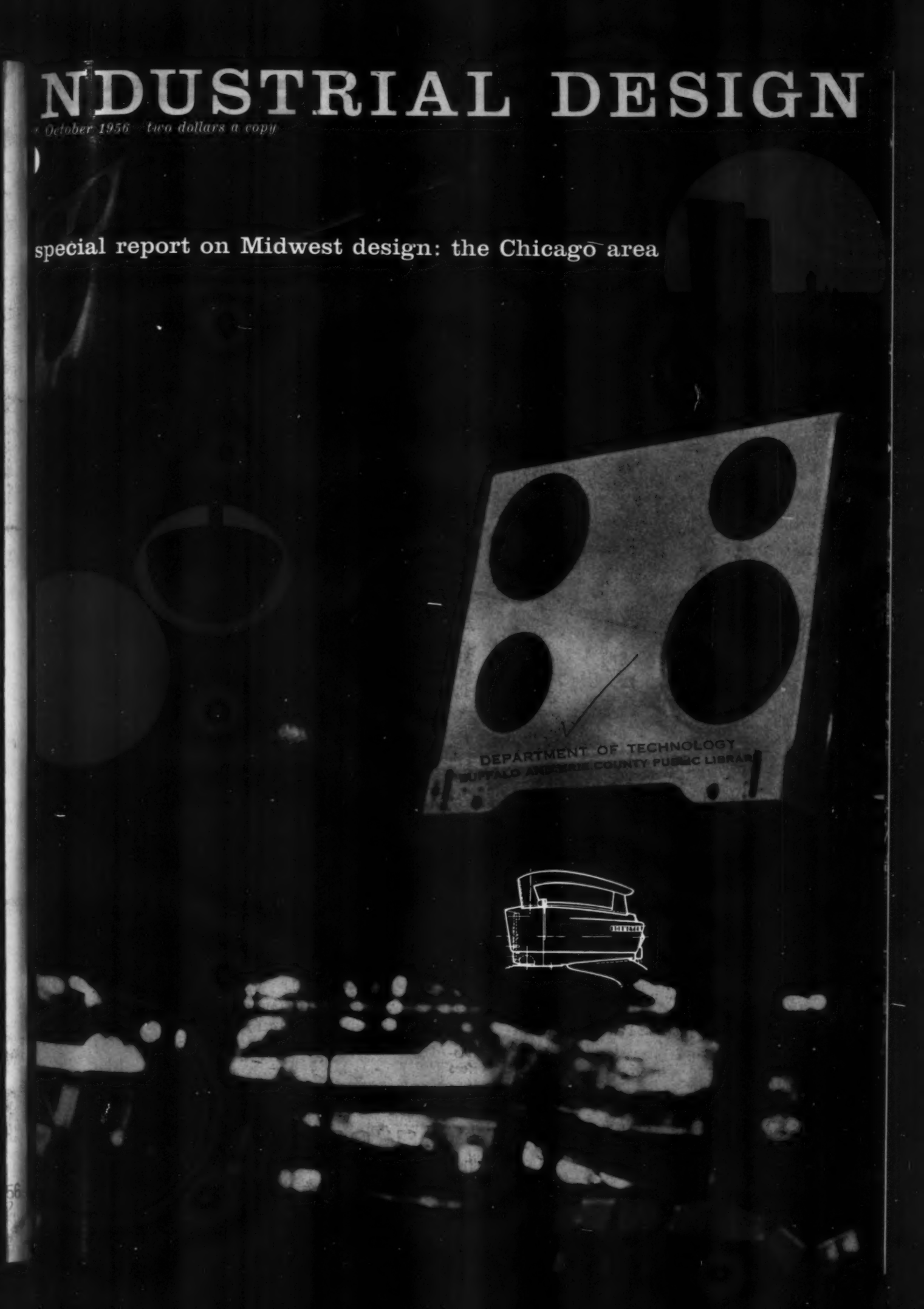
NDUSTRIAL DESIGN

October 1956 two dollars a copy

special report on Midwest design: the Chicago area



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OCTOBER, 1956 VOLUME 3, NUMBER 5

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 development and marketing.

CONTENTS

Cover: A conveyor in Hotpoint's Chicago range assembly plant introduces the theme of design and production in the Chicago Midwest to which this special issue is devoted.

Frontispiece: A detail of the fluently decorated surface of the Chicago Auditorium Building, designed by Louis Sullivan and Dankmar Adler, is part of a series of photographs by John Szarkowski presented on pages 65-70 of this issue.

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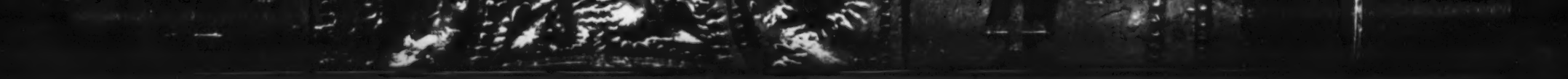


LETTERS

Captive vs. Independent

Sirs:

George Nelson is playing the old political game of setting up a straw man for the fun of knocking him down. Where is all this war between "captive" designers and "independent" designers being fought out? I get around quite a bit in the design world, and I've seen none of it.

At the start, let's free our terms from prejudice. "Captive" is offensive, and there's no reason to apply the word to a company's staff designer; "independent" is misleading, since nobody is independent of his commitments and responsibilities. The term "consulting" designer is much more suitable, not because he's an in-and-out guy, which he isn't, but because invariably today he is not an individual but an organization, small or large, set up to advise a variety of clients.

It happened that the American Society of Industrial Designers was founded by a group of consulting designers, but staff designers were welcomed immediately and now amount to about 20% of the membership. The preponderance of consulting designers is due solely to the fact that there are more of them in the profession at present. The ratio may change—who cares?

Some corporations want their designers working constantly in their own plant. If the flow of products in development is steady enough and diverse enough to keep the staff on their toes, it works out fine. If the products are limited in type and number, the staff designer faces the occupational hazard of going stale and dropping into a groove. At all levels practically all companies retain consulting designers, on occasion or permanently, to supplement their staffs. Some big corporations arrange for a consulting design organization to place a staff of its own men permanently in the company's plant, reinforced by the resources and supervision of the home office.

Company design staffs so far as I've known are never set up because they're cheaper. If it's draftsmen that are wanted, Nelson's example is pertinent. If it's designers of creative ability, they are not so easy to come by and dollar yardsticks aren't an adequate measure of their services. A design group of top-flight ability and versatility is expensive to maintain, whether as a company staff or as a consulting organization, and if it contains all the types of talent and experience needed by a corporation, it's a big one and must have a lot of work to keep it busy. Only a few of the biggest corporations are willing to shoulder this responsibility entirely. Most companies prefer to have such an organization at command when needed, sharing its support with other companies who also need it. . .

Walter Dorwin Teague
Walter Dorwin Teague Associates
New York City, N. Y.

Sirs:

Your recent article by George Nelson is the most realistic and sensible approach to this "problem" yet discussed or to appear in print. Having been on both sides of this fence, I concur and heartily commend Mr. Nelson's statements on this subject.

Intelligent presentations of this type will have immeasurable value in unifying and elevating this profession.

D. W. Doman
The Parker Pen Company
Janesville, Wisconsin

Sirs:

I wholeheartedly agree with George Nelson's analysis of the virtues of both types of design operation. I also feel he is absolutely right in saying it is not a question of which is better, but rather a matter of how each can understand the other and work together more cooperatively. Both will always be needed.

From a management standpoint it doesn't really matter—what really counts is men *with ideas* and the know-how to put them into use. I have only one criticism of the article: it should have been terminated with, "Well said. End of discussion for all time, we hope. Editor."

To students or recent graduates, let me add one bit of advice: For your own good and that of the design profession as a whole, don't take your *first* design job in a large manufacturing company. If you do, you are apt to be categorized in a way that does not help your personal growth or contribute to the standing of the profession. Your only contact with top management will be the annual picnic. You will feel lost and try to compensate for "being in the dark" by designing for your own ego. This can defeat your growth potential. You'll be kept in the back room because you can draw nice pictures, instead of getting out and mixing where you can contribute to and gain from "ideas" and the various people (other than designers) who create and deal in ideas. My advice is, work in an independent office, or on your own, until you've got the design stature and personal poise to meet top management on an easy, self-confident basis.

Whether we work "inside or out," it is essential that everyone carrying the name industrial designer learn to think and act like businessmen—if we are to have the respect and confidence of businessmen.

Don Dailey
Don Dailey Associates
Evansville, Indiana

International Design Conference

Sirs:

I have written to Will Burtin to congratulate him on the very successful execution of the Sixth International Design Conference [see "Afterthoughts on Aspen," page 126 of this issue]. Now that these ideas have been stirred up and will be digested by at least 480 creative souls, it would seem the logical step for the next IDC to attack one or more of them. Let us select only one like "man controlling his environment," or more particularly, "the city."

Melvin Best
Melvin Best Associates
Pasadena, California

Errata

Sirs:

The pleasure of receiving your August issue was marred by an error on page 138. What is referred to as Hudson's ash trays are really air conditioning ducts that are set into the cowl.

Herbert Ross
Custom Displays, Incorporated
New York, New York

Right. We wonder how many Hudson owners were able, unlike our editor, to size up this tray-like detail before dropping ashes into the cooling system.—Ed.

Sirs:

Concerning the construction of the plastics exhibit appearing in your April issue: we would appreciate an acknowledgement that we fabricated this exhibit.

For many years our organization has been selected to engineer and build almost all of Mr. Will Burtin's exhibits. There is always a very close coordination maintained between us to achieve the ultimate in fine craftsmanship and interpretation of his original creation.

B. F. Miller
The Displayers, Incorporated
New York, New York

CORNING GLASS BULLETIN

FOR PEOPLE WHO MAKE THINGS

Microwaves in the kitchen

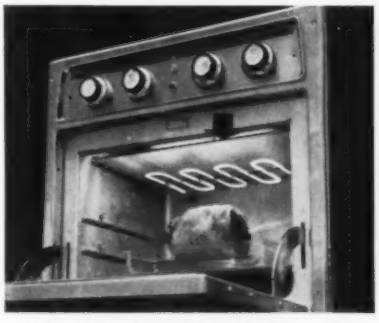
Tappan's latest electronic range lets you cook a 5-pound roast in 30 minutes, bake a potato in 4, broil bacon in 1½, heat a jar of baby food in 45 seconds.

Key to this microwave magic is a magnetron supplied by Raytheon. It generates waves of 2450 megacycles, a frequency that requires licensing by the Federal Communications Commission.

These waves do the cooking. They are fed into the oven cavity by a guide mounted at the top and properly diffused by a slowly revolving fan and a sheet of glass.

This glass, as you might imagine, is no ordinary piece of window pane. It has to pass the high-frequency waves and help in their even distribution. It also must protect the electronic elements and fan from hot, spattering grease.

Handling the task nicely is Corning's VYCOR brand glass No. 7900, one of a group of 96% silica glasses exhibiting some quite unusual performance characteristics.



Tubing below VYCOR glass shield (arrow) is an infrared unit to give a pleasant "browning" effect to food.

For example, you can heat an object made of No. 7900 glass to 900° C., then plunge it into ice water. You'll get *no* cracking, crazing, breaking, or changing in shape or structure even after such terrific thermal shocks.

Continuous use at 900° C. is standard operation; and intermittent use to 1200° C. is both possible and practical.

VYCOR brand glass also does a fine job of transmitting ultraviolet at wave lengths of 365 millimicrons and higher, and short-wave infrared up to 3.5 microns.

Details on seven of the VYCOR brand glasses (including facts on manufacturing, physical properties, uses and forms) are summed up in B-91: "VYCOR brand Industrial Glassware by Corning." A copy awaits your request.

Lachrymal lesson

Legend has it that ancient Romans grieving their departed collected their tears in small vases and buried the vases with the deceased.

Such vases go back to the Rome of about 300 A.D. Yet, despite this antiquity, so many are *still* in such perfect shape that a tourist can own one for the outlay of a mere 50 cents.

Lesson? Oh, yes, —these long-lasting vessels for lachrymal liquid were made of *glass*. And glass, as made *today*, offers the designer a host of useful qualities, in addition to durability.

Take as a starter, PYREX brand glass No. 7740. It's the choice of those whose products must cope with corrosive environments, thermal shock, and rough handling in general.

Among the literally thousands of useful items fashioned from this particular Corning glass you'll find precision labware; piping for the food, chemical and drug industries; broiler shields; oven windows; oven cooking ware; dental and medical products; vapor chambers; coffee makers and servers; and sundry lamp globes.

No. 7740 is just *one* of a wide array of glasses by Corning available in commercial quantities . . . which brings us to a standing offer:

You can tap the data files on some 50,000-odd formulas for glass in quest of an answer to your materials problems. What we've learned about the advantages (and limitations) of glass we'd like to share with you.

Or, if more background data on what you can do with today's *engineered* glasses seems in order, send for any or all of the free literature listed in the coupon.

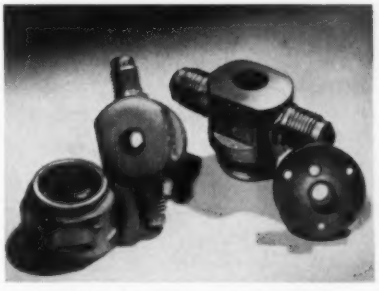
Look, no gasket!

Troubles—that's what most of us have come to expect with sight glasses used in pipelines or other strategic locations.

Causes are not hard to pinpoint—innocent tampering, heat and vibration that cause failure in soldered joints, various forces that result in gaskets degenerating.

'Til now most of us have quietly accepted the inevitable disruptions. But, there's no need to any longer.

Working with a prominent supplier of refrigeration equipment, we've come up with a real innovation—a gasketless, solderless, sight-glass assembly.



Glass fused directly to metal provides unusually rugged service in these sight glass assemblies.

In this new Corning development, the glass and metal are fused directly together. Result? A hermetically-sealed, tamperproof arrangement that stands up to moderate heats and high pressures.

A number of variations are available, with diameters ranging from $\frac{3}{16}''$ to 1″, with glasses from $\frac{1}{16}''$ to $\frac{1}{4}''$ thick.

Typical performance—$\frac{3}{8}''$ diameter and a $\frac{1}{8}''$-thick glass withstood pressures in excess of 5,000 p.s.i.

If you need to see what goes on in a closed system, why not look into these windows?

Corning means research in Glass

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Please send me the following material: Bulletin B-91, "VYCOR brand Industrial Glassware by Corning" ☐; Bulletin IZ-1, "Glass . . . its increasing importance in product design" ☐; Bulletin B-84, "Manufacturing and Design of Commercial Glass" ☐; Illustrated booklet, "Glass and You" ☐; Information on sight glasses ☐.

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BOOKS

Portrait of An Architect

SUN AND SHADOW: THE PHILOSOPHY OF AN ARCHITECT, *by Marcel Breuer. Notes by Peter Blake; book design by Alexey Brodovitch.* 205 *pages,* 298 *illustrations and photographs. Dodd, Mead & Company, New York.* $7.50.

Reviewed by Paul Mitarachi, architect

This book by the architect-designer Marcel Brewer could not have been timed better. We are just about ready to listen to anyone who will show us that the cold winds from Chicago have not swept the country to the exclusion of all architectural expression except that of glass, steel and glossy brick mixed in perfect proportion.

There are strong currents in the new architecture. Twenty or thirty years ago, when still young, it presented a unified front in its attempt to overrun the *status quo* of the Beaux Arts tradition; today, having succeeded in the inevitable triumph of reason over sentimentality, it has divided itself into various currents, each with its strong man followed by the younger admirers who, sometimes awake and sometimes fast asleep, carry on their particular line.

We like to think of Marcel Breuer as such a leader, and of his book as a photographic summing-up of his philosophy —the "line" of a particular leader. This philosophy is the humanistic, even the humane, line of the non-formalist. Breuer stands for a design of contrasts, of reconciled opposites. He cannot accept one function or one expression to the exclusion of all others. The opposites are not plowed into a neutral mixture but are openly expressed, in tension. This is brought out by his using the Spanish expression "sun and shadow," not sun *or* shadow, not gray twilight.

We like to think of Breuer as having reconciled two great opposites, as having arrived at a fine balance between reason and sensuality. The clear reasoning apparent in his plans is well illustrated and well expressed in the text. His approach to the placement of a building in the landscape or the city is discussed in two sections, and even the sections dealing with color, texture, materials or forms in space show the same clear reasoning. Yet throughout it appears the sensitivity of the artist that Breuer basically is. Within the range encompassed by this reasoning, the choice of forms, colors and materials is infinite; this choice in Breuer's case is dictated by a strong feeling for what he likes to look at and touch with his hands.

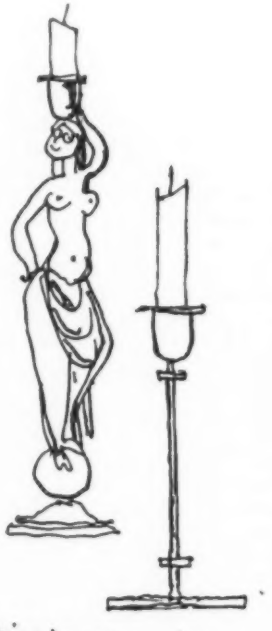
The book itself, well edited and carefully designed, contributes to the portrait of the artist.

In Matters of Taste . . .

GOOD AND BAD TASTE, *by Odd Brochmann. Translated from the Norwegian by M. A. Michael.* 128 *pages, with* 96 *illustrations by the author. Eyre & Spottiswoode, London (distributed by Macmillan).* $3.75.

If you can get past the condescending tone of the opening chapter, "which explains for whom this book was written, why it was written, and how careful you have to be about forming opinions," you may find yourself getting to like it, recommending it to friends outside the profession, and even thinking about it—with some irritation. For *Good and Bad Taste* is one of those elusive "introductory" books that manage to mingle some good sense with some bad taste. Some of the fault may lie in the translation, or in the impossibility of capturing Norwegian naiveté in English. Some readers may be confused or disappointed in the book because of its rather unfortunate title—we have had so much taste-exchanging and taste-legislating in our "other-directed" country that we must be on guard against a book that seems ready to inflict on us the latest rules for Scandinavian shoes and ships and sealing wax.

Brochmann's purpose is far more modest, however, yet much more valuable. He proposes to help educate the taste with some knowledge of the principles of esthetics and design, based on no dogma but on the things we live with and exercise our taste on. He tries to tell us *why* we like the things we do, so that we may make reasoned choices in our daily lives, rather than to give us a set of absolute criteria for judgment—and therein lies his strength and his weakness.

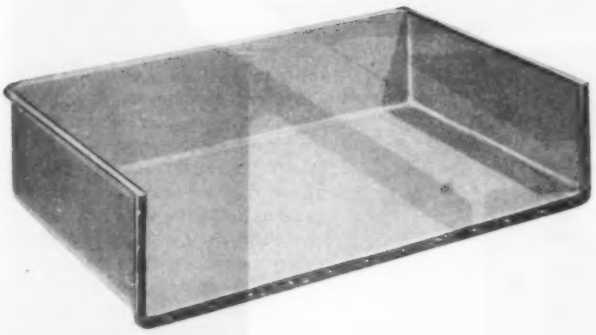


In presenting the classic struggles between organic and "pure" form, between form and function, and between "style" and eclecticism, Brochmann avoids commitment to any party, by an effortless expression of an easy-going temperament rather than by an assumed superiority or oversimplification. Yet, while maintaining the fairness appropriate to a basic book, he gradually comes to represent a point of view which one must associate with the Scandinavian values—although it is by no means strictly a northern characteristic.

It is by focussing his attention on *things* of the most commonplace sort that Brochmann suggests the temper of his mind and the undercurrent of his instruction. Not that he ever falls into the temptation to legislate taste, but from the way he illustrates his discussion of composition to his analysis of domestic interiors of nineteenth-century Norwegian rural and urban homes, his attention to the world of solid commonplace objects almost surpasses his ideas of function and convenience and the artistic laws of harmony and order which are his subject.

Similarly, when the values of organic form are discussed in their proper place, Nature assumes no more than its appropriate status in design. Yet the reader gets a cumulative effect: the standard of Nature expressed in the perfect forms of its objects begins to emerge as one of Brochmann's firmest norms. The book never descends into a revelation of personal taste, yet such assumptions emerge with some fervor but without the firm manipulation that the author elsewhere shows.

Brochmann brings his values securely within the realms of art and controlled design, and succeeds in giving us a coherent introduction to the elements of esthetics and perceptive judgment. But in limiting himself to the psychological mode of *ad hominum* argument, by taking up only the basic elements of esthetic response and not defining the nature and roots of "taste," he fails to express the deeper issues which such a subject must entail. To the man who "may not know much about art but knows what he likes," he tells much toward the formation of a civilized attitude; to one concerned with the limits of taste as a category of art criticism or as a procedure in designing, he does not speak with sufficient control of his sensibility or with sufficient consciousness of the implications of his subject.—*a. f.*



Plastics drawers like these are being custom-molded in a variety of sizes and colors for such companies as Sears, Roebuck and RWAY Furniture by General Electric's Plastics Department. Drawers are seamless, jointless, non-warping and cleanable with water.

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The very idea

THE IDEA OF LOUIS SULLIVAN, *by John Szarkowski.* 161 *pp. ill. University of Minnesota Press, Minneapolis,* 1956. $10.

To call this collection of photographs a labor of love is not the reviewer's palavering but a tolerably accurate description. While teaching at the Albright School of Art in Buffalo, Mr. Szarkowski started his work on Sullivan by photographing the Prudential Building there. To let him speak for himself: "As I began to work I found, to my own surprise, that I was seeing this building, not with the decorous disinterest with which a photographer is supposed to approach a work of architecture, but as a real building, which people had worked in and maimed and ignored and perhaps loved, and which I felt was deeply important. I found myself concerned not only with the building's art-facts but with its life-facts. (Louis Sullivan had claimed they were the same.)" So, with an approach Sullivan himself could only have approved, Szarkowski has set forth the *inwardness* of spatial forms that are architectural masterpieces. To this reviewer's knowledge, this is the first time this has been so explicitly the goal of an architectural photographer.

How Szarkowski has done this is almost as difficult to define as the art of Sullivan. Three examples may serve to suggest this. One shot captures the Wainwright Building in St. Louis rising grandly above a parking lot and far outshining, despite its sooty coat, the chrome arrayed below.

A second is more obvious a juxtaposition. The street-view of the Garrick Theater in Chicago presents the following neon illumination: "Meet Me at the Ham n' Egger—'The Bite that's rite mornin'-noon & nite'." (See page 65.) On the facing page is a quotation from Frank Lloyd Wright's *Genius and Democracy*: Sullivan had said of one of his buildings, "At last, something they can't take away from you," and Wright comments, "I wonder why he thought 'they' couldn't take it away from me? 'They' can take anything away from anybody."

A third example from this book is an interior shot of the National Farmers (now the Security) Bank in Owatonna, Minnesota. It seems to be another of the many details of the fresco-like portals and cornices with which Sullivan breathed organic life and dignity into his buildings, until one's eye moves around the page to the faces of the farmers. A burly man in work clothes strides through the door with his hand on his back pocket—no doubt about it, he is going to put some money away. And waiting on line, a man with a most elfin and penetrating gaze looks into the camera eye. This photo, and others in the book, are as much portraiture as monumental photography; and the two are held together by a common spirit—the idea of Louis Sullivan.

For all that, some of the photos are straight architectural documentation, interesting of course but not up to the standard set elsewhere. The quotations—from Sullivan, Wright, Walt Whitman, William T. Stead (*If Christ Came to Chicago*) are not all as penetrating as the one cited. And the identification of the buildings is extremely sketchy—in line, perhaps, with a policy of presenting the inner spirit rather than the external details. But *The Idea of Louis Sullivan* remains one of those rare books, in which the art-facts and the life-facts are the same.—*a. f.*

Design for the machine

KEEPING PACE WITH AUTOMATION; *Practical Guides for the Company Executive.* 136 *pages. American Management Association,* 1956. $3.75.

Since "automation" is one of the most talked-about concepts in our industrial society, it is also likely to be one of the most bandied-about words. Part of this report's aim is to straighten out management's use of the term, but as the book was prepared from material presented at an AMA conference last year by a variety of speakers, it offers a variety of definitions itself. What is remarkable about it, however, is not its variety but its uniformity of approach. Certain basic theories—and anxieties—are present in almost all of these fourteen articles by leading industrialists and automatists.

Certainly the most obvious of these anxieties—coming, as they do, from management—is over labor's announced reticence to go along with automation changeover designed to reduce the working force. Again and again it is stated here that automation will *increase* the number of highly skilled jobs, and even that an automation policy with simply labor-saving intentions is both shortsighted and almost irrelevant to the forces which automation brings into play. To make this point the distinction between mechanization and computation is made: the former is merely an extension of the division of labor (replacing specialized functions by machines), while the latter is what allows the entire system to be functionally integrated and subject to quick and precise alteration of schedules. It is the tendency to emphasize the use of electronic brains, communications and gaugings that characterizes the most progressive approaches to the subject.

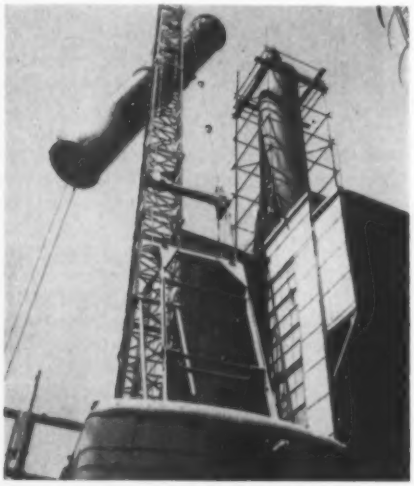
Yet another common idea among these manufacturing specialists is of great significance to the designer—as well as to the consumer and the product planner on the management staff. The theme is first sounded by John Diebold, management consultant and author of one of the first extensive studies of automation. In outlining the practical thinking required to convert to an automated plant, he states: "Before we even begin to consider process changes aimed at achieving automatic production, we must question every element in the design of the product to determine whether it is thoroughly suited to automation. Discard all features which do not contribute to the function of the product. Always ask yourself: Should I try to manufacture this product automatically, or should I alter the product so that it performs the same functions but is more adaptable to automatic manufacture?"

So far, so good—any production changeover involves similar questioning of the product. But the peculiar character of this thinking emerges when Mr. Diebold continues: "Manufacturing considerations must have a larger influence on the design of a product for automatic production than they have in conventional manufacturing. The ordinary elements of good product design—such as rectangularizing housings, reducing critical dimensions, and minimizing reference points or planes—assume a greater importance. . . . Basic redesign along completely new lines may be required. In addition to being aware of the marketing and styling problems associated with his product, the product designer must be trained in the new engineering and manufacturing methods of automation, and must work in close cooperation with the machine designer."

That these ideas are not an extension of the present requirement to thoroughly consider production methods, but are radically different, emerges in another article. David N. Smith and Paul Maker, both managers of research for tool-making companies, proceed from the definition of the machine in the new factory as "the embodiment of the apparatus defined by the product," to the converse of the proposition, that the product is "the blueprint or formula or specification [for production], not any individual embodiment of it." This says, in effect, that product design in a highly automated industry will not be essentially different from programming the machinery, because a highly integrated and complex system requires the control of the system *as a whole.* The implication is clear: no tinkering, no styling as such, and no changes of part of the product without complete reorganization and redefinition of function.

Such thinking is not the thinking of men obsessed with an image of a mechanical monster determining human creativity—no more than these ideas were learned in the Bauhaus—but the practical necessities of optimal efficiency in production without which a change to automation would be wasteful and indeed ridiculous. This is the necessity of the system: the question remains—do we need the system? Do we really want a production system that will create increasing standardization, because only standardized products can be manufactured economically by it? Or do we have a choice? The changing role of the manager has been compared to that of the B-47 crew, trained to become part of the electronic brains of their machine, and reacting immediately and almost unconsciously to the information supplied by the computers. The personality changes the rest of us face may be even more startling.—*a. f.*

Inspector checks lining in padded feet. Below, stack stacks up at Milwaukee plant.



A glass smokestack?

Why not? To protect steel smokestacks from corrosion by the acids in their fumes, the A. O. Smith Corporation of Milwaukee has developed a method of coating them with glass. Surfaced both inside and out, the new stacks are lighter (since glass weighs only five ounces per square foot as compared with the conventional inside linings of 50 pounds per square foot), longer-lived, cheaper (due to lower foundation costs and long-term returns on durability), and easier to maintain—no rust. Questions come to mind: in what strange designs will the acid etch the glass?

Anticipating this problem, two coats of glass have been chosen, the one adjacent to the metal being a good bonder, while the external coat is especially resistant to corrosion by acids. But what about the natural enemy of all glass: the small boy with the new air rifle? It is possible to cut the damaged area out of the stack by flame and bolt on a new coated patch.

But glass is highly brittle, the sceptic argues. Tests, however, indicate that glass failure occurs only after the deformation stress of the metal is reached. And how are you going to get it up there? Well, stacks as high as 75 feet have been erected without mishap by men with no previous experience in their handling—just a little padding on the slings is needed. And if the air pollution commission gets after you, you can put up a higher stack on the same foundation—it's that light.

La prima riunione . . .

The first conference of the **Italian Association for Industrial Design** was held in Milan, Italy, last April 6. Including architects and engineers as well as designers, the organization is unique in having members of industry as participating endorsers. With its wide range of technical, professional and industrial members, it proposes to share the experience of its participants through discussions, exhibitions of photographs and movies, as well as to formulate professional standards and ethics and press for legal provisions to uphold them. President Alberto Rosselli, noted architect and editor of *Stile Industria*, promises to maintain international contacts for the further information of the society.

Cable address: Knowhow

A new organization has been formed, **The Pakistan Institute of Industrial Design.** The cable address *is* "Knowhow," but from Secretary General Syed Abid Hosain's description of his society, and from its announced intentions, its scope is much larger than the connotations of that term. "The Industrial Design Movement drives home three truths," says Mr. Hosain (below). "Firstly, art is the work of man under the guidance and inspiration of a mightier power. Secondly, that the Designer and Manufacturer can breathe beauty and rightness of purpose into the simplest of articles. Lastly, through Design even the smallest of the nations can spread its message of culture far beyond its narrow boundaries."

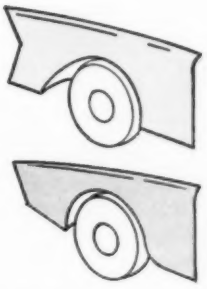
The activities of the Institute will include maintaining a Rota from which designers are recommended to industry, exhibitions, publishing a monthly "Design Review," establishment of a Design House with a trade information service and promotion center, and enlisting the consulting services of five designers from abroad. The aim of most of its work will be to survey Pakistani industrial goods with a view to building up a stock-list of well-designed products.

Just a note to say . . . the Museum of Contemporary Crafts *did* open in New York at 29 West 53rd St., as announced in August in these columns.

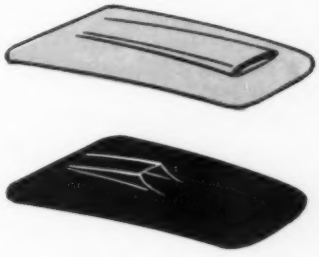
idea page

A new lift for your product, new products for your markets

Two stylings of back deck compatible with either one of...

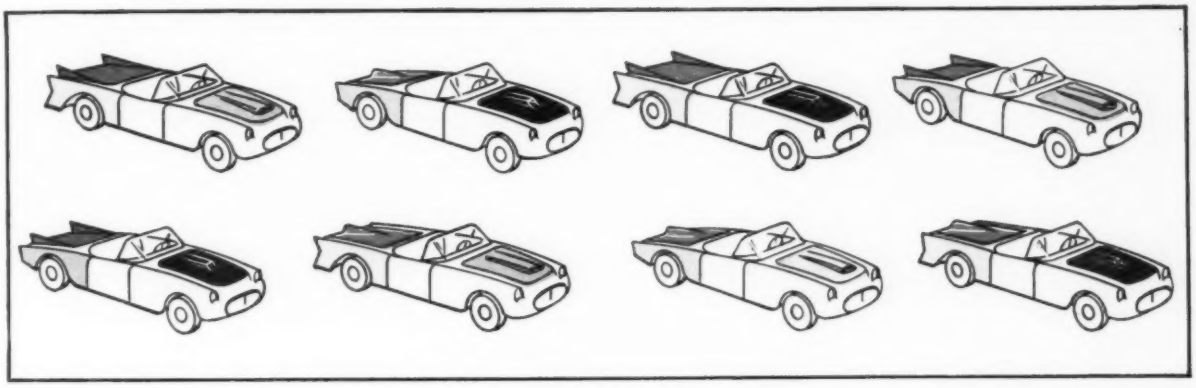


...two fender stylings, each a single "double-molding" cut apart to make a left and right...



combine with two stylings of front hoods (that stay cool to the touch)

create 8 different car stylings



New sales opportunity: modular custom bodies of reinforced plastic

■ *The relatively low cost for tooling to mold strong, dent-proof automobile parts can be the key to diversifying body styling. With three moldings each of differently designed front and rear fender sets, three back decks, three hoods... 81 different car styles can be created for the same basic chassis. This could be one way to expand line of styles for the established manufacturer—or a "new business" opportunity for a firm offering custom bodies.*

Corvette proves reinforced plastic body practical

The all-plastic body of the CORVETTE is lightweight, absorbs scrapes and glancing impacts without denting, stays cool to the touch.

Monsanto manufactures maleic and phthalic anhydrides and styrene monomer used in making polyester resins. For the names of resin makers—or—for a list of qualified molders of reinforced plastics, write MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, Dept. ID-4, St. Louis 1, Mo.

MONSANTO

Where Creative Chemistry Works Wonders for You

Designs from Britain

When last heard from, the show of designs by eight British designers was in Minneapolis. As reported in ID (April, 1956), it was to tour the country with the work of Misha Black, Lucienne Day, Robin Day, Abram Games, Milner Gray, W. M. de Majo, Ernest Race and Hans Schleger. The Walker Art Center is current repository. Watch for it in your vicinity.

ID + IIT

The Institute of Design of Illinois Institute of Technology is sponsoring a series of seminars in contemporary design that will run through January 22. Holding sessions will be Morton Goldsholl, Arthur Siegel, Jay Doblin, Bruce Beck, Jean Reinecke, Hap Smith, Dick Baringer and Fred Keck. It runs on alternate weeks with seminars on contemporary art.

Fixed "mobiles" for display

The eleventh annual Los Angeles Art Directors Show was designed in a novel way by Louis Danziger. Each artist was asked to submit his mounted entry with a colored paper of his choice on the back. These were then hung on thin wires with ordinary stationery fasteners. The room was completely black with the sole illumination confined to the area where the work was displayed.

Reports have it that the effect was most unusual: the viewer felt as if the works were floating or as if they were components of a gigantic mobile. One of the most startling aspects was that of several spatial levels occasionally interrupted by the head of another viewer from the other side.

IDI news

The Ohio Valley Chapter of the **Industrial Designers Institute** has been formed, and will hold its charter meeting at Granville, Ohio on October 20 and 21. The chapter is being formed with twelve active members and two student members from West Virginia, Ohio and western Pennsylvania.

Meanwhile, the Southern California Chapter is growing, with forty-three student members recently announced.

The Institute will hold its National Meeting in Los Angeles on February 14 and 15.

Design turns with the times

Five prominent designers were judges of a competition in which all going LP-manufacturers were invited to participate. Freda Diamond, George Nelson, Walter Dorwin Teague, Will Burtin and Walter Margulies stepped into perhaps new frontiers of the design world to speak on *The Billboard's* first annual competition for LP-record covers. The winners: in the popular category, first place was won by Columbia Records' "Ambassador Satch" album by Roy Kuhlman and Al Zalon, second by Mercury Records' issue of "The Platters" by Jim McCormick; in the classical group, first award went to Classic Editions for their Shostakovitch "Ballet Suites" by Jack Mitchell, second was garnered by Capitol Records for the cover of Beethoven's "Eroica Symphony" by Marvin Schwartz.

Results of the contest are interesting when the designers' judgments are stacked up against those of the record dealers. At the annual convention of the National Association of Music Merchants, they were given the chance to "second-guess" the experts. Their first place in the popular covers was a Jackie Gleason album showing a sultry gal out in a mysterious garden being ogled by a cigarette-smoking gent; second was "Beachcomber Serenade," which features a lush South Seas native girl looking archly over her quite bare shoulder. The fact of a self-service market requiring immediate impact was of importance in deciding the winners. Who is right?

The Satch album cover is from a photo taken by an unknown photog during Louis Armstrong's recent visit to Italy. The cover is black and white except for the title, which is light purple. The Shostakovitch Ballets are a stark silhouette-type photo in black and white.

The winners in The Billboard *LP-contest, and, the judges: Will Burtin, Walter Dorwin Teague, Freda Diamond, Walter Margulies, and George Nelson, noted designers.*

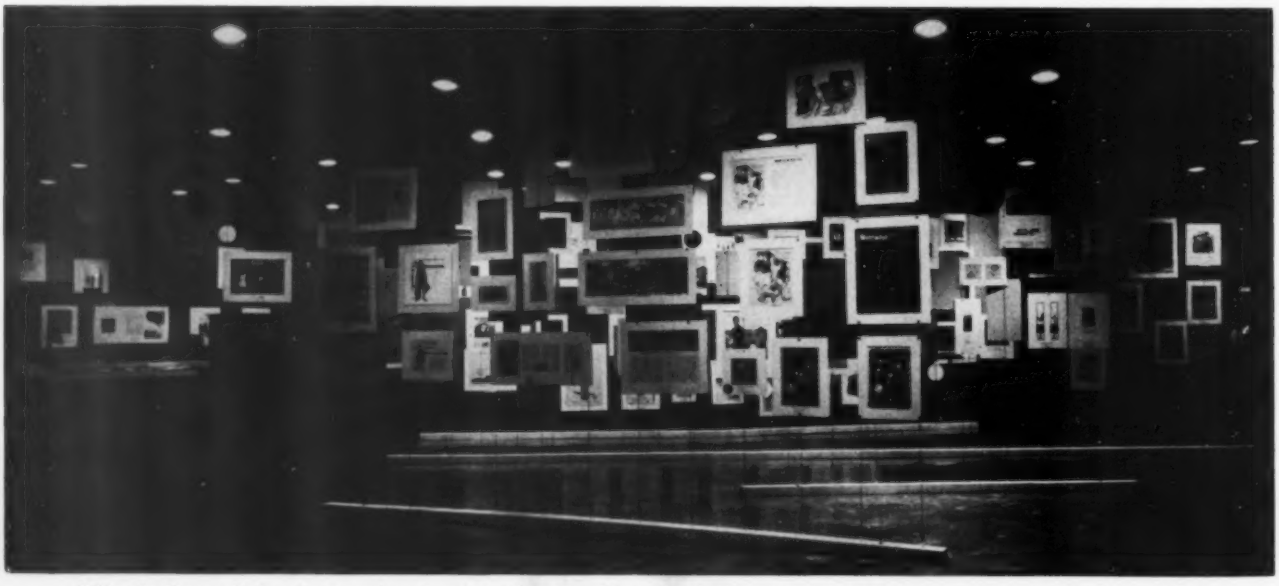


Photo: Marvin Rand

"Floating" panels in the Los Angeles Art Directors Show by designer Louis Danziger create a gigantic mobile.

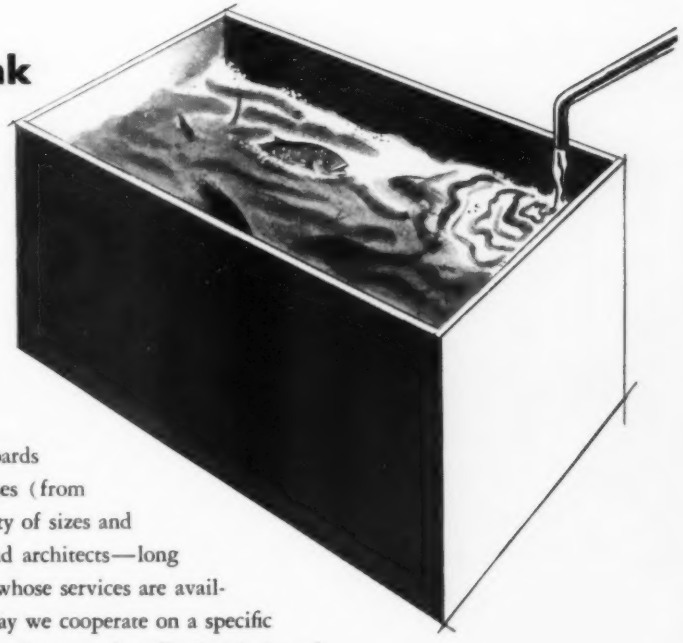
—unlikely uses for Homasote

A voodoo drum

—it could be as big as 8′ high and 14′ in circumference; it might rival the steel drums of Antigua. The point we seek to emphasize is that Homasote can be curved on an 18″ radius—solely by wetting; on a 4″ radius by steam and molds. When curved surfaces are in your design, try Homasote.

A fish tank

—not pretty perhaps, but might do in a fish market. The point is... Homasote has very low moisture absorption—only 4% by volume after aging, and only 17% by weight after 20 hours of total immersion.



Homasote Insulating-Building Boards are now available in five thicknesses (from $^{15}/_{32}$″ to 1$^{7}/_{8}$″) and in a wide variety of sizes and densities... We have engineers and architects—long experienced with our products—whose services are available to you without obligation. May we cooperate on a specific current problem? May we send you literature broadly descriptive of Homasote in all its present forms? We invite your inquiry to Department K-15.

HOMASOTE COMPANY
TRENTON 3, NEW JERSEY

Flying saucer lands on airplane, then dashes down the runway

Not really a flying saucer, but sculpturally similar, the Navy's new radome houses a distance-determining radar antenna. Built by Lockheed, the WV-2 Super Constellation on which it rests is an experimental plane to test advanced ideas in flying radar stations guarding against surprise attack. First tests are dashes down the runway, no flight.

A meter in every package

With almost a century of unsuccessful research preceding him, with dozens of commercial and consumer problems lying in his path, and with more than fifty working models tested in the course of his tinkering, inventor Stan Silver has finally done it. With a small paperboard insert, any carton can be turned into an accurate measuring device for the dry solids it contains. The types of material that can be successfully metered in quantities from a teaspoonful to several cupfuls are detergents, hot cereals, cocoa, coffee, sugar, dog meal, and many others.

The consumer enjoys the benefits of a completely non-spilling container, even if the package is dropped on the floor. And there should be no extra charge for this service: the increased cost is almost too small to pass on to the consumer, amounting to ¼¢ per meter.

The principle is basically the same simple volumetric one on which the hourglass is based. A one-way valve, nothing more elaborate than a hinged flap, allows loading and metering areas to be filled completely. These are precise amounts, which the emergence flap then discharges on a second tilt of the box (below).

Events

The twelfth annual meeting and design conference of **The American Society of Industrial Designers** at Lake Placid, September 27-30, had as its theme "New Horizons in Industrial Design." U. S. State Department officials of the International Cooperation Administration's Technical Assistance Program presented a program on design assignments in foreign countries. Henry Dreyfuss' office gave a complete case history, and Arthur N. Bec Var, Latham, Tyler, Jensen, and George Nelson discussed their unique working arrangements. At the meeting **Jay Doblin** was elected President for 1956-7, **William M. Goldsmith** Vice-President, **Kenneth Van Dyck** Secretary (his second term), and **Francis Braun** Treasurer. **Arthur N. Bec-Var**, retiring President, becomes Chairman of the Board. A full report will be carried in December INDUSTRIAL DESIGN.

The Southern New England Chapter of the **Industrial Designers Institute** held its third annual design symposium at Silvermine, October 6. Under the title "Design Explosives," Symposium Chairman John Vassos introduced speakers Dr. Elmer W. Engstrom, Senior Executive Vice President of RCA, Dr. William G. Scanlon, psychiatrist, James Ernst, noted artist, and Charles E. Whitney, publisher of INDUSTRIAL DESIGN.

The second annual color seminar at **New York University** will be conducted during Wednesday evenings of the fall term. Also scheduled are courses in graphics and package engineering.

The **National Automobile Show** is coming to the New York Coliseum from December 8 through 16. Big surprises are promised by several manufacturers.

The **National Home Fashions League** has four more symposia scheduled in its tenth annual educational series: Fabrics on October 2, Bedroom, Bath and Closet Accessories on the ninth, Table Appointments on the sixteenth, and Lamps and Accessories on the twenty-third. Those who plan to be abroad next season will be able to see the eleventh **Triennale** at Milan, July 27-November 4.

Industrial aid to design

American industry will soon offer increased financial aid and more technical instruction to schools of design, predicted James Birnie (below), director of styling and design for Reynolds Metals. Speaking before the International Design Congress in London last month, he ventured to say that this trend will begin within the next few years.

"The schools may be at fault in the apparent weakness in their product," he continued, "but I do not feel that they alone should be expected to remedy the situation. Can industry be so demanding without assuming some responsibility for the designer's training"

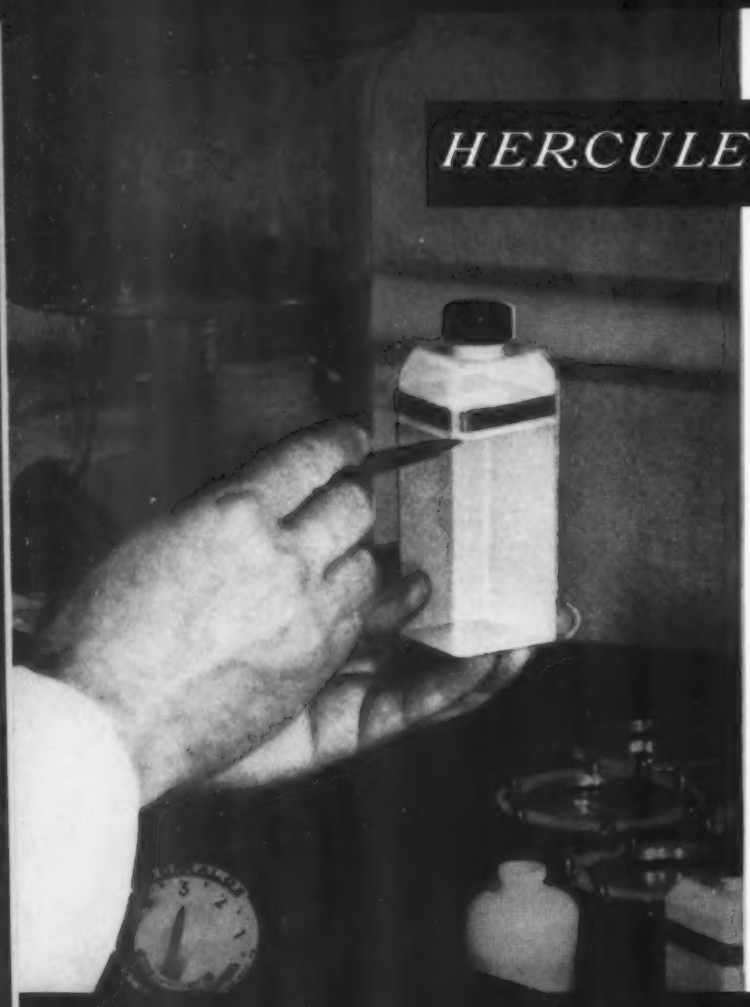
As if in confirmation of Birnie's remarks, an industrial design scholarship at IIT was awarded last month to John Seres by the Federal Tool Corporation, financed by Koppers Company.

Contests and awards

The jury for the **Package Designers Council Competition** in package effectiveness has been announced. Members are Egmont Arens, Lester Beall, Dr. L. V. Burton, Charles Coiner, Donald Deskey, Mrs. Dorothy Diamond, Robert Sidney Dickens, Karl Fink, Esther Foley, Will A. Foster, Frank Gianninoto, F. X. Golden, Howard Ketcham, Walter Landor, Roy Larsen, Harold McNulty, David Ogilvy, William Prout, Peter Schladermundt, Walter Dorwin Teague, Robert E. VanRosen, and Gerald Stahl. Deadline for entries is November 1.

The metal stamping industry's Presteel Award for 1956 was presented to **Stanley R. Cope**, president of the Acme School of Die Design Engineering, for training of some 2500 die design students and carrying on research leading to improved procedures.

The results of the **National Advertising Agency Network** competition have been announced. Three awards went to Hinde & Dauch, publisher of many useful booklets on packaging, and The Lancaster Lens Company garnered two awards, one for its advertising campaigns featuring "Design Flexibility in Glass."



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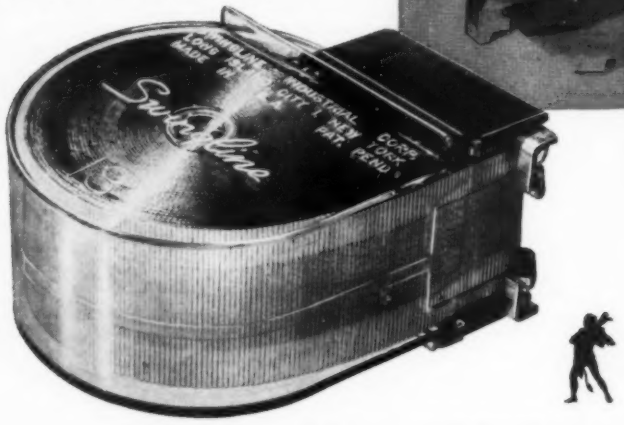
Vacuum-formed packages made with extrusion grade Hercocel combine durability and ease of production with all the recognized advantages of transparent containers. Hercocel offers excellent transparency in a full range of colors, good formability for intricate shaping jobs, plus, of course, the famed toughness and strength of acetate.

Extruder: Midwest Plastics Products, Chicago, Ill. Vacuum-formed and manufactured by J. B. Carroll Co., Chicago, Ill., for Atlantic Fish and Oyster Co.

TRANSPARENT TOUGHNESS IN MOLDED PACKAGES

The cartridge housing for the new Swingline industrial stapler has to be tough and sturdy to withstand hard day-after-day use. Hercocel gives it the rugged strength it needs. For transparent toughness in molded packaging, specify Hercocel.

Molded with Hercocel for Swingline, Inc., Long Island City, New York, by Laurel Plastics Corporation, Wannemassa, New Jersey.



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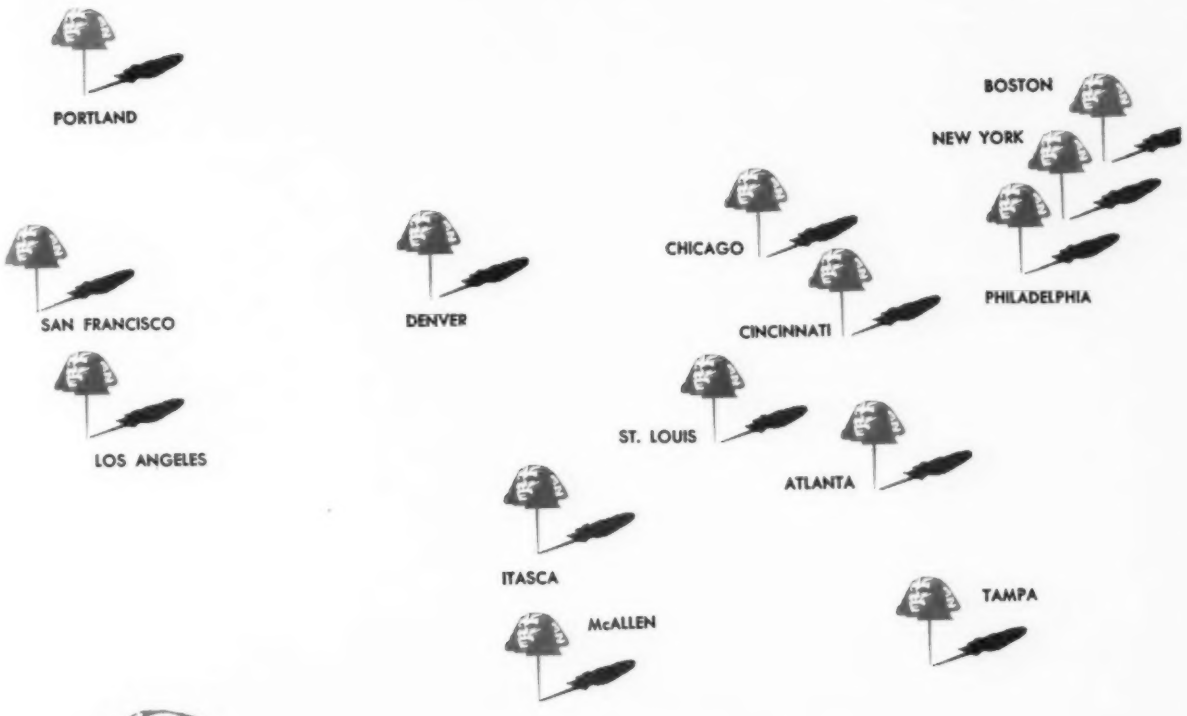

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Whether you have one plant or many, this wealth of experience and these broad service facilities hold value for you. If the plant or warehouse nearest you is ever threatened by either economic or climatic conditions, there will be no interruption in our service to you. Your adhesives will be supplied—to the same exacting specifications—from the next nearest plant or warehouse.

Somewhere in your business—in the making, packaging, labeling or shipping of your product—you use adhesives. We operate in the belief that for each specific application, there is one adhesives formula that can serve you best.

The cost of good adhesives is low. It is always the smallest part of your total packaging cost, for example. You can well afford adhesives made to your own 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 Department 61 will bring a prompt response.

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Company news

American Machine & Foundry recently dedicated its Turbo Division's new advanced research and development center at Pacoima, California. It is one of the most modern facilities in the United States for the development of accessory power supplies for guided missiles. The company also announced recently that its Canadian subsidiary, **AMF Atomics**, has been awarded the first long-term contract given to private industry in Canada to fabricate fuel elements for its atomic energy commission.

Bendix Aviation's Eclipse-Pioneer division has received a $2,500,000 order for automatic flight control systems to be used in the Boeing 707 jet transports.

A $40,000,000 Astronautics project is under way at **General Dynamics**, and a contract for the construction of the new Convair-Astronautics facility which makes the Atlas Intercontinental Ballistics Missile has been awarded to the McNeil Construction Company.

A **General Electric** vice president said recently that in ten years a major share of the electronics business will come from products not now in production. Dr. W. R. G. Baker, who is also President of the Radio-Television Manufacturers Association, said that the growth potential of the electronics industry is unlimited. As a case in point, General Electric announced on the same day that it had been awarded a U. S. Navy contract of approximately a million dollars for pilot production of a new airborne early warning search radar system.

General Motors production of cars and trucks was down about 25% in August as compared with the previous August, and yet total dollar sales in the first six months of 1956 were higher than in any previous first half year except 1955. Explanation: "Domestic automobile demand did not take the expected seasonal turn upward during the spring months." But for next year, Vice-President of Styling Harley J. Earle announces, "two-tone color combinations will reveal striking new maturity, softness and beauty," while VP of Engineering Charles A. Chayne told a Congressional investigating committee that "all the skill and resources of GM's engineers and stylists have been marshalled in a continuing campaign for automotive safety."

International Business Machines and **Sperry Rand Corporation** entered into an agreement to exchange licenses to manufacture punched card accounting machines and electronic data processing machines.

Two new plants by **Koppers** going up: one for U. S. Steel at Clairton, Pennsylvania to purify light oil and produce superrefined benzene, toluene and xylene; and one in Naples, Italy, a blast furnace for the production of iron.

A new $4,000,000 aeronautical plant will be erected by **Minneapolis-Honeywell** near St. Petersburg, Florida, to produce inertial guidance systems.

Harold E. Churchill, President of **Studebaker-Packard**: "I believe we have seen the last of the chaotic conditions which prevailed in the automobile market for the past two years. . . The industry simply made an all-out test and found out that in this country we do not yet have an eight-million car market. We will see a much more orderly market as a result, and the smaller companies and their dealers who were hit hardest in the crash production and sales programs of 1954-56 will be the biggest gainers." But by 1959 there may be eight-million-car years, and perhaps ten-million-car years in the early sixties, he added.

Westinghouse Air Brake has elected a new President, A. King McCord, to leave E. O. Boshell free to function entirely in the capacity of Chairman of the Board. An interesting example of diversification from the ground up, for the reason given for the change is the enlarged responsibilities consequent upon the company's diversification program.

Westinghouse Electric houseware sales are up 34 per cent so far this year, despite the fact that production was tied up by a strike until March 21. The company attributes the increase largely to stepped-up merchandising activities and partially to its abandonment of fair trade. It is also proceeding with its testing of refrigerator cabinets that can be hung on the wall or put under the counter, give from 5-25 cubic foot capacity, and deliver cold water, ice cubes or crushed ice.

Ethics codified

"The Package Designers Code of Ethics and Principles of Professional Practice" has been adopted by the **Package Designers Council**. It states the responsibilities of the designer to industry and to the consumer and sets forth standards of practice within the profession.

This comes at the same time as a "Code of Ethical Trade Practices" was adopted by the Point-of-Purchase Advertising Institute, which includes producers, advertisers and advertising agencies. Coming from both parties at once, these codes should help put packaging and related advertising on a sound and uniform standard.

People

Victor Guido Canzani was promoted to the rank of Assistant Professor of Industrial Design at Pratt Institute, Brooklyn.

Samuel S. Leotta and **James H. Parcher** have merged their offices in Hatboro, Pennsylvania, and **Robert Margolies** is now associated with them as project designer.

Adam Riggs has joined Harold Van Doren Associates in Philadelphia.

Joe Bulinkis is now on the design staff of the Burroughs Corporation Research Center at Paoli, Pennsylvania.

Clayton Miller recently joined the Commercial Electronic Products design group of RCA at Camden, New Jersey.

William S. Sherman is a lecturer on product design at the Illinois Institute of Technology, Chicago.

Melvin Best Associates announce the opening of new offices in Los Angeles and the appointment of **Robert Fujioka** and **Robert E. Bond** as partners. (Mr. Best, left.)

Irving Titel of Sigman & Associates is now a Vice President and their Creative Director.

Dravo Corporation, Pittsburgh, has appointed **Edgar M. Pierce** to supervise the design, engineering and installation of Dravo Incinerators.

James J. Nelson (left) has joined the design staff of J. M. Little & Associates.

Arthur Drexler has been appointed Director of the Department of Architecture and Design of the Museum of Modern Art in New York.

Smith, Scherr & McDermott has acquired the services of **Donald L. Craddock** as Assistant Package Design Director. Mr. Craddock has been associated with Reynolds Metals Company, and more recently with Specialty Papers Company.

Don DeFano, formerly Director of Design at Jon W. Hauser Associates, and **Tom Steinbach**, formerly of Illinois Institute of Technology, have formed a new firm, DeFano-Steinbach Designs, in Chicago.

Clinical aid to executives

The American Management Association is expanding its program of executive training, adding eighteen skill clinics to its roster. The clinics will teach role-playing dynamics, getting positive action, problem solving, speaking and writing skills, and creative thinking. The original course deals with decision making, communication, motivation and morale.

New Hi-Fidelity Process Makes Possible Unprecedented Realism for Creative Coverings

Dimensional restrictions so long associated with the embossing of vinyl fabrics have now been overcome by General's exclusive new Hi-fidelity process. Now unusual effects ranging from smooth satin-like textures to deep 3-dimensional designs and patterns can be captured with unbelievable realism in vinyl fabrics.

This new process offers designers a new low-cost finishing material that is both decorative and functional. It can be produced in any colors, either supported or unsupported—*in any effect you desire!* It can also be prefabricated to combine several designs, textures and patterns in one piece.

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The General Tire & Rubber Company

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does this make you think of

rising metal prices?

It should! Because higher material and processing costs may push the price of your product out of the range this lady is willing to pay. This is true, regardless of whether you make bathroom scales, ranges, refrigerators, housewares, utensils, or scores of other products for use in the home.

Now is the time to re-orient your thinking from metals to plastics. And Molded Products is the source to consider. Because **MPc** offers the most modern facilities for plastics production by all methods...injection, compression, transfer and reinforced plastics—fiberglass.

For example...

The scale housing might be molded in fiberglass reinforced polyester...unbreakable, lightweight, with beautiful, non-chipping molded-through color. The lens could be injection molded of clear polystyrene. Cams, levers and structural members can be compression molded of rugged phenolics with molded-in threads or metal inserts that eliminate costly machining and assembly.

In planning your change-over to plastics, the experience and know-how of **MPc** engineers are yours to use. Product designers, engineers and purchasing agents are invited to submit specifications, blue prints or plastic problems for study or quotations...or to request consultations either at Molded Products or at your plant.

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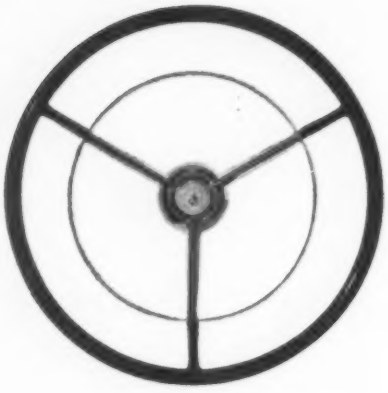

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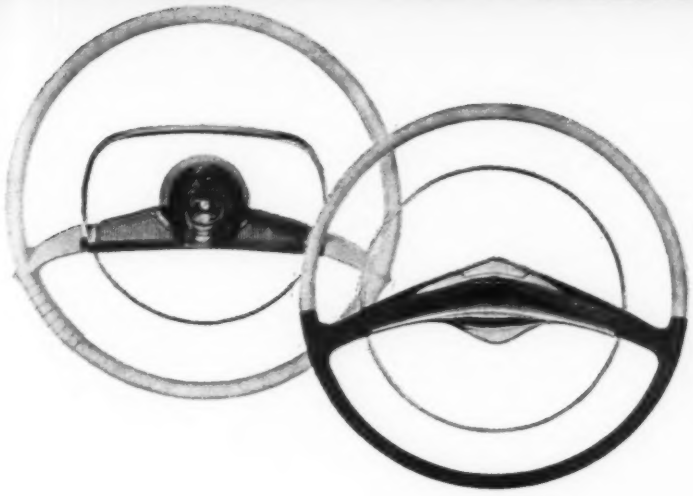

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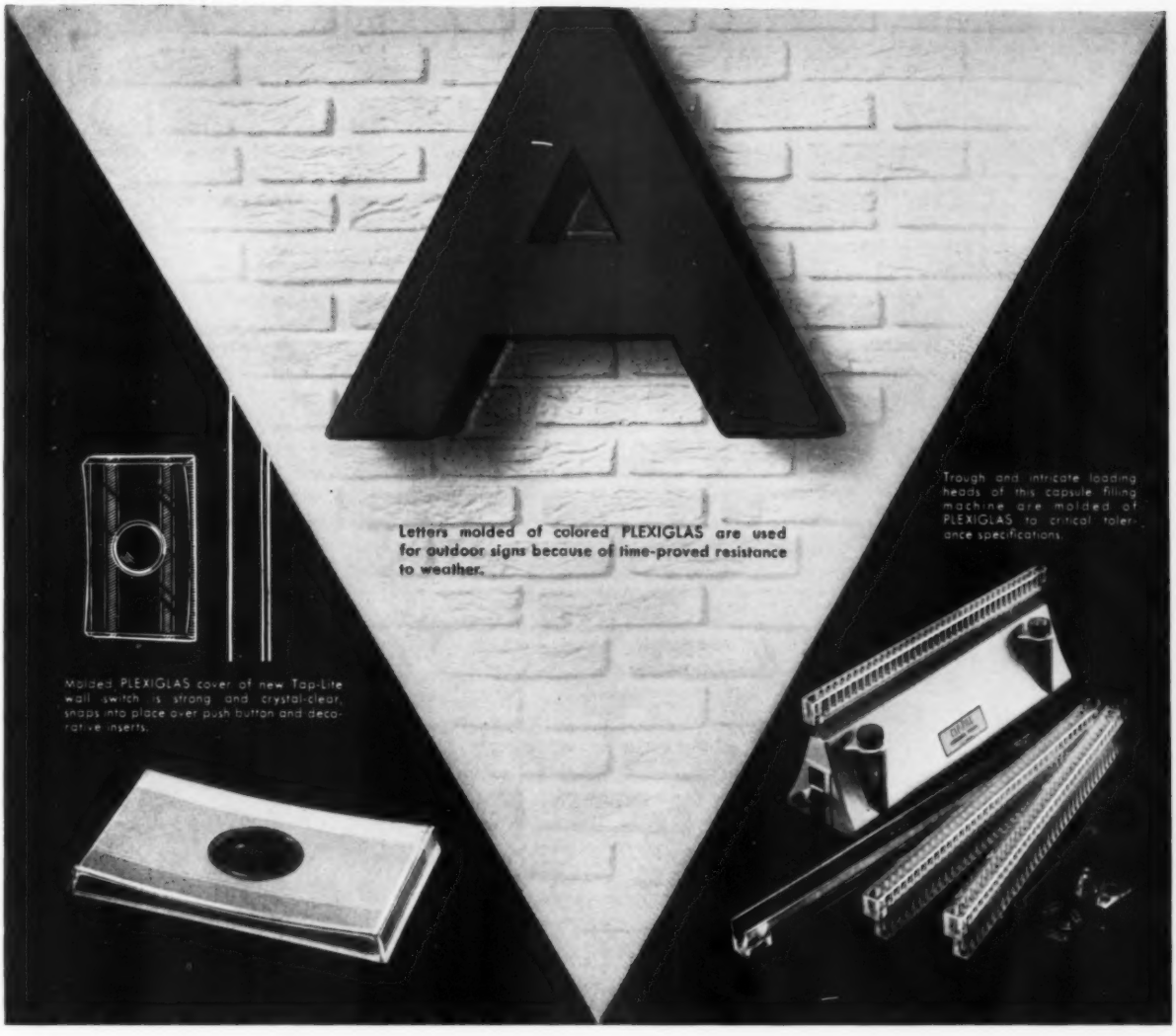

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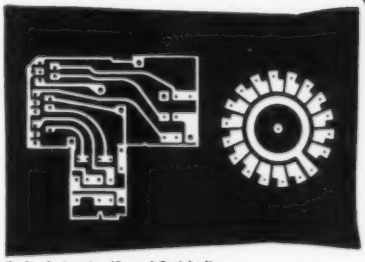

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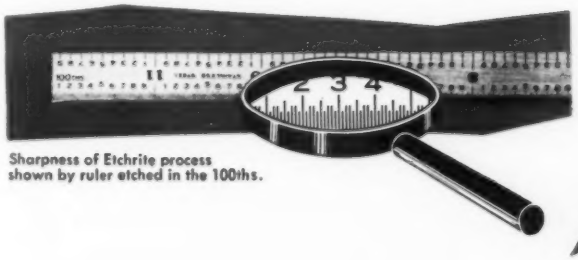

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DESIGNING WITH ALUMINUM

NO. 21

This is one of a series of information sheets which discuss the properties of aluminum and its alloys with relation to design. Extra or missing copies of the series supplied on request. Address: Advertising Dept., Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, California.

DESIGNING FOR ALUMINUM PLASTER MOLD CASTING

The process of casting molten metal in shapes closely approximating final desired form is one of the oldest methods of reducing production costs. In recent years, the ancient art of sand casting has been supplemented by new molding procedures, each with its special characteristics and qualifications. One of these is "plaster mold" casting.

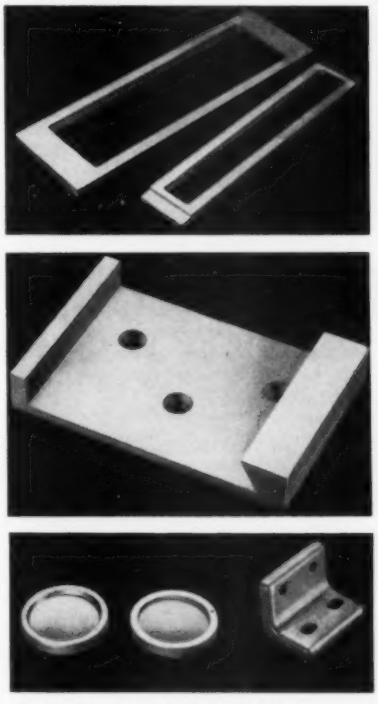
By this method, parts may be cast with the complexity, dimensional accuracy and surface fineness of die castings, but without the extensive tooling required for die casting.

Here are the most noteworthy advantages of plaster mold casting:

1. Fine details, with surface finishes in the range of 50 to 60 rms may be cast, with dimensional accuracy at .005" for the first inch, plus .001" for each additional inch.
2. Sections as thin as $\frac{1}{32}$" may be cast, as may holes for tapping, mating surfaces, etc.
3. Good foundry control is possible with resultant uniform properties among castings and within a casting.
4. Permeability of the plaster minimizes defects from gas entrapment.
5. Over-all cost savings result from reduction or elimination of finish machining and foundry sand control. Much of the process is easy to mechanize.
6. Set-up time is moderate for high-volume production of uniform parts with low rejection rates and very low scrap loss.

Housing for hydraulic control equipment is a plaster mold casting in aluminum. Note accurately formed bearing seat in the plaster mold casting (right) as compared with the sand cast piece it replaces. Also, wall sections are thinner, more uniform and more dense.

Many remarkable records in improved service and cost have been set by plaster mold castings. In one example of converting a two-piece sand cast photographic accessory to a single-piece plaster mold product, unit cost was cut by more than 90% through simplified design and reduced machining.



This group of aluminum plaster mold castings is used in spectographic instruments. Ability to obtain close tolerance on flatness and good metallurgical structure are reasons for using these castings.

In another instance, which involved the bed plate of a precise measuring instrument requiring guideways of almost optical flatness, plaster mold casting was attempted because of the inordinate rejection rate from warpage in machining sand castings. With the plaster cast plate, machining was reduced to a light surface cut. This gave accuracy in flatness and parallel of .001" across 18", and cut rejection from all sources to less than 5%.

Comparable achievements have been recorded by many different parts and accessories producers:

- The aircraft and automotive industries consume great quantities of plaster cast cylinder heads, control components, hydraulic system parts, bearing retainers and other fittings.
- Standard tools and hardware items for railroad applications commonly are plaster mold cast, with great uniformity and low cost.
- The electric industries make use of springs, couplings, connectors, levers, sparkless tools, appliance parts, gears, sprockets, clutches, valve members and similar accessories produced by plaster mold casting.
- Ornaments, locks, radar components, model train parts, plumbing supplies and surgical instruments are further examples of plaster molding versatility.

The process of preparing plaster casting molds is essentially the same as for sand casting. A master pattern, or model of the aluminum part, is made with whatever accuracy the finished casting must reflect. For high-volume production several master patterns may be used.

As in sand casting, the appropriately gated and vented pattern may be made in several pieces, as required for extraction from the flask, and may include various cores and inserts. The mold, however, is made in a specially designed casting plaster rather than in sand.

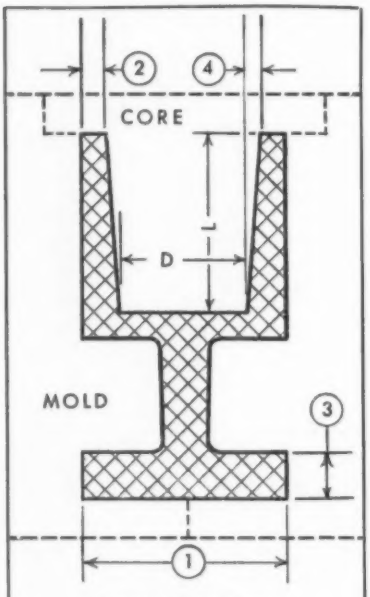
Also as in sand casting, the plaster mold is used only once, being broken during removal of its casting. In some applications, very satisfactory large castings of aluminum are obtained by composite molds of sand and plaster, using the plaster for those portions requiring high accuracy and smooth finish.

In preparing plaster molds, the mixture of water and special plaster is whipped in a power mixer so as to entrain tiny interconnected air bubbles in the slurry. This condition affords the high permeability by which gas entrapment is avoided. Surface fineness of aluminum castings is improved in proportion to the thoroughness of air-mixing. During this process, the volume of plaster slurry may increase by 50% to 100%.

When the poured plaster has taken its initial set, the pattern components are removed. After hardening, the mold is baked at 250° to 300° F. to insure thorough drying. Gas from residual moisture may cause undue casting porosity and other defects.

Pouring of metal usually is by the gravity method. Care in avoiding spattering and turbulence results in superior castings. Another quality assurance is the low cooling rate in the plaster enclosure, which permits relief of internal stresses.

The solidified casting is taken from its mold by a simple shake-out technique similar to that for sand castings.



Available Tolerances

1. Across parting line, plus or minus .005" for first inch or fraction. Add .001" for each additional inch.
2. Between any two points generated by the mold and a core, same tolerances as in case 1.
3. Between points in same part of mold, .003" for first inch or fraction. Add .001" for each additional inch.
4. Draft of 2° is typical. Zero draft often is possible.
5. Maximum L/D=5. That is, maximum diameter of core supported at one end should not exceed 5 times the core length.

A simple, plaster-molded aluminum section is illustrated above, with notes on typical coring and expectable accuracy. These statistics represent the standard findings of several major plaster mold casting producers. Even greater accuracy may be attained by adjusting of pattern equipment after observation of prototype castings.

The plaster also may be removed cleanly and inexpensively by high-pressure water jets.

In some aspects, a much greater degree of design latitude is possible with plaster-molded parts than with sand castings. For example, draft angles may be smaller because of the denser and more homogeneous mold material. The typical range of draft allowance is 0° to 2°, with an average of about ½°. These mold qualities also allow use of sharper edges and smaller fillet radii than are possible with sand castings.

The comparatively low cooling rate prevents concentrations of stress at these abrupt changes in contour.

It has been found that under conditions of high-volume production, the efficiency of plaster molding is most conspicuous in aluminum castings of small or medium size, in the range of perhaps ¼ pound to 15 pounds.

Strength limitations of the plaster molds affect the accuracy and the rejection rate of larger pieces, except those of simple form and minimum coring. Smaller parts, on the other hand, may entail an uneconomic level of unit-handling.

Physical properties offered by plaster molded aluminum castings are shown in Table 1, where several of the excellent casting alloys available from Kaiser Aluminum are tabulated. A notable feature of the plaster molding process is that these metal qualities are highly uniform throughout the casting.

Many metal products now manufactured by more expensive, less satisfactory processes are ideal for production in aluminum by the plaster mold casting method. The investment in equipment usually is moderate, and the required materials are available in quantity. The wide design experience of Kaiser Aluminum engineers is available, upon request and without obligation, to any manufacturer interested in this progressive fabrication process.

For immediate attention to your request for this advisory service, or for more detailed information, contact the Kaiser Aluminum sales office or distributor listed in your telephone directory. Kaiser Aluminum & Chemical Sales, Inc., *General Sales Office*, Palmolive Bldg., Chicago 11, Illinois; *Executive Office*, Kaiser Bldg., Oakland 12, California.

TABLE 1

TYPICAL PROPERTIES OF ALUMINUM PLASTER MOLD CASTING ALLOYS

Alloy No.	*Tensile Strength psi	*Yield Strength psi	Feeding Ability	Pressure Tightness	Machinability	Weldability	Corrosion Resistance	Elongation % in 2"
195	40,000	30,000	G	G	E	F	G	2.0
355	38,000	36,000	E	E	E	VG	VG	0.5
356	34,000	30,000	E	E	E	VG	E	2.0

Ratings: E, excellent; VG, very good; G, good; F, fair.

* In heat treated condition

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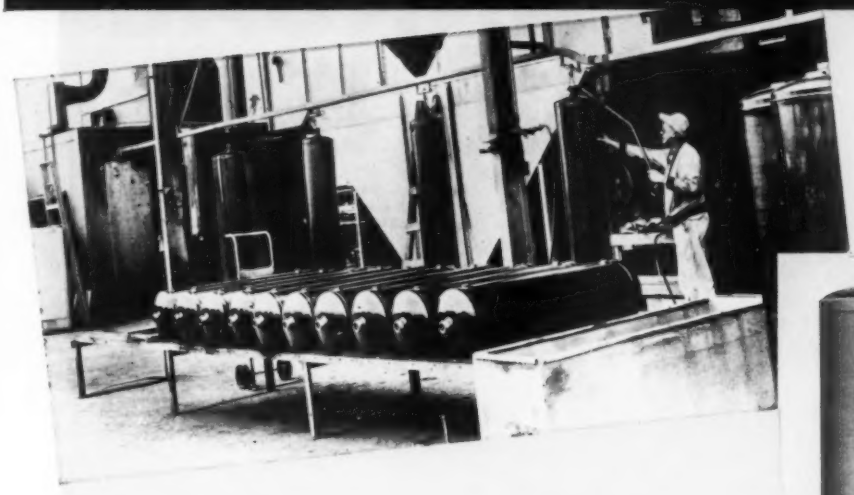

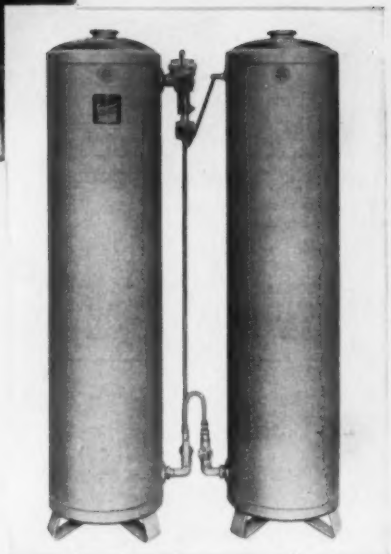

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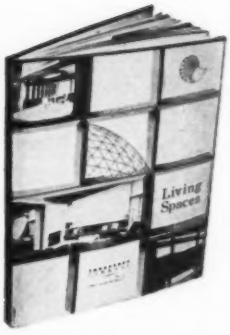

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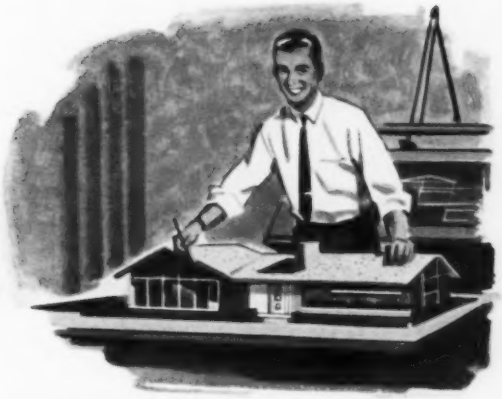

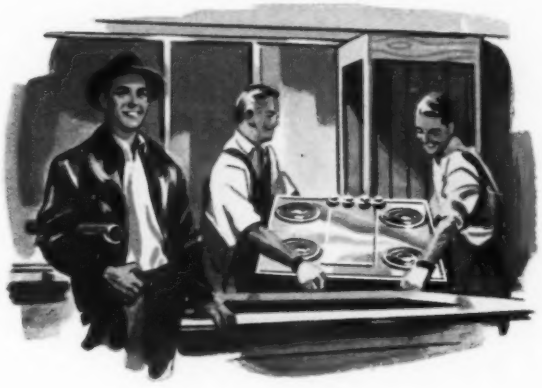

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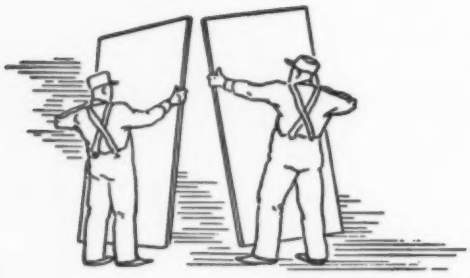

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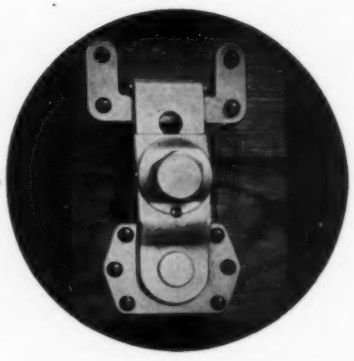

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Simmons QUICK-LOCK SPRING-LOCK ROTO-LOCK LINK-LOCK DUAL-LOCK

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Aluminum is Texture

Aluminum can be the smoothest of mirrors, or a floor so coarse that no one will slip on it. It can brightly reflect 90% of a surgeon's light or smother a sunbeam on a sniper's rifle. Between the extremes of finishes that are infinite with aluminum, lies a world of textures for exciting design. Aluminum may be tumbled, burnished, sandblasted, scratch-brushed, hammered, buffed, etched, electro-brightened, embossed, coined, stamped, or textured by many other different ways. Alcoa's Process Development Laboratories have seldom seen a texture that aluminum will not take. It is equally true that most of the basic textures for aluminum have been pioneered or developed by Alcoa. Add texture to the list of reasons why aluminum is the designer's metal, and Alcoa your source of idea exchange.

Look forward with ALCOA

HERE'S A SOLID FOUNDATION FOR IMAGINATIVE DESIGN IN ALUMINUM

In Alcoa's library are many publications prepared with but one objective: to help designers and fabricators learn the basic facts about aluminum. How to design with it. How to work it. How to join and fasten it. How to capitalize on its unique advantages to get better, longer lasting, lower cost products.

Among the newest are these . . .

Finishes for Alcoa® Aluminum—a colorful, penetrating handbook prepared by the men who know the most about aluminum finishes. It includes all of the latest and most exciting finishes and tells how to achieve them.

A New Horizon in Extruded Shape Design—a thorough text designed to stimulate imaginative thinking about designing and applying extruded aluminum shapes.

Metal in Motion . . . Alcoa Impacts—the very latest facts on this fascinating way to produce complex shapes in aluminum with a single press stroke.

In addition to these newest Alcoa publications, the Alcoa library has hundreds of others, plus dozens of motion pictures. Most of these are described in a 41-page index called *Alcoa Informational Aids*. All of these films and publications are available from Alcoa for your use.

Order this index and these newest publications right now. Send your name, address and company affiliation to ALUMINUM COMPANY OF AMERICA, 2182 Alcoa Building, Pittsburgh 19, Pennsylvania.

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Styron can be made opaque or crystal clear—or in a wide range of gem-like colors. Thousands of market-proved applications attest to its versatility in faithful reproduction of design.

** *Quoted from Jens Risom, I.D.I., Jens Risom Design, Inc., New York, N. Y., statement in Industrial Design magazine.*

". . . the selection . . . of the material to be used is one of the most important decisions he (the industrial designer) makes when planning the design." **

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All Dow plastics are backed by extensive technical service, research and development facilities. Whatever your plastics problem, we will gladly share with you to the fullest our experience and skills. THE DOW CHEMICAL COMPANY, Midland, Michigan.

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Forticel Cabinet molded for Zenith by Plastic Molded Products Company, Chicago

These are the balanced properties that are giving Forticel its reputation as a "designer's plastic."

TYPICAL PHYSICAL PROPERTIES OF FORTICEL

Flow temperature:		
(°C.) (A.S.T.M.)	D369-48	167—178
Specific gravity	D176-42T	1.18—1.21
Tensile properties:		
Yield (p.s.i.)	D638-52T	3380—5020
Break (p.s.i.)	D638-52T	3470—5240
Elongation (%)	D638-52T	56—66
Flexural properties:		
Flexural strength (p.s.i. at break)	D790-49T	6400—8500
Flexural modulus (10^5 p.s.i.)	D790-49T	0.23—0.30
Rockwell hardness:		
(R scale)	D785-51	62—94
Izod impact:		
(ft. lb./in. notch)	D256-43T	2.7—11.0
Heat distortion:		
(°C.)	D648-45T	59—70
Water absorption:		
% sol. lost	D570-42	0.00—0.08
% moisture gain	D570-42	1.5—1.8
% water absorption	D570-42	1.6—1.8

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new Celanese propionate thermoplastic for its all-transistor portable

The heart of the new Zenith 800 is a remarkable 100% transistor circuit that delivers full room power, tone-true reception.

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Alcoa's Up-to-Dater on Screw Machine Products

Four factual pages of news on aluminum screw machine products plus refresher information on alloys, finishes and design tips—all compiled for the eager young men of today, who will run things tomorrow.

Eager young men of today . . .

Fundamentals on the Economics of Aluminum

The great strides made by aluminum screw machine products in recent years have been due to many things . . . many of them based on aluminum's performance, many of them on economic factors. FOR EXAMPLE . . .

It gives the designer a way to save weight. When finished products have to be made lighter in overall weight, designers can save important pounds by using aluminum . . . weighing only a third as much as steel or brass. It provides a means of heavying-up certain components without adding to total weight. Weight saved at one point with aluminum can be shifted to other points where weight is needed.

It helps designers lick inertia problems without sacrificing strength or performance. Spectacular examples of this are found in calculators, business machines, ordnance, projectors, servomechanisms.

It gives designers a way to improve performance while lowering costs. You get three times as many parts per pound of aluminum screw machine stock as you do from brass or steel. And aluminum costs less per pound than brass. Per piece, or by the pound, you can save a bundle.

It gives designers a tool for speeding production while lowering costs. Aluminum is remarkable for its superb machinability. A free-machining metal, it is machined as well or better than the leaded brasses. A large percentage of the time, aluminum is machined as fast as the machine will run.

It frees the designer from corrosion restrictions. With aluminum, designers no longer need to worry about rusting. The initially fine appearance does not deteriorate. They can eliminate many costly features designed to protect critical machined parts from weather or corrosive operating conditions (plating, protective housings and painting). Check the way aluminum screw machine products have taken over the outboard motor and photographic fields!

It gives the designer maximum latitude in finishing specifications. The very nature of screw machine operations gives most metals a good surface finish. But, unlike some other metals, aluminum retains the surface finishes generated by machining. No special precautions are needed to preserve them. And that's just the beginning. You can give aluminum any surface finish you want . . . from a finish so perfect it's used for reflectors, to one rough enough to diffuse light. You can apply a jewel-hard anodic coating that makes the highest surface finish impervious to attack. You can incorporate any color in this anodic coating . . . to get a colored finish that's part of the metal itself.

It provides maximum design freedom. Because aluminum is so workable, so easy to machine . . . finish . . . color, it puts fewer restrictions on the

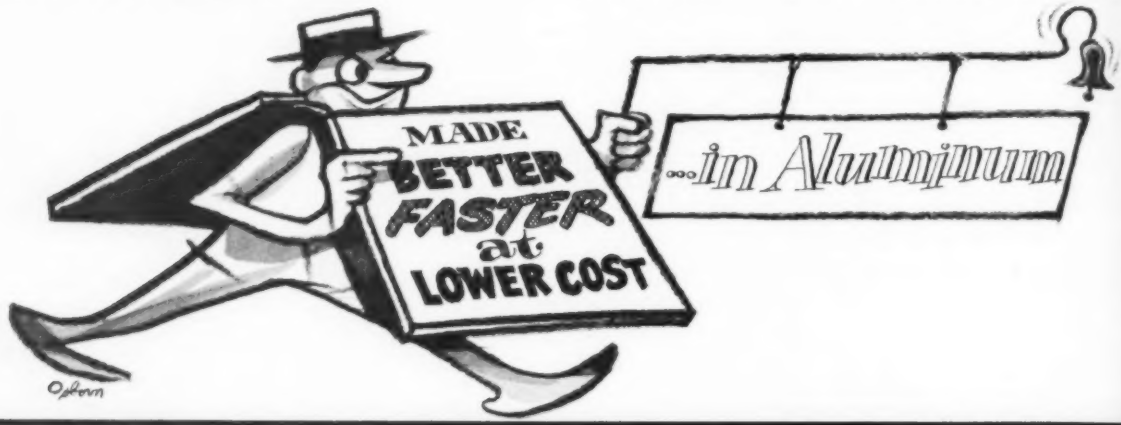
Alcoa's Up-to-Dater on Screw Machine Products (continued)

designer. His designs become less vulnerable to shortages in critical materials. His specifications put a lighter burden on tight schedules. His choice of aluminum makes sense when material costs are considered. His faith in aluminum is justified by its performance in the finished product.

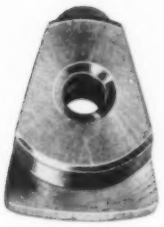
In case you haven't guessed . . .

All these parts shown at the lower left were made by Alcoa at a marvelous new screw machine plant at Lancaster, Pa. They represent the kind of work which is commonplace at Alcoa.

Our Lancaster plant is probably the biggest



Made in brass, the 2-inch ferrule for modern furniture weighed .3 pound and cost 27 cents. Redesigned as an aluminum screw machine part and anodized with a brass color, it weighed only .1 pound and cost only 20 cents.



This is a special nut for a pressure cooker. It would have cost a great deal of money if the triangular shape had been obtained by machining. To avoid this expense, it started as a triangular aluminum extrusion and was turned to two diameters, followed by drilling, tapping, reaming, counterboring and cutoff.

This hydraulic fitting needed aluminum's light weight and the great strength obtained by forging. It was centered, drilled, faced, counterbored, tapped, reamed and recessed in three turret lathe operations. Close tolerances and fine internal finishes were vital.

This machined and knurled pin is an insert for a molded plastic assembly used in electronic equipment. Aluminum was a natural for this pin, since its coefficient of expansion is similar to that of plastic. Aluminum's excellent electrical conductivity was also a factor.

This hearing-aid cap, with a shell thinner than paper, is notable for its close tolerances and delicate anodic coloring. Screw machine operations included drilling, counterboring, facing, forming and cutoff. These were followed by deburring, buffing and anodizing. It has no tool marks, and walls are confined to a thickness of 0.005 to 0.008 at a critical location.

aluminum screw machine plant in existence . . . equipped and staffed to handle any job from machining to light assembly . . . in quantities from a few hundred to millions.

We have hand screw machines for the short-run jobs and a turret lathe department for bigger ones. There are single-spindle machines to make short work of secondary turning, forming and drilling operations.

For the really big production runs, we have an array of multiple-spindle equipment for high-speed operations on stock ranging up to a diameter of 3½ inches.

There's a fully equipped press department with capacities up to 75 tons. We can heat treat, machine, bore, counterbore, tap, grind, buff, burnish, color. We can provide light assembly.

And our finishing department is the last word in completeness . . . with everything needed for polishing to a high luster to adding a rock-hard anodic coating in a variety of colors.

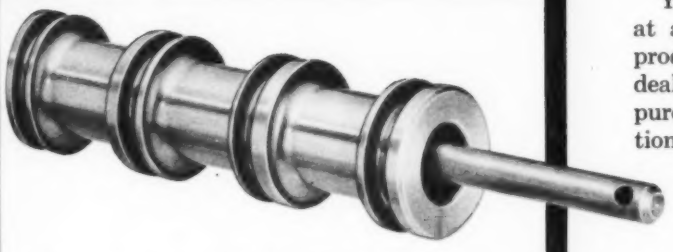
To achieve those neat little production economies that rate so high with our customers, we have the right equipment all under one roof for high-speed upsetting operations and threading . . . a roomful of cold-headers . . . a whole battery of thread rollers.

This plant offers designers, and those who produce or buy to their designs, something unique in the aluminum screw machine business . . . a single responsibility for everything needed for the job.

The Importance of Single Responsibility

Every operation required to produce aluminum screw machine parts is centralized under a single authority at Alcoa . . . from making the alloy to the most complex finishing operations. Moreover, Alcoa's tremendous knowledge of aluminum and aluminum fabrication makes possible every short cut, every way to trim costs, every trick in the book for improving performance.

You, as a designer, can call upon this knowledge at any stage from specifying alloys to detailing production methods. While much of the value of dealing with Alcoa is more apparent from the purchasing viewpoint, your designs and specifications have a direct bearing on both purchasing and actual fabrication. From that standpoint, Alcoa's Lancaster plant becomes the designer's right arm.



This spindle valve looks like a costly piece of machining. And it would have been if some smart tricks with aluminum hadn't been employed. The designer broke the part down into two easily machined sections anchored by a small machined pin. The parts were given an anodic coating and then assembled.

This shape could have been duplicated in most any metal. Its characteristics could not. Designed as a radiator for an electronic component, it was extruded from an Alcoa® Alloy, then cut, deburred. Inner diameter was reamed to .0009. Final operation was to provide a black Alumilite® finish to eliminate reflections and to improve heat emissivity.

This end plug for aluminum tubing used in furniture was produced completely by upsetting or cold-heading a small diameter aluminum bar. The original plan called for it to be machined from a much larger bar. By cold-heading much material and machine time were saved.

Full responsibility under one roof

Alcoa's Up-to-Dater on Screw Machine Products (continued)

Tips on Designing for Screw Machines

This section might be called "Cost Increasers and How To Avoid Them."

One of the worst cost increasers is unnecessarily close tolerance. At Alcoa, 0.005 to 0.003 is commonplace. We can hold .001, or even less, but only at higher cost. To keep your costs down, design with as broad tolerance as possible. Where dimensions are critical to performance, then go for close accuracy. If a diameter is critical for only a portion of its length, indicate this on your drawings. Same applies to eccentricity. Locations of cross holes, milled sections, slots and similar work should be given as broad tolerance as performance of the part permits. Ditto for angular relations.

Where possible, design so the largest diameter is equal to, or near, a standard stock size (see design handbooks). If such diameters can be left unmachined, indicate it. Where outside dimensions are machined only for sake of appearance, use a standard rod size with a liberal minus allowance, including cutting away the oxide coating.

Use standard threads in American National Coarse, Fine or Extra Fine. Special threads only increase costs. Class 2 free-fit threads are most economical.

Avoid threading close to shoulders or tapping close to bottoms. In drilling, try to specify a standard drill size and allow normal point angle at bottom of hole. Flat bottom holes cost money as do those that extend deeper than six diameters. Where deep holes are required, try increasing diameter for part of depth and extend with a smaller diameter.

Deburring is costly and should be specified only where needed. Often burrs can be removed satisfactorily during finishing. Sharp corners add to cost. Those formed by intersection of turned surfaces usually can be chamfered at no cost. Chamfering at intersection of turned and unturned surfaces requires a separate operation.

Just remember that Alcoa will gladly go over your designs and point out cost-cutting modifications that often improve the product as well.

The Alloy Story

There are four main alloys important in screw machine work. Each has a specific purpose. Alloy 2011-T3, because of its lead and bismuth content, is the most machinable and should be used wherever possible. Alloys 2017-T4 and 2024-T4 are recommended where higher mechanical properties are desired; they are only a little less machinable. Alloy 6061-T6, while less machinable, is more corrosion-resistant, joins better and takes a superior finish. There are several other screw machine alloys, each for a specific need, and we suggest your Alcoa engineer is the place to find out which is the right one for your product.

Straight Talk

Alcoa has been making aluminum and teaching industry to use it for nearly 70 years. For most of that time, Alcoa has been the sole source of authoritative guidance on basic questions. We try constantly to improve on what we already know. We're eager to share our knowledge with designers and others.

In a sense, our Lancaster facilities are a proving ground for newer ideas in screw machine operations. But they are also a king-sized job shop with tremendous capacity available to all industry.

We like to bid on jobs of all sizes and all degrees of complexity. We especially like those where we can show the superiority of aluminum to other metals. So . . .

Next time you have a job calling for screw machine parts (regardless of the metal called for in your specifications) why not ask your P. A. to get a bid from Alcoa. We'd like to try for the business. We know you'd like our service. ALUMINUM COMPANY OF AMERICA, 1994-J Alcoa Building, Pittsburgh 19, Pennsylvania.

Your Guide to the Best in Aluminum Value

ALCOA ALUMINUM
SCREW MACHINE PRODUCTS
ALUMINUM COMPANY OF AMERICA

TO THE YOUNG DESIGNER

YOUR DESIGN COULD BE RUINED! or enhanced by the manufacturing procedures used in producing them. Those experienced in the Design Profession are well aware of this. Aware that new *manufacturing techniques* are frequently required to produce startling designs. Aware that a thorough understanding of *creative production* can be a *stimulating* source for new ideas and new product designs. You are building your reputation new. Each new design forms another brick in that structure. Your solutions to design problems must be stable.

For over 53 years leading designers, product stylists and planning executives have chosen CRONAME, *"the design facility of Mid-America,"* as an outstanding source of assistance for decorative parts. The resources of CRONAME are indeed remarkable. When it comes to developing a new product finish, the application of a new material, or a new product manufacturing technique, you will find CRONAME the most renowned source from raw material to finished part.

CRONAME pioneered etching of aluminum many years ago, installed the first Chromium plating, the first anodizing, the first precision screening, the first large scale stainless steel fabricating, originated CroRoto embossed pattern metal, patented 3-D glass decoration and is a pioneer in the printed circuitry field, and many more firsts.

To acquaint yourself with *"the design facility of Mid-America"* is an *obligation* to your clients. Illustrated literature and technical information are available on request. We will be happy to show you our facilities the next time you are in CHICAGO. You owe it to yourself!

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Automatic equipment

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Most complete in industry

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CROROTO EMBOSSED METAL
Wide variety of stock patterns marproof, beauty, economy

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TO YOUR SPECIFICATIONS

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Instruction and data plates, serial numbered plates, product emblems and markers, adhesive backed plates

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METAL SPECIALTIES

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For electronic, automotive radio, TV, stove, refrigerator, heater, air conditioner, appliances, instruments, furniture, business machines

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Patented 3-D, ceramic, cold colors, tempered imp osion plates, frosting, sandblasting, edgelighting, sag bending

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At Croname you will learn for the first time what a personal comfort it is to have a reliable source of supply offering so many services under one roof.

Our service is designed to assist you produce a more attractive product economically.

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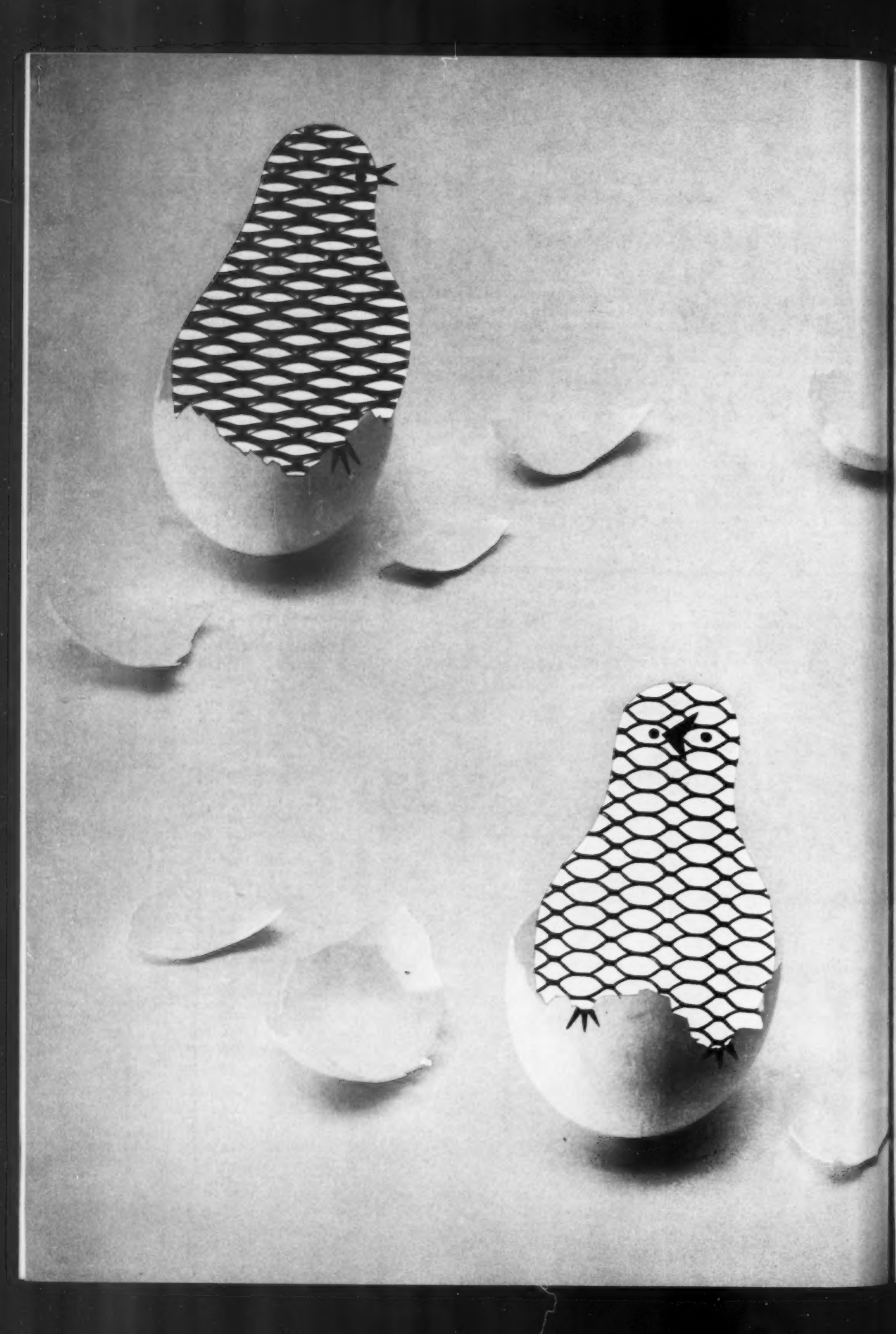
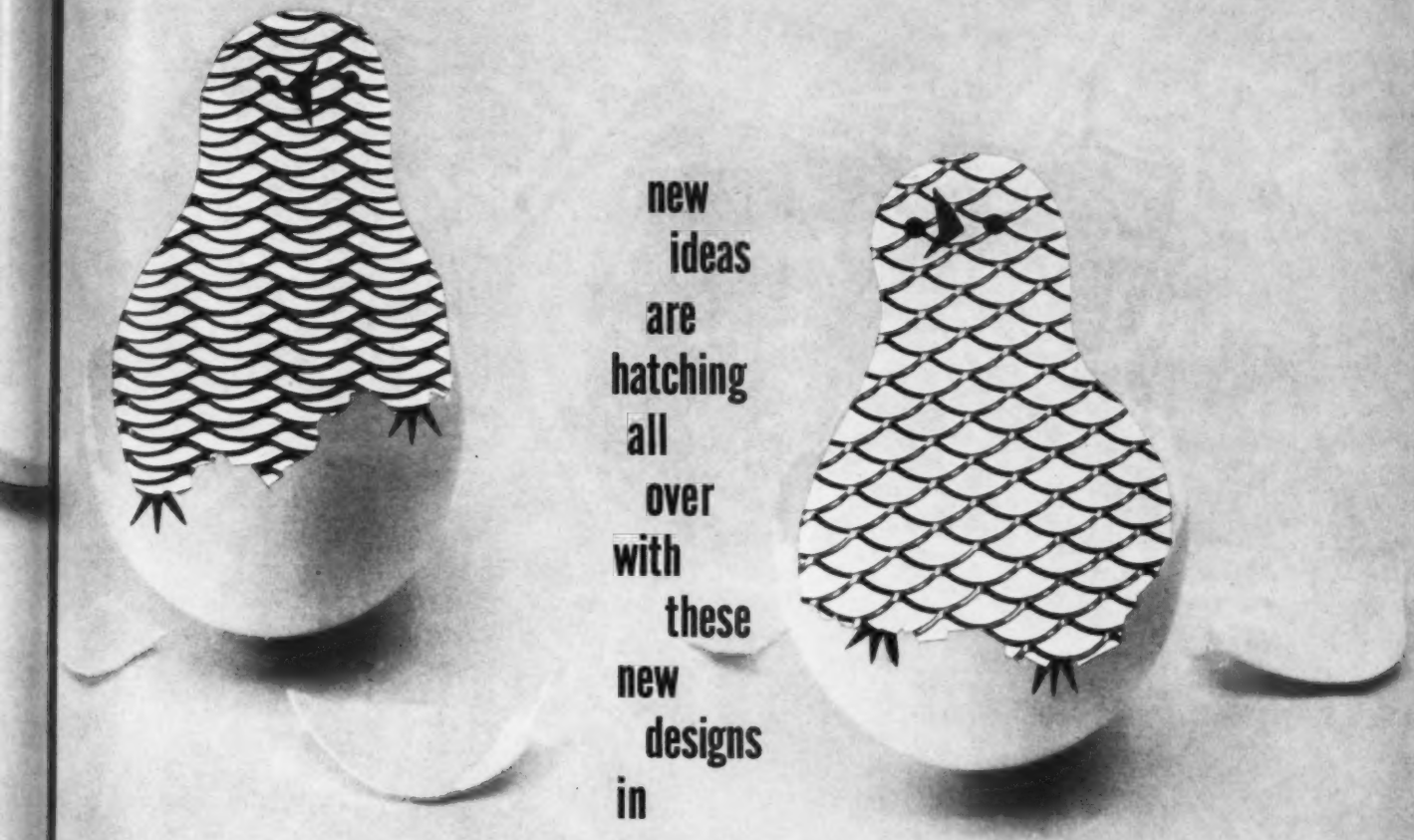
Other departments serving you:

Research, chemical laboratories, quality control, inspection, production art, executive production staff, photographic studios, tool & die, litho plate department, screen making department, engineering staff, methods & finishes department and . . . . . two large shipping departments.

Today, Croname's facilities occupy over five acres in two buildings. Skilled craftsmen working on conveyorized production lines with mass production techniques make us a major source of supply for both small and large orders.





new ideas are hatching all over with these new designs in

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Break through your design barriers with these four inspiring open mesh designs in U.S.G. Expanded Metals. New RONDO, FESTOON, WAVELENGTH and ARMORWEAVE join long-popular EXPAND-X* to provide new freedom in the design, manufacture and sale of products for better living. These versatile new meshes promise quick acceptance of products that utilize their beauty and charm. Cold-drawn from solid sheets of metal—aluminum or carbon steel—these expanded metals are strong and rigid, yet lightweight and easy to fabricate. Whatever your product, these new designs in U.S.G. Expanded Metals will help to make it *lighter, stronger, more salable.*

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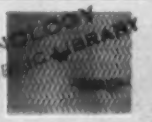

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AE
long ago lost count of the designer-specified extrusions it has manufactured. If you are still looking for a connection between the extrusion process and your product problems, we have a brochure that tells all.
ALUMINUM EXTRUSIONS, INC.
CHARLOTTE, MICHIGAN

Look, Ma, no product!

If you happen to be a trend hound, or if you merely press an occasional finger to the pulse of the times, we donate a few items in this issue to the body of your research. Though they are buried in the substratum of the larger Chicago story, they seem to deserve excavation in their own right. Items:

> *A firm of designers contends herein that a major aspect of its service to industry is in pre-design decisions—about the kind of product to make, about ways to employ productive facilities. They talk about* planning.
>
> *A design firm described herein refuses design assignments from a major client, pending time to make a complete study of the firm's product lines. They talk about* merchandising analysis.
>
> *Numerous companies in this issue use designers, yet make no consumer "product" that is itself subject to design. They talk in terms of* corporate image.

The theme is echoed far beyond the Windy City:

> *The manager of a large New York design office speaks of his firm's objectives: to examine the gross company problem from many vantage points, to be a functionary at the inception of an idea, a product, a service, or a method. He talks about* marketing.
>
> *Five leading industrial designers return from tours that took them under U.S. government sponsorship to many underdeveloped areas of the world to investigate programs for productive self-help. They talk about* economic development.

Planning. Marketing. Merchandising. Economics. Is it possible that the industrial design profession is becoming concerned with everything *except* the product?

In terms of percentage of activity, perhaps it is. But in terms of total activity, it is a positive and inevitable spreading out. In this day and age physiologists are interested in electronics; mathematicians deal with communications; economists are concerned with psychology, and art critics write books about industrial progress. In looking beyond the product—the most fleeting aspect of any company's activity—designers and design sponsors are simply responding to the dynamics of our time. Fields of interest overlap, problems inter-relate, knowledge becomes a question of totality, and the product, like everything else, can no longer be viewed alone.—*j. f. m.*

A special report: design in the Chicago Midwest

The "Chicago Midwest" is an area of our own mapping — an arc that swings west from the lakeside city, reaching up to Milwaukee, down to the tip of Lake Michigan, and out into mid-Illinois. Here some 6 million people live and work, amid 14,000 manufacturing plants that put over $18,000,000,000 worth of goods on the American market last year. It is the center of a much larger sphere of influence that encircles some six states several hundred miles beyond Chicago.

The fact that the Chicago Midwest is a cohesive area of importance to designers and businessmen everywhere was dramatized last winter by an unusual exhibition at Illinois Institute of Technology. The Second Chicago Area Exhibition of Industrial Design, sponsored by the midwest chapters of A.S.I.D. and I.D.I., gathered some 200 nationally distributed products for business and public to see and study. Over three-quarters of them came from production lines within 150 miles of Chicago; 100% were designed by men or organizations within the same orbit.

These figures should not be startling. Chicago is the world's center of diversified manufacture, leading production in some 6 national industries. It tops Pittsburgh in steel output, New York in printing, Detroit in heavy transportation equipment. Yet the Chicago area would not warrant special attention in ID unless it also emerged as a major design center, fostering trends of nationwide importance.

The Chicago Area exhibit suggested something more solid than a local design flurry, something more dynamic than a purely regional style. As we studied the show and the area that produced it, we began to see what gives Chicago design its distinct character: it is a uniqueness of approach to the hard questions of design for mass production, a special view of the usefulness of design to business. One might even call this a new definition of design for industry.

What are the reasons for Chicago's unique approach: is it the size of this production center? Its diversity? The nature of its industries? Or is it perhaps a design tradition? How should this approach be defined, and what does it mean to industry throughout the U.S.A.? The answers to these questions, as we rounded them up, seemed to warrant the special report that is unfolded on the next 70 pages. The question that prompted this study can be answered at the outset: the "Chicago Midwest" *is* a workable and newsworthy definition — an area where things are happening that may influence industry everywhere.


Milwaukee
Racine
Janesville
Beloit
Kenosha
Waukegan
North Chicago
Elgin
St. Charles
Geneva
Aurora
CHICAGO
Gary
Joliet

C. Reynolds

View north from Prudential Building shows typical melange of Chicago activity: industry crops up at the elbow of the business district, the Chicago River meanders through the city as a shipping artery to the lake that is available both for business and pleasure.

This is Chicago — a bustling center edged with gold . . .

Hedrich-Blessing

Gold Coast, flanking the city with a residue of tradition, shows Chicago's capacity for grandeur. Lake Side Drive with beaches for all offers a watery view north and south toward 115 suburbs where 25% of working force lives.

gutted by the lines of commerce that make it an economic hub . . .

Jerry Lamenford

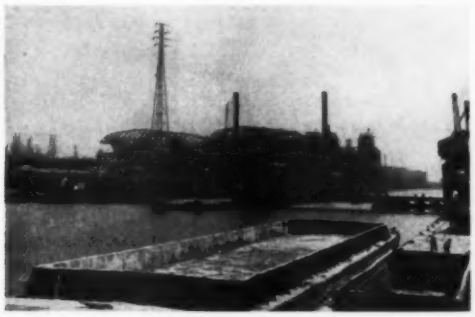
Like an oversize roundhouse, Chicago dispatches 545 intercity and 1,225 commuter trains, 35,000 freight cars daily. Central location makes it hub of national transportation.

Lamensdorf

Creature of the past twenty years, local $90,000,000 trucking industry hauls 85% of livestock in and out of slaughter yards, speeds merchandise nationwide in competition with railroads.

Out of Chicago, convoys of trucks and trains carry products . . .

George Strimbu



Iron and iron ore constitute 1/3 of the tonnage of our greatest inland port, and $1.5 billion yearly steel output makes Chicago today's Number One steel producer. Ore comes down from Minnesota fields, is processed and fabricated at U. S. Steel's Gary and South works, Inland's Indiana plant.

Into Chicago water routes carry ores to the furnaces of Calumet . . .

David Windsor

Focal point of nation's merchandising, Merchandise Mart is world's largest showroom and wholesale center, the scene of 500,000 buying visits a year. Built by Marshall Field & Co., now owned by Joseph Kennedy, it covers two city blocks (only the Pentagon is broader); its eighteen floors house 1,100 tenants, enormous shipping facilities.

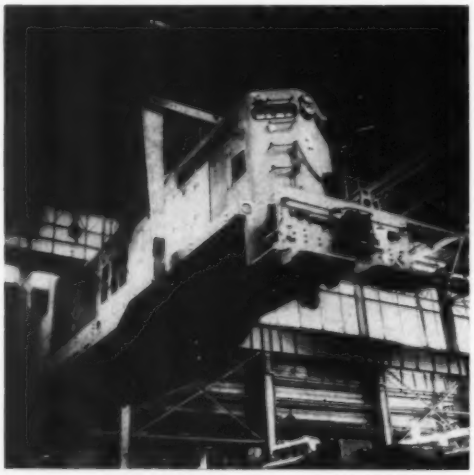
and buyers flow in seasonal streams to the nation's marketplace.

T. Rago

World's largest mail-order houses first chose Chicago for its proximity to rural markets, today do more urban retail business than mail orders. Montgomery Ward headquarters (housed in these three large buildings) and Sears, Roebuck supply 661 national outlets, and support thousands of local suppliers.

Two thousand printing plants account for large share of nation's textbooks, trade magazines, mass-circulation items. W. F. Hall is largest printer of paperbacks, R. H. Donnelley prints most of Sears' fifty million annual catalogs, nearly four million telephone books a year. Life, Look, Ebony are among city's weekly output.

Chicago produces—millions of phone books, magazines, catalogs . . .



Chicago is Number One producer of heavy equipment for transportation, farming and construction. 230 firms will produce $1.3 billion worth this year. Car from Electromotive Division of General Motors swings out; others in field are General American Transportation, Standard Railway Equipment, Diamond T Motor Car, Borg-Warner, International Harvester and John Deere.

equipment for farms and the railroads that are its lifeline . . .

TV tubes on Motorola line are components in city's $1.5 billion radio-electronics industry. Among eighty local companies are Western Electric, Zenith, Admiral, Hallicrafters, Stewart-Warner, Warwick Radio.

components for the industries that electrify America's homes . . .

With annual volume of $400,000,000, Chicago is center of both major appliances and small electrical housewares production. Hotpoint assembly line (left), Sunbeam and Thor count firsts in industry from their Chicago plants; other leading names are Norge, McGraw Electric, Toastmaster, Chicago Electric, Dormeyer, Fairbanks Morse, Cory, Whirlpool-Seeger and Deepfreeze.

Windsor

Nation's largest packaging firms are located on the spot for immediate handling of Chicago products. Among them: American Can, Continental Can, Container Corporation, General Package and fifty others, making paper, metal and plastic containers.

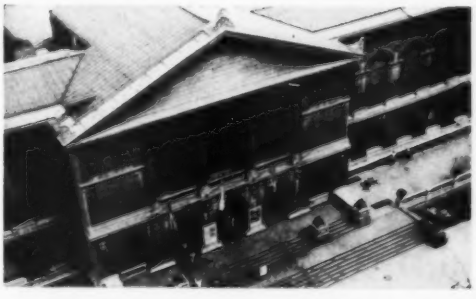
Chicago packages—the sturdy and perishable, in plastics and paper . . .

John Starkowski

Stockyard Inn is social center for the meat-packing industry that symbolizes Chicago. Two-thirds of the nation's meat stands to the west, two thirds of consumers to the east — Chicago channels the flow, though now only second largest packing center.

meat for millions, and countless by-products of Stockyard research . . .

Windsor



Art Institute is heart of city's cultural life. Once supported by industrial elite, it now has wide public support and interest, $150,000,000 collection, and schools of fine, applied and dramatic arts, including courses in industrial design.

Chicago patronizes art and scholarship in a rooted cultural tradition.

Walter McQuade

New $45,000,000 campus of Illinois Institute of Technology, incorporating Armour Institute and the Institute of Design, is shining buckle on the Black Belt of the South Side, set there by director of architecture department Mies van der Rohe. S. S. Crown Hall is new home of School of Architecture and Institute of Design. University of Chicago and University of Illinois are among other leading educational institutions of the area.

Windsor

Lakefront luxury of Esplanade Apartments by Mies van der Rohe shows that not all high-style living has moved to the suburbs. Success of twin glass towers at 880 Lake Shore Drive spurred builder Herbert S. Greenwald to sponsor construction of 3 new pairs. With Mies's Seagram building soon to be erected on nearby Michigan Avenue, the city that once sponsored Louis Sullivan, and considers itself the architectural birth place of Frank Lloyd Wright, is showing the mark of another world-famous architect.

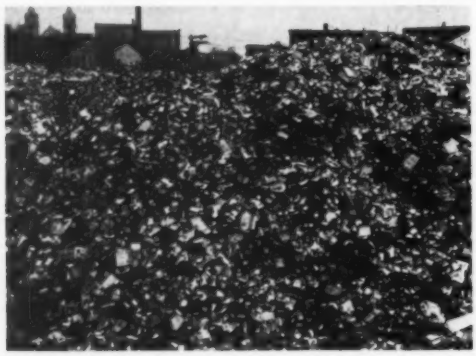
Chicago builds anew—luxurious glass towers for its lakeshore elite . . .

Hedrich-Blessing

Prudential Building, a 41-story structure, is first major office building for Chicago in a quarter-century, and city moves ahead with a vast underground parking program, widened streets like West Jackson to act as cross-town highways.

business towers that express new optimism about her future . . .

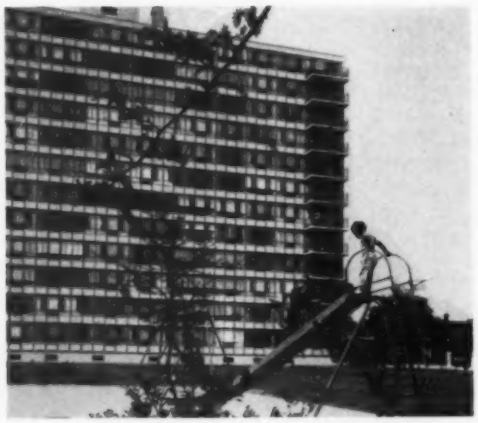
R. Nickel



Chicago still fights against "chaos of rubbish and confusion" that has been a symbol of its largest problem for a century — slums. Such recent measures as . . .

towers for the people, to rout the city's malignant slums.

Jerry Gridman



. . . Lake Meadows housing development by Skidmore, Owings and Merrill, which displaces a hundred slum acres and houses 2000 families, proposed Hyde Park-Kenwood and Fort Dearborn projects are private developments coordinated by Land Clearance Commission of Chicago Plan Commission.

Opposite: New office designed and occupied by Robert Sidney Dickens.

Design office–overtime

There are over 200 designers listed in the Chicago Redbook alone; in the greater Chicago area, some 50 studios engage in product design, nearly as many in packaging and graphics, some 40 in interiors and display — undoubtedly the largest design group in any U. S. metropolitan area. There are, in addition, many designers working on the staffs of industry. It is the relationship of these two elements — the working designer and the manufacturer — that keynotes design in the Chicago Midwest. On the following pages we shall crystallize the pattern of their relationship by examining . . .

Dramatis personae

What's happening in Chicago industry is a story that begins with builders, merchants, teachers, innovators. The members of the cast are introduced, their influences spotlighted, herewith.

Mr. Philip Danforth Armour, the great porkpacker of the '80's, made a habit of heading for the stockyards at 6 a.m., and felt he had shirked unless he worked around the clock. Gustavus Swift asserted his competitive spirit by riding off to the Yards at 5 a.m., but Armour was more irritated by the habits of Marshall Field, the drygoods tycoon, who walked from his Prairie Avenue mansion. He always reached his store promptly at 9:00, and just as punctually rolled down his desktop at 4:00. Field was not taking it easy; he was merely proving that rigorous principle in life, as in commerce, made it possible to do more with less. It would be hard to know who worked harder—but it is certain that Work is what they worshipped. They had come from New England, like many of Chicago's founding fathers, to seek their fortune. With Yankee principle driving them on, they lost little time doing anything but making it—rarely indulging in it.

Anyone who has breathed the atmosphere of Chicago can sense this; Chicago became strong on hard work and productivity, and still thrives on it today. An unexpected part of this activity is design—the application of design to the goals of industry at a scale unmatched in any other U. S. city. It may seem strange that a city that has gloried in its murders and riots, bragged about its scandals and large-scale corruption and earthy motives, should find itself embracing anything as seemingly idealistic as design. But this is Chicago's paradox, and its accomplishment: its brand of design is rarely idealistic; it has been made to pay its way. As one designer recently said, "Design is different in Chicago, because the designer is closer to the source of energy, the factory." Design *is* different because it is much more a part of Chicago's method of operation. Industrial design is *important* to Chicago industry because, among other reasons, industrial Chicago is important to begin with.

Defining "Chicago"

Because Chicago (meaning "powerful" in the language of the Illini Indians and "skunk" in the dialect of the Chippewa) happens to be the American city that accumulated the second largest population, a good deal has been made of its rank as Second City. The comparisons seem unfortunate and unnecessary. Chicago is an American big city with its own faults and virtures, in some ways typical and in a few respects extraordinary enough to talk about.

Take Chicago, a definition of "city." It is not, like New York or San Francisco, an urbane confection of stores and a soft center of financial lairs and international exchange. But a city it is—a manufacturing metropolis where factories and offices, warehouses and emporiums are democratically mixed; where the tracks and waterways of commerce cut scars across the face of broad boulevards and parks; where you cannot walk more than a few blocks without being reminded, by the tentacles of industry, that Chicago is a city where work is God.

Take the layout of the city. Just as New York's towering skyline states the perplexity of a large population on a small island, Chicago's rambling grid suggests the disorder that befalls a city without the discipline of high land values. This very diffuseness spreads to other parts of Chicago life: planning, politics, art, business, even society.

Take the industries that clog Chicago. Cut from the same basic fabric, they mostly produce goods and equipment that are basic to life, but seldom stir fashion. Yet they are as diverse as the city itself, with half a dozen leading industries sharing the industrial scene.

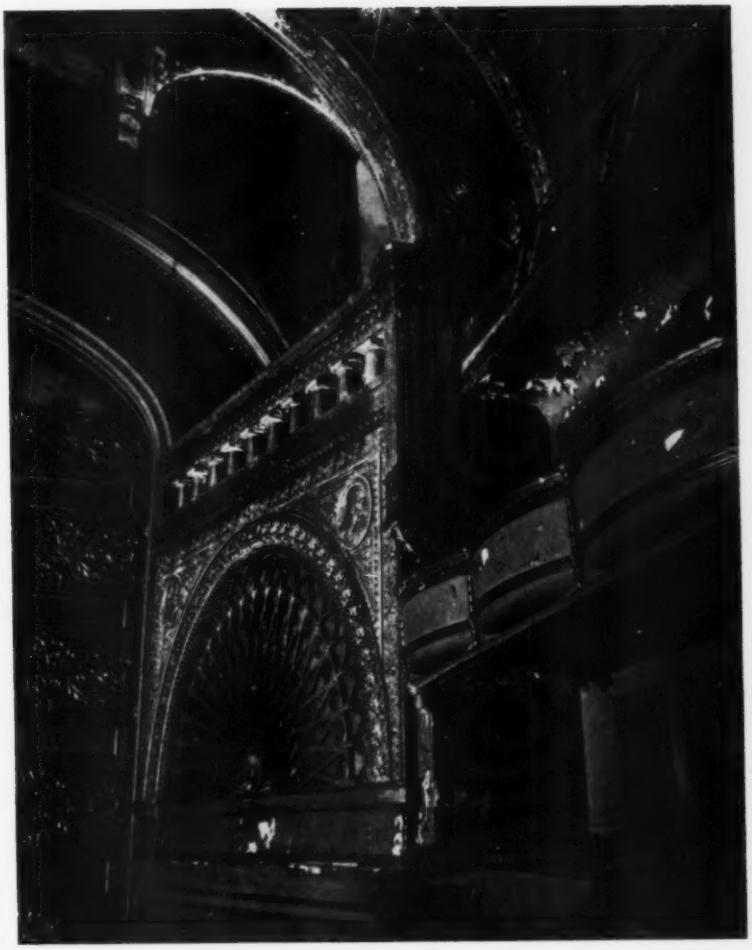
Take its culture. It is accepted that art galleries don't thrive in the windy city, yet thousands of dollars are spent every year by Chicagoans on New York's 57th Street. The same is reputedly true of stocks and women's fashions—Michigan Avenue outposts are scorned for the privilege of buying the same goods on Wall Street or Fifth Avenue. This diminished self-confidence is, in fact, a tradition in cultural Chicago—and one that is changing today. For otherwise, Chicago does everything it chooses to do with a bold stroke that conveys no other inhibitions: when it is splendid, as it is on upper Michigan and Lake Shore Drive, it is unmatchably extravagant; when it is depressed, it is as interminable and deadening as only the south side slums can be. The distances are greater, the climate more violent, and champions more ardent, the detractors more vocal in Chicago. The city is not only a paradox but a drama of extremes: brutal and friendly, big

(Text continued on page 71)

Sullivan's Chicago, Today: *photographs by John Szarkowski preview a major exhibition opening at the Art Institute of Chicago on October 25, celebrating the 100th anniversary of the master of the Chicago school of architecture. Directed by Edgar Kaufmann Jr., the exhibition of "Louis Sullivan and the Architecture of Free Enterprise" will emphasize Sullivan's buildings for commerce. The photographs on the next 6 pages of the life-facts of Sullivan's Chicago art—worked in, maimed, ignored and perhaps loved—are part of a complete document of his work in Szarkowski's "The Idea of Louis Sullivan", just published by the University of Minnesota Press ($10). Opposite: Sullivan's Schiller (now Garrick) Theater on Randolph Street.*


ALWAYS
OPEN
THE
HAM n' EGGER
NO PARKING
7 AM - 6 PM
7 AM - 3 PM
30
FOLLIES

On South Michigan facing the lake, Adler and Sullivan's Chicago Auditorium, with its glittering hall, elegant staircase and renowned acoustics, once witnessed the greatest days of Chicago Opera and society. Built in 1886, it was the firm's first architectural triumph. A complex structure, containing hotel and office building as well as theatre, its tower sank gradually under the weight of two extra floors. Music departed. Continually repatched, the building was finally left to decay. It is used today by Roosevelt College.




ONE
WAY

On Madison and State Streets, "Busiest Corner in the World," those who look up may be struck by the contemporary appearance of the venerable Carson Pirie Scott. Remodelled by Sullivan, 1903-04, the top floors and long "Chicago windows" show the uncompromising articulation of uprights and horizontals to reflect inner structure, an approach which came into general use only decades later.

The Stock Exchange, now 30 North LaSalle Street Building, presents a bold, straightforward face. Another excellent example of Sullivan's steel-frame skyscraper of the '90's, its entrance arch and cornice use ornament as an integral part of the surface.

and intimate, cultural and boorish, Chicago is a city and a home town, both loved and hated as only a powerful, important, vigorous center of gravity can be.

There is a story behind Chicago design. Seemingly unrelated things—business and commerce, art and culture—meet in the Chicago design story in a new pattern, showing that the successful development of an industrial center may depend on its culture as much as its machines. The story involves a period when Chicago led the world in architecture, and lost its dominance; when Chicago was host to an important European cultural outpost, yet was more visibly influenced by the tradition of a local mail-order house. Did these movements fade because Chicago was hostile to new ideas? There is evidence to the contrary. The city has been propelled by two winds, the commercial and the cultural, and it has found out how to chart a course between them—so smoothly in fact, that industrial design has been going on in Chicago for several decades with very little notice. Proof lies in visible fact: Chicago produced three of the most important corporate design programs of our time, long before most industries knew the meaning or direction of the word.

Builders and rebuilders

All of the roads of Chicago's business and cultural history lead from 1873, *post anno incendii*. Though it was the beginning of a new era, the fortunes of the great Houses had been made and many of the great families established. Out of the wastes of the fire the Wentworths, Palmers, Fields, McCormicks and Medills picked themselves up and started again—with easily as much vigor as when they built up the swamp that was Chicago 40 years earlier. Some gained power from real estate holdings, but the majority succeeded—like Cyrus McCormick with his reaper, Charles Crane with his plumbing, George Pullman with his sleeper—with new ideas that found a wide-open market in the Midwest. They, too, worked hard, permitting themselves few diverisions. The single indulgence of this group was Prairie Avenue. Lined with opulent dark villas by Richard Morris Hunt or monumental castles by Henry Ives Cobb, it was easily the most expensive street west of Fifth Avenue, a symbol of a city where energy and ideas were generously rewarded.

A more significant place in the history of architecture was being prepared by other men. In the '80's the "Chicago School" was emerging from the offices of Burnham and Root, William LeBaron Jenney, Adler and Sullivan—a school founded on a common search for expression of the skyscraper. A booming population, rising land prices, and growing demands for business space spurred men to dream of taller buildings. The technology of steel construction began to make new heights possible, and the accelerated pace of post-fire Chicago led architects to bold experiments. It was a time when "architecture" was thought of as a gentlemanly recreation of historic styles, and Chicago came through with the courage to seek a contemporary idiom that suited the new technology. Burnham and Root's plain Monodnock Block broke with the tradition of applied ornament; Jenny's Second Leiter building did away with supporting walls and used a purely metal skeleton, purely expressed. Louis Sullivan experimented more fully with ways to express the dignity of steel-frame construction and to ornament it properly. The massive auditorium on Michigan Avenue, built in 1886 by Adler and Sullivan, delighted Chicagoans with its opulence. It was free from the classical style, a grandeur that was purely Sullivan and wholly contemporary.

The Columbian Exposition of 1893 promised to be the most important experiment of all. But it came at at time when a new force was asserting itself. As Chicago grew from a frontier town to a moneyed metropolis, social ambitions began to overtake the stockyard magnates and drygoods princes. The prospect of the world beating a path to Chicago's Fair was the prospect of social eminence for the Midwest elite, a group eager to outshine Mrs. Astor's Eastern coterie. Daniel Burnham, author of the daring plan that reclaimed the lakefront from industry, had grown envious of the Eastern academic grandeur of McKim, Mead and White. He turned his back on the daring steel experiments around him, and planned a marble city of classic pretentions that killed for generations the promise of a new architecture.

Sullivan went on alone to find his answer to skyscraper design. His achievement in the Carson-Pirie-Scott store went virtually unnoticed in the new classical renaissance. But his philosophy that "form follows function" had universal effects in both architecture and industry. It was a time when products, like buildings, clung to the forms and ornaments inherited from an age of handcrafts. Sullivan's belief in integrating structure, use, and expression led to vital experiments in the art of the machine. These experiments sparked movements in America and Europe that would eventually boomerang on the city that celebrated, and then rejected, Louis Sullivan.

A taste for culture

The Centennial at least propelled the history of Chicago in one respect. The Fine Arts exhibit whetted the art appetite of the North Shore elite, and started them on a collecting bender that was destined to give national prominence to the city's art museum—the Art Institute of Chicago. Prominent citizens were good to the Institute from the day it opened in 1879. Some businessmen, like George Armour and Levi Leiter, lent their administrative energies; others, like Charles Hutchinson and Martin Ryerson, lent their taste,

scouring Europe for treasures that would be worthy of Chicago's veneration. Still others lent their private collections: Mrs. Potter Palmer, for one, fell in love with the French Impressionists and donated the collection that is on view today. (This tradition still carries on among Chicago collectors, who donate art works and retain lifetime privileges on them.)

Under the same sponsorship opera flourished in the Auditorium, and theater in Sullivan's Schiller building. It was the beginning of a tradition, in fact, among Midwest magnates. Affection for civic culture was found, of course, among the principled and naturally civic-minded: Marshall Field donated the Field (Chicago Natural History) Museum, and later Julius Rosenwald the Museum of Science and Industry, while Edith McCormick was a permanent patron of the Auditorium and her husband Harold poured large sums into the Civic Opera. The same attitude turned up just as often among men of less sterling reputation: Charles Yerkes, between episodes of highjacking streetcar franchises, collected Botticellis and sponsored the Yerkes Observatory; Samuel Insull was almost as eager to build a first-class opera as to build up his utility holdings, and the artless P. D. Armour poured millions and personal effort into the founding of the Armour Institute. It may not be necessary to explain this sometimes anachronistic culture drive, but one common note comes through: Chicago had paid off handsomely those who gambled on its future, and a civic contribution was a visible return on the debt. It was also, for those who felt they needed it, a comforting salve to the conscience.

Black Decade

The depression, as every Chicagoan will tell you, hit hard. For several decades, actually, the city had been riding for a fall. The circulation wars between Robert R. McCormick's *Tribune* and other newspapers had left civic optimism jaded. The *haute monde* gradually fled to the northern suburbs. Into the vacuum rushed the working people, immigrants, politicians and racketeers, who stirred up a round of murders that culminated in the gang massacre of 1929. In that same year, Samuel Insull was President of 29 corporations, Board Chairman of 13 others, and board member of 81. Three years later Insull was wiped from the face of Chicago—as if to symbolize the final collapse of its confidence and cool nerve. The Century of Progress Exposition of '33 tried to generate optimism with vision of future technology. But the Field building, completed in 1932, stood more realistically for the future of Chicago: it was the last symbol of business faith in the city to be raised for a quarter of a century.

Something new applied

The cloud of the depression penetrated everywhere, even into the cloistered halls of the Academy of Fine and Applied Arts in the Art Institute. The academy had begun with a wholly academic course; the additional "applied" art indicated a change that was occurring in museums throughout the country, under the impact of an industrialized culture. In the early '30's, courses in advertising art, lettering and crafts were offered at the Academy, and in 1932 the first course in "industrial design" appeared. To these classes came a number of artistically inclined young men who faced the uncheerful challenge of the depression with even less hope than most. A background in fine arts offered about as much promise of a career as no background at all, yet they were vaguely aware that in "applied" art they might find new outlets for their talents. It was a coincidence of some importance, as it turned out, that one major Chicago outlet was also looking for them: Montgomery Ward.

Montgomery Ward: Bureau of Design

When Anne Swainson (left) joined Ward in 1931 to establish a Bureau of Design at the instigation of Walter Hoving, one of the first projects was the redesign of the mail order catalog. Antiquated wood cuts were discarded, typography simplified and organized, but the major innovation was the use of live photographs of products in use. After investing some $4,000,000 in catalog redesign, Wards produced first results around 1936 (far right). In addition to product design, the Bureau did extensive labeling and packaging.

1931

1936

Mail-order missionaries

One of the great firms struggling for a footing in 1930 was Montgomery Ward, built on the scrupulous principle of low-profit merchandise service to the farmer. After a brilliant fifty years of expansion Ward had slipped into financial difficulties in the '20's, as it faced the challenge of its upstart competitor, Sears, Roebuck, under the aggressive leadership of General Robert Wood. In 1931, when Ward directors invited U. S. Gypsum's chief officer, Sewell Avery, to take over the wobbly giant, Ward was selling 25% of Sear's volume.

Avery brought with him several attitudes of importance to merchandising—and ultimately to the history of Chicago design. An esthete of vigorous principle, he found that the mail-order business had slipped from its principles into a distasteful game. With the catalog as a decoy, it was now considered fair sport to deliver the minimum goods for the maximum price. Avery was temperamentally unable to conceive that customers could be interested in shoddy merchandise, and determined that Ward's first principle would be to deal only in good values and good taste.

He quickly rounded up a crack team to help him invigorate Ward. Among them were Frank Folsom, Raymond Folger, Bert Prall and, from Macy's, energetic Walter Hoving as Vice President of Sales and Sales Manager. Hoving (now president of Bonwit Teller) had hardly glanced at the catalog before concluding that if Ward was to survive hard times at all, its dated and doudy products needed a complete overhauling. He proposed to set up a design group, got Avery's backing, and promptly hired a young designer from Chase Copper and Brass. Her name was Anne Swainson; her job, as Ward's first woman executive, was to head up a team of designers to be known as the Bureau of Design.

The first problems were graphic—beginning with a new approach to the catalog design. Ward's only brand identification was the "Spirit of Progress," a woodcut translation of a statue that had graced the Exposition of '93. (Founder A. Montgomery Ward had rescued the nude figure from the ruins of the Fair, and installed it atop Ward's offices. A more modestly draped version had been imprinted on all wrappings and catalogs ever since.) After the Spirit was stripped from all packages, the Bureau began to review all of Ward's merchandising: tires were restyled, cream separators, mule collars, radios, utensils, and mattress ticking.

The purpose of Anne Swainson's Bureau was entirely new. It was a service to buyers in evaluating the quality and appearance of products they ordered from thousands of outside suppliers. Whenever necessary, which seemed to be most of the time, the Bureau created a new design for the buyer's supplier. Some of the buyers, like Henry Forster (now of Ekco Products) welcomed this help, but others did not. The success of the Bureau depended, ultimately, on Anne Swainson's winning the buyer's confidence, persuading them of the value of better design on the market, and in the management of a business like Ward's.

The Bureau was her baby. She created not only its concept of service but its design attitude by her selection of a staff. A former teacher, she knew there was no vocational preparation for the jobs she offered. She preferred to hire students from the art schools and work them into the Bureau. Her first designers were architectural graduates of Armour Institute; subsequently she brought in the applied arts students of the Art Institute too. Within a few years, Sears, too, began to build up a design department, and these two companies jointly became the major source of designers in Chicago. Sears drew on the one established training ground for its staff—General Motors Styling in Detroit—but Anne Swainson preferred artists that she could train into practicing designers. And train she did.

Disciplines of a taskmaster

Discipline was probably the first lesson to be learned at Ward. The schedule enforcement is legendary. "You came to work at 7:30," one Ward alumnus recalls, "and if you wanted to read the magazines you came an hour early. You got an assignment, and on it was marked a time it was to be 'picked up.' If pick-up time was 3:00, you did it by 3:00. If it was 8:00 the next morning, you finished by the end of the day, since the building closed at 5:00 and that was that." One day's assignment might be a tractor, the next a 10-ton jack. Every beginner learned to draw any kind of idea fast, accurately, and flawlessly, unless he wished to risk the criticism of a meticulous taskmaster.

Another of Ward's lessons was the discipline of merchandising. Since the Bureau's "clients" were buyers —whose own success as well as the firm's depended on the sales curve in their department—the designer's role in merchandising was never out of mind. Within a year, the Bureau had sold itself so successfully to the buyers that activity was nothing short of frantic—cast-iron stoves, corsets, coal furnaces, table silver and banjoes flooded in to be studied and redesigned. "Line planning" was introduced in the packaging section, where as early as 1934 family packages were evolved for drug items and hardware.

The success, the remarkable productiveness, the influence, and the problems of the Bureau of Design were inseparable from the personality of Anne Swainson. Described as "spirited, tough, dynamic" by former staff members, she is also remembered as "kind, painfully shy, sensitive," by textile designer Dorothy Liebes, a close friend and former student. Miss Liebes credits her teacher with having perceived her talent

for weaving and for helping her into the field. (They met in Berkeley, where Anne Swainson went to teach Textile and Applied Design; she had studied fine and applied arts at Columbia University after arriving from her native Sweden.) With much the same kind of submerged but genuine kindness, Anne Swainson took a motherly interest in her staff. This did not lessen her demands on them—her standards of performance at times seemed unnecessarily hard. In spite of this, and often because of it, she is remembered with almost unqualified respect and gratitude—and sometimes awe—by alumni of the Bureau. "She had an acute sense of the problem to be solved," one former Bureau member recalls. "But she never built a fence around the designer." She did more than give promising talent jobs when they needed them; she brought the idea of research, of a functional approach to her staff; she tempered her acute criticisms with a delicate sense of scale and color. She was, in a real sense, the Master of many prominent designers, in Chicago and elsewhere. Her Bureau afforded them training, experience in unlimited range of practical problems, and a vision of the unbounded applications of design, that they could have obtained nowhere else.

Decline and fall

In 1935, the Bureau of Design had grown to 18 product designers and 14 package designers. The roster of her Bureau then, and in later years, read like a preview of a Chicago design directory. Among them were product design head Dave Chapman; packaging head Bond Morgan; Joe Palma (now Palma-Knapp), Jim Teague (Painter-Teague-Petertil), Roy Larsen and Bob Askren (Raymond Loewy Associates); Herb Zeller (Design Director, Motorola, Inc.), Fred Preiss (later Design Director, Hallicrafters), Richard Latham (Latham-Tyler-Jensen), and Bill Wagner (Warwick Radio). With the combined force of Walter Hoving and Anne Swainson, designers, better products, broader merchandise lines and a workable catalog, Sewell Avery had the satisfaction of seeing Montgomery Ward rise from 25% to 82% of Sears' volume by 1936.

That year Dave Chapman took what was then an uncertain step—he left his job to open his own office. Other designers followed, new ones came. By the mid-'40's most of the old guard had gone, and Anne Swainson's star began to fall. After the war management attempted to reorganize the Bureau under a central Department of Interior and Industrial Design, headed first by architect Richard Bennett and then designer Paul MacAlister. Both of them departed after brief terms, and the Bureau continued to shrink in size and influence.

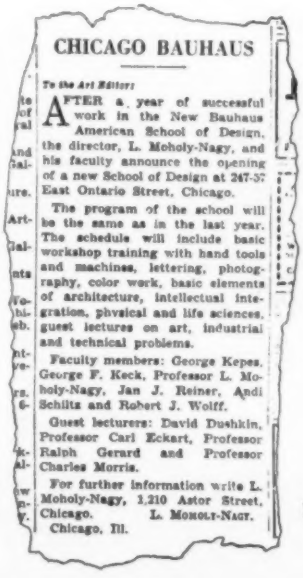
There were, to be sure, struggles within the department, but in the final analysis Sewell Avery was as responsible for its demise as he had been for its creation. As his depression-bred nerve turned into frightened conservatism, Avery put Ward's fortune under lock and key and waited dourly for the second depression. Ground was cut from under Anne Swainson in an attempt to discourage her devotion to the Bureau, but she was tenaciously undefeatable. To the amazement of many, she was one of the rare executives who was not fired by the man whose notorious dismissals have populated the ranks of U. S. management. In May of last year, after a long history of poor health, she succumbed to a heart attack. With her went the remains of the Bureau she had created: a desk in the corridor of Ward's warehouse building, and one assistant.

Bold experiment in Chicago

In 1937, while the Bureau of Design was at its peak, another influential movement was shaping up. A group

Institute of Design: Experiment in Totality

Laszlo Moholy-Nagy, (l.) *Hungarian born director of the new Bauhaus in Chicago, struggled to hold the school together during many moves that finally terminated in the old Chicago Historical Society Building* (r.). *Outlining his plans for the new School in* 1937, *he said, "We shall give you a laboratory of form and movement, a place where all you've swallowed . . . during office hours gets liberated by experience and coordination. . . Space creation and color creation can be taught like the alphabet."*



CHICAGO BAUHAUS

To the Art Editor:

AFTER a year of successful work in the New Bauhaus American School of Design, the director, L. Moholy-Nagy, and his faculty announce the opening of a new School of Design at 247-57 East Ontario Street, Chicago.

The program of the school will be the same as in the last year. The schedule will include basic workshop training with hand tools and machines, lettering, photography, color work, basic elements of architecture, intellectual integration, physical and life sciences, guest lectures on art, industrial and technical problems.

Faculty members: George Kepes, George F. Keck, Professor L. Moholy-Nagy, Jan J. Reiner, Andi Schiltz and Robert J. Wolff.

Guest lecturers: David Dushkin, Professor Carl Eckart, Professor Ralph Gerard and Professor Charles Morris.

For further information write L. Moholy-Nagy, 1,210 Astor Street, Chicago. L. MOHOLY-NAGY.

Chicago, Ill.

1938

called the Chicago Association for Arts and Industry wanted to recreate in the new world the famous Bauhaus, whose home in Dessau, Germany, had been closed by the Nazis. They contacted a former Bauhaus instructor, the brilliant Hungarian Laszlo Moholy-Nagy, and invited him to transplant the school in Chicago. Marshall Field III offered his mansion on Prairie Avenue; funds were promised by numerous prominent industrialists, and in 1937, with the blessings of former Bauhaus director Walter Gropius, the New Bauhaus opened its doors with 35 students.

It was an historic moment. The school brought not only a significant philosophy about art in a technological world, but promise of a complete cultural transfusion: the artists Archipenko and Gyorgy Kepes were among the original faculty, and Herbert Bayer, Xanti Schawinsky, Piet Mondrian and Hans Arp were promised for the second. As the only school in America to teach modern design, the New Bauhaus also promised a fresh source of talent for U. S. industry.

At the end of the first year, there were differences between sponsors and educators over the teaching approach. Financial support was withdrawn, and Moholy and his group were compelled from that moment to preserve the school by their wits. They moved to an old commissary on Ontario Street, where iceboxes served as darkrooms and ovens as storage, after another move, settled as the "Institute of Design" in the old Chicago Historical Society building. Yet, despite struggles for funds and for students, the school survived the war, and built not only an energetic day school but a night school that attracted, at one time, a group of working designers from Wards, eager to do experiments in form and color and materials under Gyorgy Kepes. By 1946, the ID had several hundred students, and a summer camp donated by Walter Paepcke, one of the few original trustees who stood by the school.

Philosophy—or calling?

Probably no school in America has been so controversial as the Institute of Design, so bitterly maligned and so ardently defended. If the case were to be judged on what happened in Chicago, one would have to conclude that its direct influence was hardly as great as its opposite number, Ward's Bureau of Design. But even failure does not destroy the validity of a bold experiment. And on the evidence of its general influences, it would certainly seem to have had important successes.

There was no disputing one fact: the original Bauhaus was the genesis of industrial design as we know it today. It taught that the machine was a medium worthy of the artist; it strove to bring the drawing-room artist and the craftsmen-producer back together in the same person, by finding a new art form in the techniques of modern production. Moholy believed with his colleagues that "industrial design," like "architecture," was too narrow a field for isolated study, and that the allied arts should be taught as a unity by educating the senses and enlarging vision, and liberating men through new creative experiences. He was convinced that an artist who understood the all-pervading principles of design could apply himself to any problem—graphic, product, or shelter. With a militant resistance to academic specialization, to overemphasis on technique, he taught design as an attitude, a philosophy—not as a profession. He was a daring and devoted educator with an unshakable belief in the process of education over its measurable results. This message of "education in totality," coming at the end of the depression, and from a magnetic personality, attracted students who were ready to rebel against the rigid patterns of conformist education, and ignited tremendous enthusiasm among them. If the school was beset by low funds, it was nourished by high spirits.

Problems of translation

This important doctrine has affected every American designer to some degree; it is specifically reflected in almost every design curriculum today, and its influence can be seen everywhere on the graphic arts, typography, and photography. The school produced a number of talented graduates—the fabric designer Angelo Testa, the photographer Art Siegel, furniture designers Charles Niedringhaus, Henry R. Kann. But relatively few chose, like Nolan Rhoades, to enter industry, or like Mort Goldsholl and Jack Waldheim, to adapt the principles of integrated design to business problems or a larger scope—in short, to give the commercial world the benefit of their new vision. Why was this? The trouble may have been one of translation. The Bauhaus educators came here with a crusading attitude, determined to infuse new ideals into a tradition-bound climate; they found a world considerably more dynamic than the one at home. They came with an old-world devotion to perfection and craftsmanship, prepared to teach new principles through workshop experiments in weaving, metalwork, ceramics. In Germany, these craft techniques had, in fact, been directly applicable to "industry" as it existed, and the student could go out and put his conviction to work. In Chicago, U.S.A., the craft attitude prepared the student to work as a lone artist, or with small craft-based industry. The gap between school and the general industrial world, in this country, was formidable indeed, and it was up to the student himself to span it—if he chose to—by acquiring the necessary skills.

The trouble was also with industry. The sponsoring group, having selected a revolutionary educator, was

not equally open-minded in their response to his ideas. A new group of ID Directors tended to measure it against standards of size or financial success; or expected, in return for their sponsorship, a student shaped to their own image, a commercially usable product.

Thus, in the face of mutual need and a chance for mutual benefit, no bridge of understanding was thrown between them. In retrospect, one wonders if the ID might not have spanned the gap *without* altering its convictions, if it had really desired a wider audience, if it had been convinced that the world at large—however artless and inhumane— deserved to benefit from these new insights. Moholy wrote understandingly of the social obligations of the designer "to reevaluate human needs in a world warped by the machine." From a mature European, whose penetrating criticisms always were converted into creative action—who himself worked successfully with industry in order to finance his school—such statements reflect a wholly positive attitude. But such ideas inevitably took on other meanings for restless students; *crusading for* too easily became *protesting against*, and a scorn of commercialism left little enthusiasm for effectiveness on the larger social scene. Convinced as they were that they must improve the art of the machine, the followers of the ID were not prepared to improve the machine's important product: the modern marketplace.

Much of the criticism of the ID may have been based not on what it did, but on frustration over its unfulfilled promise. The failure of an average school could be overlooked, but the most promising school in the land stood to be judged on its greatest potential contribution. Yet, perhaps it faced expectations beyond the power of any school: to have a pure spirit *and* to be directly influential. Perhaps it did serve its purpose by broadening attitudes in American design, by reaching indirectly many who did go into industrial design—despite the fact that it gave few working designers to Chicago, or American, industry.

Courtesy the "New Yorker" magazine

"Gentlemen—I Am Convinced That Our Next New Biscuit Must Be Styled by Norman Bel Geddes" *1934*

Moholy died in 1946, just as the school was reaching a peak of activity. His spirit proved to be irreplaceable. The school began to lose students, and falter internally. In 1949 Walter Paepcke suggested that Illinois Institute of Technology annex the ID as a special department, to give it administrative support and the chance to offer accredited degrees. In the early '50's, the administration of I.I.T. began looking for a director who could give the design school new direction. They selected Jay Doblin, an executive of Raymond Loewy Associates in New York and former chairman of evening courses in Industrial Design at Pratt Institute. To many of the ID faculty, and graduates, such a change was heresy. There were outcries, threats of resignation even before the details of the new curriculum were revealed. The objections were inevitable: the replacement of a beloved professional educator by a professional designer threatened the precious tradition of liberal design education.

Despite the schisms, Doblin has operated the school for a year. Most of the faculty stayed on; two resignations were filled by three new instructors, all graduates of the original ID. As the story on page 108 reports, the new director's program departs in some ways from the tenets of the Bauhaus but preserves many of its principles. Clearly these principles are no longer presented in their pure form. But if they are to be made available to industry, to be effectively applied to the problems of an industrial society, the new program could turn out to be a crucial reshaping of a profound old world philosophy to the uses of a dynamic new world.

Rise of the independents

During the depression the little-known field of "industrial design" had begun to grow like a hardy cactus in a desert. In the East, men like Donald Dohner, Lurelle Guild, Walter Dorwin Teague, Norman Bel Geddes and John Vassos had managed to convince industry of the need to take a new approach to machine-made products—a campaign that was greatly abetted by industry's dire need for better products and lower costs. These men, who entered the field from related areas like engineering or stage design, were not the first commercial designers in the country—design had long been employed in the art-based industries like furniture and textiles, but it was unusual that studios could survive on the "artless" industries that made stoves, toasters, cash registers and locomotives.

Hard times for business, in short, sometimes meant good times for design. In 1934, a *Fortune* article about the depression-weaned vocation cited typical

fees of $1,000 to $25,000, and retainers up to $150,000 a year for a few leading designers, all of whom worked in the East. A year later in Chicago, a manufacturer asked Dave Chapman to design a refrigerator—the fee he had in mind was $25. The reason for the discrepancy was as plain as it was painful to the Midwest designer: a firm seeking help on an important product was likely to think first of New York.

Hard times not withstanding, Chicago had its group of independent designers; some of the earliest had gravitated from art industries to heavy industry—C. E. Waltman, R. D. Budlong, R. S. Dickens, Alfonso Iannelli among them. They were soon joined by a new generation, including several brought to light by the Century of Progress Exposition in 1933. Dave Chapman had worked with an architectural firm on the Fair before joining Ward: Jean Reinecke, the young art director of General Displays, stumbled into product design quite inadvertently while supervising fair exhibits. Asked to design a souvenir ashtray for the Chrysler exhibit, Reinecke used the experience as a springboard into a new business, fully aware that he would have to learn from his clients as he helped them. With Jim Barnes, he opened Barnes & Reinecke in 1935, one of the few independent studios where a young designer could get broad experience in designing for mass production. In its pre-war career, B & R managed to work for such Midwest firms as Toastmaster Products, Bell & Howell, Motorola, Minnesota Mining and Chicago Molded Products. During the war, when it served as an engineering service, it swelled to 375 employees, with a payroll of $1,000,000 a year. The scale and seriousness of this operation helped to shake Midwest manufacturers from some of their misconceptions: design was not merely a sketch service, but could be a help in creating new and better products. It conveyed the same idea to a number of future Chicago independents.

A new age of princes

Design in Chicago survived the desert of the depression because of these few professional oases; it grew and flowered for another reason, rooted in the history of its founding families. The titans who prospered there did so because it *was* Chicago, an inland center. Their livelihood lay, by and large, not in financial maneuvering but in the physical operation of businesses or plants that fared best in Chicago. Consequently, they did not pack up their fortunes and move on, but settled comfortably in a city which was also a home town. These families have remained even in an era of large-scale transience, and they have continued an attitude of civic responsibility that began in the 19th Century and is still effective today. This culture patronage—which was originally quite independent and often inconsistent with the way business was run—took a new form in the '30's. Management perceived that it was possible to integrate patronage with business itself, that business could benefit by taking on a larger cultural role.

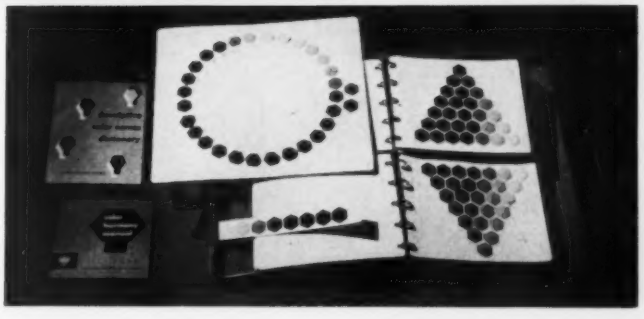
The earliest of the new patrons was Walter Paepcke, young president of Container Corporation of America, who invited Egbert Jacobsen to join the firm in 1935 to help establish a design program on an unprecedented basis: to apply design not to products but to the personality and physical plant of the business itself.

Their first project was to create a series of company ads. They elected an approach that proved extremely controversial among advertising experts: low-pressure institutional messages featuring the work of famous designers and artists. The idea of making an ad

Container Corporation of America

photo Betty Rosenzweig

Under former Design Director Egbert Jacobson, Container Corp. extended its design program into educational and cultural realms: Exhibitions of the influence of modern art on graphics (r.); the Aspen Institute, site of summer conferences on design. Herbert Bayer (l.), now Design Director, devoted several years to redesign of a "geo-graphic" atlas published by Container. The Color Harmony Manual, a color coordination system, was developed by Assistant Design Director Walter Granville and Jacobson.



primarily visual, particularly with the designs of such artists as Fernand Leger, Gyorgy Kepes, and Man Ray, was a twist that served Paepcke's aim in many ways. "We wanted to be recognized as a large organization with resourceful personnel," he says about this approach. "We reasoned that in advertisements in which modern design was the common denominator, the originality, taste and imagination displayed would reflect similar qualities in our firm." As he proved to his own satisfaction with a continuing series, the techniques of modern artists identified Container with current developments in the applied graphic arts which were—and are—a major creative tool in packaging.

The next phase of the idea was a design department whose function would be entirely corporate, to guide all aspects of the public personality of Container Corporation from business forms, advertising, color, to plant design, employee facilities, and executive offices. They subsequently launched another design division, the Design Laboratory, to serve those who use the company's basic products. The Design Department, still entirely separate, today is headed by Herbert Bayer. With a staff of 7, he continues to re-examine the tastes, techniques and design in every corner of the corporation. The department has gone on to numerous unique educational and non-profit projects: the totally new geo-graphic atlas designed by Bayer and sponsored by Container; a Color Harmony Manual, made available as a service to industry; exhibitions of modern graphic art; and the Aspen Institute in Colorado, Paepcke's personal contribution to the development of international exchange in the arts.

Walter Paepcke, now Chairman of the Board, has been atypical in more than his business policies. He pioneered a new brand of enlightened professional management, boldly entering the ranks of family managers who had enjoyed several generations in which to arrive at progressive business attitudes. Among Paepcke's peers were men like Charles Crane II, grandson of the founder of the Crane Company, who distinguished a quiet career as Vice President by trying to improve plumbing fixtures that he felt were gross and outdated. Unsatisfied with his own designs, he sought the assistance of Henry Dreyfuss in 1935, producing a radical departure in bathroom equipment and a design relationship that the company has maintained ever since (page 82). Another was International Harvester's Fowler McCormick, grandson of Cyrus and son of Edith and Harold McCormick, who is credited with the revival of a firm that was ravaged by the depression, and the launching of new policies.

What McCormick planned

Being born a McCormick did not, in Fowler McCormick's eyes, justify running a company. Introspective, unselfish, a man of acute intelligence who abhored displays of wealth and power, he worked his way up from the bottom, becoming second vice president in 1935, President in 1941. McCormick brought an energetic translation of the founder's philosophy of honesty. He viewed business as an institution with joint responsibilities to the stockholder, customer, and employee, and his whole business aim was to keep these interests in balance. McCormick has been called a born planner, a mind that dwelled on the larger issues of the company's future. IH executives recall that much of the enthusiasm of the '30's and '40's was generated by the balanced combination of McCormick and his Vice President John McAffrey—a planner with his eye on the future, and an administrator who could act with a trained eye on immediate sales.

When the small Farmall tractor was in the process

Charles R. Crane II *Arthur A. Keating* *Walter Paepcke* *Fowler McCormick*

of being re-engineered in 1937, McCormick suggested calling in Raymond Loewy from New York to assist the engineers in giving it an agile and appealing form. It was soon clear that a resident designer would be needed to coordinate design and engineering permanently, and Theodore H. Koeber became the head of a department to serve all the manufacturing divisions of IH, and to help carry out McCormick's long-range concepts of a revitalized firm.

The plum is snatched

Work on the Farmall tractor was carried out primarily in New York by members of the Loewy office. When Harvester approached Loewy again in 1943, with plans for a large recognition and dealer sales program, Loewy (whose first attempt at a Chicago outpost had closed after Pearl Harbor) lost no time in finding a lieutenant to set up a permanent branch office within walking distance of Harvester. He dispatched Franz Wagner, a Californian, to represent the New York firm that had snatched one of the biggest plums in Chicago design history. It was a significant move. The mountain had finally found it necessary—and worthwhile—to move to Mohammed.

Franz Wagner set about assembling a team to handle the Harvester account. Some came from the New York office, many others qualified on the basis of prior experience at Montgomery Ward. He started with about a dozen, who turned out what is probably the best-known identification program in the country today; it involved a company symbol, planning and designing a prototype dealer display building which has been constructed by 1300 IH dealers since 1945. (Since that time, design has continued at Harvester under a number of banners, with separate sections to handle equipment, trucks, and packaging and graphics; the Loewy office has been consulted from time to time, and Dave Chapman has also been called in on special projects, such as a new Harvester combine.)

Enter Armour

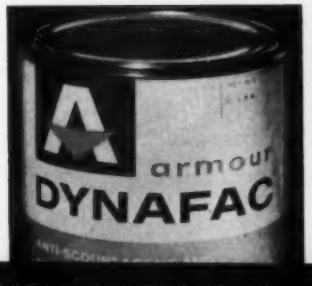
It was in 1943 that the General Sales Manager of Armour & Company began to view with increasing alarm the packaging of the firm's many products. Frederick William Specht, a determined and progressive salesman whose entire career had been spent in Sales at Armour, came to the conclusion that its unappealing and uncoordinated packages were not doing a selling job for the company. Intuitively, Specht had perceived what was to become merchandising knowledge in the postwar years: that packaging was to assume new importance as a "silent salesman" for the company in an era of self-service merchandising.

Specht's concern was well founded. The once-powerful packing house had fallen into bankruptcy in 1922, and had never stopped limping. One day Specht happened to read a news item about Raymond Loewy: the designer had made a $50,000 bet with tobacco tycoon G. W. Hill that a white (Lucky Strike Green has gone to war) package would actually outsell the familiar green one, and had won. Specht sent for Loewy, and confronted him with an array of Armour packages. Asked for his honest opinion, Mr. Loewy found few flattering adjectives. Specht, by his own admission, argued bitterly with the designer, but was secretly delighted with this confirmation of his own views. His courage bolstered, he approached the Board of Directors for funds to finance an across-the-boards redesign of Armour packages. The Board was more than sceptical of this unprecendented scheme that involved millions of dollars of packaging materials.

Specht was not dissuaded. He commissioned the de-

Armour and Company

In 1943, when Raymond Loewy Associates of Chicago began redesign of Armour packages, food products had little family resemblance (l.). First step was a new Armour trademark, (r.). Each group was assigned its own color, and all labels divided into white and colored areas. In 12 years of development, the style has remained consistent but company has returned to a single color, adding illustrations on many cases. RLA also developed individualized logos and packages for non-food products — over 2,000 packages to date.



signers of Loewy's Chicago office to make a brief introductory study and proposal, which he was sure would tell his story to the Board persuasively. Several months later RLA presented to him their version of a minimum investigation: a new trademark and the outline of a complete packaging program. Specht took the proposal to the Board, and was rewarded for his nerve with a vote of confidence to continue the program. He became President about a year later.

Specht's pioneering was not limited to methods of persuasion or of merchandising. He was sure that the company should move from raw meat into more packaged foods and bi-products. As president, his drive for product expansion turned into an endless stream of design projects for RLA. "The whole program," Specht comments, "saved us immense amounts of money. Relabeling enabled us to reduce the complexity of printing, improved our sales, and paid for itself many times over." As RLA designed some 2,000 packages for Armour, and as Armour got back on its feet, design became a permanent part of the company's merchandising plans. When Specht decided this year that the designers should begin on Round Two, reviewing and re-evaluating the complete line, getting a design appropriation was nothing short of routine.

Not all executive offices in Chicago, or elsewhere, are populated by Spechts, Paepckes or McCormicks. Yet their influence belies their number. For on top of acumen, they have had vision. At a time when there was no book of directions, they worked out their own ways to use the very flexible tool of design. At the same time they sponsored design, they saw ways to loosen it from traditional moorings and propel it in new directions. They stretched the definition of a creative service, and it ended up serving a new purpose in management. What is more, they showed that pioneering can pay—and thus assumed industry-wide importance as a prototype group. Chicago continues to create industrial clans with the ability to alter this pattern to fit a new needs. At Motorola, where founder Paul Galvin has built a business on "noodling" experiments in electronics, his son, Executive Vice President Robert Galvin, has stood behind a growing and profitable design department. At Ekco Products, Board Chairman Arthur Keating has transformed an established design program into a policy-making activity under the direction of *his* son, Executive Vice President Edward Keating.

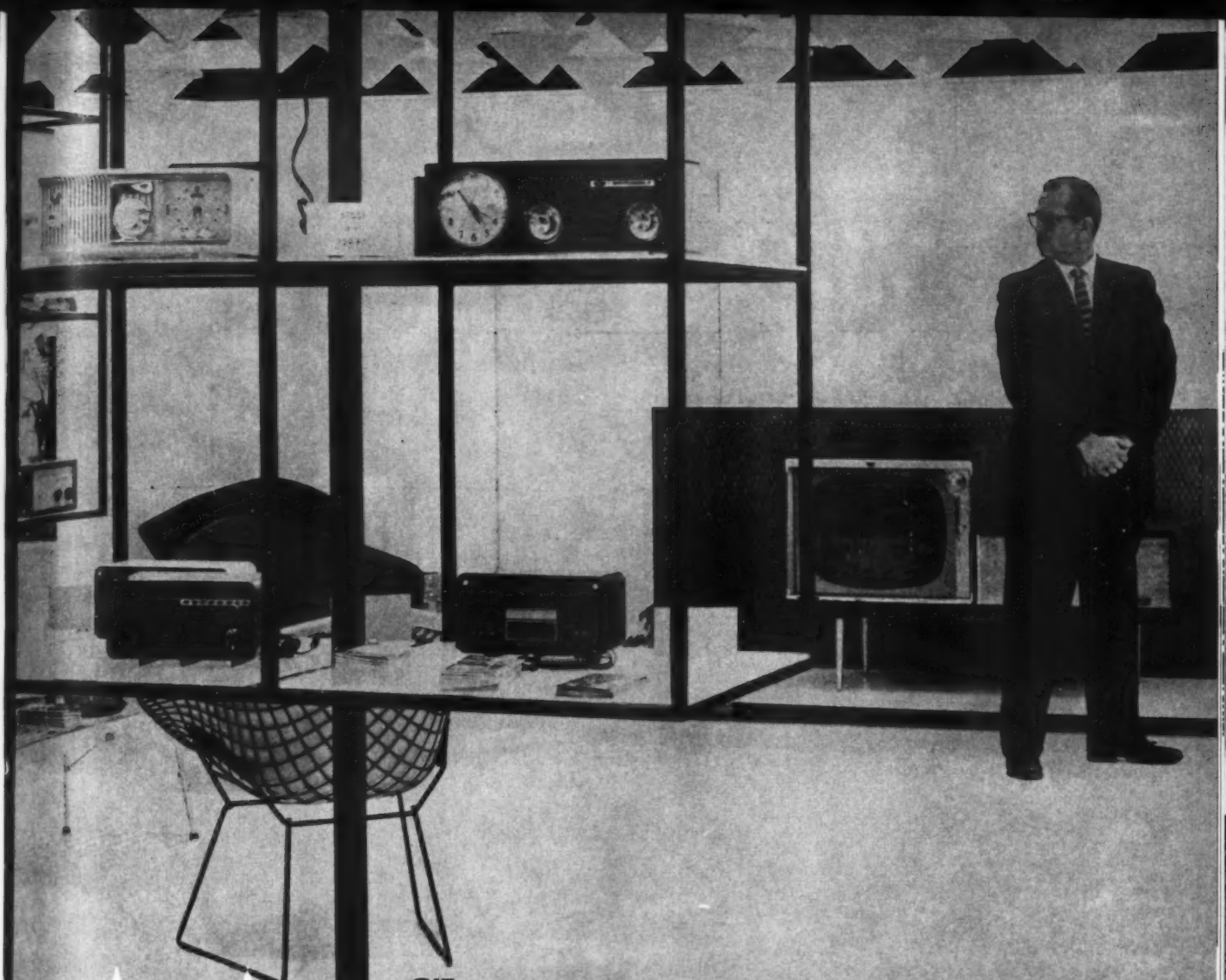
Opportunity is another thing these men have created —and Chicago area designers have made the most of it. When the rush of work started after the war, the established offices were quickly joined by new ones. Palma-Knapp, Banka-Mango, Jack Morgan Associates and Jean Reinecke Associates were a few who got a foothold before 1948. Within a few years they were joined by a third generation, many of whom they had trained: Painter, Teague & Petertil, Ken Shory, and Latham-Tyler-Jensen exemplify those who decided to trade security for growing opportunities in independent practice. These firms were oriented from the outset to work more like organizations than private studios. Many of their colleagues have taken a similar approach, while a few still prefer to maintain a personal practice. Also, many of the graphic artists attracted to Chicago by the printing industry have been able to move into merchandising design.

Having trod a fair amount of common ground, the Chicago-area designers bring to their work certain common viewpoints. They believe in hard work. They quite naturally tend to identify themselves with industry in their outlook; they are familiar with its operations and sympathetic to the task of keeping it alive. On this general base, each of them has built his own fund of specific knowledge about the inner workings of business, because the businessman with whom he customarily rubs shoulders has been willing—perhaps unusually so—to invite the designer into his confidence. Their knowledge is certainly not for local consumption only; it has benefited clients in all parts of the country, created products for the national marketplace.

For the businessman's part, offering opportunity created opportunity. He helped build a staff of available talent from which all industry, Midwest and otherwise, can choose. If there appears to be overlapping in the client lists of Midwest designers, it does not betray fickleness in industry or unusual competition among designers. Its real meaning is that the manufacturer can dip into a fund of talent for the person best suited for each job. If it is true that Chicagoans prefer to buy their art in New York, it is also true that they no longer feel compelled—except by the right of free choice—to leave home when they shop for design.

In Chicago's emergence as a design center, the industrial leaders undoubtedly deserve a large share of credit. Idealism has not been their job or their aim; yet in their patronage of design we see an excellent example of its practical cousin—enlightened self-interest —and of the standards it can achieve. Industrial design has not by any means been the sole basis of their success, or of Chicago's business revival. But design has been a visible marker over new attitudes and energies that add up to progressive management—and the outcome of those should interest industry everywhere. Of course, Chicago is not a city to rest on its laurels—or to rest at all. The work goes on. The story goes on

JANE FISKE MITARACHI



Close-ups

Motorola, a fast-moving company turning out 88 TV and radio models a year, has gradually evolved a design structure typical of many industries. Director of Design Herbert J. Zeller (above) heads a department of thirteen designers and three model makers; he reports directly to the vice president of the Product Division and, with the Product Managers of TV, radio, and contract auto radio, is an equal member of the committee which plans and approves all designs. A firm believer in the adequacy of a company design department, Zeller calls in consultants only when he is convinced they can contribute special talent: Morton Goldsholl was retained to initiate a graphic program, and designed the striking Motorola symbol and the new Mart showroom, a portion of which is shown on this page.

While this pattern is a norm that occurs in many big consumer industries, other ways of using design have emerged in industries with different problems. To illustrate their diversity within the Chicago area, we have selected the following case studies:

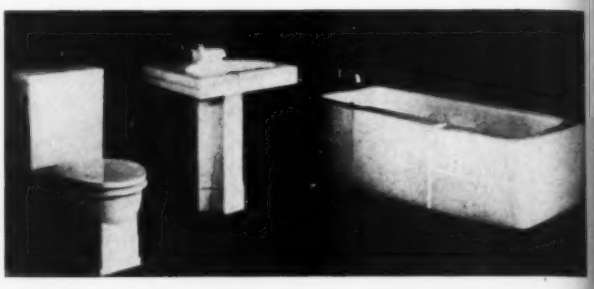
The Crane Company: long-distance design in plumbing and heating
Hotpoint Company: staff department for major appliances
Frank G. Hough: regular consultant for materials handling equipment
U.S. Gypsum and Masonite Corp.: consultants for building materials
Dormeyer Corporation: small appliances and sources of supply
Eight company identification programs

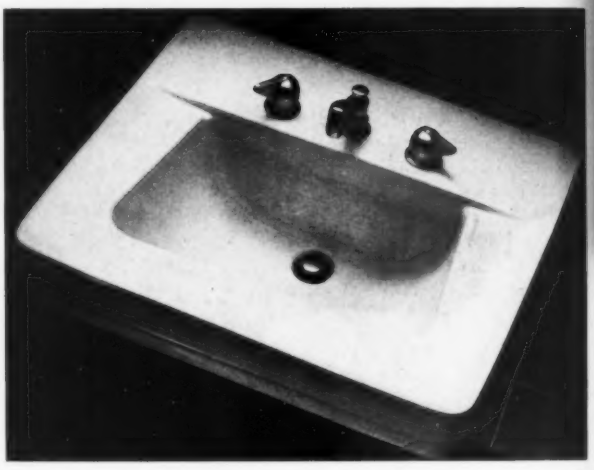
CRANE'S FIRST CENTURY
1855 1955

Over many years and miles, varied lines have grown

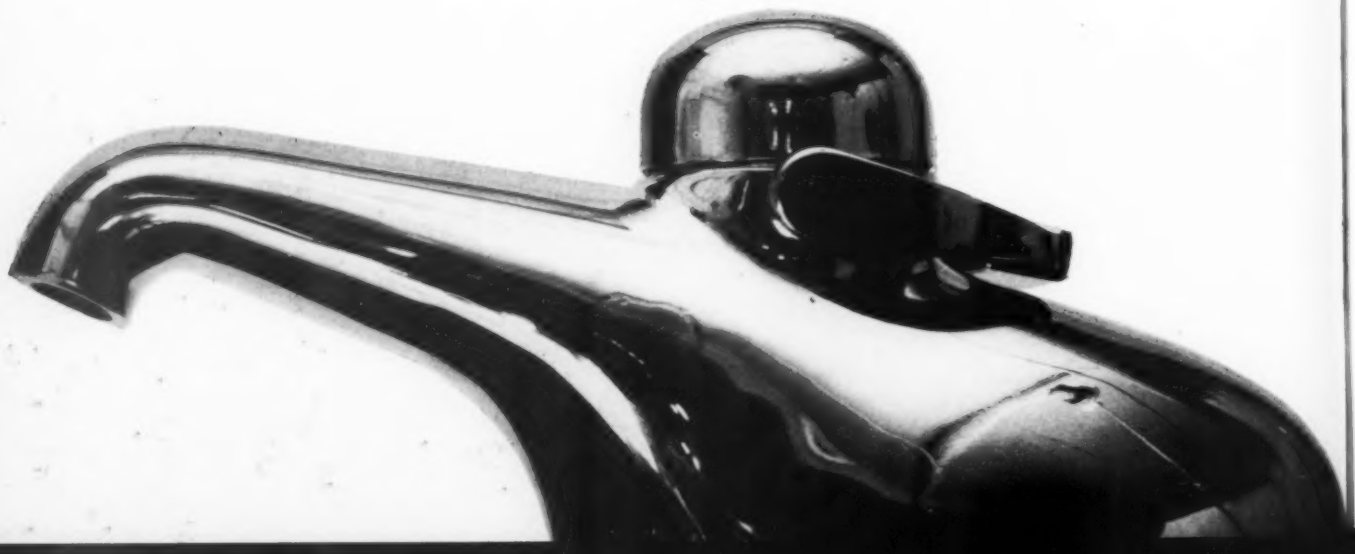
company: Crane Company
industry: plumbing, heating equipment
design requirements: style leadership as an expression of quality
solution: out-of-town consultant serving a variety of products

In 1935, the Crane Company's vice-president, Charles R. Crane II, wanted to modernize its bathroom fixtures. Turning to New York, he asked Henry Dreyfuss to collaborate on a new line. Dreyfuss' Neuvogue design (right), which introduced the radical idea of crisp-edged rather than curving forms in easily warping ceramic clay, required the close support of Crane engineers to revise traditional production standards. Crane has continued to rely on Dreyfuss for 21 years — a design-oriented firm that has found ways to work effectively with its design department half-way across the country. Dreyfuss and his staff work virtually as members of the company on problems involving not only appearance but complex engineering. Even during the war, while the industry was at a standstill, they were readying a new line in wooden mock-ups for the post-war boom. Because Crane wants and is receptive to new designs, and encourages designers to work at top level with its executives and engineers, Dreyfuss has been able to help Crane chart new directions for the industry with the Criterion line of 1951 and the Norwich, redesigned in 1955.





Left, Henry Dreyfuss with Crane president Frank F. Elliott. Top, the Neuvogue line; above, the residential version of the Norwich basin; below, Dreyfuss-designed Temple fitting.



Left to right, Malcolm W. McRae, directing engineer, Crane heating engineering; Julian Everett, Dreyfuss' senior partner, and Eugene P. Allen, manager of Crane heating sales, inspect the old version of the Sunnyday boiler. Below, with the new Sunnyday, a contractor and salesman at N.A.P.C. convention.

Whether ideas for new designs come from Crane salesmen, engineers, or Dreyfuss, the company consults its designers on almost all its product development problems — for instance, the Sunnyday boiler. In 1954, Julian Everett, Dreyfuss' senior partner, gave it a neat basement-gray jacket. After the boiler was marketed, Everett was called to Chicago by the late vice president George L. Erwin, Jr., who saw a broader market if it could be made to "come upstairs." With Crane engineers, Everett studied the jacket, with the idea of eliminating the side louvers that suggested basement equipment, and developed definitive drawings in New York. Three weeks later he brought back a jacket design utilizing a floating front panel for air circulation. Sales and engineering agreed upon white and light gray, and the first appliance-like boiler was put into production soon thereafter.

Hotpoint: a centralized design service for five autonomous departments

company: Hotpoint Co.
industry: large appliances
design requirements: annual models in 16 different product types
solution: company design department plus variety of consultants

Hotpoint Co., the multi-million dollar electric appliance business that was built on the "iron with the hot point," and the Hughes Electric Range (above), became a division of General Electric in 1952. Despite family ties, GE is one of Hotpoint's important competitors with its large Appliance Division in Louisville. A hard-driving president, John C. Sharp, a steadily increasing share of the market, fully developed research, marketing, design and manufacturing facilities (a new refrigerator plant, built in 1953, can turn out one refrigerator every 40 seconds) have enabled Hotpoint to keep its independence and to continue to develop new products.

In this intramural race, design is one of Hotpoint's prime competitive weapons, and its design policy reflects this company policy of gradual but sure change that will maintain profits while meeting market demands. This was recently reflected in the fact that Visual Design, as Hotpoint terms it, has recently been given new authority through a top-level administrative change. The change, which put autonomous general managers at the head of five different product departments, put Ray Sandin, Manager of Visual Design, formerly under Engineering and part of their service, at the head of a section which serves each department equally: ranges, refrigeration, home laundry, dishwashers, food waste disposers (Disposall), water heaters, customline appliances and television. Acting as a service group across the boards, Sandin and his department of 14 designers produce approximately 100 models a year of all products, and function for all practical purposes like an independent office within the company, working directly with the general managers; Sandin's present role is more closely allied to marketing, with engineering services distributed among the five departments. A product is launched in each of these areas by a meeting of the managers of marketing, engineering, manufacturing, finance and—working on an equal level—the Manager of Visual Design.

Sandin's beliefs have been reflected in Hotpoint's products since 1944, when he started as an architect in charge of what was then considered a stop-gap measure, the kitchen planning department. He favors "pristine design," i. e. making the best basic model possible in terms of proportion, materials and function and, building from a sound structure, emphasizing not radical changes, but yearly improvements that pioneer new ideas economically (see the ranges on the right). He relies heavily on a perfect three-dimensional model to check sculptural details and painstakingly investigates the market for new materials and processes, especially for decorative trim. The whole value, he believes, of having the designer spot check every detail with engineers and vendors, taking pains with every tool and part, is to resolve the small problems that make the ultimate difference in the quality and character of the product. He gets such cooperation from the engineers that they rarely change the position of a screw without checking with him.

In his managerial capacity, Sandin finds it natural and helpful to call in outside help. With his own budget, he is free to turn to other sources of ideas, as he sees fit: Jack Morgan has been regularly retained on appliances; Ed Klein is being consulted on television design; while Jean Reinecke has been signed up for long-range research on kitchen planning. Mostly, the consultants work on the same problems as the company designers, and their proposals are considered equally. The status of design in the company, says Sandin, eliminates professional competition and makes possible the pooling of many viewpoints for the ultimate good of product and company.

1948 *deluxe range*

1950 *intermediate-price range*

1953 *intermediate-price range*

1955 *intermediate-price range*

1956 *intermediate-price range*

photos Dave Windsor

Typical Hotpoint product development sequence: after an initial meeting with General Manager of Range Department, marketing executives and engineers, Manager of Visual Design Ray Sandin discusses layouts (above) with two members of his staff, H. Slettebak and D. A. Smith.

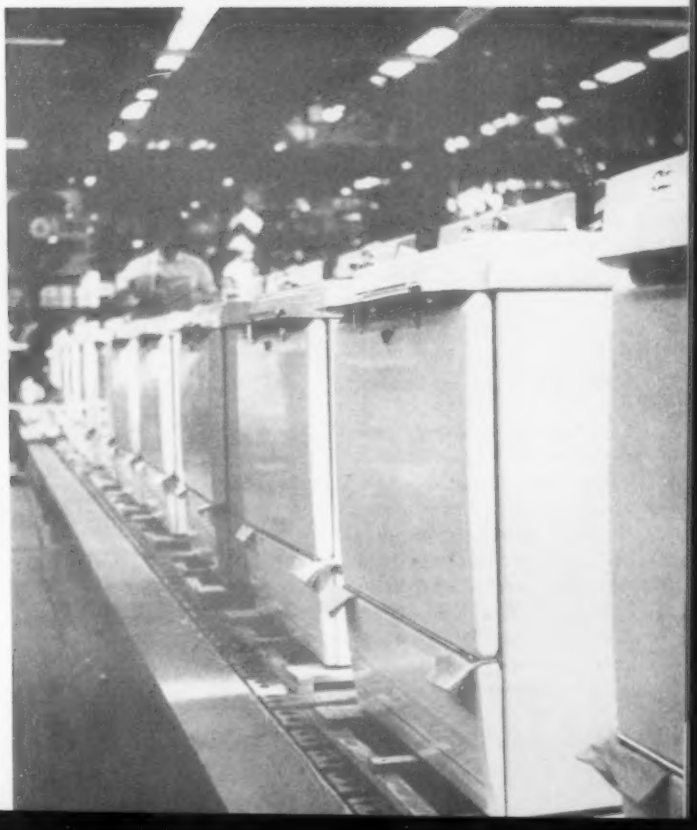
Right: Sandin goes over plans for new range line with consultant Jack Morgan, who develops his own designs.

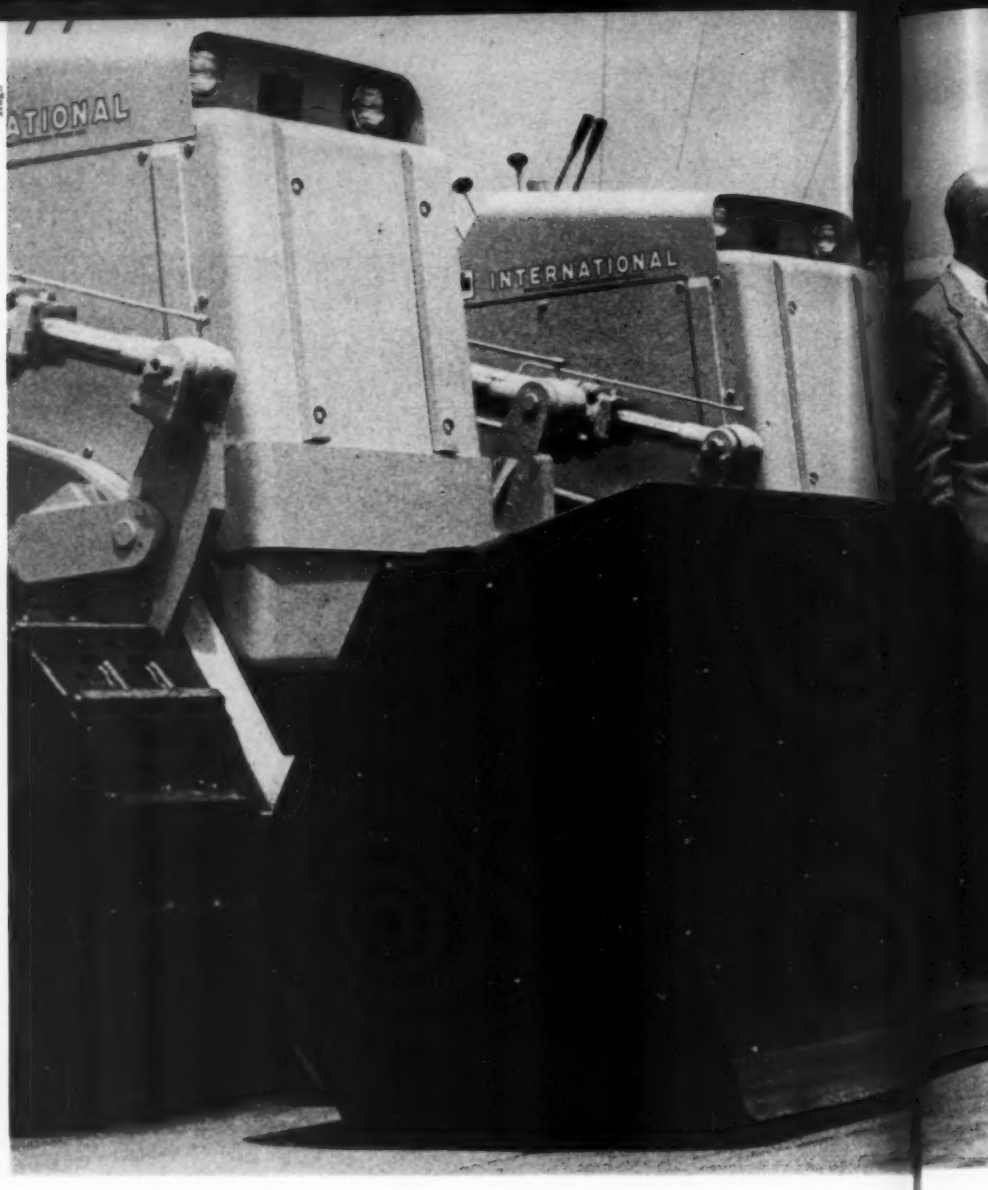
photo Joyce Lamensdo

Managers D. W. Quirk and W. R. McDowell (second and third from left) of Product Planning and Engineering meet with assistants and designers to review Sandin's sketches.

Same management group plus D. J. Irvine, Marketing Manager, goes over Sandin's final mock-up, the result of collaboration between Visual Design, Engineering and Product Planning.

Right: Hotpoint ranges come off the assembly line.



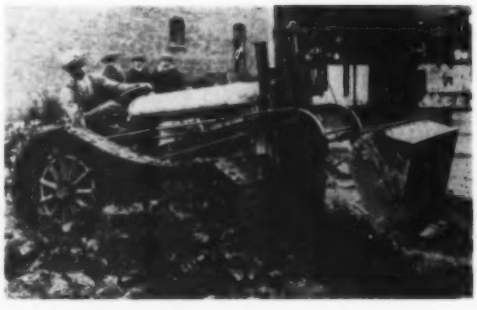


company: The Frank G. Hough Co.
industry: materials-handling equipment
design requirements: integration of engineering, invention and design
solution: regular design consultant on all model changes

Though now a subsidiary of International Harvester, the Frank G. Hough Co. and all its products represent the career of the man who founded and still heads it — an inventor. Its Payloader tractors, stemming from Mr. Hough's original invention of a hydraulic shovel in 1922, are the result of his life-long drive to improve materials handling equipment. Because each mechanical change that he fathers affects the configuration of the tractor, he has all the more felt a need for the help of a specialist to make the design of the product reflect how well it performs.

After marketing his original shovel attachment for a decade for use on converted farm tractors (right), Frank Hough formed his own Chicago company in 1933, designing and selling whole units in collaboration with tractor manufacturers. But, feeling limited by standard tractor design, determined by a conscientious nature to make the best machine he knew how, he decided to move the company to Libertyville, where, in 1939, he began to manufacture a unique kind of equipment: a narrow little forklift loader with an integrally-designed tractor and shovel. The first Payloader, the HS, proved its practicality, but Mr. Hough went on to make improvements not only in function but design (shown overleaf).

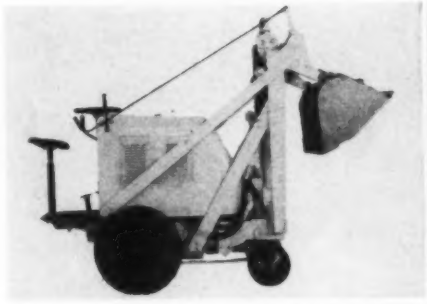
One man's family of tractors —



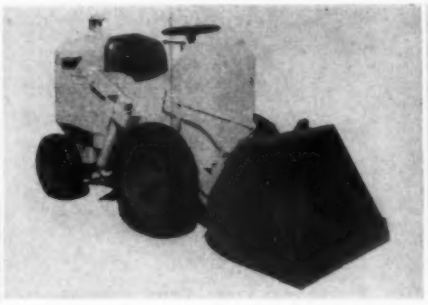
Original shovel attachment, mounted on Fordson tractor in 1922, *was called North Hydraulic Digger.*

Leader attachment was cumbersome on International Harvester tractor, 1937.

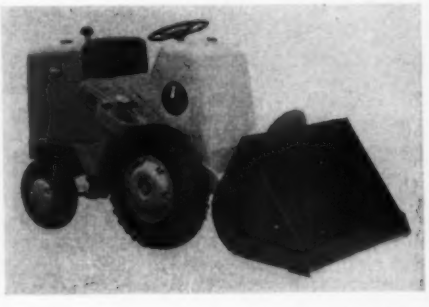
Hough Payloaders increase in size, numbers and versatility



The first Payloader, the original HS, 1939 *with vertical shaft blocked driver's view.*



Model HA Payloader 1945-50, *with hydraulic cylinder on boom bar, manual release.*

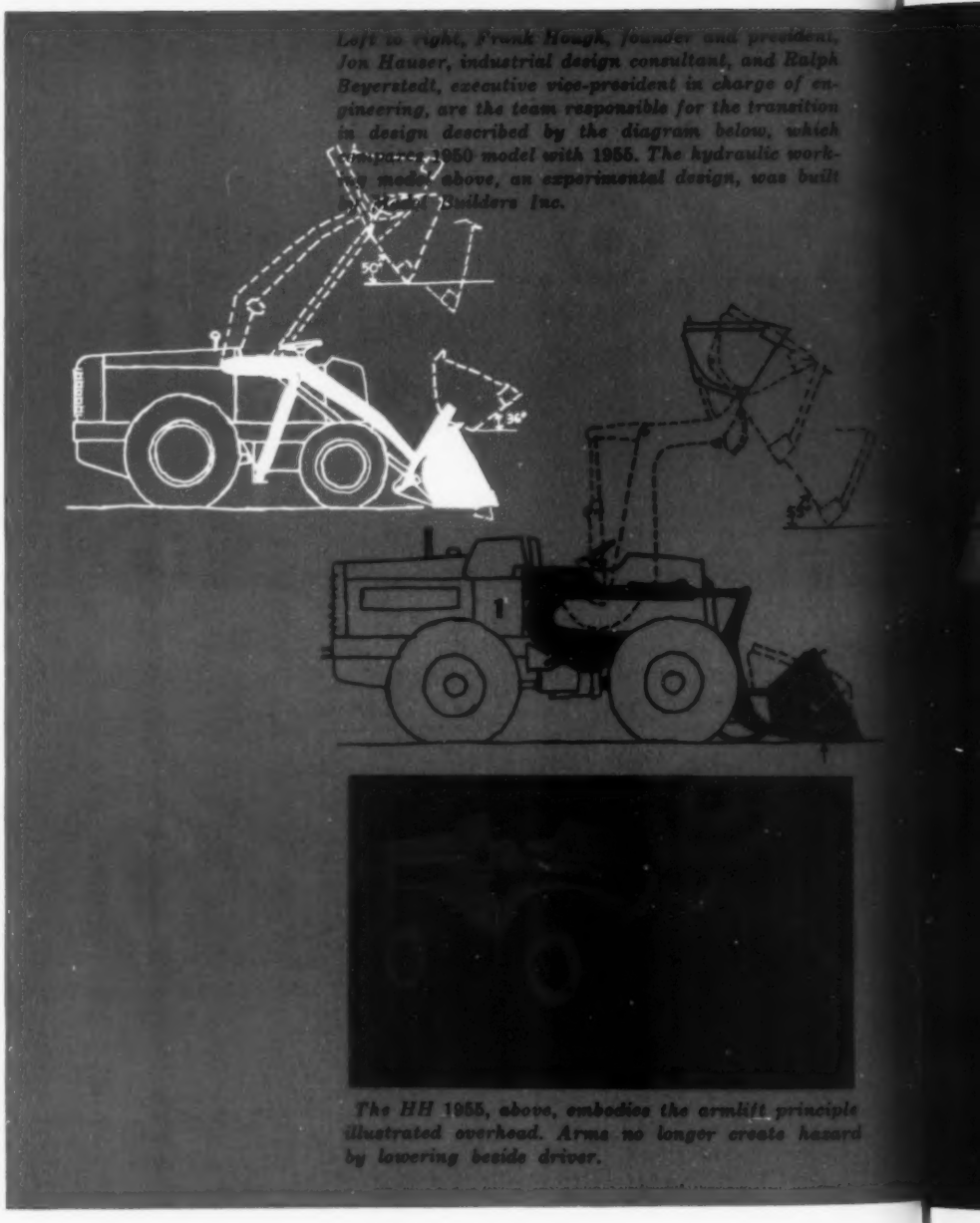


Model HA Payloader, 1950, *redesigned by Barnes & Reinecke, with braking yolk.*

The HS, though it went agilely in and out of boxcars, had a major obstacle—the fork-lift loader's vertical shaft blocked the driver's view. Mr. Hough was convinced that this could be solved by a new loading principle, and experimented persistently on a side armlift, working on a series of pivots. After they had worked out the "geometry" of the armlift, Hough and his chief engineer, Ralph Beyerstedt, felt its superior performance was not visibly expressed, and took it to designers Barnes & Reinecke. They assigned the account to Jon Hauser, who has subsequently opened his own office and continues with the Hough account. As the engineering side of the team has continued to improve upon the HA principle, refining the action of both the arm and the bucket, Hauser has paralleled their efforts both suggesting and integrating a succession of functional improvements into the overall personality of the breed, as Mr. Hough had envisioned.

The team is shown (right) with an experimental model in which they sought to reduce the load loss of the original HA. The top diagram illustrates an earlier phase, 1950: the bucket was designed with a hydraulic braking yolk which tipped it back for a vertical lift. This arc lessened the load loss, but the angle of the bucket still inclined forward at 36 degrees, causing some spillage. In addition, there was a chance of catching the driver's arm when the boom was lowered. Safety was improved somewhat in the 1953 model by a fan-shaped screen between boom and cab, but the 1955 model HH is a complete redesign, definitely safer and more efficient. The pivoting action of the arm takes place under a shield, and the boom bars are shaped so that they never pass the side of the driver. The HH 1955 presents also a further stage of the "breakout" action: the bucket mechanism, working independently of the boom, *rotates* the bucket on its hinges to slice up through the pile until, at an angle of 40 degrees, the bucket roll back is completed and the load hoisted at an upturned angle.

The most recent problem tackled by the Hough design team is to make the H 12 Crawler tractor accessible for repairs. Saving hours of disassembly, the weight of the bucket can be used to pull the entire top structure forward and expose the engine, brakes and hydraulics for servicing — another example in Hough's history of inventive solutions to product problems.

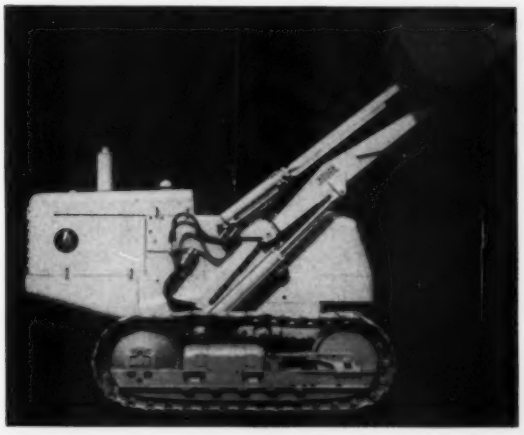


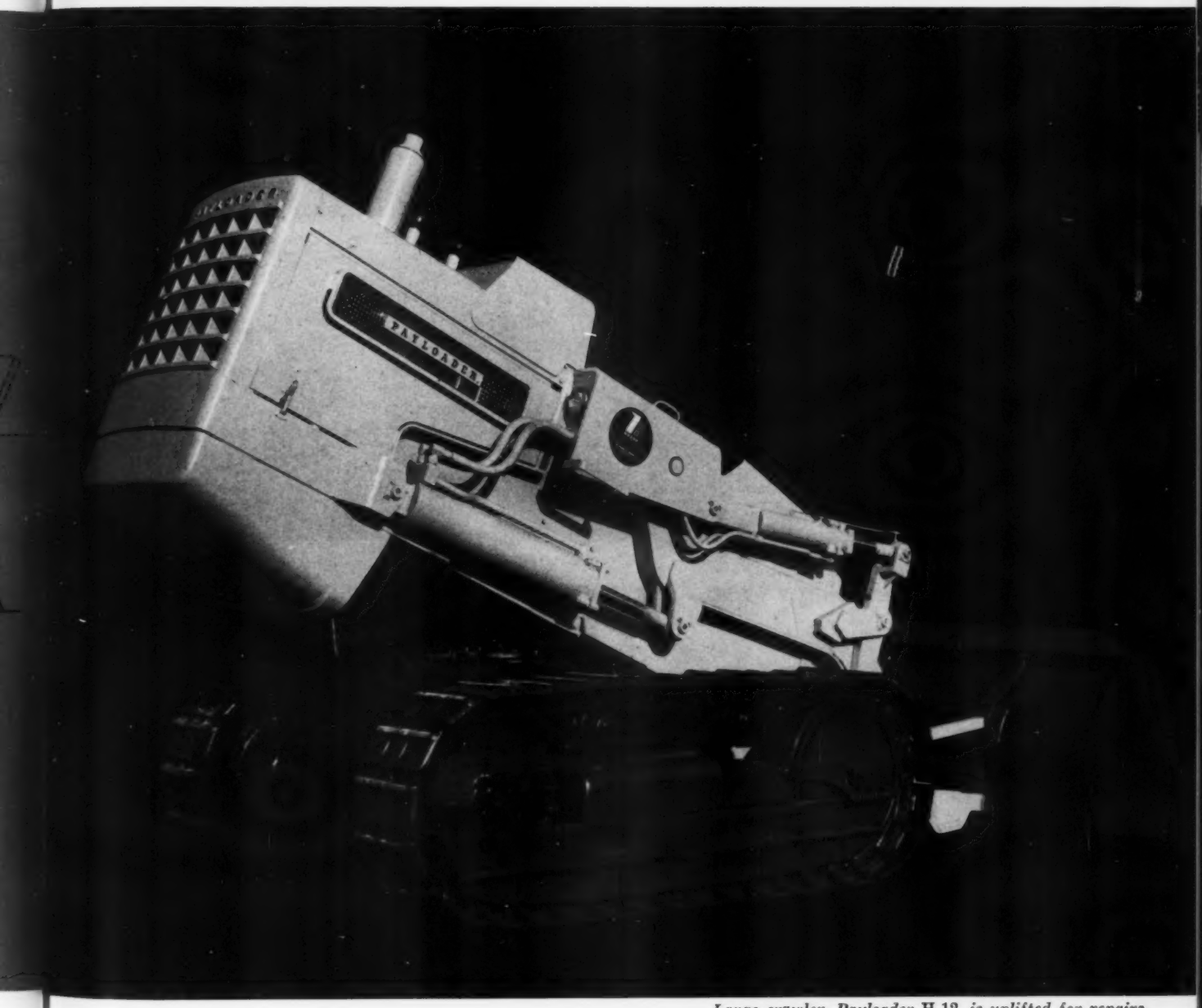
Left to right, Frank Hough, founder and president, Jon Hauser, industrial design consultant, and Ralph Beyerstedt, executive vice-president in charge of engineering, are the team responsible for the transition in design described by the diagram below, which compares 1950 model with 1955. The hydraulic working model above, an experimental design, was built by Hough Builders Inc.

The HH 1955, above, embodies the armlift principle illustrated overhead. Arms no longer create hazard by lowering beside driver.

The current HA, the smallest Payloader, was redesigned in 1953 by Hough team.

Small crawler, showing bucket in highest position.



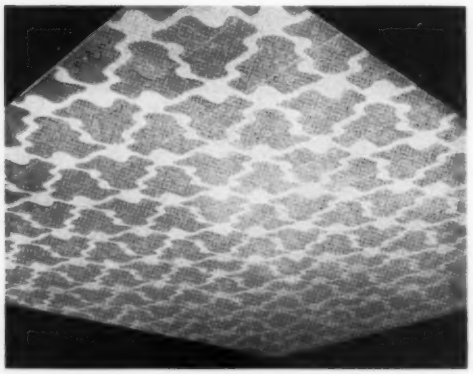


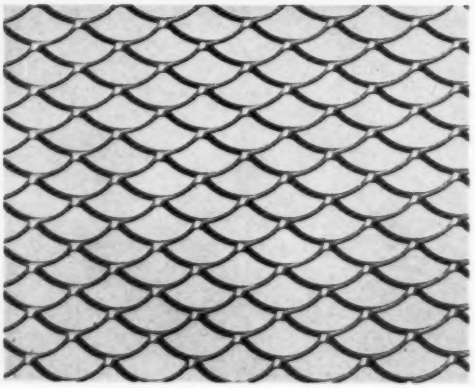
Large crawler, Payloader **H-12,** *is uplifted for repairs.*

company: United States Gypsum
industry: building materials
design requirements: new applications and designs for diverse materials
solution: special consultants on individual products

While there are no staff designers at U. S. Gypsum, which produces an immense tonnage of plaster, lime, paint, insulation board, expanded metals, hardboards, asbestos cement and acoustical tile for the building trade, the company has evolved a system for calling in various design consultants whenever it seeks to find new uses for its products. Recently Merchandising called in George Nelson for suggestions on expanded metals (ID, June 1956) and is marketing the new patterns and still working on some of the ideas he proposed for finishing the metal meshes. The Sound Control Merchandising Design Department, whose original product is the "Acoustosorber" (right), consulted with Gyorgy Kepes and is producing three of his designs for acoustical ceiling tile. The most comprehensive design project that Gypsum has undertaken was its Research Village, which stands in Barrington, Illinois. It commissioned six architects to design experimental homes for six different regions of the U. S., in order to get first-hand contact with new architectural thinking on which to base future product developments.

Left, "Acoustosorber" units, pyramid-shaped, are suspended from factory ceiling. Two inches thick, they are perforated aluminum foil with mineral fiber blanket. Below, Kepes-designed "Fantasia" for acoustical tile; "Festoon" design for expanded metal mesh.

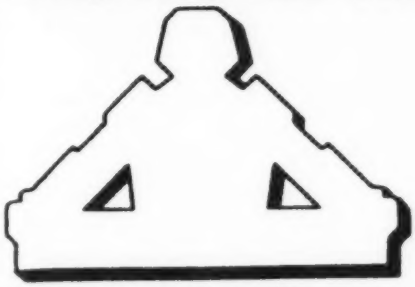




U. S. Gypsum uses design to project new patterns in the building trade

Residence designed by A. Quincy Jones, Jr. A.I.A., Los Angeles, California, and built by Joseph Eichler, Palo Alto, is one of six houses designed for Gypsum's Research Village in Barrington, Illinois, and features steel roof decking with exposed lightweight steel bar joists. Right, Jones' interior was designed by Marion Quinlan, Chicago. Far right, house by architects Brooks and Coddington utilizes a tongue and groove metal-edge gypsum plank for ceiling and floors.

Taking design cues from customers, Masonite cooperates with research



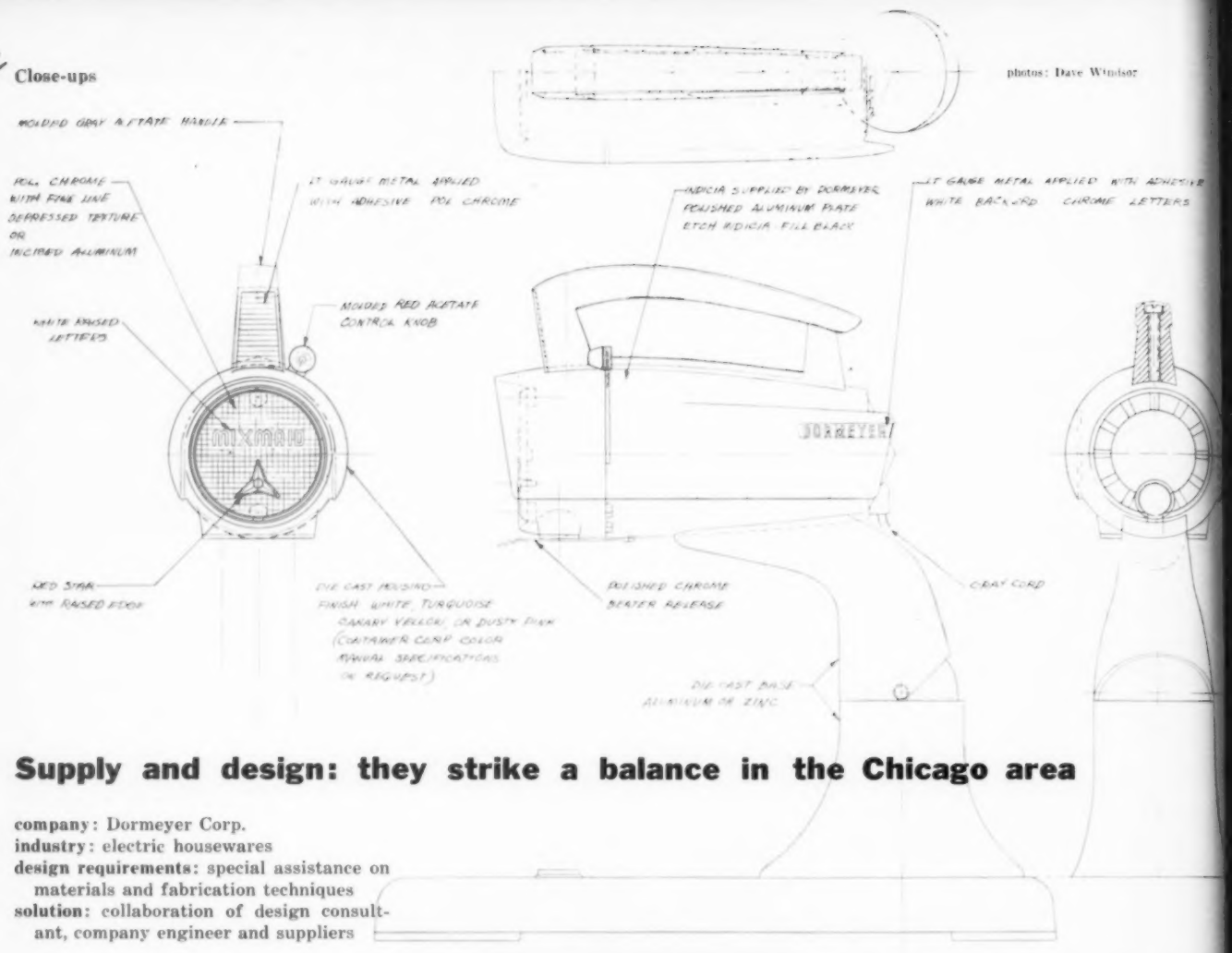
company: Masonite Corporation
industry: building materials
design objective: to help customers adapt their product to many uses
solution: research and development staff collaborating with designers

Another supplier of building materials, more specialized than Gypsum, and conscious of the prospects of merchandising through design and *to* designers, is Masonite Corporation. The world's largest manufacturer of hardboard, Masonite concentrates on research to develop its material for large-volume markets. Its engineering design and research staff works on adapting a basic product of cellulose fiber to whatever factors of strength, construction, lamination and finishing the problem or designer demands. The sales force tries to make direct contact with its customers' designers and regards them as a source of ideas for new uses for pressed wood products; the idea of coloring the perforated panels on the Tracy Kitchen Cabinet scheme (below, far right) originated with Tracy designers, and Masonite was happy to help them work out the finishing technique. In a more complex collaboration, the company worked with a garage-door manufacturer trying to develop a door that would be less expensive and more durable than wood. The first result was too costly; the second formula, though cheaper, still involved a press that left a "screen" patterned back. Eventually the lab produced a tempered board with smooth sides, dimensional stability, and a uniform paint surface, and Masonite guarantees it out-of-doors.

While the garage door represents an inroad on a new market, the Shadowvent siding is a design that Masonite developed to improve an existing market. In 1952 Masonite developed a siding that would give the appearance of vertical board construction — a package of wide lengths of Tempered Presdwood and a wood shadowline strip. Field tests established some further goals: to eliminate the nails piercing the hardboard; to prevent moisture condensation behind the wall; and to factory prime the siding. The Shadowvent siding (right) that Masonite research produced solves these problems and saves time in installation.

Shadowvent siding, made of Presdwood lengths, "floats" on a crimped aluminum strip nailed to the building; every 8 inches is a vent to reduce moisture build-up. Left, the garage door of tempered Masonite board; below, Tracy Kitchen cabinets.

photos: Dave Windsor



Supply and design: they strike a balance in the Chicago area

company: Dormeyer Corp.
industry: electric housewares
design requirements: special assistance on materials and fabrication techniques
solution: collaboration of design consultant, company engineer and suppliers

When Dormeyer decided this spring to bring out a larger table model of its "budget mixer," management called in their regular consultant Jack Morgan, who has designed Dormeyer electric housewares for the last eight years. Chief Engineer Fred Schwanake presented a motor layout, on the basis of which Morgan developed four proposals. The next step was a mechanical specification drawing of the chosen design (above) which, both engineers and designers knew, would entail the particular services of several suppliers, in addition to Dormeyer's own facilities.

Chicago has a vast number of special fabricators and suppliers who are highly experienced in solving special problems for designers and manufacturers. Croname's Bill Salyard, for instance, acts as a designer or, as in this case, a design liaison, suggesting possible methods of fabricating the decorative front insert. The same applies to production problems: Dormeyer relied upon Plastic Precision Parts Co. to maintain the exact contour of the acetate handle on a large run. Through previous experience with all four suppliers and with Schwanake, Morgan could control his design by producing actual specs, iron out production details together with Schwanake and each supplier, then follow through to make the inevitable adjustments, as shown on this spread.

The designer defined model 9700 in a mechanical drawing, above.

Morgan Associate Burton Kelly, working with Dormeyer's Fred Schwanake, visits Fred Bonecue at Plastic Precision Parts Co.'s plant. The handle design complicated the problem of gating so that a four-cavity mold was required. The designer agreed to discard the handle's metal insert since it required an extra core.

At Midwestern Die Casting Co., Schwanake, as Dormeyer's liaison between designers and suppliers, discusses with Verne Broezell, Chief Engineer, and William Slominski, president, the use of an aluminum base to save weight.

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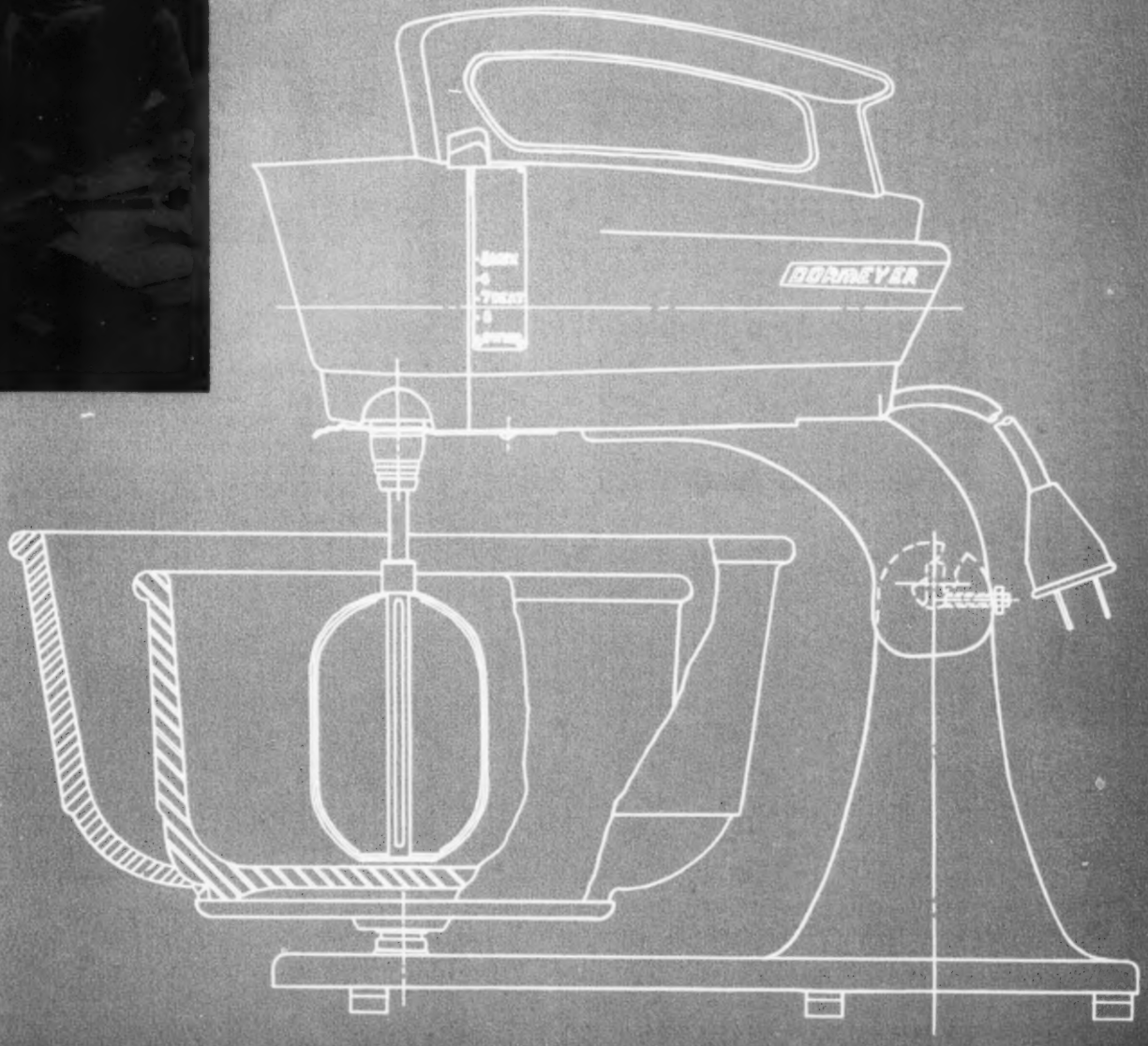
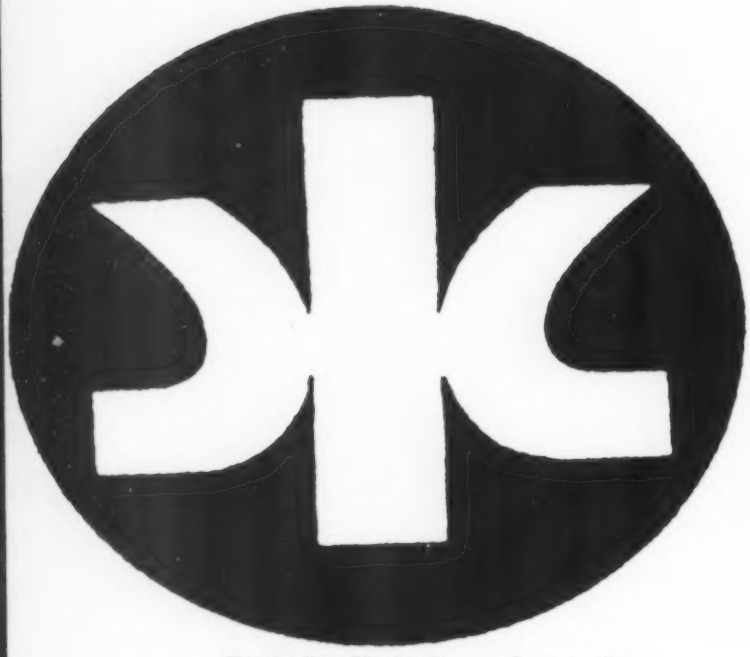
ill Salyard, art director (left) of Croname, specialist in decorative metals, reports to Bob Brooks of Dormeyer the final decision on treatment of the front insert on the housing: Croname would be able to form with one die, the air intake and the embossed name, as well as the incised lines desired by the designer, effecting a dual-purpose piece with decorative and functional.

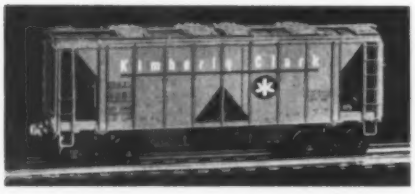
Ray Wielgus, left, presents Jack Morgan with the working model of the revised design. Morgan made changes after sales requested a larger housing than in the original proposal. This resulted in the revising of the standard base and the support arm, while the handle was changed to conform to the final contour and to give clearance for a later addition, the juicer take-off attachment. Final result, marketed in July, is shown below.

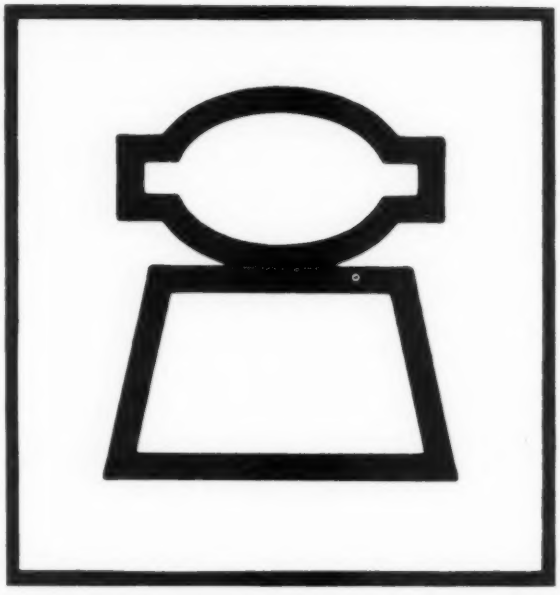


Companies: various; design requirement: corporate personality

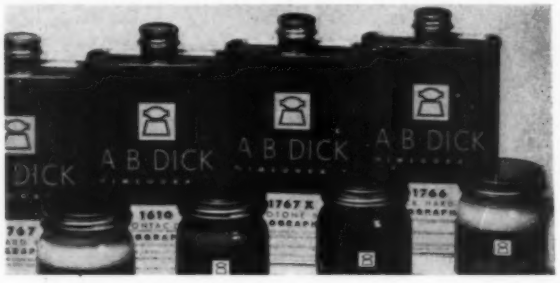


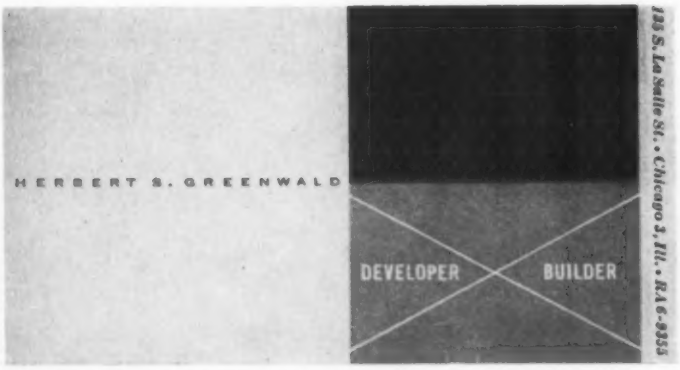
Kimberley-Clark. To supply a trademark for the large paper manufacturer entailed, according to designer Robert Sidney Dickens, "a complex study of mills, personnel and sales meetings to capture a total spirit." Applied to pale purple mortuary sheets, smokestacks and hopper (below), this solution to a basic design principle, seemingly simple, resolved even complex legal problems.



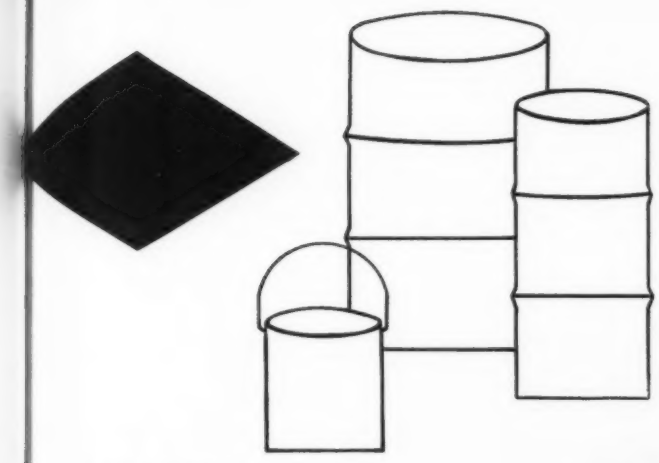


A. B. Dick Company. Walter Dorwin Teague Associates modified the border of A. B. Dick's pre-1914 mark into the well-known hieroglyph (above). The identification program, now centralized in the company's art and display department under Herbert Watts, retains W.D.T.A. as consultant. Dick achieves identification of some 2,000 products, ranging from styli and writing plates to duplicators (new #350 is first company-designed)—by means of graphics, store layouts, and packaging (color inks, below).





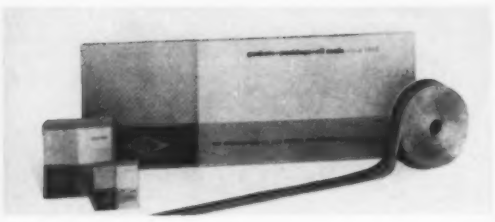
Herbert Realty & Construction Co. For the builder of Mies van der Rohe's Esplanade apartments, designer Ed Bedno devised the neatly girdered logotype for this calling card (above); he carried the builderly theme, in colors that are luxurious for real estate — black, blue, violet and gold — to Herbert Greenwald's stationery, Christmas cards and presentation brochures.



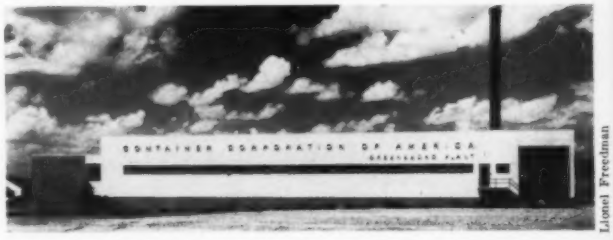
Inland Steel's use of design is unusually diverse. Its subsidiary, Inland Container Co., has employed handsome graphic promotions of its drum containers (above) and of its own customer design service. Its lake steamers were given fresh paint schemes by Karl Brocken; its new Chicago headquarters by Skidmore, Owings and Merrill is itself an experiment in the application of steel: steel flooring permits skyscraper construction without interior beams.

Martin Senour's "Color Brush," held by President William Stuart and splashed in a wide spectrum by designer Morton Goldsholl, paints trucks, stationery, cards and posters in the firm's well-known graphic program. Having designed M-S from A to Z since 1950, Goldsholl recently broadened his scope of service to the company when he and his staff invented a new system for mixing and dispensing paints electronically and economically. It will be introduced to dealers this fall.

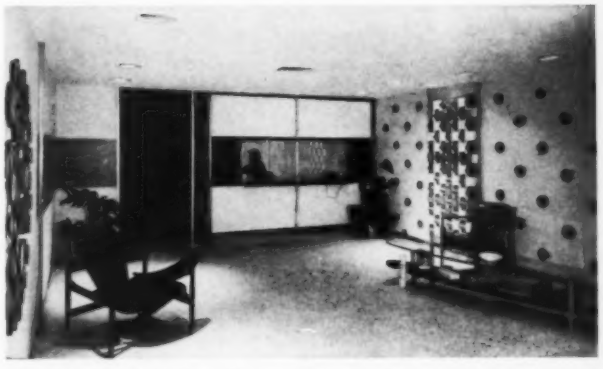
Sears, Roebuck & Co. uses package design to demarcate merchandise lines and to unify its many separate brands (Harmony House, Craftsman, etc.) that take precedence over the company name. Though examples here are all by Bruce Beck, packaging is created by many designers—a varied program that has served to identify Sears with good package design. C. W. Harper, Director of Packaging, is also developing a coordinated identification of the Sears signature line.



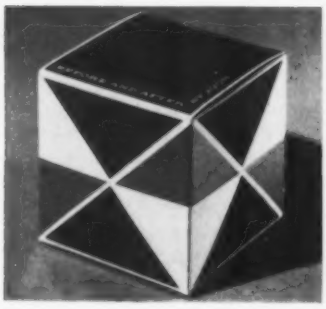
Felt Products Manufacturing Company has employed Dave Chapman since 1951 for its family line identification, now a long plan covering all communication between company and consumers, suppliers, dealers, distributors, staff and public. Basic pattern of red, tan, black—seen here on point-of-sales display rack and wrappers—has appeared on catalogues, office forms, cartons, and won the STA award this year.



Lionel Freedman



Container Corporation of America's policies include the broadest possible application of design in business (page 76). Its long-term identification program extends to advertising (Great Ideas of Western Man Series, left, by E. McKnight Kauffer), to facilities for employees, architecture (Walter Gropius' Folding Carton Plant at Greensboro), and interiors (Design Director Herbert Bayer's reception room in Container's New York office, with container board sculpture). Its special laboratory under direction of Albert Kner develops and tests customer packages (Avon design below).



Lionel Freedman

Part II of a series by designers and executives on the new relationship between design and industry

by Richard Robert George
Latham-Tyler-Jensen

Can business survive on its familiar formulas of design and merchandising? Can designers continue to work effectively with clients on the basis of traditional work relationships? A firm of design consultants in Chicago maintains that they cannot—that business stability lies in the investigation of something new called

the process of Product Planning

I

One thing is clear: no individual can invent enough new products to maintain a large company today. Most manufacturers recognize this fact. The significant thing is that they don't know what to do about it.

The American manufacturing economy is a very complex affair, so complex that it can only be maintained by the application of certain workable patterns—call them formulas. This process of assimilating large and complex problems by reducing them to known, understandable formulas is a very valuable human invention. It works so well that our culture has been able to build up and maintain a problem called "Industry" that is so huge and complex that no one man is capable of understanding all of it or even any large part of it; it is understood and maintained by men using formulas.

The trouble with formulas is that once you find them and they work, you do not want to change. The trouble with success is that once you have it, a change in the patterns that produced it is not rational. This is the exact position industry finds itself in today; it has formulas and it has success, therefore it is reticent to change. Yet industry is beginning to perceive that some kind of change is necessary. The question is, what kind of change and where?

One of industry's jobs is to produce products which answer a human need and then to sell them. The pattern for doing this has been established: design, merchandising, and advertising. Each of these has been reduced to a formula. Each works, and when applied with continuity the product sells and is successful, or so the story goes. Many men are convinced that it is true.

We are not convinced. Products which are well designed, thoroughly merchandised, and completely advertised are failing. Companies which make products and apply all of these formulas in the most modern and complete sense are failing. Men with a long and successful management record, men with all the know-how of advertising, marketing, styling, and the hard-sell, are failing. Whole industries are disappearing; obviously something more is needed.

The unbelievable duplication of products and the widely accepted "fact" that a small company finds it impossible to survive in the face of "size" also point to a need. The continued mergers which are explained as "Diversification" point to a need. How do these three unrelated facts correlate? They all have to do with useful products that satisfy a need, and the buying public's attitude toward them.

The fact is that the familiar formulas for design and merchandising are no longer good enough. Something new has to be found. We believe that this something new has to do with the Process of Product Planning. We believe there is a need for a whole new approach to this problem of getting new and useful products, and that is what we'd like to talk about.

II

Product Planning can be defined as all the work necessary to the life cycle of a product—any product—from idea to finished goods. As members of a large design firm my partners and I had been associated with the design and styling phase of Product Planning for many years. A little over a year ago we set up our own design firm of Latham-Tyler-Jensen. Our main reason for setting out on our own was our strong belief that it is possible and necessary to develop a superior creative process for Product Planning. Our concern is with the

best possible way of putting people to work together in a Product Planning Process that will produce superior answers.

The scale and complication of manufacture and distribution in large industry today is beyond the imagination of most individuals. The details of such enterprises can only be handled through new and radically different ways for groups of individuals to work together. Generally speaking, this is well understood: most modern management already uses the group approach and is concentrating now on better techniques for making it work. But usually the invention and creation of the new products from which these large industries derive their living still proceeds on the basis of individuals.

Organizing existing resources

As the techniques and needs of our highly complicated industrial society have outstripped any one individual's ability to perform, the responsibility for Product Planning has been split among a number of people with different skills. Within recent years, these skills have been defined as Research and Development, Marketing, Design, Engineering, and Merchandising. Some of these skills have to do with machine technology and some are concerned with human beings and their needs, but most or all of them are required to get any product on the market. Once the need for these skills is understood, the problem seems obvious: how do you combine them for the best possible results? This is a question of how well and how successfully the various specialists involved in Product Planning work together. All of the resources for accomplishing answers in any one of these skill areas are available to modern industry; the real problem is how and when to employ which resources for the best results.

As consultant designers, we had felt for some time that we were not operating in the best way when we acted as experts or specialists in our field. According to the traditional client-expert relationship, the designer takes a defined problem and produces a packaged result which he delivers, or if necessary, "sells" to his client. When we worked in this way we had a feeling of being isolated. Often we did not have enough information to get a superior result. Sometimes, when we were asked for innovation, we could not deliver because we hadn't access to some highly technical development that would make innovation possible. In other cases, we actually did create "new" products, but failed to see them through because of hesitancy on the client's part. When an expert consultant runs into situations like this he tends to do two things: first, he incorporates even more areas of special knowledge into his own group, and second, he concentrates on selling—on the group's ability to convince the client and to get across new ideas.

A new approach to expertise

We were convinced that what was needed was not the incorporation of new and diverse skills in our own organization, or superior selling, but a whole new approach to the relationship between client and consultant. Furthermore, we felt that we would have to alter our traditional, commercially accepted pattern in order to accomplish this.

As a result of this kind of thinking, we organized ourselves as a group of people in the Design Skill Area set up to work with clients in a new way. In place of the traditional client-expert relationship we tried to develop a true client-consultant philosophy with the idea that a consultant's basic responsibility is to act *with* the client and help him to solve his own problems. We do this either by telling him what we know in a special area or by working with his own group of specialists. Answers arrived at in this way cannot be described as ours, but are rather the results of the whole group.

In other words, we are not limited to the traditionally accepted associations—consultations and briefing sessions with engineering, merchandising, sales, etc.—but are free to work directly with company specialists in our own field of Product Planning as well as with other consultant designers. We have found that this kind of relationship does not eliminate the traditional competition between similarly skilled people, but rather puts it on a new level where everyone's efforts, instead of being spent in dueling, are directed toward a superior solution. Our new approach has allowed us to get an entirely new perspective on our client's problems, and especially on the problem industry has in getting superior, creative results from a group of people with diverse skills and responsibilities.

Very recently, studies of human motivation have introduced the social sciences into industry, and this new knowledge is beginning to be applied to the Planning Process. The most remarkable results of our own work were possible largely because we were able to employ the very special skills of social scientists and consultants in the areas of psychology and meetings-techniques. We discussed our programs freely with these specialists, and many of the changes were pointed out by people trained to identify human relationships.

III

In the past year we have learned a great deal by actually participating in planning programs that we

ourselves helped to design. We have learned by making mistakes, and by exposing ourselves to new ideas and new relationships that would have seemed dangerous by our old working standards. We have learned enough to realize that we are barely launched in a completely new learning area. We have also found that many other people both in and out of industry are beginning to concern themselves with this new concept of the relationships between people in creative groups.

Some of the things we have learned in a year's experience can be illustrated by three planning programs—Ansul Chemical Company, Ekco Products Company, and General Electric Company.

Product planning at Ansul

The program that was put under way on an experimental basis at Ansul has already progressed so far that the company has formalized it in a manual stating company policy on Product Planning. It is significant that this brochure was compiled from results of procedures that have actually been tested.

Ansul is both a chemical and a mechanical manufacturing company. This makes the new goods picture a complicated one: in some ways Ansul is the ideal research group because its diverse production offers every kind of variation on the grouping of skills needed to solve problems. Thanks to the experimental inclination of Ansul management, there is an unusual amount of freedom to study new ideas about how people work best together. As a result of this open-minded approach, we have mutually uncovered some important answers.

One of the things we have proved at Ansul is that a basic key to producing an effective team of people lies in the heart of day-to-day relationships. At Ansul, these relationships were clarified by defining two groups of people: the Product Planning Policy Group, and the Product Investigating Teams. The function of these two groups is explained by Robert Hood, president of the company, in the new Product Planning manual, as follows:

1. The Product Planning Policy Group "is made up of the area heads in the organization. Its responsibilities are to plan for the future by setting broad company policies, to investigate and review products, and to make decisions as to whether these products will be manufactured by Ansul. . . ."

2. The Product Investigating Teams "will carry out the work assigned by the Policy Group on individual projects. These teams will supply the detailed knowledge and skills required to accomplish the work, and by investigation and analysis will report to the Policy Group in such a way as to facilitate decisions. The Product Investigation Teams will vary in accordance with the problem to be solved, being made up of those people best qualified to assist in individually defined solutions. . . . The Investigating Teams are made up of active staff members of the departments who, in most cases, will carry out the detailed research and development necessary to produce a product."

In establishing these relationships we were aware that every company is organized along hierarchical lines for very practical reasons. The boss-subordinate relationship (family group) is necessary for training purposes and for policing and general day-to-day continuity. However, over a period of time this family group tends to produce ideas which are all similar in nature; thus their solutions are similar. The family group represents for the most part the kind of learning that occurs in a teacher-student relationship: both boss and subordinate, or teacher and student, are working toward similar objectives, and therefore similar answers. That is why closely related groups find it difficult to uncover radical solutions, or answers that surprise the group. To us, it is further proof that the consultant, in order to get better answers, must work creatively outside his own family group and become part of a new group representing diverse interests and security patterns. In forming Product Investigation Teams at Ansul we were trying to break through this necessary family relationship in an area where it was detrimental.

The Ansul peer-group

The Product Investigation Teams were organized on a so-called Peer basis. In other words, every member of a team represents a particular skill and has *equal standing* with every other member of the team. To accomplish this, the entire company was surveyed and each person up to and including the janitor was identified with a particular skill or area of knowledge. These skills were then charted in such a way that the Product Planner could compose a group on the basis of skills to apply to any stated problem. These groups, when selected, were further screened to make sure that no boss-subordinate relationships were present. In other words, the P.I. team was free to work together on the problem in the abstract, without worrying as to how their participation might effect their job security. The team as a whole then made its report to the Product Planning Policy Group.

As a matter of record, the results were so startling that we were forced to go back over the ground we had covered and re-examine other company relationships. We had invented nothing; we had simply put

people to work together in a way that industry is very hesitant to approach.

Ekco's management control

In a completely different area, we have been working with Ekco Products Company to build a new group of Product Planners. Ekco's output is generally limited to the housewares field, but the number of products and new projects necessary to maintain the company's position in this field are beyond the capacity of most manufacturing enterprises. To further complicate the problem, the manufacture of these products is spread over twenty-six factories and five countries. When work was begun on a new Product Planning procedure, all the necessary skills were present and had been employed for many years. The object was to consolidate a group of people already at work into a more basic, recognizable form. We have worked directly with the young management team at Ekco on this problem.

The new Product Planning procedure at Ekco is described at length in a separate article (page 102) The significant thing to point out here is that the new position of Product Planning puts qualified men into the mainstream of the company in such a way that top management can direct and control all efforts on future products. A mechanism has been established that makes it possible to report the progress and effort on new programs to top management on a day-to-day basis. In a company like Ekco large sums of money can be run through very quickly, and control is therefore necessary. It is important that Ekco not only recognizes that the job has to be done but realizes it can be done better.

The General Electric triumvirate

A third completely different approach has resulted from our new relationship with General Electric in the field of Major Appliances and Television. Needless to say, GE has had a large and competent staff of designers for years. Under Arthur BecVar it had already employed consultants at various times, and when we first started discussions with the department, George Nelson had been acting as a consultant for several years. The relationship that was formed between ourselves, the Nelson office, and BecVar's group is a completely new experience. We work as a triumvirate on all problems. In some cases we work entirely separately on specific design problems, in others we have concentrated on our areas of special skill and contributed toward a three-way answer. The important result is that each group has continued to solve problems and come up with answers that contribute independently to the total need.

In short, at GE we have found we can work freely in competition toward a better final solution. It has become obvious that each group has a special skill to offer, and we have learned that it is wasteful to attempt to compete in certain areas. On the other hand, all the groups involved have an opportunity to see and study the specialties of the others. Most important, we have shared each other's thinking.

IV

Some of the principles we have established more firmly as a result of thinking and working with widely diversified groups in such varied areas have shaped up into a working philosophy; it can be summarized as follows:

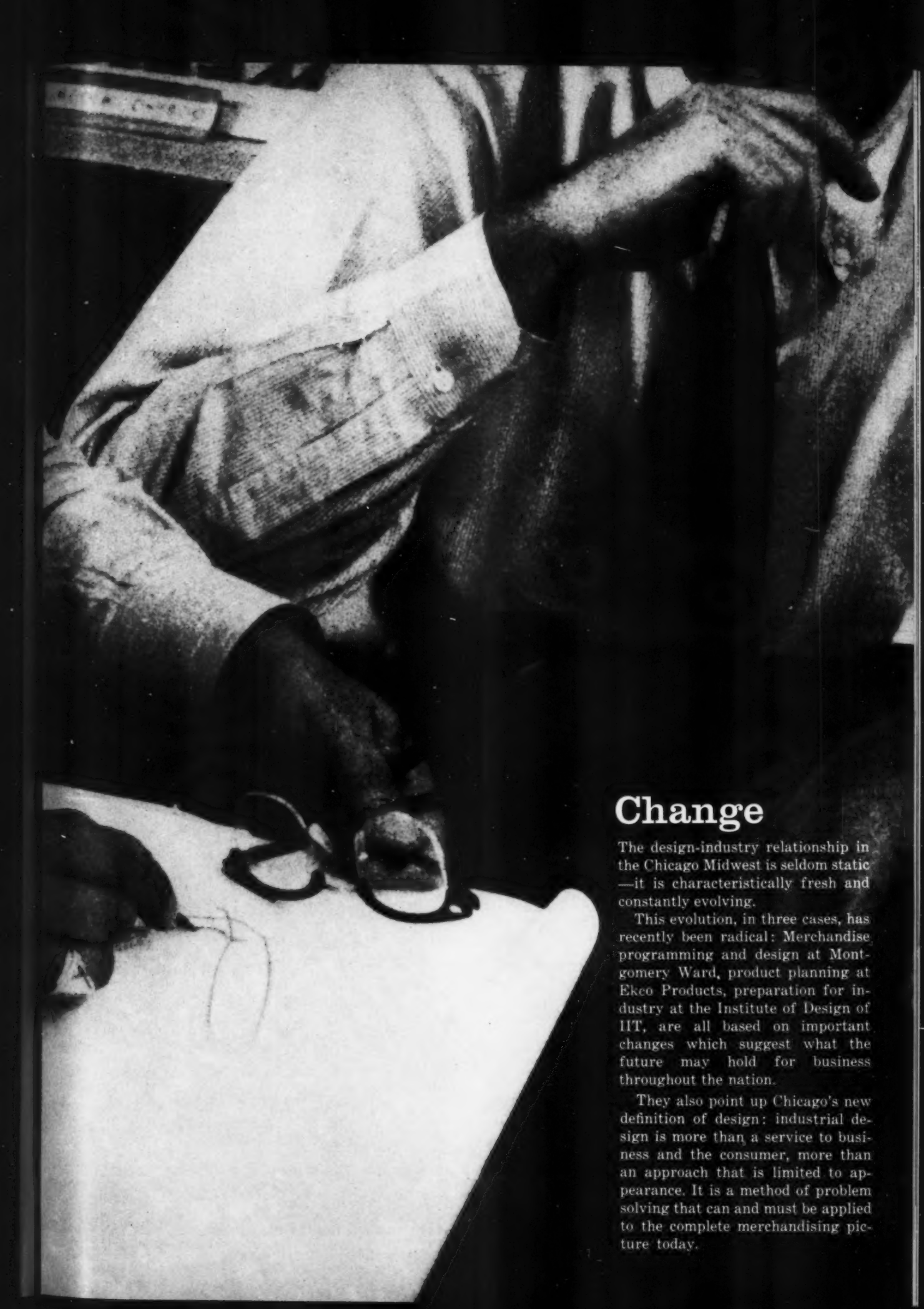
1. Continuing refinement of existing products in terms of styling and merchandising is no longer sufficient. Industrial survival in consumer goods is going to depend more and more on being able to identify new needs, screen ideas which look like answers to these needs, and process genuinely new and more useful products.

2. A process for identifying these needs and creating answers in terms of new products is within the grasp of most companies: most of them have the technical skills available internally and externally.

3. The process can be brought about intentionally, and is not dependent on luck, inspiration, or genius. In fact, the process may be described as "the ability of a group to discover within its own experience the answers that will lead to a better solution."

4. The greatest stumbling block to a better New Product Process is the inability of individuals or groups of experts to work together outside their present commercially successful patterns.

If the process of designing new and more useful products is concerned with establishing the rate of change in relation to need, the resistance to change in professional groups and industries is the hardest thing to overcome. Because of this resistance to change, creative people with special skills find it almost impossible to accept the idea that there is a different and better way for them to associate themselves in group problems. The hang-over idea of individual "Genius" and "Invention" is present in almost everyone and is especially prevalent among experts in highly technical fields. There is nothing wrong with this idea—except that it doesn't work. We are interested in a process that does work. We believe such a process is necessary to business survival.



Change

The design-industry relationship in the Chicago Midwest is seldom static —it is characteristically fresh and constantly evolving.

This evolution, in three cases, has recently been radical: Merchandise programming and design at Montgomery Ward, product planning at Ekco Products, preparation for industry at the Institute of Design of IIT, are all based on important changes which suggest what the future may hold for business throughout the nation.

They also point up Chicago's new definition of design: industrial design is more than a service to business and the consumer, more than an approach that is limited to appearance. It is a method of problem solving that can and must be applied to the complete merchandising picture today.

Members of Product Planning Department meet bi-monthly at Ekco to pass around the pencil with their design consultant; together they attempt to formulate group approach on new product idea. Here Henry Forster meets with James Hvale, Richard Latham and product planner Malcolm Smith.

photos Charles Reynolds

"Why did we change? Because things were going well. We changed because the company was growing—had in fact outgrown an informal system for keeping our productive facilities geared to our market. New ideas were no longer enough." Edward J. Keating, Executive Vice President, Ekco Products Company.

The change at Ekco: Merchandising bows to a unique planning group

Forster and Latham with E. J. Keating

Ekco Products Company is making a rare move in this business age: it is flying in the face of its own success. With sales quadrupled since 1945, employees tripled, profits increased ten-fold, the country's largest producer of kitchen tools and bakery goods is concluding an important organizational change.

Ekco's management has just razed its 20-year-old Merchandising Department. In its place they have erected a Product Planning Department, headed by a Vice President of Product Planning who is, to anyone's knowledge, the first in industry. They have assigned to him three Product Planners, three designers, a project engineer, and a firm of design consultants. They have charged this group to plan and execute up to 50 new products each year, and to review continually the firm's line of over 2,000 items bearing 36 brand names.

Ekco's success in housewares has been built with two tools: growth by assimilation, and "new goods." The former—acquiring diverse manufacturing plants—has often taken care of the latter. But if not, Ekco has had its own kind of product development in President Ben A. Ragir and Board Chairman Arthur A. Keating. Former President Keating is a natural generator of ideas, and has always been able to function quite effortlessly as chief executive officer and a new goods department—a system that worked profitably for 30 years. Then Ekco concluded that today's profits were not enough.

Growth by assimilation started during World War I, when Arthur Keating and his father, founder Edward Katzinger, expanded from commercial tinware into small bakery items for Woolworth. Buying the A. & J. Tool Company in 1929, a kitchen tool manufacturer, Arthur Keating made his first step into the housewares industry. In 1934 he moved into cutlery; after his father's death in 1938, took on stainless steel flatware and aluminum cookware, and since 1946 has purchased facilities to make stainless cookware, can openers, sponges, and gadgets by the hundreds.

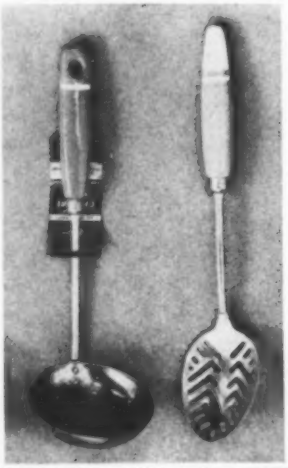
Behind this pincer operation has been Keating's indefatigible drive for better quality products. "Ovenex" bakeware, Ekco's first bid for the consumer market in 1923, was his idea and his name for a new prismatic-surfaced ware that wore better and baked better. He literally put the hollow-ground knife blade into mass production when the Geneva Forge cutlery-making subsidiary was incorporated in 1935; fifteen years later he admired the traditional craftsmanship of European cutlery, and decided that Ekco must have a quality mass-market line—the result was the Ancienne Maison line. He pioneered the idea of a staff design department in the '40's, to make sure that even the lowliest item got good treatment, and in 1935 he had the tiniest big idea in houseware history when he put a hole in the kitchen spoon handle so that it could be hung up. This twist propelled the industry into a boom with decorative hang-up utensils of every sort, and led to Ekco's classic 1900 Flint utensils which have become the accepted standard in quality kitchen tools.

Such small ideas yielded big rewards for Ekco. Sales rose from $3,811,000 in 1935 to $15,971,000 in 1945, and hit $64,509,000 last year, when the firm produced about 65% of all kitchen tools, 40% of kitchen and table cutlery, 50% of the kitchenware in the country. Keating had accomplished this expansion with the help of a management team of men who were both young and able: President Ben Ragir; his son Edward Keating, Executive Vice President; David Canmann, Financial Vice President; supplemented by the experienced Vice Presidents of Merchandising and Housewares Sales, Henry Forster and Jack Culberg. With this skilled, strong executive arm, Keating remained in a role that is not untypical for the owner-executive: as the man closest to the creation of the business, he retained close control over the mapping of its future direction.

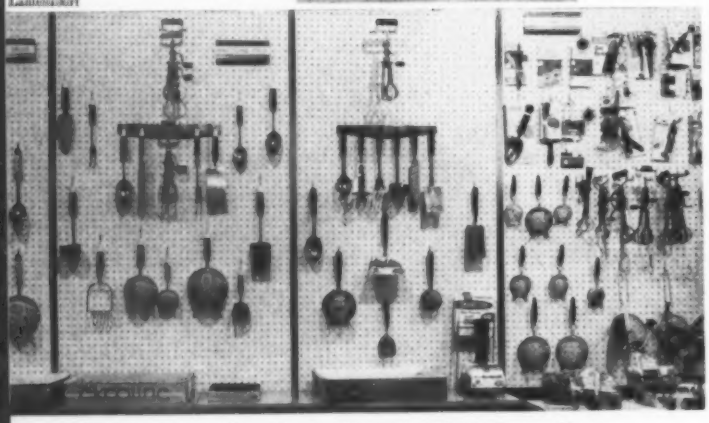
But in 1955, Keating and company faced unprecedented statistics: Ekco, competing in some 17 industries that comprise Housewares, now owned 26 plants here and abroad, employing nearly 6,000 people. The company had grown from a family-owned business to a publicly-owned corporation. Management came to a jolting realization: these people and plants could no longer be sustained profitably, year in and year out, on the basis of casual new product planning.

The problem was not purely lack of ideas. Keating alone could still stir up enough projects to keep a brace of factories humming—but 90% of them died for lack of a system to see them through.

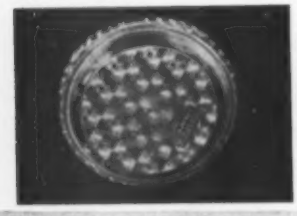
Nor was the problem design: the design staff was active—in fact continually swamped with the problems of maintaining a competitive position for the hundreds of products Ekco made. What Ekco needed was a new approach to organization that would allow attention to new goods—a group that could work the new product ideas of management into long-range plans.

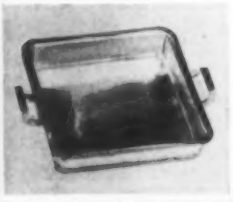


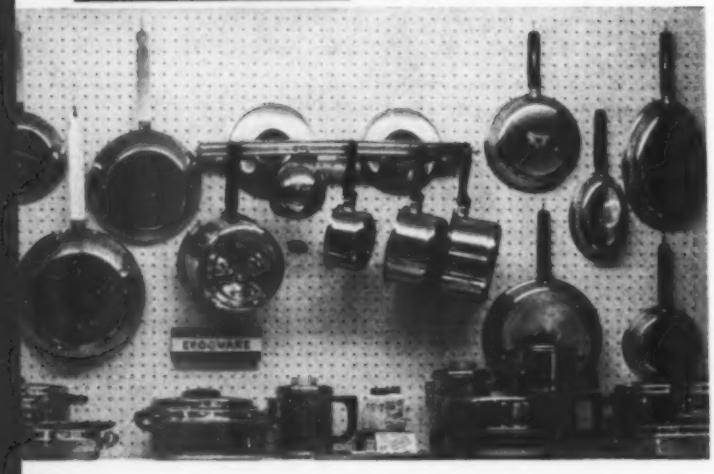
Ekco's early kitchen tools (r.) acquired hole in 1935 (l.), starting trend to hang-up utensils.



Plethora of small products shown in Ekco's large display room is firm's achievement and its problem. Over 2000 products bearing 36 brand names have evolved from small beginning in cookware. Ekco's first consumer ware, low-cost Ovenex (below, left), is now matched by quality, like copper-clad stainless (below, right) at $14.95.







uct ideas of management and work them into long-range merchandising plans.

The executive group decided to examine a new approach to its merchandising structure; simultaneously it invited its design consultants, Latham, Tyler and Jensen, to study the problem independently. Several months of self-examination, coupled with a comprehensive report from LTJ, produced a change that was explained in a memo to management of March, 1956:

> Effective the first of the year, we established a new department known as the Product Planning Department. This replaces the old Merchandising Department and applies to the Ekco Product Company and all operating subsidiaries on consumer goods.
>
> This department, under the administration of Henry Forster, V.P. of Product Planning, is responsible for the initiation and development of products, the improvement of existing products, and the merchandising of new and existing products. The department is staffed to perform the functions of product development and merchandising, including appearance design, project engineering, marketing, packaging and display.
>
> Each category of business is supervised by a Product Planner who has primary responsibility for the progress and coordination of new products, product improvement and merchandising projects in his assigned area. . .
>
> Edward J. Keating

What this meant was decentralization—a change from previous methods of product development—and then recentralization into a new department with a new structure of responsibility for the creation of products. It also meant a new method of operation: problem solving and planning were the responsibility of the entire planning and design group, while final decision and action on these ideas were the responsibility of one of three Product Planners in the three major areas—utensils, cutlery, and cookware. The crux of the system was this new Product Planner, who in Ekco's written objective would be able to "visualize and coordinate the ingredients necessary to the successful marketing of products, encompassing product and package design, engineering, merchandising, and display." This description gave a new dimension to a title that is sometimes applied to market analysts, statisticians, or production supervisors. Ekco wanted, indeed required, a person with a sensitive balance of creative and business abilities. What kind of person could qualify?

Choosing a team

There was no doubt in the minds of Arthur or Ed Keating about who should be the Number One Product Planner. Henry Forster, who had been with Ekco since 1941 as Vice President of Purchasing, then of Merchandising, offered talents of a scope that were not conveyed by either title. Forster had merchandised housewares at Montgomery Ward for 26 years, where, working constantly with the Bureau of Design, he had learned to appreciate design for its contribution to merchandising —and for its own sake. His sensitivity to design, his intuition about how it could strike the consumer, have

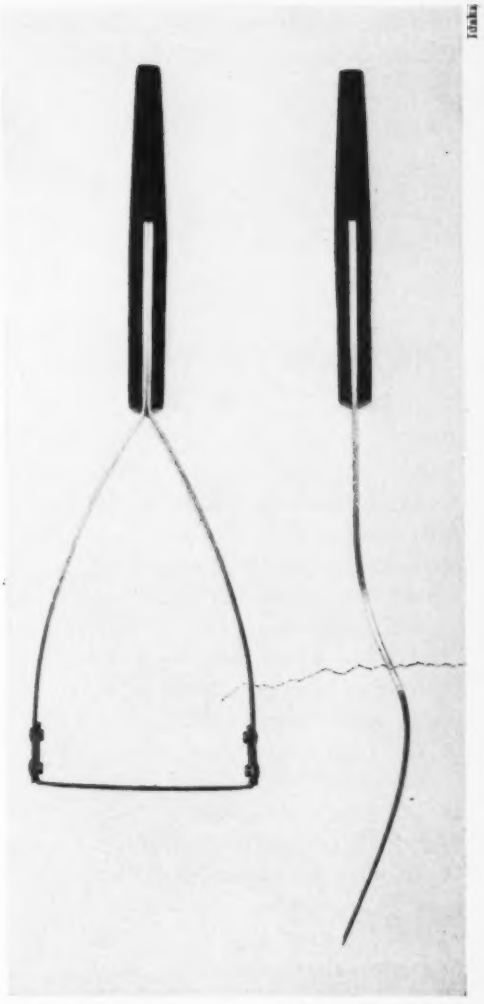
earned him great respect in the housewares industry.

Next, Malcolm Smith, Charles Moffett and Harry Edmunson were selected as product planners, from backgrounds involving merchandising and buying, and knowledge of design. Jim Hvale, formerly chief designer, was made Design Director with a group of three, to work continually with the planners on any package, product or display problem that needs attention. A new element is a project engineer, Edward Mareska, who acts as liaison between the designers (helping them during design stages) and plant engineers (interpreting the designer's objectives during production). The final ingredient is the firm of design consultants who helped create the plan: Latham-Tyler-Jensen's self-selected role is to contribute to both planning and designing.

How they work—and how it works

The Product Planning group, often augmented by sales or engineering representatives, meets semi-monthly to tackle new problems or discuss old ones. When Ekco recently acquired a German plant with a unique wood-forming process, the group spent several hours stirring up ideas about what new products they might make with it. The recent acquisition of two firms making builders' supplies, calculated to lead Ekco into a wholely new field, were paralleled by sessions devoted to product development in that area. And when management decided that the market was ready for a redesign of the Flint 1900 tools (five competitors had an almost identical product), Forster's group discussed the broad merchandising objectives in trying to improve a virtually perfect design. They decided that the design could be brought up to date while retaining its appearance of excellent craftsmanship. To achieve this, LTJ designers worked with Hvale's group and the project engineer, and presented a design to the Product Planning group. After suggested refinements had been incorporated into a final model, it was presented to management for approval. Throughout, both staff and consultants worked as a team, presenting material in a standardized form that would not identify the final result with any one person. Pride of authorship, as Dick Latham maintains in the preceding article, has been superceded by satisfaction from the group's results.

Only eight months old, the new department is still hard to evaluate. Edward Keating, who is ultimately responsible for the reorganization, is the first to admit that it has not been easy. To alter any employee's job is a delicate task; to reorient large numbers of executives too, while adding new ones, will take time and human relations talent as well as a new organization chart. But he is convinced of the soundness of combining merchandising and design under a new aegis—convinced, in fact, even amid the aches of readjustment, that the new mantle of Product Planning is custom-tailored to Ekco's kind of merchandising problem.



First product of consultant-staff collaboration is line of Flint tools, with quality appearance similar to classic line but with refinements in the handle shape and placement of the hole. Complex stand-up display box was developed by Container Corp., part of Forster's push for quality packaging throughout Ekco's lines.

"There are many new frontiers in merchandising today—new products which open to the progressive merchant whole new markets for development and growth. These are dramatic and exciting, but it must be recognized first that results can never be better than the merits of the merchandise permit them to be. The role of design and the magnitude of its significance are apparent."—L. O. Naylor, Vice President and General Merchandise Manager, Montgomery Ward & Co.

The change at Ward: a new consultant, a refurbished Bureau of Design

Biggest of the many recent changes that have taken place around Montgomery Ward was the belated retirement of Sewell Avery, an aftermath of the famous proxy war of 1955. His departure wrote *finis* to a doom-saying corporate leadership that had led sales into a steady decline and left Ward running a sorry second to Sears, Roebuck. John A. Barr, Avery's successor, emerged as a man with a purpose, a corporate purpose —to make an aggressive play for Ward's lost merchandising leadership, to give a new status and authority to Ward executives and buyers—and designers.

One of the most significant changes brought about by the new regime was in design, a change which, in fact, brings Ward's historic design role in full circle. It connotes a broadening interpretation of design by a company that had pioneered its use in merchandising in the '30s, then had largely neglected it—the Bureau of Design under Anne Swainson dwindled to a handful by the time of her death in May, 1955 (page 72-73). Last year, late in the summer, James A. Webber, recently retired Vice President and General Merchandise Manager, and designer Dave Chapman, who had been chief of product design in Swainson's Bureau in its heyday, met in the Ward home office. Webber broadly outlined steps being taken to improve Ward's position in the mass merchandising field. After stating the policy position of the firm, he requested Chapman to present a proposal for a design program to meet the needs of the new policies. By September 1, Chapman confronted Webber with a 30-page memo that called for not only the retention of an outside design consultant but the reestablishing of a strong *internal* department, a new Bureau of Design—a procedure that is occurring more frequently by those who are concerned with solving the detailed problems of a company.

Chapman's long-range purpose was to institute a design program shaped, so to speak, not to put out urgent little fires wherever they develop but to work on over-all fire prevention. The logic behind his plan was clear: Ward markets a tremendous number of products—66,000 in all. If better products were the key to more successful merchandising, as the Ward executives sincerely felt, then the designer had to play a part in the planning of the products. If merchandising was to profit from creative design thinking, then the design program had to start with the formulation of the basic merchandising policies. Design had to be a part of top-level planning of brands and price categories, or it would not be a program at all. What Chapman wanted, more concretely, was to establish the principle of "line design" and an over-all company identification program. In shirts, for instance, there might be a dozen types or categories to be firmly established before a proper design approach could be established. In addition to brands, neither Sears nor Wards had tried an over-all identification, and Chapman thought that Ward could steal a march here.

In November, 1955, Chapman was retained as exclusive consultant on product and package design, and even before the Chapman contract had been made official, Frederick W. Priess, another former Ward designer, was appointed to manage a rejuvenated Bureau of Design. Their first step was to request reports from all departments as to their design needs. Then they studied the reports to determine where overlaps and duplications of both needs and efforts might occur. Chapman and Priess are now designing the system which will ultimately produce orderly lines of planned products, properly and consistently identified. They are, as Chapman puts it, "still below the ground, but the structure will ultimately appear."

Priess' Bureau of Design has become a clearing house for design requests of a more immediate nature, while Chapman's office is responsible for working out the longer-range plans, such as basic design themes to apply to merchandise groups. And L. O. Naylor, who succeeded Webber as General Merchandise Manager, reviews the work and recommendations of the design team—and sets their new program in motion as an effective tool for a revitalized management.

Montgomery Ward and Company

Board of Directors

Chairman of the Board and President
J.A. Barr

(OPERATING)

(MERCHANDISING)

Vice-President and Gen. Merch. Mgr.
L.O. Naylor

Design Research, inc.
(consultant)

Dave Chapman
President - Director

Designers

Spec Facilities consultants

Business staff

Bureau of Design
(staff)

Frederick W. Priess
Manager

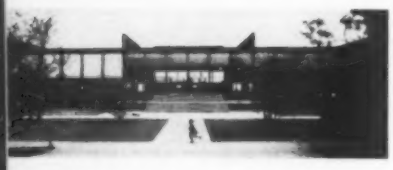
Packaging

Prod. Design

Internal facilities

"I don't think that you should shape a student in any way. The main thing is to give him a desire to be a designer—plus good work habits and basic skills. You don't hand him a philosophy. You help him form his own." Jay Doblin, Director, Institute of Design, Illinois Institute of Technology.

Illinois Tech opens new building and new era for Institute of Design



No chronicle of the changing emphases in the design world of Chicago would be complete without a glance at the Institute of Design — the "new Bauhaus" Moholy-Nagy founded — which, in its characteristic way, Chicago fought with, boasted of, and finally made its own. Since the appointment of Jay Doblin last year as new director, the school's alumni — and, for that matter, all who have felt the stimulus of its Bauhaus-derived basic approach — have been wondering what the results will be. What is Doblin's program, and what effect will it have upon a center which, for twenty years, has had a profound influence on design education throughout the country?

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The reason for this, Doblin believes, was "the fundamental mistake of thinking it was possible to find another Moholy-Nagy. I don't claim to be another Moholy. I want to retain what was good about the old ID — the experimental teaching method — and combine it with the training that is necessary to do a certain kind of operation in an established profession."

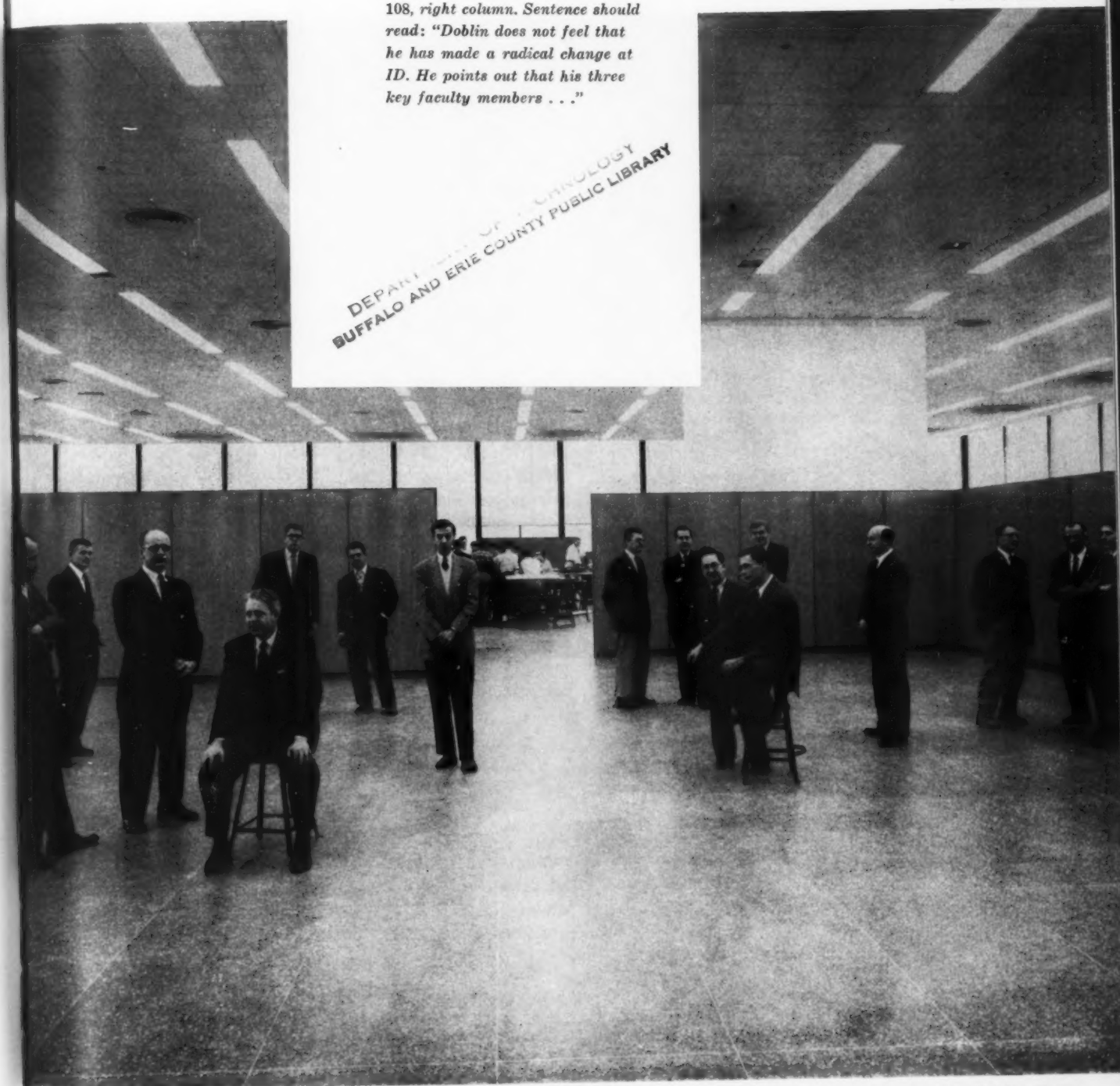
Moholy-Nagy had an artist's credo: "Design is not a profession; it is an attitude — the attitude of the planner. Every high school in this country has better equipment than we have. And what do they do with it? Nothing. It is the spirit that determines the whole thing." Believing also that "it is not vision that follows industry but industry that follows vision," Moholy was highly conscious of the social implications of design, in fact, saw it as the gateway to a new Utopia. Doblin says, "We don't see the designer in the old way as half artist and half engineer. He has got to make room for at least one-third sociology. In the future we're going to load them with psychology, sociology and anthropology —even though it will take five years." In his opinion, having as an objective the creation of a beautiful casting or an ingenious mechanism represents "neolithic design" if the object bears no apparent relation to a human need. And, taking a pragmatic view of the value of "social" courses, his purpose is not to reshape society, but to adjust to the one we have.

Having stepped out of Raymond Loewy's office into the directorship of a school whose student body had dwindled, Doblin is pleased with the gain in enrollment ("90 Product Design majors this fall"), and anxious to equip his students with the qualities which he felt were lacking in the average design school graduate who presented himself for a job. (Mere problem solving is not enough; the student must learn to detect the problem and habitually question the basic operation, i. e. not just design a toaster, but find the best way to make bread brown.) Feeling the importance of creating enthusiasm and opening new horizons, Doblin is making such innovations as the Memo Course and Design Council (overleaf). This fall he will bring in Chicago designers as teachers a half-day each week. "We'll try to pick a broad range — from the long hairs to the chrome strippers." The designer can assign any problem and is entitled to own the results if he wishes. For further exchange of ideas, he is instituting two evening seminars (non-credit and open to visitors) dealing alternately with contemporary art and design, with lectures by Misch Kohn, artist, Fred Keck, architect, and designers Bruce Beck, Hap Smith and Jean Reinecke. Doblin does not feel that his three key faculty members — Bill Sherman in Product Design, Dick Baringer, who teaches Shelter Design, and Ray Fink, Shop Director — are all ID graduates. The following pages show in further detail how under Doblin's leadership the Institute of Design's "new vision" is developing into a new synthesis.

Erratum:

We regret that through a printer's error a line was omitted on page 108, right column. Sentence should read: "Doblin does not feel that he has made a radical change at ID. He points out that his three key faculty members . . ."

photo Harry Callahan



L. to r. John Waddell, head art education; Raymond Fink, product workshop; Richard Koppe, head visual design; Jay Doblin; Stowe Myers, design council; Cosmo Campoli, sculpture; Eugene Dana, head foundation year; Raymond Pearson, foundation workshop; Tom Steinbach, former head product design; Aaron Siskind, photography; Richard Baringer, head shelter design; Raymond Martin, typography; Harry Callahan, head photography; Herbert Pinzke, graphics; Leon Golub, art history; Misch Kohn, visual design.

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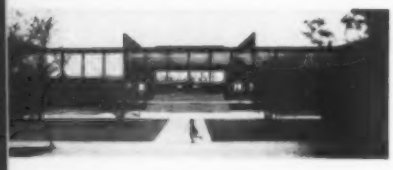

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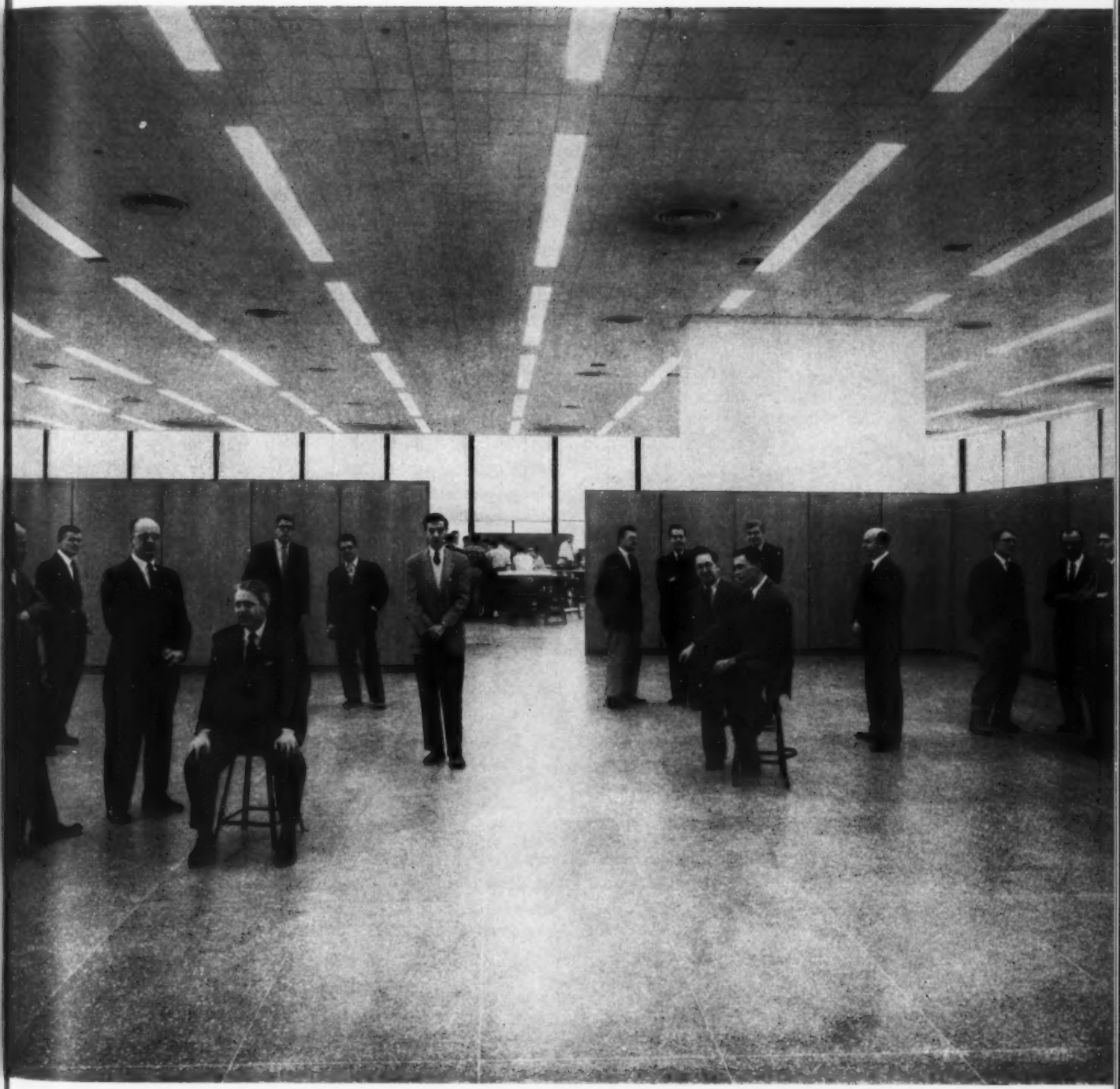
photo Harry Callahan



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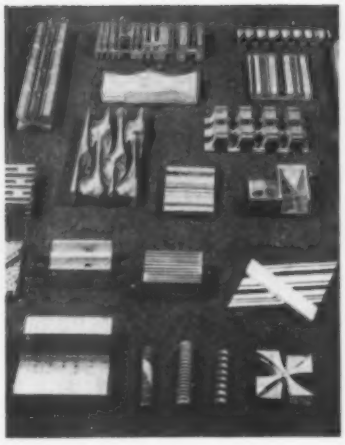
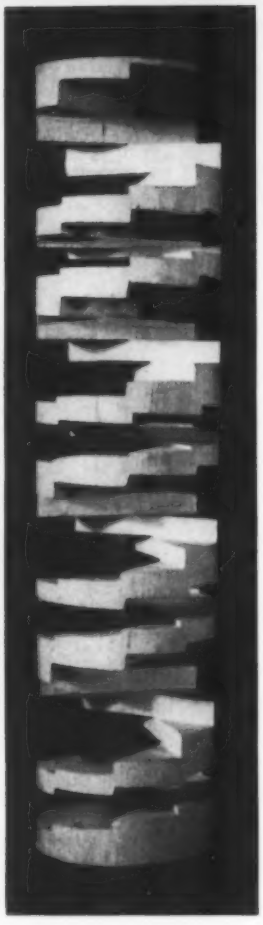




1

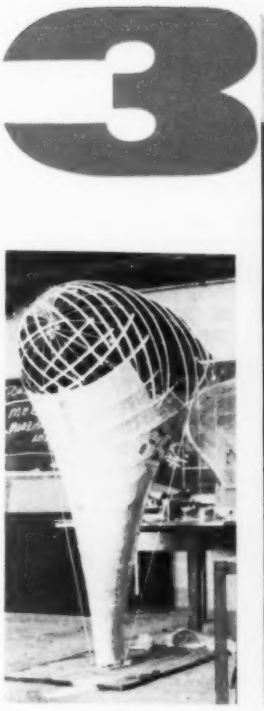
Considered the most critical in the majority of design schools, the first year is presented at IIT as one of elementary appreciation of aesthetics and education in the arts, crafts and language of design. At the same time, by stripping away the residue of romantic cliches which the student quite naturally brings with him, the first year curriculum equips the student with a fresh approach to his chosen career.

The foundation course embodies many features directly descended from the Bauhaus, such as basic abstract problems—the wood-cutting exercises shown at the left—that explore the nature and performance of materials. The program consists of: 1) visual fundamentals, or two-dimensional design; 2) workshop, a combination of three-dimensional design, basic structure and the use of hand and power tools; 3) sculpture; 4) photography. Doblin's practical attitude can be seen in his estimation of the foundation year: "The lack of direct application might bore the very talented. Yet many find it worthwhile to follow this first year at ID while pursuing related studies in textiles, interiors, crafts or fine arts at other schools."

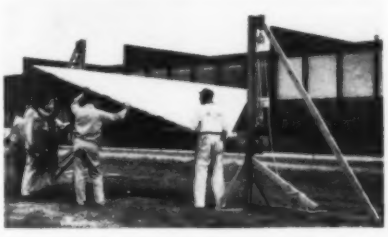
2

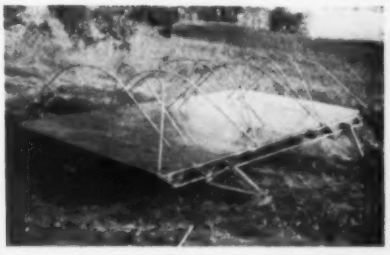
Development of professional techniques and skills is the purpose of the rigorous second year. In the eyes of the director, the student now needs the rigid discipline of working under a teacher's guidance in a master-apprentice relationship. The students are divided into two groups: visual-photographic and product-shelter. The latter section gets more science and a strict indoctrination in three-dimensional design, including perspective drawing, advanced mechanical drafting, basic architectural planning, basic industrial design, color theory, and advanced tool workshop, such as welding instruction (left). Product-shelter design problems, like the paper chair (left), give the second-year student experience in experimentation and planning that he will express in more durable media later on. The instructor plays a crucial role, influencing and directing the student-apprentice. By the end of the basic year, the student is able to make more design decisions, still under the instructor's critical—but more detached—observation.

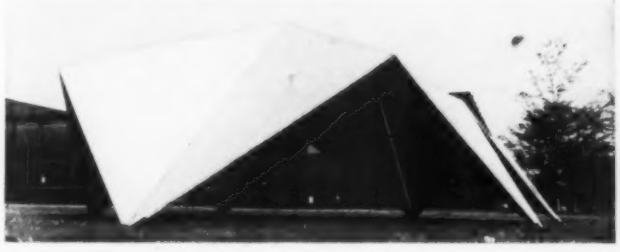
In their third and fourth years, students of product design study as a group under professional designers. The instructor's relation to his students changes markedly. No longer the source of plans and decisions, he stands ready with technical information and counsel. Projects such as the telephone kiosk, building blocks and shelters (right and below) are carried out in full scale. In an effort to simulate conditions of a profession in which the designer must someday produce under direction as well as originate and sustain projects without the help of superiors, seemingly harsh measures are employed. "By accepting responsibility for a decision, a student must produce results or else suffer the open criticism of the faculty. Those who are slow to accept responsibility and find themselves without the critical help of the instructor before deadlines must be resourceful enough to complete their projects alone, or face the consequences." Doblin finds it encouraging to watch a student, with a foundation built first of free experiment and then of more mature discipline, summon his resources and find himself suddenly, confidently designing on his own.



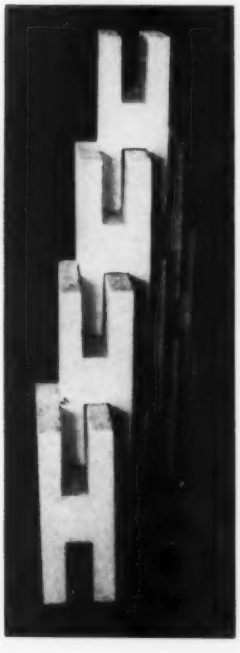
Experimental telephone kiosk by Petras Aleksas, to be used without handset.







The erecting of David Kropp's shelter design on the IIT campus is done with crane lift that would move from shelter to shelter in production-line style.



Above, a shelter experiment with stressed skin box beams. Left, building block design is tested in plaster models. Student designer is Paul Priestley.

Mr. Henry Dean
Design Director
Federal Design Studios
Flamingo, Florida

Dear Henry:

Last week I presented our new design for a taller, slenderer soup can to our clients, Campbell Soups. Though they liked the design, they surprised me by coming up with a factor we had not taken into account. Their production manager, Ed Barnes, stated that Campbell's present can uses the minimum amount of metal for the volume of contained fluid. Any other shape -- taller or shorter -- would use more metal for the same volume, and would cost them millions of dollars every year.

Will you look into this and tell me if this statement is true. And if it is, what can we do to get out of this predicament?

I'd like your answer by the 28th of the month, and will hope you'll have an answer to this embarrassing problem.

Best,

Account Executive
Federal Design Studios

Typical company letter requiring response of student in "Memo Course."

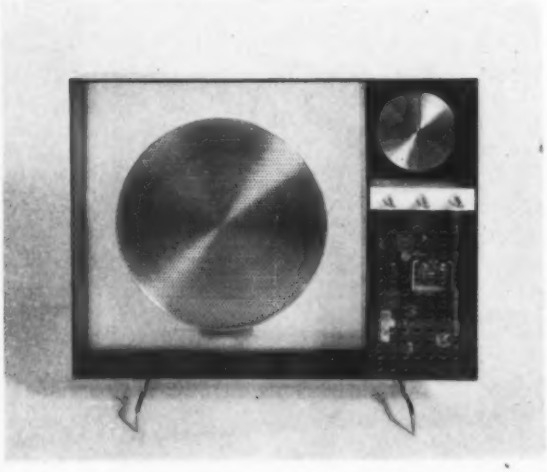
4

Two unique courses have been introduced at ID for the senior year to effect an easy transition into professional practice:

The Design Council increases the student's awareness of the vast and intricate nature of American enterprise. Students under the direction of Stowe Myers (as at left) leave their studio each week and pilgrimage to design departments in factories, retail outlets and conventions. Or they are visited by teams of experts from the outside world. In 1956 the trips included Raymond Loewy Associates, Jean Reinecke, Dave Chapman, Painter, Teague and Petertil, Sears Roebuck, Hotpoint, General Motors Electronics Division and the Technical Films Festival.

The Memo Course, an ID innovation, is a discipline in self-expression and communication, in which there is nothing but written contact between teacher and student. Each week students receive letters asking for information, suggestions or design sketches. To get the data he needs to do the job, the student must present questions in letter form, the manner in which jobs often develop in actual practice. The student is faced with tasks demanding various and ingenious approaches. Some memos are purposely written in a confused manner, so that the student must write for additional information. Others may contain difficult deadlines or make unethical requests. The student must detect and respond to these situations as he executes the problems itself. He is graded for his diplomacy as well as proficiency in executing the design.

Designer Stowe Myers leads Design Council members on field trip to appliance manufacturer's showroom in the Merchandise Mart.



Product models designed by seniors here include traffic control tower, commercial scale and radio built on Motorola chassis, with clear plastic front.

INDUSTRIAL DESIGN is indebted to the students of Aaron Siskind of the Institute of Design, who took many of the photographs in the Index of this issue (pages 58-64) as part of a Fourth Year photography problem. The editors especially wish to thank Joyce Lamensdorf and Dave Reynolds, and Mr. Tom Rago and Mr. Charles Reynolds of I.I.T., for their assistance on special photographic assignments for this Chicago issue.

Chicago design Directory

In the gallery on the following 12 pages we hang portraits of 30 of the leading independent design offices in the Chicago Midwest, with examples of their work. Is there a typical office? Are Chicago firms cut to a pattern? Based on this sample, we note the following:

Some are big, some are small:

With a median of 10, they range from 1 to 37. The big ones are exceptions.

85% have partners and associates, averaging in number from 3 to 5.

10% prefer one-man operation (with some help from their wives) and choose suburbia.

All others with staffs under 3 could use more help.

10% have model shops run by engineers.

Some are landmarks, most are new:

60% started since the war.

Half a dozen opened in the '30's.

A hardy few pioneered in the '20's.

Fields of interest vary widely:

A large number (almost 20%) make a specialty of graphics. A similar group devotes itself to home-furnishings, interiors, display.

60% tackle anything from toothpicks to tractors; about half of these have designed appliances.

Backgrounds reveal similarities.

90% of the principals are born Midwesterners; Canada, Europe, and New York are lightly represented.

Institute of Design, Art Institute, Armour Institute, and midwest art schools claim a number of graduates; fine and applied arts beat engineering backgrounds.

1 out of 6 walked the path from Century of Progress to Wards or Sears, while large offices and company departments trained an equal number.

There is a pattern in their service

(if one considers a 500 sq. mi. area as local Chicago)

They exhibit a high proportion of clients from Illinois and Wisconsin. . .

But the total clientele of these design offices is spread across the nation.

Large organizations
among the earliest in Chicago

Ted Brennan, Howard Vogel, Allan Peyer, John Cox, Robert Askren, Franz Wagner

These are some Chicago-area offices doing product, packaging and graphic design. Boldface denotes offices that are discussed later in this section.

Algeron, L. C. 620 North Michigan
Altshuler, Franz 6 West Ontario
Associated Designers 664 North Michigan
Banka-Mango Design Merchandise Mart
Beck, Bruce Design 159 East Chicago
Benjamin, E. Burton Assoc. 104 South Michigan
Benolken Graphic 101 East Ontario
Bishop, K. J. & Co. 7045 North Higgins
Boldt, Mel & Assoc. 919 North Michigan
Chapman, Dave 420 North Michigan
Collins, Jack 9025 N. Pelham Pkwy, Milwaukee
Contemporary Concepts 3815 N. Harlem Ave.
Couzens, Joseph J. 20 East Huron
Dekovic-Smith 6 West Ontario
Dewitz, J. Henry 666 North Lake Shore
Dickens, Robert Sidney Inc. 908 North Ernst
Dodge Associates Skokie, Illinois
Farrell, Harry H. 220 South Michigan
Fitzgerald, Ed. 152 East Superior
Fleming, William 6 West Ontario
Forkert, O. M. & Assoc. 53 West Jackson
Frankel, William K. 21 East Superior
Glass, Huebner Assoc. 666 North Lake Shore
Goldsholl, Morton Merchandise Mart
Good Design Associates 230 W. Washington Ave., So. Bend
Hassler, W. Scott Assoc. 2601 Peterson
Hasterlik, Wm. B. 30 N. La Salle
Hauser, Jan St. Charles National Bank Bldg., St. Charles
Iannelli, Alfonso 255 N. Northwest Highway, Park Ridge
Industrial Design Engineers Assn. 3743 North Halstead
Jackson, McStay Co. 840 North Michigan
Jannes, Nicholas Assoc. 161 East Erie
Jones, Charles E. & Assoc. Inc. 189 West Madison
Kenniston, Ken 161 East Grand
Krebs, Maisie 136 North Lake Shore
LaVioletta, Joseph R. 218 East Ontario
Latham, Tyler, Jensen 700 North Wabash
Lea Tek Studio Lake Zurich
Lerner, Nathan Design Associates 1546 West Cortez
Lewis & Hover Studios Inc. Prudential Plaza
Loewy, Raymond Assoc. Inc. 444 North Michigan
Lukasek, C. J. 75 East Wacker
Lyon, Clifford T. 2612 North Lake View
Mark, Irving Assoc. 608 South Dearborn
MacAlister, Paul 1226 North Dearborn
Minnick, Jas. S. 450 East Ohio
Moore, Phoebe 161 East Erie
Morgan, Jack Assoc. 919 North Michigan
Myers, Stowe 2210 Hartzell, Evanston
Nickle, Robert W. 1740 North Wells
Painter, Teague and Petertil 230 East Ohio
Palma-Knapp 600 West Jackson
Penson /Tuttle 161 East Ontario
Podall, Robert 210 East Ohio
Reinecke & Assoc. 155 East Ohio
Rhoades, Nolan Box 141, Beloit, Wisconsin
Richards, Harper 160 East Superior
Rutter, Sheldon 1055 Winwood Drive, Lake Forest
Sackett, DeForest & Assoc. 220 South Michigan
Schory, Ken Assoc. 911 Busse, Park Ridge
Schwartz, Norbert 49 East Oak
Stevens, Brooks Assoc. 622 North Water St., Milwaukee
Stoyke, Marcelline 646 North Michigan
Testa, Angelo & Company 49 East Ontario
Wachsman Assoc. Inc. 664 North Michigan
Waldheim-Koepke Assoc. 1513 North Farrell, Milwaukee
Waltman Associates Inc. 664 North Michigan
Wetherell, Warren & Assoc. 919 North Michigan
Wilson, Forest Assoc. 101 East Ontario
Zanck, Jerry 866 North Wabash

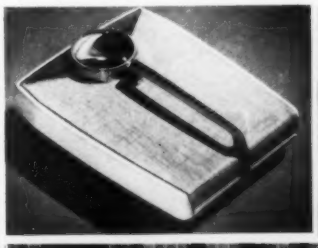
Raymond Loewy Associates *of New York opened a permanent branch office in Chicago in 1943, prompted by a contract with International Harvester for a dealer sales program, which began with the creation of an IH symbol (below). Shortly thereafter, the newly-formed office started redesigning Armour's packaging, and both companies still figure on RLA's long client list — Harvester, for instance, recently received consultation on a large research center (below). The staff of 31 includes a sizable packaging and graphics section with accounts like Quaker Oats, Reardon Company and Illinois Farm Supply. Product designers under Ted Brennan, responsible for the Rosenthal-Block classic modern china, and the Do/More posture chair (ID: June '56), have lately completed DC-6B and DC-7 interiors for United Airlines. Other recent designs are (below): the Arvin Delux heater and the Scott Atwater outboard motor. Managing Director Franz Wagner is an A.S.I.D. member. John Cox is General Manager and Robert Askren is Director of Graphics and Packaging.*

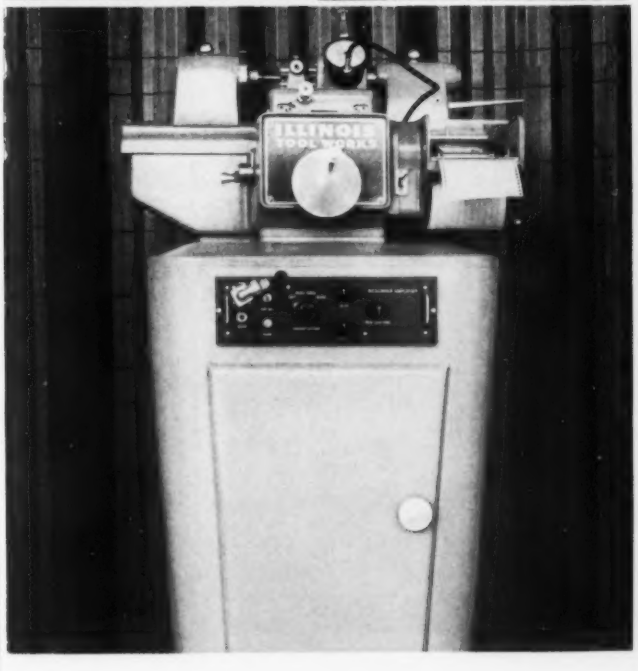
Chapman

Reinecke

Dave Chapman, *an energetic spokesman for design both locally and nationally, now has 26 staff members in his Chicago office. His long-standing clients include Parker Pen Co., for which he has designed an extensive line of point-of-sale displays (below), and Brunswick-Balke-Collender, for which he has done a complete line of school furniture (ID: April '54). Chapman started out with work on the Century of Progress, which led to an invitation to join Ward's Bureau of Design. There he became head of product design before launching his own office in 1936. Last year he opened a subsidiary, Design Research, Inc., for projects involving long-range planning in terms of future buyer motivation. An A.S.I.D. member, Chapman recently completed a comprehensive identification program for Felt Products Corp. (p. 96), a farm combine for International Harvester, a tape recorder and an automatic slide projector (below) for the Three Dimension Corp., a lawn sprinkler (below) for Scovill Manufacturing Co.*

Jean Reinecke & Associates *conducts a big design business on a small scale. The senior associate boasts a career that spans the history of industrial design in Chicago. In 1933, at the age of 19, Reinecke was supervising 50 displays at the Century of Progress Exposition. After Chrysler asked him to design an ashtray in 1935, he opened an office with his display associate, Jim Barnes. With product design shelved during the war, B & R served the defense effort as an engineering service which eventually reached gargantuan proportions. In 1948, Reinecke, who had served such clients as Minnesota Mining (for whom he designed the first tape dispenser, and subsequent models like the one below), decided to sell out his interest and return to a small-scale practice with his present associates—Harold Hart, John M. Sherrer, and James K. Gerrie, all members of A.S.I.D. They have served Motorola, Zenith, Amana, Frank Hough, Illinois Tool Works (gear-checking machine, below), and Continental Scale Corp. (scale, below).*

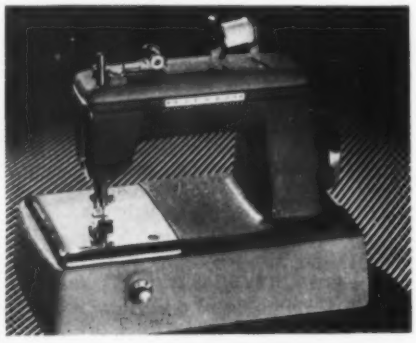


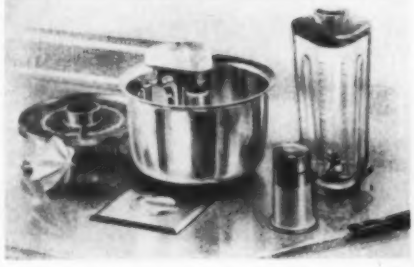


C. T. and C. E. Waltman

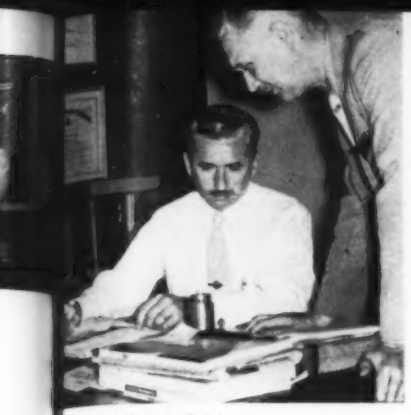
Mango, Banka

Waltman Associates, *with three associates and seven in the firm, claim to be the only father and son sharing 43 pencils in both the IDI and ASID. C. E. Waltman received his early training in European schools, his later experience in sales and product design, including assorted Grand Rapids furniture accounts. In 1925 he organized his own office. His son, C. T., tried his hand at cartooning prior to 1945, then joined his father, after doing some early postwar designs in Stockholm, where he worked with such firms as Electrolux, Facit, and Electro-Helios. The office today serves a number of Chicago area industries on a regular basis: Arvin Furniture, Altorfer Bros., NuTone, Inc. (for whom they designed the built-in three-way mixer below), Dominion Electric, and Sears Roebuck (sewing machine, below). A model shop is operated on the premises by Carl Cervenka.*





Banka-Mango *is located in the tower of the Merchandise Mart, a strategic location from which to keep abreast of the fast-paced industries which this office serves. Joseph Mango, who provides styling and know-how for the team, has a background in fine arts at the Chicago Art Institute. Frank Banka, an engineer, got his early training at Stewart Warner and Western Electric. They joined forces in 1946, and currently have 12 men working for them on such projects as built-in ranges for Tappan, a cabinet washer for Thor (for whom they did the first family-style line of appliances), a dishwasher for James, and a line of power tools for Craftsman Welder. They were the designers of the Johnson wax polisher, the Vaculator coffee decanter for Hill Shaw Company (below), and last year styled the original electronic range for Tappan Stove Co. (below).*

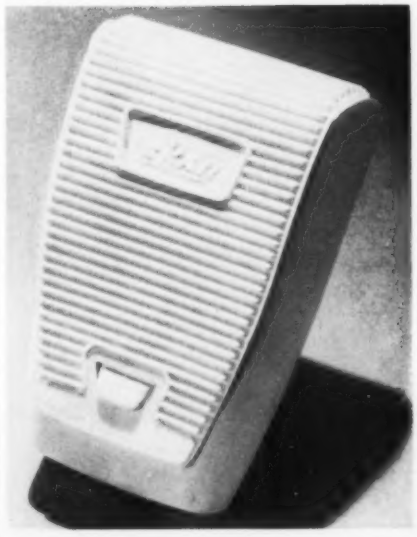


Knapp, Palma

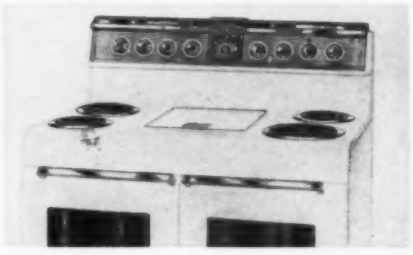
Morgan

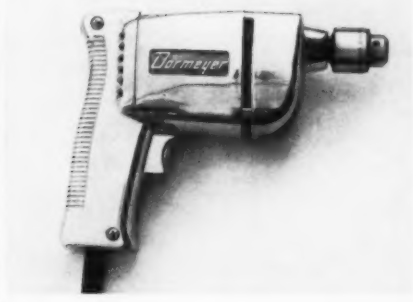
Stevens

Palma-Knapp, *partners since 1947, are both native Chicagoans. Joe Palma, a graduate of Armour Institute in 1932, followed what seems to be a classic pattern for Chicago designers: work on the Century of Progress, followed by a job at Ward's Bureau of Design. J. Gordon Knapp studied engineering at Northwestern, then went on to manufacturing and business administration. Their firm now has 13 on the staff, three of whom teach at the Chicago Art Institute. A favorite among the products they have done for a long list of clients—many of them in business and home equipment—is a corner piano for Story and Clark. They designed the first electric knife sharpener for Cory in 1950, and an unusual flexible polyethylene light meter case for GM Laboratories (below). One of their latest projects is a Ditto offset duplicator (below). Palma belongs to the A.S.I.D., Knapp to Society of Automotive Engineers.*

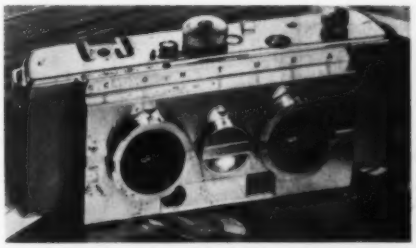


Jack Morgan Associates, *consisting of the senior associate, plus Harry Giambrone, John Defner, and Burton Kelly, was founded by a Canadian who adopted the Midwest after he attended Detroit Technical Institute. Morgan joined the infant General Motors styling section in 1928, and stayed there, except for one year, until 1934, when he became chief product designer at Sears. At GM he was responsible for the design of the first automobile bumper to be integrated into the overall design, and at Sears he designed much of the appliance merchandise (including the first "turtle-neck" washing machine tub) until 1944, when he opened his own office. He has since placed heavy emphasis on small and large appliance design, working for such firms as Dormeyer (hand drill, below, and mixer on page 92). Hotpoint, Magic Chef, RCA (stove, below), Camfield and Webcor. He is an A.S.I.D. member.*





Brooks Stevens Associates *Head of this Milwaukee firm since 1944, Brooks Stevens has managed, since graduating from Cornell in 1933, to parlay his enthusiasm for sports cars into a shining suburban business. He rode the depression designing transportation equipment, afterwards added to his personnel (there are now three partners—James Floria, John Hughes, Jr., Anthony Reed—plus a staff of twelve) and to his accounts—architectural work, household appliances, farm machinery, machine tools, outboard motors. Below: "Champagne of Bottled Beer" motif in packaging for Miller Brewing Co., Contura camera for the Stereo Corp. "My hobby, the collecting and restoring of sports cars, has been coupled with the development of Excalibur, a low-priced sports car, and Die Valkyrie, a custom design on a Cadillac chassis." Stevens, Floria and Hughes are A.S.I.D. members.*



Young organizations

with wide-spread industrial accounts

Shory

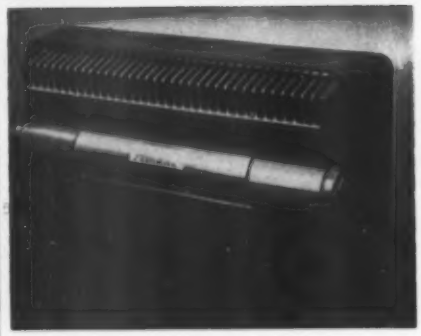
Hauser

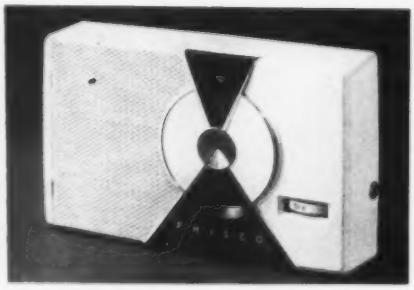
Tyler, Latham, Jensen

Ken Shory Associates, *one of the younger design organizations in the Chicago area, was organized early in 1955 in a northwest Park Ridge location selected for its availability to surrounding Midwest industrial areas. The senior associate is an alumnus of Pratt Institute and of several design offices, among them Dohner & Lippincott, Raymond Loewy, and R. D. Budlong. Associates Dana Mox and Julian Greene studied at the Institute of Design and Chicago Art Institute, respectively, and worked with Shory in Budlong's office. Their clients include such Midwest manufacturers as Sears, Victor Adding Machine and Cash Register, Amana Refrigeration, Signal Electric, Deepfreeze, and Zenith Radio. Shown below is a portable electric drill for Sears-Craftsman, and a room air conditioner for Amana. Shory, an A.S.I.D. member, keeps his group small "so that all of us have to work for the clients."*

Jon W. Hauser Associates *was founded in 1951 by a former student of aeronautical engineering who slid into automobile design at 19, as he tells it, "by caddying for the Chief Engineer at Fisher Body." In Detroit, Hauser designed for GM, Chrysler and Budd Manufacturing, then came to Chicago to join Sears, where he became Director of Design. Later, after working for Chapman and Reinecke, he struck out for himself in St. Charles, Ill., with Don Lowe as associate. His clients include: Hawley Molded Prducts, for whom he continues to do design development work (ID: June'55), since creating the Tri-Taper luggage (below); Philco, whose new T-7 transistor portable is shown below; Diamond and the Frank Hough Co. (page 86) Houser. and Lowe are members of the A.S.I.D. For his eight young designers, Hauser conducts a weekly class in office skills and merchandising problems.*

Latham-Tyler-Jensen *opened its doors in 1955 with a balanced team that had previously worked together on the design staff of Loewy-Chicago: Dick Latham, trained in mechanical engineering and later industrial design at the Chicago Art Institute; Bob Tyler, a graduate in architecture from Cornell; and George Jensen, whose background is in product and interior design. With a staff of 14, LTJ specializes in consultant product planning for such firms as Ansul Chemical (for whom they also designed a paint scheme for the executive plane, below), Ekco Products (whose new product planning department is described on page 97) and General Electric. Among their other recent projects are: an automatic instant coffeemaker for Charles Newman (below); trademark, packages and an interior for Ekco-Alcoa Containers. Latham is an A.S.I.D. member. Other views of this group are on pages 102-105.*





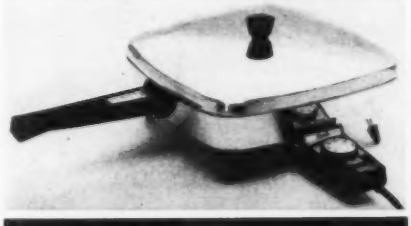
Boldt

Painter, Teague, Petertil

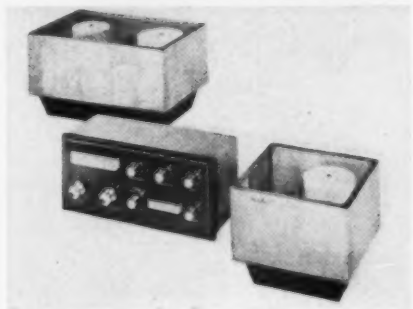
photo: Betty Rosenzweig

Goldsholl

Mel Boldt and Associates, *which now boasts 18 designers and a shop, opened in 1951 with the Bendix appliance account as a starter. Boldt's first position as an industrial designer was with a barber equipment manufacturer. In 1946 he joined Bendix as the first designer on the engineering staff. His most recent automatic washer design for Bendix is shown below. An A.S.I.D. member, he now also serves other Avco divisions—American Kitchens and Crosley—as well as Fedders, for whom he has done air conditioners, Autopoint (automatic pencils and a magnetic file), American Cabinet Hardware (a juke box). His new electric skillet (below) for National Presto Industries was designed to be submersible, and it features one detachable master control that fits a set of pans of various shapes and sizes. Boldt has also had factory experience in tooling, die designing and purchasing.*



Painter, Teague and Petertil *came together first at Barnes & Reinecke, and in 1950 purchased the firm's design interests to form their own organization. The partners all studied at Chicago Art Institute, and went on to product design jobs at Ward and Sears. Dave Painter, Jim Teague and Victor Petertil have elected to keep their organization comparatively small, with four design associates, in order to be able to function as designers themselves. 80% of their work is in products, 20% in packaging. They designed the original transistor portable radio for I.D.E.A. (below), a flush-mount room air conditioner for Mitchell, a large radial drill for Morris Machine Co., earthmoving equipment for Le Tourneau-Westinghouse (below), and are at work on packaging for the Upjohn Co. and for Compeo Corp. photographic equipment. Teague and Petertil are A.S.I.D. members.*



Morton Goldsholl/Design Associates *was founded by a graduate of the Institute of Design who, since opening his office in 1942, has been well known for graphic design, such as his continuing program for Martin Senour. In recent years Goldsholl has taken on a substantial amount of product design, with the serious conviction that it is important to function not as a specialist but as a complete designer whose role encompasses inventive engineering. His design staff has grown to 10, among them Jim Logan, an IIT graduate in engineering, who has contributed to such recent projects as a totally new paint-mixing machine for Martin Senour, and a low-cost tape recorder (below) for Ampro Corporation. Goldsholl has done a comprehensive program for Motorola, including packaging, graphics (a new symbol) and a showroom page 81), and coffee tins (below) for Parker House.*

Personal services

designers who prefer small-scale practice

Carol and Jack Collins

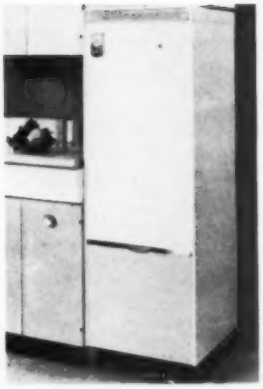
Rutter

Myers

Jack Collins, *with a background in art, architecture and teaching, entered the design field immediately after the war with a downtown Milwaukee office, which he gave up in 1952 in favor of a more integrated—and convenient—practice in a home-office in the suburbs. There, with a model shop and drafting facilities, with the help of his wife and one designer, he conducts the kind of business he most enjoys, working as closely as possible with his clients' design and engineering staffs. He concentrates on industrial tools and products for such firms as A. O. Smith, Milwaukee Malleable, David White, Ray-O-Vac and Perlick Brass. A member of A.S.I.D., Collins recently designed a fully adjustable hospital lamp for Adjustable Fixture Co. and a polystyrene mixing bowl for Flambeau Plastics, shown below. He thinks there is much to do in hospital design.*

Sheldon Rutter, *one self-confessed New Yorker in this round-up, studied architecture at N.Y.U., then switched to industrial design at Pratt Institute and apprenticed in the New York offices of Dohner & Lippincott, and J. Edmund Spence. After a stint as a Creative Designer in the GM Styling Section, in 1952 he chose the Chicago Midwest to launch his own studio. Rutter prefers working alone, with the part-time assistance of his wife, and prefers to work in varied fields "to insure a fresh viewpoint and be less vulnerable to the vagaries of one industry." His work includes a hassock fan for Robbins and Myers, refrigerated display cases for Tyler Refrigeration, a forthcoming sink for Geneva Kitchens, and numerous housewares for Rival Manufacturing, two examples of which are shown below. Rutter is a member of the A.S.I.D.*

Stowe Myers, *after extensive experience in large design organizations since the mid-Thirties, decided that he preferred the limitations and opportunities of an individual consulting practice. Before locating in Chicago, he sampled both coasts—the West Coast as director of the Los Angeles office of Walter Dorwin Teague, the East with Raymond Loewy Associates, then to Chicago with the same firm. Since launching his Evanston studio two years ago, Myers has handled product, package and some showroom design in his work for clients like Bell & Howell (Professional Equipment Division), Adams Manufacturing Co. (medicine cabinets), Western Tool and Stamping Co. (lawn mowers). His water heater for Rheem Manufacturing, and an automatic typewriter control for American Automatic Typewriter Co., are shown. He is in A.S.I.D.*



Rhoades

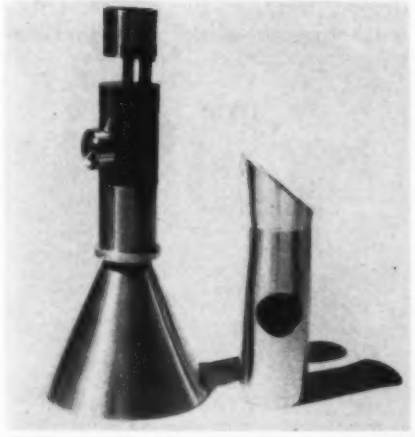
Zanck

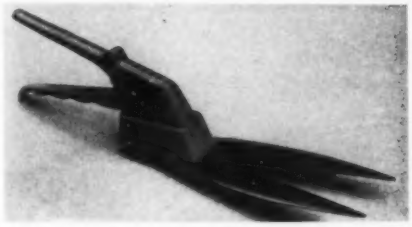
Krzywda, Molo, Irvin

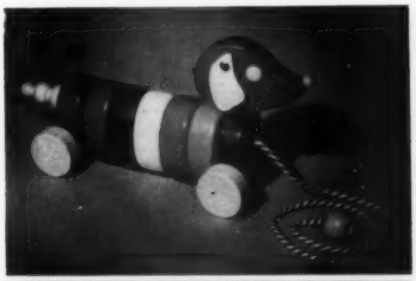
Nolan Rhoades *bases a belief in the importance of mutual respect between consultant and company designer on his past experience as chief staff designer for the Parker Pen Co. A graduate engineer, Rhoades was convinced by a talk with Moholy-Nagy to pursue industrial design; he studied for three years at the ID, went to Ward's Bureau of Design, then became a partner of Moholy. After the latter's death in 1946, he joined the staff of one of their clients, Parker Pen, until opening his own studio in Beloit in 1954. With the assistance of his wife, he works on a wide range of products as both designer and inventor-engineer. The small portable X-ray machine (below) is a project he carried through both mechanically and visually in collaboration with the manufacturer, W. F. & John Barnes Co. The grass shears (below) are for Village Blacksmith Co.*

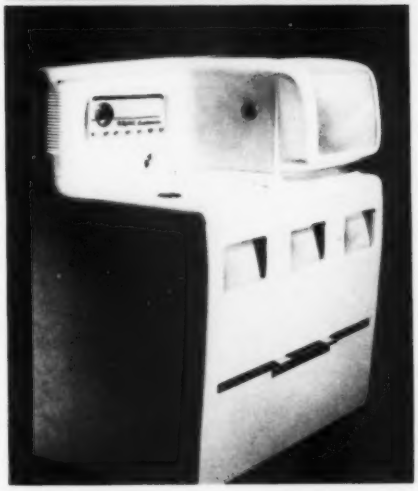
Gerry Zanck *offers services in product design, interiors, buildings and displays through two separate departments in his studio—Architecture and Industrial Design, and Interior Design, employing five people. Before the war Zanck studied engineering, architecture and painting, then entered industry as a designer of materials handling equipment. In 1949 he designed an experimental electronic range for Hotpoint (below). Turning to private practice, Zanck has served such firms as Ditto, Inc., Revere Copper and Brass, Deepfreeze, Simmons Co., Mohawk Carpet, Lightolier and Skillcraft Corp. His pull-toy for Playskool Inc. is shown below. In June Zanck became chief designer for Gregori Furniture Manufacturing, a division of Starkline, and he is currently at work developing a correlated group of case goods and light upholstered pieces.*

Contemporary Concepts, Inc. *includes three partners—Albert Molo, Tom Irvin and Mitchell Krzywda—who work closely and often interchangeably on design problems. Molo studied business administration, and graduated in industrial design from Illinois. Irvin received mechanical training with Willys Overland, and worked with his father in a manufacturing business for three years. Krzywda was experienced in machine shop work before taking evening courses at IIT. The partners met at the Ilg Electric Ventilating Co., where Molo and Krzywda were on the design staff and Irvin was a tool and die maker. With their varied technical backgrounds, they decided five years ago to form their own firm, encompassing display, layout, drafting and modelmaking, product development and interiors. Their work includes a tool grinder for Swanson Products (below).*







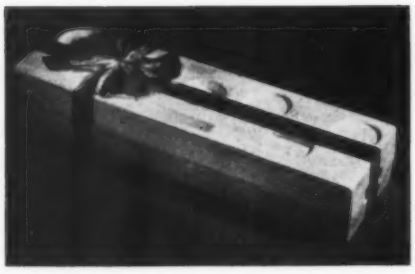


Specialized studios

deriving from architecture and home furnishings

Jackson

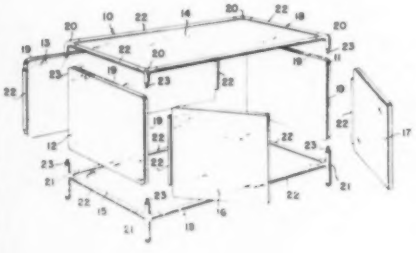
Wilson



McStay Jackson Co. *is one of the oldest of Chicago's independent offices. Founded in 1930, this firm's work has been largely—but not exclusively—architectural. Also in Jackson's portfolio are lamps, vending machines, toasters and an X-ray table. A Canadian who came to Chicago to design for Marshall Field, Jackson is currently working on railroad maintenance equipment and foam styrene cocktail items (package for glasses, above, is reusable as tray for glasses, dish for nuts).*

Forest Wilson Associates, *specializing in all types of furniture design, opened in 1947 with five permanent employees and five consultants. An IDI member, Wilson's background has been in both engineering and applied arts, with experience in advertising and commercial art studios and in industrial engineering. Aside from furniture, such as chair #214 for the Home Chair Co. (above), Wilson has designed golf clubs for the Duneiden Corp., an architectural plan for a Dayton furniture shop.*

Glass-Huebner Associates *is a Chicago organization, founded in 1945, that specializes in furniture, display, interior design and architecture. There are two associates, with Henry Peter Glass in charge of the design, and a staff that fluctuates between four and six. Glass, originally a Viennese architect, teaches industrial design at the Art Institute of Chicago. Recent work includes furniture for a number of companies and a patent-applied-for system of prefabricated panels (below) for Fleetwood.*



Glass

Paul MacAlister & Associates, *interior and industrial design firm, has pioneered in the presentation of designs to the public over TV channels. An active IDI member, he has done much to popularize design through TV presentations (below: MacAlister moderating a IDI award program) and through articles for women's magazines. A Yale School of Architecture graduate, he served for two years as Director of Interior and Industrial Design at Ward's, after the war.*

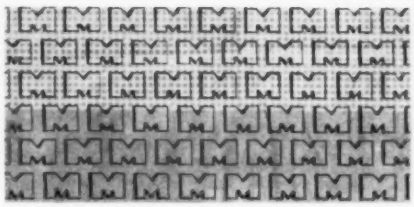
MacAlister

Christenson

Testa

Iannelli

Good Design Associates, *with Trace Christenson Jr. in charge, is a small office that was established in South Bend in 1953. Consisting of two design associates and an engineer, GDA, dedicated to designing in all fields, has served clients with interiors, complete buildings, and a variety of products, packages, letterheads, exhibits. Recent work includes a croquet set and packaging for the South Bend Toy Co. and automatic door hardware (above) for Republic Industry. Christenson is in A.S.I.D.*



Angelo Testa & Co. *was founded in 1943 by a graduate of the Institute of Design, specializing in contemporary fabrics. There are now three on his staff, excluding free-lance specialists. Although he established his reputation in fabrics, his recent work has branched out to include: designs for laminated surfaces (St. Regis Paper Co.); fiber glass panel designs (Kemlite Corp.); printed vinyl patterns (Plastron, Inc.). Above is a fabric design specially created for Monsanto.*

Iannelli Studios, *located in suburban Park Ridge, is another of Chicago's original design studios, having been founded in 1915. Alfonso Iannelli came from Italy to Los Angeles and then to Chicago, practicing his art of architectural sculpture and, jointly, industrial design, largely in the appliance field. Like his sculpture, his designs are related as closely as possible to the architectural environment. An I.D.I. member, his clients include Eversharp, Illinois Testing Labs (neurocalograph, above).*

Lionel C. Algoren Associates *was founded in 1936 and now has two associates, four persons in all. The firm specializes in all types of furniture design, in pianos, electric organ consoles, radio and TV cabinets. Algoren, who studied in Minneapolis and Europe before coming to Carson Pirie Scott, numbers among his clients Sears, Hammond, Sealy and Great Northern Dinette. An I.D.I. member, he has done work in the dual-purpose sleep-furniture field (Seng sleeper-sofa, below).*

Algoren

Graphics specialists

a few of many in merchandising design

Dickens

Beck

Robert Sidney Dickens, *who directs his staff of 15 on company identification and packaging assignments, finished high school in Princeton, Indiana and got his start in design with graphics of a different order: painted advertisements on asbestos theater curtains and theatrical posters for Paramount, Chicago. He later free-lanced, designing ethical packages for Walgreen Drug Stores, displays for the Century of Progress, brochures for Cadillac, etc., until he had achieved his present scope. He is currently working on a long-range packaging and identification program for Hamms Brewing Company, and has recently done packaging for Blatz (Tempo cans, below), Mead Johnson, Club Aluminum, Kimberly Clark, and the soap division of Armour (plastic squeeze bottle, below, for Dial shampoo). He is a member of the A.S.I.D.*

Bruce Beck, *who established his own office in 1955, is already confronted with an orientation quite the reverse of those who consciously hold size down: "Where we were accustomed to work as individuals handling all or most of design and production detail on every problem, we have changed now toward a cooperative group which will work as teams toward the solution of graphic problems." There are three on Beck's team now, and two more are scheduled to be added. Half of the firm's work is in packaging, and most of the rest is in company identification and printing design. Clients include Abbott Laboratories, Schlitz, Sears (nail packages, below, others on page 95), and United States Gypsum. Beck has just completed the redesign of "Spiral" notebooks (Western Tablet and Stationery Company) and is working on redesign of Johnson Wax packages.*

Penson, Tuttle

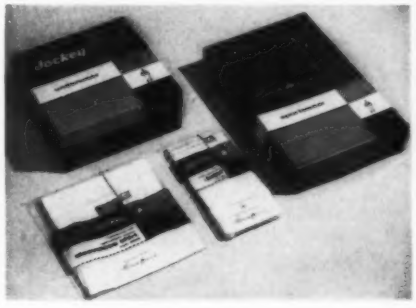
Seated: Susan Karstrom, William Fleming, Carol Thomas; standing: Dekovic, Smith, Franz Altschuler.

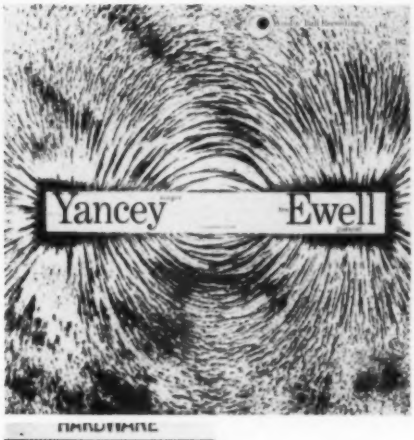
Wetherell

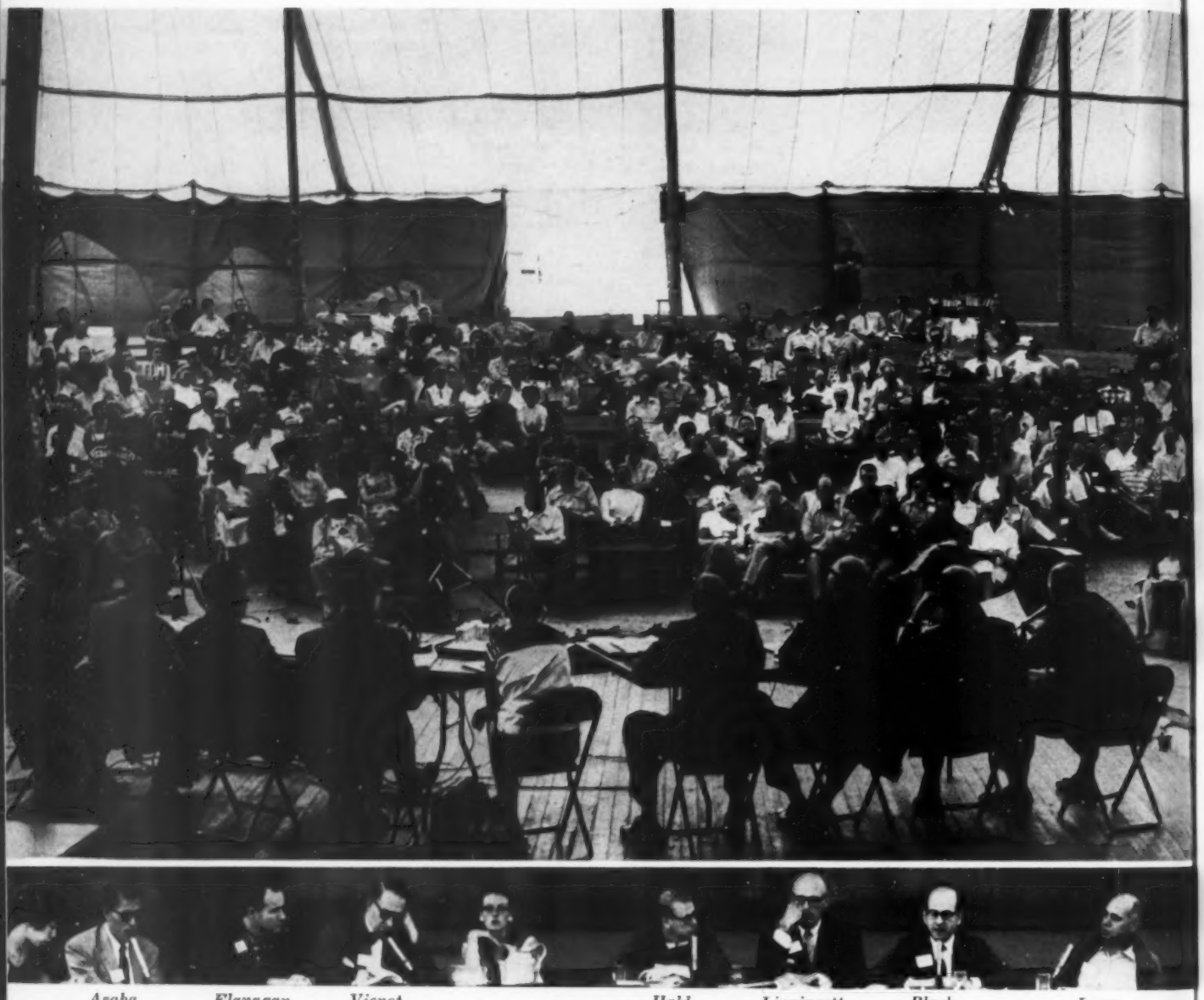
Penson/Tuttle, *a firm established in 1954, finds most of its activity in packaging and visual identification programs. John B. Penson, once with Raymond Loewy Associates, spent some time as Assistant Art Director in the Design Laboratory at Container Corporation and, in 1951, became Art Director of the Packaging and Labeling Department at Sears. James B. Tuttle, an Illinois University graduate (1950), joined Penson at Sears, postwar, and after three years, departed to form their own practice. Their clients have included: Western Tire Auto Stores (logotype and containers for oil and antifreeze); Topco Associates (logotype and detergent package design); Cooper's, Inc. (packages for Jockey and Cooper's brand underwear, sportswear and hosiery below). Currently they are at work on packaging for Upjohn, Bell & Howell, Swift, and Sears.*

Dekovic-Smith Design Organization, *founded in 1951, has a broad objective: "Corporate Communication—the identification and integration of diverse communication efforts through design." Gene Dekovic, partner in charge of planning, graduated from Northwestern's School of Commerce and did graduate study in communication at the University of Chicago and IIT. His function is problem definition—"more the determination of design's place in a business than design itself." Hap Smith, the second partner, studied at Michigan and IIT and worked with Dekovic in the design office of Warren Wetherell. Smith directs the three design associates. Projects to date include jacket covers (below) for Windin' Ball Records, a store modernization program (brochure below) for Masonite, and identification for Standard Railway Equipment Manufacturing Co.*

Warren Wetherell & Associates, *an organization employing 21 design and production people, has as its field "merchandising/design, which embraces graphics, packaging, point-of-sale and product design." Warren Wetherell, after studying at the American Academy of Art and IIT, entered the field in 1933 as a graphic artist, working successively for a number of firms until he founded his own business in 1947. Clients have included the Do/More Chair Co. (portfolio about Loewy-designed chair), Raymor Lithography (announcement of a new printing press), and a recent job was packaging and point-of-sale display for O'Cedar's sponge mop (below). Wetherell recently added a director of merchandising and research and a copy department to help him interpret his clients' needs more accurately, "to completely integrate merchandising and design."*







Asaba *Flanagan* *Vienot* *Hald* *Lippincott* *Black* *Lane*

Afterthoughts on Aspen

This year's design conference, a participant recalls, was marked by candor, excitement and a wealth of subject matter — and all this was divided into three parts

by James Marston Fitch, Associate Professor of Architecture, School of Architecture, Columbia University

The Sixth Annual International Design Conference, held in Aspen, Colo. from June 23rd through July 1st, differed from its predecessors in many important respects. It had the largest attendance — almost 700 registered conferees — and the largest and most distinguished group of speakers from overseas — 12 men from 8 foreign countries. The conferees came from all major fields of design: industrial, graphics, advertising and television; architecture and landscape architecture; craftsmen and management; educators and students; and (unlike previous conferences) the representation from each field was surprisingly well balanced. It was extremely well organized, with boxed picnic lunches, a day nursery with registered nurse and doctor in attendance, etc., etc.

But such statistics miss the most important aspect of IDC at the end of its sixth year: the fact that it is a viable, independent organization with wide international support and every prospect for a genuinely constructive future. This conference proved what its sponsors have always held — that there is a common base to all design, whether it be poster, automobile or architecture: and that therefore common problems face the designer, whatever his specialty, language or nationality. Unquestionably, it was this central fact which made possible the intense interest and lively participation of the audience in all the sessions, irrespective of the subject, profession or nationality of the speaker.

The structure of the conference, evolved from years of experience, was interesting. It was organized around one central thesis and divided into three cycles of two days each, each cycle followed by a "day of rest" with no activities programmed. Given Aspen's splendid scenery and recreational facilities, this gave the conferees leisure in which to relax, mix and — most important — digest the extremely rich intellectual fare of the discussions. The three Cycles — *Management and Design, The Practice of Design, Education and Design* — each had its own panel of speakers (usually six) whose papers had been printed and distributed to all conferees at the registration. (This technique, incidentally, was borrowed from scientific circles and cannot be too highly recommended for guaranteeing an orderly and systematic discussion of the subject in hand. Those of us familiar with the loose verbalizing so typical of art and design circles should adopt this technique as standard procedure.)

Morning sessions were devoted to the reading of the papers, discussion among the panellists and questions from the floor. In the afternoon, the conference broke up into smaller seminars, where discussion of the morning's topic could be more intimate and detailed. Each cycle was moderated by one man and, generally speaking, they did an admirable job of keeping a lively (at times, tempestuous) discussion on the tracks.

Since this was my first time as Aspen, I can make no comparisons between the quality of this and previous conferences. All I can safely say is that I found this year's discussions stimulating and solid, with little of that preciousness and subjectivity which too often surrounds discussion of such large and abstract terms as "art" or "design." It seemed very apparent that all the conferees were seriously concerned about the future of their fields and most anxious to discover what steps to take to protect it. Typical of this were the excellent papers read by three industrial designers — England's Misha Black, France's Jacques Vienot and the American, Gordon Lippincott. All three were sober, factual, frank. Indeed, Black's candor triggered a long and illuminating discussion when he said that designers "are, with the fewest honored exceptions, the great compromisers, the second-layer men, the translators of the real creative work of our time to a more common denominator." There was, of course, no harm in that, he continued, because "for every act of creation there must be a thousand adaptors."

Did Mr. Black mean to say that "compromise" was defensible in design? Several conferees decisively disagreed. But then some one pointed out that, as a matter of semantics, the word "compromise" had itself been compromised in common use. There was a "good" as well as a "bad" compromise. As for example in airplane design. Here, clearly, the contradictions between payload, speed and range had to somehow be resolved. Would anyone call this process an "immoral" compromise? Was it not, on the contrary, the very essence of the design process? Was it not the designer's responsibility to get the most strength with the least weight, the most speed with the greatest range?

Clarification of this point was closely related to another, raised by both Lippincott and Vienot: the problem of the *annual model* or the New Look. Said Lippincott: it was an easy trap for the manufacturer to fall into. "It suggests to the public that this year's model is superior to last year's (since) it is styled with the 'new look'. In practice, I think most creative designers and engineers would agree that it is simply not possible to find a 'new and revolutionary design' every year or so. Even if it were, the tooling and parts inventory problem would be staggering. In many product lines, the result is a 'new look by gimmick'. The 1957 refrigerator is actually the 1955 model with a new handle and rearranged chrome."

Vienot spoke against the concept of the annual model with equal vigor. Coming from a country where it is

Bass *Yanagi* *Henrion* *Fitch* *Rosselli* *Frisch* *Burtin* *Müller-Brockmann* *Eckb*

only just now appearing, he saw the annual model "as a great danger — especially in countries where a big effort is made to promote sales by any means, and where almost each year a new look has to be given to products although no technical improvements in these products warrant such a change. The consequence of this is . . . a new design that is different without being better." How can you "improve" an already perfected exhaust pipe, M. Vienot demanded? By plating it with gold? By wrapping it in leopard skin? A long and lively discussion followed this: the American seemed as much convinced as the foreigners that this was the cause of much of the "compromise" to which they objected.

But how to correct the situation? This was a horse of another color, especially in America where the annual introduction of a new model dominates whole fields like the motor car. The idea of outlawing the annual model seemed little short of un-American heresy to one conferee: where would American industry be without it? But another gentleman pointed out that Henry Ford had got along nicely, for decades, without it.

Lippincott made perhaps the wisest point when he urged manufacturers to adopt long-range, coherent design policies such as they already are accustomed to in plant expansion, financing, research and the like. Stop-gap designing, trying each year merely to copy the fashion as expressed by successful competitors, produced not only bad design but ultimately bad business. "Surveys we have conducted recently," said Lippincott, "show that the average American cannot identify an appliance or an automobile without looking at the name plate." Such a situation means mediocre and/or monotonous design, loss of sales, even corporate instability.

Mischa Black pointed out that such a problem scarcely exists in Great Britain, since a product like an automobile is ordinarily bought for long-term use, "if not indeed for life." This naturally works against the annual model and minimizes at least *this* source of corruption in design. But many of the American conferees were disturbed: were the opponents of the annual model not also opposed to progress? Not at all, said Jacques Vienot. Change was by no means synonymous with progress. He was merely in favor of "natural" development in design and distrusted the "artificial forcing" implicit in the annual model.

Closely related to the above was the whole problem of "good design." What was it, a charming young lady from Denver asked? How does one get it? A most interesting paper, read by Arthur Hald of Sweden, gave some persuasive answers to at least the second question. He felt that the generally high (and universally recognized) standards of Swedish design were due to two factors: a design-conscious public and a vigorous craft movement. While by no means advocating the "handcraft dreams of William Morris," he felt that Swedish experience proved that modern industrial society "*must* permit and encourage the existence of a high-class handcraft — an art handcraft so ruthlessly high-class that it will serve as a criterion of good design of any kind. Why? Because . . . the finest handcraft yields that complete integration of the factors which determine form; that absolute clarity of a finished, successively-refined form; the requirement that a material yield its maximum possibilities of expression; and a superb mastery of technique. These represent a moral that has not yet sufficiently penetrated (industrial production) . . . Craftsmanship symbolizes the concept of quality in an absolute sense."

Asaba's paper agreed with Hald's on this point. He too came from a country in which the handcraft tradition was exceptionally strong and to which industrialism had come comparatively late. The danger in Japan was the destruction of handcraft traditions by cheap and shoddy industrial products.

Hald and Black also attacked the problem of good design from another angle — that of educating the consumer. In both England and Sweden, they reported, this process has gone far enough and its importance is so generally recognized that government agencies have been created to promote and maintain higher standards of the design. Some of the Americans, in-

cluding Lippincott, bridled at this, showing our almost comic distrust of the government in any area outside war and taxes.

Despite the sharpness of many of the comments on management's actual performance in the design field (the automobile industry was a sitting duck for frequent and scathing jibes), the manufacturer's problems were handled with sympathy and respect. Given the subject of this Cycle, this emphasis was correct.

Second Cycle: the practice of design

But for many free-lance designers who design directly for the individual consumer, Cycle Two of the conference proved both broader and more profound. Here the discussion could deal less with the exigencies of commerce and more with the needs of society. A group of especially fine papers was read, including those of two Americans — the West Coast landscape architect Garrett Eckbo and the architect Paul Rudolph — as well as those of the Milano architect Alberto Rosselli and the Swiss architect-turned-author Max Frisch. It was significant that all the papers and most of the discussion pivoted around the social responsibility of the designer. Everyone remarked a central paradox: despite able men, a fine technology and modern scientific knowledge, the environment we are building falls far short of what we know it should be. Considering our vastly increased resources, our cities are inferior to those of five hundred years ago. Why was this?

Eckbo stated the problem in its most general terms: "In the last analysis, the landscape is indivisible. It stretches from ocean to ocean and its only limits are those of human vision and motion." In terms of human experience, it is a totality: every poster and gas station, auto and roadside stand becomes an integral part of the landscape. But in actual practice, we do not act as if this were the case. Our landscape is built up of bits and pieces of individual projects. Did this produce a landscape as orderly, as convenient, as handsome as it could and should be? Eckbo thought not; and Frisch, with poetic eloquence, thought not also. "How can a bird be kept in a snail's shell without damage either to the live bird or the pretty shell?" he wanted to know. "That is more or less the problem of town planning as we see it in Europe today."

European cities, designed at small scale for pedestrian traffic, were choking in modern vehicular traffic. The great squares and piazzas of Europe had become mere parking lots — "They were only visible as architectural monuments at dawn." Tall buildings, often good in themselves, merely bred more traffic. Streets were widened, old fountains removed, the canals of Venice got traffic lights. But matters got worse all the time: the shell, in Frisch's view, was killing the bird. But the villain was not merely the auto: Frisch thought it was the private ownership of urban land. This land, he said (and here he was echoing our own Henry George almost verbatim) was far too dear and precious to be left at the disposal of the owner! Only the community could be trusted with such a responsibility. Such a point of view not unnaturally led to a warm discussion of the pros and cons of planning, zoning, controlled land use and the like.

Alberto Rosselli, the famous *Milanese*, dealt in his paper with some of the special problems of the modern architect. In his view, there were two dangers in contemporary architecture: its tendency toward a blind and uncritical acceptance of technology; and its disastrous break with the cultural continuity of tradition. Designers like Maillart and Nervi were truly great, he said, because they went far beyond what a strict interpretation of the slide-rule indicated as possible. They overcame "technical determinism" by the sheer brilliance of their "intuition." Rosselli's use of this word caused quite a controversy. Rudolph seemed to think it meant the discarding of rational, objective standards of design. He pointed out, quite correctly, that "intuition" is often used as a fig-leaf for sloppy thinking and irrational designing. It was my impression, however, that Rosselli's "intuition" was of quite a different order: it came only from the artist's profound knowledge and absolute mastery of his medium.

Rosselli's other point—the importance of tradition—was also warmly debated. What he said was this, that contemporary design in each country "must be linked to (its) purest tradition rather than (spring) from an international culture with no attachment whatever to the true nature of the people involved." Several conferees wondered if he meant to recommend a return to the eclectic copying of antique forms; and to one conferee it seemed as if he were advocating the kind of vulgar nationalism exemplified by Mussolini's architectural policy. Actually, Rosselli's own work in Italy, such as the magnificent new Pirelli skyscraper now rising in downtown Milan, protects him adequately from any charge of either blind traditionalism or vulgar nationalism. But the discussion did reveal the tendency of Americans to be impatient with "sentimental" attachments to traditions other than their own.

Third Cycle: education and design

The last Cycle on Education got off to a flying start with an unscheduled debate between the University of Michigan's Anatol Rapaport and University of Chicago's Mortimer J. Adler. It was an exhilarating intellectual duel, with the kind of verbal sword play seldom heard today. In their papers they had begun

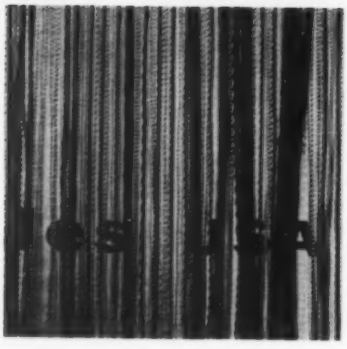
(*Continued on Page* 151)

Textiles for industry

Fabric show suggests potentialities of a developing medium

photos Johnston

Polyethylene cords make a shimmering entrance to textiles. Right, detail of cords, made by Plymouth Cordage Co. and used as all-purpose rope.



Parachutes sway in the breeze in the Museum gardens—standard nylon (below), and one of fluorescent magenta ribbons, acetate sharkskin made by Switzer Bros. (not shown).

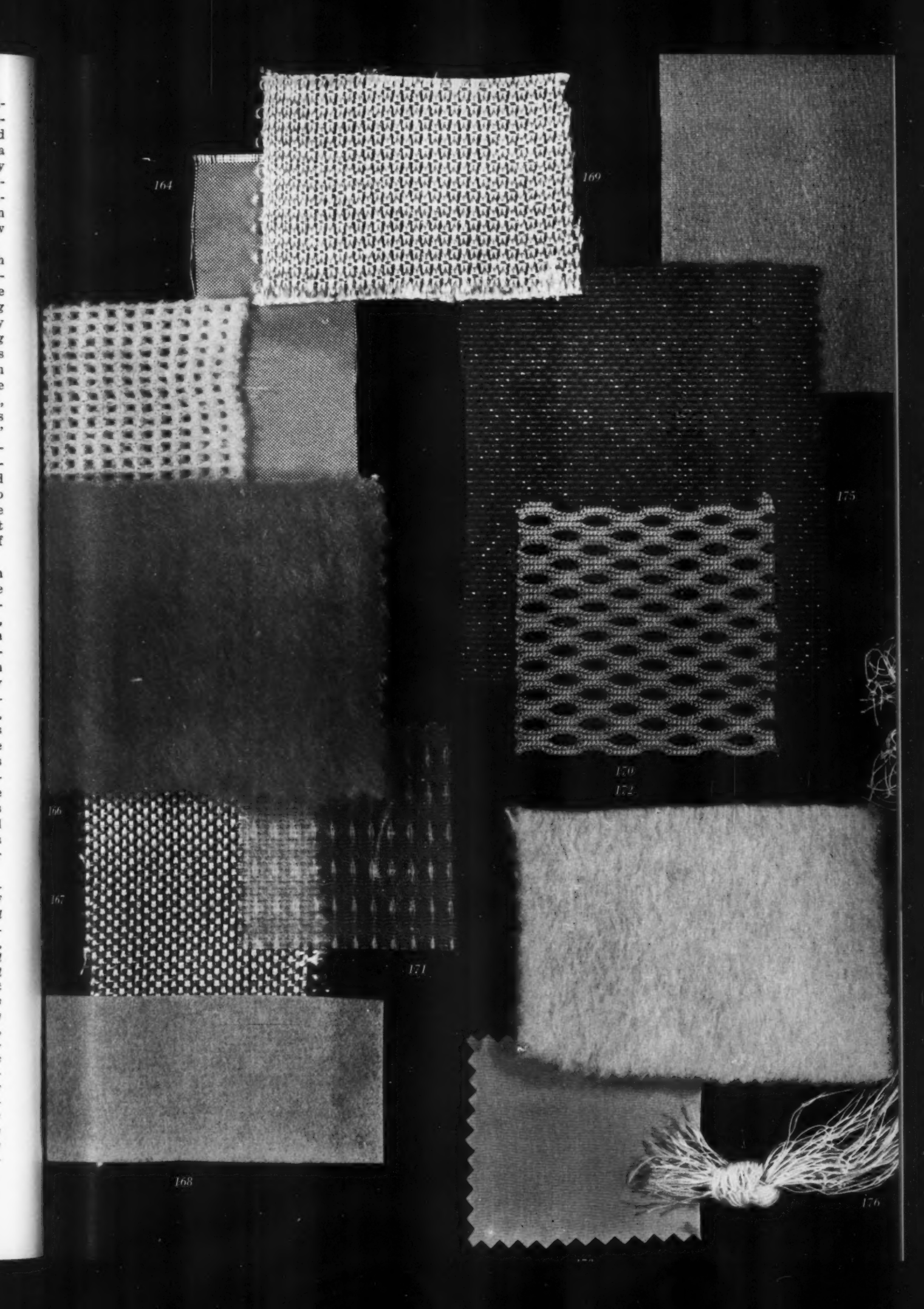
At left, section of huge umbrella composed of variety of non-industrial fabrics, the most spectacular display in the show. Above, rayon tire cord fabric under glass, manufactured by Industrial Rayon Corp. — one of the few fabrics to which "please touch" tags do not apply.

"We are not yet whole-heartedly willing to accept the fact that a plastic fabric can replace cumbersome steel and rust-prone iron—but fact it is, and a fact that looms larger and larger every day." So writes designer Henry Dreyfuss in *American Fabrics* Magazine, introducing the industrial fabrics shown by the Museum of Modern Art in New York in its exhibition, TEXTILES, USA.

The show, which opened August 29th to run through November 4th, is a selective rather than a comprehensive coverage of the textile industry, aiming only to reveal "the characteristic beauty of American textiles." Yet by including a selection of industrial materials among more familiar home and fashion fabrics, it gives a fresh picture of the scope of the industry. The installation, designed by Bernard Rudofsky, includes some dramatic examples of "clouds" made of crumpled toweling, sculpturesque forms of loosely draped parachutes, and piles of blond rayon heaped in a glass case (the lining of an auto tire). The industrial examples are shown in a straight-forward way, but the exhibit makes no explanation of their functional interest or purpose.

American Fabrics went further than the Museum's purely visual and tactile presentation, showing several of the industrial textiles in relation to their use, and its issue devoted to the show which it co-sponsored serves as a lush and valuable catalog. Designer George Nelson states elsewhere in the book, "So many of us are beginning to look at fabrics—those wonderfully varied, colorful, warm, decorative, pliable structures with which we are so familiar—and we are beginning to see them as new things for which we may presently have unexpected uses in our continuing struggle to do more with less." On these pages are some of the fabrics in the industrial category which hint at the many ways the textile industry is providing another major resource for the designer.

Opposite page: *Glass, nylon and polyethylene are being introduced in a multitude of applications — perhaps with firmer hold than the more sensational Mylar and Saran.* 164 *and* 167 *by Hess, Goldsmith & Co., and* 169 *by United Merchants Industrial Fabrics, are glass fabrics used in electrical insulation, body armor plate and aircraft lamination reinforcement.* 165 *by Bates Fabrics,* 166 *by Argonaut Mills,* 170 *by Callaway Mills,* 172 *by Albany Felt Co.,* 173 *by Burlington Mills,* 175 *by J. P. Stevens & Co., and* 176 *by Moodus Net & Twine, Inc., are nylons for insulation, lining, laundry bags, press covers, typewriter ribbons, automotive upholstery and commercial fishing, respectively.* 171 *and the fabric in the upper right by Reeves Brothers, are polyethylene cloths used as air and liquid filters, and* 168 *by The Felters Co. is a battery space-separator. (Numbers from* American Fabrics.)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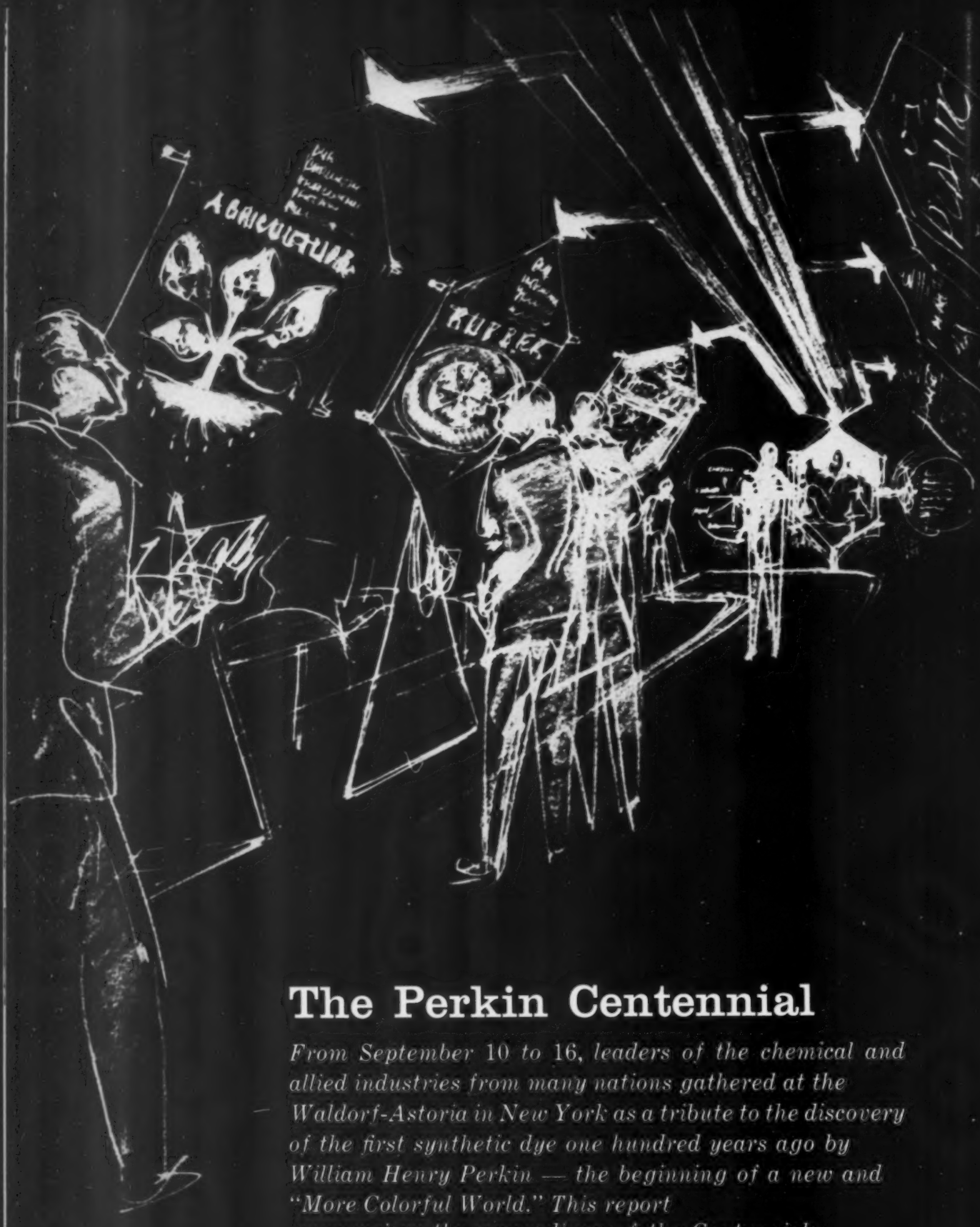
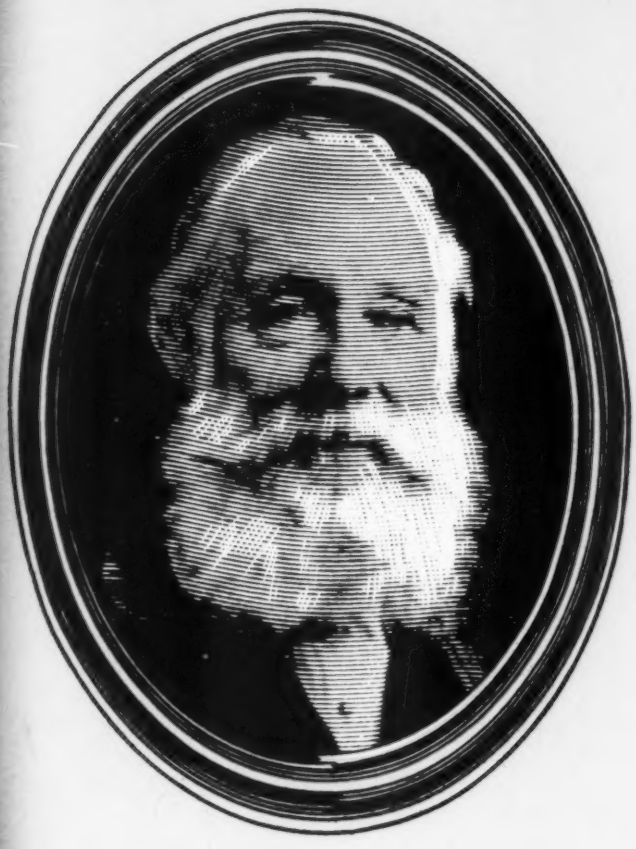


The Perkin Centennial

From September 10 to 16, leaders of the chemical and allied industries from many nations gathered at the Waldorf-Astoria in New York as a tribute to the discovery of the first synthetic dye one hundred years ago by William Henry Perkin — the beginning of a new and "More Colorful World." This report summarizes the proceedings of the Centennial: an international exchange of knowledge in the tradition that Perkin established.

William Henry Perkin by August Merz



Applied research occasionally results in the discovery of unexpected products. Some ascribe such occurrences to pure luck. Louis Pasteur, the great French chemist, however, has frequently been quoted as saying, "In the fields of observation, chance favors only minds that are prepared." Pasteur's statement aptly fits the circumstances of William Henry Perkin's discovery one hundred years ago of mauve, the first dye produced from coal-tar products, and tells us some of the reasons he warranted an international celebration.

At the time of Perkin's discovery, basic knowledge of chemistry was still very meagre, but the synthesis of naturally occurring products by artifical means aroused much interest. A prominent problem was the synthetic production of quinine. A similarity in the proportions of the elements composing quinine and aniline influenced young Perkin to attempt the conversion of aniline to quinine by oxidizing aniline to eliminate the excess hydrogen. Unaware that this theory was wrong and that available aniline was impure, Perkin proceeded with his experiments and turned up the unexpected—a black amorphous mass instead of the pure white crystalline quinine he hoped for. But Perkin had a "mind that was prepared" and looking beyond the immediate failure, found that the black mass, when dissolved in alcohol, turned into a solution of vivid violet hue. Like a Prince of Serendip, he sought a use of his unexpected find. He discovered that the solution would dye silk and wool violet shades hitherto obtainable only with dyes derived from the archil or cudbear lichen.

The head of a firm of dyers at Perth, Robert Pullar, saw some of Perkin's dyeings and was interested, but had reservations about cost. At first the new dye could not be used on cotton, although it dyed silk and wool well. Perkin attacked this problem and found that the new dye would affix well on cotton when the cloth was mordanted with tannin and stannate of soda.

Perkin's friends offered him encouragement and, while still a minor, he applied for a patent. Because he was under age, it was feared that a patent could not be granted to him, but it was ruled that, since a patent was a grant of the crown, the age of the grantee was immaterial. On August 26, 1856, Patent #1984 was issued, giving William Henry Perkin—age eighteen—exclusive rights to manufacture his new dye.

With the financial aid of his father and elder brother, Perkin undertook the commercial production of the new dye. It was not an easy job and involved difficulties such as the manufacture of aniline from benzene via nitrobenzene and the construction of apparatus in which to carry out the reactions. Finally, by the end of 1857, commercial quantities of dye were produced. The nation went mauve-crazy. Queen Victoria wore a mauve gown and penny postage stamps were similarly colored. The new Perkin Industry prospered and expanded, but within a decade, other chemists, following the way Perkin had blazed, produced a variety of even

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August Merz, a veteran of 58 years in chemical manufacturing, was one of the founders of the chemical industry in the U.S. He was associated with the firm of Heller and Merz in Newark, which was purchased by the Calco Chemical Co. in Bound Brook. Dr. Merz was vice president of Calco until 1930 and since then has been an advisory executive to that company, which is now part of American Cyanamid Company. He was president of the Synthetic Organic Chemical Manufacturers Association from 1926 to 1946.

better dyes from aniline and its derivatives. They superseded mauve, but 1856 still marks the beginning of a great era in the history of chemistry.

The discovery of mauve has sometimes been disparagingly classed as unremarkable, not only because it was an amateurish accident, but because at that time, the science of organic chemistry was so primitive and unexplored that only a dunce could have failed to make discoveries, provided his experiments were sufficiently varied and persistent.

This is an injustice to Perkin, for the extraction of mauve from the black mud resulting from Perkin's experiment was no simple matter. Color chemists trying to produce mauve for the present Centenary Celebration have learned to their surprise that even with Perkin's explicit directions at hand, the isolation of mauve is difficult.

Significant as the story of Perkin's scientific accomplishments is, in many ways it is overshadowed by the story of Perkin himself. He was a very modest, unassuming man, possessing great dignity. He was deeply religious, and an active citizen always supporting good causes. He was the youngest son of George Fowler Perkin, builder and contractor by trade, whose ancestors are thought to have been farmers in Yorkshire. Perkin's mother, Sarah, was of Scottish descent. William and a sister, his senior by two years, were the youngest of four children and they were very companionable. She told of one of William's early experiments—an attempt to emulate the manly art of smoking. It was carried out by the use of a man-sized pipeful of tobacco. The ill effects were calamitous at the moment, but probably beneficial for the long pull, since William was a non-smoker thereafter. Nicotine was not the only abstinence Perkin practiced; he was also a teetotaler and vegetarian, but it is not known whether this was the result of equally uncomfortable experiences with the latter indulgences.

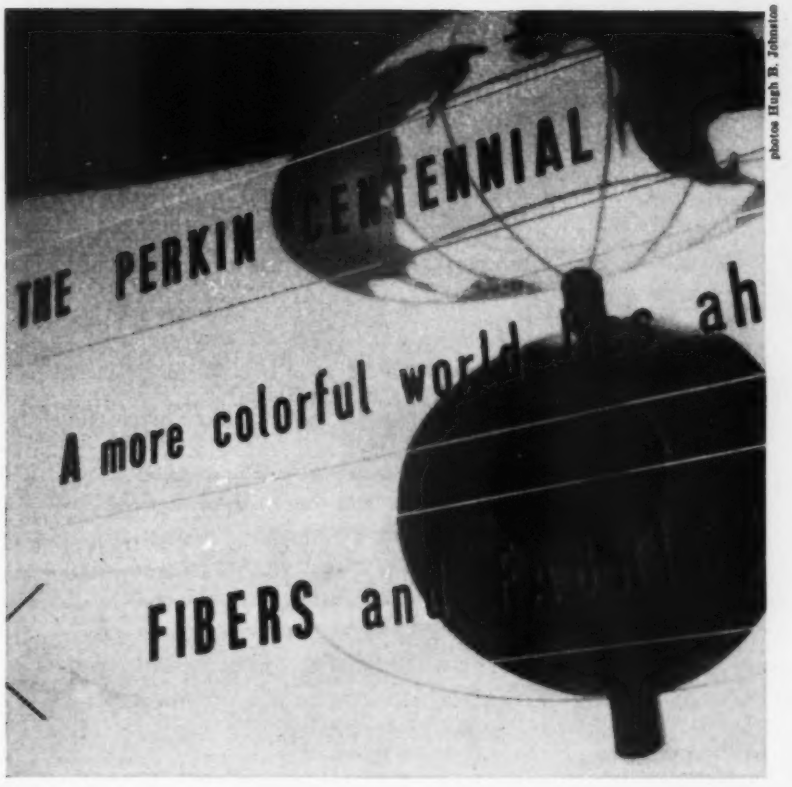
Perkin's father wanted him to become an architect, but William had other desires. At the early age of thirteen, while attending the London Grammar School, he gave up his lunch periods to hear some lectures on chemistry. Against his father's wishes, he obtained permission to attend some more advanced lectures on chemistry. He displayed such interest that he was made assistant to the lecturer. His father finally was persuaded to allow him to enroll at the Chemical School of the University of London, then headed by A. W. Hofmann, a German chemist of repute, imported to England by Prince Albert. Because of his ability and skill, Hofmann appointed William as an assistant in the laboratory. His time was so fully occupied during school hours that he improvised a laboratory at home for his own experimentation. This was the period during which he was "preparing his mind" for the observation of the unusual which resulted from his experiment based on faulty knowledge and impure materials.

Perkin, who is being recognized this year as the father of the coal-tar industries, is famous for more than the discovery of mauve. He never completely abandoned pure research, and in 1868, he devised a process for making coumarin, the flavoring principle of new-mown hay, found in the Tonka bean, woodruff, and other herbs. Thus, he laid the foundation for the great field of perfumes and flavors as another branch of the coal-tar industry. He also discovered a method for making cinnamic acid by a special reaction which is still known as the Perkin Reaction. In addition he devoted time and effort to the study of natural coloring matters obtained from vegetable sources. Several papers on the optical properties of certain organic compounds at varying temperatures bear his name.

During his life, Perkin was the recipient of many honors. Medals, honorary memberships in learned societies, honorary degrees, even a DCL from Oxford, and a knighthood from the King of England, all were bestowed in recognition of his great contribution to the science of chemistry. The culmination was in the celebrations of the fiftieth anniversary of his discovery of mauve. Throughout the scientific world, he was hailed as the founder of the Coal Tar Chemical Industry. Celebrations were held in London and New York in 1906. A great banquet in his honor was staged at Delmonico's in New York, and the first impression of the Perkin Gold Medal was presented to him. This medal is a coveted award which has subsequently been presented annually to a chemist for an outstanding contribution in the field of industrial chemistry.

In 1956, one hundred years after Perkin's epoch-making discovery, the industry he founded has grown from a test tube experiment yielding a few grains of unpromising mud to become an industrial giant. It produced innumerable products comprising dyes of many hues and uses, pharmaceuticals of marvelous curative powers, flavors and perfumes to suit every taste, and resins and plastics to fill a variety of needs. Measured in dollars, the total annual output is reckoned by billions.

On July 14, 1907, Sir William Henry Perkin passed to his reward, a truly great chemist and man, who, if chance indeed favors minds that are prepared, a man who lost no chance to be prepared.



photos Hugh B. Johnston

Since Perkin's discovery of mauve — "A More Colorful World"

The significance of, and the reason for, the spectacular tribute paid to Sir William Henry Perkin during the week of September 10 in New York is probably best expressed by members of the industries which have grown directly or indirectly from his classic synthesis of mauve. The following statements, selected from talks made during the Perkin Centennial, tell why Perkin is still honored internationally one hundred years after his discovery and forty-nine years after his death.

"Half a century ago Perkin was most worthily honored here in New York and our records show how deeply felt was his appreciation of the tributes paid him on that occasion of the Coal-Tar Jubilee. Now after another fifty years our estimate of his greatness is undiminished and we are in a still better position to realize how great is our debt of gratitude to a man who was one of the great pioneers of the chemical industry, a man who travelled straight toward the light that broke on the horizon." *Sir Robert Robinson, Society of Dyers and Colourists, London, England*

"The discovery of Mauve led to the beginning of a new era for surface coating—the era of styling, of decorating, of colored coatings as a dynamic force in merchandising." *Norman S. Cassel, Interchemical Corporation*

"As a representative of the fibrous glass industry, I want to express the homage of our group for the magnificent genius of Sir William Henry Perkin. His impact on our work is dramatically illustrated by the many wondrous colors we are able to impart to many of our products. We are also indebted to him for the dynamic technology which he represented—the quality that takes an individual beyond the point of discovery and into a recognition of and a belief in the wide commercial application of his work." *R. F. Caroselli, Owens-Corning Fiberglas Corp.*

"We are honoring a man whose discovery of the first synthetic dye began an era which will stand in history as having a most profound effect on scientific progress. The story of the development of coal-tar dyes and other products through chemical research over a hundred years is indeed impressive." *P. L. Meunier, E. I. du Pont de Nemours Co., Inc.*

These are but a few of many remarks made during the Centennial mentioning the impact of Perkin's work. But the Centennial was more than a tribute to a man: it was a comprehensive summary of activity in the chemical industries with emphasis on coal-tar colors in America and abroad. Extensive symposia, ranging from the presentation of technical papers to informal panel discussions, exhibits and special events gave attending industrialists a better understanding of the advancement of the coal-tar industry and how the numerous pathways for research are interrelated. The Perkin Centennial was sponsored by the American Association of Textile Chemists and Colorists and supported by makers of textile fibers, paper, leather, plastics, film, petroleum products, paints, pharmaceuticals, agricultural chemicals and synthetic rubber.

The theme of the Perkin Centennial was "A More Colorful World." Papers, talks, and exhibits dealt with technological problems in the use of color in materials and products, color standards, control, and testing. Some highlights of the many discussions are presented below as a supplement to the current ID series on Color Problems.

The psychology of color

In his paper on "Description of Color," Deane B. Judd of the National Bureau of Standards said, "Color is the aspect of the appearance of objects and light sources that depends chiefly on the spectral composition of the light reaching the eye of the observer from the object or light source, although light from the surroundings also has an important influence on the perceived color." Dr. Judd continued his discussion of the nature of color by explaining that opaque and transparent objects "may most systematically be described in terms of hue, saturation, and lightness; hue varying from red through yellow, green, and blue, back to red; saturation varying from grayish to vivid; and lightness varying between the limits black and white." The difference between opaque and transparent objects being that with transparent objects "lightness varies between the limits black and colorless, or as it is sometimes called, water-white." He stated that the Inter-Society Color Council and the National Bureau of Standards has developed a method of designating the colors of objects based on systematic description in terms of hue, saturation, and lightness. "The most widely used method of describing colors," he pointed out, however, "is by largely unsystematic color names derived from such sources as flowers, fruits, minerals, place names, personal names, and chemical names associated with a pigment or dyestuff."

Ralph M. Evans of Eastman Kodak Company, after describing the physics of vision, explained that for the most part what people see depends as much on themselves and their experiences as on the external reality which the light presents to their eyes. Using pictures, Mr. Evans demonstrated that seeing is largely a matter of recognition of objects with properties believed to be possessed by those objects. He showed that the mind has the ability to see several things simultaneously at the same spot, which led to the statement, "It follows that it is not entirely the physical or psychological facts which determine what we see but also to a great extent our knowledge of external reality as supplied by the mind. As the best example of this," he said, "it is shown how it is possible for a person to see simultaneously objects illuminated by light of a certain color and at the same time see the true colors of the objects themselves."

Walter C. Granville of the Container Corporation of America spoke on "Color in Industrial Design" and said, "The mass production of products, like the discovery by Perkin, occurred during the past century and has given birth to a new profession—industrial design. The aim of the industrial designer," he continued, "is to take an existing or new combination of functions and create an original design incorporating them, appropriate for current manufacturing techniques." Mr. Granville mentioned that although function is still a basic objective, a product's appearance has become a vital factor because a well-designed item will be bought in preference to one having similar functions but with a less attractive appearance. "Good color usage," he said, "is not only necessary, but in some cases it is the most important factor in creating appeal." He said that all cultures have appreciated and used color and today we are in a cycle of increased sensitivity and selectivity. Using colored slides, Mr. Granville showed examples of the use of color in the United States and abroad, saying, "Advances in the technology of industrial finishes have made possible the mass-production coloring of products, and with automation these features will assume even greater importance. Instead of a few standard colors, we now have almost unlimited color choice. This new freedom from restriction, together with the enjoyment of color, has resulted in a color binge which some people believe is at its peak. I believe," he concluded, "it has just started and that color will be a major means by which people will express individuality and counterbalance uniformity."

"Color in Paper: Rags to Riches" was the topic discussed by Leonard B. Schlosser of the Schlosser Paper Corporation. He said, "Paper has been a direct beneficiary of the sharply increased color consciousness of the American public, and colored papers have played an important part in industry and in direct contact with the consumer." Tracing the history of paper manufacture, Mr. Schlosser added, "The movement of the paper manufacturer away from textiles as a prime fiber supply to new sources of raw

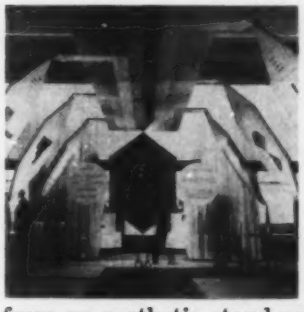
material began in the middle of the nineteenth century, and Perkin's discovery of mauve was contemporary with the early stirrings of the wood pulp giant. The paper industry's recent rapid growth has seen increased use of colored papers in grades that run the gamut of the industry's production, and paper as a carrier of message and carrier of product continues to assist and grow with the world's expanding call for color."

John F. Warner of J. B. Fuller and Company said that Perkin's discovery made possible the growing influence of color as a styling and merchandising force in his talk on "Color Harmony from Fashion to Industry." Mr. Warner emphasized the importance of color forecasting, color guidance, color coordination, and color promotion at all levels of the fashion trade, from producer to retailer.

The history of color

The American Association for the Advancement of Science sponsored the session on The History of Color which began with a talk on "Color in Relation to the Political and Economic History of the Western World," by S. M. Edelstein of Dexter Chemical Co. He discussed the alum trade, the introduction of cochineal into western Europe, the importation of calicos or "indiennes" from the East and the discovery of the chemical method of bleaching as they affected economic and political considerations.

Earle R. Caley of Ohio State University, in his paper on Color in Ancient Times, traced man's fondness for color in the Mediterranean world prior to 500 A.D.



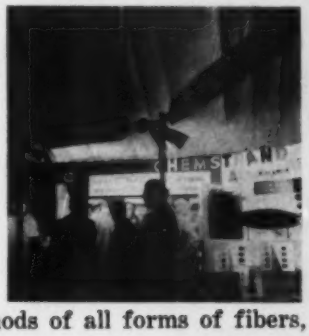
He discussed ancient ceramic products, pigments, paints and varnishes, inks, dyes and mordants, and the first theory of color which is attributed to Aristotle. He said, "The writings of ancient authors indicate an abundant appreciation of color from an aesthetic stand-point but little understanding of color from a scientific standpoint."

"Color Designation Through the Ages" was discussed by Ernest R. Kaswell of Fabric Research Laboratories, Inc., who said, "The human reaction to color has always been subjective, based upon psychological response to color stimulus. . . As progress in the arts and languages continued, the need for more precise descriptions of color became apparent, and the classification of color subjectively as well as objectively received a great deal of attention. Color charts and color designation systems were developed. Such well-known persons as Chevreul, Lambert, Maerz and Paul, Ostwald, and Munsell contributed to the quantification of color designation with numerical indices. While this phase of color designation was developing," he continued, "the physicists, one of the first being Sir Isaac Newton, were able to establish the physical nature of light and thus institute the *science* of color as a counterpart to the *art*. Colorimetry and spectrophotometry as scientific methods for color designation," he added, "are the culmination of man's ability to designate color in consistent and reproduceable terms."

The history of dyeing

This session, under the sponsorship of the American Association of Textile Chemists and Colorists, consisted of three talks: "The Development of Fast Colors for Textile," by F. M. Fordemwalt, American Cyanamid Company; "The Development of the Art of Textile Printing," by Herman P. Baumann, American Aniline Products; and "The Development of Modern Textile Dyeing Techniques," by P. L. Meunier, E. I. du Pont de Nemours & Co., Inc. According to Mr. Fordemwalt, "The first really fast synthetic dyes were the azoics. Several versions of these have been practical but all provide for the application of the components separately, even if in the same bath, followed by coupling within the fiber. The next, and the most valuable, group of fast colors to be developed were the vats. Solubilization is obtained by reduction, with or without esterification. After the soluble form has penetrated the fiber, the insoluble color is reformed by oxidation." He added, "With some synthetics the dye, once inside the fiber, is protected from removal by the hydrophobic nature of the fiber itself."

P. L. Meunier dealt with modern methods of textile dyeing and indicated that research during World War II on high-speed continuous dyeing resulted in outstanding advances over established methods. He said, "This period will be remembered for the many changes and improvements in technology of dyeing by continuous methods of all forms of fibers, both natural and synthetic, the development and application of new classes of dyes and radically new departures in the coloration of the synthetic fibers. The use of carriers, transfer agents and high-temperature dyeing techniques are all novel approaches which the textile mills and dyehouses have attacked with unparalleled vigor and resourcefulness."



In speaking about the art of textile printing, Her-

man Bauman said that the development of textile printing proceeds on three fronts simultaneously—the mechanical, the chemical and the artistic. Before the industrial revolution, the artistic front strode far ahead; from 1780 to 1860 the mechanical front far outstripped the others; and, starting with Perkin's discovery of the first synthetic dyestuff, it has been the chemists' turn.

A century of progress in the synthesis of dyes

This session consisted of seven papers concerned with early synthetic dyes, dyes for cotton, animal fibers,

non-textile coloration, hydrophobic fibers, photography, and fluorescent white dyes. Important advancements in these areas were discussed and it was pointed out how Perkin's discovery influenced their growth and development. Each speaker mentioned specific problems in his field and cited examples of how many of them have been overcome through the years. Perkin's discovery of the synthesis of Alizarine in 1869 introduced a whole new range of valuable chrome and acid wool dyes based on anthraquinone. Dyeing hydrophobic fibers necessitated the development of entirely new classes of dyes, which was accomplished by tailoring the dye molecules to the chemical and physical requirements of the different fibers. In photography, it was not until 1873 that it was discovered that certain dyes were capable of transferring the energy which they absorbed to the light-sensitive salts, thereby extending the range of colors to which such salts were sensitive, and for the first time introducing the possibility of an accurate tonal rendition of colored objects. The discovery of fluorescent white dyes has added a new dimension to the palette of the colorist, permitting him to vary brightness as well as hue.

The physics of color

The emphasis of this meeting was on methods of measuring color and color-difference with both instruments and the human eye. G. W. Ingle of Monsanto Chemical Company, speaking for the American Society for Testing Materials of Paint, Varnish, Lacquer and Related Products, said, "A major need is the standardization of reliable procedures for using instruments." He discussed the application of various instruments such as the spectrophotometer and the colorimeter, the preparation of color samples, the standardization of the method of operating various instruments; and standardization of the method of computing results from instrumental data, the accuracy of instrumental results (compared with visual estimates), and the evaluation of progress were discussed. Mr. Ingle concluded by saying, "We look forward to the development of continued means of measuring color-difference which will provide information of such a type that it may be fed back to control the coloring process in question. Until such is achieved, the several committees within ASTM concerned with color measures will not rest."

Application of colorants to drugs, cosmetics, medicine

"The preparation of the first aniline dye in 1856 by William Perkin was of the highest significance to the advancement of biology and medicine," it was stated by Morris J. Leikind of the Armed Forces Institute of Pathology during the discussion on the application of colorants to drugs, cosmetics, and medicine. "The discovery," he said, "came at a time when it could be swiftly applied to the development of the cell theory as a guiding principle in biology. It helped to establish Virchow's doctrine of cellular pathology as a foundation pillar of modern pathology. Microbiology owes much to the aniline dyes; and the science of chemotherapy through the brilliant researches of Paul Erlich could hardly have been established until the existence of coal tar dyes and allied chemicals."

This meeting was sponsored by the American Pharmaceutical Association, the Society of Cosmetic Chemists, and the U.S. Department of Pathology. Donald H. Powers of Warner-Lambert Pharmaceutical Co., Inc. pointed out that in this country unique and extreme precautions are taken with colors used in cosmetics.

The fact that no coal-tar color may be used in cosmetics unless it has been certified by the Food and Drug Administration as a Food, Drug and Cosmetic color, a D. & C. color, or as an external D. & C. color, limits the number of colorants that are available for use in cosmetics. The extremes to which precautions are taken, according to Mr. Powers, is illustrated by the necessary recertification of a mixture of two certified colors.

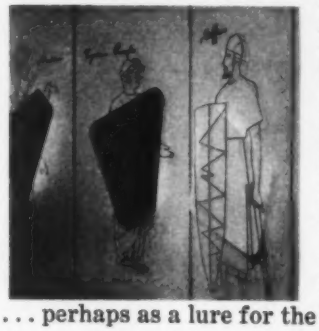
The application of colorants to plastics

This session, sponsored by the Society of the Plastics Industry, Inc., included talks by plastics experts from Koppers Company, Inc., Catalin Corporation of America, Akron Chemical Company, American Cyanamid

Company, Rohm & Haas Company, and Monsanto Chemical Company. In addition to several technical discussions of the various types of colorants that can be used most successfully with different plastic compounds, an interesting paper was presented by W. B. Hardy and Ralph Coleman of American Cyanamid on the desirability of maintaining the original appearance of a plastic, whether colored or clear. They pointed out that the use of ultraviolet absorbers, classed as substituted orthohydroxybenzophenones, will effectively retard changes caused by sunlight in the appearance and physical properties of a plastic.

Pigments and color lakes

The first paper presented in this session, which was sponsored by the Dry Color Manufacturers' Association and the National Paint, Varnish and Lacquer Association, Inc., was on "The Influence on Mankind of Colorants in Organic Coatings" by Frank Conolly of John W. Masury & Son. He said, "It's a long step from the time our caveman ancestor smeared some yellow or red clay on his face as an adornment . . . perhaps as a lure for the female of the specie . . . or for protection. Starting with Eve and coming up to the modern actress, the gals have used the influence of colorants with uncanny skill . . . often with devilish cleverness. But, from the beginning of time mere man has been led this way and that by the influence of color . . . the buying of a tie . . . an automobile . . . a yacht. For color is the greatest of all selling appeals . . . whether it be the carmine red lips of a charming lady, or the fire red of an auto."



T. J. Craig of the Sun Chemical Corp. related Perkin's discovery to the graphic arts. He stated that Perkin's synthesis "proved to be very timely, for without it the development of reproductive methods in the Graphic Arts Industries would not have been furnished with the incentive of better printing colors and by the promise of continual improvement." Mr. Craig pointed out that the development of pigments, starting in 1856 with Perkin's mauve and going up to phthalocyanine in 1935, are closely related in time to the invention of the halftone in 1880, of color separation in 1883, and of the three-color process plate about 1900. He emphasized the importance of printed packages on the Printing Ink Industry by pointing out that, "In 1941 the value of the products of the Printing Ink Industry was estimated at $60,000,000. Today it is estimated at $200,000,000."

"Coatings are bifunctional—protective and decorative," it was pointed out by Norman S. Cassel of the Interchemical Corporation in his talk, "The Economic Significance of Organic Colorants in Coatings." He said that traditionally the protective function has been stressed by their use in buildings, bridges, vehicles and machinery for protection against weather, corrosion, abrasion, and so forth. "Before the Perkin discovery," Mr. Cassel said, "pigments were limited to inorganic compounds and vegetable extracts, and were lacking in color range, permanence and supply . . . styling and 'eye-appeal' were unknown terms. So as chemistry went forward with research and development and brought forth a rainbow of brilliant pigments, a new era dawned for organic coatings. The decorative function blossomed and grew in importance until today we paint to redecorate, we look for beauty as well as the utility of the things we buy."

The application of colorants to leather

Technical problems in coloring leather were discussed at length in this session sponsored by the American Leather Chemists Association. "Leathers used in the glove, garment and upholstery fields must have properties of fastness to soap and water washing, fastness to dry-cleaning solvents, and lightfastness approaching textile requirements," J. S. Kirk of General Dyestuff Corporation said. "In recent times," he continued, "there has been a serious attempt on the part of the glove, garment and upholstery tanners to improve the quality of their dyeings. To achieve these ends, the tanner has been obliged to modify both his methods of tanning and his process of coloring. Dyes have been introduced to the leather industry that are not generally used as leather dyes, and whose use has been largely restricted to textile applications."

The impact of synthetic dyes on our economy

"From earliest times," according to C. C. Concannon of U.S. Department of Commerce, "color has exerted a strong impact on the world's economy." He stated that the enormous increase in the number of available dyes since Perkin's discovery has made color an influence on all phases of our daily lives. "The organic branch of our chemical industry, stemming back to Perkin's Mauveine," Mr. Concannon stated, "accounts for a substantial portion of our total annual chemical output of more than $20 billion, which has had an important part in helping the Nation to reach its $400 billion annual gross national product. But not only in

our domestic industry but in our foreign trade synthetic dyes are a leading item. Exports of coal-tar dyes totaled $22,883,000 in 1955 and went all over the world, demonstrating in yet another way that chemistry is basic to all industry and that color is the catalyst of commerce."

The application of colorants to food

Federal control of food colorants played an important part in the discussion on the application of colorants to food. Samuel Zuckerman of H. Kohnstamm & Co., Inc. pointed out that 1956 is the hundredth anniversary of Perkin's discovery of mauve and the fiftieth anniversary of the passage of the First Food and Drug Act permitting the use of certified coal-tar colors in food. "No other government," Mr. Zuckerman said, "has guarded with such care the colors that may be used in foods, drugs and cosmetics. Each coal-tar color manufacturer must submit samples from every batch to be analyzed for purity before certification, and the official lot-test number must then accompany the colors through all subsequent packagings." Other speakers mentioned specific factors relative to food coloring. Gloss, as well as color, for instance, play a part in the appearance of sugar and chocolate; animal or artificial casings can be dyed with certified colors provided there is no penetration of the colorant into the product; different crust colors are sought in different types of bread so that flavor characteristics will be typical of each bread type; of citrus fruits, only oranges are colored for marketing.

The application of colorants to textiles

Factors that must be taken into consideration in the application of colorants to glass fibers, according to R. F. Caroselli of Owens-Corning Fiberglas Corp., are the effects of various pigment systems on the soil resistance, fireproofness, washfastness, lightfastness, sewability, wrinkle recoverability, abrasion resistance, appearance, and general performance of glass decorative fabrics.

A delegation from Canada, headed by C. E. Coke of Courtaulds Canada, Ltd., presented a paper on the "Internal Application of Color in the Manufacture of Man-Made Fibers." They said, "To be used to any extent, all man-made fibers generally require coloration. Contrary to the conventional method of dyeing, where the dye must penetrate the substance of the fibers, the colored fibers are produced by incorporating into the liquid fiber dope, before spinning, a pigment or coloring material. These fibers are referred to as spun-dyed." One key to successful dope dyeing is the particle size and dispersion of pigment. It was pointed out that internal application of color in the manufacture of man-made fibers has resulted in improved fastness to sunlight, to washing, to perspiration, etc.

Colorfastness of textiles

Representatives from the United States, Canada, United Kingdom, France, Germany, and Switzerland presented papers on the progress that has been made in their countries in the development of new methods of colorfastness testing. The representative from each nation pointed out that his country has made progress through the years in the use of new and more accurate methods for testing colorfastness under many influences. Machines to measure the effect of laundering, perspiration, sunlight, humidity, and the other enemies of color have been developed to promote maximum consistency and reduce the human factor. The international flavor of the symposium was very evident throughout, with each speaker mentioning the importance of international standards. Dr. Fritz Buxtorf, Technical Representative, Sandoz Ltd., Basle, Switzerland, summed it up by saying, "We recall with pleasure the part which the Swiss Fastness Committee has been able to play, by its initiative and its work of intermediation, in the international standardization of colorfastness testing. May this spirit of unprejudiced and willing cooperation remain a force in the future. We need it for understanding among the nations in great things as in small."

Theories of dyeing

Milton Harris of Harris Research Laboratories, Inc., in speaking about theories of dyeing, said, "Dyeing is a process that has been used for thousands of years, but even today industrial use involves considerable empiricism. However, with the advances that have been made in understanding of the morphological and molecular structures of fibers have come corresponding advances in understanding of the dyeing process."

The last statement, in conjunction with the previous synopses of the proceedings of the Perkin Centennial, gives, perhaps, an inkling into the complex network of knowledge and talent in the arts and sciences that color and its use demand. Small wonder, then, that the personality and the work of a man with pioneering perspective and an understanding of what lay ahead in the encompassing field of color should continue to be honored by his fellow scientists.

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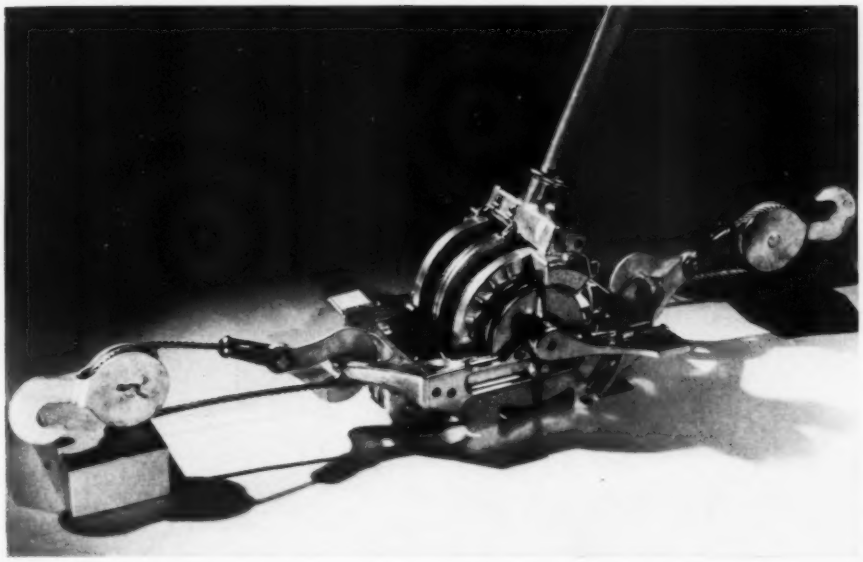
TECHNICS *a catalog of new products, materials, processes and finishes*



A new manually operated power tool designed to lift, power and pull

The new model T-100 double-reel Multi-Pul is becoming a favorite with construction crews due to its ruggedness in construction and simplicity in operation. Lightweight and easily handled by one man, it can lift and lower elevators under repair; can lower and replace elevator mechanisms in elevator shafts; can easily move machinery and heavy equipment; and, among many other applications, can winch equipment on and off trucks when on field service calls. Manufacturer: Multiple Corporation, 1908 N. Main St., Dayton 5, Ohio.

Ultrasonics clean minute parts

Intricate parts that must be "surgically clean," such as watch mechanisms, instrument components, small and miniature ball bearings and electronic parts, may be cleaned by Branson Ultrasonic Corporation's new cleaning apparatus in their Sonogen(R) series, specifically designed for bench-top washing.

Ultrasonic activation of a solvent literally blasts dirt away from the surfaces with a "scrubbing" action that is too gentle to harm even delicate components. The cleaning action reaches all surfaces accessible to the fluid and removes many soils normally thought insoluable. Cleaning time can often be cut and a lower solvent temperature is possible with the new apparatus.

The component parts of this new instrument are a power generator 36-40 kc/sec. and a cylindrical cleaning tank with transducers hermetically sealed into the base. Generator RF power output is 50 watts average.

Manufacturer: Branson Ultrasonic Corp., 37 Brown House Road, Stamford, Conn.

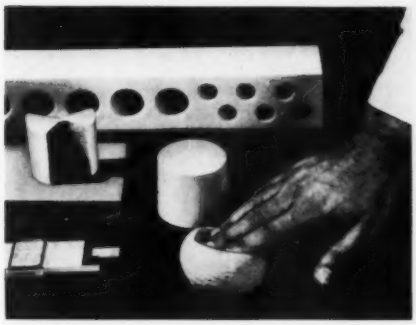
New silicone foam rubber

A new silicone foam rubber, tradenamed COHRfoam, has been introduced by the Connecticut Hard Rubber Company, which claims for it the following properties: remains soft and resilient over a temperature range of—100°F to 480°F, recovers shape instantly after prolonged compression at high temperatures, is inert to ozone and weathering, is non-sticking, non-corrosive, odorless, tasteless and exhibits excellent electrical properties.

COHRfoam is easily molded into complex shapes and has already found application as airframe seals, where no other material has operated successfully. It can be covered with Dacron fabric or Teflon to resist exceptional abrasion.

The manufacturer anticipates that COHRfoam will be used for sound and vibration packing, electrical and thermal insulation and mechanical sealing where a large, extremely light seal is needed.

Manufacturer: Connecticut Hard Rubber Co., 407 East St., New Haven, Conn.



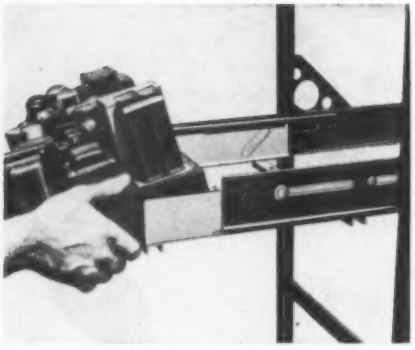
New acoustical material

"Basaltwool," a new fibrous material made from Basalt volcanic rock with high acoustic and heat insulating properties has been introduced to this country from Sweden.

"Basaltwool" can be used in mat form without a binder because of its fibre lengths, 18″ to 36″ with an approximate diameter of 20 microns. It is sound absorbing and will not burn or support combustion.

The fibres are gathered in batt form and stitched with wire, eliminating use of a binder. This wire binding and the long fibre lengths (1½′ to 3′) help "Basaltwool" to withstand severe air abrasion. It is inorganic and will not rot, decay or, induce corrosion in adjacent metal surfaces. "Basaltwool" will withstand higher temperatures than glass fibre products. Batts are available for most heat and sound insulating applications.

Manufacturer: Thermo-Sound Products, Division of Kittell-Lacy, Inc., 10816 East Fawcett Ave., El Monte, Cal.



Electronic equipment mount

Electronic equipment users will welcome Chassis-Trak's new "Easy Mount" slides. "Easy Mount" eliminates bolting the slide to the rear of the cabinet. The slide assembly is attached to the front rails of the cabinet and the chassis sets simply into the cradle. Installation takes about five minutes.

A built-in crossbar provides rear chassis support and serves to pre-align the slides for perfect fit without adjustments. The installation requires only a screwdriver.

Chassis slide in and out freely on the "Easy Mount" and tilt back to provide full access to the equipment's wiring section. Fully extended, the slide will support 125 lbs. and it fits any standard 19" cabinet or rack. Cradle bars across the front and rear permit mounting of any size chassis up to 17" width.
Manufacturer: Chassis-Trak Corp., 25 So. Webster St., Indianapolis, Indiana.

UL approval for new enameled wire

Schenectady Varnish Company, Inc., has announced that its Isonel enameled wire for Class B electrical insulating systems has been given the nod of approval by Underwriters' Laboratories, Inc., based on its success in withstanding hot spot temperatures of 130° C over long periods of time. Isonel enameled wire samples exhibited excellent dielectric strength and flexibility after aging at 153° C for ten weeks. Motors wound with Isonel wire operated at 180° C for ten weeks with no sign of breakdown; they also showed good chemical resistance when immersed for 24 hours in various solvents.

The Isonel enamel used on the wire is a polyester type introduced by Schenectady Varnish last year. It has similiar handling characteristics and properties to regular Class A wire enamels. Wire suppliers are now able to furnish Isonel enameled wire in a range of sizes to meet the requirements of electrical equipment manufacturers.

Manufacturer: Schenectady Varnish Co., Schenectady, New York.

Tempered hardboard with a plus

Wood chemistry marches on with Forest Fiber Products Co. introducing a light-colored, pre-finished, tempered hardboard named Sandalwood, which boasts a light color baked into the board to give it a sealed washable surface.

The basis of Sandalwood is long fiber Douglas fir, processed and refined for uniformity. Certain additives are mixed with the refined fiber to provide the weather resistance and workability characteristic of the basic board.

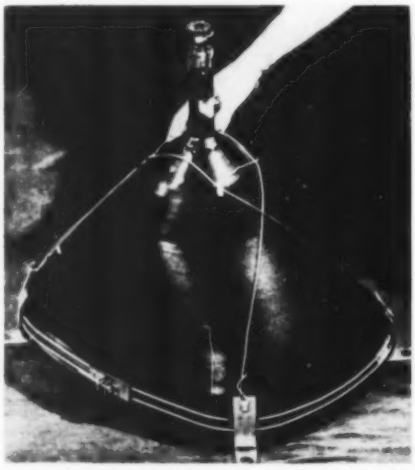
Sandalwood's color is baked-in—it is not a coating hence the fibrous quality remains visible. Ordinary food oils, drift, bleaches, ink, etc. can be wiped off easily without showing any stains. Sandalwood can be used "as is" or, painted, with no primers or sealers needed for lighter colors.

Sandalwood is tough enough to take the wear of floors, countertops, desk tops and is designed for exterior or interior use. Temper-treated Sandalwood is available with a punched surface for special uses. The panels range in size from 4' x 4' to 4' x 16'. In 1/8" thickness, a wall 12 feet long and 8 feet high costs about $12 retail with no further finishing necessary.
Manufacturer: Forest Fiber Products Co., Box 68 F., Forest Grove, Ore.

New TV tube mount

Mounting costs for television sets may be cut to a third by a new TV mount consisting of two parallel contour wires (or one, depending upon specifications) for the tube front, with four lightweight locating stampings and two adjustment stampings. A rear wire support is frequently used to complete the assembly.

The soft zinc-plated wire conforms closely to the tube contour. It will not etch glass, and consequently eliminates the necessity of gasket material which used to be required to prevent tube implosion or movement.
Manufacturer: E. H. Titchener and Co., 67 Clinton St., Binghamton, New York.



Spray-on wall surfacing

Easily sprayed on, Vitricon is a cold glazed cement mixture which becomes an integral part of a concrete, masonry or plaster surface without bonding, baking or pressure casting. It makes a durable, decorative finish at less cost than most comparable facings.

A Vitricon surface resembles mottled tile to some extent. Its physical properties are approximately equal to high-strength cement; its hard and glossy surface is impervious to most chemicals. Color combinations are limitless.

Cold glazed cement finish is today appearing on many of the new Manhattan skyscrapers. It is especially good where

an attractive but durable and low-cost glossy finish is called for in basements, corridors and utility areas. The New York Coliseum uses Vitricon facing throughout its huge restaurant, snack shop and bar in the main building, where a sanitary washable finish was required by the Board of Health. Vitricon should find use in civic, industrial and commercial buildings.
Manufacturer: Vitricon Inc., 2602 First St., Long Island City, N. Y.

Magnesium-thorium for fast aircraft

High speed aircraft pose the problem of what material to use to overcome friction heat. Stainless steel was chosen over aluminum in the plane that recently flew in excess of 1900 miles per hour, and a whole new series of materials seems to be demanded if high speeds are to go higher.

Dow Chemical has announced a magnesium-thorium sheet which is the first of a series of magnesium high temperature alloys containing thorium, zirconium and manganese in various combinations. It has good short-time properties up to 800° F, good long-time properties up to 600° F and excellent corrosion resistance for sudden heat problems.
Manufacturer: Dow Chemical Co. Midland, Michigan.

Hose for one-man copter

The use of a specially engineered hose assembly, made from a fluorocarbon resin tube and jacketed in steel wire braid, solved a difficult design problem in developing a portable, one-man helicopter for the U. S. Marine Corps.

As part of the fuel line was exposed to the elements, it was subjected to considerable wear and abuse in operation. A hose tube especially compounded and extruded from Teflon fluorocarbon resin, is lightweight, impervious to extreme weather conditions and highly resistant to snag and other operational abuse. It is also completely inert to all fuels and oils.

By developing and patenting their own technique for extruding Teflon, a notoriously difficult process, Resistoflex has baffled manufacturers but has so far refused to reveal the know-how that made the pipe possible.

Manufacturer: Resistoflex Corp., Woodland Rd., Roseland, N. J.

More Teflon tapes

Cementable Teflon tapes, single or double faced, are now available in widths from ½" to 12", bondable to glass, steel, aluminum, plastics or practically any other material including Teflon itself.

Applications range from ski, ironing board and rolling pin surfaces to pipe, bearing, hopper and vat linings for hermetic sealing or to provide frictionless surfaces, motor and coil winding and many more.

Cementable Teflon has the characteristics of Teflon such as low friction coefficient, unique dielectric qualities, chemical inertness. It is odorless, resists high temperatures, and is non-contaminating.

Manufacturer: Enflo Corp., Route 38 at Airport Circle, Pennsauken, N. J.

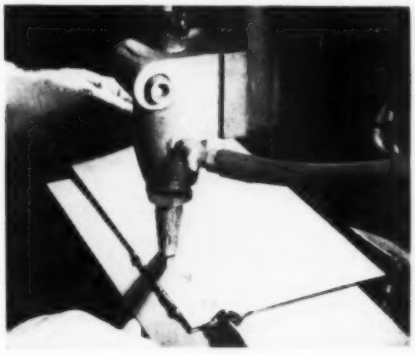
Spot weld elastic sealer

Parr Paint and Color Company reports that their Parweld eliminates electrode failure caused by the formation of copper oxide which occurs when the electrode tip comes in contact with ordinary spot weld compounds. Increase in electrode service life by 500 per cent is reported.

The elastic sealing compound provides watertight corrosion-free joints with minimum resistance to the welding currents. Tests have shown that more than 850 welds can be made directly through the compound before pitting becomes noticeable.

Recommended procedure is to apply a bead of Parweld to one surface of the joint sufficient so that the compound flows out to the edges as the weld is made.

Manufacturer: Parr Paint and Color Co., 1836 Euclid Ave., Cleveland 15, Ohio.



Metallized ceramic coating

The new firmly bonded metal-to-ceramic coating named Molcote presents a surface to which a metal part or other metallized ceramic parts may be hard soldered at temperatures up to 2200° F. Supplied ready to use, Molcote is furnished with either a thin nickel plating, which reduces oxidation tendencies, or with fired-on nickel or other auxiliary metal films. Molcote's high temperature soldering makes this new ceramic coating particularly applicable in the electronics industry, where there is a great demand for an extremely refractory coating suitable for high temperature "bakeout" procedures; most coatings cannot withstand the molten attack of high temperature solders of the copper-silver, silver, and pure copper types. Molcote, however, is supplied having the necessary surface preparation so as to be immediately useable for such solder operations.

Molcote leaves the Frenchtown plant clean and ready to use. However, should there be much of a delay between manufacture and assembly, some oxidation might occur. Handling, and possibly storage, may cause grease deposits which are harmful to brazing operations. This can be easily removed with ethylene dichloride, trichlorethylene or mineral spirits and rinsing in acetone or similar solvents. In case of oxidation, the best means of removal is by a short immersion in 10% hydrochloric or 10% hydrochloric and nitric acids, followed by a thorough washing in flowing water. Molcote is ready to use when dry.

In addition to many applications in the electronics industry, Molcote offers advantages when used with support insulators, ceramic bushing seals, radio tube spacers, hermetic seals, stand-off insulators, wear-resistent inserts, and others.

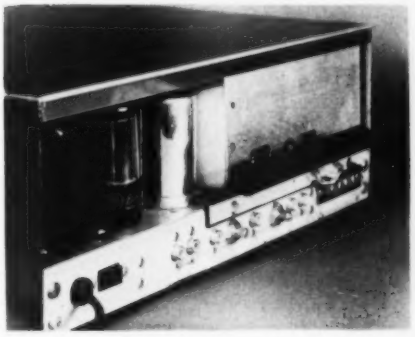
Molcote Metallized Ceramic Coating is applied at the Frenchtown plant to ceramic bodies supplied by the customer or to standard types of Frenchtown quality ceramics. When ordered, a detailed sketch or print of the product together with a description of use and quantities involved is advised to facilitate processing.

Manufacturer: Frenchtown Porcelain Co. Trenton 9, New Jersey.

New brushes for insulated motors

National Carbon Company has developed specially processed brushes to reduce the rapid brush wear and high contact drop of ordinary carbon brushes used in dc motors and generators silicone-insulated for Class H operation (180°C max.). These brushes, known as Grades N-2 and N-6, are suitable for practically any type of commutating machine with Class H insulation.

Manufacturer: National Carbon Company, Division of Union Carbide and Carbon Corp., 30 E. 42nd St., New York, N. Y.



Ferrite-core antenna supports

Pilot Radio Corporation in cooperation with Anchor Plastics has developed a new means of supporting ferrite-core antennas. These antennas, used on hi-fi tuners and tuner amplifier combinations, should be located as far away from the chassis as possible to avoid RF interference, and the supporting structure should preferably be non-conductive and non-magnetic.

The antenna holder developed for this purpose is an extrusion consisting of a slit tube to which a long flange is integrally attached. Two holes in the flange are used for mounting the assembly to the chassis, the tubular part holds the antenna element.

Manufacturer: Anchor Plastics Co., 36-36 36th St., Long Island 6, New York.

Legible digit volt-ohmmeter

The important feature of this volt-ohmeter is its legible digit readout which can be read quickly and accurately by non-technical personnel from 30 feet or more, straight-on or at angles. Especially designed for industrial uses, it is available in portable and rack mount models. The portable model is 11" high, 8¼" wide and 15⅛" deep.

The model 352 Digital Volt-Ohmeter has an accuracy of 0.1 per cent for dc volts and for ac 2 per cent of full scale from 30 cps to 3 mc for voltages greater than 1 v. The meter has a high input impedance (dc11-megohms, ac 1.5 megohms) and presents a negligible load to circuit under measurement.

Manufacturer: Non-Linear Systems, Inc., Del Mar Airport, Del Mar, Cal.

Automatic voice control

Talk-a-phone has introduced an automatic voice control that eliminates the need for manual operation of controls during conversation, yet permits private and selective communication.

"Built-in automation" provides for automatic voice control, automatic traffic control and automatic monitoring signal as well as closed circuit conferences—all automatically—making it unnecessary to use the talk-listen control as in earlier models of Talk-a-phone.

With automatic voice control, the voice automatically operates the talk-listen control for you, even when conversing with touch-control units.

Automatic traffic control determines and controls the traffic on the line with visual signals; green for a clear line, red when a line is busy and amber when a line is being called.

The Talk-a-Phone is available in two models, Series 7600 and 7700. Both provide automatic traffic control and closed circuit conferences, and the 7600 model has the additional feature of automatic touch control.

Manufacturer: Talk-a-phone Co., 1512 So. Pulaski Road, Chicago.

Miniature wire rolling mill

A miniature wire rolling mill that flattens and winds a mile of wire every two minutes has been developed by the Stanat Manufacturing Company, Inc., of Long Island City, N. Y.

The mill flattens small diameter round wire, and this wire is used to make a wide variety of products, including hair springs, resistance elements, electronic tube components and wire cloth. A typical job for the mill might be processing aluminum round wire .024" in diameter to flat wire .006 by .064". Thickest wire handled by the mill is of 1/16" diameter.

The mill is a fully-wired, compact, package unit requiring 4 x 6 feet of floor space and weighing approximately 6,000 pounds.

Manufacturer: Stanat Manufacturing Co. Inc., Long Island City, New York.

Vulcanized polyethylene

Vulkene 107-E is one of the results of GE's efforts to improve the properties of plastic materials by high-energy electron irradiation.

Vulcanized reinforced polyethylene has a higher yield and ultimate tensile strength over a wide temperature range than the low-density polyethylene from which it is derived. Stress corrosion cracking is eliminated and solvents which normally dissolve polyethylene at elevated temperatures will only swell the crosslinked polymer. Although stiffer than traditional polyethylene, vulcanized reinforced polyethylene is flexible and does not show the brittleness, low tear strength and elongation normally associated with highly-filled formulations.

The vulcanization of polyethylene by high-energy electron irradiation crosslinks the polymer and converts it from a thermoplastic to a thermoset material. The effect is analogous to the change in properties of rubber crosslinked by sulphur and other chemical vulcanizing agents. Because of this crosslinked structure, Vulkene 107-E does not melt: when subjected to temperatures above the normal melting point of low density polyethylene, vulcanized reinforced polyethylene becomes thermoelastic, exhibiting the properties of an ideal rubber.

Since, vulcanization (crosslinking) converts the thermoplastic (carbon black) polyethylene formulation to a non-melting thermoset material, parts must be fabricated—molded, extruded, laminated, etc.—before irradiation.

Vulkene 107-E vulcanized reinforced polyethylene is a highly loaded carbon black filled polyethylene formulation. It is a black, semi-rigid thermoset plastic which, in addition to the general properties mentioned, has good low temperature flexibility, heat aging characteristics and resistance to sunlight and chemicals.

Manufacturer: General Electric, 1 Plastics Ave., Pittsfield, Mass.

New slip-resistant coating

Paper bags; paperboard boxes and corrugated boxes with surfaces that prevent slipping in transit and handling can now be produced by applying a coating of "Friction-Kote" to kraft paper or board after printing and before fabrication. The new coating, produced by Dennis Chemical Company, is supplied in emulsion form and serves as a transparent protective coating for inks, preventing rub-off, and is waterproof in addition to its slip-resistant properties. It can be applied by spray or roll-coat.

Manufacturer: Dennis Chemical Company, 2701 Papin Street, St. Louis 3, Mo.

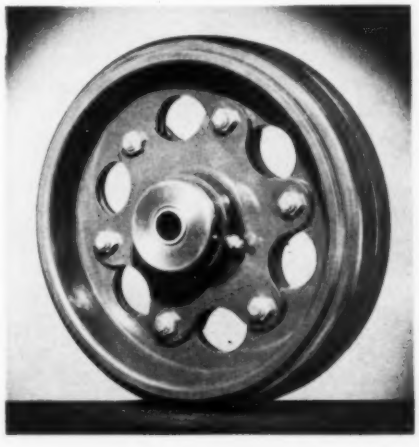
Demountable 10" wheel

The standout feature is that only a wrench, a screw driver and five minutes are required to replace the rubber tire on a new industrial wheel introduced by the Rapids-Standard Company. The hub is designed for quick indexing to match bolt holes in the rims. The ability to change the tire is a money-saver because rubber industrial wheels have previously been discarded when the tires were worn out or a new tire was molded on the rim. The new wheel is called the "Rapistan MB" to distinguish it from the 6" and 8" diameter wheels already in the "Rapistan" series.

A steel band, to which the Rapistan MB rubber tire is molded, is designed to place the rubber tire under load, thereby reducing the outward "squashing" effect prevalent in average molded-on rubber tired wheels. Component forces developed as a result of the concave metal band tend to retain the rubber tread inward to resist spreading. This results in less rubber on the ground under load, and so less resistance to rolling.

Because this flattening tendency is reduced under heavy loads, the wheel is not subject to cuts and abrasions occurring on molded-on treads which bulge outward. Consequently the Rapistan MB wheel is claimed to last longer than other types.

Manufacturer: Rapids-Standard Co., Inc., 342 Rapistan Bldg., Grand Rapids 2, Mich.



Manufacturers' Literature Supplement

A bibliography of currently available technical brochures dealing with materials, methods, components, and machines

MATERIALS: 1—Metals

Alloy Sheet Metals. S. Blickman, Inc., Weehawken, N. J. 30 pp., ill. A description of facilities for unusual and complex jobs in sheet metal fabrication.

Aluminum Alloys. Aluminum Company of America, 781 Alcoa Building, Pittsburgh 19, Pa. A comprehensive reference book on aluminum alloys and mill products in tabular form.

Aluminum Pipe. Aluminum Company of America, Room 780, Alcoa Building, Pittsburgh 19, Pa. With special application to use in the oil industry, aluminum tubular products are described in terms of durability, economy, installations, etc.

Aluminum Extrusions. Aluminum Extrusions, Inc., Aluminum Manufacturing Co., Charlotte, Mich. Handsome brochure designed by George Nelson pictures raw materials and production processes of natural and colored extrusions, and illustrates the wide range of applications this method of manufacture has found throughout industry.

Castings. Shenango-Penn Mold Co., Centrifugal Castings Division, Dover, Ohio. Five bulletins on non-ferrous alloys, special iron alloys and other metals used in a wide range of component machine parts and assemblies.

Corrosion Resistance of Titanium. Mallory-Sharon Titanium Corporation, Niles, Ohio. 8 pp., ill. Description of properties and applications, together with table of corrosion ratings.

Fluxes. Anchor Metal Co., 244 Boerum St., Brooklyn 6, N. Y. 4pp. A folder of corrosive and non-corrosive fluxes for all metal joining and soldering.

Decorative Metal Finishes. The Electric Auto-Lite Company, Bay City, Michigan. Information on metals with decorative embossed designs and simulated precious-metal finishes.

Metal Letters. Nelson Metalcraft Co. 3036 West Chicago Ave. Chicago 22, Ill. 15pp., ill. Catalog lists: styles, sizes, strokes, finishes, depth for cast letters, specifications and costs of metal letters. Pictures of application of each style are also shown, as well as a chart of standard colors available for baked enamel and porcelain enamel letters.

Metal Mouldings. Pyramid Mouldings Inc. 5353 West Armstrong Ave. Chicago 30, Ill. 19 pp., ill. Digest listing the standard mouldings available: snap-ons, nosings, covers, edgings, channels, angles and special shapes.

Nickel and Nickel Alloy Tubing. Superior Tube Company, 1712 Germantown Ave., Norristown, Pa. 20 pp., ill. Brief handbook of properties, applications, and facilities. Also available is introductory literature on large-diameter thin-wall tubing.

Stainless Steel and Nickel Tubing. J. Bishop & Co. Platinum Works, Stainless Steel Products Division, Malvern, Pa. 12 pp., ill. Replaces 8-page catalog of comparative analyses of alloy types.

Wrought Iron Pipe. A. M. Byers Co., P. O. Box 1076 Pittsburgh, Pa. 16 pp., ill. Description of composition and advantages, and illustrations of its use in modern buildings.

2—Plastics

Chemical Resistance of Reinforced Plastics. Modular Plastic Corp., 1635 Westminster, Detroit 11, Michigan. ill. Product reported on "Polyglas," with reference to 66 commonly encountered elements and compounds.

Custom Molding of Plastics. General American Transportation Co., Plastics Division, 135 S. LaSalle St., Chicago 90, Ill. 16 pp., ill. Facilities and processes at East Chicago plant.

Decorative Plastics. The Electric Auto-Lite Co., Bay City, Michigan. Includes ideas on designing with three-dimensional plastics.

Geon. B. F. Goodrich Chemical Co., 324 Rose Building, 2060 East Ninth St., Cleveland 15, Ohio. Two booklets on new vinyl compounds and resins for primary insulation and jacketing, with extensive technical information.

Introductory. Bakelite Co., Division of Union Carbide and Carbon Corp., 300 Madison Ave., New York 17. 48 pp. "The ABC's of Modern Plastics" is a digest of the manufacture and uses of synthetic materials.

Plasticizers. Monsanto Chemical Co., Organic Chemicals Division, 800 N. 12th Blvd., St. Louis 1, Mo. 64 pp. Uses, properties and specifications of its line.

Plastic Pipe and Fittings. The Carpenter Steel Co., Alloy Tube Division, Union, N. J. Ill. Normal and high-impac grades of unplasticized polyvinyl chloride products ar described, with tables.

Sprayable Plastisols. Metal & Thermit Corp., Rahway N. J. 4 pp., ill. Describes latest development in plastise coating, called "Unichrome 'Super 5300'."

3—Others

Ceramic Coating. Frenchtown Porcelain Co., Trenton 9 N. J. 4 pp. Announcement of "Molcote," metalized cerami coating for use with all types of hard solders.

Glass Fiber Insulation. Libby-Owens-Ford Glass Fiber Co., 1810 Madison Ave., Toledo, Ohio, 4 pp. Home insula tion with reflective facing.

Glass Pipe and Fittings. Fischer & Porter Co., 683 Jacksonville Road, Hatboro, Pa. 4 pp. Catalog of company's line, including metal-to-glass and glass-to-glass connections.

Metal Bonded to Plywood. Met-L-Wood Corp., 6755 West 65 St., Chicago 38, Ill. 15 pp., ill. Construction details and industrial and commercial uses of a structural material made up of thin layers of metal and wood, permanently bonded together.

Precision Glassware. Wilmad Glass Co., Franklin & Flower Sts., Landisville, N. J. 4 pp. Features use of glass in electronic applications.

Rubber Pipe. T. R. Finn & Co., Industrial Division, 200 Central Ave., Hawthorne, N. J. 4 pp. Description of "Soundzorber," wire-reinforced rubber pipe for eliminating noise and vibration from water lines.

Silicone Rubber. The Connecticut Hard Rubber Co., 407 East St., New Haven 9, Conn. Describes line of "stock" items, including allied products.

Water Base Adhesives and Protective Coatings. Flintkote Co., Industrial Products Division, 30 Rockefeller Plaza, New York 20, N. Y. 4 pp. Industrial insulation with asphalt and tar emulsions, rubber and asphalt dispersions and compounded latex adhesives.

Wood Fiber Acoustical Materials. Tectum Division, People's Research & Manufacturing Co., 105 S. Sixth St., Newark, Ohio. 4 pp. Basic design and installation brochure.

METHODS

Basic Steel Conversion. Basic Refractories Inc., 845 Hanna Building, Cleveland 15, Ohio. 12 pp., ill. Outlines comparative merits of acid and basic operation and discusses conversion costs and difficulties.

Corrosion Proofing. Corrosion Engineering Dept., Pennsalt Chemicals, 3 Penn Center Plaza, Phila. 2, Pa. Revised edition of reference manual, with description of "Corlok," a new chemical-resisting mortar.

Cutting and Bending Processes. Wallace Supplies Manufacturing Co., 1300 Diversey Parkway, Chicago 14, Ill. $2.50. Reference manual in four sections, two on bending and two on cutting, which may be ordered separately. Also available is an elaborate presentation of the company's new tube bender.

Die Casting. American Die Casting Institute, 366 Madison Ave., New York 17. Product standards for die castings with aluminum, copper, brass and magnesium alloys.

Drafting. American Machine and Foundry Co., Public Relations Dept., 261 Madison Ave., New York 16. 56 pp., ill. Detailing of standards on drafting room practices and simplified drafting.

Electroplating. Baker & Co., Inc., 113 Astor St., Newark 5, N. J. 20 pp., ill. A revised edition of "Data and Directions for Electroplating With Rhodium," a handbook.

Extrusion. The Cleveland Cap Screw Co., 2917 East 79th St., Cleveland 4, Ohio. Box No. 883. 4 pp., ill. Description of cold-forming Kaufman double-extrusion process.

Flat-Lapping. J. B. Maris Co., 14 Henry St., Bloomfield, N. J. Announcement of flat-lapping service for automotive, aircraft and precision-machine manufacturing.

Machining. Seaman-Andwall Corp., Cogmatic Division, 305Y North 25th St., Milwaukee 1, Wisc. 8 pp., ill. Description of Cogmatic Precision Flame Machining for automatic production of large sprockets and gears.

Silver Brazing. The American Platinum Works, 231 New Jersey Railroad Ave., Newark 5, N. J. Guide to selective fluxing for low temperature silver brazing as companion volume to previous manual, with data on two new fluxes.

Spectrochemical Analysis. National Spectrographic Laboratories, Inc., 6300 Euclid Ave., Cleveland 3, Ohio. Full color brochure. Illustrates scope of science of spectroscopy and laboratory methods.

Steel Strapping. Acme Steel Products Division, Acme Steel Co., 2840 Archer Ave., Chicago 8, Ill. 44 pp., ill. Information on steel packaging in catalog form. Also available is booklet on "Unitizing," method of grouping products or packages.

Testing and Rating Furnaces and Heaters. American Society of Heating and Air-Conditioning Engineers, 62 Worth St., New York 13. Code for heavy-duty furnaces and direct-fired unit heaters.

Woodworking. C. H. Dresser & Son, Inc., Hartford, Conn. An anniversary book displaying the craftsmanship in wood and installation photographs.

MACHINES

Assembly Machines. The Multra Corporation, Barnes Engineering Co., Stamford, Conn. 12 pp., ill. Description of this automatic machine through detailing of its part-by-part assembly of a single product.

Blasting Machines. Modern Industrial Engineering Co., 14230 Bilwood Ave., Detroit 38, Mich. 4 pp. Describes three designs for "Burr-Blast" method of removing fragmentary burrs from finished parts. Also bulletin on pressure test machines.

Clutches, Brakes, Etc. Fawick Airflex Division, Fawick Corp., 9919 Clinton Road, Cleveland 11, Ohio. A catalog of the company's line, including couplings, power take-offs, rotorseals, quick release valves and high-speed controls.

Hydraulic Jacks and Pullers. Templeton, Kenly & Co., 2525 Gardner Road, Broadview, Ill. 16 pp. Catalog of line of Simplex tools, designed as application guide.

Induction Motors. ACEC Electric Corp., 40 East 49th St., New York 17. Technical data sheet with dimensions and reference drawings for motors in new standard sizes.

Injection Molding Machines. Plastics Molding Equipment Division, F. J. Stokes Corp., 5500 Tabor Road, Philadelphia 20. Pa. 8 pp., ill. The advanced design features of new automatic machines are portrayed.

Lathe Fixture. Universal Vise and Tool Co., Parma, Mich. 4 pp. Specifications and prices on a new adjustable precision lathe fixture with a variety of machining applications.

Motors. Marathon Electric Manufacturing Corp., Wausau, Wisc. 4 pp. Complete cross reference between old and new NEMA ratings on horsepower and dimensions.

Motors. Robbins & Myers, Inc., Springfield, Ohio. 4 pp. A bulletin featuring new 10 and 15 h.p. single-phase motors.

Motor Starters. Cutler-Hammer, Inc., 394 N. 12th St., Milwaukee 1, Wisc. 4 pp. Improvements on magnetic starters are described, offering greater motor control.

Pump Motors. U. S. Electrical Motors, Inc., Box 2058, Los Angeles 54, Calif. 16 pp., full-color. A catalog of vertical turbine pump motors, with new design features.

Power Tools. Delta Power Tool Division, Rockwell Manufacturing Co., 450 North Lexington Ave., Pittsburgh 8, Pa. 8 pp. A booklet on the teaming of industrial power tools with special-purpose machine tools.

Precisionspring Clutches. Curtiss-Wright Corp., Marquette Metal Products Division, 1145 Galewood Drive, Cleveland 10, Ohio. Bulletins on new clutches and basic design principles.

Test Equipment. Tenney Engineering, Inc., 1090 Springfield Road, Union, N. J. Folders on refrigeration and environmental testing machines, including advanced-design explosion chamber.

Tool Grinders. Wesson Co., 1200 Woodward Heights Blvd., Detroit 20, Mich. 6 pp. Describes the company's new oscillating carbide tool grinder.

Turbine Pumps. Layne & Bowler Co., 2943 Vail Ave., Los Angeles 22, Calif. Includes full-color cutaway sections of the lineshaft type pumps for primary water supply.

COMPONENTS

Ball Bearings. New Hampshire Ball Bearings, Inc., Peterborough, New Hampshire. 30 pp., ill. A manual of small precision instrument ball bearings.

Bearings, Parts, Filters. Amplex Division, Chrysler Corp., Detroit 31, Mich. 52 pp. Catalog of "Oilite" products in form of an engineering manual, with a 12-page insert listing over 1,000 items in stock.

Cap Screws. The Cleveland Cap Screw Co.. Box 883, 2917 East 79th St., Cleveland 4, Ohio. Information on tightness, with tables of recommended torques for the company's screws and place bolts.

Cutters. The Gustave Wiedeke Co., 1833 Richard St., Dayton 1, Ohio. 32 pp., ill. A catalog of tube expanders, tube cutters and operating accessories.

Electrodes. Ampco Metal, Inc., 1745 South 38th St., Milwaukee 46, Wisc. 4 pp., ill. The bulletin describes the five grades of bronze electrodes, with typical applications.

Electrodes. National Carbon Co., 30 East 42nd St., New York 17. 16 pp., ill. A catalog of spectroscopic electrodes and powders.

Fasteners. The Nylok Corporation, 475 Fifth Ave., New York 17. Self-locking fasteners employing nylon pellets inserted into the threaded area are described with the company's other products.

Fasteners. Nelson Stud Welding Division of Gregory Industries, Inc., Lorain, Ohio. Two application data bulletins list short form specifications and erection procedures for field-assembled metal curtain walls, using the "Setlok" fastener.

Fittings and Flanges. Tube Turns, 224 East Broadway, Louisville 1, Ky. Wrought-iron welding fittings and flanges are described, with special application to heating and air-conditioning systems.

Gears. Dynamic Gear Co., Inc., 20 Merrick Road, Amityville, N. Y. New anti-backlash gear assemblies are added to the company's catalog.

Hinges. Stanley Pressed Metal Division, The Stanley Works, 195 Lake St., New Britain, Conn. Special hinges and the facilities for manufacturing and designing them are described in this brochure.

Hydraulic and Air Components. Star Jack Co., Inc., 420 Lexington Ave., New York 17. A catalog of pumps, cylinders, jacks, braces and other units in the company's line.

Laminations and Stacks. Laminations Company, P. O. Box 13, Stamford, Conn. 22 pp., ill. A catalog of imported electric-motor and generator laminations and stacks, from Messrs. Joseph Sankey & Sons, Ltd. of England.

Lockbolts. Townsend Company, Cherry Rivet Division, P. O. Box 2157-Z, Santa Ana, Calif. 4 pp., ill. A description of parts made for the aircraft industry.

Masonry Drills. Carboloy Department of General Electric Company, Detroit 32, Mich. A table of recommendations on speed, sizes and pressure requirements for piercing marble, stone, cement, etc.

Mechanical Seals. Crane Packaging Co., Dept. IZN, 6400 Oakton St., Morton Grove, Ill. A bulletin on the complete line of chemically inert seals for corrosive and high temperature services.

Milling Cutters. Wesson Company, 1220 Woodward Heights Blvd., Ferndale 20, Mich. 6 pp. New design in cutters which eliminate sharpening, based on a process which uses low cost "throw-away" type inserts.

Pipe, Valves and Fittings. Peter A. Frasse Co., Inc., 17 Grand St., New York 13. 8 pp. An engineering memorandum covering corrosion resistant polyvinyl chloride piping systems.

Semi-pneumatic wheels. Gleason Corp., 250 North 12th St., Milwaukee 3, Wisc. For original equipment manufacturers, this catalog contains suggestions for application of slow-speed wheels.

Solenoid Valves. Atkomatic Valve Co., Inc., 545 W. Abbott St., Indianapolis, Indiana. New items in the line of electrically-operated two-way solenoids are included in this catalog, together with coil and flow charts.

Solenoid Valves. Automatic Switch Co., 391 Lakeside Ave., Orange, N. J. 32 pp. This catalog contains engineering information, flow charts, operation and construction details in chart form. Also a 16-page brochure on transmissions.

Spray Nozzles. Monarch Manufacturing Works, Inc., 2501 East Ontario St., Philadelphia 34, Pa. 20 pp., ill. A catalog of nozzles, strainers and valves for industrial uses.

Tooling Inserts. Kennametal, Inc., Latrobe, Pa. 12 pp. Illustration of Kendex tooling with button-type "throw-away" inserts, covering more than 200 tools.

Unions. The Fairbanks Co., 393 Lafayette St., New York 3. Describes the bronze to bronze-seat malleable iron unions made by the Dart Union Co. of Providence.

Wheels. The American Pulley Co., 4200 Wissahickon Ave., Philadelphia 29, Pa. 4 pp. Design and construction features of a line of 128 Steelite wheel combinations.

ELECTRICAL AND ELECTRONIC

Automatic Direction Finders. Aircraft Radio Corp., Boonton, N. J. 8 pp. A brochure on a new ADF for planes in which weight is a factor.

Batteries. Exide Industrial Division, The Electric Storage Battery Co., Box 8109, Philadelphia 1, Pa. The new line of Exide-Manchex batteries is described and illustrated. Also available is a brochure on ironclad batteries for electric industrial truck service.

Capacitors. Fansteel Metallurgical Corp., Rectifier-Capacitor Division, North Chicago, Ill. Solid tantalum capacitors containing no liquid electrolyte (intended primarily for low-voltage transistor circuits) are described.

Computer Equipment. The Electronics Division, Baldwin Piano Co., 1884 Gilbert Ave., Cincinnati 2, Ohio. 8 pp., ill. Describes the new 13-digit and 16-digit optical-type analog to digital angular position encoders.

Data Logger. Fischer & Porter Co., 618 Jacksonville Road, Hatboro, Pa. 4 pp., ill. New applications of the automatic data logger and control center are described.

Magnetic Bobbin Cores. Burroughs Corp., Electronic Instruments Division, 1209 Vine St., Philadelphia 7, Pa. 4 pp., ill. A description of development, characteristics, applications and services available. Also available is a booklet on testing using pulse control systems.

Receiving Tubes. General Electric Tube Department, 1 Silver Road, Schenectady, N. Y. The line of 5-Star high-reliability tubes for critical applications is cataloged in the form of a selection chart.

Relays. American Machine & Foundry Co., 261 Madison Ave., New York 16. A 12-page article on the factors to be considered in selecting an electrical relay for a given application.

Retractile Cords. Koiled Kords, Inc., Box K, New Haven 14, Conn. 12 pp., ill. A catalog of the company's line of cords for industry, communications and home application.

Rewiring. American Silver Co., 36-07 Prince St., Flushing 54, N. Y. A chart of information required to convert from round copper wire to new copper tape in wafer-type coils.

Tape Recorders. Amplifier Corp. of America, 398 Broadway, New York 13, N. Y. Portable, battery-operated, spring-motor magnetic tape-recorders are described.

Temperature Control. Automatic Temperature Control Co., 5200 Pulaski Ave., Philadelphia 44, Pa. 20 pp., ill. A catalog of automation equipment, from differential transducer control to valves and counters.

Thermistors. Fenwal Electronics, Inc. Mellon St., Framingham, Mass. 12 pp., ill. This catalog gives dimensional drawings, physical descriptions and electrical specifications for various forms of precision thermistors.

Thermostats. Fenwal Inc., Ashland, Mass. A catalog of miniaturized and surface-mounted thermostats, including a summary of design and installation factors.

Transformers. Gardner Transformer Division, Federal Pacific Electric Co., Emeryville 8, Calif. 32 pp., 22 tables. Information on single and three-phase distribution transformers.

Transistors. Philco Corporation, Government and Industrial Division, Philadelphia 44, Pa. A wide range of information on transistor circuits and their application in computers.

Ultrasonic Systems. Acoustica Associates, Inc., Glenwood

Landing, L. I., N. Y. A report on the application of ultrasonics to cleaning and degreasing, electroplating, drilling and grinding operations.

Voltmeters. Trio Laboratories, Inc., 4025 Merrick Road, Seaford, L. I., N Y. A catalog of miniature, panel-mounting vacuum tube voltmeters that can be used for test equipment.

X-Ray Diffraction. North American Phillips Co., Inc., Research & Control Instruments Division, 750 South Fulton Ave., Mount Vernon, N. Y. Case history of solution of metallurgical problems. Also available is a bulletin on industrial applications of the Norelco Industrial Image Intensifier.

MISCELLANEOUS

Airblast Cleaning. Pangborn Corp., Hagerstown, Md. A bulletin on the new blast cleaning cabinet for small or intermittent metal-working.

Air Conditioning. Advertising and Sales Promotion Dept., Worthington Corp., Harrison, N. J. Specification sheets on new models in the central station cabinet type line.

Air Conditioning. Drayer-Hanson, Inc., 3301 Medford St., Los Angeles 63, Calif. 40 pp. An engineering manual for reference to the company's line of air handling units.

Air Conditioning. The Trane Company, LaCrosse, Wisc. (Bulletin DS-399). The revised version includes information on the largest-capacity hermetic centrifugal refrigeration units. Also available are the new edition of Trane's refrigeration manual and a fan catalog.

Color Prints. Panorama Color, 1807 West Magnolia Blvd., Burbank, Calif. A full-color brochure on dye transfer prints and translucencies which are made in sizes up to 5 ft. by 10 ft.

Conveyor Systems. Tipp Manufacturing Co., Tipp City, Ohio. 36 pp. Information on ordering and installing a cable conveyor system is given in diagrammatic plans.

Dust Collection. Dept. KP, Torit Mfg. Co., 292 Walnut St., St. Paul 2, Minn. A description of the principles of unitized dust collection.

Derbylite Pigments. Luminous Resins Inc., 166 W. Washington St., Chicago 2, Ill. Folded card listing 24 colors for use in fluorescent coatings; material is easily incorporated in paints, enamels, etc.

Electrical Heating. Electro-Flex Heat, Inc., 516 Asylum St., Hartford 5, Conn. 8 pp., ill. Listing of elements in silicone rubber and neoprene strip and blanket types.

Exhaust Fans. du Verre, Inc., 374 Delaware Ave., Buffalo 2, N. Y. 8 pp., ill. Describes a resin bonded fiber glass line of fans with great corrosion resistance.

Facilities and Services. Molded Products, Division of Admiral Corp. Dept. IC, Box 338, West Chicago, Ill. 16 pp., ill. Brochure provides a tour through company's new plant in West Chicago. Highlights facilities and services offered by plastic moldings.

Fans. Propellair Division, Robbins & Myers, Inc., Springfield, Ohio. A new line of industrial fans designed to handle corrosive and explosive fumes, high temperatures and humidity, and abrasive dusts.

Fire Alarm Systems. Edwards Co., 90 Connecticut Ave., Norwalk, Conn. 10 pp. A guide for the preparation of fire alarm specifications, discussed in relation to the National Fire Protection Association code.

Flowmeters. Fischer & Porter Co., 692 Jacksonville Road, Hatboro, Pa. 16 pp., ill. A catalog of glass tube variable area Flowrator meters, with engineering information.

Furniture. The Howell Co., Division of Acme Steel Co., St. Charles, Ill. A spread of illustrations of modern metal furniture for office and institutional use.

Furniture Legs. Indraline, 1763 North Sedgwick, Chicago 14, Ill. A catalog of cast metal legs, tubing and flanges, finished and unfinished.

Heat Transfer Data. Downington Iron Works, Downington, Pa. Tables of heat transfer rates and heat exchanger types built by the company.

Industrial Flooring. Klemp Metal Grating Corp., 6615 South Melvina Ave., Chicago 38, Ill. 12 pp. Heavy-duty steel floors are described in this installation manual.

Industrial Tapes. Johns-Manville Dutch Brand Division, 7800 South Woodlawn Ave., Chicago 19, Ill. 20 pp., ill. A description of the line of tapes, rubber products and adhesives, in the form of a booklet called "Imagination and the Man."

Laboratory Apparatus. Arthur S. LaPine & Co., 6001 South Knox Ave., Chicago 29, Ill. A catalog of a wide range of products, including new volumetric solution concentrates.

Laboratory Burners. Central Scientific Co., 1700 Irving Park Road, Chicago, Ill. 12 pp., ill. A catalog of gas burners for use on artificial, mixed, natural or bottled gases. A catalog of other laboratory equipment is also available.

Lubricants. Acheson Colloids Co., Division of Acheson Industries, Inc., Port Huron, Mich. 4 pp. A catalog of 'dag' dispersions, including a new alkyd-resin product containing semi-colloidal graphite.

Nameplates. North Shore Nameplate Inc., 214 Northern Blvd., Bayside, L. I., N. Y. Catalog sheets describe application accessories for aluminum foil nameplates.

Noise Control. Mine Safety Appliances Co., 201 North Braddock Ave., Pittsburgh 8, Pa. 16 pp. A booklet on an electronic noise analyzer and a discussion of the problem and methods of combating it.

Pumping and Sewage Treatment. Teomans Brothers Co., Melrose Park, Ill. A reference manual dealing with methods of determining capacities and selecting equipment.

Research. Cornell Aeronautical Laboratory, Inc., Cornell University, Buffalo 21, N. Y. 67 pp., ill. A report in handsome format on the past decade of research at Cornell.

Shelving. Hallowell Division, Standard Pressed Steel Co., Jenkintown, Pa. Installation methods and ordering procedure for over 1,000 combinations with wide storage and supply-handling applications.

Silencing Systems. Industrial Acoustics Co., Inc., 341 Jackson Ave., New York 54, N. Y. A brochure on a new system for silencing air conditioning and ventilation installations.

Skylights. The Marco Co., 45 Greenwood Ave., East Orange, N. J. 8 pp., ill. The catalog includes aluminum and fiber glass panel skylights.

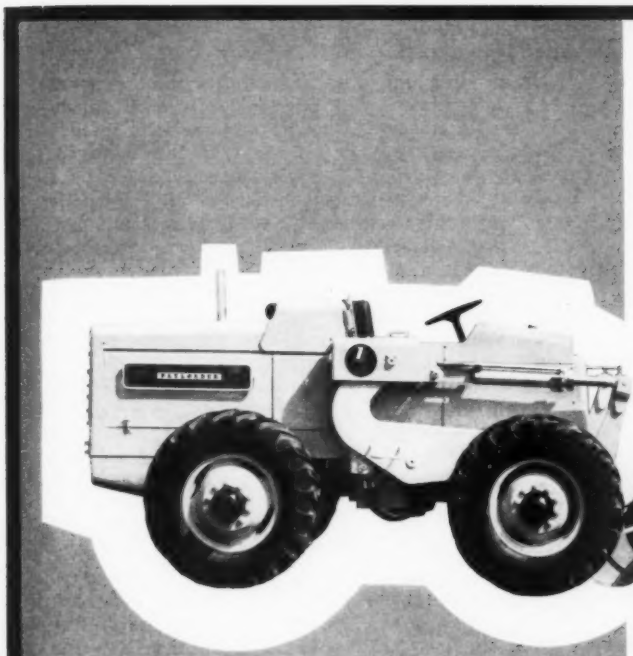
Standards. American Standards Association, 70 East 45th St., New York 17. 56 pp. Sixteen hundred American standards are indexed, with information on the Association.

Stitching Wire. Acme Steel Co., 2840 Archer Ave., Chicago 8, Ill. A chart containing color chips (for matching) forms part of this selection guide for stitching wire used in display or shipping boxes.

Storage. Mobile Storage Division, Dolin Metal Products, Inc., 315 Lexington Ave., Brooklyn 16, N. Y. Explanation of space saving through use of mobile additions to fixed equipment.

Washers, Dryers. Hotpoint Co., 5600 West Taylor St., Chicago 44, Ill. 24 pp. A sales story which offers comparative analysis of leading competitive models.

Water Filters. Graver Water Conditioning Co.. 216 West 14th St., New York 11, N. Y. 12 pp., ill. A description of the uses, design features and engineering details of pressure sand and gravel filters. Also available is a bulletin on a new deaerating heater.



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Technics, *continued from page* 144

Automatic inflator for life jackets

A new life-saving device that automatically inflates a pilot's "Mae West" life jacket upon contact with water has been perfected by North American Aviation, Inc. The automatic life jacket inflator compares in importance with such standard safety features as the automatic lap belt and automatic parachute release.

The entire automatic inflator assembly weighs five ounces, and will inflate a life jacket within 15 seconds after immersion in water. It consists of a cap, a piston, a spring-loaded plunger, a soft rubber flapper valve and an effervescent pill (60 per cent tartaric acid and 40 per cent sodium bicarbonate) that is about the size of an Alka Seltzer tablet. The automatic inflator does not interfere with the normal manual operation.

Here's how it works: As the pilot drops into the ocean, water rushes through an opening in one end of the metal cap, forcing open the rubber flutter valve. The water passes through the valve and strikes the surface of the tablet causing it to dissolve and produce a cloud of gas. The gas pushes the flutter valve back into place at one end of the small chamber and forces down the piston at the other end. This in turn releases the spring-loaded plunger, which strikes the manual operating lever with the force of a hard yank by a man, fires the CO^2 cartridge and thus inflates the jacket.

The device can't be set off accidently by rainfall, heavy dew or accumulated moisture because the flutter valve holds the opening closed until it is forced open by the pressure of a body of water on the outside.

Manufacturer: North American Aviation, Inc., International Airport, Los Angeles 45, Calif.

Speed-up stapling machine improvised

Using an air motor, a discarded refrigerator compressor, and a desk stapler, an inventive Chicago shop owner put together an automatic stapling machine that speeded up his work more than 100 per cent. The Powers Regulator Company, of Skokie, Ill., manufacturer of the air motor, explained the development in this way: The challenge arose when the owner of File-Ad Service found himself with 170,000 pages of legal exhibits to assemble and staple at the end of six months of photocopying work.

Some of these exhibits were one page long, others were 100 pages. There were five and six copies of each and they all had to be stapled. Working with a standard Bates desk stapler that makes its own staples, they found that the operator was limited to a half-hour's work before fatigue set in. During this period, she handled 350 to 500 sheets of paper, operating the staple about 33 times. Not only was a half-hour at a time the limit, but the operator's hands became sore and she needed 20 minutes to rest. At the end of the day, her hand was so tired she could not work the next day.

Realizing that at this rate, it would take a month to do the job, he looked for an easier way. Buying a power stapler was ruled out, since major stapling jobs like this one were uncommon. Then R. F. Wolver, one of Powers' factory engineers, suggested using a 3-inch Powerstroke motor, a diaphragm type, which operates on compressed air or hydraulic fluid. A ½ h.p. compressor from a used refrigerator was used to power the motor, which was controlled by a foot switch. The gradual action of the motor, working on 20 pound pressure, was ideal for the application, it was found.

For approximately $25 in materials, they had an automatic stapler that enabled them to handle 1,000 sheets an hour, for eight hours at a stretch. The whole job took 10 days, instead of 30.
Manufacturer: The Powers Regulator Company, 3434 Oakton St., Skokie, Ill.

44 Alundum: an aluminum oxide abrasive

A new abrasive produced by a special new electric furnace process has been developed by Norton Company of Worcester, Massachusetts. Known as 44 Alundum, this is the latest addition to the Norton line of aluminum oxide abrasives.

44 Alundum abrasive is a non-premium product which, during two years of field testing, has proved itself more economical to use in a wide variety of grinding operations. Its primary benefits, when compared to other non-premium priced abrasives, are greater toughness, higher inherant strength, finer crystal structure and greater sharpness. Because of these advantages, 44 Alundum grinding wheels offer such benefits as longer life, holds form longer, more work pieces per dressing, better finish, faster cut, cooler cut, and more production per wheel.
Manufacturer: Norton Company, Worcester 6, Mass.

High-speed process for molded plastic products

Development of a high-speed, low-cost technique for the manufacture of fiber glass reinforced plastic products has been announced. The new process, which is fully automatic and continuous, makes possible for the first time precision mass production of reinforced plastic products of non-uniform thickness. Pressurform Co. is keeping its secret, but the new process hinges on a way they have developed to produce preforms out of the reinforcing material that are the exact shape of the finished product. Ribs, bosses and flanges become integral parts of the preform in one operation, which requires from 30 seconds to 2½ minutes, depending on design, a fraction of the time required to lay up a preform by conventional methods. The precisely shaped preform, along with a resin, is placed in a mold under pressure to produce the finished product, and waste due to "pinch-off" is eliminated. Shipping containers for radar equipment are the first application for this process.
Manufacturer: Pressurform Co., Swarthmore, Pa.

New heat resistant rubber

Developed in collaboration with the Materials Laboratory of the Wright Air Development Center, Silastic LS-53 is the first commercially available fluoro-silicone rubber. Offered by Dow Corning Corporation, the new heat-resistant rubber withstands swelling by aircraft fuels and oils, and represents a major step toward the Air Force's goal of a low-swell, heat-stable rubber for use in jet-powered planes. The new compound combines the ease of fabrication of silicone rubbers with the solvent resistance of fluoro-carbon plastics.
Manufacturer: Dow Corning Corporation, Midland, Michigan.

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by agreeing on several important points: that the capacity of people to appreciate good design was far more general than commonly supposed; and that the surest way of raising levels of popular taste was by increased attention to art and design in the educational system. But they tangled over a distinction, which Philosopher Adler insisted upon

(Continued on next page)

Aspen, *continued from page* 151

making, between what he termed the *liberal* arts (poetry, music, mathematics) and the *servile* arts (architecture, industrial design — any activity which "creates biologically serviceable utilities"). Rapaport, himself a semanticist, argued that the distinction was at best semantic; that the word "servile" had unfortunate connotations and could only create friction where no friction need exist. Vienot agreed: no one in France would dare to apply that term to industrial design. But, like most philosophical discussions, this ended in a draw.

A more fundamental discussion of professional design education grew out of a paper by John A. Pappas, professor at the Institute of Fine Arts at Athens, Greece. Outlining the curricula and teaching methods of that institution, he described what we would call, in this country, an orthodox or classical system of art education. He was immediately challenged by the audience, which, by its questions, showed the wide prevalence of progressive theories of education. The idea of so narrow a curriculum, with no social studies, no science, no room for experimentation in technique, obviously startled many. Yet Pappas defended his position quite well. It had its dangers, he admitted, but also its virtues. He questioned the validity of exposing teen-age students to every artistic wind that blows in the modern world. With movies, television, papers and magazines, they got too much "exposure" as it was. In this connection, he even questioned the value of today's museum as a teaching instrument. Piero and Picasso, Rembrandt and Renoir, "arranged, if you will pardon me, like the wares in an American drug store" — would indiscriminate exposure of the young student to all this really broaden him or merely confuse him? He felt that the student should only gradually be exposed to an increasing number of stimuli; it was the teacher's task to protect him

from too many. Eckbo raised the obvious objection: who could one trust with such censorship? and according to what standards?

Three other papers on the same subject showed its complexity and the world-wide search for generally acceptable standards of professional education for the designer. Peter J. B. Stevens, editor of *Design News*, gave a straightforward curriculum for what he called The Engineering Designer. This emphasized training in the "Three M's" — materials, mathematics and mechanics. But it was criticized for being as one-sided in its direction as was Pappas' in the other. The papers of the German educator, Jupp Ernst, and the Swiss, Armin Hofmann, charted a more median line. They called for a more liberal curriculum than either Pappas or Stevens but implied a stiff intellectual discipline. Hofmann had the edge on his colleagues, since he had brought with him an exhibit of student work from his school. Judged by this, the Swiss system works very well indeed in preparing young designers for the modern world.

With this Cycle, the conference ended. I have necessarily omitted many fascinating facets (entire papers, in fact, such as Dennis Flanagan's breathtaking slides and talk on structure in Nature), but I hope I have suggested the richness of the subject matter and something of the excitement of the actual discussions. The Conference had, of course, its shortcomings. Not a single woman was on the panel of speakers; nor was there any spokesman for the consumer who is the ultimate object, after all, of all our endeavors. The eastern seaboard was inadequately represented; the sound and projection equipment failed at several critical moments; and the box lunches were dreadful. But such shortcomings can and will be corrected. In any event, I think it was clear to all present that the International Design Conference fills a need which no other organization does. And this alone is a guarantee of its future success.

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SMALL FIRM *with metal spinning and stamping facilities desires services of industrial designer to start consumer line; arrangement to be on free lance royalty basis. Box ID 95,* INDUSTRIAL DESIGN, *18 East 50th Street, New York 22.*

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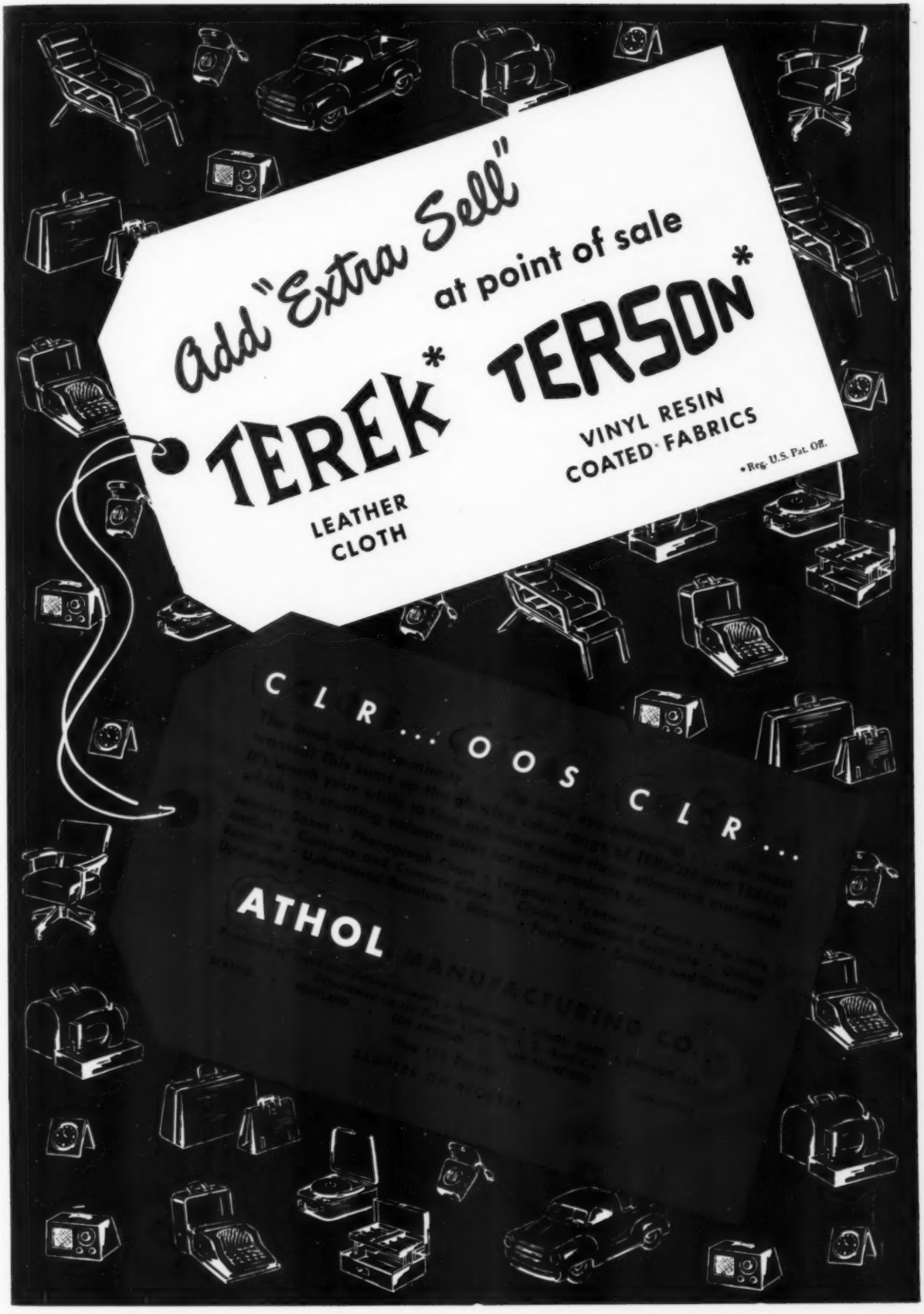
Index to Advertisers

For Your Calendar

October 1-22. Recent Work by Harry Bertoia. Smithsonian Institution Traveling Exhibition, San Francisco Museum of Art, San Francisco.
October 1-31. European Glass Design. Smithsonian Inst. Traveling Exhibition. Toledo Museum of Art, Toledo, O.
October 4. "German Architecture Today"; exhibition by the American Inst. of Architects. Washington, D. C.
October 8-12. National Metal Exposition. Cleveland, Ohio.
October 9. Package Designers Council dinner. Society of Illustrators, New York, New York.
October 10-12. Creativity as a Process. Sponsored by The Institute of Contemporary Art, Boston. Arden House, Harriman, New York.
October 11-12. Society of the Plastics Industry, New England Section Conference. The Wentworth Hotel, Portsmouth, New Hampshire.
October 14-16. International Sanitation Maintenance Show. New York Coliseum, New York.
October 15. Cleaner Air for Urban Areas. The Franklin Institute, Philadelphia, Pennsylvania.
October 15. Lecture by Walter C. Granville on "Color," sponsored by Syracuse Chapter of IDI.
October 15-19. National Business Show, N. Y. Coliseum.
October 17-19. Convention of American Society of Body Engineers, Inc., Detroit, Michigan.
October 18-19. Plastics Institute, University of Wisconsin, Madison, Wisconsin.
October 22-26. National Industrial Development Exposition. Detroit Artillery Armory, 8-Mile Road, Detroit.
October 22-25. Technical short course, Society of Industrial Packaging and Materials Handling Engineers and National Protective Packaging and Materials Handling Competition, Kiel Auditorium, St. Louis, Missouri.
October 23. Ninth Annual World Trade Conference. University of Notre Dame, South Bend, Indiana.
November 1. Parsons School of Design, 60th Anniversary Dinner, Waldorf-Astoria, New York, New York.
November 1-30. British Graphics (AIGA Exhibition). Freedom House, New York, New York.
November 12-16. National Industrial Development Exposition. New York Coliseum.
November 14-15. Windows and Glass in the Exterior of Buildings. Sponsored by the Building Research Institute. United States Chamber of Commerce, Washington, D. C.
November 19-21. Fifth Annual Advertising Essentials Show. Statler Hotel, New York, New York.
November 26-30. National Exposition of Power and Mechanical Engineering. New York Coliseum.
December 4-5. Seventh Society of the Plastics Industry Film, Sheeting and Coated Fabrics Division Conference. Commodore Hotel, New York.
December 8-16. National Automobile Show. N. Y. Coliseum.
January 19-27. National Motor Boat Show. New York Coliseum.
January 28-31. Plant Maintenance and Engineering Show. Cleveland, Ohio.
February 4-8. National Auto Accessories Exposition. New York Coliseum.
February 15-16. National Meeting of Industrial Designers' Institute. Los Angeles, California.
February 16-24. National Photographic Show. New York Coliseum.
February 25-March 1. Thirteenth International Heating and Air-Conditioning Exposition. Conrad Hilton Hotel, Chicago, Illinois.
March 4-10. National Mobile Show. N. Y. Coliseum.
March 18-21. Radio Engineering Show. N. Y. Coliseum.
March 18-21. Pacific Coast Plastics Exposition. Los Angeles, California. Also the convention of The Society of the Plastics Industry, Inc.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