

17th Ewing Lecture

Geomagnetism - a Dynamo at the Centre of the Earth

Wednesday, 10 December 2003

Presented by Professor David Gubbins, School of Earth Sciences, University of Leeds

at

The Royal Society, London

Everyone knows the compass points north because the Earth possesses a magnetic field similar to that of a bar magnet at its centre. Anyone involved in map reading will know that magnetic north differs somewhat from true north, and that it changes slowly over time. The magnetic field is generated by a dynamo located in the central core of the Earth, where liquid iron flows at speeds of about 20 kilometres a year, or a fraction of a millimetre per second, and is driven by heat escaping from the core and by light elements rising towards the surface.

We know a great deal about the behaviour of the geomagnetic field in the past. Direct measurements have been made for centuries, with good global coverage dating from the 17th century and we can use the magnetisation of rocks to infer changes in the distant past. This science of paleomagnetism has revealed a very long history in which the geomagnetic field is continually changing, usually maintaining its general dipolar configuration but occasionally reversing polarity altogether, the last time 750 thousand years ago. We now know that it has nearly reversed many times during the present interval of normal polarity and the last such "excursion" of the poles was about 23 thousand years ago.

The Lecture will introduce the science of paleomagnetism and the Earth's magnetic field and then concentrate on topics of current research into the factors influencing the magnetic field, such as the effect of the Earth's mantle which overlies the core, and the changes in the solid part of the Earth that moves with the tectonic plates. The Lecture will also demonstrate that it is possible to model all of the effects using the theory of fluid dynamos, and how computer simulations can reproduce Earth-like behaviour.

from 5pm Registration/Tea
6-7pm Lecture
7:15pm Buffet supper

The UK Magnetics Society accepts no responsibility or liability in any way whatsoever for any statements made or opinions expressed during this event

PLEASE COMPLETE AND RETURN TO:

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I wish to attend the 17th Ewing Lecture, *Geomagnetism - a Dynamo at the Centre of the Earth*, Wednesday, 10 December 2003, at The Royal Society, London, and enclose remittance to cover Lecture, refreshments, buffet supper - **cheques made payable to 'The UK Magnetics Society', drawn on a UK bank.** Payment may also be made by bank transfer: The UK Magnetics Society, Barclays Bank plc, 17 Market Place, Wantage, Oxon OX12 8AG, UK, Acct No 50893293, Sort Code No: 20-90-91; *please add £10 to cover bank charges if paying by bank transfer from overseas.*

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To ensure a place at this Lecture, please register by 30 November 2003

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