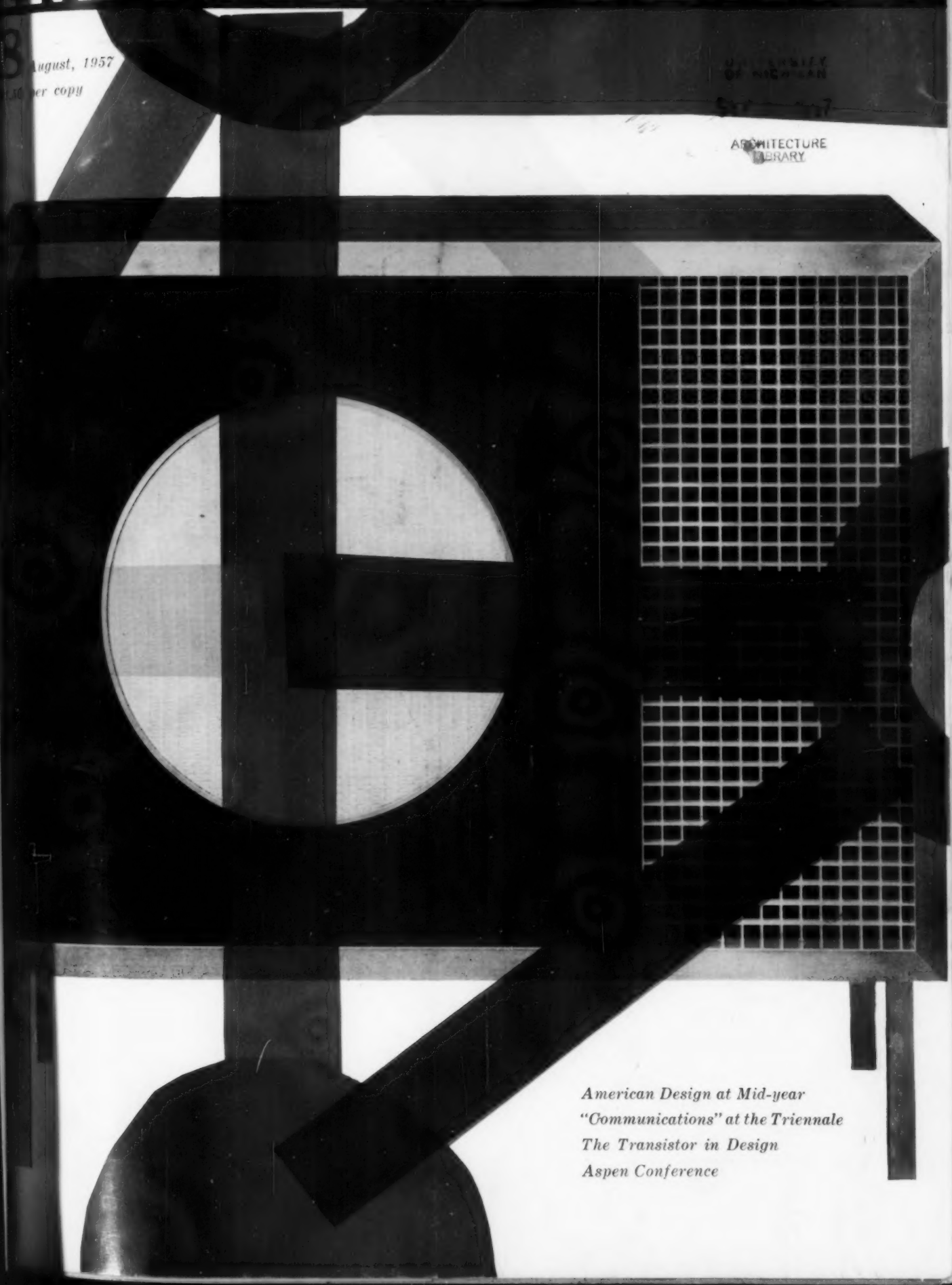
INDUSTRIAL DESIGN

August, 1957
per copy



American Design at Mid-year
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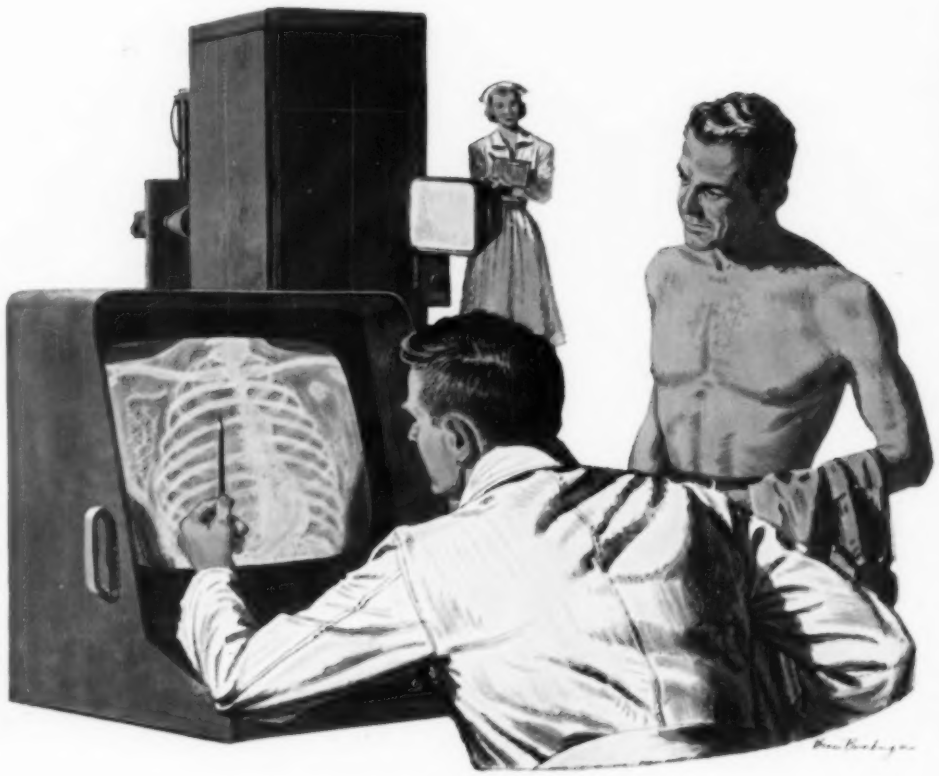

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...T, 1957 VOLUME 4 NUMBER

INDUSTRIAL DESIGN

...monthly review of form and technique in ...gning for industry. Published for active in...trial designers and the executives throughout ...stry who are concerned with product design, ...lopment and marketing.

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...ER: A random pattern of aluminum joints, suggesting the struc... of the geodesic dome, has been superimposed by Aldo Giurgola ...harles Eames' speaker cabinet for Stevens Trusonic: both are part ...e American exhibit of "Communications at Home and at Work" ...ed on pages 30-40.

FRONTISPIECE: In the hospital-clean atmosphere of G.E.'s Semi... Plant in Buffalo, workers in "nurse" uniforms assemble the delicate ... components whose importance to design is discussed on pages 88-97.

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Charles E. Whitney, President and ...
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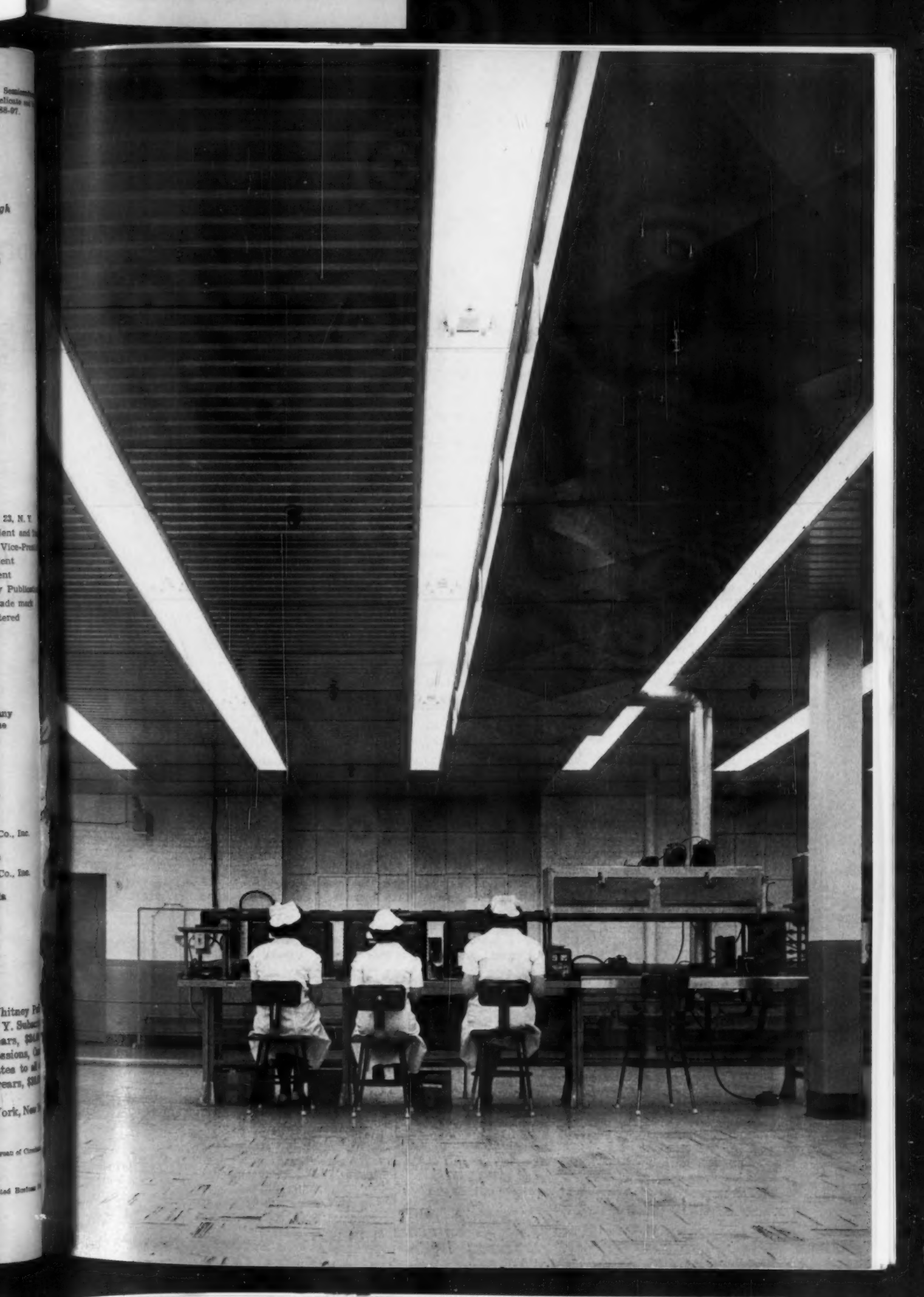


LETTERS

Three sides

Sirs:
I just had the pleasure to see the June issue of your journal and to notice that you quote from my article on American industrial design in "Art and Industry" (though unfortunately crediting it to "Design") and mention my write-up of the new triangular whisky bottle designed by Hans Schleger for Grants (though without mentioning me!). I make no complaint, but I should be grateful if you could mention the confusion about the two journals in one of your next issues.
Rene Elvin
Middlesex, England

Sirs:
So interesting to note page 10 of the June issue, the three-sided whisky bottle and your observation: "one wonders why it was never thought of before."

Well it has been! Nearly 18 years ago, when Chief Designer at Owens-Illinois Glass Company, the writer designed a three-sided brandy bottle.
Norman Steuer
San Francisco, California

Praise for product planning

Sirs:
The writer personally and on behalf of this company again commends INDUSTRIAL DESIGN for the general excellence of its material.

We have been extremely impressed by the presentation in the current issue on product planning. The scope and quality of this presentation is indicative of your capabilities and those of your staff.
J. Gordon Bentley
The Porter-Cable Machine Company
Syracuse, New York

Sirs:
It was with the greatest of interest that marketing people in the Radio Receiver Department read your excellent article in the June issue, "Product Planning in American Business." Having worked personally with both Messrs. Ogden and Day in the New York office a few months ago, I feel a great admiration for their contribution to the concept of product planning.

May I congratulate you and your entire staff on one of the finest articles I have ever read on the subject.
George P. Craighead
General Electric Company
Bridgeport, Connecticut

Sirs:
I have just finished reading your magazine's section on product planning, as background for a conference on this subject. This is a magnificient job of research, solid writing and lucid presentation which you folks have done. You deserve a lot of credit for the high quality magazine you produce.
Hugh A. Gyllenhaal
Conference Counselors
New York, New York

Tongue partly in cheek

Sirs:
With tongue only partly in cheek, I would suggest that someone organize a society called the S.N.V.D.–The Society for Non-Verbal Design, whose motto might be:
"Lemme see
Whatcha got
That works
Well
In all respects."

It is one thing to talk about design, it is another thing to do it completely. The manufacturing activity, like most others, is concerned with two basic elements–things and people. Since the things are what the people make them, all of the sophistication finally reduces itself to people. As ever, good ones are hard to find.

In my opinion the real need is for comprehensive designers. Such people are "naturals." They may emerge from many areas. I do not think they will be helped to maturation by the industrial design schools as they currently exist or as they will be modified in the future. The results of these efforts reveal that there is a distinct contrast between *what they say*, and *what they do*. I would suggest that what is needed are schools for "disciplined inventors" – educational environments which will condition the naturally inventive individuals.
Dean K. Minick
Capitol Products Corporation
Mechanicsburg, Pennsylvania

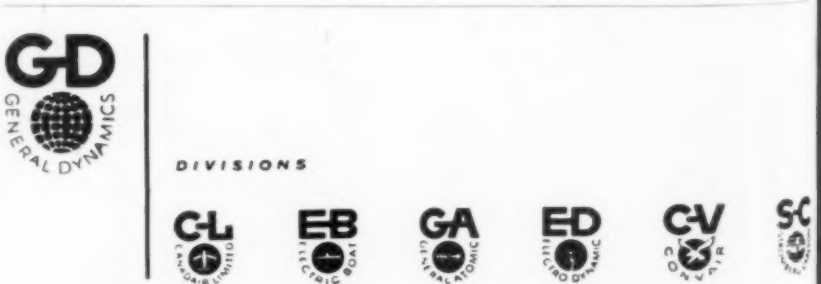
Aid to Student

Sirs:
I find INDUSTRIAL DESIGN one of the most informative magazines available to students. The sections devoted to product evaluation are especially helpful to a student of marketing and advertising.
Frank De Palma
Los Angeles, California

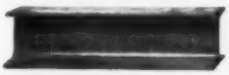
Errata

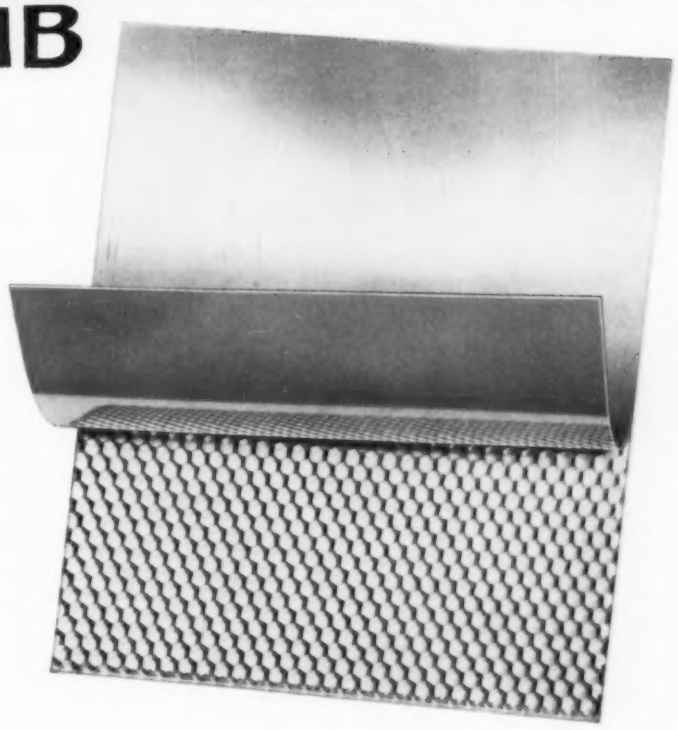
Sirs:
I should like to thank you very much for the fine article on our student project with the Polaroid camera in your May issue. But I feel obliged to correct a detail. The problem as given was entirely in the hands of Professors Leland C. Smith and Douglas R. Cleminshaw, who introduced it to their fourth year class. The other members of the staff and myself were in on the preliminary planning stage as well as the final evaluation.
Arthur Pulos
Department of Industrial Design
Syracuse University
Syracuse, New York

Sirs:
It is sometimes very sobering to find that we are not so much a household name as we might wish. This being the fact, I suppose we must forgive the error on page 20 of the June issue in the item on Diamond Alkali Company's new corporate mark. Our firm name is Royal Dadmun and Associates, Inc.
Royal Dadmun
Baltimore, Maryland



On pages 92 and 97 of the June issue we regret that we neglected to give credit to the creator of the trademark designs above, for General Dynamics and its subsidiaries. They were done in 1952 by Charles C. S. Dean.—Ed.

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**



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BOOKS

In praise of the Victorian

THE GINGERBREAD AGE: *A View of Victorian America. By John Maass. Reinhart and Co., Inc., New York. Illustrated.* $7.95

The publisher states this is the first book ever devoted to American Victorian architecture. Surprisingly, this seems to be fact. Whatever material there was on the subject prior to the appearance of this book was scattered about in guide books, history books and general architectural books dealing with a building type or the architecture of a particular locality. It is no secret that interest in things Victorian is growing and this would seem to be more than a fashionable fad. Modern architects and designers in particular are showing an increasing and quite surprising fondness for "gingerbread" although they are often not quite ready to admit this weakness publicly. Actually this is a development that was easy to predict; the most despised style is always the style we have just discarded, its predecessors we admire or at least value. As long as Victorian architecture was the most recently discarded style no one could speak harshly enough of it. It is only now that the more formal ecclecticism of the 1920s is finally being stamped out that we are willing to transfer our hatred forward one period and open our minds to Victorian clutter.

We stand to gain by this, particularly as we notice the murmur of complaint growing about the "starkness," the "monotony" and the "blankness" of our own period because the Victorian period, whatever its faults. certainly never permitted a square inch of "starkness," "blankness" or "monotony." In other words, a book on this architecture was very much needed and Mr. Maass should be congratulated on being the first to deliver. His book is primarily a picture collection illustrating a wide selection of bracketed, mansarded, befretted and generally heavily enriched buildings and interiors. The text is brief and is mostly concerned with pointing out the absurdity of the general violent rejection of this period that took place after its close, and directing the reader's attention to some of the merits of its architecture.

The illustrations are a mixture of wood engravings and old photographs of this work when it was new, with modern photographs and a few drawings and paintings showing all the possible stages from fine preservation to total decay in which the buildings now stand. It is a real delight to leaf through a world so uninhibited by restraint, taste, or finicky knowledge of what buildings "should" be. Also, these illustrations stir up an interest in the innumerable buildings from this period that are all around us—many of them just as interesting as any shown here.

It is at this point that a little reflection brings up some regrets about this book. There are so many Victorian buildings and we have ignored all of them so completely that critical judgement, the ability to sort out the significant from the insignificant in Victorian architecture has not been much developed. Mr. Maass, to be sure, warns us in his introduction that he does not intend to attempt the critic's job. His is not a book of scholarship or of criticism; it is simply a book of enthusiastic collecting. But collectors and enthusiasts often lack discrimination, and, in the intensity of their fondness, they neglect to dig into their subject deeply enough to find out how truly interesting it is. The enthusiast here gives us almost without exception only one picture of a building he likes plus a few lines of verbal enthusiasm. If we like the picture we find that we are all the more hungry for the floor plans (why will people try to publish architecture without plans? They are the only real means to comprehension of a building), the cross-sections, the views of the other side and of many interiors, for some of the architect's original drawings, for the comments of critics when the building was new, and finally, for a sound critical discussion of what this building means to architectural history. This kind of treatment of ten buildings selected with judgement would take us closer to Victorian architecture than the glimpse we get here of hundreds of buildings.

It is, of course, both easy and foolish to complain that a good book is not some other book instead. *The Gingerbread Age* is not an exhaustive study of ten great buildings nor is it a definitive work of history or criticism in which Victorian buildings and architects are placed in some scheme of historical values. Such books are needed and will, no doubt, appear as interest in the period grows. Meanwhile we should be delighted to have this amateur's scrapbook collection of curious and interesting illustrations.

—*John Pile*

An acoustical handbook

ACOUSTICS FOR THE ARCHITECT: *Harold Burris-Meyer and Lewis Goodfriend Reinhold Publishing Corporation, New York. 126 pages, illustrated.*

In the last few years the American architect has been forced into the position of coordinator of engineers and various technical experts; he must now learn to maneuver his design through the demands for compromise which result from conflicting requirements. The specialized uses to which our buildings are being put, and our drive for higher standards, have created complex new mechanical systems for environment control, as well as the constant flow of new materials filling manufacturers' catalogues. To deal with problems that arise in this mysterious realm of the technical, the expert and the specialist have set up their shops, ready, for a fee, to help the architect design the structure, heating, ventilation, air conditioning, lighting and plumbing systems. The expert will, furthermore, help him with the design of special buildings or the design of special areas in not too special buildings. He may be a color consultant, an audio equipment consultant, a fireplace consultant. Or just a consultant.

A case in point is the science of acoustics, not only as it affects the complex auditorium of the broadcasting world, but also the nervous system of the New York City apartment dweller. There was a time, not too long ago, when all acoustical problems were resolved by empirical methods. Then the only expert was the architect. Gradually, however, accumulated experience and research have produced a sizeable body of knowledge and tested methods to replace the trail-and-error approach. How recent this work is can best be illustrated by the fact that, according to the head of acoustical reasearch on the project, the extent of our knowledge at the time was *doubled* by the research and tests done for the design and construction of the Royal Festival Hall in London.

Acoustics for the Architect, by Harold Burris-Meyer and Lewis Goodfriend, is an attempt to clarify some acoustical mysteries for the man who eventually takes responsibility for the total success or failure of the building. Approaching the subject from what at first appears to be an extremely rational point of view, the book has been organized into eight chapters, the first of which discusses acoustics in terms of comfort, communication, special requirements, and approach to design. Chapter Two deals, in a limited and simplified manner, with the physical characteristics of sound and its behavior; Three describes the acoustical character and function of structure and how its elements can contribute to the accomplishment of acoustical design objectives. Chapter Four and Five deal, respectively, with the relation of sound to building materials and the shapes and surfaces of the spaces within and through which sound is distributed and controlled. Electronic devices and sound systems are discussed in the following chapter. Finally, a system of acoustical design for the architect is set up; this includes a method of gathering information prior to planning, and tests

(*Continued on Page* 107)

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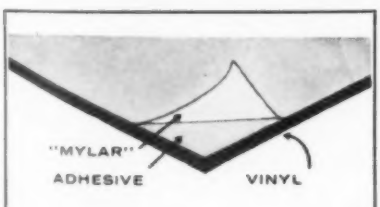

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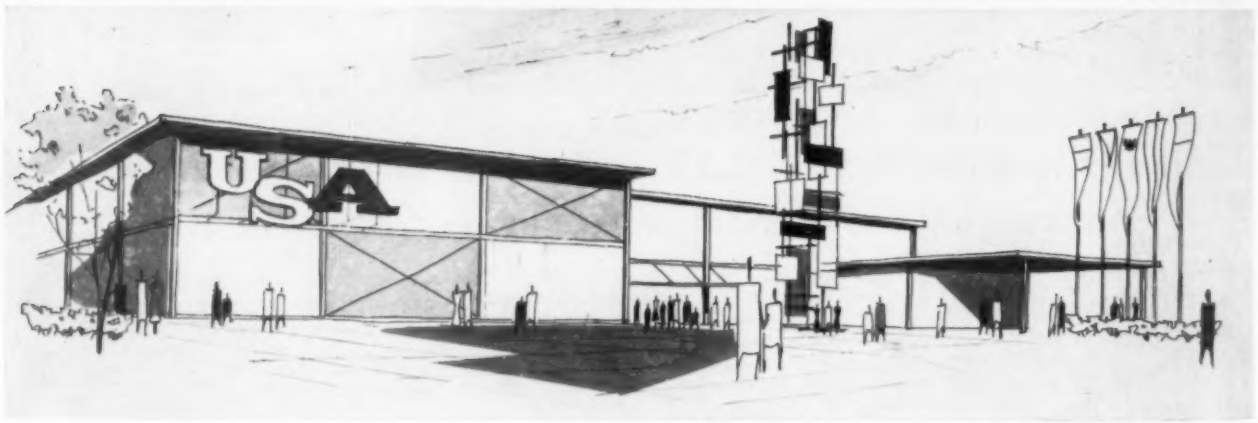


America in Europe: Teague designs two trade fair exhibits for the U.S.A.

The United States is exhibiting at two European trade fairs this September—Zagreb, Yugoslavia and Vienna, Austria—in structures designed by the Walter Dorwin Teague industrial design firm of New York. The Zagreb fair opens September 7; the Vienna fair, September 8. Both fairs run for two weeks.

The Zagreb fair has received much publicity from the fact that it contains a complete typical American supermarket, a shopping concept altogether new to the Yugoslavian populace. The National Association of Food Chains is operating it, in cooperation with the Department of Commerce. The object is to demonstrate American methods of food distribution as part of our program of technical assistance to other nations. The Zagreb exhibit is specifically grouped around consumer products. Within the louver-sided contemporary hall designed by Teague (top) is a representation of average American products (the selection carefully avoids luxury items to concentrate on budget-class goods)—appliances, sporting goods, low-price automobiles—with the supermarket occupying the center of the display floor. Adjacent to the market is a laundromat which is actually open for use, and a selection of food dispensing machines, which have proved popular at other trade fairs.

The Teague-designed exhibit hall was erected for the two-week-long fair but will be used for exhibit purposes for at least ten years. The Zagreb climate dictated the open-sided exhibit hall with its strong horizontal lines formed by venetian-blind-like louvers which shade the light but admit the breeze. Steel framing members for the structure were fabricated in Yugoslavia to the designer's satisfaction.

The Vienna exhibit hall has as its theme "Construction," and the structure itself was designed both to house exhibit rooms, construction details, and the like, and to function as an example of modular prefabricated building. An antidote to the all too prevalent idea that America deals exclusively in luxury architectural materials and methods, the U. S. exhibit will stress and, by its very prefabricated presence, display the applicability of U. S. cost-cutting methods to rebuilding the decaying other-century structures which Vienna seeks to redevelop.

Rocket hits Grand Central

In honor of the International Geophysical Year, the Army's "Sunday Punch," the giant Redstone missile, recently was unveiled at Grand Central Terminal, to the delight of the daily flood of commuters and other travelers. Towering almost to the ceiling, the 62-foot-long, 6-foot-diameter weapon is the largest object ever displayed on the concourse of the station. Already being incorporated into the Army's arsenal as an operational weapon, it is the biggest missile ever successfully flown by the western powers.

The Redstone was developed by a team of Army Ballistic Missile Agency scientists, headed by the famous German rocket expert Dr. Wernher von Braun. Prime contractor is Chrysler Corporation. Key subcontractors are Ford Instrument, division of Sperry Rand; Reynolds Metals; and Rocketdyne, division of North American Aviation.

The Army describes the weapon as a high-accuracy, liquid-propelled, surface-to-surface missile capable of bringing tremendous firing power against enemy installations. It provides mobility, firepower, and range not possible with conventional artillery. In flight it reaches a speed several times that of sound.

Ceramic designers meet

The American Ceramic Society's Design Division, holding its annual meeting in Dallas in the late spring, examined the broad territory of the relation of design to company management (concluding that it ought to be close and seldom is) and surveyed an appropriate geographic area of the industry under the discussion heading, "Ceramics in the Southwest. "All the participants agreed that design is basic to their industry, with keynote speaker Christian Planje, of Gladding, McBean and Company (Franciscan dinnerware, Hermosa tiles) suggesting that "design should be present at every point where a company meets the public, for it inherently displays the character of a firm." Mr. Planje pointed out that this presupposes "designers who have an understanding of the other company operations and can work in tandem with them."

Developing further the role of the designer, Joseph Von Tury underlined the fact that industrial design has reached maturity and become a profession which demands professional self-discipline and integrity of purpose. This and related problems were discussed by a panel consisting of Paul Johnson, Structural Clay Products Research Foundation; Kelley Lane, Bartlett-Collins Company; Mr. Von Tury and Mr. Planje.

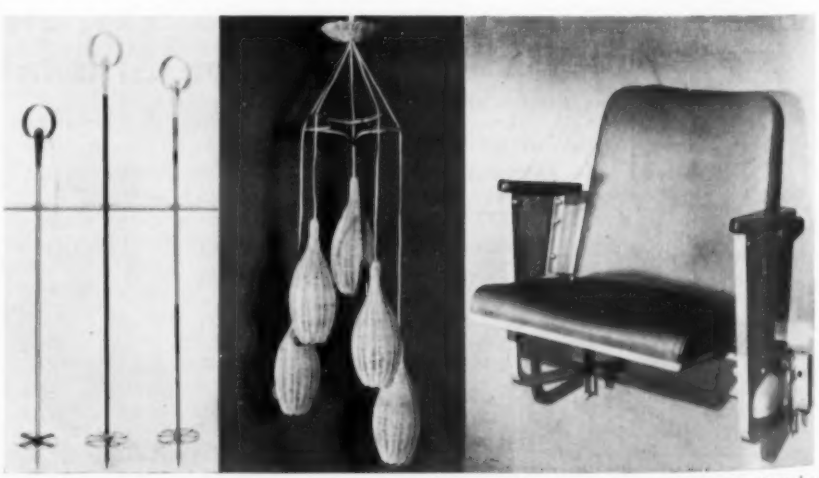
Elizabeth Synar of Synar Ceramics, Oklahoma, spoke on the striking growth of ceramics in the southwestern states, which she attributed to four factors: the availability of clays, the geographical location for shipping, the excellent labor supply, cheap and plentiful fuel. Other panel members in the discussion were Hubert Capps, Ludowici-Celadon Tile Co.; Dan McPhail, American Clay Forming Co.; Bill Coates, Coates Co. The twin heritages of Indian and Spanish art were felt to have inspired a truly regional style.

Coates saw the industry, as a whole, held back by its own lack of novel design. He mentioned the use of ceramic building panels, a possibility that intrigues the industry. "We have nothing really new, except the design of brick, to offer the public," he said. "Take ceramic houses: everyone's house should be ceramic because it is maintenance-free and as safe as it is possible for a house to be." John Frank of Frankoma Pottery showed slides of the all-ceramic house designed and built for him by architect Bruce Goff.

Joe Taylor, professor of sculpture at the University of Oklahoma, ended the three day meeting with a discussion of form and content, illustrating his remarks with clay molding demonstrations. He reminded his listeners that the principle forces of the 20th century — such as atomic energy — could not be directly pictured, and this gave rise to new modes of artistic expression which are helping to form the patterns and designs of our day.

New York sees Canadian designs

Products chosen by the National Industrial Design Council of Canada as the outstanding designs of the year for Canadian-made products (designers did not have to be Canadian, although most of them were) have been placed on exhibit, for the summer at the private exhibit room of the Canadian Consulate in New York's Rockefeller Center. The 60 products range from children's toy constructions through furniture to home appliances, putty knives, and plastic ski pole grips. The designs are handsomely done and the equal, in most cases, of their U.S. counterparts, but their similarity to our own designs is so great that they fail to excite the American viewer. Though surely praiseworthy, they have no national or regional flavor and one could easily mistake them for American products.



Canadian design award winners: (left to right) polyethylene ski pole grips by Douglas Hossop; wicker lighting fixture by Bodil Erichson; wood, metal and vinyl fabric theatre chair for the Stratford Festival, by Kenneth Warren.

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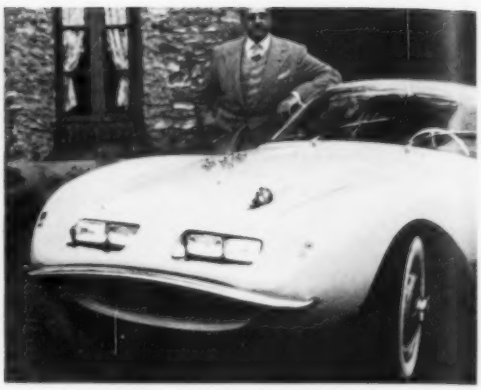


Loewy designs curvaceous car

Raymond Loewy, (above right) part-time resident of France, recently designed for his personal use an automobile which boasts, among other things, the first compound-curve windshield to be made in France. Pictured at Loewy's country home, (above), at Rochefort-en-Yvelines, the car has a body by Bernard Pichon and Andre Parat of Sens, on a BMW 507 chassis. Mr. Loewy says "The car was described as promising to be 'sensational' which, if true, is contained in a return to fundamental automobile styling conceived for function instead of effect. Italian body builders have demonstrated that the most beautiful cars on the road are simple and pure in design. Pichon, Parat and I have striven to produce a logical car, a good looking car, resulting from principles of moderation and functional integrity." Loewy adds: "It is inevitable that there will be a return to sobriety of form. This new personal automobile, a sports car with 'Grande Tourisme' characteristics, is not intended for mass production; still, it has integral safety features which are far superior to those in most sports cars. The roll-over bar, or collision ring, is not an accessory; it is an integral part of the body. Further, the car is equipped with bumpers, a feature generally omitted from sports car designs.

The chassis, reinforced metal structure, is banded by two square-section members, serving as profile around the windshield and the rear window. These are joined by two similar steel members over the doors, for maximum panel rigidity and passenger protection. Additional safety is assured by cushion sections at salient points within the car. The windows are electrically controlled. Soundproofing has been stressed for interior comfort.

The design features which are attracting most attention are the flush relation of rear body section to wheels, the thin, flattened section of the top fender line, the flush city driving lights, and the fact that there is scarcely a straight line in the entire body.

Muller-Munk (right) at I.C.S.I.D.

International design council formed

Delegates from professional organizations of industrial designers in eight countries —Denmark, France, Germany, Italy, Norway, Sweden, United Kingdom, U.S.A.— met in London June 27 and 28, to establish the International Council of Societies of Industrial Designers and name American designer Peter Muller-Munk their first president. Other members of the Executive Board are Misha Black, executive vice president, United Kingdom; Enrico Peressutti, vice president, Italy; Pierre Vago, secretary-treasurer, France. All offices will be held for a two-year period.

Organized as a temporary body in 1956, the ICSID was established permanently this June for the purposes of setting internationally acceptable professional standards of performance and business conduct, helping world industries to evaluate the benefits of industrial design; serving as a source of interchange for significant trends, ideas, and activities in the international design and technical fields.

The Council's first activities include organization, a study of applicants for membership, and the establishment of a professional rules and standards.

The Council will also interest itself in the education of student designers.

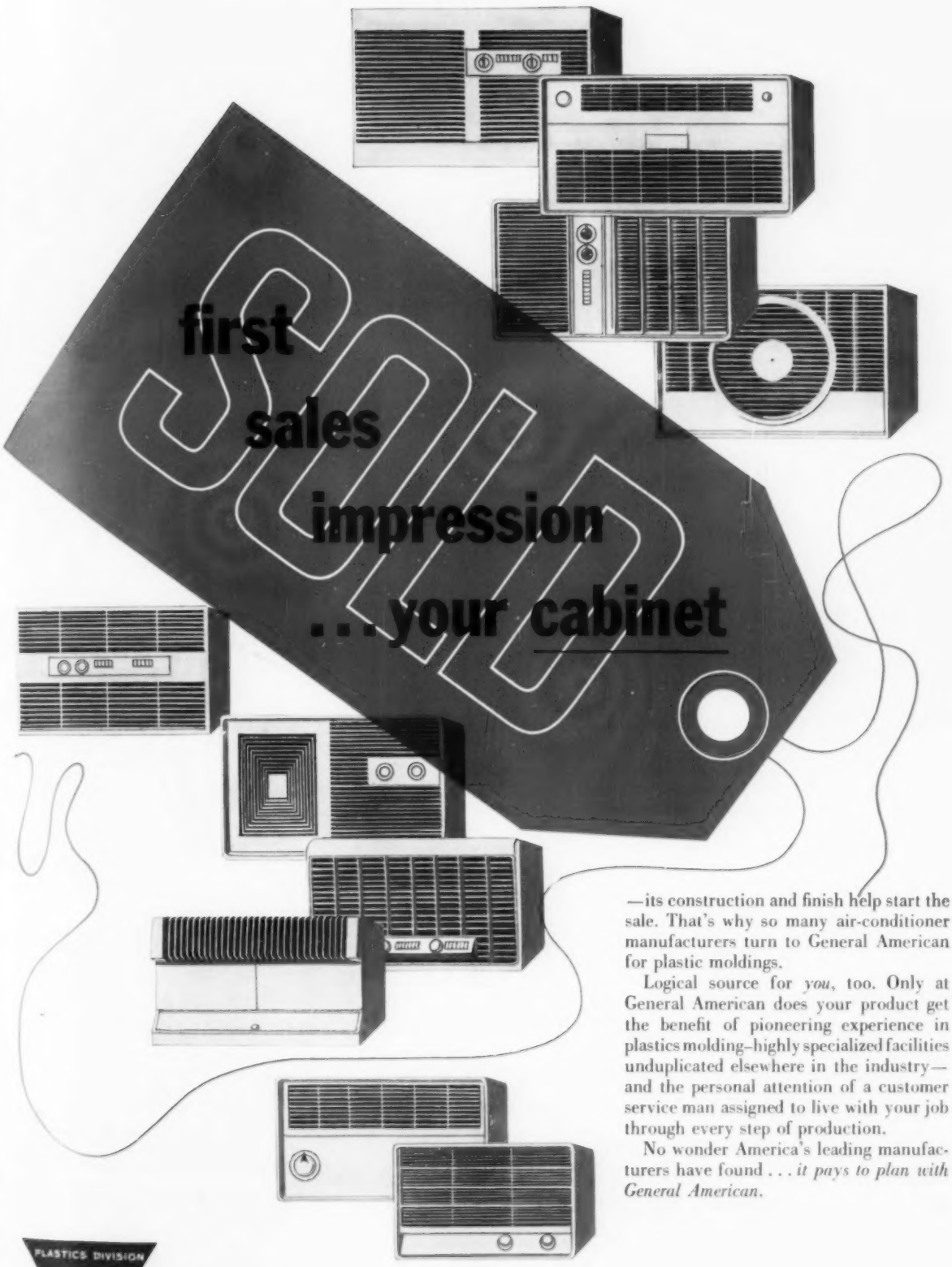
Fifth Avenue's aluminum curtain

The world's largest aluminum curtain wall (below)—covering a surface of more than eight acres—is now being raised into position on the 38-story New York office building, 666 Fifth Avenue. The huge facade, which will enclose more than one million square feet of quality office space, consists of 2,950 Reynolds Metals Company-made aluminum panels weighing a total of 800,000 pounds.

Fabricated at the Louisville, Kentucky plant of the Reynolds Company, the panels have a die-pressed design on each spandrel, consisting of alternate rows of small pyramids plus a 20-inch-wide vertical band of white porcelain enamel on aluminum between each window. The white areas will be framed on each side by a three-inch polished aluminum border.

A typical panel and window unit is approximately 7 feet 5 inches wide and 11 feet high, and weighs about 225 pounds.

Panels are placed on the facade from within the building and then bolted to steel members previously welded to the building's frame. These vertical steel rails position the panels and each panel interlocks at the bottom with the one below it. The window units are about 5 feet 6 inches high and consist of a pivoted sash flanked on each side by a fixed sash. The pivoted window design permits safe cleaning of the glass.



—its construction and finish help start the sale. That's why so many air-conditioner manufacturers turn to General American for plastic moldings.

Logical source for *you*, too. Only at General American does your product get the benefit of pioneering experience in plastics molding–highly specialized facilities unduplicated elsewhere in the industry—and the personal attention of a customer service man assigned to live with your job through every step of production.

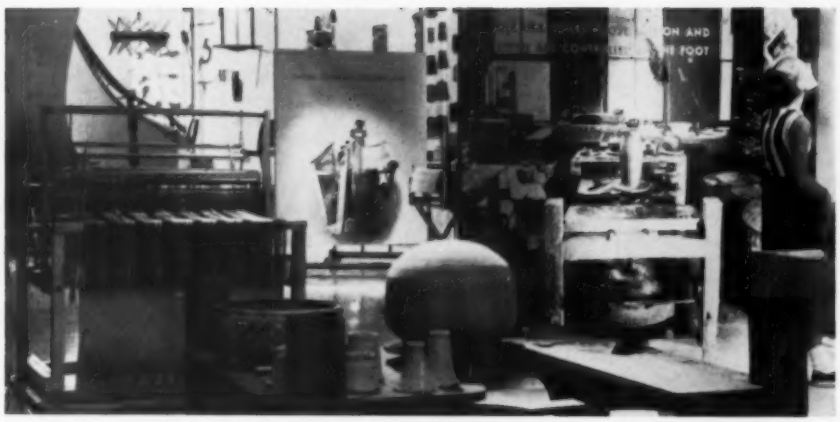
No wonder America's leading manufacturers have found . . . *it pays to plan with General American.*

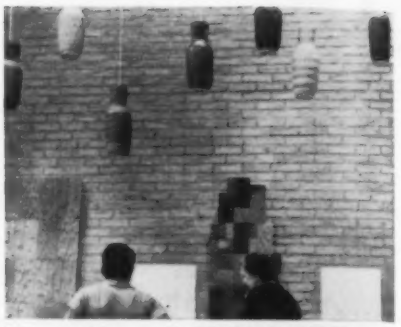
PLASTICS DIVISION GENERAL AMERICAN

Plastics Division
GENERAL AMERICAN TRANSPORTATION CORPORATION
135 South LaSalle Street • Chicago 90, Illinois

Exhibit shows how crafts still contribute to the production line

photos: Matilde Lourie



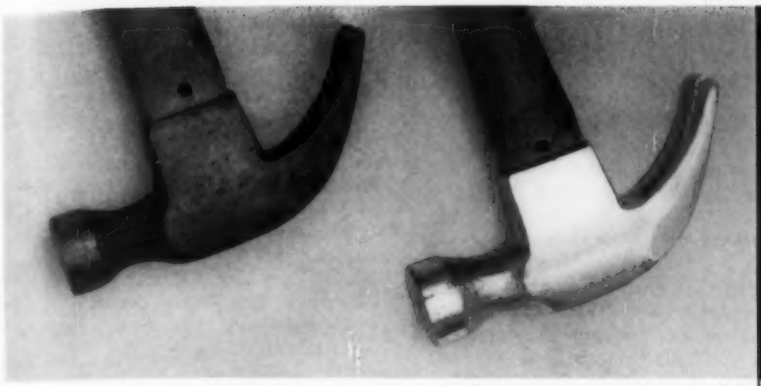


The handsome little Museum of Contemporary Crafts, just off New York's Fifth Avenue on 53rd Street, avoids a merely artsy-craftsy appeal and attempts to interest those whose work bridges the gap between hand crafts and production line. The current exhibit "Tools, Techniques and Materials," viewed from the main floor exhibit area (above) shows a montage of potter's wheels and weaver's looms. Pictures at right (top to bottom): ceramic lamp bases suspended from cords, and tile decorative groupings; looking down from the studio balcony at pigment display; the evolution of a wooden salad bowl; silver teapot and clay prototypes; potter's wheel and wine sack-like clay jugs. All exhibits trace the steps to a completed product.

New York's new (1956) Museum of Contemporary Crafts has been mounting a number of stimulating shows, the newest of which—"Tools, Techniques and Materials"—is of special interest to designers. The show, which will run through September 8, includes design case histories (i.e., the development of a ceramic bowl from clay lump to finished, glazed decorated product); a selection of craftsmen's tools from Old Sturbridge Village, Massachusetts' 18th century restoration; looms and a range of textiles. Among the companies and other groups that contributed display material: Reed and Barton, National Cotton Council, Gorham, Design Technics, Dunbar Furniture, Du Pont, Aircraft Tool and Supply.

The foreword to the exhibit has this to say: "While all of the crafts draw upon tools, techniques and materials which have been in use for centuries, each era is distinguished by a new and individual expression through their use. The implementation, however, comes always from man, who possesses the most remarkable tool—the hand, which ultimately controls all other tools. The hand's relationship to man-made tools and their relationship, in turn, to the materials upon which they are used, is an exciting history. Beginning with the cave man's implements and progressing to the complicated machinery in today's vast industrial plants, the hand has retained its significance as an indispensable instrument."

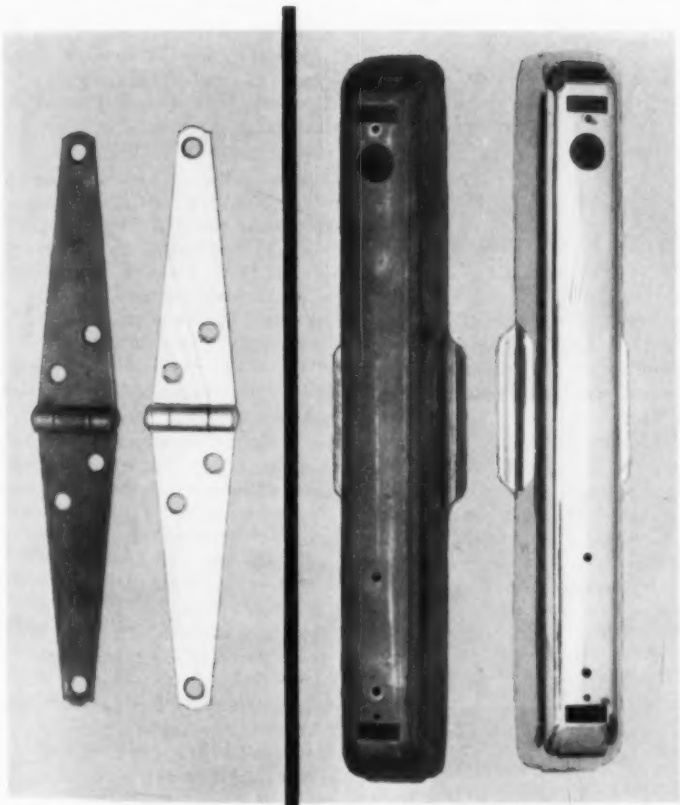
"Tools, Techniques and Materials" takes as its subject the work of some contemporary craftsmen in the media of clay, wood, metal, and textiles. Past and present crafts are linked through the medium of the human hand and its effects upon tool design, which, in turn, influences techniques and choice of material. The overall effect of the exhibit, on a broad level, is to re-emphasize the vitality of the crafts and demonstrate their direct link to the production of mass goods.



Shelf appeal can be increased for only 3¢

Finishing costs reduced to 12¢

If It Looks Good...It Sells Better



High class look for 4¢

Fluorescent lamp reflector finishing cost cut 62%

If you're looking for a way to increase the sales appeal of your products by adding a quality appearance at low cost, you should investigate vacuum coating.

While this modern process is not a cure-all, most likely you'll find it will add new life to the items you manufacture — and may cut your costs spectacularly, too! Brilliant, eye-catching, metallic finishes, in a wide range of colors, can be applied on plastics, metals, wood, glass, paper, fabrics and many other materials. Today's vacuum coatings are brighter than buffed and polished electroplating, cost less, and in some applications stand up better.

You don't have to take chances, either. Send us a sample of your product and give us details about its use. We'll tell you whether your application is a good one, show you how your product will look, and estimate your costs. Then, if you want, we'll supply a complete installation, guarantee its output, show you how to run it efficiently, and even train your operators. Write us today!

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EQUIPMENT CORPORATION

Olin adds aluminum

A growing number of companies are retaining industrial designers to work out a symbol of their corporate identity. This kind of program has become a major area of activity for the designer, and an immense amount of thought and planning enters into good contemporary symbol design and redesign.

When Olin Mathieson Chemical Corporation decided to enter the aluminum field last spring, they retained New York designer Fred J. Brauer to design a symbol that would identify the new division in the mind of the public. The result is reproduced above. The enclosed areas of the letters can be rendered in a variety of contrasting colors, which gives the mark a versatility for display, but the essential outline remains identical from presentation to presentation. A full scale campaign in the business papers is making the symbol familiar to the public.

New plastic from Germany

The Hercules Powder Company has opened a multimillion dollar plant in New

Jersey so that they can become producers of the unique type of polyethylene, heretofore imported from Germany, which is used for housewares and other products. Hi-fax, which has been on the market for about two years, is the result of a special process discovered by Professor Karl Ziegler of the Max Planck Institute in West Germany. Prior to the building of their facility in Parlin, New Jersey, Hercules had been importing over a million pounds of the plastic under an exchange agreement with the German firm, Farbwerke Hoechst AG.

People

The Heyward-Robinson Company announces the new location of its architect-engineering, design, and executive offices in the Engineering Building, 114 Liberty St., New York.

Schnur-Appel, design consultants, 2165 Morris Avenue, Union, New Jersey, have expanded their modelmaking operations to include complete facilities for experimental vacuum forming. This service includes the design and building of sample molds and test vacuum forming.

Designs For Industry, a new firm offering a complete service in interior, product, and packaging design, has been formed by Albert Lefcourte at 205 East 69th St., New York City. Mr. Lefcourte has done design work for such firms as Du Mont Television, Inc., Westinghouse Electric Co., Lever Brothers, Revlon, Inc., Wamsutta Decorative Fabrics. Everywoman's Magazine has recently retained the new firm to redesign its format.

Lefcourte

Steinbach

Tom Steinbach has been appointed planning director of Reinecke and Associates of Chicago. He has had an independent design office, been associated with Raymond Loewy Associates, with Hotpoint Co., and headed the Industrial Design Department of the Illinois Institute of Technology.

The election of **Virgil M. Exner** as a vice president of Chrysler Corporation, was announced July 30. Mr. Exner, who is also director of styling for Chrysler, joined the company in 1949. He recently received a gold medal award from the IDI for his 1957 styling of the Chrysler line.

Exner

A new student chapter of the **I.D.I.**, at Michigan State University, East Lansing, the first in the Midwest, was chartered in June with 23 members and will begin its regular program with the coming fall term.

Sally G. Swing, after five years as Executive Secretary of the American Society of Industrial Designers, resigned to become Assistant to the Director of Information at the New York office of UNESCO, where she began her duties on August 4. Mrs. Ramah Larisch, National Office Secretary, has been appointed to replace Miss Swing.

Company News and Views

A trade-in offer on pots and other kitchen tools is being run through November 30 by the **Ekco Products Company** as an inducement to customers to retire old kitchen items and buy replacements from the company's Flint line. Ekco is paying $1.25 each for pots or pans in any condition; $1 for knives or eggbeaters, etc. Full dealer markups will be given on the reduced merchandise.

The Stainless Steel Producers of the American Iron and Steel Institute report that a survey of car dealers shows that stainless steel is favored over all other types of brightwork by 2½ to 1.

Turquoise, although a good selling color in home decorating and appliances, will probably never move into the ranks of the major colors preferred by customers—yellow, red, and green — according to James K. Buckwalter, a vice president of the **Wooster Rubber Company**, Rubbermaid housewares manufacturer. Mr. Buckwalter bases his opinion on customer reaction to his company's color choices through the years.

Judson S. Sayre, president of the **Norge Division** of Borg-Warner Corporation, says the automatic clothes dryer is the one bright hope for the appliance industry, which is beset by over-production and price-cutting. He predicts that the dryer will set another record this year with sales reaching 1,800,000.

The **Frigidaire** division of General Motors has been awarded a special award of merit for the 1957 "sheer look" by the Traphagen School of Fashion, New York. It is believed that this is the first time that an award of this kind has been made to the home appliance field.

The new Seagram tower at 375 Park Avenue will have an astronomical clock that will adjust lobby lighting to daylight outside, thus minimizing the difference in light intensity for persons entering or leaving the building. Sunrise and sunset are registered by the clock automatically. **Kelvinator's** main appliance plant at Grand Rapids, Michigan, has undergone expansion to the amount of 4 million dollars worth of equipment to increase production, particularly the manufacture of refrigerator outer shells.

some summer stock-taking:

American Design at Mid-year

1/2 yr

American design

A teen-ager of our acquaintance invited us on a shopping trip not long ago, and it proved most illuminating. She wanted to buy a few inexpensive, attractive products as a "typical American" gift for a pen pal in Japan, a teen-ager who had generously sent along a native paper fan and flower-printed silk scarf. Limited to the stock of a New England dime store, the young consumer found herself choosing between Indian moccasins (made in Lowell, Mass.), early American trivets (reproduced in Lancaster, Pa.), carved wall plaques of covered bridges (handpainted in Japan), a scarf with pennies imprinted (made in France), a ball point pen (made in Chicago), plastic pop-it beads, nylon apparel, and a baseball and bat on a charm bracelet. After much deliberation, she chose the scarf and the bracelet, and sent along two movie magazines and a souvenir pennant of the local historical monument for good measure.

Since nothing has been heard from her correspondent, the effect of this communication cannot be recorded here. But the girl's frustration over finding something "American" is a more interesting problem for the American designer.

That there is hardly a product that is a symbol of America's traditional image *and* unique to American living, as the fan is to Japan, is not as hard to explain as it is to accept. America is a many-sided thing, and the man who designs for its heterogeneous people cannot afford to be one-sided. That is one of the reasons for pausing, at midyear, to look at some of those sides from a design point of view.

Our job of summer stock-taking is made easier by a number of people who, like our teen-aged friend, have recently had reason to draw their own conclusions about what is American about America's design:

- The designers of the U.S. exhibit at the Triennale, trying to communicate the meaning of design in American culture, selected 115 products from 58 manufacturers by 56 designers, and sent to Italy an exhibit of "Communications at Home and at Work" (page 30).
- The Italian committee for the Triennale, wishing to typify the American design profession in an international showing of industrial products, asked six leading designers to submit case studies of characteristic U.S. products (page 41).
- Organizers of Disneyland, deciding to add a house of the future to its all-American wonderland, commissioned a firm that saw the housing problem in a characteristically American way: not only is the house potentially mass-producible, but it is nearly all plastic (page 48).
- The committee for the annual Aspen conference, building a program for an international conclave on the broader problems of design, this year turned its attention to the meaning and values of American society (page 70).

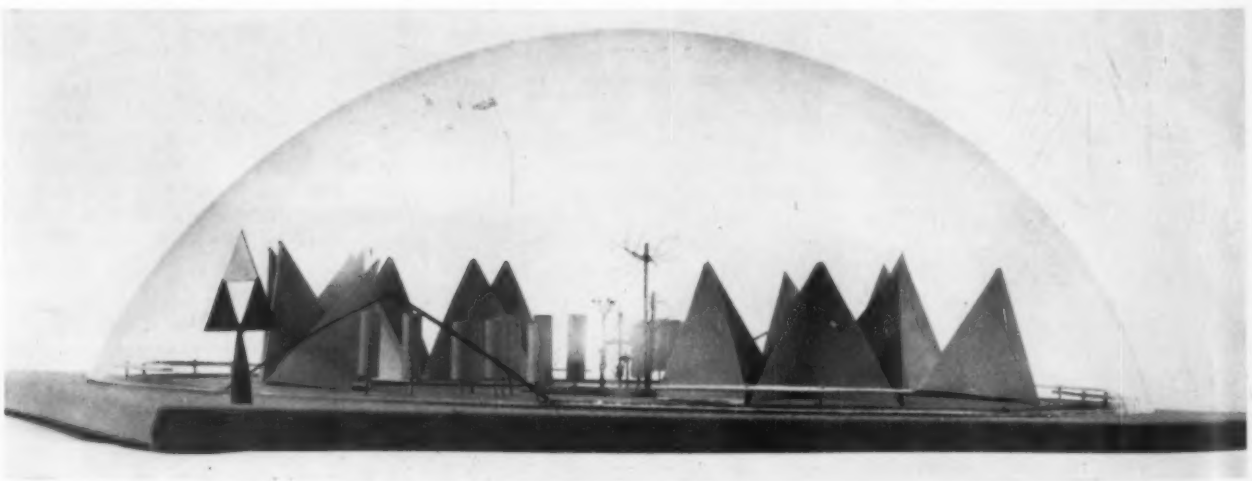
Each of these concerns is as American as pie — apple pie and Eskimo pie, and even pizza pie and shoo-fly pie. In wrapping them all up in a single issue, we do not pretend that they wrap up "American design in the middle of 1957." In fact, it would be dangerous to assume that *anything* could, as it would be dangerous to assume that any one side of the many-sided American market is the *most* American. Our purpose here is to reflect what must be the designer's purpose: to examine, and respect sides that are not his own. To this point, the discussion at Aspen is especially pertinent: today's designer must understand the nature of America not just by being American, but by being a student of America. It is a student's business to draw conclusions after examining the facts, and it is the nature of study to change the student along with the conclusions. The new facts about America which are becoming available through new sciences — the social sciences — are grist for the creative designer's mill, and they may very well change the course of American design.—*J.F.McC.*

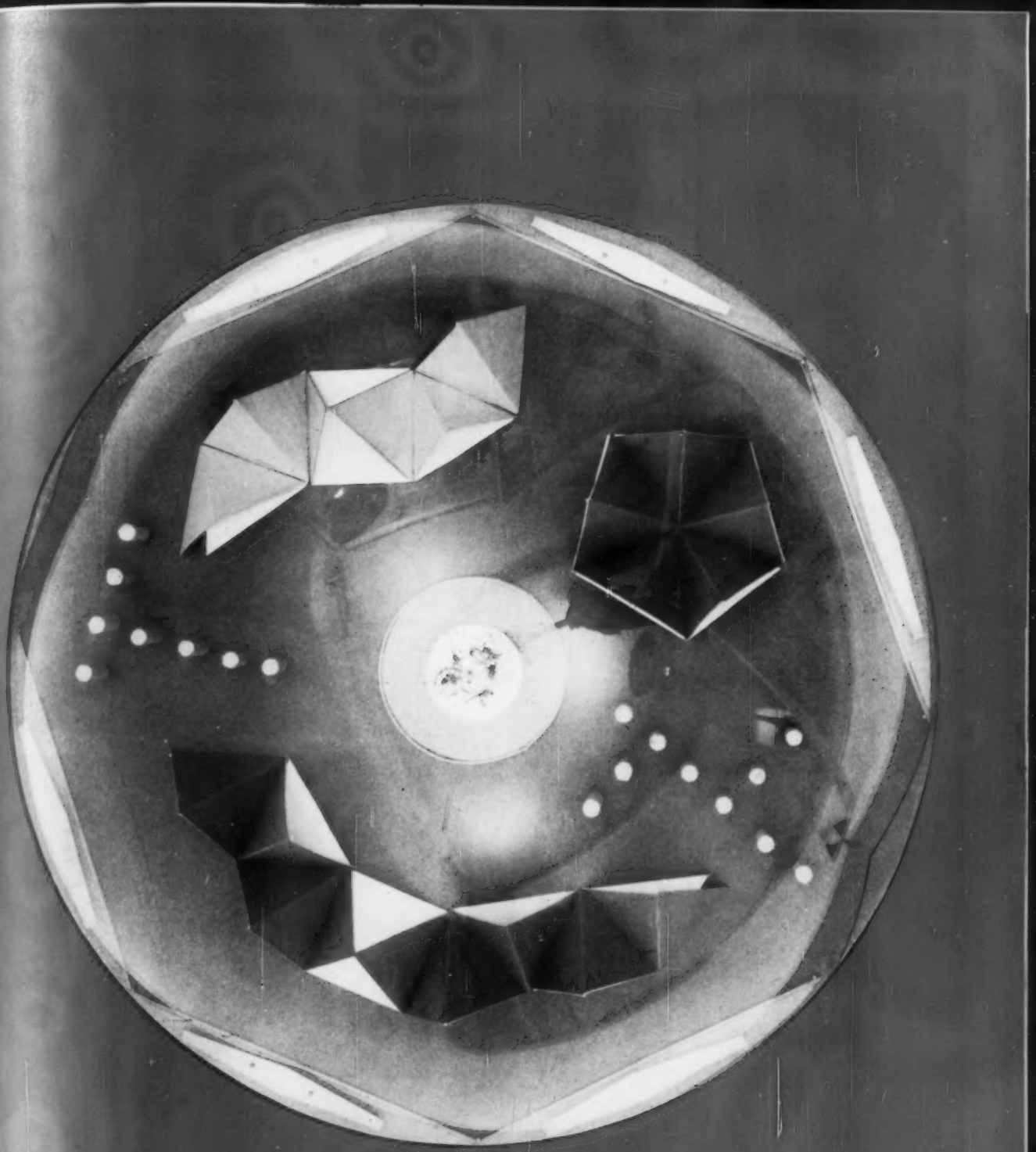
U.S.A. EXHIBITS AT THE TRIENNALE:

In "Communications at Home and at Work," the union of American science and art is arrayed in a translucent dome.

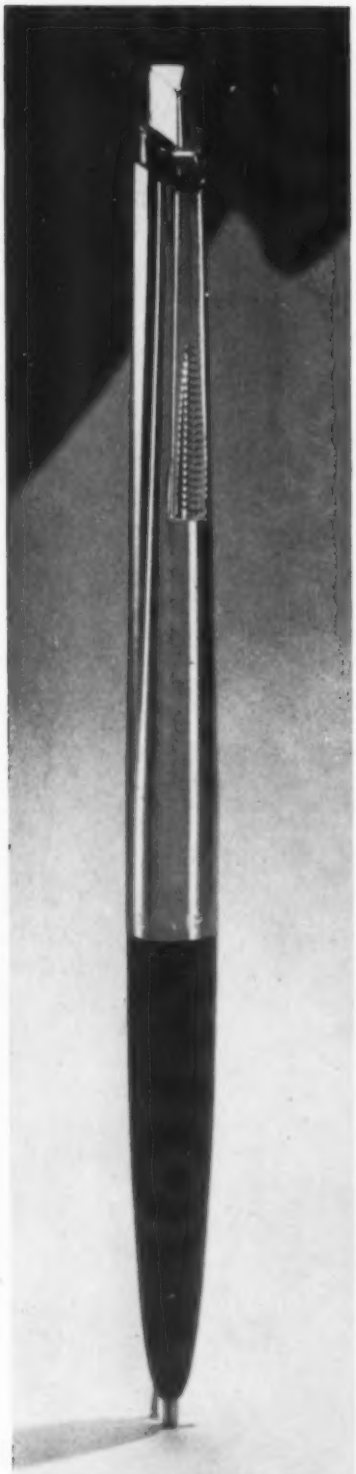
Some 115 American products are currently being scrutinized by thousands of international visitors at the Triennale of Milan—a cross-section of design for mass production assembled around the theme, "Communications at Home and at Work." Some of the products that visitors will see are sampled on the next 10 pages; they were selected by a committee of the American Society of Industrial Designers, with representatives of the Industrial Designers Institute, led by Walter Dorwin Teague as U.S. Commissioner to the Triennale. Paul McCobb created the display, shown here as a model, within an aluminum and plastic dome donated by the U.S. Information Agency. Funds for the exhibit were granted by the Department of Commerce, which will use it for European trade fairs in 1958.

The American dome houses an important exhibition at a major exposition; yet it was put together — as previously reported on these pages — under circumstances that were far from ideal for the designers involved. The display they managed to assemble, against pressures of time and money, is unlike any other in Milan, both in its emphasis and in the inherent character of American design for mass production. How well the exhibit itself will communicate to foreign visitors can be evaluated only as the Triennale continues over the next few months. One of its messages is phrased thus in the introduction: "Whatever characteristics the American designer may give these products, they are never somber. They help to make Americans one people, gayer at leisure and more efficient at work."





The United States exhibits at the Triennale under a plastic and aluminum geodesic dome: Paul McCobb display sets communications products in tent-islands, 12 feet high, brightly colored on the outside, white inside. Circles indicate tall cylindrical display cases with products spotlighted inside. Central fountain, made of chrome-plated pipe and anodized aluminum, uses 5 pumps to recirculate water which spills over bronze sculpture by McCobb



Ball point pen
Scripto, Inc., Atlanta
Walter Dorwin Teague Associates, consultant designers

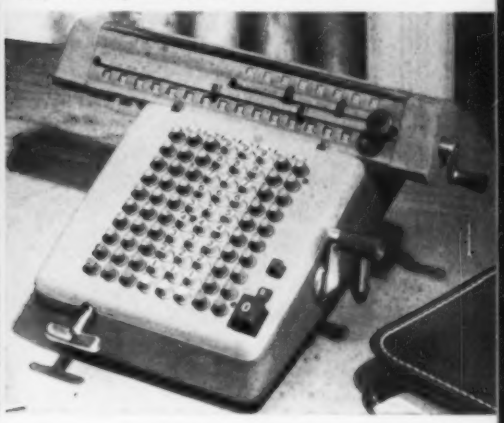
Thermo-Fax "Fourteener" copying machine
Minnesota Mining and Manufacturing Co., St. Paul, Minn.
Harley Earl, Inc., consultant designers

"Recorder" desk pen set
Esterbrook Pen Co., Camden, N.J.
H. E. Steinberg, staff designer

Mail opener
Pitney-Bowes, Inc., Stamford, Conn.
William O'Neil, consultant designer

Adding machine
Monroe Calculating Machine Co., Orange, N.J.
Raymond Spilman, consultant designer

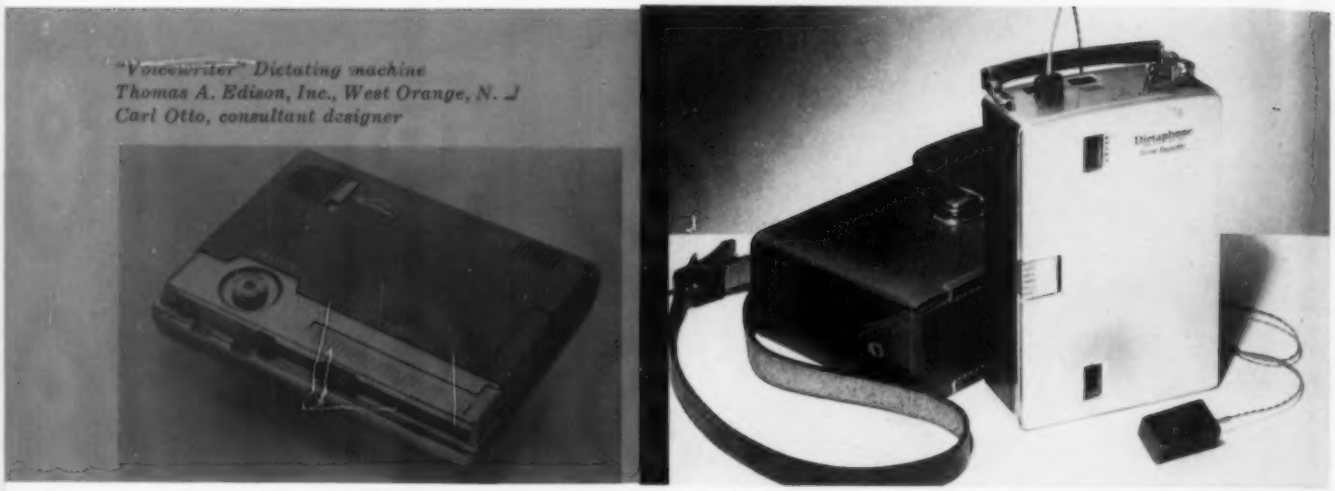
Portable calculating machine
Monroe Calculating Machine Co., Orange, N.J.
Sundberg-Ferar, Inc., design consultants
Raymond Spilman, color consultant



Check perforator
Cummins-Chicago Corp., Chicago.
Raymond Loewy Associates, consultant designers
George Seeger, staff designer

Electric typewriter
Royal McBee Corp., New York
E. H. Dreyer, designer
Faber Birren, color consultant

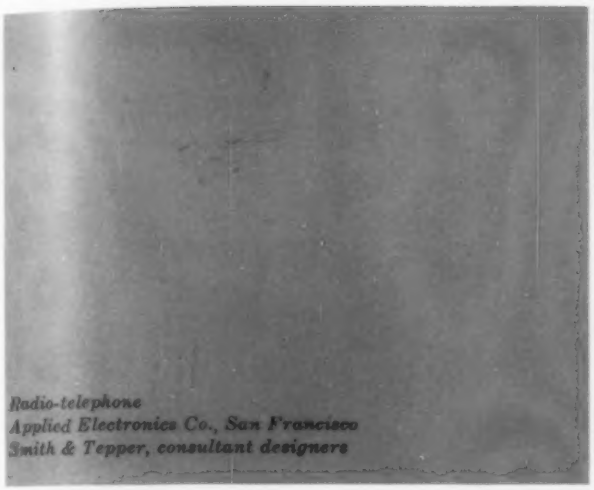
Dictet recorder
Dictaphone Corp., New York
Gordon Florian, consultant designer



"Voicewriter" Dictating machine
Thomas A. Edison, Inc., West Orange, N. J.
Carl Otto, consultant designer

Transcriber
Dictaphone Corp., New York
Gordon Florian, consultant designer

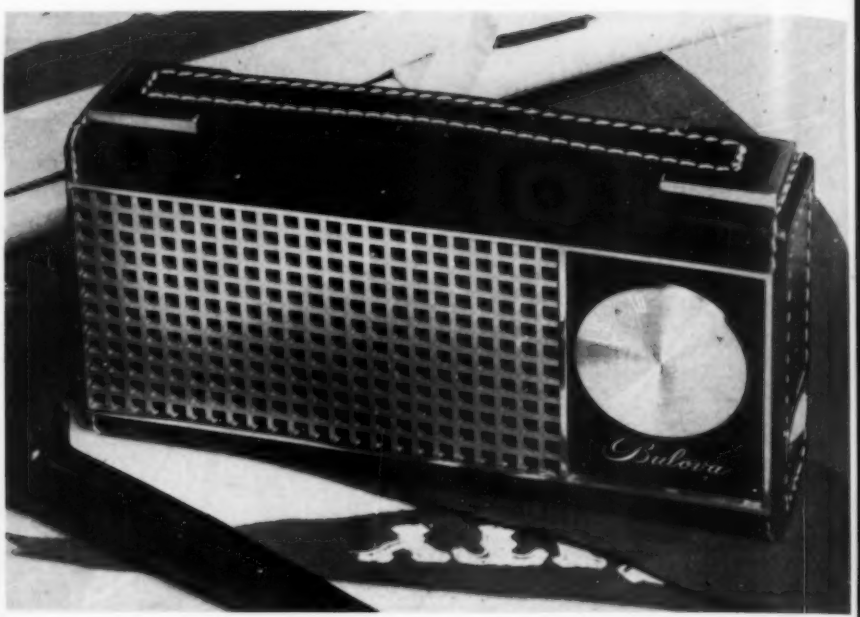
Microphone
RCA Commercial Electronic Products Div.
Camden, N. J.
John Vassos, consultant designer



Radio-telephone
Applied Electronics Co., San Francisco
Smith & Tepper, consultant designers

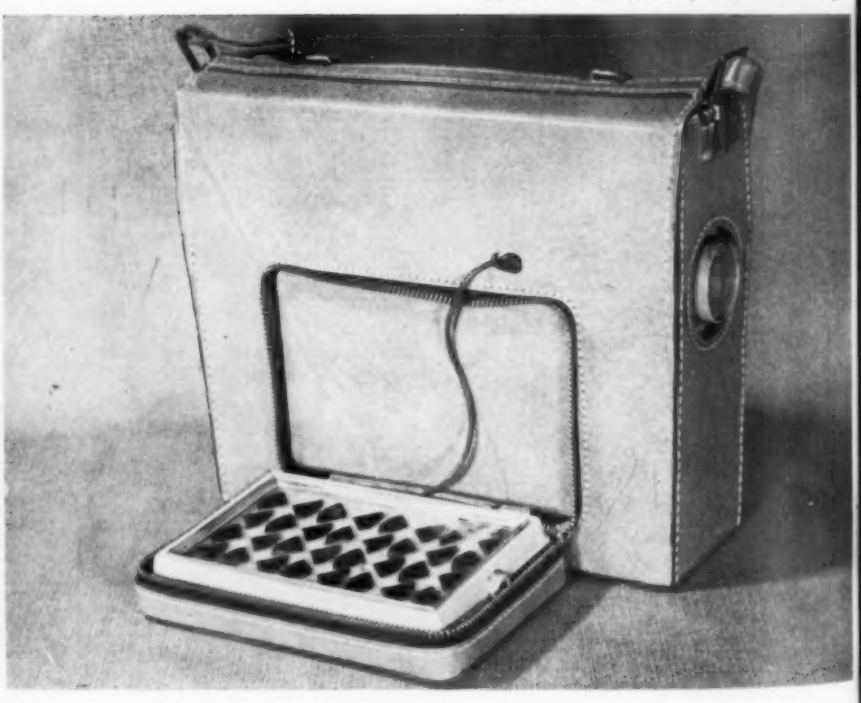
Thumbnail-size hearing aid
Sonotone Corp., Elmsford, N. Y.
Carl Conrad Braun, designer

Radio guide for museum use
Modernophone, Inc.
Joseph Abruzzo, designer

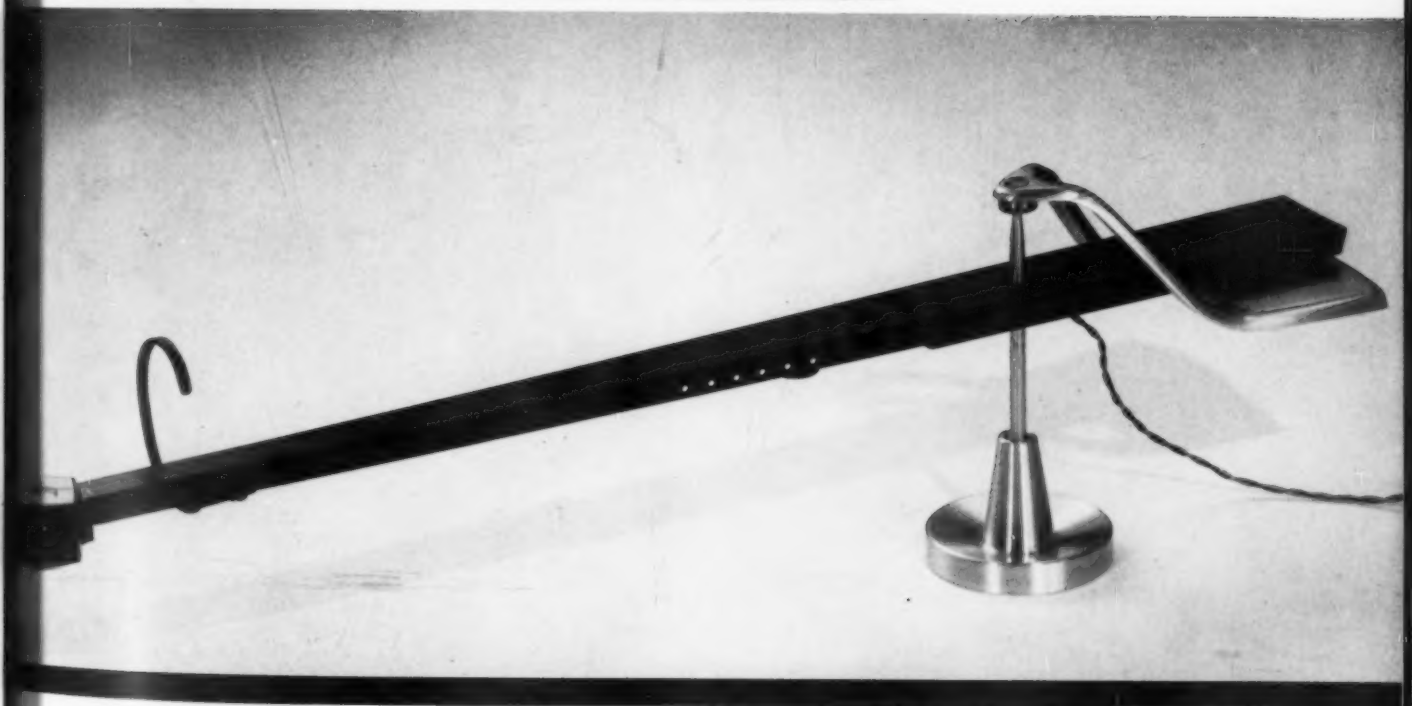


Transistor radio (leatherette)
Bulova Watch Co., Flushing, N. Y.
Jay Doblin, consultant designer

Sun-powered transistor radio
Admiral Corp., Chicago
Lawrence H. Wilson, consultant designer



Turntable and tone arm
Rek-o-Kut Co., Long Island City, N. Y.
Walter H. Heintze, consultant designer

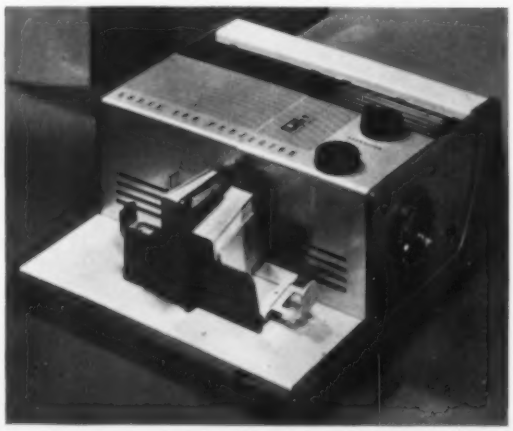


Tone arm
Pickering and Co., Inc., Oceanside, N. Y.
Raymond Spilman, consultant designer

U.S.A. exhibit

Flash-holder
Eastman Kodak Co., Rochester, N. Y.
Walter Dorwin Teague, design consultant
Appearance Design Section, Eastman Kodak

Slide projector
Eastman Kodak Co., Rochester, N. Y.
Walter Dorwin Teague, design consultant
Appearance Design Section, Eastman Kodak



Motion picture camera (K-100, turret)
Eastman Kodak Co., Rochester, N. Y.
Walter Dorwin Teague, design consultant
Appearance Design Section, Eastman Kodak

Filmstrip Viewer
Society for Visual Education, Inc.
Jean Otis Reinecke, Reinecke and Associates, consultant designer

17" portable television set
General Electric Appliance and TV Div., Louisville, Ky.
Arthur N. BeeVar, Manager of Industrial Design
Richard Montmeat, staff designer

14" portable television set
Westinghouse Radio and TV Div., Metuchen, N. J.
Raymond Loewy Associates, consultant designers

Public address amplifier
David Bogen Co., Paramus, N. J.
Alfred Zuckerman, staff designer

AM-FM stereophonic tuner
Herman Hosmer Scott, Inc.,
Cambridge, Mass.
V. H. Pomper, staff designer

High-fidelity loudspeaker
Stephens Tru-Sonic, Culver City, Calif.
Charles Eames, consultant designer

Quadreflex speaker enclosure
Stephens Tru-Sonic, Culver City, Calif.
Charles Eames, consultant designer

Triennale explores the industrial design process in many lands

American design

1/2 yr

OUR UNIQUE METHOD OUTLINED IN SIX AMERICAN CASE STUDIES

In the monumental Palazzo dell' Arte, built in 1933 for the fifth Triennale, the Italians have assembled an international exhibition of industrial design which explores the theory of design, the practice, and the result. To illustrate the last, an assortment of products from many nations, including about a dozen from the U.S.A., were chosen by a committee headed by Italian architect Marco Zanuso.

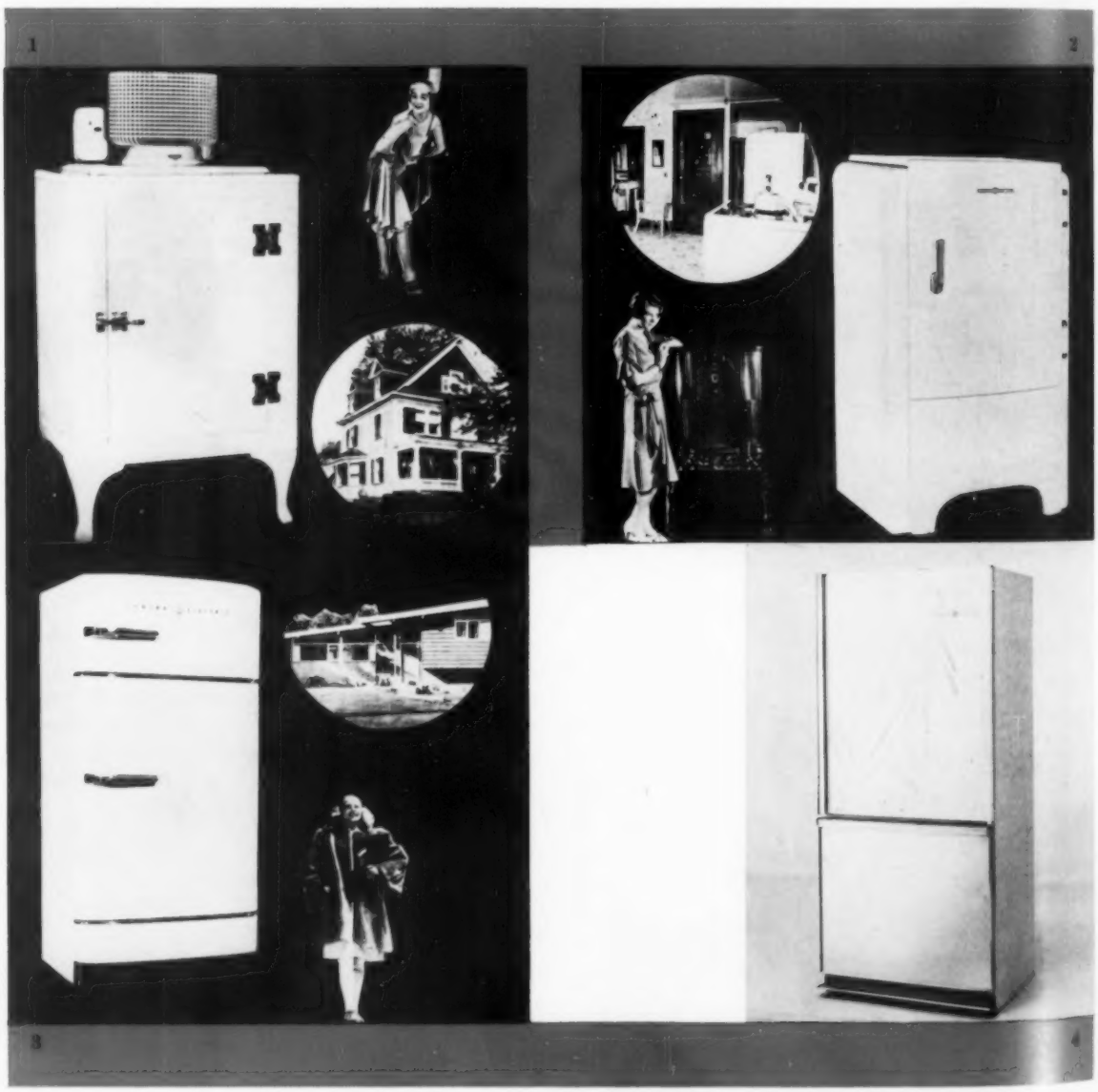
The practice of design is dynamically presented in individual case histories prepared by some twenty-five designers from ten countries, six from the U.S.A.

Here the 11th Triennale probes its major concern in industrial design, *the design process.* It is explored first in terms of the interaction of design, art, economy, technics and society as they determine the product's final form; second, from the viewpoint of the working relationship between designer and client as they guide the idea to finished product.

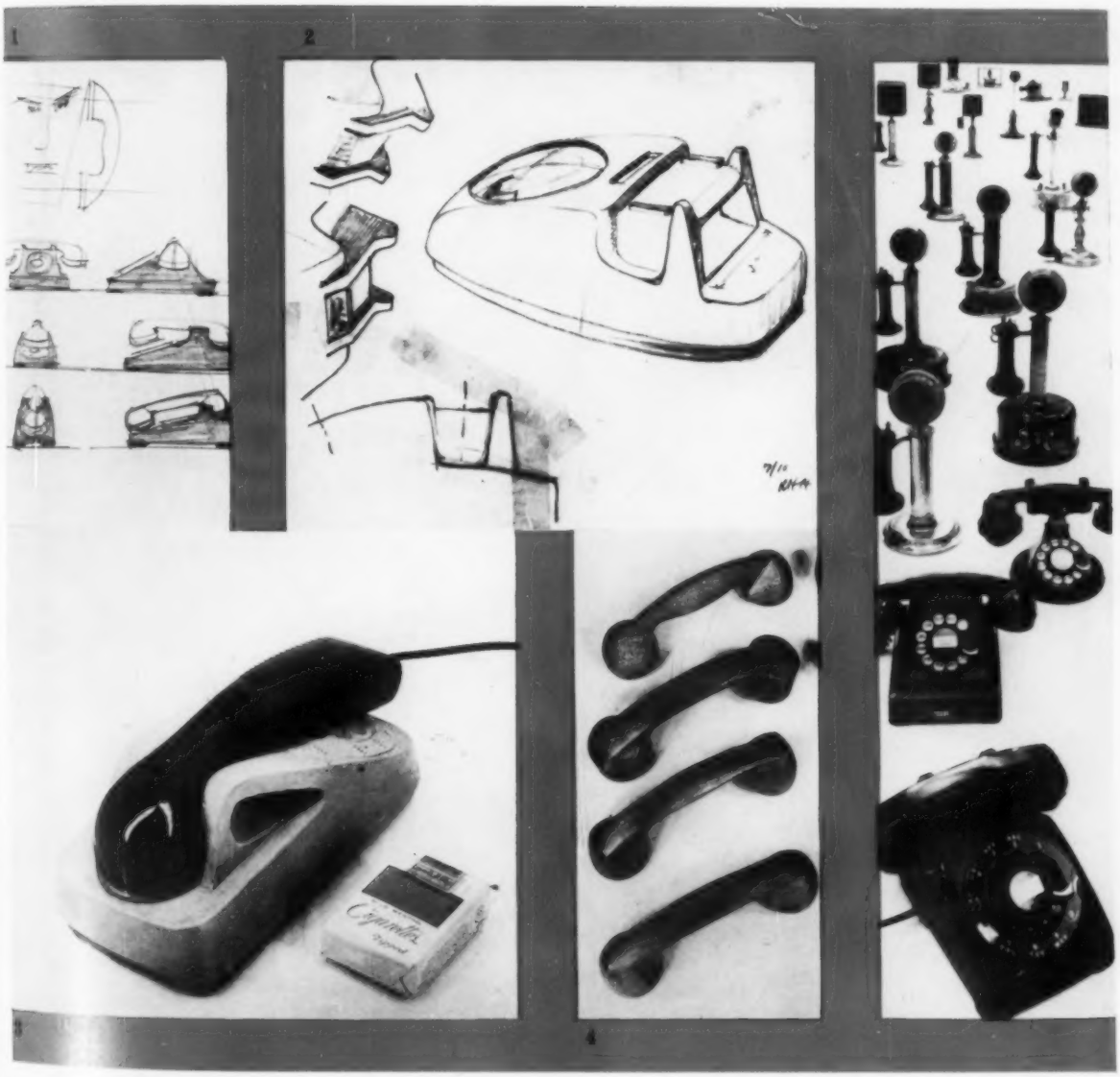
To European visitors the American case studies will reveal a design process which is new to their experience. The intimate working relationship between designer and manufacturer is unique to this country; the product demands of American industry—predicated on mass production, alive to technical advance, dedicated to change—are met nowhere else in the world. In response, American designers have developed a process using teamwork, research, sketches, models and consumer testing for making new products. All these stages will be documented in studies contributed by Arthur N. BecVar, Henry Dreyfuss, Walter Dorwin Teague Associates, Raymond Loewy Associates, Peter Muller-Munk Associates and Herbert Bayer.

Another point which visitors will surely catch: industry in this country calls upon design to do many jobs. In this microcosm of six studies, designers project a corporate image, design social change into consumer products, and initiate technical improvements.

Arthur BecVar: By tracing the changes in GE refrigerators and the world around them Arthur BecVar demonstrates that designers interpret economic and social forces in designing for the consumer. The GE industrial design staff under Mr. BecVar studies an appliance in its total context: the refrigerator is part of the kitchen of a house that answers the demands of America's brand of living at a particular time. Reflecting a more easy-going attitude toward cooking, today's refrigerator (4) incorporates a freezer, comes in color, has straight lines and square corners to fit flush with kitchen walls. In the exhibit one will be shown in tandem with a kitchen cabinet to underline the new desire to group appliances. Four photographic panels will compare the styles and times that dictated the 1927 refrigerator (1); the 1934 model with integrated compressor, no legs (2); the 1948 freezer-refrigerator combination (3); and the 1957 model.

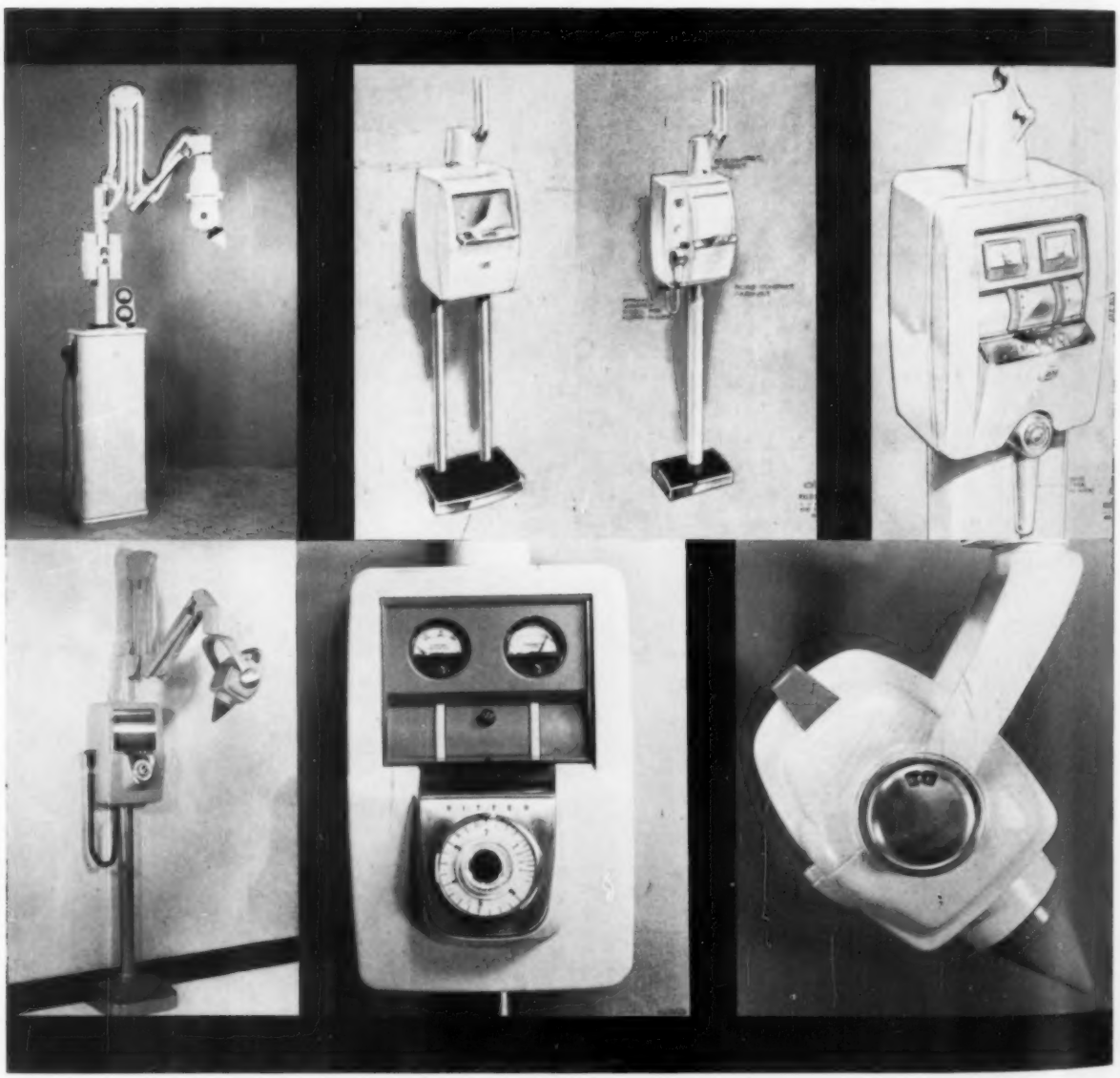


Henry Dreyfuss: In an almost day-to-day study, Henry Dreyfuss and staff tell the inside story of their work with Bell Labs in designing the 500 series telephone. Because the telephone is an instrument designed to weather many years of service and changing taste, a classical form was essential. Their work was directed toward solving two thorny problems: inaccurate dialing and improper replacement of the handset, which tied up expensive facilities needlessly. Another goal was to make a lighter, lower telephone. The Bell-Dreyfuss team formed for preceding phone tackled this one, and early Bell drawings (1) and models (3) exploring handset placement were the jumping-off point. Dozens of ideas were explored in sketches. The best were translated into models to test in three dimension their feel, convenience and look, as the team struggled with prong design (2), more integrated handset (4), and a more readable dial.



Walter Dorwin Teague: How the industrial designer improves institutional equipment where appearance is not a primary consideration is the implicit point of Walter Dorwin Teague Associates' exhibition of the dental x-ray developed for the Ritter Company. In a field where technical advances are rapid and new models rare, the machine from which Teague worked (1) was an amalgamation of tacked-on improvements. The point was not only to integrate them, but to consider the whole machine in terms of convenience. With the help of Ritter engineers, the x-ray unit was compressed into a small box. Resolution of the leg changed from double poles (2) to single chrome column (3); the control panel went through many stages (4). For standard dental work, machine remains closed (5) and nurse need only set timer and push button; for more difficult work, cover slips up (6) to permit fine adjustment. Head (7) swivels on universal joint.

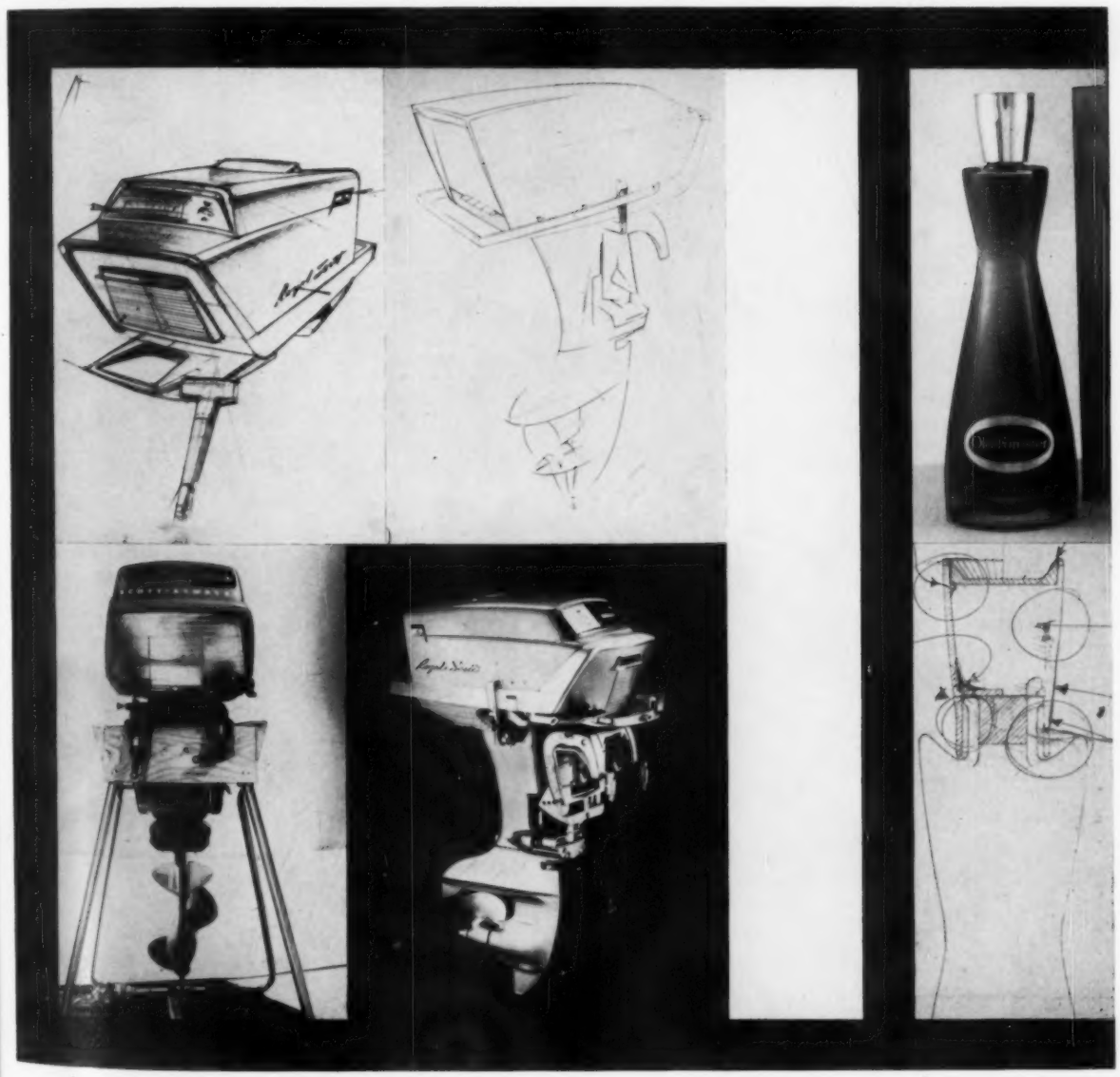
1 2 3 4



5 6 7

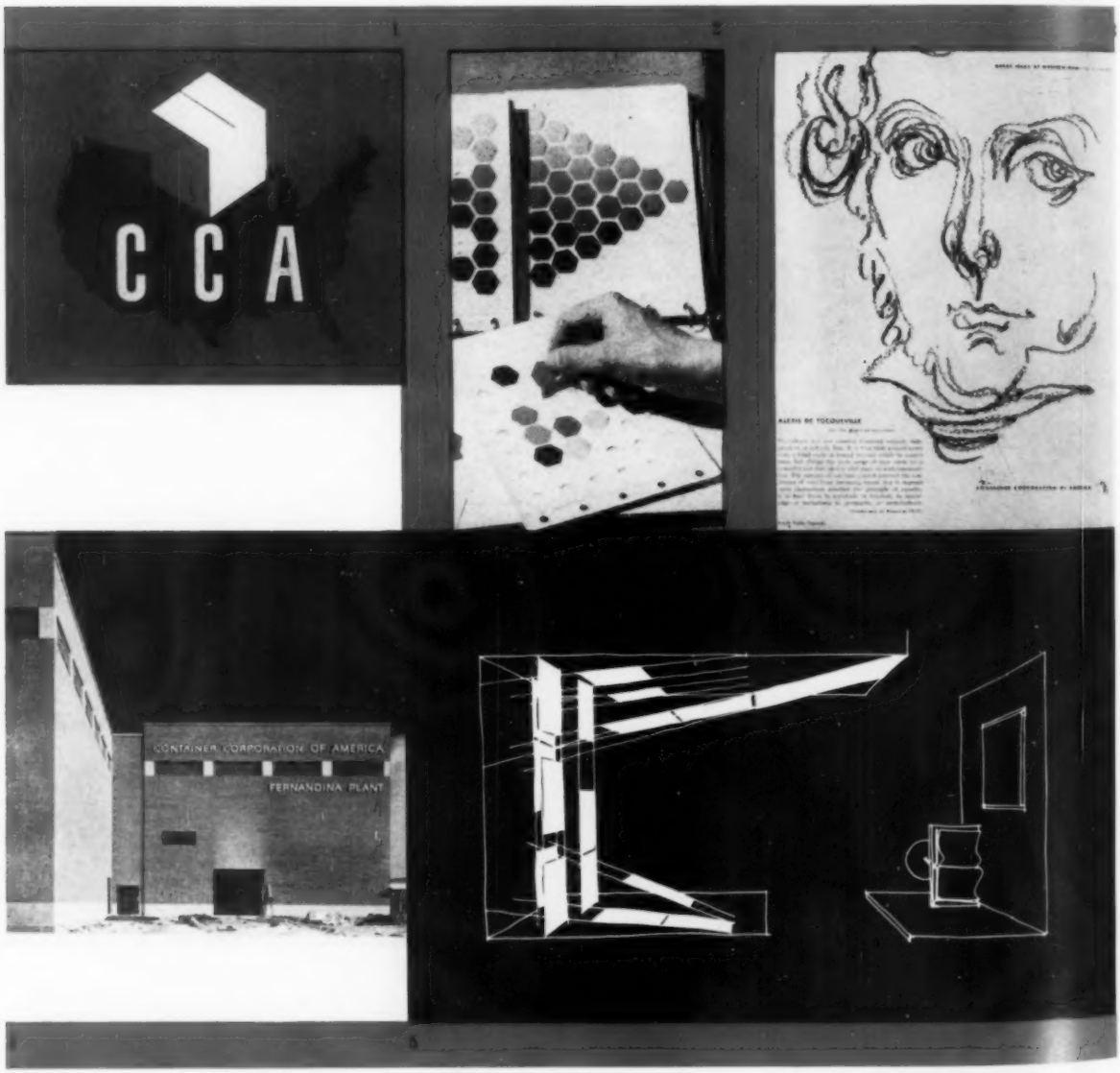
Raymond Loewy Associates outline their mode of operation in designing two consumer products: the Scott-Atwater Mfg. Co.'s Royal Scott outboard motor (5), and 1954 Old Forester decanter for Brown-Forman Distillers. Both will be displayed, and the visions and revisions that accompanied their growth documented by sketches, engineering drawings, clay and wooden models. Design details were roughed in on sketch of motor body (1) whose form developed from early Loewy sketch (2). Clay mock-up (4) was basis for final engineering drawings and production specifications. Basic molds and die castings for the 40 h.p. Royal Scott will serve the complete line. As much research and design detailing were involved in the search for a tall, slim Old Forester decanter that would be easy to grip, stock and display. Preliminary sketches, revised many times (6), were followed by wooden molds, and a trial run of 200 before decanter was complete (3).

1 2 3

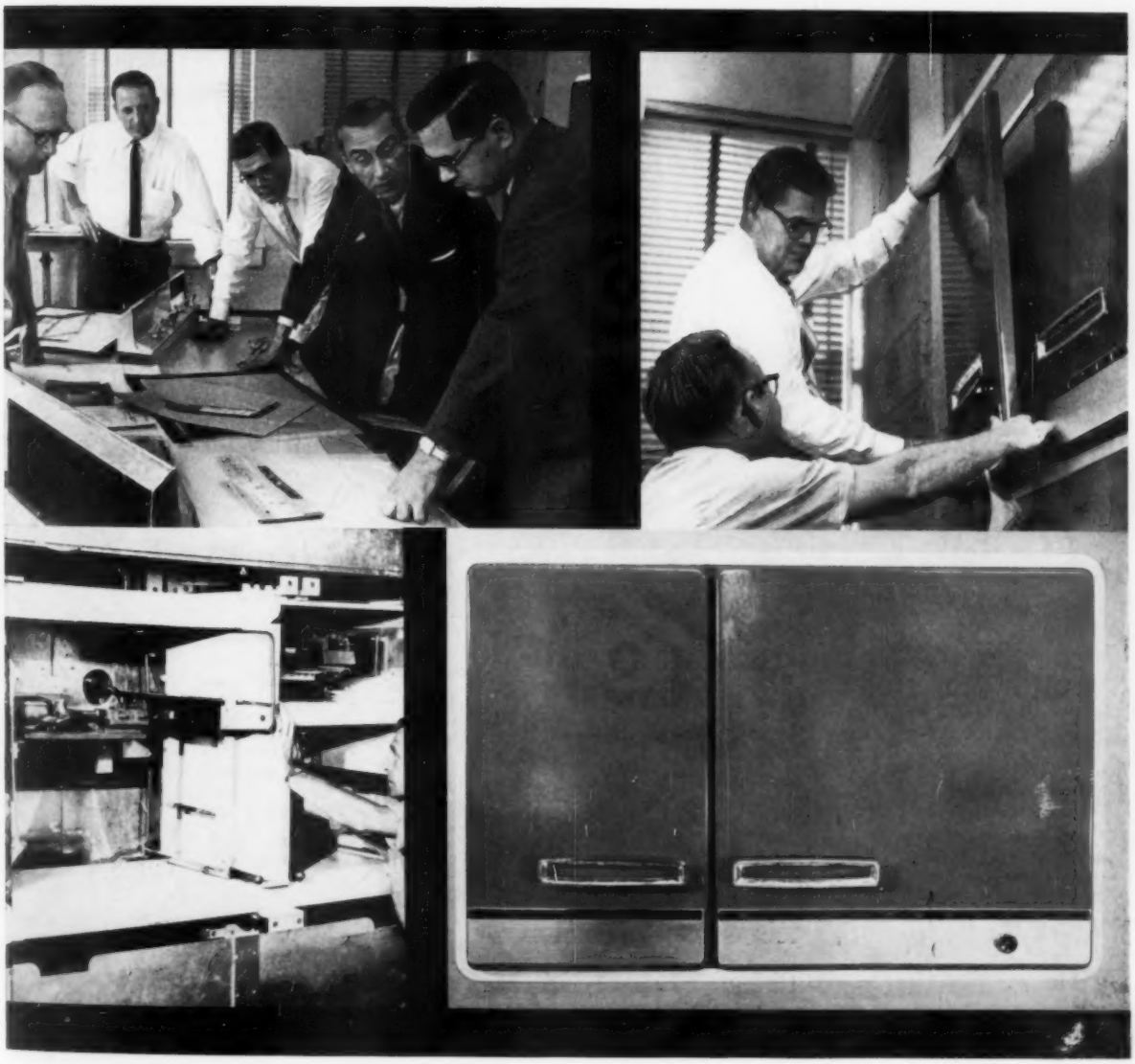


4 5 6

Herbert Bayer: One of the few designers to mount his own Triennale exhibit (5), Herbert Bayer makes a case for the power of design to capture and convey a corporate image. As Consultant Director to the Department of Design at Container Corporation of America, he integrates design activities from trademarks (1) to plant layout (4) to carry out a high-minded goal: "As one of the keystones of contemporary civilization, industry can become the initiator of some of our most potent art forms. It can attain a position to become, by its widespread influence, a carrier of education and culture" (from text panel at the exhibit). At the exhibit advertising pages from a regional series and from the famous "Great Ideas of Western Man" (3), and photos of plants and interiors will be mounted on panels, supported in space by wires stretched between adjacent walls. The Geographic Atlas rests on a column near the Color Harmony Manual (2).



Peter Muller-Munk: To show the industrial designer working in closest cooperation with the client from the very beginning of a project, Peter Muller-Munk Associates detail the development of the newest Westinghouse refrigerator-freezer (4)—a built-in unit with rigid, one-piece laminated plastic cabinet. It was Mr. Muller-Munk's dream of making a low cost, lightweight plastic housing that stirred Westinghouse's engineering staff to develop a suitable laminate: polyester glass fiber exterior, polystyrene foam insulation, high-impact polystyrene interior. This case study portrays the designer in an unusual role: initiator of technical advances which result in economy for the manufacturer; here, by lowering tooling costs. Below: (1) Westinghouse's F. W. Becker (second from left) confers with Muller-Munk associates; (2) Ernst Budke and Howard Anderson of PMMA attach doors to appearance model; (3) refrigerator in production.



1
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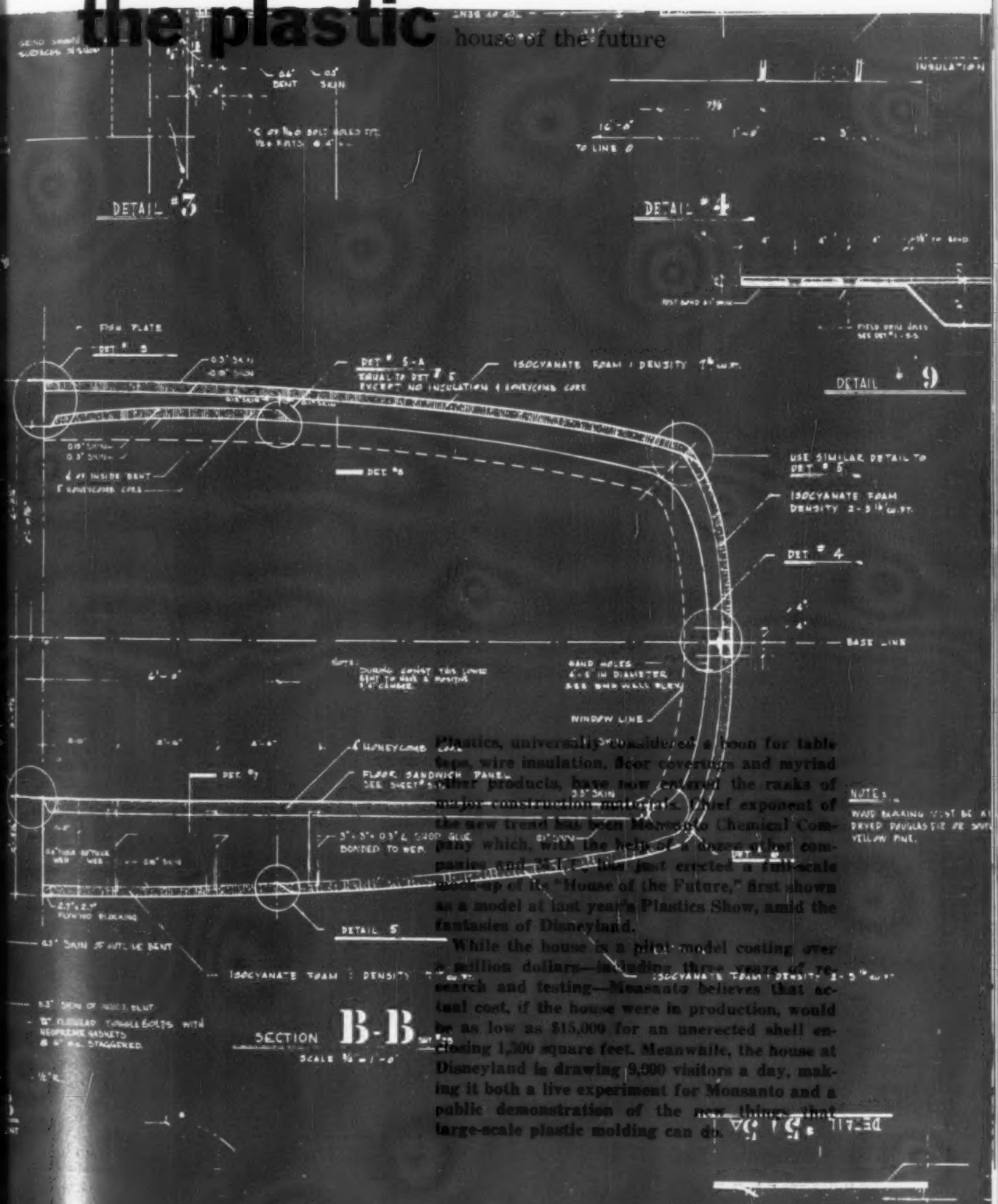
American design

the plastic house of the future



Plastics, universally considered a boon for table tops, wire insulation, floor coverings and myriad other products, have now entered the ranks of major construction materials. Chief exponent of the new trend has been Monsanto Chemical Company which, with the help of a dozen other companies and 250 [illegible] just erected a full-scale mock-up of its "House of the Future," first shown as a model at last year's Plastics Show, amid the fantasies of Disneyland.

While the house is a pilot model costing over a million dollars—including three years of research and testing—Monsanto believes that actual cost, if the house were in production, would be as low as $15,000 for an unerected shell enclosing 1,000 square feet. Meanwhile, the house at Disneyland is drawing 9,000 visitors a day, making it both a live experiment for Monsanto and a public demonstration of the new things that large-scale plastic molding can do.

To make their plastic house dream a reality, Monsanto commissioned M.I.T. in 1954 to undertake a research program on plastics as a building material. The research group set out to plan a house that would capitalize on the construction advantages of plastics: formability, light weight, resistance to corrosion, complete color penetration, adaptability to production-line methods, controllable thermal and electrical resistance. At the same time they did not try to use plastics in the house where another material could do the job better.

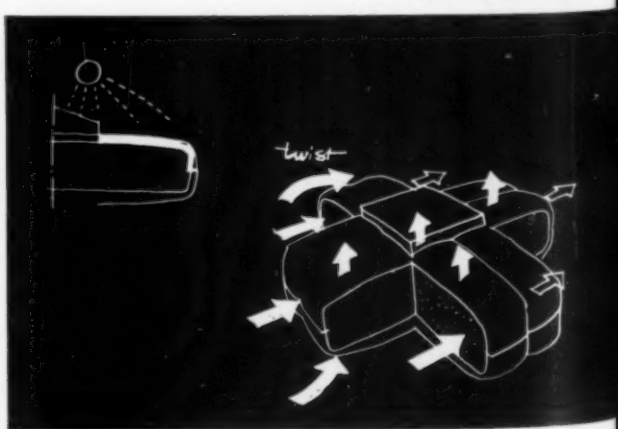
The objective of the architects, Richard Hamilton and Marvin Goody, was to find a structural form unique to plastic. After eliminating panel systems, frames, and domes, they arrived at a scheme that exploited its moldability in a U-shaped bent forming floors, ceiling and walls in a continuous structure. From this concept they went on to devise a 1,300 square foot cruciform floor plan in which four wings are cantilevered from a central 16-foot square concrete foundation. This foundation, which constitutes the central heating, plumbing, and air conditioning core, requires a minimum of on-site construction and makes the house adaptable to flat, irregular, or sloping surfaces.

When it came to engineering the wings for construction, architects and engineers found it necessary to subdivide each wing into four 8-by-16-foot bents which could be nested for shipment. The two floor bents in each wing extend from the foundation core outward and turn up to meet the two roof bents at half the height of the end wall. Inner section of the floor bents contains a flat, load-bearing sandwich while the roof bents contain a curved plastic ceiling panel. Since the side walls of the wings do not support weight they can be made wholly transparent.

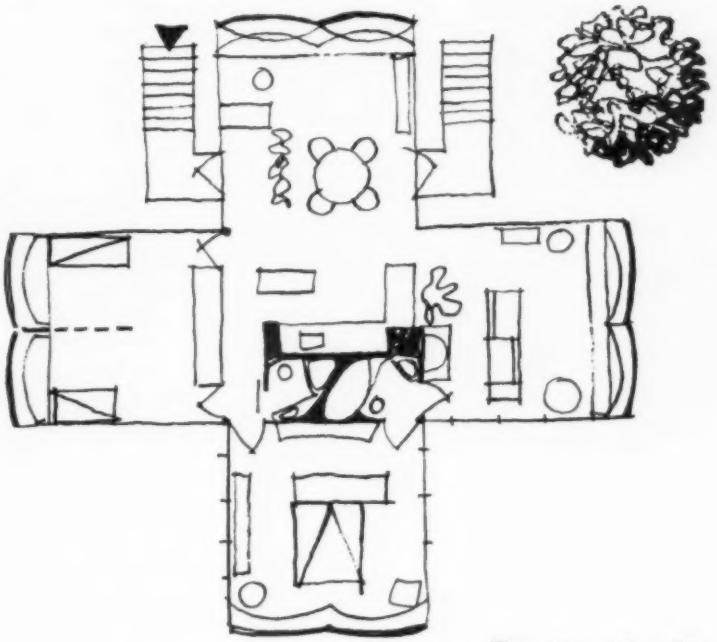
When the architects had finished their plans, a series of tests were run on a single upper and lower bent at Monsanto's Plastics Division Research Lab in Springfield, Massachusetts. The tests established a standard method of structural analysis for plastics, similar to tests run for other materials. Under the direction of project engineer Bob Whittier the bents were tested for the amount of load they could carry, and for the effects of wind, heat, cold, and temperature variations (see diagrams at right).

Upon completion of tests, Monsanto gave actual fabrication of the bents to Winner Manufacturing Company of Trenton, New Jersey. After study, Winner decided on a hand layup, vacuum-bag method of fabrication as being most economical for bents of such a large size. The material selected was a glass fabric-reinforced polyester which Winner built up in sandwich-like layers to give the maximum rigidity necessary for the cantilever action of the design. Owens-Corning Fiberglas Corporation, which developed the particular reinforced plastic used by Winner, estimates that there are some 23,000 pounds of Fiberglas reinforcements lending additional strength to the shell of the house.

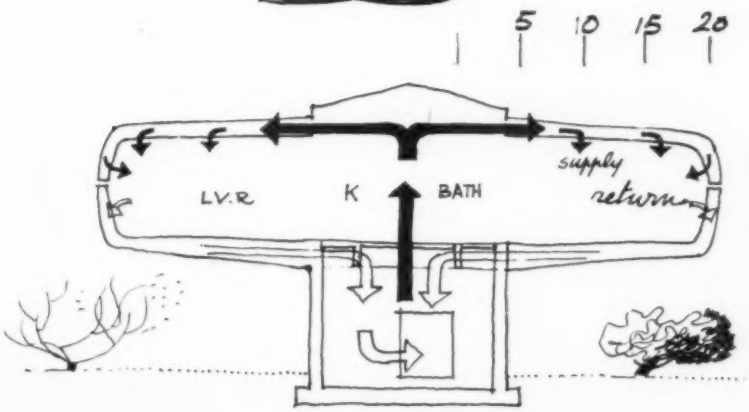
Project engineer R. P. Whittier and architect Marvin Goody (left and right above) spent a large part of their time devising standard methods of structural testing for plastics similar to those that exist for other building materials. It was found, for instance, that the sun's rays can cause a variation of 100° between the temperature of roof and floor bents, which can result in a combination of thrusts and bending moments (see diagram at left, below). To compensate, sandwich construction of shell was thickened. A series of load tests indicated that bolts had to be placed closer together in anchoring the bents to the foundation. Finally, the twisting force resulting from unequal wind loads (see diagram at right, below) required the addition of laminated wooden beams in roof of utility core for further wind bracing.



Planners found a form unique to plastic, then built for rigidity as well as strength



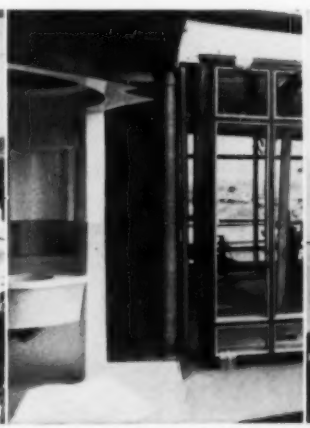
Basic plan can be varied to include garage, additional rooms. The wings at left are divided into living and dining area and two sleeping areas. Curved interior walls maintain basic form of house.



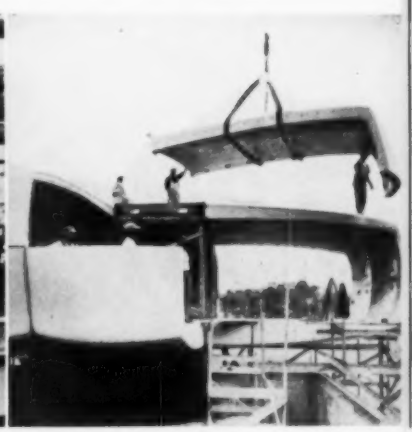
Cross section shows path of air flow from cooling and heating unit in foundation up through the diffusers in ceiling. Air is returned through circular diffusers in the end walls.

A 10-layer modular section of Owens-Corning impregnated Fiberglas is removed from mold at the Winner plant.

Urethane insulation being foamed-in-place for a modular section.

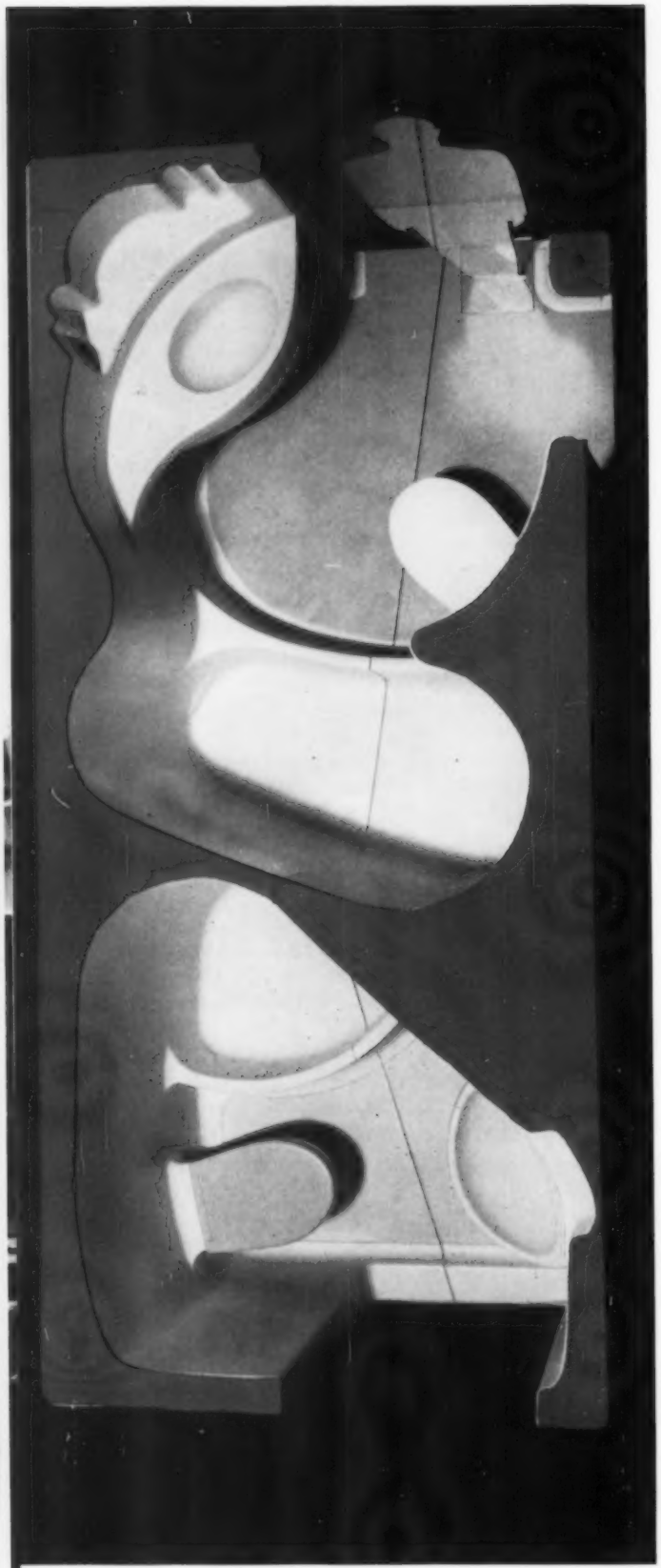


Framing system, right, for the eight window walls is made of laminated wood.



A roof bent is swung into place before being glued and bolted into position.

Model of large-scale molds for two bathrooms is divided vertically; actual molds join horizontally.



Henry Dreyfuss designs a precursor of prefabricated

The two bathrooms in Monsanto's "House of the Future" were designed by Henry Dreyfuss in cooperation with the Crane Company, as another major experiment in plastic prefabrication. Their aim was a design reflecting the essential nature of polyester reinforced Fiberglas, the material used in the shell of the house itself. The result was two large, irregularly molded forms that join horizontally like cupped hands and incorporate sinks, tubs, and showers in two chambers. Walls, floor, and ceiling of both bathrooms, measuring five by 13 feet overall, fuse into two large pieces that lock together at shoulder height with the advantage of eliminating dirt-catching fissures and leakage points around the bathtub and showerstall. These bathrooms carry the built-in look to a logical structural conclusion and suggest at the same time a simple, inexpensive means of mass-producing prefabricated bath units.

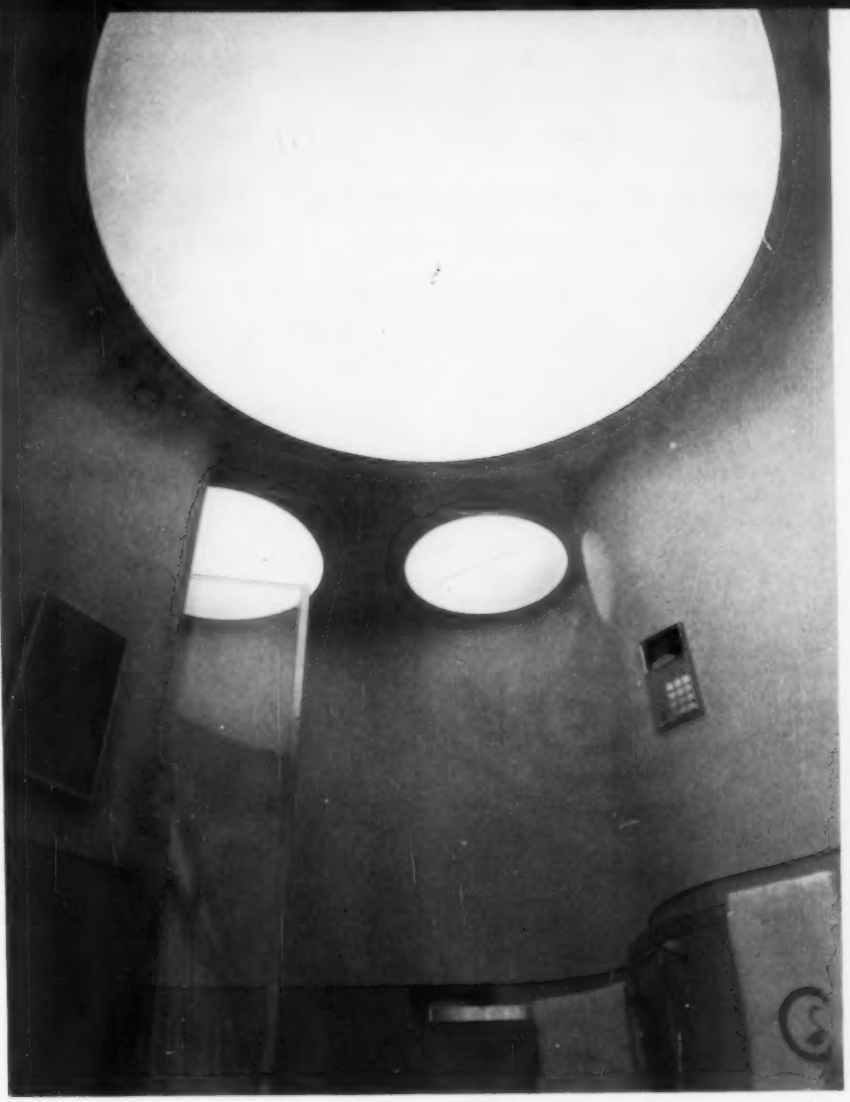
The outer walls of the bath mold contain the plumbing connections, which lead down to outlets in the foundation. They are enclosed by the outer walls and can not be seen. To give the finished walls a smooth, semi-gloss look, the designers had the sides of the molds themselves highly polished. Dreyfuss and his group then specified a one-quarter inch recess in the bottom mold, into which the floor—of Armstrong Corlon, a linoleum with plastic surface and foam rubber base—was set. It gives more cushioning underfoot than hard plastic flooring, and a drain makes it possible simply to hose down all surfaces.

To set off the bathroom's sweeping forms, unusual fixtures and several blue-sky luxuries have been added. Radiant panels attached to the back surface of the walls add warmth to otherwise non-heat absorbent plastic walls. The lavatory in the children's bathroom can be adjusted electrically to any height. Thermostatic valves on tub and lavatories will mix water to preselected temperature and hold it there. Water closets (not made of plastic because of the present problems of sanitation) operate with electric flush valves, eliminating the need for tanks. Lighting is diffused through three circular holes in the ceiling, which have been covered with translucent discs. In addition, panelescent plaques (panels painted with a special Sylvania product to glow under an electric current) furnish a dim night light.

In the children's bath there is a small-load washer-dryer mounted in the wall. Constructed to handle only a few pieces at a time, it supplements the larger unit located in the kitchen. Plumbing pipes for the washer, as well as for other fixtures in the bathrooms, are of wire-reinforced plastic and attach by pasting to the back surface of the walls. This, of course, cuts expenses by saving time as well as material. Final note of luxury is a one-way TV "picturephone" set into the wall of the adult's bathroom. Like most of the phones in the house, it is non-operative and intended only as a projection of ideas which may be utilized in the future.

bath units for Crane

↑ *Children's bath contains shower and adjustable sink. Clothes washer-dryer is recessed in the wall.*



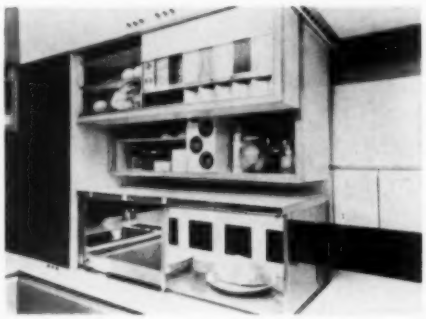
↑ *Horizontal ridge shows where two halves of plastic shell join. At left is panelescent plaque which gives off dim, night glow. At right is Bell System "Picturephone," above are the translucent plastic discs which furnish the regular lighting.*

↓ *Wall behind master bedroom vanity table encloses outer shell of adult's bathroom with its plumbing and heating connections. Elaborate vanity with lavatory is a major bedroom feature.*

↑ *Medicine cabinet which has been recessed in wall has fluorescent lights attached. Below it is a holder for electric toothbrushes, shaving cream, soap. Line of lavatory flows in with line of the wall.*

Kelvinator's atomic-age kitchen features irradiated food refrigerator, ultrasonic dishwasher

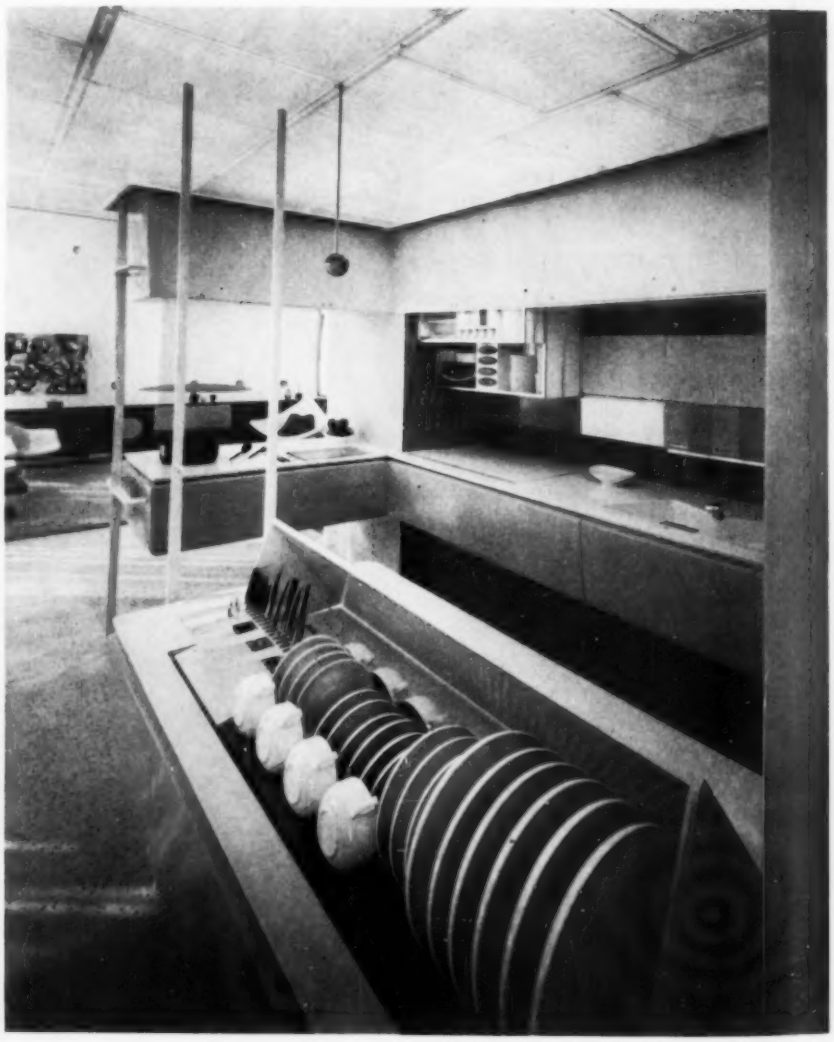
In keeping with the style of the rest of the house, Kelvinator Division of the American Motors Corporation set out to project a kitchen that would do justice to living five to 15 years in the future. The final design, worked out by Randall D. Faurot and based on food irradiation experiments conducted at the University of Michigan, provides for three different types of food storage: a freezer compartment, a normal refrigeration compartment, and a third cool zone which will keep foods that have been subjected to atomic irradiation safe for many months. In building the kitchen Faurot's group first erected an L-shaped frame of aluminum. All overhead cabinets were then concealed behind a gently curved plastic valance. The push of a button will bring the cabinets down into sight. Base cabinets, built on an aluminum frame and then molded in plastic like the other cabinets, are cantilevered from the wall, thus repeating the basic structural feature of the house itself. An unusually shaped sink makes up an integral part of the counter top, and an island cabinet, which sets off the kitchen area from the rest of the house, encloses an ultrasonic dishwasher.



←Refrigerator and range are push-button-controlled, bringing refrigerator down from upper cabinet and range up out of base cabinet. Electronic range is zoned for cooking different foods simultaneously. An aluminum liner and metallized, mirrored glass help deflect energy in this microwave oven. Seven cubic-foot refrigerator has front and rear section which may be lowered independently so that contents are accessible without a deep reach.

→High-frequency sound waves vibrate dirt from dishes in two minutes. Water is used only to flush away waste through pipe at base of unit (not yet installed).

↓ Two-way rack is designed for storing as well as washing dishes. Panel at lower right is pushbutton phone.



Polaroid kitchen ceiling is made of series of thin plastic sheets which conceal fluorescent lights. Whole ceiling glows with diffused light that can be regulated in intensity. Work island in center of kitchen houses communications center as well as ultrasonic dishwasher. Supports of plastic over steel tubing enclose wiring and plumbing.

Communications and climate control are fashioned to meet wide variety of family needs.

It was to be expected that communications would get special emphasis in a house of the future, and 13 new telephone units developed by The Bell System in conjunction with Henry Dreyfuss have gone into the Disneyland exhibit.

The heating and cooling system as well, developed by Crane, has been specially adapted to the design of the house and brought under centralized control with a panel located in the kitchen. Utilizing the hollow plastic shell, the system brings cooled, heated, or filtered air up from the foundation core through central ducts and out through perforations.

↑ *Small, lightweight, oval-shaped model has illuminated dial, will be field-tested this year.*

← *Flush-mounted kitchen phone has pushbutton dial, mike overhead.*

↓ *Wall-mounted two-way "Picturephone" has viewing screen, mike, speaker, and lens for transmitting image of person at the unit.*

↓ *Globe mike enables housewife to talk on phone from any point in kitchen.*

↓ *Crane's eight-inch climate control panel maintains interior temperature. It is a non-operating demonstration panel.*

↑ *Wall-mounted, one-way "Picturephone" has viewing screen, microphone, speaker.*

← *Front door camera lens permits caller to be seen on bath or kitchen*

1 Dining room ceiling shows perforations from which hot or cold air flows. Air is returned through side wall perforations.

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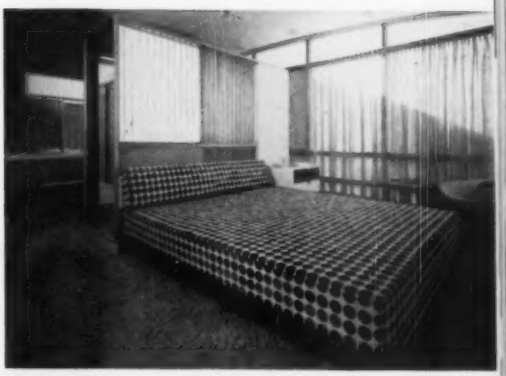
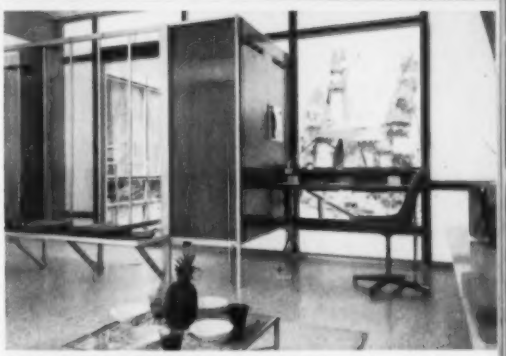
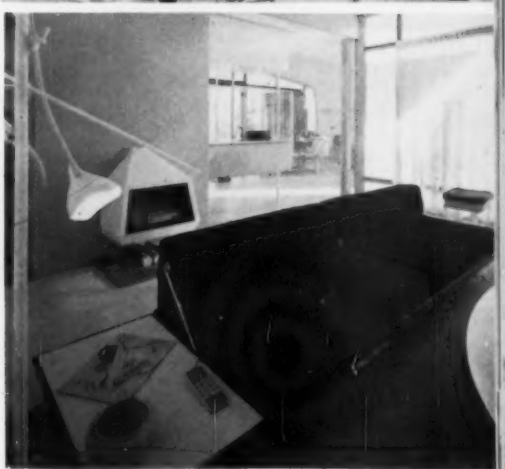






1. Headboard unit behind bed has movable Plexiglas louvers, two sets of lights with dimmers for separate adjustment. 2. Desk overlooking Disneyland is adjacent to room divider. All closet space in the house is free-standing cabinet work. 3. Cushions of large sofa may be reversed to face toward wall-hung metal fireplace or living room. All interiors were directed by Jack Aureil of Victor G. Canzani and Assoc. 4. Overall view of house shows peaked rectangular "roof." It is made of four hyperbolic paraboloid panels, a form unique to plastics, just as the overall shape of the house is.

DESIGNERS GET OUT INTO THE FIELD

As part of its continuing design program for Montgomery Ward, Design Research of Chicago, an affiliate of Dave Chapman Industrial Design, sent three cosmopolitan researchers from its Gold Coast offices to a farm outside the city on a guinea-pig experiment. Assignment: bring back the facts on how the would-be but inexperienced camper lives in tents, and how thirteen tents, including Ward's and its major competitors', perform for him. From their four-day expedition they came back with a detailed performance and specifications record of the tent market; recommendations on ventilation, storage, weather conditioning, materials and function of accessories; and a winter's supply of anecdotes. What came of the testing—of the men and of the tents—is reported on the next three pages.

Mike Rogers, Doug Anderson and Charles Todd pose before completed bivouac of 13 tents that they have just set up in a farm field at Cary, Illinois. Design Research study was one of the first thorough investigations of tent design — which has known little change since the days of the Nomads. While performance and durability were being tested in the field, the Chapman Chicago office began analysis of tent materials and production techniques.

1 **Time and motion studies** *were made during erection of each tent, taking account of the time it took one, two and three men to set it up. Designers—none of whom was an experienced camper—relied solely on instructions provided with each tent.*

2 **Livability.** *One tent was supplied with full camping equipment from Montgomery Ward's line. Two men remained for three nights to sample how tent improved or hindered camper's life. Lighting and ventilation were carefully studied.*

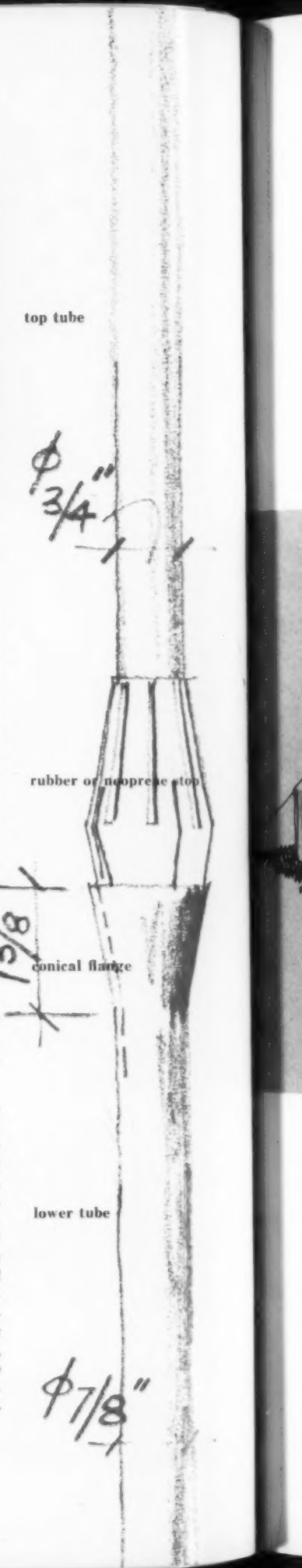
3 **Inspection.** *Each morning the tents were inspected for effects of weather during previous 24 hours. Not content with natural conditions, researchers sprayed tents with lawn sprinklers; this proved redundant when it rained heavily one night.*

4 **Repacking.** *Effects of night-long rain were dramatic: one tent had shrunk so much that it bent tent pole 30°. Stakes, roofs and closures were checked for leakage and weakening. Final operation was repacking: one tent left paint on designers' hands.*

On the third day of the Design Research encampment, a progress review was made by Montgomery Ward representatives and Chapman account executive Anthony Morrow (second from right, above). This was the first opportunity Ward buyers had ever had to review the tent market so completely. Within two weeks, the research analysis (below) and preliminary recommendations were reviewed with Frederick Priess, Manager of Ward's Bureau of Design, and immediate and long-range objectives were established. By the middle of the following month, the redesigned tent models and the first models of a new tent pole—developed from the field expedition findings—were on hand for testing. A month later, the finished prototype was approved and the new MW company symbol by the Chapman office was applied with other graphic detailing.

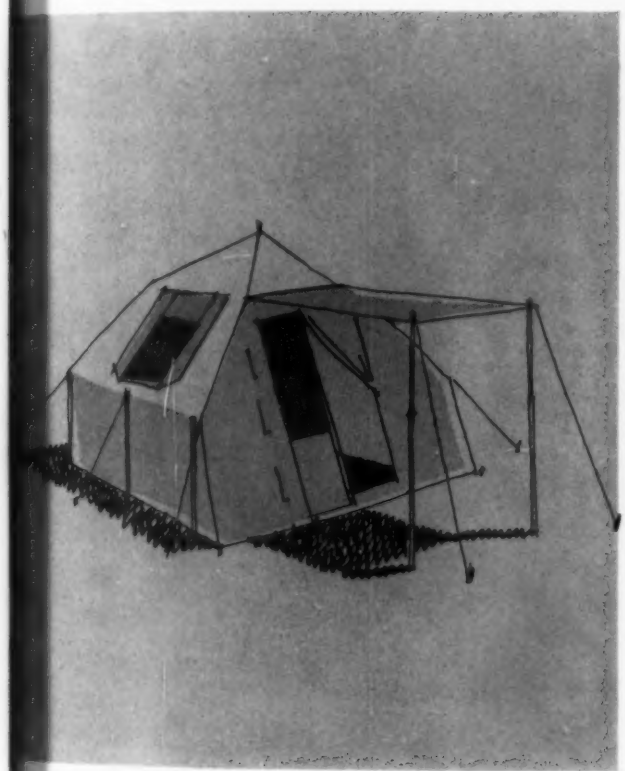
The new tents—both the deluxe "Sunaire" at $225 and the "Umbrella-Wall" at $99.50—are made of a higher quality fabric than customary in American tents: 7½ oz. vat dyed, Sanforized, Zelan water-repellent, mildew-resistant poplin in walls and floor; vinyl-coated duck is used for roof and canopy. Large Saran plastic screened openings allow seven-way ventilation on the deluxe model, including a unique gable vent to draw out hot air at the ceiling, and sloping roof for efficient drainage. From their study of li[illegible] ability, the designers specified hanging valet packs to provide built-in storage and act as room dividers for relative privacy. For the first time on the American market, a two-tone effect is offered, with gold roof, canopy and door panels, sand colored sides. The color harmony is carried through to such accessories in the Ward line as cots, lanterns, sleeping bags and stools.

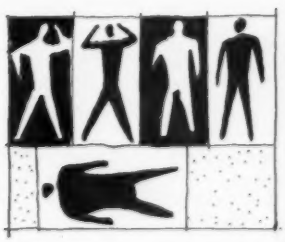
New pole consists of two aluminum tubes and double truncated plastic locking cone. Bottom of each tube has conical flange to receive semi-rigid plastic slit-lock—cored to fit top pole. To extend or reduce height of pole, one hand holds cone as the other hand draws top section to desired length. Slight downward pressure on slit lock compresses flexible plastic, locks pole in position. No mechanical parts are used, no machining is required.



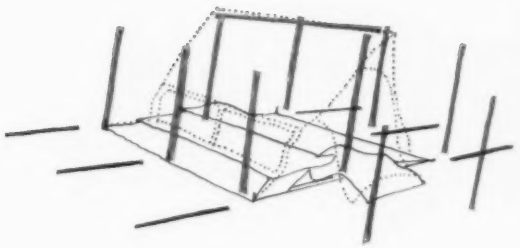
New features, easy operation for small tent

"Umbrella-Wall" (below) adds luxury features to low-price model. Patented eaves frame eliminates overhead constructions; with 4-way cross-ventilation, zip-up door and windows, it sleeps five. "Sunaire" is 50% lighter for its size with new poplin fabric; sets up in three easy stages; includes screened gable, 4 roof ventilators, 6 windows, 2 valet packs.





Simple erection, ample ventilation for deluxe model



1 *3-pole canopy support sheds water, increases ventilation.*

2 *Sloping ridge and extended roof funnel hot air through gable vent.*

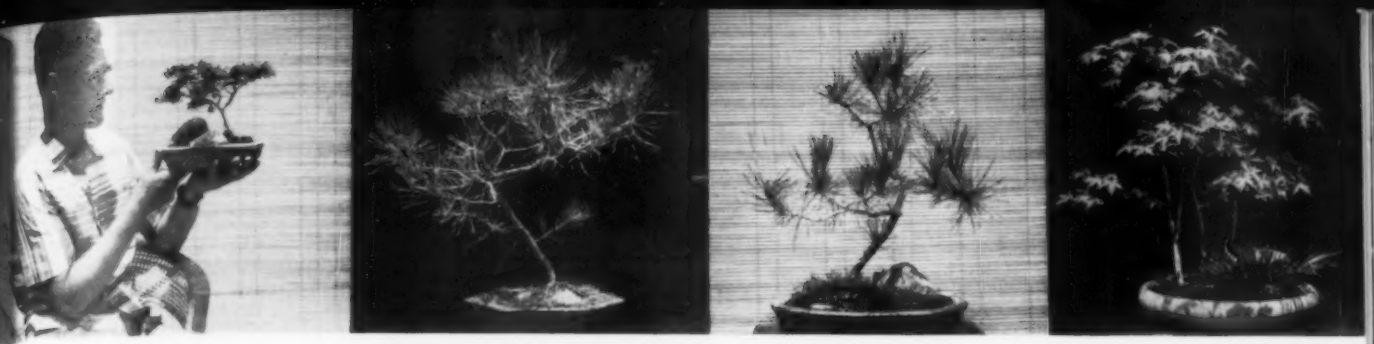
3 *Exterior poles on each side are easily adjustable, open ventilators.*

..... after hours

Since tradition has it that all work and no play makes Jack precisely what no designer can ever afford to be, I.D. asks: how do industrial designers occupy their leisure hours, when they have any? Answer: they find pleasure and relaxation in a variety of activities; but because they are designers, very often what they do at play reflects the heightened vision, the sense of form, the values peculiar to what they do at work. Here are some American designers and their hobbies ..... →

Robert P. Vuillemenot

When Robert P. Vuillemenot was a boy in Toledo, he would fish out of the pond back of his home small pieces of colored glass rejected by the Libby Glass Co., where his father was an industrial designer. Having grown up with glass, Mr. Vuillemenot, partner of Donald Deskey Associates in charge of package design and development, now collects American bottles (some 50 of them so far) with both personal and professional intentions. As a collector, he specializes in pre-Civil War flasks, early machine-made dispensers, and examples of unusual production problems with modern equipment. As a designer, he is inspired by their textures, colors and decorations—and acquires considerable knowledge from their manufacturing techniques. The "romance" of glass pervades his work, as this photo of his reference shelves in the Deskey office indicates.



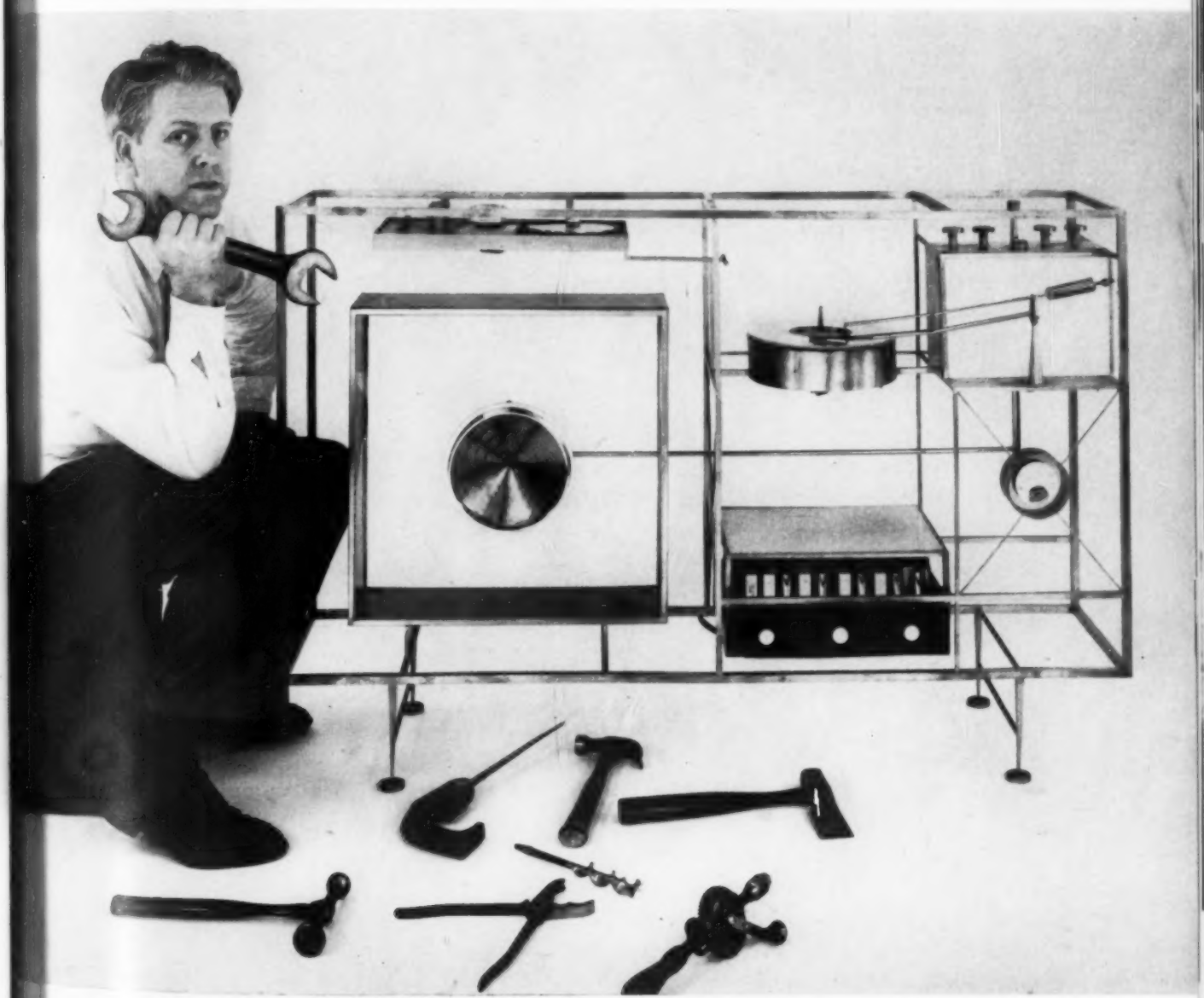
Hunt Lewis

↑ Like many Californians, Hunt Lewis has been influenced by the mysterious East, and it has left a special imprint on his interests.

As a small boy he fell in love with some Japanese dwarf trees brought back by his aunt around the turn of the century, and today is an ardent advocate of the 1,000 year old art of "Bonsai," dwarf tree cultivation, and studies it with two Japanese masters in Los Angeles. What can dwarf trees mean to a designer? Mr. Lewis says: "Sitting on a table they are able to convey to the viewer much of the beauty, peace and design itself of outdoor nature —a very convenient way of attaining these satisfactions in a crowded city."

Jay Doblin

↓ As a form of "occupational therapy," ASID President Jay Doblin builds absurdly experimental products, including a clock that won't tell time, an abacus that doesn't add up, and a crystal ball with fine tuning. Mr. Doblin is shown below making minor repairs on a recent creation: a curious wired, brass-framed high-fidelity phonograph that works.



William Hamby

William Hamby, of Fordice and Hamby, finds relaxation in taking pictures of rare birds. His naturalism harmonizes with Mr. Hamby's primary hobby interest, photography: his shots attempt studied design, sometimes difficult with his skittish subjects. The Osprey, above and right, feeding a fish to its young, was caught in the act of tearing it in two; the herons below seem never to have moved.

When, in his native Shanghai, Peter Quay Yang was apprenticed to his uncle, a master signature seal carver, he began a lifetime interest in stones. Now an industrial design consultant with a New York office, Mr. Yang finds that his lapidarianism has taken a new turn. As he describes it, "When I find a rough piece of stone on one of my forest walks, I want to find out the secret of this stone. It comes out a piece of jewelry in the end, but I have no preconceptions about what I want in size, shape or pattern—I let the stone reveal its own form to me." Above are semi-precious stones in the three stages of working: (l. to r.) rough cut, shaped, and finely ground. The final products below, high polished, are Michigan agate, smoked quartz, tiger's eye, and banded obsidian.

Peter Yang

John Pile, an associate of George Nelson, not only collects old musical instruments, but plays them. Owner of a clavichord, an organ, an 18th century harpsichord, and numerous reed instruments, Mr. Pile has made a do-it-yourself hobby of his interest. For the past two years he has spent most of his spare time building a walnut double-manual harpsichord in his attic.

John Pile

Leon Miller

←

Does primitive art have anything to say to a modern designer? Certain that it does, Leon Gordon Miller passionately collects primitive sculpture, ceramics and other handcrafted objects. He is especially impressed by the fact that most of his pieces were created for use: "An Eskimo bowl, an Indian rattle, Mayan incense burner—each is beautiful in itself, yet each is a use object, a part of daily living." In his admiration for "a people whose design sense was so bold and creative," Mr. Miller has roamed far from his Cleveland office; Alaska, Mexico, Guatemala are a few of the areas he has visited in search of exciting primitive art.

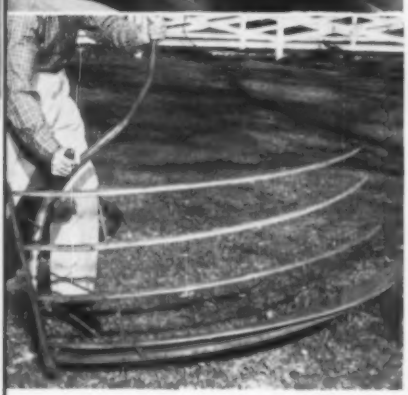
Harold Darr

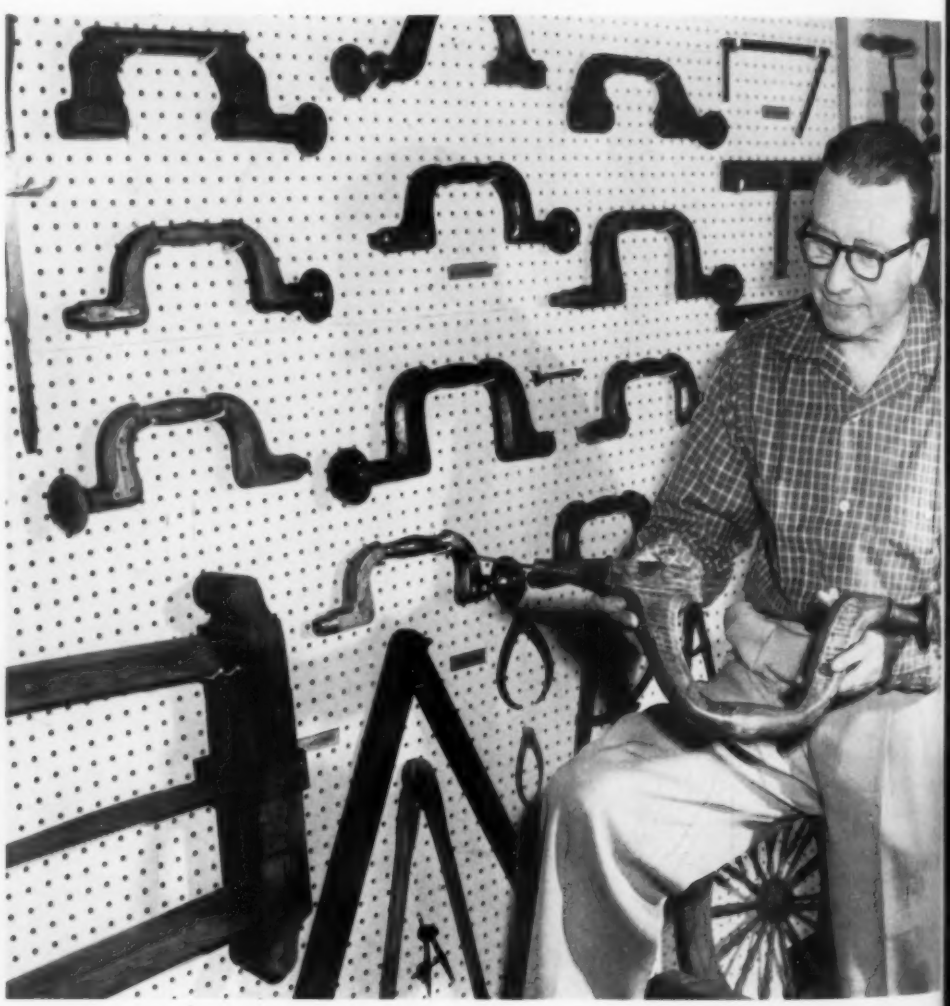
→

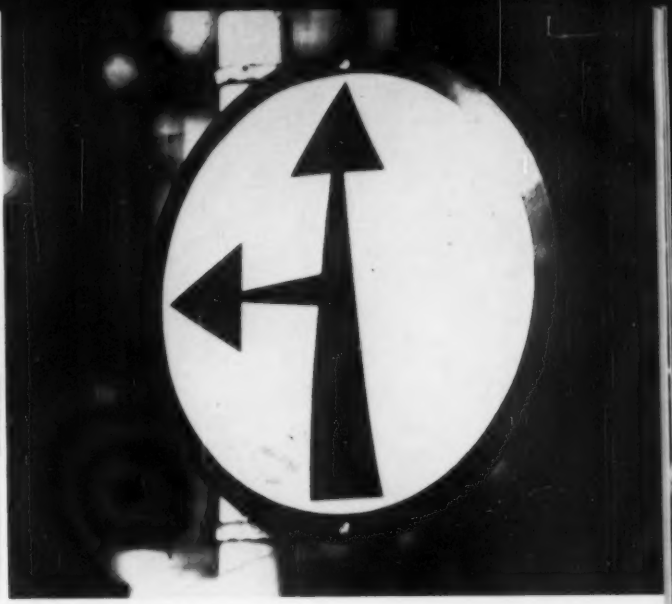
Harold Darr: "This locomotive hobby, and my interest in trains in general, was probably what led me to become an industrial designer rather than a commercial artist." The hobby is building ½" scale models of live steam locomotives — which burn coal, have working air brakes, and are sturdy enough to ride on the test track on Mr. Darr's lawn and at several club tracks around the country. He rescales and re-engineers the original drawings of classic locomotives, makes his own patterns, and machines his own castings. When finished he has "not a model but a small-sized locomotive designed to do a certain job."

Paul MacAlister's pride is a collection of old tools that includes some 4,000 items. To house them, Mr. MacAlister remodeled a huge barn near Chicago, where he has his office. As a designer, Mr. MacAlister admires the striking visual forms his tools display, and the ingenious methods of their manufacture. But his hobby also serves him in special professional functions: almost all of the tools in his collection are in good working condition, and he is able to use many of them in the practice of his own craft.

Paul MacAlister

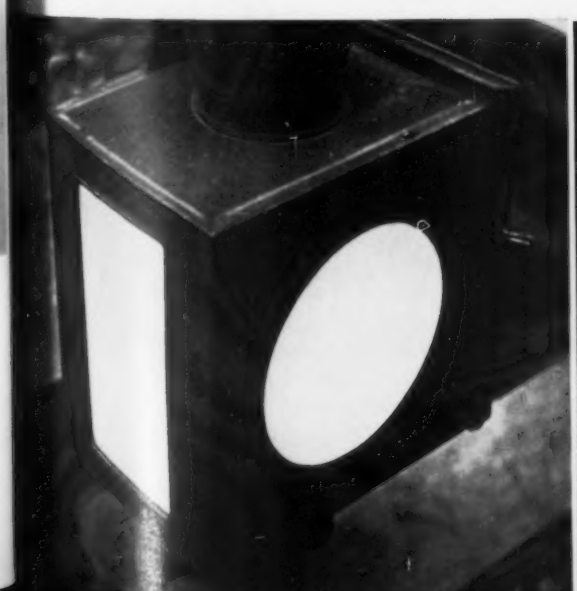






George Nelson

Design details, etched faces, buildings, dancers, marketplace incidents — whatever is colorful, curious or characteristic provokes George Nelson to take a picture. Motoring through Europe or America, he keeps a cameraman's eye out for impressions to capture, stopping frequently to add to his photographs of road signs — which now add up to one of his best collections of kodachrome slides. Here are a few of his visual souvenirs of travel in Germany, Ireland, Georgia, and Massachusetts. Left to right, top to bottom: Street sign, Boston; traffic sign, Germany; fraternity symbols, Athens, Georgia; railroad marker, Germany; road sign, Ireland; traffic signal, Germany.



The consumer was the center of attention this year at

Aspen

along with his values, foibles, and tail fins

"Design and human values" provided six days of discussion at the International Design Conference

That remote and mysterious target of designers, the American consumer, was the subject of the International Design Conference at Aspen this year. He (or *she*, as most statistics characterize our major consumer) put in only an occasional personal appearance — all too infrequent, in fact, for a conference that dedicated six days to exploring the designer's relation to his ultimate customer in the marketplace. Yet the consumer's foibles and inconsistencies rose to the surface of most discussions, finally emerging as a symbol of all that frustrates the designer in America today: the automobile tail fin.

That the tail fin was singled out as the great white whale of a design conference is no great surprise: it embodies many of the vagaries and "vulgarities" of taste that keep designers from projecting their own taste preferences into the marketplace. But it ended not as a beast bloodied by verbal harpooning, but as a species somewhat better understood — and thus was finally a symbol of the conference's achievements.

Piloted by Chairman George Culler, Program Chairman Saul Bass, and Procedures Chairman William Friedman, this year's conference differed from its six predecessors in one major respect (or so it seemed to this observer, from the admittedly atypical post of a moderator). It brought together an authoritative group of professionals not only to exchange views, but to provide a useful factual background for a discussion of a very subjective topic. A number of panelists came from special disciplines: anthropology (Dr. Mills), social psychology (Dr. Helfgott), behavioural science (Dr. Meier), social history (Professor Kouwenhoven), and scientific philosophy (Dr. Bronowski). Their combined impact gave the question of value an interesting and perhaps unexpected turn — one that offered an exciting learning experience for those who were open to it. It became clear that they brought knowledge of the broader scientific and humanistic scene that is a basic resource for any designer today.

The six azure days in Aspen were divided into three major "Cycles," each starting with panel sessions among the visiting experts and continuing with smaller seminar discussions with the panelists. The major theme of the conference was divided into three topics, starting with the background of values, moving into expressions of values, and concluding with the communication of values through mass media. But "Value" proved nearly as hard to dissect into neat cycles as it was to talk about in neat words. It was several days before the dust of definitions had cleared and the conferees could come to grips with the central problem: How can the designer be effective in a heterogeneous society whose values often differ — for many valid reasons — from his own?

It was not unexpected when, at the outset, a number of designers rose in opposition to the methods of science and research that have traditionally "interfered" with the subjective approach of the artist. But gradually the scientists allayed the antagonism. Bronowski, Meier and Benson each helped to dispel the myth that creative intuition is the concern only of the artist and has nothing to do with scientific pursuits. The social scientists, Mills, Helfgott and Kouwenhoven, chiselled away at hasty value judgments by discussing the reasons behind values in American sub-groups, the reasons for American taste patterns, and why designers might be at odds with them. Gradually the conferees ceased to disparage the public and began to question its motives more objectively; in the final few days it was clear that the conference was seeking information rather than resisting it.

Perhaps most important, its participants began to use these scientific resources to understand not only the consumer's motivations but their own as well.

In the final panel, the group witnessed a parley of a high order that seemed to summarize the issues objectively — made possible by each panelist's clear recognition of the validity of viewpoints other than his own. Leo Lionni defended articulately the right of the "arrogant" designer to be more concerned with his own esthetic ideals than with facts and values beyond himself; but he left little doubt that only the talented and perceptive and well-informed designer could risk being arrogant. He was balanced, in various degrees, by Dr. Helfgott's defense of human research because it "Never makes the decision but only helps make a more valid judgment," by Dr. Meier's call for better biological understanding of human needs, and Mr. Benson's terse admonition to "Never underestimate the value of information; it is essential to every communication."

There were many other problems on the collective mind of the conference, of course: Change, how it comes about and what it means to design; tradition, and the educational process; and the pursuit of truth through scientific process. But the message about human values, which underscored them all, went something like this: the designer would do well to remember that his values are only human too; this does not diminish his right or responsibility to assert them, but it suggests that a good designer does this — as Ernesto Rogers put it — "by getting his ideas from experience, humbly, then expressing them with presumption." The summary given overleaf could be inaccurate, of course. Ours is just one view of a many-faceted conference, and it's probably loaded with value judgments.

—J. F. McC.

1

In order to understand what makes the American consumer tick, the conference first delved into the background of his values: How are values formed in a heterogeneous society? How are they changed? Are there societies with superior value systems? What molds American taste?

Dr. Myron Helfgott:

I would like to introduce what is sometimes called "problem solving theory" as a frame of reference for thinking about human values.

This theory assumes that people have problems, and are problem solvers. A problem is thought to exist when people are required, due to some dissatisfaction with present conditions, to change the present conditions. For instance, people who have been used to getting their food through farming have a problem when they discover that the land productivity is exhausted and that it no longer supplies their food needs. They are forced to find another solution to their food problems.

Social groups grow out of this need for solving collective problems. And the social structure of the group grows out of the way the skills for problem solution are divided up in the group. Thus, if all of these people become fishermen, the social organization will tend to be simple, undifferentiated, and homogeneous. If, on the other hand, some become net makers, some fishermen, and some cooks, the society will tend to be more complex, differentiated, and heterogeneous.

This group problem solving is influential in determining the kinds of personalities that will develop in the society. Personality, in this frame of reference, is considered to be the unique ways in which the person tends to solve his problems. In a simple, homogeneous society, there will be more similarity of personality than in a complex society.

This problem solving venture also determines the kind of culture that will exist. A culture in this sense is thought to be the accepted and transmitted problem solutions characteristic of the group. It is the institutionalized problem solutions. The culture of the simple fisherman society will probably be fatalistic and mystical—the fish would probably be totemized and worshipped. The culture of our more complex society would probably be somewhat more concerned with the way in which the fisherman, net makers, and cooks get along together, and their ritualistic arrangements might well be less concerned with wooing God than with working out, in symbolic form, like a dance or a festival, the social relations between these heterogeneous groups.

Values, in this frame of reference, refer to any aspect of the problem solving situation which is considered to be helpful in solving the problem. As such, values are not arbitrary. They are determined by the characteristics of the group, their skills, and their problems.

One of the functional advantages of culture is that, by traditionalizing the problem solution, it allows us to be free of forever re-solving continuous problems. Thus, cul-

Panelists

Robert Anshen, architect, Anshen & Allen.

Edmund N. Bacon, Executive Director, Philadelphia City Planning Commission.

Bernard Benson, President, Benson Lehner Corp.

Jacob Bronowski, mathematician and philosopher.

Amiya Chakravarty, Professor of Comparative Oriental Religions and Literature, Boston University.

Lewis Clarke, Visiting Associate Professor of Landscape Architecture, School of Design, North Carolina State College.

Myron C. Helfgott, President, Package Research Institute.

John A. Kouwenhoven, Chairman of the Department of English and American Studies, Barnard College.

Richard S. Latham, Industrial Designer, Latham-Tyler-Jensen.

Leo Lionni, Art Director, Fortune.

Richard L. Meier, Research Associate, Mental Health Research Institute, University of Michigan.

George Thompson Mills, Curator, Taylor Museum, Colorado Springs Fine Arts Center.

Ernesto N. Rogers, Architect, editor Casabella.

Jennie I. Rowntree, Home Economist, Visiting Professor at Berea College.

Dr. Kouwenhoven

It seems to me that American values are derived from a number of factors that relate to how the country was launched and by whom. The early settlers, outcasts from an established aristocratic system, came here without any attachment to conservative ideals. They were a work-satisfied people, dependent on education for the development of taste and for the knowledge to solve problems. Nature, rather than something to preserve, was something to conquer. From these and many other factors I would conclude that America values *process* more than formal accomplishment. We see it in the gridiron plan of our cities and countryside—in the endless repetition of a pattern without beginning, climax, focal point or end. We see it in the design of skyscrapers, which do not build up to a climax or terminal point, as a Gothic spire once did, but consist of an infinitely repeated pattern made shorter or taller as requirements dictate. And we see it in Jazz, which is a similar kind of problem-solving by means of a large and rather loose formal framework within which improvising becomes possible. I would also say that this has influenced our readiness for change in this country—in design as well as in living patterns. In fact, impermanence seems to be a definite design value.

Dr. Mills

I don't believe you can compare cultures on any absolute basis. There are countries where commonly accepted behavior would be considered criminal by our standards. As far as anthropology is concerned, we have not been able to discern any standards for "better" cultures. You have to see every society as a whole, and understand that every value is related to, or made necessary by, something else—and you cannot change one value without running the danger of upsetting a chain of other values too.

Dr. Bronowski

I disagree. I believe there are definite reasons for finding some societies better than others. Human evolution has always been in the direction of liberation from instinctual drives. Man always moves in a way that will satisfy his preference for a wider variety of choices. Likewise, in all value judgments, we can call those better that liberate us toward freer choice.

Dr. Mills

I would say that your criterion might in itself be a value judgment.

tures tend to transmit to each new generation their problem solutions, and the values therein. How, we may ask, does this transmission actually take place?

I believe that the basic vehicle of value-transmission is the parent-child relationship in the first few years of life. In support of this there is a body of clinical literature which endorses the view that the values of the first few years tend to endure throughout the lifetime of the individual, and that basic values, after the first few years, are not likely to change.

This is really not very astounding when we remember that, in the first five or six years of life, the child has faced pretty much all of the basic kinds of problems which he is likely to encounter in his lifetime, and he has learned the way in which the culture prefers that he solve them.

If we accept this thinking, we would look for differences in child-training practices to explain cultural differences, and similarities in child-training practices to explain cultural similarities, or continuity. We know that the basic personality types of value-orientations of different cultures are markedly different from each other.

The American seems to be centrally concerned with competition, success, and achievement; the French with individuality and freedom, and so on. Evidence is accumulating which explains these differences in terms of the unique parent-child interaction patterns in each culture. For instance, in America we know that the predominant middle-class value in child rearing is to punish certain kinds of impulsivity, and to reward achievements. This is communicated to the child in terms of how he handles his anger, how much he eats, how quickly he learns—so that by the time he is five or so years old he knows that competitive achievement behavior pays off.

This thinking can help us explain not only how values continue, but also how they change. *We would look to explain change in values in terms of a change in problem situation, and ultimately a change in parent-child relations.*

And so it goes. New developments constantly make our old problem solutions obsolete. And we are constantly changing because of it. One of the reasons for this change is that we, as a culture, are very sensitive to reality conditions. We interpret the world less through mythology and folklore, and more in terms of its own characteristics. It makes for great flexibility, if not for very much permanence.

Miss Rowntree

Parents must realize that nothing is as important for the future as the values on which their lives and homes are based.

Schools cannot create values but they can support and cultivate those present. Values are tied up with emotions, and schools by giving experiences in literature, art, music and drama, can intensify feeling. The climate of the school's offerings must be congenial. Youth must not be indoctrinated but must be given freedom. Savelle puts it this way. "The individual who accepts any set of values by reason of authority, and not because he has chosen to give them his loyalty by his reasoned choice and will, abdicates his own highest moral condition, which is intellectual freedom."

Much as teachers desire to improve taste and stimulate creativity they often feel insecure. How can any teacher be sure that his own values or even his standards are sound? The next thing he reads may require the assimilation of something new, or a modification of his original ideas. The last word will never be said on any subject of importance.

Teachers who are dominated by absolute standards, a feeling that there is only one right way to achieve a result, exert an unhealthy influence. In meal planning the teacher who expects students to eat her type of breakfast or dinner forgets that the cultural background determines what you consume and "when you eat what." A Dutch family that likes cheese for breakfast and fruit at bed time should not be made to feel queer, nor un-American. If the customs of people from remote areas could be studied and their excellence shown, if their possessions could be admired, students could get new ideas on what constitutes adequacy and beauty.

2

What are the designer's values and where do they come from? As discussion pointed up the relativity of values from group to group, the conferees examined more closely the standards of their own professional group — standards of "taste" that one panelist boldly challenged.

Mr. Richard Latham:

When the machine separated people from things, and especially from the *making* of things, it separated them from a world of experience. A man who has never worked with his hands to carve wood or shape leather, to do any craft job, has no reliable knowledge of the performance of these materials, or of their value as work-doers. When people face a car, or even a tea cup, they cannot know instinctively what

went into making it, or whether the materials are appropriate for the job. All they can rely on is convention, hearsay, advice, or advertising.

It seems to me that this particular fact of modern society —being separated from the real experience of inanimate materials and things—explains a great deal about the nature of fashion, fad, and taste. Social scientists point out that there are always leaders in any society who insist on being experimental in terms of *things*. Because those experimenters, traditionally, have also been in a position to be more knowledgable than the masses, the very possessions which they find new and daring and therefore valuable, tend to become the norm of the next period. Apparently this has been the case throughout history, according to the experts, with one exception: today.

The top strata of society today is in no better position to know in its bones the intrinsic value of things than the general public, being just as cut off from direct experience.

There is, further, a direct relationship between our loss of "knowing about things" and our willingness to participate. Our national reliance on television as a substitute for providing one's own entertainment is only symbolic of the trend toward passivity that accepts machines generally as a substitute for the *learning experience*. Since without retracing the steps of the human learning process, we can not build a base for fresh esthetic expression, we are without tradition. And a people without tradition — the continuum of culture—is unable to judge intrinsic values.

We have had, in the last 25 years, a modern movement. We have come to know what products are "contemporary" by the way they look. Since the new is good, what came before must be bad and must be erased. Yet how do we know? How, without studying tradition, could we know? Can we accept a show of Good Design without being sure, ourselves, why it's good, and without being sure we can identify bad design as readily? I am not prepared to believe that to tell good from bad is a simple matter of a contemporary look, a fad, a style, a matter of good taste.

Mary Mix Foley says, in *Forum*, that mass-taste is nonexistent. She feels the architect must take things in hand.

Now this question of elevating low public taste and vulgar needs is a very pertinent one. It assumes that there is also high taste, and that the low taste can be elevated from bad to good or to a level that somebody else says is good. What I wonder is, is this "low public" even aware of the word taste? Do they even concern themselves with it? It seems possible that in many social groups, there is very little self-consciousness about taste because there is no conscious striving toward a standard other than their own. "Taste" becomes self-conscious in the mobile middle classes, because it implies an awareness of a standard that is beyond their own group, beyond their own ability to distinguish with assurance between good and bad. I imagine that taste, originally referring to social manners, became a problem when

Mr. Anshen

The sensory impressions of objects, not the objects themselves, are the raw materials upon which we pass aesthetic judgment. What combinations of colors, shapes, distances, will give what visual impression of these colors, shapes, and distances can be analyzed and generalized into scientific laws. But these laws of visual effects and optical illustions must not be confused with "eternal principles of beauty"—which separate the visual effect of lines and colors from the materials from which they emanate. Which lines, forms, and colors are considered beautiful varies with different materials and with the different uses to which we desire to put those materials—varies with our varying ideals.

At any given time, however, the material conditions affecting the possibilities of fulfilling our ideals are objectively-knowable facts .The different degree to which different people living at the same time in the same society are aware of existing material conditions causes them to make varying aesthetic evaluations.

It is up to the designer to lead the public. The public has absolutely no idea what it wants. It is the designer's bounden duty not to cater to "low public wants" but to insist upon a high level of objective design, the better to entice the public with. The designer is in the background publicly, but he is nevertheless responsible for the things which the public ultimately buys. The responsibility not to cater to low desires is heavy on the designer. In this responsibility to resist conformity and assert his own fresh values is the designer's real challenge.

Mr. Bacon

The prevailing values in any period are set by the degree of acceptance by the many of the value proposals of the few. It is the job of the designer constantly to set before society concrete physical expressions of fresh potential values and readerships, so that there will be continuous stimuli and rich alternative choices available.

The form of the city is an important expression of the values of any period, and the designer has a vital role in producing images of the possibilities of city form.

it was possible to learn manners that you might not have been born with, in order to convince those who mattered that you deserved to belong to a higher social group. In a contemporary society cut loose from the moorings of clean-cut class distinctions of tradition, of direct experience, taste becomes another kind of anchor: it is a sure way to know good from bad. For an aspiring middle class, it becomes a steadying rung on the way up the ladder. For a more secure upper, intellectual or professional class, it becomes a symbol of superiority and a defense against unacceptability, against being confused with a class that is less acceptable.

I submit that this problem of taste should be very much on every designer's mind today. Suffering from the same isolation from nature and materials as others, he tends to take the same path to the security of taste that is common everywhere. He will avoid driving an American car because it is a bad design, but will drive a European product that was directly influenced by America and consider it "honest" when, in fact, it is no closer to a correct expression of a motored vehicle than a Buick. What it *is* closer to is a set of values that shows he is more vulnerable to style than those he styles for. If he is able to go beyond momentary fashion he may, in fact, surround himself at home with objects and works of art that are really beautiful—but confronted with two fighter planes of distinctly unequal merit, he is unable to differentiate and probably finds them both beautiful.

I do not deny that this is an extremely human and exceedingly difficult problem. Designers face the quandary that everybody faces in today's society—but in allowing themselves credit for more developed sensibilities and in assuming the right to create objects for other people, they also inherit a responsibility to do a more intelligent job of tackling those problems. I observe, on the contrary, that many a designer is too content to crank out what he feels is good for people, knowing little about people and caring less. He is mainly concerned that his relationship with the maker of things be successful, and that relationship is based on selling the most things to the most people at a fair profit. But to do this, he sees only two blunt alternatives: he must either impose on others his own taste—the one he knows and accepts—or make a heartless stab at imitating taste levels that he basically disdains. He cannot sympathize with the patterns of other groups if he is disinterested in the basic workings of humanity. He cannot communicate with other people at a general, human level until he becomes a student of nature, materials, and human beings.

One of the most serious problems facing the designer of mass goods today is how to transcend this taste barrier, how to get more knowledge of the relation between social and functional values in order to achieve more creative *design* solutions. There are no easy answers. I certainly don't go along with the designers who console themselves that things are getting better esthetically; that people are reaching "higher taste levels" and eventually it will all work out. This sounds, rather, as if the designer wants to rationalize his own desire to hang on to a set of values—hoping rather desperately that everyone will eventually learn to see things *his* way.

As designers, we may properly assume responsibility for goodness and badness in the work we create; we are called upon, and entitled, to make value decisions. We are also

Mr. Benson
I like to think of two kinds of professions: One is a service job which contributes something substantially functional, and one is the creative job which breaks new barriers of thought. Perhaps design has been too much of the former.
Dr. Helfgott
I would prefer to think of both elements, service and creativity, in every job and profession. It is a question of how you solve the particular problem set before you—inventively or imitatively. A garbage man can do his job creatively, and a designer can do his perfunctorily, or vice versa, depending on the individual abilities. There is always a correlation between personality and the jobs people pick. It is my feeling that every designer has a high degree of emotional investment in his field, and selects it because it offers him certain outlets that fit his personality: among these are the ability to control his environment and to some extent other people by symbolic communication—and this omnipotence has to be considered when you discuss the designer's values.

Dr. Helfgott
Design is as indicative of a culture's values as is its folklore or mythology. *Design is part of the expressive behavior of a culture, and as such, reflects the culture's needs and problem solutions.*
Design in America tends to reflect our valuation of precision, economy of effort, functional utility. Even our "non-realistic" art tends to sanction silently our technologically, scientifically-oriented culture, in that it attests the acceptance of that which is not immediately discernable through the senses. It sanctions exploration, discovery, and freedom from the directly apprehended.
Similarly, the intricate detail of a Persian rug reflects an appreciation of contemplation and slow discovery. The typical unboundedness in Japanese painting reflects the Buddhist value of the "annihilation of the self for the serene apprehension of the totality."
We are also mindful of the fact that design not only reflects but also contributes, just as advertising or other communications, to value change.
If I were an anthropologist and this were a strange island I was observing, these are some values I would note as common to this design group: 1) Any problem can be solved if discovered and defined. 2) Everyone must contribute to society in some way in order to be happy. 3) Everyone must fulfill his own capabilities. I note at the same time a feeling of conflict between the idea of "compromise" and good design, and similar confusion as to whether the work you do should be autonymous and for your own satisfaction, or directed to the needs of others.

entitled to a pioneering spirit and a desire to see things change for the better; we need not assume that *what is*, is always inevitable or for the best. I believe that change, even for its own sake, can be a good thing. But I contend that, before we dare assume this right to judge and shape other people's values, we had better first examine our own values —and our own motives for wanting to exercise this control over the lives of others. In doing so, it might be helpful to go back and begin separating the truths of design from the fancies of fashion, and the truths about all people from our fancies about ourselves. We designers can begin to build a meaningful esthetic culture if we are willing to prepare ourselves for a new learning experience, and we cannot learn unless we participate.

3

Functionalism, one of the operating values of design today, came in for some special attention: What does it really mean? Has it always been important to design? Has its meaning always been the same? The keynote speaker, a social historian, gave the word a shaking up.

Dr. John Kouwenhoven:

Anyone who reads what designers and critics of design have said at various times in the past soon becomes aware that words such as *function, structure, simplicity,* and *elegance* are so imprecise as to be meaningless. A book published in 1877 about the *Industrial Art,* which has been exhibited at

the Centennial Exhibition in Philadelphia the year before, reads as if it might have been written by a fairly advanced (if somewhat coy) twentieth century critic, with its condemnation of showy and flashy objects, "overloaded with meaningless ornament," and its praise of "true honesty in construction, fitness of ornament to material, and decorative subordination." But when one looks at the illustrations of the objects which are praised in these terms, it is perfectly clear that the words "honesty in construction" and "fitness of ornament to material" were verbal symbols of an actuality which does not resemble what we would symbolize by those words. The whole group of word symbols clustering about the concept of the machine—a concept of great importance to contemporary design—provides striking evidence of this. As an illustration, let me remind you of a famous passage in which Samuel Taylor Coleridge defined organic form. In a lecture on Shakespeare, given in 1818, he made a distinction between what he called mechanic form and organic form. Form is mechanic, he said, "when on any given material we impress a predetermined form, not necessarily arising out of the properties of the material." Organic form, on the other hand, is innate, shaping itself from within, as it develops, so that "the fullness of its development is one and the same with the perfection of its outward form."

Mr. Rogers

Functionalism is essentially a method for establishing more and more subtle relationships between necessity and aesthetics (beauty is the greatest extrinsic manifestation of necessity). Therefore, at first, functionalism strove to reintroduce particularly the practical and technical meaning of the architectonic composition so that it would honestly reflect fundamental necessities common to all men; but then, it deepened its content and extended the notion of necessity to cover not only practical but psychological needs; from a phase of the equality of men there developed subsequently (and this without denying the achievements of a rational approach) that process of distinguishing individual from individual which had already been introduced by the Art Nouveau, etc. But while the Art Nouveau developed the theme of freedom of form without much concern for interior meaning, the second and present phase of functionalism gives attention to content and, in exploring it, draws forth the forms best suited to interpret and exalt it.

Functionalism tries to give to every man the objects which he most needs, and among these objects the house, which is the most important of all, is being styled less "everybody's house" and more "your" house. It tries hard to face the problem of producing in quantity the quality objects which gave to the modern movement the proof of its profound possibilities.

We are all so used to this formulation, or to echoes of it in hundreds of later writers, that we are not likely to wonder why Coleridge used the word "mechanic" as the verbal symbol for the antithesis to "organic." Actually, the adjective "mechanic" like the noun "machine" had strongly disagreeable overtones in 1818. To Coleridge and his contemporaries, therefore, and to many since his time, the verbal symbol "mechanic" seemed appropriate as a contrast with "organic" because it had connotations not only of meanness and servility, but also of inhuman power. There has been an anti-mechanical bias in much discussion of design ever since Coleridge's time. People of education and refinement have retained the anti-machine bias inherent in the verbal symbols which Coleridge quite understandably used in 1818, but instead of which, at a different moment in history or in another context, he might have chosen some other word.

In opposition to the cultivated tradition, however, there has been, in the United States especially, for well over a century, a vernacular tradition in which the machine has been unselfconsciously and enthusiastically accepted. The history of design in America, seems to me to be largely the product of dynamic tensions between the cultivated and vernacular tradition. Ironically, the cultivated tradition, which has by and large been uninterested in, or downright contemptuous of, the machine, has been chiefly responsible for inspiring and patronizing those forms which Coleridge labelled "mechanic," while the vernacular, evolved by men who were often mechanics working with machines, has produced those contemporary forms which are truly organic.

This is not to say that all machine-made objects are organic, or that all handmade objects are mechanical. It is only to say that the worst machine-made objects are those whose designers have been most awed by the prestige of the cultivated tradition, just as some of the worst handmade objects have been those whose designers made foolish concessions to the "aesthetic of the machine."

For an instructive example of the vernacular's influence on the cultivated tradition, we might take the spring-steel cantilever chair which Mies Van der Rohe designed in 1927. The two basic elements in this design were the cantilever principle (which Mart Stam, of Holland, had used in a chair he designed the previous year), and the spring principle of bent steel. Both of these principles had been used in seats long before, but only in those vernacular areas where "artistic" effect was not considered. As Mart Stam himself said, he found the suggestion for his original cantilever chair in the folding jump seats used in seven-passenger American automobiles. As for the spring-steel principle, that had been used for eighty years or more on the cantilevered seats of American agricultural machines (combined, incidentally, with a seat shaped to fit the human fundament in its pear-shaped, seated position).

All this has been noted before. But what I, at least, overlooked till now is that both of the vernacular designs were functional, while Mies Van der Rohe's design—widely hailed as a masterpiece of functionalism—was not. Both the jump seat and the mower seat were functional cantilevers, because back legs on the jump seat would have interfered with the feet of the passengers sitting behind them, and there was no part of the mower to support back legs for its seat, which was cantilevered out over empty space

Dr. Chakravarty
Nature is self-operating, but in the "man-made" world of city and factory we have to change and invent, to inform our productions with graceful efficiency. We must find for our creations, whether in clay, enamel, plastic or wood, the forms that combine precise utility with aesthetic strength. Skill and quality are really inseparable: a high proportion of both would bring satisfaction to the makers and users of the things we manufacture. The problem for the designer of furniture, hearth rugs, or the window screen is to use his material well, to satisfy the values of refinement, and meet the specific needs of his customer. All this comes fairly easily when the social values and needs of a community are of a high standard, a community to which the maker and the buyer both belong. A technological age is no less answerable to social standards than the earlier patron and worker situation. Actually, in a democracy, however complicated its modern structure, the relationships between members are closer, mutual awarenes and cooperation is more easily achieved in such a society. What we need is a redefinition of our values in terms of the new materials and new techniques that we must use. That is to say, values will not be sacrificed, neither will machine-skills be spurned; the two can be brought together if we are using experience and are willing to take "creative risks" certainly not an aesthetic system.

Mr. Mills
It seems to me that functionalism was once necessary, and after it had worked through the basic problems that needed attention, it left us free to deviate, to make choices. It is certainly not an aesthetic system.

so that the operator could sit behind the cutter bar and see what it was cutting. As for the spring effect in the mower seat, it provided a functional shock-absorber on a rough-riding machine. For household chairs, however, which are used on relatively flat surfaces which don't jounce, neither the cantilever nor the spring was quite relevant. The Mies Van der Rohe design was, fundamentally, pure playfulness (though you would never guess it from the solemn things that were written about it), the product of cultivated aesthetic playing with forms developed in the vernacular.

In recent years, since about 1930, the prestige of genuine vernacular forms has enormously increased, partly as a result of social and economic forces which made economy and simplicity attractive, and partly because in those years certain vernacular forms reached a degree of refinement which gave them an unimpeachable appropriateness and made them a source of liberated delight. Aerodynamic forms have, in fact, acquired an authority as classically absolute as the scuptural forms of Periclean Athens. And, as Dr. Bronowski said, in a speech recently printed in INDUSTRIAL DESIGN, because these vernacular designs (he calls them pioneer designs) interest and satisfy us, "there grows from them a custom in the eye" which forms our taste in other fields as well. We like to design and to buy streamlined toasters and irons not (as Dr. Bronowski sensibly points out) because we have any expectation of their flying, but because machines that fly have taught us to question protuberant decoration and to admire streamlined forms. To me it seems obvious that it is to this magnetic appeal, rather than to the Freudian symbolism in which some critics are so suspiciously absorbed, that we owe the rocket-shaped ornaments and tail fins of contemporary Detroit.

Mr. Lionni
In a competitive society, the values which the society transmits to the designer form the basic mold for the objects of use. The designer may refine, combine, decorate, and even add attitudes of his own,—he is expected primarily to incorporate the values received and return them in tangible symbolic form. He is expected to arrange them in conformity with his society's scale of values, and his refusal to do so is dealt with simply by the consumer's refusal to accept his design. Chrysler's unsuccessful attempt to sell a car that was "larger on the inside—smaller on the outside" was a dramatic demonstration of punishments for the designer's failure to conform. The Chrysler idea was economically and functionally sound—it even included ethical considerations which are generally accepted as "goals." A look at today's cars seems to validate Kardiner's point that in social evolution the discrepancy between goals and norms tends to increase.

Furthermore, if the designer is bound to express, willingly or unwillingly, the values of his society in the physical shape of the objects he designs, a far stronger evidence of these values is to be found in the mere existence of these objects. The presence of certain objects at a given time and place is more indicative of a society's value scale than their design characteristics. A Cadillac is tabu in Park Forest *qua* Cadillac—regardless of its model, color, or size of its fins. It is tabu as a symbol of ostentation—of non-conformism with the values that are prevalent in the social structure of Park Forest.

4

The image of Detroit's tail fins hovered over the conference from start to finish, a symbol of anti-functional values. Can their popularity be explained? Do they threaten valid design efforts? Dr. Kouwenhoven explained tail fins in terms of a design value that is special to our time.

Dr. Kouwenhoven:

When Mr. Fitch asked me to participate in this conference, he spoke of those fins, and I've thought a good deal about them since. I am convinced that if we could really determine why the designers designed them, and why the car-buying public likes them, we would come near the heart of the problems this conference is supposed to be dealing with. An idea in Don Wallance's book, *Shaping America's Products*, may serve as a useful text for further discussion. Mr. Wallance distinguishes between objects whose inner structure and outer form are integral—such as a pottery bowl or a plywood chair—and objects whose outer forms merely sheath an inner structure or mechanism—objects such as refrigerators or radios, whose essential nature separates the process of making from the process of designing.

Now when we consider objects whose inner structure and outer form are integral—it seems to me that we can all, designers and consumers alike, agree upon what constitutes good design. We can without too much difficulty determine whether the design is appropriate to the tools with which

Dr. Helfgott
I note that all the derogatory comments about the tailfin relate it to the Cadillac. I suspect that if the tailfin had been introduced first on the Chrysler, the critical group would find it more acceptable, because the Chrysler as a symbol sanctions values that are closer to those of this group. I think it is important to recognize that "good taste" varies considerably from sub-group to sub-group within American society, and that in some respects this variance is related to exhibitionalism and emotionalism. For instance, in some groups it is perfectly acceptable to display your emotions and exhibit yourself, and in these groups a gaudy car is perfectly acceptable and in "good taste." As you move up the social ladder more and more importance is placed on control of impulses, so exhibitionistic design is regarded as vulgar and controlled "simple, clean" design is regarded as "good." The over-decorated auto, then, becomes a symbol of exhibitionism that is not sanctioned by this group.

it is made, to the materials of which it is made, and to the uses for which it is made; whether it has evolved from the inner structure; whether it is organic and functional.

In considering objects of the other class, whose outer forms merely sheath an inner structure which designer and public agree should be covered up, however, the question of the appropriateness of the design becomes much more complicated—becomes, in fact, not a matter of logic, but of taste. And we may as well define taste as that sort of preference for one or another form which is relevant only when form is independent of function.

Think again of the Cadillac's famous (or infamous) fins, or of their exuberant progeny on other cars. In Don Wallance's terms, these forms are sheaths, in no sense integral with the inner structure or mechanism of the car; and there is no reason why they shouldn't be, or why we should try to apply to them, or to any other sheath design, the criteria we apply to integral designs. They are not functional, in Greenough's sense, nor organic in Coleridge's, and it strikes me as silly for the advertisements to try to pretend they are. I am convinced those fins are the shape they are primarily because some designer liked their looks, and because a good many car-buyers (*not* including me) agree with him. I am also convinced that both the designer and the buyer like the look because the fins echo forms which were functionally evolved in aerodynamics and are therefore pleasing.

Dr. Kouwenhoven
To get some perspective on the automobile, as well as other American symbols, I think you have to remember that America came into being at just about the same time as the machine. This had a great deal to do with making Americans so much at home with mechanical objects that they build them into symbols of power, mobility, speed: formerly the locomotive, now the car. We must remember that the automobile is a very powerful object, and yet the average American is unafraid of this machine and is able to run and control it. People decorate the things they love; they used to decorate the locomotive, and now they decorate the car.

5

Beyond functionalism, what values today affect the designer's work? A scientific philosopher proposed that independence and originality are basic to the scientific method—stirring questions on how research, tradition and science affect the designer's creativity, and on the nature of freedom.

Dr. Jacob Bronowski:
Is it possible to have a practical aesthetic, and yet to seek the source of values as something larger than functional use? Of course it is. The notion that function fixes the value of design is a wild simplification of utilitarianism —a sort of primitive fundamentalism. In reality, values are much more delicately determined than this. Values are indeed social, they grow from use, but the fitness which they express is to the whole context of a society. A knife and fork are not merely things with which you eat; they are things with which you eat in a society where eating is done

with a knife and fork—and that is a very complex form of society.

The social condition which most influences design is that men discover new methods and materials because they are looking for a new freedom. Human evolution, and the evolution of societies, is a constant attempt to break through the constraints imposed by the environment of the time.

Every great movement in art has this stamp, that it is a breaking through, a breaking out into liberty.

What inspires the artists of an age is also the high inspiration of their society. The Rennaissance, the reign of Elizabeth, the Restoration and the Romantic Revival are not private incidents in the history of art. They are also the times of scientific discovery, of economic expansion, of conquest and of new political thought. Yet they are all original. The movement to freedom which springs in them all is a human movement, straining in every age to free itself from the compulsions of the past, and breaking out whenever discovery or imagination opens a first crack in the rigid shell of society.

Freedom is only one expression of a society which is still evolving. Once a society recognizes itself as imperfect, and wants to evolve, it sets a value on forms of behavior which are designed to encourage change. These are the values not of a static but of a stable society—a flexible society using the methods of science.

First, of course, comes independence, in observation and thence in thought. I once told an audience of school-children that the world would never change if they did not contradict their elders. I was chagrined to find next morning that this axiom outraged their parents. Yet it is the basis of the scientific method. A man must see, do and think things for himself, in the face of those who are sure that they have already been over all that ground. In science, there is no substitute for independence.

By degrees, men have come to give a value to the new and the bold in all their work. It was not always so. European thought and art before the Renaissance were happy in the faith that there is nothing new under the sun. Today we find it as natural to prize originality in a child's drawing and an arrangement of flowers as in an invention. Science has bred the love of originality as a mark of independence.

Independence, originality, and therefore dissent: these words show the progress, they stamp the character of our civilization as once they did that of Athens in flower. From Luther in 1517 to Spinoza grinding lenses, from Newton's heresies to the calculated universe of Eddington, the profound movements of history have been begun by unconforming men. Dissent is the native activity of the scientist.

It is really our task, at a Conference like this, to elucidate these values which a scientific society forms for itself, and then to work out their concrete expression in the things it makes for daily use. These values are of two kinds. First, there are values concerned with human relations. In a scientific society, these hinge on the notion that man should fulfill himself.

Second, there are values concerned with man's view of nature. The scientific view of nature is not like that of the Greeks, a gay chaos of gods nor that of the Middle Ages, a miracle renewing itself from instant to instant.

Science has become, and has taught us all, a universal search for unity. The aim of science is in fact to find unity in the variety of natural phenomena. It is striking that, one hundred and fifty years ago, Coleridge defined beauty in just these words, as 'unity in variety.' The value of design, to us, lies in its unity; and what I have called the fallacy of the iron tower—pure functionalism— is a primitive form of this. We have to work out a more subtle conception of unity than has yet been found.

Mr. Rogers

The roots of any individual being an essential part of his personality, it becomes more than ever necessary that design, in serving society, consider that personality not only in space but also in its historical continuity in time. In other words we must learn how to go beyond the tangible presence of the personality and penetrate into the character of the pre-existent cultural environment to which it is bound, an environment which determines a single reality. Individuals and things, the subjects and objects of artistic activity, may be investigated by the same critical process, in as much as the notion we have of them creates a more subtle order of relationships both between individuals and objects and among themselves.

By drawing the greatest possible energy from everything surrounding us, we improve the creative process of our work and, far from negatively affecting the works of the past, we reinforce them, for we are building a bridge between the past and the future. The future partly depends on us, just as we partly depend on the past: tradition is this perpetual flow, and to be modern means to feel oneself consciously a part, an active part, of this process. Those who do not feel this way are not fully responsible "modern" artists and might simply be defined "contemporary," which means belonging to our age only in the chronological sense, without having sensed and expressed its deepest content.

Dr. Meier

Each society holds different ideas about what are justifiable expectations for material well-being and within each society these expectations vary from one class to another. Yet some visible standard needs to be set for individual requirements for food, shelter, medical services, recreation, etc. so that the approximate long-run demand for goods and services can be estimated and the scarce resources allocated in a reasonable fashion to people throughout the world.
The science related to comfort and convenience seems likely to provide suggestions for the necessary economies. It draws upon recent findings in physiology, psychology, and medicine, which permit at least a semi-quantitative estimate of these basic needs of the individual, while allowing for a variety of ingenious adaptations and substitutions suitable for each culture. Science helps in establishing standards because it offers facts as a means for settling differences of opinion about what is adequate, and puts a premium on consistency. Only if a genuine feeling of adequacy can be achieved with fewer resources, can the majority of a population indeed be brought up to minimum adequate levels. Thus a major pre-requisite for economic development must be *conservation at the point of consumption*, over and above that kind that is conventionally stressed at the point of extraction and processing. The society must find a way of conveying these principles to the whole population.

6

In the final rounds at Aspen, discussion settled on the most urgent questions: How is a designer to be effective in a society whose values are often not his own? Can he change the values of the American consumer, and should he? What is his responsibility if he does decide to tamper with taste?

Leo Lionni:

Design is a synthetic term covering a number of activities. These activities share certain basic characteristics and attitudes which should make it possible for a designer to work with equal competence in two or three dimensions, to handle paper or steel, to perform singly or in a group, to form objects personally and directly for end-use or to build prototypes for mechanical or human mass-production. The "total" or "integrated" designer is an exception, however. More often he engages in a specialized field within the limits of special circumstances and with the use of a special vocabulary. He may end up, and often does, not as a performing artist at all, but as an entrepreneur, a stimulator, or an administrator. He may direct a group of designers or interpret consumer needs for other designers. Whatever his activities, they involve to some, and various, extent, the shaping, interpretation and transmission of values.

Like many conscious acts of man, design is performed almost simultaneously on several levels: aesthetic, mechanical, psychological, ethical, social, expressive, etc. It could be explained by imagining the designer in the act of superimposing translucent discs of various colors and textures, each representing a class of considerations. Each disc modifies the others—each has its own responsibilities toward a final effect. Color and texture can be altered by shifting the order of the discs.

The good designer aims at a perfect fusion of the various considerations which enter into his design. He aims

at an untortured unity—a direct whole. He arranges his levels consciously or subconsciously, adhering to the requisites of the problem he is asked to solve, or to his own inclinations. Some designers see the total act through a disc of aesthetic considerations—others, more practical minded, may put economic considerations at top level.

Generally the design act, individually performed, occurs with a surprising sense of simultaneity. The levels seem to fall into place automatically and instantly (one could say intuitively) and the designer is unaware of the compromises he makes in arranging them.

If simultaneity is characteristic of design at its origin, it is even more typical at the receiving end. Non-discursive symbolism, unlike verbal discourse, where meanings are constructed "while-u-wait," so to speak, contains meanings as an integral part of its fabric. It is only through the totality that they are revealed—and totality imples simultaneity.

In painting and flat design, especially, a single glance can, and often should, reveal all. Even in architecture,

Mr. Bacon

In approaching the design of a neighborhood needing urban renewal under a method which we call the "Greenway System," we regard the job as one of collaboration between the architect and the planner. The planner's work is to devise a basic design structure consisting of a system of public open space, focusing on significant local landmarks and having a meaningful relationship with the *principal* buildings of the new development projects. This system provides a means for getting about on foot in such a way that the walker is exposed to a series of space experiences in designed sequence, opening and closing of spaces, sunny and shaded spaces for movement and for rest, with changing textures underfoot. It provides vistas of significant local institutions, settings for structures important functionally or symbolically, visual relationships between elements of the community. It is primarily a humanistic conception: the community becomes a series of impressions to people, forming a meaningful sequence of space conceptions.

The Greenway system provides a basic unifying design structure, a system for the larger order, which throws into meaningful relationship the *essential* elements of the composition of the designers of the various new projects which make up the neighborhood, producing an over-all civic unity but still allowing great freedom of expression in the greater part of the individual projects. We believe design will have to operate on such a basis if it is to tackle effectively the large-scale problems of our time.

where the development of space is most clearly a time concept, related to our own possibilities of motion, can one act of vision grasp a resume of the total statement.

But while the potentials of simultaneous perception give design its peculiar powers, they also hold the causes of its inadequacies as a form of communication. Unlike words and illustrations, which can be expected to communicate values in unequivocal terms, the more abstract aspects of design, like the ones that take place in product design, can, at the most, express general attitudes. They tell little or nothing of the specific values which, having been absorbed in a total statement, can not be re-identified.

In the course of his work a designer will be faced with problems involving such values as beauty, truth, honesty and the vision of an ideal society, but, with the exception of beauty, which is an inherent quality of artifacts, the chances of these values being communicated to the consumer are almost nil.

The designer who rejects phony hammermarks as a texture for machine-made aluminum flatware, or, for similar reasons, imitation walnut Formica for his furniture or handlettering for his stationery implies his values by doing so. But when he designs a smooth textured fork, or a desk veneered with bright colored plastic (preferably a color which is most artificial, least woodsy, and therefore most honestly Formica) or has his name set in Futura (upper and lower case) his objects fail to release the meanings they contain, so significant in the act of rejection.

He may be forced to interpret the attitudes of the consumer and express the consumer's scale of values, but the possible solutions to a problem may be, and usually are, many. He can, within a fixed range of conditions and without altering the order of values, exercise a choice. Society may reject forms, textures and colors which express a designer's scale of values satisfactorily. It may give preference, for deeprooted psychological reasons, to walnut-formica and hammermarked flatware—whereas the designer, respecting the nature of materials and processes, would choose bright colors and a smooth finish. But the motivations for these preferences may indicate other, perhaps unexpected, solutions. The designer may find that the consumer's needs can be satisfied by means that are acceptable to him too. The consumer, after all, "knows a good thing when he sees one." Incapable of imagining all possible ways to satisfy his needs, he relies on the designer to "show him." In fact he always seems surprised to discover a new product which represents "just what he has always wanted."

It is in this nomansland between what society needs and what it ignores that the designer finds his room for maneuver. It is here that he may discover opportunities for compromise between ways of expressing the consumer's values and his own. In his design vocabulary he may even find words with multiple meanings, that satisfy both him and the consumer for different or even opposite reasons. This happens frequently in architecture. A detail which is inserted by the architect for aesthetic reasons may be acceptable to the consumer for practical considerations—and vice versa. Similarly the relationships between designer and businessman often depend on the exploitation of the ambiguities of a language which sometimes is expected to function with the semantic efficiency of verbal discourse, but can, at the most, communicate, or direct feelings.

Mr. Anshen
There is a point in the design of any object, no matter how large or small, where "intuition" has to play a certain part. There are certain objective considerations about color, about lines, about proportions, but in the end the design of any object which is forward looking depends upon this "intuition." I think that this "intuition" is not confined to architecture or product design, but is also present in such so-called scientific developments as atomic energy.

Mr. Clarke
Good design for people cannot be judged according to the dollar, but by what it does for the individual, the family, community, and for generations to come. Man appreciates his environment through his five facilities of sight, smell, hearing, touch and taste, all culminating in one final response in the brain. A visitor to an old court in which design and age is apparent is heard to exclaim "This has much atmosphere." He does not analyze why—he just senses it. Should not a designer similarly decide on the final atmosphere he feels is appropriate and achieve it? The philosophy of contrast guides so many, for we seek our vacation in the mountains, beaches, and country away from the obvious man-made environments. Even the housewife in the poorest slum grows a few indoor plants, perhaps unconsciously expressing her desire for association with living materials. The landscape in all its forms is perhaps man's greatest connection with continuity, within nature's continuous annual cycle of birth, growth, and decay.

Dr. Helfgott
If you accept the idea that the products people buy contain some symbolic communication, some sanction to do what they want to do or feel as they would like to feel, you realize that designers have a tremendous responsibility. They are dealing with values in everything they do, and they can change values. I would suggest that one positive contribution a designer can make to the mental health of the nation, is to give people "permission" to feel what they really feel instead of asking them, through an imposition of negative values, to repress their feelings.

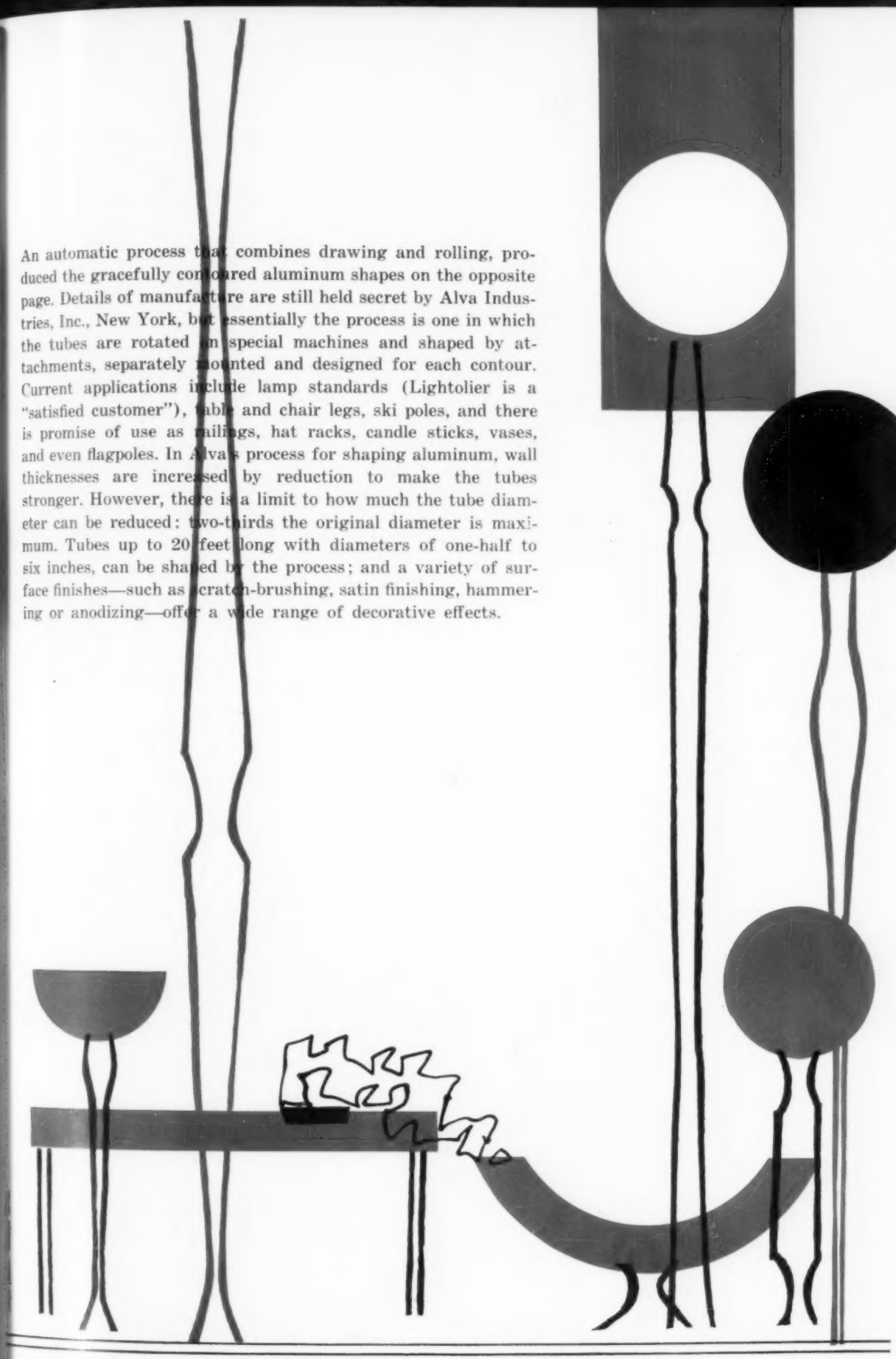
Dr. Bronowski
Is there not a distinction between a drug and a food? Is it not up to the designer to decide whether he is forcing the public to accept drugs—which by definition seem to nourish the system without actually doing any physical good—or to accept genuine food? Doctors must make these decisions; they do *not* make them on moral grounds, I might add, but on the basis of scientific investigation and objective study. Added to this, I believe, the designer simply needs confidence in himself as a person as the soundest way to understand what other people are like.

Mr. Latham
Many times, in my years as a consultant designer, I have seen designers—ourselves included—present a good design solution to management, go away, and find their work butchered by the "men down the line" who are charged with carrying it out. I came to the conclusion that we needed a new kind of relationship with clients, and we have worked it out with the help of social scientists who understand the dynamics of organizations and people. Today we are concerned not only with what management thinks of our work, but with each of the staff men who will touch it; we try to get them involved enough in it to care about its proper execution; we try to tap the human resources that are a company's real competitive potential. Consultants cannot do this by being arrogant, by being "visiting experts" who ignore the people that their work affects.

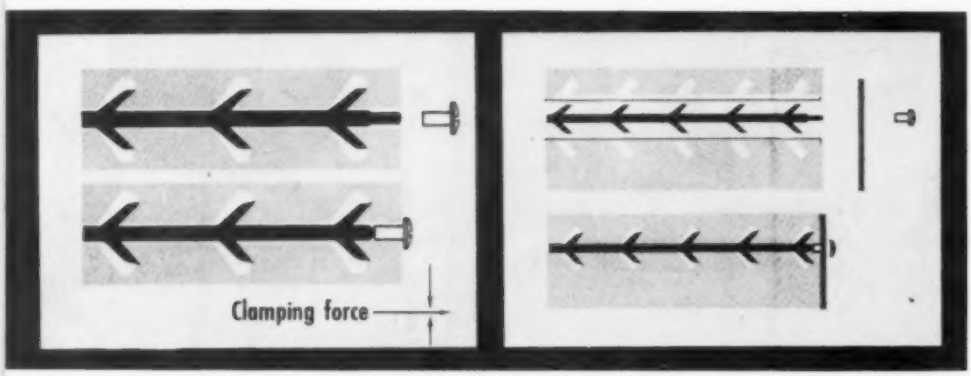
Cycle I opens in The Aspen tent. Photo by Ferenc Berko.

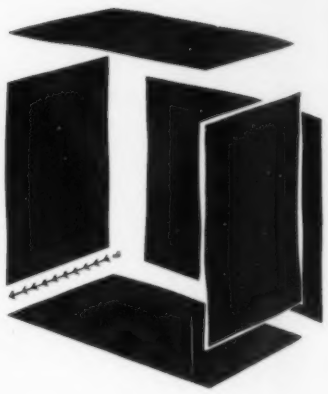
New contours ro ed into a inum tubing

An automatic process that combines drawing and rolling, produced the gracefully contoured aluminum shapes on the opposite page. Details of manufacture are still held secret by Alva Industries, Inc., New York, but essentially the process is one in which the tubes are rotated on special machines and shaped by attachments, separately mounted and designed for each contour. Current applications include lamp standards (Lightolier is a "satisfied customer"), table and chair legs, ski poles, and there is promise of use as railings, hat racks, candle sticks, vases, and even flagpoles. In Alva's process for shaping aluminum, wall thicknesses are increased by reduction to make the tubes stronger. However, there is a limit to how much the tube diameter can be reduced: two-thirds the original diameter is maximum. Tubes up to 20 feet long with diameters of one-half to six inches, can be shaped by the process; and a variety of surface finishes—such as scratch-brushing, satin finishing, hammering or anodizing—offer a wide range of decorative effects.



Fishbone Connector Makes Invisible Joint





The photograph on the opposite page shows two sections of wood about to be brought together by a new joining system called the Fishbone Connector. Designed to permit strong joining without interfering with either styling or fabrication, the connector has many applications in the furniture and display industries. It can be used with butt or mitered joints in solid laminates or particle board. According to the manufacturer, Funco Products of Denver, Colorado, the new joining method combines a low-cost operation with the advantages of toughness, simplicity, versatility, concealment, and ease of assembly in all applications.

Unlike many product designations in use today, the name of this device bears a close descriptive relationship to its construction and appearance: the connector actually looks like a fishbone. And in its spinal appearance is the key to the whole concept of this simple invisible joining system.

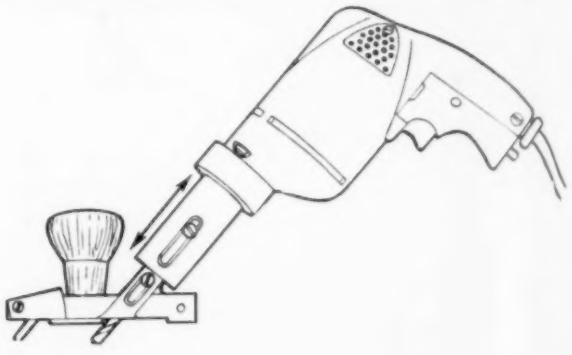
Basically the connector is a spine stamped from heavy gauge steel, with a series of ribs angling from both sides of it. The end of the spine is threaded to receive a female cap nut.

As illustrated in the right frame above, the connector rests in matching slots and holes cut into the parts to be joined. When the cap nut is tightened against the back, the wood parts are pulled firmly together.

Both the size of the holes and the angle of the ribs have been designed to achieve good adjustment and to allow loose tolerances. The left frame above indicates that when the joint is pulled together, the ribs grip along the entire length of the joint with a spring action.

Funco has developed both processes and equipment for the wood fabrication in an effort to make it an inexpensive, non-skilled operation. For plants that wish to introduce the system on an experimental basis, the hole-drilling power jig shown below is available. Developed for pilot or moderate production, the jig does all the hole fabrication on the wood parts.

Adaptable to factory, dealer, or consumer assembly, the Fishbone Connector can unite both finished and unfinished furniture parts, either glue or dry. The new joining system was subjected to extensive tests by Funco.



by Arthur Gregor

THE TRANSISTOR IN DESIGN

What do semiconductors mean, and what new product concepts do they promote?

Predictions, always speculative and often introduced with a cautious "don't quote me on this," can carry authority if voiced by people whose long association with a field gives them "visionary" privileges. The most radical forecasts regarding kitchen and other home appliances are being advanced by experts in a field that, at first glance, would appear to be unrelated to the comforts of the home — the field of transistors and other semiconductor devices.

These experts speak of a radio receiver the size of a wristwatch and worn like one, of a home computer designed to keep a steady eye on the family budget, of remote control and switching devices that will make the electronically controlled home a part of normal living. The electronic home, these experts say, will provide automatic control of many of the operations that are now manual: automatic door and window control, automatically adjusted light intensity, automatic temperature control with air-conditioning and heating units, remote control of garage and various gardening operations, intercommunication within the home, and communication from house to outlying areas.

How do the appliance makers react to these views of the future? While firms such as GE or Philco refuse to divulge what experiments, if any, are being conducted along these lines, RCA Whirlpool, on the other hand, has already come out with an experimental "Miracle Kitchen" in which every operation is controlled from a single monitor board. The RCA Whirlpool Kitchen employs the device responsible for the experts' bold look into the future, for appropriately enough, this "miracle" in housekeeping will be brought about by what has been called a "miracle" gadget — the transistor.

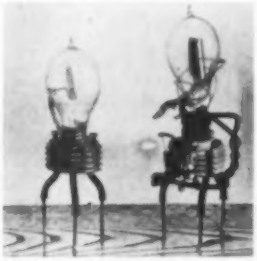
Devices that eventually cause dramatic changes often make undramatic first appearances. Just nine years ago, on July 1, 1948, the Bell Telephone Laboratories sent out a press release with the following opening paragraphs:

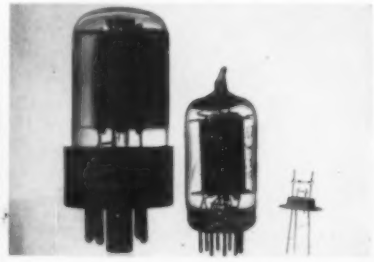
"An amazingly simple device, capable of performing efficiently nearly all the functions of an ordinary vacuum tube, was demonstrated for the first time yesterday at Bell Telephone Laboratories where it was invented.

"Known as the Transistor, the device works on an entirely new physical principle discovered by the Laboratories in the course of fundamental research into the electrical properties of solids. Although the device is still in the laboratory stage, Bell scientists and engineers expect it may have far-reaching significance in electronics and electrical communications."

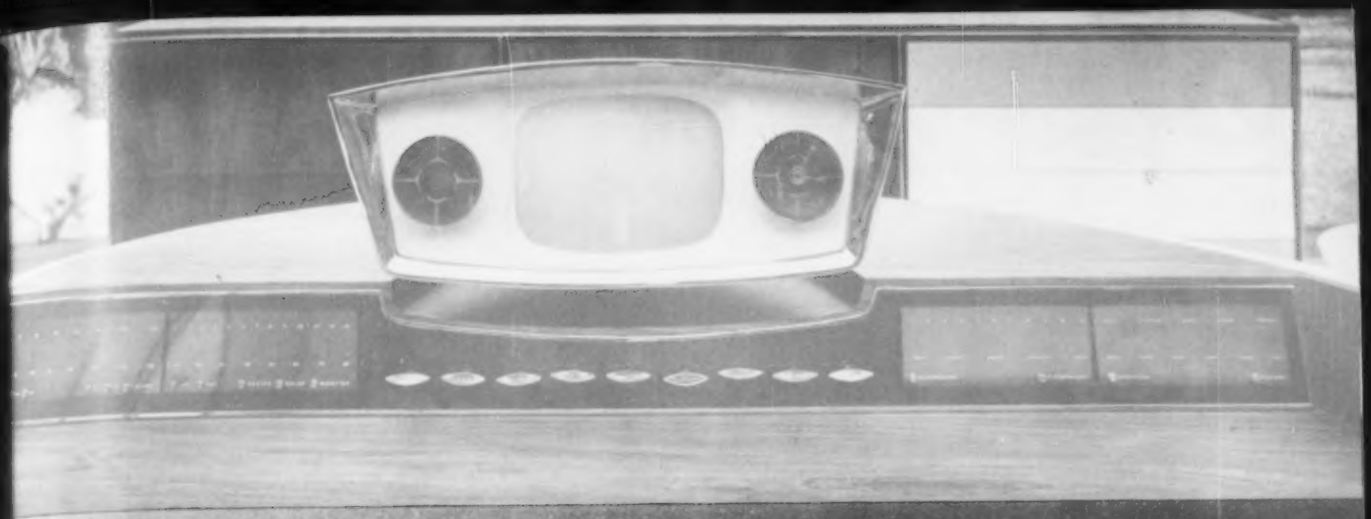
This release was reported in a brief announcement on page 46 of the New York Times. But the impact of the announcement, containing what was without a doubt the most important electronic news of the postwar era, was not lost on commercial tube manufacturers. The vacuum tube was beginning to impede further developments in electronics, the very field it had created. Its bulkiness, fragility, short life and high power consumption were seriously limiting the possibilities inherent in computers and other industrial control equipment. Although for some time there had been rumors that Bell was at work on a solid-state device that would rescue electronics from its plight, the reaction of the tube manufacturers to the official announcement was one of near-panic. They knew that methods of manufacture for a solid-state device would differ as drastically from existing tube production set-ups as do the operation principles of the two devices. When subsequent Bell Laboratories' releases treated the invention with considerable caution, the tube makers' fears subsided for a time; the feeling was that the vacuum tube replacement apparently wasn't all it had been cracked up to be.

(continued on page 90)





A half-century of progress in electronics is demonstrated by the evolution of the electron control valve: the original Fleming Valves of 1905 (replicas are shown at extreme left), followed by a regular vacuum tube, a miniature vacuum tube, and transistor.



Transistor at right shows magnified view of actual size, capped unit above. The 3-lead electron valve is the brain behind some new products: the planning center with rotating tv monitor in RCA Whirlpool's "Miracle Kitchen" on top; Dictograph's hearing-aid glasses for binaural hearing below, among others shown on the following eight pages.

Photo: courtesy Raytheon

Production begins with change of germanium dioxide into metal (at GE), metal purification (at Western Electric), and

But scientists of the major electronic companies knew better than to be intimidated by the kind of reversals that are common with any invention of much worth. In April, 1952, when Bell called a symposium on semiconductors and offered licenses at $25,000 each as an advance on future royalties, all the major tube companies were represented at the conference, and took out licenses. Five years after Bell unleashed the industrial news that was so explosive it couldn't readily be accepted, the transistor went into volume production: companies like Western Electric, GE, RCA, Raytheon, Sylvania and others soon had set up separate semiconductor divisions.

Charged with significance for the giants in industry, to the consumer in 1948 transistors meant little more than a new term to wrestle with. But after only nine years, the consumer feels the effect of this new device in such standard products as portable radios, car radios and dictating machines. Furthermore when the time comes for the consumer to control home operations as easily as he now manipulates a light switch, it will be transistors which will make the electronic miracle possible. And if the transistor promises to influence comfort, its effect on design will certainly extend far beyond the product changes it has promoted so far.

Just what will the new device mean to the man who converts power innovations into usable products — the designer? ID interviewed various experts on the question of the transistor in consumer products and its relevance to design. In answer to our questions, an authority in the semiconductor field, Mr. H. E. Marrows, author of "Transistor Engineering Reference Handbook" (John F. Rider), had this to say:

"A few statistics will convince you that no designer can afford to overlook the promise and possibilities these new devices offer. In 1956 some 13 million transistors were sold in the U. S. I estimate that the figure will reach over 30 million units in 1957. Some 26 manufacturers of transistors are offering about 500 different codes, or models — although, of course, many of these are interchangeable. Other companies make them mainly for their own use or for the use of government agencies only, such as Western Electric."

"How will the 30 million units be used?"

"About 11 million will be used in home entertainment devices such as radios, phonographs and tape-recorders. Communication equipment will use some 5 million. Miscellaneous packages or modules, to be used in computers or instruments, will run about 5 million. Development programs, hearing aids and other miscellaneous uses will take another 5 million. Although I have no knowledge of what military requirements will be, my guess here would be in the order of 5 million. This is a total of 31 million units."

"Apart from the home entertainment devices, how are the transistors being used in the civilian field?"

"To put it in simple terms, let me break the market down this way: 37 companies are currently making home entertainment devices; 32 companies are making instruments, such as oscillators, wave generators, R. F. signal generators, probes, voltmeters, etc.; 32 companies are making package or module units, such as amplifiers, flip-flops, etc. (these are generally made for computers and other large scale instrument systems;) 24 companies are making communication equipment such as PA systems, Walkie-Talkies, telephone repeaters, etc.; 16 companies are making hearing aids; 10 companies are making power converters; 7 companies are making servo amplifiers; 5 companies are making transistor kits; 4 companies are making Geiger counters; 9 companies are making other miscellaneous units. All in all, transistors so far significantly affect products of about 175 firms."

"From the designer's standpoint, will transistors make for concepts that could not be realized before?"

"Very definitely. Applications where tubes were not feasible are now subject to transistor use."

A well-timed accident

To clarify the last statement it is necessary to recall the status of the vacuum tube at the time the transistor came along. To evaluate the significance of the tube, it is important to remember what it has meant to the consumer and to industry.

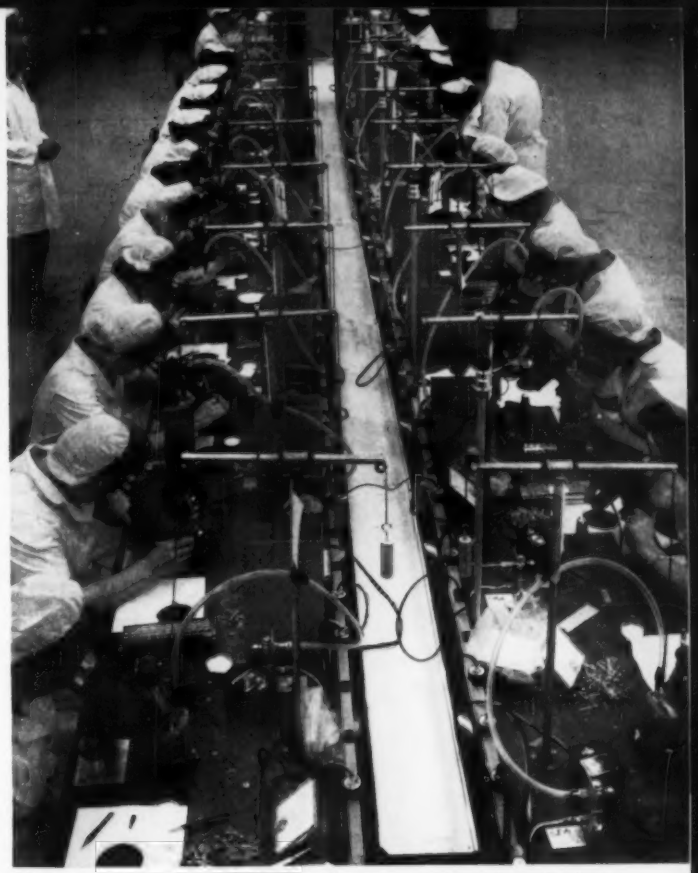
The tube is an electron control valve which has the ability to detect, amplify, modulate and transmit electric signals. It is the brain of any message-transfer circuit, and without it, radio, television, telephone, talking motion-pictures, and other equipment permitting long range transfer of communication, would not have been possible. So vast and varied is the

forming of final ingot to desired consistency (at GE).

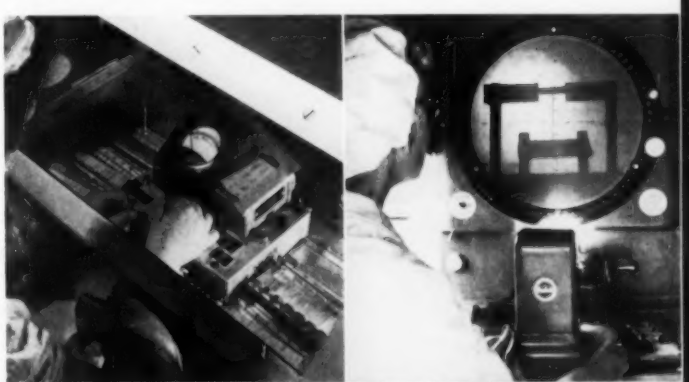
tube's performance ability, that miracles were literally achieved when it was applied to the needs of industry and the military in electronic calculators, and the long range detecting set-ups that created a stir during the war. Circuits developed for the military and applied to industry meant a whole new concept of industrial operations: remote control — control of operations in remote locations with or without the use of closed-circuit television installations; automatic control — control of machine operations by means of a single control panel in power stations, chemical plants and wherever the performance properties of the tube could be employed to detect the need for an operation change and to actuate it. But, with the extension of the tube, it was found to have serious limitations.

Fundamentally, further developments in electronics were hindered by two factors: circuit requirements, and heat. Components that work with tubes to perform a given function — chokes, transformers, condensers, resistors, and switches — had been miniaturized as far as availability of materials and specification requirements would permit, but they could not be eliminated; the power required for tube operation and the heat given by the tube is unaffected by size reduction of the tube envelope. This meant that miniaturization was seriously curtailed: however much every available bit of space might be utilized on a circuit board, the heat given off by the tubes required a certain amount of expansion area or the operation of the circuit would be impaired. On the other hand, making circuit boards smaller and smaller became a *must* with certain equipment, such as multiple function computers or military installations where weight was a factor.

Any electronic equipment capable of performing complex operations is made up of an intricate system of circuits, and these multiply as additional performance is demanded. When every bit of space is crammed with wires and components, problems arise for any business or government agency using a complicated electronic set-up: to prevent and repair circuit breakdowns, maintenance becomes more a puzzle in tracing errors than a mere matter of replacing worn-out parts. Added to these complications was the fact that the reliability of tubes had steadily decreased as the result of increased competition in a crowded field. As tubes

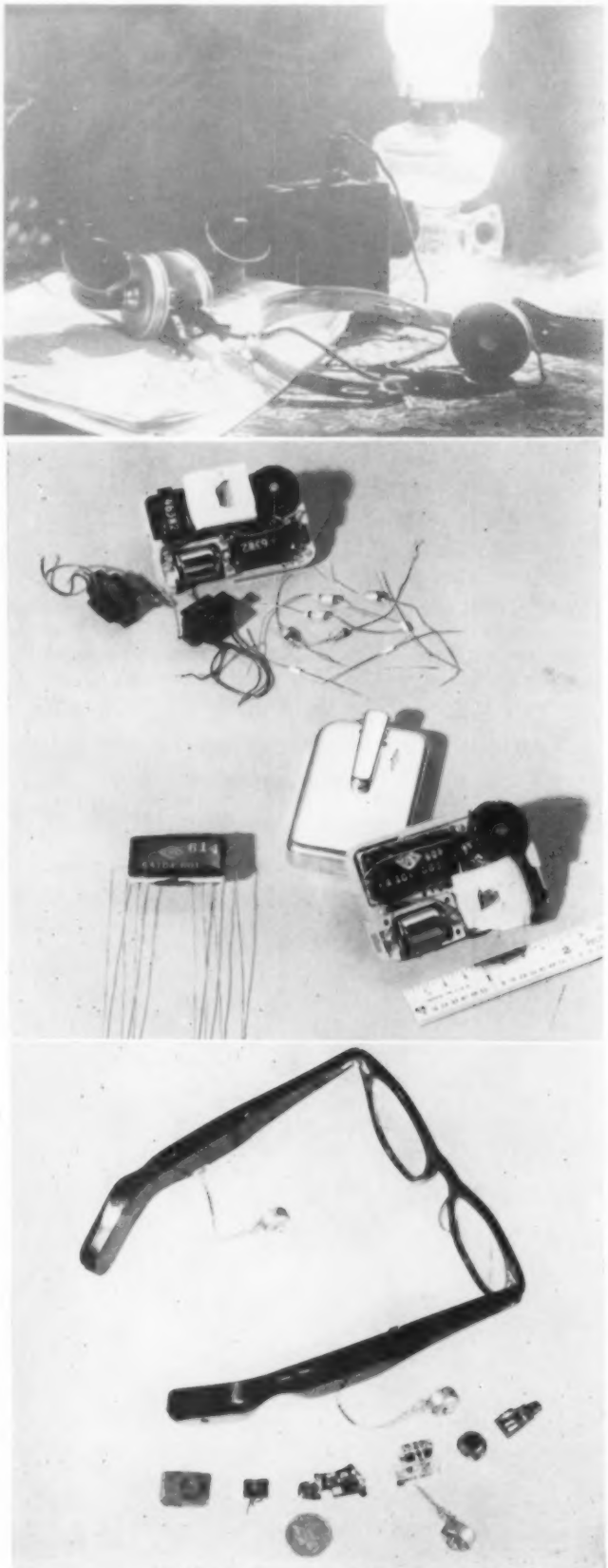


After ingot is sliced into tiny bars, operators fuse leads to bars; assembly is carried out under closely controlled temperature and humidity conditions; before capping, assembly is checked by magnifying projector (at GE's Buffalo Transistor Plant).



Final check of diode with special orientor (at Hughes Aircraft).

Vastly simplified components have given compactness to hearing aids. Today's product bears no resemblance to the clumsy assembly worn about fifty years ago (top picture.) Packaged transistor circuits (lower left in middle picture) now make for simplified assembly and less weight, and further miniaturized parts incorporated in eyeglass frames permit binaural hearing.



Photos: Middle, courtesy Centralab, Milwaukee; others, Dictograph Products.

became cheaper, production control and, consequently, tube reliability suffered. This defect, troublesome even to television owners, was a serious hazard to any business using equipment made up of hundreds, and often thousands of tubes. By 1948, it had become abundantly evident to electronic research scientists that unless the requirements basic to tube operation could be altered, little could be done to remedy the limitations inherent in tube operation. As far as the electronic industry was concerned, the invention of a new electron valve was perfectly timed.

Like the vacuum tube, the transistor (TRANSfer resISTOR) was discovered somewhat accidentally as a result of research in another field. The new electron valve operates on an action theory developed from facts that come from research in the field of semiconductors begun more than thirty years ago. "Semiconductors" are materials whose ability to permit electron flow falls between that of insulators like glass (little flow) and conductors like copper (abundant flow); germanium and silicon — two commonly used semiconductor materials — have been used for some time as rectifiers, and during the war as crystals for detecting microwave signals in radar sets.

At the end of the war a concentrated basic research program in semiconductors was undertaken at Bell Telephone Laboratories. Headed by William Shockley, one of the country's leading solid-state physicists, the group was seeking to answer three basic questions: 1) physically, what is a semiconductor? 2) how does its physical nature produce its observed properties? 3) how does the fabrication and processing of the material affect its physical nature? These were the research objectives, and no specific thought was given to the development of a device that could perform many of the functions of a tube.

It was known from the action of the crystal diode that the electron behavior within a semiconductor material is altered when a pointed wire—catswhisker—is brought in contact with it. During the course of the experiments at Bell, it was discovered that when small electric signals are fed into a second wire placed in contact with the material, the current strength between the first wire and the material is greatly affected. Thus the scientists had literally stumbled upon a hitherto unknown possibility: electronic amplification (control of electron flow) in solid material. Here then was a rival to the vacuum tube, a new, much simpler device that also had the ability to detect tiny signals and greatly magnify them.

Transistor assets and liabilities

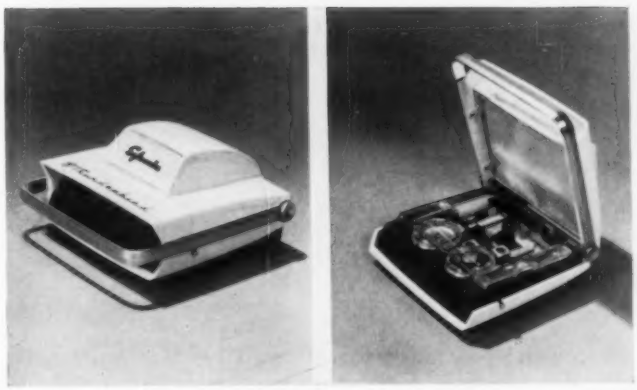
Whatever the shortcomings of the new device — and there were many in the early stages — this much was certain from the start: the basic requirements for

transistor operation differed drastically from those of tubes. Essentially a transistor consists of a minute wafer of specially treated germanium or silicon to which are attached a minimum of three wires. The power required to operate a transistorized circuit may be as little as one-millionth of the power required by a similar vacuum tube circuit. The smallest subminiature vacuum tube takes up about one eighth of a cubic inch in volume; the space occupied by a transistor is about two-thousands of a cubic inch. This means not only that "cramming" incurs no danger — the heat given off by transistors is negligible — but that circuit components can be greatly reduced in size as the result of the cut-down power requirements. Because of their minuteness and simplicity of construction, transistors can be subjected to extremely severe shock without damage; it is fairly well guaranteed that a transistor used in a circuit will never have to be replaced.

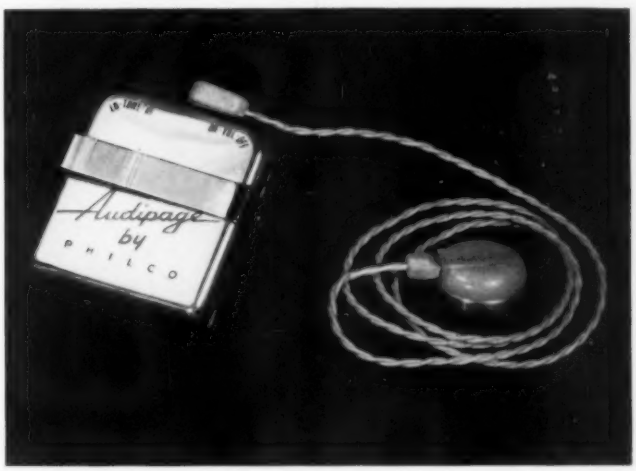
While these distinct advantages were evident from the start, there were some performance characteristics that limited the transistor's application potential in the early stages. These included: high noise level, breakdown due to temperature changes, and a frequency operation not high enough to permit transistor use in television and other circuits operating in the high megacycle range. But with continued research at Bell and other companies in both transistor action and manufacture, many of the early drawbacks were removed. (Transistors are made of material that is first purified, then grown into crystals—see pages 90, 91—then sliced and put through wire and cap assembly.) Compared to the vacuum tube the cost of transistors was very high in the early stages, and although greatly reduced now, still remains above tube costs. But transistor production control has improved rapidly (when first produced the reject rate in some cases was as high as 9 out of 10). Within three years they could be made so that their performance was within twenty percent of specifications, which is as good a production control as had been achieved in fifty years of experience in making tubes, and as transistor consumption increases and the production reject rate continues to be diminished, transistor costs will drop proportionately.

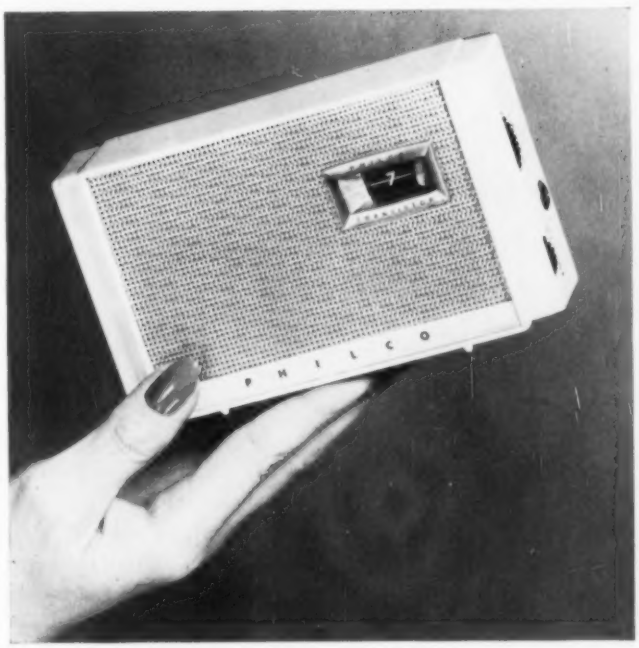
Transistorized future

It augurs well for a new invention if it develops into a group of related products and becomes a field of science while still in its infancy. In less than a decade, three major kinds of transistors have been devised — the point contact, junction, and surface barrier. From them have emerged new circuit theories discussed at numerous engineering conventions and compiled into engineering handbooks and college texts. The three transistor categories (their names derive from their construction) differ in the way they are made, in



Sylvania's portable radio, the Thunderbird, Philco's wireless one-ounce receiver paging device, and Philco's new pocket-size radio (3-9/16" by 5⅞" by 1-11/16") attest to the product portability made possible by transistorized circuits.





physical composition, and in performance ability. Each group includes a variety of types, each yielding different circuit properties. GE, among other major transistor makers, has put out a transistor manual, a guide to company transistor types that is reminiscent of the old manuals for the myriad vacuum tubes. The basic lines for further development have already been drawn. That this new field will go far is indicated by the comments of men who have watched its birth and rapid growth. Said Mr. James E. Keisler, head engineer of GE's Semiconductor Products Department: "We have it on our agenda to put all vacuum tubes out of business." Statistically this seems an objective prediction. Transistor costs have so far undergone a tenfold reduction; they are expected to meet the price of tubes within the next five years, and this will mean a product consumption increase from this year's 30 million to about 300 million units by 1965.

Where will transistors be used?

The generally successful application of transistors indicates that they will keep the customers they have made so far, and that the number of units used by these consumers will increase as more and more products are added to the list of transistorized consumer goods. Along with the giants in semiconductor manufacture—GE, RCA, Texas Instruments Incorporated, Hughes Aircraft, Sylvania—a host of newcomers compete in a market broadly divided into three areas of manufacture: hearing aids, entertainment articles (portable radios, phonographs, tape-recorders, hi-fi and tv) and military and industrial products. That the transistor has won out over the tube in hearing aids is indicated by the transformation of the product: after a gradual size reduction, the awkward hearing aid box has finally been replaced by eyeglass frames containing all the necessary components for binaural hearing (page 92).

In entertainment transistor use will undoubtedly continue until the vacuum tube is replaced altogether. Even in those cases where the space-saving advantages of the transistor cannot result in a drastic redesign of the product because of some large component that is fixed — i.e. speakers or tv picture tubes — the low power drain and long life of transistors will put them ahead of tubes once the price is the same. In communications, military and industrial control equipment, the transistor has proven a boon over and above its operation assets. Some companies — Centralab of Milwaukee is a leader among them — have made use of the transistor's vast life-span, and have incorporated them into standard amplifiers and other circuits in packages not much larger than a postage stamp. This greatly facilitates assembly of complex equipment, computers for example, where use of such packages eliminates the painful assembly of sometimes hundreds of circuits. Applications of transistors in packaged circuits or otherwise will increase in military equipment; the intricate guidance and communication systems of some types of missiles would have been prohibitively bulky and heavy without them. In the telephone system reliability is far more important than cost, and the close production tolerances to which transistors can be held has made possible equipment that can work for years with no attention.

New product concepts, the electronic home

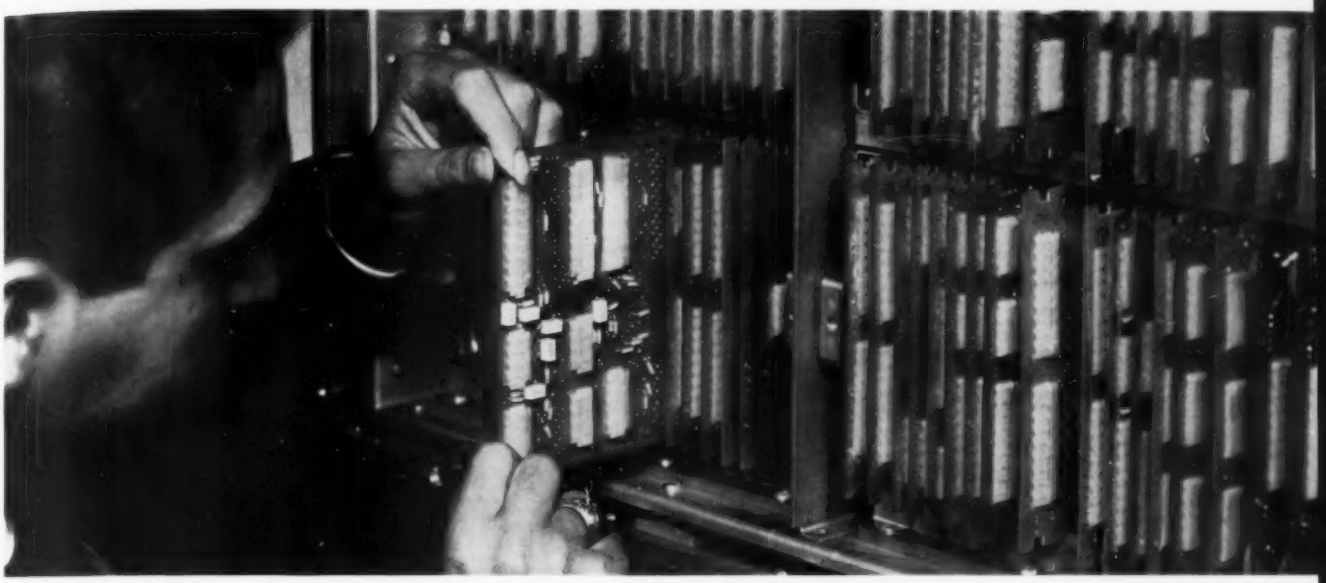
In transistorized consumer products now on the market the new electron valve has greatly altered both design and operating conditions. Without exception, the design change has resulted in miniaturization; but miniaturization has meant more than merely making a fixed product smaller. It has made possible totally new product concepts: binaural hearing in hearing aids; a product portability in home entertainment that could not have been achieved with earlier designs. In all transistorized products, operating conditions have changed. The attention required for overhauling has become minimal: some of Philco's pocket-sized portables run on flashlight batteries that have a life-span of at least 250 hours. (In 1955 Philco also came out with a portable transistorized phonograph; it is reasonable to expect that more will be done by Philco and other manufacturers to bring out phonographs that will run longer and take up less space.)

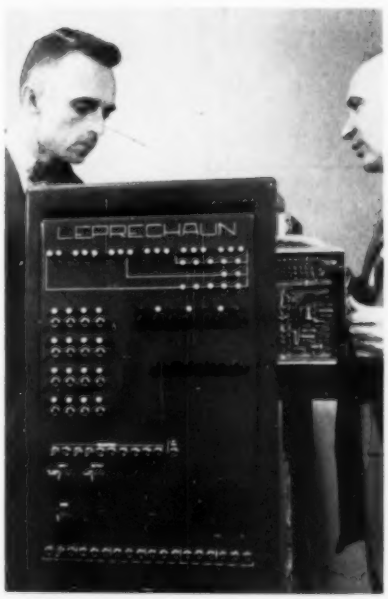
Transistor use has similarly benefited business and industrial products. Peirce Dictation Systems, among other companies, has devised a portable dictation machine (page 95) that measures 8½" by 6½"; intercoms have already become pocket-size (Philco's Audipage, page 93); metering equipment for the laboratory and assembly line is also undergoing "transistorization"; (as these become portable, and therefore more personal, the industrial designer will no doubt be called in to design them.) And transistorization will presumably continue to create new concepts. There is talk of a radio that will play the dual role of plug-in car-radio, and portable to be used anywhere; of a transistorized piano, a toy-instrument that will play through the radio and thereby gain a greatly improved tone. But the radicalism of the nine year old invention will not be fully impressed upon the consumer until the remote and direct control circuits that already exist in industrial and military applications become the norm in home equipment.

Some remote control equipment for the home is, of course, already operative: Motorola has put on the market a wireless remote television tuner (page 97), a small transistorized box that can be used within a radius of twenty-five feet for changing television channels; in RCA Whirlpool's experimental kitchen a

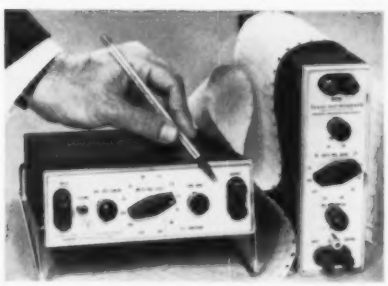
Compactness in computers and other industrial equipment

Transistor use greatly reduced the space volume of Philco's Transac computer, made possible plug-in cards for programming. Transistors soldered into circuits require no periodic replacements.

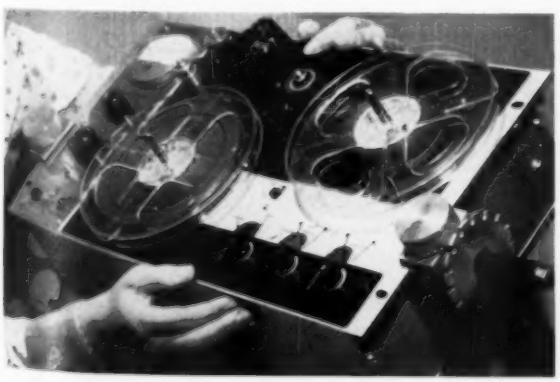




Use of 5000 transistors has made possible the small size and low power requirements of Bell's new electronic brain.



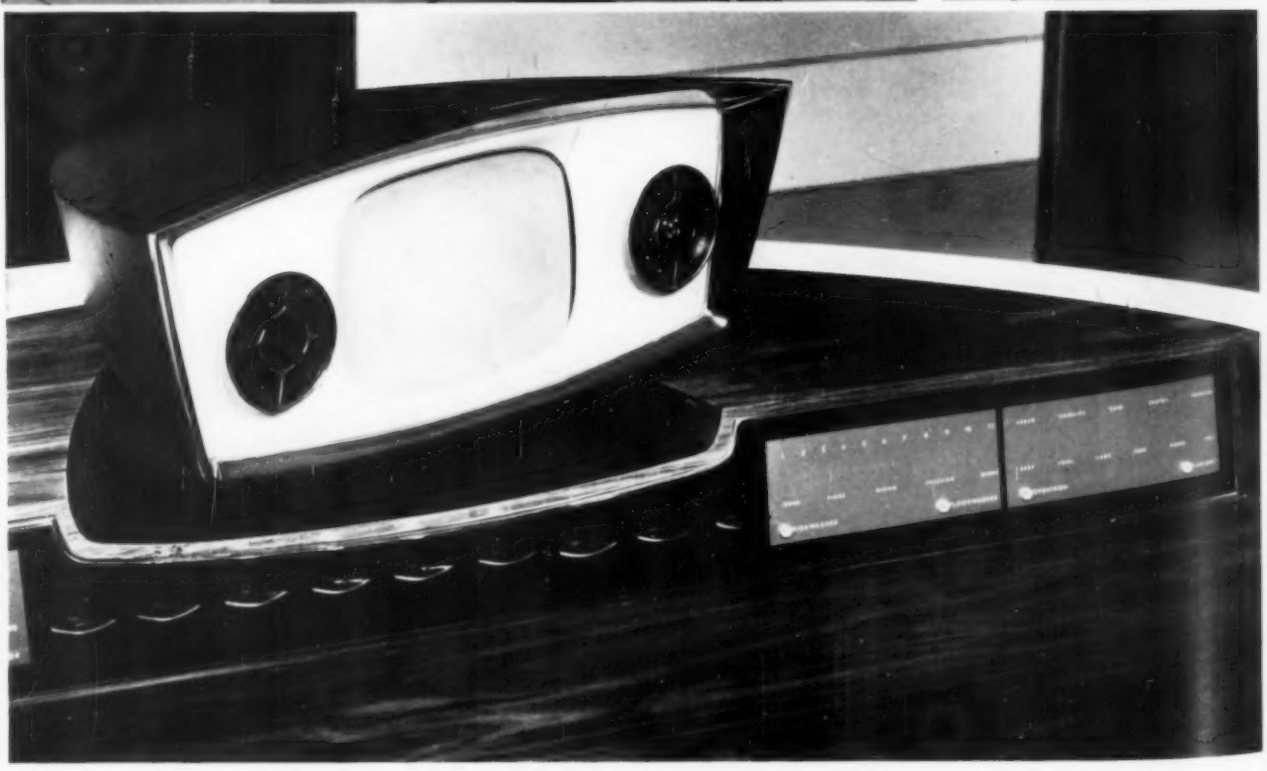
Transistorized industrial metering and control equipment offers reliability and quick stabilization in addition to easy portability. Texas Instruments Incorporated has put out a dc amplifier to be used with small current recorders, that operates from line voltage or battery; shown at left in vertical and horizontal form.



↑ A transistorized dictating machine, by Peirce Dictation Systems, the size of a book and weighing 4½ lbs., operates from self-contained batteries or line voltage. Transistorized record-and-playback amplifier has made for a hum-free size-reduced recorder-reproducer (left) designed by RCA for hi-fi music systems and industrial sound systems.

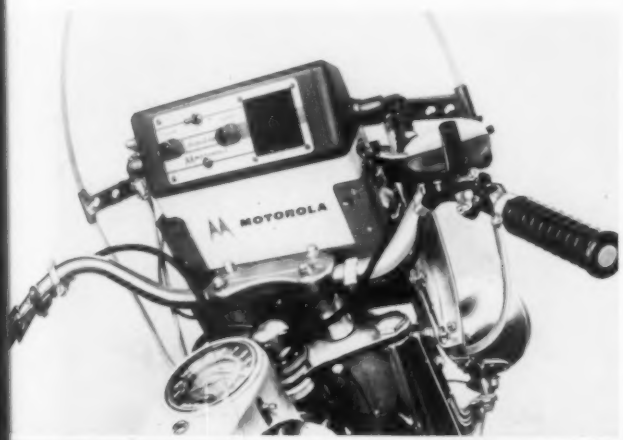
Remote control possibilities

***Low power drain, compactness, high reliability and vast life-span of transistors** will bring "electronic maneuvering" to many home operations. In the RCA Whirlpool "Miracle" Kitchen developed by the Whirlpool-Seeger Corporation, a number of appliances are dispatched and operated by remote control: the serving-cart dishwasher (far left), the mobile floor cleaner (below) among others. All operations are actuated and controlled from the planning center (at bottom), a transistorized monitor board from which manipulations of appliances are controlled by keys and buttons. Sundberg-Ferar were consultant designers.*



number of appliances, the mobile floor cleaner, and serving cart and dishwasher among them (opposite), are dispatched by remote control. (The cleaner, freed of the need to be pushed or pulled, is reduced to a box on wheels.) Since the transistor is a sensing device that can translate sensory signals into action, it is also likely that direct automatic control elements will give certain new features to the operation of some appliances: irons that sense the proper temperature and control it automatically, vacuum cleaners that adjust suction according to the type of surface being cleaned.

Electronic housekeeping will be the transistor's own achievement. Without it, automatic home controls, although theoretically possible, would not be practical. The hundreds of tubes required for automatic home controls would not only consume a prohibitive amount of power and space, but would also demand the frequent attention of maintenance men — at a cost that would far exceed the value. In the transistorized home the single monitor board from which operations are now controlled in the experimental kitchen might be extended to include control of operations throughout the house: temperature control, illumination control, push-button doors and windows, intercommunication — possibly intercom-video — throughout the house and from the house to garage, garden, playground, etc. Another possibility for the future home is a system of indicating lights that could be used as information relays on stoves, washers or almost anywhere in the house to indicate excess temperatures, faulty operation, work-completion, etc. Panels for such systems could easily be powered with a packaged circuit and a small battery that could last a year or two. Humidity and temperature control panels that are expected to operate eventually are already being shown at Monsanto's House of the Future (page 56) at Disneyland.



Wireless message transfer for motorcycles has become a convenience made practical by Motorola's new "Dispatcher" — a transistorized two-way radio with very low power drain. Another new transistor application — Motorola's "Transituner" — permits remote operation of tv channels within twenty-five feet of set.

Research continues

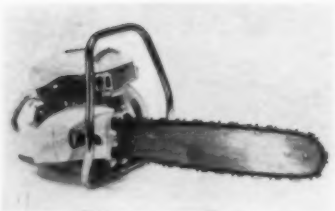
Developments in semiconductors — materials as well as devices — continue at a rapid pace. In addition to work with the transistor, experiments are being carried on with other devices, notably the diode used in detector circuits, and rectifiers which will eventually replace large transformers. Raytheon recently announced a new device, the *spacistor*, operating on a new action theory: A semiconductor device, it will be made of a variety of semiconductor materials which will not have to go through the costly process of purification. The spacistor is expected to operate at temperatures and frequencies far above those of the transistor. RCA also reports experiments with a new semiconductor compound, gallium arsenide, which also will push back the "heat barrier" now limiting the transistor's performance in high-temperature uses.

It is an interesting comment on our time that as things get smaller they make possible a bigger and bigger job — in this case a more monumental undertaking than could ever have been attempted before. The compactness of the equipment the satellite will take along on its trip around the earth could not have been achieved without the new miniature valves; the data recording of missiles is largely their work, and when — in the near future — the satellite is launched, it will be the work of electrons moving in tiny bits of semiconductors that will make available space information hitherto unknown to man.

Design review

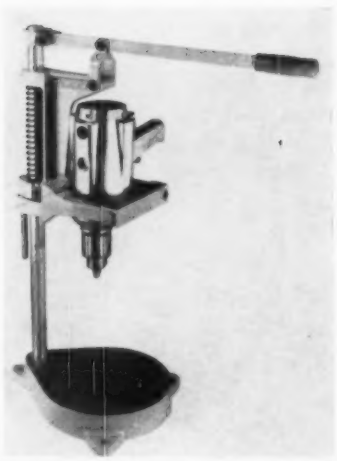
Stanley power tools: Stahl rounds handles for more comfortable versatility

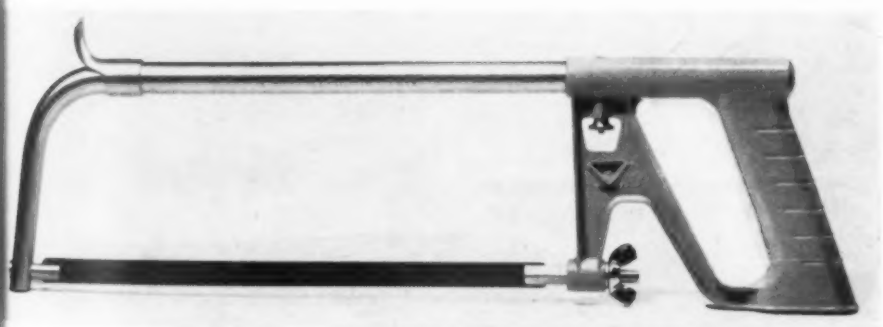
Heavy duty industrial power tools—½" and ¼" drills and 8" circular saw—are new designs by Gerald Stahl Associates for the electric tool division of the Stanley Works. The saw is the first of this size and the largest on the market. Despite their size and purpose, these are hand tools which are used in many different positions on building jobs. Weight, an important factor in worker comfort, is kept to a minimum by the use of aluminum alloy die-cast housings. The shape and position of handles and their relation to the weight and balance of the tool were major points of design study and testing for maximum ease of handling. Pistol-shaped smaller drill has ribbed, continuous-surface handle for secure hold in all working positions; larger drill can accommodate two hands when necessary. Overheating, a hazard for machines in constant use, is avoided by carefully conceived ventilating system; saw has new rear-port vent system. Many hours of on-the-job study were spent in checking workers' reactions to the tools in an effort to design a promise of rugged dependability and reliable performance into them. Saw i $89.95; ½" drills from $54 to $100; ¼" ones, $33 to $61.



↑ **Lighter** than previous models, the Pioneer RA chain saw for heavy duty cutting has "snap-off" shroud which can be removed in five seconds to expose entire engine for quick repair. Finger-tip controls operate throttle, which is positioned to prevent accidental operation. Enclosed ignition system is weatherproof. Made by Pioneer Saws. $260.

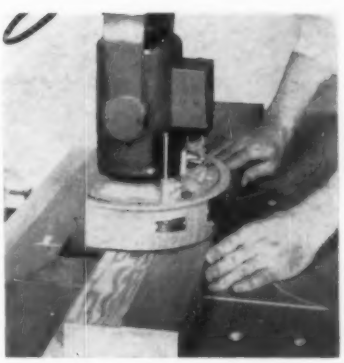
→**Cummins Portable Tools** introduces to the home craftsman a new vertical drill press for the ½" drill and a sander. Exclusive lock lever simplifies raising and lowering carriage of drill press by eliminating need for wrench, tightening bolts. Neoprene-coated handle or steel carriage bar resists wear; maximum distance between chuck and table is 9". $29.95. With turn of key, sander can be switched from orbital to straight-line motion; making this the first machine, says its maker, to provide two sanding actions in one piece of equipment. The first is for preparing raw wood, the second for finer finishing. 3-position auxiliary knob for easy grip during flush sanding. $49.95.





↑ **Tubular frame** hack saw is straightforward, professional looking hand tool for home use. Adjustable to 10" or 12" blades, it has comfortable grip, guard to protect knuckles. Frame is heavy gauge ⅝" tubular steel, chrome plated; handle die-cast aluminum with gray enamel finish. Designed by Garth Huxtable in collaboration with engineering department of hand tool division of Millers Falls Co. with simplicity and economy of material in mind. $2.75.

→**Adjustable** metal tool guard for De Walt radial-arm type woodworking machines protects hands by covering cutting parts on all sides and on top. It fills a need for protection when the direct-drive motor is used in a vertical position, as in the case in rotary surfacing and grooving operation. $11.95.

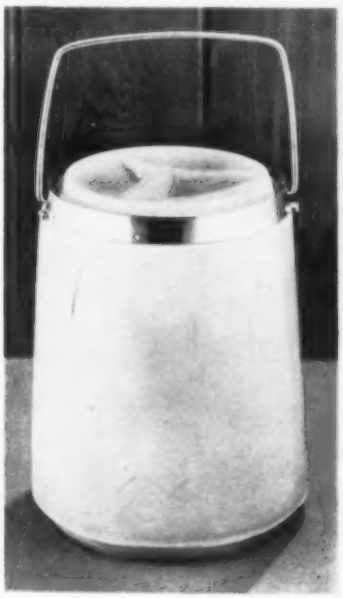


↑ **Lucky Lager beer,** brewed and distributed on the West Coast, has a newly designed trademark on all bottle labels and caps, cans, six-paks and cartons. The work of Walter Landor & Assoc., this redesign is the first phase of a continuing visual identification program under Landor which will include delivery trucks as well as display and promotional material. While the original brand image — the red X — has been retained, it has been softened by a background of golden hop leaves, surrounded by bands of opaque white. Because good beer depends on an ancient art, the label does not attempt to be sleekly modern, but suggests the old-world heritage of brewing skills. In adapting it to cartons — a turquoise panel with waving barley was added — a light, easy-to-carry effect was the goal.

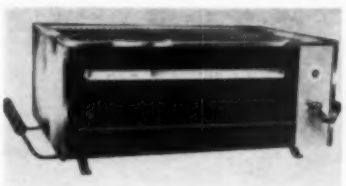
← **More efficient** and sanitary containers for Johnson & Johnson's dental floss and Dentotape are the work of Irvin J. Gershen. Replacing the old cylindrical glass and metal containers, these injection-molded polystyrene containers are a shape which will not roll when toppled. To prevent snarling, floss is extracted through metal vent plate from vertically revolving plastic spool fitted on post molded into container. Colors—white with pastel blue top for floss, navy blue for Dentotape—were chosen to reflect both pharmaceutical and cosmetic purpose of product.

↓ **Inflatable** Krene vinyl sheeting makes 30 inch square beach table when inflated, keeping food nearly a foot off the sand. To and from the beach it serves as a carry-all that holds up to 20 pounds. Made by Aquador Plastics, Inc.; $4.98.

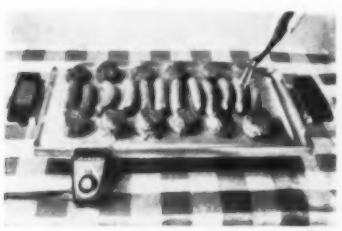
↓ **Condensation** does not form on the outside of the Polaris Ice Pak — a one-piece polyethylene container with fiberglas insulation — claims its maker. Bucket fits tightly into aluminum base, has chrome-plated aluminum top. Designer: John J. Olson of Brown & Bigelow.

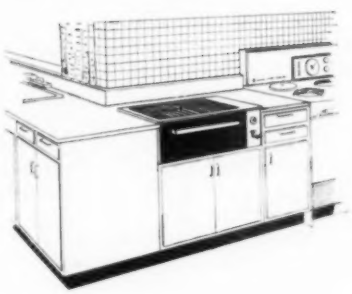


↓ **Wearever** has two new items for the outdoor chef: 4½ qt. dutch oven and 19" by 11" griddle that can also serve as tray. Both are equipped with copper-colored handles, made of extra-thick aluminum to withstand rugged outdoor use.



↓ **Heat-resistant** handles and legs (of phenolic plastic) on Casco portable electric griddle permit moving it when still hot. 200 sq. in. surface is polished to prevent sticking; excess grease is collected in channels along each end. $27.95.





↑ **Appliance-styled** charcoal barbecue grille by Majestic is for cookout enthusiasts who cook in: it is designed to be built into a cabinet or counter top in the kitchen. Steel fire pan is controlled by crank in front. Front is black enamel, top stainless steel.

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

Sylvania unwraps three contenders in the flat-screen tv race

Sylvania Electric Products has taken the wraps off three new methods of producing images on flat screens, all of them contenders in the rush to develop a final prototype for the household tv screen of tomorrow. Although industry's public estimates of how long it will take to get flat-screen tv range from ten to twenty years, tv manufacturers privately admit that a prototype may appear by 1960. Sylvania's engineers are cautious, but concede that at least three possible areas of application have been opened: military—radar display, air defenses, air traffic controls; industrial—in computers, for quality control, temporary storage of visual data; flat wall-tv.

The three applications involve respectively: visual image production, light storage, image conversion.

The three types of image production are all made possible by a combination of electroluminescence and photo-conductance, and bear the group name of "Sylvatron." (*Electroluminescence* is the production of light by direct excitation of certain phosphors placed in an electrical field. The same principle is used by Sylvania in its "Panelescent" lamp, said to be the only device on the market which produces light by this method. *Photo-conductance* is the effect of light on the flow of electricity through a solid.)

The "Sylvatron" panels are electroluminescent glass or metal squares controlled by a photo-conducting element which enables them to produce both light and images. At present, there are three basic types of these devices, and many combinations of them are being studied: 1) an electroluminescent panel on which the position of a mobile dot of light can be manipulated electrically. 2) a display panel which produces optically the track of a mobile spot of light. The image thus created can be held or "stored" indefinitely in visible form on the panel. 3) an electroluminescent panel which can reproduce optically a motion picture with good resolution and rapid response.

Thus far, a two-inch and a four-inch square have been produced in the laboratory. The only size limitation is the size of the production machinery itself. Larger units are already being developed for military use. While the device is still in the laboratory stage, it is considered to be advanced enough for military use. Manufacturer: Sylvania Electric Products Inc., 1740 Broadway, New York.

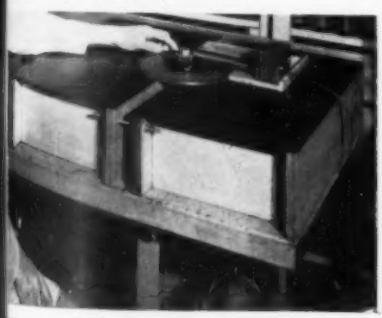
Magnets replace moving parts

The Bussey Research Laboratories of Rockford, Illinois, are doing advanced work in applied magnetics which should be of interest to designers and manufacturers of computing, data-processing, and control instruments. Preliminary work has reached a point where the laboratories have announced that their research points to a number of innovations that may make possible the elimination of moving parts and mechanisms employed in current designs. The benefits of this research are open to a limited number of sponsoring firms.

The Laboratories point to these possibilities: sound recording and reproduction without moving parts; pictorial and other visual recording in magnetic replica without moving parts; recording, storage and reproduction of information, either digital or of an analog nature, without moving parts; circuit selection and commutation by magnetic methods without mechanical switching and relay contacts.

The wide potential applications of this research are obvious. The exact methods that have been devised by the Laboratories are not revealed.

Manufacturer: The Bussey Research Laboratories, Rockford, Illinois.



Plane with detachable pod

Convair's B-58 Hustler has been called a suave plane. The addition of a detachable "pod" slung under its fuselage may not increase its reputation for suavity but it does give the plane a unique striking power: the pod can be dropped to lighten the plane after its contents—a bomb or fuel—have been put to use and there is no necessity to carry the extra weight of a fuel compartment on the home flight. Bulky reconnaissance equipment can be transported, then jettisoned to reduce overall weight if necessary. Exact details of the "pod's" versatile military uses are hidden behind top secrecy, but this general principle of weight saving on the homeward trip is apparent in the design. The result is a delta-wing aircraft that can perform a greater variety of missions.

Manufacturer: Convair Division, General Dynamics Corporation, 445 Park Avenue, New York 22, New York.

Miniature-circuit battery

A miniature dry cell battery, said to be practically indestructible, and which can be recharged for years, has been developed by the Naval Ordnance Laboratory at Silver Springs, Maryland. Designed to supply power to miniature electronic circuits, it is simple in construction and lends itself readily to mass production methods, according to its inventors, Monroe B. Goldberg and Herbert B. Reed.

Called the XA-108, it was built primarily to power recently developed electrochemical control units used in the brains of underwater mines. It can be adapted for use in transistorized hearing aids, walkie talkie receiver-transmitters, air navigation systems, and personal radios.

A single cell from this mighty midget delivers 9/10 of a volt, as compared with approximately 1½ volts obtained from a conventional dry cell. Though no larger than a man's wrist watch, it has a capacity of 1½ ampere hours.

Banks of the cells can be connected in series or parallel through use of simple plastic plates containing contacts which are slid over the face of the battery. Voltage or ampere hours can be raised to a higher level in this manner.

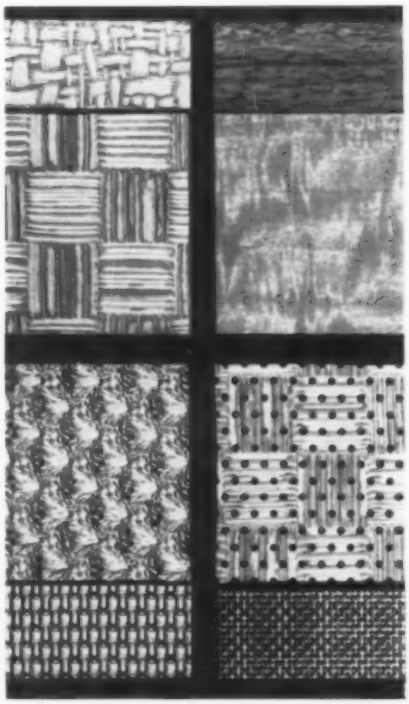
Developer: Naval Ordnance Laboratory, Silver Springs, Maryland.

Adhesive for urethane foam

The Compo Chemical Company has developed a new adhesive AV24600 for laminating and combining urethane foam to many types of surfaces. It can be applied by conventional methods and works for both pressure-sensitive and heat sealing operations. The adhesive resists water, mold, fungus, and weathering, and the resulting bonds permit full machining operations.

AV24600 is a general purpose adhesive to adhere urethane foam to other foams, wood, fabrics, metal and many other materials used in the fabrication of urethane foam into manufactured products. Its applications will include cushioning, sound conditioning, carpet underlay, packaging, and shock absorbancy uses.

Manufacturer: Compo Chemical Company, Inc., 125 Robert Road, Waltham 54, Massachusetts.



New plastic does sheet metal jobs

A new plastic two-ply laminate, Pearsonite, is said to replace sheet metals in a variety of applications. The plastic backing is an undisclosed member of the vinyl family, appearing in this country for the first time. Many finishes can be vacuum metallized to the underside of a mylar cover-film forming the top ply of the finished laminate. The material has the workability of light gauge sheet metal. It takes a number of surface indentations giving it a three-dimensional quality and is available in bright metallic, multi-color or wood veneer finishes. Perforated patterns are also available. The price of Pearsonite is said to be roughly half the cost of the conventional sheet metals of light gauge which it is designed to replace.

There are over 3000 variations in color, finish, texture, gauge, and perforation pattern. Supplied in rolls of 40" to 48" wide and up to 100 yards long, it can also be obtained in large production-size sheets.

Pearsonite can be worked with conventional tools that are used to fashion sheet metal, other plastics, fiberboard or wood. It can be sawed, punched, die cut, pressure-formed, riveted, stapled, sewn, cemented, heat sealed.

Manufacturer: Metallic Plastics Corporation, 27-10 44th Drive, Long Island City 1, New York.

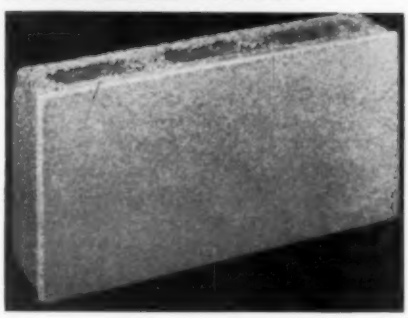
Cinder blocks with plastic faces

The new Inorganic Research Center of Monsanto, outside of St. Louis, Missouri, is a showcase for a number of plastic construction materials including a polyester-faced cinder block for exterior or interior walls, and foundations. Called "Spectra-Glaze" blocks, they consist of a thermo-setting resinous binder combined with glass silica sand. Pigments, color granules, or both can be used to add color and decorative characteristics to the facing of the block, manufactured in a choice of three surface styles with a range of colors in each style.

An important characteristic of the new blocks is their light stability: they resist color degradation. The results of accelerated tests (the blocks have had in-use testing of three year duration) are said to show no fading or other color changes.

The blocks are conventionally manufactured and the glaze applied after they are formed. The resinous glaze compound flows into the pores of the block, providing a firm anchorage that makes the glaze an integral part of the block.

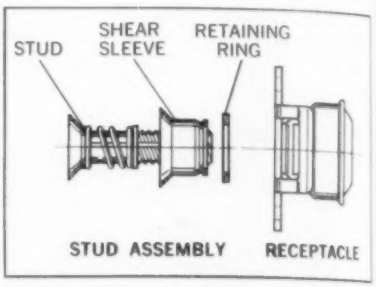
Manufacturer: Monsanto Chemical Company, 445 Park Avenue, New York 22, New York.



New fastener for aircraft

Waldes Kohinoor, Incorporated have patented a new "quick action" stressed-panel fastener that has immediate application to aircraft and missiles. Known as the Waldes QAF, the device is intended for use on structural load-carrying panels in aircraft, guided missiles and other applications where quick access to service areas is required. It locks in less than one-half torque-free turn and compensates automatically for sheet separation resulting from warpage or deformation in the panels being secured.

The fastener has already been used on a B-17 structural fuselage panel during flight tests conducted by the U.S. Air Force. It is said to exceed the National Aircraft Standard No. 547 for strength, and it conforms to the airframe industry's so-called "idiot proof" operating requirements.



The fastener is said to be vibration-proof and have a tensile load capacity of 4,000 pounds. It withstands operating temperatures as high as 550°F. The fastener is strip proof and cannot be cross-threaded. Panels being secured may be adjusted without disengaging.

Manufacturer: Waldes Kohinoor, Incorporated, 47-16 Austel Place, Long Island City 1, New York.

Spray gun urethane coating

A special polyurethane formulation for spray gun coating of flat or contoured surfaces, fabricated objects, or assemblies has been announced by the American Latex Products Corporation under their tradename of Stafoam. The foam ingredients are applied with De Vilbiss catalyst spray equipment to uncoated surfaces. The 1900 series Stafoam will foam-in-place to any thickness, it is said, from one-eighth to 2 inches, forming a surface bond stronger than the material itself. Densities of the foam range from 2 to 20 pounds per cubic foot.

Manufacturer: American Latex Products Corporation, 3341 West El Segundo Blvd. Hawthorne, California.

Manufacturers' Literature

Acrylic Sheets. Cadillac Plastic & Chemical Co., 15111 Second, Detroit 3, Michigan. 12 pp. Bulletin contains information on handling, machining, forming, cementing and annealing of Cadco extruded acrylic sheets. There is also a table of properties and light transmittance charts, including a comparison with cast sheet.

Aluminum Foil Wire Markers. North Shore Nameplate, Inc., 214-27 Northern Blvd., Bayside 61, N. Y. 2 pp., ill. Catalog sheet describes properties of new line of aluminum foil wire markers.

Capacitors. Industrial Condenser Corporation, 3243 N. California Avenue, Chicago 18, Illinois. 12 pp., ill. A general information bulletin describing Royalitic capacitors, including performance graphs, features and specifications.

Caps and Plugs. Shurclose Seal Company, 3000 East Grand Boulevard, Detroit 2, Michigan. 4 pp. Catalog describes Shurclose's new protective closures. Complete specifications are given for both rubber and plastic closures for the protection, sealing or masking of threaded parts, pipe ends or tubing.

Clamp-N-Jack System. Universal Vise & Tool Co., Parma, Michigan. 8 pp., ill. Catalog 557 describes uses of the clamp-n-jack system and gives specifications.

Corrosion Proofing Data. Pennsalt Chemicals Corporation, 3 Penn Center, Philadelphia 2, Pa. 8 pp., ill. Manual contains tables giving detailed information on Pennsalt's line of corrosion proofing cement mortars, interliners, protective coatings and linings.

Counter Revolution. Armstrong Industrial Div., Armstrong Cork Company, Lancaster, Pa. Film describes a new vinyl plastic for counters and wall surfacing of interest to manufacturers of furniture, mobile homes and fabricators of counter and sink tops. Arrangements for screenings may be made.

Designer's Aluminum Bibliography. Aluminum Company of America, Alcoa Building, Room 799, Mellon Square, Pittsburgh 19, Pa. A complete listing of Alcoa literature and motion pictures of interest to designers and design engineers. Final pages of the booklet include forms for ordering literature.

Dial Indicators. Petz-Emery, Inc., Pleasant Valley, N. Y. 1 p., ill. Bulletin 557 describes company's newly-developed "Golden Em-re" line of dial indicators.

Electrical Boxes and Cabinets. Spring City Electrical Manufacturing Co., Spring City 59, Pa. 24 pp., ill. Catalog 10 shows cast metal junction and pull boxes, conduit boxes, hinged cabinets and explosion-proof housings. Cut-away drawings and a section on specifications and requirements of electrical enclosures are also included.

Expansion Joints. The Garlock Packing Company, 408 Main Street, Palmyra, New York. Bulletin AD-137 describes rubber, neoprene and Teflon-lined expansion joints, their construction, sizes and uses, and the characteristics and limitations of seven styles of expansion joints and flexible couplings.

Filters for Aviation Industry. Cuno Engineering Corporation, Meriden, Conn. 6 pp., ill. Folder describes newly-developed micro-magnetic filters that trap sub-micronic ferrous particles and provide mechanical filtration of 10 microns for airborne applications.

Manufacturers' Literature, cont.

Flow Rate Control. Industrial Sales Division, Hays Manufacturing Company, Erie, Pa. 4 pp., ill. Bulletin 237 gives a flow chart, dimensional information and cross-sectional illustrations of a new flow rate control known as "Flush-Flo" backwash control.

Heat Treating Alloy Fabrications. Wiretex Manufacturing Co., 10 Mason St., Bridgeport, Conn. 16 pp., ill. Catalog M-7 lists heat treating fixtures designed to meet industry's need for alloys that must be used in high temperature ranges and withstand extreme corrosion conditions.

Heavy Duty Air Units. J. E. Watkins Co., 307 Lake Street, Maywood, Illinois. 4 pp., ill. Bulletin F-1 describes heavy duty air units for blast freezers or holding freezers. Standard sizes are listed from three to 15 tons, with an air range of 6° and a temperature difference of 13° between entering air and refrigerant.

High Temperature Insulation. Sales Promotion Dept., L.O.F. Glass Fibers Company, 1810 Madison Avenue, Toledo 1, Ohio. 4 pp., ill. Folder WMF-2 contains data, including insulating efficiency and resistance to vibration properties, on lightweight micro-quartz and glass micro-fibers high temperature insulation.

Hot-Punching Laminated Plastics. Continental-Diamond Fibre Corp., Newark, Delaware. Bulletin outlines acceptable methods for heating laminated plastics for best punching practice.

Molding Line. Reed-Prentice, 677 Cambridge St., Worcester 4, Mass. 4 pp., ill. Automatic injection molding line is described.

New Mechanisms for Animated Films. The Animation Equipment Corporation, 38 Hudson Street, New Rochelle, New York. 8 pp., ill. A brochure describes design features of integrated animation units and explains how such mechanisms provide maximum accuracy, versatility and speed in film production.

Packaging Materials. Packaging Parade, 22 E. Huron St., Chicago 11, Illinois. 53 pp., ill. A listing of every basic product used for packaging from paper, the oldest, to polyvinyl alcohol, the newest. Each material is examined for its uses and limitations in packaging, its printing and sealing characteristics and its physical and chemical properties.

Plastic Molding. Waterbury Companies, Inc., Waterbury 20, Conn. 4 pp., ill. Brochure describes their facilities for compression, transfer and injection plastic molding and their associated operations of mold making, engineering and design, research and assembly.

Plastic Tooling Bibliography. American Society of Tool Engineers Research Fund, 10700 Puritan Avenue, Detroit 38, Michigan. 46 pp. Compiled by Orville D. Lascoe, professor of industrial engineering at Purdue University and co-sponsored by the Bakelite Company, Ciba Company, Incorporated, the Marbelette Corporation and the Shell Chemical Company, this paperbound book contains 254 references and abstracts from every major work concerning plastic tooling since its inception.

Pressure and Temperature Instruments. Fischer & Porter Co., 212 Jacksonville Road, Hatboro, Pa. 16 pp., ill. Catalog introduces the company's new small-case instrument line for indicating, transmitting and controlling temperature and pressure.

Books, continued from page 8

which must be performed as part of design procedure. Acoustical design procedure is then outlined with check lists for a number of common building types. According to the authors' preface, the book is meant to be "an acoustical handbook so that he (the architect) will not have to hire somebody outside his own shop to do his acoustical planning, except where the problems are complex or acoustics the determining consideration in design." There is no doubt that this book will prove valuable as an eye opener and a general guide. Unfortunately, the clarity and logic of the order of subjects is not reflected in the makeup of each chapter. A random mixture of text with more or less related photographs and charts, some of which are used as illustrations and some as computation tables, makes the discussion hard to read. Although the book is profusely illustrated, some of the photos and drawings are not relevant, and some are so badly drawn they are impossible to follow. In attempting to take the mystery out of acoustical design by the informal mixture of discussion and hand-book data, the authors have created a helpful but somewhat diffuse and clumsy tool. A clearer organization of text and technical data and a more direct layout would have been welcome.

—Paul Mitarachi

Recent Books

THE SELLING POWER OF PACKAGING *by Vernon L. Fladager. McGraw-Hill Book Company, Inc., New York.* 132 *pages.* $3.50.
A survey of packaging today and its impact on sales, merchandising, and business.

QUALITY CONTROL FOR PLASTICS ENGINEERS *edited by Lawrence M. Debing. Reinhold Publishing Corporation, New York.* 142 *pages, index.* $4.95.
Sponsored by the Society of Plastics Engineers, this is the first in a series on technical aspects of plastics. It assumes that the reader has no previous knowledge of statistical quality control and explains the use of these procedures in achieving the highest standards of performance.

EARLY ELECTRICAL MACHINES *by Bern Dibner. Burndy Library, Norwalk, Connecticut.* 57 *pages, illustrated.* $1.50.
This is a brief but interestingly illustrated survey of the inventors, experiments, and apparatus of the 17th and 18th centuries that led to the emergence of the electrical age.

MECHANICAL DESIGN FOR ELECTRONICS PRODUCTION *by John M. Carroll. McGraw-Hill Book Co., New York.* 348 *pages, bibliography, index, illustrated.* $6.50.
The book describes the translation of electronic breadboard circuits into a finished item.

LET ERMA DO IT *by David O. Woodbury. Harcourt, Brace and Co., New York.* $5.00.
A painless and non-technical introduction to automation and the machines of automation.

MANAGEMENT FOR TOMORROW: *Eighth Annual Conference Proceedings of the Philadelphia Chapter of the Society for Advancement of Management. Chilton Co., Philadelphia.* 179 *pages.* $6.00.
A collection of papers on broad management principles and problems.

SELLING COLOR TO PEOPLE *by Faber Birren. University Books, New York.* 219 *pages, illustrated.* $7.50.
Discusses commercial uses of color in advertising, television, packaging, etc.

INDUSTRIAL DESIGN, *vol. 6, no. 2, edited by Jiro Kosugi. Gihodo Publishing and Printing Co., Ltd., Tokyo, Japan.* $3.77.
Concerned mainly with Japanese designs for automobiles, scooters, and trucks. Text in Japanese.

Classified Advertisements

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NEWLY RENOVATED AIR CONDITIONED GROUND FLOOR THROUGH, *in Murray Hill near Park Ave. for architect, graphic designer, etc, to share with product designer. Completely private space available, can share receptionist if desired, reasonable rent, MU 9-5129.*

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Index to Advertisers

For Your Calendar

June 29-September 30. "Forms and Colors in the Home," an exhibition of furniture, lighting, fabrics, etc., at Villa Olmo, Como, Italy. The exhibit will present the most advanced thinking of Italian architects, designers, painters, sculptors, and maufacturers.

July 27-November 4. The eleventh International Triennial Exhibition of Modern Decorative and Industrial Arts and Modern Architecture will base its program on the themes: 1) relationship of the arts, 2) contemporary architecture, 3) art production and industrial design. The address is, as always, Milan, Italy.

July 30-September 22. In recognition of the exceptionally high level that Swiss graphic art has reached since World War II, an exhibit of the work of 12 Swiss graphic designers will be shown at The Institute of Contemporary Art, 230 The Fenway, Boston 15, Massachusetts.

September 9-13. The Instrument Society of America, devoted to the technology of instrumentation and automatic controls, will convene for its 12th Annual Instrument Automation Conference and Exhibit, at the Cleveland Auditorium, Cleveland, Ohio. About 500 exhibits are scheduled and some 100 papers will be delivered.

September 12-22. The National Furniture and Home Furnishings Show will be held at the Coliseum, New York.

September 17-18. "Plastic Materials for Roof Construction" will be the topic for the fourth meeting of the Plastics Study Group of the Building Research Institute, the technical society of the building industry. The place is Washington University, St. Louis, Missouri.

September 18-24. An International Design Congress will be held in Darmstadt, Germany, under the sponsorship of the Frankfurt Industrial Design Organization. The theme of the Congress will be "The Creation of Good Design and its Acceptance by the Public."

October 14-18. The National Hardware Show will be held at the Coliseum, New York.

October 16-20. The National Meeting of the American Society of Industrial Designers will be held at the Ojai Valley Inn, Ojai, California.

October 24-25. The Aircraft Electrical Society will conduct its annual display of the latest aviation electrical products in the Pacific Auditorium, Los Angeles, Cal.

October 28-31. The Third Trade Fair of the Atomic Industry will be held at the New York Coliseum, New York.

October 28-November 1. The National Business Show will be held at the Coliseum, New York.

October 31-November 1. Third Annual Technical Conference of the Electron Devices Group, Institute of Radio Engineers, will be held at the Shoreham Hotel, Washington, D. C. Papers will cover developmental techniques and devices, including electron tubes and transistors.

November 1-4. Third Creativity Conference, sponsored by the Boston Institute of Contemporary Art, will be held at Arden House, Harriman, New York. Registration may be made at the Institute, 230 The Fenway, Boston 15, Mass.

December 1-6. There will be a design engineering conference held in conjunction with the annual meeting of the American Society of Mechanical Engineers, the Palmer House, Chicago, Illinois.

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Industrial designers are finding a wealth of inspiration in the handsome textures and exciting colors of TERSON and TEREK.

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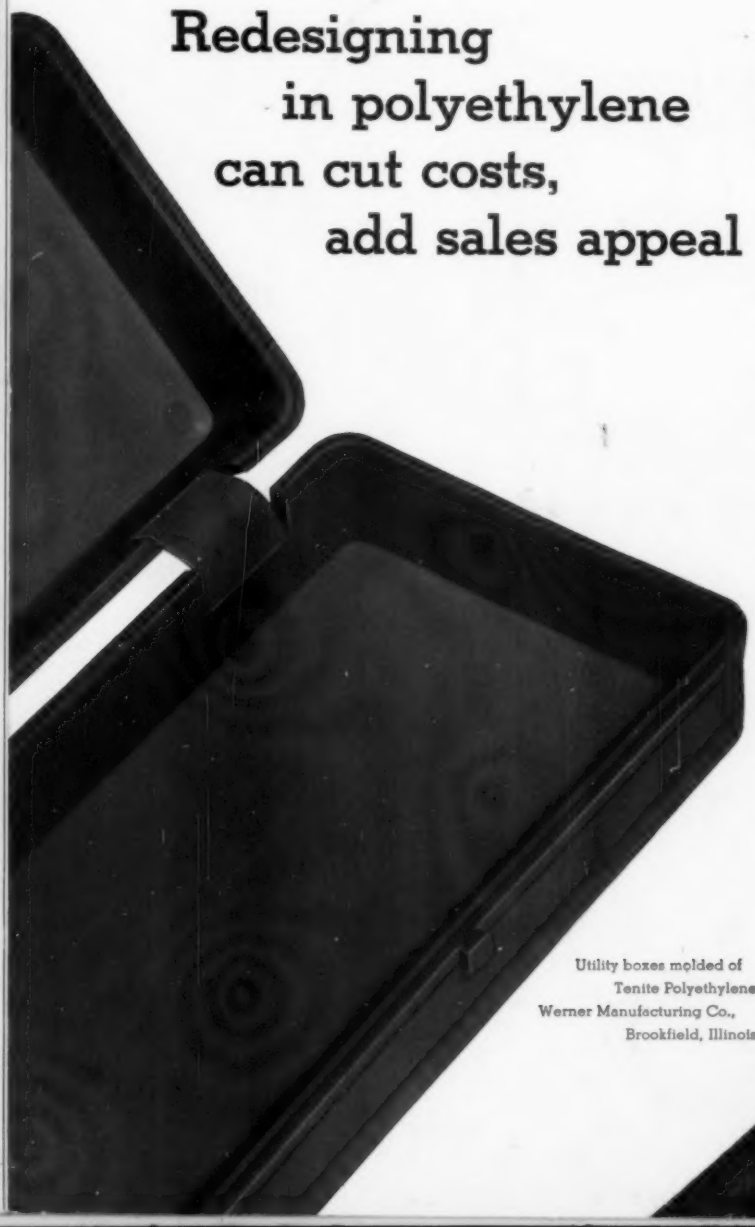

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