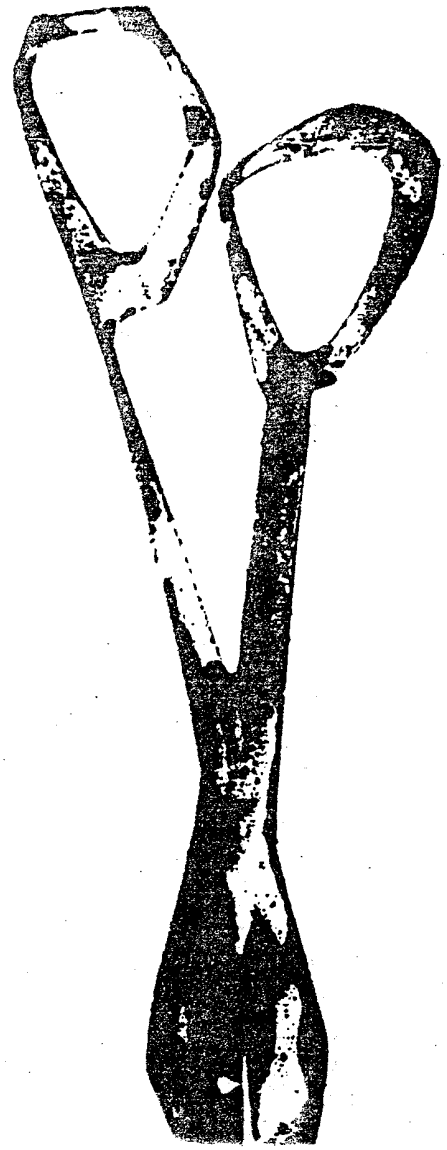
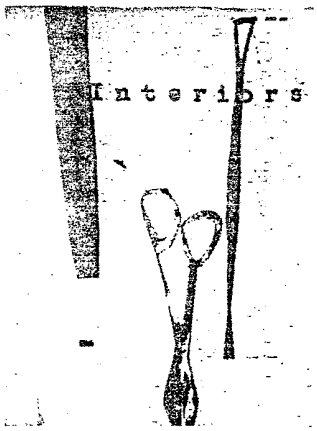
Interiors



George Robinson



George Robinson's rendition of the tools of his trade aptly introduces Alexander Kostellow's article, starting overleaf, on Industrial Design at Pratt Institute, where Mr. Robinson is a senior student.

EXECUTIVE STAFF OF THE INDUSTRIAL DESIGN DEPARTMENT AND EXPERIMENTAL LABORATORY:

James C. Boudreau, Dean of the Art School; Alexander J. Kostellow, Chairman of Department of Industrial Design and Director of Experimental Laboratory; Frederick Whiteman, Chairman of Foundation Year; John S. Griswold, Associate Director of Experimental Laboratory; Rowena R. Reed, In charge of Three Dimensional Design and Sculpture; Victor G. Canzani, In charge of Experimental Design; Luigi A. Contini, In charge of Engineering; Walter Civardi, Head of the Photographic Laboratory.

FACULTY:

Alfred Auerbach, Merchandising and Market Research; William N. Breger, Aesthetics; Gerald Gulotta, Industrial Design; Otto Hula, Wood Technology and Furniture; Joseph Kapey, Model Making; Robert A. Kolli, Industrial Design; Philip Lawson, Structural Representation and Perspective; Ivan Rigby, Three Dimensional Design; Harold Simon, Techniques of Presentation; Ruth Taylor, Structural Representation; Eva Zeisel, Ceramics.

PRATT'S EXPERIMENT IN DESIGN EDUCATION

By Alexander J. Kostellow

In 1947 *Interiors* published an article of mine, explaining the program and procedures of the Industrial Design Department at Pratt Institute. At that time we had a three-year certificate course of studies, leaning somewhat toward craftsmanship and technical skills. Since that time, important changes have occurred.

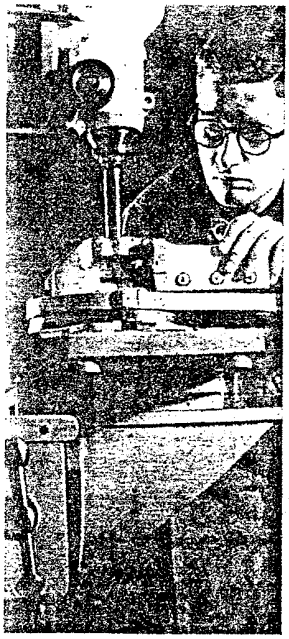
The Industrial Design Department has grown considerably and, at present, it offers a four-year degree course. The additional time has enabled us to introduce a more rounded program, both in experimental design and in general education.

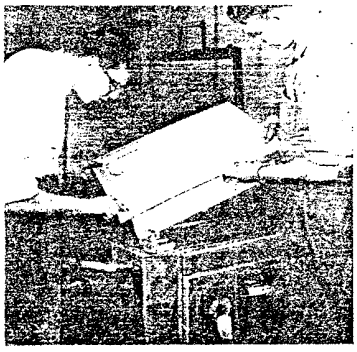
With all its progressive expansion the Industrial Design Department still considers that its purpose is to develop the student's creative potential, to supply him with adequate scientific and technical information, and to equip him with methods for research. We feel that the integration into the program of humanistic subjects is essential for the development of the student's personality and for his over-all growth. It acquaints the student with our country's social and economic structure against a world background and helps him to gain insight into and recognition of the patterns of our emerging culture.

The planning of the design curriculum was not based on the assumption that there are certain and definite methods or procedures the use of which would produce ideal designers. Experience proves that specialized courses in design like other programs devoted to the development of technical skills restrict the esthetic potential of the student. "Practical" approaches rarely bring forth creative designers of importance. At best they produce skilled technicians, typical products of a trade school. The ideal approach, perhaps, would be a well-rounded liberal arts program, devoted primarily to the humanities with some study of the theoretic aspects of design, and the introduction of the student, in his last year, to more specialized phases of design in their relationship to industry and life. However, a critical analysis of this type of program reveals its obvious lack of organic unity. One could not possibly regard as separate entities the various components which make up the designer's personality; the emotional-esthetic aspects of the designer's expression of his inner life as one; the technics and mechanics for its materialization as another; and, as something apart, his own place in the present social and economic structure.

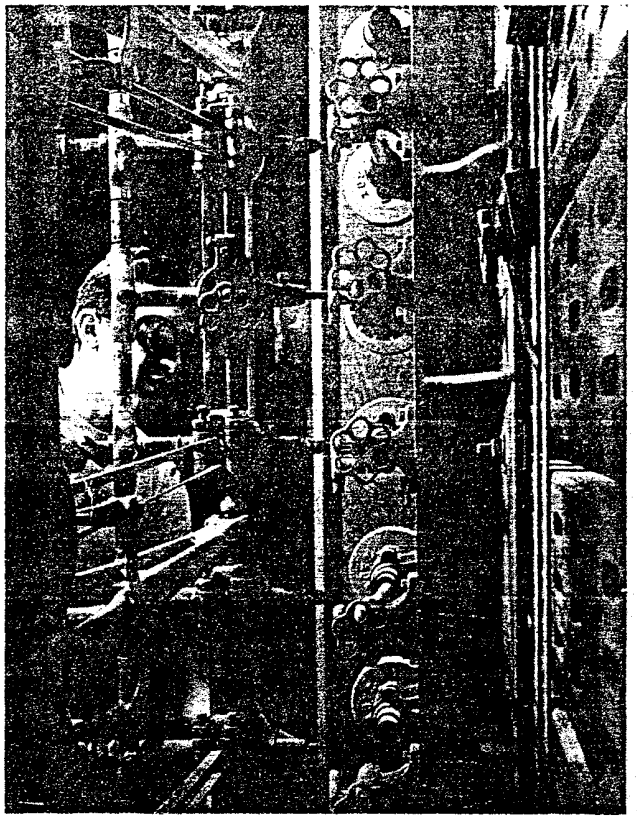
To effect, as much as possible, the simultaneous development of the student's capabilities in these indicated directions, we have established, in addition to the study of design, three major curricular areas: 1. The Humanities, a course of studies organized to help the student to orient himself in mankind's achievements in the arts, letters, and sciences. Human relations, Great Books, esthetics, impact of science, and anthropology, form, in part, this division. These studies are supplemented with concerts, plays, and lectures by authoritative representatives. 2. The technics of civilization, including the subjects which pertain to the mechanics and instrumentalities of contemporary existence resulting from the scientific and technological advances peculiar to our age. 3. Social and economic factors as they

From left, seated: Alexander J. Kostellow, Luigi A. Contini, Victor G. Canzani, Rowena Reed, John S. Griswold; standing: Joseph Kapey. Walter Civardi.





Photos at right: Three instances of designing with machines. . .



. . . Top: a Maho electronic milling machine shapes metal surfaces. Center: a Sill vacuum former for plastics: Bottom: a Curtis multiple carving machine reproduces fivefold from hand-made forms.

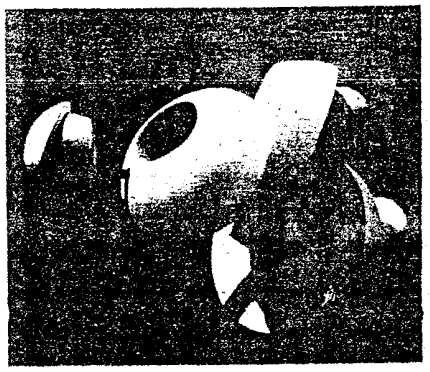
affect our lives. In ultimate application these three areas of study and investigation are necessarily related to the problems of industrial designing.

In analyzing the design program we may observe that it is based to a great extent on exploratory experimentation. Industrial design is a new field touching upon every phase of our daily existence. There being no ready-made catechisms or syllogisms to follow, almost any statement in teaching industrial design tends to become a creative statement. Yet, by its very nature of being new, it demands a fundamental study of its premises and postulates. It cannot be taught simply as design for industry; that is, purely as a technical pattern necessary to benefit our social economy. Nor can it be taught only as a study of functional forms and the development in terms of the sensitivity of those forms. And certainly, teaching it as purely abstract creative expression would not take into account the multifaceted nature of industrial design. Obviously, all these factors must be considered and combined. It is in the understanding of this combination that the teaching of industrial design can be comprehended and evaluated. Each design problem demands not only understanding of its functional aspects, knowledge of the nature of the materials, and the graphic or three-dimensional method of presentation, but also, an understanding of manufacturing processes and of industrial technology. But such an understanding, while it may make the student superficially valuable to industry, does not fully exploit his potential value if only technology and skills are involved. There must also be an intellectual perception of the various factors which condition designing for industry; factors of function, materials, price range, and public acceptance, which are necessarily interwoven with the study of technology in its application to industrial design.

The development of the creative and imaginative potential of the student could also be approached from the purely abstract viewpoint. Such an approach might seem too dialectic, but with a theoretic understanding of technology it may be applied creatively, and the design of an object could take into consideration not only how it can be made, but also why it should be produced, and what it really solves for society. This approach may produce designers who are esthetically articulate, but who tend to look over the market place rather than belong to it. While this viewpoint has its advantages, it is not realistic enough for an industrial designer. It is important that industry is a participating factor: and therefore, above everything, the dichotomy of the academic school and the industrial world must be broken down, and must be broken down within the experience of the student. This can be accomplished by bringing industry and the school together physically and intellectually.

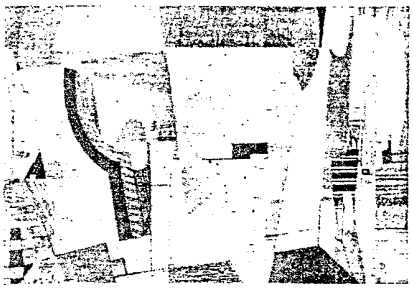
Although these objectives were clearly perceived by us from the beginning of the degree program, we lacked at first the intimate relationship with industry which we consider a necessary element for the synthesis of all the phases of industrial designing. Above all, we wanted the student to design *with* the machine, we wanted him to achieve a directness, a familiarity, which would permit him to think of even the most complex machine as only a tool with which to design. To accomplish this directness, we would have to establish environmental conditions where he could avail himself of all possible types of production machinery: we would need to engage an extensive staff of competent technicians to assist the student in the use of this equipment, and it would be necessary to supply him with a veritable storehouse of diversified materials.

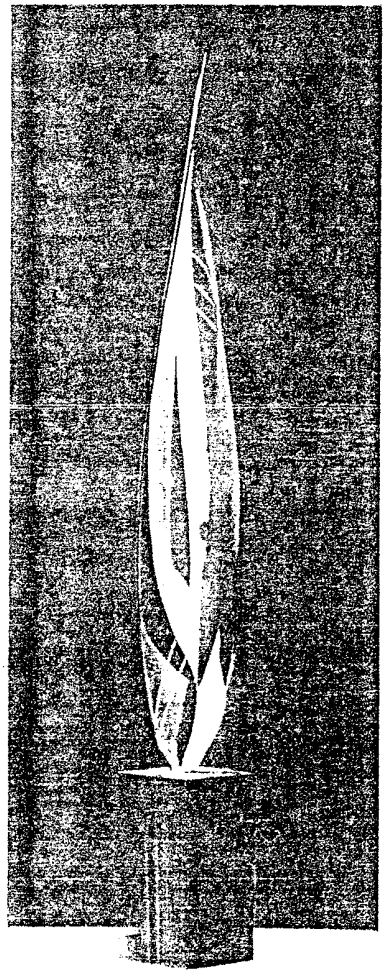
With this close relationship in mind, about three years ago we approached a number of leading industries in the United States, asking them to assist us in establishing and equipping an experimental laboratory and to participate actively in a number of mutual projects. In such a laboratory the design processes and conditions would be simulated, not by academicians but by members of the specific industries involved. The student would work with real problems, gaining from them an understanding of the reality of industrial design and would also be

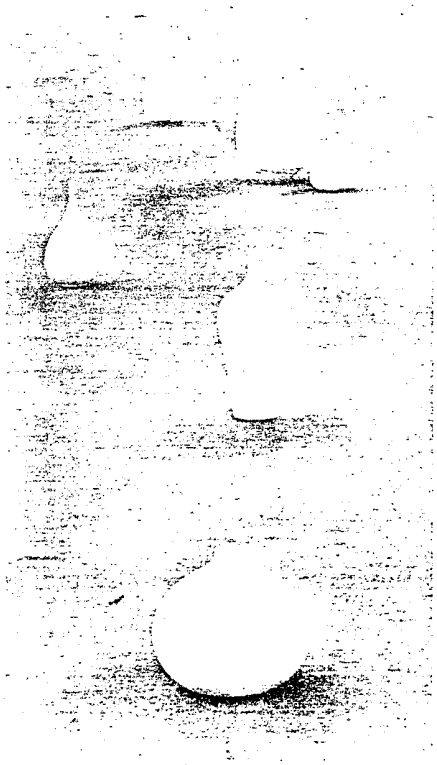


Above: Solution of a first-year problem, fragmentation of volumes. The bird was formed by cutting a sphere into parts.

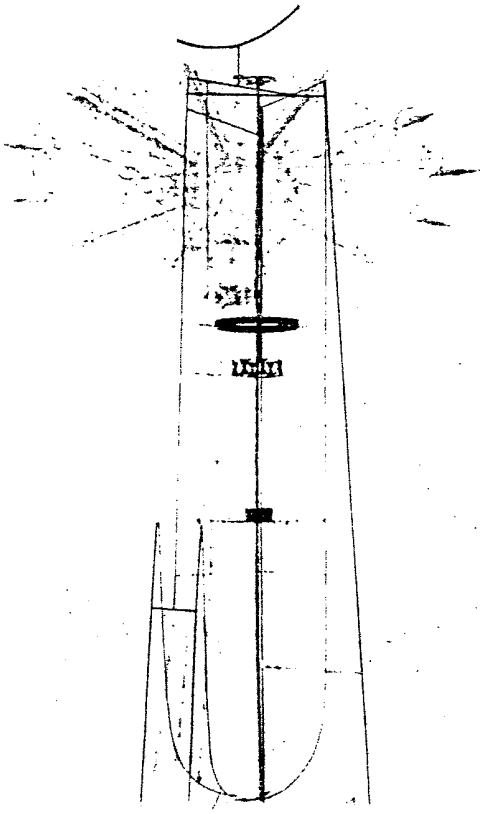
On the facing page: A study of [illegible] second year problems in [illegible] industry or machines. Right: A two-dimensional study of dynamic and static planes. Below left: A metal and wire sculpture; a study of lines and planes. Below right: Three-dimensional forms. Bottom right: A study of concavities, in plaster.





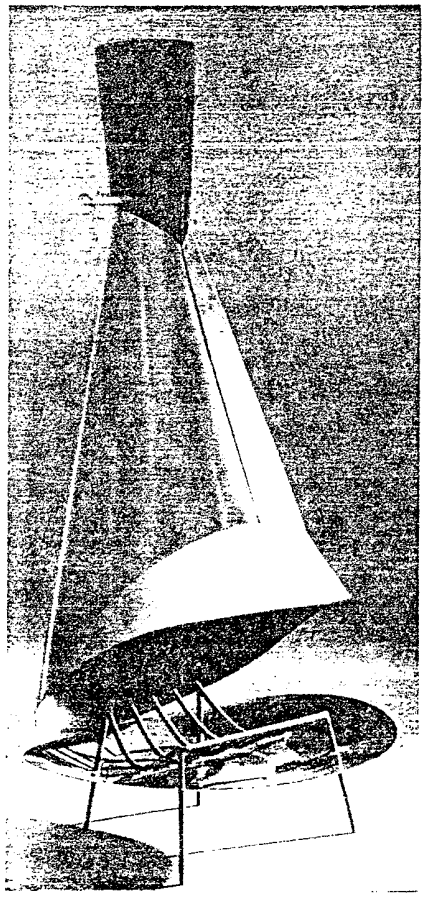


Below left: An interpretation of one of the third year problems, construction with movement. This one abstracts the drop and spin of a record changer.

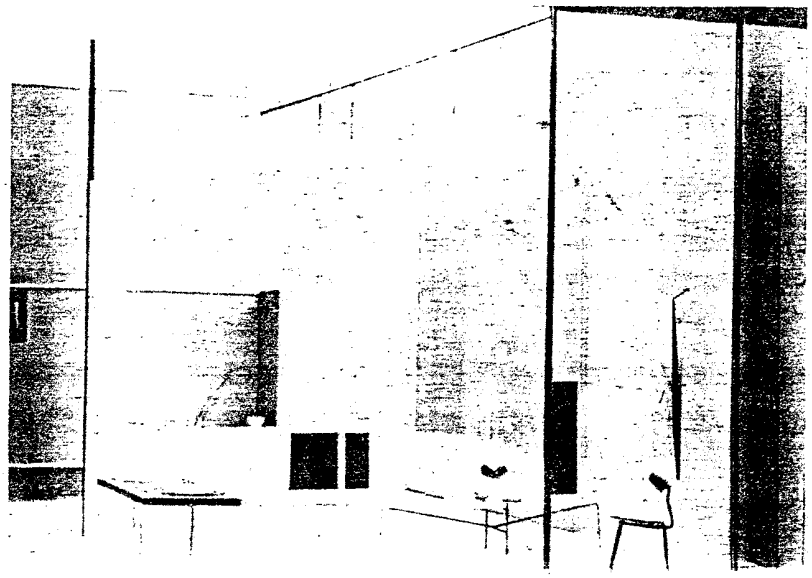


able to contribute to industry directly by using creative experimental processes in terms of the industrial scheme. This method of supplementation of the academic curriculum with an experimental laboratory in cooperative participation with industry should not produce an art for the garret, nor an art for the hucksters, but it should cause the student to be totally involved in reality, in the kind of world he will face, and in applying what he knows when he gets to this world. For only when the laboratory techniques, the humanities, and the creative concepts are intermingled in the fullest possible way, can an art that is rooted in the very basis of our society be expressed. Such an art we hold to be industrial design.

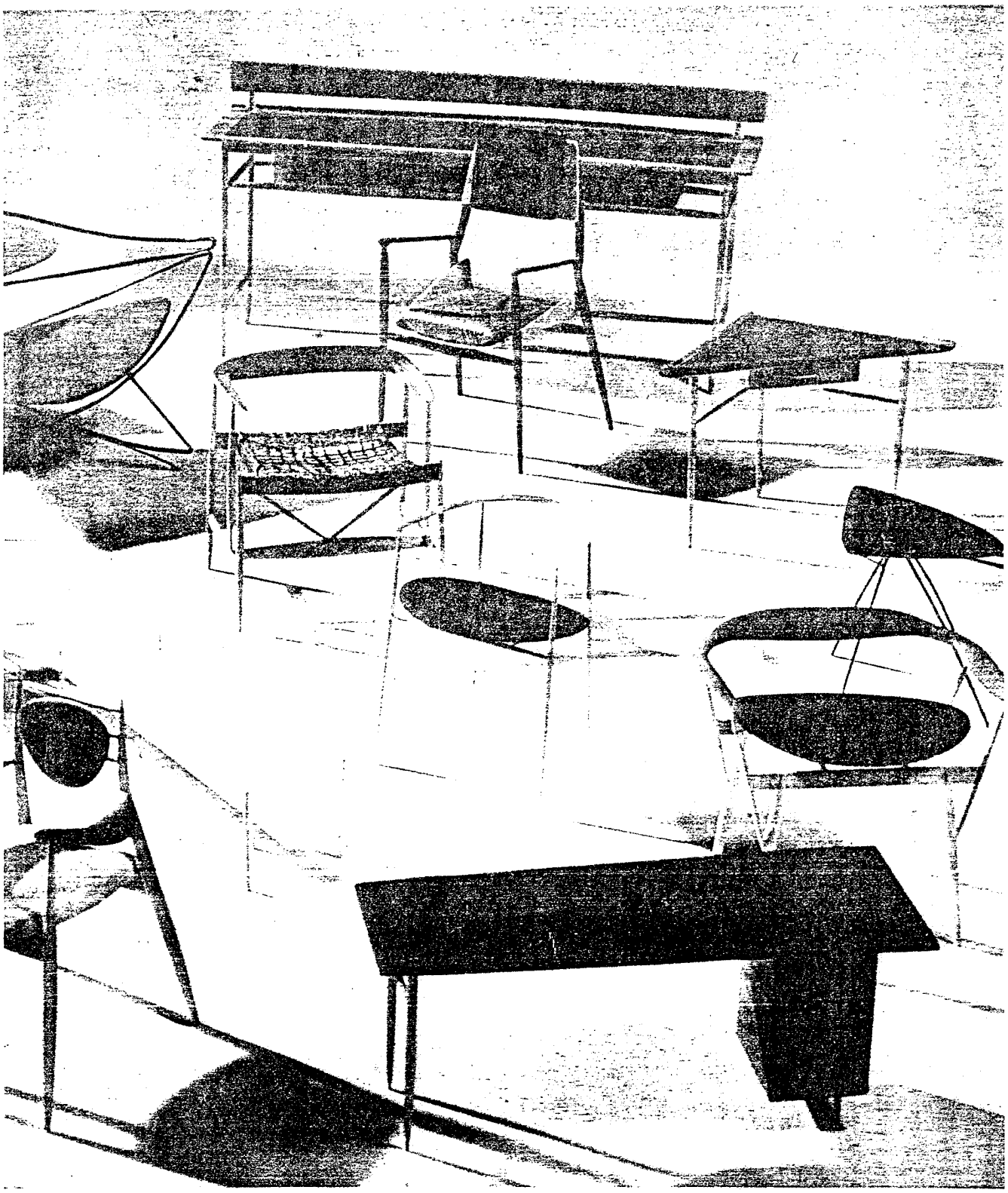
We were successful in our efforts to establish the experimental design laboratory. At present its participating membership is composed of three categories. In the first are the producers of basic materials, who are concerned with the widest possible application of their products. In this classification we have as members the Monsanto Chemical Company (Plastics Division), Reynolds Metals Company, and a combine of furniture manufacturers. The second group consists of large distributors, Sears, Roebuck and Company and the Shell Oil Company. These two companies cover a wide range of the retail market and give us the opportunity for the study of consumer reaction in planned and impulsive buying throughout the country. The third group is made up of industries which manufacture a great diversity of products, some in the household division, some in the luxury brackets of merchandise, others in the industrial and transportation types of products. These include the Elgin National Watch Company with its subsidiaries (Wadsworth Watchcase and Compact Company and the Hadley Jewelry Company), the Gorham Silver Company, The Hickok Manufacturing Company, and the E. A. Electrical Laboratories (manufacturers of electrical appliances and automobile accessories). We also have as members of the laboratory the Vendo Manufacturing



Above: An indoor fireplace in varied metals. Interiors, such as that below, are produced by students of industrial design as well as those enrolled in the Interior Design Department, another department in Pratt's Art School.



Furniture design receives heavy emphasis in third and fourth years. Below are models for chairs, tables, and desks in a variety of woods, metals, webbing, and upholstery.

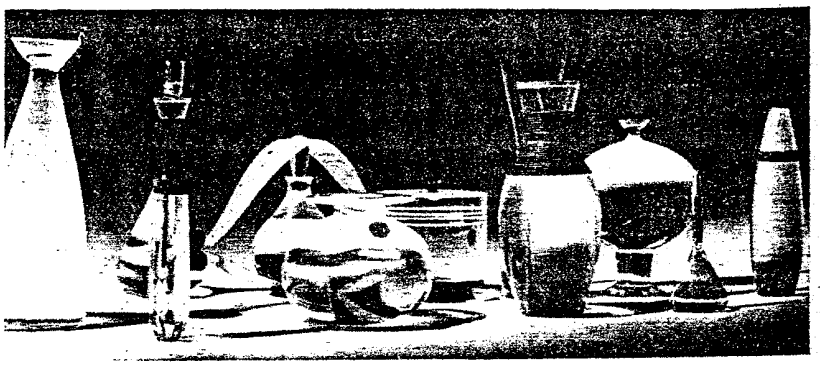


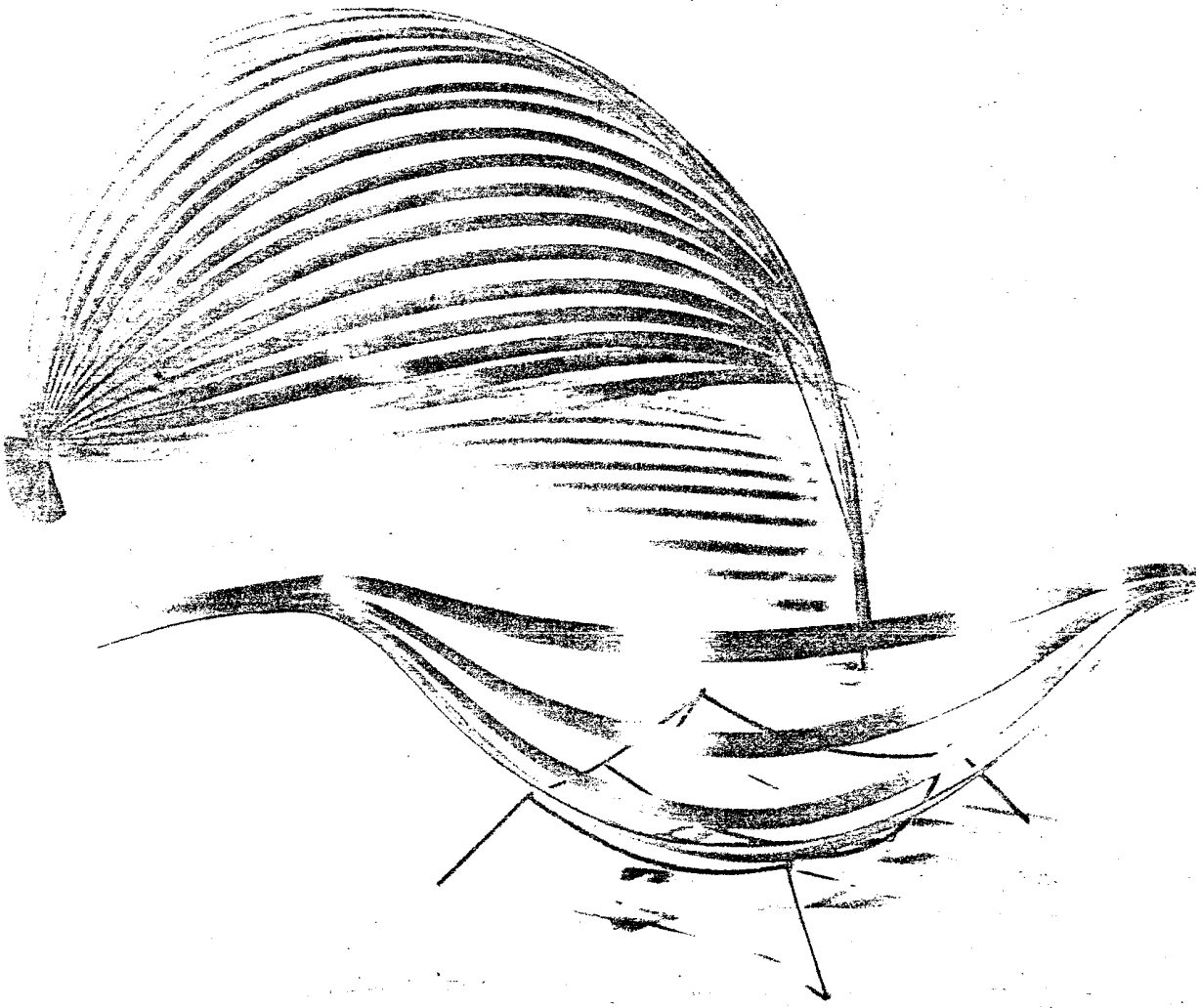
Company (producers of all types of automatic dispensers and vending machines), and General Motors Corporation, which produces, in addition to automobiles, locomotives, refrigerators, radios, interiors, and many other consumer and industrial products.

The experimental laboratory furnishes each of its member-companies, with a working-room office. These rooms are adequately equipped and contain samples of the company's products and other pertinent data. The members send their staff designers to the laboratory on a rotating basis because they find that these visits stimulate their designers by recharging their imaginations. While at school, the designers act in an advisory capacity in supervising student projects, or engage in independent research. All the facilities of the Industrial Design Department, including consultations with the faculty staff, are at their disposal. The Experimental Design Laboratory is a vital factor in our design program. The student accepts the production machine as the tool of the contemporary designer. He works in a great variety of materials, the use of which would have been impossible without the present laboratory equipment.

As to the design program itself, to enumerate the courses of study or to discuss the various problems we present to the student would not in any way indicate our procedures in attempting to develop the student's creative potential or enrich his imagination.

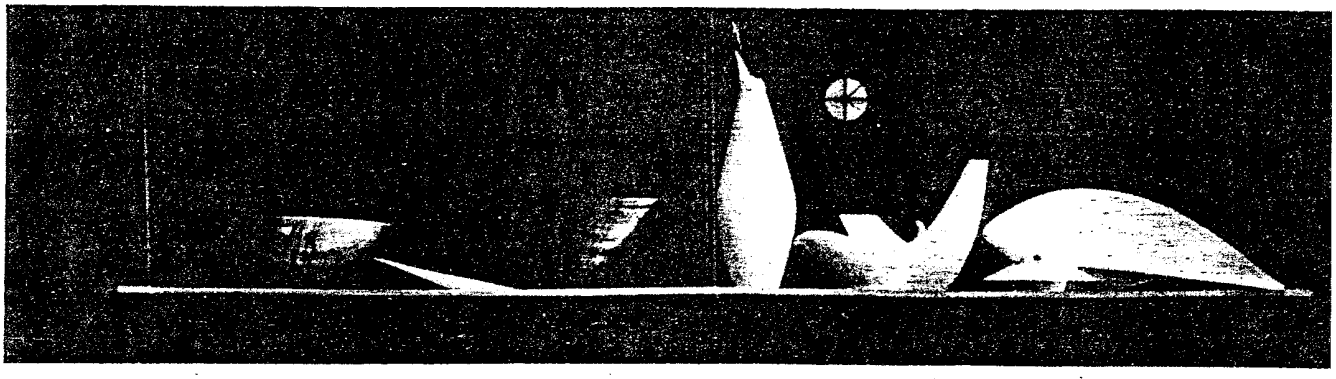
It is not too difficult to explain the nature of acquisition of general knowledge in the humanities or sciences, technology or social and economic structures; for this purpose the heritage of all the ages is at our disposal, and any interpretation must lead one to some cultural orientation. But to find direct means to convert a student's vague urge through technical empiricisms into significant realizations growing out from his own empathic responses and vision, becomes the all-important and difficult problem of the department's curriculum. It is a problem of teaching presentation without enslavement to tradition, of introducing the student to design organization and not leading him to rigid



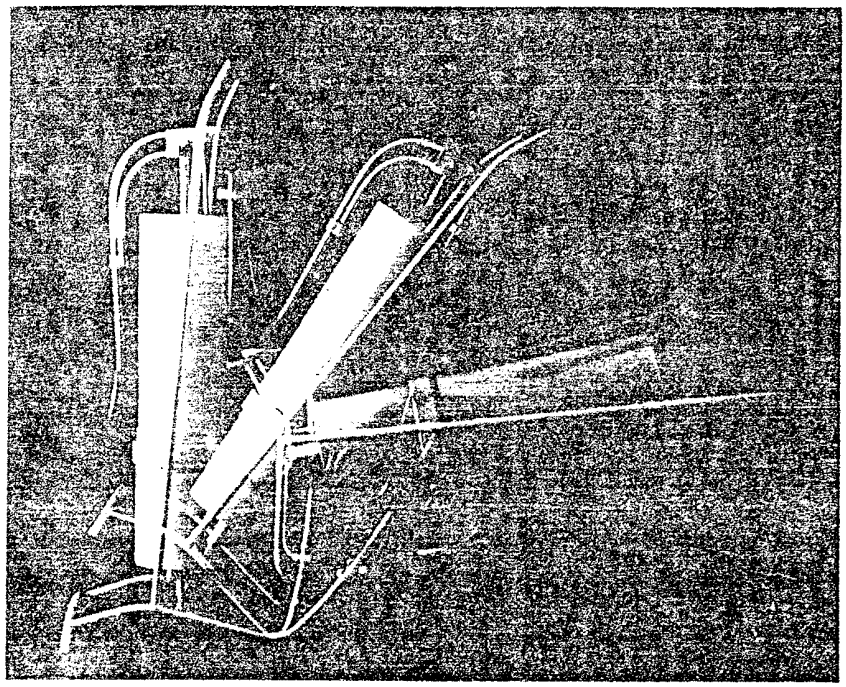


Above: Second-year experiments in designing with metal stripping. Opposite, top: Second-year studies of forms in plaster.

Below, and middle photo, opposite: Third-year experiments in tectonic shapes. Opposite page, bottom: Third-year designs in glass.



Below left: A portable sprayer, photographed in several positions. Below: Models for beaters.



Blades are interchangeable on various handles.

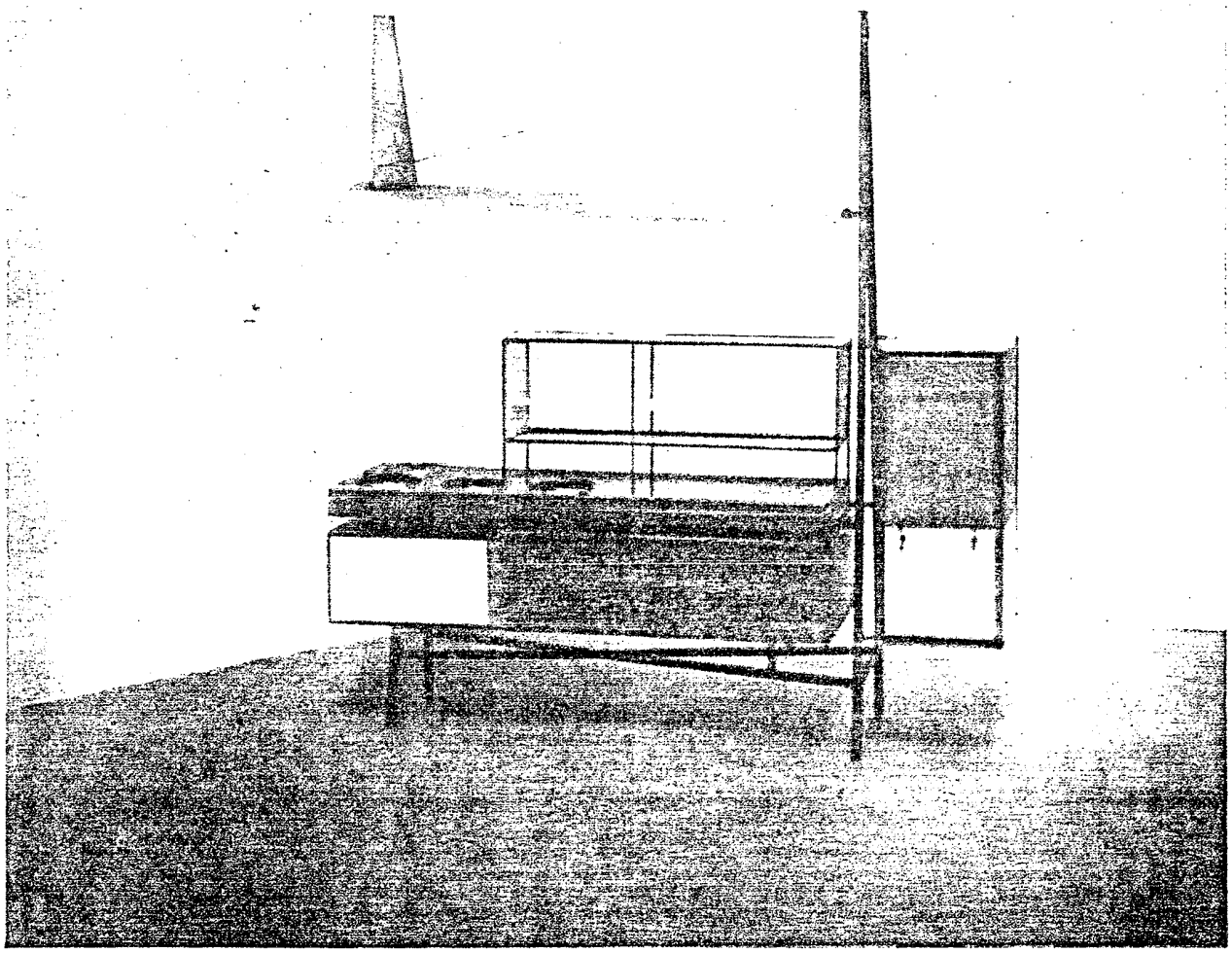
formulations. Nor does the answer lie in the study and analysis of existing works of art as directly contributing factors to the development of creativity in the individual, in spite of its otherwise great value in establishing a sense of historic continuity.

To start with, it is necessary to develop the student's intellectual perceptivity and encourage the unhampered objectification of his intuitive creative urges. The growth of the student's esthetic sensibility depends largely on his own experiences and discoveries, as, ultimately, does his esthetic expression.

We have found that an effective procedure is to present the student with a philosophical evaluation of the elements—graphic, plastic, and three-dimensional—which he must use to express his creative imagination. He must at the inception recognize that these elements—line, plane, volume, space, value, texture and color—not only determine appearances of functional forms, but simultaneously express abstract-esthetic qualities, the poetry of their existence as conceived by the artist-designer.

(In the previous article in *Interiors* I have described briefly some of the terminology we use in defining these graphic and three-dimensional elements, the mechanics and the forces which control them, and the natural discipline which they impose.)

The student in his first year is given the opportunity to explore freely these graphic and plastic elements. He is encouraged to interpret the problems for himself as much as possible. He is introduced to a great variety of materials and is given the use of power tools, so that he may experiment in any direction he chooses in developing his tactile responses. We ask that he be creative; we do not accept craftsmanship as a substitute for the cre-

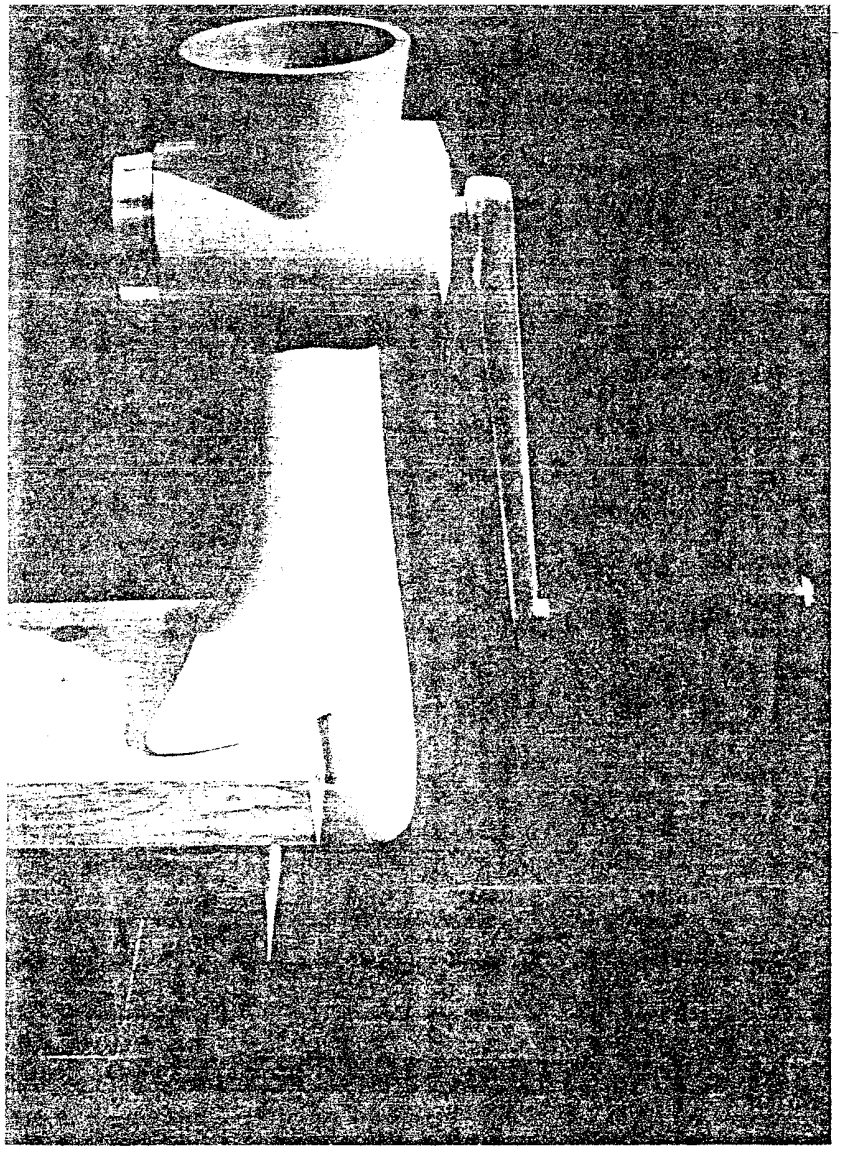


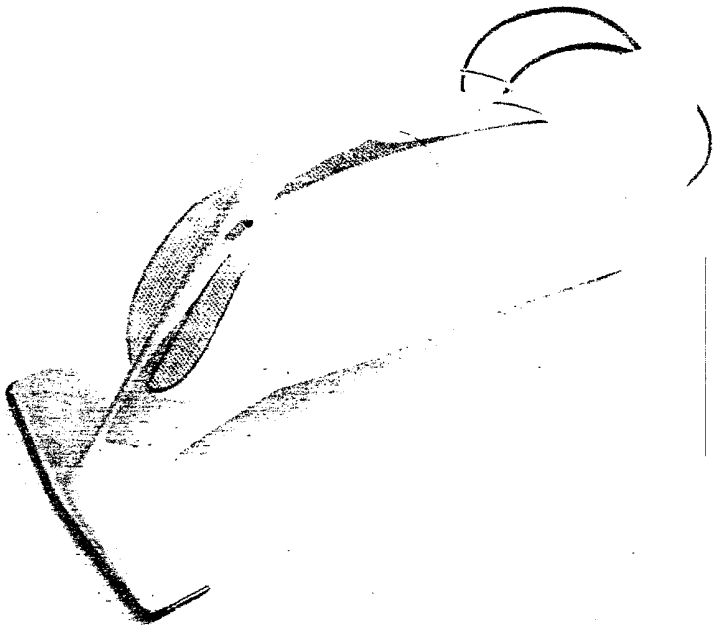
A kitchen unit in wood, metal, and plastics is raised well clear of the floor to prevent dirt collection, includes electric plates, ample storage facilities, and work tops.

ativity by which we evaluate the student's progress. In addition to this free search, the curricular committee of the Industrial Design Department has worked out a series of correlated problems which may not only stimulate the student's imagination but also equip him with some criteria of judgment.

Besides exploration in the abstract possibilities of the elements of design the student also analyzes the structure of natural forms: in these studies he gets a concept of the many forms which follow a similar function. The first year, we believe, supplies the student not with disjointed bits of information but rather with an organized approach to the *mechanics* of design and the necessary inner discipline to carry out assigned problems. We say "mechanics" because the creative element in design is an innate gift and is the result of a stimulated imagination.

In the second year the student continues the purely experimental phase of his art education, and while he may be presented with some problems requiring definite technological approaches, the exploration is directed toward the recognition of the esthetic possibilities of the materials and the forms as well as their functional uses.



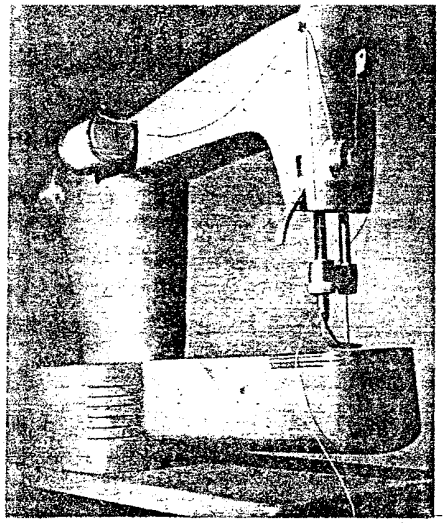


We encourage in the student the desire for self-expression, and the free use of materials and tools for this purpose.

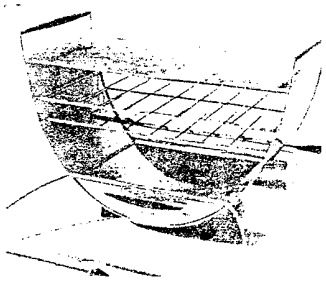
In the third year the design problems are more realistic in nature, and though they are based on definite conditions—those of function and methods of production—they grow out from the student's personal experiences and his own interpretation of the problems in terms of human needs and wants. In this year the student is introduced to the methodology of product research on a laboratory basis. To make extensive research possible, the students are organized into groups, each advised by an authority in a specific field. Each of these groups engages in research pertaining to some phase of the article to be designed. One group may be investigating the market, studying consumer reaction; another may study the materials and methods of production most suited to the item under consideration: still another group may experiment in the study of forms as they relate to their functions. These groups present illustrated reports on the results of their investigations to the faculty and advisory committee. The reports are used for class and seminar discussions. When agreements are reached and the necessary revisions are made, the corrected reports are mimeographed and are distributed to all the students and serve as a basis for their designing.

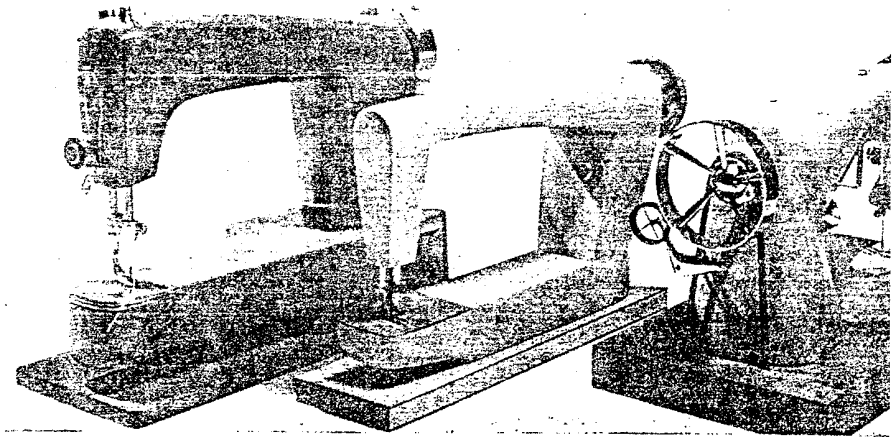
In addition to these experiences in product design, the student devotes considerable time to purely esthetic research in painting and sculpture. On the whole, the first three years tend to develop in him an understanding of the elements of design, of structure, of the organizational forces which control them, and an ability to apply this knowledge to a variety of situations in designing for self-expression or for industry.

Part of the program of courses is organized for the purpose of familiarizing the

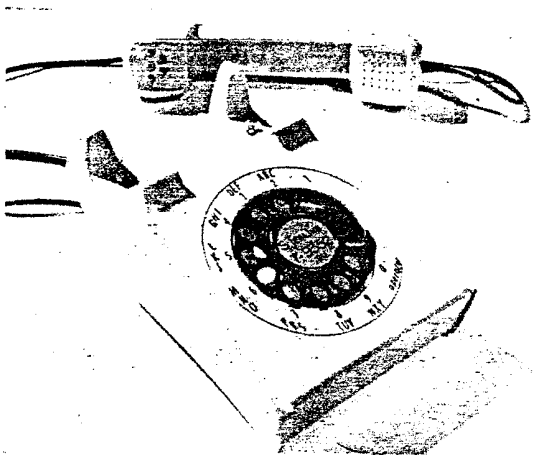


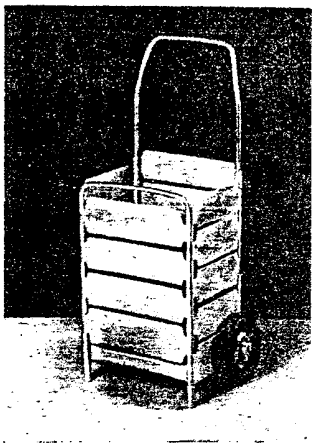
In the fourth year, the student makes models for actual products, employing the principles of design he has learned in basic years. At right: an electric roaster, which is hemispheric to catch juices and reflect heat economically.



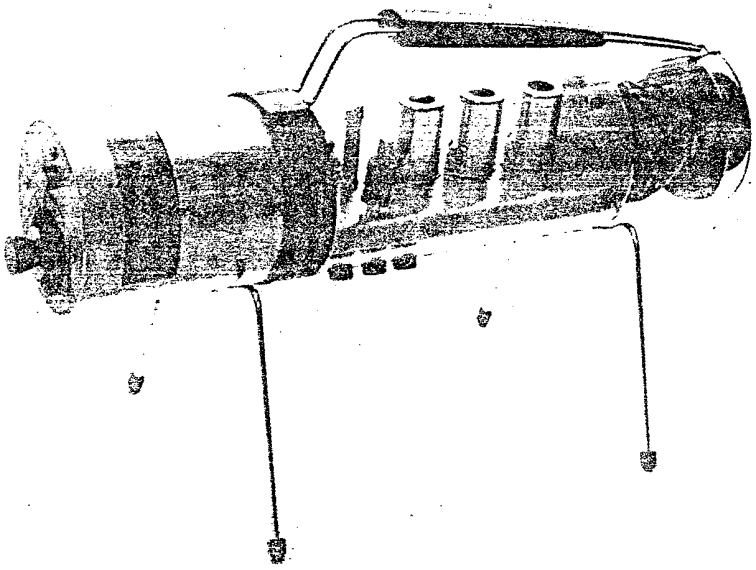


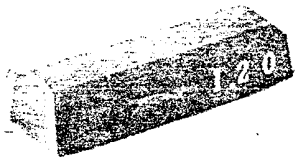
Meat grinder, hand vacuum, sewing machines, telephone, and collapsible aluminum shopping on this spread represent part of the range of products students investigate for design possibilit



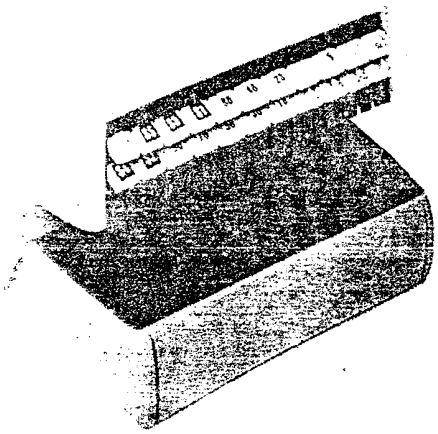


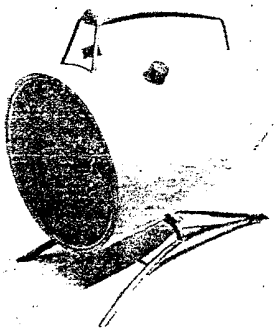
Rowena Reed, who teaches sculpture and three-dimensional and interior design, expresses succintly Pratt's point of view about design's role in society: "Why shouldn't a voltmeter be beautiful?" One is at right.



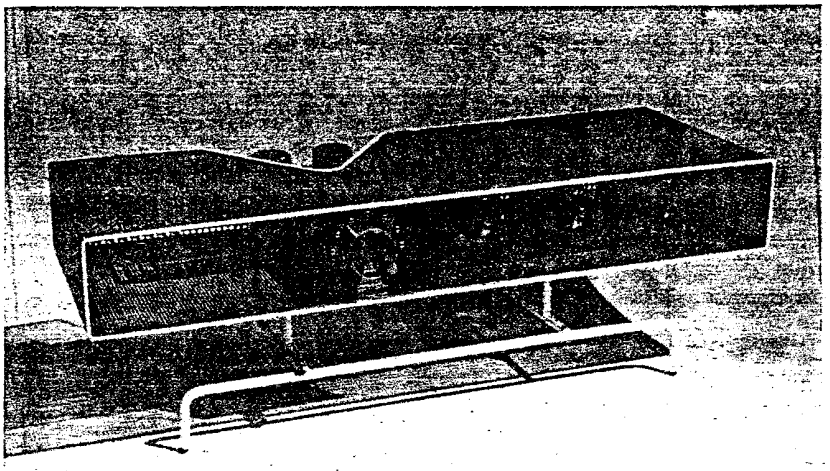


Below: An electric hair dryer that may be turned in various directions. All products on this spread are fourth-year designs.





A problem assigned annually to fourth-year students is to design a table radio that exposes its mechanism. At right, one with black wire grill, white frame.



student with the technological factors of American industry which make mass production possible, and also to enable him to analyze methods of distribution and consumer reaction and to understand business procedures. It consists of courses in production methods, business practices, merchandising, and market analysis. These subjects are presented to the student by our market analyst, by representatives from industry and commerce, and by our resident engineer whose sole duty is to supervise the technical aspects of the industrial design program.

In the fourth year the student is presented with a number of authentic problems in product designing. This is the year in which the members of the Experimental Design Laboratory play their most significant and important part in the education of the future designer. These member-companies assign to us definite projects in which they also participate. They send to us merchandising and design directors to acquaint the student with the various problems of design in merchandising, production, and distribution. These representatives of the companies participate in seminar discussions and act as advisors to the department and to the individual student. Each company supplies us with samples of its products and materials for design experimentation, and also sends production engineers to keep us informed of the latest technological developments in its particular industry. Most of the members maintain research assistants at the design laboratory. This assistantship affords a young designer the opportunity to engage in specialized research for any of the industries involved.

The benefits which industry, Pratt Institute, and the students derive from this relationship are many and vital. By their participation in the design laboratory, commerce and industry are contributing directly to the education of the future designer. Their design and merchandising directors get to know the students intimately and are, consequently, able to choose personnel best suited to their needs. This aspect is further aided by the fact that the member-companies accept the design students in their junior and senior years as apprentice-designers in the factory studios during summer vacations. For its part the Industrial Design Department is enabled to acquire the kind of equipment in tools and machines, and to maintain a staff of technicians, it would be impossible to bring together with the limited funds at the Institute's disposal. And what we consider of even greater importance is that we are, to a degree, instrumental in developing in industry an understanding of the significance of creative design, and of the place of the designer in the scheme of things.

In conclusion I should like to emphasize that our students do not specialize in any specific direction, nor do we attempt to substitute rendering techniques or model-making for creative expression. And while our students are fully aware of the technological and economic implications which contemporary production and consumption involve, they also realize that as creative designers they are instrumental in the advancement of public taste and in raising the level of esthetic response, and that theirs is definitely a cultural function in expressing and shaping their time.

More charming than functionally serious is the Japanese-looking scale for a candy store, below.