

THE
MICROSCOPE
AND ITS
REVELATIONS

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ROYAL MICROSCOPICAL SOCIETY*

*ILLUSTRATED BY TWENTY-FIVE PLATES
AND FOUR HUNDRED AND FORTY-NINE WOOD ENGRAVINGS*



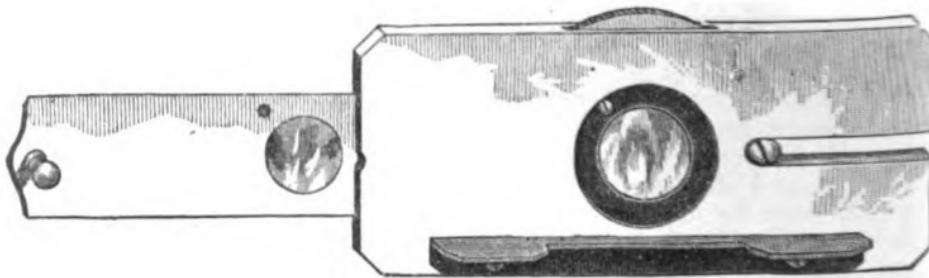
LONDON
J. & A. CHURCHILL, NEW BURLINGTON STREET
1875

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Glass Revolving Stage.—The invention of this stage (Fig. 130), attributed to MM. Nachet, is claimed by Mr. Zentmayer, of Philadelphia; who states that he first constructed it in 1862, and that a Microscope which he made in 1864 for Dr. Keen, of Philadelphia, was shown by Dr. K. to MM. Nachet, who copied from it the arrangement in question.

Combination of Mica-film with Selenite.—The variety of tints given by a Selenite-film under Polarized light, is so greatly increased by the interposition of a rotating film of Mica, that two Selenites—red and blue—with a Mica-film, are found to give the entire series of colours obtainable from any number of Selenite-films, either separately or in combination with each other. The *Revolving Mica-Selenite Stage* (Fig. 445) devised by Mr. Blankley, and made by Mr. Swift, furnishes a very simple and effective

FIG. 445.



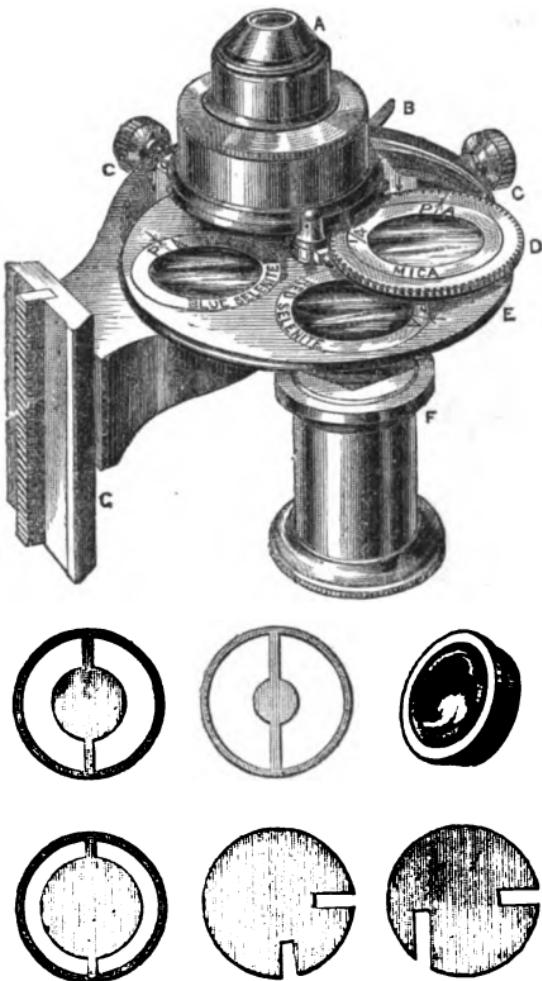
Blankley's Revolving Mica-Selenite Stage.

means of obtaining these beautiful effects; the Mica-film being set in a diaphragm which can be made to rotate by applying the finger at the front edge of the stage; whilst the Selenites are so placed in a slide, that either of them can be brought under the aperture as desired.

Swift's New Achromatic Condenser.—In this ingenious piece of apparatus (Fig. 446) are combined the advantages of (1) an Achromatic Condenser, *A*, centred by two milled-headed screws, *c*, *c*, and having an angle of 140°, which fits it for use with Objectives of very wide angular aperture, whilst, by removing the upper combination, it is made to suit lower powers; (2) a contracting Diaphragm worked by the lever *B*; (3) a revolving Diaphragm, *E*, with four apertures, into which can be fitted either (*a*) a series of three central stops, giving a Black-ground illumination scarcely inferior to that of the paraboloid, and capable of being used with the small angle 1-5th, (*b*) tinted or ground-glass Moderators, or (*c*) two Selenite-films for the Polarizing apparatus; (4) a Polarizing prism, *F*, mounted on an eccentric arm, so as to be brought under the axis of the condenser when not in use, and thrown out when not wanted; and (5) an upper arm carrying two revolving cells geared together by fine teeth (one of them shown at *D*, while the

other is under the condenser), so that a revolving motion may be given to either by acting on the other; one of these cells carries a plate of mica, the revolution of which over the selenite-films gives a

FIG. 446.



Swift's New Achromatic Condenser.

great variety of colour-tints with Polarized light; while the other serves to receive oblique-light disks, to which rotation can be given by the same means.—The special advantage of this Condenser lies in its having the polarizing prism, the selenite- and mica-films, the black-ground and oblique-light stops, and the moderator, all brought close under the back lens of the Achromatic; whilst it combines in itself all the most important appliances which the 'sub-stage' of

Messrs. Ross's or of Messrs. Powell and Lealand's large Microscope, or the 'secondary body' of Messrs. Beck's, is adapted to receive, either separately or in combination.

Swift's Portable Microscope Lamp.—Every Microscopist who desires to exhibit his objects by artificial light elsewhere than at his own home, has desired a lamp suitable for this purpose,

adjustable to any height, and capable of being packed in a small compass and of being carried in any position without spilling the liquid it burns. This *desideratum* is now supplied by Mr. Swift, who has devoted much ingenuity to the construction of such a lamp; the special difficulty being to prevent leakage from the passage through which the wick rises, without interfering with the ascent of the fluid. The lamp (Fig. 447) is mounted on a telescope-pillar, which supports it steadily at any height from 4 to 12 inches; and this is screwed into a tripod foot. By pushing in the telescope-pillar, unscrewing the tripod, and inverting it over the chimney (Fig. 448), the lamp can be packed into a tube $7\frac{1}{2}$ inches long and $1\frac{1}{8}$ inch in diameter. It gives

a good flame, and burns for two hours. The size of the reservoir might of course be increased, so as to enable the lamp to burn longer; but this would add to the bulk of its case.

Section-Cutting Machines.—An entirely new apparatus for cutting thin sections has been devised by Prof. Biscoe (U.S.), which has the great advantage of being adaptable to the stage of a Microscope, so that the section may be cut in view of the magnified picture, instead of under the guidance of ordinary vision. The principle of the apparatus is that the object is attached to the platform, whilst the cutter is carried in a frame which slides over it, supported by three micrometer-screws; by turning which

FIG. 447.

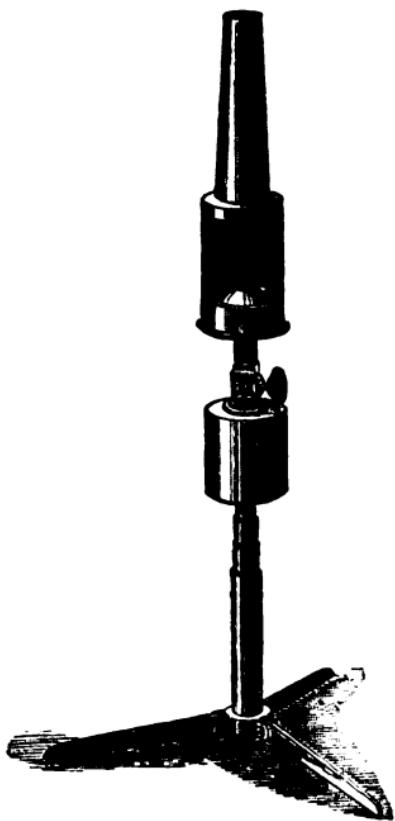


FIG. 448.

