Note on a New Modification of Double Colour Illumination.

By J. Rheinberg.

(*Read October 15th*, 1897.)

I should like to bring before your notice, this evening, a new modification of double colour illumination suitable for high power.

Similarly as with low-power colour illumination, on the dark-ground principle, one of the ordinary double colour discs, having a central spot of one colour, surrounded by a ring of a strongly contrasting, and in this case preferably complementary colour (*e.g.* red centre and green periphery) is placed in the substage condenser, and by means of the iris diaphragm the relative proportions of the two colours are so regulated that on looking through the microscope the light appears to be neutral tinted.

But although the background appears neutral tinted, a suitable object will be seen coloured, in fact coloured differently in its various parts, as, according to their form and position, they will pick up a preponderance of one or other of the two colours by which they are illuminated. To give a single concrete example:—It is possible to light up a diatom so that the secondary structure may appear in one colour and the primary structure in another, both being very distinct at the same time.

Differential colour illumination by methods hitherto described has been confined to the use of cones of light either greatly exceeding the aperture of the objective used (viz. on the dark-ground principle), or very much smaller than the objective aperture (viz. on the diffraction system), but it will be observed that the particular modification described this evening permits of the use of the illuminating cone ordinarily employed. Each microscopist may use his own favourite cone.

It will also be observed that diffraction plays but a quite subsidiary part in this method as far as the colour effects are concerned, so that no untoward results on this score need be feared.