

EARTH'S CORE HELD WORLD'S DYNAMO

Its Electrical Currents May
Magnetize the Entire Planet,
British Scientist Believes

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LONDON, May 30—The theory that electric currents in the liquid metal core of the earth act like a dynamo and magnetize the whole terrestrial sphere has been propounded by Dr. Edward C. Bullard, head of Britain's National Physical Laboratory near London.

According to Dr. Bullard, the dynamo theory would explain why there has been no perceptible diminution in the magnetism of the earth and also why compass variations from true North change irregularly from place to place.

He believes the theory, if proved, could also be applied to the magnetism of the sun and the stars and may lead to a better understanding of the electromagnetic nature of sunspots which periodically jam wireless communication.

Although Dr. Bullard says the theory cannot be proved by practical experimentation it may be possible, he believes, to demonstrate it by mathematical means—and complicated equations to this end are now being fed into one of Britain's largest computing engines, the ace at the National Physical Laboratory.

Compass needles often swing as much as twenty degrees on either side of their mean direction and the changes at a given place are often irregular. However, as Dr. Bullard has noted, the changes normally proceed in one direction for periods of about 100 years.

The basis of the new theory is the belief that the core of the earth is capable of making electricity like a dynamo by the movement of a conductor (the core) inside a magnetic field, the whole earth.

The electricity in turn acts on the metal core and electromagnetizes both it and the surface of the earth.

Dr. Bullard has calculated that core currents of about 5,000,000,000 amperes would be enough to maintain the present magnetic field. However, it has yet to be established that the action is self exciting, that is to say that the core is capable of first producing a field from which electricity can be drawn.

Engineers have said the phenomenon is known in so called homopolar dynamos which require very small fields to start them off.

Dr. Bullard foresees fewer difficulties in his contention that permanent movement is present within the core of the earth to give the dynamo action.

This, he says, is due to the heat of the liquid that brings about upward and downward streaming convection currents. He believes, too, that small eddies near the surface of the core wax and wane and cause fluctuations and seasonal irregularities in the magnetic field at the surface of the earth.