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Microscopes and accessories

by Ken Baynes

Although they work in an industry where engineering and technical standards are high, manufacturers of optical instruments have been notably conservative in their approach to industrial design. Even where changes have been made, they have generally been on the level of styling. The new range of microscopes and accessories that Vickers and its design consultants have been developing over the last five years are a distinguished exception and, because they are proving a commercial success, they represent an important breakthrough for industrial design in this field.

Vickers Ltd (dickers Instruments) is a company formed by the merger, in 1959, of two firms which between them controlled 50 per cent of the output of microscopes in Britain. These were Cook, Trouton and Simms Ltd of York, which was already a part of Vickers, and C. Baker Instruments Ltd of Croydon. After the merger, their operations were rationalised and it became possible for Michael Curties, who had been managing director of Bakers, to take the first steps towards a new design policy for the combined company. Behind the decision was an awareness of the competitive importance of design and the possibility that it could help in the company's aim of producing a better instrument without an increase in price. Only by doing this could the threat of competition from Japan and Eastern Europe be met. In the event, these aims have been realised and the new designs are enabling the company to enter the market in Europe and America, as well as maintain their traditional markets in the Commonwealth.

Speaking at a recent meeting of the Design and Industries Association, Noel London of London and Upjohn said that what a manufacturer sought from an industrial designer was "a better looking product", and that it was the designer's primary job to give it to him. Essentially, this is what Vickers was after when it brought in London and Upjohn as design consultants. Vickers' own scientists and engineers already had the experience and know-how to develop the microscopes technically, and they were backed by a factory with high standards of manufacture. In fact, one of the consultants' main achievements has been the working out of designs which make good use of the existing background instead of disrupting it. In this kind of situation, it is impossible to overrate the importance of a designer's personality, or his ability to grasp and utilise what is valuable and important in a company's own resources and traditions.

A cautious beginning

At first, London and Upjohn's work was confined to the re-design of a pair of stereo binoculars, 2-4, and it was only after the success of this initial experiment/hat a start was made on the progressive re-design of all the equipment in the range. The consultants approached the design of each instrument separately and have never tried to achieve a synthetic house style for all the equipment.

Nevertheless, the microscopes do have a very clear family likeness. This has come about from the logic of the production processes and from the fact that all the instruments are designed by the same team, which naturally has certain characteristic ways of handling mass and detail. For example, a degree of unity is achieved by the rationalisation of the range of knobs and knurls, so that only five diameters are necessary to cover all functions on all microscopes. In the same way, the precise, crisp, shapes and refined detailing are related to the designers' understanding of the impeccable standard of finish traditional in the company's factories. Only two colours are used, mushroom and black in a semi-gloss paint finish, with satin chrome for some components; this also creates a family resemblance.

The designer's role

equipment when used on an illuminating base.

The Patholette unit, 8 and 9, is unusual because it was designed to a very tight schedule and with little opportunity to change the balance of the components in any fundamental way. The modifications to the design were undertaken when the tool producing the main die-cast housing cracked and a replacement was required as quickly as possible. In spite of these very limiting circumstances, a big improvement in appearance has been made by carefully refining the detailing and unifying the character of the instrument as a whole.

(caption)

1 The Patholux research microscope. In this unit an unusual form of box-frame construction gives an exceptional degree of rigidity, replacing the conventional slim 'backbone'. The main controls (light dimming control, coarse and fine focus control, and substage focus control) are grouped together at the front of the base. The microscope is designed to take a large number of accessories.

Although the designers have made a considerable contribution to those units which are primarily a re-design of existing equipment, their most original contribution, and one which goes far beyond the business of making "a better looking product", is in the work on the Patholux, 1, an entirely new type of research microscope which differs in many ways from conventional designs. The consultants were involved in the project from an early stage, and worked closely with the company's own engineers. The basic determining factors in the design were the optical system, which was already worked out; the needs of users, which were established by world wide research; and the need to employ certain well tried manufacturing techniques. The engineers developed the basic principles of the new type of support, but the particularly neat way in which this is integrated into the instrument as a whole results from the work done by the consultant designers. Instead of the usual slim 'backbone' support, the microscope has a very rigid box-frame construction, with a lever and scroll focusing mechanism which moves in a wide ball bearing slide supporting the head consisting of the eyepiece and objective. Visually, the box-frame gives the unit an architectural quality and the detailing is similarly robust. The controls are particularly well placed on the base, and the whole unit has a coherence of treatment which is unusual in a large and complicated microscope. The Patholux has a logical appearance which makes the instrument easy to understand and operate.

London and Upjohn's work in association with Vickers is particularly interesting because it shows that the industrial designer can make a big contribution to the appearance and convenience of a range of equipment, even where the individual units are at differing stages of evolution. It shows, too, that a consultant can often achieve the best results by making intelligent use of the existing characteristics of an industry, instead of bull-doing across them simply for the sake of originality. This is probably particularly significant in any branch of engineering where standards of construction and finish may be high even though the level of industrial design is low.

(caption)

2, 3 and 4 The redesign of the Stereos microscope shown in its original form, 2, is particularly interesting because the eyepiece had to be capable of alternative mountings and yet still appear visually 'complete' in either position.

3 shows the redesigned eyepiece in use on a long arm stand, and 4 shows it in use on an illuminating base. In 3, the eyepiece works as a separate visual element, while in 4, the eyepiece appears to be unified with the base.

5 The Sterimag microscope is an inexpensive unit intended mainly for industrial use. It has a sophisticated built-in magnification chamber, which is unusual in a low price instrument. The arm gives a simple but easily operated adjustment. A very slight instability at the arm's furthest extension is accepted because of the usefulness of this long range in industrial examinations. The arm is controlled by well detailed wing nuts.

6 and 7 London and Upjohn have designed the casing for a number of the accessories in the Vickers range including the blood cell count unit, 7

8 and 9 The old, 8, and new versions of the Patholette microscope. This unit had to be redesigned at great speed when the tool producing the main die-cast housing cracked. In spite of these difficult conditions, the improvement in appearance is considerable. The microscope is available in a number of different forms to suit specialist needs.