Art and Design at Pocklington School

The integration of work in Art and Technology at a Yorkshire Secondary School

J. Jeffrey

Pocklington School, York

The Design and Creation Centre, opened in January 1970, brought together under one roof an existing Art Department and new Technical Unit. From the outset it was decided that the Centre should develop an integrated approach rather than separate art and technical courses and this led to the development of a basic course which aims to challenge a boy's intelligence and appeal to his creative and aesthetic instincts. The course, parts of which are described in this article, is followed by all boys in the 11+ to 13+ age range.

The Design Centre is situated in a new single storey prefabricated building with an 'H' shaped open plan arrangement of six main teaching areas: a Design studio used primarily for modelling work in paper, card and wire; a Fine Art studio; a Workshop equipped as a general purpose room for wood, metal and plastics and containing dual purpose benches and simple machine tools; a Technical laboratory; a Lecture Room equipped with a number of visual aid facilities, and a central Reference and Display area.

All boys in Forms I, II and III are timetabled to spend two double periods each week in the Centre, one on the art side and the other on the technical. This distribution varies from time to time and a group may spend all four periods in one place if a particular phase of their work demands it, or two groups may be combined for a joint session. In the IV Form boys may opt to take art as an 'O' level subject and continue to an 'A' level examination. There are no examinations in craft or technical drawing, although technical projects are offered as part of VI Form General Studies programmes.

The decision to integrate the main outlines of the work has demanded a close collaboration between teaching staff for in the course of its development a single piece of work may be pursued in a number of different areas. Fundamentally, each subject is considered not so much as a self-contained framework of knowledge or experience, but more as a flexible and complementary tool to the other in assisting the total learning experiences of the student. Within this all-important and pervasive view a number of specific aims can be identified.

1. To analyse the design of natural and man-made forms through exercises at drawing, painting and modelling techniques.
2. To give a strong impulse to original design by encouraging an individual response to a variety of given problems. Following this, to foster an appreciation of the relationship between function and design through the refinement of the initial idea.
3. To foster an imaginative use of technical and craft skills acquired through an understanding of, and experience in, the use of a wide range of tools and materials.

4. To develop the ability to record and communicate ideas accurately in the form of models and drawings.
5. To provide a continuity of excitement and enjoyment throughout the three years.

In addition to these points there is an attempt in the nature of work given to students to balance the areas of experience; the demands of technical thinking, for example, balanced against aesthetic considerations and these against the demands of materials and competent levels of workmanship.

As with any developing scheme ideas change rapidly in the light of experience and particular tasks are introduced or modified as the response to them by the boys, and their insight into them, is gauged. At the present time the broad outline of activity is shown in Fig. 1.

YEAR 1.
Pattern work leading to simple woodwork exercise.
Vehicle Toy, stimulus, mock up, technical discussion, fabrication.
Totem exercise, further craft skills.
Drawing of natural forms.
Pottery.

YEAR II.
Study of natural forms leading to enamelling design – preliminary wire craft exercise – enamelling work.
Figure drawing leading to dry point and lino cutting.
Further craft skills through simple puzzle design.
Pottery.

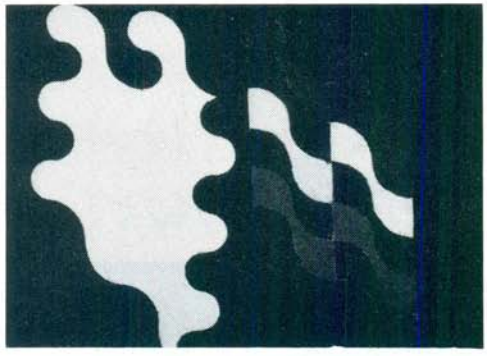
YEAR III.
Stimulus for imaginative articulated paper sculpture of birds, fishes etc., leading to major technical and craft project.
Natural form study leading to screen printing, plaster sculpture and pottery.

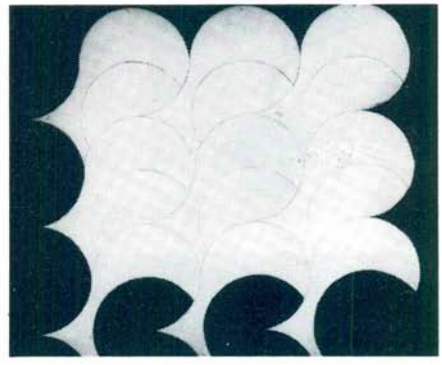
FIG. 1.

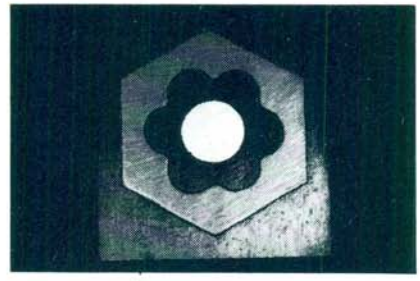
ART AND CRAFT LINKS

The first project of last year's Year I was fortuitous as it linked with an SMP maths topic and discussions of tessellated patterns were often lively. In art the first stage was to form simple free patterns with some concentration on colour and the use of oil pastel techniques while in craft the opportunity was taken to encourage accurate measuring and marking-out by limiting the work to simple geometrical shapes. The balance between free and disciplined work continued in art with a consideration of tessellated shapes other than squares and triangles and the introduction of shapes with curved edges. (Fig. 2). Geometric drawing is used in a meaningful way to construct accurate patterns (Fig. 3) and these are used as templates to cut out plywood pieces (Fig. 4). The conclusion to this

work is a number of panels, each a plywood tessellated pattern, which is considered loosely as a child's puzzle in which the separate pieces have to be fitted together in the original way (Fig. 5). By the end of the project some boys have moved a long way in the complexity of their ideas from the simple beginnings (Fig.6).







2	3
4	5
	6

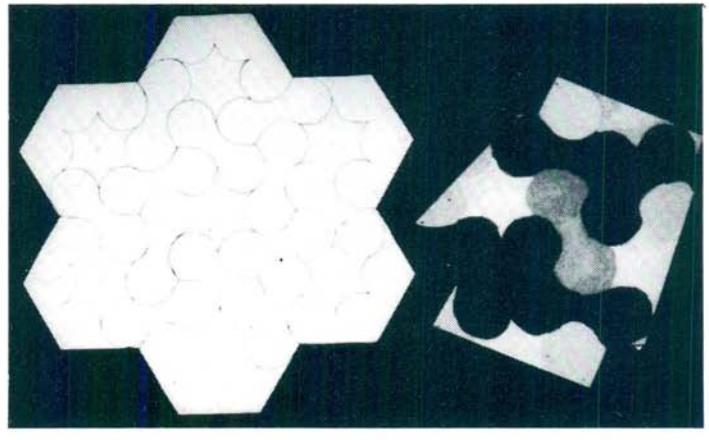


Fig. 7a

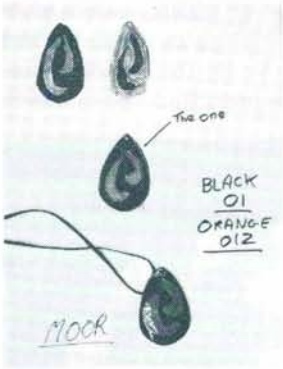


Fig. 7b

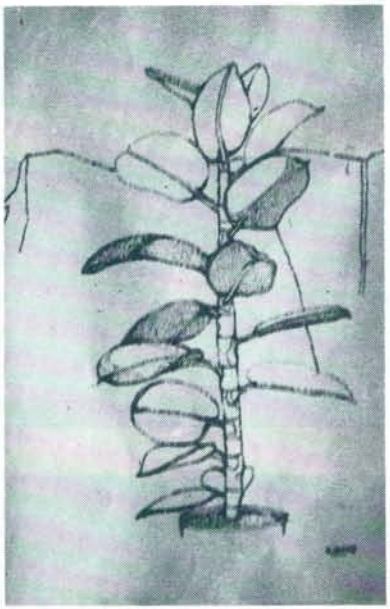


Fig. 8

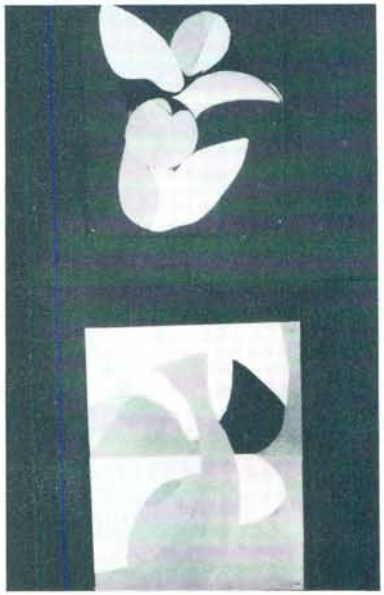


Fig. 9

A similar piece of work began the second year. It started in the art room with drawings of perforated stones in which outer and inner surfaces needed consideration. This led to an examination of overlapping shapes and finally ideas were focussed on the design of an enamelled medallion. Mock-ups were made from cardboard and coloured paper and where colour separation by wire was required in the final article it was bent and attached to the model as practice for the real thing. (Figs. 7a and 7b) Another development, higher up the school, began with formal plant studies (Fig. 8) which were then, as a second stage, abstracted and presented as coloured paper panels (Fig. 9). A conclusion to this is visualized in the form of enamelled steel tiles.

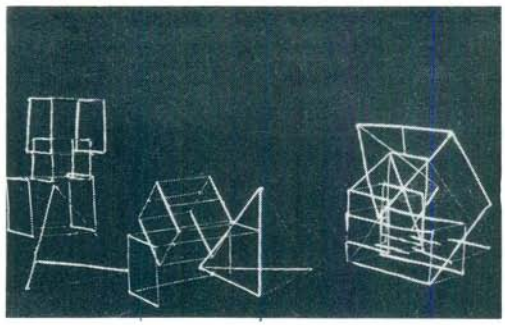


Fig. 10

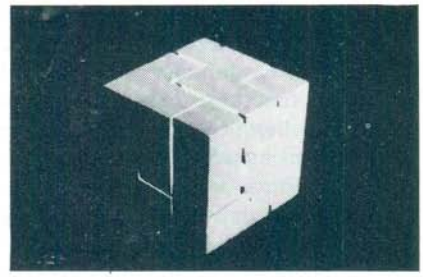


Fig. 11

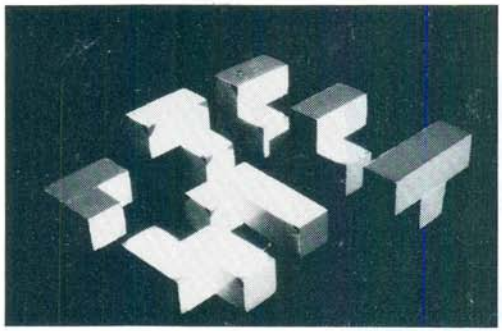


Fig. 12

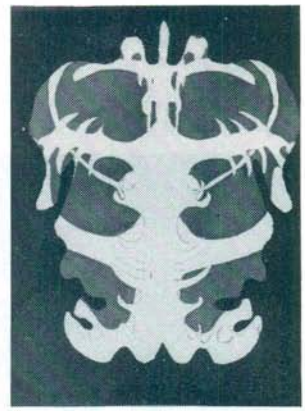


Fig. 12a

BASIC ART AND CRAFT PRACTICE

Although basic art and craft skills are being introduced all the time, at some stage it becomes necessary to practice them deliberately in order to instill sufficient ability to undertake more complex work. Much of the second year is devoted to this and the enamelled medallion is one example. During the early art work which precedes the production of the medallion students are being taught to manipulate wire with jeweller's precision on the craft side. The set task is to make defined shapes, e.g. cubes and tetrahedra, and having formed a number of them, constructions are developed in which the arrangements of parts is once again a matter for aesthetic judgment (Fig. 10).

Such basic skills as accurate marking-out and cutting of wood are encouraged but, like the cubes these are used as a means towards some further end. One design problem given is to construct a child's cube puzzle made of a number of identical smaller cubes assembled in any way. This is quite a challenging problem since, although the first blocks are easily assembled, the later ones become fairly complex (Figs. 11 and 12). At the same time basic art exercises are being introduced which, in addition to painting and drawing, include dry point, screen printing (Fig. 12a), engraving and pottery.

BRINGING ART AND TECHNOLOGY TOGETHER

In the second term of the first year a start is made on simple moving mechanisms with reference to earth-moving vehicles. Films showing these in operation gave an idea of the variety of functions these machines performed and an inspiration for the students' own work. In subsequent talks some discussion of their mechanical principles took place and of the means by which suspension and steering could be achieved.

The problem was to design a mechanical toy suggested by the earlier films. The students' first step was to model immediately in balsa and polystyrene (Figs. 13, 14, 15). These were fairly free expressions of ideas and later they were re-interpreted in more precise technical terms ready for final production in metal. This was achieved by using strips of cardboard (having the ability to bend like metal) of the same dimensions as the intended metal strips. At this stage a clear understanding of the final construction was attained – using paper rivets for hinged joints, glue for soldered joints, folded sections and so on – but the opportunity was also taken to examine the appearance of the construction and the usual compromises were made between technical and aesthetic requirements (Fig. 16).

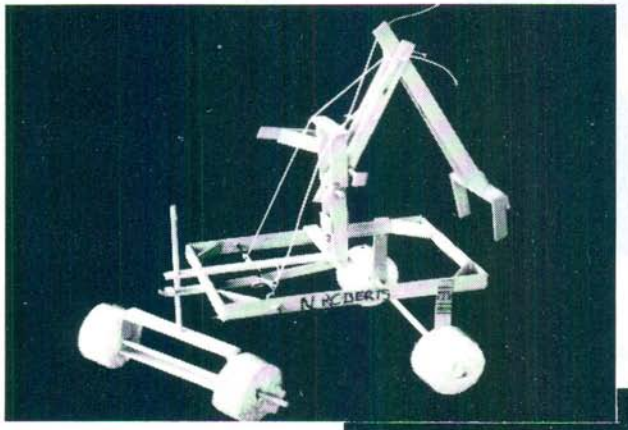


Fig. 13

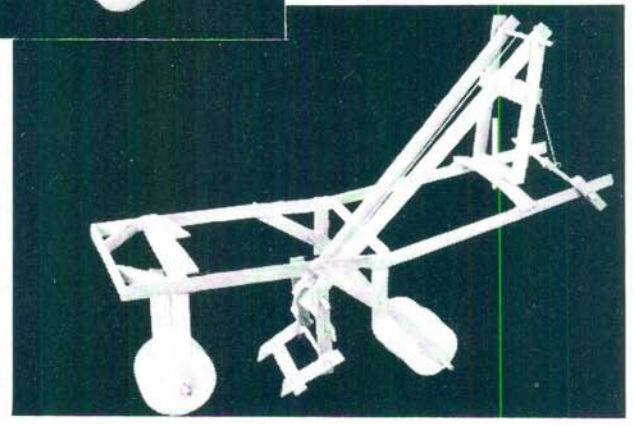


Fig. 14

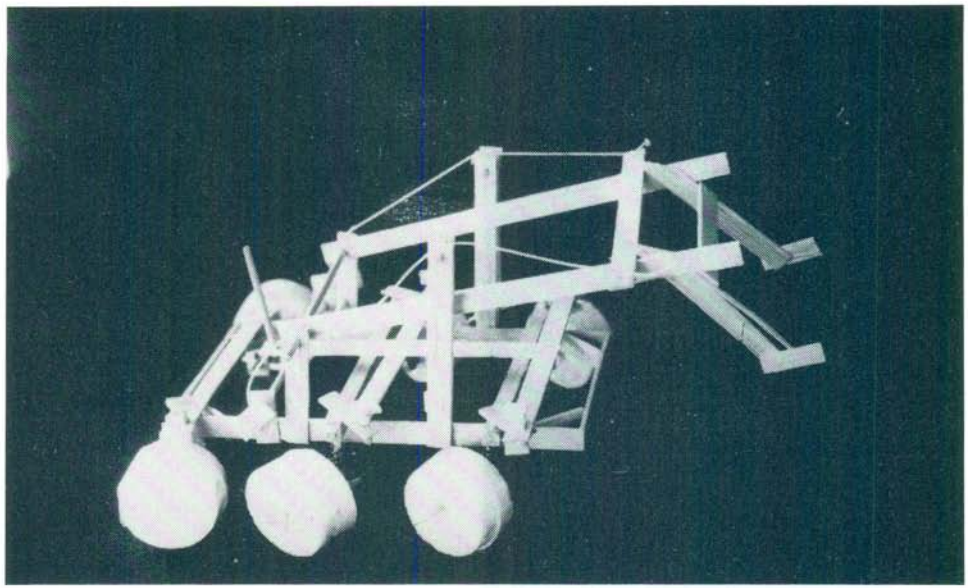


Fig. 15

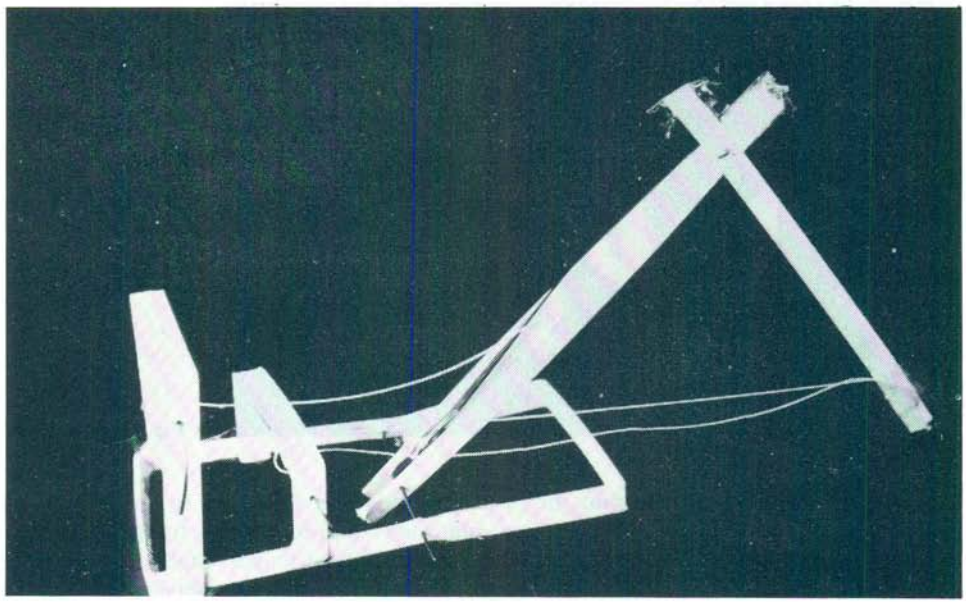


Fig. 16

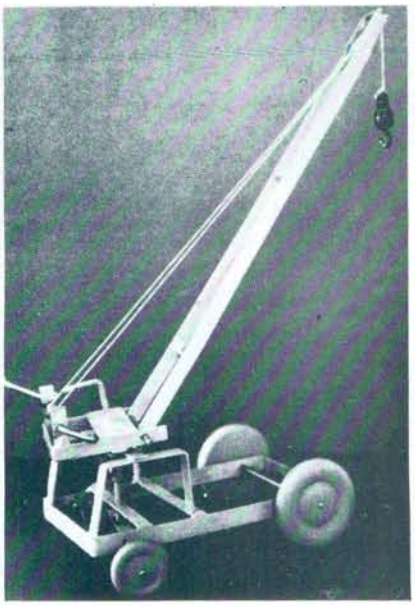


Fig. 17

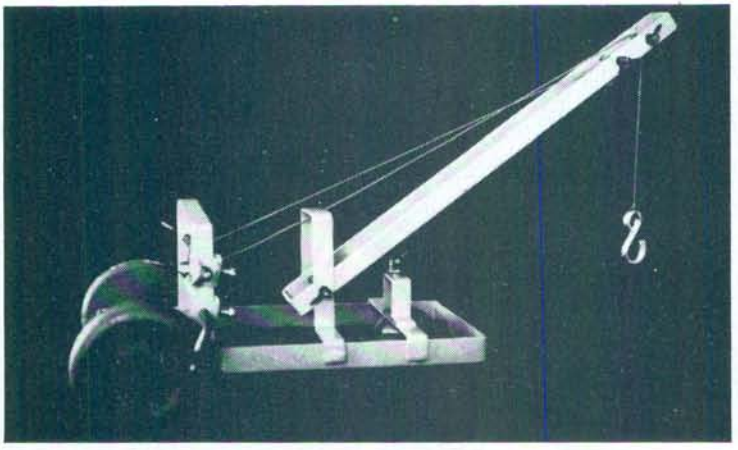


Fig. 18

The next stage was to interpret the cardboard model as a drawing to be used on the bench and in order to reduce repetitive and time-consuming work to the minimum, duplicated sheets were provided giving a number of outline shapes. Students completed this by adding dimensions, the positions of holes and other relevant details. Some of the models in wood and metal, are shown in Figs. 17 and 18.

Looking at the final models, and comparing them with the original balsa wood ideas, we were struck by an obvious loss of spontaneity in the final versions, due to the fact that the design process had been made too long and drawn out and that the final version had been reduced to a craft exercise. This year we posed a problem in a more open-ended way from the outset. The project is based on a moon vehicle and initial discussions tried to establish the hypothetical functions such a machine might incorporate. Having decided these students were asked to design their own vehicle in a similar manner to the earth-moving machine. Another difference, however, is that a number of part constructions were made in order to convey some ideas of the practicalities of the mechanisms which might be incorporated in the machine. Each boy, having decided the functions of his machine, makes two or three components and is then free to trade those which are surplus to his requirements in exchange for others he needs (fig. 19.)

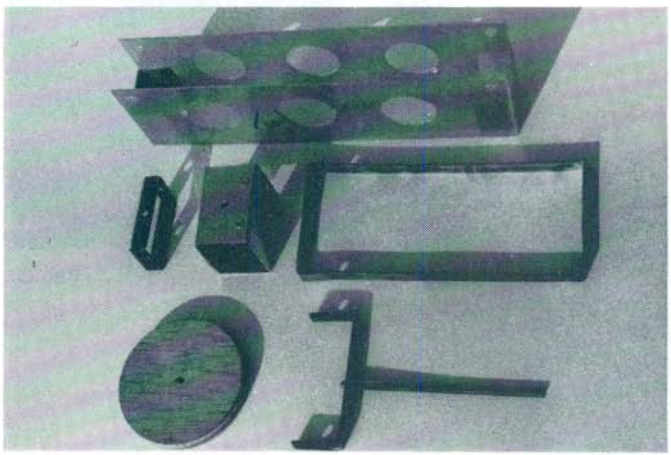


Fig. 19

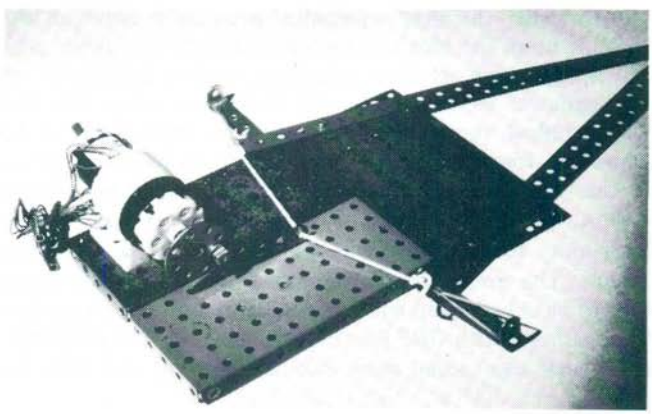


Fig. 20

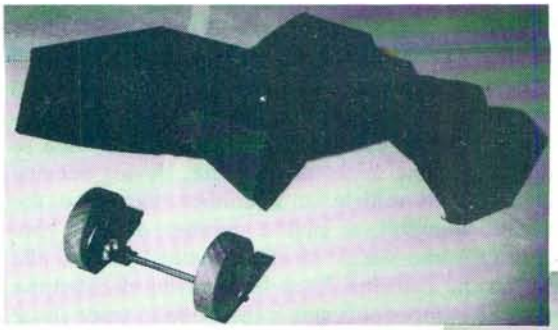


Fig. 21

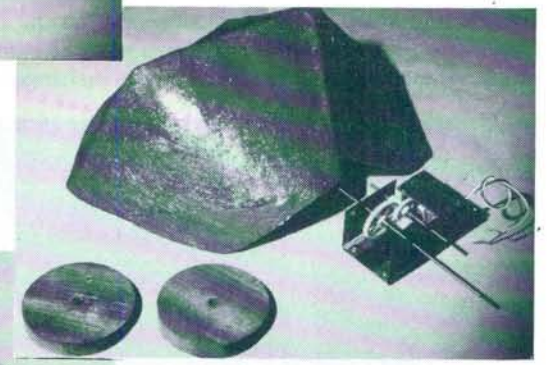


Fig. 22

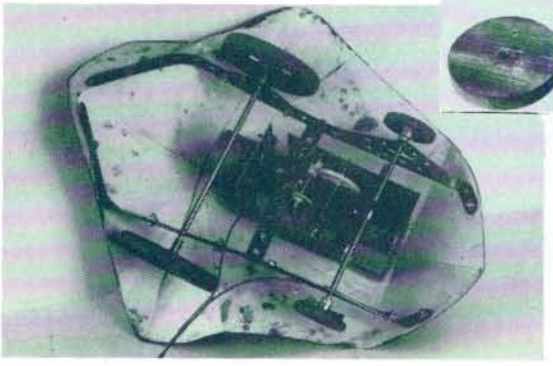


Fig. 23

Historically, the first mechanical projects began with third year students two years ago built upon the idea of a mobile crab with articulated parts. This piece of work began, once again, in the art room with observational drawing of crabs' shell which led naturally to imaginative paper models with articulated joints. The task of transferring these ideas into technical terms provided our first experience of bringing art and practicable technology together. Studies were made in 'Meccano' of ways in which movements, in the case of Fig. 20, a pioneer movement, could be achieved. A standard pattern for a gearbox was presented to the class because it was felt that this item presented little opportunity for original design and left the students to concentrate on other mechanical features. The bodies of the creatures provided a marvellous opportunity for 'free-form.' shells to be constructed and this was achieved by forming the shape in cardboard first and then coating it with GRP (see Figs. 21 and 22). The problems of attaching the mechanism to the shell also caused some difficulties as the two parts had been developed separately.

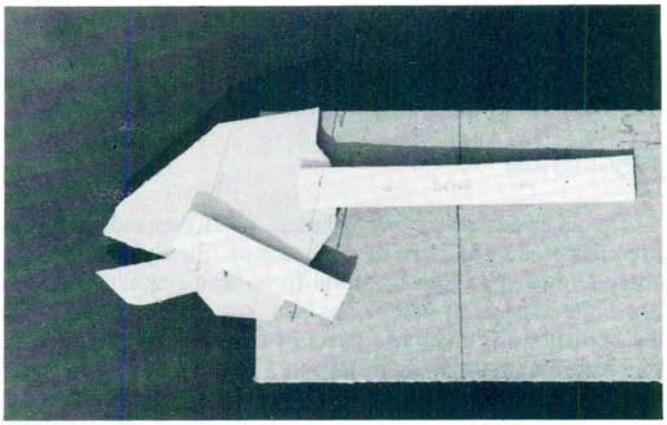


Fig. 24

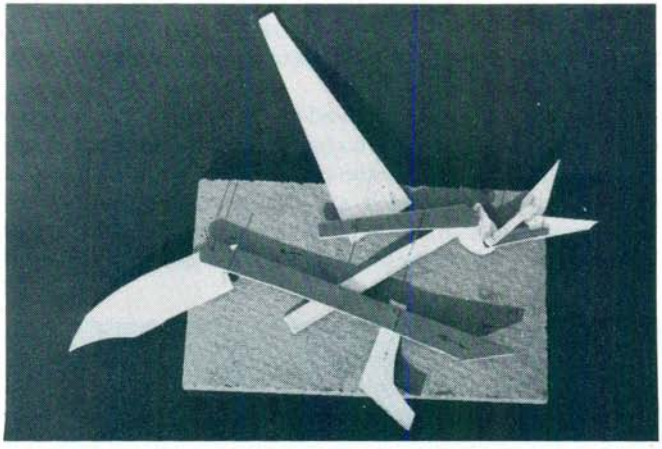


Fig. 25

Now that we have a clearer understanding of the necessary sequential development of this sort of work, this year's third year are working on another animal project which, we feel, presents a more balanced problem. Here the articulation of parts is achieved by a system of pivots and levers inside the animal's body. The work began, yet again, in the art room as an imaginative paper sculpture exercise, that occupied all groups for all sessions for 2–3 weeks. This was followed by an empirical investigation of various classes of lever – worked out in two dimensions using strips of cardboard. Once the basic principles were understood they were individually employed by the student to produce a card mechanism that performed in certain ways. Thus, on different models, beaks opened and closed, necks stretched forward, tongues poked out, tails rose and fell or fanned out, wings opened and so on. (Figs. 24 & 25). Having determined the mechanism, the moving parts

were manufactured in metal, and built into wood and 'Fylon' bodies (Figs. 26,27,28).

The importance of aesthetically pleasing shapes needs to be continually stressed and appropriate modifications encouraged throughout this workshop stage. Finally the work will pass back to the art side for decorative embellishment.

CONCLUSION

The imaginative use of technical skills demands a disciplined and ordered series of experiences on the part of the student. Firstly, his imagination must be fed by direct observational drawing of natural forms and artifacts followed by analytical studies which cover the aspects of colour, texture, structural and mechanical form etc. This deepens the students' intuitive awareness of these qualities and he now has the experience from which to extemporise imaginatively. This is the source of ideas that is the starting point of projects in enamelling, screen printing, pottery, mechanical toys, etc.

In order to execute an idea in any of these fields, there must be a period of technical instruction if necessary backed by a technical exercise. In the particular case of the mechanical projects the same processes of investigation and analysis are needed to provide the basic stimulation for imaginative work. Once the student's attention has been refocussed on the original idea it is vital that the work maintains a visual and aesthetic excitement at every subsequent stage.

Since the projects set to students are relatively open-ended it is impossible to know precisely what kinds of problems will be encountered. In consequence we, as teachers, are learning alongside, slightly ahead of, or even on occasion slightly behind our own pupils. Frequently in group discussion ideas emerge which are circulated immediately and credited to the originator. This simple but democratic device serves to indicate that worthwhile ideas do not only come from the teacher nor are they the sole province of an imaginative 'elite'.

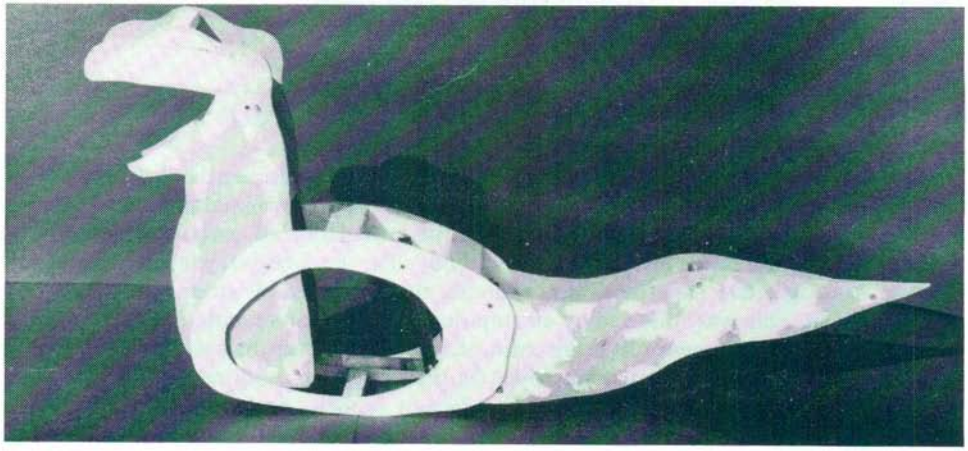


Fig. 26

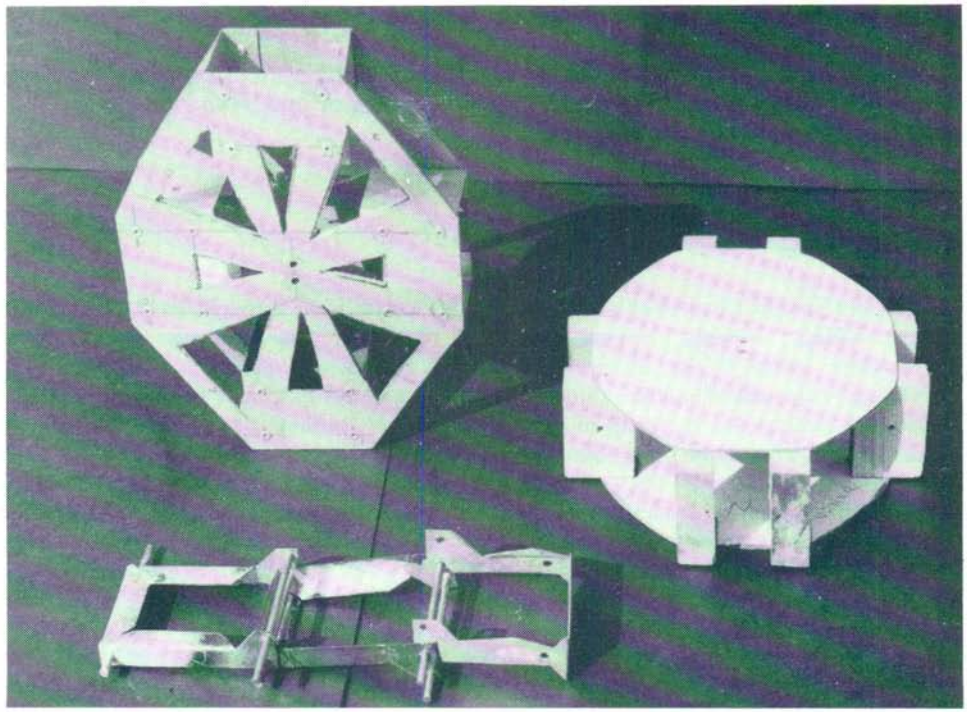


Fig. 27

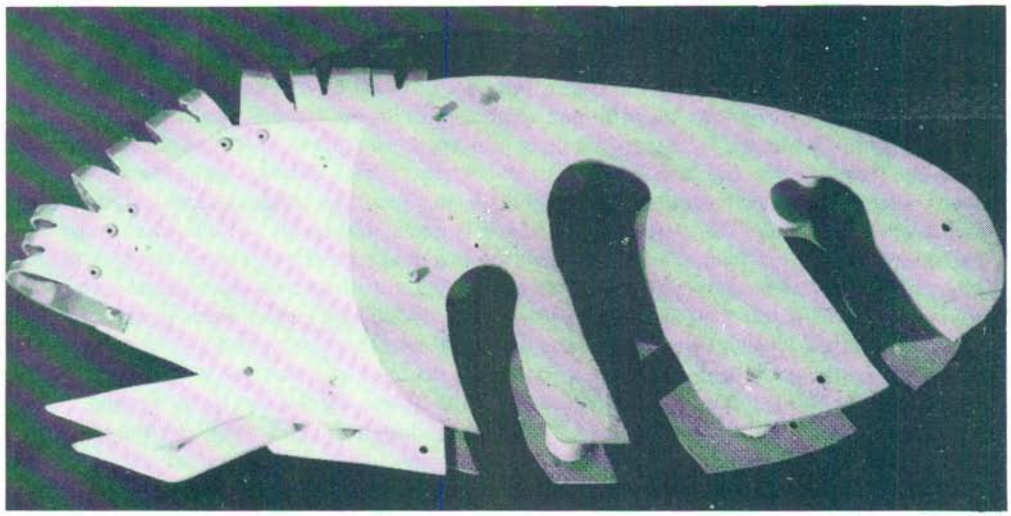


Fig. 28