

CoLD AWARDS 1971

CAPITAL GOODS

Descriptions of the final pair of 1971 Design Awards: Vickers' M41 Photoplan microscope (company designers with Noel London, London & Upjohn) and Churchill's company-designed BX and HBX grinding machines

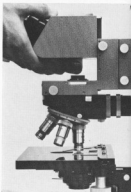
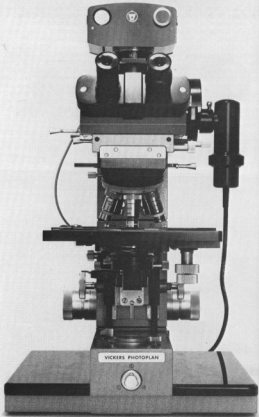


Handy research microscope

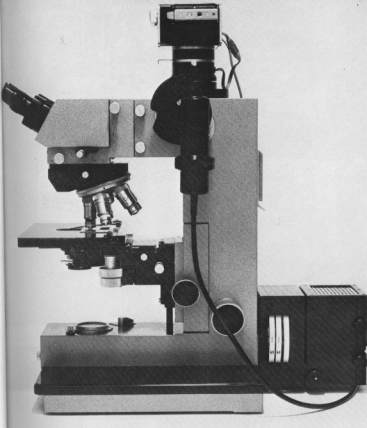
Vickers Instruments' M41 Photoplan research microscope was launched in April 1969 only fourteen months after managing director A J Munro and G R Osgood, vice-president of the company's American sales subsidiary, jotted down a draft specification on the back of a menu at an official dinner. Providing a vast array of accessories and a complex variety of microscopy techniques, the M41 is the second of the 1971 CoLD Design Awards produced with the help of design consultants London & Upjohn - this time in the person of Noel London.

He and the Vickers design team have produced an instrument whose elegant simplicity is founded in its basic construction. The microscope's rectangular form greatly assists its essential rigidity and reflects the fact that light travels in straight lines. Accessories clamp on at right angles, retaining a unified appearance and the rectilinear shapes are ideal for production on numerically controlled machine tools. Vibration damping is a vital performance factor so the M41's large base has special feet and the body, housing the photographic and illuminating optics, has been designed so the camera clamps directly onto the main section at the point of greatest stability. Standard dovetail slide joints are used for all the major accessories and a variety of positions are provided on the microscope body for plugging in alternative light sources and photo cells.

The binocular viewing head incorporates a slide containing three sets of beam splitters; one directs all light to the eyepieces, a second delivers 80 per



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Vickers' M41 Photoplan microscope was designed to perform most advanced microscopic techniques with the help of a wide range of accessories. For left, the instrument is principally used for photography and is set up (front and side views, left) with one of a wide choice of camera bodies (here, the 35mm Autowind model) and a photo cell connection to one of three automatic exposure meters. Side view shows one lamp unit attached in the lower position and above it the bracket taking a second unit for simultaneous transmitted and incident light work. All major parts of the instrument are detachable for interchange and replacement, below left, and demonstration viewing is aided by the 6in diameter projection screen head.

cent of the light to the camera and the final selection position cuts the view through the eyepiece and passes all the light to the camera. The second position enables the operator to monitor a specimen during film exposure. The head also has an automatic compensator which ensures the image is in focus for the camera, regardless of the adjustments the operator makes to suit his own eyes.

A wide choice of camera formats, including manual and automatic film wind models and a Polaroid system, can be used with manually set shutters or with electromagnetic shutters controlled by one of three exposure units. The units, separated from the microscope body but connected to a photo cell plugged into the microscope body, are the J35, an automatic meter for light from the total specimen area, the J37, for photography of small areas of the image-like small particles against a contrasting background, and the J36, a simple cadmium sulphide photometer.

Lamps are attached by dovetail slides to the rear of the main body, at the top for incident illumination and at the bottom for transmitted light. For fluorescent work a special reflector housing can replace either unit. The standard lamp housing takes a 100W tungsten halogen lamp or a 50W mercury vapour unit and a larger housing takes a 200W high pressure mercury vapour lamp or a 250W mercury halogen lamp. Each housing has an iris and eight filters to control specimen illumination.

Easy to fit stages and optical equipment cover the requirements of many specimen types and most microscopy techniques like polarising and double refracting interference. Stages are mounted on precision cross roller bearings with spring counterbalances so there is little difference in the pressures required to raise or lower them; as a result, the fine focus control is free running and accurately calibrated in microns. Control positions and angle of the binocular

head were chosen after trials with an adjustable model, and the final M41 is designed for use on a standard height laboratory bench. An example of good detailing is the beam splitter slide which has visual setting marks and click stops.

Vickers' conception that there was considerable potential for a research microscope capable of being used for the majority of advanced research techniques has been borne out by sales of several hundred M41s in the first 18 months of production. Sales feedback has been incorporated in more recent models - for instance, a mirror adjusting control has been changed from a knob to an Allen key screw; mirror position is critical but it does not require frequent change - and orange ultra-violet absorbing Perspex shields have been added to the 200W mercury vapour light source to cut stray light levels. Sales are increasing and it is planned to double deliveries during 1971 - about half the sales go to the American market.