INDUSTRIAL DESIGN

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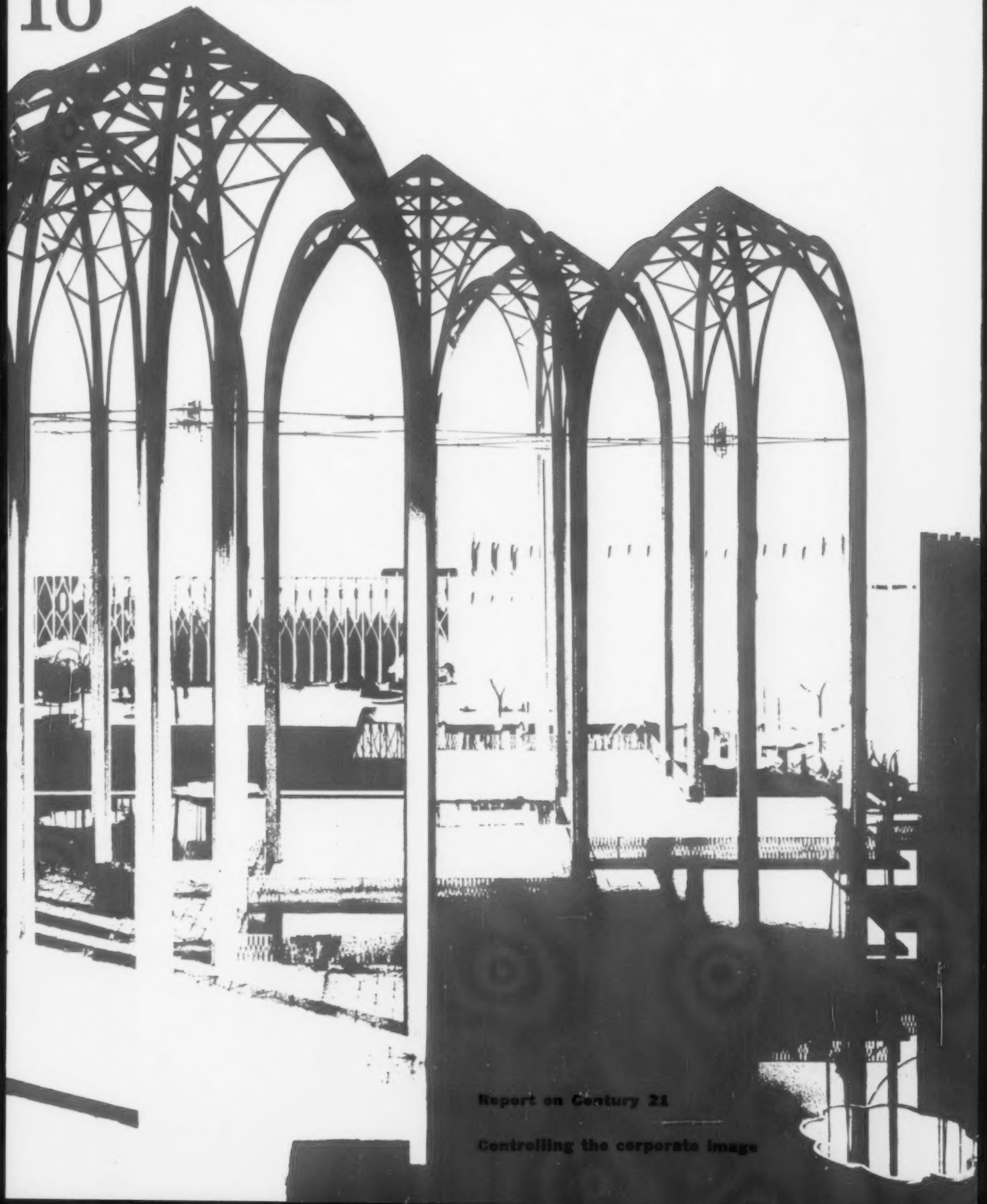
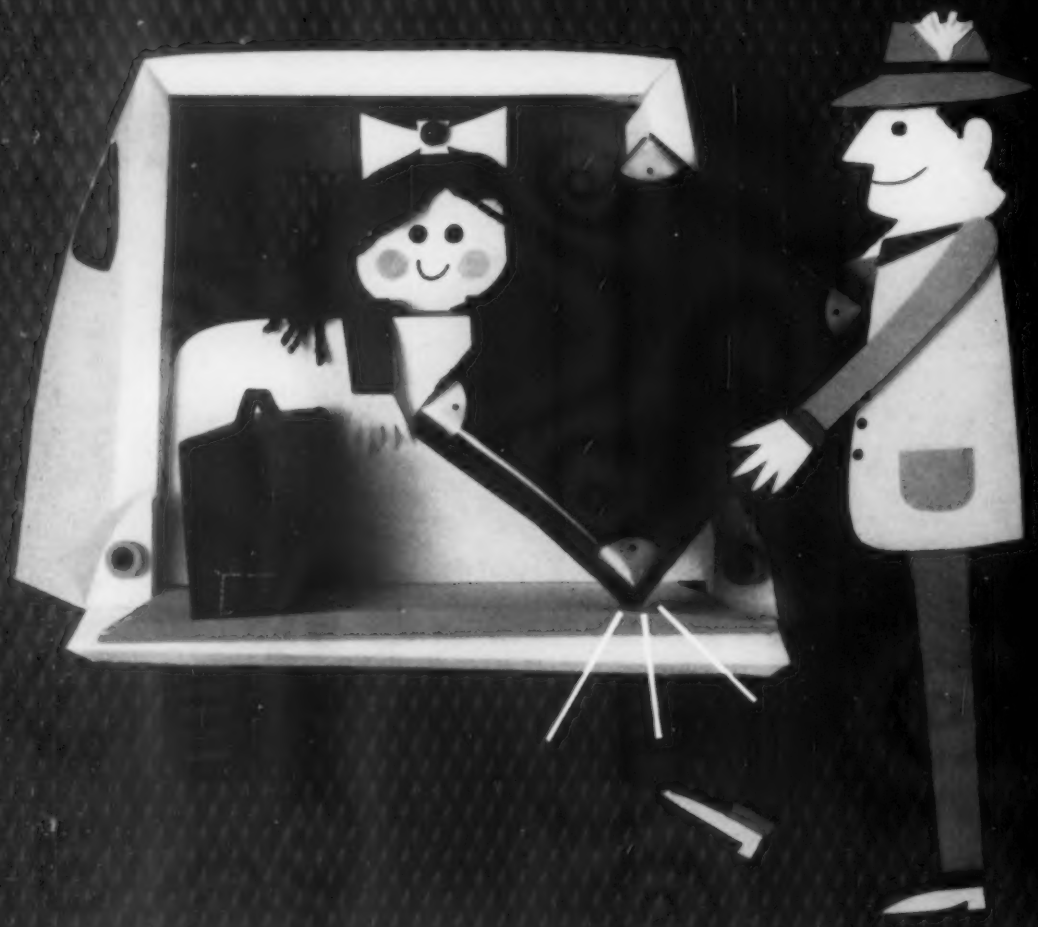


Report on Century 21

Controlling the corporate image



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OCTOBER, 1961 VOLUME 8, NUMBER 10

INDUSTRIAL DESIGN

Published for active industrial designers and the executives throughout industry who are concerned with product planning, design development, and marketing

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IN DECEMBER—*8th Annual Design Review*

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FRONTISPIECE: A pile of sheet metal waits to be processed at Olivetti's plant before being turned into the firm's "Synthesis" line of office files and related equipment; to be included in a feature on Olivetti in November.

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COMING IN THE DECEMBER 1961 ISSUE OF INDUSTRIAL DESIGN.

8th ANNUAL DESIGN REVIEW

An informative review of the year's production, and a valuable permanent reference, it will feature products in such categories as:

Housewares, Furniture, Radio, T.V. and Hi-fi. Tools, Garden equipment, Toys and sporting goods, Major appliances, Packaging structures, Hardware, Lighting, Architectural components, Plumbing fixtures, Prefabricated structures, Business machines, Electronic components, Machine tools, Industrial machinery, Farm machinery, Transportation equipment.

The Annual Design Review, to be published in December, is a portfolio of the year's major design achievements in consumer products, packaging, professional and industrial equipment, materials, architectural components, and programs and devices for selling and corporate identity.

INDUSTRIAL DESIGN

If the past is a criterion we can assure you that the 8th Annual Design Review will be read and referred to again and again by the leading independent and company designers here and abroad --- and by the manufacturers of the some 300 products and packages that will be pictured and described -- and too- by the competitors of these manufacturers.

Your advertisement in this long-lived issue will be noted repeatedly by the men who specify the materials and processes for the products and packages they design.

If you are already advertising to industrial designers, or contemplate doing so, we urge your substantial use of our December 1961 issue to favorably influence the men who specify the materials and processes for the products and packages they design.

"...When we do a package ... we specify inks and the exact formula of inks to be used. This is also true of adhesives and closures."

- Henry Dreyfuss

"...The sales dimensions of display packaging and shipping containers are an integral part of the impact. Industrial Designers are vitally concerned with these factors, therefore exposure to materials, construction techniques, printing inks, etc., would be a valuable asset."

- F.W. Priess, Montgomery Ward

"...While I do direct, in detail, the design of closures, bottles, packages, choice of papers and inks and specify materials, the textures, etc.,to the point of production, please consider that this is done completely as a package designer and unrelated to other industrial design".

- Maxwell B. Rogers, Avon Products Inc.

Closing Date: November 15th, 1961

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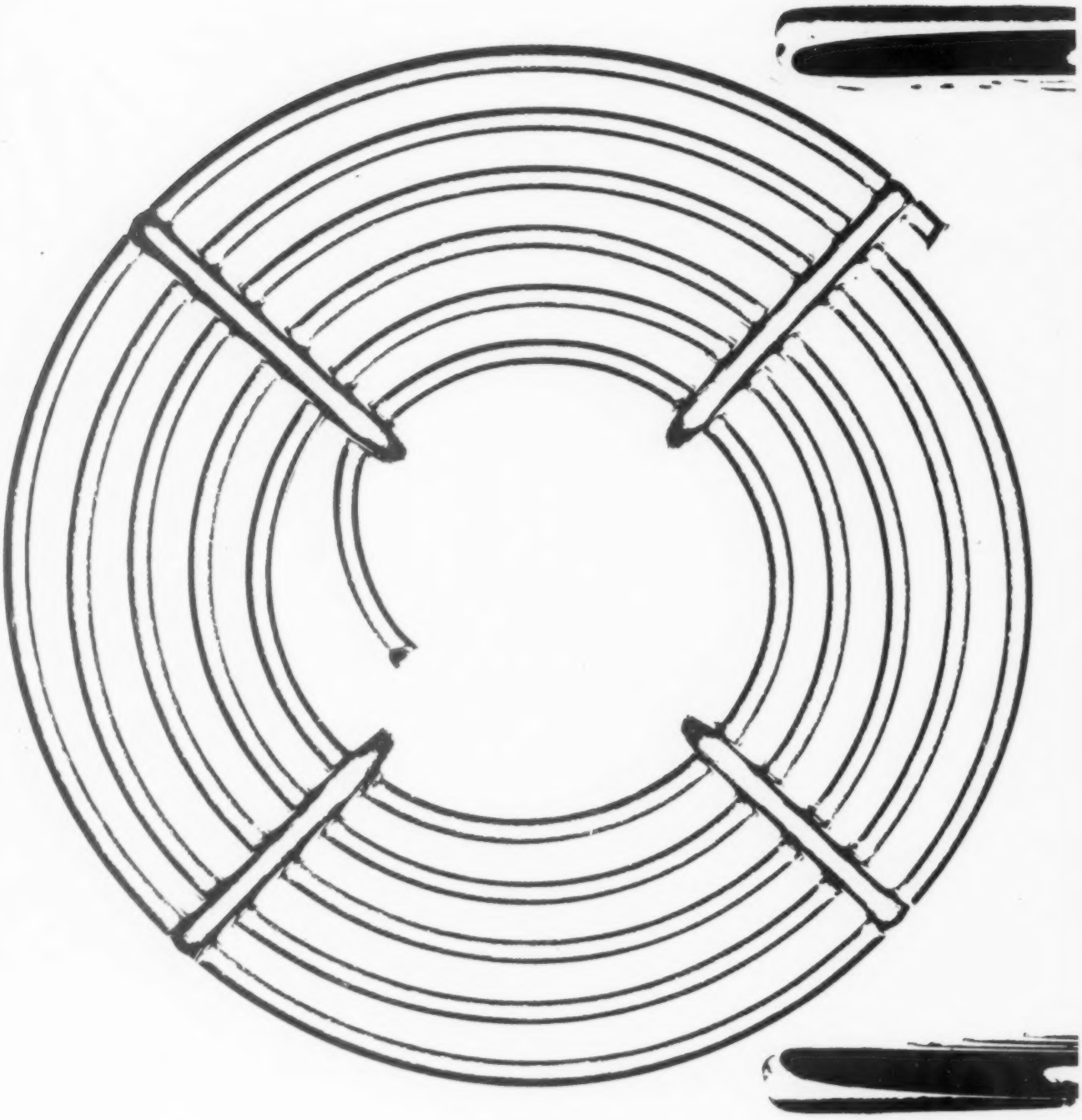

Going round and round on product design? Do it with steel wire!

There is probably not a commercial photographer alive who is not familiar with the intriguing spiral object shown here. It's a developing reel that you load with exposed roll film for developing, fixing, and washing. The film spirals outward, and there is an even space between each layer to prevent uneven concentration of developer solution. ☐ This reel, designed and sold by the Nikor Corporation, Springfield, Mass., approaches perfect design: like a fine machine, it has absolutely no unnecessary parts. It is the most compact reel ever made. It is made from **the** best material to resist corrosive chemical attack: stainless steel. It is made from the strongest, most useful form of steel for this purpose: wire. ☐ Wire is cold drawn in successive passes through dies. This cold working imparts such a smooth surface finish that there is no danger of snagging the film on a tiny imperfection. The reel can be fabricated in jig time on high speed automatic wire forming machines, and because it's made from steel wire it can be permanently joined with one jolt from an automatic welder. There are dozens of film processing reels on the market but professionals continually buy this one because it has no equal. ☐ There are thousands of products that desperately need to be redesigned to retain their place in the market, and an untold number of these products could be drastically improved through the imaginative use of steel wire. Welded wire assemblies, for instance, are amazingly stiff and strong for their weight; and although this is a functional consideration, it has great meaning for the new aesthetics of design that is replacing ponderous and bulky products with those that are airy and graceful. ☐ Wire is manufactured to over 300 billet specifications, from low carbon through alloy to stainless steel grades. It is available in a vast range of hardness and sizes, as rounds, squares, or hexagons . . . in fact, more than **10,000** mill production specifications are available from American Steel and Wire. More than that, we can ship wire in carbon grades in 1,000 pound coils that do not contain a single weld, if required. American Steel and Wire, Rockefeller Building, Cleveland 13, Ohio.

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IN THIS ISSUE

Paul Thiry, as primary architect for the Century 21 exposition (page 68), is prime mover of the fair. He is responsible for the site development, lighting, landscaping, placement of structures, advisory control over the work of others, and development of the area when the fair is over. Besides this general administrative work, the Thiry office has designed the Coliseum and the International Exhibition building. Mr. Thiry is a familiar figure on the West Coast. Born in Nome, Alaska in 1904, he studied at the University of Washington and has had his own firm in Seattle since 1929.

Jack Robinson is Donald Deskey Associates' project director on the Theme Exhibit for the Century 21 Fair (page 68). After six years as a pilot in the Air Force, he continued his industrial design studies at Pratt Institute. He has designed or directed several exhibits for the U.S. Government, and has designed furniture and products for Paul McCobb, J. Gordon Carr, and M. Singer & Sons.

Jack Lenor Larsen, fabric designer and weaver, explores the future of fabric design (page 78) in conjunction with the opening of the traveling Fabrics International exhibition. Larsen studied interior design and architecture at the University of Washington, then studied fabric design and weaving because he wanted to work directly with materials. After receiving a MFA from Cranbrook Academy in 1951, he came to New York and opened a studio which received early recognition for its unusual yarns, colors, and weaving techniques. Larsen manufactured the first successful diagonally woven fabric, revived shaped weaving, and converted many handweaving procedures to the power loom. He currently serves as textile consultant to Du Pont.

Henry Raleigh, Instructor of Theory of Form and Two Dimensional Design at Pratt Institute, questions the validity of modern corporate identity symbols in an article on page 58. Raleigh has published several articles on design education, esthetics, and professional design, and also writes poetry. His paintings have been exhibited in New York.

Crawford Dunn, president of Ikonogenics, Inc., design consultants in Dallas, tries to pin down that elusive term *the corporate image* on page 50, and ends up with some new terms. About the only aspect of the subject he does not discuss at length is its economics. About that he says, "Many companies with an accidental look pay just about the same for design as those with a planned look. The difference by and large is central esthetic discipline. And that does not take money so much as it takes a manful decision from topside."

Tom Lee, whose review of a book on window display appears on page 12, is a versatile interior designer who can cope with anything from the Cocoanut Grove night club to a UNESCO art show, a contemporary motor lodge for colonial Williamsburg, or a chemical laboratory for Helena Rubenstein. The son of an American diplomatic official, he was educated in Europe and Latin America as well as in the United States.

Thiry

Robinson

Larsen
Dunn

Raleigh
Lee

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sales appeal.

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buy it and is worth more
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LETTERS

London cabs 1910 (left) and 1961 (above).

Taxi revisited

Dear Sir,

I was interested in the article by Robert Cumberford and Mitchell Sayers called "Hailing the Ideal Cab" (August). There is a reference to the London taxi which does in fact come very near to the specification suggested by the authors.

The interesting thing about this is that the design has grown around specifications laid down by the police since the first motor taxi. The London taxicab has always been an expensive vehicle and in the early days was built on chassis supplied by Renault, Unic & Beardmore. Later the Austin Motor Company came into the picture, followed by Morris. Today the British Motor Corporation, which embraces the Austin and Morris production, supplies all the new taxis.

For many years it was impossible to build a fashionable taxi within the police requirements but recently modifications have been allowed that provide for a vehicle of a reasonable appearance. They all have diesel engines and automatic transmissions.

The scope in the United States for a vehicle to the specification suggested by the authors must be considerable, due to the large numbers that could be sold, and I have no doubt that they could be produced in sufficient quantities to make the the cost reasonable.

It is interesting that in England, London is the only city with tight design requirements. This has meant that the sale of the London taxi has been restricted to London. Users outside the London area have used converted vehicles which they have been able to purchase at a much more reasonable price. Never has it been possible to sell sufficient London taxis to make the price attractive.

I write this letter because this is an interesting case in which requirements instituted by the police some 50 years ago have dictated a design that measures up very closely to the vehicle suggested by your authors in this enlightened 1961.

I am not connected in any way with the design of London taxis.

E. R. Sharvell
London, England

Editor's note: For further visual commentary on the Cumberford-Sayers cab, see cut below. The sketch was submitted by a whimsical reader whose name we wish we knew.

Reader sees ideal cab as ideal assault vehicle.

Was the frieze necessary?

Sirs:

Was the frieze on the Parthenon really necessary? It is a reasonable supposition that some economist or critic in Periclean Athens, more interested in pure function than the manifestations of Grecian art, berated this matchless temple as an example of ostentation. However, would a less elegant, embellished structure have served as appropriately or convincingly as a shrine to a patron goddess, and have withstood the tests of time and judgment which, 25 centuries later, regard the Parthenon as an artistic achievement of the highest order?

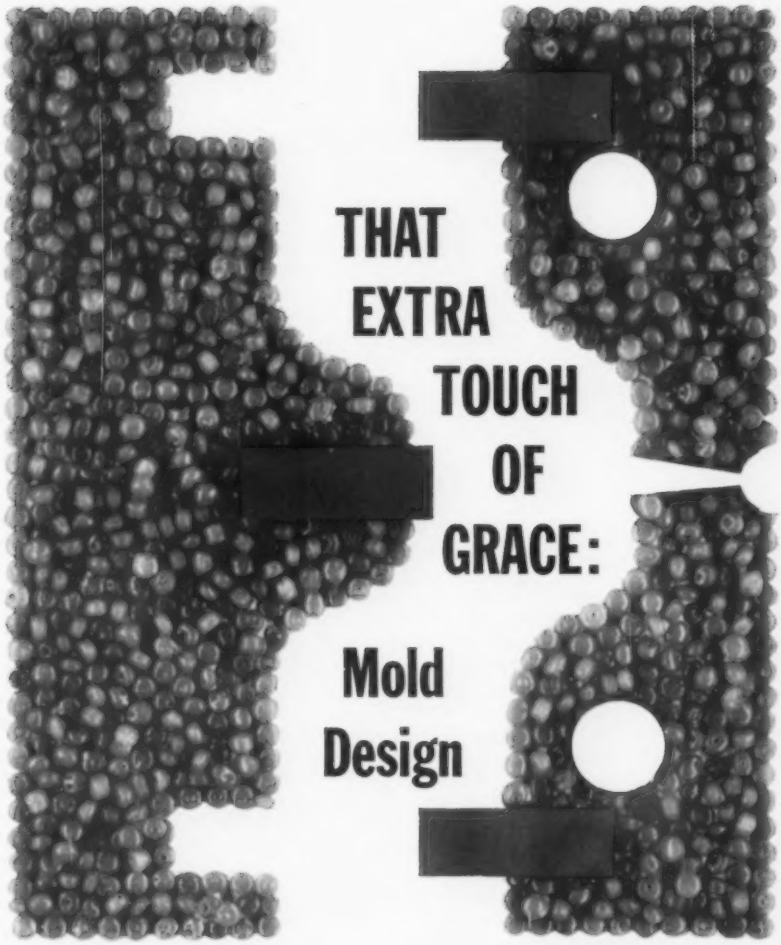
All of us concerned with the design and fabrication of the structures, conveniences, and appliances which are the accoutrements of society today, are mindful of an artistic goal as well as an economic one. Function is sometimes transitory, but genuine beauty is ageless. Function is what is purchased. It is what makes the automobile run. The consumer purchases function because he needs it or wants it. But it is beauty which often causes him to purchase function. Beauty is one of the motivating forces of mankind. Forthright attainment and improvement cannot be called artificial obsolescence. Somewhere between change for change's sake and art for art's sake lies the plateau of intellectual honesty upon which the industrial designer can rest his case with dignity.

Frederick Pederson
La Crosse, Wisconsin

Addendum and Erratum

Donald McFarland, author of "I Never Was an Engineer" (September) should have been identified as the managing partner of Latham, Tyler, Jensen in charge of their Los Angeles office.

The IR toy phone shown in the July issue was designed by A. R. Williams. Gunther Kleeberg was the chief engineer.



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REVIEW: BOOKS

Non-designed living

The Personal House: Homes of Artists and Writers. *By Betty Alswang and Ambur Hiken. 80 pages. Illustrated. Whitney Library of Design, New York. $13.50.*
Reviewed by Bodil Nielsen

The thesis of *The Personal House* is that a non-designed house is well designed when it reflects the personality of its owners. To make this point, photographer Ambur Hiken and decorator Betty Alswang have studied seventeen "personal" habitats of the creative species—including painters Henry Varnum Poor and Buffie Johnson, designers Don Wallance and Costantino Nivola, and photographer-author Dorothy Norman. Six colonies are represented—Rockland and Westchester (N. Y.), Fairfield (Conn.) and Bucks (Pa.) Counties, the Hamptons (N. Y.) and Woodstock (N. Y.)—each introduced by a description of the social and esthetic forces that first attracted artists. Ambur Hiken's large exterior and interior photos of each house show uncommon talent for contrast and composition; Betty Alswang's text is clear and simple; and the two are perfectly joined in Erle Yahn's beautiful design of this outsized (12 by 15½-inch) book.

As first-rate snooping, *The Personal House* will make many a Garden Club bosom heave with envy. The book is not intended as a house tour, however, or as a statement on art or design. In an excellent preface, editor Joan Adler describes the kind of statement the book intends to make. First, the term "personal house" is defined in architect Robert Woods Kennedy's terms: "The theses of living are loving, sociability, privacy, self-expression, comfort, belongingness and the like. They will suffuse a good house, i.e., a house willing to be suffused, with meaning. . . ." Second, the term "artist" of the subtitle is used, loosely, to mean the kind of artist who could qualify for a "professional apartment" in New York City—that is, they make their living by the art they practice at home. The artists on view here are dubbed "moderately successful." As homemakers, most can be more generously described.

Most surprising are the many qualities these houses have in common, a similarity which reflects the taste of the authors but gives a one-sidedness to the book. For example, none have been designed in a modern idiom. All favor the old, rustic atmosphere, relying on heavily textured native materials and some odd origins—among them a summer camp, schoolhouse, icehouse, church, and carriage house. Their uniformity of type, however, is enlivened by some delightful individual signatures. Valentine D'Ories, for instance, created a homey middle-European opulence that would do a Dutch burgher proud. Wolfgang Roth and Julio De Diego make antic use of bric-a-brac: an old cartwheel makes a banister rail in Roth's farmhouse; a porcelain Apollo sits on De Diego's chimney with commendable *sang froid*. The most "personal" house is Henry Varnum Poor's; he built it himself, stone by stone.

Readers seeking the bizarre will be disappointed, but the book does show "what can be done by the inventive and sensitive person who is not bound by convention" and implies that a good house—i.e., a personal house—says more about its owner than about design.

BODIL NIELSON, who was born in Denmark, is at present decorating a house in Puerto Rico. Before publishing the popular ski newspaper, Sugarbush News, *she was an associate editor on* INTERIORS.

The Buffie Johnson—Gerald Sykes studio

Window display international

Window Display: An International Survey. *Edited by Walter H. Herdeg. 287 pages. 379 Illustrations. Text in English, German and French. Amstutz & Herdeg, The Graphis Press, Zurich, Switzerland.*
Reviewed by Tom Lee

Window Display is organized and presented in the handsome way we have come to expect of any Graphis publication. Since it is divided by country it is possible to quickly grasp the individual national approach to the handling of design, merchandise and style. One may approach the book from various points of view: as a collection of artistic compositions, as a lesson in merchandise presentation, or as a barometer of taste in Switzerland, Italy, France, Germany, Japan, Great Britain, and the U. S.

The most important single fact pointed to by this collection is that window display design has changed since the last Graphis edition was published ten years ago. Gone is the extreme surrealism of the 1930's (though some fantasy remains), and generally the trend is toward simpler arrangements, bolder design and stronger statements. There is also a growing use of photo enlargements.

Some countries, like England, Italy, and Germany, emphasize the arrangement of merchandise alone, whereas some depend on props and construction for their effect. Romantic as they may be, these last seem somewhat out of date. Probably the most interesting group of windows are by the Japanese designers. The ones by Kenji Itoh for the Wako store remarkably combine Japanese simplicity with western sophistication. While *Window Display* presents no great innovations, it does define what is out of date, what is current, and what seems fresh.

Interior designer TOM LEE also does exhibits and displays *(see page 8).*

Plaques of tough Butyrate plastic give super-service at gas pumps

Toughness, weatherability, and eye-appeal are some of the reasons The Pure Oil Company chose sheet of Tenite Butyrate for these three-dimensional plaques. Mounted on 72,000 service station pumps, they build recognition for the new "Firebird" brand of gasoline.

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NEWS

Left to right: Nelson chair, Cherner chair, Jacobsen chair

Cherner sues Plycraft

Is a designer entitled to royalties if his design has been modified by a manufacturer? Or can a manufacturer declare himself exempt from royalty payments by modifying a design he has contracted for? The designer's right under those circumstances has just been supported by an auditor appointed by the Superior Court of Massachusetts, in the case of New York designer Norman Cherner vs. Plycraft, Inc. (Massachusetts procedures call for the court to appoint an auditor to conduct hearings, investigate the facts, and report to the court. The auditor's recommendations are not binding upon the final decision of the court, but do carry a great deal of weight, according to Lee Epstein, legal counsel to the ASID.) Cherner is suing Plycraft for breach of contract, to recover royalties on the sale of a chair. Plycraft denies that Cherner designed the chair that is now being sold, wants Cherner to return the money they have already given him, which they contend was given under duress and therefore constitutes "blackmail." As determined by the auditor's hearings, here are the facts:

Early in 1958, Plycraft was manufacturing, in its Lawrence (Massachusetts) factory, a chair designed by George Nelson for the Herman Miller Company (above). After a short time, the chair was dropped from the Miller line. Plycraft, wishing to take advantage of the tooling it had installed, wanted to have the chair redesigned. On Nelson's recommendation, Plycraft's president, Paul R. Goldman, contacted designer Norman Cherner, who agreed to redesign the chair, advise and counsel the manufacturer in its production, provide sketches and drawings, grant Plycraft exclusive rights to the manufacture of the chair, and refrain for the duration of the contract from designing for any company in competition with Plycraft. In addition, Plycraft agreed to pay Cherner a two per cent royalty on gross sales, consult no other designer, and credit Cherner in any promotional advertising it might use.

In accordance with the agreement, Cherner prepared a group of preliminary drawings and then made a full-scale drawing. In his drawings, the chair had separate back and seat. There were a number of meetings and discussions about the chair and in an exchange of letters in June of 1958, both Cherner and Goldman expressed dissatisfaction with Cherner's design. (No mention was made in the letters of the one-piece back and seat which was incorporated in the final design. See cut above.) Goldman wrote to Cherner, informing him that he intended to continue work on the project, and would contact Cherner in a short time about further design changes. Since Cherner received no further letter and no formal notice of the abandonment of his design, he was obligated to refuse work with competing firms.

In April of 1959, Cherner, by chance, discovered the chair he had designed (but with a one-piece back and seat) in the New York showroom of B. G. Mesberg, Plycraft's authorized agent. The chair (above) carried a label which read: "Manufactured by Plycraft, Inc. of Lawrence, Mass. designed by Bernardo." It was admitted at the hearings that no such designer existed and that "Bernardo" was the creation of Mesberg's publicity agent.

Cherner claimed his right by contract to the design credit and the royalty payments from the manufacture and sale of the chair. (Sales from November, 1958 through April 30, 1961 totalled $488,000). On behalf of Plycraft, Mesberg offered a $300 settlement, which Cherner rejected. Mesberg then agreed to recommend that Plycraft pay Cherner a royalty payment of one per cent of its net sales, which they did. Mesberg also asked Cherner to relieve Plycraft of the exclusive-rights paragraph of their agreement, which Cherner refused to do.

In his talks with Mesberg, Cherner said that if it were necessary, he would sue to protect his rights. At the trial, Plycraft claimed that these statements constituted duress, and that the royalty payments of one per cent that it made to Cherner from June 17 to November

(Continued on page 16)

20, 1959 (amounting to $1,131.06) constitute payment of "blackmail."

At the trial, Cherner conceded that Goldman had suggested a one-piece construction, and said he had welcomed the suggestion, with the reservation that it was valid only if the chair could be made with Plycraft's existing facilities. Goldman, however, insists that he got the idea for the one-piece back and seat in July of 1958, when a friend showed him a chair (page 14), designed by Denmark's Arne Jacobsen, that had been on the market for at least 10 years. According to testimony, Goldman and a Mr. and Mrs. Plotkin spent a great deal of time in changing that chair into the design that finally evolved, was manufactured, and is the basis for the legal action. (Goldman never mentioned to Cherner the Jacobsen chair or the work that he was doing on it.)

Goldman asserts that the original contract, signed in March, 1958, was superseded by a new agreement to pay Cherner one per cent. This claim is based on an addendum prepared and signed by Cherner in July, 1959, in which Cherner agreed to modify the original agreement if Goldman would furnish him with quarterly statements of gross sales and allow him or his representative to examine the Plycraft books semi-annually for the purpose of verifying royalty accountings. In following correspondence, Cherner urged Goldman to execute the addendum and maintained that until the two came to terms, the old royalty agreement was still in effect. In September of that year, Cherner sent Goldman another, revised addendum, but nothing came of it.

In the various points brought up at the hearings, the auditor found as follows:

"Despite the fact that Mesberg was the exclusive agent of the defendant and that the plaintiff threatened him with litigation, I am unable on all the evidence to find that these statements so affected the will of Goldman that they constituted coercion or duress. Whatever the plaintiff said was said to Mesberg and not to Goldman and was communicated to the latter by Mesberg. If undue emphasis was placed on the plaintiff's statements by Mesberg in his talks with Goldman the plaintiff is not responsible therefor. Legally, also, both parties hereto had the same right to resort to litigation if they honestly felt the other had broken the contract.

"Clearly the claim of duress in the spring of 1959 could not vitiate the contract . . . executed by the parties hereto on March 19, 1958. At the most it would only serve to negative an inference that the defendant in paying royalties of one per cent (1%) had recognized the plaintiff as the designer and that it was bound by the original agreement.

"I find that the addendum was never executed and that the original agreement is still in effect.

"I find that the chair in question was designed by the plaintiff and that the defendant converted it to its own use but since no evidence of damages was introduced, I am unable to award him any.

"I find that the total sales amount to $488,000. Should the court find that the original agreement is still in effect, the plaintiff would be entitled to $9,760 minus the aforementioned payment of $1,131.06 . . . or $8,528.94 plus interest from the date of the writ.

"If however, the court should find that the original agreement was superseded by a new agreement calling for one per cent (1%) royalties, I find for the plaintiff in the sum of $4,264.47 plus interest from the date of the writ."

Dansk line uses jungle woods

Designer Jens Quistgaard has fashioned a collection of salad bowls, ice buckets, carving boards, trays, and salt and pepper sets from a group of dense jungle hardwoods to create Dansk's newest product line. The woods, which come from Nicaragua, Brazil, British Honduras, and East Africa, have a natural finish achieved by burnishing with leather buffing wheels. They are said to be impervious to alcohol and water. The pieces in the top photograph (above) are all made of wenge, a deep brown wood from the Congo; those in the bottom photograph are of jacaranda, a strongly-grained Brazilian rose-wood.

Quistgaard's new pieces for Dansk

IDI to hold symposium

"The Pivotal Forces," an exploration of the importance of the industrial designer, will be the theme of the Industrial Designers Institute's first National Symposium, to be held October 28th at the Somerset Hotel in Boston. In the morning session, there will be speeches by Serge Chermayeff, of Harvard's Graduate School of Design; RCA staff vice president (advertising and sales promotion) Ralston Coffin; and Elmer Tangerman, editor of *Product Engineering* magazine. The discussion will be continued in the afternoon by a panel consisting of: engineer Dr. Joseph C. R. Licklider, of Bolt, Beranek, Newman; architect Jean Paul Carlhien, of Shepley, Bulfinch, Richardson & Abbott; and Charles E. Whitney, publisher of INDUSTRIAL DESIGN.

New York World's Fair

The New York World's Fair ran into trouble last month when a bill authorizing $300,000 in federal funds for a study of government participation in the fair failed to pass the Senate Foreign Relations Committee, and consequently did not reach the floor before Congress adjourned. According to Senator Fulbright, chairman of the committee, the bill violated the 1959 pledge of the fair's Congressional supporters not to seek government aid. In a counter-move, New York's Mayor Wagner appealed directly to President Kennedy, who responded with letters of encouragement to Wagner and fair president Robert Moses. Meanwhile, Time Books, a division of Time, Inc., was reported to have the exclusive contract to provide all the fair's official maps and publications.

(*Continued on page* 18)

NEWS *continued*

Bentwood from Thonet show

Bentwood furniture exhibited

Examples of bentwood furniture, ranging from the well-known old-fashioned loop-back chair to more modern rockers and tables, are being displayed now through October 15th at the Art Galleries of the University of California at Los Angeles. Entitled "Thonet 19th Century Bentwood Furniture," the exhibition includes a large number of bentwood pieces personally executed by Michael Thonet, who discovered the process of curving wood through the use of steam. The collection at left is a view of part of the show. Jack Carter, assistant professor of design at UCLA, assembled the exhibition.

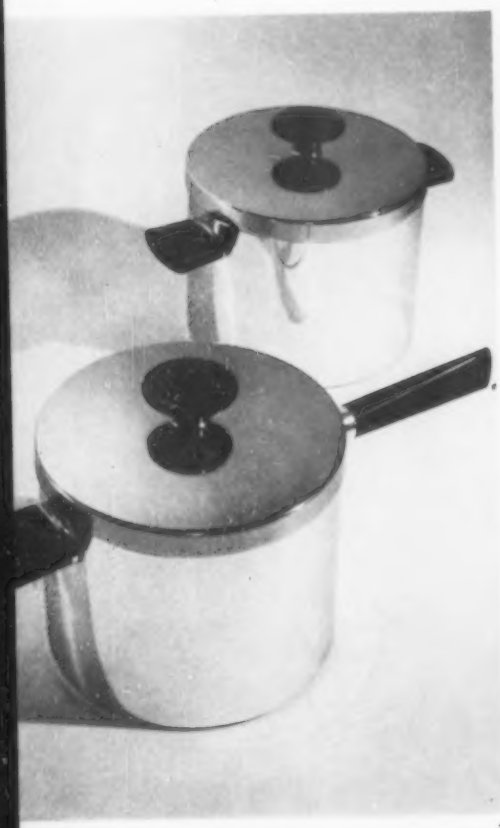
PDC explores planning programs

When management confronts the designer, the effect can be stimulating. At the Eastern Chapter meeting of the Package Designers Council on September 28, it was. The purpose of PDC's sixth annual Silvermine, Connecticut meeting was to help define the designer's role in the development of packaging programs. Surprisingly, this is just what the conference did.

Although moderator Gordon Lippincott opened the meeting by remarking that "the package designer's prime motivation is marketing," neither of the packaging programs described by the morning speakers credited the designer with much of a marketing contribution. Theodore Montague, Jr., president of Drake Bakeries, described the role of his design consultant, Robert Neubauer, as simply design. At Drake, he made clear, the designer must stick within a narrow range of packaging equipment and material; and design solutions grow from field trips the designer takes with Drake's marketing and sales staff. Ronald F. Gilrain, marketing director of the Hand Tool Division of Stanley Tools, discussed packaging projects he has been working on with Ehrman & Reiner, Inc. Gilrain too emphasized the design, rather than marketing, contribution of the package designer. "Stanley," said Gilrain, "prefers to get marketing council from market research experts."

In the afternoon Seymour Murray Kent, packaging director for Lehn & Fink Products Corporation, gave a much bigger picture of the designer's role by describing the work of his own office. Vernon Fladager, director of marketing at Bruce Payne & Associates, management consultants, described a new kind of management man who "must innovate to survive." Because this new manager must turn to science and the arts to instigate his changes, his goals will be closer to those of the creative designer, who also innovates to survive. Fladager suggested that the designer's real problem may be to recognize this type of manager among his clients.

(*Continued on page* 28)



1

2

New products

1. Midlands stew-pans have aluminum body and lid. Lid is anodized in copper color; top-knob and handles carry brand mark. *Designers: Milner Gray, J. D. Cochrane, Design Research Unit.*
2. Sears Roebuck's "Tower" portable slide projector has red and white urea plastic housing. Carrying handle turns to side to perform as operating lever. G-M Laboratories molded and assembled piece. *Designer: John P. Rovnik, Sears staff.*
3. Bohn's electric calculator is small, takes up little desk space, but performs functions of larger models. *Designer: Henning Carlsen.*
4. GE's "Voice Commander" small, portable two-way radio, houses transmitter and receiver in single case. Handle is also auxiliary antenna. *Designers: Robert Huntington, Loren Polson, GE.*

3

4

As part of the Alcoa Design Education Program to aid and encourage outstanding industrial design schools, an award is presented annually at each of 6 participating schools to that student who most creatively applies his school's design philosophy to a faculty-assigned problem. Award-winning projects have in common only a significant and imaginative use of aluminum. The faculty at each school administers the program and selects the awardee. Each participating school receives an unrestricted grant from the Alcoa Foundation.

Alcoa also supplies these schools, and others, aluminum for student projects; a library of technical information; and up-to-date information on facilities, research and process development. Close liaison with schools all over the country, including seminars on campus, is maintained by Alcoa's Manager of Design, Sam Fahnestock, and industrial designers on his staff.

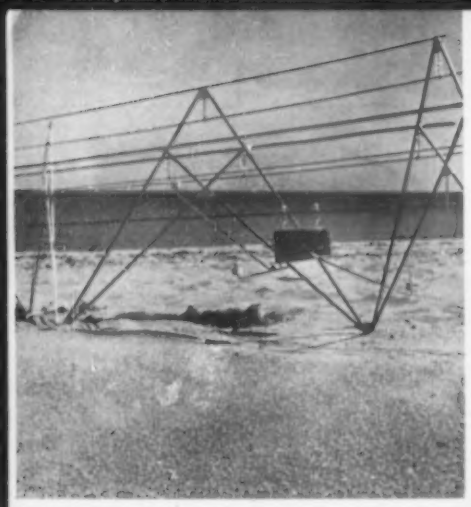
The education program is but one expression of Alcoa's interest in promoting a closer relationship among industry, the industrial design profession and design education.

University of Bridgeport, David L. Haas; *University of Illinois*, Robert C. Taylor; *Illinois Institute of Technology*, Marnie C. Averitt; *Philadelphia Museum College of Art*, Andrew A. Oakes; *Pratt Institute*, John H. Bowers, Jr.; *Syracuse University*, Charles H. Tipple

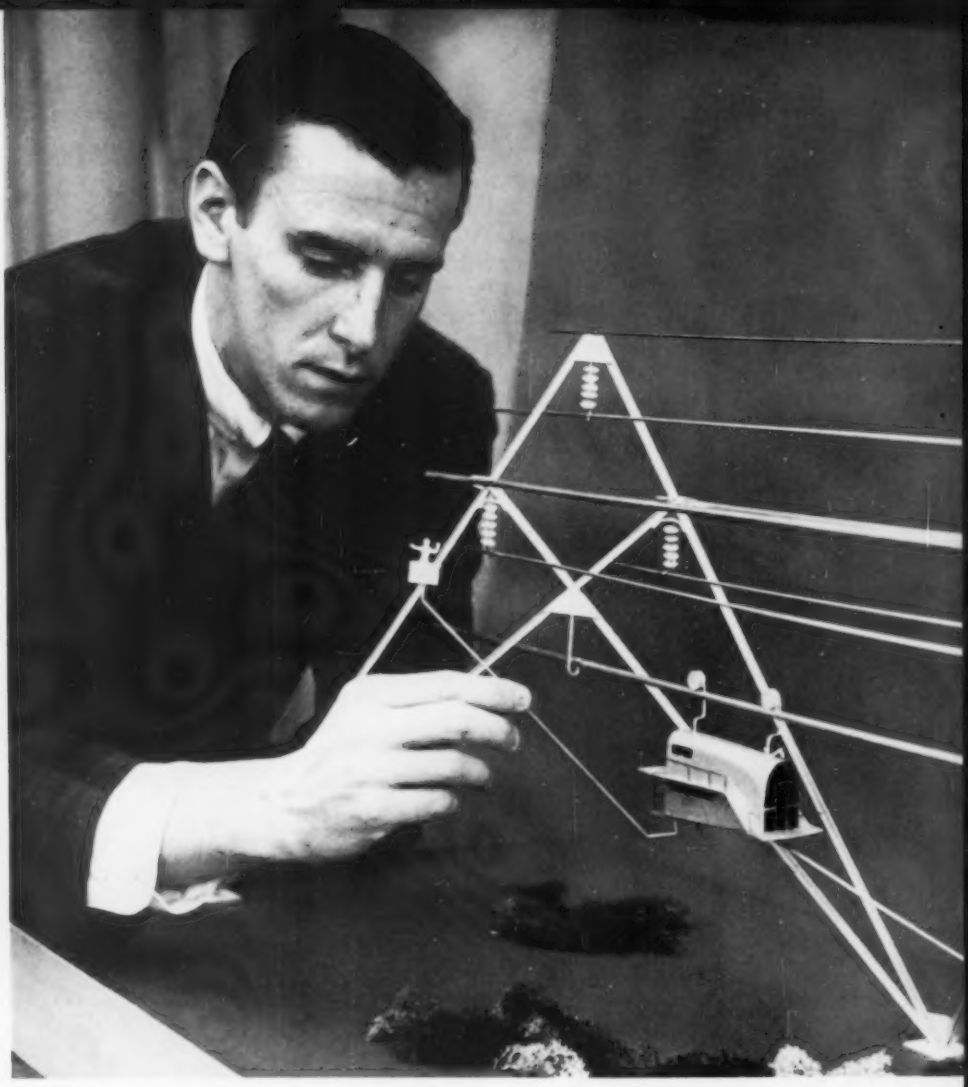
ALCOA ALUMINUM

STUDENT DESIGN MERIT AWARD

Aluminum Company of America
841-K Alcoa Building
Pittsburgh 19, Pa.



L to r: Prof. Redmann, Haas, Asst. Prof. Douglas Merilees, Instructor Wilfred W. Tressler.



". . . we see our graduates neither as designers of products that only they *like . . . nor as social reformers. A product ought to represent a better investment, both for the manufacturer and for his customer, once a designer is through with it—or he's no designer."—Robert E. Redmann, Chairman, Department of Industrial Design, University of Bridgeport*

UNIVERSITY OF BRIDGEPORT—DAVID L. HAAS

MULTI-SYSTEM

Develop a new and important use of aluminum with existing mill or semi-fabricated forms was the assignment Professor Redmann gave his classes. His criteria: Make it substantially different, consequential in design and engineering, logically or uniquely suited to aluminum.

David Haas' *Multi-System* was chosen because he "overcame a major financial burden to utilities in the construction of access roads and transportation of line construction materials."

Wide-legged aluminum A-frames are the basic *Multi-System* structure. Twin aluminum pipelines carrying oil, gas or mail cylinders link the towers, bracing them vertically. Besides 4 or more electrical conductors, the towers support a monorail for construction/maintenance vehicles. *Multi-System* "builds itself" by transporting men and materials. Each bolted structural assembly is 102 ft high, 100 ft wide at the base, and diagonally spans an 80-ft right of way. Only aluminum can meet its combined requirements for strength, lightness and low maintenance.

Assoc. Prof. Zagorski and Taylor discuss methods of joining *Mailagon* stacked in "honeycombs."

"Upon the basic liberal arts training of our students, we try to build a program without 'isms' . . . From 5 different instructors, our students might complain that they get 5 different viewpoints—but what really happens is that they are forced to find viewpoints of their own."—Edward J. Zagorski, Associate Prof. in Charge of Industrial Design Div., Department of Art, College of Fine and Applied Arts, University of Illinois

UNIVERSITY OF ILLINOIS—ROBERT C. TAYLOR

MAIL-AGON

Stimulated by an assignment to do something with sheet aluminum, the student explored the hexagon as a structural form suited to modular assembly, probed several uses before perfecting one.

Robert Taylor's *Mailagon* is outstanding, Professor Zagorski explains, "because of its quality of sheer simplicity applied as an excellent solution to a real problem."

Designed in aluminum sheet but mass-producible as an impact extrusion, the *Mailagon* is an 18½-in.-long hexagon measuring 6½ in. between parallel faces. It nestles singly into an angle bracket or clusters like a honeycomb atop one or more aluminum poles. Besides looking good, *Mailagon* saves the carrier time and trouble by putting several boxes in easy reach at a single stop. Its plain anodized finish contrasts with the door, color-anodized for ready identification and a pleasing visual effect. Being aluminum, the *Mailagon* is virtually immune to weathering, yet economical to make.

Director Doblin and Averitt return from a test drive in prototype of electric runabout *Sparky*.

"The school seeks an operating solution that solves a human problem . . . removes antihuman elements of previous devices allied in function. A skill-centered graduate can gaily create social and economic havoc because he hasn't the foresight to see the long-term implications of what he is doing. We are trying to graduate a designer really *concerned about the meaning of his work in the over-all social structure."—Jay Doblin, Director, Institute of Design, Illinois Institute of Technology*

SPARKY

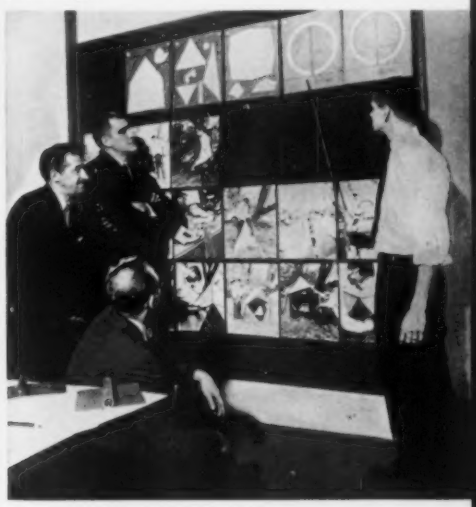
ILLINOIS INSTITUTE OF TECHNOLOGY
—MARNIE C. AVERITT

Emerging from broad-scope studies about problems of the automobile, this project narrowed on urban transportation. By assigning long-distance, high-speed travel to railroad "piggyback"—a principle already proved in practice—the student directed his efforts to defining the needs of urban transport, and creating a vehicle to meet them.

Marnie Averitt's *Sparky* was judged uniquely apt for its function —far more so than bigger, faster cars. Better still, the little electric runabout could sell for *half* as much.

Aluminum nearly everywhere—from monopanel frame to body sheet metal—keeps *Sparky's* curb weight under 1,000 lb; gives it a top speed of 30 mph and a 60-mile range. Built on a highly maneuverable 66-in. wheel base, *Sparky* carries 4 passengers or 2 passengers plus a payload of 800 lb. Maintenance-free electric motors simplify accelerating, braking and reversing; eliminate noise and fumes. With minimum weight vital for speed and range, only aluminum provides lightness with structural stability and corrosion resistance.

L to r: Dir. Carreiro, Assoc. Dir. R. H. Reinhardt, Oakes, Instructor W. A. Pennock (kneeling).



"If you don't emphasize personal talents, you can't get invention. Ideas—invention—come only from an individual . . . We must start with an artist to develop someone who can satisfy the needs of many people. The designer doesn't design for the manufacturer, but for the ultimate consumer."—Joseph Carreiro, Director, Industrial Design Department, Philadelphia Museum College of Art

PHILADELPHIA MUSEUM COLLEGE OF ART
—ANDREW A. OAKES

SHEET METAL ZIPPER

"Explore the potential of aluminum," Instructor William A. Pennock told his class. "Exploit its virtues and develop a useful new product."

Andrew Oakes' *Sheet Metal Zipper* won because he invented a system and developed a use for it, according to Associate Director Richard H. Reinhardt. "It is a definite, complete, truly simple solution."

Joining flanged aluminum sheets in seconds without tools, the *Sheet Metal Zipper* creates a strong, efficient, self-clamping joint. It may be flexible polyethylene, for knock-down structures; or aluminum tube, for permanent joints. Clamping action of tube on flange makes the structure rigid. Each joint acts as a structural rib in the assembly. Experimental emergency/utility shelter shown uses .020 aluminum sheet in triangular panels, a very strong geometric shape. Measuring 3 x 3 x 4½ ft, it takes one man about 30 min to assemble, using 12 aluminum panels and 75 ft of tube; weighs less than 15 lb; could sell under $40.

L to r: Bowers, Chairman Kolli and Instructor Giles Aureli inspect model of the *Amphicamper*.

"Our graduate is a problem solver, conscious of individual human needs (beyond just the basic needs). He can't specialize in a small segment of his area and become protective; he must confront change as an everyday thing. We try to provide a minimum necessary development of skills and a maximum stretching of the mind."—Robert A. Kolli, Chairman, Department of Industrial Design, School of Art, Pratt Institute

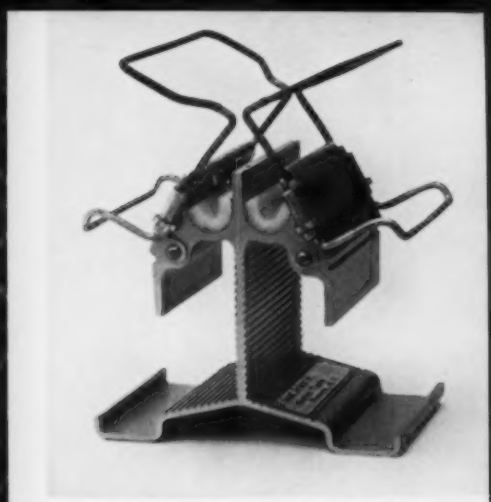
PRATT INSTITUTE—JOHN H. BOWERS, JR.

AMPHI-CAMPER

Assigned a 2-year project to find and fill a need, this student concentrated on a fast-growing family recreation activity with great potential: camping and boating. His research indicated a sizable market for a multi-purpose family vehicle.

John Bowers' *Amphicamper* was selected not only as a good design, but also as a good solution to a real problem.

Car, boat, camper and campsite in one, *Amphicamper* seats 6 and sleeps 5; provides all basic facilities, though only 16 ft long and 7 ft wide. With a unit body and frame of aluminum, it weighs 3,000 lb fully loaded and draws but a foot of water. Hydraulically operated umbrella roof (with sleeping penthouse atop) adapts the vehicle to its 3 uses. Pancake engine powers an axial-piston pump, providing 4-wheel hydraulic drive on land and controllable-impeller propulsion in water. Aluminum throughout *Amphicamper*—frame, sandwich panels, shell and wheels—provides lightness, weatherability, formability.



L to r: Assoc. Prof. L. C. Smith, Asst. Prof. D. C. Waterman, Prof. Pulos, Tipple look over *Tote*.

"We believe that if we take sensitive people and provide them with the informational tools and an exciting environment in which to work, we will develop designers who will provide new answers to old problems (as well as new questions, and answers for these)."
—Arthur J. Pulos, Professor in Charge, Department of Industrial Design, School of Art, Syracuse University

SYRACUSE UNIVERSITY—CHARLES H. TIPPLE

THE TOTE

This was a "wide-open" project to develop a new concept for a consumer product not now marketed. Applying aluminum's high strength-weight ratio to devices for carrying things, the student filled a personal need he shares with thousands of sports enthusiasts.

Charles Tipple's *Tote* is a good project, explained Professor Pulos, because it is an entirely new, producible product that solves the problem assigned.

A ski-and-pole carrier weighing but 10 oz in aluminum, the *Tote* doubles as a summer-storage hanger. It's designed around an intricate aluminum extrusion. Two pairs of pivoting clamps become handles in use, tightening the entire assembly. Adjustment nuts and compressible pads let the *Tote* carry any skis and poles made. Besides light weight and high strength, aluminum provides necessary corrosion resistance in its natural finish. Colored dip-coating for handle and the foam pole pads add contrast. The *Tote* might retail for $15 or less.

ALCOA DESIGN STUDENT RECOGNITION FOR IMAGINATIVE USE OF ALUMINUM IN CREATIVE DESIGN

1961

National Lock follow-through produces furniture trim that

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NEWS *continued*

People

APPOINTED: **Theodore E. Luderowski** (right), **James E. Fekete** (right), and **Douglas N. Cabell** (right) as associates; and **Carl Benkert** (previously head of the Architectural Interiors Department of General Motors) and **Richard A. Isola** (also previously with General Motors) as senior designers, with Walter B. Ford Design Associates, Detroit. . . . **John B. Schmid Jr.** (formerly with Product Presentation, Inc.) and **Donald M. Streiff** (formerly with Scherr & McDermott) to the staff of Peter Muller-Munk Associates, Pittsburgh. . . . **Roy Ozaki** (below), **Richard Oborne** (below), and **John McMillan** (below) as associates with F. Eugene Smith Associates, Bath, Ohio. Previously, Ozaki was an associate at Sundberg-Ferar, Oborne was with Smith, Scherr & McDermott, and McMillan was with United Airlines. . . . **Theodore S. Jones** as development director at Samuel Ayres Associates, Boston. . . . **Howard Barber,** formerly president of the Peabody Seating Company, as a consultant in product diversification, merchandising, and marketing with Good Design Associates, South Bend, Indiana. . . . **John B. Breen,** formerly a partner at Raymond Loewy/William Snaith Associates, as Deputy Director of the Office of International Trade Fairs, United States Department of Commerce. . . . **Ladd J. Orr** as resident stylist for Chrysler Corporation's Airtemp Division, Dayton, Ohio. . . . **Chester Wells** (previously Manager of Expositions for the American Society for Metals) as president of Associated Exhibition Management, Inc., in St. Louis. . . . **Fred W. Hannula,** formerly with Radio Corporation of America, as product planning manager for the Computer Products Division of LFE Electronics. . . . **Robert W. Carr** as manager of product development at Shure Brothers, Inc., electronic component manufacturer. . . . **Donald P. Allen** as manager of the products department of Ampex's Tape Unit Division. . . . **Alfred E. Hammer** as Dean of Students at the Rhode Island School of Design. . . . **William Wondriska,** illustrator and author, as graphic designer at the Walker Art Center, Minneapolis, Minnesota. . . . **Mrs. Janet Sillen,** Director of the Women's Products Division of the Institute for Motivational Research (Croton-on-Hudson, New York) as vice president of the firm. She will continue her supervisory work in the Women's Product Division as well. . . . **Axel von Saldern** as curator of the Department of Paintings and Sculpture at the Brooklyn (New York) Museum. . . . **Mrs. Helene Schembs**

Fekete *Luderowski*
Cabell

as sales coordinator for Cushing & Nevell, New York.

RESIGNED: **Douglas R. Cleminshaw** from the industrial design teaching staff at Syracuse University, to devote full time to his design office at 524 Hawley Avenue, Syracuse, New York.

ELECTED: **Aaron Burns** as President and Director of Design of Graphic Arts Typographers, Inc.

Company News

RETAINED: **Roger Mark Singer,** New York, by Westrex Corporation (electronics) and by Air-Shields, Inc. (medical equipment). . . . **Fred E. Denzler Designers,** Chicago, to execute the corporate image program for Health Physics Associates, Ltd. Denzler has already completed the symbol. . . . **Charles M. Huck,** New Brunswick, New Jersey, by the Telerad Division of the Lionel Corporation for human engineering on the company's line of ultrasonic cleaning equipment. . . . **Arnold Wolf Associates,** Berkeley, California, by the F. W. Moulthrop Company to develop a corporate identity program, and by James B. Lansing Sound, Inc., for general product design. . . . **Cushing & Nevell,** New York,

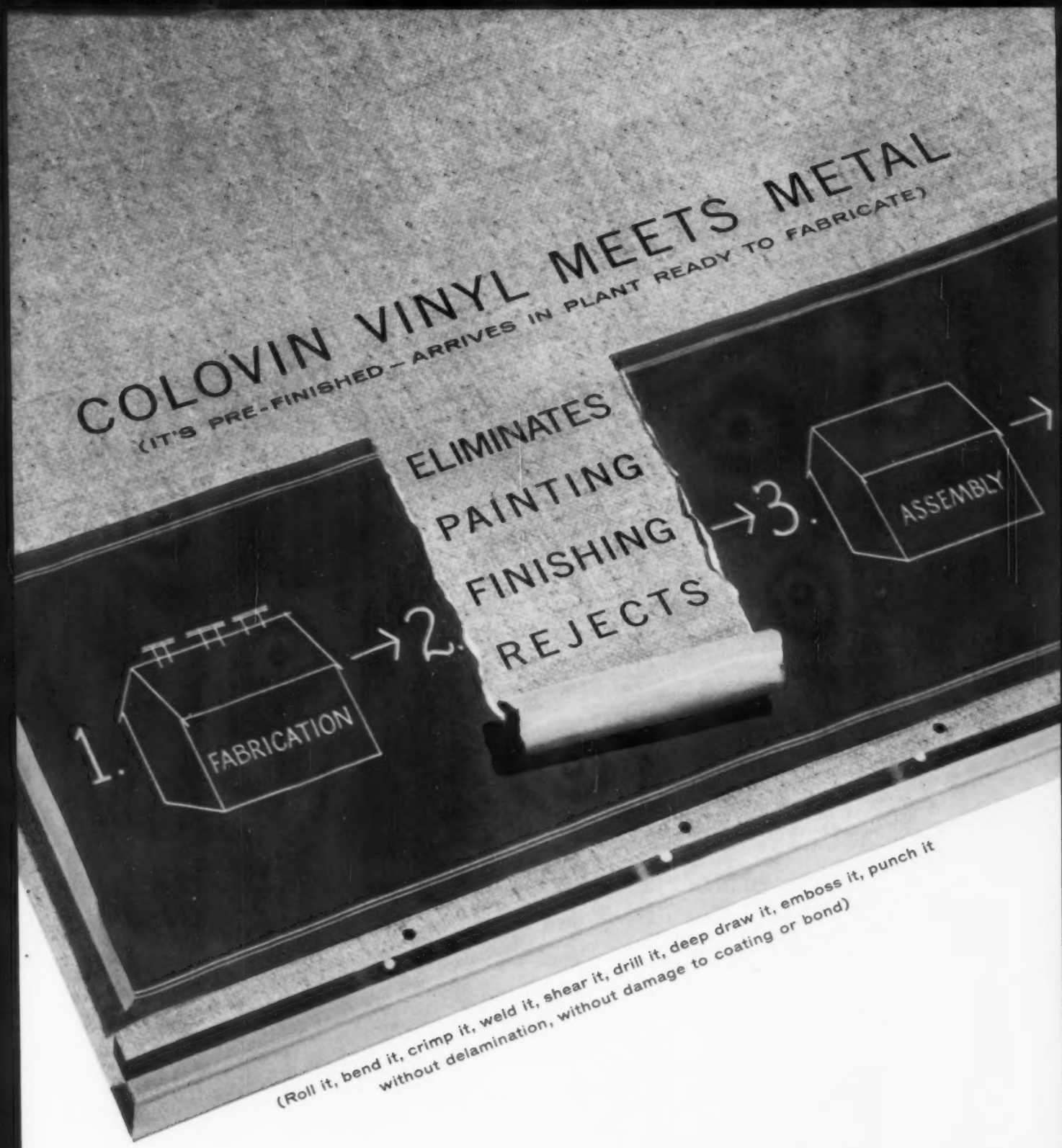
McMillan *Oborne*
Ozaki

by William Kilborne to collaborate with architects Rogers & Butler in the development of a concept for a Transportation Building at the New York World's Fair. . . . **Charles Butler Associates,** New York, to design a Hong Kong ticket office for Canadian Pacific Airlines. . . . **Becker & Becker Associates,** New York, by the Commonwealth of Massachusetts to program all new construction and to design the interiors of all the state buildings in the new Government Center. B&B will also be in charge of remodeling the State House. . . . **Painter, Teague & Petertil,** Chicago, by Bowser, Inc., with their first assignment the design of a gasoline dispensing system. . . . **Bramwell Lieber,** Reseda, California, by Electronic Enclosures, Inc., manufacturers of computer and electronic consoles. . . . **Harper Landell & Associates,** Philadelphia, by Fisher and Ludlow, Ltd., division of British Motors Corporation. . . . **William Pahlmann Associates,** New York, to design five major restaurants in the New York Hilton, two ballrooms, the lobby cocktail lounge, a cocktail bar, a V.I.P. room, and to act as consultants on the lobby and coffee shop areas. . . . **Waltman Associates,** Chicago, to develop new products for the Ero Manufacturing Company. . . . **Leon Gordon Miller,** Cleveland, by the S. J. Campbell Company to design a correlated contract line of office and upholstered furniture.

ESTABLISHED: **Ikonegenics Incorporated,** consultants in corporate design, at 4930 Cedar Springs Road, Dallas 35, Texas, by Crawford Dunn and Susan Wright (formerly of Knoll Associates). The new company has been retained by Owen Laboratories to handle all corporate graphics, including a complete repackaging program. . . . By **Felix V. Waser,** previously an associate of Walter B. Ford Design Associates, his own design firm at 575 South Barrington, Los Angeles, California. . . . **Vitroselenia,** a new company jointly formed by the Vitro Corporation of America and Selenia S.p.A. (a Raytheon subsidiary), in Italy, for the design and installation of missile systems and other electronic equipment.

EXPANDING: **Leotta & Parcher,** Conshohocken, Pennsylvania, with the opening of a new office at 140 West 57th Street, New York. . . . **Marc Shiowitz and Associates** (MS&A), computer consultants, Hawthorne, California, a branch office at 1058 East First Street, Santa Ana.

GOING PLACES: **Rosay Industrial Design** to 12791 Newport Avenue, Tustin, California. . . . **S.U.A., Inc.,** inner space specialists, from New York to 1111 Wilshire Boulevard, Los Angeles. . . . The **American Society of Mechanical Engineers** to the United Engineering Center, 345 East 47th Street, New York.



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*LUSTRAN: T. M. Monsanto Chemical Company

Monsanto

MONSANTO designer in PLASTICS

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EFFECTIVE STRENGTH AT THE RIGHT COST

CHECK THE RANGE OF KEY PROPERTIES OF TYPICAL LUSTRAN FORMULATIONS:

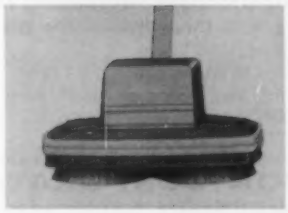
PROPERTIES	TEST CONDITIONS	UNITS	MOLDING FORMULATIONS 210	MOLDING FORMULATIONS 710	EXTRUSION* FORMULATIONS 261	EXTRUSION* FORMULATIONS 761	ASTM
Tensile							
Stress at Yield	73° F.	psi	9,000	6,200	6,800	5,100	D638-58T
Stress at Failure	73° F.	psi	6,800	5,200	6,200	4,500	D638-58T
Elongation at Yield	73° F.	%	3.3	3.2	2.2	2.5	D638-58T
Elongation at Failure	73° F.	%	45**	70**	25	40	D638-58T
Modulus in Tension	73° F.	psi	420,000	300,000	380,000	290,000	D638-58T
Impact Strength							
Izod ½" x ½" Bar Mld. (.010" Notch Radius)	73° F.	ft. lbs./in. of notch	1.1	4.3	0.9†	3.6	D256-56
	0° F.	ft. lbs./in. of notch	0.8	2.0	0.6†	1.5	D256-56
	−40° F.	ft. lbs./in. of notch	0.6	1.4	0.6†	1.1	D256-56
Izod ⅛" x ½" Bar Mld. (.010" Notch Radius)	73° F.	ft. lbs./in. of notch	1.3–4.0	6.0–8.5			D256-56
	0° F.	ft. lbs./in. of notch	0.7–1.2	2.0–2.6			D256-56
	−40° F.	ft. lbs./in. of notch	0.6–0.8	1.1–1.8			D256-56

*Data on Extruded Sheet **Monsanto Test †½" x 0.115" Bar-Sheet

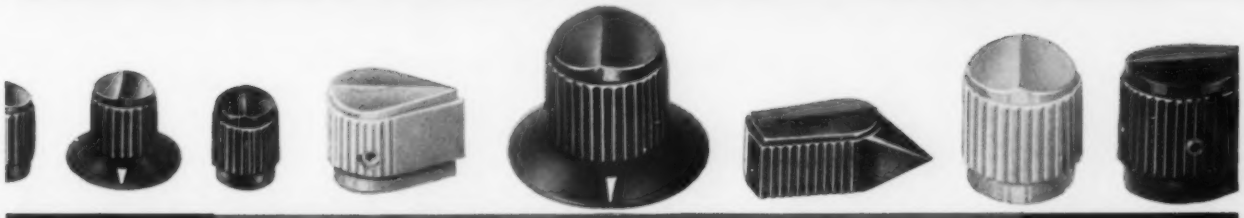
Lustran's combination of light weight, superior toughness and rigidity, excellent thermal stability, colorability, gloss, and abrasion and chemical resistance provides new opportunities for creative industrial design.



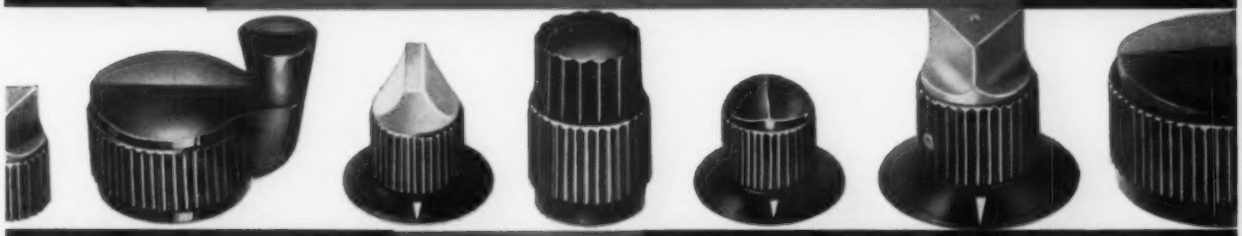




TO GIVE YOUR INSTRUMENTS



THE PRECISION-ENGINEERED LOOK



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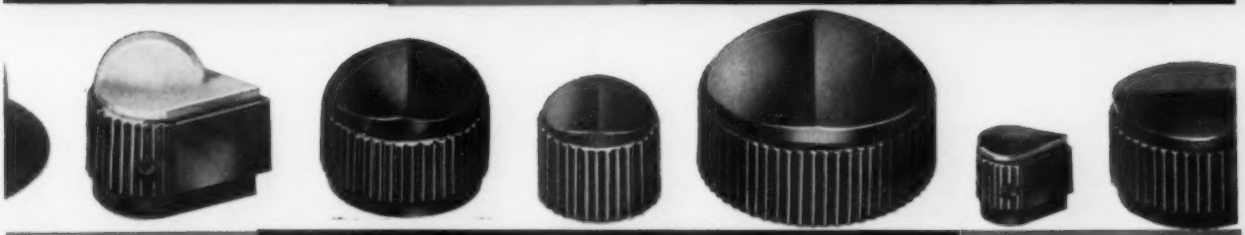

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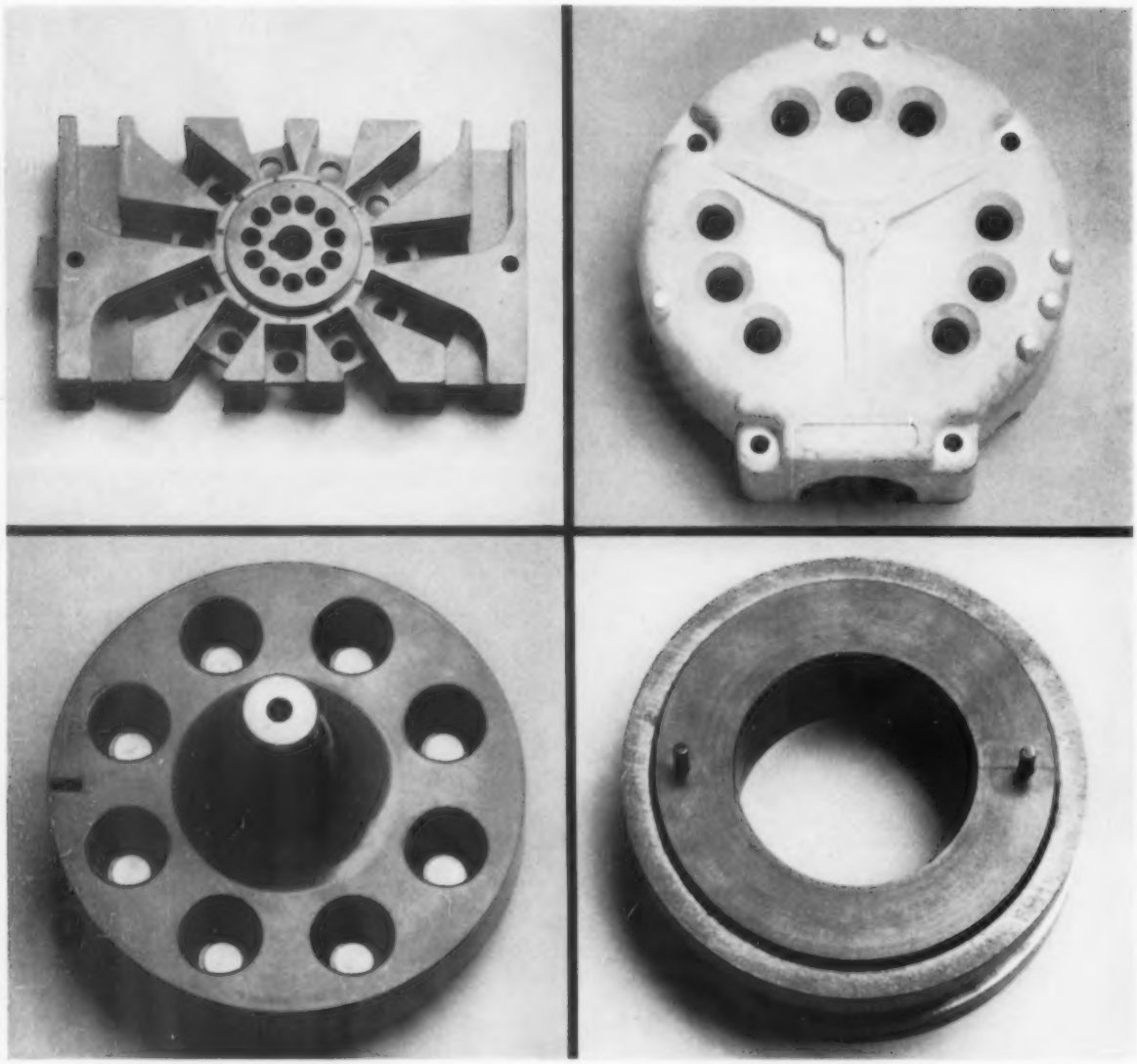

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Consider basic properties of Cymel melamine plastic: Hardest surface of any plastic yet developed • best wear resistance • high impact resistance • outstanding electrical properties under adverse conditions • extraordinary flame resistance • good dimensional stability • resistance to heat, boiling water and attack by solvents. ■ **Consider applications:** Cymel **592** (asbestos filled) for auto and aircraft ignition parts, radio, television and other electronic equipment components, circuit breakers, terminal blocks, switch gears. Cymel **1500** (wood flour filled) and Cymel **1502** (alpha cellulose filled) for auto ignition parts, connector plugs, industrial housings, meter blocks, wiring devices, switch gear housings. Cymel **3135** and **3136** (glass fiber filled) for heavy duty naval, military and industrial switch gears, electrical and electronic components, coil forms, terminal strips, stand-off insulators. Cymel **3020** (fabric filled) for terminal strips and circuit breakers. ■ Consider the fact that other Cymel molding compounds are available for applications where beauty and color are essential. For complete information and technical assistance, contact your nearest Cyanamid office listed below.

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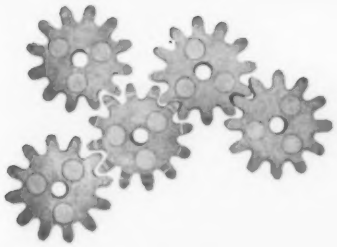

Why zinc die casting?

To you, the designer, the answer to the question can be summed up as follows:

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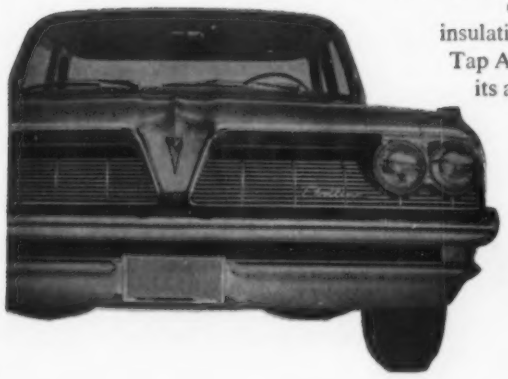
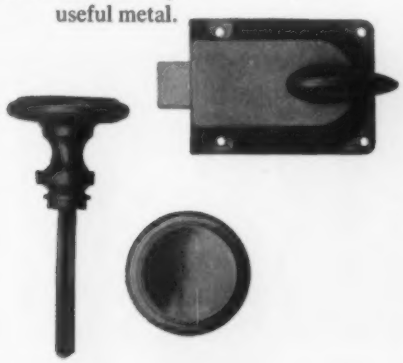
- *Smooth casting surfaces*
- *Minimum machining and finishing time*
- *Superior impact strength*
- *Takes brilliant, lasting finishes*
- *Shorter casting time*
- *Close dimensional tolerances*
- *Reduced production time and cost*
- *Complex shapes, thin wall sections*
- *Pleasing to eye and touch*

This unmatched combination of advantages is yours when you design your product with Asarco zinc die cast metal, unsurpassed in purity and uniformity. Whether your product is miniature or massive, you'll design it better with zinc.

Asarco produces zinc in the following grades: Special High Grade, Prime Western, Brass Special, Intermediate and High Grade; Zinc anodes for cathodic protection of submerged steel structures and for electroplating; Zinc Foil for barrier wraps, insulation; Zinc Alloys for die-casting; Zinc Dust. Tap Asarco's knowledge about zinc's properties, its alloys and its many applications. If you are using, or contemplate using, zinc in your product, look to Asarco for technical information about this broadly useful metal.

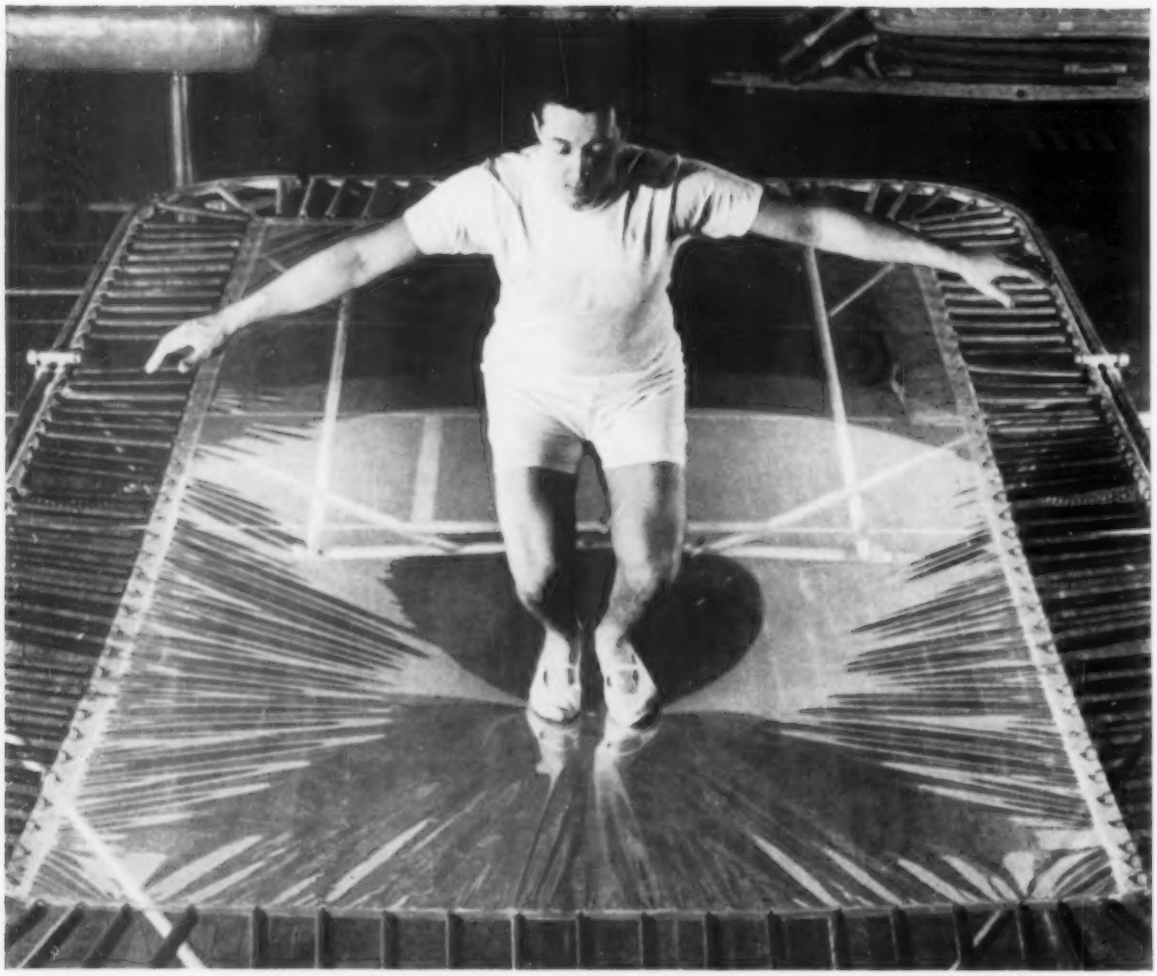




ZINC DIE CAST METALS

ASARCO

American Smelting and Refining Company, 120 Broadway, New York 5, N. Y.



Tough, durable Mylar® cuts costs... improves product performance

1. Huge (100 ft. diam.) inflatable satellite of metalized "Mylar" stays strong and flexible in sub-zero outer space.

2. Permanent collar stays of "Mylar" last the life of the shirt . . . keep their shape even after hundreds of launderings.

3. Capacitors with insulation of "Mylar" give long-lasting reliability . . . need for costly encapsulation is eliminated.

For example, "Mylar"* polyester film gives many products extra resistance to heat, cold and aging . . . lengthens their life. Today, "Mylar", with its resistance to chemicals and moisture, is improving the performance of products as different as surgical bandages and intercontinental ballistic missiles.

Can this unique plastic film and products made with it help you? For more information on "Mylar", write the Du Pont Co., Film Dept., Room S-8, Wilmington 98, Del.

DU PONT

*"Mylar" is Du Pont's registered trademark for its brand of polyester film.

Better Things for Better Living . . . *through Chemistry*

DU PONT MYLAR® POLYESTER FILM

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An exciting new dimension of *texture* is captured in *Frostwood** molded articles produced by injection molding Pelaspan expandable polystyrene beads. *Frostwood* molded articles have a uniquely swirled surface texture reminiscent of rich, fine wood grain. The appearance is compelling . . . its feel is friendly. And because the wood grain pattern never repeats itself exactly, every article becomes an original. For full details on the technique for producing *Frostwood* molded articles, drop us a line in Midland. Write Plastics Sales Department 1701BR10. *TRADEMARK

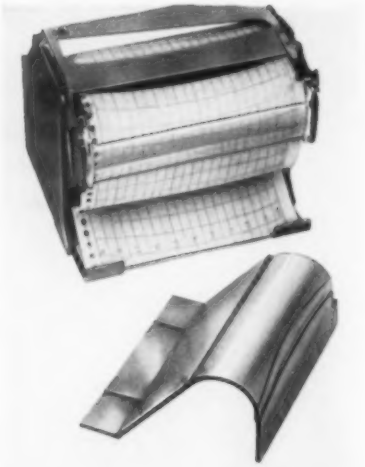
THE DOW CHEMICAL COMPANY DOW Midland, Michigan

G-E LEXAN® POLYCARBONATE RESIN

GOOD DIELECTRIC—AND MUCH MORE!

STABLE ELECTRICALS. Binding posts made of LEXAN resin retain electricals even under moist, hot conditions. They do not loosen, are molded in six attractive LEXAN colors for coding. Other features are: low loss and power factor, low dielectric constant, high voltage insulation, non-sink surfaces.
(Superior Electric)

HEAT RESISTANCE. Beautiful handles of LEXAN polycarbonate resin are used in rugged service on U.L. approved soldering irons. They resist the impact, heat and abrasion of daily bench work. The hard, glossy handles are light in weight. Molded in three pastel colors, they provide toughness and sales appeal.
(Ungar Electric Tools)



TRANSPARENCY of LEXAN resin is important in chart guide for recorder. LEXAN resin is the only transparent plastic able to withstand heat generated by internal lights. It is distortion-free at temperatures up to 270°F and self-extinguishing. Its extremely high impact strength eliminates cracking of guides.
(The Foxboro Co.)

DIMENSIONAL STABILITY. Maximum allowable change in this 5-inch aircraft instrument part is only 5 mils over a temperature range of −65° to 300°F! And it must maintain this tolerance under high humidity. Part is injection molded of LEXAN resin as half spheres which are solvent cemented, lathe-turned and painted. (Lear, Inc.)

TOUGHNESS. Press-fitted into metal gear used in an electric drill, bushing of LEXAN polycarbonate resin provides safety from electric shock . . . helps eliminate need for additional grounding. Strength and creep resistance of LEXAN resin enables bushing to withstand torque and load requirements of drill.
(Millers Falls Co.)

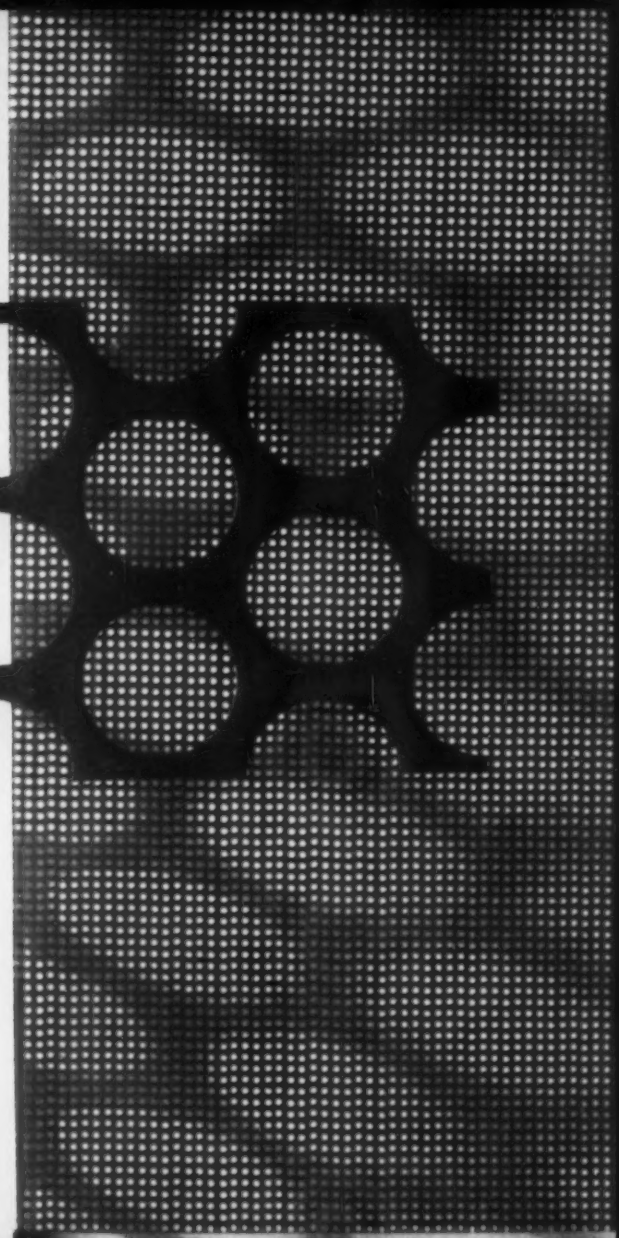
ARE YOU LOOKING FOR A PLASTIC THAT CAN REALLY TAKE IT?

To demonstrate the toughness of LEXAN resin, salesmen will sometimes slam and hammer a product made of the material. LEXAN has the highest impact strength of any plastic – amounting to 12-16 foot-pounds per inch of notch – and it usually emerges unscathed from encounters with such "merchandising stresses". It is a high-performance material, likewise, with regard to high-temperature behavior and dimensional stability.

Its many other advantages make it a priority material for thorough investigation by all designers, engineers and molders. We will be pleased to supply you with information on the properties, processing and end-uses of LEXAN resin. Don't hesitate to write to us. General Electric, Chemical Materials Department, Section ID-51, Pittsfield, Mass.

LEXAN®
Polycarbonate Resin
GENERAL ELECTRIC

H&K



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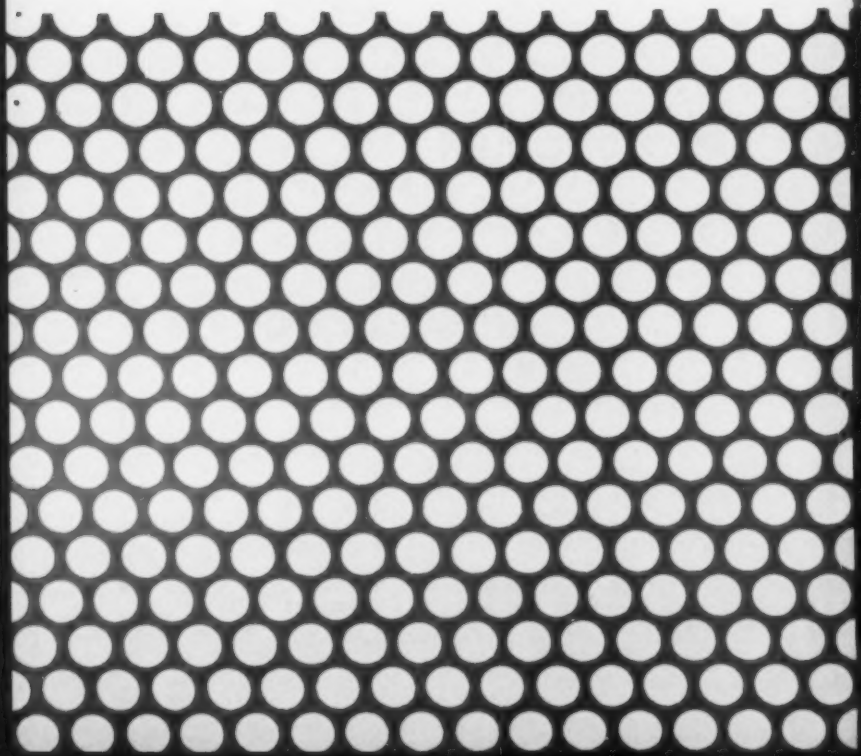
perforated materials
to American industry
since 1883



THE Harrington & King PERFORATING CO., INC.

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COMING NEXT MONTH

Beyond the Olivetti legend

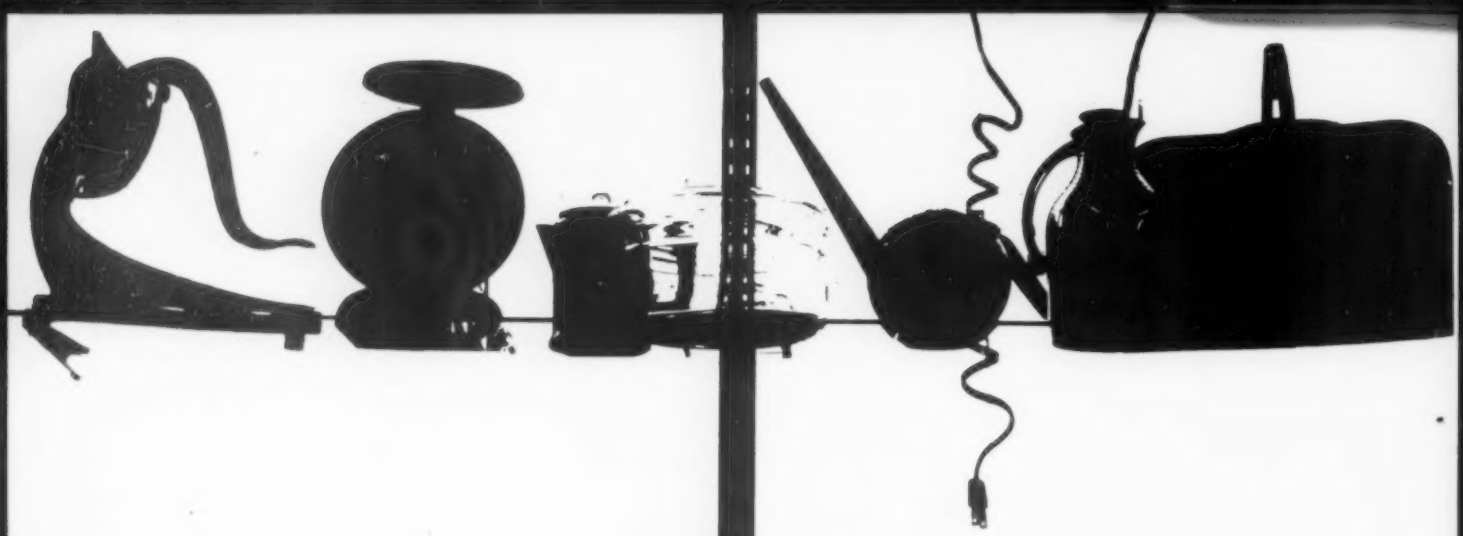
To the general public, the name Olivetti is synonymous with a typewriter called the Lettera 22. To designers, it is the name of a company that produces, year after year, some of the finest — and finest looking — business machines on any market, and that has established for itself a public image virtually unequaled in scope, depth, and quality. Yet, beyond these well-known surface facts, which have been reported in article after article, little is known about the company itself, about the wide range of products it makes, about the people who work for the company, or about how this fabled concern is run. Next month, ID will report on what lies behind the Olivetti legend, with special emphasis on the famous and not-so-famous Olivetti designers: who they are, how they work, and their relationship to the company.

Packaging and the corporation: Montgomery Ward

Packaging the merchandise for a mail order and retail house which rings up over $1 billion in sales annually is big design business. Under product and package design manager Frederick W. Priess, designers at Montgomery Ward search out the best materials, develop new structures, and test final packages to meet tough engineering and merchandising standards. When Anne Swainson, the company's famous design chief, died in 1955, what had been in effect the best practical design training school in the West nearly died with her. Yet today Montgomery Ward's design department has a staff of 60, with packaging, point-of-sale, and display design as important functions. How the department recaptured its vitality, and what its new "self selection" approach to package design means, will be discussed in this second report on corporation packaging.

Product graphics

While mediocre products cannot achieve design distinction by the addition of an escutcheon plate or an embossed logo, certainly a great many well-designed products have had their appearance outrageously spoiled by a badly designed graphic device. One of the designer's most common problems is the identification that must go on the product. Next month, ID will examine the product graphic work currently being done and report on the means available for doing it.



To be published in December, the Annual Design Review is an illustrated survey of the year's major design achievements in consumer products, packaging, professional and industrial equipment.

A valuable permanent reference, ADR shows products in such categories as:
Housewares Furniture
Radio, tv and hifi
Tools Garden equipment
Toys and sporting goods
Major appliances
Packaging structures
Hardware Lighting
Architectural components
Plumbing fixtures
Prefabricated structures
Business machines
Electronic components
Machine tools
Industrial machinery
Farm machinery
Transportation equipment

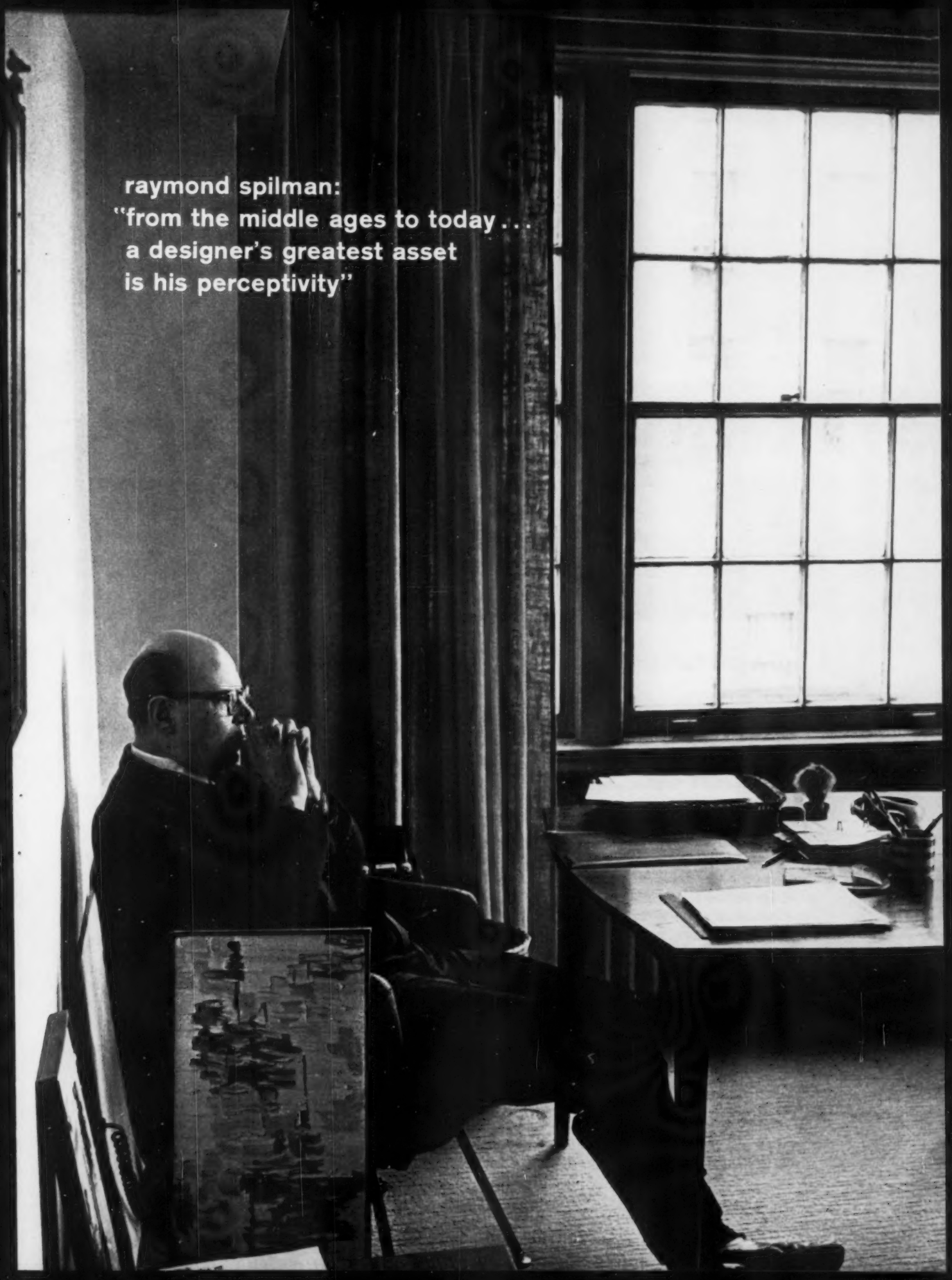
November 15 is the closing date for advertising in

INDUSTRIAL DESIGN's

8TH ANNUAL DESIGN REVIEW

INDUSTRIAL DESIGN

18 East 50th Street, N. Y. 22, N. Y.


raymond spilman:
"from the middle ages to today . . .
a designer's greatest asset
is his perceptivity"

"Today's industrial designer is a problem solver. He must help create a new product, extend its economic life to the Nth degree, yet be able to pronounce the obituary before it stagnates in the market place."
Address before the Peabody College Arts Museum, February 21, 1961

spilman talks design

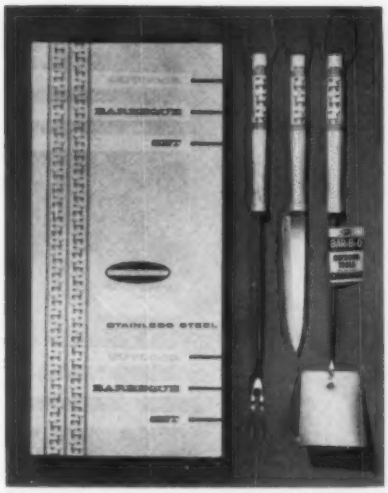
Raymond Spilman likes to contrast today's industrial designers with the artist-craftsmen of early civilization. In the Middle Ages the artist-craftsman's products and wares reflected his interpretation of the society of his time as testified by the remnants of pots, vases, tools and weapons, pictures and decorations turned up by probing historians. It was a relationship that continued until about 1750, and it ended when the invention of mass production in England separated the artist from his craft. A new relationship was born in 1929.

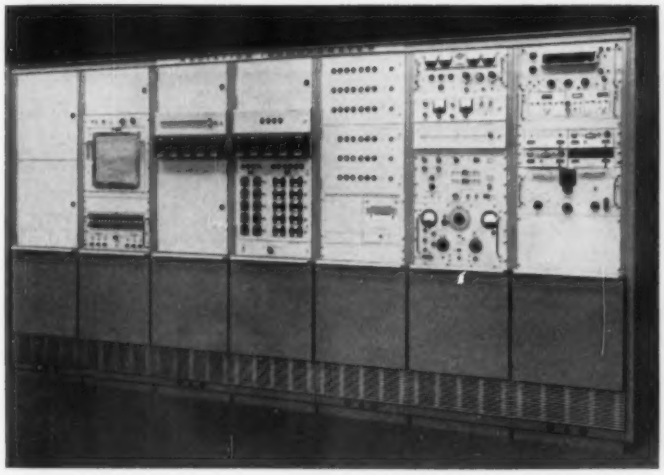
What caused it? Spilman says that the industrial designer was the first to recognize that the machine of mass production was not a monster but a new tool that, properly understood by the designer, made it possible for him to establish a direct emotional and visual understanding between the consumer and himself. Spilman feels that now, more than ever, it is up to the designer to retain that close relationship—better it if he can—because so much of our economy depends on it.

Pursuing that relationship a bit further, Spilman feels that design must transmit a sense of discipline, form and completeness between designer and consumer. He says that "today's industrial design function is a living, breathing, working part of our daily economy, with its own professional standards, requirements, good and bad uses." Esthetics included, he believes that "the designer is critically concerned with the market cycle of product acceptability."

Industrial design was born, according to Spilman, when the designer recognized that it would profit not only himself but the product user to create a product that was as functional as it was attractive. *Advancement* and *progress* are important to the consumer. Monetary profit is important to the manufacturer. Provide the first two and the last will take care of itself. Spilman illustrates his theory of design by citing the example of an early electric refrigerator. It worked, and it took the place of clumsy, troublesome iceboxes. The designer had created a product that profited both consumer *and* manufacturer.

What kind of a man is an industrial designer? According to Spilman, he is a man with an art education who has distinct mechanical sense. He is an intellectually curious person, creative in one or more unique ways,





keenly aware of the mass mind and its probable reactions. He understands that industrial design is a comprehensive lateral form of visual creativity that can be applied to a multitude of diverse problems. His work cannot be pure guesswork, nor can it be pure art.

What is the weakest link in a good design program? Spilman does not think it is the designer or the consumer. He is quite outspoken in his views on the lack of management understanding of the detailed work and time required to successfully design a new product. Management, he feels, is prone to forget the fact that new designs are getting more and more difficult to obtain because more companies are using visual design effectively. "More than ever, the only bargain price in visual design is an adequately budgeted design program," he says.

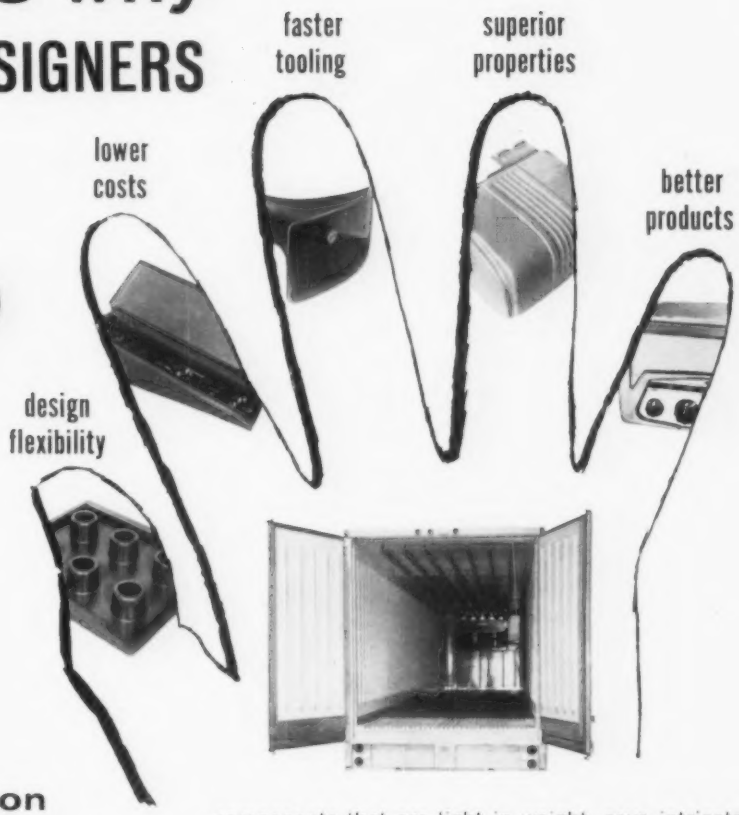
Spilman also has strong feelings about the materials he designs with. He feels that steel, for instance, represents lightness and strength. The designer must select material by appearance, manufacturability and cost. If the consumer believes that same material denotes strength and stability, and that it gives him a feeling of strength, physical security and a mental/psychological feeling of safety, so much the better. It's no coincidence, then, that many of Spilman's most successful designs are of steel. In a computer housing he designed, the entire case, except for the grille at the bottom, bar handles and name plate, is made of steel because it was the best material for strength, cost and ease of finish. For another client, Spilman designed a steel flour sifter. He used steel for cleanness, brightness, strength and lightness. For a light look, strength and durability, the frame and back plates of a chair were designed of steel. Dormitory furniture was designed of steel for strength, appearance and ease of finishing. Spilman feels that Stainless Steel is the ultimate design material. A barbecue turner he designed of Stainless is strong, lightweight and easy to clean. Its Stainless surface will resist corrosion and stay bright, clean and sanitary.

Steel is the modern metal. Little wonder that designers like Raymond Spilman consider steel the most versatile material in industrial design.

USS United States Steel

TRADEMARK

5 reasons why INDUSTRIAL DESIGNERS *should use* MFG MOLDED FIBER GLASS



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Molded Fiber Glass (MFG) — the structural plastic — is light weight, strong, versatile. Molded under heat and pressure in matched metal dies to produce strong, uniform parts holding close tolerances and dimensions.

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"This gentleman walks in with a copy of my extrusion order, lights my cigar and starts talking aluminum, aluminum, aluminum. In short, he's telling me how Olin can save me money by making my dies, giving me better design efficiency in my extrusions. Then he shows me a new welding technique and suggests a brand new market for my product! Who'd think you would ever get service like this from one of America's biggest aluminum producers? Smart people down at Olin. They know how to help a man out where he needs it most."

Nobody thinks in aluminum better than Olin. Want to talk to one of our consultants? See the Yellow Pages for our local Sales Office.

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ALUMINUM

IMAGE AND IDENTITY

Corporate image, corporate image *program*, corporate identity, *total* corporate identity, the corporate personality — these and other roughly synonymous, equally ambiguous terms are tossed up daily wherever designers talk. What does the "corporate image concept" mean? To some designers it means creating a logo that appears not only on letterheads, ads, and company literature, but also on the office draperies, the bowling shirts, the delivery trucks, and the giveaway cigarette lighters. To others, it means finding out what a company would like to be when it grows up, then helping it grow up with that aim in mind.

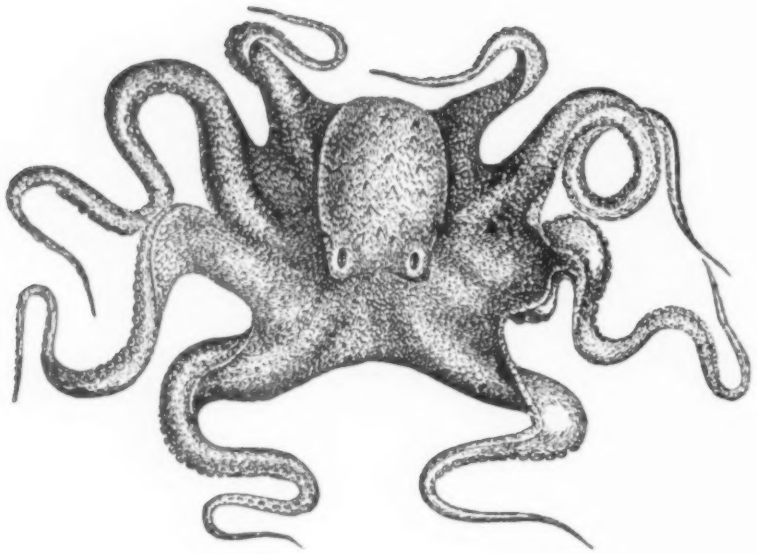
But the latter is rare. Most corporate image stories sound pretty much alike, just as most companies that have "gone modern" *look* pretty much alike. Perhaps it will be years before someone has something radically new to say on this subject. In the meantime, we have found a man (see overleaf) with a different and more comprehensive way of actually saying what designers have been broadly hinting at for years: that if a company knows how, it can control the way it looks; and that if it can control the way it looks, it can control the way it is.

He has even forged a special vocabulary. *Ikonogenesis* is the process by which a man receives data and evolves a private image. *Ikonogenics* is the process of controlling the presentation of data. Normally this sort of jargon makes us cringe. But the subject is customarily treated so pretentiously that it is refreshing and useful to have pretention honestly acknowledged and pushed, with literary taste, to an extreme. *Ikonogenics* stands out like a sore thumb, and why not? Its effect is homeopathic; it drains energy away from the dreary terms everyone has been using. At both its best and worst, ikonogenics is a kind of New Criticism of corporate design. Well, a good humored return to Academe is not necessarily a bad thing.

It is not necessarily a good thing either, but maybe the only way to reach the business community these days is to address it in one of its own languages. It has three. First there is the specialized terminology of economics and technology. Then there is the illiterate jargon of the corporate pitchmen ("Productionwise we have a total approach to incentive type upgrading across the board"). Finally, there is the academic business diction that got into industry when the social scientists did, and has been nurtured by university business school journals, whose faculty editors feel defensively compelled to demonstrate a scholarly apparatus equal to that of their colleagues in traditional academic disciplines.

Of the three we like the last best. Or maybe we just like ikonogenics for the same reason college freshmen like the Areopagitica: it rolls off the tongue with the satisfying dry click of kulchur. And while it is rolling, it makes the point that a good corporate image does not depend on advertising or PR or graphics. It depends on a good corporation with good products and services, and an image of itself that will inspire excellence.

That seems so simple that one wonders why it has to be said in Greek. A look at what industrial corporations are doing in the name of corporate imagery may explain why. It *is* Greek to a good many of them.—*R.C.*



CORPORATE IKONOGENICS is one designer's way of describing an approach to corporate image building that calls for nothing less than the complete control of *all* the images that a corporation presents to the world. The approach is based on a strikingly obvious, but frequently ignored, truth: it takes the same virtues to have an excellent corporate image that it does to be an excellent company.

BY CRAWFORD DUNN

The one objective common to all those corporate activities loosely categorized as *public relations and advertising* is to show a company's products and services favorably. While PR&A activities have obviously answered a need, there is increasing evidence that this "traditional" approach is not always efficient, that its results do not always justify its costs. It is becoming more and more difficult, meanwhile, for a company to make itself heard above the multibillion-dollar din of PR&A. The effect, all too often, is not favorable at all. At best, it passes as camouflage and at worst, its effect is actually *un*favorable.

In an atmosphere of growing disenchantment with the traditional approach, the "corporate image" concept has appeared. This concept, though, has been only dimly understood by management, and for a good reason: it has not yet been clearly articulated by its practitioners.

What are the real defects of the old approach? What is the real difference between it and the new concept? What makes the new better? What does a company that needs a good image do to get one?

The composite image of anything as complex as a business organization exists only in the minds of individual persons who have received, decoded, evaluated, and stored information about that organization. Since the entire process of image creation, what I shall call *ikonogenesis*, occurs only in the minds of individuals, it

Cut courtesy Bettmann Archive

is patently and irretrievably beyond the control of all except those individuals themselves.

The fact that no company has control over the receiving processes of ikonogenesis does not, of course, leave it at the mercy of happenstance. On the contrary, a company can have full control over both the content and form of its own ikonogenic *output*, the image-inducing "information" that it presents to its public, and which, upon presentation, is available as *input* for ikonogenesis. Thus, everything else that occurs in the entire communication sequence — up to the point of ikonogenesis itself — is at least theoretically subject to the control of corporate management.

The ikonogenic matrix or *ikonomatrix* of a company is composed of an *essential* ikonomatrix — its actual products, services, and practices — and a *predicative* ikonomatrix — the information which the company presents about its products, services, and practices. The first is directed toward current profits, the second toward future profits. Understandably, the more valid and authoritative of the two is the essential ikonomatrix; it is from this that the more "faithful" and persistent images of the company are created, through firsthand experience with those products, services, and practices. But unfortunately these essential images have a serious shortcoming; they can be received by only a comparative few, those who come in direct contact with the products, services, and practices: i.e. customers, suppliers, distributors, and employees of the company. Although favorable essential images are the best basis for gaining a favorable reaction to a company, few companies can hope to succeed with only the support of that part of its public which receives essential images. No company *should* survive for long if its essential images are unfavorable.

Most companies, then, must try to create favorable predicative images of their products, services, and practices. It is the predicative ikonomatrix, with its wider public exposure, that allows a company to present itself favorably to prospective customers, suppliers, distributors, and employees as well as its present and prospective stockholders, the government, the banks, the insurance companies, the immediate community and the world. These predicative images can serve not only as substitutes for essential images, but can also reinforce, renew, and reassure favorable essential images and reform unfaverable ones. (The ability of a predicative image to actually reform an essential image is not easy to observe from outside a corporation. Yet, it is well known that, on the personal level, a man's reputation can do much to change his character, and the same holds true for the corporation: like an individual, an entire company can, in time, be absorbed into its own "disguise.")

The corporate-image, or ikonic, concept of presentation control is firmly rooted in the psychological fact that every part of every presentation is intrinsically ikonogenic, that is, intrinsically image-inducing. This concept incorporates the very nature of ikonogenesis: every image is the residual sum of its component inputs, in the same way that a mosaic is the total of its tiles. We are aware, as we look at a mosaic from the proper distance, only of the total composition and not of the individual tiles; this synthetical effect is so strongly illusory that it is usually difficult to see the component tiles as distinct, individual parts. For this reason, it is easy to be deluded into discounting the contributory importance of any single tile. We may need reminding that it is upon this optical synthesis that such inventions as half-tone photo-engraving and television depend.

The first defect of the traditional, or *pre-ikonic*, concept of presentation control is that it is based on the assumption that only the most ikonogenically potent elements of a presentation are significant. This pre-ikonic concept is valid only in situations of extreme simplicity and, in such situations, succeeds through a commendable economy of means. As a basis for the control of complex corporate presentation in an inherently dynamic market context, it is merely naive.

In some strange way, in those companies in which presentation is controlled along pre-ikonic lines, there seems to be an unquestioned belief that only those presentations made deliberately for ikonogenesis are ikonogenic. It seems never to have occurred to management in such companies that to expect any part of a presentation to be ikonogenically neutral is as disingenuous as expecting a jury to be psychologically capable of disregarding evidence which has been presented but subsequently stricken from the record.

As a result of the basic difference between the two concepts, there is a corresponding difference in the *scope* of presentation control under each concept. Under the ikonic concept, deliberate, conscious control is applied to all formal presentations in both the essential and the predicative modes; everything that a company does is monitored for its ikonogenic potential and is corrected as required. Under the pre-ikonic concept, on the other hand, such control is applied almost exclusively to the predicative mode and, significantly, only to the most ikonogenically "strategic" aspects of that.

Under the pre-ikonic concept, for example, the reader of a company brochure is expected to be affected only by the words and pictures in the brochure. The recipient of a letter from the company is expected to add almost nothing to his image of the company; he is assumed to be interested only in the facts set forth in the letter. The reader of an annual report is thought to be absorbing information on the fiscal situation only, as expressed in the words and figures. In all these instances, the communication carrier itself, in the form of the brochure, the letter, the annual report, is not recognized as being ikonogenically potent — in which case it is not con-

trolled at all; or it is considered as only marginally potent—in which case control is marginal.

It may very well be that a major esthetic shift has occurred almost simultaneously in several widely separated disciplines. If true, this does much to explain the emerging need for esthetic control of corporate identity.

Take modern architecture, for example. Convention used to allow any building, public or private, to have at least one partially "unpresentable" elevation — the service entrance, the "back" door. The only buildings not accorded this "privilege" were the really monumental edifices of the rank of a Parthenon, and it was to a great extent the waiving of this privilege that gave such structures their high esthetic rank. The result was a 360-degree "presentability" unknown in lesser, vernacular buildings. Today, no building of any rank has an exposed side that is ignored esthetically.

The same is true of modern furniture. Many of the finest and most elegant period pieces took advantage of the permissability of a blind side, a side forever to be turned to a solid wall. But with the new division of interior spaces, there are fewer opportunities for the designer to "forget" one side, the blind side. And it is becoming still less respectable to do so. Charles Eames, in the design of his elegant "Time-Life" chair, has characteristically established yet another high-water mark: even the usually slighted *underside* of this new chair is unexpectedly handsome.

All this is demonstrably characteristic of the 20th century, and the 20th century corporation can be no exception. It, too, needs total presentability.

Corporate images in the round

The entire pre-ikonic approach to presentation is analogous to that exemplified in proscenium theater (as opposed to arena theater) which assumes that, since the point of view can be controlled, presentation need accommodate perception only from that controlled point. But, unfortunately, audience perception in the corporate situation cannot be controlled adequately with regard to point of view. This analogy is not overdrawn; as a matter of fact, it seems to offer the best explanation for the characteristic "facade" effect of pre-ikonic presentation. A false front, after all, never looks like a false front from the controlled point of view. It is only when it is viewed from an uncontrolled point that its falsity can be discerned. Actually, the world of theatrical presentation suggests other analogies with regard to corporate presentation. For example, the entire traditional, Thespian approach to "play-acting" calls to mind the pre-ikonic approach to public relations and advertising, while the newer, total, approach of the Stanislavsky method of role-taking has much in common with the concept of total corporate identity. One thing, though, the theater does *not* share with corporate ikonogenics: the willingness of the audience to suspend its disbelief. No corporation can ask its "audience," as Shakespeare did, to "piece out our imperfections with your thoughts."

The very practitioners of pre-ikonic presentation control betray a deep skepticism concerning the real efficacy of corporate communication. True, they go through the motions of presentations, but their half-heartedness is self-eloquent. Such lack of conviction shows up in unexpected, even surprising, places: the "presentation room" that is itself unpresentable; the dolled-up executive suite whose main access takes the visitor past lesser offices with an all-too-visible "scuff-shoe" look; the outdated appearance of the literature of a company which is trying in other ways to seem progressive and modern.

When the first general awareness of the power of a good corporate image began to spread through the world of business, one could detect that the "image" was entertained as a thing apart and not—as it really is—inseparable from the *essence* of a company. *Time*, in an advertisement in its own behalf in its issue of June 9, 1958, *seemed* to be talking about corporate identity, but was only talking about institutional advertising:

> A (good) corporate image tends to make the busiest of men find time to see you when you call; . . . can open minds as well as doors, hold decisions until your story is heard; . . . creates confidence in any product that bears your company's name; . . . helps assure you of acceptance for a new product in advance; . . . gives your company an edge in attracting good talent; . . . helps keep the people at your company feeling it's a good place to work; . . . helps attract capital to your company at favorable terms; . . . causes a stockholder to seek out your stock and select it over another; . . . gives your company an edge with dependable sources of supply . . . helps you secure efficient, profitable distribution; . . . can be the difference between a lawmaker's "yes" and "no"; . . . helps a community understand a company, accept it as a good neighbor.
>
> (*By permission of Time, Inc.; copyright Time, Inc.* 1958.)

The dark at the top of the corporation

Typically pre-ikonic control is established on the basis of corporate rank rather than of ikonogenic skill. Under such a management-as-authority arrangement, the quality of control tends to be strictly limited to management's understanding of the subtleties of ikonogenic processes. At times, even the merest personal whims of management members (however unrelated to the desired ikonomatrix) are catered to at every hand. Rank, per se, constitutes the highest qualification for the judging of all matters pertaining to corporate communication. When management orientation itself is defective—as is the case all too often—the efficacy of presentation is seriously impaired. The narcissism of such managements is betrayed by their steadfast refusal to give any real rank or real authority to those who administer their PR&A "programs."

Since these companies have, to varying degrees, engaged in ikonomatrix control only perfunctorily, it should not be surprising that the results are superficial. So perfunctorily, in fact, have such companies exercised control that this control usually is applied solely to the predicative ikonomatrix, information *about* their products, services, and practices. The essential ikonomatrix, the more authoritative source of images, is not considered legitimately subject to control from an ikonogenic viewpoint at all. For this reason, management frequently identifies a product weakness only with the product itself and not with other products of the company or, indeed, with the company proper.

Keeping the noise down

Meanwhile, uncontrolled elements of corporate presentations continue to emit ikonogenic noise.

Noise, in the standard terminology of information theory, is any element that is not part of the original message. The chatter of two old ladies behind you at the theater constitutes noise in the playwright's message. The cat-calls of a heckler at a political rally constitute noise in the politician's message. The word *noise* has an equivalent connotation in electronics engineering: interference caused by undesirable random voltages. In the television image, we may see noise as "snow"; in the radio loudspeaker, we may hear noise as a hissing sound.

It is worth noting that the effect of noise in ordinary communication is only one of impeding the communication; it never imposes additional or "false" data to change the message. In an ikonogenics context, however, noise actually transmits additional and always contradictory data. This is what happens when little Johnny, seeking to obtain official sanction for a day of hooky from school, takes it upon himself to forge a note of excuse, allegedly from his mother. In spite of the fact that the content of the note is adequately deceptive, he cannot quite bring off the plot; he is incapable of controlling the collateral elements of spelling, punctuation, grammar, and—perhaps most ikonogenic of all—penmanship. He is caught redhanded because of his noise, of which he was unaware. He never had a chance.

In an issue of *Fortune* not too long ago, there appeared an ikonogenically flattering article about the aggressive young head of a brand new combine of technological companies that was just beginning to build a nationwide image. In the very same issue of that magazine, there also appeared a full-page advertisement formally announcing the formation of that new corporation. The ad, instead of inducing an image of the kind that would have been appropriate to the enterprise, was ikonogenically devastating. Here was little Johnny, all over again, getting caught for a corporate kind of bad penmanship. This is the kind of collateral noise that results within the ikonomatrix when it is controlled subjectively. In a subjective environment, there is likely to be a preoccupation with content (not unlike Johnny's singlemindedness about the note) and an innocence concerning form (not unlike his ignorance about penmanship). Subjectivity was Johnny's trouble, too.

The most serious consequence of controlling the corporate ikonomatrix only partially is that noise inevitably results in the uncontrolled areas. Control is the only means of eliminating noise. Noise is always ikonogenic and always ikonogenically contradictory.

(However, "contradictory" does not absolutely mean "negative." We have all at times encountered occasional positive noise in messages that are usually negative. But we can't depend on such accidents.)

Companies that strive for only partial control are, as time goes on, likely to have less and less identity between the essential and predicative ikonomatrices. The disparity between the two image sources is itself a source of more noise. Such a company is not only talking mostly to itself, but out of both sides of its mouth.

One powerful source of noise is intracorporate multiplicity, the usual result of political anarchy within the company; this can be at its worst if the company has autonomous divisions whose managements have the authority to direct all divisional presentation. Even if one or more of those divisions are aware of public relations, and manage presentations that are ikonogenically positive and ikonogenically related to *divisional* objectives, the over-all *corporate* effect can suffer drastically if such multiplicity is not resolved.

Some time ago one of the several divisions of a large corporation moved into a new plant of its own a few miles away from the headquarters complex. The parent corporation had commissioned an internationally known graphic designer to create a new corporate logotype, applicable to all divisions and superseding its old logo (which had been improvised in a hurry a few years before by the advertising agency). Management of this division apparently had decided that it really preferred the old logo; a large "temporary" signboard was erected in front of the new plant on which the *old* logotype was displayed in large letters. Multiplicity was compounded by insubordination: the "temporary" sign—now two years older—is still there. As if this were not enough, a second division, in setting up separate offices in the same city, had its own logotype — completely unrelated to that of the corporation — designed and incorporated in thousands of dollars worth of letterheads, other business papers, and brochures. These instances of diffusing (and confusing) the corporate image constitute a patent willful mutiny against the corporation and, as such, are completely insupportable.

The most serious ikonogenic deficiency of pre-ikonic presentation is that it is characterized by a low *signal-noise ratio*. The strength of the ikonogenically positive "signal" is not high enough above that of the ikonogeni-

cally negative noise. Whenever the noise level rises to a certain percentage of the level of the signal (the "information" of a presentation) the positive ikonogenic potential is materially impaired. This is why it is almost impossible for a company making use of pre-ikonic presentation control to be heard and understood with clarity, with consistency, and with favor.

Some companies have even attempted "corporate-image" programs on a pre-ikonic, management-as-authority basis. The results invariably have been not only superficial but synthetic. Such programs were applied only to the predicative ikonomatrix, communication *about* products, services and practices. Even in those cases where the predicative ikonomatrix was completely redesigned to exclude all the various kinds of noise, the essential ikonomatrix has continued to emit negative signals. (Since images are created in the minds of individuals by a sort of "totalizing" process in which complex multiple-scale values are likely to be reduced mentally to a single grand total, it is even possible for a company to do itself more harm than good by redesigning its communication while ignoring its "facts.")

The ikonic, or "corporate image," concept is a product of the mid-20th century. While it had occasionally been practiced on an almost completely intuitive basis before this time, it has been only recently that attempts have been made to rationalize its process. Ironically, the designer's abilities and insights have been least welcome where they have been most needed; his talents, when used, have been used on subordinate, piecemeal terms. It is doubly ironic that the designer has had to wait for the ratification, the corroboration, of his intuition by the new fields of semantics, phychology, and cybernetics before that intuition was "safe" for business.

Visual versus verbal

The ikonic program, although it may infrequently be involved with some presentation in the other sensory modes, is primarily a program for *visual* presentation. The sense of sight in human beings is the most highly developed of the senses, and is properly assigned the burden of ikonogenic presentation. But it is a characteristic of pre-ikonic presentation to emphasize verbal visual messages at the expense of the non-verbal, this in spite of evidence that communication in the verbal codes is infinitely more easily rejected by the receiver. Aside from the fact that it takes more time and effort to translate, that is, to read, a verbally encoded presentation, it can be subjected to considerably more critical evaluation than can the non-verbal. In our culture at this time, probably as a direct result of a kind of verbal "inflation" that has led to a devaluation of words, the audience seems to reject the majority of verbally encoded presentations. This gives all the more indication for resorting to the use of the non-verbal codes. (Inflation of a sort also occurs in visual *non-verbal* codes, particularly in the more abstract symbols such as those used in trademarks. In the past few years, a handful of excellent corporate symbols has been created for various companies in which an arrow shape is an important design element. Recently, some graphic designers have begun to devaluate those few really good marks by incorporating highly similar arrow shapes in more new symbols. Perhaps it would be a good idea to put these "arrowsmiths" on notice that nominations for this cliché are now closed. The same can be said for those designers who are utterly preoccupied with variations of global spheres as the only means of endorsing internationality and the space age. As for those designers who are still turning out symbols with orbiting electrons, they are beneath contempt.)

Actually, even pre-ikonic systems of corporate presentation have been known on occasion to use non-verbal codes, unfortunately on a less than fully conscious basis, for the conveying of certain messages for which verbal codes would be quite inappropriate. One of the more obvious instances is the design of formal business invitations on a model of social formalism. Although adequate informational communication would be served by a simple typewritten or handwritten verbal message in plain grammar on ordinary paper, such invitations are often couched in highly formal language set in an elegant script face on fine paper and reproduced by the extravagant means of engraving. Thus the non-verbal, almost subliminal, portions of the presentation convey concepts about the company which it would be unthinkable to convey verbally: "We are established; we are legitimate; we have good taste; we know what we are doing; we know how to do things well; we are completely acceptable; we belong."

Yet, few outside the field of esthetics readily appreciate how ikonogenically capable are the non-verbal codes. Just how capable they are is emphasized by a "corporate-look" checklist compiled by one firm of industrial designers which includes *eight categories of* visual materials totalling 57 kinds of items that do not depend ikonogenically upon verbal cognition except for identification. The compilation, accomplished by the New York industrial design firm of Lippincott & Margulies, includes the following.

Packaging: Labels, stickers, tags, display units, cartons, boxes and crates, sample packages, others. *Advertising*: Newspapers (recruitment), magazines (consumer), magazines (trade and business), television (promotion), booklets and brochures, catalogs, posters, merchandising aids, research reports, giveaways and gimmicks, others. *Signage*: Office entrance, plant entrance, showrooms, warehouses, doors (internal), plant identifying (external), others. *Institutional Literature*: Annual reports, legal documents, house organs, employee booklets, notices and bulletins, others. *Stationery and Forms*: Executive office letterheads and envelopes, divisional letterheads and envelopes, branch office letterheads and envelopes, order forms, distributor letterheads and en-

velopes, calling cards, others. *Building and Equipment (Stationary)*: plants (external appearance), offices (external appearance), office decor and furnishings, showroom decor and furnishings, machinery and production equipment, others. *Transportation Equipment*: Trucks (over-the-road vans), trucks (local service), company aircraft, company cars, materials-handling equipment, others. *General Company Identification*: Trademarks, tradenames, logotypes, slogans, special product names, company colors, official type styles, others.

A program whose prime objective is the total favorable individuation of a company is an ambitious one; it constitutes a form of treason against nature itself, for it is palpably most unnatural to aspire to the creation of ikonic order in the face of corporate chaos. The very existence of so many "look-alike" companies is strongly conclusive evidence that ikonic chaos is, if anything, natural. Any ikonic program, then, needs all the help it can get: unconditional support by top management.

The importance of authority

It would be unreasonable to expect such support unless those top executives first understood the tangible objectives and appreciated the inevitable hindrances to the attainment of these objectives. Clearly, there is a need for the "education" of top management concerning the nature of the program, its value, and its requisites.

Because of the multiplicity of sources of ikonogenic presentation within the company, management must, at the outset, establish a *central authority* for the program. Access to the processes of presentation must be limited to that central authority for, no matter how completely the program is administered, its positive effect can be quickly cancelled by "unofficial" noise from any quarter because, from outside the company, *all* presentation is taken as officially representative of the organization and is accordingly processed into an image of the company.

The unenfranchised sources of noise within the company are not to be underestimated. There is apparently a deeper need in most persons for creative self-expression than is ordinarily recognized. Such needs of those within the company may be accommodated in other ways and self-expression harnessed in other projects or, indeed, channeled as raw input for the ikonic program, subject to screening by the central authority. There is, though, no "speaking part" for the usual cast of corporate anarchists, the do-it-yourself esthetes, the mediocrity-oriented bureaucrats, the inveterate expediters, the host of assorted sidewalk superintendents. In short, the program must be armed with a means of effectively *quarantining* the corporate kibitzers, however well meaning they may be.

This is particularly difficult to accomplish in those companies in which there is a technological elite, endowed summarily with all the privileges of the first-born, including the privilege of inordinately influencing the form of corporate presentation. *As with the game of chess, it is axiomatic that anyone who knows enough about ikonogenics to know how to kibitz knows enough to know that there must be no kibitzing.*

Particular attention also must be given to ensuring political immunity from the sales department. Many a corporation today can think its sales executives for a tasteless, graceless predicative image because its PR&A people are cowed and out-ranked by them.

Management, then, taking into account that the creation of ikonogenic order is and always will be a delicate operation, must first erect political barriers within the company to keep the unskilled out of the program "compound," regardless of rank. The next requisite of the program is the appointment of a competent program director. Since the program is, as has been indicated, predominantly concerned with visual presentation, it is important that it be placed under the direction of an executive not only managerially qualified but also oriented professionally in esthetics. It is, after all, esthetics that will take the lead in giving form to the ikonomatrix and, consequently, that will impinge authoritatively upon all aspects of the program.

The aptitudes and drives that make a man competent in esthetics (i.e., ikonogenics) are usually antithetical to those that make a man a manager. Conversely, there is good evidence that the very ones that motivate a captain of industry — particularly on his way up — actually tend to subvert or cancel any esthetic impulses he might have. For these reasons, we cannot delegate the average member of management to exercise central esthetic discipline over a corporate identity program any more than we can assign the average chief engineer the administration of the legal affairs of the corporation.

In this context, it is all too obvious that the person directly responsible for the execution of the program cannot be pre-ikonic in orientation; the stereotyped PR&A director is clearly not qualified. If, for political reasons, management is opposed to replacing the current PR&A director and he is indeed not qualified esthetically for the ikonic program, then the minimum alternative is to appoint a "visual coordinator" subordinate to the director in all matters except those of esthetics. This is a cardinal point: the old pre-ikonic kind of "program" could be administered without such talent because of its relative dependence upon verbal content and its relative independence of non-verbal form; the ikonic program cannot be. Indeed, the very dependence upon verbal means in the pre-ikonic program has been the factor that has almost always dictated the choice of a verbally-oriented journalism-trained PR&A director.

(It has been argued persuasively and almost unanimously by many of the best qualified professionals in the field of ikonogenic presentation that the most inspired single tactic for the program is to place all esthetic direction in the hands of a capable independent consultant, on the grounds that no one inside the corpo-

ration is politically pure enough or politically safe enough to do what must be done.)

Specifically, the task of esthetics in the ikonic program is that of *encoding* all formal corporate "messages." Closely integrated with the process of non-verbal encoding is that of verbal encoding to ensure a stringent verbal economy in order to bypass as much as possible the already overcrowded verbal lanes in favor of the relatively traffic-less non-verbal ones. (The traditional approach to the *channeling* of the various elements of the corporate message, that is, the shunting of the various elements to various media in accordance with the appropriateness and capability of those media, remains largely unchanged in the ikonic program. The bulk of the task of channeling goes to the media experts of the advertising agencies themselves. However, since the majority of media employed by such agencies is strictly graphic—and therefore predominantly verbal—additional media can be brought into play to convey those corporate messages unsuited to graphic presentation. For example, as has been suggested, architecture, interior design, and industrial design constitute excellent channels, being well suited to the presentation of non-verbal, nongraphic elements of the ikonomatrix. These channels are hardly used to advantage under the pre-ikonic concept.)

It is precisely the requirement for a high-quality international esthetic in the ikonomatrix that dictates excellence in the techniques of presentation. Yet a whole tradition of mediocrity has pervaded American commerce and become a habit, engrained, honored, nourished. Under ordinary conditions, decisions as to how much and what kind of excellence is required in the creation of a particular product, the performance of a certain service, or the adoption of a specific practice can be made with great precision. Indeed, the success of many an enterprise is attributable in a very real way to the accuracy of such decisions on the part of management. In these matters, management has shown itself to possess considerable expertise. In the case of the ikonic program, however, an unenlightened management can unwittingly do much damage to presentation quality by an insistence on a pinch-penny economy. This is another reason for the proper orientation of management at the outset of the program.

All that glitters is not goal

Of course the initiation of an identity program must await a definition by management of what its identity is to be, and of what the present identity is. It goes without saying that any contradiction, equivocation, or ambiguity in the definition of corporate objectives by management must be resolved before adoption.

The entire PR&A structure is, with a few maverick exceptions, pre-ikonic. The time for change may be overripe. The PR&A structure, fortunately, could respond with little delay upon a clear mandate from corporate management-clientele. However, PR&A might do better than wait for motivation to come from the client: unless it makes it its business to move in the direction of ikonic concepts, it may find that many of its former prerogatives and its previous tasks have been quietly usurped by others.

(There is a strong current against esthetics these days in PR&A, a current encouraged by the recent publication of the book *Reality in Advertising* by Rosser Reeves. Mr. Reeves clears up a lot of genuine nonsense that has pervaded the business of product advertising in mass media for a long time. His own statistics seem to prove that his kind of product advertising outsells any other, and he attacks any attempt at esthetics with a vigorous, heartfelt hostility. Now, no one can deny that there has been an awful lot of ineffectual foolishness in advertising committed in the name of esthetics. But this does not make for a case against esthetics, per se: the typography, binding and jacket of Reeves' book were all handsomely designed by that highly competent esthetician, Herbert Bayer.)

There are right now probably only a few companies whose top executives will insist on the real thing. Of these few, fewer still will be able to muster the necessary conviction to install the necessary discipline to manage the necessary excellence, and for a formidably simple reason: *it takes the same virtues to have an excellent corporate image as it does to be an excellent company.* Only to these few — a select circle indeed — will the full assets of totally ordered, totally controlled corporate presentation accrue. Right now, this circle is beginning to widen. No longer must the list start and stop with Olivetti and IBM. Now there are those like Connecticut General and International Minerals & Chemical Corporation which have already gone through a truly remarkable metamorphosis within a relatively short time. There are, too, quite a few companies that have initiated broad corporate identity programs, the effects of which it is too early to see, much less to judge. And among the 500 biggest U. S. industrials there are those with a contagious internal enlightment: Kimberly-Clark; Container Corporation of America; General Dynamics Corporation; Underwood (through a transfusion from Olivetti); Aluminum Company of America; Olin-Mathieson Chemical and Abbott Laboratories. Outside this circle, there are those organizations with an excellent essential image, but whose predicative image is stodgy, or regionalistic, or unimaginative, or undramatic, or just plain neglected. International Harvester? DuPont? Texas Instruments? Next would come those firms whose predicative image has already come in for a handsome reworking, but whose essential image could stand enormous improvement. It would be hard not to place the name of Westinghouse at the top of this roll of schizo-

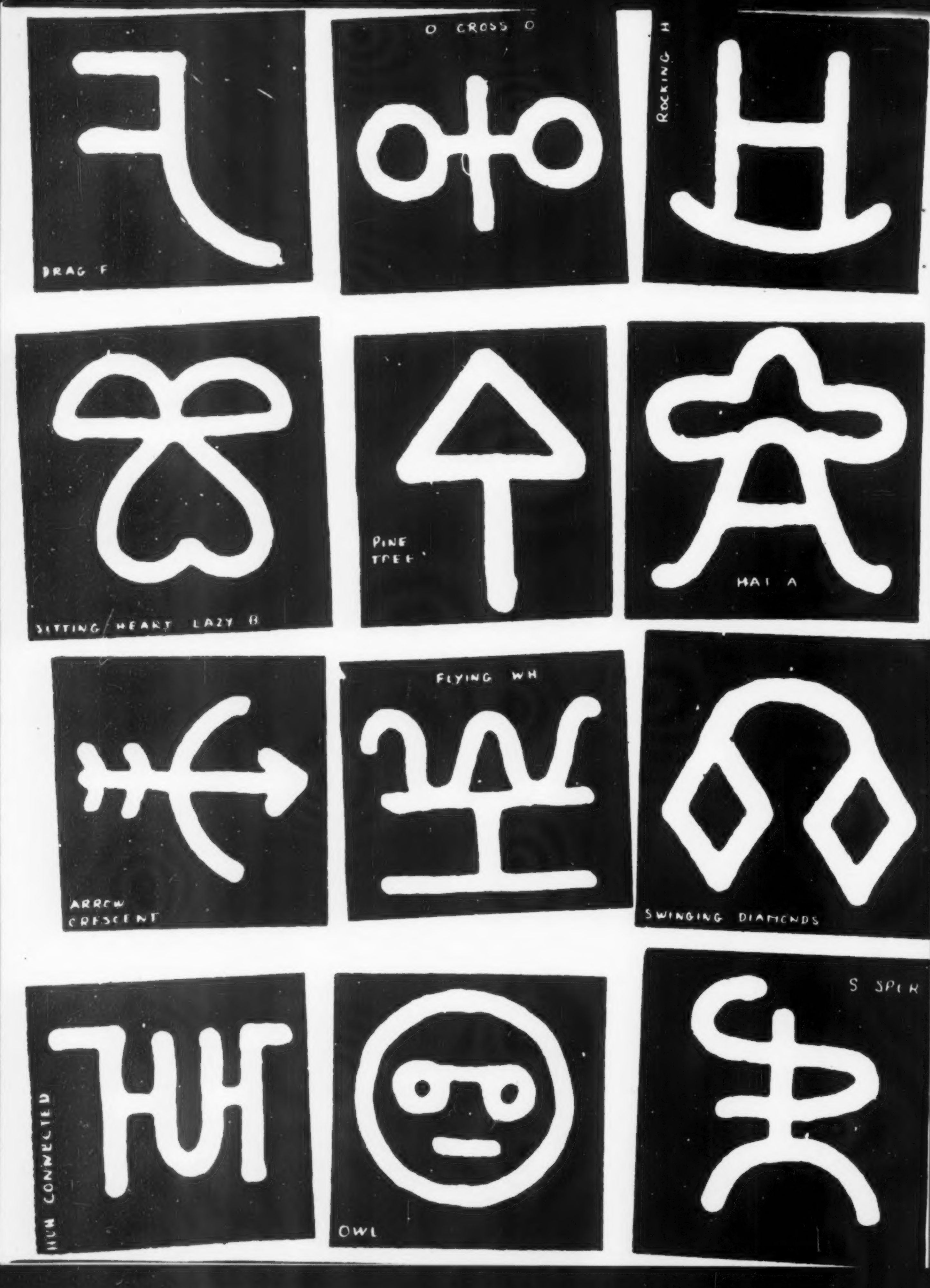
phrenics. Farthest outside the circle there are those companies that still have a long way to go with both images. Take General Motors: look at such parts of the essential ikonomatrix as a Cadillac, and such parts of the predicative ikonomatrix as a full-page, full-color magazine ad for Cadillac. It would be difficult to know where to start rehabilitation, but one suspects that it might be a good idea to begin by turning inside out the dictum attributed to the late Charles Wilson, making it. "What's good for the country . . ."

Perhaps the greatest asset of total presentation control is one that could be considered as gratuitous. Because of the real sophistication required on the part of management to perceive the benefits of such control, only a relatively small number of companies will inaugurate such programs. As with many another strategy, when only a few of the total number of competitors in any field engage in the strategy of total ikonogenics, the corporate identity resulting from such a program can be expected to be all the more favorable and all the more individuating.

These few companies will, in time, become aware that something else has happened somewhere along the way: participation in a total ikonic program will have, because of its breadth and depth of involvement, wrought upon the "company" itself a deep and massive therapy. The "company" can then for the first time see its own objectives clearly; it can express itself meaningfully; it has gained insight; it has attained a new wholesomeness; it has health.

For lack of argument on other scores, the skeptics have chosen to attack ikonogenics on grounds of morality. They have depicted ikonogenics as a dark, manipulative art, not unlike alchemy. Actually, the factor least subject to suspicion about ikonogenics is its demonstrably superior ethics. As a matter of fact, an ikonic program can be expected to have a singularly moralizing effect on a company. The management of the highly ikonogenic Olivetti organization has for decades been keenly aware of the need for "introducing into man's life the norm of beauty, because moral life can develop only under esthetic conditions." The undeniable correlation between the esthetics and the ethics of ikonogenics, between its "beauty" and its "truth," is all the more profound when the ikonic concept is contrasted to the traditional PR&A concept.

The late Walter Paepcke of Container Corporation of America, himself a well-known carrier of viruses back and forth between art and business, once — in parrying a thrust by one of the top CCA executives — spoke with succinctness and finality on this subject. The executive had asked, "Walter, do you really think that 'good design' helps sell more products?" Paepcke did not hesitate. "Hell," he snapped, "I don't know. But, then again, I don't know that getting the customer drunk does, either!"


DRAG F
O CROSS O
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HUH CONNECTED
OWL
S SPUR

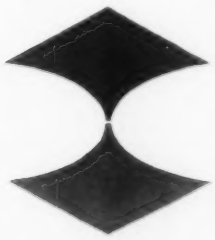
WHAT'S IN A MARK? The powers claimed for the corporate mark sometimes rival those claimed for the Holy Grail and Frank Sinatra's Clan. A design teacher questions the validity of elementary abstract forms — technically necessary for the cattle brands shown at left — as a distinguishing symbol for the great variety of industrial corporations now using them. BY HENRY RALEIGH

The corporate mark is a symbol of a symbol. It stands for the corporate image, which is itself symbolic in the corporate identity system. Its importance to American industry is presumably monumental, and few of man's inscriptions have been charged with such staggering responsibility as has the corporate mark. But unfortunately the scope of corporate communication has been condensed into a limited range of flat, elementary forms, conceived under the contemporary hypothesis that virtually nothing is visually apprehended unless it has been reduced to a deadening simplicity.

The potency claimed for marks is tremendous. Take for example (Fig. 2) the recently revised corporate mark for Johnson's Wax. The design firm of Lippincott & Margulies has imbued it with the following symbolic meanings *(Design Sense* #13): it is reminiscent of both reflective and protective qualities; the free form shape flows together, inducing the emotions of "power and movement"; the shape has something to do with floor tiles. The second example (Fig. 3) is even more revealing. Described in the October, 1958 issue of INDUSTRIAL DESIGN ("The New Image of United States Steel") the problem here was to create a new image concept. Exploiting the resources of Politz Research, Inc., a design team produced a sharper trademark and an abstract symbol which emanated a feeling of a "light, stylish, fashionable material." (Interestingly enough, this latter sign, called the "steel-mark," was unregistered and other companies used it, with U.S. Steel's blessing and encouragement. The built-in associations to U.S. Steel seemed not to be too irresistible for unimaginative competitors to borrow it.) Equally un-

Figure 1, at left, shows cattle brand marks, direct and uncomplicated, but monotonous. Figure 2 is the corporate mark for Johnson Wax Company, and Figure 3 is the "steel mark." They are intended to communicate vastly disparate messages.

2



3

imaginative were the Arapaho Indians, who employed the same hypocycloid as a pictograph for a star. Other Southwest Indian tribes have, with variations, used the form to signify the interior of a teepee or in a supine position it has stood for a navel. Probably none of these archaic meanings are of much value to U.S. Steel; they are "extras."

What is most remarkable is that while the two signs (Johnson's Wax and U.S. Steel) are believed to communicate such disparate information, they remain so strikingly similar. At least to the casual observer not familiar with the *raison d'etre* of these respective images, there is little major distinction between the forms. There is, however, an accompanying device which obviously enough sets the primary symbolic reference. In each case it is the name of the company and, as is true of most semantic responses, they depend on a meaningful, associative history. Should nonsense names be substituted ("Blip Blap Glun" for instance) both marks and words become entirely meaningless and it would be decidedly difficult to claim that these marks communicate anything at all.

The observer of corporate marks may develop a growing suspicion that the symbolic content of the visual sign is limited to an association with a previously known, and thus familiar, content. Further, he may reason, and perhaps justly, that the mark serves only to identify and *distinguish* one known content (or company) from another. If this is true, almost any sign will do the job properly. Army division patches have traditionally and effectively served this function. Without teams of research experts, poll-takers, and designers, clearly identifiable signs have been devised to visually separate one military unit from another. Identification is strongest where some representational element is present, as in the Second Infantry Division (Fig. 4, "Indian Head"), First Cavalry Division (Fig. 5), or the Twenty-fifth Infantry Division (Fig. 6, "Tropic Lightning"). The sign-making process in the fashioning of cattle brands is also direct and uncomplicated, although their design suffers the disadvantage inherent in the medium—they must be formed from single metal bars, and no color is possible. Since pictographs are not convenient, the strength of verbal signals are used instead — either in monograms or combinations of monogram and simple pictographic techniques (Fig. 1). Abstract signs are no more reasonable in these examples than they are in any other identification system that is not immediately dependent upon written words. Yet here it is the limitation of the medium that impose a monotonous sameness on the visual qualities. The possible variations of forms are restricted to the rigid abstractions of flat space, or the inflexibility of primary color and linear conception.

In the past, two-dimensional artists have realized that an infinite range of forms and meanings is pos-

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Figure 4 (Second Infantry), Figure 5 (First Cavalry) and Figure 6 (Twenty-fifth Infantry), represent signs that clearly distinguish military units from each other, without benefit of poll-takers or other market scientists.

7

8

Figures 7 and 8 are two signs that have survived simply because the companies have survived.

sible only within the illusions of space. It seems curious that modern designers are singularly unaware of this fundamental. A number of years ago the less pretentious makers of corporate marks created, without devious intellection, straightforward forms in depth. Many of these signs, their forms no longer fashionable, still survive simply because the companies survived. The visual distinction between the corporate marks of the Prudential Insurance Company and Victor Records (Figs. 7 and 8) is enormous. There can be little question that these marks satisfy the requisites of memorability without the primary support of verbal signs. Some few of the older signs have suffered "up-dating" —in every case drawing the sign closer to the disenchantment and relative anonymity of flat, abstract decoration, sacrificing a bit more of the real function of the corporate mark: *to identify.*

Without question, contemporary design sensitivity to typography and lettering has improved visual taste in logos and initials. Designers, though, seem to prefer the mysteries of the abstract sign, failing to consciously recognize the far greater effectiveness of the written word over the non-verbal sign, or erroneously believing that the sign will assume verbal qualities more penetrating and enduring than words themselves. Psychological studies in memory have emphasized the significance of verbal learning, and though wide modes of variation occur within the meaning of words, a meaningful word can be recognized under conditions where an equal but less meaningful sign is barely seen. From at least one psychological test (Gibson—Retroactive Inhibition) may be inferred the relative weakness of the abstract sign as a direct stimulus form. Even without laboratory testing, this is familiar in common sense experience: almost any former student of a college biology course, who finds no difficulty distinguishing between male and female in word and fact, has confused the abstract Greek symbols for the two sexes. Also familiar is the experience of recognizing with ease a visual sign, such as a corporate mark, without knowing what in the world it refers to.

Logically, it would appear that the corporate mark is only as good as the universality of the verbal exposures that have preceded it and accompany it. The functions currently ascribed to the mark are fictitious and damaging to the extent that acceptance of the myth leads to a neglect of the simple, pre-requisite role of "identifier." It should be foreseen that the limited variations of flat, geometric shapes and the comparatively poorer visual acuity regarding these forms, if multiplied by designers, must inevitably result in an extremely homogeneous-looking corporate world. If only a dozen or so corporations existed, such corporate marks might prove adequate to the task. But in that case the corporate mark, as well as its designer, would be unnecessary.

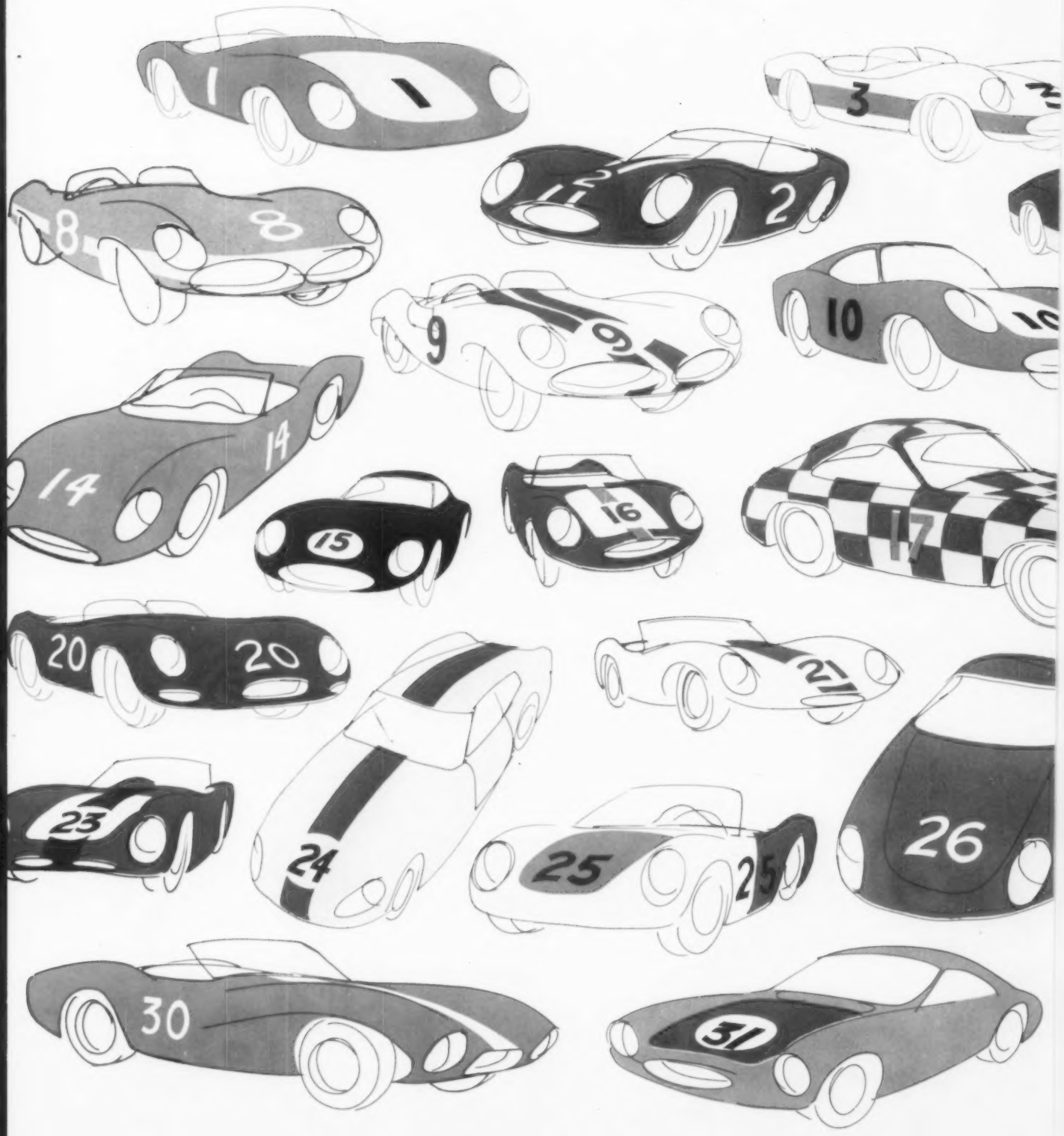
1. *Spain — red with yellow hood, black number*
2. *Canada — green with white stripes, white number*
3. *Monaco — white with red band, black number*
4. *Austria — blue with yellow band, silver hood, white number*
5. *Argentina — blue with yellow hood, black stripes, red number on white ground*
6. *Egypt — mauve with red number on white ground*
7. *Roumania — blue with red hood, yellow number*
8. *Thailand — light blue with yellow band, white number*
9. *U. S. — white with blue stripes, blue number*
10. *Switzerland — red with white hood, black number*
11. *Latvia—black with white hood, black number*
12. *Bulgaria — green with white hood, red number*
13. *Belgium — yellow with black number*
14. *Netherlands — orange with white number*
15. *Finland — black with blue number on white ground*
16. *Czechoslovakia — blue with white hood, red stripe, blue number*
17. *Lithuania — green and yellow checkerboard, red number*
18. *Mexico — gold with white number on black ground*
19. *Chile — red with blue hood, white stripe, red number on white ground*
20. *England — green with white number*
21. *Venezuela — white with green stripe, green number*
22. *Italy — red with white number*
23. *Estonia — blue with white hood, black stripe, black number*
24. *Brazil — pale yellow with green stripe, black number*
25. *Hungary — green and white with red hood, black number*
26. *France — blue with white number*
27. *Cuba — yellow with black hood, white number*
28. *Luxemburg — pearl gray with white number on red ground*
29. *Germany — white or silver with red number*
30. *Portugal — red with white stripe, white number*
31. *South Africa — buff-gold with green hood, black number on white ground*
32. *Poland — white with red stripe, red number*
33. *Irish Republic — green with orange stripe, white number*
34. *Sweden — blue with yellow hood, blue stripes, white number*

THE COLOR OF RACING is arbitrary at Saratoga Springs or Hialeah, but at Le Mans the flamboyance is assigned according to nationality. Here are the 34 combinations of international automobile colors in use today, shown on a variety of nonexistent cars, and backed by a set of automotive Cards of Identity.

BY DANIEL LIST drawings by Robert Cumberford

The drawings at right and the captions above add up to a complete compendium of all the colors and designs assigned to nations who have competed in international racing. The colors are not arbitrary or individually picked; each represents exactly the nationality of the vehicle's manufacture, or in certain rare cases, the national origin of the driver. For example, the Porsche car, being German (illustration 29) is ordinarily silver or white, but with an Italian owner, it might turn up on the track wearing Italy's racing red (illustration 22).

The colors were originally assigned to the various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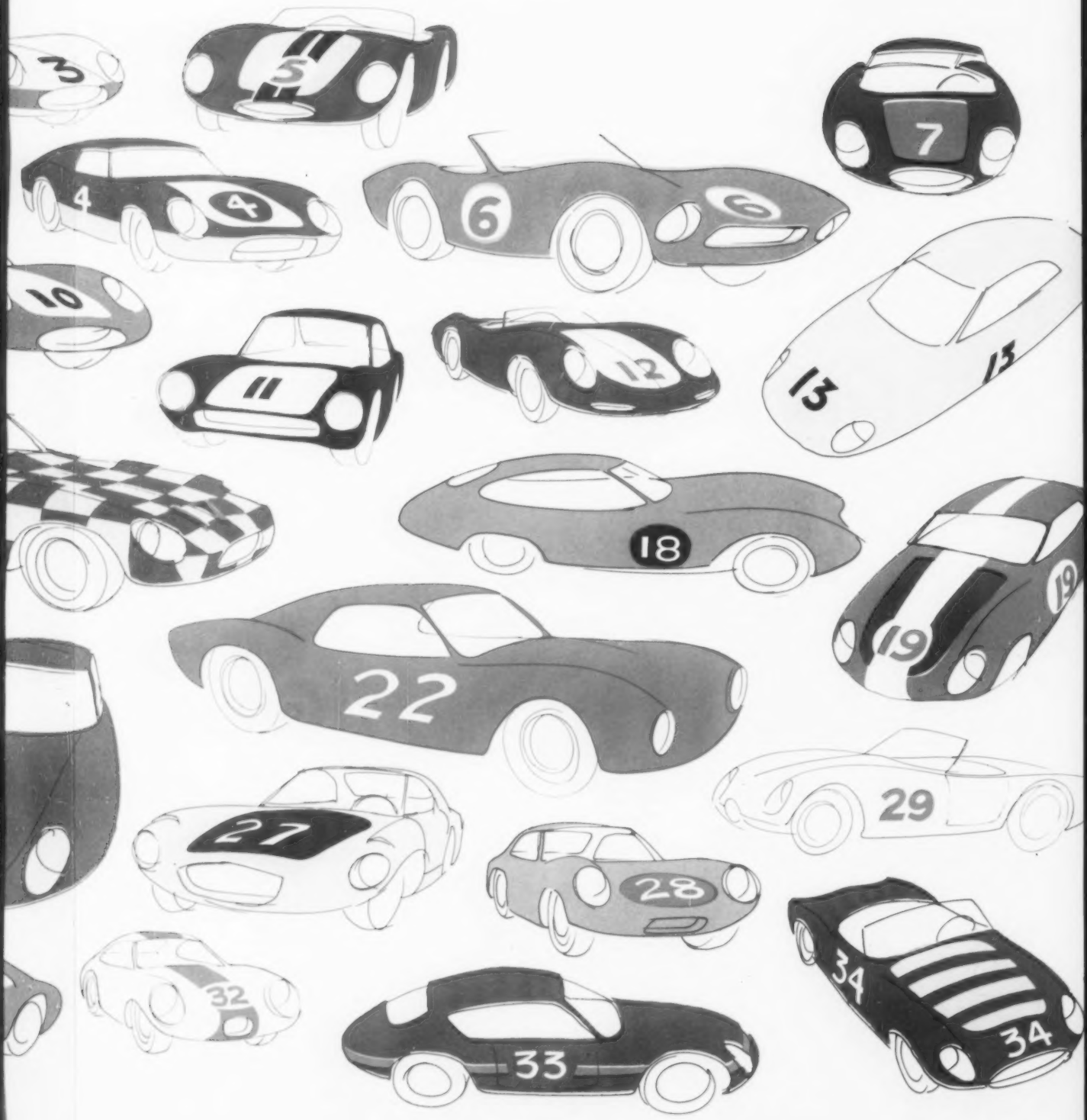
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Aden

Albania

Alderney

Algeria

Andorra

Angola

Argentina

Australia

Austria

Bahamas

Bahrain

Barbados

Basutoland

Bechuanaland

Belgium

Brazil

British Guiana

British Honduras

Brunei

Bulgaria

Burma

Cambodia

Cameroons, British

Cameroons, French

Canada

Ceylon

Chile

China, National Republic of

Colombia

Costa Rica

Cuba

Cyprus

Czechoslovakia

Denmark

Dominican Republic

Ecuador

Egypt, U.A.R.

Finland

France

French West Africa

Gambia

Germany, Federal Republic of

Ghana

Gibraltar

Great Britain and Northern Ireland

Greece

Guatemala

Guernsey

Haiti

Hong Kong

Hungary

Iceland

India

Indonesia

Iran

Iraq

Ireland (Eire)

Isle of Man

Israel

Italy

Jamaica

Jersey

Jordan

Kenya

Kuwait

Laos

Lebanon

ychtenstein

Luxembourg

adagascar

Malaya, Federation of

Malta

Mauritius

Mexico

Monaco

Morocco

Mozambique

Netherlands

Netherlands Antilles

Netherlands New Guinea

Newfoundland

New Zealand

Nicaragua

Nigeria

North Borneo, British

Northern Rhodesia

Norway

Nyasaland

Pakistan

Panama

Paraguay

Peru

Philippines

Poland

Portugal

Romania

Ruanda-Urundi

San Marino

Sarawak

Seychelles

Sierra Leone

Singapore

Somalia

Southern Rhodesia

Southwest Africa

Spain

Surinam

Swaziland

Sweden

Switzerland

Syria, U.A.R.

Tanganyika

Thailand

Tobago

Togo

Trinidad

Tunisia

Turkey

Uganda

Union of South Africa

United States

U. S. S. R.

Uruguay

Vatican City

Venezuela

Viet-Nam, Republic of

Windward Islands Dominica

Grenada

St. Lucia

St. Vincent

Yugoslavia

Zanzibar

countries in the early days of competitive racing by the Code Sportif Internationale, a division of the Federation Internationale del'Automobile. Most cars at that time were painted a distinctive single color, perhaps two, with a differently tinted chassis. Nowadays, since the modern chassis is rarely visible to the eye, the erstwhile chassis colors usually take the form of additional stripes superimposed on the body. For racing officials and spectators, the convenience of different body colors with their contrasting numbers and backgrounds is obvious in an era when racing cars exceed speeds of 150 miles per hour.

The curiously colored badges at left, which appear in black and white in real life, are an outgrowth of a convention of the Federation Internationale de l'Automobile held prior to World War I (in 1909) in Switzerland to iron out the problem of identification of automobiles touring outside their countries of origin.

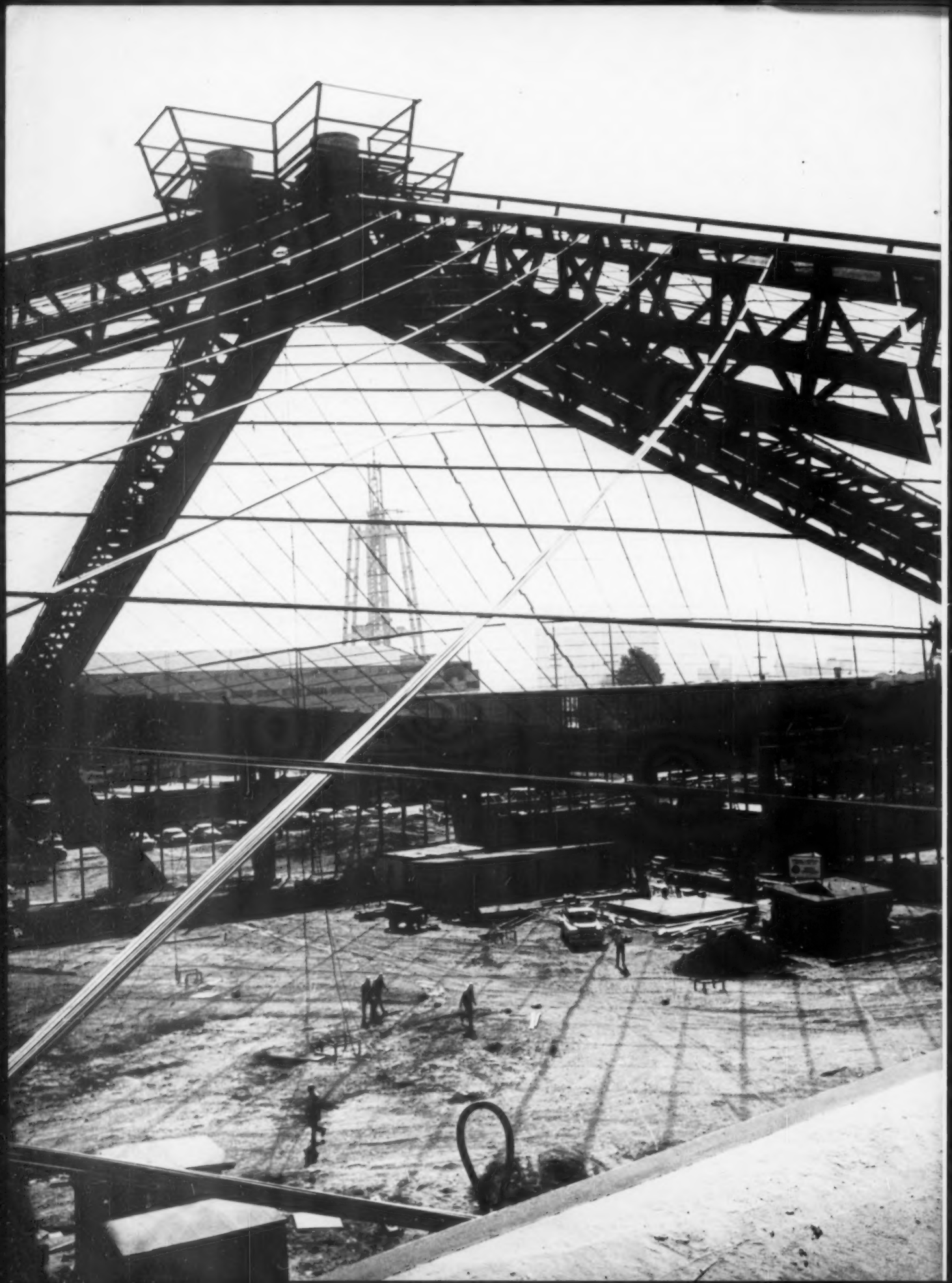
Many nations—because they are at this time uninterested in the expensive, complex American system of issuing multi-colored, dated, state-named license plates on an annual or bi-annual basis—simply issue their motorists a coded number with special letters for his city or county and he is in many cases responsible for having it made into a plate and displaying it properly on the car. The number remains on the vehicle until its destruction, or remains in the possession of the motorist for his various vehicles. The form and shape of the plate or the figures painted on the car naturally conform to particular national specifications as to color and size of the figures, but rarely do they specify the country's name, although those of France, Britain and Germany are now familiar around the globe.

However, according to international traffic regulations, a motor vehicle traveling outside its country of origin is required to display a lettered disc at the rear adjoining, and in addition to, the number plate. This includes US-licensed vehicles traveling in foreign countries.

The "discs" (occasionally square, rectangular, or round, but mostly oval) are manufactured of local materials, usually a plastic, but are also seen in the form of stick-on decals, stamped, embossed, or painted metals, and in some cases may sport a tiny national flag, coat arms, or other device. In Germany it is even possible to purchase the registration letter painted on glass with a small light behind it.

The discs have recently become widely available in this country for the convenience of Americans who intend to travel overseas, and need USA identification. It is also quite common in the larger cities here to see US-licensed, foreign-made sportscars displaying, illegally, the disc of some exotic country for the amusement of the owner and the mystification of other drivers.

On the foldout at left, the identification discs in red represent countries whose assigned racing colors appear overleaf.



Seen through the steel compression trusses that will enclose Century 21's theme exposition, the Space Needle, the Seattle Fair's most dramatic building, begins to rise. Ultimately, it will be 730 feet high ("the tallest building west of the Mississippi," its builders say proudly) and will support a revolving restaurant (see model page 71). Shaped like a very tall, thin hourglass, the structure consists of three pairs of inclined structural steel legs around a central stairwell. Three elevators with observation windows will run outside the central shaft. The circular, saucer-shaped restaurant at the top will revolve completely once every hour, although the bars at the top and base will remain stationary. The privately financed building will remain after the fair is over. John Graham of Seattle is the architect.

WORLD'S FAIR IN SEATTLE The Century 21 Exposition, although frustrated by industry's view of the Pacific Northwest as frontier country, capitalizes on the vigor of the area to plan a coherent and even spectacular fair that is unashamedly progressive, unapologetically concerned with design, and uninhibited by pressures to become a mammoth run-of-the-mill trade show. BY URSULA CLIFF

With only half of its "preview year" left to go, the 1962 Seattle world's fair — "Century 21" — has entered the most dramatic stage of its development: the point where years of hazy predictions and pretty drawings turn into the less romantic reality of foundations going down and steel trusses going up. The skeleton shapes rising this fall beside Puget Sound do not yet reflect the city fathers' image of a "jewelbox fair," but they do substantiate Seattle's determination to make its fair memorable for both architecture and design.

Seattle has had to look hard to find a silver lining in the cloud raised by the prospect of the New York fair,

scheduled for 1964. It has found the semblance of one in the consoling comparisons presently being made between the two fairs. Maybe New York is planning a bigger show; at least Seattle is not inhibited by pressure for a profitable commercial venture. Perhaps more potential exhibitors are impressed by the prestige of New York City; but the Bureau of International Expositions has given its approval to Seattle alone. And while Robert Moses angrily dismisses what he calls his "avant garde critics," Seattle gratefully accepts the compliments of some of the same critics. Perhaps the theme of the fair itself *is* avant garde — for it is the portrait of man in the next century.

The theme of the Century 21 Exposition is as grandiose as any civic booster could wish for, but the practical details more modestly acknowledge the limitations imposed by the city's size, location, and comparative youth. The Seattle area counts on about five million visitors during the annual six-month tourist season; next year the city hopes to double that figure, for a predicted fair attendance of 10 to 12 million. (New York hopes for 70 million.) Total investment in the Seattle fair — 80 per cent of the buildings will be permanent—will be approximately 100 million dollars. (New York: one billion.) The site of the fair, one mile north of downtown Seattle, covers 74 acres. (New York: 646 acres.)

Seven years ago, when a group of Seattle businessmen first proposed the fair, it was intended as a city-wide observance of the 50-year anniversary of the Alaska-Yukon-Pacific Exposition held in Seattle in 1909. (That fair had three and a half million visitors, although not even Seattle can explain where they came from.) The first step was a city appropriation of $5,000 for an initial survey. The results of this were so encouraging that the city went to the state, got $50,000, and expansively planned a regional exposition. At about this time, Sputnik appeared, and the federal government, casting about for a shrewd countermeasure to the Russian challenge, decided on a science museum, for which Congress appropriated twelve million dollars. Happily for Seattle, Senator Magnuson was on this committee and proposed that, since Seattle already had a fair underway, the museum take the form of a Federal science pavilion. (So far, however, only nine million dollars of the appropriation have been released for the pavilion, and fair officials are losing hope of getting the rest.) With government money in its pocket, Seattle turned itself into a national fair; BIE approval made it an international one.

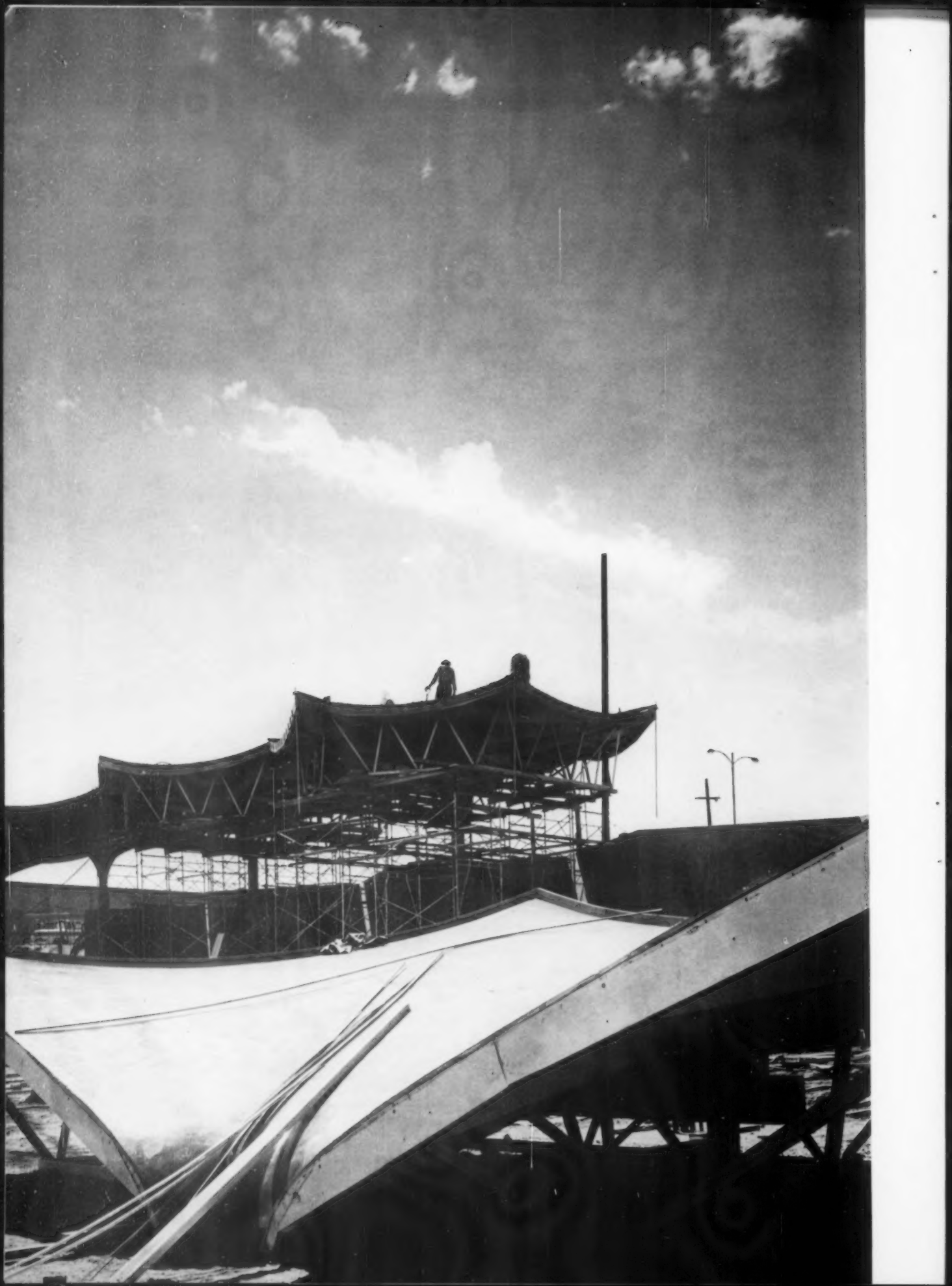
This has not been the smooth success story it might sound. Seattle has had its share of problems, ranging from taxpayers' suits to the cold war. In public, fair officials with forced smiles and stiff upper lips have insisted that the New York fair is a fine idea and anyway, the more fairs the better, but in private they admit freely that the competition has hurt them considerably: business would rather spend its money where it is sure to show, and many Eastern industries still think of the Pacific Northwest as an uninhabited frontier. The 1960 recession further inhibited many potential exhibitors. And, finally, Herb Rosenthal, the fair's chief designer, points out that because the fair management had so little money to work with, they could not commission their own exhibits and had to depend on participating exhibitors to set the pace. (As a sobering footnote to this financial limitation, the plans for an industrial design exhibit have been jettisoned for lack of funds.)

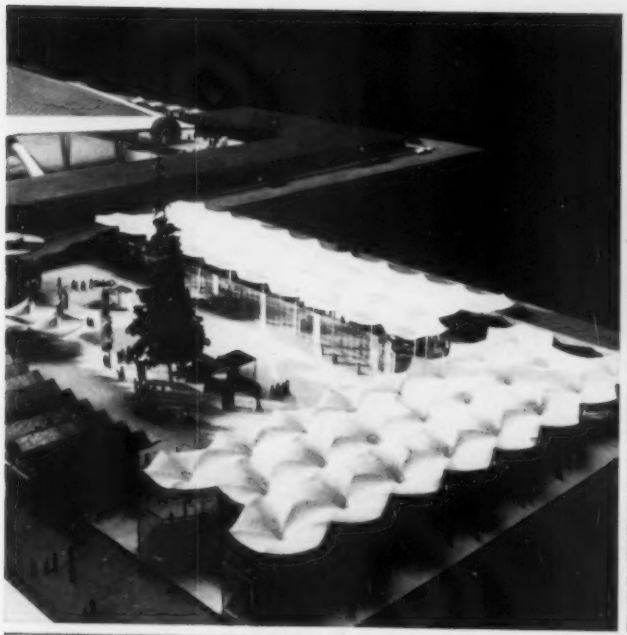
To outsiders it would seem, however, that the fair has made a valiant attempt at setting its own design pace. As far back as August of 1957, Century 21 created a Design Standards Board, who in turn chose a Primary Architect, Paul Thiry, and a Primary Designer, Herb Rosenthal. Part of Thiry's job was to draw up a preliminary site plan that would satisfy both of the fair's objectives: housing for a six-month exposition and a permanent civic center for Seattle. The site was complicated by the presence of three buildings (the Civic Auditorium and Ice Arena, the Memorial Stadium, and the National Guard Armory) that had to be retained, and the drab neighborhood that formed the immediate surroundings was hardly a gay foretaste of the Space Age. Thiry's solution was to use the grid pattern established by existing streets on the site, and to design a series of courtyards, each focusing on one principal building. The courtyards are formed by low buildings facing inward, away from the street. (Incidentally, this plan also utilized existing utilities.)

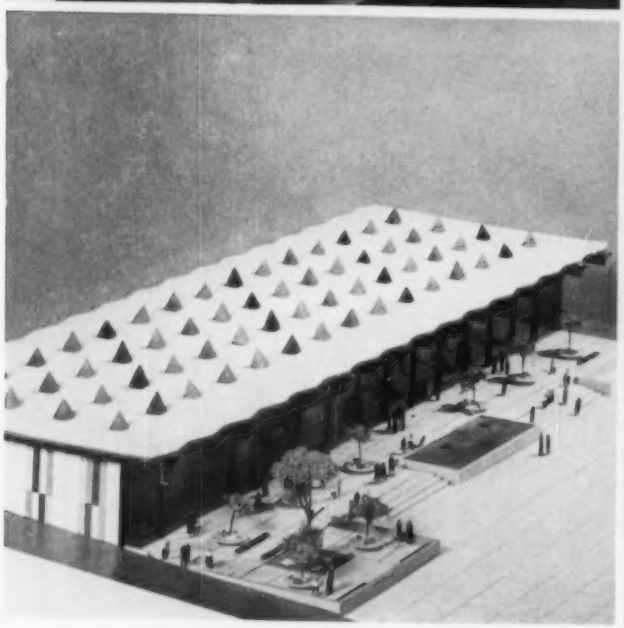
Rosenthal's responsibility was a general design for the exhibits themselves, as well as an outline of exhibition policy. He did preliminary design studies for the Coliseum interior, the Boulevards of the World, and the kiosks. As the exhibits have been formally assigned to architects and designers, he has switched his function to the supervisory level, coordinating and approving the designs as they come in. As with all fairs, this means that only the most blatant offenses are rejected. (Rosenthal says frankly, "The fair management, at this time, cannot realistically empower me to be too harsh.")

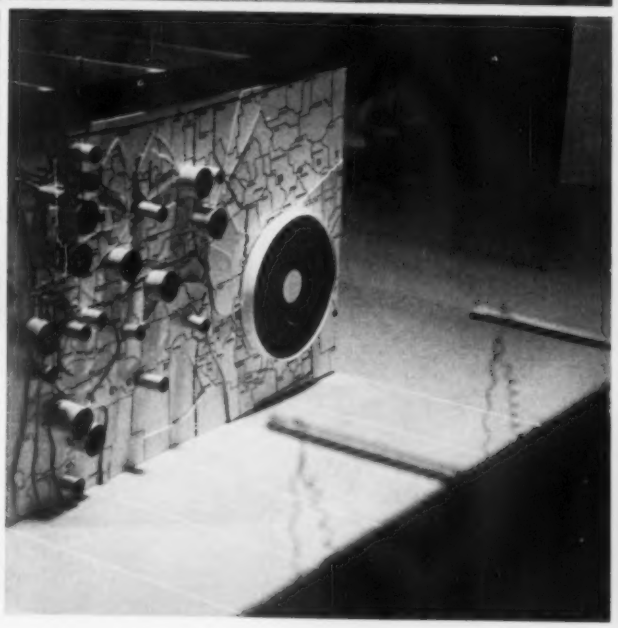
Even without harshness, Seattle has begun to assemble a fair that is at its least distinguished, coherent and at its most distinguished, spectacular. The coherence has been helped by the fair's decision to erect many of the exhibit buildings itself, rather than leave this to private entrepreneurs. As for the spectacular, it is there because it was invited and made welcome.

Incomplete model shows many of the principal buildings at the fair. (1) The Gayway, the fair's amusement area, designed by John C. Ray and directed by George Whitney, will be, its producers say, a combination of the Tivoli Gardens, the Munich amusement park, and the St. Louis Fair. (2) A monorail will transport visitors one and a half miles from downtown Seattle to the fair in 90 seconds. The Swedish firm of Alweg is responsible for design and operation; the cars are manufactured in Germany and the tracks in Tacoma. There will be two trains, each with a maximum capacity of 450. (3) Space Needle—see page 68. (4) National Guard Armory, already on the site and converted by architects Young, Richardson & Carleton to a food exposition for the fair. (5) U.S. Science Exhibit—see page 76. (6) World of Commerce and Industry buildings by Robert B. Price, will contain corporate exhibits. (7) National exhibits of foreign countries will be housed in buildings by Paul Thiry around perimeter of his Century 21 Coliseum (8)—see page 74. (9) International Commerce and Industry buildings, by Walker & McGough—see page 72. (10) The Civic Center Fountain, designed by Tokyo architects Hideki Shimizu and Kazuyuki Matsushita, was the subject of an international design competition sponsored by the city of Seattle. (11) International Boulevards of the World, designed by architects Naramore, Bain, Brady & Johanson, will serve as both exhibit space and sales rooms for foreign retailers.





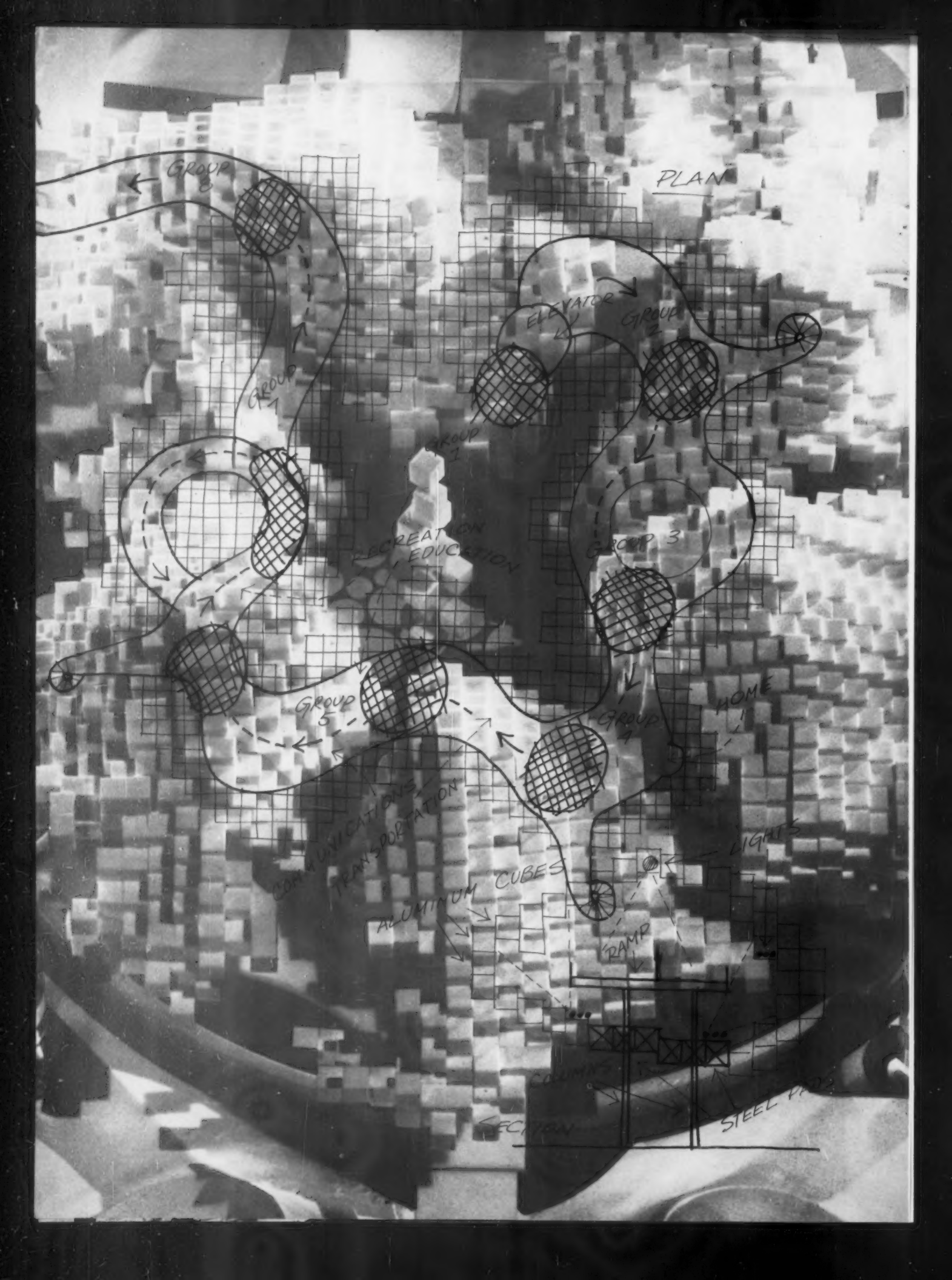




Left and top: Walker & McGough's umbrella shapes for the World of Commerce and Industry, are a series of hyperbolic paraboloids: hexagonal shells of thin concrete set on tapering columns. Exhibitors will be foreign trade associations, each of whom will design its own exhibit. Below: American companies will sponsor exhibits in the World of Commerce and Industry building. So far, announced exhibitors include National Cash Register; a joint exhibit by Kaiser, Alcoa, and Reynolds; Johnson Wax Company; United Airlines; Carnaton Milk Company (Herb Rosenthal, designer); and Northwest Orient Airlines. Architect for the building is Robert B. Price. The plastic pyramids on the roof serve as both skylights by day and lighting fixtures by night.

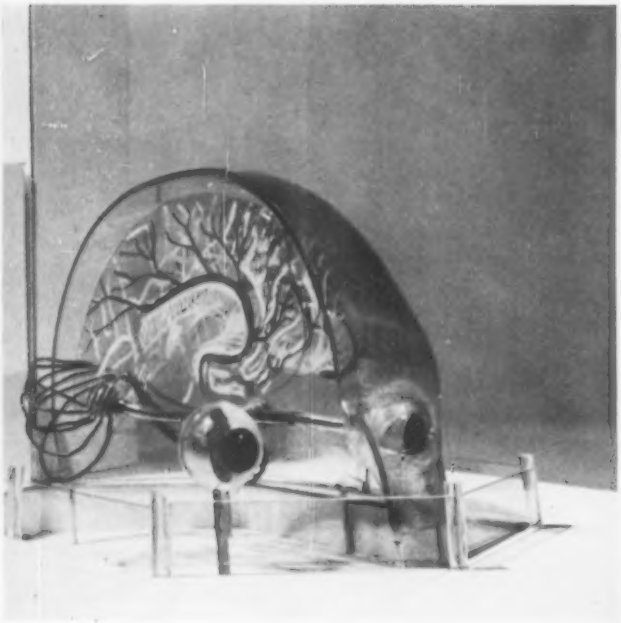
Above: The Christian Witness pavilion is sponsored by a group of Protestant denominations and will include a chapel and a child-care center as well as a series of displays on religious themes. Architects are Durham, Anderson & Freed of Seattle. The building is of wood, with laminated sphere arches supporting a central cross.

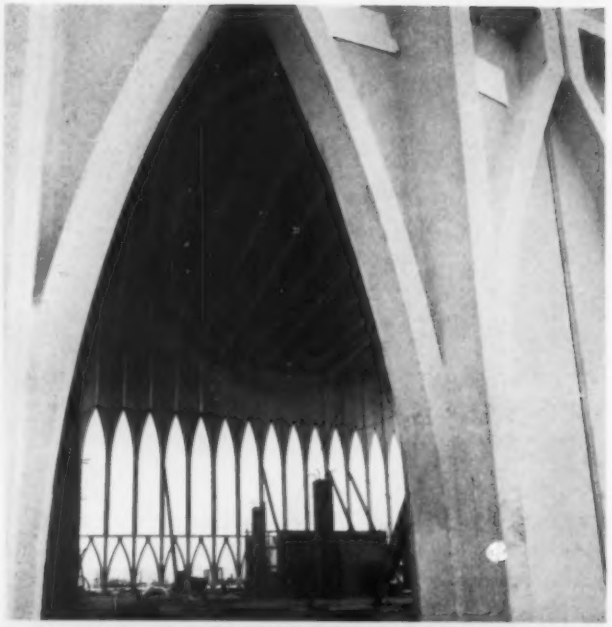
Below: Raymond Loewy/William Snaith are the designers for the AT&T exhibit (with John Graham as architect), which will occupy a separate building at the fair. The show will emphasize the company's local subsidiary, Pacific Telephone Northwest (subject of display shown here) and will also include a number of audience-participation games to familiarize visitors with the Bell System's various services.

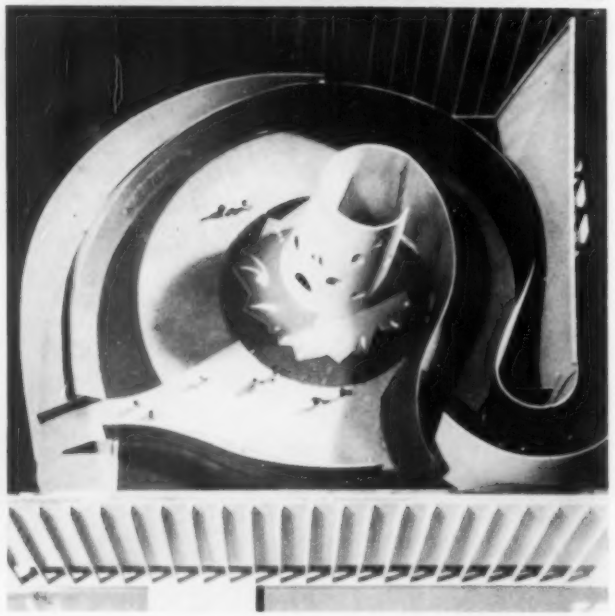

PLAN
GROUP 2
ELEVATOR
GROUP 1
GROUP 3
RECREATION
EDUCATION
GROUP 5
GROUP 4
HOME
COMMUNICATIONS
TRANSPORTATION
LIGHTS
ALUMINUM CUBES
RAMP
STEEL

The theme exhibit building, second largest at the exposition, will sprawl over a four-block area, house 100,000 square feet of unobstructed exhibit space. Architect Paul Thiry's sweeping roof, supported by steel compression trusses (see photo above), will rise 11 stories at its center point. Designed for permanent use, it probably will serve later as a sports arena with capacity for 12,000 to 18,000. Within the building Donald Deskey Associates is devising a complex honeycomb of aluminum-framed cubes which will carry the theme story: the environment of man in the 21st century—his home, industry, transportation, communications, education, food production and recreation. Author Gilbert Seldes will consult on the script; Alfred Stern will produce it.

According to project director Jack Robinson, of the Deskey office, spectators will enter the building on walkways, gather into groups of 100, then ascend by a plastic bubble elevator to the show itself. As each group passes down the ramp through the darkened tunnel of cubes its progress will be electronically controlled by lights (see traffic pattern, left). When the illuminated transparencies, three-dimensional models, and atmospheric effects (falling leaves, snowflakes, clouds) darken in one area, the group will move down to the next lighted area.







The Federal Science Pavilion, the largest building at the fair, is actually six connected buildings, designed by Minoru Yamasaki & Associates, around a group of five lacy concrete vaults (opposite and top right, above, and on cover). Walter Dorwin Teague Associates are chief designers for the whole exhibit, working in cooperation with the Government's design coordinator for the pavilion, Leonard W. Nederkorn. The first building will be a theater, where a 12-minute film by Charles Eames, "The House of Science", will introduce the exhibit. The second building, "The Development of Science", deals with the origin of science and the evolution of the basic scientific tools. The third building contains a laboratory for school children. Boeing is a co-sponsor, with the Government of the fourth building, the Spacearium where visitors will experience outer space by means of Cinerama. Two exhibits from the fifth building, the Methods of Science, are shown above: left, at top, designed by the Teague office, is an illustration of the workings of the optical system. Below it is an exhibit designed by Lucia DeRespinis of the George Nelson office for Abbott Laboratories, showing the structure and methods for laboratory study of the sympathetic nervous system. Raymond Loewy/William Snaith designed another area in this building. The fifth building, the conclusion (Teague's model is shown above, lower right) is intended to provoke questions about the relation between science and society.


U S A
SCIENCE
EXHIBIT

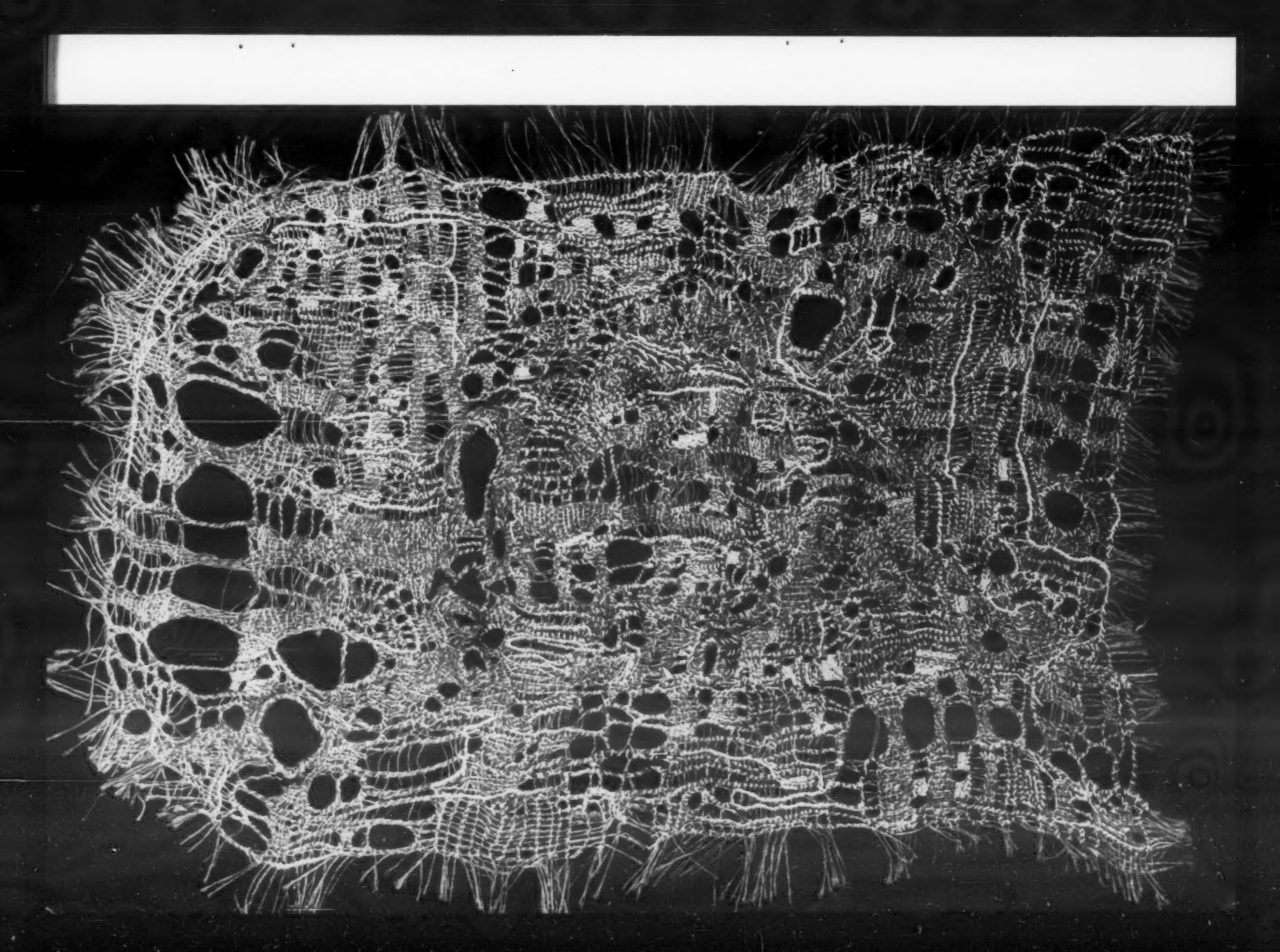
While the conservative textile industry sleeps, the chemical industry burns midnight oil (synthetic) to mix advanced science with some ancient concepts of fabric structure. And the discoveries of the chemists may stir the weavers to explore the possibilities of

FABRICS IN A NEW DIMENSION

BY JACK LENOR LARSEN

If the prognosticators are correct about the population explosion and the rise of a middle class in the underdeveloped nations of Asia and Africa, the world's need for cloth is going to rise spectacularly in the next 10 to 20 years. The more people, the more fabric needed to clothe them. And the more affluent a society, the more extensive a man's (or a woman's) wardrobe. Also, the more fabric needed to curtain their picture windows and cover the seats of their cars. The fabric industry, says designer Jack Lenor Larsen, is in no sense ready to handle this demand. It is a stagnant giant. The power loom, fast as it is, has reached the limits of its production, and furthermore seems capable of turning out little but mileage—its product is as bland and characterless as white bread, and for the same reason. Like bread, fabric has had to become standardized to fit the requirements of high-speed machines and high-volume production. In the following article Mr. Larsen explains what we have lost and what we are likely to do about it. He explores—as far as classified information permits—some of the new fibers and forming techniques that could be the advance guard of a fabric technology in which the end product will not be a flat piece of goods but a formed, flexible, organic covering for a specific object, animate or inanimate—a man's garment, a chair's upholstery. Much of the material for this article, and all of the accompanying photographs, was assembled in the course of preparing the Fabrics International Exhibition, which opened in Philadelphia on September 24th, travels to New York

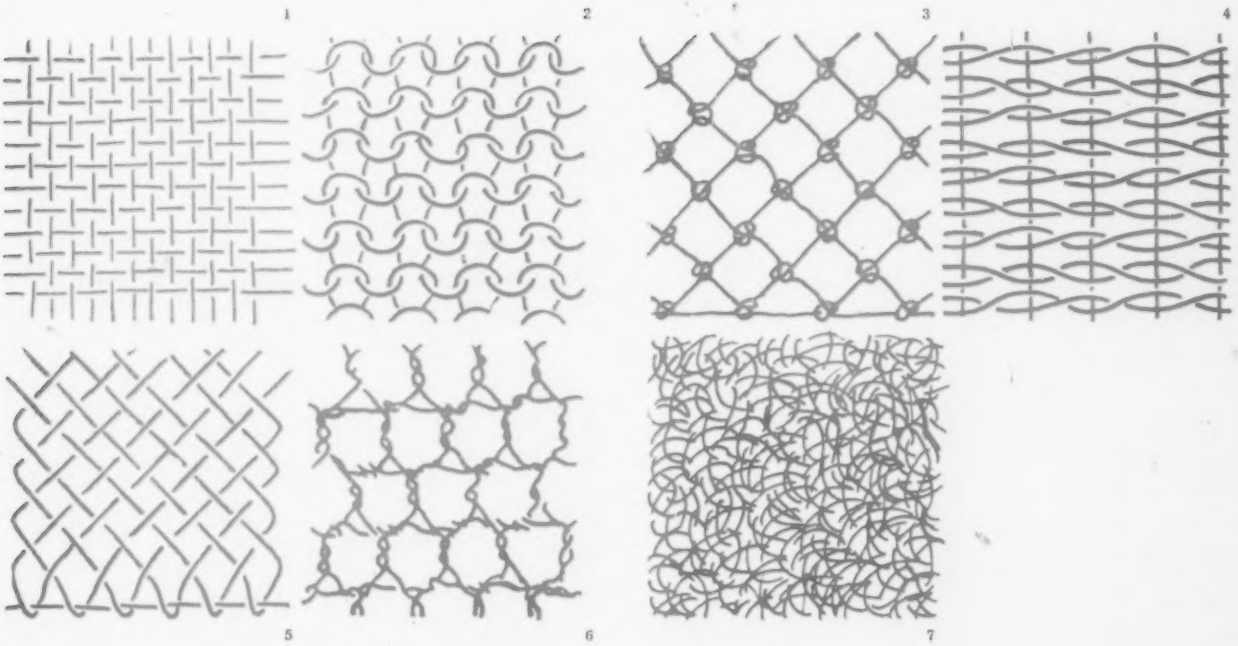
Left: fabric structures from nature, a spider's web from continuous filament, and the skeletal veining of a leaf.



on November 17th, and thereafter will be circulated around the country by the American Federation of Art. Mr. Larsen served as director of the exhibition; the sponsoring organizations are the Museum of Contemporary Crafts in New York and the Philadelphia Museum College of Art.—*The Editors*

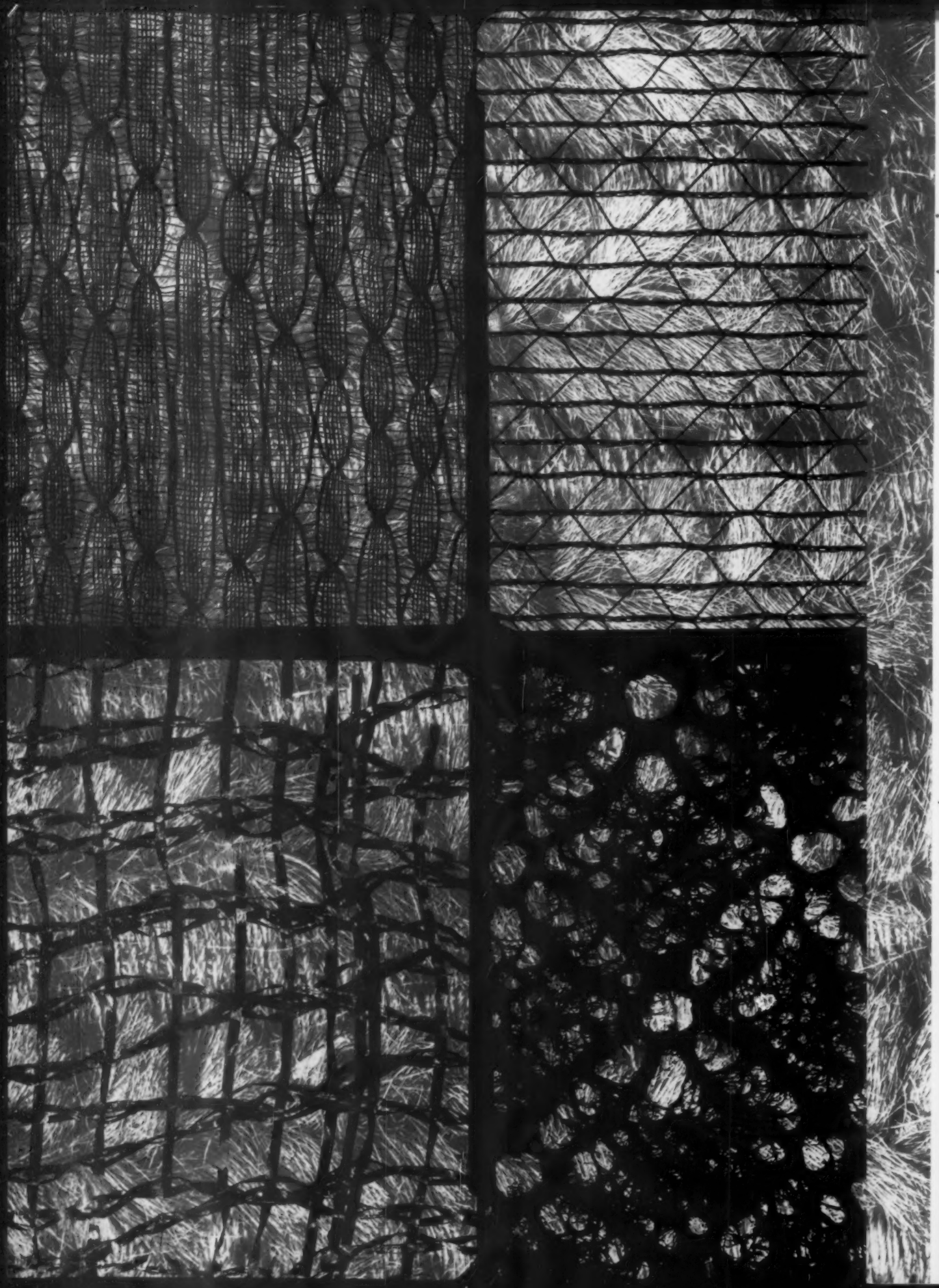
In most cultures, weaving, as we know it today, emerged from basketry—as did pottery and plaiting. Basketry, in fact, was the base or armature for much early pottery: the wet clay was pressed against the inside of woven or plaited vessels to make them usable for more things. In this form, weaving was a free, maneuverable, three-dimensional medium. It related to, and may very well have been borrowed from, the structures of spider webs, oriole nests, the nests of paper-making wasps, the inner bark of palms, or leaf skeletons. The invention of

Basic methods of fabric construction include: 1) weaving; 2) knitting; 3) knotting; 4) twining; 5) plaiting 6) netting; and 7) felting. In weaving, strands of yarn intersect as right angles. Knitting is done with a single strand of yarn. Knotted constructions occur mostly in lace. In twining, a a cousin to weaving, the intersecting yarns pass through, instead of over or under, each other. Plaiting, sometimes called braiding, intertwines strands of yarn on the diagonal. Netting combines braiding and twining. In felting the fibers are joined organically by heat, steam, and pressure. Left, section of experimental fabric by Marie Kelly; base is burlap, re-shaped, re-aligned, and lashed with white string.



the loom reduced weaving to one plane, and further, it limited the interlacing of warp and weft yarns to a right angle relationship. But it *was* a much faster way of making cloth, and inevitably it over-shadowed the other techniques.

Today, most people, even those in the fabric design field, think of loom-woven textiles when they think of fabrics. Actually, *fabric* is a much broader term, embracing all fibrous constructions such as knitting, knotting, twining, plaiting, netting, and felting—as well as weaving. Recently, fabric-like films and extrusions have been added to this list. Accurately speaking, the term *textile* refers only to woven cloth, the virtues of which, like the virtues of natural fibers, are both inherent and associated: we think of them as being reliable and predictable. But these qualities stem partly from the



fact that we have known them long enough to learn to use them well. In the case of weaving, we have developed its natural properties of resilience, porosity, and stability to a state of near perfection.

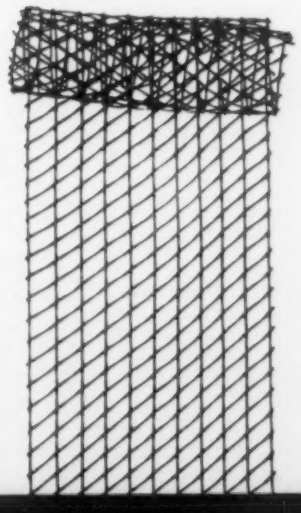
Nevertheless, weaving is a dinosaur. It is huge, but it has also grown sluggish and it has just about reached the limits of its development. The barrage of automatic devices above, beside, and underneath a power loom do not alter the process; they just replace man as the weaver. Basically, the mechanism is still the shed-making, shuttle-throwing, beat-up and take-up of the ancient hand loom, and although it moves much faster than it did when "fast as a shuttle flies" was a synonym for great speed, it does not produce cloth nearly as rapidly as the hundreds of needles that simultaneously feed yarn into a modern knitting or lacemaking machine. The power loom is anachronistic in another sense, too: since its warps and bobbins require finite lengths of yarn, the continuous yarns of modern chemistry must be chopped up, re-wound, and then eventually unwound again.

Almost as unsatisfactory as the process is the product. It is a curious comment on industrialization that the addition of a machine to the loom expanded its volume hundreds of times over, but drastically diminished its versatility. In one sense this is the fault of mass production. To function efficiently the high-speed loom must use yarns of unvarying gage; all the slubs and occasional irregularities which add surface interest to a handwoven fabric must be removed from machine-fed yarns in order to prevent breakdowns. As a result, most cloth has been bred to an over-refinement that is as tasteless and characterless as white sugar and packaged white bread. Unfortunately, we seem to have also raised and nurtured a clientele for this bland diet.

But the dull perfection of mass-produced cloth might also have been caused, paradoxically, by the very richness and variety of fabric technology at the time the machine took over. The weaving of textiles is so ancient, so universal, and has developed into so many specialized sub-categories, that almost all the possible construction techniques had been explored, and almost all the problems had been solved, before mechanization came along. In adapting the method to the machine there was very little to change or add—except volume. The specialists simply became more specialized until today it is not unusual for a manufacturer to produce only wool goods, or only silk, only wide goods, or only narrow, only grey goods, or only finished fabrics. At the same time, the designer is removed from production, and the consumer and producer never meet. This estrangement within and without is one more reason why one of the world's largest industries is now one of the dullest.

We do not have to go very far back in time to rediscover it at its liveliest. The high point was probably in the late 19th century when most fabric cultures were

Examples of pattern created by structure:
1) The jute thread in a jute-and-linen gauze by Kay Sekimachi is lashed together at intervals to create a lozenge pattern. 2) Monofilament Saran casement cloth by Ellen Siegel is done in Raschel knitting, a stitch that makes an open-work, lacy fabric. 3) Experimental gauze of flat black cellulose ribbons by Ed Rossbach. 4) Paper lace is made by a Japanese technique in which fibers are deposited on a base screen that is later removed. It could be applied to felt fabrics. All four of these structural textures are overprinted on a photograph of a knotted-tuft, sisal rug by Ruben Eshkanian and Jack Lenor Larsen. Below, Dupont's expandable, extruded mesh, Vexar.



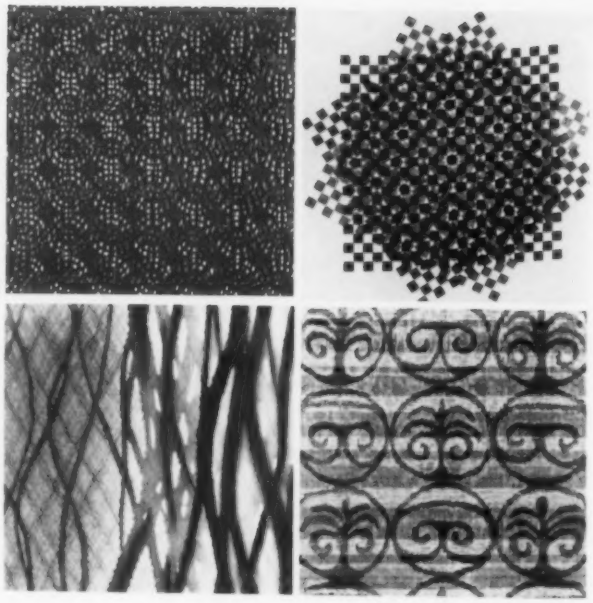
still alive and producing, and when European weavers, stimulated and threatened by the industrial revolution, were both ingenious and profusive. The silk pile fabrics, web-like nets, and intricate combinations of sheer leno, velvet, and brocade from this period are truly marvels. Such terribly complex and ornate fabrics may not be appropriate to our culture, but we ought to have room for some sort of "important" fabric, a contemporary equivalent of the cashmere or paisley shawl, the Persian rug, the New England coverlet, the lace mantilla. The only candidate we seem able to offer is the blue mink coat.

It may be that we do not want "important" fabrics. But it may also be that the weaver, historically deferential to the architect, may in the case of modern architecture have been too much so. For a number of years architects and apparel designers have ignored patterned fabrics on the premise that there is pattern enough in our congested and active lives. They have also suggested that ornament is inconsistent with a democratic society. But our Fabrics International collection suggests quite the opposite: ornament seems to have existed everywhere in time and place, and in every kind of society. For that matter, much fabric *is* ornament, and should have the occasional opportunity to be rich or sensuous.

In reality, in the best of fabrics, the richness of pattern, color and texture is apt to come from material and construction rather than applied decoration, but our energies have been diverted from the manipulation of cloth structure. Anni Albers pointed out in her article, "Constructing Textiles" (*Design*, April 1946) that cloth-making has been preoccupied for several decades with (1) the development of fibers, yarns, and finishes; and (2) the rediscovery of fabric's inherent textural possibilities. But most cloth constructions remain those of the Renaissance and earlier periods.

We have reached a point of development at which we need to find some deliberate means of injecting variety into the slick, smooth, power-loomed product. We need somehow to permit the happy accident, to find a substitute for the lack of guts in our carefully graded fibers. We need, for instance, to think of the essential nature of fibers, their individual qualities even *before* they are spun into yarn. To the historical fibers — silk, mohair, wool, linen — our technology should be adding new fibers, and they should be more than a collection of synonyms.

Fabrics International shows a number of ways to pattern fabrics that could conceivably be adapted to machine production. A Philadelphia textile designer, June Groff, and Olly Reinheimer of Rio de Janeiro both submitted hand-painted cloth without motif. From Kano, we got a length of beaten Indigo resist. James Howell patterned a fabric by overlaying a single screen in different positions. And we have several versions of ikat, the traditional technique of tying and dyeing



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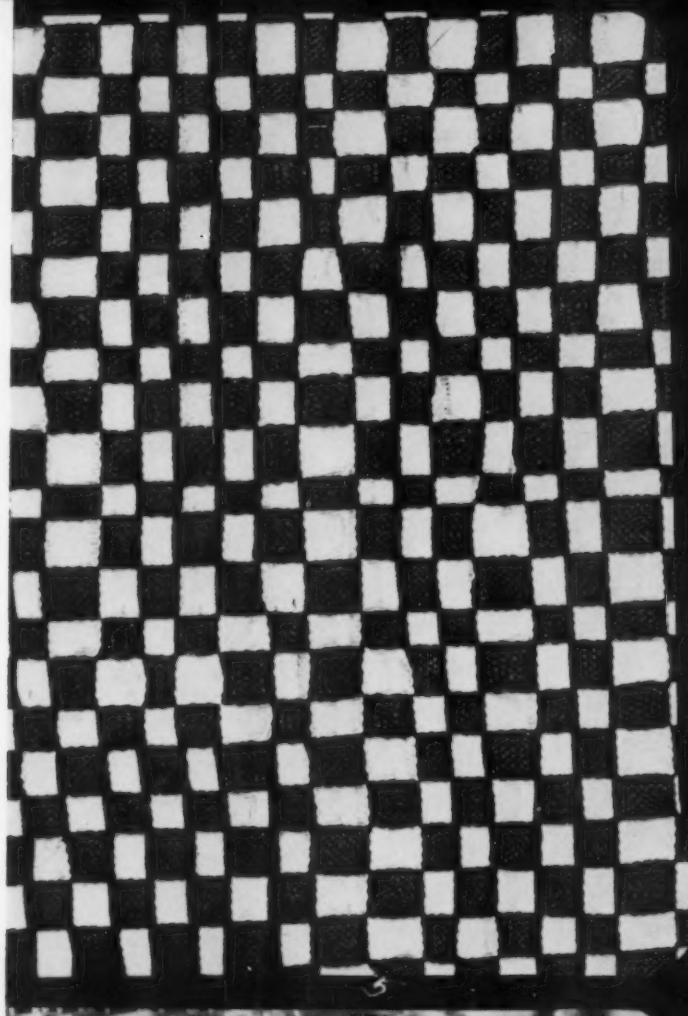
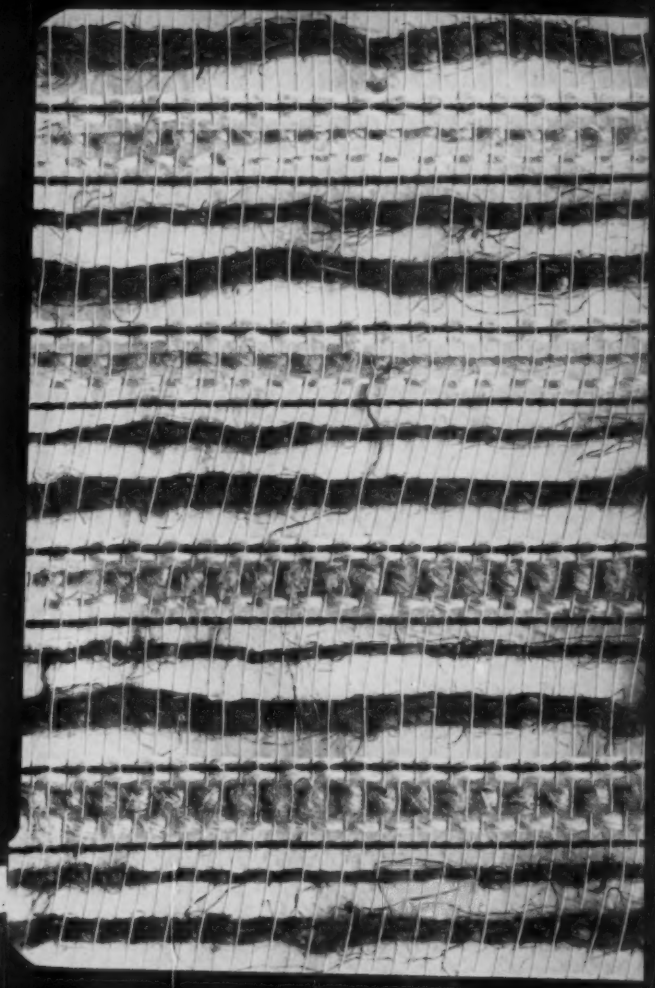
New and old printing techniques:
1) Japanese lacquer-printed fabric; the lacquer puckers the fabric and makes highlights.
2) James Howell's use of a single screen, printed out of register in various colors, to achieve pattern interest by simple means.
3) Japanese kimona fabric is printed first dry, then wet, so that overprinting becomes blurred.
4) Ed Rossbach's experimental fabric is based on traditional ikat technique: linen warp threads are printed with pattern before silk weft threads are woven through them.

Variations in woven fibers:
5) Weave-on-weave of orlon ribbon by Hurel of Paris; the gradations are caused by the natural furling of the ribbon.
6) Casement of loose strands of wool woven through linen warp threads. 7) Japanese paper fabric intended for hats, handbags, and wall covering. 8)Leno weave by Ria Herlinger of wool, worsted, and reindeer hair. Leno combines weaving and twining and is more flexible than ordinary weaves; it is commonly used for dish cloths.





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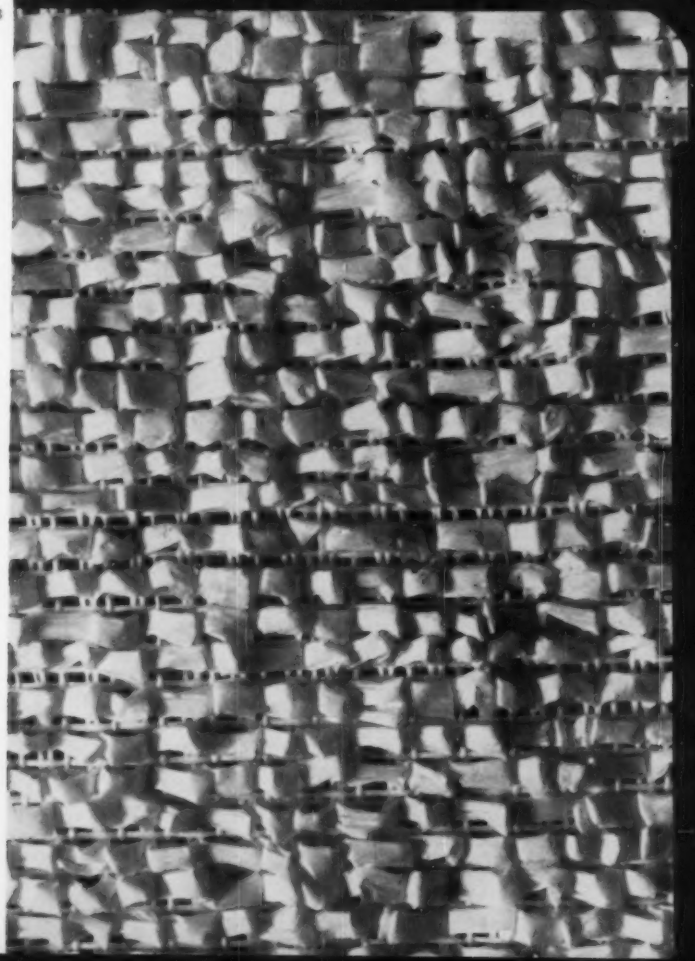
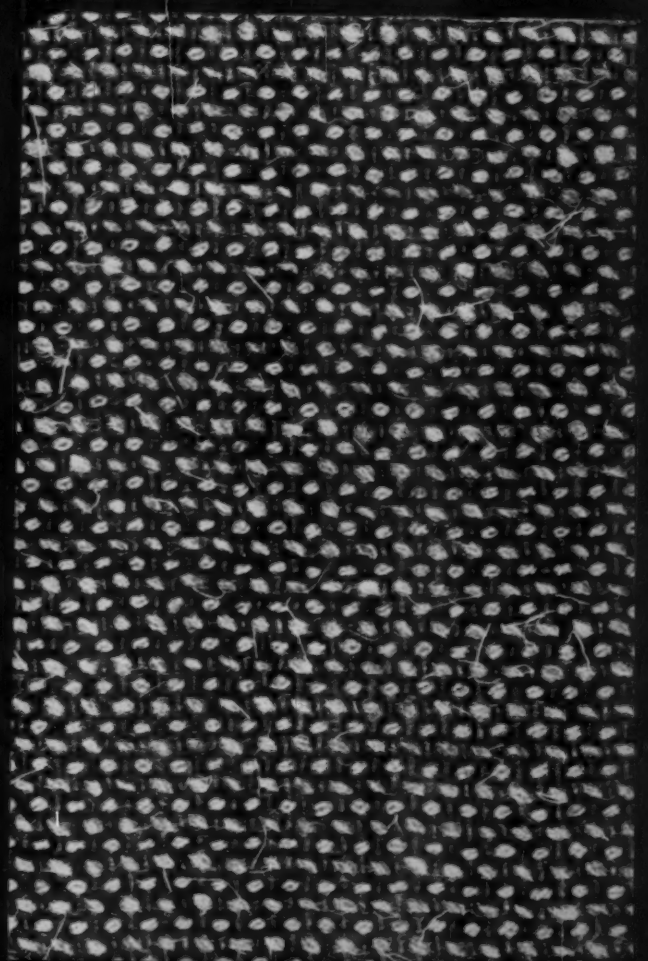
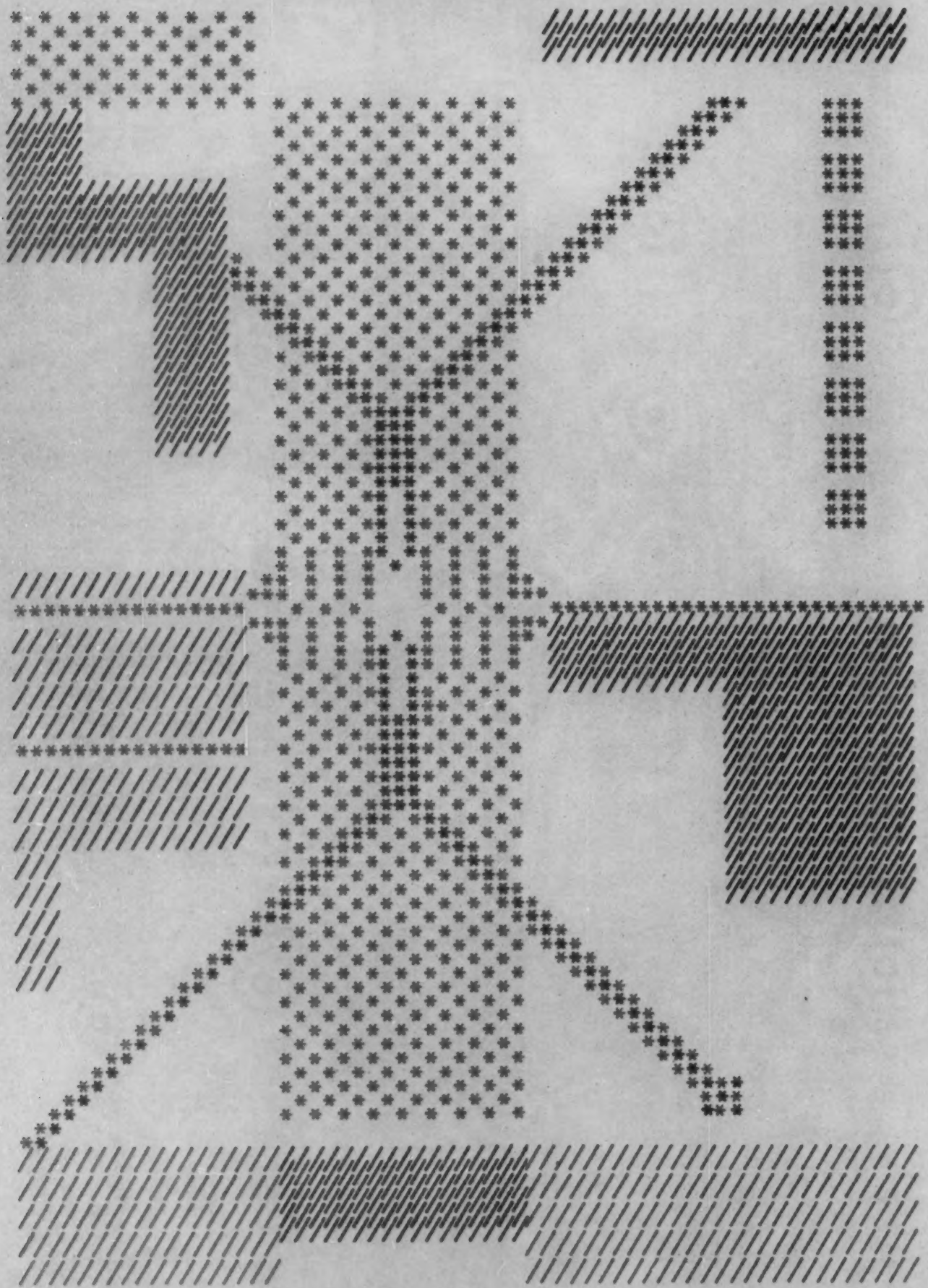
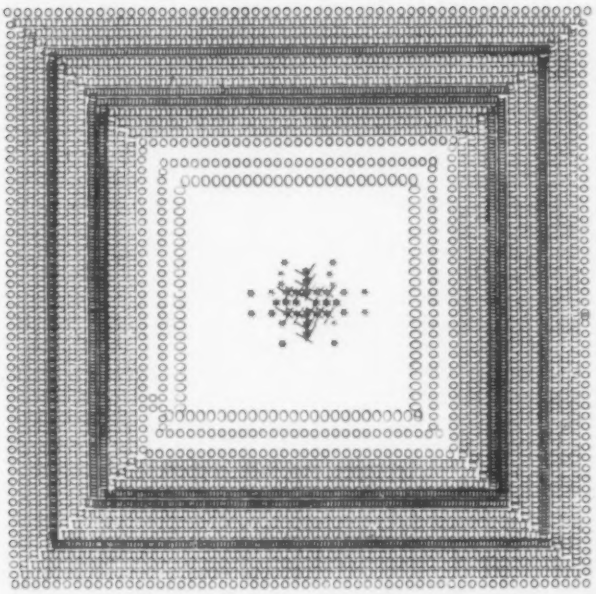


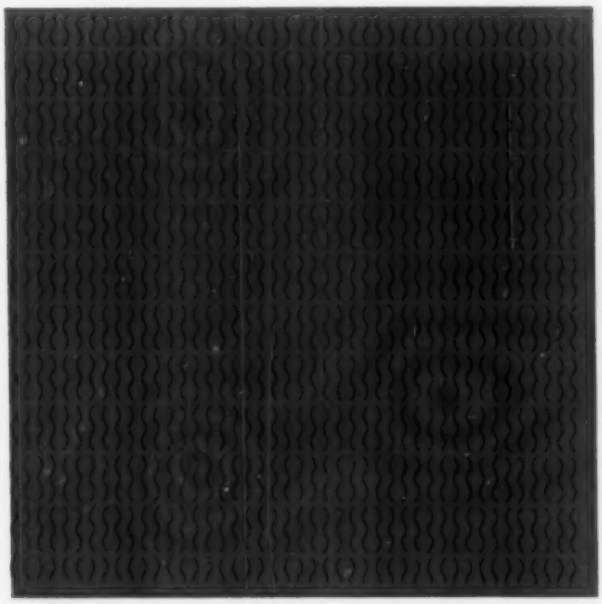


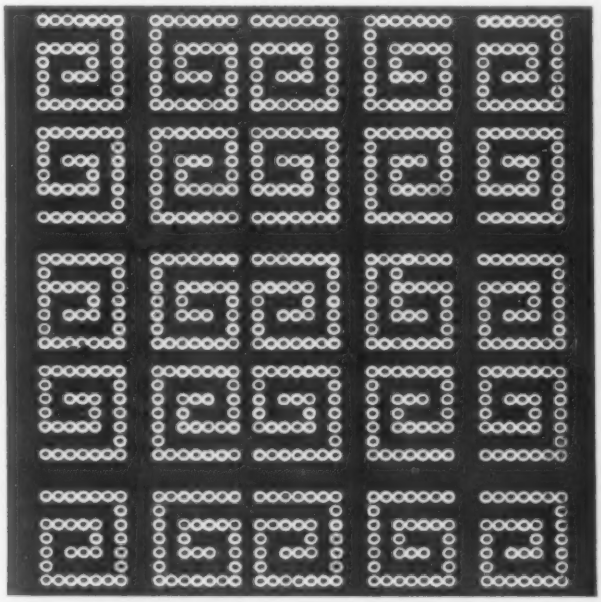




bundles of yarn in sequence: in its older form it is represented by a Mexican rebozo and a Cambodian longee; more modern versions include a French warp-printed taffeta and a scarlet and blue silk scroll motif woven by Ed Rossbach of Berkeley, California. The very old practice of space dyeing yarn has been industrialized for general use by Allied Chemical Corporation, which has space-dyed its Caprolan nylon.

Of new techniques in patterning, one of the most interesting is Fredric Karoly's research into the potential of machine-created pattern (shown here and overleaf). Pattern can also be spray-painted by machine, a process that could supplement the standard roller and screen-printing techniques. Felts and laminated fabrics are very receptive to decorative additives. Pleating by machine and heat-set quilting also have a fascinating potential. A revolutionary technique is the pattern pro-

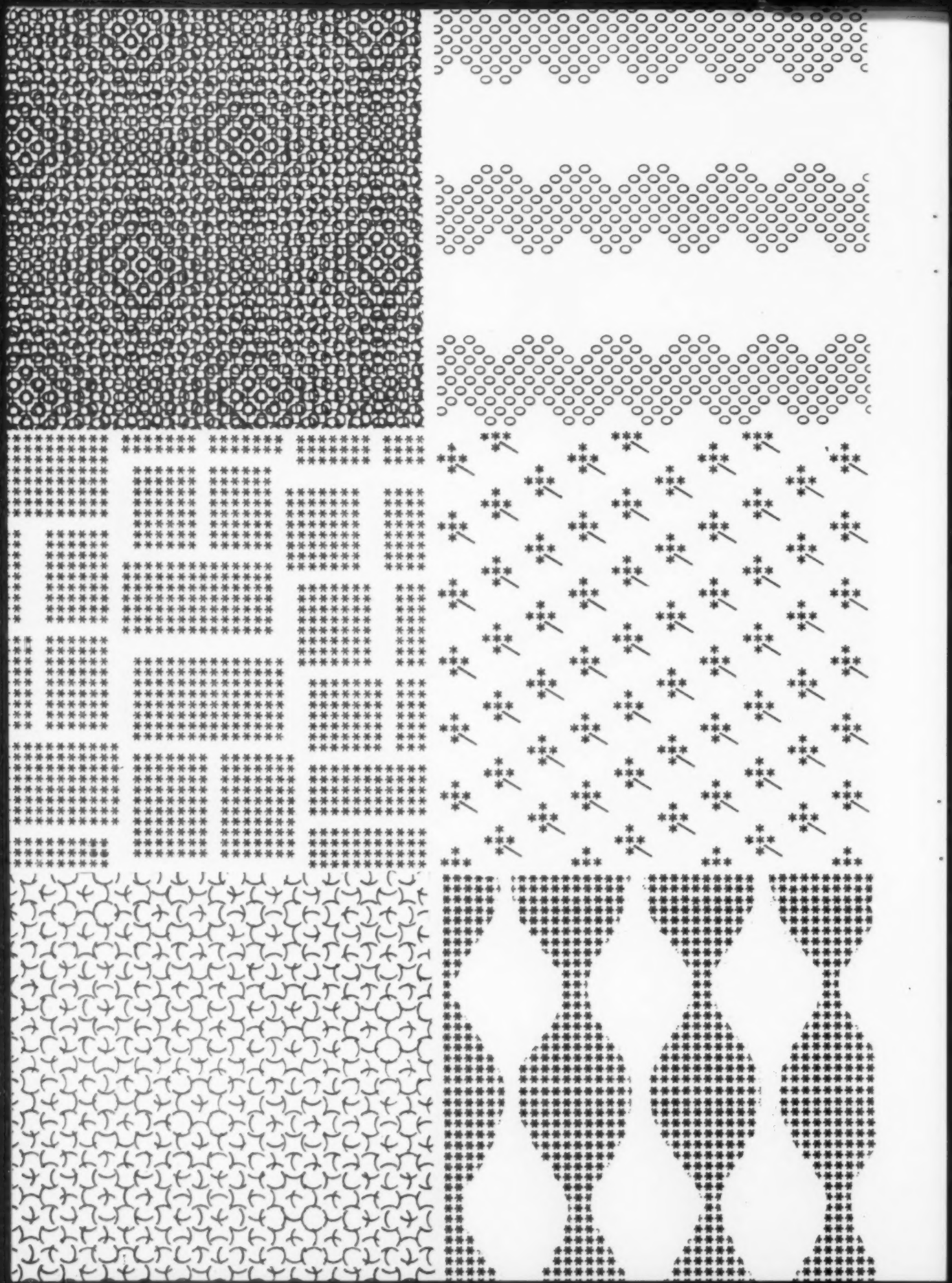


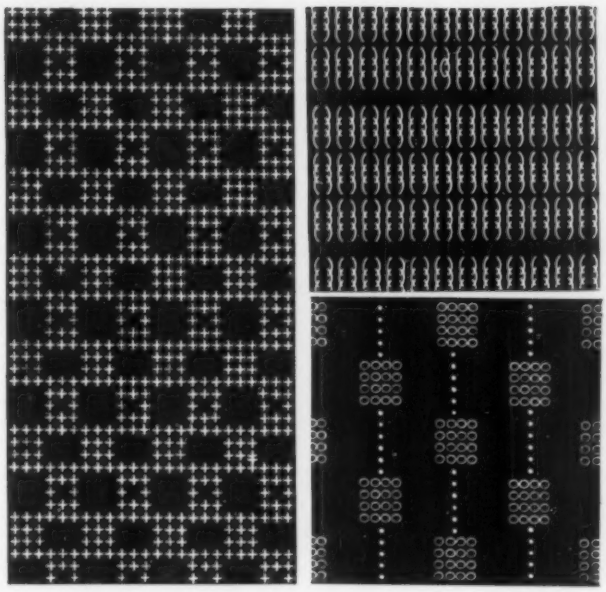


Fredric Karoly used the ordinary characters of a regulation typewriter to work out the patterns shown here and overleaf. Ultimately he would like to design a special "font" of decorative characters. This method of creating a pattern could by-pass the lengthy process of working out color separations on graph paper, and could conceivably be incorporated into automated pattern-creation for weaves and prints.

jection which Jo Mielziner devised for the stage curtain of "Cat on a Hot Tin Roof" — a projected drapery pattern could be turned on or off, its color could also be altered at will, and its pattern could be changed by simply inserting a new slide.

But beyond the conventional way of thinking of fabric as fiber and structure and pattern, we need to think of its function. A window, for instance, does not require drapery, but some means of controlling light, heat, and privacy. The window treatment that Alexander Girard devised for La Fonda del Sol restaurant is neither woven nor draped, but is strips of Raschel knit, stretched in space in a rhythmical arrangement; and Russel Wright's "Holiday" curtain is a cascade of cut ribbons in three shades of red, suspended along a traverse rod.





Patterns created from standard typewriter characters by Fredric Karoly (see also preceding spread) could potentially simplify the process of devising and/or transferring designs for mechanized printing processes.

We are also, in parallel exploration, looking for monolithic, one-piece constructions. And this may take us far afield from fabric as we know it. Just as the rectangular forms of conventional carpentry produced rectangular buildings, so the rectangular loom produced rectangular cloth. But in true mass production, the need to cut and fit many small parts is by-passed and the resultant structures are not necessarily rectilinear at all: when a window frame was joined by hand, the rectangle was the simplest form to employ; now that frames are molded or stamped from a single piece of metal or plastic, almost any other shape is easier to produce.

Similarly, if we think of garments or upholstery as monolithic constructions, rectangular cloth structures may no longer be essential. Take a man's shirt: conventionally it has two fronts, a back, two yokes, four collars, two sleeves, four cuffs, 12 buttons, a great deal of stitching — all of which come in 15 sizes, none of which really fits. If a shirt-type garment were really considered on the basis of its function, and related to currently available technology, it might be knitted of stretch yarn in one piece—from cone to yarn to finished product without intermediate processes. It could fit father or son equally well, be easily laundered, and require no ironing. The whole concept of disposable garments — underclothes, hospital uniforms, aprons, and such — also bears exploration. We have only one example of disposable cloth in the Fabrics International exhibition—Kimberly-Stevens' yarn-reinforced cellulose laminate for uniforms—but it is indicative of a direction in which fabric science is working. Last summer, a disposable tennis dress was actually put on the market; the price was hardly right ($9), but its introduction had enormous significance.

The whole field of monolithic structures is one that is going to explode in the next few years. Knitted cloth and clothing—women's hose, leotards, sweaters, dresses —can be produced without supervision, are shaped as they are made, and are comparatively inexpensive to produce. This concept of automated production could just as well be applied to the stretching and covering operations of upholstery. In fact, this is already happening — next year, a large proportion of the new Detroit cars will be upholstered in foam-backed knitted nylon.

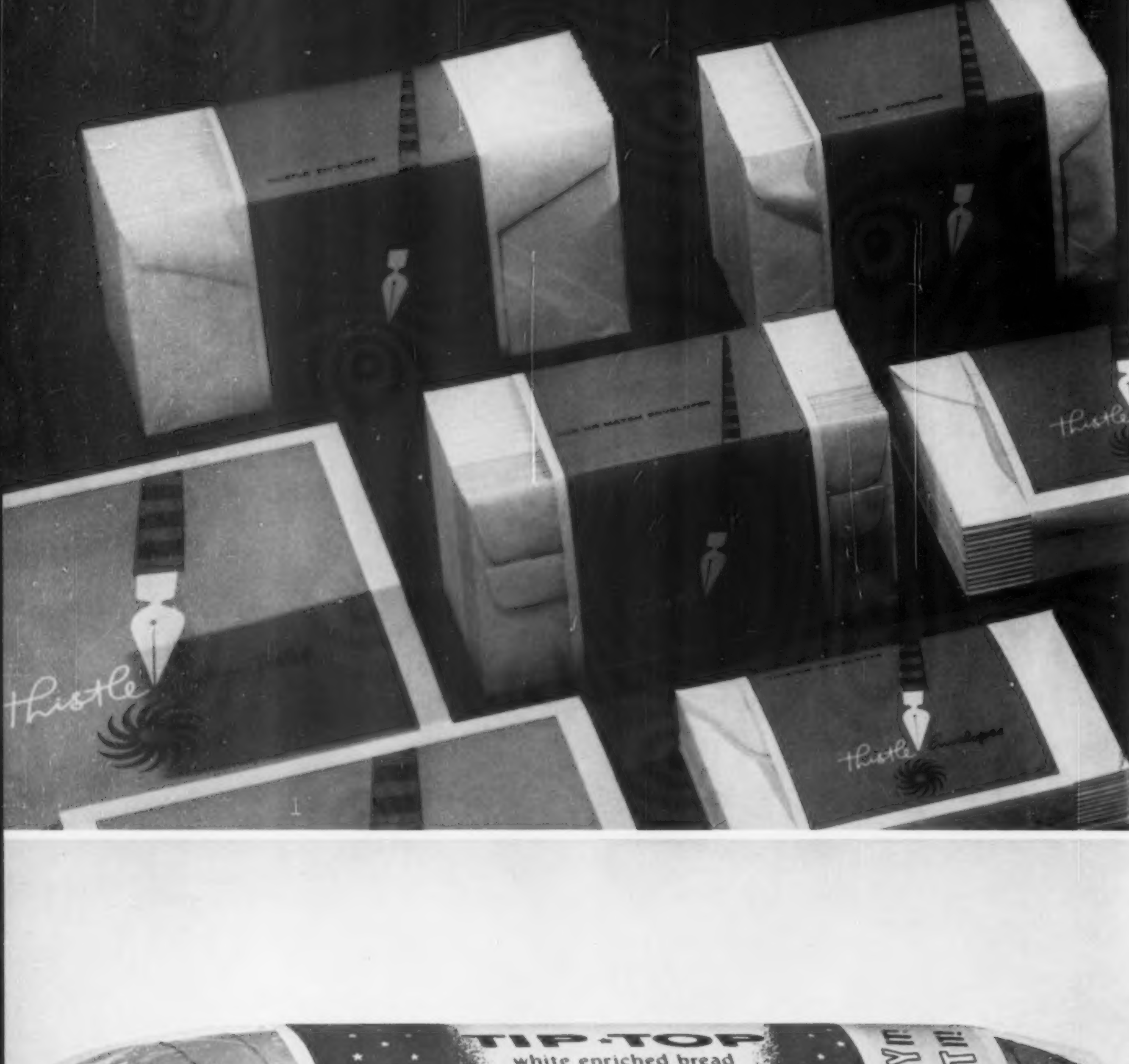
Felting is another of the possible techniques for monolithic construction. In the felting process the fibers are in molten form and can be given any shape in automatic presses, going directly to end product and by-passing the yarn and cloth stages. The use of vacuum-forming and molding to turn cloth into dimensional structures is being explored by, among others, Union Carbide Corporation: several examples of their experiments with Dynel are in the exhibition. A parallel development is heat-sealing, in which pieces or shapes are permanently welded without stitching. Another

area, still undeveloped, is spraying. After the last war, the turrets of battleships were protected in this way. It is quite conceivable that a porous, flexible, silky garment could be produced in a similar manner or that one could spray-upholster or flock a molded foam chair.

With knitting, perhaps felting, and certainly with spraying, there is a potential for a new kind of custom design—automated custom design. One could get out of the shower in the morning, step into disposable underwear, and spray on the garment of the day. Or, more immediately probable, one could go into a store, be electronically measured, press buttons for silhouette, color, such details as sleeve and dress or jacket length, and walk out with the custom-made garment. Our exhibition does not show this, but it does show how the demands of industry and science for new properties in fabrics are stimulating innovations of a similar caliber. A sampling of these demands includes new requirements in fabrics for filtration, screening, packaging, reinforcing, and insulation. We are also showing existing fabrics, many of them taken-for-granted staples, that deserve re-evaluation. Fire hose, for instance, is a handsome textile and has a monolithic construction of great potential. Knitted wire is inexpensive as a diffusion cloth; as a window curtain, it is resistant to sun rot and fire. Cable blasting mats used in excavation work weigh three tons, but they are handwoven textiles and have the resilient strength of such textiles. Elastic fabrics have developed amazingly in recent years: is their utility really confined to undergarments? And what about extending the use of the fibers themselves? The Velcro zipper is a fine example of nylon's use for its unique properties; stretch yarns have been employed for some remarkable applications; and two years ago DuPont created Vexar plastic netting as a new packaging material.

All this activity and change suggests that the fabric designer will have to become far more than an adapter and stylist. A new technology demands involvement in technique, where the problems are elemental. Curiously, in this new world to come, the designer may go full circle, back to the craft approach, working very much like the primitive craftsman who found his own material, knew the needs of his client, and worked with both from beginning to end. In the near future, a single manufacturer may be working directly from raw material to consumer product, a production process which will require the designer to follow through from yarn development to three-dimensional end product. In this vertical operation, the designers' colleagues will be the scientist and the researcher, and the problems they will tackle will be not yarns, or looms or dyes, but the consideration of coverings for the body, or of seating or bedding, or of light and privacy control. The question may be not what to weave for an Endless House, but how to weave an Endless House.

Less than 15 years ago, when a package designer called for flexible, transparent film, he got cellophane and nothing else. Today, hundreds of materials compete for his attention in this once-exclusive packaging market.


thistle
thistle
thistle


TIP-TOP
white enriched bread
WHITE
WHEN YOU BUY IT
WHEN YOU EAT IT
TIP-TOP
WHITE

FILMS FOR PACKAGING

In 1939, package designers had an easy time specifying a flexible, transparent film. Cellophane was all there was, and about 100 million pounds of the film was sold. It was an era when poet E. E. Cummings could even use the material as a symbol of America's insularity from experience: "everything is protected by cellophane against anything. . . ." By 1948, cellophane was still a lonely leader in the field and had more than doubled its 1939 sales figure. Today there is some real competition. It comes from cellulose acetate, polyester resins, perhaps a hundred different formulations of polyethylene, polypropylene, polyvinyl chlorides and alcohols, polystyrene, rubber hydrochloride and numerous modifications of the foregoing.

In spite of the onrushing competition and, to an extent, because of it, cellophane manufacturers have continued to register impressive sales increases rather steadily as they improve and amend their products. Today there are more than 100 types of cellophane in a variety of properties, gages and colors. Last year, cellophane production in the United States reached an all-time high of 439,000,000 pounds. This figure is still more than twice the estimated poundage for polyethylene (in a distant second place last year), but even so, cellophane's chunk of the market for packaging film had by that time dwindled (if nearly half a billion pounds can be called dwindling) to slightly more than 50 per cent of all flexible, transparent packaging.

Most experts are reluctant to discuss packaging market percentages for very many years in advance — new films caught many of them off guard in the past — but few would quarrel with a figure of one billion pounds for cellophane in 1970 (with the usual hedge: no major war; no major economic distress). By 1970, however, it seems quite unlikely that cellophane will be enjoying its singular eminence of today. The new films greatly extend the range of transparent packaging both in terms of functional properties and of package cost. Some are considerably less expensive than cellophane. Some are astronomically higher. The best-ranked contender, as might be expected, is the oldest and least costly: *polyethylene*, at 1.6-2.1 cents per 1,000 square inches. The same amount and gage of cellophane costs more: from 3.0 to 4.1 cents.

But cost is not the only consideration in polyethylene's favor. It can be formulated for extremely low water vapor transmission. And, although its strength is modest at best, polyethylene film almost totally dominates the paper field: it will not dry out and crack even during the long periods of sheif-life which are traditional with stationery supplies. Polyethylene feels soft, and it is the limpest of all films — traits that are both blessing and curse. Soft, flabby films are said (by some

Three films — cellophane, polyethylene and polypropylene — show the dynamic competition among flexible, transparent packaging materials. On page 91: cellophane for hard candies and nuts; left above: polyethylene for stationery; below: polypropylene, newest of the olefins, in a significant adoption.

research specialists who are believed by some package designers) to support the psychological impulse to buy a sweater, for example. Without actually grabbing a handful of soft wool, it is suggested, the prospective customer can be persuaded by polyethylene packaging that the sweater actually is cashmere. For similar tactile reasons, a man buying a shirt is led to believe, so the argument goes, that it will be somehow more comfortable if it comes wrapped in a polyethylene pouch. The trouble with polyethylene film has been its unsuitability to high-speed automatic packaging equipment, most of which was built to push cellophane through the mechanism. Polyethylene simply doesn't push (as Mike Nichols might say, polyethylene is not one of your pushy plastics). It lies there. Early attempts to convert pushing machines into pullers or carriers at moderate cost were generally unsuccessful, and the equipment owners could not be persuaded to abandon existing equipment for new machines. Polyethylene is a bit stiffer now than it was at introduction, and the machine modifications have achieved some success but the film's best prospects would seem to be markets where newly designed machinery is being considered for high-speed packaging.

A close chemical relative of polyethylene is polypropylene. Both are olefins — that is, they are derived from petroleum and polymer chemistry. But in spite of the chemical similarity, their physical properties are widely divergent. Polypropylene is the lightest known transparent film. This means that a packager will get more square feet of film per pound of polypropylene than he will from its competitors. The new film competes on slightly better than equal terms with polyethylene's strength. It admits (and loses) less water and is almost as effective a gas barrier as its cognate film. And, in some standard formulations, it can be made as stiff as cellophane.

Although polypropylene is not as good a grease and oil barrier as cellophane, and despite the fact that it does not accept standard printing inks well, it withstands extreme low temperatures with equanimity (cellophane does not), it is a better water vapor barrier, and it has excellent resistance (as does polyethylene) to strong acids and alkalis which attack cellophane.

Functionally, polypropylene is a formidable entry in the contest for dominance among flexible, transparent films. Its cost is reasonably competitive—falling between that of cellophane and polyethylene.

Recognition of polypropylene's attractive qualities as a packaging film came swiftly. The film has been available only three years: first, in laboratory quantities, later as pilot plant production for market development. And during 1960, the first "big" year, some 40 to 50 million pounds of the resin was produced. But by the end of this year, polypropylene production capacity will have grown to more than 100 million

Some of the packaging films shrink to form skin-tight covers. Above, DuPont Mylar is used on smoked meats; below, polyethylene is used over a trayful of kitchen supplies to keep them from spilling in an innovation adopted by contract household moving companies.

Most flexible, transparent packaging films will do one job a little better than the others. None of them are best for all packages. The chart at right and on page 96 shows which film is best for which job and how much better it is than others.

PROPERTIES OF FLEXIBLE, TRANSPARENT FILMS

Properties	Cellophane	Polyvinylidine chloride	Cellulose Acetate	Rubber hydrochloride
Yield*	*9,500-25,000*	*about 17,000*	*22,000*	*24,000*
Optical qualities	*transparent to translucent or colored*	*transparent, translucent, opaque, colored*	*transparent or colored*	*transparent to opaque*
Tensile strength	*medium to high*	*medium to high*	*medium*	*low*
Impact strength	*low to medium*	*medium to high*	*low*	*low to medium*
Tear strength	*low to medium*	*low to medium*	*low*	*medium to high*
Stiffness	*high*	*low to medium*	*medium to high*	*low*
Water vapor transmission	*low*	*low to medium*	*high*	*low to high*
Gas transmission	*very low*	*very low*	*medium*	*low to high*
Grease resistance	*impermeable*	*excellent*	*excellent*	*excellent*
Temperature range (In degrees F.)	*subzero to 375*	*subzero to 290*	*subzero to 300*	*varies up to 300*
Printability	*good to excellent*	*good with special inks*	*excellent*	*good with special inks*
Sealability	*heat or adhesive*	*heat or mechanical*	*adhesive*	*heat*
Heat-sealing range (In degrees F.)	*200-350*	*275-300*	*350-450 (special equipment needed)*	*240-350 (special equipment needed)*

*Value given is for square inches per pound at one mil (0.001 inches).

continued

TRANSPARENT FILM CHART *continued*

Properties	Polyester resin	Polyethylene	Polypropylene	Polystyrene	Vinyl
Yield*	*20,000-25,000*	*29,000-30,000*	*30,650*	*26,100*	*21,600*
Optical qualities	*transparent*	*transparent to translucent or colored*	*transparent*	*transparent*	*transparent*
Tensile strength	*very high*	*low to medium*	*medium*	*medium to high*	*low to medium*
Impact strength	*very high*	*low*	*low*	*low*	*medium to high*
Tear strength	*medium*	*medium to high*	*medium to high*	*low to medium*	*low to high*
Stiffness	*medium*	*low*	*low to high*	*high*	*low to medium*
Water vapor transmission	*low*	*low to medium*	*low*	*high*	*high*
Gas transmission	*very low*	*medium to high*	*medium to high*	*medium to high*	*medium*
Grease resistance	*excellent*	*fair to excellent*	*excellent*	*good*	*excellent*
Temperature range (In degrees F.)	*—80 to 230*	*—60 to 250*	*—60 to 280*	*subzero to 185*	*varies widely up to 200*
Printability	*good*	*good if specially treated*	*good if specially treated*	*good with special inks*	*good with special inks*
Sealability	*adhesive*	*heat*	*heat*	*heat or adhesive*	*heat or adhesive*
Heat-sealing range (In degrees F.)	*275-400 (if specially coated)*	*240-350 (special equipment needed)*	*325-400 (special equipment needed)*	*325-400 (special equipment needed)*	*200-350 (special equipment needed)*

* *Value given is for square inches per pound at one mil (0.001 inches).*

Portable "cocktail bar" (top) uses laminate of Mylar and polyethylene to package quick-chilling chemicals used to refrigerate cocktail when package's interior seal is broken. Mylar's resistance to high temperatures permits boil-in-bag use (center). Recently-introduced overwrap of polyethylene (bottom) protects magazine mailings is said to be cheaper than regular envelopes.

pounds, with an even greater expansion expected in 1962. The new plants are not modifications of existing installations, either. Nearly all of them represent substantial investment in new sites and equipment. In February, Eastman opened a 20-million-pound plant. Hercules followed shortly after with a 60-million-pound installation (soon to be enlarged to reach a 120-million-pound capacity). AviSun Corporation dedicated a 100-million-pound plant just last month, and Montecatini, the Italian pioneer in polypropylene, plans to begin production next month in West Virginia, where the company expects to make 30 million pounds of resin annually. Dow Chemical Company is reported to be preparing a West Coast plant which may open early next year with a 25-million-pound capacity. Shell Chemical is firmly committed to an 80-million-pound plant; Allied Chemical is said to be planning a 10-million-pound flyer in polypropylene by 1963, and Firestone Plastics Company is planning to build a 10-million-pound plant soon—possibly next year. All this is in addition to Enjay's 40-million-pound plant, which has been in operation since 1960.

It is well to bear in mind, however, that the plant capacity figures cited above — more than 400 million pounds — are only capacity, not necessarily anticipated production or sales. Nonetheless, polypropylene is certain to be getting a generous share of the packaging film market during the next several years.

But this does not mean that all of the other packaging films are going to be abandoned. Far from it. Most of them will continue to be used, more often than not in laminations, where their special properties will combine with the so-called all-purpose films. Here is a sampling of the films available to today's package designer, with suggestions as to suitable uses:

Cellulose acetate — has brilliant clarity and accepts printing well. Used effectively on window box display packages which are not subject to rough handling.

Polyvinylidene chloride and vinyl chloride—are heat-shrinkable and admit very little ultra-violet light. They perform well as skin packages for luncheon meat.

Rubber hydrochloride — has a wide heat-sealing temperature range and good resistance to grease and oils. It is effectively used in laminations with foil for drug and cosmetic packaging.

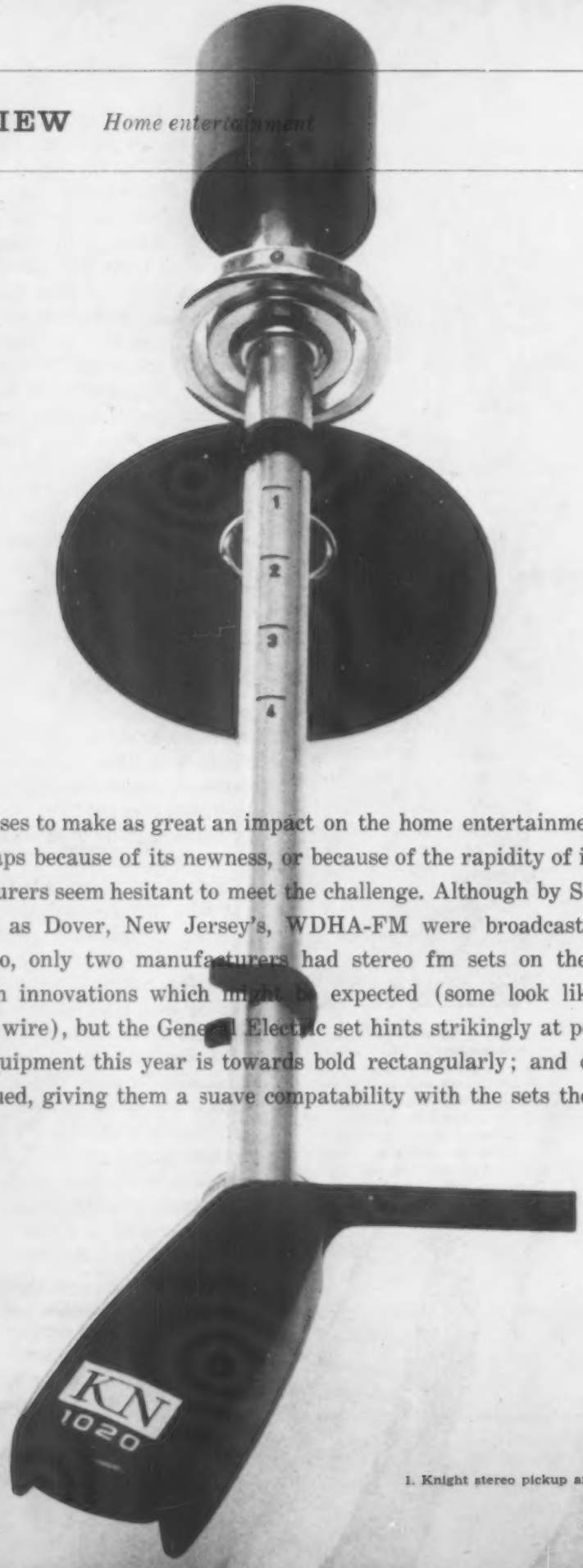
Polyester film—is the toughest of all packaging films but its cost is high. It would be a good display package for sharp-cornered, heavy hardware items.

Polystyrene — transmits both gas and water vapor readily and has good clarity. It works well on produce packages which must "breathe" while on display.

Polyvinyl alcohol and methyl cellulose—dissolve in water. Used as unit packages for soaps, bleaches and detergents.

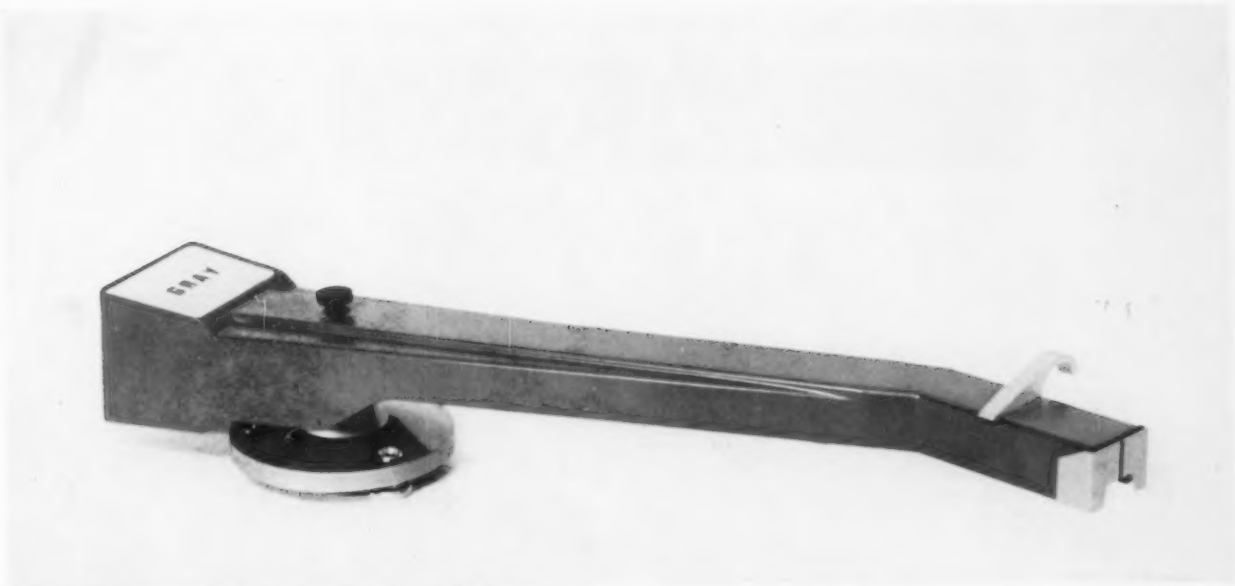
Fluorocarbon resins—have high heat-resistance and are extremely inert, thus may be sterilized.—*R.B.*

DESIGN REVIEW *Home entertainment*



Stereo fm radio promises to make as great an impact on the home entertainment industry as did stereo hi-fi. But perhaps because of its newness, or because of the rapidity of its arrival, most designers and manufacturers seem hesitant to meet the challenge. Although by September such progressive broadcasters as Dover, New Jersey's, WDHA-FM were broadcasting more than 18 hours a day in stereo, only two manufacturers had stereo fm sets on the market. None of these show the design innovations which might be expected (some look like two inexpensive radios connected by a wire), but the General Electric set hints strikingly at possibilities to come. The trend in other equipment this year is towards bold rectangularly; and control panels and knobs are often subdued, giving them a suave compatability with the sets they operate.

1. Knight stereo pickup arm, Allied Radio Corporation



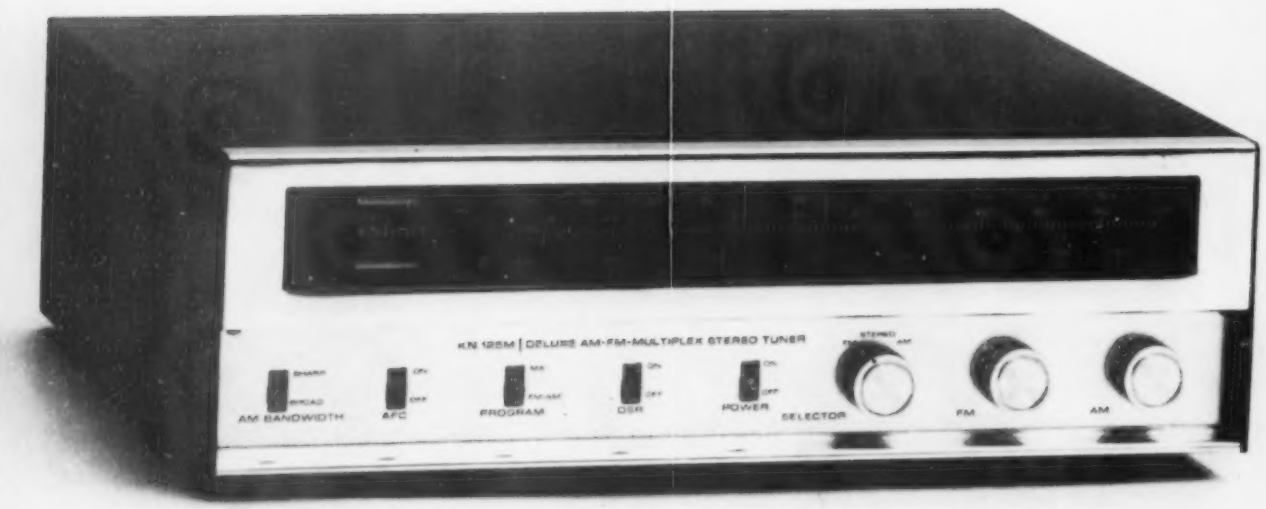
2. Professional stereo tone arm, Gray Manufacturing Company

3. Turntable, Acoustic Research, Inc.

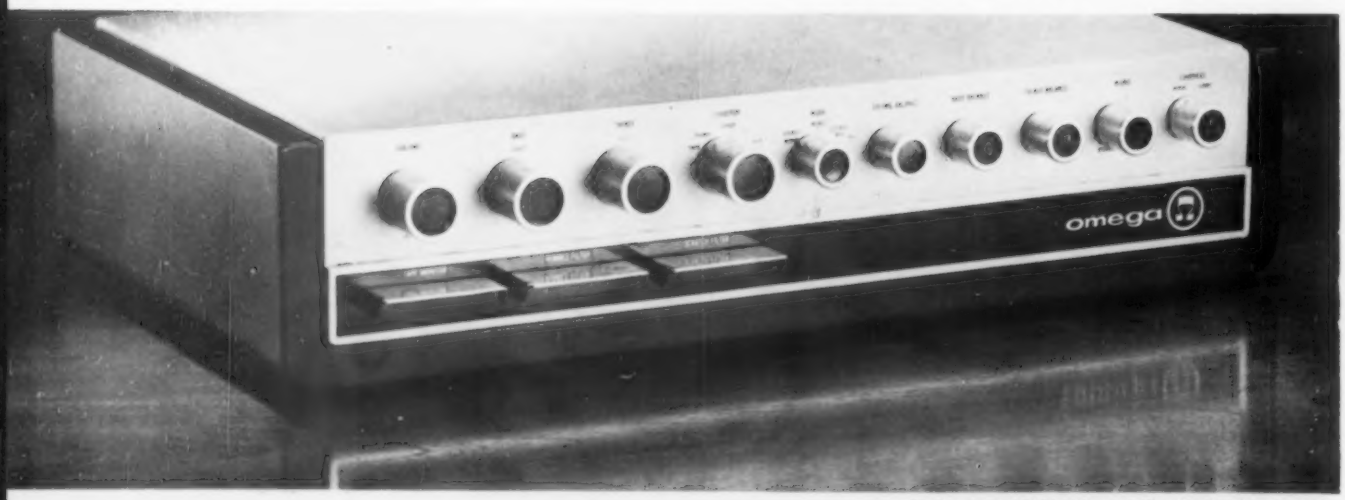
1—Knight stereo pickup arm by Allied Radio Corporation is simple without being stark. Shaft is chromium plated. Molded plastic cartridge head accepts any cartridge. Sliding counter weight provides dynamic balance. $19.95.
Design: Klein Wassmann/Design.

2—Gray Manufacturing Company's professional stereo tone arm (208-S) with tapered housing covers a mechanism that provides viscous damping with silicone fluids. Balance adjustments, bearing pressure, and tracking force are controlled by gravity, adjusted by knob on top of arm. Die cast aluminum. $49.50.
Design: Peter Quay Yang Associates.

3—AR turntable by Acoustic Research, Inc. has gracefully curved arm that is damped to float down to record when dropped, but is released from damping on contact with record. Turntable and arm are jointly suspended to absorb external shock. Die-cast, machined aluminum platen; natural brass counterweight; oiled walnut base. $58.
Design: Edgar M. Villchur, President, Acoustic Research.



4. Stereo multiplex FM-AM tuner, Allied Radio Corporation

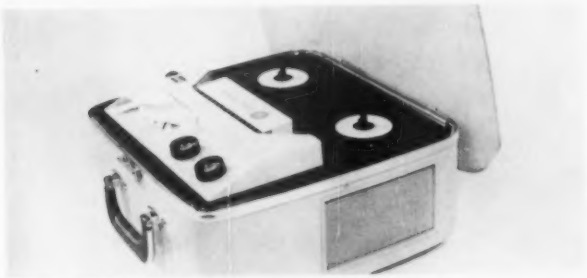


5. Stereo amplifier, Omega Electronics Corporation

6. Tape recorder, Ampex Audio Company

9. Stereo multiplex adapter, Fisher Radio Corporation

7. Tape recorder, Saba Werke



8. Tape recorder, Westinghouse Electric Corporation

4—Knight stereo multiplex FM-AM tuner (KN-125) by Allied Radio Corporation is one of the best looking of the flock of FM multiplex tuners which appeared on the market this year. Easy-to-read dial face has well spaced, harmonious, unobtrusive dials and switches. Embossed, dark brown textured, rolled steel case. Recessed polished brass face panel. $179.95.
Design: Klein Wassmann/Design.

5—Transistorized circuitry makes possible the low silhouette of Omega Electronics Corporation's stereo amplifier. Master bass and treble controls are said to allow for the first time a simultaneous balanced adjustment in both channels. Low unobtrusive lines blend well with any decor. $229.
Design: Richard Sorel.

6—Ampex Audio Company's tape recorder (PR-10) is crisply linear, has easy-to-read control instructions which give it a highly functional, efficient look. Self-contained unit can be used as a compact portable recorder or may be rack-mounted. Automatic threading feature is optional. Stamped aluminum, vacuum-formed Royalite. $845.
Design: James Hackney, Ampex staff.

7—Four-track tape recorder by Saba Werke has a molded plastic housing. Controls are red plastic push buttons and polished aluminum-capped knobs. Control panel tilts towards operator. $150.
Design: Goertz Industrial Design, Inc.

8—Piano key controls of Westinghouse Electric Corporation's tape recorder (H21R) harmonize with control panel, making operation look as easy as it is. It represents trend away from cluttered control areas which make home entertainment equipment seem unnecessarily complex. Molded gray, pebbled, wood fiber case. $169.95.
Design: Westinghouse staff; Seymour Silverman, Manager.

9—Fisher Radio Corporation's stereo multiplex adapter (MPX-100) is typical of the multiplex adapters developed this year. Design matches this unit with existing Fisher hi-fi components. A "stereo beacon" automatically indicates whether station tuned is broadcasting in stereo. Extruded aluminum front panel is painted to resemble brushed brass. $89.50.
Design: Ben Davidson, Fisher staff.

10. Portable stereo phonograph, General Electric Company

11. FM radio, KLH Research and Development Corporation

10—Drop-down changer and detachable speaker units make this GE portable (32 pounds) stereo phonograph fairly compact. Vinyl laminated steel case is durable and washable. $139.95.
Design: GE staff, Richard Montmeat, Manager.

11—Quiet sophistication of KLH Research and Development Corporation's FM radio is a departure from most other radio design. Large, well-positioned black knobs contrast with cream surface. Speakers and tuner-amplifier system are seperately housed. Housing is walnut. $159.
Design: William Barton.

12. FM stereo radio, General Electric Company

12—One of few FM stereo radios on the market is this model by General Electric, made important by expanse of oiled walnut cabinetry. Detachable door-speakers are connected to amplifiers through hinges. Tooled steel control knobs. $175.
Design: GE staff; Richard Montmeat, Manager.

13—Compact Westinghouse transistor radio has three-band tuning: standard broadcast, short wave, marine. Black leather housing gives it a gentlemanly, sportsmanlike look. Aluminum lid has map of the world, shows time differentials. Aluminum trim. $79.95.
Design: Wesinghouse staff.

13. Transistor radio, Westinghouse Electric Corporation

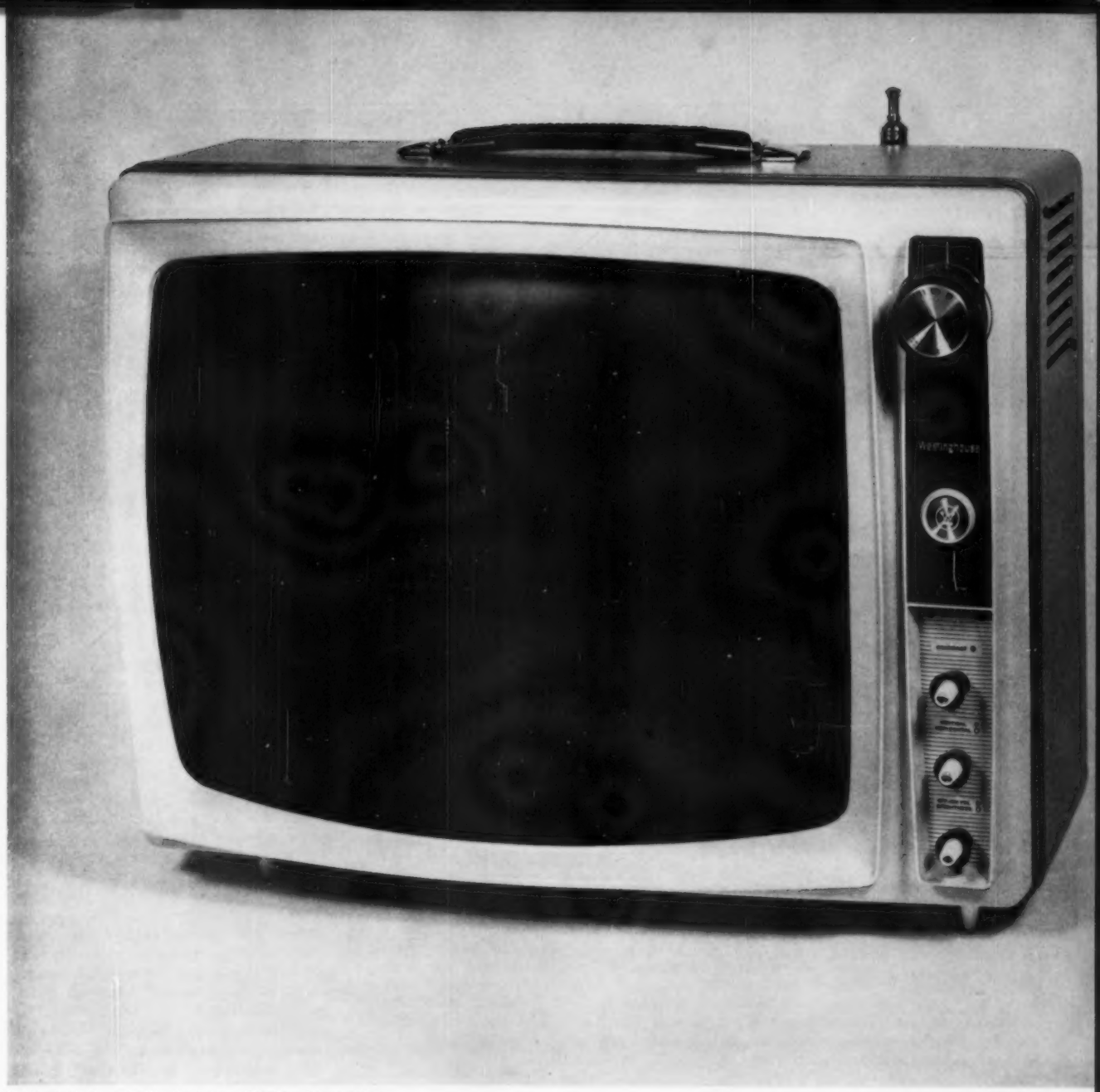
14. Transistor radio, General Electric Company

14—Low horizontal design is feature of General Electric's transistor portable radio (the General). Radio rests on a clip which can be used to fasten it to railings, chair backs, etc. Carrying strap is detachable. Black with aluminum trim. $59.95.
Design: GE staff; Richard Montmeat, Manager.

15—Westinghouse portable tv (P3170) has injection-molded polystyrene front and back, stamped steel wrap. Molded texture in control panel adds pleasant contrast, but adjustment knobs and inlay behind them seem out of place in this otherwise sleek set. Speaker grille slits, unlike most, are inoffensive. Price: open list.
Design: Westinghouse staff; Seymour Silverman, Manager.

16—Muntz 19-inch portable tv has this year's boldly rectangular design, but the dignity of this otherwise handsome set is marred by knob arrangement reminiscent of a bulb-nosed, buck-toothed clown. $189.
Design: Schory-Steinbach Associates.

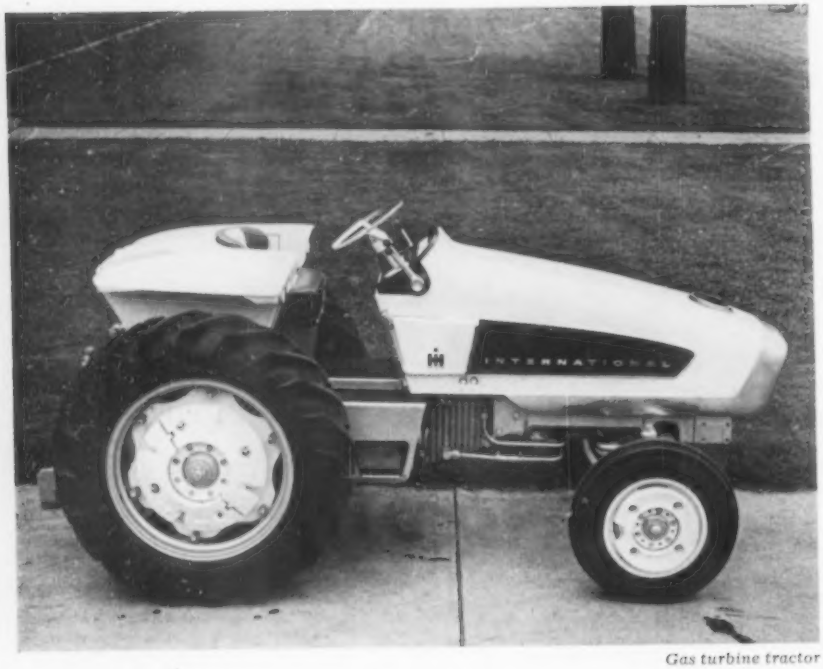
17—Almost all this year's crop of portable and table model tv sets are housed in squared-off rectangles, but the surfaces themselves tend to be anything but plain. This Westinghouse table model, while typical, is less fussy than most. Raised control panel highlights knobs against white background without compromising the quiet tone of the rest of the set. Formed steel wrap with simulated wood grain. Extruded frame. Die-cast knobs. Anodized stamped metal inlays. $219.95 to $249.95.
Design: Westinghouse staff; Bronislaw Zapolski, consultant.



15. Portable tv set, Westinghouse Electric Corporation

16. Portable tv set, Muntz TV

17. Television set, Westinghouse Electric Corporation



Gas turbine tractor

Turbine-tractor

Gas-turbine engine with hydrostatic transmission is used to run redesigned tractor

Although the new leisure has not yet reached the farming community, an increased sophistication is noticeable in both farmers and the equipment they use. Now an experimental tractor has been developed that can run on vodka, cleaning fluid or virtually any other liquid fuel.

Combining a hydrostatic transmission with a gas turbine engine, the tractor has no gear shift lever, no throttle, no brake or clutch pedals. It uses neither cooling water nor anti-freeze, and it has no conventional transmission gears.

This internal mechanism gave International Harvester's industrial design staff a chance to experiment with the somewhat futuristic but efficient configuration shown here. Equally important, it provides an opportunity to test the qualities of a material not previously used in tractors: fiberglass.

The gas turbine engine, built by IH and said to be one of the smallest ever made for this purpose (21 inches long, less than 13 inches in diameter, 90 pounds), develops a substantial (for its size) 80 horsepower, but at present can use only about half of this, since its transmission was originally designed for a 40 horsepower piston engine. Nevertheless, a ground vehicle can operate efficiently with this power plant because a constant-speed turbine is particularly well matched with a hydrostatic transmission to provide speed variation. As in other gas turbines, this engine draws in air, compresses it, then mixes it with fuel in a combustion chamber. Hot gases from the ignition of the air-fuel mixture spin a vaned turbine wheel. This turns the output shaft directly, producing constant engine speed. Turbine simplicity provides the engine with three basic freedoms: freedom from vibration; freedom from conventional maintenance problems; and freedom from oil consumption (only a few bearings need lubrication). Furthermore, the constant-speed engine allows elimination of throttle, gear shift lever, brake and clutch pedals. Operation is simple: the driver pushes a starter button, and after that, is concerned (except for steering) with only one control—the transmission lever—to change forward and reverse speeds and to stop.

An hydraulic apparatus permits easier steering and also makes the steering mechanism more compact, leaving more room for mounting instruments and implements. It also makes possible an adjustable steering wheel so that the driver can sit or stand. And what is more, the compactness of the gas turbine permits a low, forward-sloping hood, giving greatly improved visibility.

However, the gas turbine is a notoriously thirsty engine, and a large fuel tank is essential. This design problem was solved by wrapping a 30 to 35 gallon fuel tank around the seat, making fenders and tank a single unit, but still retaining good rear visibility for watching rear mounted implements.

Besides providing protection for the operator in mud and wet weather, the fender-tank assembly provides a location for lights (they are well protected and high enough from the ground to give good coverage). The two inner lights provide night visibility of side mounted attachments; outer ones are for road driving and general illumination during night work in the field. The tractor nose contains a floodlight for use with front-mounted attachments such as loaders or blades. Two rear lights illuminate rear-mounted implements.

Exhaust and air intake (for cooling) are located towards the front of the hood. Tube-like projections in the nose suck in additional cooling air.

Since gas turbine engines require a minimum of maintenance, the designers enclosed the engine compartment in a fiberglass hood, which lifts vertically for major repairs or service. And a cast iron nose was designed to absorb normal operational shock.

The fenders and most of the body are white. The perforated side panel, where gas turbine air intake is located, is red. Instrument panel is black to reduce glare. *Manufacturer: International Harvester Company, Chicago, Illinois.*

Multi-lens housing

One fixture holds sixty-seven different lighting combinations with variable fronts and finishes

Individual housings that accommodate a wide variety of fronts, a new simplified numbering system and faster, easier installation are features of an expanded line of recessed lighting fixtures for residential and commercial applications.

Designated S-R-O (Square, Round, Oblong) the new line includes 13 housings and 13 different fronts including flat

Variable light fixture

and drop bowl lenses, louvered, conical, skirted, pinhole and adjustable spot lighting. One of the housings, for example, can be used with any of 67 different fronts and finish combinations. Ordering and stocking the line is greatly simplified through use of a parts numbering system and because fewer housings need be carried in stock. The fixtures are installed quickly, according to the manufacturer, through use of straps with built-in nail prongs. These permit nailing directly to studding. The fronts are made of anodized aluminum to eliminate rust, corrosion and deterioration. They are available painted or in finishes simulating chrome, brass, or copper. *Manufacturer: Emerson-Pryne Company, St. Louis, Mo.*

Plastic pipe

Pipe structure, materials combine to offer high resistance against mechanical pressures, corrosives

Two-inch diameter pipe which withstands pressures up to 500 pounds per square inch and operates successfully in corrosive environments has been developed by the Spiral-Glas Pipe Company.

The structure and its components include: a cover of a blend of nitrile rubber and polyvinyl chloride for abrasion resistance, erosion resistance and oil and chemical resistance; three layers of glass-reinforced Enjay Buton resin core, and a lining of the same materials as the cover. It is supplied with factory-applied threaded ends in twenty-foot lengths. To date the piping has proven successful in handling the following materials at temperatures up to 200 degrees F.: crude oil, kerosene, diesel fuel, jet fuel and brine. *Manufacturer: Spiral-Glas Pipe Co., Old Bridge, N. J.*

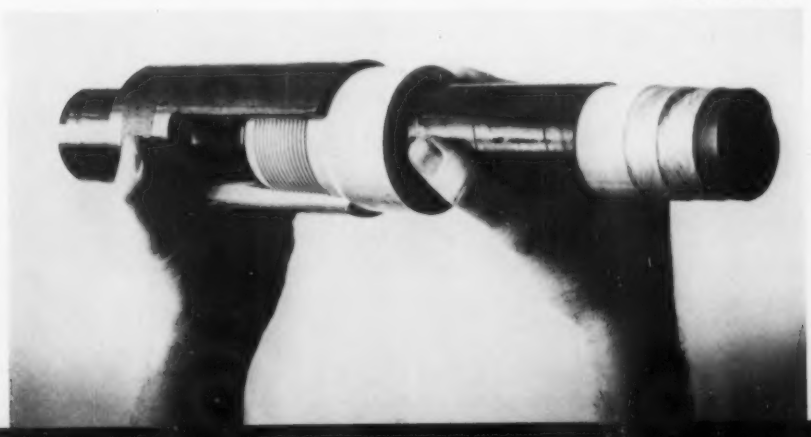
Stronger silver

Sapphire crystals blended with silver increase metal's strength five-fold

Small amounts of tiny sapphire or alumina "whiskers" (crystals) are being blended with pure silver to increase the strength of the silver five times. The additional strength helps overcome the problem of the heat barrier in space vehicles and advanced aircraft design, where there is a need for structural materials which maintain strength at the high temperatures created by re-entry, hypersonic air speeds, and powerful jet and rocket engines. These laboratory-grown crystals have extremely great strength (up to several million pounds per square inch) but have neither the rigidity nor bulk for machining or for use as structural pieces or engine parts. High-strength metals, including steel, are rigid and can be machined into precision parts, but lose nearly all strength at high temperatures (2,000 degrees F. or more). Embedding the crystals in the metal enables them to carry almost the entire load and allows the metal to perform at temperatures far beyond its normal operating range. It is the same principle as that of reinforced concrete, plastic or cardboard.

The whisker-silver composite was achieved by infiltrating molten silver into a pack of the crystals under a vacuum, with the final composite containing 11½ per cent sapphire. It held up under tension of 118,500 pounds per square inch, five times the ability of unreinforced metal. Future plans for the process are to develop composites using steel or other high-strength refractory metals as a matrix. *Manufacturer: General Electric Missile and Space Vehicle Department, Philadelphia.*

Heavy-duty pipe



Microminiature lamp

Tiny lights use fractional amounts of electricity yet deliver up to 45 millilumens and last for 1,000 hours or more

Micro Lamps are being made which operate on 1.2 or 1.5 volts and draw only five milliamperes of current. This infinitesimal power use suggests unusual design opportunities, particularly with miniature batteries or transistors. The lights are amazingly small and are manufactured with a lamp envelope diameter of .0234 inches. They are .138 inches long. In spite of their tiny size they deliver a light output of 40 to 45 millilumens (enough to be enormously useful in medical probes, for example) and they will last 1,000 hours or more.

Scaled-down lamp

Design opportunities are suggested in various fields, including instrumentation (needle lights mounted on the tip of instrument pointers) electronics (indicator lamps, read-out devices, photo-electric systems) and consumer markets. *Manufacturer: Miniature Lamp Engineering Co., New York, N. Y.*

Skylights

Acrylic skylight is completely sealed and insulated; can be nailed directly to roof deck

A new acrylic skylight has been developed that is said to provide completely insulated protection on any type of roof, in any climate. The skylight consists of two domes separated by a uniform one-inch hermetically-sealed air space that acts as an efficient thermal barrier and eliminates vapor condensation. It is trademarked Twin Dome.

It is available in any combination of clear colorless, white translucent and reflective inner and outer domes to allow maximum control of light levels and heat gain. Sizes range from 20 by 20

inches to 64 by 96 inches. *Manufacturer: Wasco Products Department, American Cyanamid Company, Cambridge, Mass.*

Flame-cutting machine

Numerical control flame-cutting machine speeds operations, eliminates need for templates

The first numerical control flame-cutting machine has been put into operation, and can cut straight lines and contours in steel plate of any length, 22 feet in width, and up to six inches thick. The computer-run machine is particularly valuable for use in shipyards and by large and medium-sized fabricators, such as manufacturers of earth moving equipment, farm machinery, and railway cars.

The new machine eliminates the need for templates and does not require an operator to control the flame-cutting process. It provides automatic control by means of pre-determined, coded instructions fed into it by a General Electric Mark Century numerical control system. The tape not only tells the machine the dimensions to be cut but also controls auxiliary functions such as starting and stopping the machine, igniting the flames, and supplying the proper amount of gas. Equipped with four cutting torches, the unit has an accuracy of plus or minus 1/64-inch. *Manufacturer: Air Reduction Sales Company, New York, N. Y.*

Fiber optics

Shaped-beam tube uses fiber optics to produce printing lines at widths up to standard page sizes

Minute, light-carrying pipes, smaller than a human hair, extend the performance of cathode-ray tubes used for recording computer-generated information. These are essentially nothing more than glass fibers, although they are made of high-quality optical materials and coated with a surface which keeps the light inside the fiber instead of allowing it to leak out through the filament walls.

In the Charactron Shaped-Beam Tube, these fibers eliminate conventional lens systems and allow direct contact printing (the image is sent through the fibers directly from its source without having to be projected optically on a screen or viewing plate). It is said that systems using cathode ray tubes with fiber optics will allow operations with lower voltage, reduced complexity, weight and size.

In a cathode ray tube, the image or picture is formed by an electron beam illuminating a light-emitting phosphor which has been deposited on the inside surface of the faceplate (screen in a tv set). Conventional cathode-ray tubes have drawbacks caused by the thickness of faceplate glass, such as reflection, light scattering and halation which limit the resolution and brightness of the image.

Installed in a cathode ray tube, fiber optics will transmit the image produced on the phosphor to the external surface of the faceplate. The resulting image will show considerable improvement over conventional cathode ray tubes. *Manufacturer: General Dynamics/Electronics, San Diego, Calif.*

Page-wide printout tube

Jacketed insulation

Stainless steel provides protective coating for insulating material used on chemical plant piping

A thin layer of stainless steel covers the piping insulation in Union Carbide Chemicals Company plants to protect it from mechanical abuse and chemical corrosion. The steel jacket also reflects heat, helping to keep pipe temperatures lower, and it increases the insulating material's strength and fire resistance.

Trademarked Metal-On, the material consists of a high temperature Thermobestos (calcium silicate) insulation with a factory-applied 0.01-inch-thick layer of stainless steel. Combining the two at the factory reduces installation time. It is manufactured in 36-inch lengths in two half circles. Longitudinal joints along the steel jacket lock the unit after it has been placed around the pipe. End joints are kept water-tight by metal snap-strap bands and a sealer.

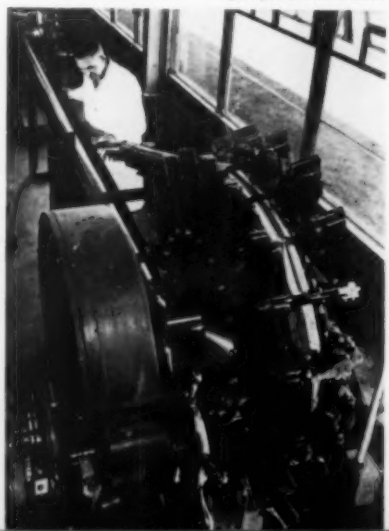
To prevent freezing of gases and liquids flowing through the pipes, the insulation includes a ¾-inch space above the half circle that permits passage of an electrically heated tracer line. *Manufacturer: Johns-Manville, New York.*

Multi-purpose rapid canner

Machine delivers up to 2,000 cans per minute, will operate with either tin plate or aluminum

The American Can Company has developed a machine that produces cans from either aluminum or tin plate three times as fast as conventional machines. In recent years aluminum has found increasing acceptance as a material for cans, but its production requires an electric weld, rather than the soldering process used with standard tin plate and double-reduced tin plate. Therefore separate machines were required for use with each material. Furthermore the standard can machine forms cans from blanks of tin plate cut to the size of a single can body by notching, soldering, and pressing (complex operations which

High speed can maker



limit production speed). The new machine makes cans from a continuous ribbon of metal sheet which is first formed into a tube. Then sides are welded together, and the tube moves onto a large wheel where individual cans are cut off. Up to 2,000 cans a minute can be produced, using any conventional can material specified by the customer. Units are scheduled to start production early next year. *Manufacturer: American Can Company, New York, N. Y.*

Miniature voltmeter

Twenty-ounce instrument designed for greater sensitivity, portability, records accurately on paper tape

A miniaturized, precision recording voltmeter permits operational freedom for electrical contractors and appliance servicemen.

The Amprobe Recorder offers features not found in similar instruments. It is inkless; it uses smudgeless, pressure-sensitive paper which is not affected by

Portable voltmeter

heat, cold, moisture, humidity or fumes. All its internal mechanism is shielded by a polyester film barrier against dust, even when the paper record roll is being changed. The paper feeds at a speed of 12 inches an hour and is loaded as easily as film in a camera, according to the manufacturer.

The meter is available, complete with leather carrying case, line cord and test probes, in two models, one with a regular scale and another featuring an expanded scale for greater accuracy in readings. *Manufacturer: Amprobe Instrument Corp., Lynbrook, N. Y.*

Extra-wide zinc-clad steel

Zinc-coated steel

Growing markets for zinc-coated steel prompts construction of extra-wide continuous rolls to permit broader design applications

One of the steel industry's oldest products, zinc-coated steel, has burgeoned in use and acceptance during the last decade. In 1960 shipments of zinc-coated steel for use in automotive applications, appliances, architectural and building components, heating and air conditioning systems, and agricultural products reached a record 3,056,996 tons. And 1960 was a year in which the steel industry was hard hit by strikes and layoffs.

Now the widest (72 inches) continuous zinc-coating line is in operation. It will not only increase the output of zinc coated steel but will also (through greater width of the coated material) make possible new product design and manufacturing innovations. The line (operated electronically) has an engineered coating speed of 300 feet of strip per minute and can produce 30 tons of zinc-coated steel in sheet or coil form per hour. The process operates by feeding strip steel into a line, where it is uncoiled, welded, cleaned, heat-treated, coated, cooled, sheared to sheets, or recoiled and inspected. *Manufacturer: Armco Steel Corporation, Middletown, Ohio.*

Low-cost pump

Plastic pump operates on toothpaste-tube principle, eliminates the need for boxes, shaft seals, values and gaskets

A compact, low-cost plastic pump which does away with many conventional pump components, works like a toothpaste tube being squeezed and refilled in cycles. It is being recommended by the manufacturer for applications in vending machines, laboratory equipment, bottle fillers, and lubrication devices, etc.

Pumping action is accomplished by a rotor turning on an eccentric shaft within a flexible lining. This squeezes the fluid trapped between the liner and the body block, and pushes it through the pump. Thus the only parts in contact with fluid are the liner and block, so that valves and seals and stuffing boxes (which are normally used to seal off the shaft of a conventional pump) are unnecessary to its operation.

The pump is available in capacities from 1/3 to 10 gallons per minute and it delivers pressures up to 35 pounds per square inch. *Manufacturer: Vanton Pump & Equipment Company, Hillside, N. J.*

Simplified ball valve

Con-O-Sphere uses plastic block as seat for metal ball through which corrosive materials can flow

The Con-O-Sphere ball valve (shown here in a cutaway model) is said to be the most easily adjusted, maintained and overhauled valve available. A stainless steel ball is molded within a conical block of Teflon (a tough, inert fluorocarbon resin), like the yellow within the white of a hardboiled egg. Designed to replace conventional ball valves which require many parts, the Con-O-Sphere has only seven parts: sealing capsule with its integral handle stem, valve body, handle, Teflon stem seal (a small washer), screw-in base plate, lock nut and screw set. The sealing capsule is held in the valve body by a screw-in base plate, controlled at the handle. Gases and liquids flow through the opening in the ball, and are controlled by simply turning the ball.

Most ball valves have two separate seats, two stem seals, and a ball, any of which may have to be adjusted or replaced—and repair means a shut down

Con-O-Sphere valve

of the line. Should the Con-O-Sphere require rebuilding, it can be done in the line in three minutes. Removal of the base plate and handle permit the sealing capsule to drop out of the body. Replacement of the capsule and stem seal completely rebuilds the valve. Con-O-Sphere is now being made in sizes from one-eighth to two inches and in a pressure range from vacuum to 1440 pounds per inch. It is available in a number of metals including ductile iron, carbon steel, bronze, aluminum, and several stainless steel alloys. Likeliest applications are in process plants where efficient handling of gases, liquids and viscous or abrasive ladings is vital. *Manufacturer: W-K-M Division, ACF Industries, Inc. Houston, Texas.*

Low-cost three-wheeler

Tricycle trucklet can drag 470-pound loads, carry 800 pounds; has a six-foot wheelbase

Cushman's Haulster is a low-cost three-wheel vehicle designed for a wide range of "off-the-road" towing and light hauling applications. Equipped with a special transmission which allows a safe top speed of 14 mph, the vehicle can pull 470 pounds in low gear.

Two body styles, a pickup-type rear box and a chassis model, are available, each having a capacity of 800 pounds. The unit can operate in a passageway no larger than 4½ feet and will turn in a circle with a 90-inch radius. It has a 72-inch wheelbase, an overall width of 41¾ inches, and stands 40 inches high. It is available with either a 9- or 18-hp 4-cycle die-cast aluminum engine (both are air-cooled and available with electric starting). It has three forward speeds and one in reverse. Accessories such as a fiberglass and steel cab, a wrap-around windshield, a flat bed and stake racks, a dump body and a personnel carrier are available. *Manufacturer: Cushman Motors, subsidiary of Outboard Marine Corp., Lincoln, Neb.*

Wedgie light bulbs

New bulb made with wedge-base eliminates bayonet socket or threading arrangement, plugs directly into simplified connector

Miniature light bulbs with a simplified contact base offer interesting design possibilities as indicator lamps in panels and dashboards, and appear likely to find wide use in the automotive, aircraft and electronic industries.

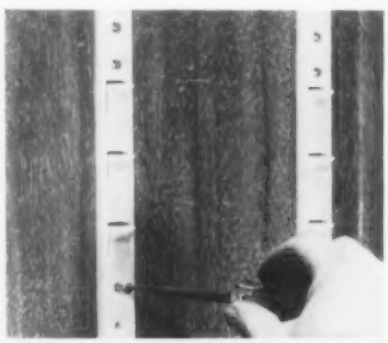
Simplified light bulbs

The compact bulbs have no metal base or threads. Instead, the glass at the end of the bulb is formed into a flat wedge which is easily inserted into a vastly-simplified socket. The bulb is merely wedged into the socket (no turning or twisting is needed). Electrical contact is made by two tiny wires which are crimped into recesses at the base. The bulbs are said to be ideally suited for use in areas where space is severely limited. The new design also permits use of the bulb in printed circuits where the sockets can be molded automatically into the circuit board. *Manufacturer: Westinghouse Electric Corp., Bloomfield, N. J.*

Plastic shelf tracks

Delrin shelf track with integral support tabs is easily adjustable to various shelf levels

A newly-marketed one-piece Delrin acetal shelf track can be adjusted to various shelf levels by simply pressing in the projecting support tabs and raising or lowering the shelf. Called the Shelf-a-Matic, the patented item takes advantage of Delrin's resiliency, permitting the support tabs to spring back into place after each adjustment. The shelf tracks come in 24-inch lengths and are available for a wide variety of shelves, including those used in dish and storage closets. *Manufacturer: Michigan Plastic Products, Inc., Grand Haven, Mich.*



Adjustable plastic track

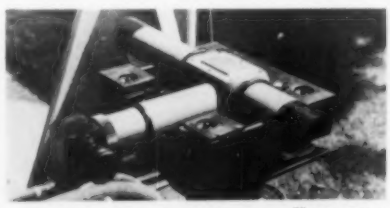
Two-way scope

Front and rear views are superimposed in optical instrument designed to aid engineers in leveling and grading problems

An optical instrument, designed primarily for aiding track leveling work on railroad right-of-ways, permits its operator to see forwards and backwards at the same time. Other applications suggested by the manufacturer may be in road leveling, bridge building, and construction work.

Unlike split-image rangefinders, which project two separate side-by-side images, the new instrument (called a Hoganscope) superimposes front and rear images. In this way rail height can be determined accurately over long distances.

Before the development of the Hoganscope rail elevation was determined in only two ways: by stretching a wire between two marked stakes or by sighting a surveying target with the naked eye. The Hoganscope is mounted on a track ballast tamping machine, and lines up two mobile targets placed on the rails from 25 to 100 feet in front of and behind the scope. Peering through the scope the operator sees a red line on the front target, a green line on the rear target and a black line (the horizontal axis of the instrument) bisecting the image. Green and red lines are brought together by turning a knob. The operator can determine from a scale the distance between the red and green target images and the black instrument line. The track is then raised with a tamping jack until the three lines are superimposed in the instrument.



Hoganscope

According to its manufacturer, the Hoganscope is accurate to tolerances of .032 inches. *Manufacturer: Simpson Optical Manufacturing Company, Chicago, Illinois, in cooperation with Donald J. Hogan & Company.*

FREE LITERATURE *available from manufacturers, on materials, components, processes, machines*

Materials—Plastics

Guide to Laminated Plastics and Vulcanized Fiber Parts. Taylor Fiber Company, Norristown, Pa. 8 pp. Article covers fabrication characteristics, types of parts, ordering information (including common conflicts in specifications), and design tolerances of laminated plastic and vulcanized fiber.

Revised Plastics Fact File. Monsanto Chemical Company, Department FF, Springfield 2, Mass. 16 pp. Booklet describes the properties and typical end uses of the diversified line of materials produced by the company's Plastic Division.

Plastics Brochure. The Richardson Company, 2634 Lake Street, Melrose Park, Ill. 12 pp. Illustrated brochure outlining the services and products the company offers in the laminated, fabricated, and molded laminated plastic fields. Also describes unusual areas of service for customers.

Pearl Pigments and Plastics. The Mearl Corporation, 41 E. 42nd Street, N. Y. 17, N. Y. Illustrates applications of pearl pigments incorporated into vinyl film and sheeting, thermoplastics, and cast plastics. Explains uses of pearl pigments for coatings and printing on a wide range of plastics.

Silicone Rubber Electrical Insulation. Silicone Products Department of General Electric, Waterford, N. Y. 4 pp. Technical bulletin describing the properties and handling characteristics of silicone rubber as they pertain to wire and cable insulation for use in aircraft and missile support equipment.

Plastic Tubing. Busada Manufacturing Corporation, 32-21 Downing Street, Flushing 54, N. Y. 4 pp. Brochure describes a simplified approach to the selection of correct transparent plastic tubing for every application.

Materials—Metals

Vacuum Metallizing. F. J. Stokes Corporation, 5500 Tabor Road, Philadelphia 20, Penn. Bulletin 584 explains vacuum metallizing, a low-cost method of depositing a thin film or layer of metal on prepared surfaces of metal, glass, paper or plastics.

High-Permeability Alloys. Magnetic Metals Company, Hayes Avenue at 21st Street, Camden, N. J. 40 pp. Booklet contains new material on permeability and core loss of Carpenter High Permeability "49" and Carpenter HyMu "80" alloys at both 60 and 400 cycles.

Methods and Machines

Collapse Problems in High Density Polyethylene Containers. Dept. 119, W. R. Grace and Company, Polymer Chemicals Division, 225 Allwood Road, Clifton, N. J. 8 pp. Illustrated brochure details causes of collapse in blow-molded, high-density polyethylene containers, gives correction measures and outlines the principles of good initial design. Covers causes of dimpling, methods of distinguishing between causes, and eliminating and reducing causes of dimpling.

Polycarbonate Resin for Electric Components. Chemical Materials Department, General Electric Company, 1 Plastics Avenue, Pittsfield, Mass. 6 pp. Ill. Brochure CDC-397 gives complete technical data on electrical properties, details physical properties, and describes typical applications of Lexan.

Electronic Information Searching. American Society for Metals, Metals Park, Novelty, Ohio. 8 pp. Brochure describes new electronic system of searching technical articles, documents, and patents on metals and related subjects.

Vibration, Shock, and Noise Control. Advertising Department, Lord Manufacturing Company, Erie, Pa. 16 pp. Booklet presents comprehensive background material on Lord's work in vibration control. Describes origin, products, facilities, and services offered.

Electric Quantity Measurement Instruments. General Electric Company, Schenectady 5, N. Y. 12 pp. Bulletin GEA-6788A describes G.E.'s full line of aircraft electrical measurement instruments.

Digital Data-Recording and Alarm-Scanning System. Monitor Systems, Inc., Dept. 33, Fort Washington Industrial Park, Fort Washington, Pa. 8 pp. Brochure describes monitor systems for alarm-scanning and digital-recording of virtually any type of combination of analog system.

Air Bearing Turntable. Dunn Engineering Corporation, Cambridge, Mass. 4 pp. Brochure on new Model T900 rate turntable. Model T900 is designed for testing the dynamic performance of inertial systems, all types of gyroscopes, accelerometers and pendulums.

Air-Powered Equipment for Materials Dispensing Applications. Lincoln Engineering Company, 4010 Goodfellow Blvd., St. Louis 20, Mo. Equipment shown includes pumping systems to dispense paint, cold roofing materials, and food materials.

Heatless Dryers, Purifying Systems and Miniature Compressors. Catalog No. 61, Applied Pneumatics, Inc., 740 Colfax Avenue, Kenilworth, N. J. 4 pp. Catalog describes uses and illustrates six new units designed to meet all applicable military specifications and producing capacities to 30 SCFM.

Tools and Components

Wiring Conduit. Anaconda Metal Hose Division, Anaconda American Brass Co., Dept. R, Waterbury, Conn. Bulletin S-544 discusses "Sealite," a liquid-tight, wiring conduit. Gives diameters, weights, and other information useful in specifications.

Screw Standards. J. I. Morris Company, 394 Elm Street, Southbridge, Mass. A condensation of standards for small screw threads and screws, an essential reference work, especially for those engaged in government projects.

Directional Diffuser. Waterloo Register Company, P.O. Box 147, Waterloo, Iowa. Contains data on a new all-extruded aluminum directional diffuser.

Mill and Die-Sinking Cutters. Tomkins-Johnson Company, Jackson, Michigan. T-J Catalog No. 661 contains T-J's complete line of metalworking cutters as well as informative data and numerical charts to aid the metalworking engineer on his cutting problems.

Girder rail design. Bethlehem Steel Company, Bethlehem, Pa. 24 pp. Ill. Brochure presents a portfolio of plans for the design and installation of girder rail and girder guard rail in paved areas, such as piers, wharves, docks, and streets.

FREE LITERATURE *continued*

Ring-Type Flange Designs. Design and Research Associates, 863 Pleasant Valley Way, West Orange, N. J. "Manual of Bolted Flanges: Ring-Type" consists of a listing of over 25,000 optimum ring-type flange designs, calculated as integral types in accordance with the ASME code rules.

Electric Ratio Control Station. Republic Flow Meters Company, 2240 Diversey Parkway, Chicago 47, Ill. Bulletin describes the operation of Rockwell-Republic control, lists its features, and provides detailed specifications.

Stainless Steel Condenser Tubing. Advertising Department, Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa. 12 pp. Booklet gives detailed information on use of stainless steel tubing in condensers. Charts and photographs included.

Stationary-Housed Switch and Fuse Equipment. General Electric Company, Schenectady, N. Y. Bulletin GEA-7186. 4 pp. Illustrated bulletin provides details on special switch and fuse equipment, with emphasis on auto-blast interrupter switch which gives almost instantaneous arc interruption.

Microwave Products. Telerad Division, Lionel Corp., Route 69, Flemington, N. J. 42 pp. Catalog of microwave product lines geared to space age electronics.

Industrial Casters. Faultless Caster Corporation, Dept. PR-327, Evansville 7, Indiana. 4 pp. Illustrated guide to industrial casters.

Pump Motors. Kingston Conley, Inc., Plainfield, N. J. Bulletin L-4121A describes full line of ac pump motors.

Jewels for Precision Instruments. Moser Jewel Company, 544 Fayette Street, Perth Amboy, N. J. Manual describes and illustrates "complete jewel package," giving comprehensive information on properties and types of jewels, precision metal parts, characteristics of jewel bearings, etc.

Hydraulic and Pneumatic Packings. Chicago-Allis Manufacturing Corp., 125 North Green Street, Chicago 7, Ill. 16 pp. Catalog describes company's complete line of pneumatic and hydraulic packings. Also serves as a design handbook.

Gate Valves. Circular 561, Lunkenheimer Company, Cincinnati 14, Ohio. Circular reports on applications, features and designs of "King-Clip" valves.

Numerical Control. Diehl Manufacturing Company, Div. of **Safety Tools.** Ampco Metal, Inc., Box 2004, Milwaukee 1, Wisc. 4 pp. Ill. Bulletin describes line of non-sparking, non-corrosive safety tools including wire brushes, hammers, scrapers, pliers, shovels, wrenches, etc.

Microwave Tube. Raytheon Company, Microwave and Power Tube Division, Advertising and Sales Promotion Dept., Waltham, Mass. 70 pp. Lists 201 active, unclassified microwave tubes of all types plus ferrite devices, magnetic compounds, high power test modulators, and infra-red detectors.

V-Band Couplings. Advertising Department, Marman Division, Aeroquip Corporation, 11214 Exposition Blvd., Los Angeles, California. Bulletin SDP-2 gives specific cost comparisons between V-Bands and other joining methods.

High Speed Steel Drill Sets. Ace Drill Corporation, Adrian, Michigan. Folder covers drills for general industrial purposes.

Plastic Tooling. The Scientific Cast Products Corp., 1490 E. 40 Street, Cleveland 3, Ohio. Illustrated brochure entitled "Scientific Pressure Cast Aluminum Molds and Dies," outlines methods by which Scientific, using a single pattern, model, or print produces a multiple-impression die or mold at low cost.

Industrial Finishes. General Electric, Silicone Products Department, Waterford, N. Y. 16 pp. Bulletin CDS-294 describes silicone-based industrial finishes and their capabilities.

Tracing Paper Characteristics. Five Hundred Tracing Paper, Charles Bruning Company, Inc., 1800 West Central Road, Mount Prospect, Ill. 16 pp. Illustrated booklet covering manufacturing processes, materials selection, and control procedures in the production of quality tracing papers. Also explains key steps in the manufacture of fine papers and their relation to the finished product.

Miscellaneous

Control Centers. Monitor Controller Division, Atlee Corporation, 99 Grove Street, Rockland, Mass. Guide for laying out and designing any control center, special or standard.

Preparation of Subfloors. Rubber and Vinyl Flooring Council, 444 Madison Ave., N. Y., N. Y. Manual is prepared for professional use, outlining methods for the preparation of subfloors for the installation of rubber and solid vinyl flooring. Section of manual outlines methods of the preparation of surfaces for installing rubber and vinyl cove base.

Concrete Floors. Master Builders Company, Division of American-Marietta Company, Cleveland 18, Ohio. 24 pp. Ill. Brochure describes Masterplate concrete floors and includes information on wear and corrosion resistance, spark resistance, and economy as well as photographs and diagrams of installation procedures.

Write-On Labels. W. H. Brady Company, 727 W. Glendale Avenue, Milwaukee 9, Wisc. 8 pp. Ill. Brochure describes new, self-sticking, write-on labels that are furnished on a patented dispenser card for quick application. Over 100 stock, preprinted labels are available for property identification, instrument calibration, fire extinguisher marking, inventory control, and similar applications.

Industrial coatings. S. C. Johnson & Son, Inc., Racine, Wis. 4 pp. Ill. Folder describes 18 special industrial protective coatings for various types of materials including metals, rubber, plastics, wood, and paper.

Fiber materials. Rogers Corp., Rogers, Conn. 12 pp. Booklet describes company's products, known as Fiberloys, which are non-metallic alloys made by combining fibers and chemicals. The products include plastics molding materials, fiber boards, leather alternates, heat shields, and molded rubber products.

Industrial felt. Continental Felt Company, 22 West 15 St., New York 11, N. Y. 16 pp. Catalog lists hundreds of applications of industrial felts and details the properties that suit felt for the various applications.

Conveyor belt rayon. American Viscose Corporation, 350 Fifth Ave., New York 1, N. Y. 12 pp. Technical bulletin provides full information on Avisco XL rayon used for conveyor and transmission belting fabrics.

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Industrial Design Engineer—*Experience in product and package design, engineering, sales. Outstanding creative ability. Graduate engineer with four years' industrial design training. Particularly suited for design, development, marketing new product/package design concepts. Presently employed. 35, married. Location northeast or midwest preferred. Resume on request. Box ID-414, Industrial Design, 18 East 50th Street, New York 22, New York.*

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Architectural and Design Personnel Agency—Muriel Feder—*A personalized placement service for top-level architects, designers, engineers, draftsmen, interior decorators, and home furnishing personnel. Selective contacts arranged in a confidential and professional manner. Interviews by appointment. 58 Park Avenue, N.Y. MU 3-2523.*

Product Developer—*With background in industrial design and experience in sheet metal fabrication. To carry out research on the use of steel in appliances, furniture, office equipment and related applications. Large Research Laboratory, Pittsburgh, Pennsylvania. Submit resume and salary requirements to Box ID-417, Industrial Design, 18 East 50th Street, New York 22, New York.*

Industrial Designer—*We are seeking a genuinely creative designer who has energy and drive, who is critical of his own work that does not measure to a high level of distinction, who has a fluency in sketching ideas, and who is a whole, balanced, perceptive person able to communicate and work with others. If you are such a person interested in the design of television, radio, Hi-Fi and related products, we would like to arrange an interview with our Manager of Industrial Design, Mr. Si Silverman. Address your resume to Mr. R. D. Sommer, Westinghouse Electric Corporation, Television-Radio Division, Metuchen, New Jersey. LIberty 8-5000 ext. 262.*

MISCELLANEOUS

Products Wanted: *Well-established research and development company desires to contact designers and inventors having new, novel and original ideas or inventions for toy or hobby field. Royalty or outright purchase. Prefer items two dollars retail and higher. Any accepted medium OK. Please send for submission forms. Box ID-415, Industrial Design, 18 East 50th Street, New York 22, New York.*

Needed: *Contact Man for Contract Industrial Designer. An offering partnership basis as incentive to build own business. State age, experience and background. Write to Box ID-419, Industrial Design, 18 East 50th Street, New York 22, New York.*

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CALENDAR

Through November 4. "Fabrics International," an exhibit of fabrics selected from all over the world. Sponsored by the American Craftsmen's Council. Philadelphia Museum College of Art, Philadelphia.

Through November 5. "The Art of Contemporary Craftsmen of the Far West." Museum of Contemporary Crafts, New York City.

Through November 12. "The Art of Assemblage." Museum of Modern Art, New York City.

October 5-8. American Society of Industrial Designers 17th annual meeting. Theme: "Design Explorations." C. Rhoades MacBride is key speaker. Los Angeles.

October 9-11. 17th Annual National Electronics Conference. Sponsored by American Institute of Electrical Engineers, Illinois Institute of Technology, Institute of Radio Engineers, Illinois and Northwestern Universities. International Amphitheatre, Chicago.

October 12-21. North Carolina Trade Fair. Charlotte Museum and Merchandise Mart, Charlotte, N. C.

October 15-19. National convention of the Prestressed Concrete Institute. Theme: "New Opportunities in Structural Design." Brown Palace and Cosmopolitan Hotel, Denver, Colo.

October 16-20. Fall Furniture Market. American Furniture Mart (tentative) and Merchandise Mart, Chicago.

October 18-20. Annual Packaging Forum sponsored by the Packaging Institute. Senator Philip A. Hart is key speaker. Biltmore Hotel, New York City.

October 18-November 4. Exhibition of Shoji Hamada, Japanese potter. Bonniers, New York City.

October 19-20. Midwest conference of the American Society for Quality Control. Chase-Park Plaza Hotel, St. Louis, Mo.

October 21-29. Second annual "Electra City, U.S.A." exposition. Coliseum, New York City.

October 23-27. Metal Show, sponsored by American Society for Metals, with ten American technical societies and associations participating. Cobo Hall, Detroit.

October 25-27. National Management Association's annual convention. Keynote address to be delivered by Major General J. B. Medaris, U.S.A. (Ret.). "New Dimensions in Management Responsibility." Sherman Hotel, Chicago.

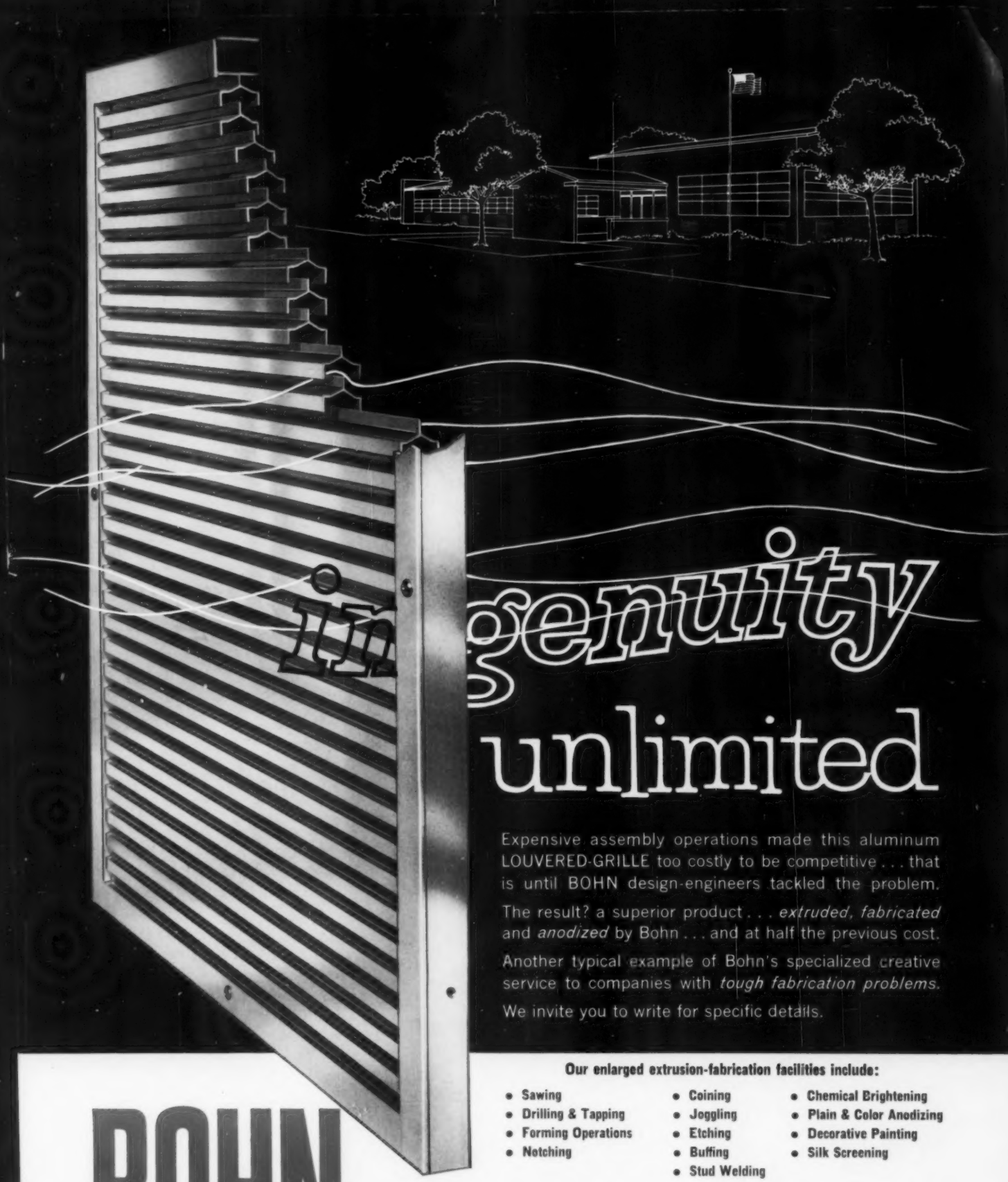
November 1 and 2. Canadian National Packaging Exposition. Exhibition Park, Toronto.

November 6. Western Technical Conference sponsored by the Los Angeles section of the American Institute of Electrical Engineers. Biltmore Hotel, Los Angeles.

November 8-10. Annual convention of the National Warm Air Heating and Air Conditioning Association. La Salle Hotel, Chicago.

November 13-15. Annual Technical Conference of the Steel Founder's Society of America. Hotel Carter, Cleveland.

November 15. Society of Plastics Engineer's regional technical conference on "Vinyl Plastics in the Household." Statler-Hilton Hotel, New York City.



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