

THE MAGNETIC BEHAVIOUR OF A TEKTITE

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Received June 14, 1944

(Communicated by Sir C. V. Raman, Kt., F.R.S., N.L.)

1. Introduction

THIS paper reports the results of a magnetic study of a specimen sent to Sir C. V. Raman for examination by Baron R. J. de Touche, being one amongst the several small black stones which were obtained by him in 1939 from the Manager of the Dutch Mining Company at the island of Billiton, when he visited the place on behalf of the Raffles Museum to examine a supposed find of meteorites. As a result of his investigations of the ancient literature, notably the records of the seventh century A.D., the Baron has identified these stones with the "magic stones" or "fire pearls" which were esteemed highly by the ancients and believed to have mystical powers. In his paper entitled "Discovery of the ancient magic stone of the Orient" (1944) to the Royal Asiatic Society, they are described as having a dark and sculptured surface suggestive of moon craters and appearing dark green at the edges which were thin. The material was found to be extremely hard and it is reported that "during the cutting and polishing process of one specimen, the surface of the polishing steel disc was so severely cut that it became pitted with deep holes". The specimen sent for examination had a part of its surface cut and polished plane, while the rest of it had the original ovoid form of the stone and was marked with deep grooves.

2. Experimental Data

The specimen was tested for magnetic anisotropy by suspending it in a uniform magnetic field by a calibrated quartz fibre. The tendency to take up a definite equilibrium position was very feeble and this feeble anisotropy was determined for three mutually perpendicular axes of suspension, by finding the period of oscillation in the magnetic field and in zero field. The values obtained were 0.012×10^{-6} , 0.01×10^{-6} and 0.003×10^{-6} per gm. These values are very small compared with the magnetic susceptibility and hence the specimen can be taken to be magnetically isotropic.