Note on the Dielectric Strength of samples of Biotite Mica from the Forest of Kodarma,

By F. N. Mowdawalla, M. A , s. so.

The samples of mica 011 which the tests forming the subject of this note were carried out, were obtained from a vein encountered at a depth of 70 feet from the surface of the ground in the forest of Kodarma. It is said that the vein is very prolific, and it was thought that an examination of the mica from an electrical point of view would be of interest. A small specimen was submitted for chemical examination to Dr. H. E. Watson, who pronounced the mica to be biotite.

The mica was tested for electric strength by means of the small testing transformer in the Electrical Laboratory of the Institute. The testing electrodes were discs f inch in diameter with well-rounded edges. The shape of the voltage wave closely approached that of a pure sine wave, so that the crest of the testing voltage may be taken to be 1·414 times its r. m. s. value. The results of the tests are exhibited in the accompanying Curves, Curve I showing the relation connecting the break-down voltage with the thickness of the specimen, while Curve II, which has been deduced from Curve I, shows the connection between the apparent dielectric strength, in r. m. s. volts per millimeter, and the thickness. The testing voltage was applied gradually, so that the values obtained may be taken to represent the minima values corresponding to long-continued application of the testing voltage. The results obtained with the Kodarma mica are indicated by large dots in the Figure.

In order to obtain comparative results, some specimens of Nellore mica were subjected to similar tests. The results are indicated by crosses in the Figure. It will be seen that the Kodarma mica is only slightly, if at all, inferior to the Nellore mica, from the point of view of electric strength. The Kodarma mica was, however, found to be very weak mechanically, and for this reason would appear to be unsuitable as an insulator for electric machines.

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