

### III.—Notes on the Use of Mr. Wenham's Reflex Illuminator.

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(Read before the ROYAL MICROSCOPICAL SOCIETY, June 2, 1875.)

IF Mr. Wenham's Reflex Illuminator for High Powers is used under the circumstances for which he especially contrived it, little difficulty will be found with suitable objects. The light, as he explained, penetrates only where the object makes a new surface on the slide, and "acts," to use one of his familiar phrases, "like a hole in a dark lantern."

The effect is so admirable upon many objects, such as scales of insects, certain micro-fungi, minute algæ, desmids, diatoms, &c., that everyone who has successfully tried it must wish to add to its range of utility, and this may be easily done.

It will be found that most balsamed objects, and many in which the covering glass lies very close to the slide, give with it so much false light when ordinary objectives are employed, that the result is very unsatisfactory. This false light will be found in many cases so oblique that it can be got rid of by using an objective with a small angle, or temporarily reducing the angle of an ordinary high power by a movable stop.

For example, a slide of *Surirella gemma* and this illuminator exhibited no false light with a glass of about  $70^\circ$ ; some, but not much, with a fine  $\frac{1}{4}$ th made on Mr. Wenham's new formula, and having an angle of  $150^\circ$ , too much to be endurable with Powell and Lealand's immersion  $\frac{1}{4}$ th full aperture; and none with the same glass and with a stop limiting the rays admitted to about  $90^\circ$ .

Many slides of butterfly and other scales taken at random from a cabinet become manageable with reduced apertures, and the effects, when the plan succeeds, are very curious, beautiful and instructive. Mr. Wenham has alluded to the changed aspects obtained by rotating the apparatus when employed upon the so-called Podura scale, *Lepidocyrtus curvicolis*, and similar observations may be made with regard to Lepisma scales, and those of various insects allied to Podura. Indeed it is not prudent to pronounce an opinion upon any scale of difficulty until this method has been tried, and all the aspects it produces considered in their mutual relations.

It is by no means intended to advise microscopists against the use of this apparatus with large-angled glasses upon objects mounted so as to be fit for it; but when slides fail, the observer is recommended not to abandon the plan, but to reduce the angle of the glass and try again, and with good chances of success. The apparatus has a remarkable power of increasing both the penetration and the resolution of good objectives.

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