

Organic design in home furnishings

By Eliot F. Noyes

Author

Noyes, Eliot

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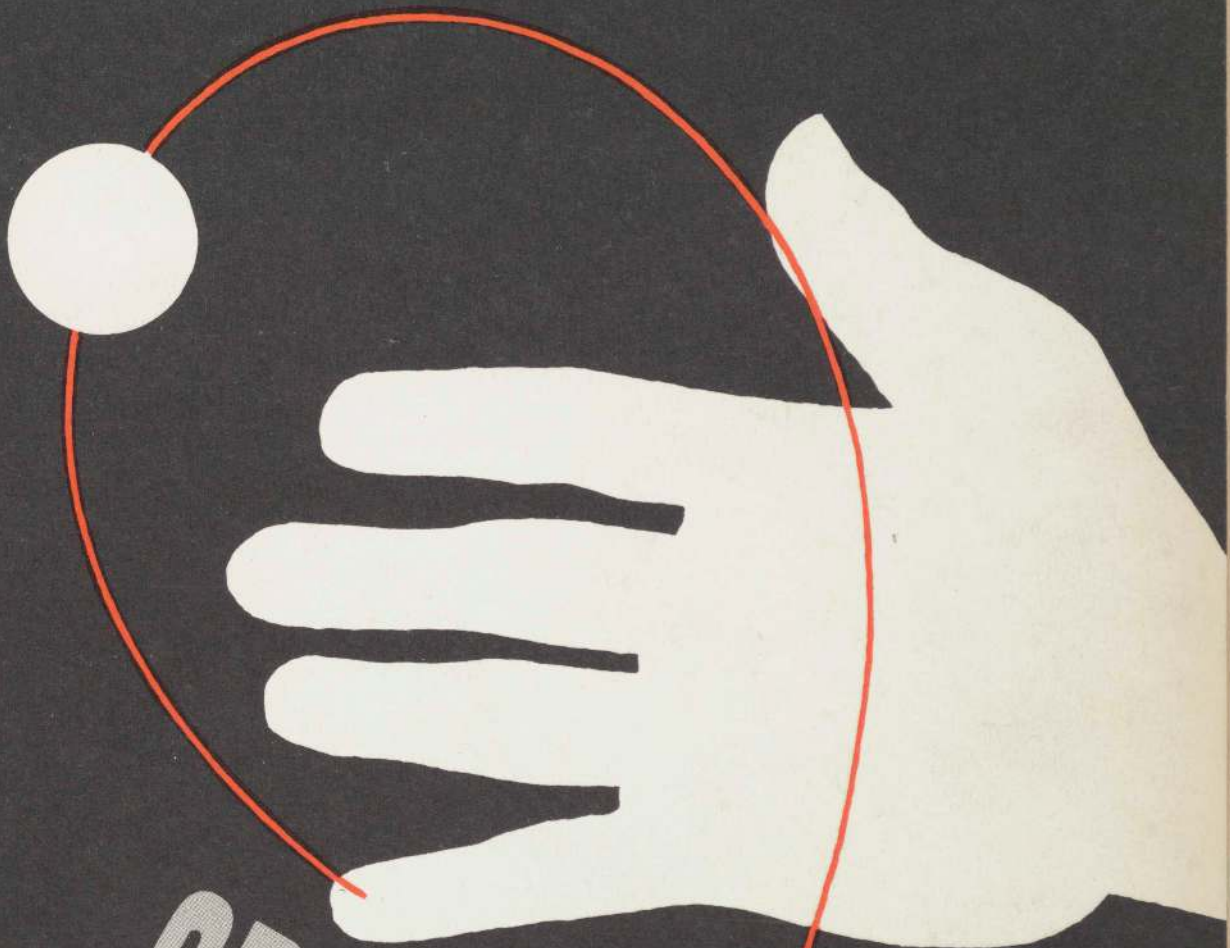
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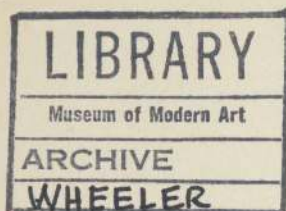
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museum of modern art new york



ORGANIC DESIGN

McKnight Kauffer



ORGANIC DESIGN:

A design may be called organic when there is an harmonious organization of the parts within the whole, according to structure, material, and purpose. Within this definition there can be no vain ornamentation or superfluity, but the part of beauty is none the less great — in ideal choice of material, in visual refinement, and in the rational elegance of things intended for use.

"By the beauty of shapes I do not mean, as most people would suppose, the beauty of living figures or of pictures, but, to make my point clear, I mean straight lines and circles, and shapes, plane or solid, made from them by lathe, ruler and square. These are not, like other things, beautiful relatively, but always and absolutely."

PLATO *Philebus*

"For beauty three things are required. First, then, integrity or perfection: those things which are broken are bad for this very reason. And also a due proportion or harmony. And again clarity: whence those things which have shining color are called beautiful."

ST. THOMAS AQUINAS
Summa Theologiae

"Have nothing in your house that you do not know to be useful or believe to be beautiful."

WILLIAM MORRIS 1860

"To find beauty in form instead of making it depend on ornament is the goal towards which humanity is aspiring."

ADOLF LOOS 1898
Ins Leere Gesprochen

"Our capacity to go beyond the machine rests in our power to assimilate the machine. Until we have absorbed the lessons of objectivity, impersonality, neutrality, the lessons of the mechanical realm, we cannot go further in our development toward the more richly organic, the more profoundly human."

"The economic: the objective: and finally the integration of these principles in a new conception of the organic — these are the marks, already discernible, of our assimilation of the machine not merely as an instrument of practical action but as a valuable mode of life."

LEWIS MUMFORD 1934
Technics and Civilization

WINNING DESIGNERS:

The illustrations in this book show work of the following designers selected in competition throughout the United States and the twenty Latin American Republics.

CATEGORY A — Seating for a living room:

EERO SAARINEN and CHARLES O. EAMES, Bloomfield Hills, Michigan.

Honorable mentions to EMRICH NICHOLSON and DOUGLAS MAIER, New York City; PETER PFISTERER, Los Angeles; CARL ANDERSON and ROSS BELLAH, Los Angeles; OSCAR STONOROV and WILLO VON MOLTKE, Philadelphia.

CATEGORY B — Other furniture for a living room:

EERO SAARINEN and CHARLES O. EAMES, Bloomfield Hills, Michigan.

Honorable mention to HARRY WEESE and BENJAMIN BALDWIN, Kenilworth, Illinois.

CATEGORY C — Furniture for a dining room:

No submissions were found worthy of a first prize.

Honorable mentions to CARL KOCH, Belmont, Massachusetts; HUGH STUBBINS, Arlington, Massachusetts; and STEPHEN L. MacDONALD, Salt Lake City.

CATEGORY D — Furniture for a bedroom:

OSCAR STONOROV and WILLO VON MOLTKE, Philadelphia.

Honorable mention to HARRY WEESE and BENJAMIN BALDWIN, Kenilworth, Illinois.

CATEGORY E — Furniture for a one-room apartment:

MARTIN CRAIG and ANN HATFIELD, New York City.

Honorable mention to ANTONIN RAYMOND, New Hope, Pennsylvania.

CATEGORY F — Furniture for outdoor living:

HARRY WEESE and BENJAMIN BALDWIN, Kenilworth, Illinois.

Honorable mention to CHESTER E. NAGEL, Austin, Texas.

CATEGORY G — Movable lighting equipment:

PETER PFISTERER, Los Angeles.

Honorable mentions to NORTON POLIVNICK, and BERNARD GREENBERG, Cambridge, Massachusetts; and to CHARLES W. WYCKOFF, Cambridge, Massachusetts.

CATEGORY H — Woven Fabrics:

MARLI EHRLMAN, Chicago.

Honorable mentions to HENNING-REES, San Francisco; MARIANNE STRENGELL, Bloomfield Hills, Michigan; and ULLA OF UGGLAS, Bloomfield Hills, Michigan.

CATEGORY I — Printed Fabrics:

ANTONIN RAYMOND, New Hope, Pennsylvania.

Honorable mentions to FRANCES MILLER, New York City; HARRIET MESEROLE, New York City; and VIRGINIA NEPODAL, Cleveland Heights, Ohio.

LATIN AMERICAN WINNERS:

XAVIER GUERRERO, Mexico, D.F.

MICHAEL VAN BEUREN, KLAUS GRABE, MORLEY WEBB, Mexico, D.F.

ROMAN FRESNEDO, Montevideo, Uruguay.

JULIO VILLALOBOS, Buenos Aires, Argentina.

BERNARDO RUDOFSKY, São Paulo, Brazil.

ORGANIC DESIGN
IN HOME FURNISHINGS

BY ELIOT F. NOYES

THE MUSEUM OF MODERN ART, NEW YORK

ACKNOWLEDGMENTS

The President and the Trustees of the Museum of Modern Art wish to thank the following stores for collaboration in the sponsorship of the project:

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The J. L. Hudson Company, Detroit
Kaufmann Department Stores, Pittsburgh
The F. & R. Lazarus & Co., Columbus
Wolf & Dessauer, Fort Wayne

Also the following manufacturers for their collaboration in carrying through the production of furniture, fabrics, and lamps:

Cyrus Clark Co., Inc., New York
Ficks Reed Co., Cincinnati
Haskelite Manufacturing Corp., Chicago
Heywood-Wakefield Co., Gardner
Moss Rose Manufacturing Co., Philadelphia
Mutual-Sunset Lamp Manufacturing Co., New York
Red Lion Furniture Co., Red Lion
Red Lion Table Co., Red Lion
Valley Upholstery Corp., New York

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A NOTE ON THE COMPETITION

The wonders of modern mechanism, we all know, have wrought much more than a change in our habits of life. Economics and politics and the fate of nations in war and peace are all affected by the vast recent changes in the equipment of man.

In some respects, however, we foolishly flatter ourselves. We are not as modern as we think. In private, at home, most of us still live in the clutter of inheritance from the nineteenth century. Much of this out-of-date and rigidified furniture is no longer in tune with today's esthetic requirements, and is certainly far from suitable to our needs. Through design inertia, modern mass manufacture has simply seized upon and lifelessly repeated many weary old styles that are often neither beautiful nor practical.

Obviously the forms of our furniture should be determined by our way of life. Instead, for the most part, we have had to adapt ourselves uncomfortably and unreasonably to what has happened to be manufactured. For several years the Museum of Modern Art has been studying this problem in order to foster a collaboration between designer, manufacturer, and merchant, to fill this strange gap in the conveniences for modern existence.

On the first of October, 1940, the Museum's Department of Industrial Design inaugurated an inter-American competition for the design of furniture, fabrics and lamps. The purpose of the contest was to discover good designers and engage them in the task of creating a better environment for today's living. Twelve important stores in major cities throughout the United States sponsored the competition and offered contracts with manufacturers as prizes to the winners, whose names appear at the beginning of the book.

A separate division of the competition was

established for entrants from the other American republics (see page 39).

Under the supervision of the Museum, contracts with manufacturers were arranged for all of the first prize winners and for some of those who had received honorable mention. During the process of manufacture, the original drawings were used as the basis for larger groups of furniture, and a number of the competition winners were asked to design additional pieces to fill out these groups. And as the purpose of this competition was to select designers rather than individual pieces, arrangements were made in some cases for a winner to develop designs for production in a category other than the one in which he had received an award. All pieces were produced as closely as possible in accordance with the original designs, and modified only when necessitated by the process of manufacture.

A significant innovation was that, in the case of chairs by Saarinen and Eames, a manufacturing method never previously applied to furniture was employed to make a light structural shell consisting of layers of plastic glue and wood veneer molded in three-dimensional forms. It should be born in mind, however, that the theoretical or experimental aspects of design were necessarily limited by the existing facilities of the collaborating manufacturers.

Most of the designs in production are illustrated on the following pages. As this exhibition opens at the Museum of Modern Art, the furniture which has been produced through this project is being offered for sale by the sponsoring stores, some of which have arranged special displays designed by competition winners. It is expected that other distributors will join the project at a later date.

OUTLINE OF THE DEVELOPMENT OF MODERN FURNITURE

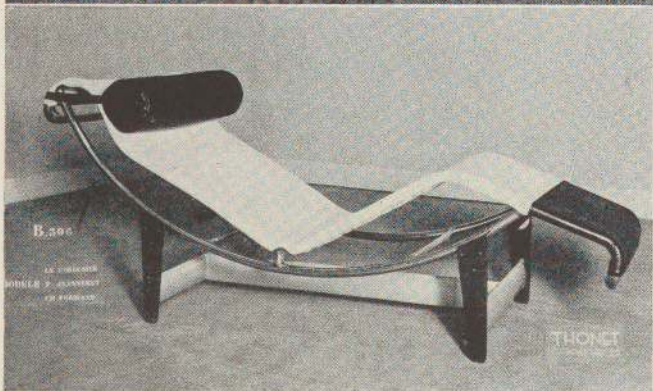
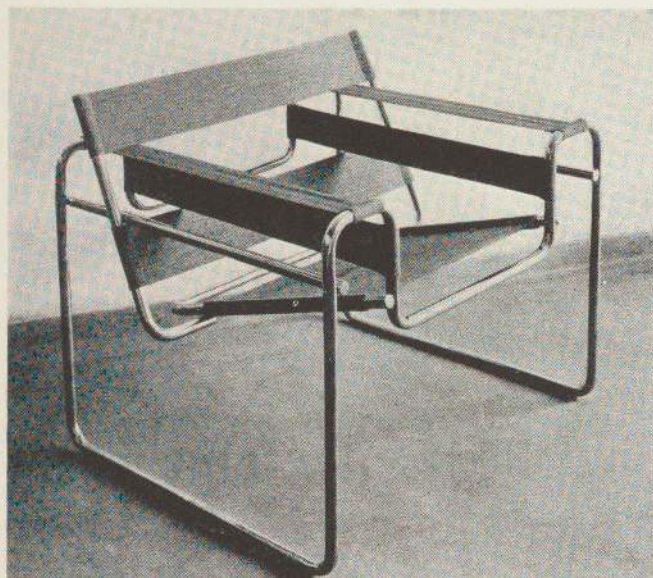
Modern art, in many of its manifestations, is a revolution. It is a revolution, often, against the conditions and the artistic chaos which followed the Industrial Revolution. In many cases modern art may also be said to be an expression of the fundamental nature of this new industrial development. In no field is this more true than in Industrial Design, which, as a conscious art form, was born in the esthetic agonies of the middle of the nineteenth century.

MORRIS

During the artistic confusion which occurred when machines began to flood the everyday scene with articles the design of which was a fumbling imitation of hand crafts, William Morris, a great revolutionary figure, realized that art no longer existed as a normal function of life. Declaring that the machine was incapable of producing art, he called for a return to arts and crafts. His observation was correct, but his remedy was negative and fundamentally wrong. While others were to recognize the positive qualities which machine production could offer, Morris had at least taken a major step in his insistence that art and design must be a normal part of life. In his attempt to create this harmony through arts and crafts, he initiated a movement of considerable vitality which, despite its direction, contained elements of a true idealism and honesty which are basic elements in contemporary design as well. For this reason it may be said that Morris is the first important figure in the modern movement; for these qualities the "Morris Chair," while probably not designed by Morris himself, may be called the first modern chair (**upper right**).

From Morris' time until today, three distinct aspects of design may be observed in action. One of these is the reactionary, decorative, arts and crafts approach to design. The validity of tradi-





tional ornament was quickly undermined by the Industrial Revolution, and immediately there came attempts to create new decorative formulae to replace it. Art Nouveau at the turn of the century, the Viennese Kunstgewerbe, the decorative trivialities of Paris in 1925, and finally streamlining (as a decorative formula) are all of this package.

THONET

A second aspect of design is contributed, often unconsciously, by men who, while working with materials and new machines find new forms and new ways of making things. Technicians, engineers, men experimenting with new machine processes — these are the untrained but instinctive creators of new forms and of a kind of expression which stems directly from materials and methods of manufacture, and is determined by the requirements of use and efficiency. This occurs particularly in fields where esthetics are not consciously considered, as in the case of the design of machines or scientific instruments. With no primary intent to create beauty, new beauty is revealed. In this way, little by little, a new esthetic has been born. As an example, a significant step in furniture design was taken in 1830 with the invention by Thonet of wood bending which opened up a new esthetic development through a new technical possibility. A contemporary Thonet bentwood chair is shown in the photograph at the bottom of page 5.

BREUER

Still a third aspect of design is that in which designers of vision, recognizing the temper of the new industrial world which is coming into being, try to come to terms with the machine and its implications. While progress of this sort was being made in other fields of art, the next important development in furniture occurred in 1925, at the time when the superficial "modernistic" of the Paris Exposition was at its peak. This was the invention of tubular metal chairs by Marcel Breuer at the Bauhaus in Dessau. Although chairs had been made of metal even in the nineteenth century, and of tubular metal as early as 1912 in the United States, this chair of Breuer's (**upper left**) is the first example of the use of tubular steel in terms of the material, and

with a fresh and contemporary design spirit. It should be noted that this esthetic development occurred in connection with a structural change. Two years later, in 1927, another important step was taken by Ludwig Miës van der Rohe when he produced the first steel chair to utilize the spring quality of bent steel legs (**center left**).

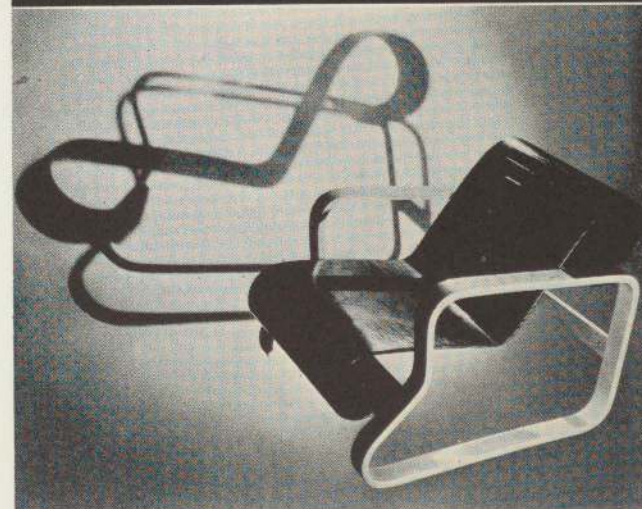
LE CORBUSIER

During these years, Le Corbusier also attacked the problem of furniture design in metal. His reclining chair (**lower left**) was not only a distinguished piece of design, but pointed up dramatically the changing living habits of the new century which were exerting an influence on all sorts of design. This chair, consisting of a tubular steel frame resting on an independent base, gave the possibility of various sitting positions without any mechanical adjustments. The tubular steel armchair (**upper right**) was designed by Le Corbusier in 1929. These two chairs and many designs by Breuer were produced in great quantity during the late twenties and early thirties by Thonet, whose bentwood chairs were still among the best designs being manufactured.

AALTO

In the thirties another type of modern furniture appeared for the first time. This group depended on the exploitation of bent plywood, which was again the introduction of a new structural idea. Plywood, made of thin veneers of wood glued together with the grain running at right angles in alternate plies, is in effect a completely new material, since it has very different properties from wood. When advantage is taken of these properties, a new type of design becomes possible.

In 1932 Alvar Aalto produced a chair with a bent plywood seat on a tubular metal frame. Soon after, he made chairs entirely of laminated wood and rounded out a series of designs conceived for quantity production and manufactured by Artek in Finland. Four of these chairs, sensitively and beautifully designed, are shown in the photographs at the center and lower right. In the case of the armchair (**lower right**), the single sheet of plywood, which daringly and dramatically forms the seat and back, varies in thick-





ness according to the structural requirements. At the seat, where the weight of the body exerts more strain on the plywood span, additional interior plies are added, thickening the sheet at this point to give more strength. This results in a sensitive refinement of proportion such as may be observed in flamboyant Gothic vaulting or in the relations in thickness of the trunk, branches and twigs of a tree.

OTHER PLYWOOD DESIGNS

Likewise, in the early thirties, Marcel Breuer was developing another important group of designs in plywood. Working in England with Isokon, a progressive firm which manufactured plywood, he developed other possibilities of the material. While Aalto's designs depended largely on a flat sheet, bent in two dimensions and strong enough to take the required stresses without any bracing, Breuer utilized thinner sheets of plywood and devised a sort of web to give added strength where the plywood alone was not adequate. The arm of the reclining chair demonstrates this use (**upper left**). Inside the structural arms a very thin and flexible sheet of plywood is slung. The entire construction is pliable, flexing and moving with the movements of the sitter. Breuer also worked out other imaginative uses of plywood, glueing up thin sheets in T-shaped sections for table legs, attaining great strength while retaining lightness. The light stacking chairs (**center left**), part of this same group of designs, weigh only about eight pounds apiece. The seat is again a sheet of plywood, suspended front and back on cross bars, and is only $3/32$ of an inch thick.

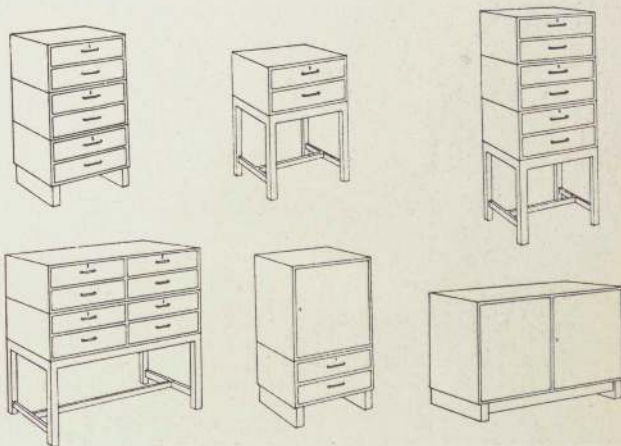
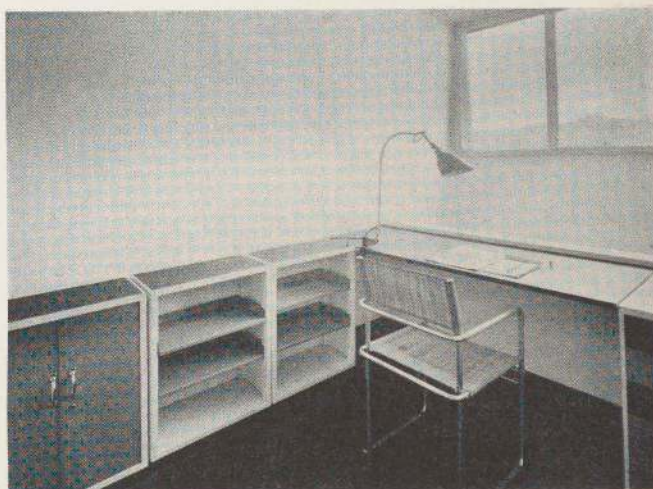
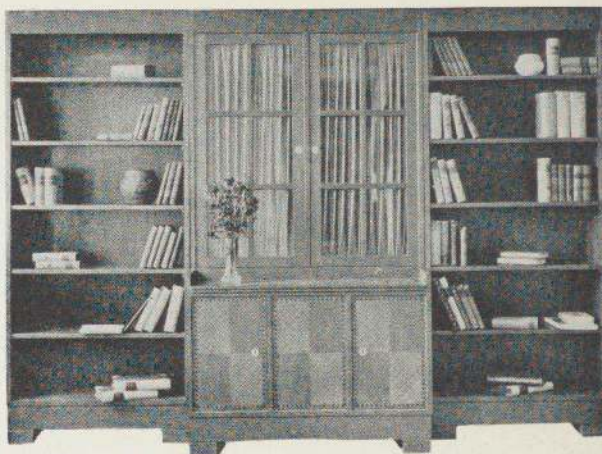
In Sweden also, distinguished solutions in plywood were developed. The chairs of Bruno Mathsson (**lower left**) are among the best and are now being produced in the United States.

UNIT FURNITURE

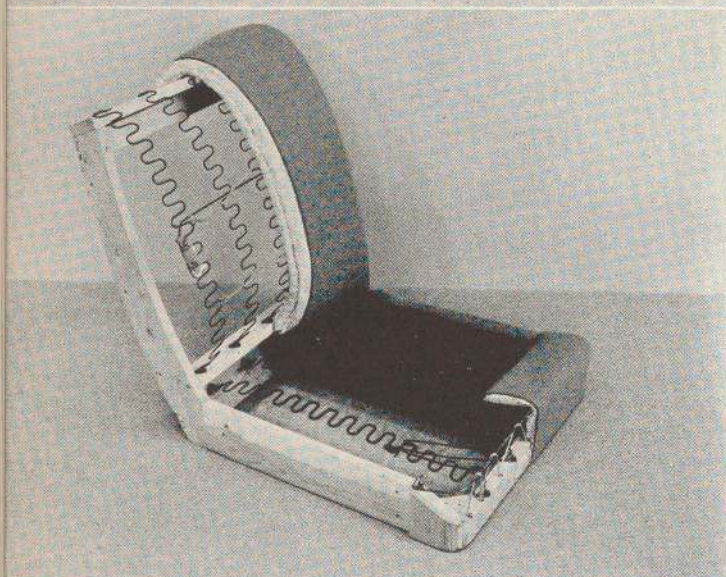
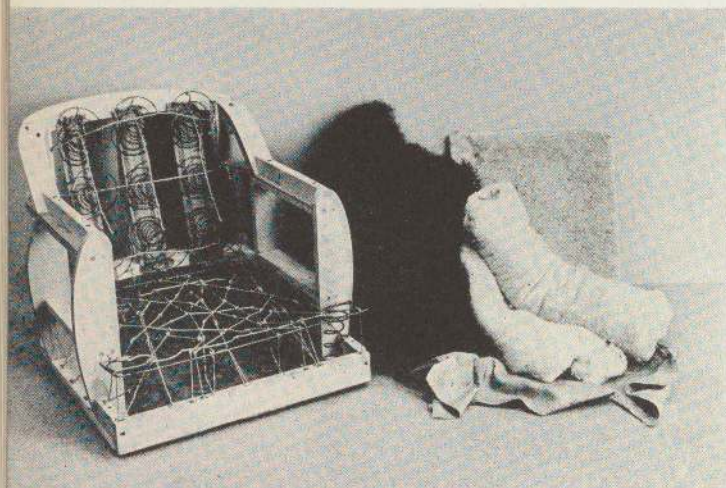
In furniture for storage purposes the twentieth century has introduced one completely fresh idea — unit furniture. The idea originated in the 1890's in the United States. As early as 1909, the Sears Roebuck catalog advertised and illustrated "sectional bookcases." Borrowing the idea from this country, the Deutsche Werkstätten made studies of standardization, and the first pieces which they displayed were the cases published by Bruno Paul in 1910 (**upper right**), described as "Bücherschrank mit Regalen zum zusammensetzen — Typenmöbel" (bookcase with shelves for assembling — unit furniture). Although standardized units for office furniture were common, there seems to have been no further progress of importance made in this approach to domestic furnishings until the system developed by Marcel Breuer in 1925-26 during the opening years of the Bauhaus. He applied this system in the Piscator apartment in 1926. In 1927, in the Weissenhof Siedlung at Stuttgart, Breuer furnished the Stam house with his units, executed in enameled sheet metal and actually made by a manufacturer of office furniture (**center right**). In this system all cabinets, movable closets, buffets, tables, desks, bookshelves, bed, night tables and so forth had standardized dimensions so that they might be combined according to needs and available space. Breuer later carried this system further by extending the use of the unit case module to the plans and dimensions of rooms and buildings. This was demonstrated in his "Sportsman's House" in the Berlin Bauaustellung of 1931.

In the meantime the unit idea was making progress elsewhere. In Germany Hans Buser published unit designs in 1928, and Schuster in 1930. In England the idea was taken up by Plan, Ltd., which worked out a very complete group of units with cupboard, shelf, and wardrobe units on bases of standardized widths and heights (**lower right**).

Unit furniture appeared in the United States about 1929 or 1930 in designs by Donald Deskey and Gilbert Rohde. Rohde's designs were shown in the "Design for Living" House of the 1933 Chicago World's Fair. Only since 1938 has it become a large-scale popular development.



CHAIR CONSTRUCTION

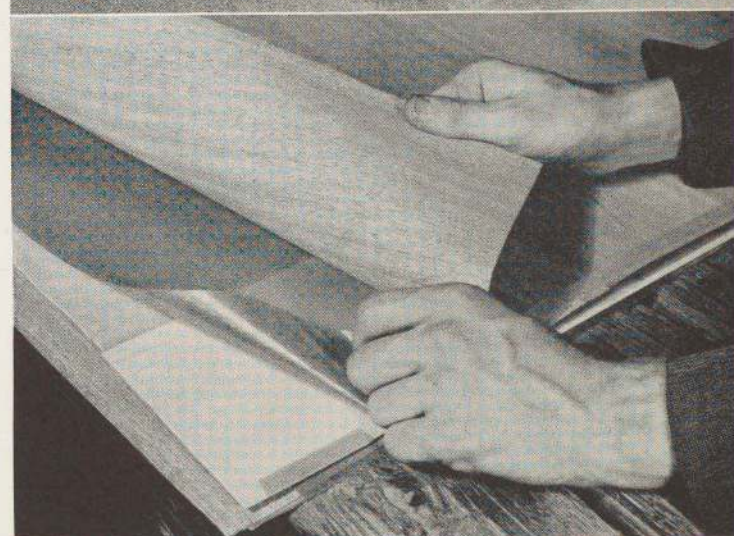


The winning chair designs by Saarinen and Eames, illustrated on the next few pages, demonstrate a tendency common to modern furniture design. All furniture is getting lighter. This tendency derives not only from the need to keep the weight and bulk of our furnishings down as we live in smaller areas, but is also the natural result of new techniques and new materials. Refinement of chair design involves the economical and imaginative use of materials, while providing comfort and strength. Various stages of this lightening process are shown on this page. The chair frame pictured at the **upper left** is characteristic of what goes on inside much overstuffed furniture of today. In such chairs the bulk is generally intentional and not the result of clumsy technique. This frame (still without legs) contains thirty-one separate pieces of wood, almost all of different shapes. These are screwed or glued together in a rigid and heavy construction, and thick burlap is stretched to take the ten springs which must be placed for the seat. Two helical springs with a large piece of baling wire are still needed to support the center section under these seat springs. The back contains nine more separate springs, braced on heavy webbing; then all these nineteen springs are tied and braced against each other and the frame. On top of all this must still be applied a fiber pad, a load of hair and further cotton padding before the upholstery material can be put on. The final frame without legs or covering weighs forty-five pounds. Furniture of this sort is made almost entirely by hand processes and the workers have become so skilled in putting this chair together by hand labor that it can still sell at a reasonable price. A tremendous step toward simplification and lightness is the introduction of a new type of spring, shown on the rigid frame in the **center left**. Here the webbing and hand tying can be dispensed with, since the springs are attached directly to the wood frame, which can then be lighter. The form of the back is determined by the flexing of the spring

to its extreme positions. This lighter frame and new spring system, as illustrated, have been utilized by Craig and Hatfield in some of their designs.

A still more advanced step is represented in the sectional unit by Saarinen and Eames (**lower left**). Here the rigid and built-up wood frame is replaced by a thin laminated shell of wood veneers shaped to take the thrust of the springs on seat and back and braced with wood strips at the points where these springs are attached. Instead of bulky stuffing, foam rubber has been used here on top of the springs. This excellent material comes in various grades of softness and provides a very comfortable seat in combination with springs or even alone. In the armchair by Nicholson and Maier (**upper right**) a minimum spring arrangement has been used with a thicker rubber pad. In this case the rubber seat rests on a system of steel straps with helical springs in a rigid frame. For the back the rubber alone is adequate, even though the form is shaped only two-dimensionally to fit the human body.

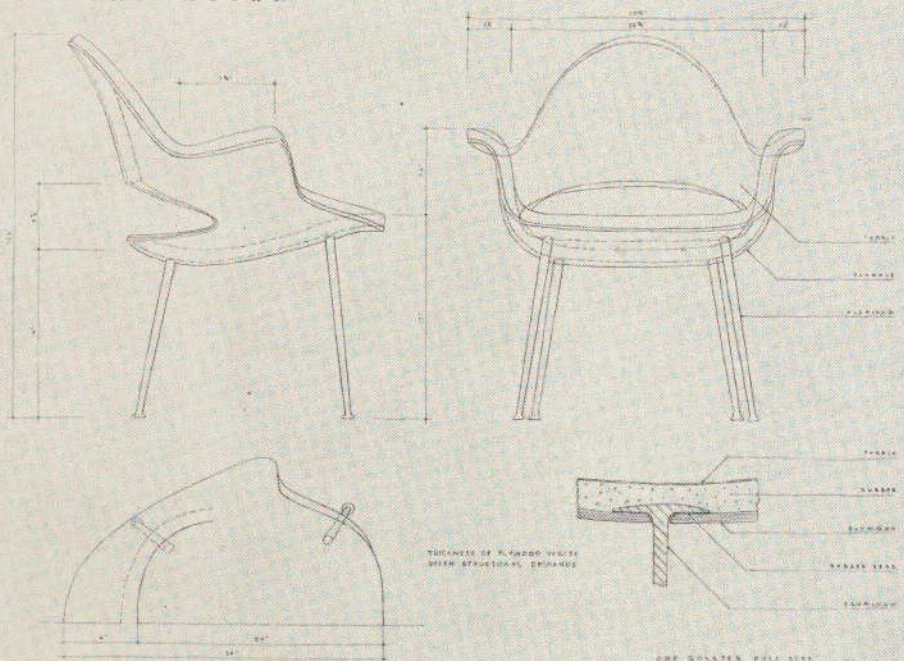
The most advanced of all these systems appears in the group of chairs by Saarinen and Eames. In an ordinary chair there are a seat and a back which support the body at two or three points. In the case of a usual large upholstered chair the body sinks into a general softness until it reaches support. The principle in these chairs by Saarinen is that of continuous contact and support, with a thin rubber pad for softness at all points. The shell is formed of strips of veneer and glue (**center right**) laminated in a cast-iron form by a process developed by the Haskelite Corporation. In this way more comfortable support is secured with a minimum of material, and the finished chair, the construction of which is illustrated (**lower right**), weighs twenty pounds as compared with the forty-five-pound Gargantua shown in the photograph at the upper left. While these chairs as first produced must be expensive, the principle involved is sound and it is reasonable to expect that with further development the chairs shown on the following pages will come into moderate price brackets.



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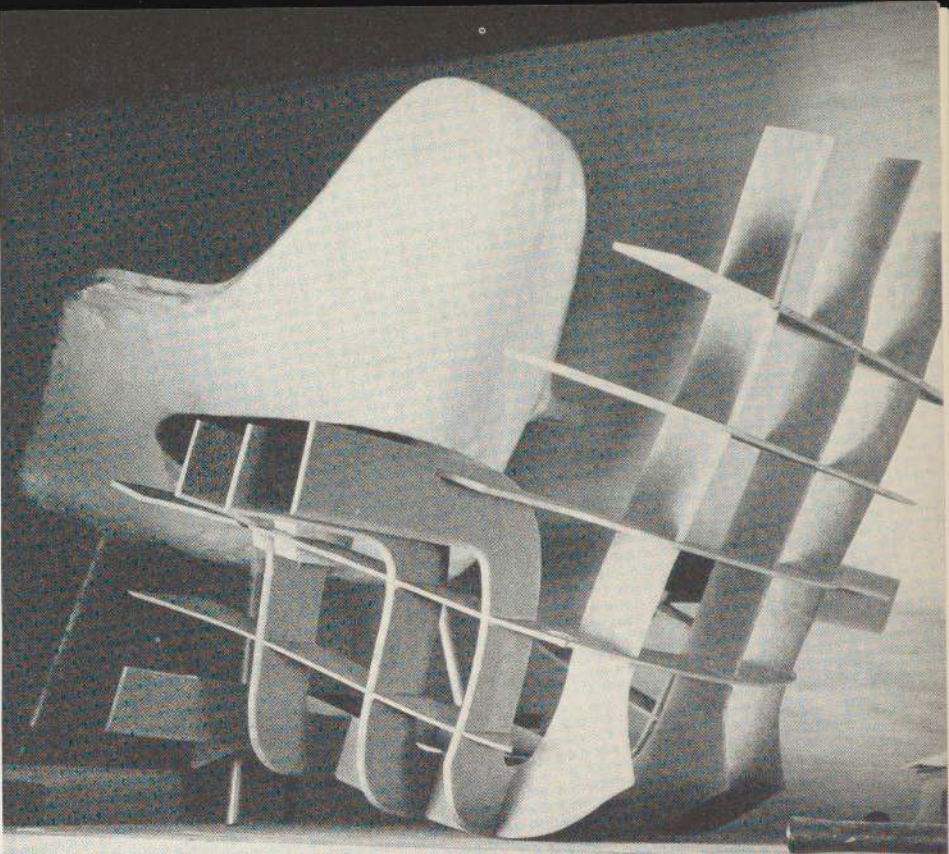


CONVERSATION



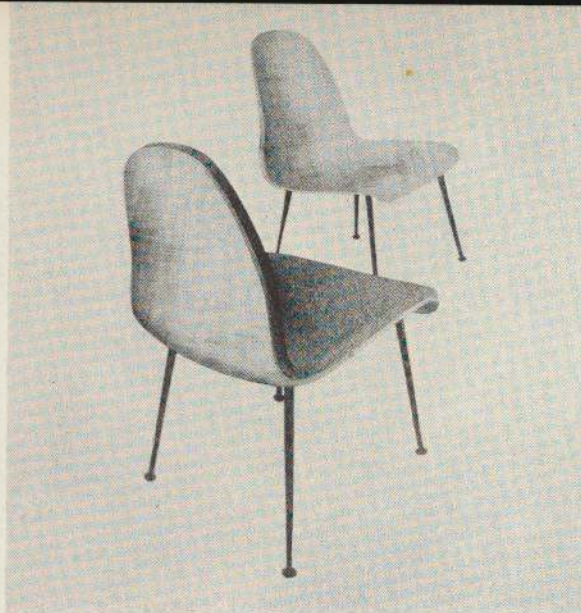
Drawing of the armchair submitted by Saarinen and Eames. The original design shows aluminum legs. These were to be attached to the plywood shell by a new rubber-weld joint which was proved to be capable of taking a stress of at least nine hundred pounds per square inch. In production, wooden legs had to be substituted for the metal ones because of the difficulty of procuring the latter.

The chair was made first of plaster on wire mesh reinforcing. In this way it was carefully molded to give maximum support and comfort to the body. Adjustments were made by fracturing the plaster shell and resetting it correctly. In order to record the concave form thus obtained, a light crate of strips of masonite was made. These strips followed the contours, and when assembled as in the photograph, recorded the modulations of form inside the chair.

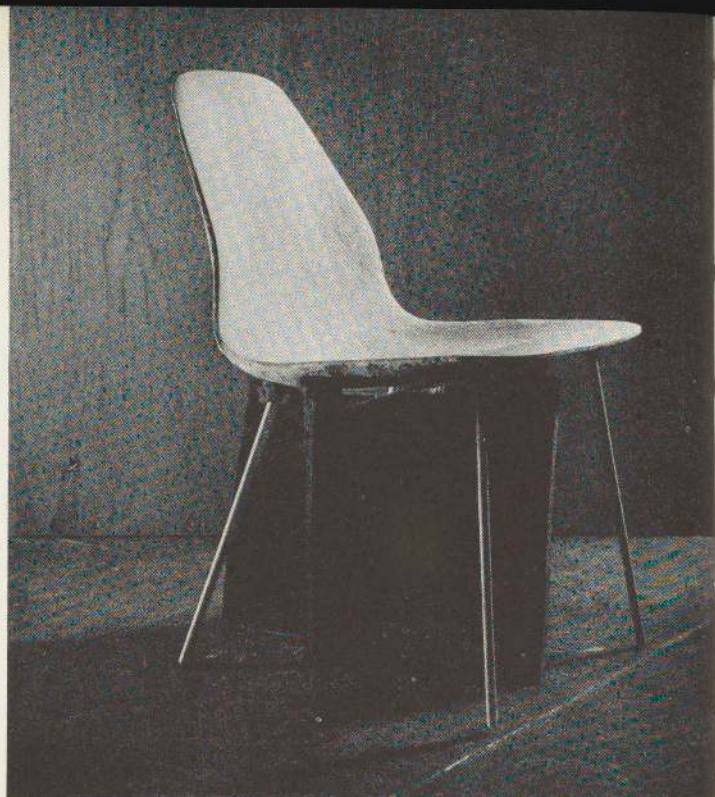


From the crate, which defined the form, a cast iron mold was made, and the wood shell of the final chair was glued up in this mold by the Haskelite Corporation. Shells were then trimmed, fitted with rubber, finished, and upholstered by the Heywood-Wakefield Company. A special patented joint holds the wood legs firmly to the shell whether there is expansion or contraction of the wood. The finished armchair, covered in a fabric by Marli Ehrman, is shown at right.





Detail from the competition drawing submitted by Saarinen and Eames. The side chair was designed to be used either with the bare wood surface or with fabric on rubber. At the present stage of development only the upholstered version has been possible. The extreme elegance of the form is seen in the full size plaster model in the photograph at the right.



Detail from the competition drawing. Three-dimensional study of the form of these chairs was made in small models of copper. The small model for this relaxing chair and the method of constructing the full size plaster study are shown in the photograph at the right.



The original intention was to expose the wood veneer on the backs of all these chairs. The complicated compound curves on the other models made it impossible to be sure of a surface without flaws at this stage of development. In the case of the side chair, however, the form was comparatively simple, and Honduras mahogany veneer has been exposed on the finished chair.



The form is similar to that of the arm chair, but this one is larger and slopes more. Here, as in the case of the armchair and the sectional chair, the back is covered with fabric cemented to the unfinished wood surface underneath. (Fabric by Marli Ehrman.)



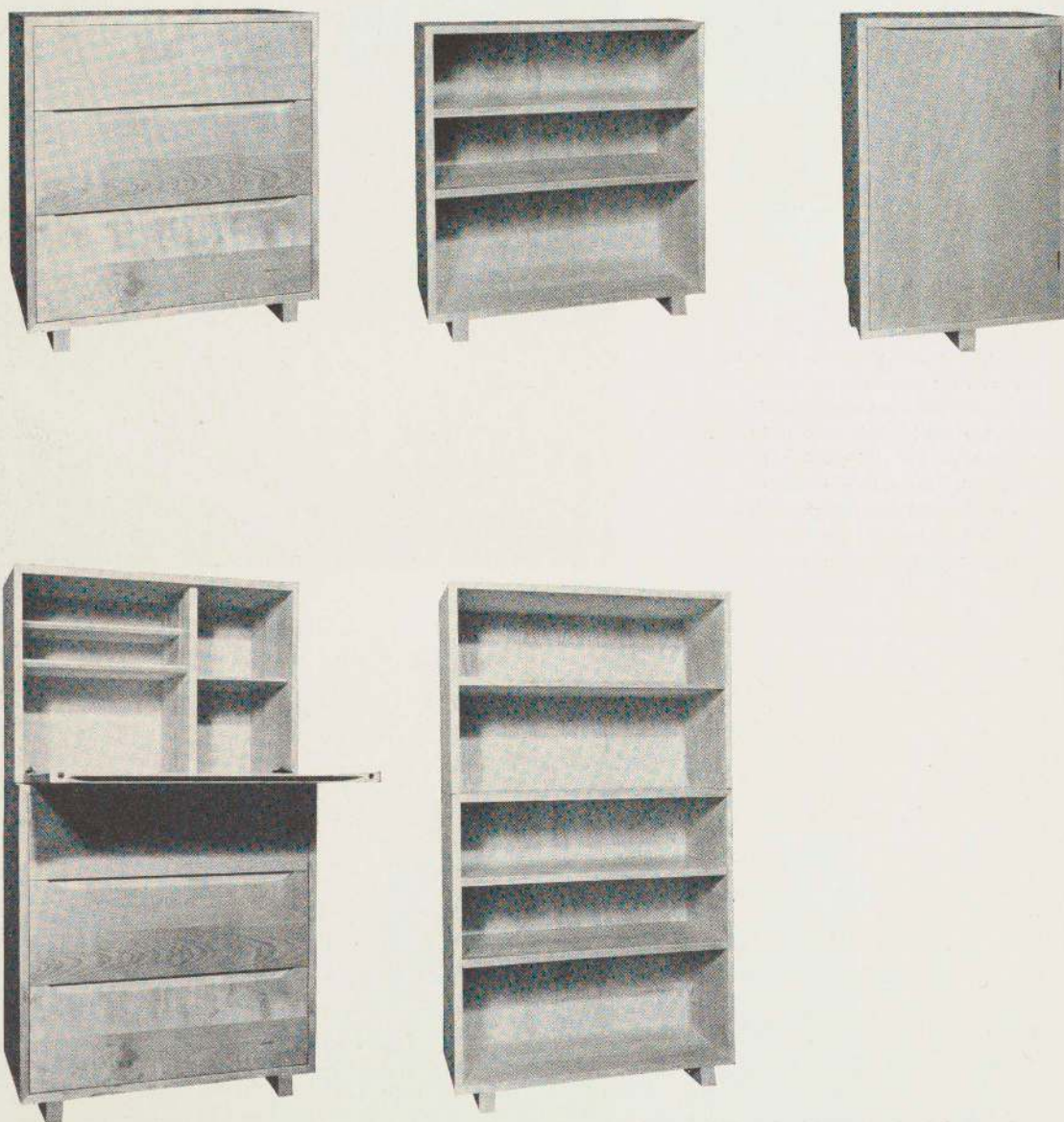
Full size plaster shell from which the mold for the sectional chair was made. The compound curved form at the sides of this chair gives stiffness to the shell which must resist the thrust of the springs. The plaster form is shown here sitting on an experimental construction which was used to determine the correct location of the springs in the shell.



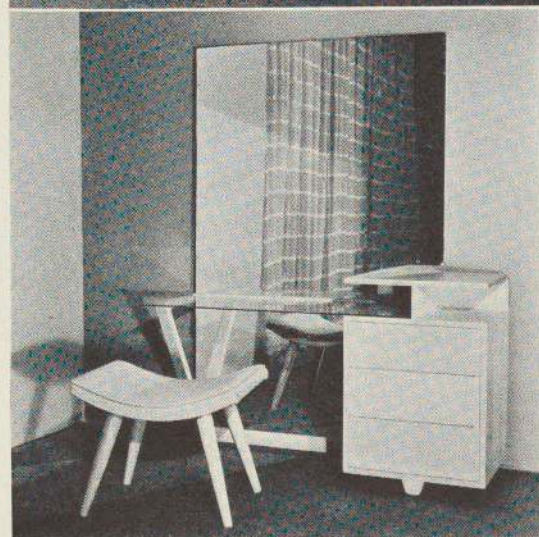
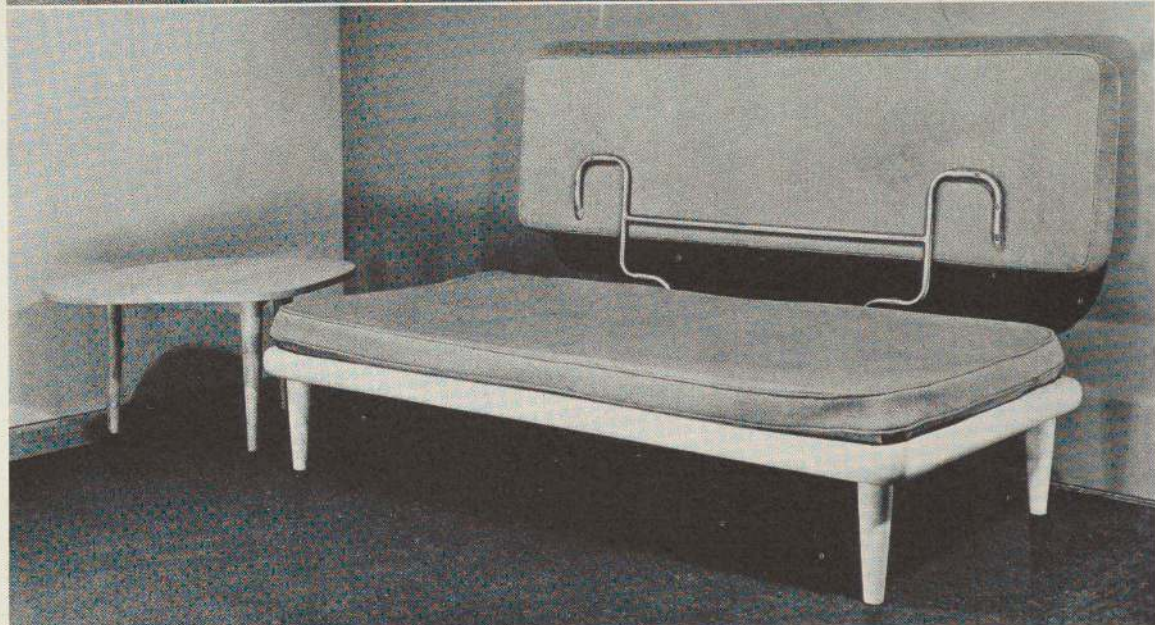
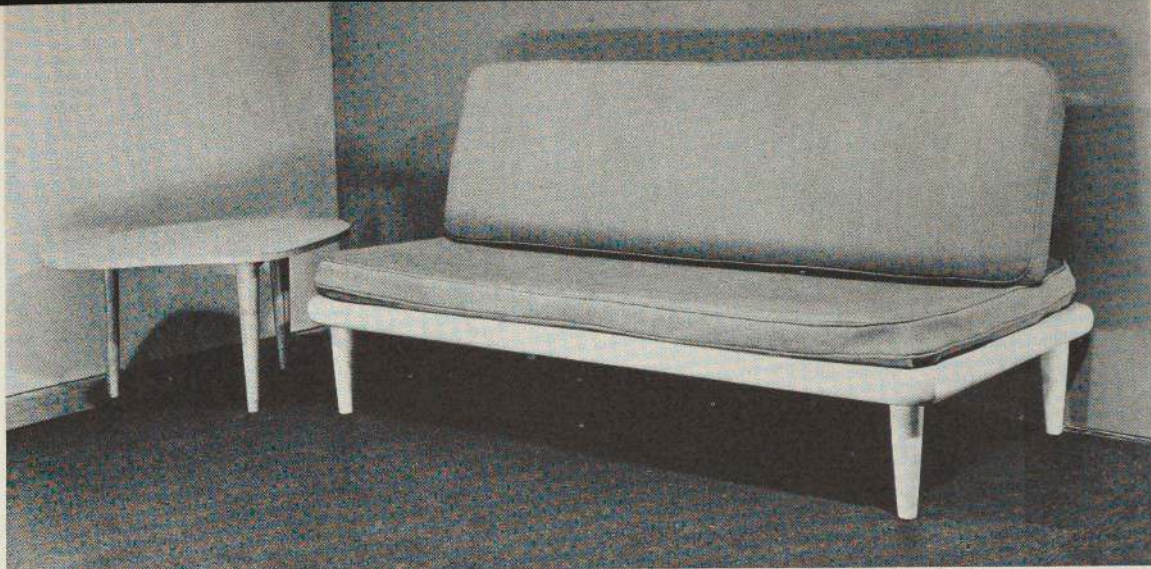
Finished Sectional Sofa Unit. It was necessary here, as in the case of the armchair and the relaxing chair, to cover the wood back with fabric. The line at which the structural wood shell starts is clearly marked in this photograph by the shadow. These chairs may be used singly, or in a series as a sofa.



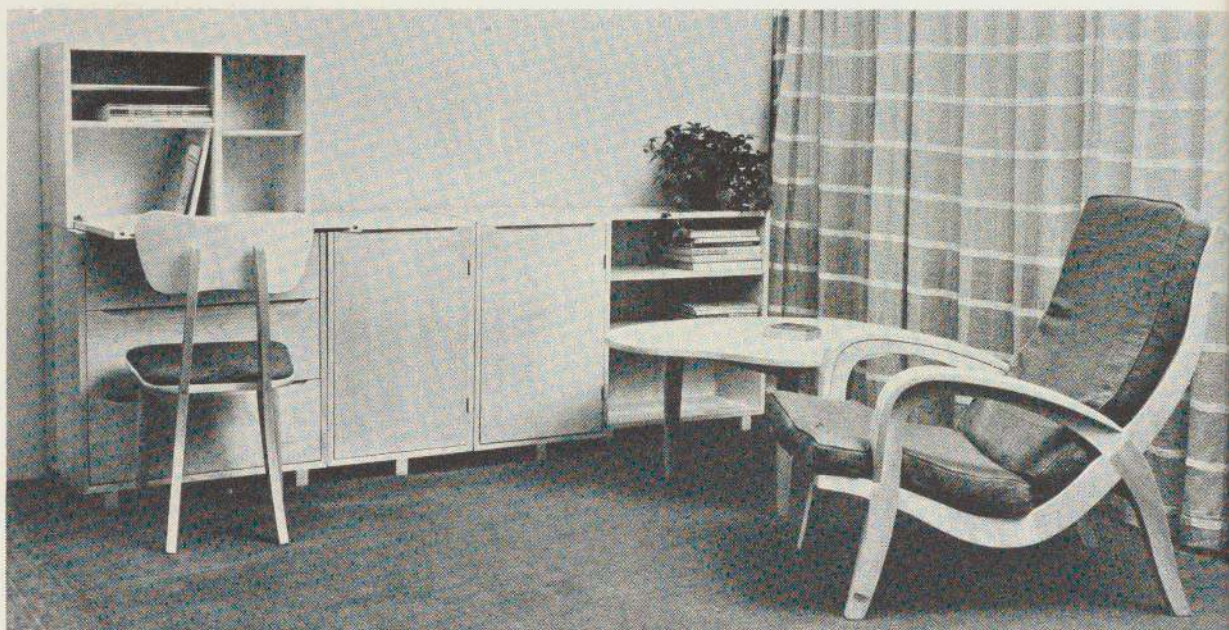
FURNITURE BY CRAIG AND HATFIELD



The casework by Craig and Hatfield has been produced in five basic units with standardized dimensions so that they may be combined in a variety of ways. With a table height of 30 inches, widths are either 19 or 28 inches, and depths either 17 or 12 inches. Three units — the open shelves, the drawers, and the cabinet — serve as bases upon which the other two units — the upper shelf section and the desk — may be placed. All are of solid natural birch.



In addition to the five basic units at the left, a number of independent pieces were developed. The sofa-bed (**above**) has a 4-inch thick foam rubber mattress. A swivel has been devised so that the back counterbalances itself and may easily be adjusted to make either a sofa or a full-size bed. The drawer unit of the dressing table (**left**) may be used on either side of the mirror. Other pieces, not illustrated, include a single bed, night table, and bureaus.

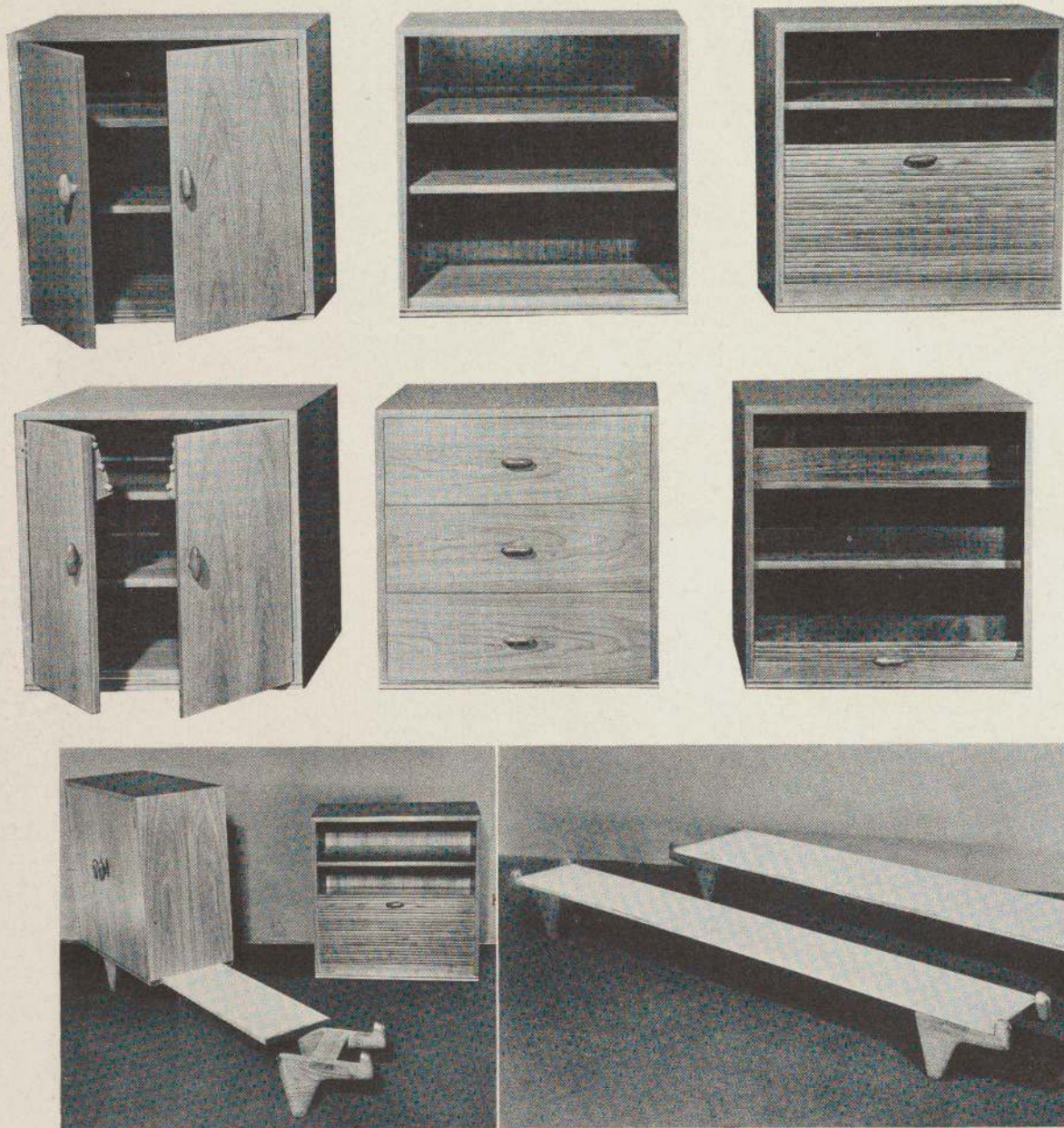


(above) Living room group of Craig and Hatfield furniture. The large chair has a cushion of foam rubber. The small chair, which also serves as a dining chair, has a back which adjusts itself automatically to the sitter. Both are upholstered in fabrics by Marli Ehrman. (below) Another grouping of units by Craig and Hatfield. (Chair by Nicholson and Maier.)

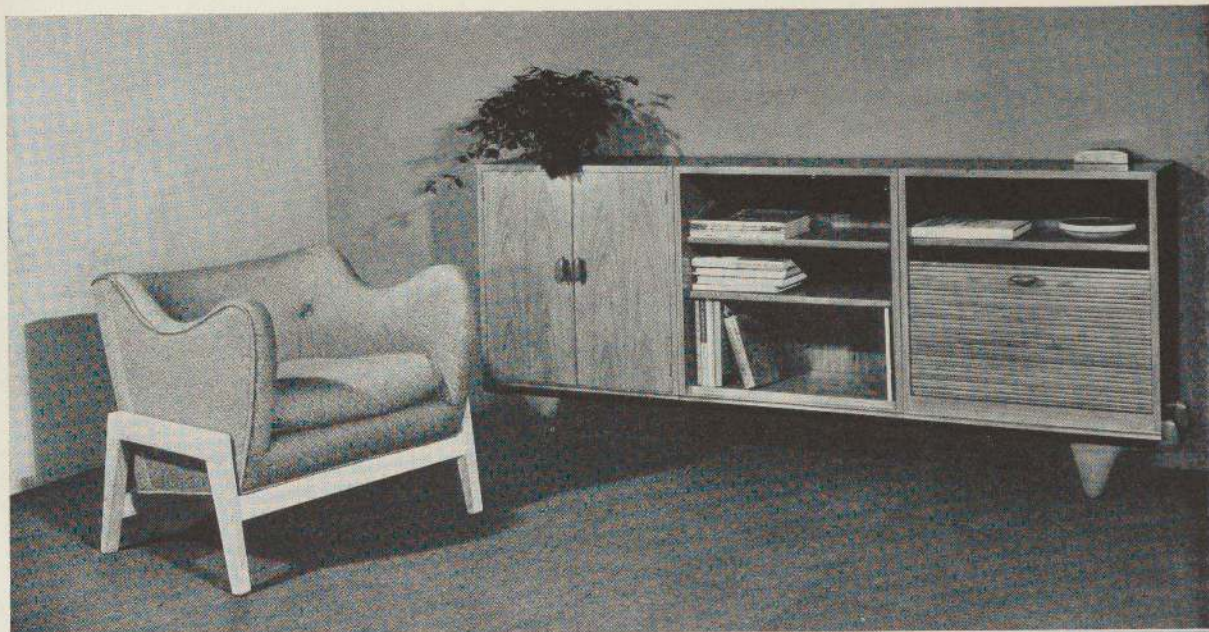


(above) Sectional chair units by Nicholson and Maier. This chair, in natural birch, is manufactured with two arms, with no arms, and with an arm on either side. In this way a sofa of any length can be assembled. It has been produced with a foam rubber cushion (right) which gives clean trim lines, but is expensive; and also with less expensive cushions of ordinary stuffing (left). Fabrics are by Marli Ehrman. (below) Group by Nicholson and Maier. These pieces are samples which were made up for the exhibition, and may be quantity produced later.

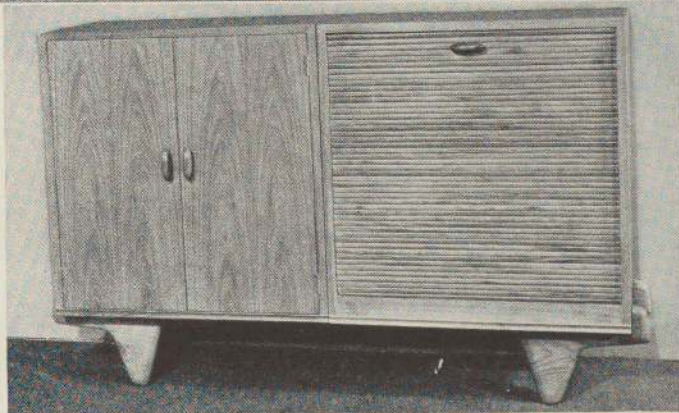
FURNITURE BY STONOROV AND VON MOLTKE

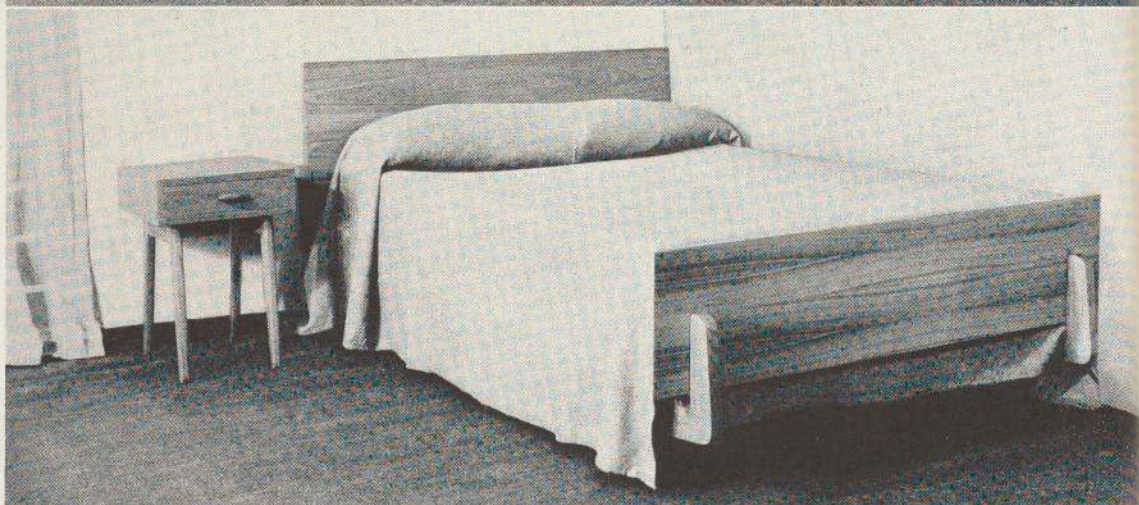
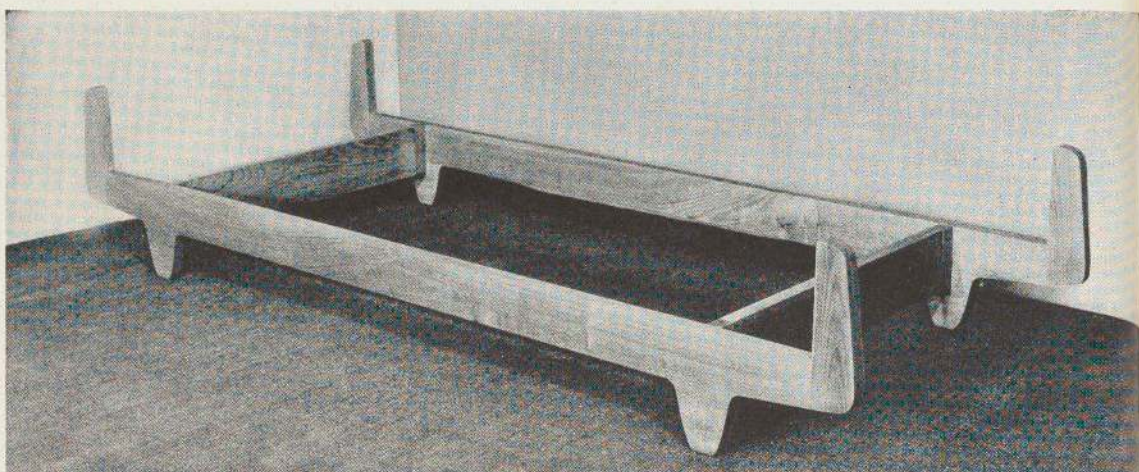


A system of unit cases in walnut. These are made in a 12 inch depth for the living room (**top**) and a 20 inch depth for the bedroom (**center**). All these units are 27 inches high and 27 inches wide. They may be used on the floor directly, or on an 8-inch high base with removable legs. This base board may be used for any two or three units in combination, as shown (**bottom**).



(above) Living room case formed of three shelf units assembled on a three-unit base. Similarly, any other grouping of these units would be possible. The chair employs the same structural system as some of the other pieces, with clear distinction between supporting members and the seat. (center) Assembled bedroom units showing cabinet with shelves and tie racks, tambour with shelves and butler trays, and drawer unit with sliding trays in top drawer. (right) Living room case assembled from two units on a shortened base.



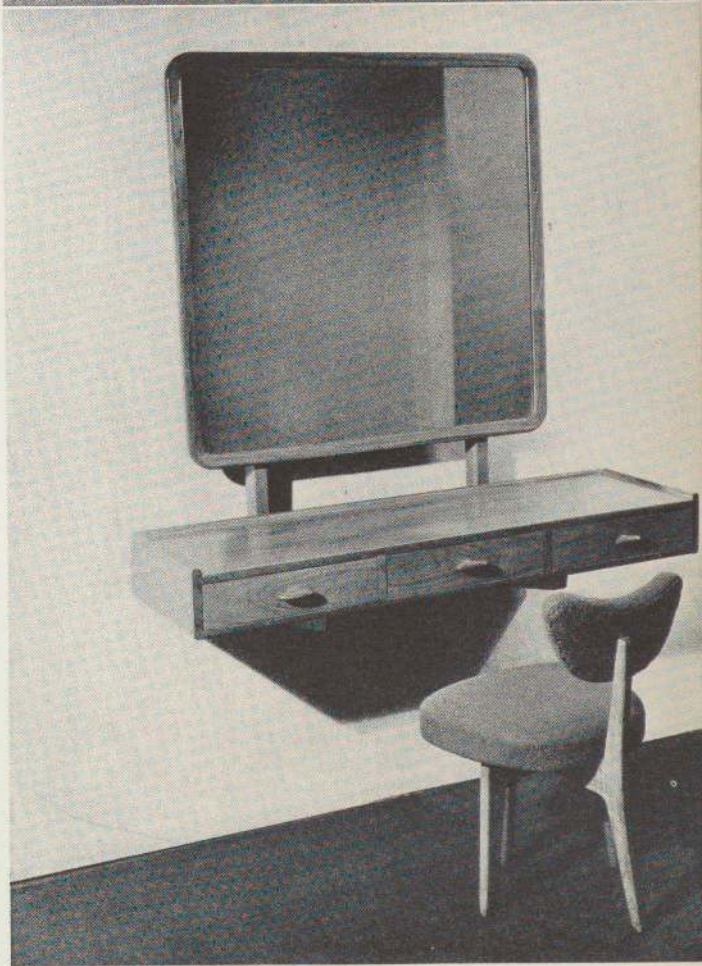


BED. One standard frame (**upper left**) has been made to serve a number of different requirements. The basic frame consists of two longitudinal members laterally spaced by two stretchers. As shown, this frame takes the standard 3'3" box spring and mattress. By substituting longer stretchers the same frame takes the standard 4'6" box spring and mattress. Similarly any size can be accommodated. Where head and foot boards are desired, these may be attached to the ends of the bed frame as shown (**center left**). These end boards are being manufactured of wood, but could also be made up in many other ways, such as with leather, webbing, or upholstering. A similar frame with end boards and a webbed back forms a sofa (**lower left**) with seat and cushions added. (Fabric by Marli Ehrman.)

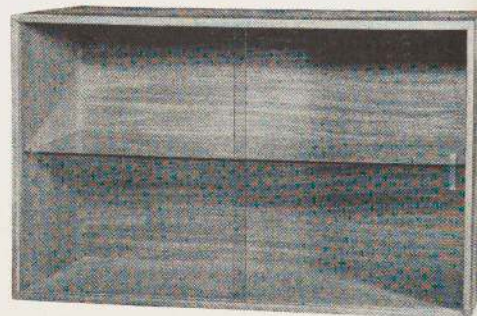
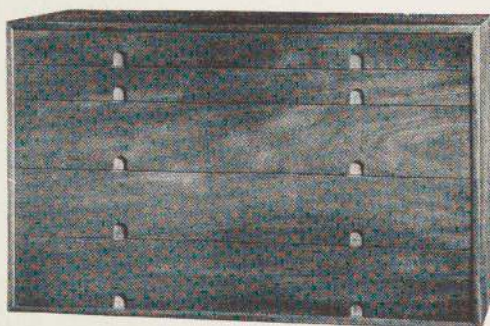
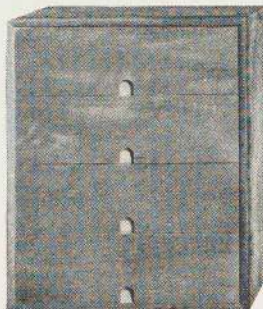
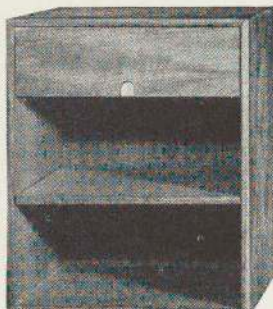
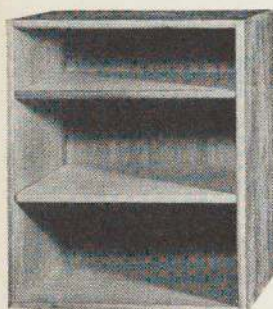


DESK AND CHAIR (**upper right**). The desk contains a small drawer, a sliding shelf for typewriter, and a file drawer. The working surface is covered with Plastyle, a durable plastic. The unit above the desk top is attached by metal straps, and may be omitted. The center section of this unit contains a tubular incandescent light which illuminates the desk surface.

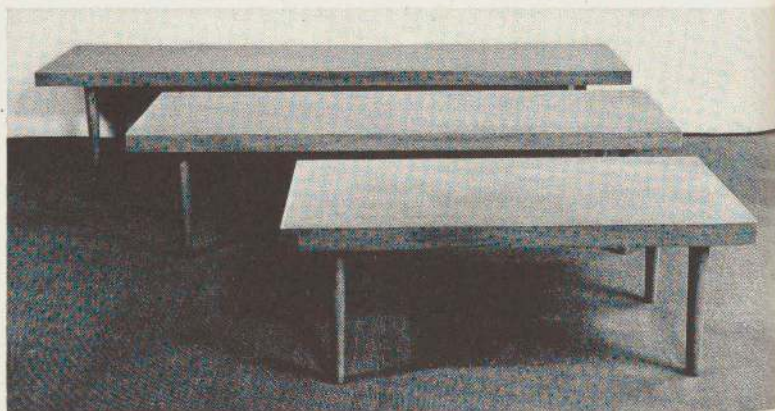
DRESSING TABLE AND CHAIR (**lower right**). A frame, which must be hung from the wall, supports the three-drawer unit and the mirror, which also has a tilting adjustment. Other produced pieces, not illustrated, include a small dining table, an end table, a coffee table, and a high-backed upholstered chair.

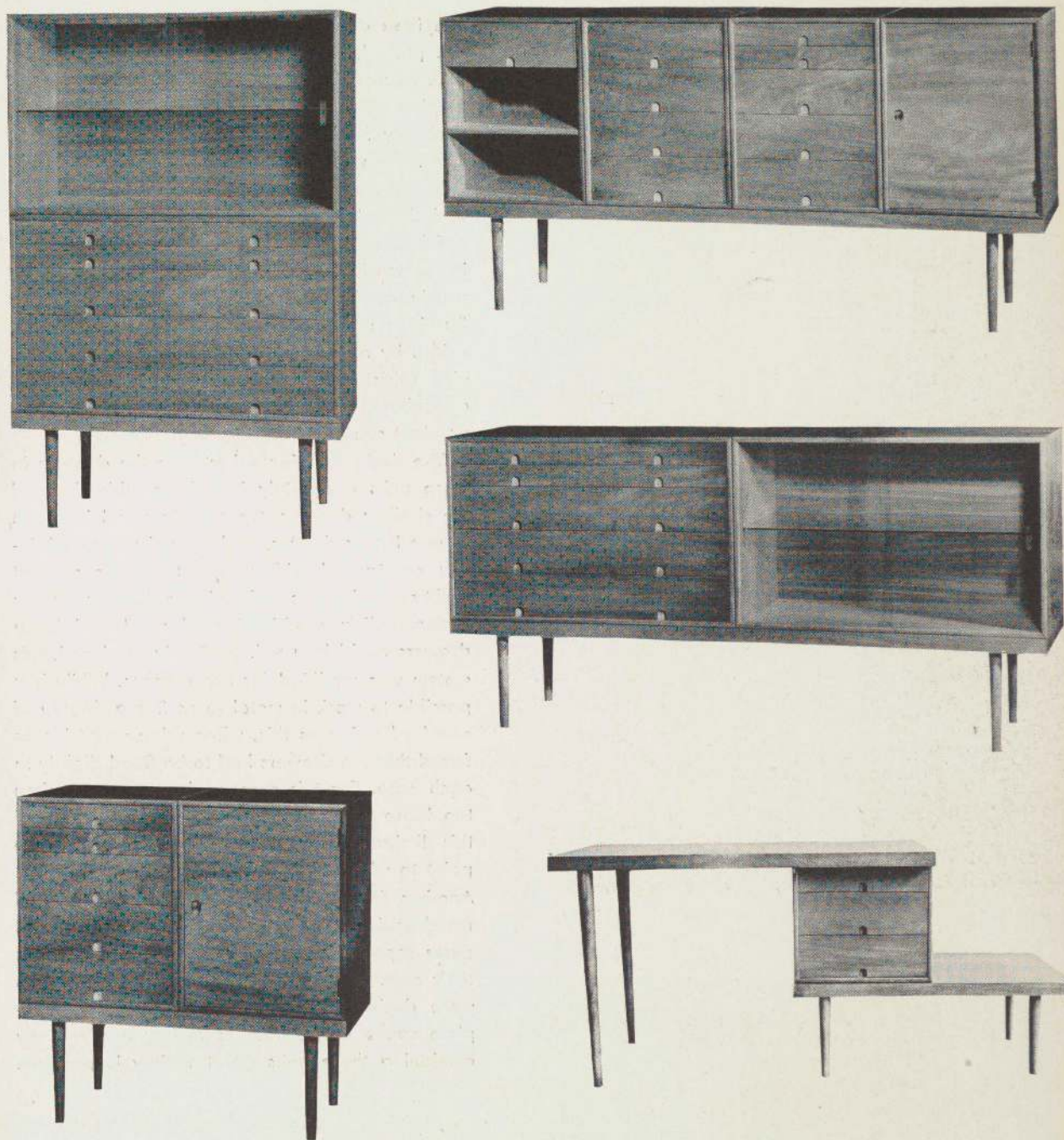


FURNITURE BY SAARINEN AND EAMES

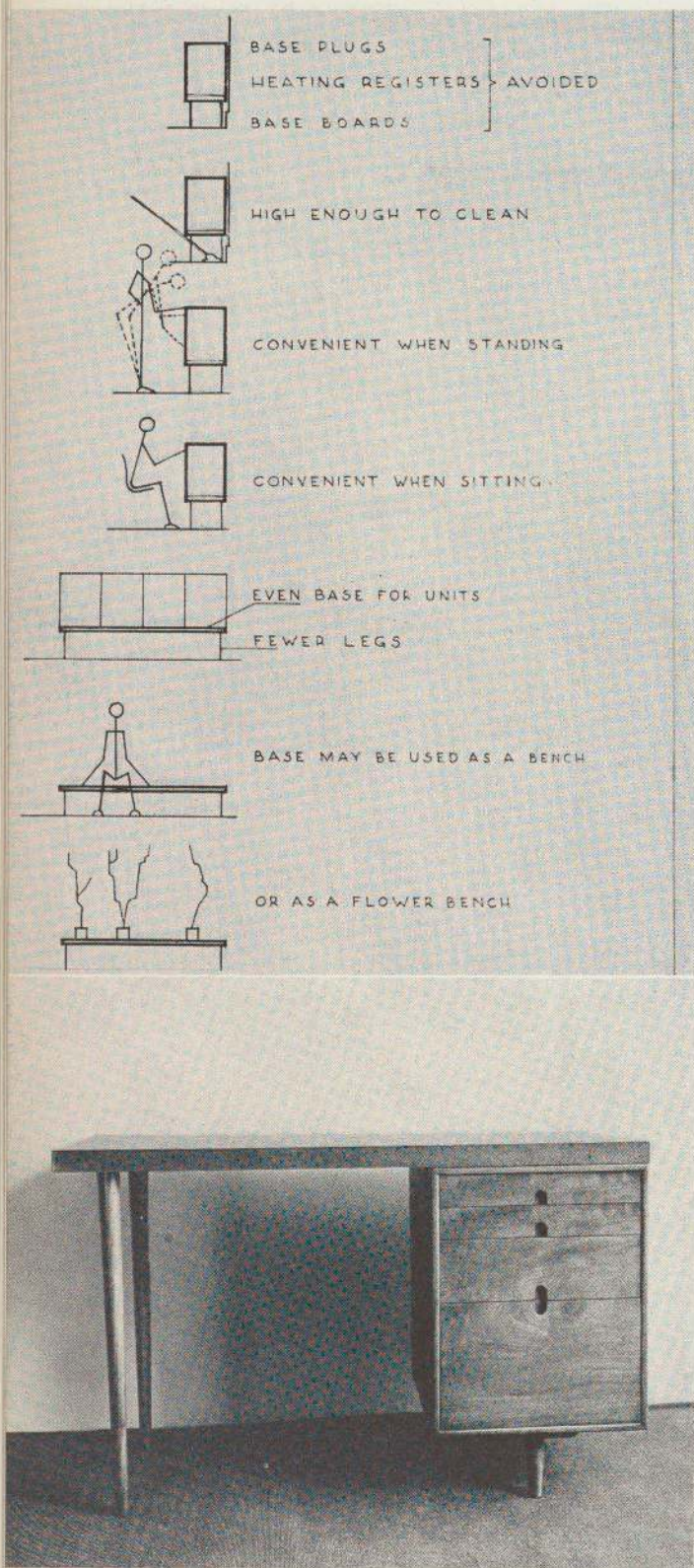


The case furniture designed by Saarinen and Eames is veneered in Honduras mahogany. It carries the principle of standardization farther than any other group yet produced in this country. An 18 inch module was adopted, the units being 18 inches square (or 36 inches in length for the dining room cases). The bases on which these units rest are 13 inches high and come in lengths to hold two, three, or four units (**right**), and may be used in combination to make larger groupings as well.





These units may be combined in any fashion on benches of various lengths. Independent pieces of furniture of almost any size and scale may be assembled by grouping them horizontally or vertically, or both, as shown above. The units have small rubber grips underneath to keep them from slipping on top of each other. A table top with two legs fits on a 15½-inch high unit to form a desk which ties in with this system as seen above. There is also a corner unit, opening from the top.



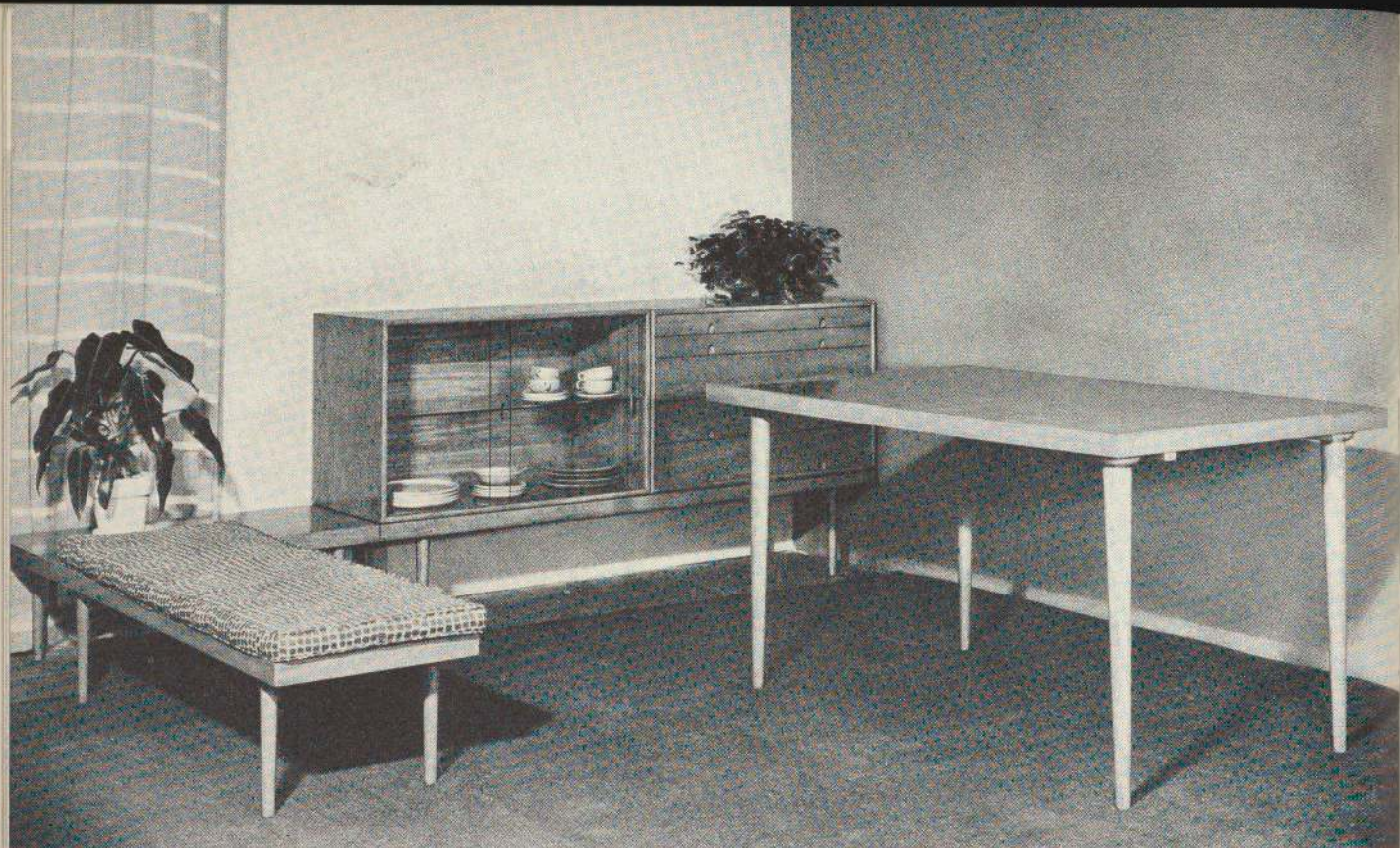
The idea of a separate base, upon which units are placed, has been used a number of times. (See illustration at the bottom of page 9, for example.) These designs by Saarinen and Eames, probably for the first time, exploit the base for itself. The various advantages of this system are demonstrated in the detail from one of Saarinen's and Eames' competition drawings (**left**). Units which rest directly on the floor provide difficulties in rooms where a baseboard prevents their fitting snugly against the wall. This base system by Saarinen and Eames not only avoids such difficulties by raising the units well off the floor, but also adds many pleasant new possibilities by extending the usefulness of the bases as seats or plant stands.

The designers planned to have the drawers in these units completely interchangeable. Two of the shallow drawers are exactly equal in depth to one larger drawer, and the units were originally constructed with sufficient runners so that eight small drawers or four large drawers, or any corresponding combination of small and large drawers could be used. As finally produced, this system was modified for two reasons. While it is possible to work in metal to as fine a degree of standardization as this, when using wood it was found that the drawers had to be fitted slightly to each case. For this reason, drawers were often too loose or too tight when interchanged, and this limitation of the material determined the point to which standardization could be carried. Another factor was the extremely complicated merchandising problem of ordering drawers and cases separately, and allowing customers to mix their own. Therefore five standard arrangements were decided upon, giving a reasonably complete range of possibilities in any one unit. By combining these units great variety is possible.

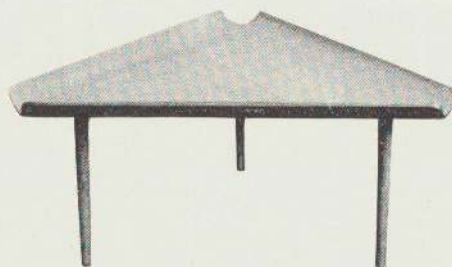
(**lower left**) In addition to the desk shown on page 27, an independent one was also produced. It is the same height as the desk formed with the units, but does not tie in with the unit system.

(**right**) Two groupings of the unit cases with the armchair and side chair.



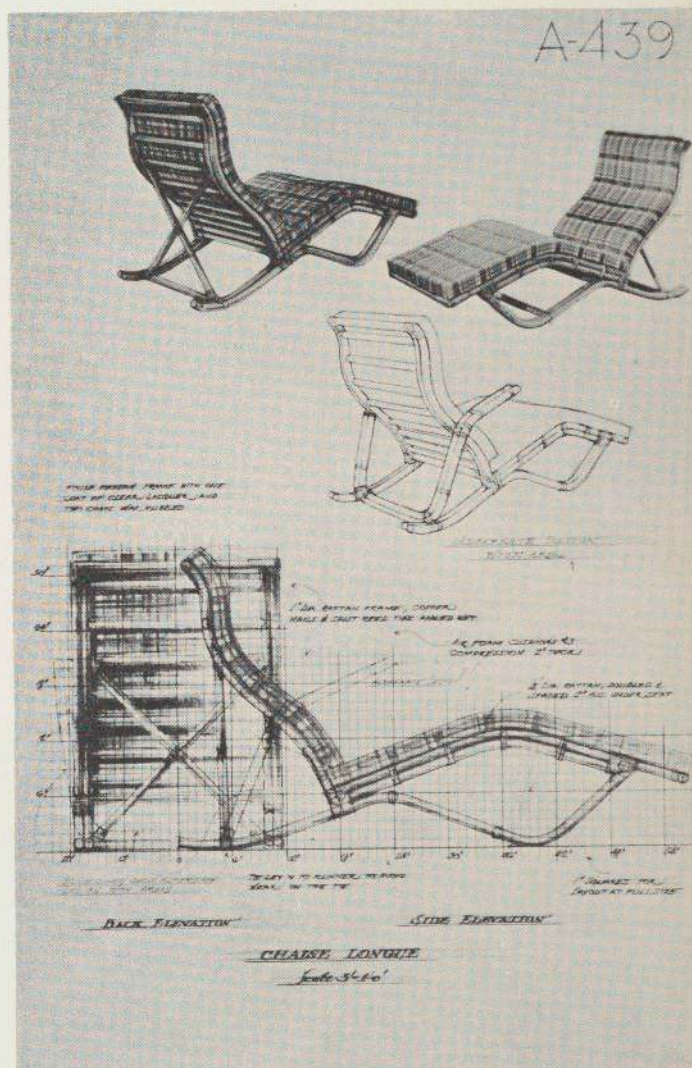


Two tables were produced as part of the group by Saarinen and Eames. The dining table, shown **(above)** in a diagrammatic grouping with the dining room cases, is 56 inches long and 36 inches wide. A pair of metal extension arms pull out at either end to hold leaves 18 inches wide, making it into a 92 inch table extended, as shown **(center right)**. A low coffee table, 16½ inches high and 40 inches on a side **(lower right)** is also being made in plywood by a process similar to that used for the chairs.

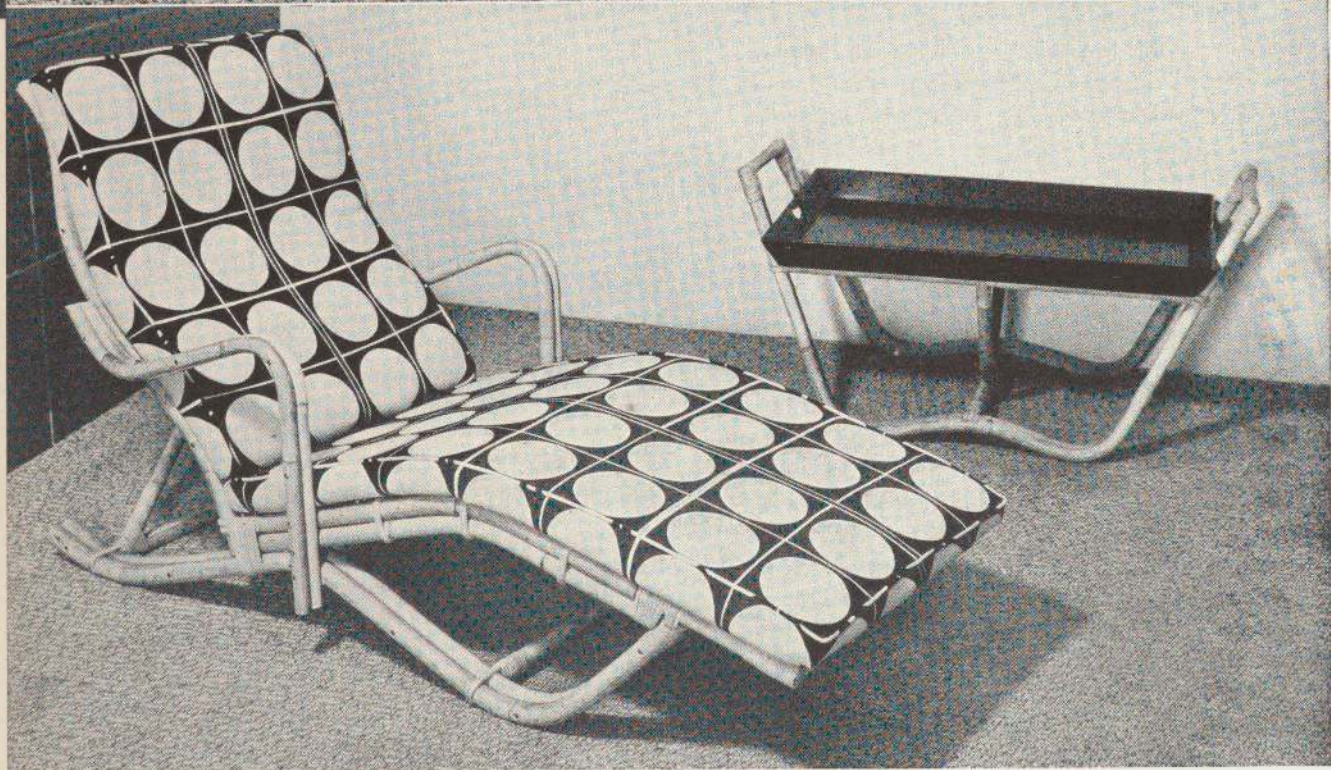


FURNITURE BY ANDERSON AND BELLAH

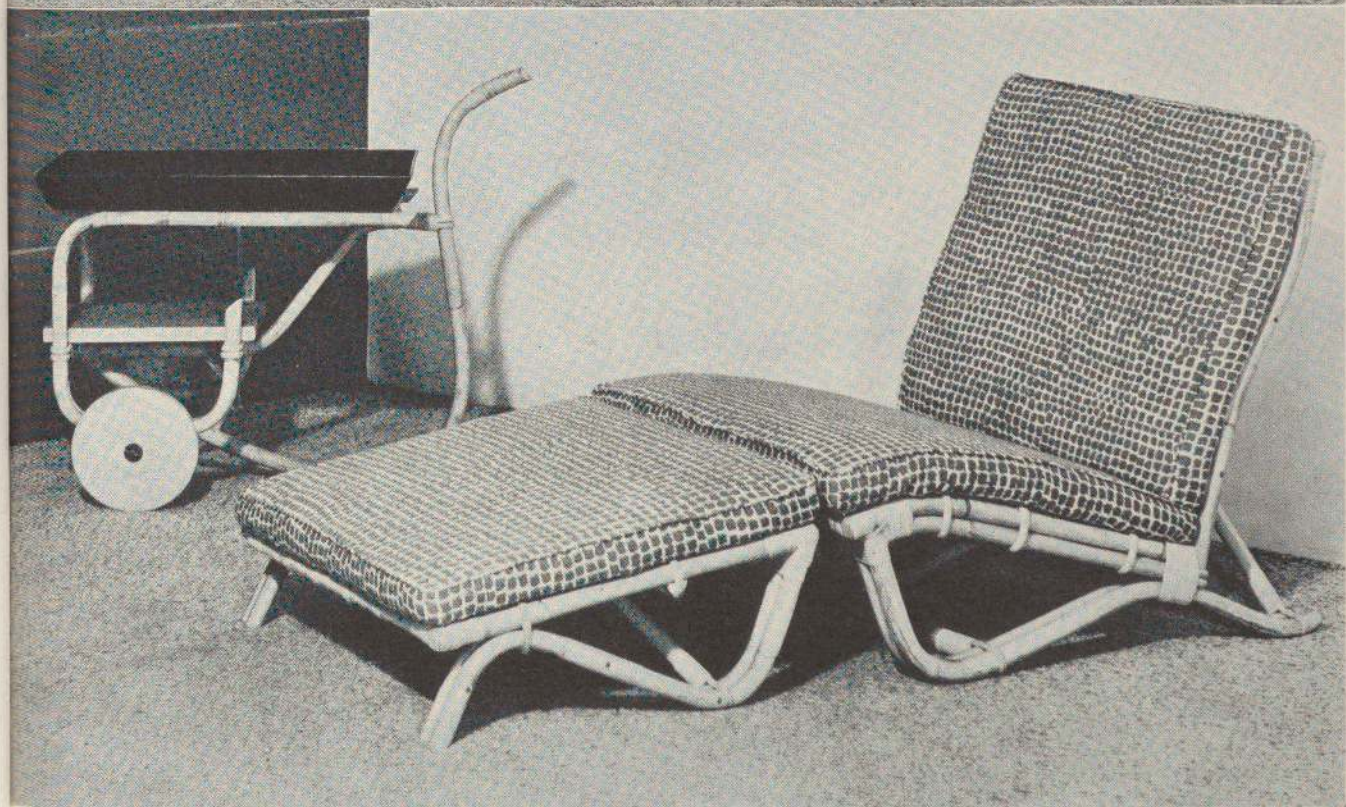
Rattan, commonly confused with bamboo, is a solid vine which is imported largely from the East Indies. It grows to a length of several hundred feet in the jungles and varies from one eighth of an inch to about two and a half inches in diameter. The outer skin of rattan may be cut off into strips by a tubular knife with radial blades. These strips are known as cane and the remaining pith which forms the core is called reed. Cane, reed, and rattan are all used extensively in furniture today. Rattan chairs have been made in this country since about 1850, but the use of stick rattan (in diameters of an inch or so) is a development of the last thirty years. Originally only the small diameters of rattan were imported, and this involved considerable labor and waste in selecting the proper sizes before shipment. It was then found that substantial savings could be made by accepting shipments of random thicknesses. The smaller diameters were used as before, and a new kind of furniture was devised to utilize the thicker pieces. In this way rattan furniture as it is seen today probably started as a by-product. The qualities of rattan as a material are of extreme importance. The fact that it can be bent and its uniformly linear character suggest structural solutions in design. At the same time, the limitations of this character tend to prevent flagrant misuse of it as a material. As a result, there has been some fairly good rattan furniture on the American market for some time, and the chief fault in design has been the introduction of superfluous pieces in a pseudo-structural sense for decorative effect.



Chaise Lounge. One of the drawings submitted in the competition by Anderson and Bellah.



The chaise lounge has been manufactured with arms, as shown in the lower photograph, and also in a version without arms. Various kinds and sizes of tables have been designed to fill out the group. Some of these have removable tops which may serve as trays.



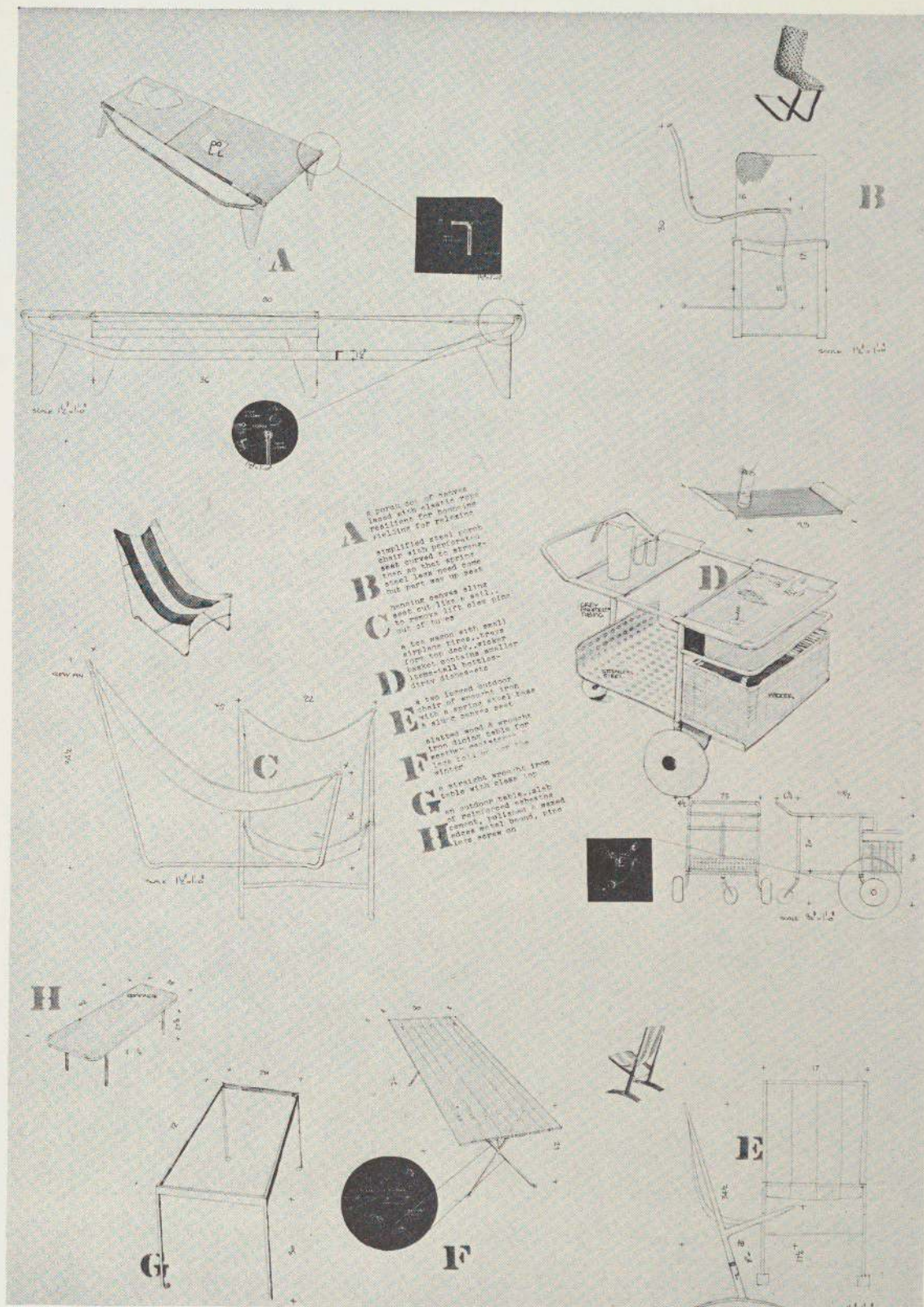
The sectional chair units, shown in both photographs above, may be combined to make a full sized sofa or may be used individually. A separate piece to be used as a foot rest also goes with any of these units. The tea wagon, shown in the lower picture, has a removable tray. Printed fabrics on this rattan group are by Antonin Raymond.

FURNITURE BY WEESE AND BALDWIN

Outdoor living, as a characteristic and increasing feature of American life, has given designers many new problems to solve and has resulted in the creation of many new types of furniture. The designs of Weese and Baldwin, whose competition drawing is shown on page 35, reflect the informal and cheerful character of this outdoor activity. Many of the pieces shown in this draw-

ing have been produced. The tea wagon (below) is made of tubular steel, rolls smoothly over lawns and terraces on its pneumatic tires, and has removable trays and a wicker basket. A variation of the spring steel chair shown in the lower right hand corner of the drawing is also being produced by a manufacturer.





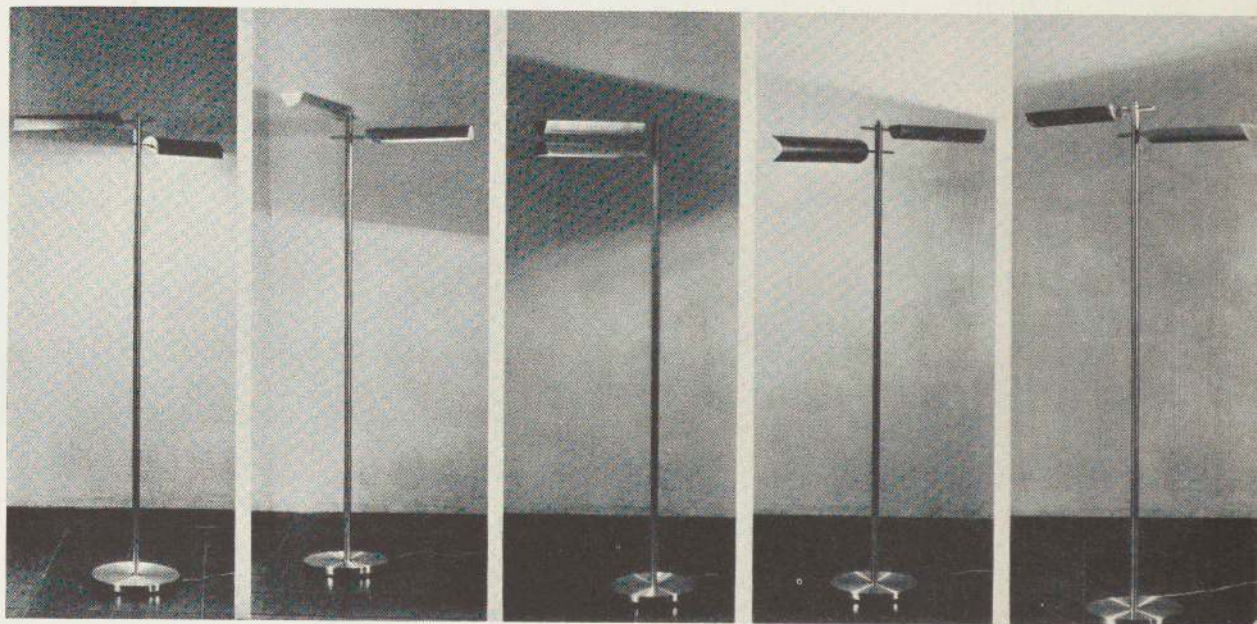
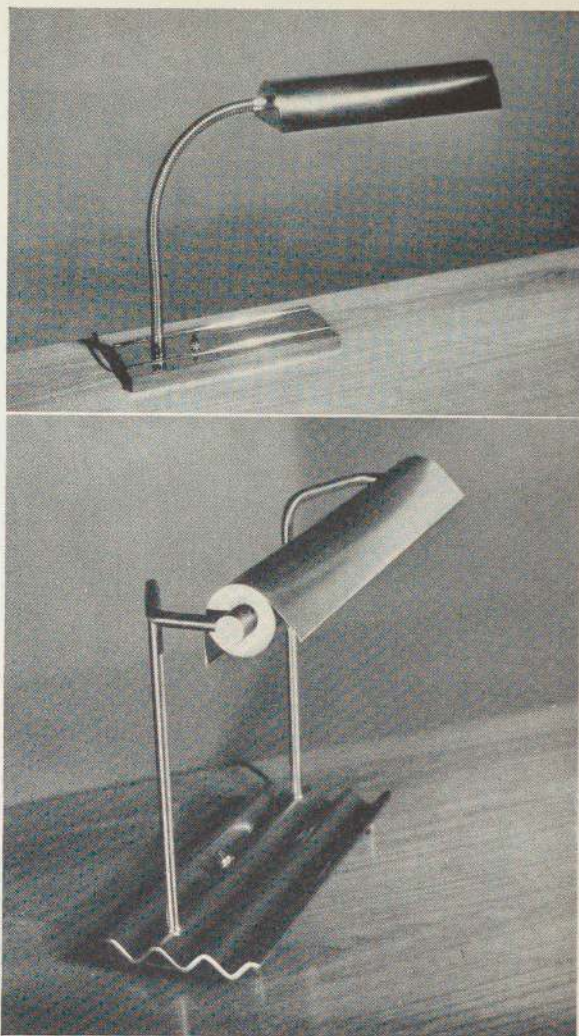


Flexibility has been carefully considered in the outdoor furniture. The barbecue wagons, and the table and bench all have collapsible features so that they may be carried in an automobile or stored in a minimum space during the winter. The canvas seat of the striped "sail chair" (above) is fastened to the tubular frame by means of easily removable plugs in the ends of the pipe.

LAMPS BY PFISTERER

First prize for lighting was awarded to Peter Pfisterer for his ingenious and flexible solution (**below**). This floor lamp, consisting of a vertical rod with two horizontally rotating arms on which are rotating shades, provides many different kinds of lighting by adjustment of the arms and shades. Five possible positions are shown in the photograph above. A second version of this lamp has been produced with one arm about three and a half feet from the floor so that it may be used near a chair for reading. Among a variety of other designs by Pfisterer is the desk lamp with the goose neck (**top right**). The fluorescent desk lamp (**center right**) is one of a group of lamp designs by Weese and Baldwin also executed.

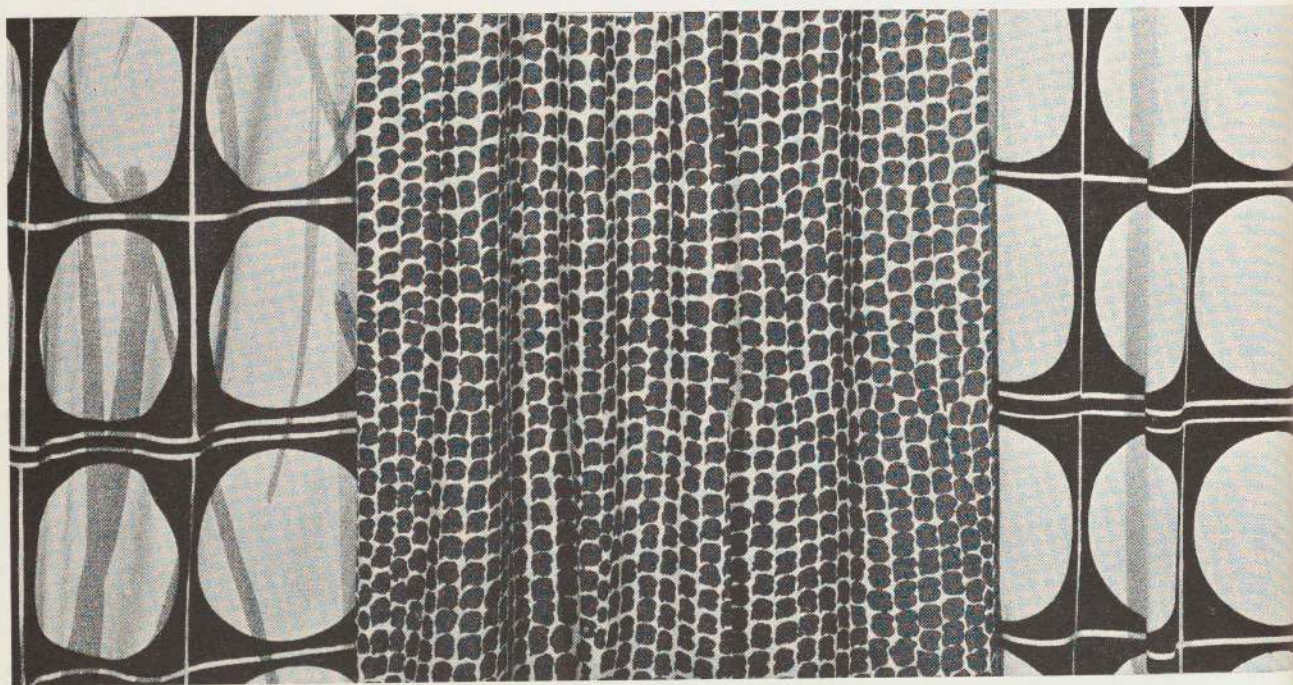
A particularly interesting lamp by Bernard Greenberg and Norton Polivnick received an honorable mention in the competition. This design depends on light being thrown upward against a shade-reflector which is corrugated accurately and scientifically so that light is reflected evenly over the table surface. Arrangements have been completed for the production of this lamp.





WEAVES BY MARLI EHRMAN

From the samples submitted by Marli Ehrman in the competition, six different weaves were selected for production; these have been made in a number of different colors. Three characteristic examples are shown in the photograph above. Other examples are shown on the furniture on pages 13, 15, 20-21, 24.



PRINTS BY ANTONIN RAYMOND

Five print designs, from a group submitted by Antonin Raymond, have been developed in a number of color schemes. Representative examples are shown above. One design by Virginia Nepodal has also been produced. Some of these prints are shown as upholstery on the rattan furniture (pages 32-33).

LATIN AMERICAN DESIGNS

Simultaneously with the competition for United States designers, a second and independent competition was conducted for residents of Mexico, Guatemala, Honduras, Salvador, Nicaragua, Costa Rica, Panama, Cuba, The Dominican Republic, Haiti, Venezuela, Colombia, Ecuador, Peru, Brazil, Bolivia, Chile, Paraguay, Uruguay and Argentina. The purpose of the Latin American contest was not primarily to procure designs for production in this country, but to discover designers of imagination and ability and bring them to New York to observe and study the work being done here. Designers were encouraged to submit suggestions as to the manner in which their own local materials and methods of construction might be applied to the making of furniture for contemporary American requirements. In this way it was hoped that the range of materials available for furniture might be expanded to include handsome and practicable materials such as certain fibers, woods, skins, etc., not now in general use.

Special programs of this competition in Spanish, Portuguese, and English were widely distributed throughout Mexico, and Central and South America. From the large number of entries received from seventeen of the twenty republics, five winners were selected by the same jury which made awards in the United States competition. These winners were:

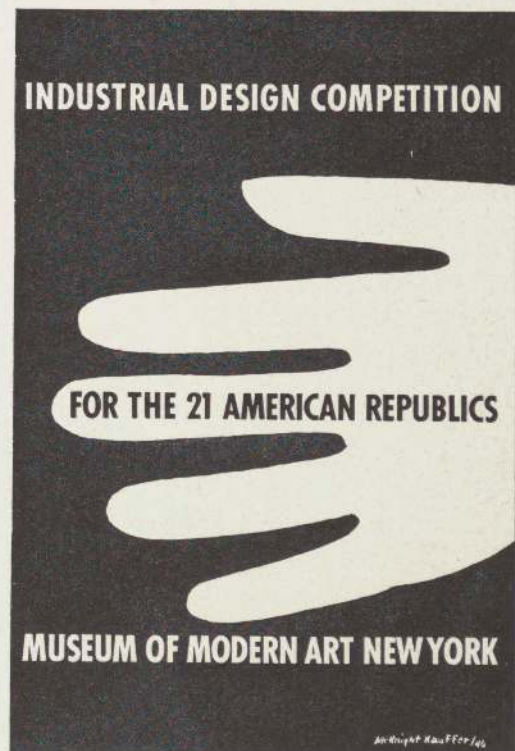
Xavier Guerrero, Mexico, D. F.
Michael van Beuren, Klaus Grabe, Morley Webb, Mexico, D. F.
Roman Fresnedo, Montevideo, Uruguay
Julio Villalobos, Buenos Aires, Argentina
Bernardo Rudofsky, São Paulo, Brazil

As a prize, each winner received a round trip ticket to New York and \$1000 in cash to cover his expenses during his stay here. The designs of each of these winners utilized materials from his own country.

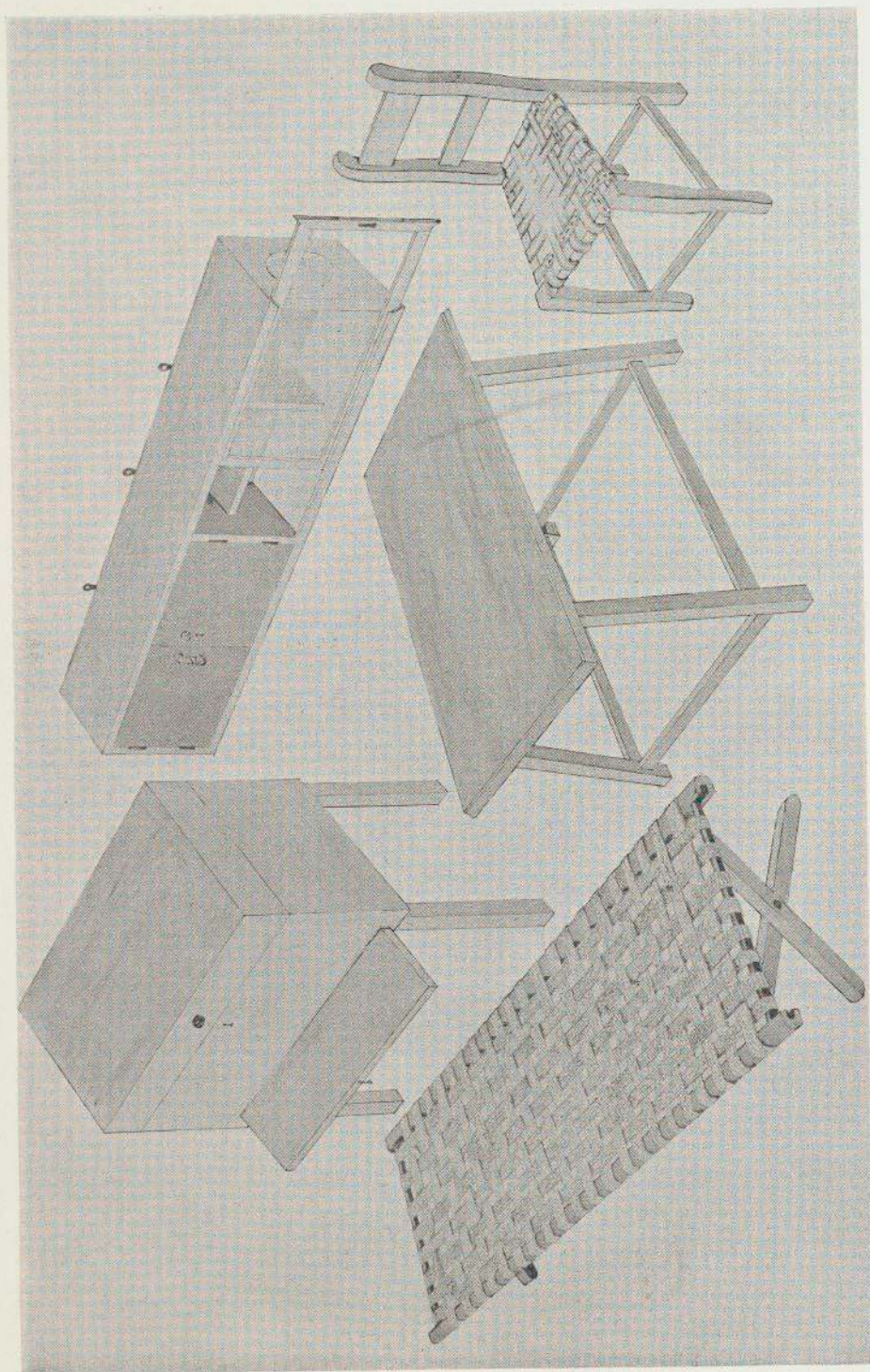
With the collaboration of Bloomingdale's, Inc., New York, arrangements were made with a number of manufacturers in this country to construct a few finished pieces from the designs of each of the above winners, and it is planned to make them available upon special order. While

much of the work could be done here, many of the materials had to be imported. Fibers were brought from Mexico, knitted fabrics from Brazil, cactus wood from Argentina, and skins from Uruguay. In the case of the group in Mexico City who were already manufacturing their own pieces, it was possible to import a completed set. A few finished pieces were also brought from Argentina. In all about twenty-five examples of furniture by these designers were prepared for the exhibition.

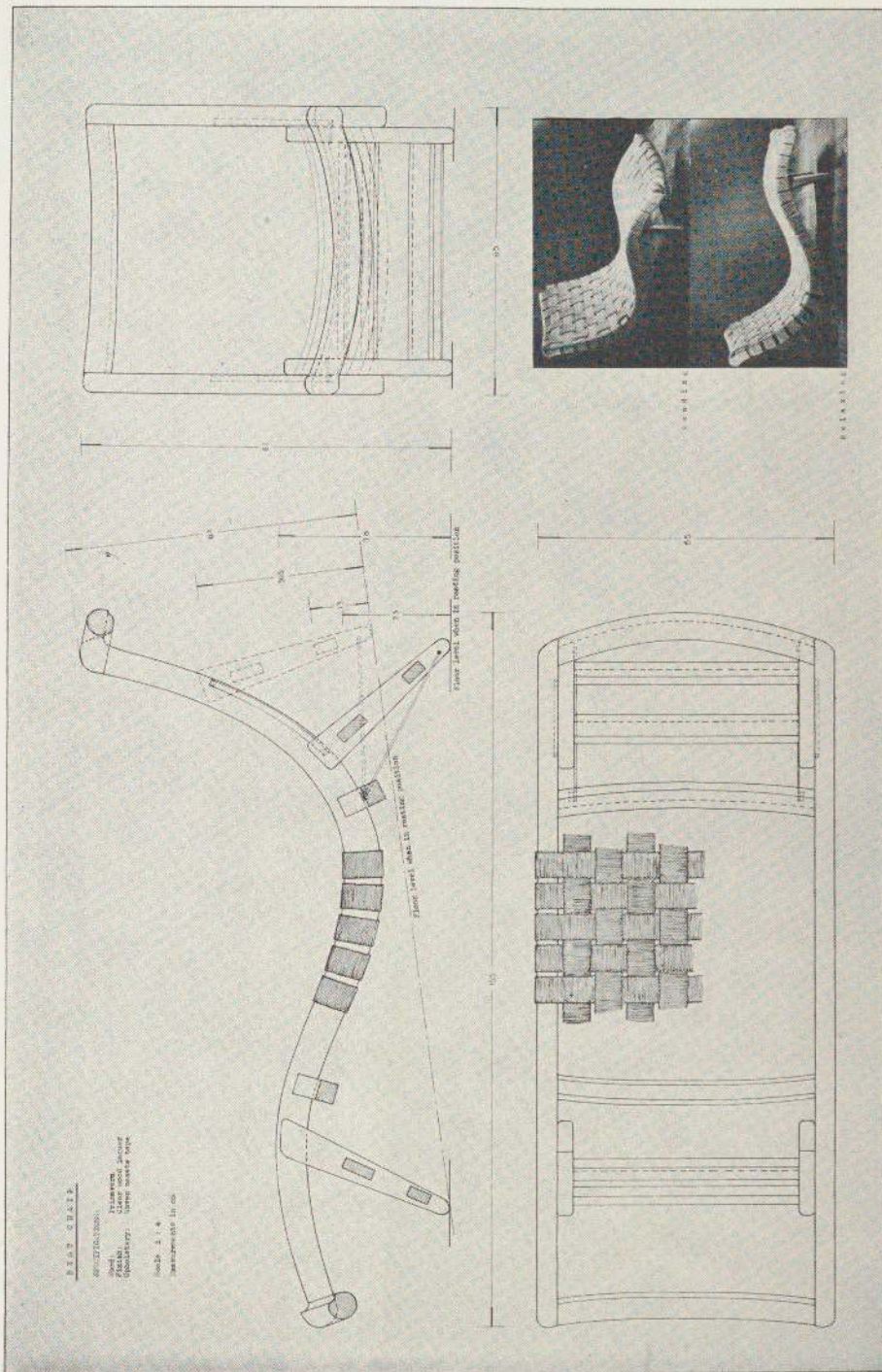
On the following pages are shown drawings and photographs selected from the competition submissions of these five winners. Of the pieces illustrated all those on pages 40, 41 and 43 have been constructed, as well as the chair at left on page 42 and the hooded chair on page 44. These pieces as well as several others by the same designers are included in the Museum's exhibition.



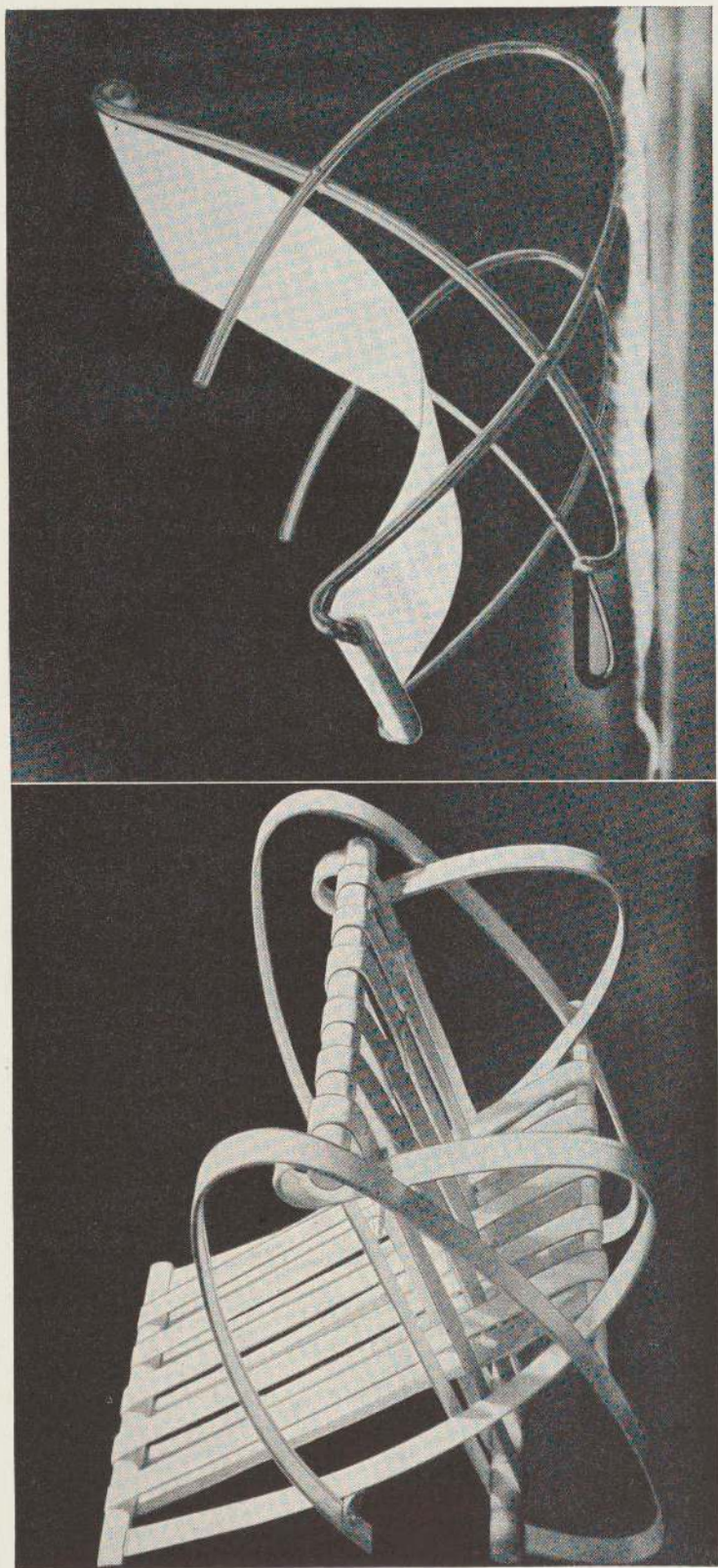
Cover of the competition program designed by E. McKnight Kauffer.



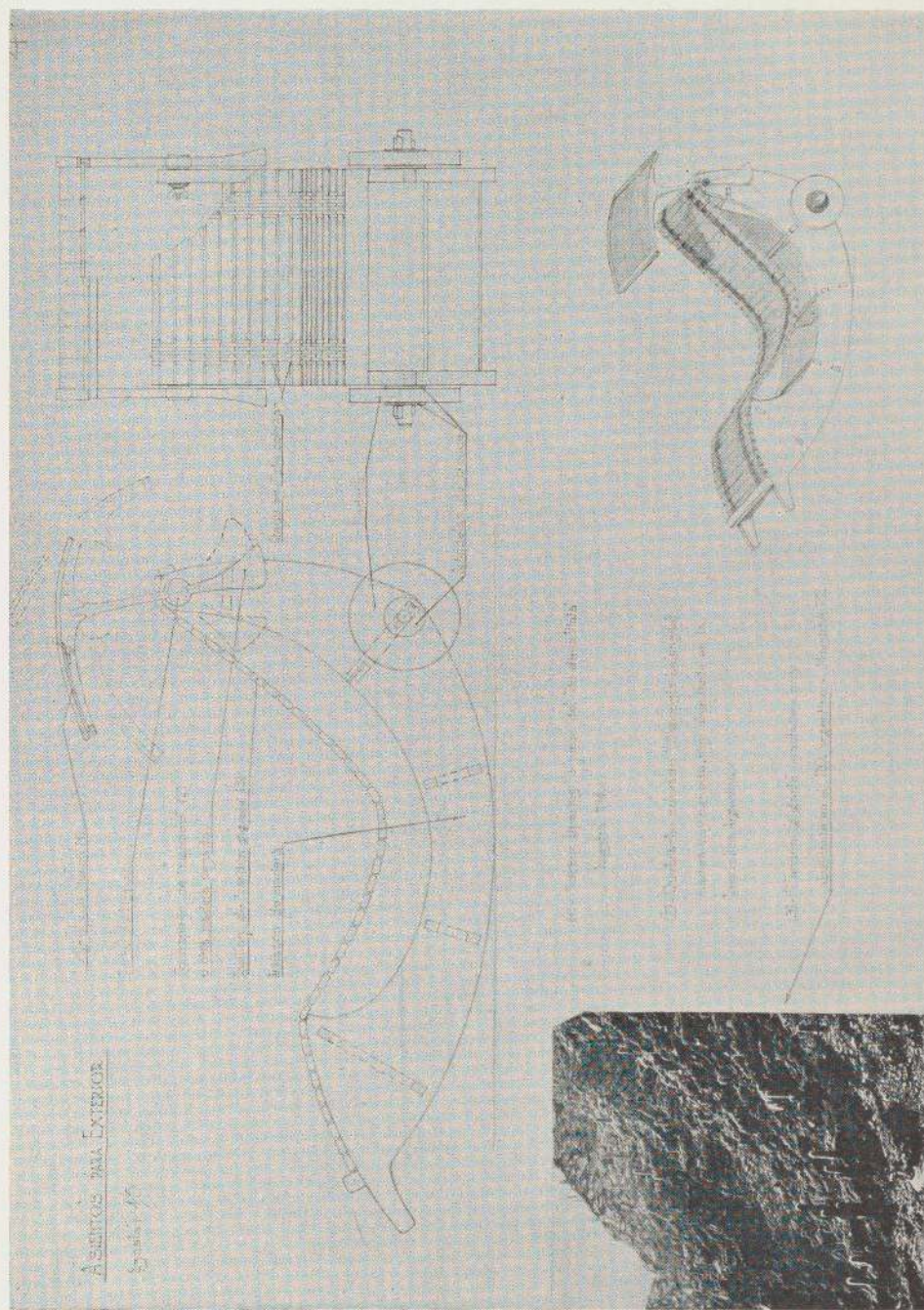
XAVIER GUERRERO, MEXICO CITY. The group by Guerrero was conceived as peasant furniture, to be made of pine with webbing of ixtle on the cot and chair. The wall case has screening of jute in the sliding doors and at the end.



VAN BEUREN, GRABE, WEBB, MEXICO CITY. The adjustable chair of primavera wood and woven mecate tape (illustrated) is one of a group of designs which are manufactured by the designers in Mexico City.



ROMAN FRESNEDO, MONTEVIDEO, URUGUAY. Designs submitted by Fresnedo included rattan pieces as well as the chairs illustrated which utilize skins and leather straps from Uruguay on steel frames.



JULIO VILLALOBOS, BUENOS AIRES, ARGENTINA. Wood from the giant cactus is used by peasants in the north of Argentina for structural beams. It has not yet been exploited at all. It is extremely porous and cures very quickly. Villalobos uses it here in strips for the seats and backs of chairs. The shade on the chaise illustrated is made of junco, a pithy reed which has definite insulating value, and is widely used in Argentina.

SELECTED BIBLIOGRAPHY

- ALOI, ROBERTO *L'arredamento moderno*. Seconda serie. Milano, U. Hoepli, 1939.
- ARCHITECTURAL FORUM Vol. 67, pp. 247-68. October, 1937.
Special issue: "Domestic interiors."
Vol. 73, pp. 217-320. October, 1940.
Special issue: "Design decade."
- ARCHITECTURAL REVIEW Vol. 74, pp. 1-46. December, 1933.
Special issue: "British industrial art."
Vol. 78, pp. 211-302. December, 1935.
Special issue: "Interior house equipment."
- L'ARCHITECTURE D'AUJOURD'HUI Vol. 10, pp. i-1 through i-95. January, 1939.
Special issue: "L'équipement de l'habitation . . . numéro spéciale préparé sous la direction de M. André Bloc."
- BAUHAUS Neue arbeiten der Bauhauswerkstätten. Schriftleitung: Walter Gropius, L. Moholy-Nagy. München, Albert Langen Verlag, 1925.
Staatliches Bauhaus, Weimar, 1919-1923. Weimar-München, Bauhausverlag, n.d.
- BEHRENDT, WALTER CURT *Modern building—its nature, problems and forms*. New York, Harcourt, Brace & Co., 1937.
- BERTRAM, ANTHONY *Design*. Harmondsworth [England], Penguin Books Ltd., 1939.
- CIRCLE; international survey of constructive art. Editors: J. L. Martin, Ben Nicholson, N. Gabo. London, Faber and Faber, 1937.
- DAY, LEWIS F. *Of William Morris and his work*. London, J. S. Virtue and Co., 1899.
- DEUTSCHE WERKBUND Die form ohne ornament; Werkbundaussstellung 1924. Stuttgart, Deutsche Verlags-Anstalt, 1924.
Innenräume: räume und inneneinrichtungsgegenstände aus der Werkbundaussstellung "Die Wohnung." Stuttgart, Verlag Dr. Fr. Wedekind & Co., 1928.
Section allemande, exposition de la Société des Artistes Décorateurs, Grand Palais, [Paris]. Berlin, Reckendorf, 1930.
- DIECKMANN, ERICH *Möbelbau: holz, rohr, stahl*. Stuttgart, Julius Hoffmann Verlag, 1931.
- ECKSTEIN, HANS *Die schöne wohnung*. München, F. Bruckmann A. G., 1931.
[New, completely revised edition.] München, F. Bruckmann A. G., 1934.
- DIE FORM; zeitschrift für gestaltende arbeit. Vol. 1-10. Berlin, 1925-35.
Fortnightly organ of the Deutsche Werkbund.
- GIEDION, SIGFRIED *Space, time and architecture: the growth of a new tradition*. Cambridge, Harvard University Press, 1941.
- GIEDION-WELCKER, C. *Modern plastic art*. Zurich, Girsberger, 1937.
- GLOAG, JOHN *Artifex: or, The future of craftsmanship*. New York, E. P. Dutton & Company, 1927.
- GLÜCK, FRANZ *Adolf Loos*. Paris, Crès, 1931.
- GROPIUS, WALTER *The new architecture and the Bauhaus*. Translated . . . by P. Morton Shand, with a preface by Joseph Hudnut. New York, The Museum of Modern Art, 1936.
- INNEN-DEKORATION; die gesamte wohnungskunst in bild und wort. Vol. 1-ff Darmstadt, 1890 —.
Unit furniture first published in issues dated January 1928 through December 1930.
- KOLLMANN, FRANZ *Schönheit der technik*. München, Albert Langen Verlag, 1928.
- KROPP, ERNST *Wandlung der form in XX. jahrhundert*. Berlin, Verlag Hermann Reckendorf, 1926.
- KULKA, HEINRICH, ed. *Adolf Loos: das werk des architekten*. Wien, Verlag von Anton Schroll, 1931.
- LE CORBUSIER [pseud. of Charles Edouard Jeanneret-Gris.] *L'art décoratif d'aujourd'hui*. Paris, G. Crès et Cie., 1925[?].
The city of tomorrow and its planning. Translated from the 8th French edition of *Urbanisme*. New York, Payson & Clarke, 1929.
Towards a new architecture. Translated from the 13th French edition. New York, Payson & Clarke, 1927.
- LOOS, ADOLF *Trotzdem*. Innsbruck, Brenner-Verlag, 1931.
A collection of essays. A French translation of the important 1908 article "Ornement und Verbrechen" (Ornament and Crime) appears in *Esprit Nouveau*, No. 2, pp. 159-68, 1920.
- LOTZ, WILHELM, ed. *Licht und beleuchtung*. Berlin, Verlag Hermann Reckendorf, 1928.
Wie richte ich meine wohnung ein? Modern gut mit welchen kosten? Berlin, Verlag Hermann Reckendorf, 1930.
- MCGRATH, RAYMOND *Twentieth-century houses*. London, Faber and Faber, 1934.
- MARTIN, J. L. and SPEIGHT, S. *The flat book*. London, William Heinemann Ltd., 1939.
- MOHOLY-NAGY, L. *The new vision*. Translated by Daphne Hoffman. Rev. and enl. New York, W. W. Norton & Co., 1938.
- MORRIS, WILLIAM *Architecture, industry and wealth; collected papers*. London, Longmans Green, 1902.
- MUMFORD, LEWIS *Technics and civilization*. New York, Harcourt, Brace and Co., 1934.
- NEW YORK. THE MUSEUM OF MODERN ART *Architecture and furniture: Aalto*. 1938.
Bauhaus, 1919-1928. Edited by Herbert Bayer, Walter Gropius, Ise Gropius. 1938.
Cubism and abstract art. Edited by Alfred H. Barr, Jr. 1936.
Machine art. Edited by Philip Johnson. 1934.
Modern architecture. Edited by Alfred H. Barr, Jr., Henry-Russell Hitchcock, Jr., Philip Johnson and Lewis Mumford. 1932.
- OSTHAUS, KARL ERNST *Van de Velde: [leben und schaffen des künstlerers.]* Hagen, Folkwang-Verlag, 1920.
- PEYSNER, NIKOLAUS *An enquiry into industrial art in England*. New York, Macmillan, 1937.

PEVSNER, NIKOLAUS *Pioneers of the modern movement from William Morris to Walter Gropius.* London, Faber and Faber, 1936.

POPP, J. *Deutsches warenbuch*, herausgegeben von der Dürerbund-Werkbund Genossenschaft. Kriegsausgabe. München, Dürerbund-Werkbund Genossenschaft, 1915.

READ, HERBERT *Art and industry, the principles of industrial design.* London, Faber & Faber, 1934.

RICHARDS, CHARLES RUSSELL *Art in industry.* [New ed.] New York, Macmillan, 1929.

SCHNECK, ADOLF G. *Schrank und bett.* 3. auflage. Stuttgart, Julius Hoffmann Verlag, 1932.

— *Der stuhl.* 3. auflage. Stuttgart, Julius Hoffmann Verlag, 1937.

These two books of Schneck were originally published, in 1928, under the title "Das möbel als gebrauchsgegenstand."

SCHWARZ, RUDOLF *Wegweisung der technik.* Potsdam, Müller & Kiepenheuer, n.d.

THE STUDIO YEARBOOK OF DECORATIVE ART Vol. 1-ff London, 1906 —.

VOGT, RICHARD *Der neue markt; standardartikel aus der industriellen produktion; ein wirtschaftsbuch.* Berlin, VDI-Verlag, 1931.

YORKE, F. R. S. *The modern house.* London, Architectural Press, 1934.

— and **GIBBERD, FREDERICK** *The modern flat.* London, Architectural Press, 1937.

These books may be consulted in the Museum library.

BIOGRAPHICAL INDEX

ANDERSON, Carl. Motion picture set designer. Born 1905 in Dover, New Jersey. Started by working for a decorating firm in Los Angeles.

1927 Architectural designer.

1935 Formed partnership with Ross Bellah for furniture and architectural design, Los Angeles.

BALDWIN, Benjamin. Designer. Born 1913 in Montgomery, Alabama.

1935 B.A. Princeton University.

1936-38 Princeton Graduate School of Architecture.

1937 Fontainebleau Scholarship.

1937-38 Princeton Junior Fellow in Architecture.

1938-39 Fellowship at Cranbrook Academy of Art.

1939-40 Technical supervisor for W.P.A. in Alabama; worked for Eliel and Eero Saarinen.

1941- Collaborating with Harry Weese, Kenilworth, Illinois.

BELLAH, Ross. Motion picture set designer. Born 1908 in St. Jo, Texas. Draftsman in architectural offices in Los Angeles. American Home.

1940 Associated with Carl Anderson for furniture and architectural design, Los Angeles.

CRAIG, Martin. Sculptor and designer. Born 1906 in Paterson, N. J.

Specialized in chemistry and physics at C. C. N. Y. Research Division Bell Telephone Laboratories on Sound and Light Engineering.

1930 Sculptor. Free lance in Industrial Design.

EAMES, Charles. Architect. Born 1907 in St. Louis, Missouri. Attended public schools.

1925 Scholarship to study architecture at Washington University.

1928-38 Worked for architects in St. Louis, travelled and practiced independently.

1938 Architectural fellowship at Cranbrook Academy of Art.

1939-40 Worked for Eliel and Eero Saarinen.

1940-41 Teaching design at Cranbrook Academy of Art.

EHRMAN, Marli. Textile designer. Born 1904 in Berlin, Germany. Studied at Royal Arts and Crafts School, Berlin, and Bauhaus at Weimar and Dessau; also at Universities of Jena and Hamburg.

1925-27 Experimental weaving shop at Bauhaus.

1927-28 Teacher and designer of textiles, Switzerland and Germany.

1938- Head of Textile workshop, School of Design, Chicago, Illinois.

FRESNEDO, Roman. Architect. Born 1903 in Uruguay. Early education in Asuncion, Paraguay.

1930 Graduated from the School of Architecture of Montevideo, receiving the gold medal of the Ministry of Public Education. Childrens' Hospital Competition, Second Prize.

1931-32 Experiments in naval architecture.

1934-35 Agraciada Avenue and Womens' University Competitions, Second Prize.

1937 Travel in Europe.

1937-38 Grand Stand in the Hippodrome of Maronas Competition, First Prize.

1938 School of Architecture Competition, First Prize. Court House Competition, Fourth Prize.

1938- Domestic and industrial architecture. Winner in several photographic competitions. Professor at the School of Architecture. Architect for the Electrical Plant, Montevideo.

GREENBERG, Bernard F. Born 1919 in New York City.

1940 B.S. in Electrical Engineering, M. I. T. Research assistant in Bemis Foundation, M. I. T.

GUERRERO, Xavier. Born 1896 in Mexico. Began making line drawings for architects when only twelve years old. Guadalajara, water colors and murals.

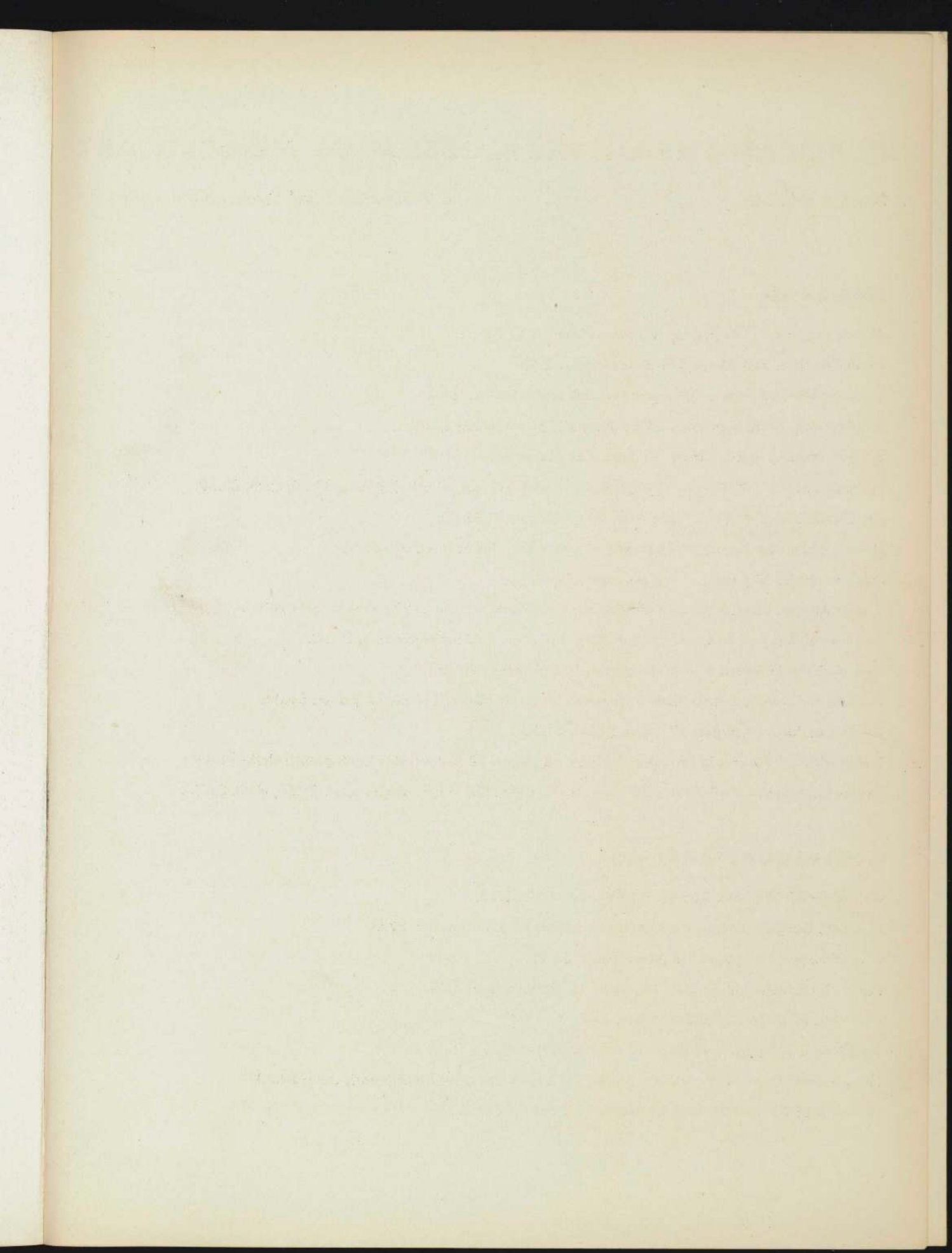
1911 Mexico City, one of the founders of the Sindicato de Obreros Tecnicos, Pintores y Escultores. Restored the process of fresco painting.

1923 Organized and brought to the U.S.A. the exhibition of the popular arts of Mexico.

- 1939 Fresco mural for the Hall of the Syndicate of Chauffeurs, Guadalajara.
- 1941 Fresco and furniture designs for the Tourist Center of Mexico City.
- HATFIELD**, Ann. Designer. Born 1903 in Newton Centre, Massachusetts.
- 1926 A.B. Mount Holyoke College.
Worked for Pola and Wolfgang Hoffman, Plymouth Patchogue Mills. Decorating Department of B. Altman & Co.
- 1938 Opened her own office for "Suitable Interiors." Collaborated with architects in carrying out interiors of Museum of Modern Art, Time and Life Reception Room and offices, Hunter College Student Lounges and offices.
- HENNING-REES**, (Carolyn Rees and Henning Watterston) Henning Watterston. Born 1916 in Appleton, Minnesota.
Both studied at Rudolph Schaeffer School of Design in San Francisco.
- KOCH**, Carl. Architect. Born 1912 in Milwaukee, Wisconsin.
- 1937 M.Arch. Harvard University.
- 1938 Travelling Fellowship, working for six months with Markelius on Swedish Pavilion for the World's Fair.
- 1939 Practicing architect in Boston. Collaborated with Hugh Stubbins on Industrial Design Competition.
- MACDONALD**, Stephen L. Architectural designer. Born 1914 in Salt Lake City, Utah.
- 1939 Graduated from School of Architecture, M. I. T.
- 1938-40 Worked with architects in Boston and New York.
- 1941 Private practice in Salt Lake City, Utah.
- MAIER**, Douglas. Designer. Born 1912 in Cleveland, Ohio.
- 1934 B.A. Yale University.
- 1937 B.F.A. Yale University. A. I. A. Medal.
- 1938 Langley Scholarship.
- 1937-38 In office of Harrison and Foulhoux.
- 1938-40 Associate of Russell Wright.
- 1940 Free-lance designer of pottery and wood articles. Associated with Emrich Nicholson, New York City.
- MESEROLE**, Harriet. Free-lance artist. Born 1893 in New York City.
- 1915 Graduated from Pratt Institute.
Free-lance artist for magazines and advertising agencies.
- MILLER**, Frances. Textile Designer. Born 1893 in New York City.
Educated in private schools in U.S.A. and Europe.
- 1933 Exhibition at Century of Progress, Chicago.
- 1937 Exhibition at International Exposition, Paris. Gold medal for Decorative Textiles.
- 1939 Exhibition at Golden Gate Exposition, San Francisco, and Heinz Building, World's Fair.
- NAGEL**, Chester E. Architect. Born 1911 in Fredericksburg, Texas.
- 1934 B.Arch. University of Texas.
- 1938 Registered architect. Three years architect for National Park Service.
- 1940 M.Arch. Harvard University. Practicing architect, Austin, Texas.
- NEPOTAL**, Virginia. Textile Designer. Born 1914 in Cleveland, Ohio.
- 1937 Study at Cleveland School of Art.
- 1938 Agnes Gund Travelling Scholarship for travel abroad.
- 1941 Teacher at Cleveland School of Art.
- NICHOLSON**, Emrich. Designer. Born 1913 in Shelburn, Indiana.
- 1933 Graduated from Chouinard School of Art, Los Angeles.
- 1936 B.F.A. Yale University.
- 1936-38 Chief designer for Otto Kuhler.
- 1938- Free-lance designer.
Associated with Douglas Maier, New York City.
- PFISTERER**, Peter. Architect. Born 1907 in Basel, Switzerland.
- 1922-29 Technical study and apprenticeship in architects' offices.
- 1929-30 Architectural and engineering courses at University of Vienna.
- 1930-32 Travel in Europe and draftsman in French and Swiss offices.
- 1933-40 Associated with Richard J. Neutra, architect, Los Angeles.
- 1940- Technical advisor to National Youth Administration. Drafting Project in Los Angeles. State Architect and chief of Planning Office for National Youth Administration, Los Angeles.
- POLIVNICK**, Norton. Born 1918 in New York City.
- 1941 B.Arch. M. I. T.
- RAYMOND**, Antonin. Architect. Born 1889 in Prague, Czechoslovakia.
- 1910 Degree Architect-Engineer, Higher Polytechnic Institute, Prague.
Office of Cass Gilbert.
- 1916 Office of Frank Lloyd Wright.
- 1917 Designed Theatre du Vieux Colombier for Jacques Copeau, New York.
- 1917-19 U. S. Army Intelligence officer in Europe.
- 1920 To Japan with Frank Lloyd Wright.
- 1921-38 Practicing architect in Japan.
- 1939 Practicing architect, engineer and designer in New Hope, Pa. with Noemi Pernessin Raymond, designer (Mrs. Antonin Raymond).
- REES**, Carolyn. Textile designer. Born 1912 in Omaha, Nebraska. See Henning-Rees.
- RUDOLFSKY**, Bernard. Designer. Born 1905 in Austria.
- 1928 Graduated from Polytechnic Academy of Vienna. Lived for years on Greek and Italian islands studying primitive architecture and archeology. Worked as decorator, painter, movie and stage designer, assistant editor and ghost-architect.
- 1935 Visit to U.S.A.
- 1938-41 Living in South America. Now resident of São Paulo, Brazil.

- SAARINEN, Eero.** Architect. Born 1910 in Kirkkonummi, Finland. Son of Eliel Saarinen, architect.
- 1923 Came to U.S.A.
- 1924 National Small Sculpture Competition, First Prize.
- 1929-30 Studied sculpture at Academie de la Grande Chaumiere, Paris.
- 1931-34 School of Architecture, Yale University.
- 1934-35 Matcham Travelling Fellowship.
- 1934 Post and Telegraph Building for Helsinki, Third Prize.
- 1935-36 Worked with Jarl Eklund on remodelling Swedish Playhouse in Helsinki.
- 1936-38 City Planning and Housing Projects with Flint Institute of Research and Planning.
- 1938 Wheaton Art Center Competition, Fifth Prize.
- 1938-40 Associated with Eliel Saarinen in architectural work.
- 1939 Festival Theater, College of William and Mary Competition. Eero Saarinen, Ralph Rapson, Fred James, Associated Architects, First Prize. Smithsonian Gallery of Art Competition, Washington, D. C. Eliel and Eero Saarinen, J. Robert, F. Swanson, Associated Architects, First Prize.
- 1940-41 Tabernacle Christian Church, Columbus, Ohio. Opera House and Chamber Music Hall, Berkshire Symphonic Festival, Stockbridge, Mass.
- STONOROV, Oscar G.** Architect. Born 1905 in Germany. Studied at the Ecole Polytechnique Federale, Zurich, Switzerland.
- 1925-29 Sculptor in Paris and Florence.
- 1927-29 Worked in atelier of André Lurçat. Wrote book on Le Corbusier with Willi Boesiger.
- 1932 World Competition for the Palace of the Soviets, Stonorov and Kastner, Associated Architects, Second Prize.
- 1932 Started practicing architecture in U.S.A. Housing consultant for P.W.A.
- 1939 Smithsonian Gallery of Art Competition, Honorable Mention. Practicing architect in Philadelphia, Pa. Housing projects completed in Philadelphia, Camden, N. J., New Britain, Conn., Beaver County, Pa.
- STRENGELL, Marianne.** Textile designer. Born 1909 in Helsinki, Finland.
- 1927-29 Art Academy in Helsinki.
- 1930 On staff of the Stockholm Exposition.
- 1931-36 Designer of textiles for A. B. Hemflit, Helsinki.
- 1934-36 Owner and designer of textiles for Koti-Hemmet, Helsinki. Designer of textiles for B. O. Aktieselskab, Copenhagen.
- 1937 Instructor in weaving and textile design at Cranbrook Academy of Art.
- STUBBINS, Hugh, Jr.** Architect. Born 1912 in Birmingham, Alabama.
- 1933 B.S.Arch. Georgia Tech.
- 1935 M.Arch. Harvard University.
- 1939 Smithsonian Gallery of Art Competition, Washington, D. C. with Mark Peter, Jr. one of eight third prizes.
- 1940 Instructor, Harvard School of Design.
- ULLA of UGGLAS, Textile Designer.** Born 1916 in Stockholm, Sweden.
- 1936 Graduated from High School, Uppsala. Study in Geneva.
- 1938 Study of weaving at Uppsala Lans Hemslojdsfor-enings Vavskola, Uppsala.
- 1939 Study of dressmaking and design, Stockholm.
- 1940- Honorary Fellow of the American-Scandinavian Foundation. Study at Cranbrook Academy of Art under Marianne Strengell.
- VILLALOBOS, Julio.** Architect. Born 1905 in Argentina.
- 1930 Graduated from the School of Architecture of the University of Buenos Aires.
- 1932 Invented blind with vertical giratory leaves. Worked in office of the National Direction of Irrigation.
- 1940- Head of Architecture Office in the Ministry of Public Works, directing the design of large water works, Buenos Aires. Professor of Drawing at the Colegio Nacional D. F. Sarmiento.
- VON MOLTKE, Willo.** Designer. Born 1911 in Silesia.
- 1937 Graduated from the Technische Hochschule, Berlin. Worked in England under Robert Henning and Anthony Chitty, former partner of the Tecton Group.
- 1938 Worked in offices of Ivar Tangbom, Sune Lindstrom and others in Sweden.
- 1940 Worked for Alvar Aalto on the medical center for Caracas, Venezuela, and the Finnish Pavilion at the World's Fair. Studied under Lawrence Kocher at Black Mountain College.
- 1941 M.Arch. Harvard University. Associated with Oscar Stonorov in Philadelphia.
- WEESE, Harry M.** Designer. Born 1915 in Evanston, Illinois.
- 1938 M. I. T., A. I. A. award and Rotch Award.
- 1938-39 Fellowship at Cranbrook Academy.
- 1939-40 Research assistant at M. I. T. with the Bemis Foundation.
- 1940 With Skidmore, Owings and Merrill, Chicago.
- 1941 Collaborating with Benjamin Baldwin, Kenilworth, Ill.
- WYCKOFF, Charles W.** Born 1916. B.A. Dartmouth College.
- 1940-41 Third year student at M. I. T.

10,500 copies of this book were printed for the Trustees of the Museum of Modern Art in September, 1941, by William E. Rudge's Sons, New York.



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