INDUSTRIAL DESIGN

Important Announcement to All Makers of Metal Products

Sensational New Process Puts Beautiful, Durable Finish on Your Product Before it's made

BECAUSE Sullvyne-Clad products are pre-finished, important time savings are possible in the production line. And because the attractive Sullvyne finish is so enduring, so impervious to wear, your product retains its freshness and beauty longer.

Sullvyne-Clad Metal Laminate is a bond of vinyl plastic on metal sheeting—steel, aluminum or magnesium. The resulting material may be drawn, stamped, or punched without destroying either the vinyl or its bond.

A Sullvyne-Clad product has a protective coating ten times thicker than one with any conventional finish . . . a coating which has superior abrasion resistance, resists corrosion and withstands the effects of heat, light and weather.

For decorative beauty, Sullvyne-Clad offers an unlimited variety of patterns and colors, many far superior to anything obtainable with ordinary enamels or paints.

Wherever a metal product requires a decorative finish, wherever the impermanence of its present finish is causing maintenance expense or customer dissatisfaction, O'Sullivan's new Sullvyne-Clad Metal Laminate suggests itself as a highly improved basic material. Find out today how Sullvyne-Clad can facilitate your production and add to the salability of your product.

Write today for complete information.

METAL LAMINATE DIVISION
O'SULLIVAN RUBBER CORP.
WINCHESTER, VA.
Makers of America's No. 1 Heel

IS YOUR PRODUCT LISTED HERE?

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Aircraft
Appliances
Automobiles
Baby Carriages
Building Materials
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Busses
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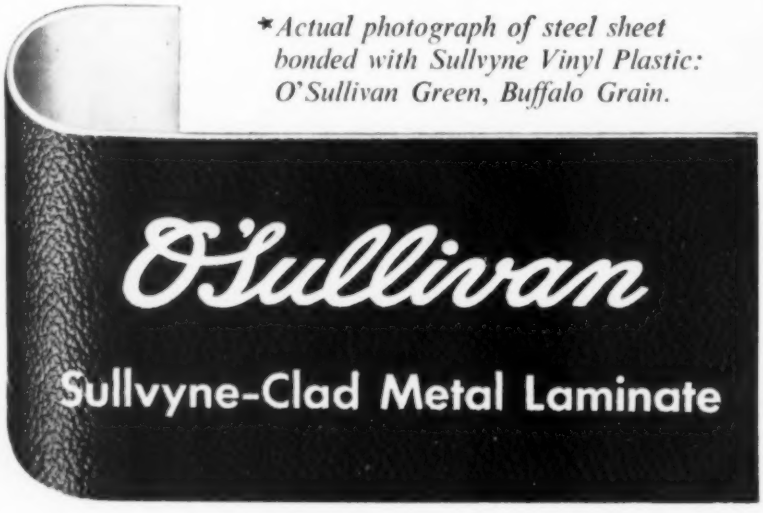
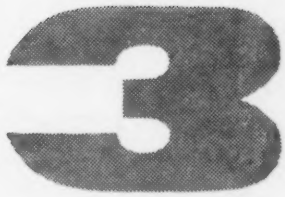
Electrical Apparatus
Furniture
Hardware
Hospital Equipment
Housewares
Luggage
Office Equipment
Photographic Equipment
Radios
Refrigerators
Restaurant Seating
Sporting Goods
Television Sets
Toys
Vending Machines
Washing Machines
And all other products with finished metal surfaces



**Actual photograph of steel sheet bonded with Sullvyne Vinyl Plastic: O'Sullivan Green, Buffalo Grain.*

VOLUME 1, NUMBER 3



INDUSTRIAL DESIGN

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

CONTENTS FOR JUNE, 1954:

Workmen are mere perspective points in the 100'-long interior of the world's largest rotary steam dryer, being fabricated by General American Transportation Corporation out of 35,000 pounds of Alcoa aluminum. →

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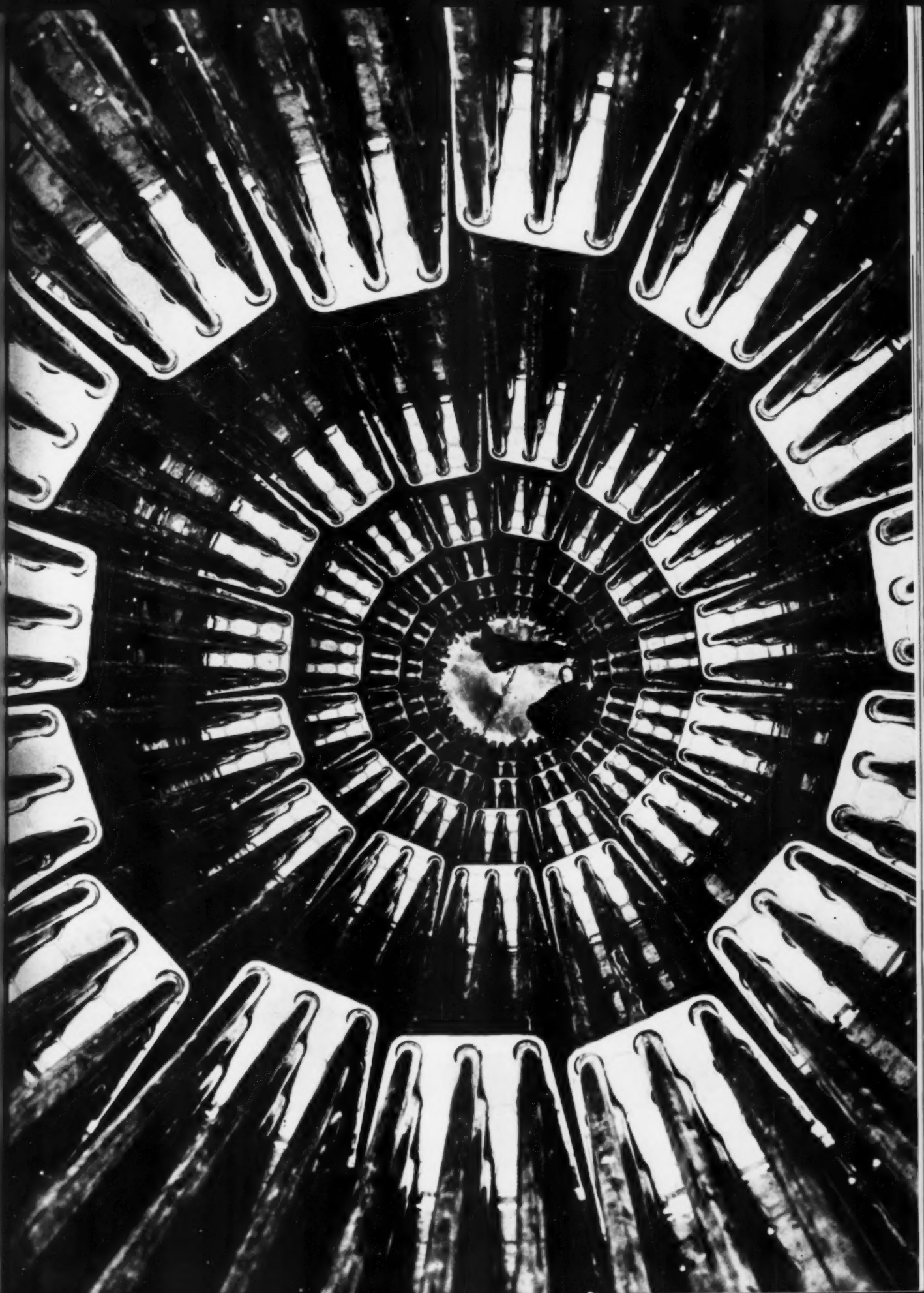


in this issue...

Walter J. Derenberg, who explores the outlooks for design protection on pages 62-67, was until recently Trademark Counsel for the U. S. Patent Office. Now a member of the Attorney General's National Committee to Study Antitrust Laws, he is also Editor of "The Trade-Mark Reporter," and chairman of the Trademarks and Copyright Committee of the International Law Association, a professor at N.Y.U.'s School of Law, and a member of the firm of Alexander, Maltitz, Derenberg and Daniels.

Eric Larrabee, who peers into machines that make music on pages 22-31, has been an Associate Editor of Harper's Magazine since 1946. Before that, his *curriculum vitae* reports, the Army (intelligence) and college (Harvard), with about a week in between. A frequent contributor to national magazines, he is also co-author of *Creating an Industrial Civilization,* and secretary of the American Civilization Committee of the American Council of Learned Societies.

Roberto Mango (left) has been one of *Interiors'* Art Directors since 1951, and is also an architect, designer and photographer. He is currently abroad working on the forthcoming Triennale of Milan, but collected all the manhole covers (pages 90-93) from the streets of New York.

William C. Renwick (right), who uncovered the foaming polyester on pages 110-111, is a graduate architect, became a Navy materials engineer, and worked with Raymond Loewy before becoming one of George Nelson's associates. He teaches plastics engineering at Pratt Institute.

Peter Schladermundt (left) is a senior partner of Nowland and Schladermundt, which designs anything from pumps to packages. Responsible for the Johnson and Johnson container, page 84, he is a member of the Society of Industrial Designers and the American Institute of Architects.

Carl Otto (right) was in charge of the London office of Raymond Loewy Associates for several years before opening his own New York firm, which designed the diminutive Schick Shaver on page 88. He is a member of the Society of Industrial Designers.

J. McLeod Little, designer of the Toledo Scales on pages 48-51, and many other products for the same company, opened his own office in 1943 after working with Harold Van Doren for eight years. A visiting lecturer at the University of Michigan, a member of the Society of Industrial Designers and the Society of Plastics Engineers, he won the latter's 1953 modern plastics competition.

ALFRED B. GIRARDY, S.I.D. As manager of design for Westinghouse Electric Corporation, Swiss-born Mr. Girardy shows an aggressive functional attitude toward commercial machine forms. Mr. Girardy is particularly noted for his work on the internationally-famous "train X" created in 1952 for the Chesapeake & Ohio Railroad.

LETTERS

Clicks

Sirs:
It was a pleasure to become acquainted with INDUSTRIAL DESIGN magazine. We found it to be extremely interesting in content and presentation, and we envisage a great future for this new publication.

Your article on "Click Bookmatches" is beautifully done, although evidently your editorial staff was not aware of a few technical points. First, the illustration of the Click Bookmatch in an open position is not in line with its construction. The Click is scored at the bottom just below the striking surface on each side, so that when it is opened the cover remains straight instead of being curved, at it appears in your illustration. The Click was designed expressly for advertising purposes, and it is imperative that it open widely so that the advertising messages on the two inside covers will be clearly visible. One of its features is more advertising space than is provided by the standard matchbook.

Secondly, the Click Bookmatch does not actually open upon pressure of the fingers, but rather by pulling the two sides apart at the top; and when the book is grasped to strike the match, the cover automatically snaps closed.

Finally, the Click Bookmatch is not standard in Italy, but is manufactured by Saffa in Milan exclusively for the writer, who is the inventor (U. S. A. Patent #2470523) and also the importer and distributor for the United States. We also call your attention to the fact that the undersigned has registered the trademark "Click Bookmatch" with the U. S. Patent Office under #588233. Recently a corporation was formed for the import and distribution of the Click Bookmatch, namely Click Bookmatch Corp.

Although the St. Regis was one of our first and is still one of our best customers, our Click Bookmatches are in circulation through first class clientele throughout the nation.

As a matter of interest to you, matchbooks generally have been in use since 1889 —or for 55 years.

Giuseppe Russo, President
Click Bookmatch Corp.
New York, N. Y.

Hungry

Sirs:
. . . I thought my order was in very shortly after the first ad appeared in the interior of Interiors — and Gentlemen, I really looked forward to that first copy. Now, 9,999 other designers are hungrily absorbing a rich fare and I am left gazing greedily through the buffet window.

So please give us a break if you possibly can, even if it means snitching one from the VP in charge of the atomic styling division of the Ion Magnification Company, or somebody. With all this, believe me Sirs that I will understand if you do not send the framed first copy off the press—but may the tears in my eyes touch your heart to send the next.

Dick Rowe
Lindeman Advertising
Holland, Michigan

Dynamic

Sirs:
Heartiest congratulations on INDUSTRIAL DESIGN. It is exciting, dynamic and highly informative. You have made a real contribution to our thinking and planning.

Will you please enter a subscription immediately for Mr. George F. Smith, President of our company.

E. G. Gerbic
Johnson & Johnson
New Brunswick, N. J.

Correction

Sirs:
In your April issue you suggest that the miniature camera "Minox" was supposedly designed as a "spy camera" for Central European demand.

This apparently cannot be true because, designed by a Latvian company V E F (Valsts Elekrotechniska Fabrika) Riga in 1938, the camera was generally available in Latvia and many other European countries until 1940 when the Russians occupied that small country. Apparently somebody has managed to take the blueprints to Germany where it is now being manufactured as a German product.

Karlis Minka
Baltimore, Md.

Appreciative

Sirs:
Most appreciated John Pile's article as an excellent editorial documentation of The Black Box. The introduction especially is an expressive, imaginative, and concise presentation of context. I think it most important that you as editors are aware of the great need for this level of thinking in documenting the various aspects of the "Industrial Design" problem.

Hap Smith
Dekovic-Smith design organization
Chicago, Illinois

"Must" reading

Sirs:
With your widespread and informative coverage of the various phases of the product design field, the magazine should be must reading for all of us who all too often are bogged down with the everyday problems and details of our profession; of more than casual interest to top executives of our client companies; and of educational value to design students.

Carl W. Sundberg and Montgomery Ferar
Sundberg-Ferar, Industrial Designers
Ferndale, Michigan

Refreshing

Sirs:
Have received the first two copies of your new refreshing publication and have enjoyed them immensely (as have my nonsubscribing but oft-borrowing fellow designers). The change of pace from page to page is excellent. Other bouquets I'd like to throw would sound like a reprint from your "Letters" page.

John C. Winter
Upper Darby, Pa.

Prized Possession

Sirs:
The publisher certainly deserves the plaudits received for INDUSTRIAL DESIGN. This will end up right beside "Fortune" and other prized publications.

E. A. Fryer
Kusan, Inc., Plastics Division
Nashville, Tennessee

GLASS CAN CONTROL RADIATION

Today's glass can control various useful bands of the spectrum: a 10-foot bar passes light without appreciable loss of visibility while a one-quarter-inch pane blocks all but invisible ultraviolet rays; a black glass transmits only infrared rays and another glass absorbs most of the heat while passing light.

Each of the 400 different glasses regularly melted by Corning Glass Works may also have mechanical, chemical, thermal and electrical characteristics combined with controlled radiation in the ultraviolet, visible and infrared bands.

Corning considers glass a versatile basic material; from this concept, the company has created many new opportunities in the production and marketing of glass components. As you consider new product designs which may use glass, the services of the company's Research, Design, Engineering and Production Departments are readily available.

A copy of the descriptive booklet, *Glass and You*, awaits your inquiry to the Design Department.

CORNING GLASS WORKS • CORNING • NEW YORK

Corning means RESEARCH ENGINEERING PRODUCTION DESIGN *in glass*

NEWS

Aspen conference

Plans for the Fourth Design Conference at Aspen are shaping up to fill the seven days of June 23-29 with tempting if scholarly discussions. We don't mean to imply that the past conferences have been designers' beer parties, but the prospect of hearing a particularly distinguished roster of speakers discuss the broader approach to better design suggests that this get-together will be provocative at a higher level. The Conference Committee consists this year of designer Will Burtin; M.I.T.'s Gyorgy Kepes; and Carl Maas, Art Director of the Standard Oil Company of New Jersey. Agreeing that the increasing incompatibility of scientists and designers stems from their inability to communicate ideas, the committee has arranged for the discussions to begin with basic communication problems and then to develop the theme of the over-all importance of design. The final meeting will feature Richard Neutra, whose book, *Survival Through Design* is, in general, the idea the speakers in preceding meetings will discuss. Although the theme sounds as if it might be too cosmic for a June week in the mountains, both practical and philosophical statements will be expressed by the speakers: Dr. Albert E. Parr, Director of the American Museum of Natural History; Dr. Lawrence Schmeckebier, Director of the Cleveland Institute of Art; Roberto Burle-Marx, landscape architect of Sao Paulo; Russell Lynes, Managing Editor of *Harper's Magazine* and author of books on American taste (who discovered the "upper and lower Middlebrows"); Robert Saudek, Producer of "Omnibus" and head of the Ford Foundation's radio and television workshop; Dr. A. Garrard McLeod, Editor of *Scope;* Lawrence P. Lessing of *Scientific American;* Burns W. Roper, Research Executive in the Elmo Roper firm of marketing and public opinion research; architect Victor Gruen, of shopping center fame; Ted Parmalee and Pete Burness of United Productions of America, producers of "Gerald McBoing-Boing," "Madeline," and "Mr. Magoo"; Dr. Robert O. Carlson, Columbia University sociologist now with Standard Oil of New Jersey, and architect Richard Neutra.

No listless lying-abed mornings for the design conferees. Each morning there will be meetings and round-table discussions, followed by afternoon seminars directed by the principal speaker of the morning. Round-table discussion groups will be limited to three speakers, a workable number. Pre-Aspen assignment to these panels has been made to enable those selected to do a bit of homework and to obviate that meaningless courteous fencing before coming to the point.

Exhibitions will be changed often by an energetic committee. The entertainment committee promises a concert and "new and significant" movies (not necessarily the same thing) each evening.

Visitors to the Design Conference will probably prefer to stay at the Hotel Jerome which offers accommodations, European plan, ranging from $2.00 to $12.50 a day. Information about the Jerome and other local hostelries may be secured by writing to the Aspen Institute, Aspen, Colorado.

Since Aspen is one of the country's more inaccessible places, it is advisable to plan the journey with care. Here the Aspen Institute can help too. Through the Institute, Denver architects and designers are forming car pools. Both planes and trains go to Denver. Trains go to Glenwood Springs, a "city" only an hour and a half from Aspen. From Denver and Glenwood Springs the trip may be completed by bus, reminiscently called "stages" in Glenwood Springs. Five hours on a Trailways bus from Denver will take you to Glenwood Springs for $5.23. Stage fare from Glenwood Springs to Aspen is $1.89. You-drive-yourself cars are available in Denver, and taxis will haul you from Denver or Glenwood Springs, but advance registration is recommended. Taxi fare from Glenwood Springs to Aspen is $8.40 for the first passenger and $2.10 for each additional passenger; from Denver to Aspen; $37.40 for one, and only $9.35 for each additional passenger—proving conclusively that two can move more cheaply than one.

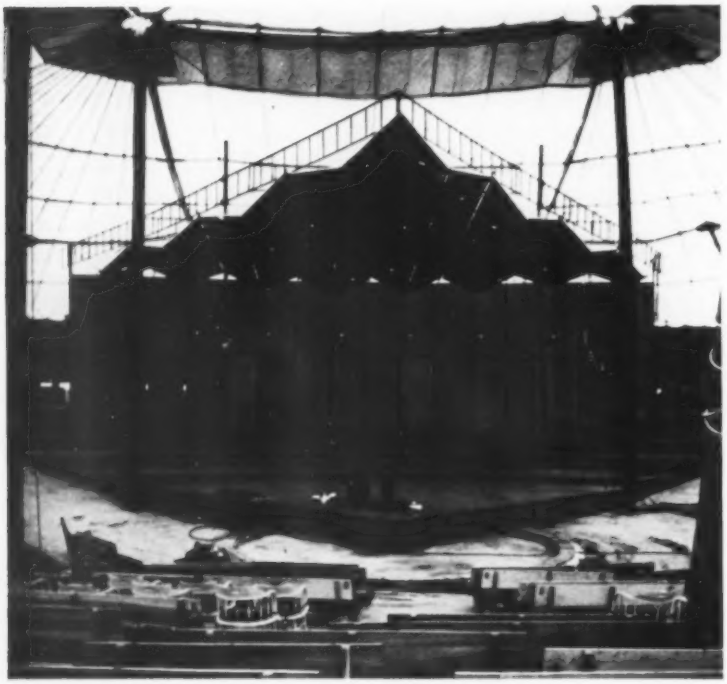


photo: Betty Rosenzweig

Inside view: They'll be tenting in June at the Aspen Design Conference

THE PACKAGING SYSTEM

THAT *increases the unit purchase*

THROUGH attractive, convenient Dacam cartoning, the purchaser is pressed to take four to six units rather than one or two. This space-saving packaging system has proved its case—for products as different as ale, beer, canned milk, dog food, frozen juices and motor oil.

With Dacam machinery, as many as 9,600 flat or cone-topped cans are packed per hour! To match this speed, a quick-setting adhesive was required.

"At the inception of the Dacam program", wrote Mr. Grover C. Currie, Vice President, Dacam Corporation, "we asked Arabol to develop an extremely quick-setting, water-resistant adhesive with the binding qualities to hold together a carton of relatively heavy merchandise. Arabol successfully developed such an adhesive. This adhesive is now referred to as Dacam No. 2 and is recommended by us for use in our equipment."

Packaging is one of a hundred industries in which Arabol is privileged to serve the leaders. In 69 years of pioneering, more than 10,000 adhesives formulas have been developed in our five laboratories. Our experience covers adhesives for every type of machinery—including the most modern. Yet we firmly believe that there is only *one* adhesives formula that can serve you best in any particular application. The cost of the finest adhesives can hardly exceed 3% of your total packaging costs. So, just as surely as you use adhesives to make, label, package or ship your product, you can afford adhesives made to *your* specifications.

• We invite the opportunity to submit samples for you to test in your own plant—under your particular working conditions—for your specific requirements, whatever their nature. That is the one kind of testing that assures you of satisfactory results. Your inquiry to Dept. 99 will bring a prompt response.

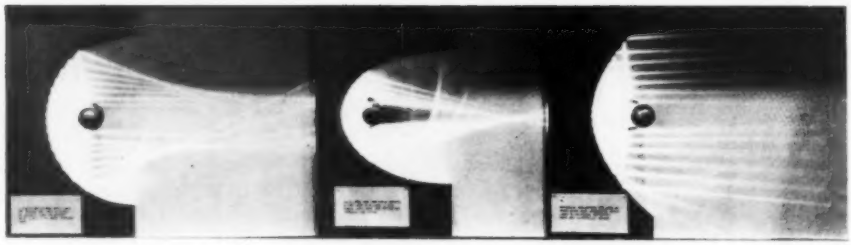
Adhesives?
ARABOL!
69 YEARS OF PIONEERING

THE **ARABOL** MFG. CO.
... a nationwide organization serving major users of industrial adhesives
EXECUTIVE OFFICES: 110 E. 42nd ST., N. Y. 17, N.Y. CHICAGO • SAN FRANCISCO • LOS ANGELES • ST. LOUIS
ATLANTA • PHILADELPHIA • BOSTON • PORTLAND, Ore. • ITASCA, Tex. • LONDON, Eng.

British Industries Fair

Some 2400 of Britain's leading manufacturers exhibited their goods and demonstrated current British industrial innovations to overseas buyers at the 33rd Annual British Industries Fair, May 3-14. The Fair sprawled over nearly a million square feet of floor space in the three exhibition halls it occupies each spring, Earl's Court and Olympia in London, and Castle Bromwich, Birmingham, where the cumbersome industrial engineering products are shown. The two London halls held consumer goods where visitors could see everything from the latest jewelry, the traditionally high standard English china, lawn mowers, refrigerators, and the British pianos that provide 60% (surprising statistic) of the world's reborn and growing demand for that instrument. A section was set aside for the exhibition of 350 outstanding designs selected by the Council of Industrial Design, a governmental agency under the Board of Trade.

The Canadian offerings were characteristically native products like fur dramatized on Canadian models. The largest space in the representations of Commonwealth industrial design was taken over by India with its exhibition of Indian handicrafts. Its neighbor, Pakistan, was also represented, exhibiting, of all things, such items as Pakistani cricket bats, showing that the British way of life is pervasive even now.



Part of the Light and Color exhibition at the San Francisco Museum of Art

San Francisco color

Commemorating the 75th anniversary of Thomas A. Edison's invention of the incandescent lamp, the San Francisco Museum of Art presented a five week exhibition on "Light and Color." Prepared with the cooperation of the Illuminating Engineering Society, the emphasis was on practical applications of light and color as elements in today's architecture and interior design. Edison ended the search for enough light three quarters of a century ago, but the effect of light and color on the esthetics of environment is a relatively new tool in the hands of designers.

While most communities contented themselves with lighting a gigantic electric bulb as their observation of the Diamond Jubilee, the San Francisco Museum of Art really extended itself with a television program about lighting and the hosting of a two-day conference on the subject co-sponsored by the Northern California Chapter of the American Institute of Architects and the Northern California Section of the Illuminating Engineering Society.

The exhibition presented graphic demonstrations of the fundamentals of light and color, principles of color mixture, and the effects of various types of illumination on pigments and fabrics, The latter was shown by using a series of painter's palettes with identical hues, each under a different kind of light, daylight fluorescent, standard, warm white, or standard cool white. There was also a chronological development of light sources traced through the use of Edison's first experimental model through today's efficient bulbs and tubes. W. and J. Sloane designed and furnished a series of room settings showing applications of modern lighting.

From the Council of Industrial Design exhibit at the British Industries' Fair: Right: Laminated beech steamer chair, designed and produced by Ernest Race, has no hinges or moving metal parts to corrode in the salt sea air of a deck.

Lower left: A small piano in mahogany and rosewood, designed by Ward and Austin for W. Danemann and Co., Ltd., one of Britain's most sought-after exports.

Lower right: Filing cabinet designed by K. Frankenschwerth for James H. Randall & Son, Ltd., is completely collapsible for easy export, and has adustable innards.

British artists in Steuben glass

Unconventional collaboration between graphic artists and glass makers was evident in the exhibition entitled "Twenty British Artists in Crystal" (April 27-May 31) presented by the Steuben Glass, Inc., New York. Most of the artists from the other side—with the obvious exceptions of the late Eric Gill and Sir Muirhead Bone—were commissioned to make drawings for use on crystal later transferred into vases and bowls of various shapes by artisans on this side. Subdued lighting, playing fountains, floral offerings, and tasteful arrangements made up the luxurious exhibition.

Goblet: Cecil Beaton's "Lady in Waiting." Asymmetrical plate: Robin Darwin's "Dove."

NEW PROTECTIVE COATING CHEMICAL FOR ALUMINUM

ALODIZING

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

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

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

NEW IMPROVED "ALODINE" DEVELOPED By ACP RESEARCH CHEMISTS

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

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

PROCESS DETAILS

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

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

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

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

RECOMMENDED USES FOR "ALODINE" No. 1200

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

RESULTS OF TENSILE TESTS

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

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

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

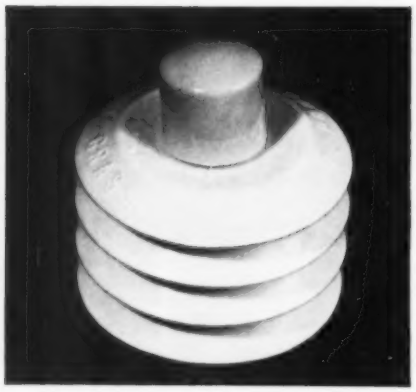
CHEMICALS ACP PROCESSES

AMERICAN CHEMICAL PAINT COMPANY

General Offices: Ambler, Penna.

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

Bradley Container Corp. holds American rights to extrusion process for poly tubes.



For Elizabeth Arden's Blue Grass Dusting Powder, push down on the accordion bottle.

A. M. A.'s National Packaging Exhibition in Atlantic City

reported by Mathilde Arens

The 23rd annual National Packaging Exposition and Conference, alternating annually between Atlantic City and Chicago, was held this year in Atlantic City's vast Convention Hall (April 5-8). Sponsored by the American Management Association, the event demonstrated that 1954 is a year of consolidation and ingenious refinement, not radical innovation, in the field of packaging.

Unlike post war years when new packaging materials—destined to become bigger giants than cellophane—were pouring out of the laboratories, the 1954 Exposition unveiled no revolutionary single new material nor development. But manufacturers showed consistent ingenuity in applying the galaxy of now familiar materials and processes. Competition is forcing manufacturers to seek ways to package faster, cheaper, and better.

The Monsanto Chemical Company exhibition demonstrated a number of improvements in polyethylene molding, the miracle plastic of five or six years ago. Until recently, use of polyethylene moldings has been limited to conventional squeeze bottles with the smooth surface peculiar to this plastic. Photographs on this page indicate how far fabricators have traveled in polyethylene molding. The accordion bottle made by the Injection Molding Company for Elizabeth Arden's Blue Grass dusting powder suggests a wide range of possibilities for high-style cosmetic packaging. An unusual solution to a small packaging problem, the accordion form shows the application, at moderate cost, of principles which can transform today's novelty packaging into tomorrow's staple.

Monsanto's polyethylene has been applied by the Henry L. Hanson Company of Worcester, Masachusetts, to its high-speed drills, taps, and dies line. In the Super Set of taps and dies, the case is molded with a fitted tray. What was previously packed in two larger wooden boxes now fits into one compact polyethylene container. Molded in one piece by the Prolon Plastics Company, the box has a non-creaky self-hinge, which employs the plastic's "memory" to revert to its original position. A grain has been tooled into the mold of the box so that the relatively smooth and soapy "feel" of the plastic is overcome.

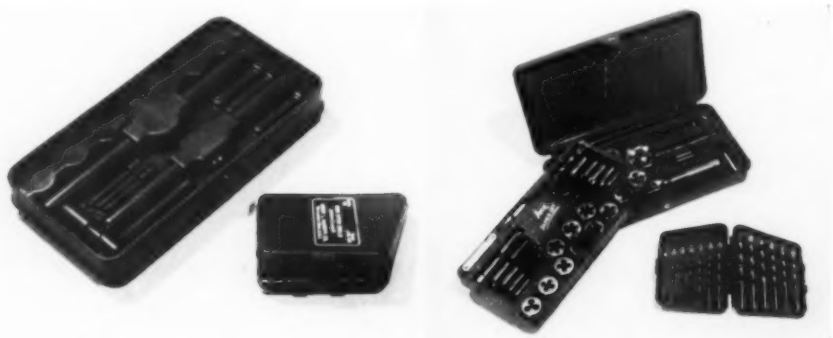
The polyethylene box costs less than the two wooden cases formerly needed to stow the same number of metal dies and drills. Its light weight, compactness, and durability reduce shipping charges and breakage losses. The little drill set, also produced by the Hanson Company, exploits the advantages of polyethylene with a custom-molded interior that holds the drills precisely, unlike the rattling, rust-prone metal boxes in our workshop. The container holds a variety of shapes without jiggling or jarring in transit, and is readily accessible to the user who will continue to store the bits in the box. The Hanson Company stamps its boxes in various colors with a hot foil process.

Barrier materials, developed for the Armed Services, are now available to consumers. These durable laminations are used by the Shellmar-Betner Flexible Packaging Division of Continental Can Company in packaging Kentucky Club pipe tobacco. Discarding a cellophane overwrap and cardboard box, the smoker is left holding an attractive pouch, so that he no longer spills tobacco on the rug while dumping it from the traditional tin into his own pouch. The triple lamination is flexible, strong, and has no vapor transmissions, so that the tobacco's fresh aroma is sealed in.

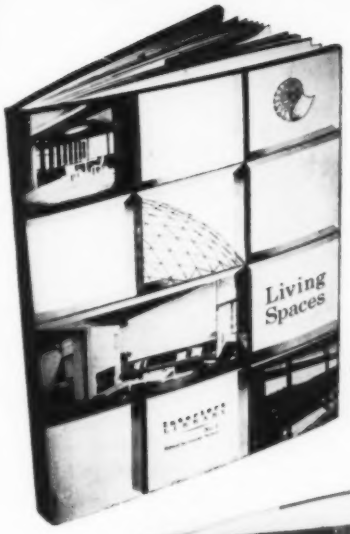
Laminations are used in those fuzzy liners for candy boxes, carrying design elements into the box by laminating the liner between sheets of glossy lightweight paper printed with the maker's trademark and decorative motif.

Paper, plastic, film, foil, tin, and glass still form the vertebrae of the packaging industry. But new innovations appear even in those materials where one might think "they've gone about as far as they can go."

Triple laminations in consumers' pockets, triple packaging for Kentucky Club Pipe Tobacco is low-cost and thus expendable.



Prolon Plastic molds Monsanto polyethylene into secure, lightweight cases for the line of drills, taps, and dies of the Henry L. Hanson Company of Worcester, Massachusetts. Everything "fits," even the tray, ideal for both shipping and storage.



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Why industrial design?

What is Industrial Design? was the subject of the April exhibition at the Munson-Williams-Proctor Institute in Utica, N. Y., a community art center long associated with pleasant water colors and conventional fine art in the permanent collections of its gallery. Using local products wherever possible, the exhibition showed the steps in planning and redesigning an object in terms of its use, methods of production, and materials. The problems exhibited were as diverse as teaspoons and manhole covers, a fishing rod and a sweat shirt, a refrigeration condensing unit and a radiant heating baseboard panel.

A panel discussion "Why Industrial Design?" shoved the exhibition off to a spirited start on April 2nd. Harris K. Prior, Director of the Institute's Community Art Program, was moderator. Panel members were Lester A. Amtsberg, chief engineer, Rotary Division, Chicago Pneumatic Tool Company; W. A. Barnes, vice president in charge of product development, Utica Drop Forge and Tool Corporation; Lloyd E. Ressegger, Manager, Design Department, Oneida Ltd.; and Richard Montmeat, industrial designer, Electronics Division, General Electric.

Main points made by the paneleers were: good design is essential to good business, and industrial design is a contribution to better business and a better life for everyone.

From left to right, panel members discussing "Why Industrial Design?" at Utica, N. Y. H. K. Prior, Lester Amtsberg, W. A. Barnes, Lloyd Ressegger, Richard Montmeat.

Moving sidewalks

Long a "city of tomorrow" fantasy, moving sidewalks have become a fact, thanks to 20th century engineering. The Hudson and Manhattan Railroad Company has installed the world's first peripatetic passenger conveyor belt in the Jersey City terminal to hasten Jersey-bound commuters upgrade to Erie trains.

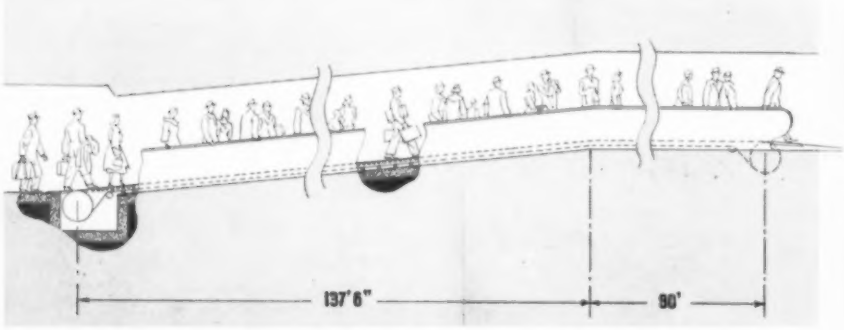
"Speedwalk" does just what its name suggests. Moving at a pace of approximately 1½ miles per hour, or about 120 feet a minute, it still makes it necessary to move the feet. (The average pedestrian moves at about 4½ m.p.h. in rush hours.)

Five and one half feet wide, the belt is one continuous piece of rubber weighing nearly 11,000 pounds, designed by Goodyear Tire and Rubber Company, in a joint development with Stephens-Adamson.

I. D. I.

Another chapter—the fifth—of the Industrial Designers' Institute was launched May 3rd, to accommodate the growing number of industrial designers in lower New England. At the dinner meeting held at Connecticut's Silvermine Guild, John Vassos was elected chairman of the new Southern New England chapter. Headquarters of the new group will be in Norwalk at the Silvermine Guild because of its facilities especially well suited to the exhibition and program plans of the I.D.I. The inauguration meeting was addressed by Richard Bach, creator of the industrial design section of the Metropolitan Museum.

A fortnight later, the new Syracuse chapter heard Clare Bacon of Owens-Corning Fiberglas, talk on "Plastics that Dream Cars are made of."



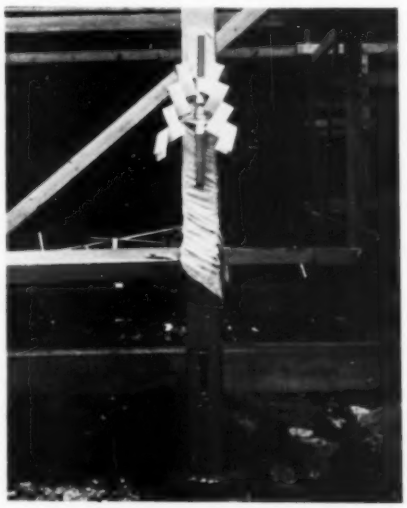
Jersey Terminal's sloping "Speedwalk," developed by the Goodyear Tire and Rubber Company and Stephens-Adamson, accommodates 10,800 commuters one-way.

Museum of Modern Art

Raising the roof of a Japanese house is a solemn occasion complete with Buddhist priest. New York's Museum of Modern Art has transported from Japan a real Japanese house for its summer exhibition, (opening on June 19) and re-assembled at the East end of its garden.

At the West end of the garden, a high-style cafeteria has been opened to the museum's paying public. The fare is as light as that offered to members-only up in the Penthouse, but the new atmosphere has its charms. It occupies what will be the ground floor of the Whitney Museum, next door, and thus shares the Sculpture Garden where first-comers may sit under the shade of the birch trees or striped umbrellas, or Lachaises. Three walls are gray glazed ceramic brick (not unlike the new annex lobby), and Marie Nichols' open mesh dynel covers without obscuring the glass walled view. Suspended over the food counter is an eggcrate ceiling with air-conditioning, lighting, and exhaust fans combined. The restaurant was designed by Philip Johnson, Director of the Museum's Department of Architecture.

Ridge pole of Japanese exhibition house.



Museum of Modern Art's new al fresco cafeteria, designed by Philip Johnson.

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President
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- Payroll Savers are serious savers: over 75% of the amount of Series E Bonds that matured since May, 1951—almost $9 billion—is still being held by individuals under the Treasury's 10 year optional automatic extension plan.
- For the third straight month of 1954, sales of E and H Bonds exceeded maturities and redemptions. The sales excess amounted to $242 million on March 31—the highest first quarter net since 1950.

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INDUSTRIAL DESIGN

News

STA jury, left to right: Morton Goldsholl, William R. Stone, and Charles Harper.

Society of Typographic Arts

The Society of Typographic Arts held its 27th annual exhibition of Design in Chicago Printing at the Art Institute of Chicago (March 27-May 2). There were 863 entries which the jury boiled down to a selection of 206. Fourteen Certificates of Award were given to ten Chicago-and-environs designers. On this page are three of the winning designs: Christmas card by Phoebe Moore for Jack Kapes and Associates; national ad, "As Industry Has Grown" by Bruce Beck for General American Transportation Company; and the booklet, "There's Money in the Air," designed by Morton Goldsholl for Chrysler Airtemp. Goldsholl also won an award for his design for "The Gothic Press" stationery. Bruce Beck won three more certificates for the Passavant Cotillion Program booklet, the Annual report of the Kawneer Company, and Sears Roebuck's automatic electric blanket packaging.

Certificates of Award went to Dean Wessel's announcement for the Artists' Guild of Chicago, Elsa Kula's Spaulding Christmas catalog, Carl Regehr's folder for the Veritone (photolithograph) Company, James McCrary's total design of Inland Steel's magazine, Lynne Park's Marshall Field and Company handkerchief ad in a newspaper, and Lindell Mabrey's "March of Dimes" poster. The jury was composed of designer Morton Gold-

Morton Goldsholl

Bruce Beck

Phoebe Moore

sholl; Charles Harper, Manager of Informative Packaging and Labeling Division, Sears Roebuck and Company; and William R. Stone, designer and printer of Kalamazoo, Michigan.

Report from Chicago: Basic materials

Brand new materials and new uses for old ones was the double theme of the Second Basic Materials Exposition, held in Chicago during May. In his opening talk, conference chairman T. C. DuMond, editor of Materials and Methods magazine, pointed out that although the last year saw no flood of glamorous new materials, engineers could take note of plenty of new developments. Among his points: old standbys are finding unexpected applications (paper honeycombs and adhesive bondings are important developments in aircraft design); some materials that have been replaced are staging a comeback (with the development of strong alloys that can be formed by extrusion, steel now competes on a weight-strength basis with such new aircraft materials as titanium, aluminum, magnesium, and plastics); most materials applications can be improved with imagination (aluminum beer kegs are now lined with insulating plastic). Lest those who are accustomed to working with metals underestimate the plastics, he called attention to Detroit's pioneering in the use of plastic for auto bodies, and low-cost jigs and dies, and plastics for uses where corrosion is a problem. DuMond sees promise of exciting progress in the future: Thermenol, an alloy of 80% iron, aluminum, and molybdenum or vanadium, is strong, easily worked, light, and corrosion resistant; according to the most optimistic accounts it may supersede titanium. Also in the offing are high-temperature brazing alloys, high-temperature plastics, colored phenolics, high-temperature stainless alloyed with chromium and manganese, low cost ceramic coatings for mild steels, improved high temperature ceramic coatings, and the possibility that present research may lead to foamed aluminum as a substitute for foamed plastics and honeycombs. A detailed discussion of new developments revolved around rockets, the *ne plus ultra* of design problems since they involve most of the big unsolved materials problems. Other sessions were devoted to corrosion, new metal forming processes, non-metallics (plastics, carbon and graphite, ceramics, glass, and rubber), joining (adhesive bonding), and materials management.

About seventy companies exhibited at the exposition held in conjunction with the conference. Here are some high points. **Goodyear:** Plio-tuf, a thermoplastic, high-impact styrene copolymer resin, now offered in dispersions of colored pigment which are made up in pellets, giving virtually unlimited color control. **DuPont:** Teflon produced in fiber form, which has high heat and chemical resistance, for filters, belting, packing, etc., the lowest coefficient of friction, greatest water repellency, and least affinity for adhesives of any fibrous material. **Taylor Fibre Company:** Polyester glass rods, light, strong, and uniformly colored, recommended for sporting goods, electronic equipment, furniture, and decoration. **Dobeckmun:** DuPont's Mylar film produced in strip for electrical insulation can be coated for adhesion, colored for identification. **Frenchtown Porcelain Company:** new equipment precision grinds high-alumina ceramics to plus or minus .001. Our correspondent was particularly interested in DuPont's exhibition of paper fiber impregnated with 5% Neoprene woven into fabric that a major automotive company is testing for slip covers. Neoprene as a pulp additive offers high wet-strength, promising a new material for outdoor floor coverings and fabrics. He noted also the light wood tank truck exhibited by the **Balsa Ecuador Lumber Corporation**, and was disappointed to find no material on consumer applications for the new lightweight metals.

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AE

ALUMINUM EXTRUSIONS, INC., CHARLOTTE, MICHIGAN

What's your line?

The design profession is like any other profession in one respect—it has a name. This doesn't tell you what it's about, though, and the first thing a businessman wants to know is, what does a designer do? That should be easy—a businessman does business, a designer does design. Business has been with us long enough so that everyone understands the businessman's line. It's not so obvious with design.

Not long ago, while wondering how best to define "design," we fell into a discussion which seemed to add up to a good definition. Three upstanding members of outstanding design offices were at hand. When we raised the innocent question, "Why should a manufacturer want good design?" their replies went something like this:

Mr. A: "If a design is any good, it sells better."

ID: 'Bad design seems to sell pretty well too."

Mr. A: "As long as the designer is hired by a man who's in business to sell, the design that sells is a good design."

Mr. B: (impatiently): "Let's admit that any design that *could* be better isn't really good. If it's successful, it probably hasn't met real competition."

ID: "How do you persuade a client that the design *you* think is better *is* better?"

Mr. A: "If it's any good at all, you can explain it logically in practical terms—cost, tooling, convenience, sales appeal, and what have you."

ID: "You can explain everything you do?"

Mr. B: "Well, explanations go just so far. To read some design case histories about the problems that are solved, you'd think the designer was Edison; yet the final product may be ugly as sin—and may not sell so well either."

Mr. C: "Look at it this way. With every nice new design contract you get a horrid list of terms—call them limitations. Half the job may be meeting those terms. Still, the other half is pure personal choice. You *must* have three knobs and they *must* be molded plastic, but it's your business to shape them and relate them so that the whole thing makes sense. That gives you an awful lot of room to make or break a design."

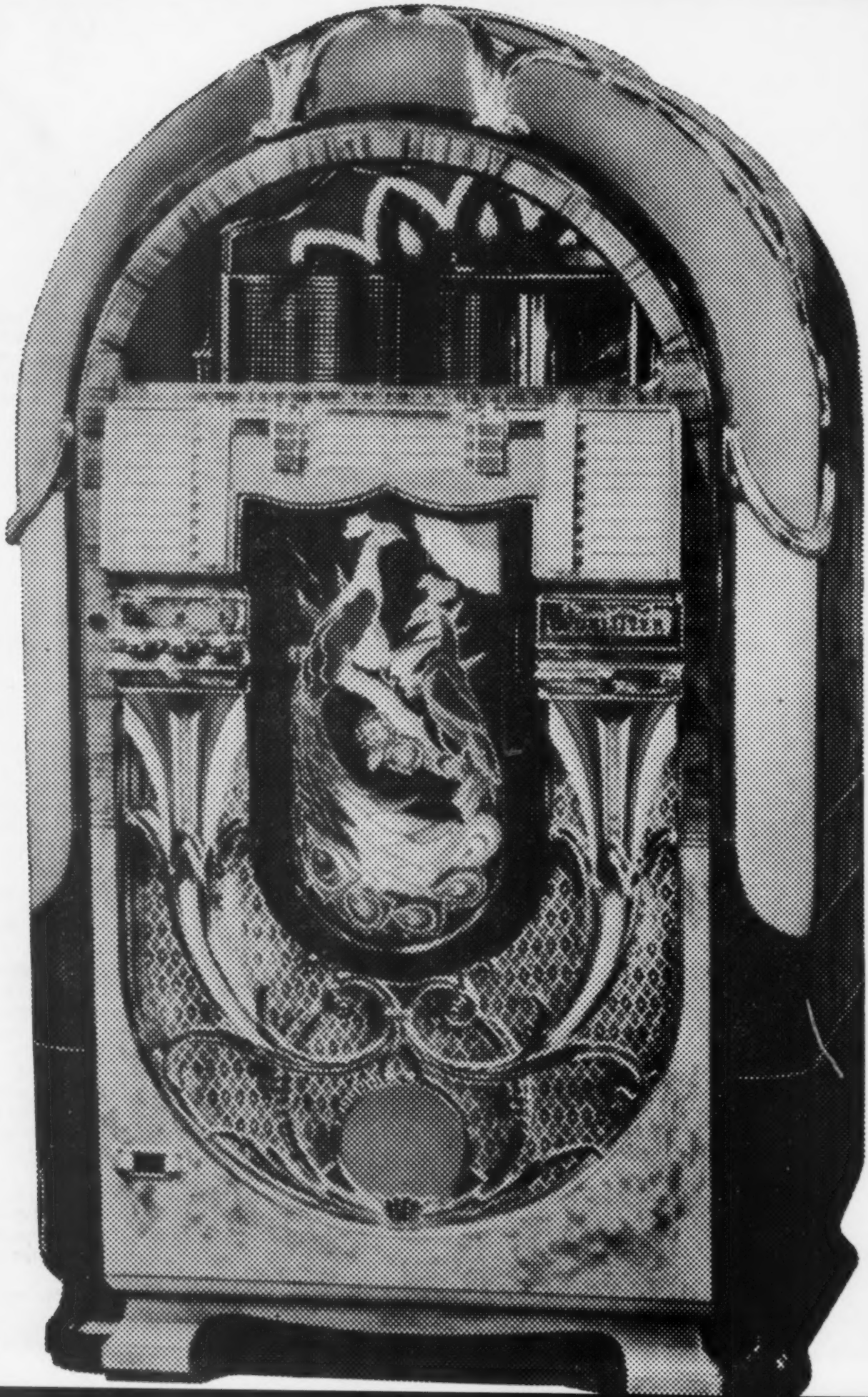
Mr. A: "Exactly—and here's where you separate the sheep from the goats. Many people wouldn't know how to work without limitations—they let them dictate the whole design. Take a washing machine: it's got to be big and white with a door in one place, and it's probably made with dies that can't be changed. Anyone can figure out what to do with those limitations—shift the controls around and throw some color on the nameplate—but a good man may transform it into a knock-out.

Mr. C: "There's one job that only a good man can do, though, and that's the one with *no* limitations. When someone says, 'Design me the best washing machine you can—make it any way you want, as long as it's good,' the designer meets his test. No use worrying about that, because most manufacturers aren't interested in putting us to the test—so far."

ID: "How can you get a client to let you do a good job?"

That's where the meeting broke up. Though the last question was left up in the air, we're prepared to venture an answer: The job of putting across a good design is not just up to the designer, it's up to the businessman too. There are no easy rules on either side. Just as the designer has cultivated the ability to design, the executive must cultivate the ability to choose, and use, his designer well.

—the editors



ERIC LARRABEE

MACHINES THAT MAKE MUSIC

Hi fi was the consumer's baby . . . in the salon or the saloon
it satisfies his hankering for culture and toys.

The current discovery that almost anyone in the market for a phonograph is a hi-fi addict (or wishes he were) has caused understandable confusion in the musical world. Any manufacturer is likely to feel that his own line of business is an exceptional one, but the discovery that the public agrees with him is disconcerting. The giants of the industry, who had sized up the market along other lines, are wondering how important "high fidelity" really is. The modest makers of "genuine" hi fi parts wonder how they can survive big-company competition. And the great, addicted public must be wondering whether the product of this uncertainty will be more fidelity or less.

The quality craze in music machinery is not without explanation, however, and the questions of design and technology it raises are not all as new as they seem. The mysterious box that makes music has never been just a machine. Of all clockwork devices, the barrel organ and the music box were the least mechanical in purpose, and their technology was charged with emotion. They, and all the music machines that followed them, had to serve the habits and aspirations of their owners by satisfying two competitive demands: they must advertise the perfection of their clockwork, yet they must also symbolize their owner's ability to command entertainment at will. Thus they always combined gadgetry and snobbery. (Often, as in the "pure" high-fidelity rigs, the two were hard to tell apart.) The old fashioned music box might have a glass window to reveal the turning barrels and pins within, yet the cabinet was a calculated reminder that this machine was replacing a hired corps of musicians. Its contemporary descendant, the electric phonograph, has the same double obligation to be conspicuously technical while flattering its owner that he is, at least momentarily, a patron of the arts.

The basic shapes of machines that make music do not change much. Yet this double-loaded meaning has always encouraged a wide range of designs and, despite the continuous improvement of sound at all levels of price and prestige, the possibilities today are greater than ever, ranging all the way from the juke box to the hi-fi combo in a Herman Miller cabinet.

Shapes for Sound

Neither of the two men (Charles Cros in France and Thomas Edison in the United States) who simultaneously hit on the idea in 1877 seems to have thought of the gramophone as an instrument of pleasure. Edison, in fact, intended it as a secretarial device. At least a decade elapsed before its natural employment dawned on people and a series of subsidiary inventions began to shape Edison's wax cylinder into a recognizable predecessor of the phonograph.

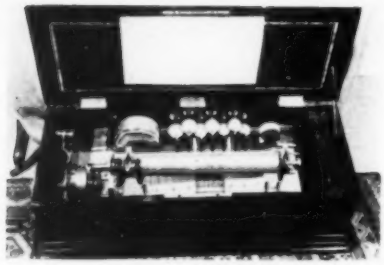
The cylindrical shape must have seemed obvious to Edison, for it had been the basis of musical automatism for four or five centuries. Edison was handling sound much as the music box did: if noises may be described as patterns in a time track, then a music machine—of whatever kind—will be a device for storing a patterned track so that it can be repeated at will. The principle is the same, whether you wind it up, wrap it around a cylinder, or coil it in a spiral on a plate-like disc. The perforated roll of the player piano and the magnetic tape of the modern recording studio are different only in degree.

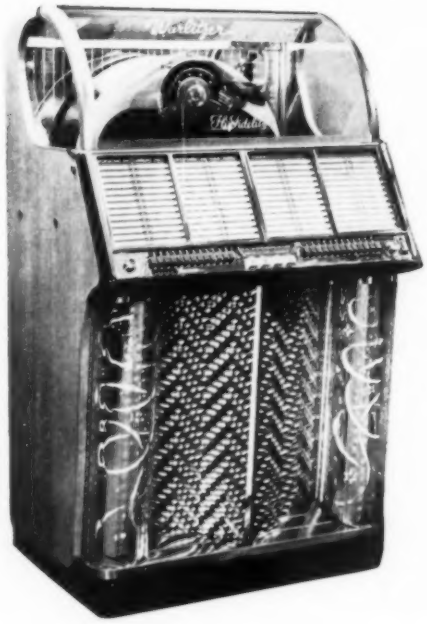
The disc-shaped record, which appeared in the music box before the phonograph was thought of,

was adapted to the phonograph by Emile Berliner, a German-born American. By coiling Edison's soundtrack in a spiral plane he seems to have fixed once and for all the most economical method of storing music. With the later development of microgroove, an hour and a half of sound could be put in a single envelope.

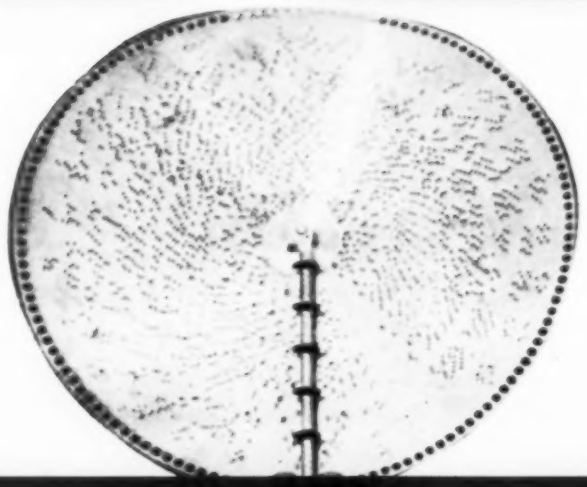
Given Berliner's record, plus a reliable clockwork motor that could turn it steadily for at least five minutes, the gramophone quickly assumed its familiar form. The box enclosure is as self-evident from a design point of view as the circle is from a technical one, and the music box, the gramophone, and the modern hi-fi table phonograph are distinguished on the outside only by minor changes in fashion and the relative costs of skilled carpentry. All are rectangular cabinets containing revolving discs in a fixed, flat position—a set of conditions which allow only for limited variation. The gramophone started with a horn, but it was later shaved clean and designed into a leatherette suitcase to make a sensible, portable machine. This same box and crank is still sold by the big mail order houses to that tiny group of people who have no electricity, and only the crank differentiates it from the electric phonograph that Liberty Music Shop later made famous. Its success was deserved, for it was a stable and practical compromise between ornament and function.

Today the gramophone, like the music box, survives only as a fossil, and what destroyed it was superior gadgetry. The phonograph's problem is not to originate music but to repeat it, and the music box maker's pride in the tinkly chrome mechanism inevitably was transformed into a craving for realistic sound. Today the toy technology of the music box survives in the aggressively complicated mechanism by which the juke box, in full public view through its display window front, makes its unerring selection from a stack of several dozen records. This delight in machinery finds a more modern outlet in the tinker toys of the hi-fi addict. The two streams gaudily combine in the newest Wurlitzer, whose elaborate carousel performs its esoteric task behind a window bearing the proud legend, "hi fidelity."





Complex interior machinery is as much in evidence in the newest Wurlitzer (note "Hi-Fidelity") as in the barrel-and-pin music box, while the flat-disc record under a lid relates the Regina to Columbia's "360."



Furniture for its own sake

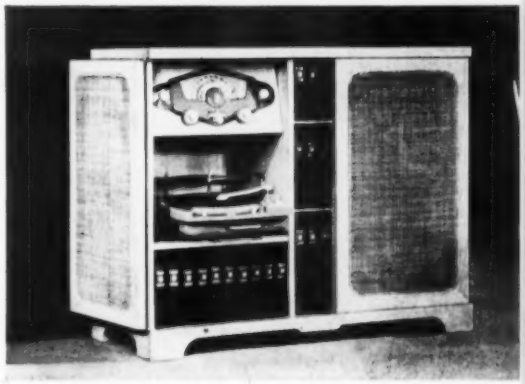
The demise of the gramophone was brought about by the downfall of the acoustic system, which made sound simply by transferring vibrations from one hard material to another, and the arrival of electronic reproduction. The result was the radio-phonograph, a music machine that could look nearly any way the designer wanted it to. Yet at this point the phonograph paradoxically reasserted its decorative role as

a piece of furniture that ornamented the life that went on around it.

The generic name of "radio-phonograph" has a basis in fact, even though the phonograph may be self-sufficient. Radio manipulated musical sounds by magnifying minute currents with a vacuum tube and using them to power a loudspeaker; everything it could do for the tiny currents from the airwaves it could also do for those set up by a vibrating needle. Not long after their introduction, the "musical" console radios began to appear with phonographs attached. The process was cumulative, but by 1925 (an operational date: this was the year Walter Damrosch began to broadcast with the Philharmonic over Station WJZ) the acoustic process had been abandoned in the manufacture of records, and the radio-phonograph was on its way.

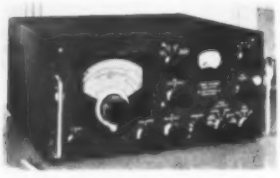
Despite the flexibility of the new system, these first consoles announced their technical superiority with more imposing cabinet work. If less "functional" in the stylistic sense, this still had practical aims: a cabinet that could be moved, and adapted to different situations in different rooms, would be more convenient than a scattered mass of the tubes and wires that were boxed inside. These early years in the life of the radio-phonograph can be called the "Capehart Decade," after their most typical monument, a massive rival to the private chamber orchestra, equipped with a record-changer that could flip the manual discs (automatic sequences had not yet occurred to anyone). Though it was certainly capable of better sound than anything hitherto available, this monstrous sarcophagus was only at home in the music rooms of the well-to-do. It was too pretentious and too boomily noisy for the ordinary home, and it was priced accordingly. The Capehart gave way to the Magnavox, the Scott, and such current versions of the big, deep-throated box as the Zenith. But for many years, the best thing available to the average listener was a radio with turntable attached—and as much quality as rudimentary circuits and a four-inch speaker could be expected to provide. The average consumer was dissatisfied—and why shouldn't he be? The luxurious noise and appearance of the consoles were not designed for him—technically, physically, or economically. Before the forties had arrived he was looking for ways to evade the store-bought monoliths and get his hands on the workings they concealed.

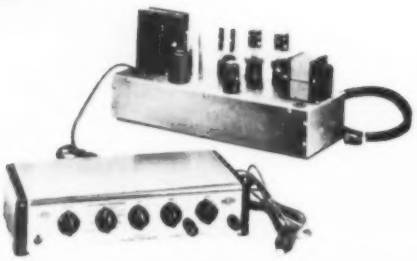
Designs, the twenties through the fifties, for consoles in the parlor: three decades of over-upholstered sound and cabinetry to match, as interpreted by Capehart, H. H. Scott, and Zenith.



Hi-fi, low-fi, middle-fi

High fidelity, like most good American institutions, grew up untended in the vacant lot of a neighboring enterprise. Its seedbed was the wholesale store where





The Loewy Treatment: a Hallicrafter radio receiver before and after, and examples of the present hi-fi style: a tuner (Espey) and amplifier (Brook).

the Ham was accustomed to buying pieces of equipment at the mark-down prices of radio repairmen. To some anonymous and original mind, circa 1935, there occurred the idea that you could make a better radio-phonograph than anyone could sell you—at a quarter the cost.

The results were historic. In the two decades that have elapsed, what started as a private enthusiasm has become the accepted standard; what started as a hobby has become a multi-million-dollar business. The pattern was logical: at first, as soon as a cheap new piece of equipment had been located, Hams started tinkering with it, hoping to make it work better. Thus serious tinkerers were responsible for developing, and later demanding, some of the most conspicuous improvements, especially in their insistence on flexible controls. They were also responsible for spreading the cult outside the circle of the electronically over-educated. Thousands of addicts, when their own rigs were perfected beyond further tinker-

The happy hi-fi consumer has to choose his component parts from the undifferentiated multitudes displayed in an "Audiotorium," as here at Lafayette Radio, one of the first in the field. Once the moment of choice is past, each splendidly technical-looking piece of equipment can be carefully concealed from sight, as in built-in shelves from Herman Miller Co.

ing, started all over again by installing them at cost for their low-fi friends. Soon after the war, such organizations as Consumers Union made it known that a complete electronics education and a sure hand with the soldering iron were not necessary to install a hi-fi set. Then laymen turned to tinkering too.

In a sense, the original hi-fi urge was a negation of design. If you could string together a collection of parts and get $400 worth of noise for only $125, what did looks matter? Hiding the equipment was like putting your wife in purdah. Nevertheless, there grew to be a definite hi-fi style. What the purist was buying and, if forced to, building into the bookcase or a plywood box, were the elements of the ordinary public address system—that is, turntable, amplifier, and loud-speaker. After World War II, as the movement gathered steam, these objects discarded the black hammered look of the old Ham paraphernalia and began to dress for their one significant moment—when they posed on the shelves of the Audio Salon for comparison with their competitors. They had to look technical, but not too technical, and in this they mainly derived from one of the earliest attempts to master the booming market. This, the radio receiver that Raymond Loewy Associates designed for Hallicrafters in 1947, was consciously intended to satisfy the electronics enthusiast without disconcerting his wife.

From the beginning, the hi-fi revolution was an uneasy love affair between the gimmick-minded and the music-minded, drawn together by their common passion for an impossibly fanatical fidelity. It is sometimes said that even musicians are sometimes unable to distinguish low-fi from hi-fi, yet the man who owns one soon finds his way through the typical high fidelity hiss and crackle and learns to live with —and count on—the range of sound that a good set gives him. These amateur combinations were without doubt superior in sound to the average phonograph—and they could be tinkered with. The loudspeaker could be mounted in an enclosure that was

closed at the back—thus saving the bass notes that had previously been lost. The turntable could be arranged so as not to mangle the records. The amplifier could be chosen to give attention to the full range of wavelengths that make music sound alive.

This was the consumer's baby, and before long the consumer knew it. The full trappings of a cult were on it before the broad public or the mass manufacturer paid serious attention. But for all its awkwardness, there was no denying that it had an inverse snob appeal. When a product is both better and cheaper, its market is bound to be small at the start, but it is full of menace. Without advertising, without public relations council, with nothing but happenstance contact between potential buyer and the man who owned one, word got around. Hi-fi became Big Time. Today, if it isn't hi-fi, it hasn't a chance. Led by the small-fry, craftsmanlike concerns—who in turn were led by the public and soon fell all over each other making better and better components—the mammoths of the industry maneuvered into line. Commercial phonographs of every conceivable quality swung over (in their descriptive literature if nowhere else) into the hi-fi ranks; according to one estimate, $250,000,000 of the $300,000,000 spent in the field last year went for their ready-made sets. In this exuberantly mixed market, as the makers of "genuine" parts loudly insist, the term "hi-fi" is being devalued through improper use. Yet it is also true that even the compromise solutions are incomparable improvements on their predecessors, and for the majority of music-consumers a compromise may be the logical answer. The pressure toward quality on the part of a minute group of people has already shown that it can work miracles, and to suppose that the revolution is over would be rash and ungenerous.

Innards, Outwards, and Upwards

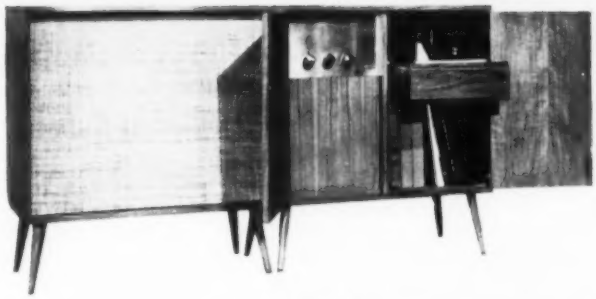
High fidelity was a misnomer from the beginning, but the time has long since passed to complain. You cannot, obviously, reproduce in a 15 x 25 living room the sound of a symphony orchestra in a concert hall. You cannot, in all the subtle ministrations of the recording engineers, do anything but distort the abstract and unimaginable ideal of perfect faithfulness to music—sometimes to its advantage, sometimes not. You cannot, but you try—and, in the process, achieve not fidelity but a new kind of music in its own right.

In this respect, the laboratory ideal of high fidelity is a deceptive goal, and the assumption that goes with it—that the most widgeted and gimmicky-looking piece of equipment must be the best—is false. There never was any reason why the same parts the amateur assembled could not be pre-packaged by an enterprising manufacturer, and one cannot assume that the current commercial "hi-fi" ready-mades are inferior simply because they come in cabinets. Hi-fi has not always been free of fakery, even in its purest form, nor does everyone like to tinker, nor is every home hi-fi system a model of unfailing performance.

Hi-fi, in fact, has much in common with Oscar Wilde's explanation of why the cigarette is the perfect pleasure: it is exquisite, and leaves you dissatisfied. Other people's hi-fi sets always sound better than your own, and your own is always going to sound better next week—when you get that wow out of the changer, try a new cross-over network, and mount the speaker in the fireplace (this unhappy state of mind is known as hi-fi-chondria). There would be much to say for letting the manufacturer do some of the worrying for you, if only this alternative did not seem to lead in the direction of that bugbear of the aurally sensitive, the juke box.

This extraordinary instrument (its makers call it the "commercial coin-operated phonograph") must be among the most widely listened to in history. By any standard it is extreme. The sound is more distorted than the most miserable of low-fi radios. The elaborately atrocious exterior, as Russell Lynes suggests, seems intended to combine in one object all the atmosphere of a rather garish nightclub. Yet even the juke box has its own kind of integrity. The distortion of the machine is recognized in the distortions of the recordings, and popular music has concentrated on the brass choirs and close-up voices that the juke box loves. Best of all, the juke box has kept alive—over a period when phonographs have often tried to look as dull and serious as the sounds they make—a sense of delight in mechanism and in the casual gaiety of artificially continuous music.

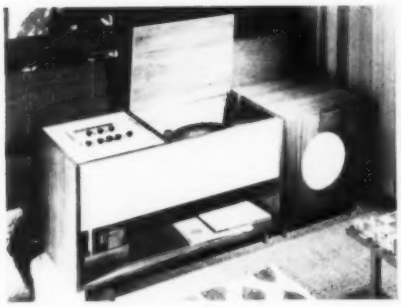
Now that the juke box is proposing to take hi-fi seriously, hi-fi could do worse than return the compliment. Though the home is not a night club, and most people are capable of lifting records off the shelves without mechanical assistance, the juke box at least reminds us that music today—as in its courtly past—can be taken casually as an accepted part of the atmosphere. A hushed, concert-hall reverence in the presence of "classical" music is a relatively recent innovation. As far as tradition goes, the juke box attitude, which regards music as a natural accompaniment to routine and special occasions—is older and more respected. The phonograph is slowly introducing this attitude into the home, and today there is no more need for a phonograph to look like a family heirloom than there is for its owner to dress for an evening of records. Hi-fi methods and mechanics have opened up almost unlimited possibilities for the designer, giving him an opportunity to match the technical and aesthetic integrity of high-fidelity with suitable and original shapes.

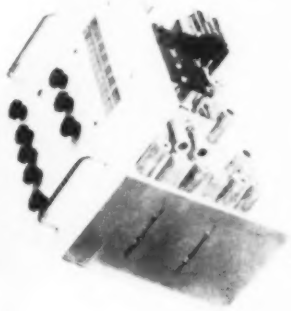


Furniture: Motorola's packaged radiophono looks like furniture (pandanus covering leaves some doubt that a speaker is enclosed), but its direct lines suggest that it has technical proficiency which is easy to handle.

Recent hi-fi units suggest a range of solutions

Fidelity in a box: Magnavox has pursued good sound in a small 2-speaker table radio which uses the entire chamber as a base reflex. The chassis forms one side of the resonance chamber.

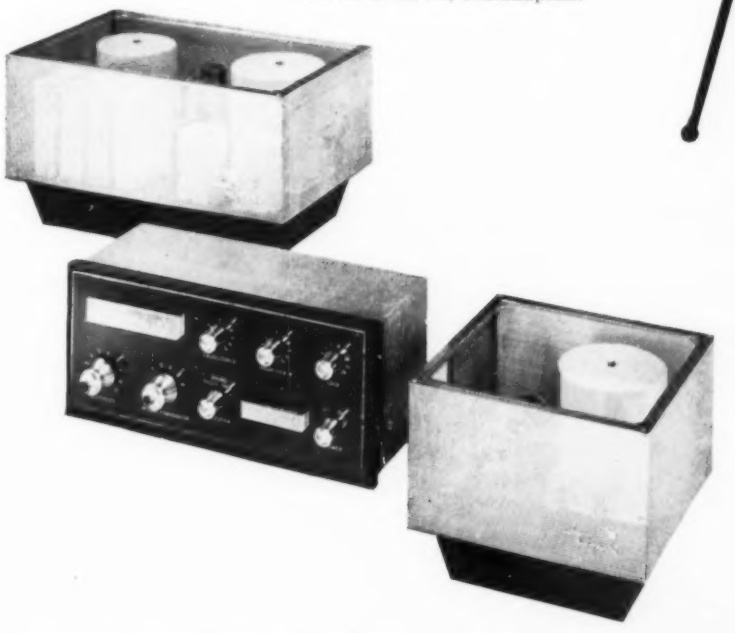




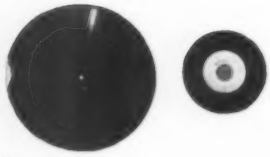
Custom furniture: Separate equipment and speaker cabinets offer flexibility and a place for each individually selected component. Combined, they form an imposing but mechanical piece of furniture which permits—even suggests—tinkering. Sound system and cabinets designed by William Barton for Design Research, Cambridge.

Acoustical shape: Though only a 4-tube radio with a 4-inch speaker hides within this efficient-looking shape designer Jon Hauser found in this experimental design for Hawley Molded Products that a half-circle gives good reproduction. (Presumably it lends itself to high-fidelity development.) An instrument engineered in this shape — a dynamic projection of the form of the speaker — might be hung on the wall like a clock.

Tamed but not concealed: A perforated case protects this equipment, a glass top reveals it, making it both technically expressive and dressy enough to leave exposed. Painter, Teague and Pettertil, for I. D. E. A., Indianapolis.



Technical advances will make hi fi of the future



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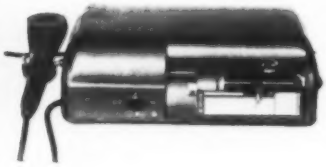

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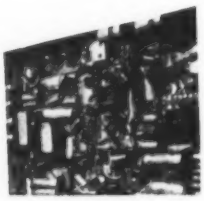

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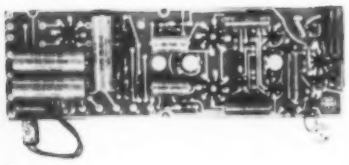

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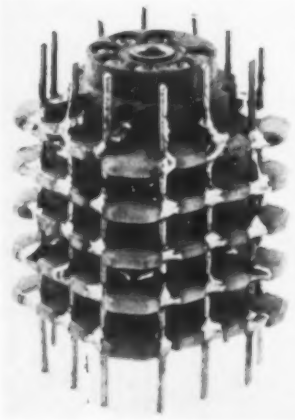

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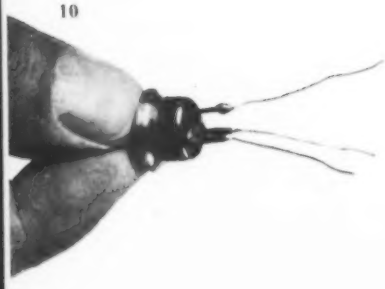


The machinery needed to reproduce sound is changing so fast that even fanatics are hardput to keep up with it, because every part of the sound system is undergoing metamorphosis. Most of the advances of the last few years are aimed less at improving sound (presumably it is good enough if you can pay for it) than at improving the equipment which turns it out. If it is cheaper to make and easier to install, the industry reasons, it will be easier to sell to an ever-larger audience.

The SOUND SOURCE, standardized for 40 years as a 12-inch disk which turned 78 times per minute, has dissolved into discs of smaller size and longer playing time (1). Though the LP record may remain the standard for serious musical recordings, its position is already challenged by magnetic methods. Ordinary records and needles do wear out, and the automatic changer which manipulates them is complex and heavy (2). Magnetically recorded tape, on the other hand, is permanent and compact and it can be recorded at home. Though machinery is far from small and simple at present (3), there are plenty of indications that magnetic recordings can be done well with a compact machine: the dictating machine (4) is far ahead of its musical descendant in compactness, and the Minifon, a German wire recorder the size of a hand (5) shows what *can* be done. If occasional snarls of tape frighten the average user of magnetic recorders, he can now get a machine (made by MagneticOn, N. Y.) just like a conventional phonograph except that it records magnetically on a flat disk and has a magnetic pick-up in the head. Although magnetic recorders can't supply the mass market now because there is no cheap way to mass-produce magnetic records or tape, the bottleneck is no doubt temporary. And though the buyer still has to choose between high quality and minimum bulk, we seem to be headed toward some recording system which is small, durable and undeniably faithful. In the electronic CIRCUITRY of commercial radio and amplifying equipment, bulk is already disappearing before simplified circuitry. The familiar under-chassis confusion of wires and components (6) was the product of outdated handcraft assembly methods; the new printed and etched circuits (7) which take a fraction of the space for components and for assembly, have already given us infinitely smaller radio and amplifier chassis, and in combination with new connectors and modular subassemblies (8) make it possible to put much more machinery in the same old space.

This leaves tubes and transformers as the main space-takers, and they too have been moving into a sub-miniature state (9). In some circuits miniature

E. B. Meyrowitz

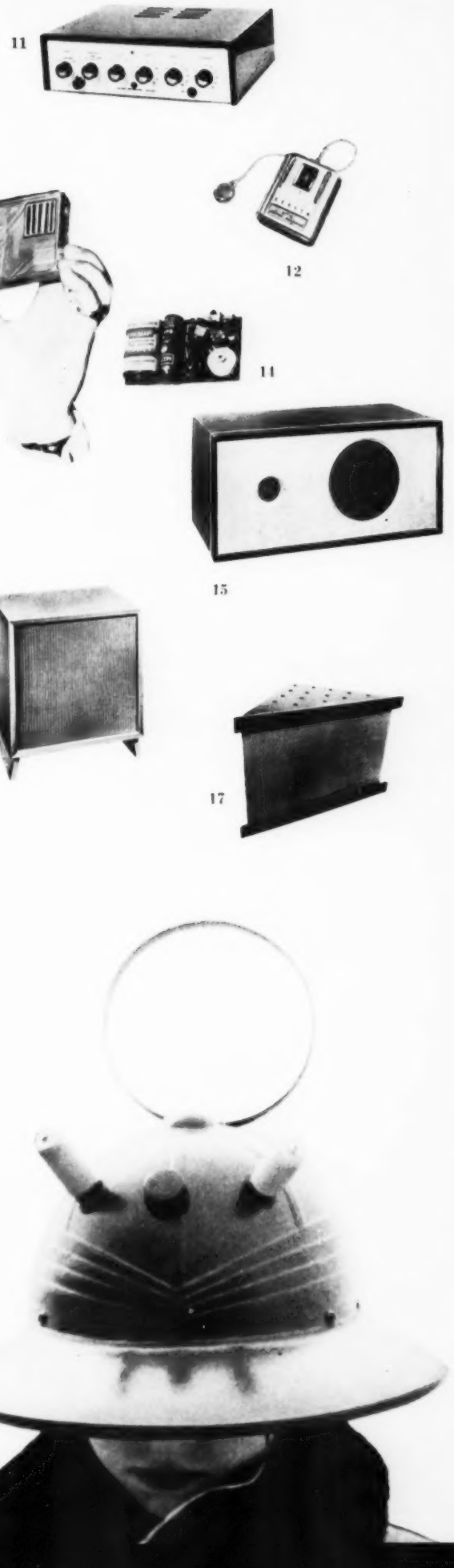
easier to make, install and sell.

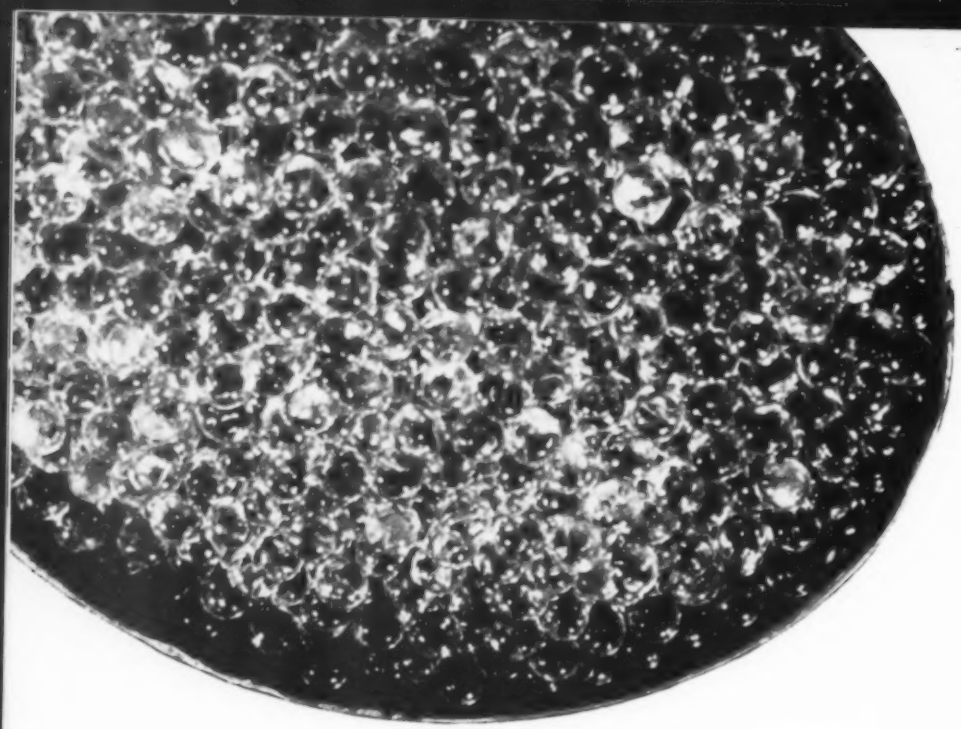
tubes can now be used for the power output tubes (usually the largest), and even before they are fully exploited the transistor **(10)** threatens to replace them entirely. The transistor is usually smaller than the smallest tube to begin with, and because it needs little power it allows the power-supply components to be cut down. The result of all this is that the large heavy amplifier of conventional circuitry, to meet this competition, is now sometimes not much bigger than a candy box. The Scott, though only 3" high **(11)**, is suited for use with the finest equipment. The future of miniature audio systems is augured by transistor hearing aids **(12)** and baby instruments like call radios **(14)** and now Emerson's experimental pocket radio **(13)**.

SOUND PRODUCTION poses the most difficult problem in the whole audio chain, because the best and most compact of electrical signals is worthless until it vibrates the air to make sound. The design of loudspeakers, like the making of violins, seems to involve as much art and luck as technical know how, and among technicians there is scant agreement about future prospects and even aims.

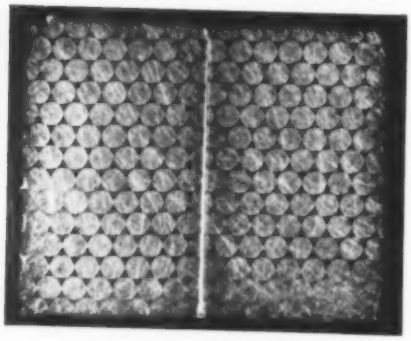
If the aim is to make smaller speakers to suit smaller instruments, the major problem is how to produce low notes without a large speaker area. The builder of an organ needs a 32-foot pipe to handle the low-frequency vibrations, and there is a similar relation between bulk and bass in building loudspeaker enclosures. It is possible to satisfy the human ear with something less than the sound produced by an organ pipe, however, and most enclosures are now designed to make smaller speakers to do *almost* as good a job as gigantic ones. The 11" high Kingdom **(15)** fits well on a shelf. Some new enclosures take advantage of long-neglected resonance principles: the R. J. **(16)** tries to compensate for the size of its speaker by reinforcing low frequencies by use of a Helmholtz resonator. Others, like the Baruch-Lang **(17)**, are made to fit into room corners, so that they can substitute the resonant walls for a larger enclosure. The final step in this direction—long presaged by the custom of mounting speakers in the closet door—may be a special room or space built into a building to act as the sound chamber. Though it seems impractical, it would probably produce better and cheaper results than many available enclosures.

If the ultimate in a compact, easy solution is really what's wanted, we could all wear headphones and receive programs through antenna-trimmed hats. Then no speakers would be needed at all—though it might end by making music an *anti*-social activity and creating havoc in heavy traffic.



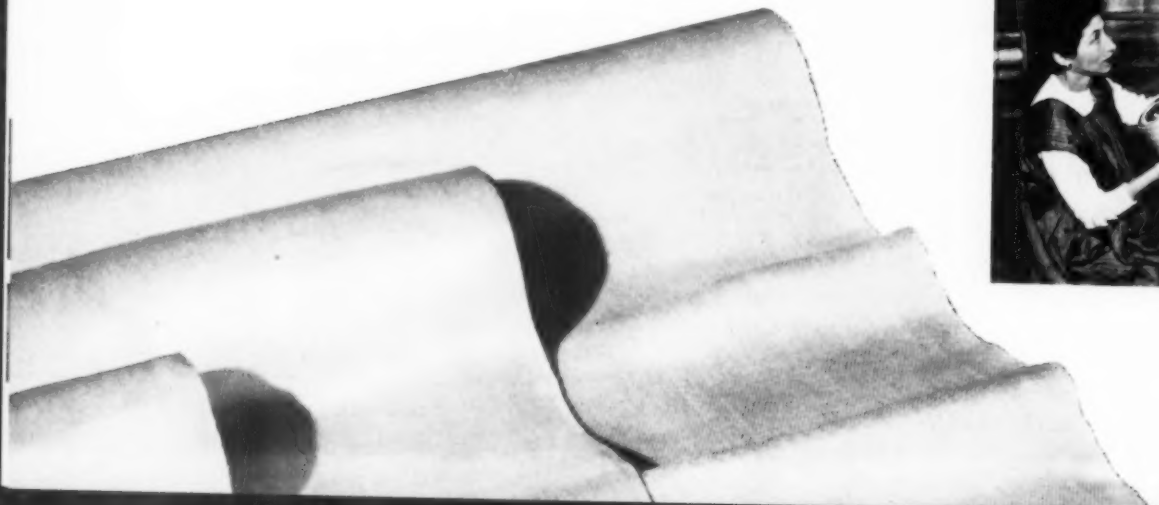


Sometimes Fiberglas sells itself



WHAT FIBERGLAS DID

Sometimes design is needed



to sell a new material to an old established market

Suppose you've sunk a fortune developing a material so versatile it suggests itself for a million new markets. Chances are you reach some of them almost automatically. But what do you do in areas where the product meets indifference?

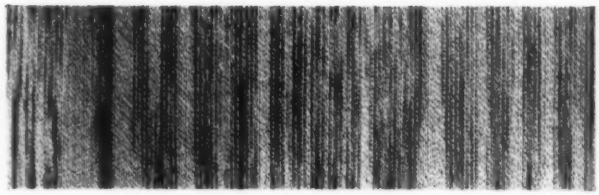
Take the case of Fiberglas. When Owens-Corning Fiberglas Corporation, after years of research, found a way to draw molten glass into yarn or blow it into wool fibers, it had worked a technical miracle. Wool could be packed into filters or insulation; yarn, better still, could be woven into curtains that seemed almost ideal. Though the glass could not be yarn-dyed (eliminating woven patterns and tweeds) Fiberglas curtains offered many premiums: fireproof, durable, immune to deterioration, they promised to revolutionize home fabrics. Yet, while commercial users were attracted by their fireproof qualities, homemakers apparently did not shop for draperies with a holocaust in mind.

One trouble was that Owens-Corning made yarns only; the converters who bought them made finished fabrics. Converters naturally had little time to give Fiberglas the special treatment it needed; they tended to weave, print and sell it as a sturdy substitute for silk or rayon. But as long as other fabrics offered nice prints and textures, customers resisted. Design, it seemed, was as important as durability.

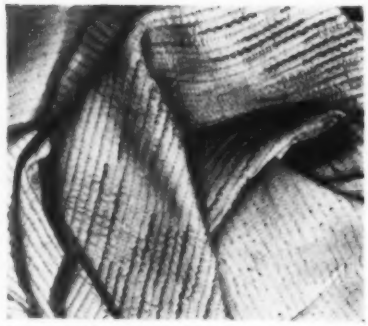
R. K. Biggers, head of the firm's Textile Division, concluded that the way to make Fiberglas good enough for the home was to design it more appropriately, by enhancing glass cloth's particular assets. He asked fabric designers D. D. and Leslie Tillett to study Fiberglas from yarn to yardage, and create weaving and printing techniques suitable to the material. Last month the Tilletts' collection was shown to the converters (above). Many of the design experiments were snapped up for production next fall; all of them shed new light on Fiberglas as a different kind of decorative fabric for the home. Some of the new techniques are shown on the following pages.

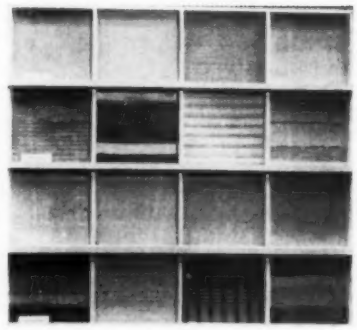
Yarns

There are only two kinds of Fiberglas yarns: staple fiber (far left) and continuous filament (left). Neither will take dye. So the Tilletts suggested a way of printing the yarn so that when woven it would haev the textured effect of a tweed, as the sample at the right shows.



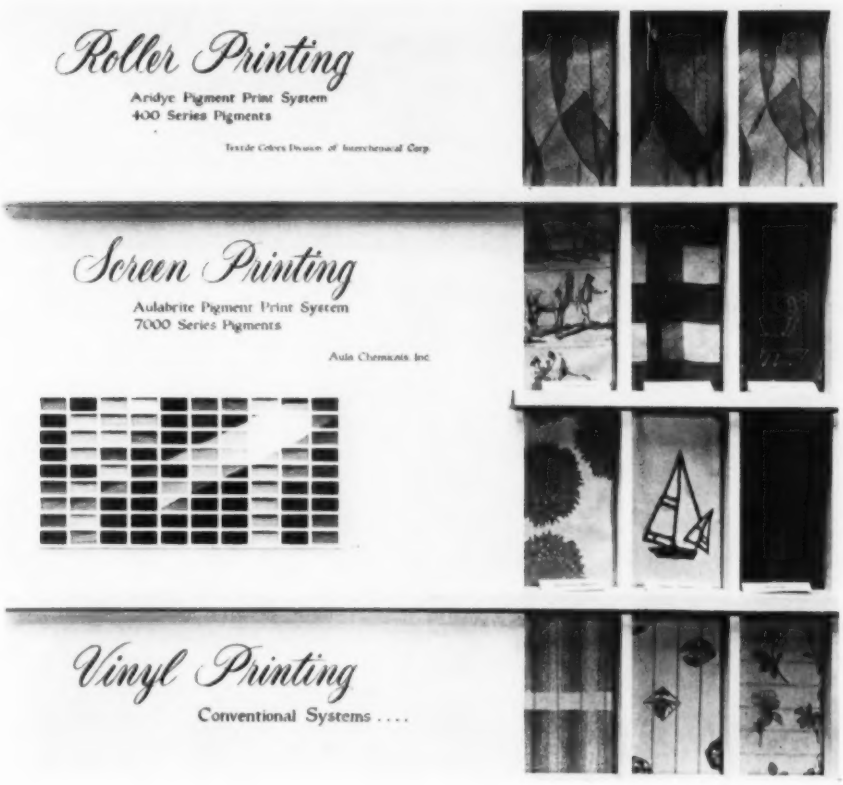
Weaves





Working with weavers, the Tilletts suggested new ways of achieving textured weaves with the two basic yarns.

In printing, the designers worked out several new techniques. The two basic qualities of Fiberglas fabric are translucency, and reflectivity or lustre. The Tilletts wanted to enhance these qualities—often considered drawbacks—by controlling light to create new and interesting surfaces. They found they could "delustre" areas by printing them with a 100% opaque pigment; this led to various designs for enlivening the surface: printing white on an off-white lustrous ground, or reversing the method to print only the ground around the pattern, leaving the pattern lustrous (immediate right). Printing white patterns on dark grounds (far right) was also successful. The Tilletts developed fine steel-point designs for the non-absorbent fabric, and a range of stripes, plaids and moires expressive of the printing technique.



The display for converters illustrates three way to print Fiberglas fabrics. The Tilletts concentrated on screen printing with pigments (not dyes) of the Aulabrite System, a new technique which leaves printed surfaces pliable and permanently colored.

TV in a prefab HOME

The thing's the show in a new type of television conceived by NBC's supervisor of plant design.

Massive sets, specially hung lights, and crowds of operating personnel may be required for a single performance of a big show. The Home Show studio is a permanent set on which a number of acts can be performed in sequence.

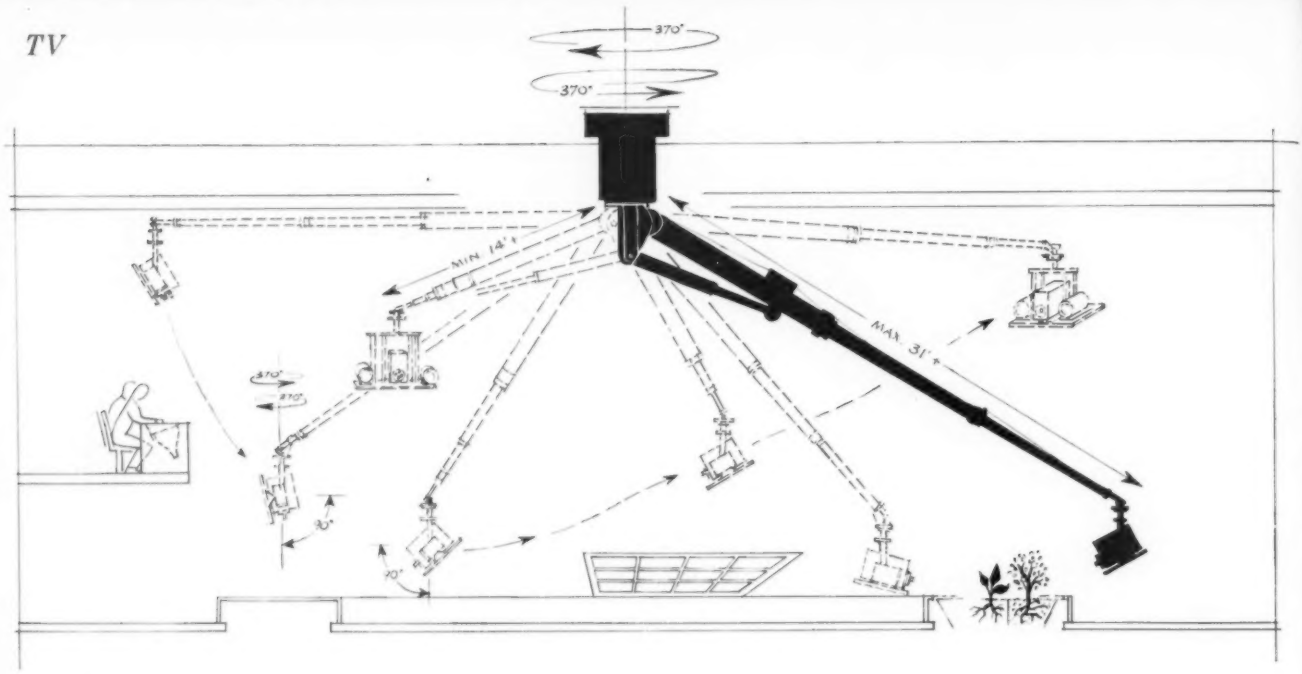
It's a miracle that this home ever got built—it was a virtuoso performance from start to finish. When Sol Cornberg was brought into the act, last November, NBC had been kicking around plans for the Home Show for over a year. The idea seemed great —a show that was edited like a woman's magazine to present tips on cooking, gardening, fashions, children, and everything else that's wifely, with plenty of advertising sandwiched between the pages. Three kinescopes had been made up and presented to advertisers, but the format didn't jell. Sixty days after Cornberg tackled the problem of giving the Home Show a home, it went on the air.

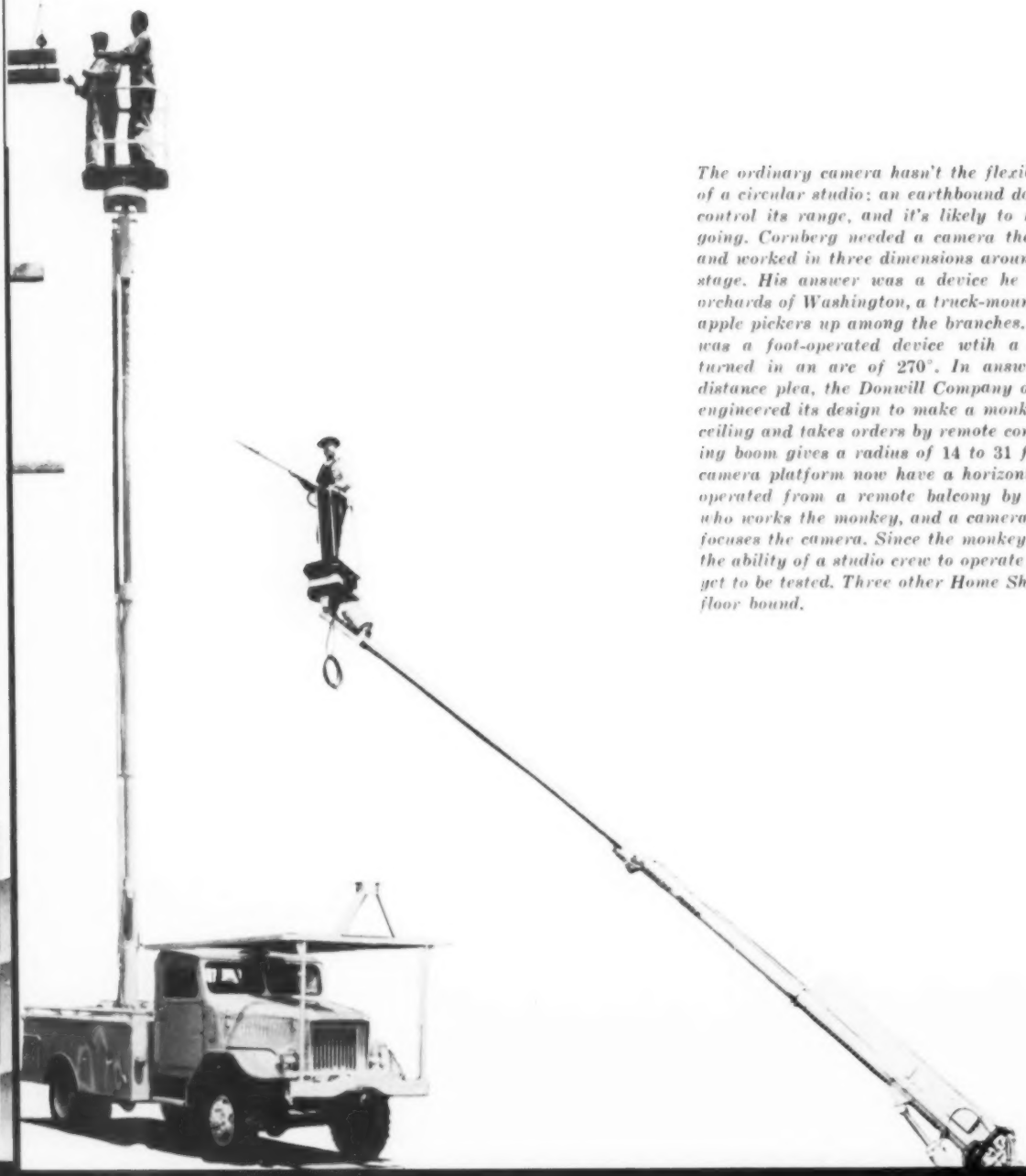
Cornberg's set is one of the flashiest television has seen, and the speed with which it materialized left NBC breathless. But the real miracle was not the speed but the idea—an idea that was essentially alien to traditional television—and the fact that Cornberg put it over, at a cost to NBC of at least a quarter of a million dollars.

Cornberg has always felt that television wears too much make-up. The great virtue of the medium, he feels, is spontaneity, and the massively realistic sets that are hauled in to back up big shows are not only a waste but a drag. In the Home Show he wanted to put the emphasis on things and the people who show the things. The background was to be as anonymous as possible. If you try to sell a bed by putting it in a bedroom, he argued, maybe the audience won't like the room, or maybe they'll think it looks too expensive for them. What you want to show is the bed—"the thing as it has never been shown before—animated, mobile, divorced from the conventional presentation."

So sets were out. In their stead Cornberg produced a plan he had been developing for many years —a studio that is permanent yet flexible and completely mechanized. The bottom layer of the studio was reserved as a stage. Technical devices were brushed into upper space, and maintaining and operating personnel were relegated to the "proper time and place." The stage was made circular to facilitate the movement of cameras and the control of lighting. Its perimeter was a background of infinite variety, a "color value wall" that could be spotted with light from the front or painted with scenery by rear projection. Permanent props—sinks, stoves, garden, weathermaker, lift, etc.—were placed on a circular ramp several feet within this background. The center of the studio was left as an arena.

Many of the gadgets used in the Home studio are familiar display equipment. But Cornberg's concept of a permanent, flexible, completely mechanized studio depends on several unique devices. Some of them, in fact, have not been invented.

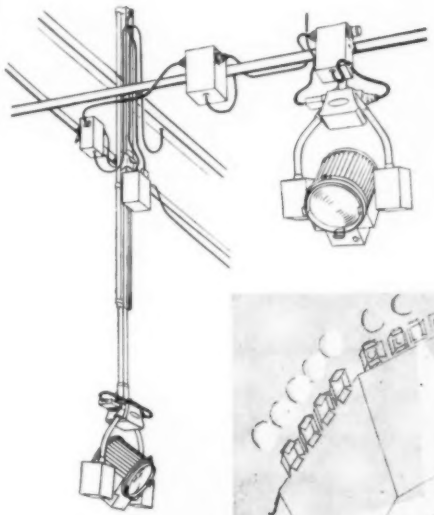


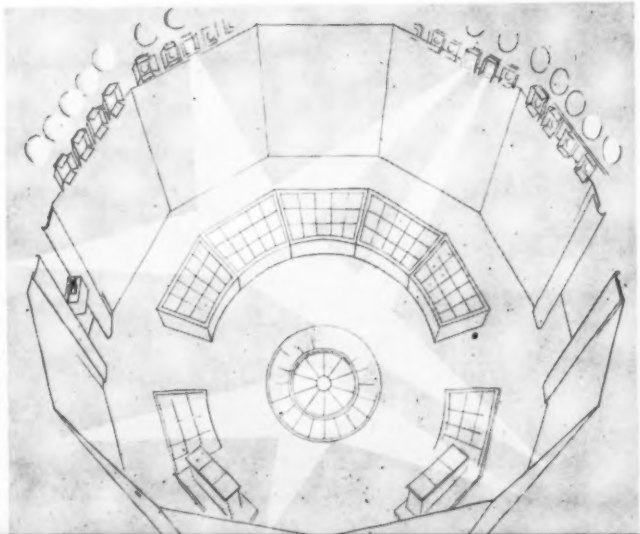


The ordinary camera hasn't the flexibility to make the most of a circular studio: an earthbound dolly and a trail of wires control its range, and it's likely to meet itself coming and going. Cornberg needed a camera that flew above the floor and worked in three dimensions around his three-dimensional stage. His answer was a device he had seen in the apple orchards of Washington, a truck-mounted monkey that swung apple pickers up among the branches. The Industrial Monkey was a foot-operated device wtih a retractable boom that turned in an arc of 270°. In answer to Cornberg's long-distance plea, the Donwill Company of Portland, Oregon, re-engineered its design to make a monkey that hangs from the ceiling and takes orders by remote control. Its double-retracting boom gives a radius of 14 to 31 feet, and both boom and camera platform now have a horizontal radius of 370°. It is operated from a remote balcony by two men: a dollyman, who works the monkey, and a cameraman, who positions and focuses the camera. Since the monkey has just been installed, the ability of a studio crew to operate this interstellar eye has yet to be tested. Three other Home Show cameras will remain floor bound.

The studio microphone, with its long boom and its tether of wire, is another studio obstacle. Several companies have developed wireless pocket mikes, but since they transmit sound by air, these miniatures must be steady enough for FCC approval. The first to make the grade on a permanent basis, Century Lighting Company's Porto-O-Vox, was licensed to operate at 27.57 mc. on April 26. On the sending side it comprises lapel mike, soap-dish-size amplifier and battery case, and a leg's length of antenna. The receiver can be 300 feet away.

A third technical headache is lighting. Even if lights are rehung for every show it's hard to light each shot in a sequence perfectly. The most flexible remote control system is the Century set-up below, whose vertical position, rotation, focus, and cut-off are controlled from one panel. But since roving lights and roving camera cannot share the same air without danger of collision, on the Home Show Cornberg proposed that similar flexibility might be achieved with fixed position, fixed focus lights. Each of the thirteen segments of the studio was banked with a near, or back, light, a far, or front light, and sidelights. The diagram shows how they combine on a scene. The main drawback is diffusion—deep contrasts are almost impossible. Cornberg's still working on this one.





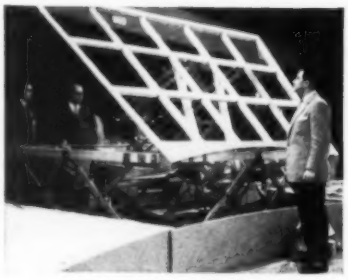
Cornberg had his first meeting on the Home Show with NBC President Sylvester Weaver the day after Thanksgiving. In three days he had prepared an outline of his plan. A couple of weeks later he and scene designer Bill Riggs unveiled a model and scale drawings with such stunning effect that duplicates were made up for every Home salesman (opposite page). The network freely admits that advertising worth 1½ million dollars was sold on the basis of these plans, before the cast was announced.

The biggest drawing card undoubtedly was the equipment that Cornberg devised for displaying products. The tilt elevator, for instance, pokes carpets in the air and pans them toward the camera without ever admitting they are heavy. The spiral lift picks up a chair and turns it over to reveal the fine workmanship. The elementary deposits rain, hail, fog, snow, or sleet on young ladies in model raincoats. The growery can be used to demonstrate the transplanting of seedlings or the installation of Reynolds downspouts. The concentric turntables at the center of the room can make giant display tables or a carousel for a children's party. The rear projection screen offers unlimited backgrounds, and displays can be arranged in no time by fitting a system of aluminum pipes into notches in the floor. Some of these devices are standard, but others were specified by Cornberg and Riggs and engineered by the manufacturers.

In all this circus of equipment there were bound to be some bugs. Various mechanical devices have gone on the blink from time to time. The original color value wall, a curtain of latex stretched to translucence, was torn when the show opened and may be replaced by a rigid screen of reinforced polyester. Some of the equipment provides confused or messy backgrounds—particularly the metal plugs and glass lighting blocks in the floor. The show was also handicapped by a change in plans. Five weeks before air time it still had no studio assignment. At the last minute it was crowded into a space with a diameter at least twenty feet smaller than the plans had called for. This meant, among other things, cutting down the alley behind the ramps so that camera dollies couldn't move around the displays the way they were supposed to. It also meant that the rear projection screen was limited to one position for optimum results.

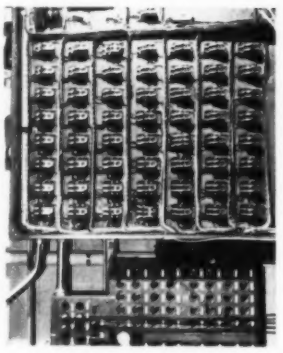
But the biggest handicap the Home Show faces is probably its reputation. The set has been widely publicized as a novel departure from TV tradition. But in all the excitement about the gimmicks there has been a tendency to overlook the set's most important contribution (next page).

Pipes and wires are concealed beneath raised studio floor.



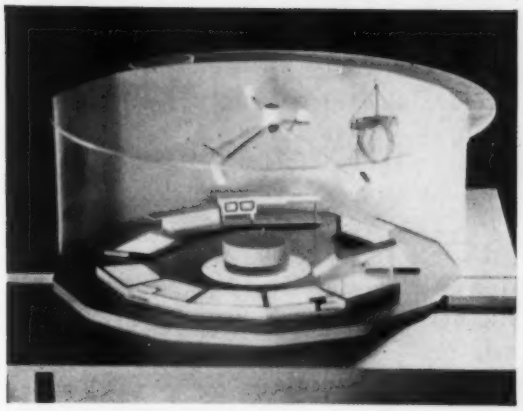
Tilt elevator lifts and tilts heavy displays.

Spiral pick-up turns objects (or people) in mid-air.

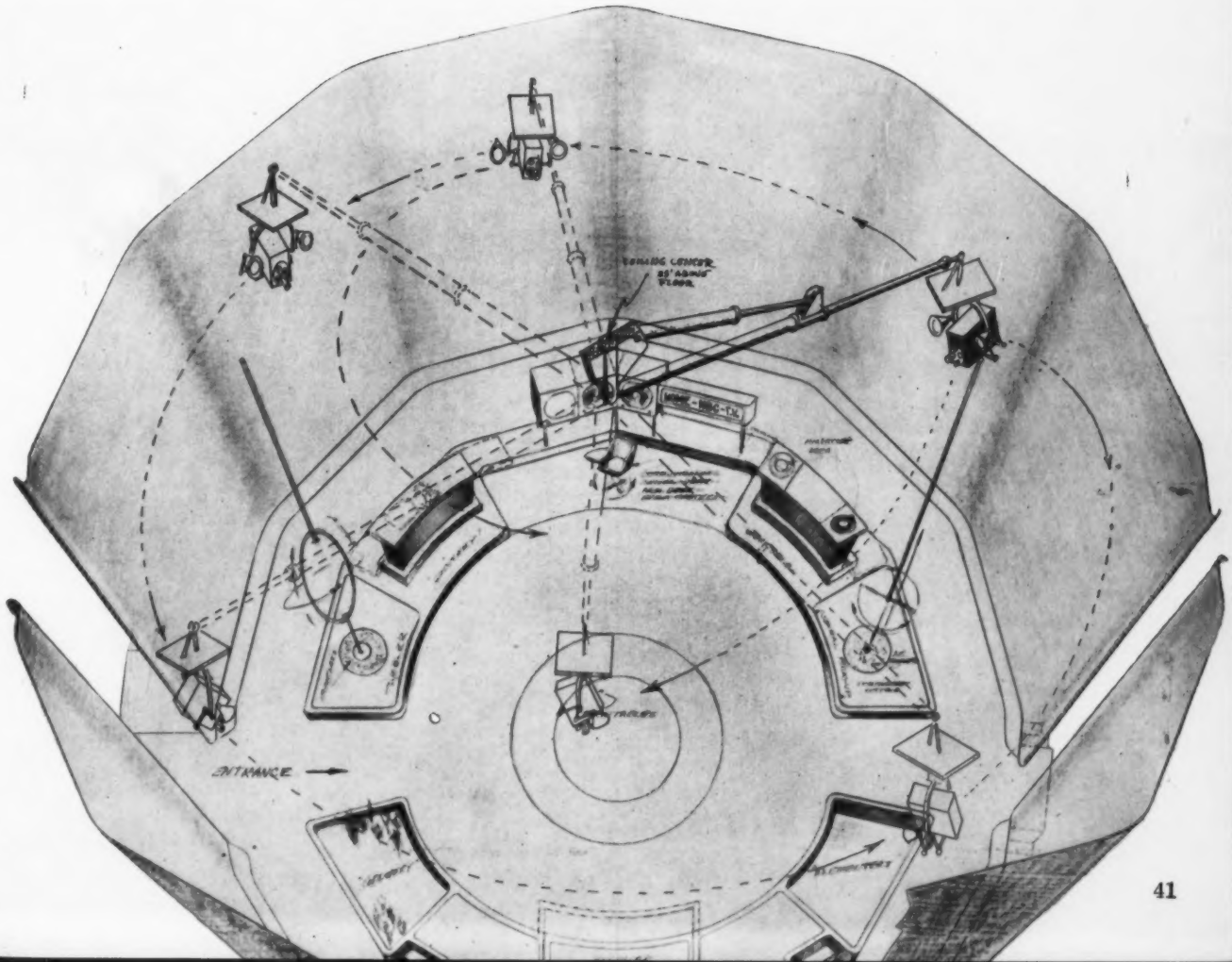


Control room is crammed. Master panel permits presetting works for each show.

Camera monkey has just been installed, is still unproved.



Cornberg and his drawing arm, Bill Riggs, presented their ideas in the model above and the plans below. Executives were so pleased that each Home salesman was given a set of blue prints and a model case wired for lighting to show advertising prospects.

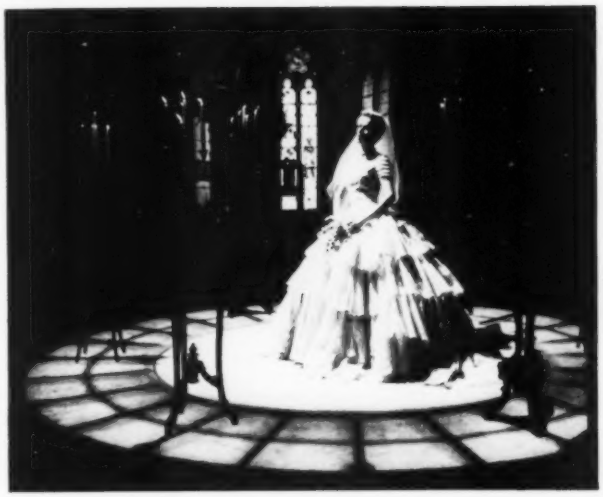


"We designed this set so that producer and director can walk in and think out loud—and their thoughts materialize," says Cornberg. He admits this is hard on everyone involved. When the sky's the limit, the challenge is almost too great, and it's natural to fall back on realism. The editors are inclined to fall back on realism too—they don't feel at home in a plain old studio, and when they bring in new material they count on a brand new setting to back it up. As a result, a number of productions have been built around the heavy, obvious sets of traditional dramatic shows.

This is too bad, because one of the beauties of the show is the way it lets you in on the workings of the studio. As the camera pans around the circular stage you see what the editors see—not a series of sets, but a continuous working area. Once you are familiar with this area, every artistic illusion is patently artificial. If it hits too hard it jars on your knowledge of the stage—those painted mountains were a nuisance to install, and you know the workmen are waiting, just outside of camera range, to haul them off again. A playful illusion is far more believable. It's fun to see the actors cast their spell over familiar surroundings, and far closer to theater than anything television has done.

This conflict between Cornberg's stage and conventional scenery may keep the Home Show on the track. It's Cornberg's built-in assurance that they'll do things his way or not at all.—*d.a.*

Simple display devices, imaginatively used, provide varied backgrounds for all kinds of skits. But editors and directors run out of imaginative ideas from time to time and long for the steady support of specific scenery.



Every now and then, the Home Show makes perfect use of its equipment. In the scene at far left, a projected background, dramatic lighting, and a happy subject combine in a stunning picture. A frequent and pleasant alternative to such pointed illusions is a trip to a real place. Here Arlene Francis admires the cherry blossoms along the Potomac.

Seated on her editorial throne, a chair beside the monitor screen, Editor-in-Chief Francis is a link between illusion and reality.

Alexey Brodovitch's scheme for end-lighted Plexiglas script on Lever House, New York.

signs in the street

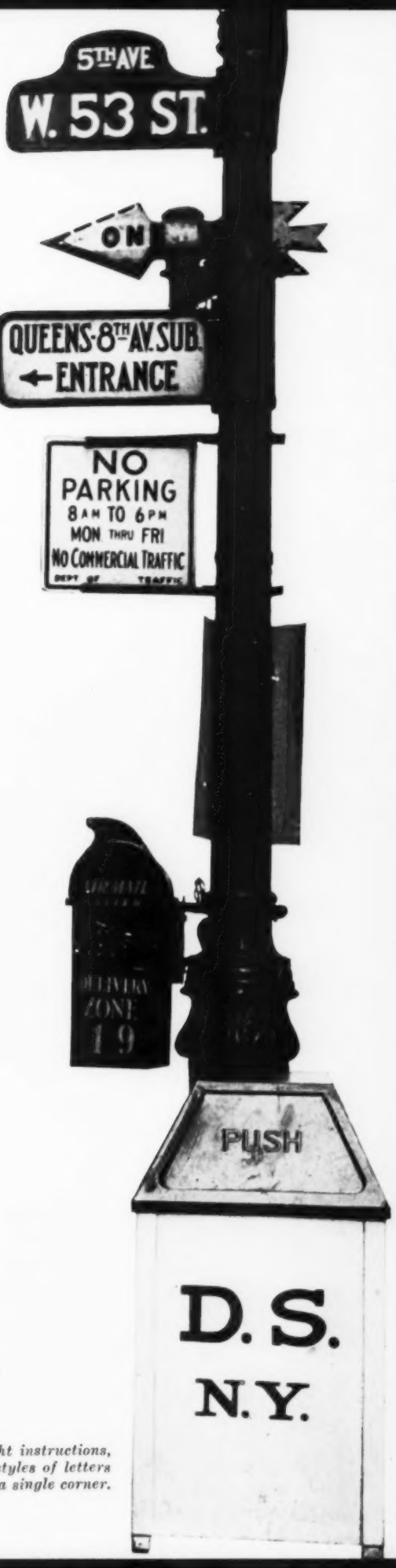
Variations on Trajan's alphabet in a Wall of Letters, *composed by Alvin Lustig, and executed in Plexiglas by Rohm and Ha*

Out of the chaos of buildings, lights and letters,

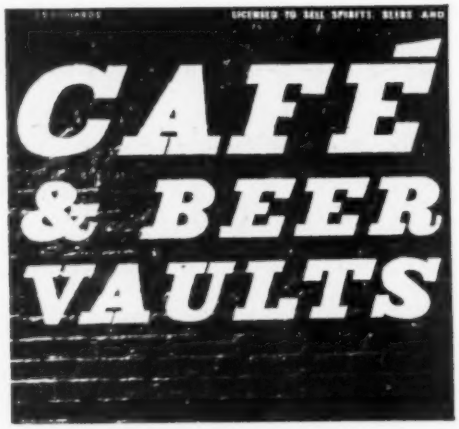
a Museum of Modern Art exhibition suggests,

we could make order with design and materials

For cities whose bus stop markers are indistinguishable from no-parking-peddling-smoking signs, the New York Museum of Modern Art's exhibition of "Signs in the Street" took some halting steps in the right direction. Though its method was affirmative rather than critical, its purpose was to show what may be done to improve the signs of the times—and with them the entire industrial and commercial scene which is the world our eyes must put up with. Each letter has a message, Nicolette Gray reminded us in December's *Architectural Review*, quite apart from that conveyed by the combinations and permutations imposed on words by language. Letter forms can be modest in character, cheerful, handsome, irritating, or merely dull. No matter how magnificent the material or how ingenious the idea which uses it, an ugly letter is still just that—ugly. Though the monstrosity at the Fifth Avenue corner retains its shock value, it confuses those of us who must read on the run. The answer to the chaos around us does not lie alone in individually beautiful letters, or end-lighted Plexiglas, or a symbolic vocabulary of simple, memorable shapes, such as those used successfully by state highway departments. (Nor are the worst signs restricted to city streets. Unsightly ones may be seen in drug stores and shoe stores.) The Museum's exhibition points to one way out: new materials like Plexiglas can—if anyone makes the effort—be worked into pleasing letter forms as easily as into poor ones.



The problem: Eight instructions, seventeen different styles of letters on a single corner.



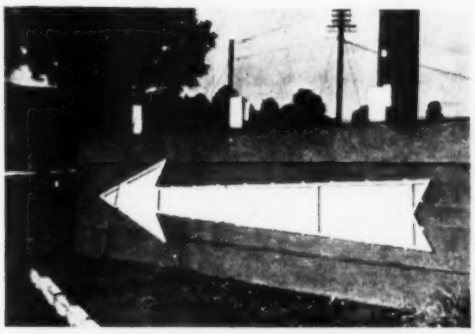
Drawings of letters on the wall next to enlarged photos point up the letter style used by the designer in each sign. Right: old and new manner of exploiting the silhouetted letter in architecture: surface design and an inside view.

1

1 *The pennant-style British bus stop signs atop obelisk shafts score high for immediate recognition and good appearance.*

2 *Clarity of direction is obvious in these arrowed signs, even to the illiterate and the most aggressively monolingual.*

3 *Gyorgy Kepes' neon sign becomes the symbol — and vice versa — for a radio store in Boston designed by Carl Koch.*



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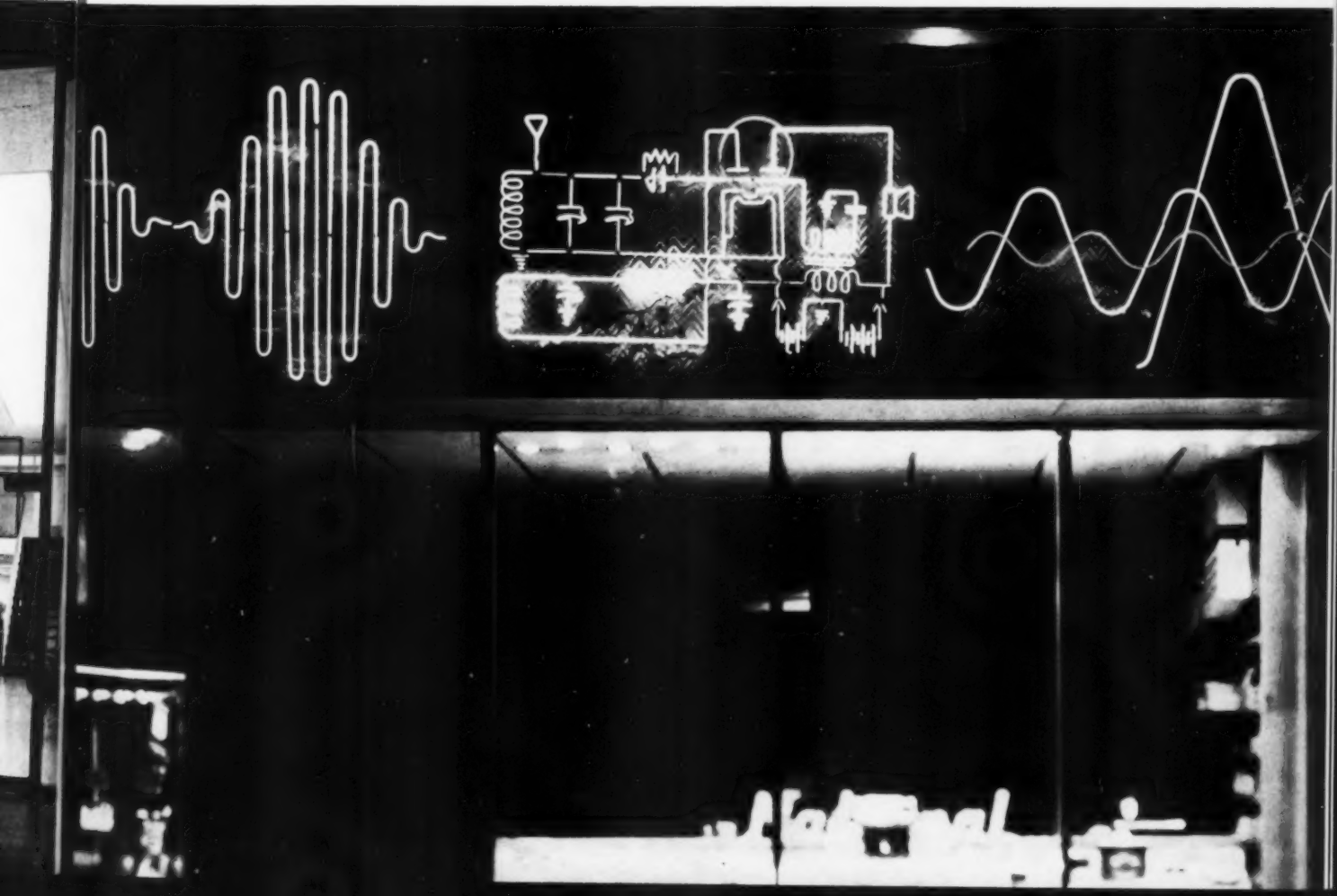
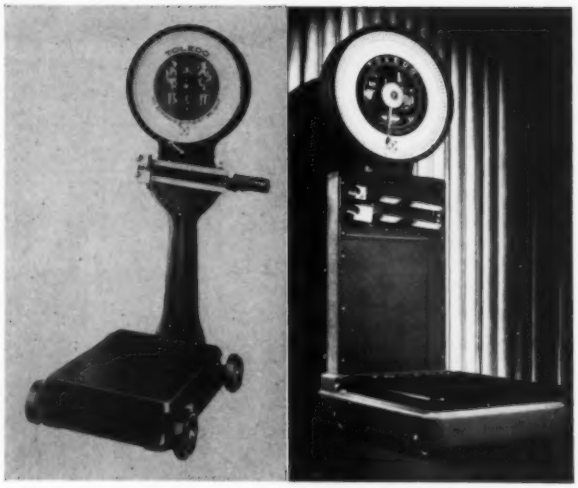
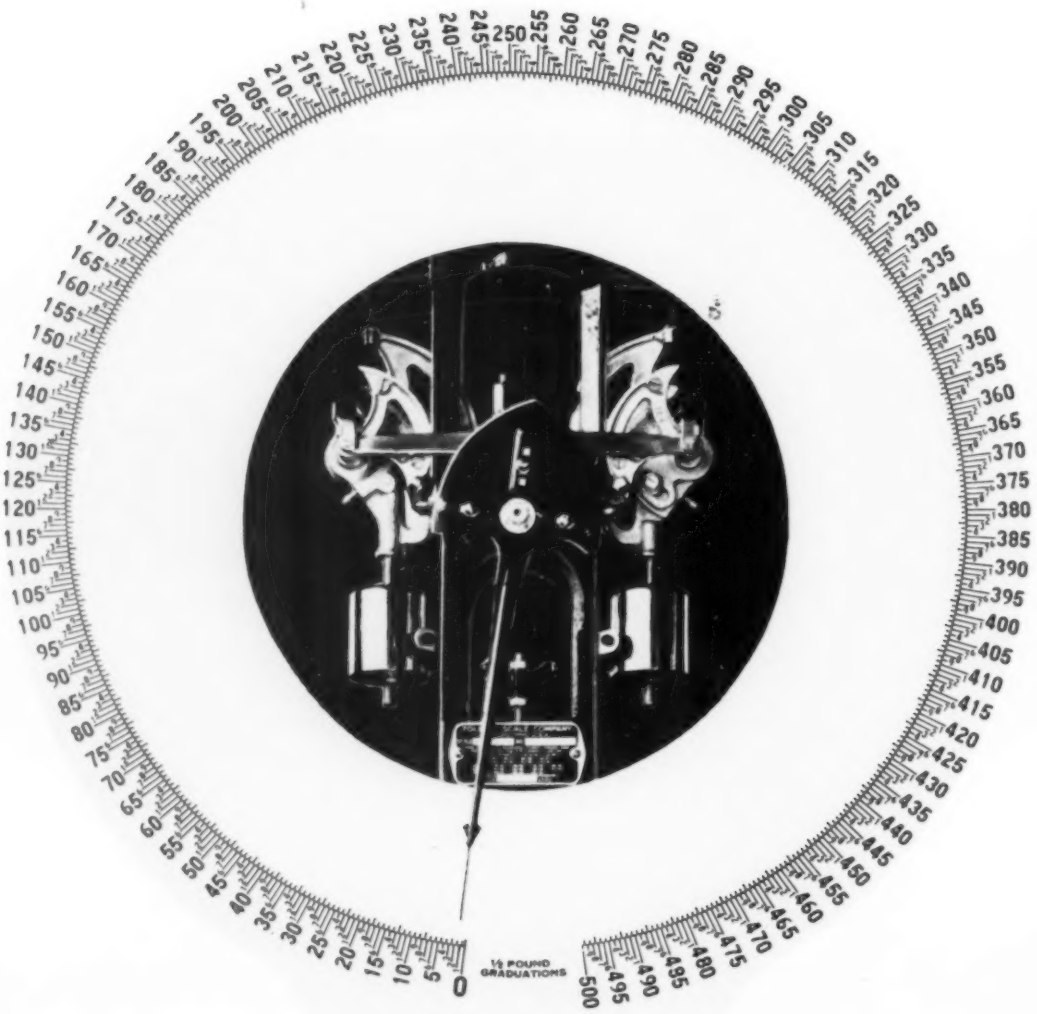


Toledo rescaled



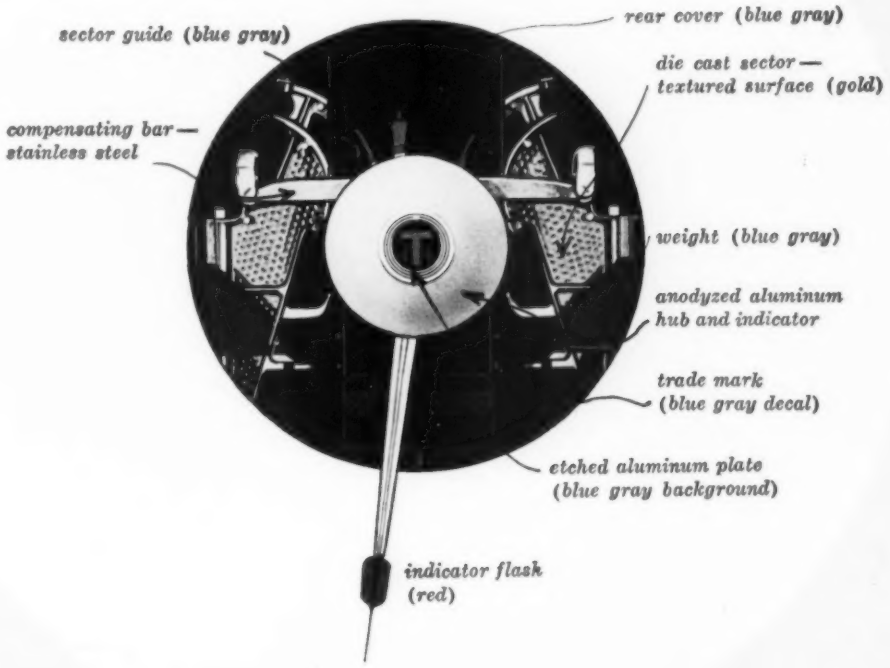
The indicating head of the heavy duty industrial scale, last re-engineered in 1931 *(left), is adaptable to a complete line of cabinets and bases. New head also swivels* 360 *degrees.*

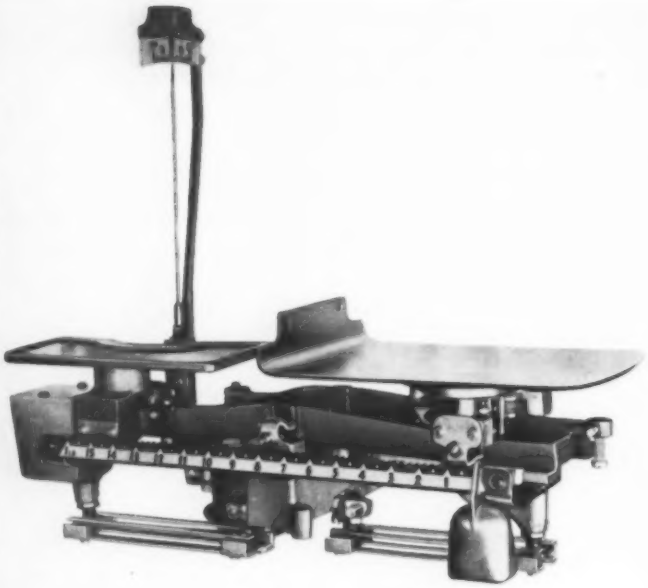


Two face-lifting jobs accomplished without loss of identity

Since modern scales, like so many mechanisms, tend to conceal their identity behind efficient dust covers, the face that charts that hidden machinery has become the scale's most characteristic feature. Two of the newest products of J. M. Little's continuing design program for the Toledo Scale Company are interesting for their answer to this challenge.

Toledo's new industrial scale presented Little with an additional problem of identity. When Toledo re-engineered the scale in 1953 to adapt it to precision die-casting, it ran up against the fact that the precise forms of mass production may look less precise than their hand-finished forebears. Toledo engineers saw no reason to squander the money they had saved on unnecessary polishing and plating of die-cast aluminum; they favored covering the machinery entirely. The sales department demanded some visual substitute for the shiny display of watchwork that had always spelled Toledo. But how is built-in precision expressed? Conceding that aluminum sectors are not naturally smooth, Little decided to exploit the production method by casting them with a textured surface and finishing them with gold paint; other parts could be painted blue-gray or left unpainted. The contrast of color and texture, he surmised, would show off moving parts just as well as chrome plate and polished brass. The result is below. For Little's second scale problem, turn the page.





Since the Speedweigh scale is used in fast-moving packaging lines, its chart has to be easy on the eyes and visible from a variety of angles. When the model above was re-engineered so that its chart tower could be turned to face front or side, J. M. Little designed an acrylic shell which is locked between the two die-cast halves of the tower, leaving the chart well-illuminated and clearly visible even from the top. One of the main design features of the tower is adaptability: the same tower can be mounted on small, medium or large bases.

The chart on the Speedweigh shows only the amount under or over a weight established by the selector on the base. Designer Little carefully proportioned the numerals and calibrations to permit flash reading. He used a yellow chart background and a gray indicator and numerals to reduce eye fatigue and consequent errors on the industrial model (opposite page), red numerals on white on the candy scales (left). Note the compositional integration of indicator and chart calibrations—an integration absent in the older model. The designer's sense of the whole paid off in better visibility.

Why should an established manufacturer of industrial products go in for a design overhauling? Here is what a midwestern chemical firm decided, and did, and found out.

One of the first products after the trademark was developed — the new 10-lb. extinguisher — has as one of its salient features an easy-to-operate, squeezable nozzle.

is for ANSUL

A staple of Ansul's industrial line was the wheeled 150-pound extinguisher. Loewy Associates redesigned the controls (shading on dial makes pressure point immediately visible), gave it a new wheel assembly and bright red and white coloring.

The Ansul Chemical Company of Marinette, Wisconsin, makes no bones about the fact that it is a small fish in a big competitive pool. In addition to refrigeration and industrial chemicals, Ansul makes mechanical products for the refrigeration industry; its refrigeration drier — to take an example—faces competition from 30 well-entrenched firms. Ansul pioneered in dry chemical fire extinguishers in 1939; 12 competitors have since entered that field.

Ansul has an antitode to the competitive squeeze on small business: the specialized consultant. While it can't support a staff of experts full time, Ansul finds it perfectly feasible, and even economical, to hire top talent on an advisory basis, and for some years has kept a stable of consultants in everything from finance and advertising to industrial psychology.

Late in 1951, the company's young and inextinguishable president, Robert C. Hood, concluded it was time to get the same service in the field of design. As he explains it, "We saw that companies had been using design for years — spottily, one package or product at a time. Our approach was broader; we didn't want to exclude any benefit we could possibly get from a design program. Even if we couldn't give the entire company a new look overnight, we wanted to nibble away at it from all sides."

This interest in applying design to business was not singular, but the way the impetus traveled from the top throughout the organization was anything but commonplace. When Ansul's management committee started to outline a design program, it found that overhauling in three areas was almost essential: 1) product design — including two new extinguishers and four existing models, with the purpose of making visible the inherent quality of Ansul's premium products; 2) packaging and identification, with a trademark as the prime need; 3) general plant layout — because Ansul felt it could make a better showing as a business organization if the appearance of its plant and test field were up-

graded. It also hoped to work up a master plan for expansion, to correlate land acquisition and expected growth.

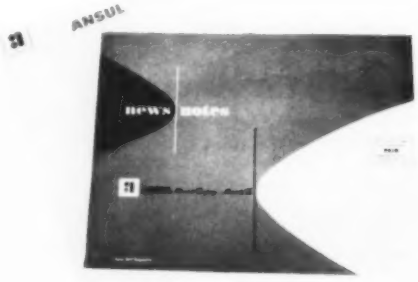
Priority charts were set up for all the jobs to be done. Then — February, 1952 — Ansul went to the Chicago office of Raymond Loewy Associates, which is directed by Franz Wagner, with an invitation to work with management and the engineering department on the program.

A budget, flexible but feasible, had been plotted: roughly 1% of annual sales volume was allotted to design costs for the first year, and a diminishing percentage as work progressed. The Loewy organization was engaged on a flat retainer to evaluate each of the proposed projects. As every design recommendation came through, a separate fee for the design work on that job was specified.

After the management committee gave each recommendation the green light, the designers worked directly with the departments involved. Final o.k.'s came, in cases of general company concern, through Ansul's special system of "participative management." For example: several schemes for the trademark "a" went to 25 department heads, and the committee based its final choice on their opinions.

Staff reactions, throughout, supplied one of the interesting lessons of the program. At the outset there was some questioning of management's inordinate concern with design — largely because Ansul produced industrial, not consumer products. Management replied, through sales bulletins and news letters, by stressing the value of company identification in the competitive race. This went over well with the salaried staff. But a later survey disclosed that hourly-paid employees — apparently inured to the unglamourous aspect of a

The double-dot "a" trademark was used as the basis of a complete graphics program, which covered stationery, forms, promotion and advertising.



Controversial pylon was part of Ansul's drive to make its plant and fire test field (where buyers watch and participate in fire-fighting demonstrations) more attractive.

A new refrigeration drier, employing a unique T-principle for removing moisture from cooling systems, was developed by Ansul engineers. The designers' problem was to package the mechanism in a way which expressed to the buyer — a repairman — the fact that the drier, because of its right-angle attachment to the refrigerant line, was easier to install than other types.

Identification extended to every aspect of the company's activity involving public contact. Although labeling company cars caused some consternation among salesmen (who liked to drive them around after working hours) they are gradually getting used to it.

chemical plant — didn't understand why money was being spent on visual "improvements." Painting of buildings and a new test field pylon came in for particular criticism. Presumably workers felt the money might find its way into their paychecks. Ansul's answer was a series of gripe-airing meetings to explain that the program was not merely an act of management's whim. The test field, they pointed out, was the point-of-sales display visited by hundreds of customers each year; the products themselves were redesigned to make Ansul recognizable — hence desirable — for its quality, to help boost the firm's prestige in the field. This obviously benefited everybody in the organization.

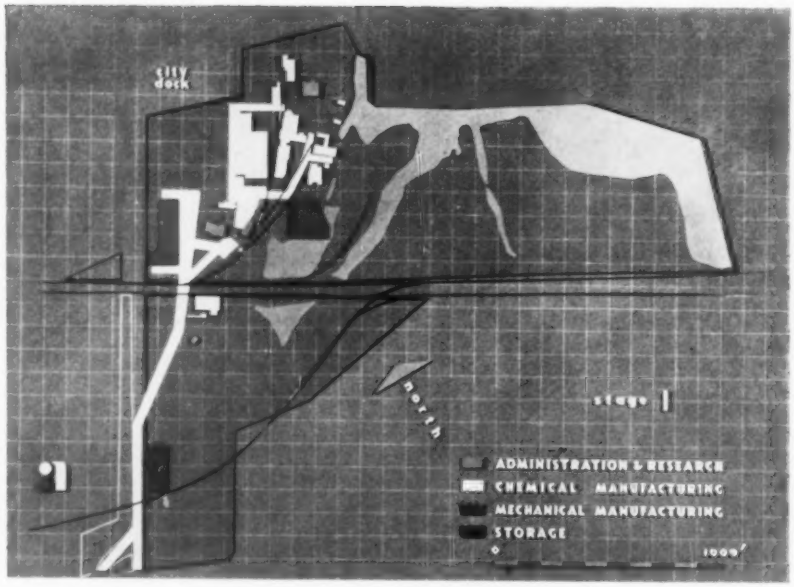
The effort not only sold the majority of employees on the program, but apparently did a lot to increase their pride in the company itself. Salesmen are reportedly highly enthusiastic about the outcome, and Hood says there is every reason to believe that integrated design is helping Ansul improve its sales position.

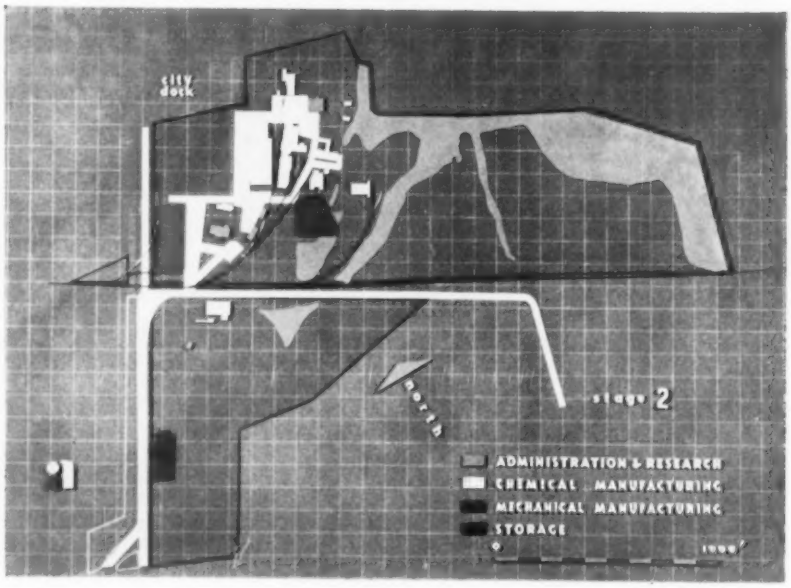
The biggest snag in the program, Ansul candidly reports in retrospect, was its own over-enthusiasm. Early results were so encouraging that the committee tended to rush things, which unbalanced the budget and confused the planning. Many small jobs were turned over to the design office for execution — jobs which Ansul now feels it should have handled alone.

What the client learned, while undergoing this highly satisfactory overhauling was that "We should have paid more attention to careful advance planning, in the interests of results as well as economy. We could have used the consultant more effectively, as a specialized adjunct to our staff rather than a replacement for it."

The results on these pages are the fruit of two years work, and to a large degree the completion of Ansul's original program. But the Loewy organization will be retained to keep an eye on Ansul, in strict accord with Hood's dictum that "design is not something you turn on and off like a spigot."

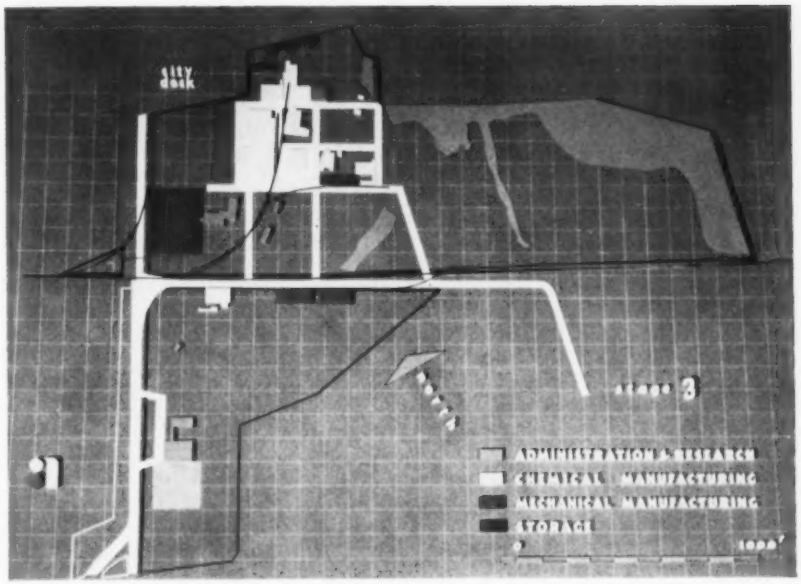
Planning for expansion on the basis of present and potential productivity figures, Ansul com-

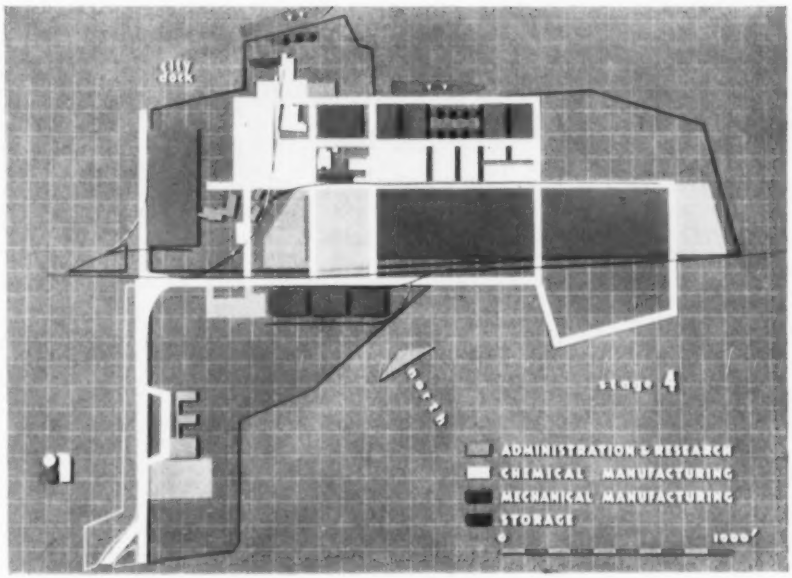




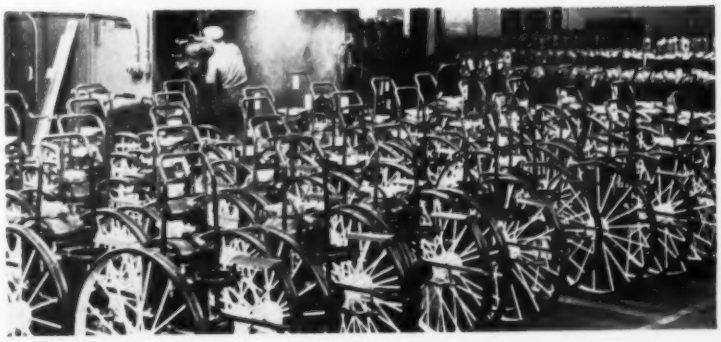
The master plan, in the form of a permanent block-plan model, is color-coded to administrative,

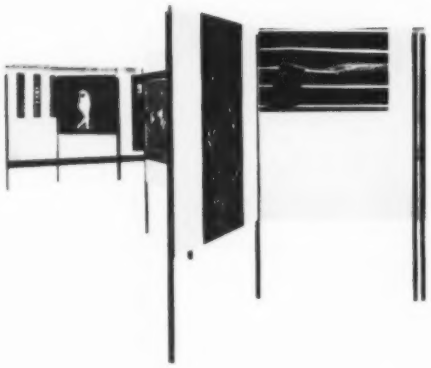
missioned a master plan to guide property acquisition, space utilization and plant construction.





production and storage area. Developed by Loewy Associates, John Somerville, consultant.



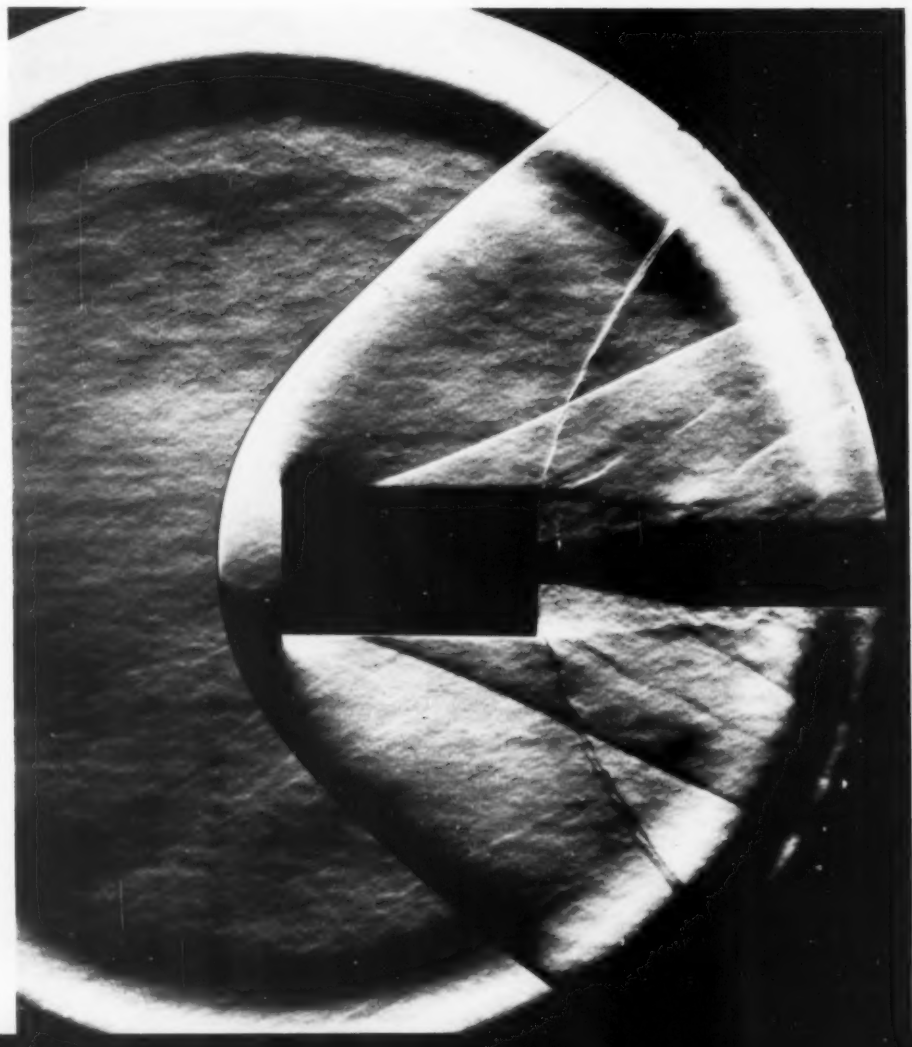


GHOSTS on film

Phenomena the eye has never been able to see are captured and recorded by high speed photography.

When Leland Stanford, in 1878, wanted to prove that all four feet of a galloping horse are off the ground simultaneously, his photographer, Eadweard Muybridge, needed a series of cameras set off by electricity to catch the horse in the air. Techniques of speed recording have now developed to a point where not only bullets and flying fish but such scientific ghosts as sound waves and air densities can be "frozen" and made visible. In addition to the obvious fascination of recording action otherwise unseen by the eye, often with arresting visual results, high speed photography serves science and industry by making it possible to record such data as air and sound reactions to various shapes and materials.

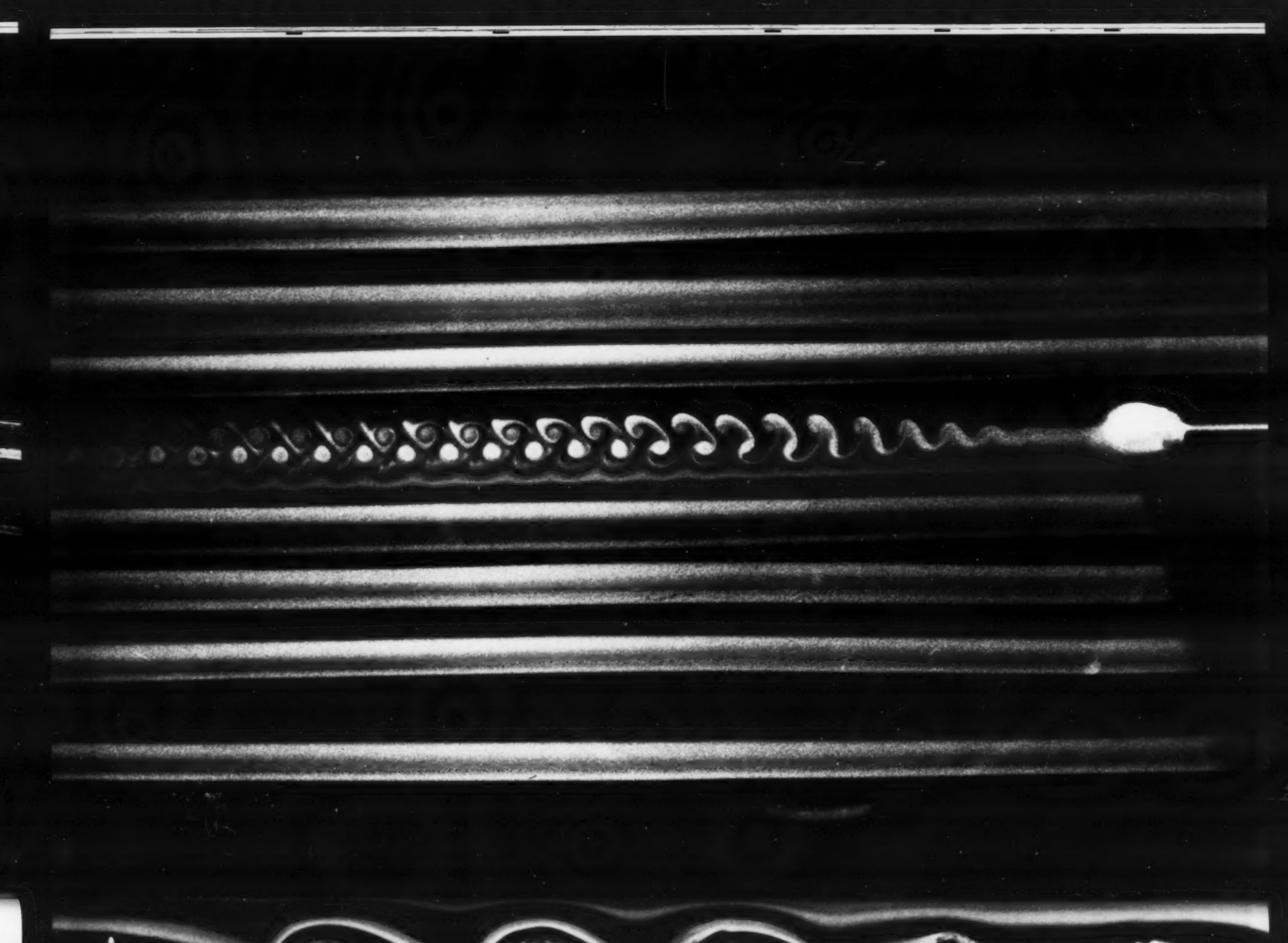
These photos are part of an exhibition of American high-speed photography prepared by the Smithsonian Institution and currently being shown in Germany. The demountable display, designed by The Architects Collaborative, uses Masonite-faced panels and 1" steel pipe supports which are slit to receive fasteners from the panels. The panels may be installed in groups radiating from a central support, or placed in variable sequences and arrangements in any kind of interior space.



Photos on these and following two pages, in order:

1. Schlieren photo of Airflow around 3" cylinder in wind tunnel. Mr. Seth Briggs, Naval Supersonic Laboratory, M.I.T.
2. Plexiglas rod falling. (multiple image) David Shaw.
3. Smoke pattern showing wake of a propeller; flash duration 30-40 microseconds.
4. Smoke pattern test of air passing airfoil. (3 & 4) Prof. F.N.M. Brown, Notre Dame

The Architect's Collaborative: Jean Fletcher, Norman Fletcher, Walter Gropius, John Harkness, Sarah Harkness, Robert McMillan, Louis McMillen, Ben Thompson; Chester Nagel, Associate in Charge.

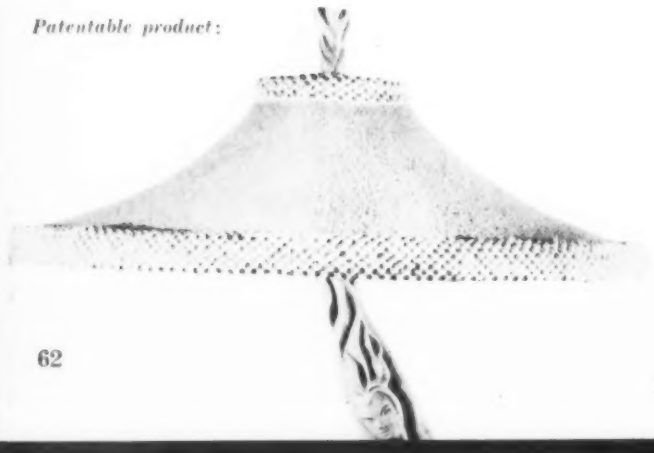


Copyrightable art:

Are your designs Inventions Trademarks or Writing?

This is the question the courts must untangle in every design protection case. A recent Supreme Court ruling about a copyrighted lampbase adds to the confusion. How will this affect your chances of getting adequate design protection in the future?

Walter J. Derenberg



Patentable product:

On March 8 of this year, the nine Justices of the Supreme Court filed into the courtroom in their customary fashion to announce a decision in *Stein vs. Mazer*—a case which apparently involved nothing more than a lamp whose base consisted of a dancing figure in a somewhat unlikely pose. But an unusual number of people were interested in the outcome of the case, the first design case to reach the Court in thirteen years.

The plaintiff, Stein, had copyrighted the ballerina as an original piece of sculpture, and had then proceeded to mass-produce it as a lamp base. When a competitor, Mazer, subsequently used Stein's molds to manufacture a practically identical lamp, the latter took him to court for infringement of his copyright.

It seems strange that Stein had chosen to regard his lamp base as a "work of art" to be protected by the *copyright* law, instead of securing the *design patent* which exists specifically for the protection of commercial, as opposed to fine art. But as it turned out, the plaintiff won his case. The Supreme Court decided that the copyright on the original sculpture remained valid in spite of the fact that the sculpture may have been intended, originally or subsequently, for commercial production as a lamp base.

The decision was widely hailed as a victory for designers of all mass-produced items, a legal step which might assure them of future protection by the same means—copyright. But on closer study, it seems to have settled precious little.

The history of Stein vs. Mazer highlights the confusion which now surrounds the entire question of design protection. The case wended its way to the Supreme Court—known to be reluctant to review such cases—only after a series of decisions and counter decisions in lower courts, and though it did uphold the copyright on the original sculpture, it did not give any clear-cut answer to the broader issue of the case: Does a copyright cover the artistic aspects inherent in any commercial product? It now appears, in spite of the much-misunderstood lamp case, that neither the Design Patent Statute nor the Copyright Act, nor even the law of unfair competition gives the minimum protection to which a designer or manufacturer might well feel entitled.

What did the law intend?

Article I of the Constitution established the basis of legal protection by stating that "The Congress shall have power . . . To promote the Progress of Science and useful Arts by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." A copyright, in other words, is the exclusive right to reproduce a literary or artistic work, and to qualify for copyright protection that work must constitute "writing." An invention of a mechanical nature, on the other

Success is no protection: *A court of appeals found this clock casing "novel, ornamental and pleasing in appearance," but lacking sufficient inventive skill. After three million had been sold, the producer's design patent was invalidated.*

hand, qualifies for a patent—an exclusive right to make and sell a "new and useful process, machine, manufacture or composition of matter, or any new and useful improvement thereof."

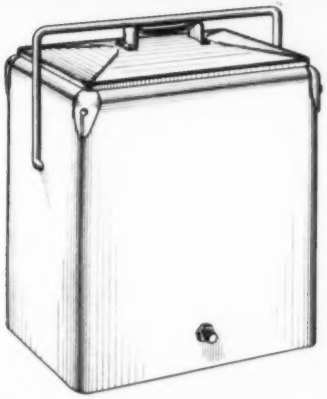
But the Stein lamp, like the majority of commercial products today, does not contain this kind of invention and could not qualify for such a patent; neither are such products objects of fine art. Here, in fact, is the source of trouble: the emergence of a vast middle ground of commercial products since the copyright and patent laws were framed, and the gradual recognition that a useful article can also embody artistic qualities (though not always in the literal sense of a sculptured figure or an applied ornament). The laws have had to be stretched to meet the situation.

The industrial designer's contribution, unlike the inventor's, does not ordinarily lie in the creation of new mechanisms, constructions or substances, but rather of new forms and ornamental designs which may work well and appeal to the eye. The first legal recognition of this came in 1874, when Congress passed the Design Patent Statute to protect those originators of mechanical designs who *inventively* improve the appearance and esthetic value of a commercial article. The statute is still in effect.

A patent, whether mechanical or design, is no better than the judicial tradition which upholds it, and in practice the courts have applied so strict a standard of "invention" that nine out of ten design patents have been held invalid for lack of it. And, since the law itself does not define "invention," it has been up to the courts to decide what minimum degree of inventiveness, or as it is sometimes put, "spark of genius," is needed to qualify a design for a patent.

The field in which original designs have always been in greatest jeopardy is fashion—where originality is particularly hard to demonstrate. And to determine whether a dress embodies inventive genius, the court is usually called upon to become a judge of esthetics and analyze the design. But the problem is not confined to fashion. There have been countless cases like that of a small electrical jigsaw for which a patent was not upheld because it lacked creative artistry, and the watchcase-bracelet for which a 14-year design patent was invalidated because the plaintiff could not establish invention.

One of the rare cases in which a design patent was sustained involved a combination sandwich toaster and tray. One of the judges commented that this particular combination was nothing but "streamlining" of the shape of a conventionally recombined structure. But his two colleagues stated that even a



Natural development: *The design patent on this portable beverage cooler was not upheld because its improved features were "no more than the natural development of progressive change in appearance of a long-established prior art."*

Not exceptional: *A federal judge did not uphold the design patent on this cannister because its step forward was "an unstartling regrouping of old elements" which failed to show "exceptional talent beyond the skill of an ordinary designer."*

reassembly of familiar forms and decoration may satisfy the invention requirements.

The sole design patent which has been unanimously upheld by all three judges of an appellate court covered an ornamental reinforcing for hosiery.

In short, a design patent may be easy to get, but it is upheld in only the most exceptional (one might say freakish) cases, and then usually over the dissent of at least one judge or by a lower court decision which may be reversed on appeal.

A trio of entanglements

The design patent, which is seldom useful, becomes worse than useless in the light of three other legal principles: 1) Our courts have almost consistently held that a designer, while entitled to patent *or* copyright protection, may have only *one* of them *at his option*, and cannot enjoy both at the same time. As a result the designer may, as the British so aptly put it, "fall between two stools" and find himself without any protection whatsoever. If his design patent should be held invalid, for instance, he has definitely disqualified himself from copyright protection for the same work. The only way to avoid this is to avoid design patents altogether—unless there is good reason to think that the design's invention will stand up under strict interpretation. 2) If a package or design has previously been the subject of a design patent, our courts are reluctant to grant it protection against trademark infringement or unfair competition, should the need arise at some later date. Thus after the design patent on Lucien Lelong's long-necked perfume bottle had expired, it was open to imitation because the manufacturer failed to prove that it had acquired distinctive or secondary meaning.

Though this kind of secondary meaning is hard to establish, it is one of the surer ways to support a protection claim: a recent New York state decision on the Ronson lighter says that if someone copies all the details of a product so that the buyer thinks he is getting the original, the imitation is unfair competition and can be stopped even though the patent has expired. 3) In many cases a design patent is impractical because of the time element. By the time it is granted—usually six months or more—changing fashion may have left the design obsolete.

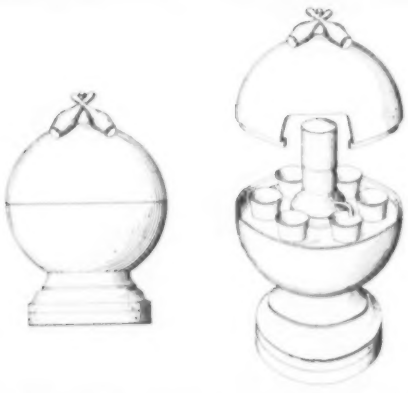
For all these reasons, it is not hard to see why the originator of the Stein lamp was well advised to avoid design patent protection. It is altogether likely that the courts would have declared such a patent invalid for lack of invention—and the lamp would have been thrown into public domain.

For all practical purposes, then, the design patent statute has become a dead letter. At this point three other modes of protection are possible: copyright protection, trademark protection, and the law of unfair competition. How do they fill the breach?

Copyright protection

With so little hope of protection from design patents, designers like Stein are trying to exploit the Copyright Act by registering their designs as works of art, or as sketches for works of art.

The Copyright Act, as we have noted, protects any work of art in "writing" against direct imitation. Over the years, of course, music, motion pictures, maps and photographs as well as painting and sculpture have been construed as writing in the broad sense. But until about five years ago the Copyright Office would not accept the artistic features of three-



Regret: *The court expressed regret that it could not offer protection of "such originality as the plaintiff may have displayed in designing something which had not previously been offered to the public in this exact embodiment."*

Unanimous: *The one case in which all three judges of a federal appellate court have agreed on the validity of a design patent covered this ornamental design for reinforcing hose.*

dimensional works of the *applied* arts for copyright; it always returned such applications with a letter explaining that "the exclusive right to make and sell such articles should not be sought by copyright registration, but rather by means of a design patent."

In 1949, however, the office changed its definition to the following: "Works of Art (Class G)—(a) In General. This class includes works of artistic craftsmanship, insofar as their form but not their mechanical or utilitarian aspects are concerned, such as jewelry, enamels, glassware, and tapestries, as well as all works belonging to the fine arts, such as paintings, drawings and sculpture."

The real issue

It was the validity and scope of this definition, in fact, which was the real issue in the recent lamp case. Two questions were posed: 1) Can statuettes be protected by copyright when they may subsequently be used for mass production in the form of lamp bases? 2) Stripped down to essentials, can a lamp manufacturer *copyright* his lamp bases?

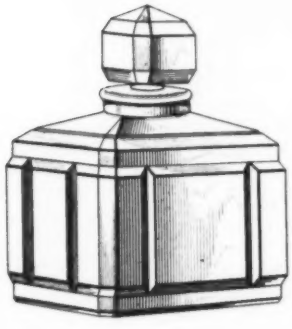
This matter of copyrighting a utilitarian object prompted Justice Douglas to say in his opinion on the case, "The Copyright Office has supplied us with a long list of such articles which have been copyrighted —bookends, clocks, lamps, doorknockers, piggy banks, salt shakers, ashtrays. Perhaps these are 'writings' in the Constitutional sense. But to me, at least, they are not obviously so. It is time that we came to the problem full face. I would accordingly put the case down for reargument."

Nonetheless, the decision of the Court makes it clear that something which is a work of art (or which seems to qualify by virtue of having only a "decorative" function) retains its copyright protection even if intended for mass-production as a useful object. In other words, if you take a sketch by Picasso, or a Manship sculpture, or a lithograph, and use them in trays, bookends, or other products, they will remain copyrightable even after their transformation.

But who decides what is by its nature a "work of art?" What happens if the sculpture is non-objective? Or if it happens to house a washing machine? It is understandable that our judges are reluctant to set themselves up as arbiters of what may or may not meet minimum standards for copyrightable work. In a famous Supreme Court case, in 1903, involving ordinary circus posters, someone suggested that such advertisements could not possibly qualify as literary or artistic works. Justice Holmes replied:

"It would be a dangerous undertaking for persons trained only to the law to constitute themselves final judges of the work of pictorial illustrations, outside of the narrowest and most obvious limits. At the one extreme some works of genius would be sure to miss appreciation. Their very novelty would make them repulsive until the public had learned the new language which their author spoke. It may be more than doubted, for instance, whether the etchings of Goya or the paintings of Manet would have been sure of protection when first seen. At the other end, copyright would be denied to pictures which appealed to a public less educated than the judge . . ."

Since then, ordinary advertisements or sketches have met the minimum copyright requirements, no matter how they might displease a person of taste. It is an interesting if not reassuring fact that the widest protection available today seems to go to comic strips. If a comic strip is copyrighted, none of its

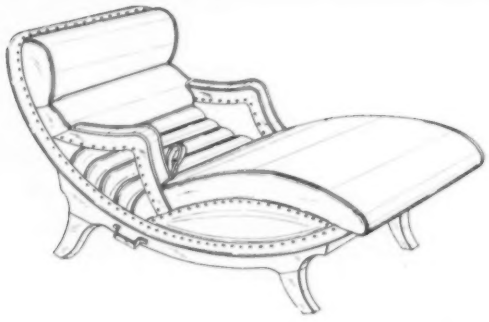


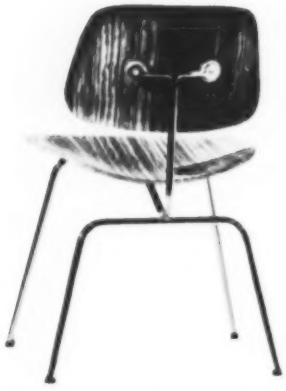
Trademark: *It was recently decided, in the case of the "Caron" bottle, that a prior design patent did not preclude its registration as a trademark on the Supplemental Register (as had always been thought) because the manufacturer had used it many years after the patent had expired.*

Copyrightable? *Some attorneys now recommend copyrighting sketches of designs which might be infringed on by actual products. The man who once copyrighted this sketch did not win his case against the U. S. Government for making such parachutes.*

characters can be used in dolls, product decoration, or even by suggestion in movies and radio shows. If a sketch of a doll were copyrighted, on the other hand, the originator would be hard put to prevent all kinds of imitation. It may not be entirely facetious to suggest that, with laws as they are, designers should put their ideas into the funnies and get maximum protection.

What about the broader question of copyright for all industrial designs? While the Copyright Office has not made any express ruling, we have no reason to expect it to go beyond the Court's limited ruling and register copyright claims for all commercial designs and we must conclude that the lamp case has given little comfort to the originators of commercial products whose ornamental features are inseparable from their utilitarian ones. There is no reason to think that from now on such works as the contour chair, or any similar commercial article, may have become copyrightable, even on the basis of the identifiable artistic features which may have made it popular or successful.





Eye-test: *An interesting precedent may have been set by the judge who upheld the design patent on the contour chair above because it had new decorative characteristics if judged by the "eye test." "Chairs have existed for centuries," he said, "and men of inventive ability have been at great pains to adopt means for fitting the human body to repose in them. . . . The scope of invention, especially if we are dealing with design, is narrow. Utility does not count in a design patent. But utilitarian function does not make a design unpatentable." The case is being appealed.*
The much-copied Eames' chair is a rare example of a design covered by both design and mechanical patent (on the flexible wood-metal joint). The manufacturer has never bothered to bring suit on the basis of design patents.

Trademark protection and unfair competition

Only the inadequacy of other methods could have led to occasional efforts to invoke the Trademark Registration Statute to cover design features—a purpose for which it obviously was not intended. To be sure, the configurations of identifying forms of products have been open to registration since 1946, but this gives only pseudo-protection in the United States. Its maximum protection goes to bottles and "configurations" which are "capable of distinguishing (in other words unconventional), and even so is useful mainly to support registrations in foreign countries, where packages, labels and bottles legally qualify as trademarks.

There is always a hope of getting design protection solely on the basis of the law of unfair competition and misappropriation. If the defendant tries to "pass off" his goods as those of the original manufacturer, he is undoubtedly guilty of unfair competition. But lacking evidence that this has been done, the courts have held time and again that mere copying—even slavish copying—of design features of any kind does not constitute an actionable wrong.

The court's side of the problem

However reluctant they may be to set themselves up as final judges of works of literature and art, the men who pass on each design protection case must be not only judges of the law, but judges of art, design, invention and human genius. This is not an easy role, and from their point of view perhaps not even desirable. Is it, in fact, completely desirable from industry's, or society's point of view?

The law has traditionally hedged this question, as we have seen, by its strict categories like "work of art," which take care of everything ornamental and non-utilitarian (however ugly and unartistic) without further value judgment on anybody's part. This is easy, although frequently open to question. For instance, it was decided that a figurine was originally "sculpture," presumably because it was a novel creation of form—though it is doubtful that any museum in the land would bear this out. It would probably not decide that a radio was "sculpture," even though its outstanding quality was the beauty of its form—or even though it was shown in the Museum of Modern Art.

Mr. Justice Douglas complained recently, in a patent case involving the movable frame used at check-out counters of self-service groceries, that the Patent Office had departed from its original purpose

of rewarding inventions which benefit the public interest, and now granted many patents on "gadgets," only trivial inventions from the viewpoint of "promoting science and the arts." He continued, "The fact that a patent as flimsy and spurious as this one had to come all the way to the Supreme Court to be declared invalid dramatically illustrates how far our patent system frequently departs from the constitutional standards which are supposed to govern."

Patent as protection—or suppression?

Some people, of course, question the need for any design patents at all. Design and industry, they maintain, both move ahead on the basis of influence and imitation; even a work of art influenced by another is not necessarily a bad one. What good is a good idea if it is not allowed to be an influence? Where, in fact, would society be if every effort of the human mind and imagination had been coveted? These philosophical questions are much involved in any decisions about where the law should go from here.

Other people maintain a more practical view toward protection. They say, realistically enough, that there are only three kinds of design "protection"—tooling, production and distribution—and with these no manufacturer has to worry excessively about being copied. A corollary to this is: Be there first with the lowest price, and the pirates won't bother you. Any competitor's tooling time will give adequate protection to the original, and by the time an imitation appears the design can probably be changed anyway. Still another school of thought claims that the best protection is the best design: its superiority will usually be evident in contrast to unsure imitations.

All of these methods, workable or not, have been the only antidotes to the law as it now stands. But there are some areas of industry where tooling is not a major factor, where a small producer is at a disadvantage, where designers may want to produce objects of more than passing interest and to reap the benefits. In cases where an element of originality exists, and a contribution results, it would seem desirable to give a limited monopoly to encourage further investment of time and talent.

Can any effective protection be offered which would be fair to both originators and society at large, which will do a fair job without creating a petty nuisance or a legal holocaust?

One answer probably lies in the outright repeal of the existing Design Patent statute—a farce at best—and a return to the original purpose of the law by simply extending copyright protection against outright imitation to any design. A short term copyright —say five years—could apply to any ornamental configuration or design without its showing a "flash of genius." This solution, while limited, would at least

Competition—but is it unfair? *Unless an imitator tries to "pass off" his goods as the original, the courts have ruled that mere copying is not unfair competition. Steak knife manufacturer (left) had no luck in his case against copyist.*

be uncomplicated and unequivocable. It might do away with needless litigation and confusion by admitting, once and for all, that broad design protection is unfeasible. There's no doubt that it would give everybody a better footing vis-a-vis the law.

A second possibility, admittedly difficult to establish, would be an enlarged definition of a design patent. Generally, it would mean replacing the "invention" requirement of the present statute with some broader principles protecting the general nature of a design for its concept or originality. While it might not end adaptation and imitation, it could conceivably do the more important job of protecting those originators who need such protection.

There is a third possibility. To overcome the difficulty of granting design protection in the absence of "invention," or copyright protection in the absence of "writing," Congress could pass a statute making slavish imitation of original designs a form of unfair competition. Such a law, if intelligently administered, might give designers and manufacturers a more effective measure of protection than either a new design patent or copyright statute.

The New York Times, April 6, 1954

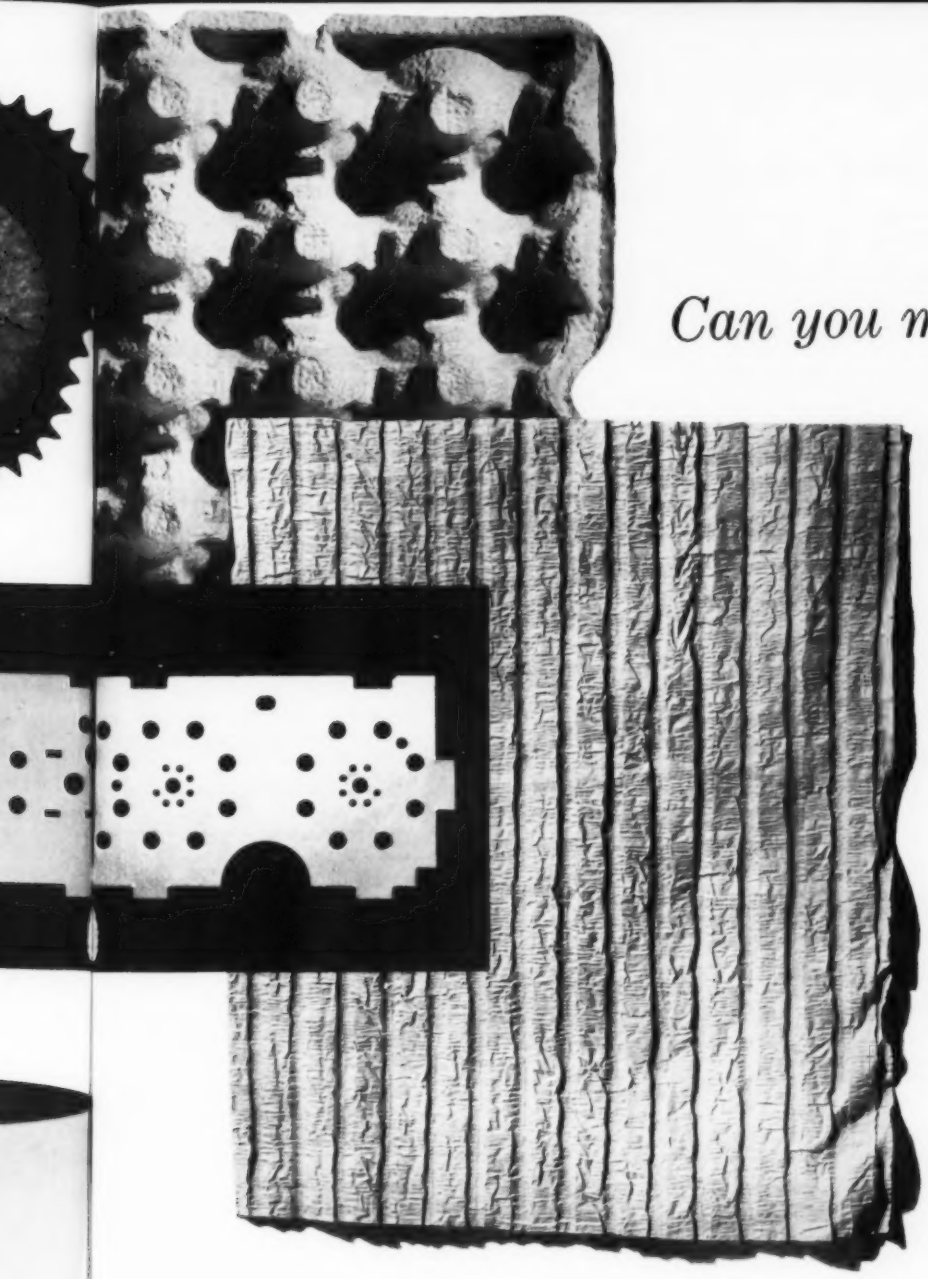
"Copying down," a process by which high-priced ideas of famous designers reach the middle income homes of America, is the feature of new furniture shown yesterday at the new showrooms of Robert Barber, Inc., 6 East Fifty-third Street. The pieces are available through decorators.

The influence of well known designers was seen in the group, which included living room sets, outdoor furniture, and bed and dining arrangements. Brass pull rails, for example, an idea used by William Pahlmann some time ago, are effectively placed on drawers of a walnut chest made by Woodlux Furniture Company. Round brass full knobs form a double-breasted pattern on an eight-drawer straight-line walnut chest with a white marble overhanging top.

A group of upholstered sectional chairs and sofa by the Mansfield Furniture Company has the light, lean touch introduced by Paul McCobb. Designed by Charles Allen, the pieces are neat and pleasant, are scaled to the smaller apartment, and stand several inches higher off the ground for ease in cleaning.

Resembling in shape a wicker lounge chair designed by Roberto Mango, which won a "Good Design" award of the Museum of Modern Art, is a wrought iron basket chair by the John B. Salterini Company. Suspended from a circle thirty inches in diameter is an oval back and seat of perforated metal.

Slide-back doors on chests and serving pieces, the use of woven cane as a contrast material for the plain lines of storage pieces, and woven rope backs for dining room chairs are other features of the collection.



Can you make it of paper?

Maybe you don't know it, but there's a good chance you can.

You've probably never thought twice about what material to specify for your letterhead — the nation's fifth largest industry has cornered your business there. But if your picture of how paper can serve you stops with drafting pads, cigarette packs and coffee containers, you may be missing a bet. For paper, like everything else, isn't *only* what it used to be; it's 20,000 varieties of a substance ranging from wispy to leather-tough, from molded forms to woven fabrics — the sole family tie being their varying content of cellulose fiber. "Paper," in fact, is about as unspecific a genus as "plastic," and the similarity does not end there. The chemical industry, at the same time it has been creating competition for paper, has helped the paper industry in an unprecedent growth. A single cellulose fiber has the strength of a comparable strand of steel, but the "mucilage" which binds fibers into paper is only 1/10th as strong as the fibers themselves. Even so, untreated paper in an efficient structure, such as honeycomb, will hold up a man. New chemical impregnations help to increase that fiber-to-fiber bond — an impregnated honeycomb slice will bear up under an elephant.

Strength, of course, is not the only news in paper. Chemistry has made paper resistant to flame, decay, water, and a hundred disabling matters; it has created new form, color and feel. Today's "paper," in fact,

should often be viewed as an entirely new material, combining the strength and stability of plastic with the suppleness of an organic fiber.

We are not used to finding strength in a material so low-cost that it is considered disposable. But who says it has to be disposable? Because we are rich enough to throw paper away, we deduce that it is cheap; because it is cheap, we may think of it only in terms of throw-away uses. Yet we might put that cold in our pocket if it didn't mean a big laundry later on; the fact that paper napkins are standard table fare says more about our convenience-loving Kleenex Culture than it does about the possibilities of paper as a material. The very cheapness which suggests paper's pedestrian reputation may make possible a door, radio or house for lots more people.

At the same time that paper is joining the durables, it's being wasted faster than ever (in 1930, 200 pounds per capita; this year, probably 400.) In our economy, which honors labor above materials and balances on a spiral of expanding markets, a material that asks to be wasted is as economical in its way as one which goes on forever. Paper milk bottles, diapers and coffee filters have prepared us for disposable vacuum cleaner bags and one-plunge bathing suits, and someday it may not be hard to convince people to throw out the old house instead of patching it up. Already there is a growing third market for products — like ductwork and shelters — in which paper is desirable because it is *both* strong and expendable.

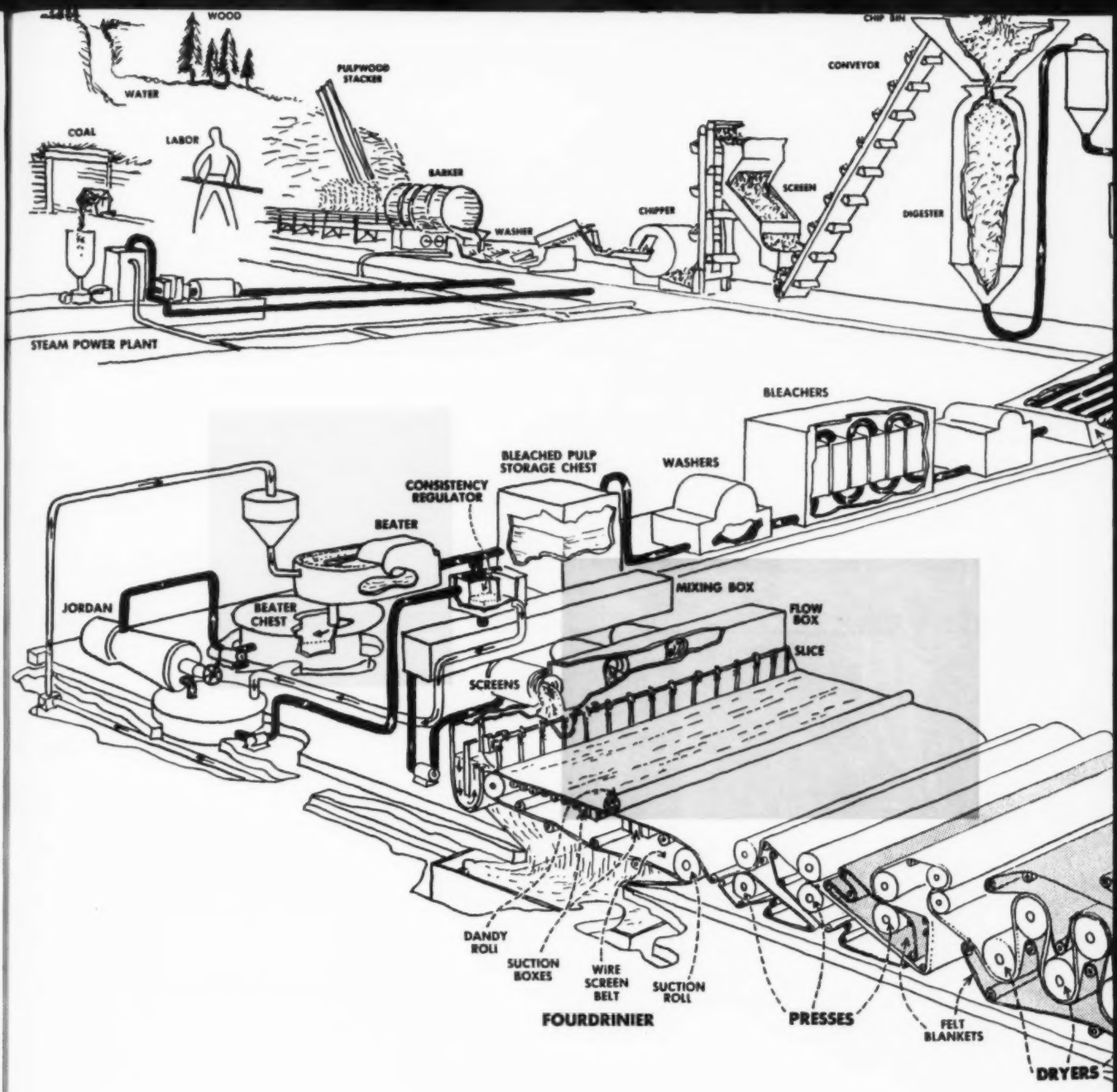
That — if the question should ever come up — is why you should consider making it of paper. Other materials are lighter and stronger and cheaper than ever. But if you know what paper is and what it can do, it may be quite adequate for the job, and — as the industry likes to remind us in chorus — paper is always cheapest—*m.s.*

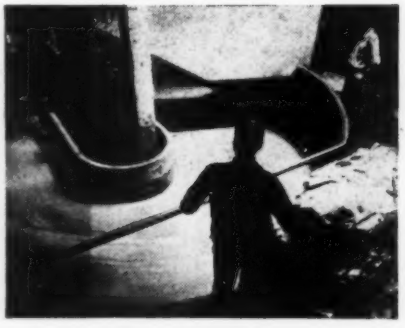
The paper-making process →

From the wood yard, pulpwood passes into the **barker**, a drum which revolves slowly and causes the bark to rub off as the logs are thrown together. After washing, the barked wood goes to the **chipper**, to be broken up by revolving knives. Vibrating **screens** sort out chips of the proper size and deposit them on a conveyor leading up to the chip **bin**, where they are stored until used. When the chips are loaded into the **digester**, a cooking liquor is added—acid or alkaline according to the kind of pulp which is wanted. The chips are cooked under steam, as in a pressure cooker, until all the binding materials are dissolved and the cellulose fibers are liberated. The mushy unbleached pulp—which might be compared to the remains of a pot roast after the juices have been removed—is washed, screened, and sent through the **bleacher** if bleached paper is desired. (Kraft paper is usually not bleached.) The **beater** actually determines the character of the final paper. Two things happen: fibrillation, or the further separation and fraying of the fibers, and hydration, the effect of water which seems to produce a natural mucilage which bonds the fibers when they are dried. The length and kind of beating affects the transparency or toughness of the finished paper: long fibers provide strength and resistance to tearing; short fibers give a smoother surface. After a second beating, in the **jordan**, the pulp is ready for the paper machine.

As the pulp is pumped into the headbox, or **flowbox**, at the wet end of the paper machine, it is diluted into a mixture which is about 3% fiber and 97% water. This flows out onto the Fourdrinier wire, an endless screen which vibrates the fibers and distributes them crosswise for two-directional strength. While the fibers are being shaken, water is drawn out at the bottom by suction, vacuum-forming the fibers into a flat sheet. As they dry, the fibers have a mysterious tendency to bond (and, because the process is a reversible one, to separate again when saturated). The damp sheet is carried onto a series of felt-covered wet **presses** and is further dried, then to the **dryer** sections where a series of hollow steam-heated iron rolls reduces its moisture content from about 70% to 5 or 10%. Some papers pass through the **size press**, a rosin bath which closes the pores and decreases absorbency, or through other coating baths before reaching the **calender** stack; there a series of hot rolls give paper a smooth finish, and from a large 220-inch steel roll it is cut and rewound into small rolls.

We wish to thank the following for their assistance and advice: John B. Calkin, Foster D. Snell Laboratories; Ralph David, Pulp and Paper Magazine; Richard Bingham, TAPPI; Ralph Crane, Mengel Corporation; The Fiber Box Association; American Cyanamid Co.; Bakelite Co., Dow Chemical Co.


WOOD
WATER
PULPWOOD STACKER
CHIP BIN
CONVEYOR
COAL
LABOR
BARKER
SCREEN
CHIPPER
DIGESTER
WASHER
STEAM POWER PLANT
BLEACHERS
BLEACHED PULP STORAGE CHEST
WASHERS
CONSISTENCY REGULATOR
BEATER
MIXING BOX
JORDAN
BEATER CHEST
FLOW BOX
SLICE
SCREENS
DANDY ROLL
SUCTION BOXES
WIRE SCREEN BELT
SUCTION ROLL
FOURDRINIER
PRESSES
FELT BLANKETS
DRYERS



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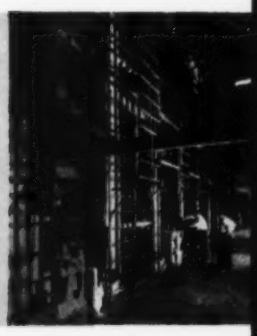
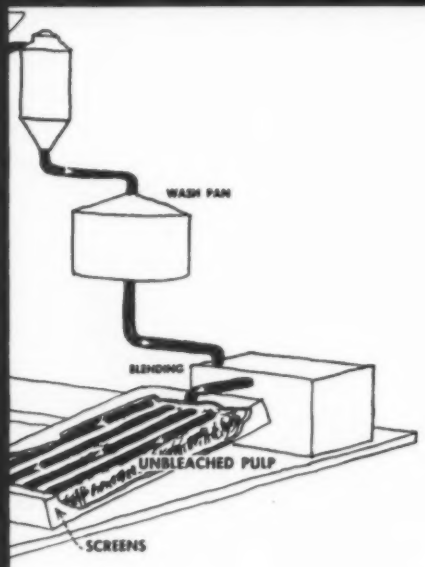




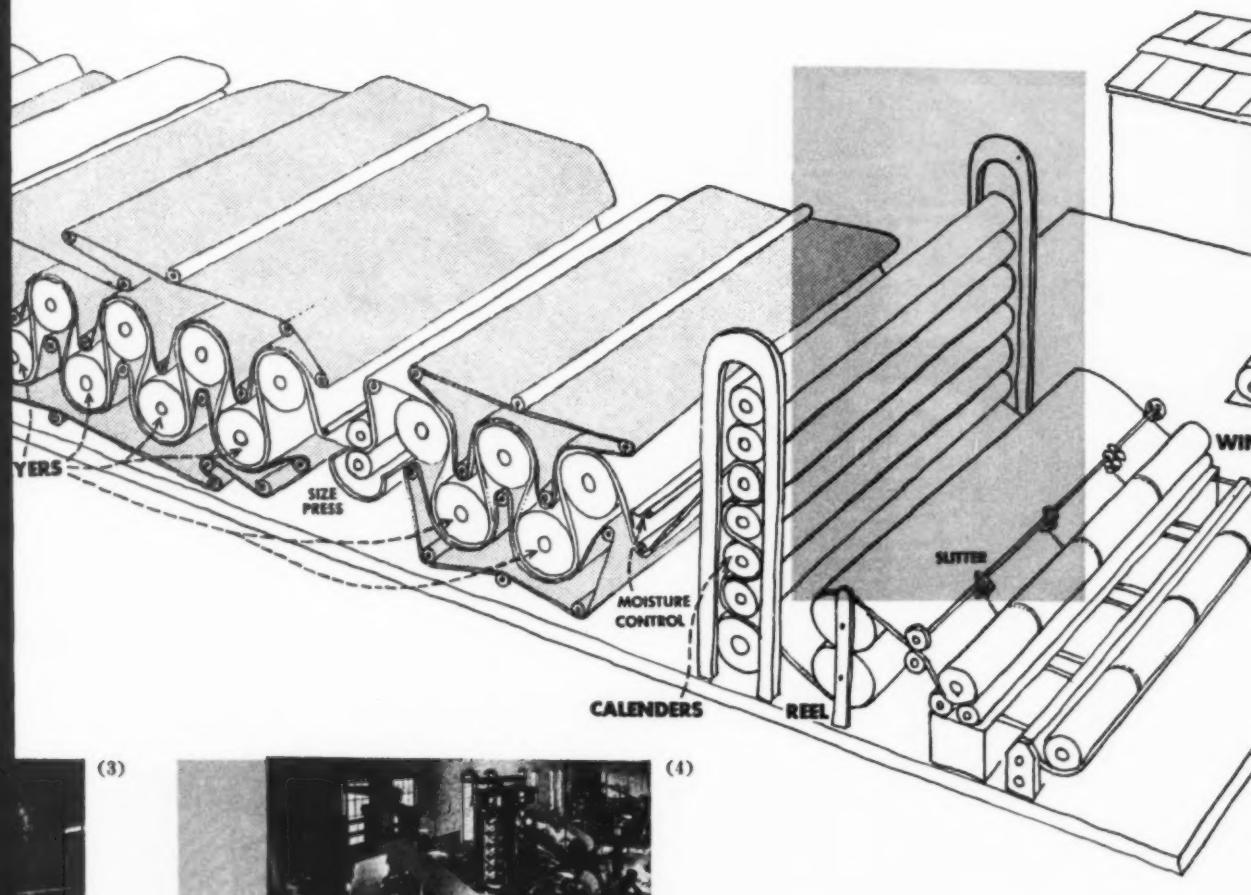
At several points the end product may be altered:

The grade of paper is pre-determined by the kind of fiber an put in the digester. An acid liquor produces long pliable sulfit alkaline produces sulfate or "kraft" pulp, known for its stren wearing properties; soda is sometimes used to make soft-t papers from short-fiber woods.

Beater: Here the final nature of the paper is determined (1 strength" resins can be added (they coat each fiber with a fil later polymerizes to a water-insoluble state). Synthetic or rubber, gums, sizing material and color added here become manent ingredient of the finished paper. Some resins are adde headbox, or flowbox.

Paper machine, wet end: Pulp, which changes from a liquid to state by a vacuum process, is usually formed into a flat sh But multi-layered boards may be formed on a series of cylinde dip into vats and draw pulp by suction; these layers may be together with cheaper quality stock inside. Pulp may also be in a separate pulp molding process, without entering this ma Coatings may be applied to paper on the machine (3) by di into vats of resins or other additives before drying is complet

Calenders: Finished sheet is pressed through hot rolls and by pressure (4). Special finish chemicals or wax may be appli



(3)

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be altered:

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make soft-textured

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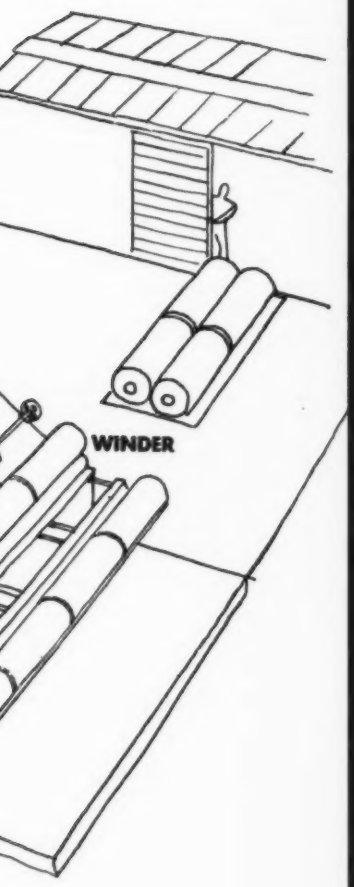
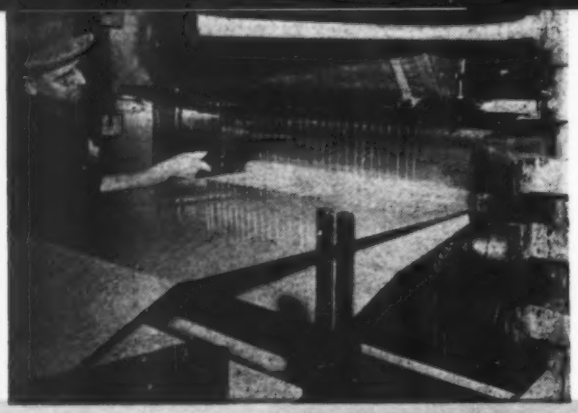
Photos, Terkel Korling, courtesy Container Corporation
Diagram, courtesy West Virginia Pulp and Paper Co.





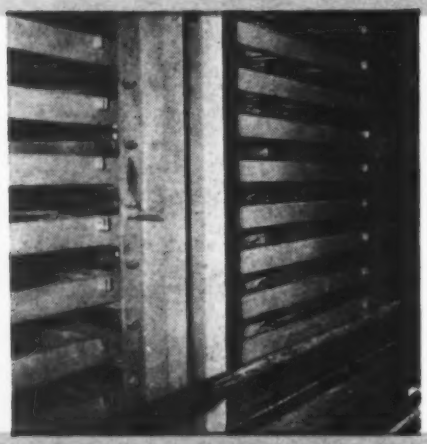
chemical treatment

Paper-making chemicals fall into two categories: 1) beater additives, applied to the pulp before forming; 2) post-forming additives, applied to wet sheet on the machine or as a subsequent converting operation. Most papers today undergo some chemical treatment.

Beater additives:
urea formaldehyde and melamine formaldehyde both increase dry strength 15%, wet and tensile strength 5-10 times without affecting absorbency; they bond fibers for smoother finish. (Melamine cures faster, is sometimes more expensive.)

pulp molding

Making paper from pulp is a vacuum forming process used to form a flat sheet; but it is possible to mold pulp directly into contoured shapes by die-forming it over a perforated mold through which water is drawn off; then the product is dried over forms to prevent sagging. A closed mold may also be used: dilute pulp is agitated inside mold while pressure (inside) and vacuum (outside) are applied. Hot air dries the deposit of fiber before mold is opened. Porous inside surface may be spray coated.

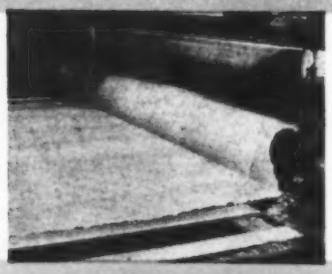


lamination

There are three steps in making paper-base laminates: 1) preparation of the thermosetting resin; 2) impregnation of base material — generally kraft or alpha paper; 3) application of heat and pressure on superimposed layers to consolidate them. Sheet material is formed by heated flat press plates; tubing and rods by winding the impregnated paper on mandrels, then curing it with heat and pressure. Molded forms may be made with heat and pressure. High pressure lamination (urea, melamine and phenolic) produces high strength materials; cheaper low pressure polyester lamination permits rapid molding of flat or shaped parts in light presses, or without presses, using dies from easy-to-form materials.

honeycombing

Honeycomb core is made from sheets of kraft paper, often impregnated with phenolic resins. Generally strips of resin adhesive are laid on the sheets, alternately spaced to leave air gaps; sheets are stacked, heat bonded into pads, later cut into strips of desired thickness (often sold in unexpanded form.) Expanded honeycomb (stretched and heat-cured) may be sandwiched between many skin materials.



X-creping

Kraft paper is diagonally creped by a knifing process, then creped again at right angles to give bias-like stretch in all directions. Sheets may be laminated together with asphaltic compound for strength and impermeability; wet strength papers may be used. Made in a variety of grades, some crimped, others laminated together, or embossed for extra stretch.

twisting

Jumbo rolls of specially-treated Kraft twisting paper are machine-slit into "reels" ranging in width from ½" to 1¼". The ribbon-like strips from the reels are twisted by machine into threads and wound onto spools. Twisting makes paper stronger. Warped and filled threads on spools can be arranged in any desired sequence for feeding into the loom. Chemical treatment of woven fabrics adds new strength and durability.

chemicals applied to wet or finished paper sheet:

A variety of chemicals may be applied to paper, ranging from **urea formaldehyde** which stiffens and rotproofs paper without damaging permeability (see oil filters, right) to **phosphorous nitrogen compounds** for flame resistance, to **polyethylene coatings** which may be calendered on to make a moisture-proof paper.

impregnation for lamination:

melamine: bath in 40%-70% resin-alcohol solution gives clear arc-resistant surface.

phenolic resins: tinted, less brittle than melamine, these "workhorse" resins give economical performance.

polyesters: in low-pressure lamination, give glossy surface of limited abrasion-resistance.

oil filters

Characteristics: Deeper, more complex forms than are practical in metal-drawing processes; strength and durability combined with lightness; good acoustical and insulating qualities. Silicone additives give combination of stability and flexibility; Resin additives make it much like plastic, though less brittle and of a more variable texture and finish.

Typical uses: Ductwork, plates, packaging inserts, sanding cones, toys, loudspeaker diaphragms and other components.

Some producers: Keyes Fiber Corp., General Fiber Corp., Diamond Match Co., New York. Hawley Products Company, St. Charles, Ill.; United Press Products, Chicago; Detroit Paper Products, Detroit.

speaker diaphragm

Characteristics: *High pressure laminates*: heat, electrical resistance; light weight; flexural strength. Can be sawed, sheared, engraved, stamped, high-pressure molded. (Formica, Consoweld, etc.) *Low pressure*: easily fabricated in continuous sheets with glossy finish; can be cut, drilled, or cold punched without chipping or fracturing; can be heated and made into coils. (Conolite) *Contact pressure*: paper to polyethylene or foil combine printability and impermeability.

Typical uses: *High and low pressure*: Decorative boards and surfaces; industrial parts; tubing, insulation, wall coverings. *Contact*: packaging. **Some producers:** St. Regis Paper Co., N. Y., (Panelyte), Consolidated Water Power & Paper Co., (Consoweld), Wisconsin Falls, Wisc.; Continental Can Co. (Conolite); Westinghouse, Pittsburgh (Micarta); Formica Co., Cincinnati; General Electric Co., Pittsfield, Mass.; Pioneer Plastics, Salem, Mass.; Reiss Associates, Boston.

stainproof panel with "wood grain" pattern sealed in melamine

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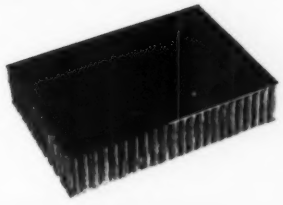
Characteristics: High strength and extremely light weight, varying with facing material; excellent structural rigidity and insulation; durability and fire-resistance, low maintenance cost. Holes may be filled with foam-in-place resins for greater insulation.

Typical uses: Structural panels; strong cartons; core filling for doors, ceilings, and floors; airplane partitions and radomes. **Producers:** Douglas Aircraft, Santa Monica, (Aircomb); Union Bag and Paper Co., N. Y., (Honeycomb); Lincoln Products, Marion, Va. (Figure "8" honeycomb)



wood-faced honeycomb

Characteristics: Cloth-like in texture and appearance, it has high-strength stretchability; can be creased, formed, coated, sewed without pre-punching, glued, cemented, embossed and printed. Need not be bias-cut.

Typical uses: Especially suited to wrapping, padding and covering irregular and contoured shapes; wet-strength X-crepe now used for disposable bathing suits at public beaches. **Producer:** Cincinnati Industries, Inc., Cincinnati 15, Ohio.

disposable bathing suits

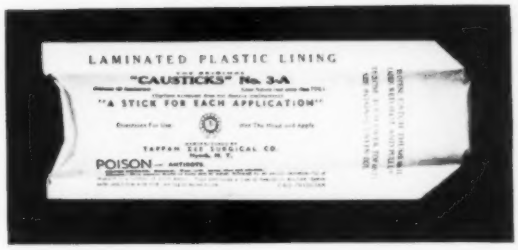
Characteristics: Looks like straw cloth, but is much cheaper. Paper fabrics can be sewn, soap cleaned, and plastic-coated or chemically treated after forming. Weave may vary from coarse to fine, fabric may range from hard and stiff to pliable and soft.

Typical uses: Wall coverings, clothing, upholstery, luggage. **Some producers of twisting papers:** International Paper Co., St. Regis Paper Co., Gilman Paper Co., New York. **Producer** of treated paper fabrics: Marlan Corp., New York

hat steamblocked from woven sheet

New faces for old uses

Since Uneeda took crackers out of the barrel and put them in boxes, individual packages have been a big selling point in food and cosmetics. In spite of the encroachment of plastics today, paper is holding its own in packaging because of its cheapness, printability, and amenability to combinations: aluminum and other metal foils bonded to paper make a highly protective package; polyethylene gives paper a transparent, moisture-proof glow, while paper gives polyethylene a firm, crisp printable surface. The three together—paper, foil and polyethylene are considered unbeatable, as in the package at the right. (Paper laminates by Riegel Paper Company.)



Paper is a good replacement for glass in packing poisons and pharmaceuticals: impregnated bleached kraft is safe, strong, cheap and unbreakable. Central States Paper Company.

Continental Can's Payoffpak for wire is designed as a 3-in-1 labor saver: a fiber winding drum for wire off the drawing machine, a shipping carton and later a dispenser.

Heavier duty for lighter containers

First the wood crate gave way to the corrugated carton, and now freight handling is further simplified by the multi-wall bag: it offers crush-protection in handling and in transit, and packs into minimum space. Meanwhile the kraft carton has become an international traveler with the help of chemistry and design: Fort Wayne Corrugated Paper Co.'s self-locking apple carton is assembled without staples or glues, and molded trays (Keyes Fiber Corp., made with American Cyanamid Melostrength resins) cushion the fruit and remain rigid even in moisture.

Non-skid bags can tower to new heights on fork-lift, cut breakage. Union Bag & Paper.

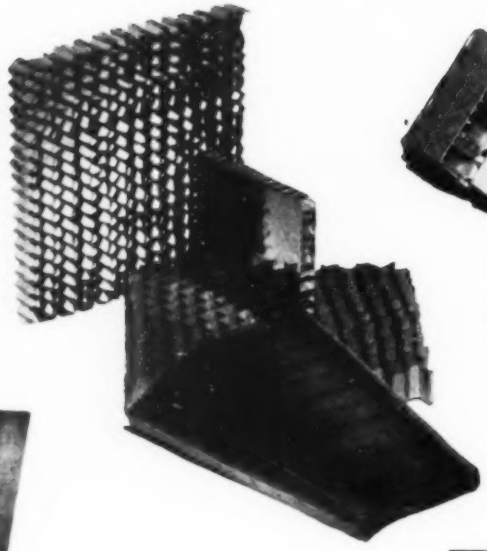
Shock-absorbent honeycomb replaces complex old packing for mirrors.

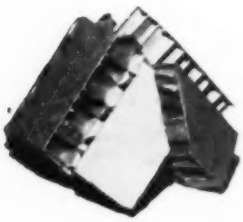
photogram martin rosenzweig

photogram martin rosenzweig

Honeycomb

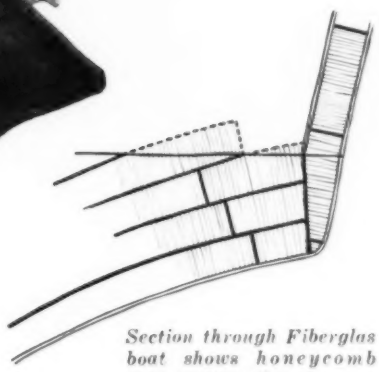
In the efficient honeycomb structure, strips of paper are arranged to distribute the load throughout their long, strong axis, and are braced with a thin skin. The honeycomb could be any material —but paper is usually strong enough, in addition to being cheap and light. Its ability to absorb shocks has been a boon in packing for some time; impregnated, it is now being used as a structural form in making Fiberglas boats, and as the core of extra-light aluminum-faced panels which promise a multitude of architectural uses.





Unimpregnated honeycomb is excellent for heavy packing, and lightweight pallets for unified shipments.

Reynolds Metals' Reynocel panel, with paper honeycomb, is light, insulates better than 12" brick wall.

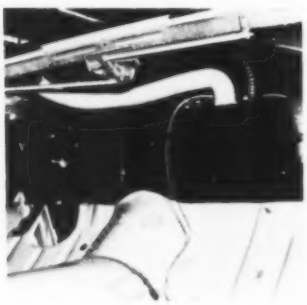


Section through Fiberglas boat shows honeycomb core construction.

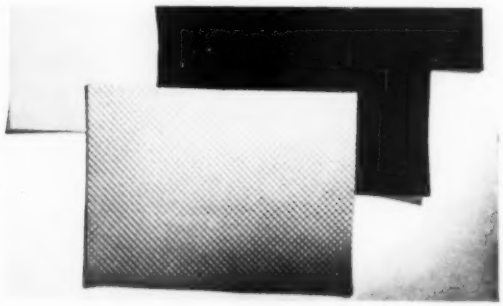
X-crepe

The Wiremold Company makes defroster hoses for automobiles; it switched from a rubber-coated cotton wrapper to Cincinnati Industries' X-crepe because it was cheaper and equally efficient (except where exposed to moisture, abrasion or battery acids.) Its natural stretchiness and relative stiffness were added advantages. This year Wiremold will use X-crepe for a fresh-air duct inside the body compartment. X-crepe has wet-strength and is cheaper than cloth, and because it stretches makes a good go-between in bonding incompatible materials: metal to wood, etc. The manufacturer suggests it in various forms for wrapping glass, baling under high pressure, and edge-binding.

Wiremold's defroster hose in 1954 Ford.

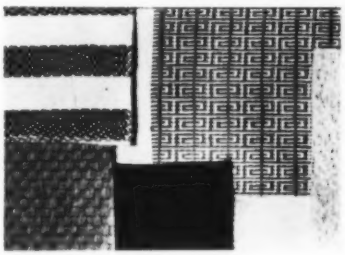


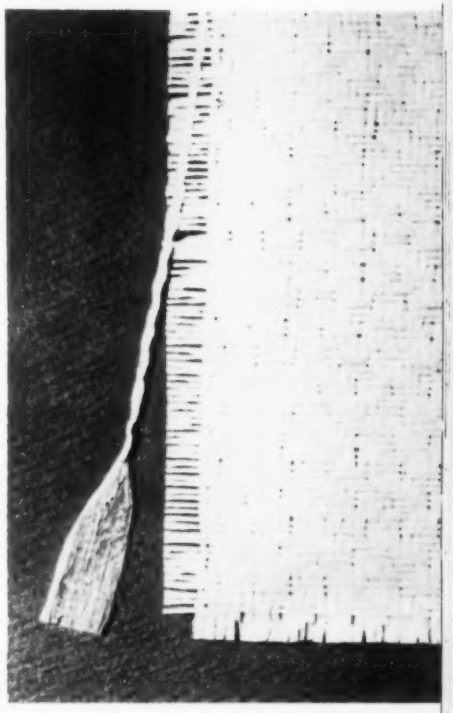
Several types of X-crepe paper.



Textiles

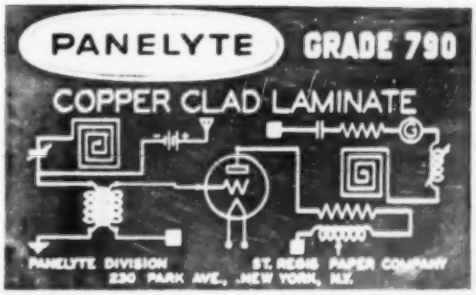
Slip covers for cars once were the accepted use for twisted paper weaves; Waite Carpet now uses it underfoot, and the Marlan Corporation is using a treated form for straw cloth. One of the best examples is its pandanus-like wall covering, which is washable and scuff-proof. Others include furniture covering, mats and clothing; Marlan says that $40 straw shorts would be just as good made of woven paper for $4.98.



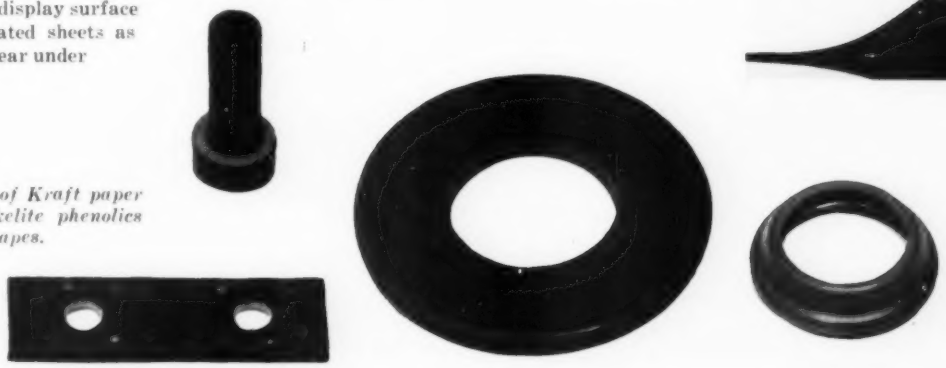


Paper-base laminates

Many of the paper-base laminates come close to being plastics, but the presence of a cellulose filler is not to be overlooked. Phenolic alone would be brittle and uncertain in color; paper fibers give it flexural strength and make a material which can be milled, punched or stamped. A familiar laminate like Panelyte has recently found a new use in printed circuits—its copper coating is etched with acid. High and low pressure laminates are expanding rapidly into decorative uses. Photo at far right shows make-up of such a laminate: thin melamine impregnated sheet on top, display surface next, phenolic-impregnated sheets as filler. Top sheet turns clear under heat and pressure.



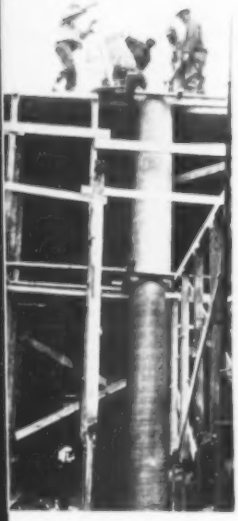
Industrial parts made of Kraft paper impregnated with Bakelite phenolics assume a variety of shapes.



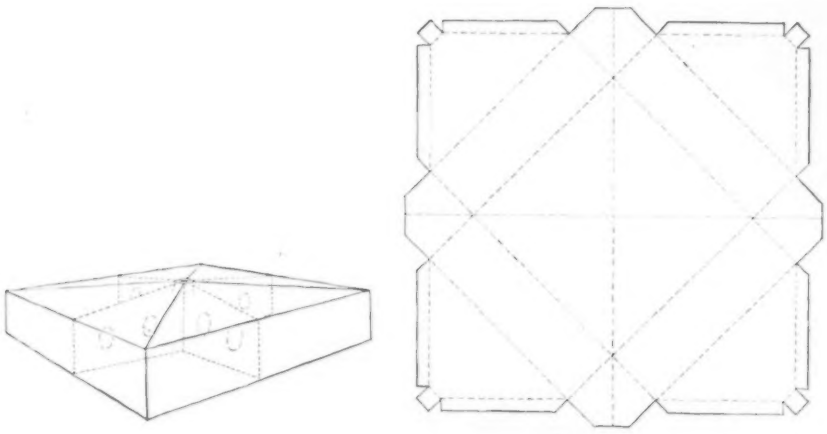
Paper might be picked for some construction jobs because it can be both cheap and strong, but its greatest selling point lies in being a cheap, strong material you can afford to throw away. The Gaylord Container Corporation of St. Louis exploited this fact in an experimental fiberboard tent for Army use in arctic regions. When covered with snow, the ordinary canvas tent freezes stiff and has to be abandoned when the site is changed. A sized and paraffined paper tent is easy to assemble and economical to leave behind. Sonoco Products uses wound paper for Sonotubes. Because of the high containing strength of the circular form, they are strong enough for pouring concrete columns, and are easily stripped away when the concrete is cured. Sonovoid tubes, and Sonoairducts, are buried when a slab is poured to save weight and material and create heating ducts; their roundness makes them stronger by distributing the concrete load equally.

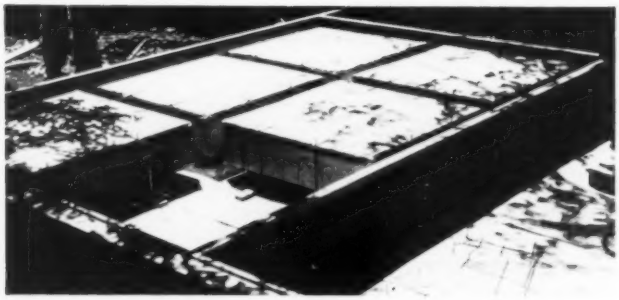
Gaylord 10-man tent comes in 8 flat sections joined on the site with a hand stapler. Board is highly sized and paraffined for water-resistance; seams may be caulked. Quartermaster tests indicate excellent heat retaining properties.

Permanent paper throw-aways



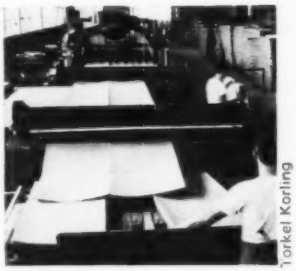
Sonotubes, prefabricated forms for pouring concrete posts are kraft paper and chipboard, polyethylene-coated inside; Sonovoid tubes save material and weight by becoming part of the poured concrete slab (left). Sonoco Products, Hartsville, S. C.





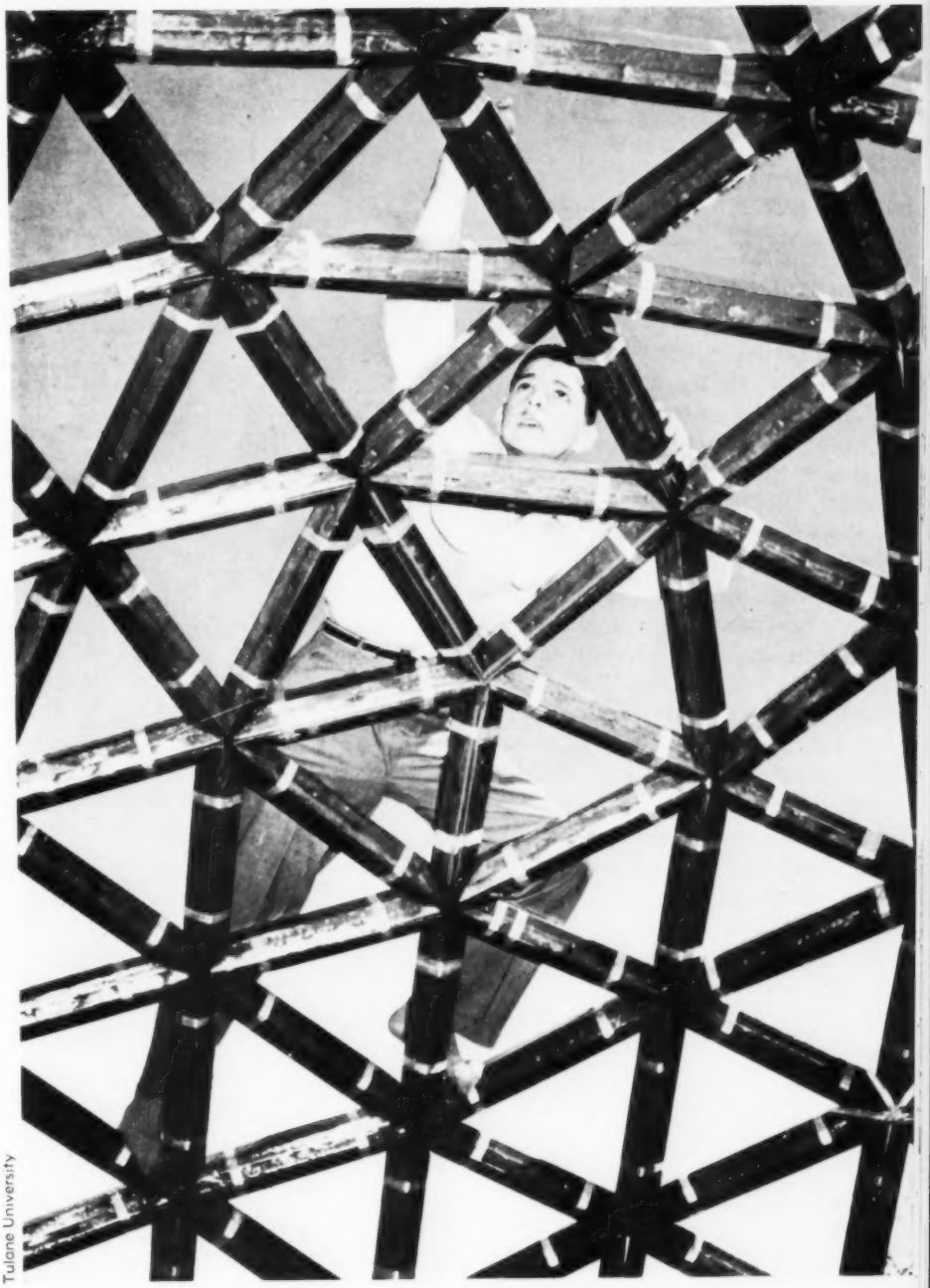
Edgardo Contini of Victor Gruen Associates uses paper and water in hollow-slab formation: the form is a water-tight cardboard box, site-folded and filled with water to withstand the load of the concrete on the box and prevent its floating. Box is drained automatically by a pipe closed with a slowly dissolving seal.

Printed Shelter



Torkel Korling

Paper dome is made by a continuous "printing" process: corrugated sheet is formed, scored, die-stamped; final press prints instructions. Shipped flat, sheets are folded, stapled, assembled with dowels into a dome skeleton.



Tulane University

The use of so unstructural a material as paper for a large permanent shelter would have seemed absurd a few years ago, and might still — except for the meeting of two revolutionary and unrelated phenomena: a special wet strength kraft paper and the geodesic dome. Though inventor Buckminster Fuller won't tell all, he has made a startling combination of the two which uses paper as a printed pattern, a structure and a molding material.

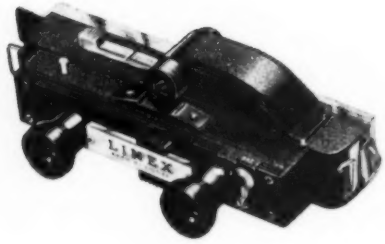
The dome is a rigid hemisphere with a skeleton of equilateral triangles. Because of the distribution of stresses, triangles can be, and have been, built in various light, low-strength materials in Fuller's previous experiments. But in hopes of mass-producing domes, Fuller figured that paper would be an ideal material —being cheap, printable and easily processed—if only it had compressive strength when wet. He asked around, and found that a certain compound of kraft fiber and phenolic resin would make an impermeable sheet which could be laminated with resinous adhesive into three-ply corrugated boards, and cut, scored, printed, and bent into strong triangles. For domes of certain sizes the paper alone had enough specific stiffness. For larger domes, Fuller used thicker layers of adhesive resin which, he explains, give most of the strength. At this point the cardboard sheets turn into parting forms—a "tool" so cheap it can be left in the product to eliminate the withdrawal problem common in plastic forming. A 36-foot shelter takes ½ ton of paper, so 160 could be made in an hour by an 80-ton-an-hour press. It can be assembled with staples and dowels by any literate laborer, since keyed instructions are printed on each triangle, and fold lines are scored. Plastic "bathing cap" waterproofs the entire structure.

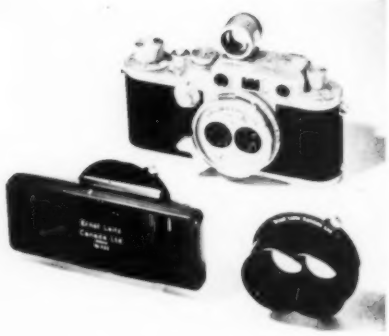
design

makes a camera part of a complete, easy photo system

THE LINEX

A. C. Gilbert's low-cost Linex stereo camera is not so much a design as a system developed to meet a certain market need. For less than $50 the buyer gets camera, strap, case, illuminated slide viewer, film, slide file and instructions, all in a Loewy-designed package. The system extends from package to viewing. After eight exposures, the 16 mm film goes back to Gilbert in its sealed magazine to be processed and mounted. Other stereo film must be cut apart (pictures are exposed in staggered pairs) to be accurately mounted — a troublesome process, but the Linex simplifies things with strip mounting — the film is mounted just as it comes from the camera in a continuous strip ready for the viewer. The Linex, the first "subminiature" stereo unit, seems to offer the casual snapshooter a chance to capture 3-D with an absolute minimum of trouble. On the old box camera theory of a minimum of adjustments, it has only one shutter speed and two aperture settings (F 6.1 maximum). Its 16 mm format makes fixed-focus lenses quite satisfactory. The Linex's kind of operating simplicity comes from eliminating complications in the basic planning; other cameras, like the Leica, must add refinements to offset existing complexity.
At the Leica end of the stereo scale, Leitz is offering a system using a twin-lens mount, more versatile than the Linex and about ten times more expensive (with camera). Oddly enough, the Leica stereo unit works on all previous models, but doesn't fit the new M3.





Leica's answer to 3-D is a twin-lens attachment

REdesign

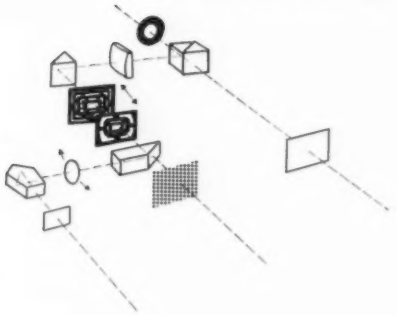
makes a complex camera simpler

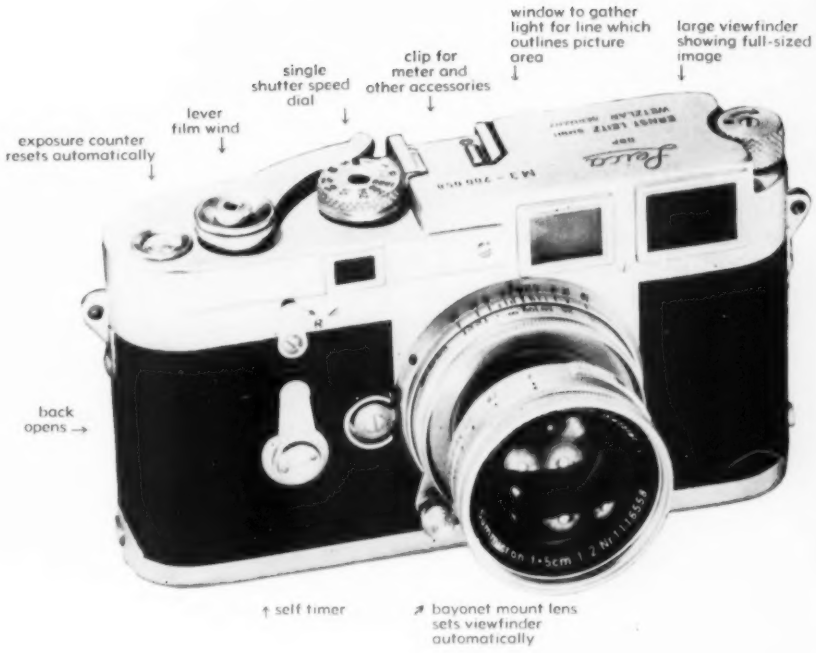
THE LEICA

The new M3 — the most radical change of the classic Leica since 1933 — tries to improve on the near-perfect. Major change is a new optical system (right) which combines viewfinder and rangefinder and gives a bright, life-sized image with rangefinder spot centered in it. The viewfinder adjusts to different lenses, a convenience also found in the Kodak Ektra, with a luminous line which defines the field of view. The film wind is a lever, as on the Exacta, the exposure counter is as simple as the Rollei's, the lens mount and self-timer compare to the Contax. Some of the eccentricities of earlier Leicas have been eliminated: the back plate has a hinged door for easier loading; and there is one shutter-speed dial in place of two. With an exposure meter mounted on the accessory clip and coupled to the shutter-speed dial, setting is semi-automatic. But new refinements bring new problems. There is no check against leaving the "door" open after loading. The viewfinder does not compensate for all lenses; a wide-angle lens requires a special viewfinder which goes on the accessory clip, which means you can't use the exposure meter. Many of these changes seem designed more to obsolete present models than to add convenience or visual refinement. Considering how much has been added, it's remarkable that the Leica has grown only 1/4" higher and 8 ounces heavier, and retains its compact, easy feel. But changes of proportion and spacing give it a chunkier, less precise look. We think we'll hang on to our 1933 model.

Top: Leica A, 1920's
Left: Leica IIIc, 1933

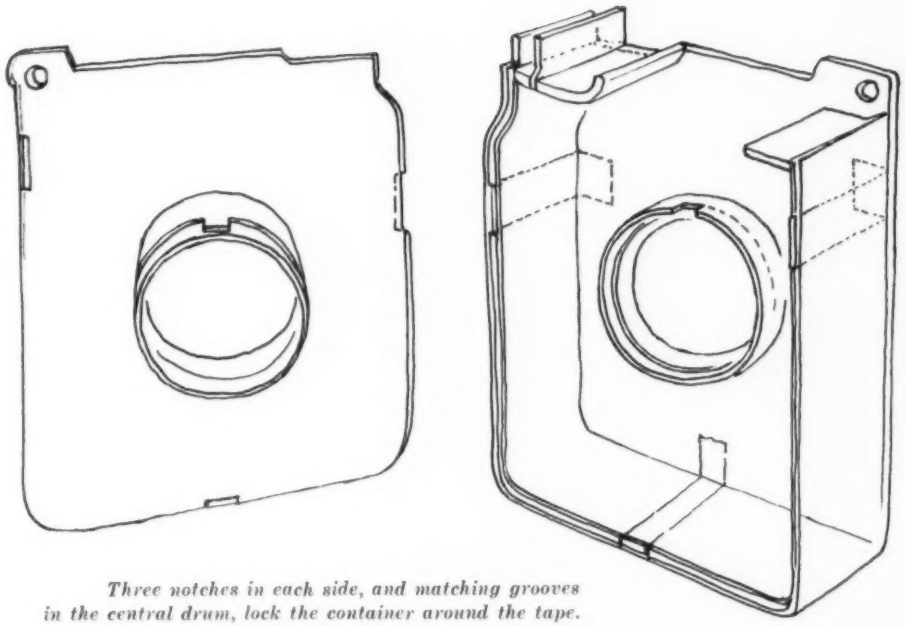
Below: Diagram of complex view- and rangefinder mechanism.



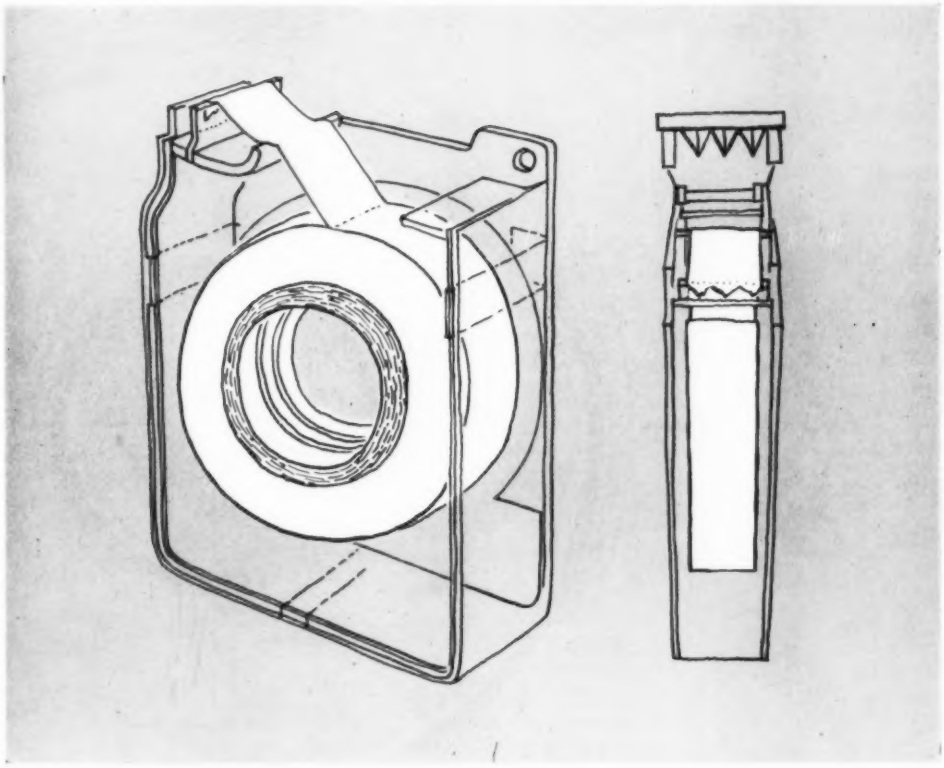


SQUARE CASE FOR PLASTIC TAPE

Curad's new circle-in-the-square dispenser is the direct and logical result of having something new to dispense: it contains a waterproof skin-thin plastic adhesive on a Bakelite Kreen backing which, Bauer and Black report, is the product of nine years of research. The container makes design capital of the thin, elastic nature of the tape. Since Curad tape, unlike cloth, can be pierced by nothing more knife-like than a few plastic teeth, the manufacturer could use a polystyrene container with teeth molded in the lid. Such a lid implies a square container, and the one that evolved has the added advantage, the manufacturer points out, that it will stand upright without rolling. Though the tape is sealed inside, the transparency of the plastic gives the user constant surveillance of the adhesive supply. It also opens the way for a new labeling idea: two round paper inserts, colorfully printed, identify the product by both word and shape, yet stay clean and unfadable inside the case. Constructed of three molded pieces, the case can be assembled in a trice. Labels, tape and lid are inserted, and the halves snap together without fasteners. Dispenser and tape were developed by Bauer and Black laboratories; the label was designed by DeForrest Sackett.

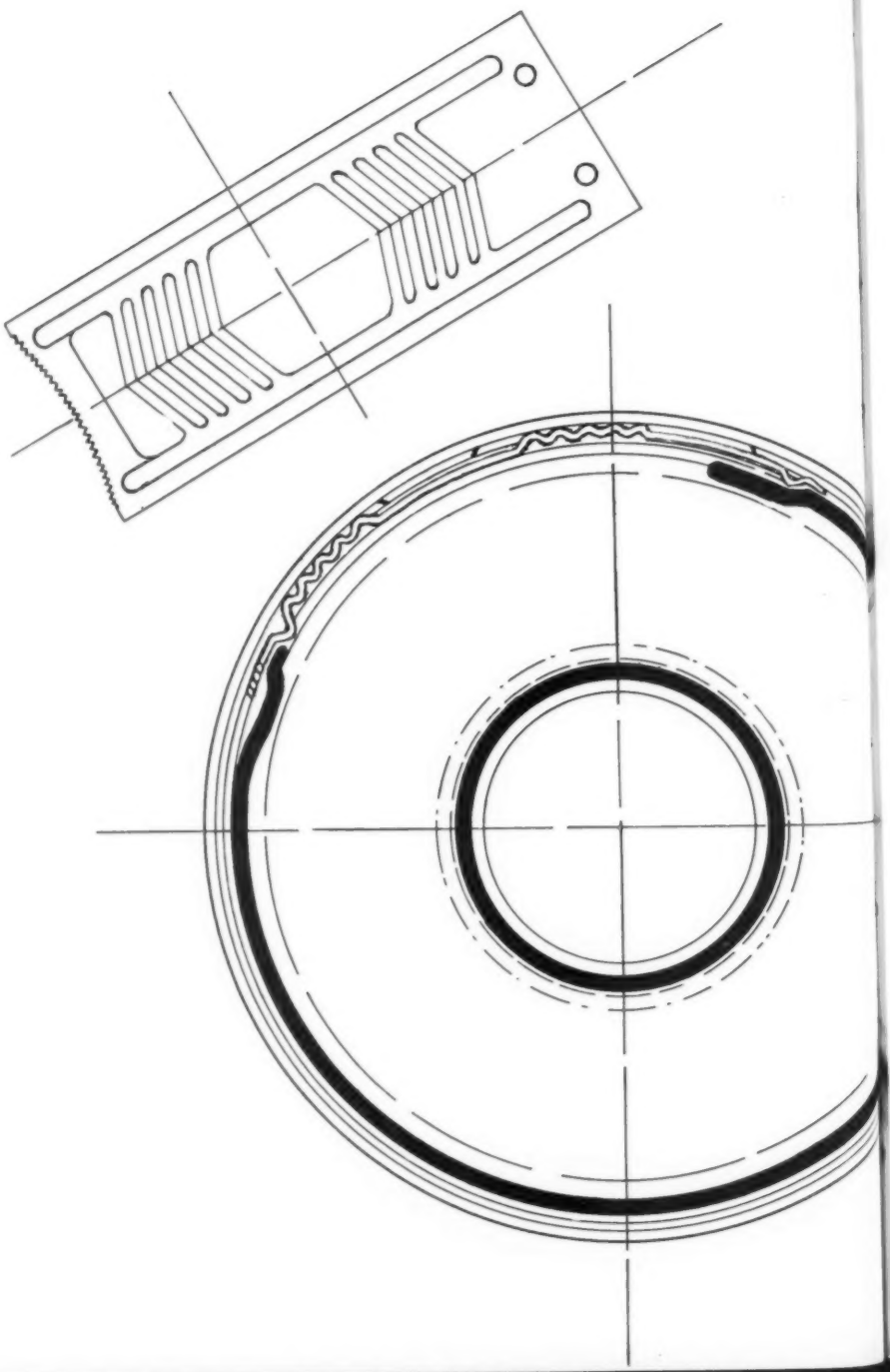


Three notches in each side, and matching grooves in the central drum, lock the container around the tape. Six intermeshing prongs, shown in the side view below, pierce the tape and make it easy to tear.

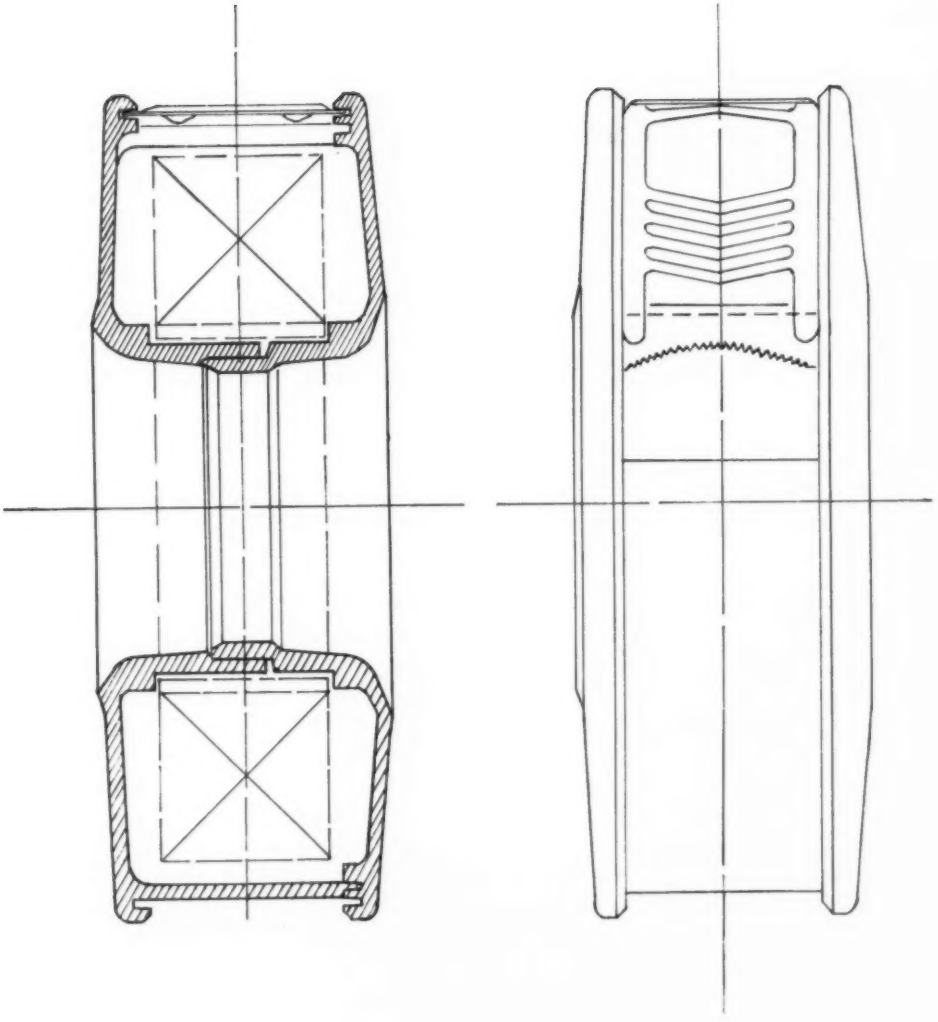


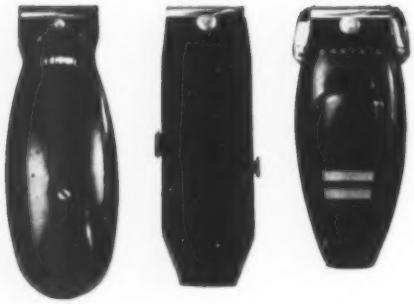
J. & J.'s SELF-SERVICING CONTAINER

Getting a strip of adhesive in a hurry will never again be a maneuver requiring numerous hands and a pair of scissors, thanks to new developments on the tape-dispensing front. Johnson and Johnson has repackaged its Red Cross tape in a dispenser-container which makes tape cutting a one-man, or a one-child operation. The tape comes to the consumer in a molded polystyrene disc, not unlike the two-part metal reel which formerly had to be opened at each use; but now the tape roll is permanently sealed in, and one end pulls out through a cutaway. A metal cutter which slides between the sidewalls is closed over the projecting ribbon; a slight tug tears a piece of the desired length, and the cutter holds the inner tape-end ready for the next emergency. Nowland and Schladermundt, who developed and designed the package in cooperation with the company's Sales and Engineering departments, detailed it for merchandising convenience. As the drawings show, the side walls have dissimilar sections so that the rolls can be nested, and so that the druggist stacking them on his counter will automatically place all the labels right side up, in a readable position.



No opening, no closing: J & J sealed plastic tape dispenser is shaped to reel and cut adhesive and to nest with all the labels in a readable position.

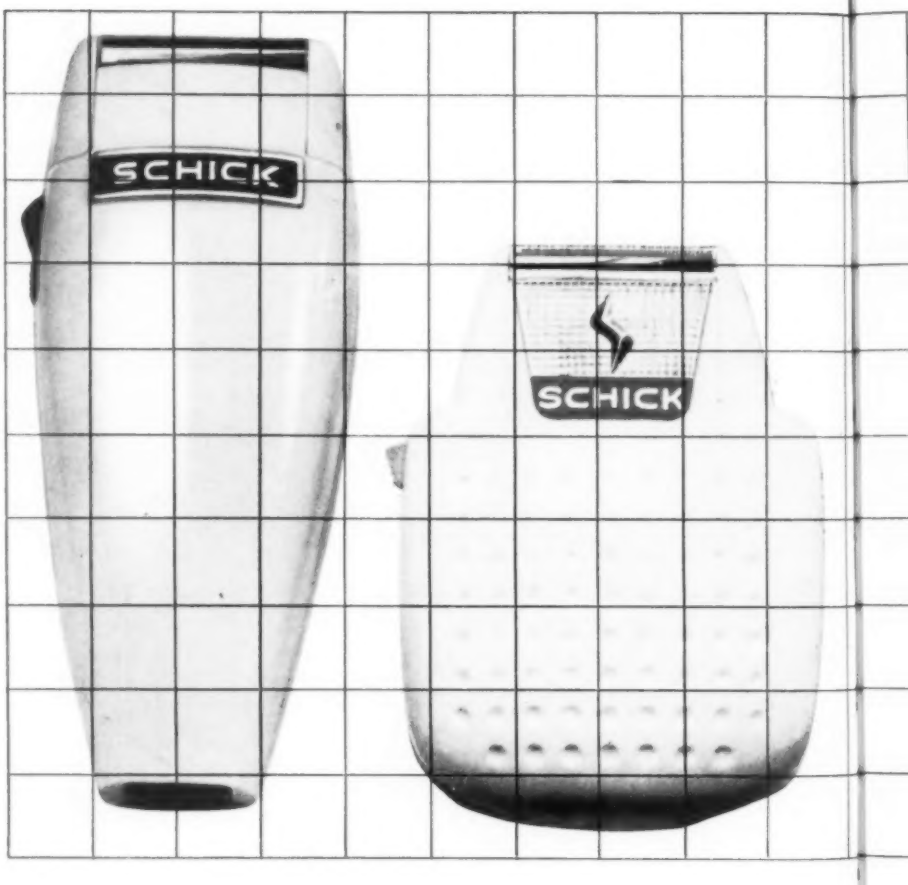




1930 *1934* *1939*

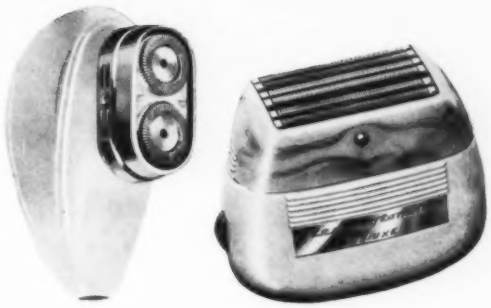
SCHICK'S NEW SHAPE IN A LITTLE SHAVER

"400" — 1948 *"20" — 1950*

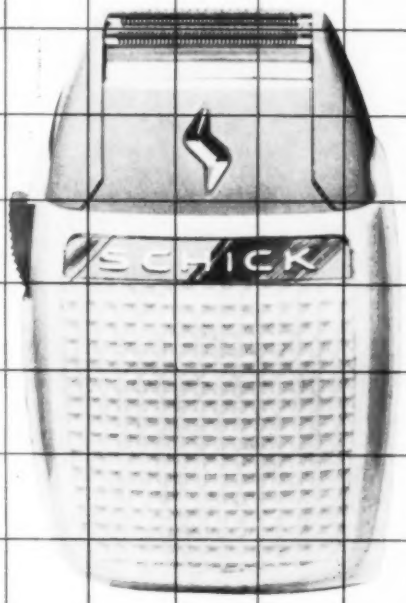


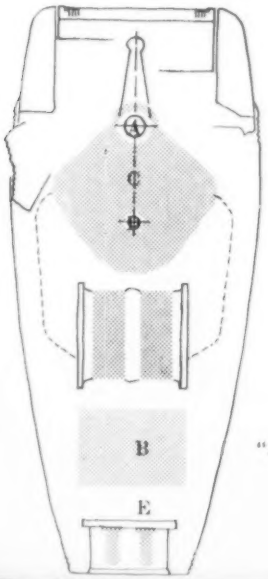
In a day bloatedly devoted to the Big Package, it is interesting to find a company cheerfully pursuing the virtues of smallness. Schick — a big business built exclusively on shavers — has just introduced its most compact model yet, the Custom Schick ($28.50), designed by Carl Otto in cooperation with Schick's engineering department, Norman Gray, Chief Engineer. Size in a shaver is a relative thing — relative to its shape, and to the hand of the man who holds the shearing head perpendicular to his face. The long "sweet potato" shape, which prevailed from Colonel Schick's invention in 1930 until 1950, was determined more by internal workings than by manual convenience; its length made it awkward to grasp between thumb and fingers. Shortly after the war, Otto set out to design a handier shaver, and found it could be done by tilting the motor and shuffling other parts out of their conventional string (see diagrams). The plump "20", taking up in width what it lost in length, proved to be an easier shape to hold and maneuver. The new Custom is ¼" narrower and thinner than its parent, but has an even more petite appearance. Otto designed a two-tone melamine case—a deep shell closed by a shallow cover—to reduce its apparent size. The joints, instead of butting as best they can, are clearly offset, and the neatly stepped edges become part of the angular, multi-faceted design.

Other shapes on the shaver market: The Remington shaver, (right) wider than it is long, is also held between thumb and fingers; Norelco, based on two revolving shearing heads, is surrounded by fingers and cushioned in the palm of the hand.

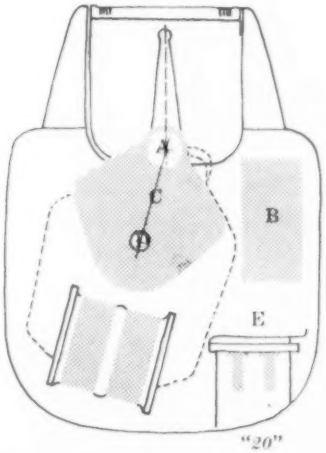


Custom — 1954

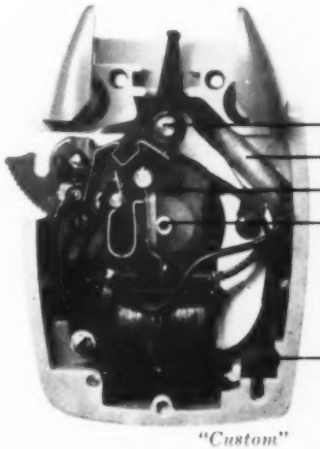




"400"

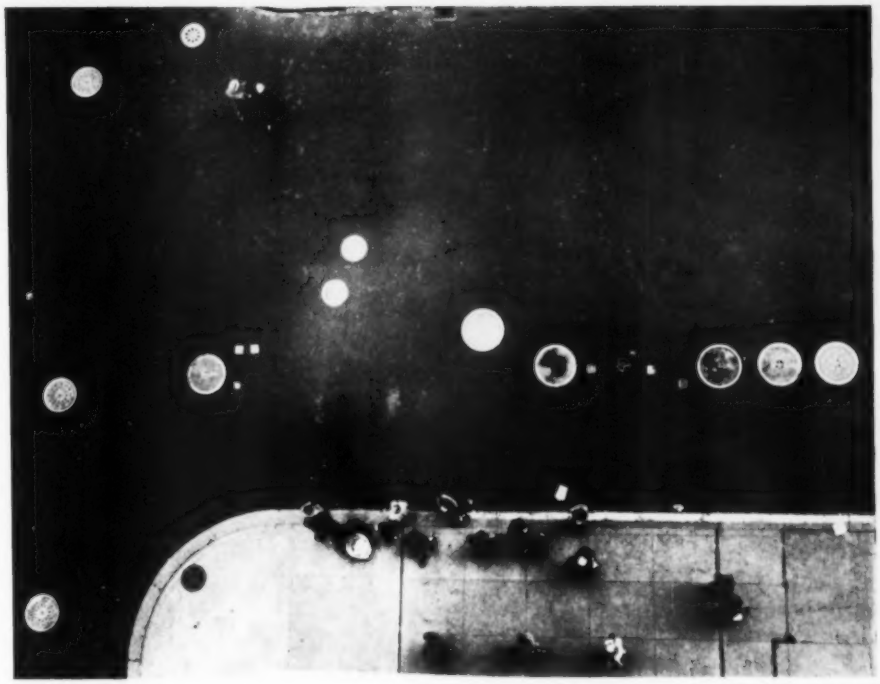


"20"



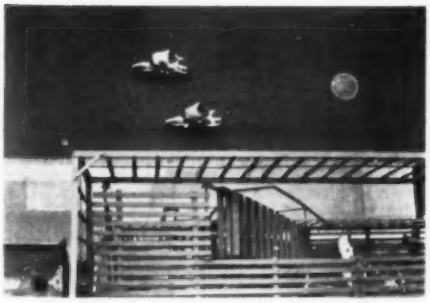
"Custom"

Old cities, like old houses, are gutted with a maze of pipes and wires. But cities, unlike houses, have no cellars, so far-sighted engineers have scattered the streets with roses to give access to the maze. In New York there are about 185,000 manhole covers, some a hundred years old. The legends they bear are a revelation of the service we get and attempts to serve us better. The greatest number, about 61,000, cover Consolidated Edison's electric lines (the countless coal chutes that dot the sidewalks are not considered manholes). 56,000 belong to A.T.&T. 36,000 are sewer covers and bear the insignia of the Manhattan Borough President or his liege, the Department of Public Works. Another 16,700 cover Water Department mains. A few thousand memorialize abandoned services: The Fire Department once kept a high pressure water system but finally settled for city water; covers marked "N. Y. Mail and Newspaper Transport" recall an abandoned attempt to shoot mail through pneumatic tubes.

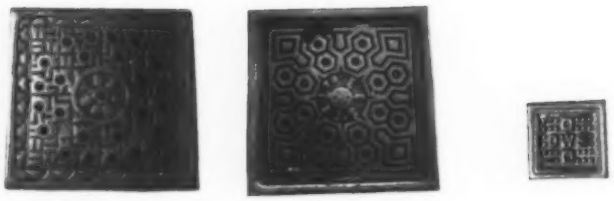


Roses in the street

collected by Roberto Mango



The man who walks with his eyes on the stars may miss the stars at his feet. Or to put it another way, the view is sometimes better from a fire escape than an ivory tower. Manhole covers run the gamut from calligraphy to iconography and simple geometry. The glass-studded circles in the sidewalk usually cover coal chutes.



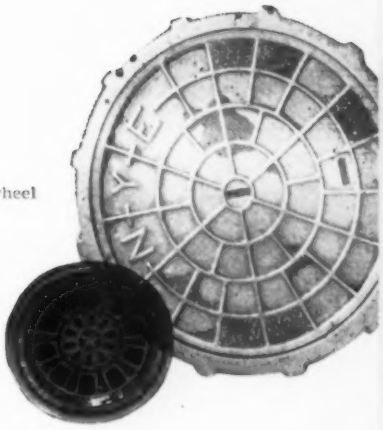
Individualism flourished in the early days of manholes. Sturdy geometrics like the ones on this page are the rule today.

Herbert Hoover, evidently a man who watched his step, once suggested that manhole covers be standardized. But the plan apparently went awry: modern catalogues show hundreds of designs, some marked as the favorite covers of certain engineers. Requirements vary as to weight and reinforcing, the number of bolts, and the method of carrying the load. Special designs offer such things as internal locking, pressure loaded tops for boiler manholes, and space for sawdust packing as insulation against frost. The decorative tops have the simple purpose of minimizing splash and skidding. Usually the foundries produce their own patterns, inserting names or initials if required. The oldest covers often bear the foundry's name and address worked into an open pattern designed to provide a grip for hooves. When automobiles appeared they tended to spin between the grooves, so rosettes were introduced for better traction. These lacy patterns wore down too quickly, and in the early thirties the foundries switched to the present inventory of waffles, bird's eyes, hexagons, and basket weaves. The men who work out these patterns remain unsung. Presumably they are pattern makers following the requirements of the material and the complaints of the customer, and if necessity worked to their advantage, it's unfair to call them artists.

. . sunburst

. . . glass

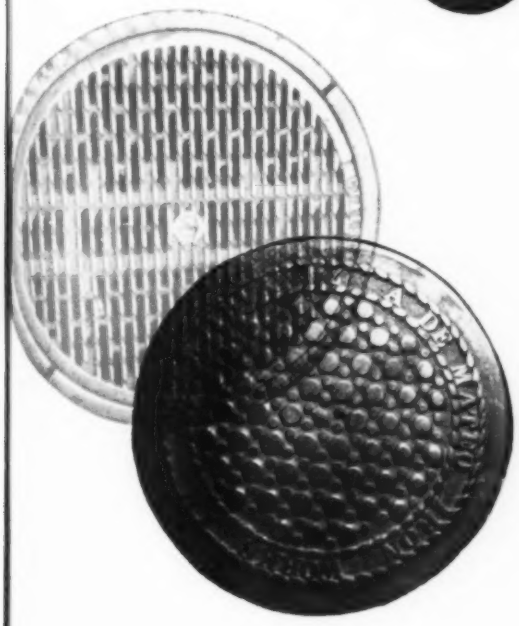
. . . star



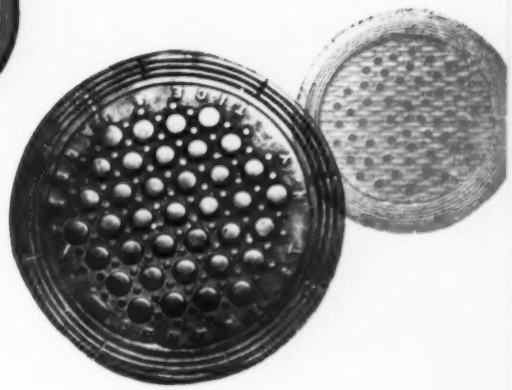
. . . wheel

. . . rose

. . . holy bird

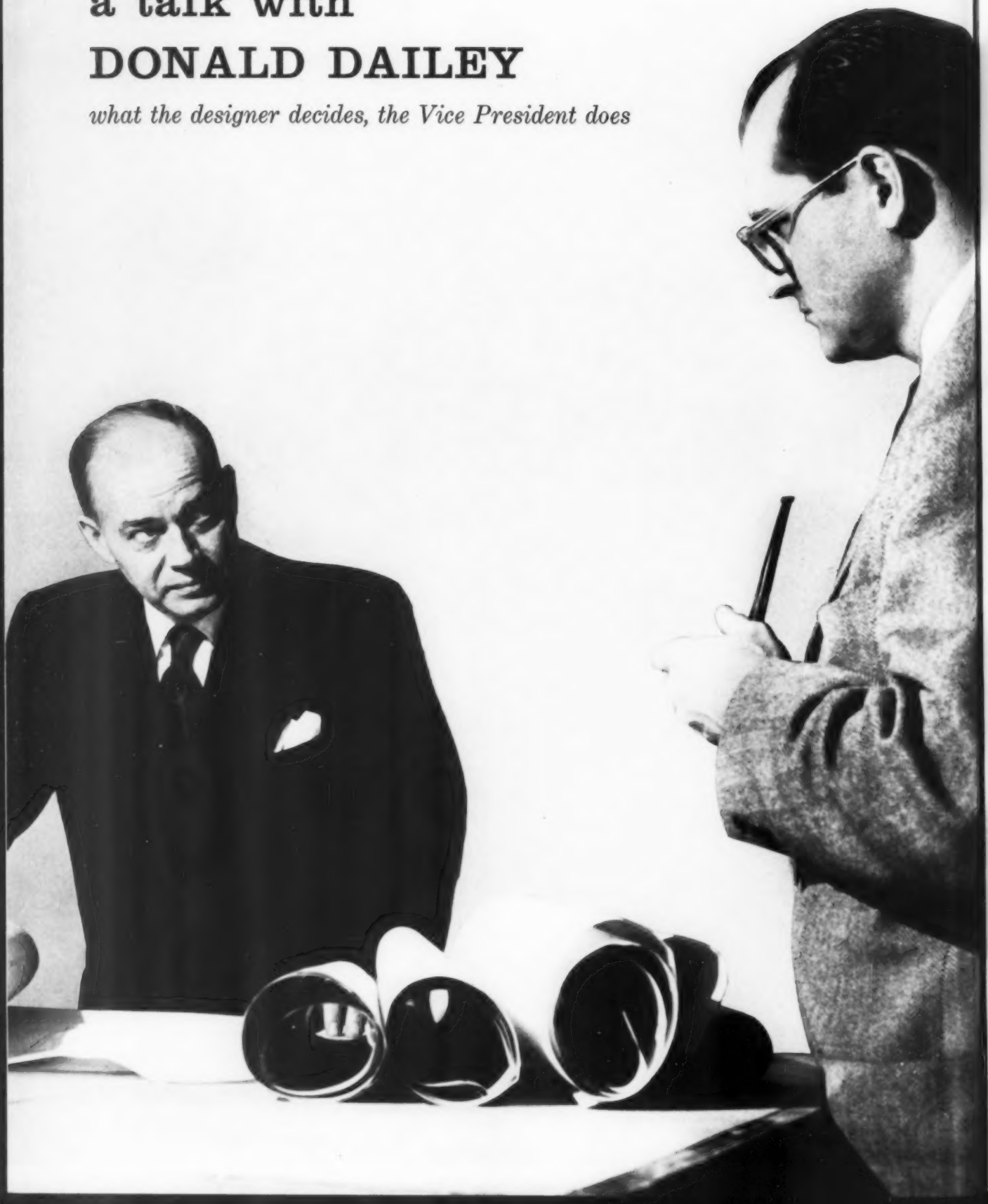


. . studs

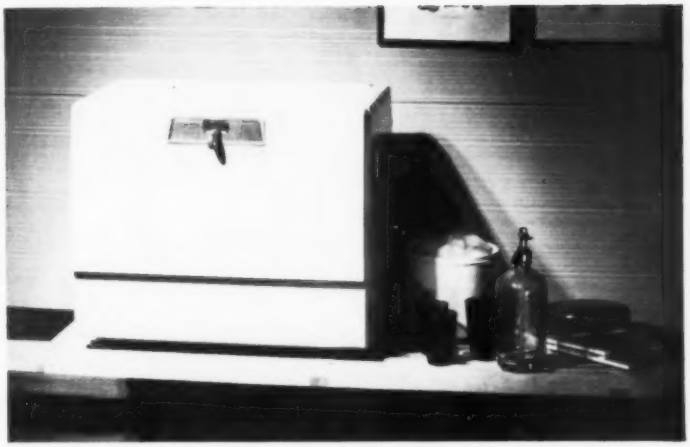


a talk with
DONALD DAILEY

what the designer decides, the Vice President does

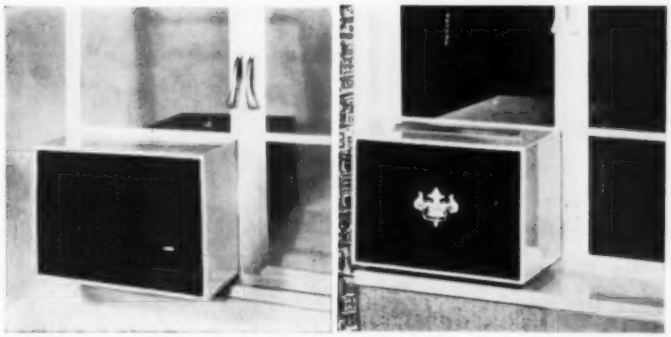


Opposite: Dailey with Servel President, W. P. Jones (left).



The Wonderbar was part of Servel's drive to establish itself in electrical refrigeration, as well as to create new uses for refrigeration in the home. The Icemaker, right, was developed by the research department, refined by engineering, and given final form by the design department.

When he had his own office, Dailey designed toasters and irons for Proctor, radios for Philco.



Servel's product planning group designed the novel air conditioner (right) with a drawer to actuate the controls. Early model at left.

Donald Dailey, a modest midwesterner with a penchant for puns and mechanical patents, is, at 39, one of a handful of men who sit on both sides of the designer-management table. As a Vice President of Servel, Inc., he has a voice in company policy; as head of the product planning department, he captains the team that dreams up new products and then "sells its ideas to management." When Dailey was called in as Product Manager in 1950, as part of president W. P. Jones' program to find new markets through diversification, design was a function of engineering. "I'm in favor of making company designers autonomous," says Dailey. It is important because, unlike engineers, "Their job is to contribute innovation and objectivity, and to do it they need perspective." Shortly after his arrival, Mr. Jones put design on a staff basis.

Having made the point with Servel, he underscored it by suggesting that even an autonomous designer could lose his perspective in a corporate set-up. He keeps his department on its mettle by calling in design consultants for specific jobs. Jean Reinecke of Chicago frequently works with Servel's design group, and the resulting teamwork is one of the few things Dailey permits himself to brag about.

An ex-independent himself (he spent nine years with Harold Van Doren, ran his own office for five), Dailey still likes to work at the boards. Servel's successful Wonderbar was his design. More important, it was his idea; his significant designing today is of this policy-level kind, which shapes a product by the concept. The Wonderbar was created to be "not just another appliance, but one with a new character which would logically expand the use of home refrigeration."

Called by one colleague "a genuinely inventive designer," Dailey has collected 37 patents, one of which pertains to the horizontal evaporator used in most refrigerators. He equates invention with creativeness, and suggests it may be the designer's salvation. "Turning out new models at regular intervals is as habit-forming as dope. The designer's only escape is to have new ideas first, and needle management with them." Management, he adds, should encourage such needling. "The designer's creativeness will depend on his success with the front office. If he knows new ideas are welcomed, he'll turn out more original work."

Obviously he knows whereof he speaks, being, in his unique position, the idea man *and* the welcomer. Under such an arrangement, it would seem, the lines of communication become invitingly direct: designer Dailey relays his ideas to V.P. Dailey, whose advice to management—by dint of his practical and executive savvy—is more than likely to be listened to.

The American bathroom is as sacred as it is sanitary, the symbol of a nation's physical and spiritual wealth. In a country that makes cleanliness a fetish, it hardly seems necessary to explore the market for bathroom fixtures. But since the manufacturer's job is to satisfy, and the customer's job is to see that he's satisfied, the question should be raised from time to time:

What do people want in

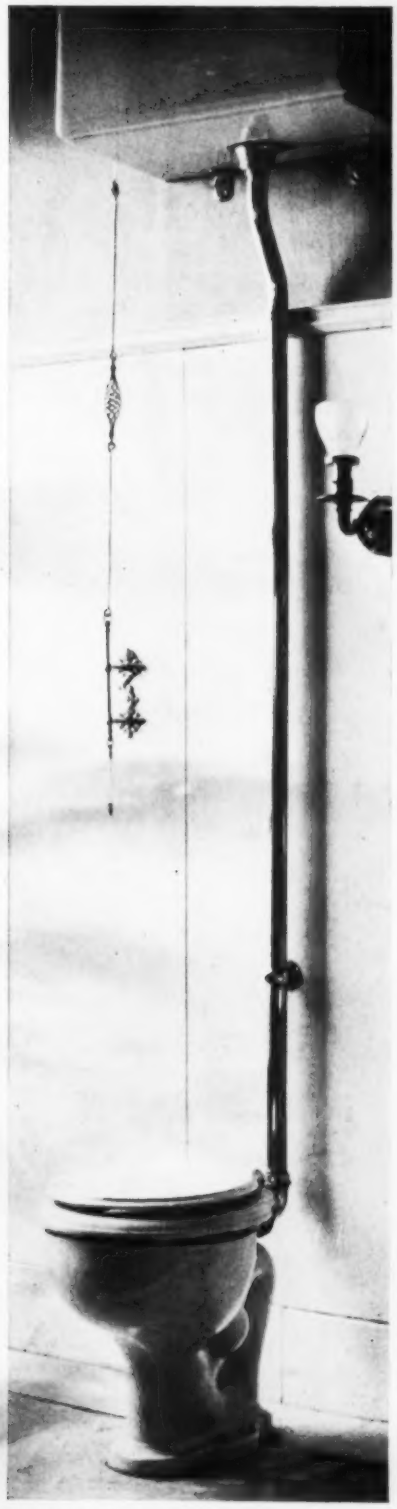
Rome: Baths of Caracalla, 3rd Century A. D.

Photo Ernest Nash

Photo Betty Rosenzweig

by Deborah Allen

a bathroom?



Courtesy National Park Service

Vanderbilt Mansion,
Hyde Park, New York

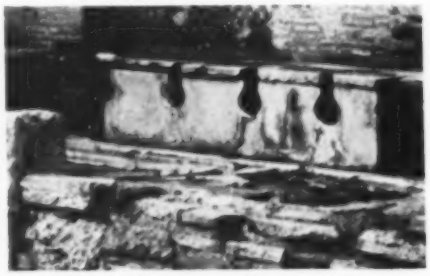
Photo Ernest Nash

One thing is certain: people like to spend money on their bathrooms. For a while one company found its best selling line was its top line. Colored fixture cost at least 10% more than white ones, yet they sell like hotcakes.

What do people like besides color? If money is no problem they may buy tubs with seats and slab lavatories with finger-touch faucets. Yet a glance at *House Beautiful* shows that they often prefer built-in "plunge" tubs and kitchen sinks. You can't please everybody, of course, but hard-to-please customers tend to prophesy the market.

Modern plumbing allows us to group a marvelous array of conveniences in one room. Our per capita water consumption is the highest in the world, but this isn't a new high. Rome, which limps along with seven aqueducts today, required thirteen in ancient times. Even so, the ancient Romans didn't have "bathrooms." The famous baths were civic centers, built around a way of life instead of a plumbing stack, and the toilets were just outside the door. This lavish attitude toward bathing seems to have given way before the quick shower, but perhaps it's only camouflaged by the bathing suit. The beaches are crowded and private pools abound. There is even evidence that baths *a deux* are a common, if clandestine, pleasure. This raises a new question: Do people want *bathrooms?*

Purification?

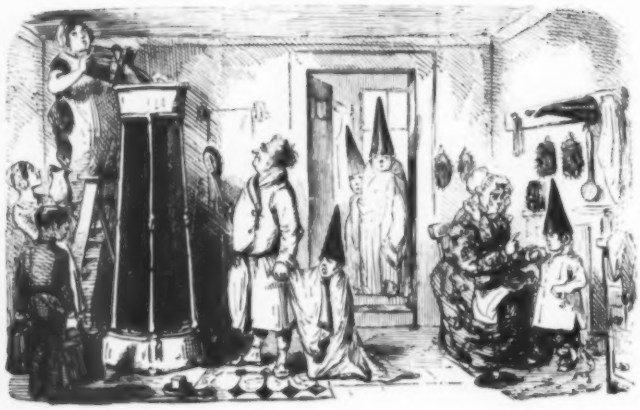


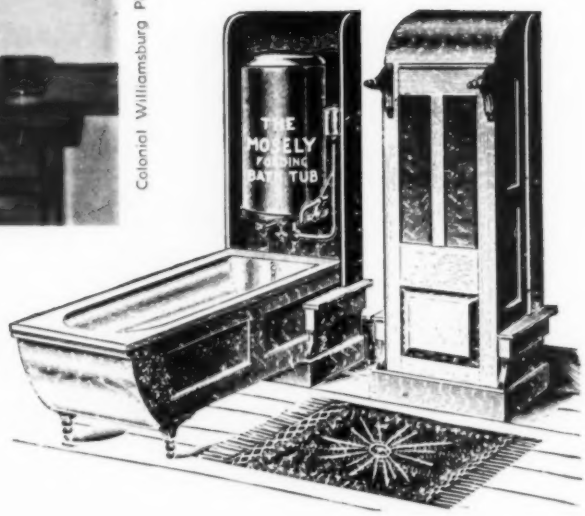
Ernest Nash

The Romans did not associate bath and w.c., though both were provided as a public service. This public lavatory stood outside the baths of Ostia.

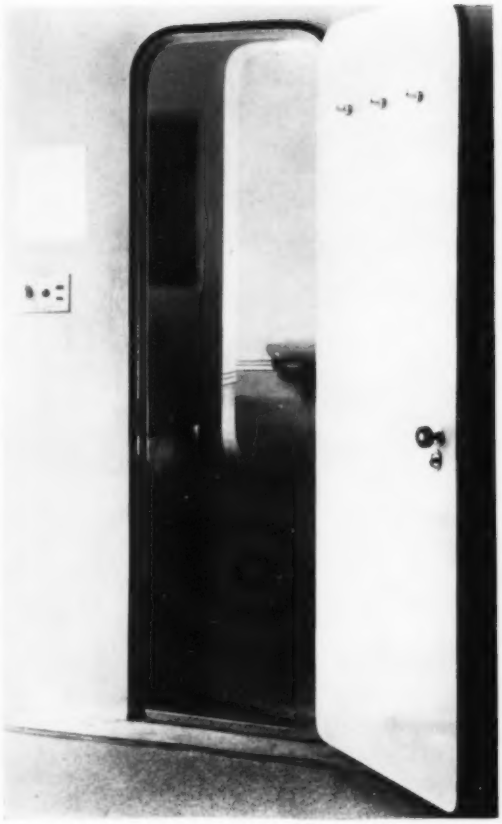
Colonial Williamsburg Photograph

In 18th century America, which lacked the plumbing that now unites bath and w.c., the toilette was naturally performed in the bedroom, and w.c. was banished to the garden.



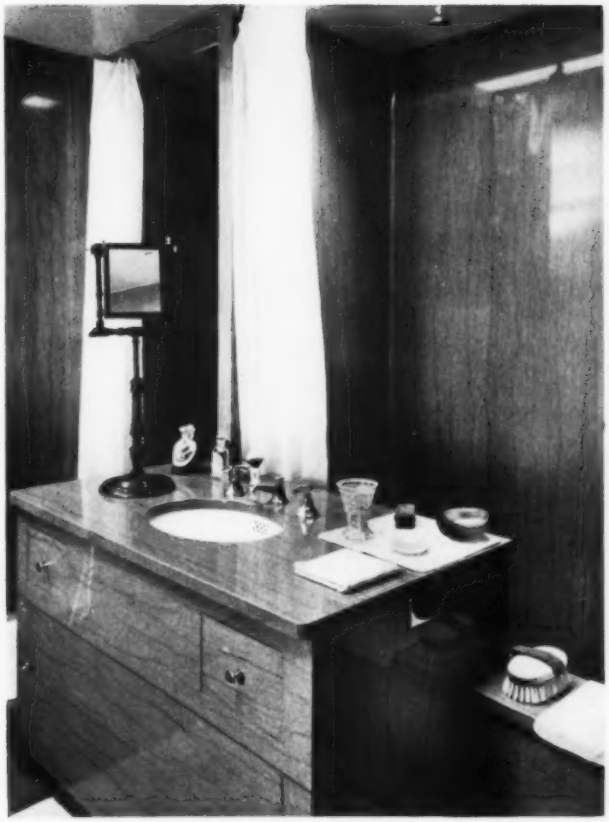


Although bathing was still uncommon in the 19th century, disciplinarians discovered that a clean body is easier to inflict than a clean mind (left), and began to regard it as virtuous. The Victorians worked out some ingenious ways of adapting the torture chamber to the home (above).



The Museum of Modern Art

The cleverly compacted bathroom was still a legitimate goal for designers when Bucky Fuller designed this all-metal prefab model.



Michael Miller

The ascetic approach can yield splendid results if it is rendered in beige marble. In Edgar Kaufmann Jr.'s bathroom, toilet compartment, dressing table, and tub are reduced to marble cubes.

Or relaxation?

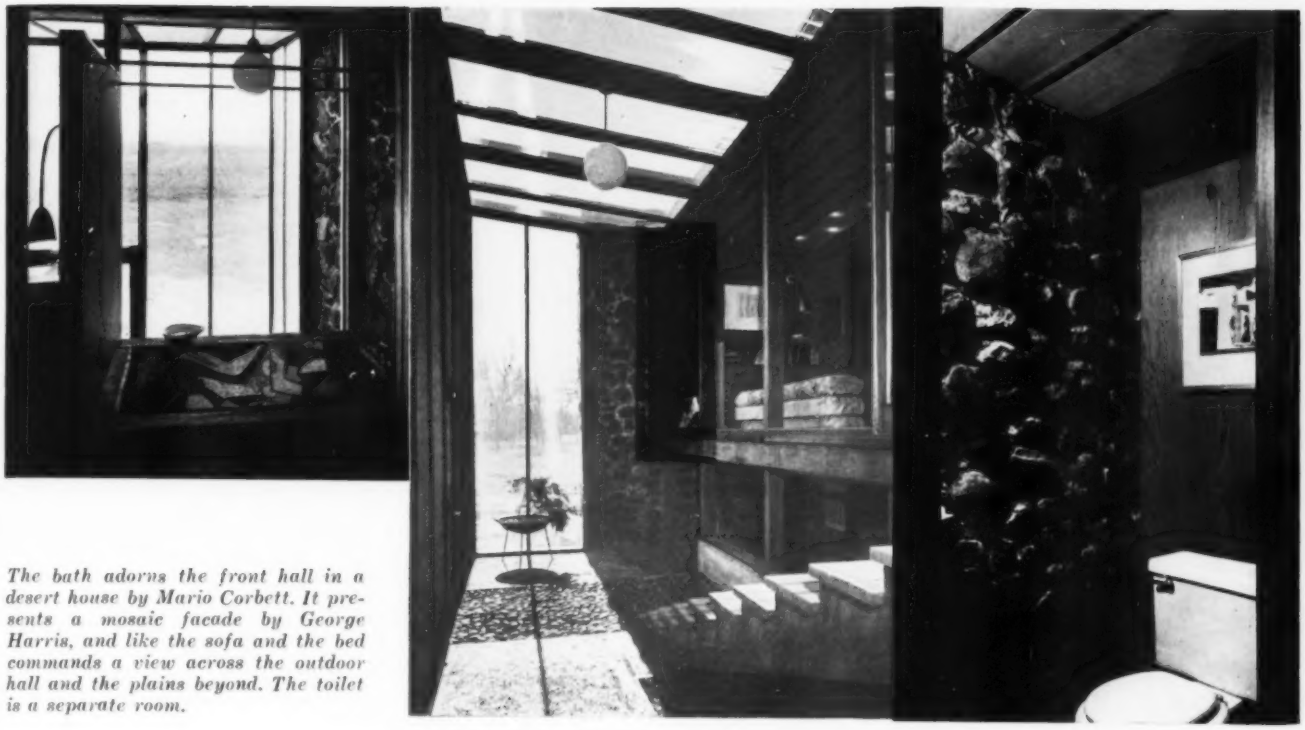
The traditional conception of the bath as a relaxing background for reading or conversation is not entirely dead.

Sid Grossman

The breakdown of strict divisions between living areas is typical of the modern house. In custom-built homes even the bathroom sometimes loses its identity. The toilet is likely to retreat to a private closet, while the bath is promoted as a luxurious adornment of whatever room it occupies.

The bathroom elided with the bedroom in a house designed by Le Corbusier for the Salon d'Automne of 1929. Even today such lack of self-consciousness is uncommon.

The bath is part of a separate living area in a house by Edward D. Stone. A marble plunge with built-in seat and acrylic shower, screen, it stands at the center of a large, comfortable dressing room.



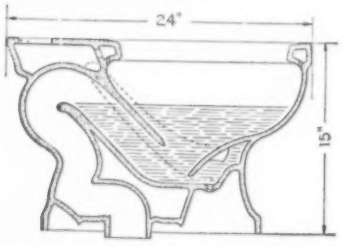
The bath adorns the front hall in a desert house by Mario Corbett. It presents a mosaic facade by George Harris, and like the sofa and the bed commands a view across the outdoor hall and the plains beyond. The toilet is a separate room.

The bathroom was widely publicized as a place for family relaxation in a model arrangement designed by Edward Stone for a national campaign of the Tile Council of America. Here again, the toilet is closeted.

What do people want in a bathroom?

Techniques

The toilet, a remarkable shape for pottery, must be cast in several sections which the caster joins with slip.



When pottery comes out of the mold the caster must remove seams and smooth out irregularities by hand.

Cast iron tubs are frosted with enamel by a workman with a skilled eye and a quick hand.

Despite its disparate functions, the bathroom persists—the only area of the house that remains habitually entrenched behind four good soundproof walls. And regardless of what people *might* buy, it is unlikely that any manufacturers will rush into production on plunges for the dressing room or mosaics for the parlor. Their biggest market is the builder's house, and the builder sees no reason to give space to fancy bathrooms.

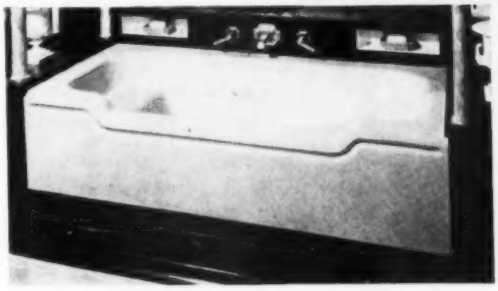
Yet even though they end up the same color in the same room, the individual fixtures are as dissimilar in their mode of manufacture as they are in function. Vitreous china water closets and lavatories are produced in potteries by skilled craftsmen using the tools of the ceramist. The base material is a liquid slip, which is poured into plaster of paris molds of carefully regulated moisture content and left until the mold has absorbed enough water to leave a fairly firm clay body. Cored sections are formed by removing a plug to drain out excess slip.

For the past fifty years most tubs have been turned out in foundries from sand-cast iron, but today a number of companies are using big modern presses to form tubs from steel. The tooling expense demands volume production, but the end product is lighter and cheaper to color.

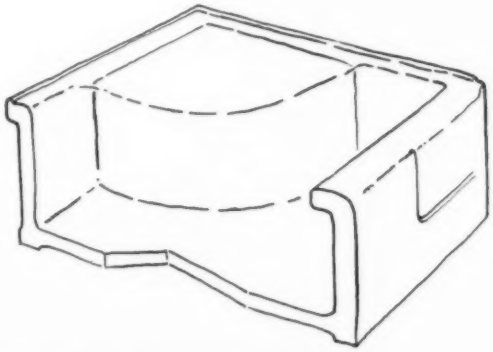
Pottery fixtures present plenty of headaches, but they do lend themselves to large inventories of varied designs. The tub, however, must usually come in a number of versions to fit various installation requirements—left-hand corner, right-hand corner, and recess with left- and right-hand outlets. Since each new tub design may require at least four new sets of patterns or dies, the manufacturer is not inspired to splurge on variety.

The public has decided, or been persuaded, that the free-standing four-legged tub is old-fashioned because it is a practical nuisance, and today such tubs are replaced as a matter of course. The old tub did have a certain grandeur, though. Furthermore, the same model did for most bathrooms, and since it was raised the tub itself was easier to wash out than a modern one. Now that we've all been sold on modern convenience, perhaps it's time to proselytize for old-fashioned luxury. If builders felt bigger bathrooms were a sales point they might build their own plunges, and they might even do it cheaply. Even now, they advertise "sunken" tubs. But the point of the custom-made plunge is not depth so much as elegance. Perhaps the most successful commercial version would be another kind of pool—a modern, easy-to-clean reincarnation of the free-standing tub.

Luxury tubs include American Standard's corner model (above) and tubs with head- or bottom-rests. The American Standard version below was designed by George Sakier in the thirties to specifications of King of Siam. Crane's advanced designs are planned to suit the requirements of modern architecture by Henry Dreyfuss (right).



Two problems in tubs are weight and the lack of variety. Ceramic gave way to cast iron because of its weight; today some companies make still lighter tubs of steel. At present the only alternatives to these metals are clay and plastic. Crane's compact "receptor" (below), is made of Duraclay, a material that lends itself to special designs because it's easy to tool for. The reinforced polyester tub at right, bag-molded by Lunn Laminates for Carl A. Strand Company, is a real lightweight. It's aimed at the trailer market and would need the sanction of plumbing authorities to get in the home.



While the bath can be regarded as a civilized luxury, the toilet and lavatory are basically utilitarian devices. One way of putting them in their place is shown in the bathroom below, where the toilet is simply a seat and the lavatory is a function of the counter space.

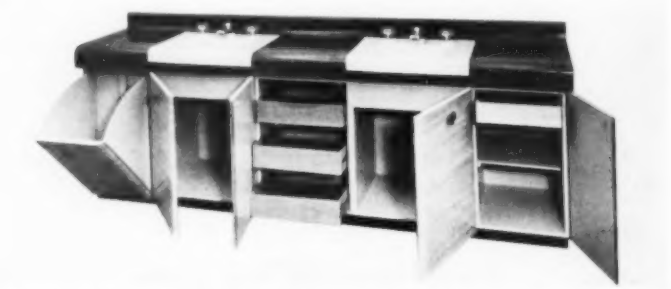
The countertop lavatory is nothing new. The earliest ones were basins suspended in marble or wood counters. The basin is a simple ceramic shape, but the concealed putty joint it involves is considered unsanitary today, so modern lavatories are generally made with square tops to provide a clean joint and a maximum of integral counter space. Sometimes the useful surface is increased with "ledge" or "shelf" backs, but lavatories that are to be built in must obviously be flat. In either case, the extra area requires careful engineering. Ceramic lavatories are made with double walls around a cored interior, from molds designed by trial and error to compensate for warpage in the kiln. The "slab" lavatory, whose broad, unornamented surface makes it equally useful with or without the counter, is an especially formidable casting. Steel and cast iron, which disdain the square shapes that have been forced on ceramic, do not compete with ceramic lavatories in size and are usually more lyric in shape.

China is the standard material for water closets for sanitary reasons. The tankless, wall-hung closet, a scrub-woman's delight, was apparently invented by Frank Lloyd Wright for the Larkin Building of 1903. With its supporting irons it makes an unusual load for residential construction, and it relies on a heavier, steadier water pressure than is normally supplied to the home. The neatest residential closet is a one-piece "quiet" model, which sits on the floor but has a tank low enough to fit beneath a window.

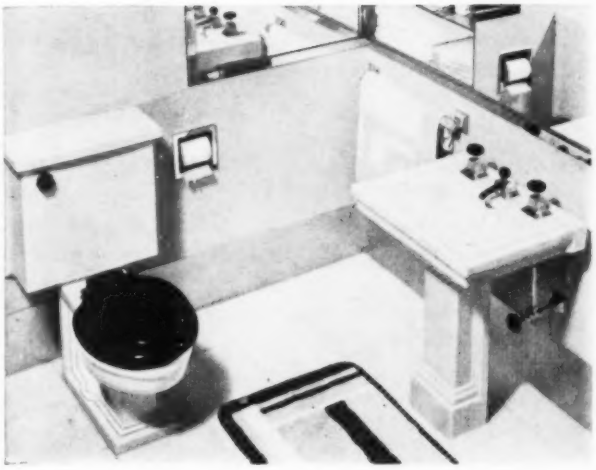
sinks and toilets

Left: An early "modern" lavatory designed by George Sakier was part of a prefab panel that fitted between studs. It wasn't popular with plumbers.

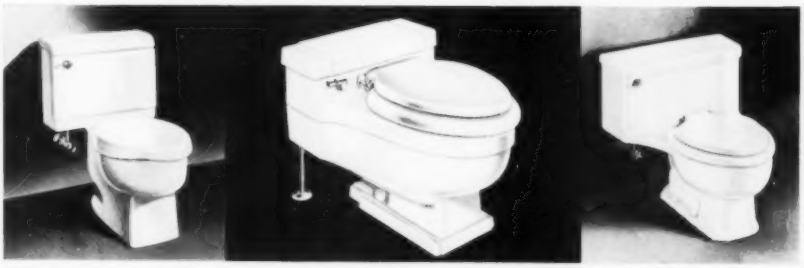
William Zeckendorf's private bath, the spiraling climax of a circular office, contains two ideals of modern bathroom design—the countertop lavatory and the wall-hung closet. Both have practical drawbacks.



Crane is one of several companies that meet demand for built-in lavatories with dressing table units. It is hard to make ceramic surfaces smooth enough to butt.



Neo-classicism, which was popular in the thirties when George Sakier designed the bathroom at far left, is still the reigning style. American-Standard's modern slab lavatory, a tough casting, retains square lines, but Universal Rundle design beneath it shows a freer approach.



The sculpturesque toilet at the left is by Crane. Beside it is Case's "Quiet" closet, another tough casting. Less expensive version of the "quiet" is the closet by Placid.

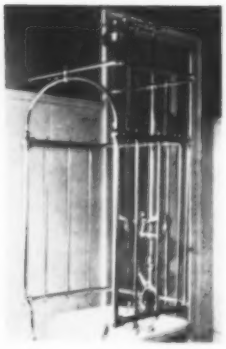
Crane semi-circular basin is designed so that it may be built on or used alone.

American sanitary potteries boast that their products are mass-produced sculpture, but few of their designs are as sculptural as European fixtures. The lavatory below, like many designs by Adamez of England, is unusual for its thin walls, presumably possible because of the inherent strength of the curved section. Closet is also by Adamez; basin by Morisseau of France.

The essential service in the bathroom is the delivery of water, a miracle that is generally performed by brass pipes. The ancients took this miracle quite seriously and often had their water delivered by lions symbolically chained to human service. In a modern bathroom, running water doesn't seem especially miraculous, and equipment that requires the care of a well-trained staff is no longer viewed as a luxury. The manufacturer's main concern is to terminate the pipes with faucets and spouts that are reasonably attractive, reliable, and easy to clean. Since plumber's brass is not attractive and polished brass is notoriously hard to clean, it is customary to chrome-plate any parts that show. Such modern inventions as dial showers, compact shower heads, and one-handle faucets have helped to reduce the amount of chrome necessary in a well-equipped bathroom.

Yet even though we have ceased to identify plumbing with tamed lions, the modern bath bears a certain resemblance to its classical forebears. Toilet, tub, and lavatory, after all, are simply catch basins. Today, as in ancient times, they tend to recede into the architecture, leaving the plumbing as a conspicous and symbolic ornament. It need not loom large, to live up to the role, so long as it looks willing and efficient, and pleasant to handle.

Among the bath accessories of a lady in a 16th century tapestry are 1 lion and 4 attendants. The lady from Bali is also served by a lion.

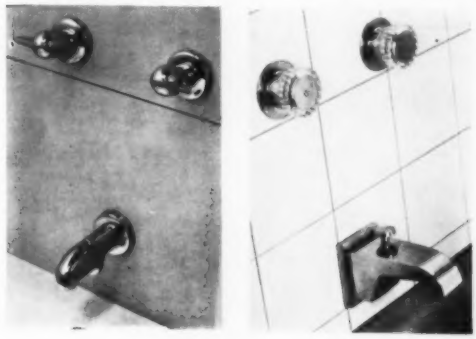


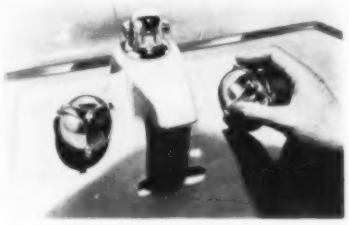
Plumbing was worked in filigree patterns against the sparkling white walls of the Vanderbilt Mansion at Hyde Park (left).

When tub is empty, chrome fittings are the most conspicuous feature of this tiled bath by William Becket (right).

American Standard Tubular lavatory by George Sakier (above), had red and blue porcelain knobs. Weisway offers elegant version of standard forms in father-and-son shower fittings (right).

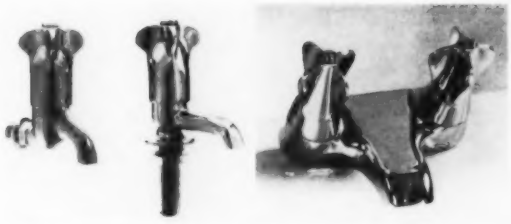
Among Crane fittings designed by Henry Dreyfuss are plastic knobs, and chrome wings.





"Dialese" faucets, set on a turret, are rounded because they turn so easily.

Swivel spigot, scalloped knobs blossom from French basin.

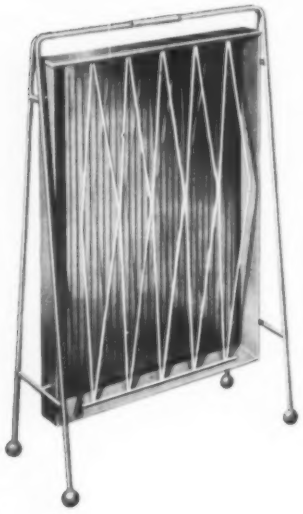


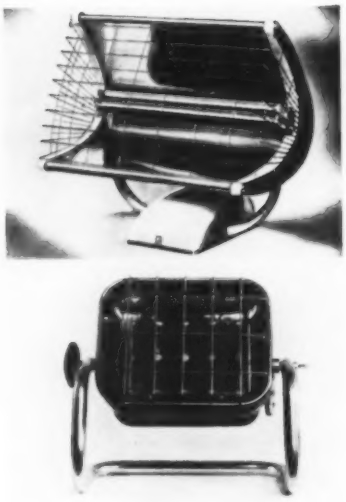
Metal handles slip off English (left) and Canadian faucets to simplify repairs.

Push-pull faucets, usually self-closing (Like Dreyfuss Lockheed design), are introduced on the kitchen sink by American-Standard.

On Ravenna's Moen faucet, temperature and flow are controlled with one knob. It's made in three pieces to fit standard lavatories.

DESIGNS FROM ABROAD





Heating element of British Premier (left) is a metallic path deposited on armour plate glass, so no "live" parts are exposed. British Ferranti cast-iron heater, above, gives deep wide heating area with parabolic reflector. Italian Triplex has knob to adjust angle of head. Sculptured toaster, top, from Neowatt of Milan.

Washer by Sigvard Bernadotte and Acton Bjorn achieves elegance from careful detail; restrained but easy-to-read top-lighted panel has backlighted dial. Denmark.

(1)

(2)

English ideas in cookers: (1) *High backsplash holds dish rack where dishes will warm; 19" wide, General Gas Appliances, Ltd.* (2) *Dustpan-shaped broiling pan cooks under hotplate. Timers are on backsplash. 22" wide, English Electric Co.*

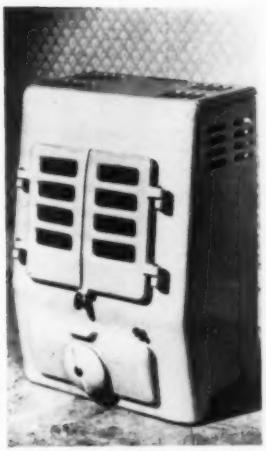
(3)

(4)

(3) *Eye-level grill atop backsplash has two adjustable burners, a grill pan designed for the table. Warming drawer below. Parkinson Stove Co.* (4) *Hotplate cantilevered over oven has grill beneath, dish-rack above. 24", Radiation, Ltd.*

(1)

(2)



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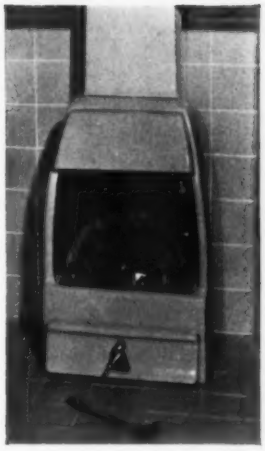


British "fires" are smaller than they look: Enameled gas boiler (1) *is 31" high; Frederick Kay, Ltd. Others are cast-iron in colored finishes, 23½" high.* (2) *Interior stove, designed by A. G. Goodwin for Mitchell Rosell & Co., Ltd.* (3) *Automatic water heater, Smith and Wellstod, Ltd.* (4) *Convector heater to fit fireplace, Radiation Sales Group Ltd.*

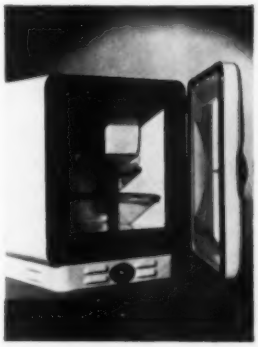
In most countries when an appliance firm designs a new model, it has to stay designed. It will probably be on the market five or ten years without so much as a restyled knob. The creation of a design which is dateless must be a refreshing sort of challenge—one which American designers might like to be confronted with. Many foreign firms meet it with lengthy pre-production research, and the design which comes out is considered to be complete and final, a total effect which invites no tampering later on. When the time comes to retool, they usually start with a clean slate.

That is why, if the products here seem more remarkable for their similarity to American designs than for their departures, it is worth noting the differences. Some pertain to standards: stoves are compact, without pan rests and storage, and low front controls seem to be acceptable. There are some interesting functional differences: the separate grill and high dish rack on stoves, and the portable wired-glass heater. All things being equal, there are also differences of treatment which suggest that curves, chrome and pushbutton gadgets, properly combined, can have an air of classic perfection; viz. the Italian toaster which is suavely toast-shaped, and hovers off the table on its own pop-up.

(5)

(6)

(7)



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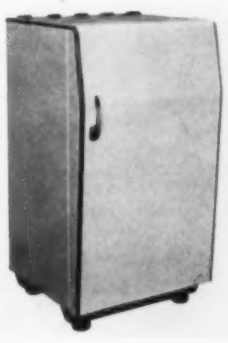
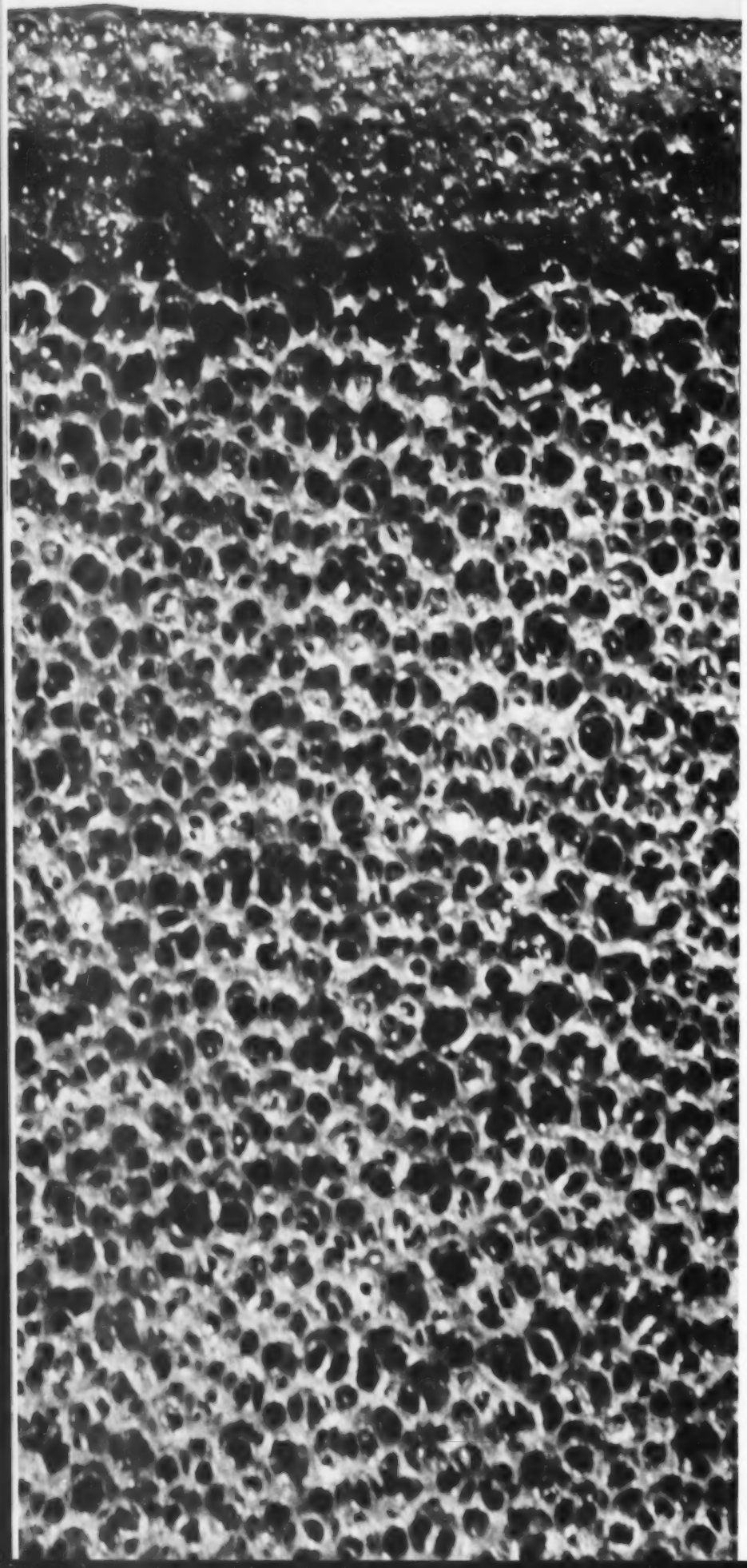


(5) *21" cast-iron Carron electric, like most British stoves, is compactly arranged for cooking, does not provide work surface or storage.* (6) *Four-burner Swedish electric Helios has a baking oven, warming oven, and small storage cupboard.*

(7) *British Astral baby refrigerator, 1.5 cubic feet, is 24½" high to fit on shelf or stand, but can be hung on wall.* (8) *1953 model of Easiclene refrigerator, designed by Grey Wornum, is 51" high, operates on gas, electricity or kerosene.*



Polyester foam

Perma-Foam magnified about 40 times; Photo: Michael Miller

William C. Renwick

that grows its own skin is THE LATEST MUTATION

There was a time, ten or twelve years ago, when resin chemistry was both benign and scrutable: once you had determined whether a plastic was thermosetting or thermoplastic, you had a reasonably accurate idea of the properties you were dealing with. Not so today. The first of the mountebanks was bouncing putty, so paradoxical in behavior that it was good mostly for laughs. Now we have a material whose eccentricities suggest some unusual practical advantages. It is a polyester resin—thermosetting according to the books—which has been modified and expanded so that it apes a thermoplastic. It is produced, at present, solely by Hudson Foam Latex Company of Yonkers, New York, under the name Perma-Foam.

It is not easy to learn much about Perma-Foam from Hudson, who, as any manufacturer might be, is somewhat uneasy at being confronted with a strange new material. So far Hudson has tried to ignore or correct the eccentricities of its odd child by fitting it into a familiar mold. Foam naturally suggests foam rubber, and since Perma-Foam has some real advantages in this area it has been promoted as a sort of super foam rubber. Naturally, Hudson would like to get firmly entrenched in the comfort market before the competition moves in. But a close look at some of the advantages—and some of the so-called problems of this material—suggest that it would be a shame to keep polyester foam beneath the bedclothes.

The manufacturer's major claim is that Perma-Foam has a cushioning effect double that of foam rubber. While it would seem difficult to assign a mathematical factor to such a subjective reaction as comfort, the Rubber Manufacturers Association tests for compression vs. load indicate that, by definition, such is the case. Moreover, Perma-Foam has a noticeable damping action: the cushion follows you up instead of bouncing you. This difference is explained, according to Hudson, by the make-up of air cells. Foam rubber has an almost total lack of closed cells, and sponge rubber a similar lack of open cells, which is said to account for the springiness of foam and the deadness of sponge. In Perma-Foam the proportion of open and closed cells can be varied at will to control the degree of firmness in any pad or cushion. A slab of medium firmness has the same number of open and closed cells.

Perma-Foam's other advantages are equally attractive: It does not support combustion, and the products of combustion when it is exposed to an exterior flame are apparently non-toxic. Ultra-violet rays simply turn white foam slightly yellow, and such chemicals as affect it are not usually found outside a laboratory anyway. It is said to be odorless and non-toxic, and does not cause allergenic reactions. Because its tensile strength is considerably higher than that of foam rubber (3 to 5 times depending on the quality and grade of foam rubber), it can be handled quite roughly. The density of Perma-Foam is low—a medium-firm piece weighs about half as much as a comparable piece of foam rubber, and the price is roughly the same by volume.

Since the cushioning effectiveness of Perma-Foam is supposed to be double, you can figure on using half the thickness you would use in a foam rubber piece. Foam rubber pads are cored, however, while Perma-Foam products are not, at present; this means that the cost per square foot of cushioned area will be considerably more than one-half the cost in foam rubber.

Because tests so far have been directed at furniture uses, there are no data on electrical or insulating properties. The manufacturer says, too, he has no exact data on how high temperatures affect the physical properties of the material—except that it can withstand 450° F. indefinitely without breakdown, and that it shows no appreciable set at 300°F. This is a reasonably good sign that Perma-Foam will be a boon as insulation where weight and flexibility are problems, as in transport air distribution systems. And at temperatures as low as —65° F., where other resins get brittle and fairly stiff, Perma-Foam remains flexible enough to satisfy government specifications for low temperature applications. This points to another area of use—high altitude aircraft.

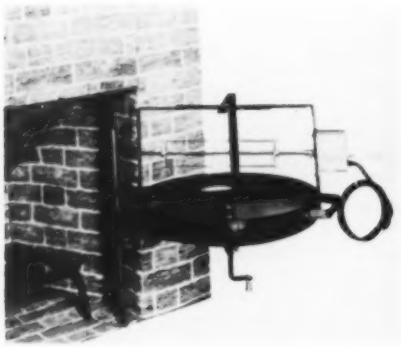
As for surface finishing, the producer likes to emphasize that vinyl sheet can be electronically sealed to Perma-Foam sheets without any ill effects from the migration of vinyl plasticizer. This ties in well enough with the company's current practice of making the foam in sheet form only —a cake is baked and then sliced into mattresses, foot pads, bosoms, and the like. As far as molding is concerned, Hudson has been avoiding it because the foam forms a thin skin against the mold surface. It has even gone to some lengths to find ways of eliminating the skin—and is more than surprised that the effort is not universally acclaimed.

It hardly seems necessary to point out that an integrally-formed skin cancels out the need for an applied vinyl skin, and when Hudson starts to make molded articles—as it plans to do soon—it will no doubt find out what good news it has for designers and engineers. An integral skin foam is the long dreamed-of answer to labor costs in producing all kinds of seating. With it, upholstery can be turned out in a range of colors literally in finished form. And because a controllable skin can be formed by pre-coating the mold, it is possible to make without further operations such varied things as crash pads, insulated footwear, articulated mannikins, floor coverings, insulated containers, acoustical hoods and gaskets.

The one reason molded foam is less economical than flat sheet is that, for the moment, only the latter can be cured by high frequency means. Normally this process involves parallel condenser plates from which current can pass uniformly through the curing liquid. When it comes to curing curved or irregular forms, the plates are not parallel; since they necessarily come closer together at thin points in the mold, the concentration of energy tends to overcure the material there, to the neglect of thicker sections. No doubt compromise methods will be worked out; compression molders have a system in which the material is electronically pre-heated and molded under pressure with some additional heat. The manufacturers of foam dolls must have some of the answers even now.

With the introduction of Dacron some years ago, it came as something of a surprise that fibers could be made from polyesters—originally a binder material. Now an elastic polyester foam turns the properties table full circle. It isn't easy to think of another resin that can be produced as a heat-resisting and insoluble fiber, clear sheet, laminating resin and flexible foam. As your friend always says, they don't make 'em like they used to. You bet your life they don't.

DESIGN REVIEW



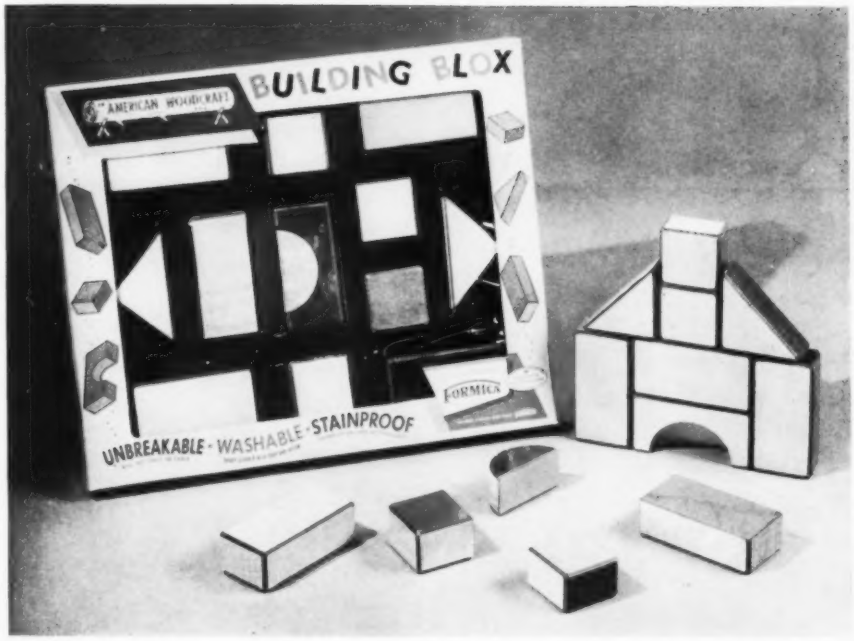
← Goodwin of California designed its "Four Seasons" brazier on the premise that barbecuing should be a year-round pleasure. The bowl can be removed from a collapsible stand and hung on a post that fits anybody's fireplace. $44.95 complete. Bowl and grill, $32.95. With motorized spit, $69.95.

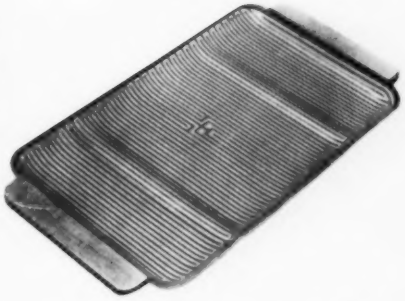
↓ Falcon Plastic Products' unbreakable snack thermos is made of a new rubber and plastic synthetic without metal parts or replacement cylinders. It keeps hot for 4 hours, cold for 10. Its wide mouth accommodates liquids or solid food. Designed by Meredino-Greene. $1.98.

↑ Hinckley and Schmidt of Chicago, which sells mineral and distilled water, designed this ½-gallon bottle holder for distribution to its customers. Molded of watery-clear Eastman Tenite butyrate in opposing halves which are permanently cemented, the holder loops over the neck of the bottle and snaps under the bottom. Though it weighs next to nothing (the handle is hollow), it is virtually unbreakable. Molded by Keolyn Plastics, Inc., Chicago.

↑ George Jensen's complete new line of stainless steel holloware bears the mark of the smiths who design Jensen silverware. Skillet, $49.00.

↑ Presto carries the kitchen to the table in a stainless electric skillet finished to resemble silver, which cooks, fries, or warms. Mel Boldt, designer. $27.95.





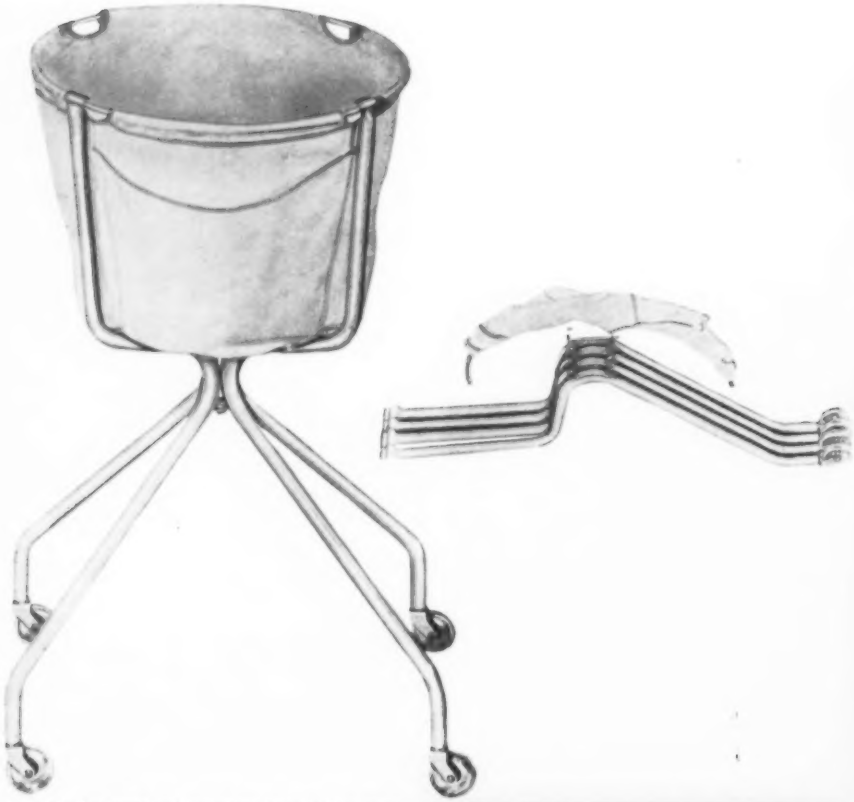
↑ **Electriglas Corporation,** Bergenfield, N.J., has a new version of the hot tray in its "Hot Maid," an electric serving dish on which the meal can be arranged buffet style and kept on the table for serving and seconds. The radiant-heating tray is made of two sheets of tempered glass fused together around a conductive chemical ceramic element. Designed by Leon Appleman, president of Electriglas, "Hot Maid" trays come in round and rectangular shapes and in the form of a table.

↑ **Victory Plastics'** molded styrene posture high chair prepares youngsters for a future life of contour-seating. Designed by Alfred Braga, $13.95.

↑ **American Woodcraft Corporation** makes its perennially popular building blocks practically indestructible with a Formica facing in a variety of colors and patterns. Stain-resistant Formica (impregnated with Melmac) can be penciled, crayoned or otherwise defaced and then wiped clean with a damp cloth. Set of 13, $2.50.

↓ **Levco Metal Finishers** has come out with a chair for this generation's younger generation: a miniature bucket of hand-woven reed on a wrought-iron base, 18" high. Designed by Richard Galef, distributed by Raymor, New York. $9.00.

↑ **Thonet Industries** intends to keep its reputation for quality and durability based on its original bentwood cafe chair, and is constantly developing new furniture for commercial use which is good-looking as well as practical. Staff designer Joe Adkinson has worked out this tub chair for convenient shipping, moving, and storage. Its rubber-filled cushions are loose (the back one buttons in place to a wood panel). When the chair is to be moved, the wood panel folds down over the seat, and the cushions are stacked flat on it.

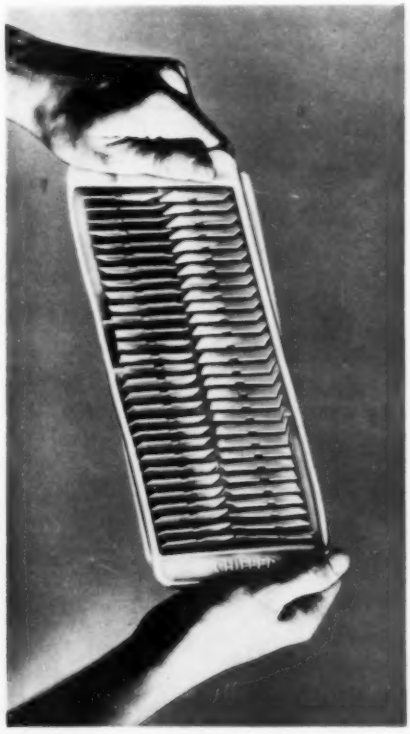


↑ **Arvin Industries'** laundry cart folds compactly (above right). Central hinge locks legs in upright position in a flash. Raymond Loewy Associates, designers. $5.95.

↑ **U. S. Stamping Co.** answers the demand for decorative utensils with a set of white enamel pots with black covers. Set, $6.95.

↑ **Monsanto Chemical Co.'s** high-impact plastic Foliator is attached between hose and faucet, with its tube in a bucket of soluble fertilizer; the solution is drawn into the hose stream, diluted, and sprayed as the garden is watered. Designed by Ottway Rash, of Monsanto, Foliator is sold with 1 lb. of Folium for $1.95.

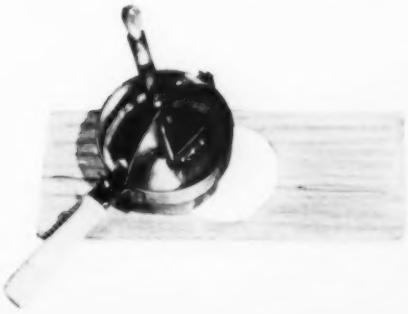
↑ **Bellaire Enamel Co.** has added to its line a dome-covered chicken fryer in yellow or red porcelain-finished steel. $5.50.



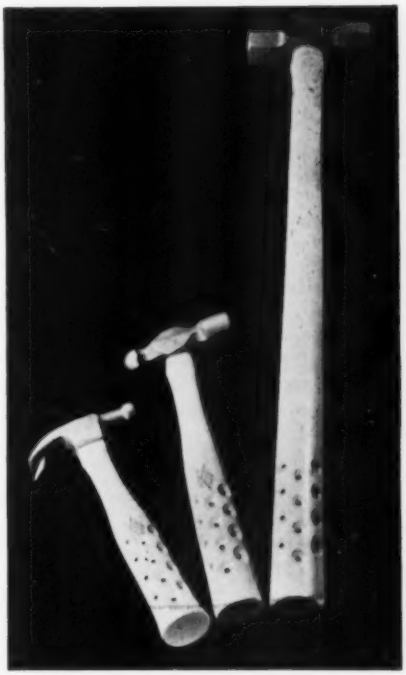
↑ **Gits Molding Corp.** has used DuPont polyethylene in its "Chipper" icetray; twisting turns the ice out in chips. $1.00.

↑ **Hamilton Metal Products'** enameled metal picnic jug has a replaceable glass lining. Design features by Petra Cabot. $1.98.

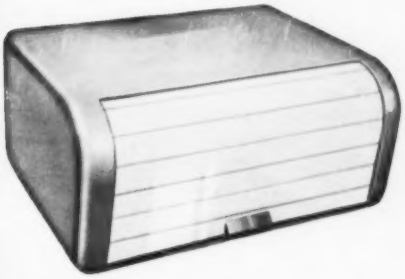
↓ **Hirco Manufacturing Co.'s** "Babsi" noodlette resembles a perforated pan with a pushing blade. Heatproof masonite board holds pan over soup into which batter is dropped. U. Grieshaber, designer. $4.95.



↓ **Play-A-Round Pen Corp.** has introduced a light-weight circular aluminum-framed pen with nylon cord and vinyl-covered floor pad. It folds into a 6"-high package. Designed and patented by Eric Eisner. Approximately $35.00.

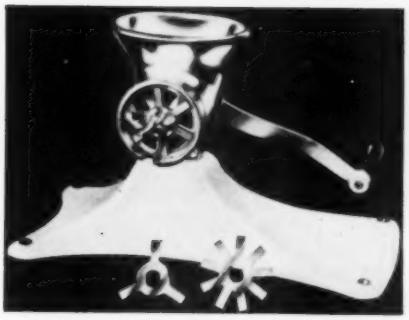


↑ **Ampco Metal, Inc.** found from handle tests that conical impressions create a vacuum, minimize slipping and blistering. Prices for 3 types of hammers start at $3.30, $2.10 and $5.90.

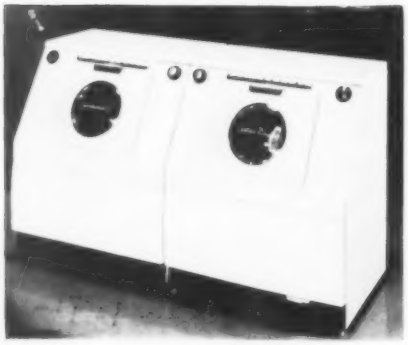


↑ **Beacon Plastics'** breadbox has a rolltop polyethylene door which disappears at a touch of the hand. $4.98.

↑ **Vaughn's** Flexroll automatic can opener looks as prehensile as its magnet makes it. It drops when not in use. $3.79.



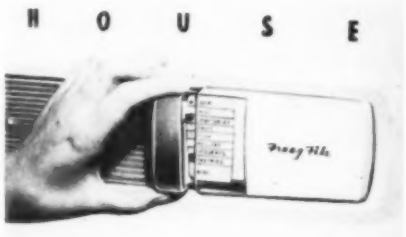
↑ **Enterprise Manufacturing Co.** offers a budget chopper with a broad rubber-padded base which works without clamps on any surface. Harold Van Doren collaborated with firm's staff on the design. $5.95.



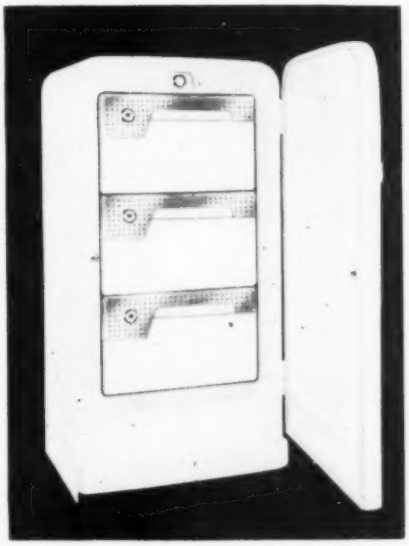
↑**Westinghouse** has had a third set of twins: a medium priced "custom" Laundromat washer and electric dryer have been added to its 1954 line at $259.95 and $191.70 respectively. On the former, both water temperature and washing time are regulated by a single flexible dial control, and both machines shut off automatically when doors are open.

↑**Westinghouse** has designed its Rancho range in the manner of a knee-hole desk foregoing the usual storage chest. The waist-high drawer is intended for small pans utensils, and the knee-space for storage of a stool or waste basket. $158.88.

↑**Hotpoint** has attacked the problem of making a dishwasher practical for the transient apartment or rental home tenant: They put a handsome maple chopping block on top of it, and casters under it, and converted it into a freestanding table or work surface which doesn't have to be built in. The plug-in machine can be moved about to set the table, clear the table, or *be* a table wherever it is needed at the moment. It can be attached to regular kitchen plumbing without casters. $310.00.

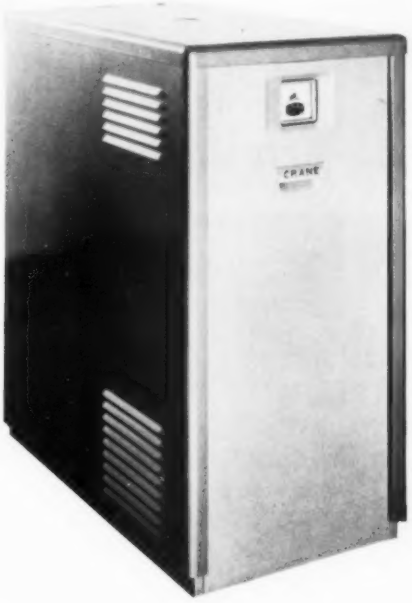


↑**Westinghouse's** new 8.4 cubic foot freezer is organized so that food is filed instead of piled inside. The inner organization—a quick-freeze shelf, a roll-out drawer and a central section with a slide-out tray—is reflected by a built-in "FreezFile" on the door plate. Under its dropdown cover there is a card on which to record when and where the food was stored. Peter Muller-Munk Associates, designers.



←**Coolerator's** duo-appliance reverses the usual positioning and space allotment in a freezer-refrigerator combination. The much-trafficked refrigerator compartment is on top (5.6 cubic feet) and the freezer (6.28 cubic feet) below, where it works with maximum efficiency. Ice trays are at the top of the freezer. $479.95.

↑**Minneapolis Honeywell's** "Round" thermostat was suggested by engineering changes in the controls; Henry Dreyfuss developed the shape into a modern decorative asset by designing a snap-off phenolic cover which can be painted to match any wall. $12.50.



←**The Crane Company's** latest residential heater, the Sunnyday, a low cast-iron unit designed for automatic firing with either gas or oil, is sealed in a two-tone hammerloid jacket designed by Henry Dreyfuss. The only "door" is a recessed front panel, light-toned for a three-dimensional effect, which is removed by a handle formed by the plastic nameplate. In four sizes, $452-$650.

↑**Palmer Manufacturing Company** combines summer cooling and winter heating in a single portable four-season weatherman. It has a fan, a 1300-watt heating element, a humidifying reservoir which operates with the fan to circulate hot or cool air. The unit can also be used as a spot evaporative cooler. Styled by Vytant Aleks. $64.95.

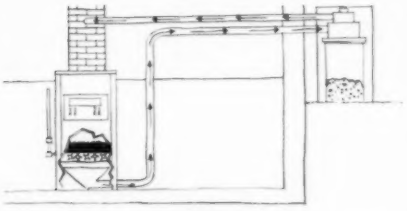
↑**Modine Manufacturing Company's** Airditioner is a commercial or residential unit which heats, cools or ventilates individual rooms. Because of its long, low shape and squared edges, it can be installed under windows, either exposed or partially recessed. Jean Otis Reinecke, designer. 2-ton unit, $194.

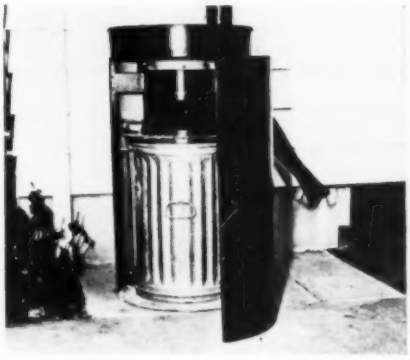
↓**Hoover,** which makes tank-type vacuum cleaners, is not neglecting the still-popular upright. To make the upright lighter and easier to carry, the company has just brought out its "Lark" model at $84.95, designed by Henry Dreyfuss. Despite its compactness, it has a full-width (12") nozzle. The main frame is a single piece die-casting, into which the motor is mounted from below.

←**Landers, Frary & Clark's** Universal Jet 99 takes its boxy shape from the internal arrangement of two upright cylinders: the motor at the back, and a paper dust bag at the front. A button on the handle release raises a round cap in the top of the tank, and the throw-away bag is easily removed and replaced. Designed by Sundberg-Ferar, Detroit. $89.95 with accessories.

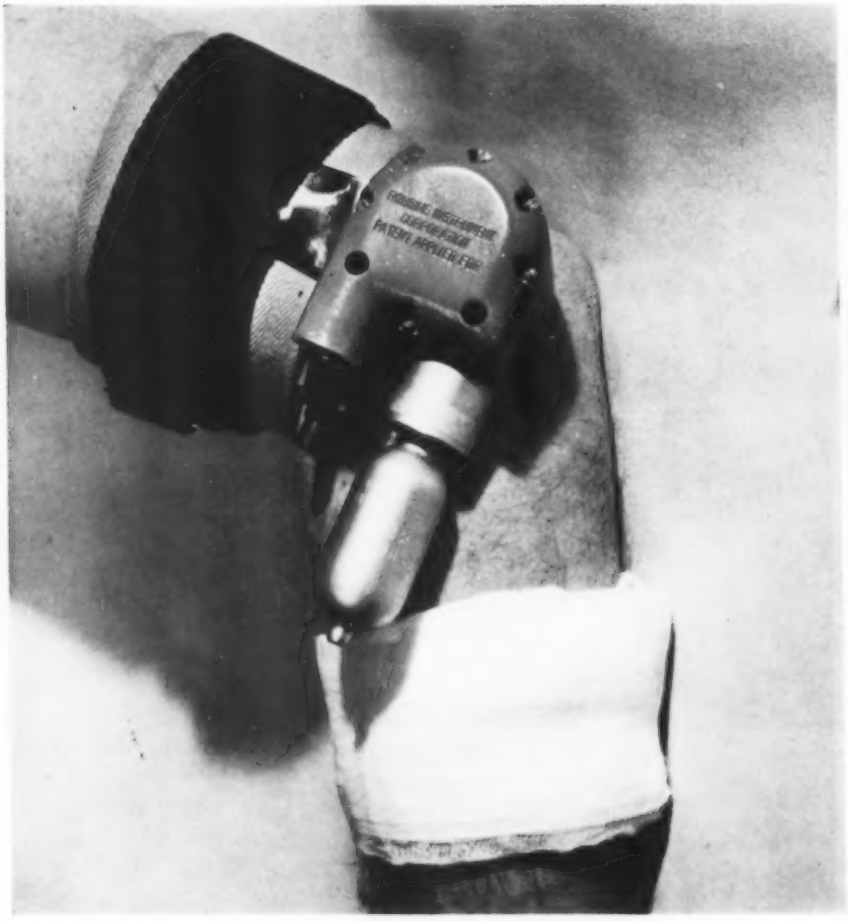
↓ **Robbins Instrument Corporation** of Attleboro, Mass., in collaboration with the Hi-Pac Division of Worcester Pressed Steel, has developed a gas-pressure tourniquet for professional use. After a cuff is wrapped around the arm or leg, a twist of the carbon dioxide cartridge inflates the cuff, exerting a uniform squeeze which halts bleeding.

← **Akro-Mils, Inc.**, Akron, offers a Swing-Bin cabinet for all those annoying little items. 6 clear plastic drawers swing out from a hinged bracket which attaches to a wall, a table, or under a shelf. Dividers are removable from drawers, and drawers slip out of bracket for cleaning. 6 drawers, $3.95. Available in 12, 18 and 24-drawer models. Designed by Smith and Scherr, in collaboration with the United Development Corporation, Akron, Ohio.



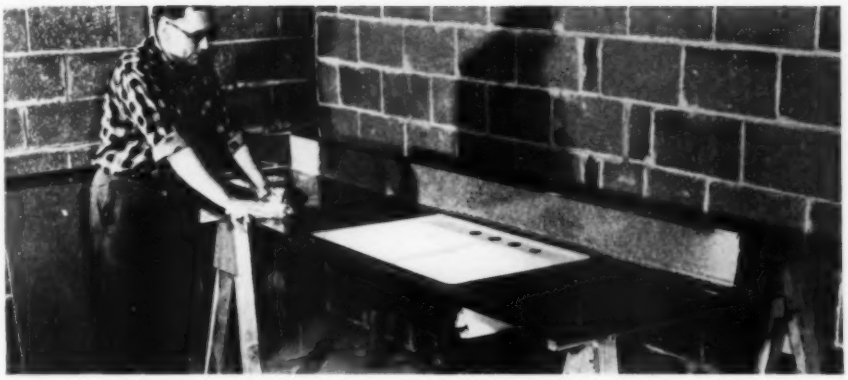


↑ **Lehigh Valley Coal Sales Company** seeks to make life cleaner and easier for anthracite users with its automatic Vacuum Ash-away system. It works like a large vacuum cleaner for the furnace. A special grate inside the furnace reduces the size of the ash so that it can be drawn off by a high-speed vacuum fan to a receptacle outside the house. Adaptable to automatic stokers ($167) or hand-fired operation ($104).



→ **Telex Inc.**, St. Paul, Minnesota, has devised a miniature pillow speaker which may be attached to a radio or p.a. system for comfortable and undisturbing listening through a pillow in hospitals, hotels and commercial vehicles. Constructed of a melamine resin housing, assembly-molded into an integral unit, its diaphragm is punched of alloy steel hermetically sealed against dust and moisture. The unit may be sterilized in a standard alcohol solution. $11.40.

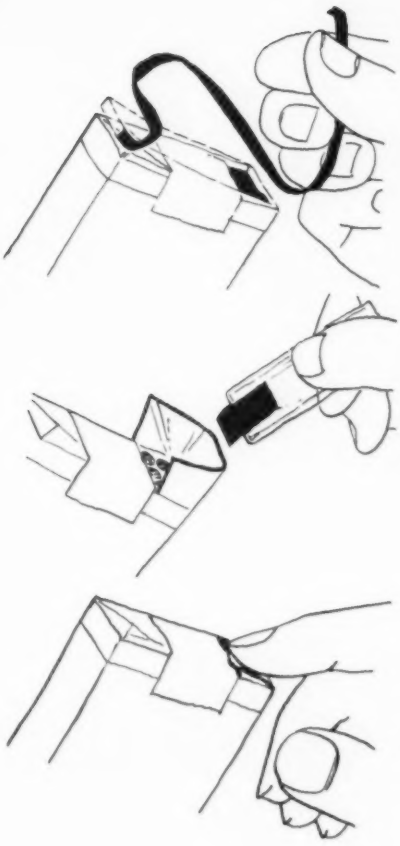
↑ **Picket & Eckel, Inc.**, Chicago, offers the Paraline, an all-in-one drafting device which combines the function of a T-square, triangle, straight-edge, scale and protractor without adjustment or additions. Designed by Myron Feigenberg. 12" length, $5.50; 10" length, $3.95.



←**U. S. Plywood** is appealing to both the builder and the homeowner with its Unitop, a one-piece sink countertop and backsplash which is easy to install. Unitop is sold as a 60", 72" or 92" piece of formed ¾" plywood, faced with 1/16" Micarta. Installing it involves tracing the sink rim, cutting a hole, applying chrome trim and installing. Additional Unitop pieces will make a U- or L-shaped countertop without a dirt-catching seam.

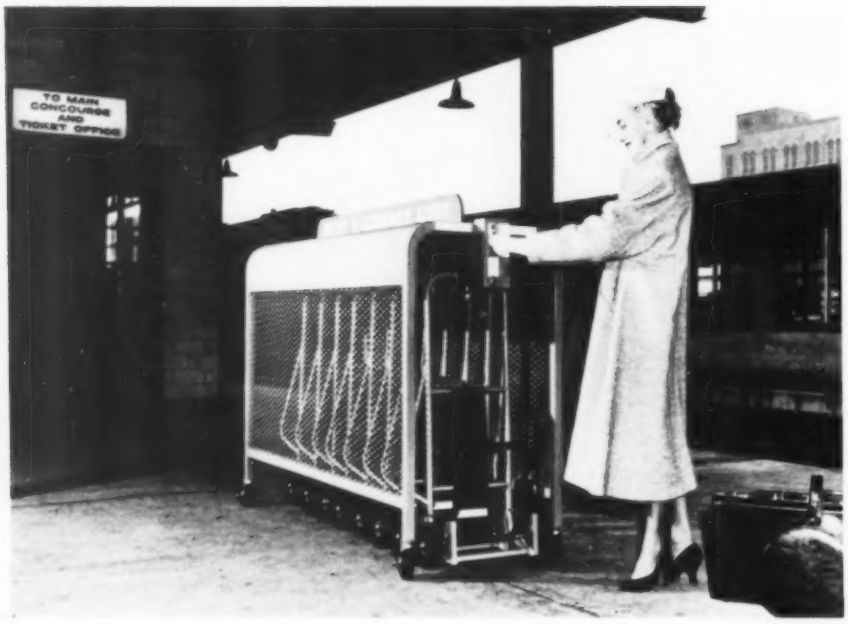
←**General Foods Corporation,** Walter Baker Division, has given its La Belle Chocolatiere a modern sparkle appropriate to high-speed production techniques. Designer Jim Nash kept the character of the famous old trademark in a simplified poster treatment.

†**Organon, Inc.,** manufacturer of pharmaceuticals, is giving away sample ulcer pills in a package which turns an advertising message into a game of skill. A hollow, stomach-shaped dish beneath the transparent lid has a crater where the unfortunate victim's ulcer might be; the problem is "shield the crater" by jiggling the pill into it. Designed and manufactured by Vacu-form Corporation, Brooklyn, New York, of Celanese acetate.



†**Philip Morris** has what it calls the greatest stride in cigarette packaging in 15 years: the "Snap-Open" pack, with a cellophane tab which automatically pulls up a neat corner of the inner foil wrap so that it can be closed again. The machine which makes the self-opening package (a tiny attachment easily mounted on the conventional packaging machine) was invented by Bernard J. Tamarin, President of Pull-Packaging, Philadelphia. Philip Morris has a 1-year exclusive on machine.

United Sound & Signal Company, makers of vending machines, had the help of several newspapers in developing an automatic newsboy for lobbies and other places that do not support a live vendor. The 93-pound machine holds 30 papers or magazines, changes nickels, dimes, or quarters, can be loaded in 90 seconds. It uses only two moving parts. Larger ones are on the way. The patented device will be leased for $1.10 to $1.50 a week.

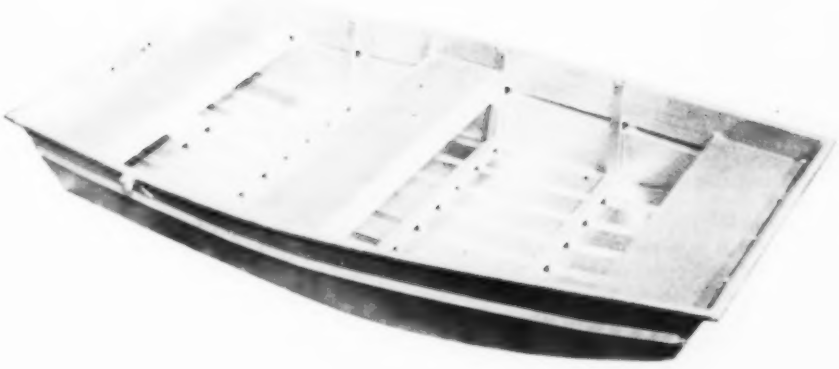


American Locker Company of Boston is designer and manufacturer of a mechanical redcap. Lightweight tubular metal luggage carts are lined up nine deep in a coin operated rack. Travelers insert a quarter in rack near ingress, wheel up to four bags across station, and return the cart to nearest rack for a 10¢ refund. Trial runs are underway at Boston's South Station and Pittsburgh's Pennsylvania Station.

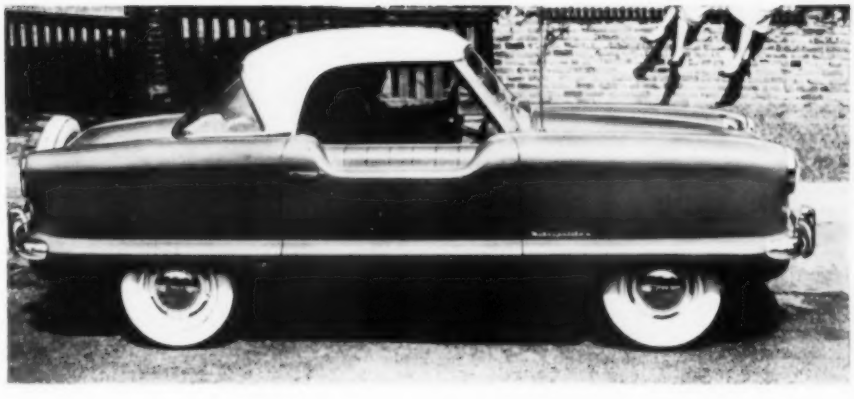
Peter Austin, Toronto, makes the Magnajector, a toy projector of heat-proof plastic which uses ordinary light bulb to reproduce whatever it sits on. Sid Bersudsky's design won two Canadian awards.

Connecticut Telephone and Electric makes the Direct-A-Call, a two-to-five-station interoffice telephone. Designed by Maurice E. Libson in light gray impact-resisting thermoplastic, the instrument operates from a standard electrical outlet without batteries or tubes and can be used on the top or side of a desk.

Benson-Lehner's Oscar F, an electronic data reduction machine, permits rapid semi-automatic reading of oscillographic or film records for precise analysis of anything from petroleum to guided missiles. With appropriate attachments, readings can be automatically translated into digits for listing by an electric typewriter; recorded on punched tape, punched card, or magnetic tape for use in digital computors; or fed to an electroplotter for final plotting. The sleek housing emphasizes simplicity and legibility. The Boscar, or ballistic film analyzer and recorder (right), a flying spot aligned with fingertip control, measures X-Y displacement.



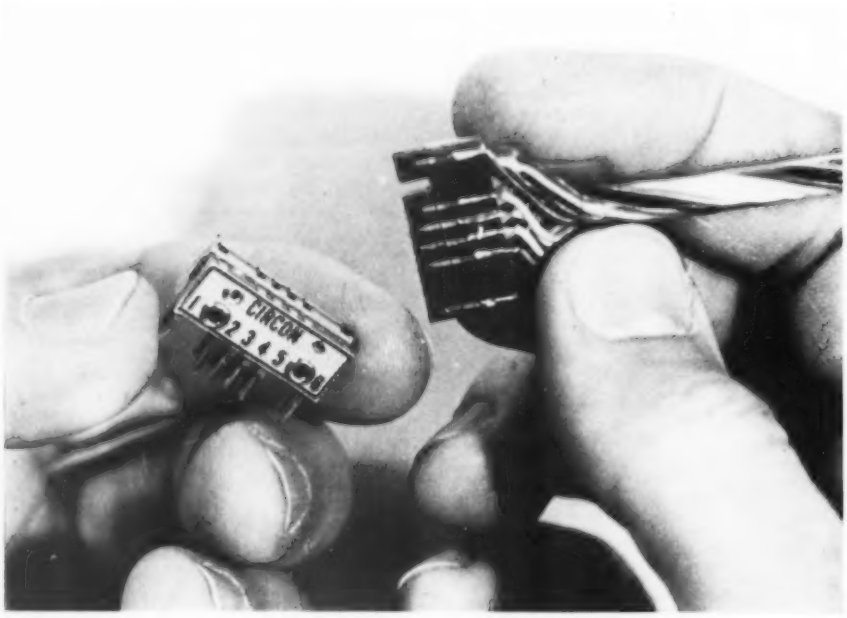
Vio Holda Manufacturing Company of Topeka makes an all-aluminum boat weighing only 39 pounds, using Rigidized Metals Corp.'s Rigid-Tex for sides and ends. This textured metal is said to outdo flat-rolled metal by 108% in rigidity, 70% in buckle-resistance, 92% in tensile strength, and 39% in impact resistance. Eight-footer sells for $125. Designer: James Studebaker.



Nash's new midget Metropolitan is touted as the product of eleven years of effort to make an economical ($1,445 for hardtop) car meet American standards of performance, comfort, and appearance. Head room and leg room are said to equal those of top sellers. Front seat holds two or three; access to trunk is through rear "utility" seat. Height: 54½"; wheelbase: 85"; overall: 149½". Designed and engineered in U.S., built in England, assembled by Austin with 42 h.p. Austin engine, British downdraft carburetor. Other details: unitized construction; manual shift; elbow-rest sills; "continental" spare, low one-piece hood; open glove compartment.

TECHNICS

A catalog of new products, materials, processes and finishes



Circon miniature connector for use with printed circuits.

Miniature connector

The development of printed circuits for electronic applications has reduced the bulk of the main circuit components to a point where the connectors often are the largest components used. Miniature circon connectors are now available for use in these tiny circuits; they are also scaled to fit in with the size reduction made possible by the replacement of vacuum tubes by transistors in many kinds of electronic equipment. The connectors can be mounted side-by-side or end-to-end in desired combinations. The typical Circon connector consists of a bar of insulating material with metal contact bands bent to receive the base of a printed circuit component.

The metal bands are backed by an elastomer which maintains pressure on any conductors inserted into the connector. A variety of different types provide for from two to twelve contacts, accommodation for printed circuit cards with thicknesses from 1/32" to 1/64" and current-carrying capacities up to two amperes per contact. Two series of contactors are manufactured, described as "miniature" and "sub-miniature." The smallest connector provides twelve contacts in a size of 1/4" x 5/16" x 5/64"." In many cases even such a tiny connector will give adequate support for mounting a printed circuit card.

Manufacturer: Circon Component Co., 17544 Raymer St., Northridge, California.

Plug-in electronics

Plug-in electronic components promise to simplify and perhaps eventually to eliminate hand-soldered assembly. The system is based on a simple clip terminal which holds the ends of components and slips through prepunched holes in a mounting card. Components are soldered to the clips after all are mounted in place. The terminal card is then mounted below a conventional tube socket with special mounting brackets and connections are made between the components on the card and the tube base. This completed assembly can be placed in a housing with its own base plug for connection to a socket strip that holds and interconnects a number of the small plug-in units. Mounting cards and chassis are also available for making up larger sub-assemblies with a number of tubes. Rack panels, plugs and connectors are available for assembling small units into large and complex assemblies. Although this type of modular electronic construction was developed primarily for use in computing machines, intricate military equipment and other units of great size and complexity where the division into small, replaceable sub-units makes servicing easier, there is no reason why it should not be applied to quality radio and television sets and other electronic equipment designed for consumer use.

Hardware for the system is available in a number of moderately priced laboratory kits for use in the design of circuitry. Individual parts can be ordered in quantities needed for production. A 226 page handbook explains the system in detail and suggests typical solutions to a great variety of problems.

Manufacturer: Alden Products Co., 127 North Main Street, Brockton 64, Mass.

Sand screen

An open mesh abrasive material, Sand Screen, substitutes a light wire screen for the paper or fabric backing of ordinary sand paper. Silicon carbide abrasive grains are applied to the wire mesh, which provides thousands of tiny openings permitting the sanding residue to flow through. The clogging that spoils the usefulness of ordinary sand paper cannot occur with this material, and a life seven to twelve times as long as that of ordinary sanding materials is claimed. Sand Screen can be used wet or dry in either hand or machine sanding. It is produced in grit sizes of 180 and finer and is available in sheets discs and rolls.

Manufacturer: Coated Products Division of the Carborundum Co., Niagara Falls, New York.

Irradiated polyethylene

The General Electric Company has bombarded polyethylene with cathode rays from its million-volt electron generators to produce a plastic film with high resistance to heat and chemicals. The irradiated plastic maintains its form at temperatures up to 350°F. and does not crack on contact with solvents or other active chemicals. On the market as an insulating tape, the new product, "Irrathene," can substitute for bulkier insulation in elec-

trical equipment and so will be useful in reducing its size. Also available as a narrow packaging film. Irrathene can produce heat resistant and sterilizable transparent containers for foods and drugs. Bottles, housewares and tubing may soon be made of this new electron-irradiated plastic.

Manufacturer: General Electric Co., Chemical Division, Pittsfield, Mass.

Rubberized cactus

We may soon sit on long cactus fibers from Mexico. Combined with natural latex rubber, the long, firm fibres produce a resilient cushioning and upholstery material, quite different in "feel" from the more conventional cushioning materials.

Information from: Natural Rubber Bureau, 1631 K Street, N.W., Washington 6, D. C.

X-Y plotter

The familiar line graph long used to visualize mathematical relationships can now be produced without benefit of a draftsman's hand—or even of the mathematician's brain. The X-Y Plotter automatically charts the curve expressing the relationship between two independent variables. The uncanny device can plot this curve by reading its own data from IBM cards at the rate of 50 per minute. The raw data can also be fed to the plotter from an adding machine type keyboard. Accessory equipment converts binary data into a form that corresponds to the horizontal (Y) and vertical (X) scales of the chart. These electrical inputs are amplified and fed to servo motors which move the pen over the face of a standard graph paper chart. The pen can be set to trace either a continuous curve or a series of points. The unit is calibrated to its input signals by setting the dials on its face to match the travel of the pen to the scale desired.

Log scales are, of course, possible. The producer will estimate the cost of special adaptations not covered by the standard accessory converters. The plotter can be used for automatic process control monitoring, for plotting curves of characteristics for vacuum tubes or transistors, for plotting stress strain diagrams, and for graphing more conventional test results, business trends and similar arithmetic data.

Magnetic phonograph

The "MagneticOn" phonograph combines many of the advantages of the disc record player and the tape recording machine in a single unit. It is available as a small portable phonograph (about $90) or as an attachment for any phonograph. It uses a standard turntable and pickup to play regular records and provides a second pick-up head, directly interchangeable with the regular head, for magnetic recording and play-back. For magnetic recording a grooved disc revolving at 33 1/3 RPM is used. The grooves are smooth and the recording is done by magnetizing the ferric oxide coating on the vinyl disc (as in tape recording). A double-faced recording disc ($2.50) plays for 9 minutes, 4½ minutes on each side. The life of the records is long and their erasure and rerecording is similar to that in all other types of magnetic recording. The life of the inexpensive recording needle is about 300 hours. Frequency response is 100 to 5000 cycles; about that of AM radio. Although this unit is not likely to replace tape recording, sound-on-film recording or conventional discs, it has the great advantage of simplicity of operation. Home recordings of parties, children, music practice and the like can be made with less equipment, trouble and expense than tape recording demands. Another bonus: any part of a recording can be located at once (as on any disc record) without the troublesome shuttling of tape. Improvement can be expected in frequency response and playing time so that prerecorded magnetic discs comparable or superior to conventional phonograph records look like a possibility.

Manufacturer: Magnetic Recording Industries, 30 Broad Street, New York 4, New York.

Glass door

A glass door, one-third lighter than the standard glass doors now being used, is in production. While no different in appearance from current models, the light Tuf-flex glass door will be easier to handle, install and open. Improvement in the tempered glass made it possible to pare door thickness as much as ¾". The new door is equipped with newly designed fittings, available now in aluminum, soon in bronze.

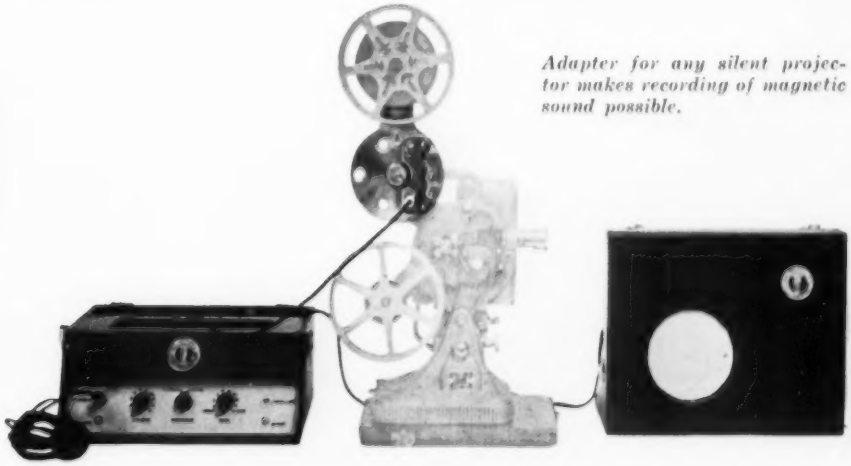
Manufacturer: Libbey-Owens-Ford Glass Co., Nicholas Building, Toledo 3, Ohio.

16mm movie sound

It is now possible to add a sound track to 16 mm movie film at greatly reduced cost. A new adapter unit replaces expensive optical recording and can be used with any silent projector. The Cinesone is also equipped with an automatic subduer, which permits the user to record a new track over an old one by a flick of a switch. The unit uses an adapter which acts as a spindle for the film supply reel, with the magnetic record and playback head below. This unit is connected to a compact electronic unit which supplies a recording signal to the magnetic head from any sound source such as a microphone, radio or phonograph. If a tape recording machine is available, it may be used with the adapter alone, reducing the cost of the sound recording equipment to less than $100. The unit in its present form seems to have several drawbacks for serious use. The adapter provides space for film reels only up to 400 ft. (about twelve minutes running time), the spacing from picture to sound head is not standard so that films with a sound track added on this adapter will not synchronize properly on any other equipment, and there appears to be no means provided for stabilizing the speed of the film, so that it is hard to see how music could be satisfactorily recorded on a silent projector with the adapter.

Manufacturer: Foto Corporation of America, 169 Lexington Ave., New York 16, New York.

Librascope plotter makes a continuous graph of the relation between two factors.



Adapter for any silent projector makes recording of magnetic sound possible.

Rubber-cement compound

Liquid rubber mixed with cement provides a tough concrete, remarkably resistant to cracking. Mixed with plaster, it yields the same toughness and resilience, also makes the plaster waterproof. This new discovery of the research laboratories is on the market as Surco Yellow label, a surface coating that will adhere tightly to standing concrete, steel, glass or masonry. Tested by application to a section of the Georgia Tech football stadium, the coating smoothed away cracks and erosion left by years of exposure. It is also recommended for covering floors, lining swimming pools and acid resistant tanks. The synthetic rubber used in the mix is a styrene-butadiene latex called Pliolite and is manufactured by Goodyear.

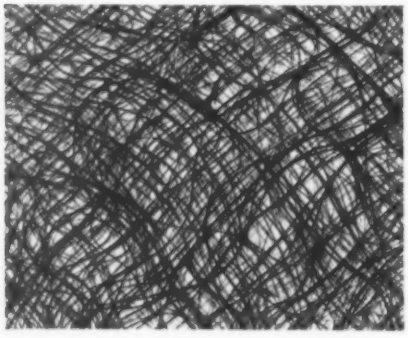
Manufacturer: Surface Coatings, Inc., Atlanta, Ga.

Decorative laminates

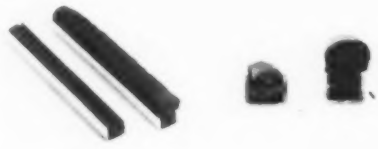
Heather branches, hemp fiber and virtually any material that can be reduced to a flat plane can be imbedded into vinyl laminated sheets called Pan Laminates. In addition to the familiar textures of woven fabric and fibre, it is now possible to obtain a great variety of unusual materials laminated into plastic sheeting for decorative effect. Natural textures such as grasses and bird feathers are surprisingly fresh and exciting in this form of preservation. The manufacturers will laminate any material that can be reduced to a flat state on special order, but the range of laminates carried as stock items samples the possibilities of the technique quite exhaustively. The new decorative laminates, available for some time as stiff sheets, are now also being made in sheets flexible enough for use as upholstery covering. It is also possible to obtain the characteristics of the solid laminated sheeting in open weave materials permitting the passage of air and sound. Raftan 'O', for example, is a woven fiber coated with vinyl but with a high proportion of open area. Used as a radio grille cloth this material has the durability and easy cleaning characteristics of a plastic while preserving the openness of conventional cloth grilles.

A great range of samples in a line that is constantly expanding is available.

Manufacturer: Polyplastex United Inc., 441 Madison Avenue, New York.



Polyplastex laminates of textile fibers (above) and bird feathers (below) in translucent sheet.

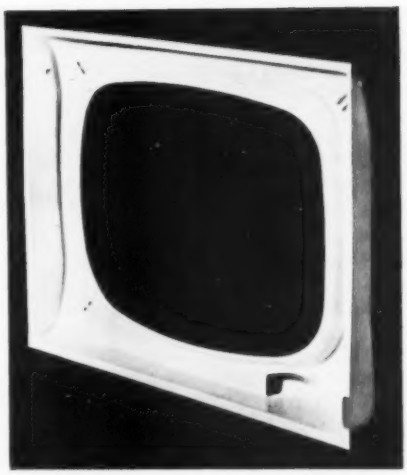


Expanding sealer

By expanding its volume nearly 2¼ times, a new sealer can fill cracks and provide gasketing in many places where a tight seal has been difficult to secure. Minnesota Mining EC-1209 is a ¼" diameter flexible rubber strip. It can be placed by hand in any crack or opening and will expand when heat is applied. The amount of expansion depends on the time and temperature used in the curing process. Heat at 250° for 40 minutes will produce a 70 to 80% swelling; at 350° the strip will swell 125% in 15 minutes. In neither case will the material soften enough to flow or run out of joints. After curing, the seal is flexible in temperatures down to —20°F. and will give good service in temperatures up to 150°F. Even 300° heat will not cause deterioration or flowing if not continuous. EC-1209 is especially useful for sealing seams that vary in width; when expanded, it fills the entire seam, sealing out water, dust and dirt and cushioning against rattles and squeaks. The material will not flow out through large cracks or when pressure is applied to the joint. EC-1209 also conforms easily to the surface irregularities of sheet metal parts and is already in use as sealing between body and floor panels in automobile bodies. The sealer strip is pressed into place by hand. Curing takes place in the paint-baking and drying ovens so that no separate equipment or operations are required for heat application.

EC-1209 is made in 30-inch lengths of ¼ inch diameter strip. The standard box contains 810 linear feet.

Manufacturer: The Adhesives and Coatings Division, Minnesota Mining and Manufacturing Company, 423 Piquette Avenue, Detroit 2, Michigan.



Translucent mask for TV tube permits screen to be surrounded with glow of light.

Illuminated television mask

The extreme brightness contrast between a bright television screen and a dark room is responsible for most of the eye discomfort about which persistent viewers complain. To provide a transitional brightness area Sylvania offers a "halolight" television mask, which frames the picture tube with a band of soft light. The neon lamp ring is mounted in a two-piece assembly consisting of a reflector of vacuum-formed Campo S-300, a polystyrene plastic mixed with rubber alloy for impact strength, and a formed front mask of translucent polystyrene. The new product suggests that television cabinets might provide not only an illuminated mask, but additional equipment for overall room lighting that would permit optimum viewing conditions. A television set that can aid its owner in solving this tricky lighting problem should have a market advantage.

Manufacturer: Sylvania Electric Co. Plastic housing by Cortland Industries, Chicago.

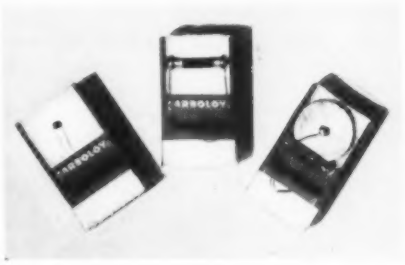
Temperature test chamber

A small unit test chamber covers a temperature range of 600° to —100°, simulating conditions of high altitude sonic flight. Temperatures can be held within 2° of a

Test chamber with range of 600° to—100°F.

set point and automatic controls and recording instruments are provided to vary the temperatures through any desired range, in a recurrent cycle if desired. The cooling capacity is sufficient to lower temperatures from room level to —100° in about one hour. The chamber itself is a top-opening chest 4 feet long, 3 feet wide and 2 feet deep. It is manufactured as a complete unit and requires only the connection of 220 V, 3 phase power and water supply and drainage to place it in operation. The most obvious use of this unit is in the testing of aircraft parts, actuators and other sub-assemblies that must be operative at a wide range of temperature conditions.

Manufacturer: Conrad Inc., Holland, Michigan.



Various G. E. Thermistors in new standard transparent package.

Repackaged thermistors

Pin-head size electronic components like Thermistors, produced in many varieties, are hard to package, harder still to sort out when you want to use them. Package redesign now makes each Thermistor easy to sort by eye. A standard one-inch cellulose acetate package holds each Thermistor, whatever the size. Each one is mounted against a white plastic foam filler and is instantly visible through the window-front package. The more commonly used Thermistors are supplied in kits, with the little packages sorted by size and type into drawers. The larger of the two basic kits includes washers and tubing for mounting.

Manufacturer: Carboloy Department, General Electric Co., Detroit, Mich.

Epoxy Bonding

Aluminum can be bonded to aluminum by a new adhesive, Armstrong's A-6. This can be done at room temperature and with only contact pressure. A-6 will also bond metal to glass, hard rubber to glass, plastics to metal or ceramics, and form a heavy-duty link between many other rigid and non-porous materials. The adhesive is an epoxy resin formulation which must be mixed with an activator just before use. The bond will cure at room temperature but for bonds of maximum strength curing at 200°F. for one hour is recommended. Published test results on bonds of aluminum to aluminum show shear strength of over 3000 psi at room temperature and 2400 psi when tested as high as 180°F. The joints have an impact strength of over 15 ft.-lbs. A trial kit is $1.00; larger quantities are available for immediate shipment.

Manufacturer: Armstrong Products Co., Argonne Road, Warsaw, Indiana.

Plastic foam

Anyone with some newly developed processing equipment and a plastisol solution based on bakelite vinyl resin can now produce a plastic foam sheet in continuous processing at a price comparable to that of foam rubber.

Gas is mechanically mixed with plastisol to produce interconnecting cells that allow the foam to "breathe." The foamed plastisol is discharged into molds or onto a conveyor belt for curing in high-frequency dielectric ovens. A 30-foot-long conveyer using a five kilowatt oven can cure a ¼ in. thick sheet 14 in. wide at a rate of 3 feet per minute. The foam can also be molded directly onto natural or synthetic sheeting or textiles at this stage. It can easily be made in thicknesses up to 8 in. and widths up to 60 in. Variation of the plastisol formulation and of the foaming and molding technique produces foam in forms ranging from extreme softness to hard sponge. Unlike foam rubber, the plastic foam will not continue to burn if ignited, which gives it a wide variety of possible uses: auto upholstery, shoe linings, and carpet backing among them.

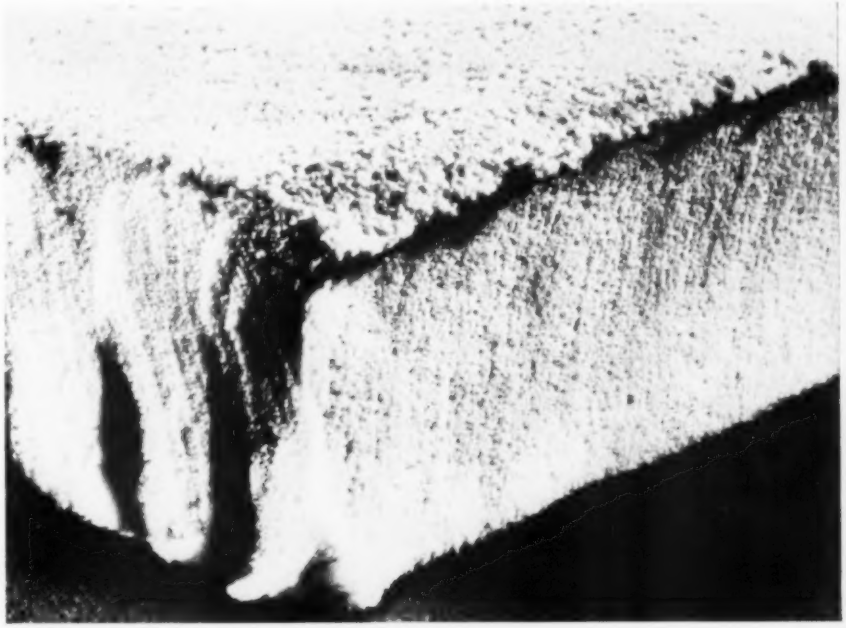
Manufacturer: Elastomer Chemical Corp. (processing equipment). Newark, N. J.

Miniature Stevens thermostat in several typical models.

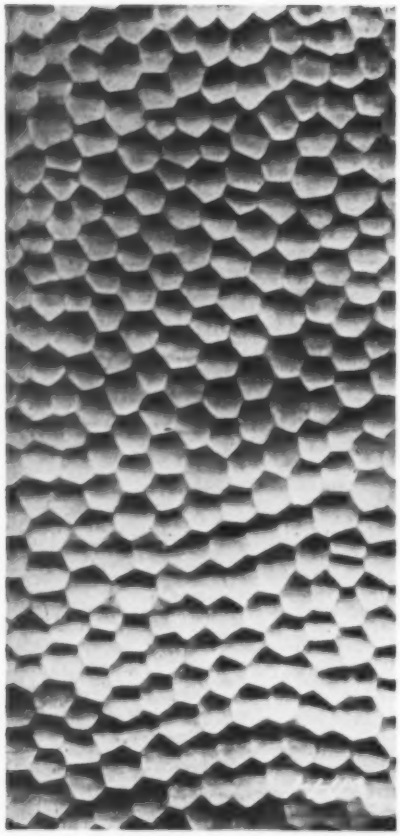
Compact thermostat

Unusually compact thermostats use a bimetal thermal element for close control of temperatures in electronic, appliance, and industrial apparatus. The disk type bimetal element is mounted in a brass housing in direct contact with the surface of the unit being controlled. This means that the thermal element is heated by both conduction and radiation from the unit. It is also electrically independent because current is carried by a separate copper contactor, completely insulated. This means fewer contact operations, reducing the false cycling and rapid fluttering that tend to shorten contact life. The maximum temperature at which these Stemco Type A thermostats may be used is 400°F. Temperatures as low as —60°C. will not interfere with normal functioning. A variety of styles are available for different ranges and applications.

Manufacturer: Stevens Manufacturing Co., Inc., Mansfield, Ohio.



Plastic foam made from a plastisol based on a Bakelite vinyl resin.



Metal texture

The texture illustrated above is available in Rigidized metals in sheets up to 38" wide and thicknesses up to .0312". The general effect is that of a hammered metal with a certain additional mechanical regularity. Available finishes include mill finish as rolled, mill finish with highlights, colorized, painted and porcelain enamel finishes. The reverse side of the sheet gives a somewhat different textural effect.

Manufacturer: Rigidized Metals Corp., 738 Ohio Street, Buffalo 3, New York.

Viscasil fluid

Conventional high-viscosity fluids often thicken at low temperatures and thin out under heat. Viscasil, a new silicone fluid, is little affected by temperature variations. As with many of the recent silicone developments, exact uses for the new fluid are not immediately apparent, but it is suggested as a means of giving a water- and stain-repellent finish both to new synthetic fabrics and to rubber. They are also being added to the glass used in bottle-making, to help reduce breakage. But chemists believe these applications scarcely scratch the surface of the possibilities of the silicone group. The new viscous fluids, for example, promise a versatility ranging from waterproofing protective skin creams to de-icing the rubber boots on aircraft wings. A major commercial application may be as a damping medium for crankshaft vibrations.

Manufacturer: General Electric Co., Chemical Division, 1 Plastics Ave., Pittsfield, Massachusetts.

Miniature switch

Gasoline-powered equipment can now be shut off by a flick of a finger, like a light bulb. A shut-off switch for small internal combustion engines, the M-Gill No. 73, is designed to replace older shorting straps. Its extremely small size makes it useful for power mowers, srayers, and similar combustion engines, the McGill No. 73, is intended to short out a magneto ignition to provide a positive cut-off.

Manufacturer: McGill Manufacturing Co., Inc. of Valparaiso, Indiana.

Lock nut

There is now a simple lock nut which makes separate lock washers unnecessary. The concave nut is of spring tempered, high carbon steel. The turned down corners of the flange bite into the material against which the nut beds, and apply tension to the screw threads to prevent the nut from loosening. When the screw mating with the nut is power-driven, the concave shape of the nut leads the screw into the threads so that a wrench is usually not needed to hold the nut. Sizes of 3-32, 8-32, 10-32, and 10-24 are available and additional sizes are planned.

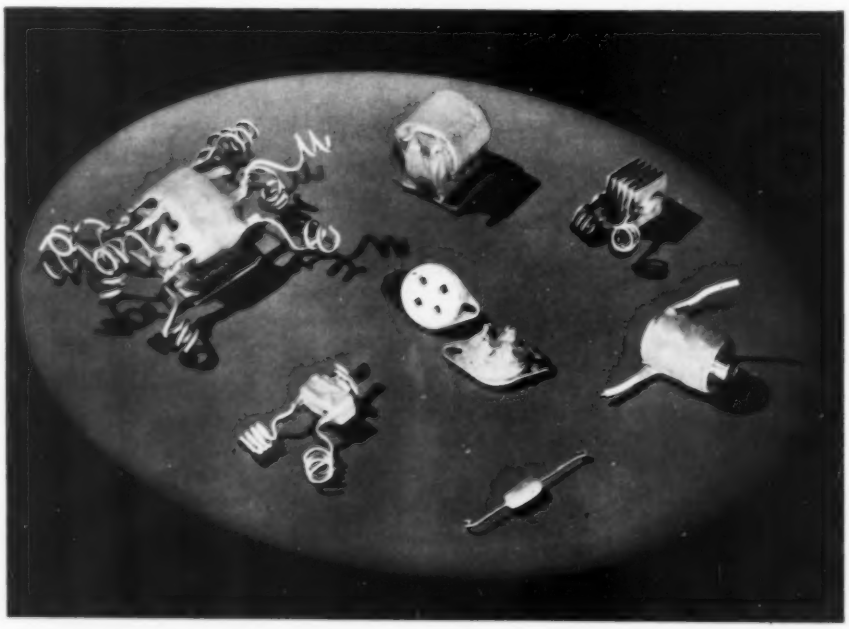
Manufacturer: Waterbury Pressed Metal Co., 300 Chase Avenue, Waterbury, Connecticut.

Silicone rubber

RTV Silastic vulcanizes at room temperature. It can be set in four hours, cured in twenty-four, is water-repellent and stable at high temperatures. Parts up to ⅛ in. thick require no pressure for application. Parts up to 1 in. thick can be cured by pressure of not more than 50 psi. The new silicone rubber is available in consistencies ranging from fluid to heavy enough to require milling. It is shipped as two components. When mixed, these form a system that vulcanizes without generating heat. The material is a good caulker and glazer, also useful for sealing and cushioning electric and electronic components.

Manufacturer: Dow Corning Corp., Midland, Michigan.

A variety of electrical parts insulated with self-vulcanizing RTV Silastic.



Manufacturers' Literature

Adhesives—Coatings—Sealers. Minnesota Mining & Mfg. Co. Adhesives & Coatings Division, Detroit 2, Michigan. 8 pp., ill., charts. Pamphlet describing various products manufactured by Adhesives & Coatings Division, their uses, and differences.

Air Conditioning Units. Westinghouse Electric Corp., Dept.T-126 200 Readville St., Hyde Park, Boston 36, Mass. 40 pp., charts. A guide for the plant engineer showing the proper use of performance data, curves and charts to select the proper unit for a particular installation.

Allegheny Metal in Chemical Processing. Advertising Dept., Allegheny Ludlum Steel Corp., 2020 Oliver Bldg., Pittsburgh 19, Pa. 34 pp., ill., charts. The use of stainless steel in industry, including corrosion resistance data, fabricating information, and a stainless steel finder.

Automatic Gear Grinding Machines. Gear Grinding Machine Co., 3901 Christopher, Detroit 11, Mich. 8 pp., ill. A catalog giving specifications and features of machines in this company's line. A 12-page supplement to this catalog is also available, which devotes two pages each to the six principal models in the company's line of automatic form grinding machines.

Control Knobs. Raytheon Manufacturing Co., Waltham 54, Mass. 8 pp., ill. A catalog of the Raytheon line of standard control knobs.

Electric Heating Units. Westinghouse Electric Corporation, P.O. Box 2099, Pittsburgh 30, Pa. 23 pp., ill., tables. Booklet B-6161. Complete data on heaters, thermostats and snap switches for users of industrial electrical units.

Formica Woods. The Formica Co., 4614 Spring Grove Ave., Cincinnati 32, Ohio. 8 pp., ill. Information about Formica woods, which are thin veneers impregnated with resin, then subjected to heat and pressure.

Frigidaire. Frigidaire Division, General Motors Corp., Dayton, Ohio. "Our Business is Being Helpful." 20 pp. ill. Explanation of Frigidaire's commercial refrigeration and air conditioning products, with a complete listing of cities containing Frigidaire branch offices and distributors.

Heat-Flow Transducer. Beckman & Whitley, Inc., 900 E. San Carlos Avenue, San Carlos, Calif. Leaflet illustrating and describing the Beckman & Whitley Model 200 Series Thermopile Heat-Flow Transducers.

Heating and Ventilating Units. Westinghouse Electric Corp., Dept. T-126, 200 Readville St., Hyde Park, Boston 36, Mass. 40 pp., charts. A catalog designed to enable plant engineers to plan, specify and order the proper units to solve any problem involving the moving or heating of air. Includes maintenance information.

How to Work with Plexiglas. Cadillac Plastic Co., 15111 Second Avenue, Detroit 3, Mich. 16 pp., ill. A clear, complete description of properties of Plexiglas and methods of handling this material.

Hydraulic Presses—Preventive Maintenance. Denison Engineering Co., Columbus 16, Ohio. 16 pp., ill. Bulletin 45. Describes proper care and maintenance of hydraulic presses and components, and selection and use of hydraulic oils.

Masonite Presdwood. Masonite Corporation, 111 West Washington St., Chicago, Ill. 32 pp., ill., charts. A guide for the selection, application and finishing of Masonite Presdwood Products in architecture and construction.

Manufacturers' Literature *(Continued)*

Mechanical Handling & Storage of Dry Bulk Materials. J. C. Corrigan Co. Inc., Boston 22, Mass. Folder No. 112. Describes systems for the mechanical handling of dry bulk materials from unloading point to storage and from storage to processing.

Metal Mouldings. Pyramid Mouldings, Inc., 5353 West Armstrong Ave., Chicago 30, Ill. 20 pp., ill. Pyramid's plan book, giving complete information about their extensive line of metal mouldings.

Micarta Plastic. Westinghouse Electric Corporation P.O. Box 2099, Pittsburgh 30, Pa. 50 pp., ill. A handbook of technical information for the user of industrial materials, covering all grades and forms in which Micarta is supplied and the chemical, mechanical and electrical properties of each.

Paint Manual. Socony Paint Products Co., Metuchen, N. J. A guide for correct industrial painting, containing schedules for exterior and interior painting, a description of various Socony paint products, and a general discussion of paint.

Plans for Garages of Reinforced Plastic Panels. Monsanto Chemical Co., Plastics Division, Springfield, Mass. A portfolio of 13 garage plans, including greenhouse-patio-carport combinations, etc. Plans, a drawing, and a complete listing of needed materials are included for each building.

Plastic Surfacing. Consoweld, Wisconsin Rapids, Wisconsin. 8 pp., ill. Clear, detailed information about how to apply Consoweld 10, a decorative plastic surfacing material for counter top and wall areas. Supplementary 2 pp. pamphlet lists distributors and shows available patterns.

Precision Extrusions. Precision Extrusions, Bensenville, Illinois. Ill., charts. Booklet giving complete information about extrusion process, showing available tubings, shapes and mouldings, with engineering information and charts showing proper style for any particular use.

Rivets. The Milford Rivet & Machine Co., Milford, Conn. 12 pp., ill., charts. Milford rivets, their applications and selection of proper rivets. 12 pp. companion piece explains The Milford Method of research, design, engineering and production. Milford also offers the "Milford Rivet Selector" (a slide rule system).

Roll Formed Shapes. Roll Formed Products Co., 3760 Oakwood Ave., Youngstown, Ohio. 24 pp., ill., charts. Available products, and the production procedure and advancements made by this firm in roll forming sections from both ferrous and non-ferrous metals.

Sealers as Engineering Materials. Minnesota Mining & Mfg. Co. Detroit 2, Michigan. 14 pp., ill. Reprint of an article written by Richard S. Piper of the Commercial Development Dept., Adhesives and Coating Division, Minnesota Mining & Mfg. Co.

Thermistors. Carboloy Department, General Electric Co., Detroit, Mich. 52 pp., ill., charts. A Thermistor manual, providing background information, applications and characteristics of Thermistors; and benefits derived from using them in detecting and compensating temperatures, and providing time delay or surge control in electrical equipment.

Welding Data Chart. Ampco Metal, Inc., 1745 South 38th St., Milwaukee 46, Wis. A 20" x 29" wall chart containing specifications for spot welding similar and dissimilar metals, and eight other data charts.

Classified Advertisements

10c A WORD PER INSERTION. $3.00 MINIMUM. PAYABLE IN ADVANCE. BOX ADDRESS COUNTS FIVE WORDS.

Positions Wanted

PRODUCT DESIGNER—*Four years successful, comprehensive product development experience with manufacturer. Degree in Industrial Design. Age 29, married, children. Desires challenging permanent position. Will relocate. Box ID-4,* INDUSTRIAL DESIGN, *18 E. 50th St., N. Y. 22.*

INDUSTRIAL DESIGNER—*Pratt Graduate. Much varied experience with commercial equipment and capital goods. Full knowledge of all phases of design. Ability to follow through on design project. Desires position with manufacturer. Box ID-3,* INDUSTRIAL DESIGN, *18 E. 50th St., N. Y. 22.*

PRODUCT DESIGNER (BY NATURE, TRAINING, EXPERIENCE), *36, Heavy Production Know-how. Have successfuly helped design products totaling $500,000 annual sales. Can help you design a profitable, beautiful and efficient product. M. H. Doliton, Levittown, L. I., N. Y., LE 3-6997.*

Help Wanted

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

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HELEN HUTCHINS PERSONNEL AGENCY—*specialist industrial, architectural, Interior Design, Decorative Arts, Trades, Home Furnishings. Helen Hutchins' long association with a leading industrial design organization insures intelligent and individualized screening of all types of personnel for industrial designers. 767 Lexington Ave., New York 21. TE 8-3070. Interviews by appointment.*

INDUSTRIAL DESIGNER *with successful experience in styling, engineering and production of commercial and household products desires position with progressive manufacturer or studio in Chicago area. Box ID-7,* INDUSTRIAL DESIGN, *18 E. 50th St., N. Y. 22.*

Index to Advertisers In This Issue

FOR YOUR CALENDAR

International Machine Tool Exposition. A permanent exhibit, starting in October. 1,000 machines, under power, including production, fabricating and tool-room equipment, are to be permanently displayed by the S. & S. Machinery Co., 132 — 54th Street, Brooklyn 32, N. Y.

Carnegie Institute of Technology, Pittsburgh. Conference on "The Impact of Solid State Science on Engineering Materials." June 21-25. Co-sponsored by the American Society of Electrical Engineering, the National Science Foundation, University of Illinois and Carnegie Institute of Technology, the Conference will bring to the attention of engineering educators the important recent contributions of solid state physics to the understanding of engineering materials.

Good Design Anniversary Exhibition, Merchandise Mart, Chicago. Opens June 20, for one year. 100 objects selected from the five years of Museum of Modern Art-Merchandise Mart-sponsored Good Design exhibitions will be on view, with a forecast of design prepared by the country's leading design schools.

Playground Sculpture Competition prize-winning designs. Museum of Modern Art, New York. June 30-Aug. 22. Prize-winning designs in a competition sponsored by Parent's Magazine, the Museum and Creative Playthings, Inc., will be on view. The first three prize-winning designs will be shown full scale, and models of approximately 35 additional entries will also be exhibited.

A Japanese House, complete with furnishing and gardens will be on view from June 16 throughout the summer at the Museum of Modern Art, New York.

Scottish Industries Exhibition, Glasgow. Sept. 2-18. Almost all of Scotland's many industries will be represented by approximately 300 firms at this national Scottish trade fair, sponsored by the Scottish Council. The fair will be held in Kevin Hall, one of the biggest exhibition halls in Europe.

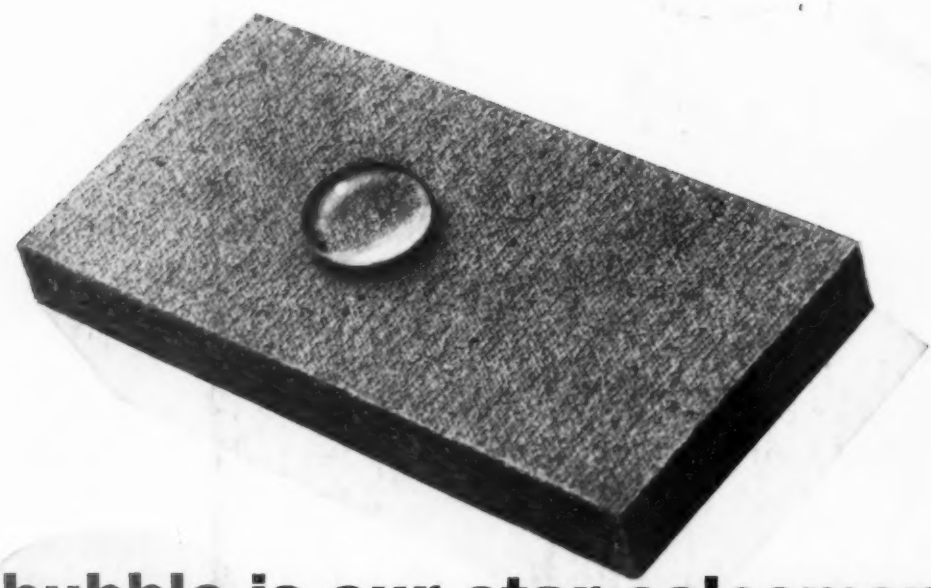
British Trade Fair at Baghdad, Iraq. Oct. 25-Nov. 8. The Federated British Industries, with the support of the Governments of Britain and Iraq, is planning the most ambitious trade fair Britain has ever promoted.

Schools and seminars

Massachusetts Institute of Technology, Special summer program in Design Fundamentals of Architecture. July 6-23. Professor Richard Filipowski will direct the program, which will include lectures by guest instructors, discussions, and field trips. Full details and applications blanks may be obtained from the Summer Session Office, Room 7-103, M.I.T., Cambridge, Mass.

Illinois Institute of Technology, Art Education Graduate Program beginning June 28. Six courses leading to a master's degree in art education will be offered by the Institute of Design during the summer session. For information write to Institute of Design, I.I.T., Chicago 16, Illinois.

Pratt Institute will offer a program leading to the degree of Master of Industrial Design, **beginning Sept. 1954.** Candidates must have a bachelor's degree in design, architecture or engineering; however, courses are also available to designers who wish to do refresher work. For information write to the Dean, The Art School, Pratt Institute, Brooklyn 5, N. Y.



This bubble is our star salesman

Homasote boards are weatherproof; they are highly moisture-resistant. When a prospective purchaser challenges these statements, the Homasote representative puts a sample of the board on his desk — and pours a small amount of drinking water onto it. This forms a bubble, as pictured above.

The bubble remains there throughout the conversation. Allowing only for an extremely dry room, the bubble is essentially unchanged when the prospect returns to his office the next day. A good many customers have found this an interesting fact.

We would like to send you a sample piece of Homasote and ask you to make this test for yourself. After which—you can also test it for strength, nail-holding, sound-deadening, or any other test that has a bearing on your immediate requirements.

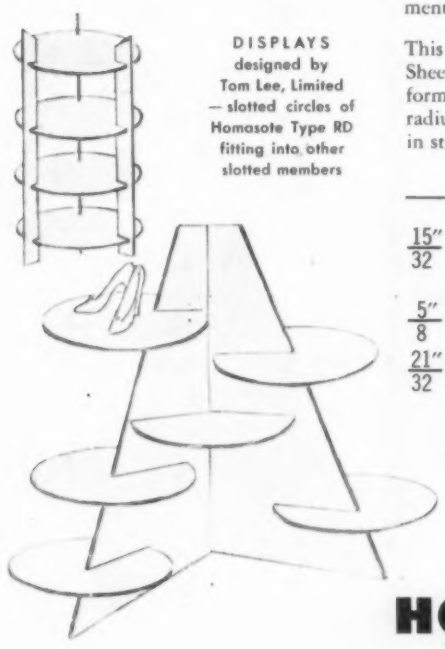
This material also has SIZE... its Big Sheets—up to 8′ x 14′—abolish many former size limitations. Bent on an 18″ radius, it holds its new form with no loss in strength.

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

Homasote is available in five forms and/or thicknesses—each having its own special qualities and properties. All are weatherproof and crackproof—all may be used indoors or out.

In one form or another, users have already found more than a hundred applications for Homasote Boards.

May we send you literature, samples and detailed specifications? Kindly specify which boards sound interesting and address your inquiry to Department 88.



DISPLAYS designed by Tom Lee, Limited — slotted circles of Homasote Type RD fitting into other slotted members

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15/32″ **HOMASOTE**—in Big Sheets up to 8′ x 14′. Time-tested in all climates—from Alaska to Africa to Little America.

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

21/32″ **HOMASOTE TYPE RD** — strong, tough, weatherproof. Single-ply in sizes from 2′ x 8′ to 8′ x 14′; 2- or 3-ply, in 2′ x 8′ size only, bottom ply V-grooved, upper plies ship-lapped. Live load—75 lbs. with 2-ply 32″ o.c., 3-ply 48″ o.c.

3/8″ **STRIATED HOMASOTE PANELS** — offering endless variety of pattern, depending upon how cut and positioned. Panels are 8′ in length; 16″, 32″ and 48″ in width.

3/8″ **WOOD-TEXTURED HOMASOTE PANELS**—molded from actual board, retaining everything but the splinters. (Dimensions same as for Striated Panels.)

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HOMASOTE COMPANY

TRENTON 3, NEW JERSEY