OCEANOGRAPHIC GROUP

by T.D. ALLAN

About five years ago a new type of magnetometer, called the Nuclear Precession Magnetometer, was developed for towing behind a ship. It measures the absolute value of the total magnetic intensity with an accuracy of $\pm$ ½ γ which is much better than the uncertainty of the diurnal variation extrapolated from the nearest observatories on land.

While working at the Department of Geodesy and Geophysics, Cambridge University, I carried out magnetic surveys with this new instrument in the English Channel, off the Brittany coast, in the eastern Atlantic and, more recently, in the Red Sea. The survey in the Red Sea was especially interesting and I shall give a very brief account of the results.

A narrow, steep-sided trough was found to run down the centre of the Sea. The width of this trough varied from approximately 35 to 50 km and reached a maximum depth of approximately 2000 m. Associated with this trough and almost entirely confined within its boundaries was a magnetic anomaly which reached a maximum amplitude of 1300 γ peack-to-peak. This anomaly was much stronger in the southern part of the Red Sea where the trough had been developed to a greater extent than in the northern part.

It is reasonable to assume that whatever mechanism caused such a rift has also brought up a rock type which is more magnetic than the surrounding rock. A possible explanation may be that tensile forces formed a crack and that vertical pressures on either side caused basaltic material to rise up through the crack. We would also expect such material to be denser than the surrounding rocks and in fact the very few submarine gravity measurements that have been made in the Red Sea show a positive Bouguer anomaly associated with the trough.

I would like now to say a few words about the Oceanographic Group at the Saclant Research Center, La Spezia. This was formed earlier this year and at present consists of three scientists, interested in different aspects of Oceanography. It is hoped that we will be able to contribute to geophysical research in the Mediterranean. We plan to have a magnetometer by the Spring of 1961 and it may be possible for us to combine our magnetic surveys with gravimetric surveys carried out by Professor MORELLI's group.

Finally, I should like to say that the Nuclear Precession Magnetometer is now being made by a commercial firm and I will be pleased to provide more details about the instrument to anyone interested.

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