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GEOMANETIC FIELD INTENSITY IN THE GEOLOGICAL PAST

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The analysis of the available palaeointensity data indicates that the dipole moment of the earth was fairly high and similar to the present dipole moment of 8.0×10^{22} A m^2 in the pre-Cambrian times, then dropped precipitously during the late Cambrian—Cambrian and since then has been gradually increasing to its present value. With a view to investigate the above behaviour of the geomagnetic field, a palaeointensity study for 3 crucial sections of the geological time scale was carried out using improved laboratory techniques and magnetically igneous rocks.

Young tertiary basalt samples from Australia showed a mean palaeointensity value of $(8.55 \pm 0.30) \times 10^{22}$ A m^2. A mean value of $(5.81 \pm 0.48) \times 10^{22}$ A m^2 was obtained for the Permian, using samples of the Exeter traps in England and the Esteral volcanics in France. For the pre-Cambrian, palaeointensities of

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$(7.32 \pm 1.72) \times 10^{22}$ A m^2 and $(4.56 \pm 0.92) \times 10^{22}$ A m^2 were determined, using dolerite samples from southern Zimbabwe (1,700-2,000 million years old). The present study suggests, contrary to the observations of the previous workers, that the intensity of the earth's magnetic field has not changed significantly throughout geological time.