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I—*On a simple method for determining the index of refraction of small portions of Transparent Minerals.*

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Preliminary Notice.

THE author exhibited and described the small additions that need be made to an ordinary microscope, in order to make it available for the above-named purpose, and also gave a few illustrations of its application to particular minerals. So far, however, the instrument has been used only sufficiently to prove that the method gives excellent results. The author thinks it desirable to defer a complete description of the construction and use of the instrument until he has been able to examine a sufficient number of minerals to publish a table of their indices of refraction for practical use. It may, however, be well to say that the addition to the microscope consists only in a small graduated scale attached to the body of the instrument, and vernier to read off to $\frac{1}{1000}$th of an inch. This enables us to measure the extent to which the focal length of the object glass is increased by looking through a more or less transparent mineral, and also its thickness in the part thus examined.

From these data the index of refraction can be calculated very easily by means of the formula $\mu = \frac{t}{t-d}$ where μ is the index of refraction, and d the increase in the length of the focus due to looking through the thickness t of the mineral. Since in different minerals the index of refraction varies from about 1·43 in fluor, to 3·28 in ruby silver, and the measurements are easily made, it will be seen that it is a most important character, which, up to the present time, has not been recognised in mineralogical works, on account of the difficulty of determining it by previous methods.