

## THE NEW ORDNANCE SURVEY MAGNETIC MAPS OF GREAT BRITAIN

The Ordnance Survey Physical Maps of Great Britain are published in two sheets, one for Scotland and one for England and Wales: they show water in blue and relief by colouring. The names on the map refer to physical features only. A Magnetic Edition of these maps is issued from time to time, the latest being dated 1933. These maps give the value of the magnetic declination at a large number of points (about 150 on the map of England and Wales) where observatory or field observations have been made in recent years; the original observations have been corrected for the effect of the secular change so as to apply to the middle of 1933. In the previous edition of these maps, for 1928, the name of each such magnetic station was placed alongside the magnetic figure: these names are (rather regrettably) omitted from the 1933 edition. But a much more striking change of practice is made in the new edition, relating to the isogon lines, that is, the lines along each of which the declination has one and the same value at all points. The 1933 map gives such lines for each whole degree of declination ( $11^{\circ}$  to  $17^{\circ}$ ), instead of for every  $14^{\circ}$ , as in 1928; and the 1933 lines are nearly straight, and thus widely different from those of 1928, some of which were extremely twisted. A partial explanation of the change is given on the new maps, in the following words:

“The Isogonals, or Lines of Equal Westerly Declination (Magnetic Variation), show the underlying regularity of the distribution while the observed values, printed for each station where observations have been made, show the degree of approximation which is to be expected between values interpolated between the lines and actual values. The shaded areas are the principal areas where, owing to the occurrence of magnetized rocks at or near the surface, much greater anomalies are probable. No attempt to draw isogonals in these areas is of use. There are many small isolated areas coming into the same category but not shown. In such areas two points within a few yards of each other may show a difference in Declination of many degrees. The small departures from regularity in the Isogonals drawn do not indicate the true course of the lines, but serve to draw attention to anomalies in their vicinity. The present rate of change of Westerly Declination in England is about  $10'$  or  $11'$  per annum, *i.e.* a diminution, being slightly more rapid in the north than in the south. This rate of change is itself likely to slow down in the near future.”

The small departures from regularity in the isogonals, as drawn, consist of breaks in the nearly straight continuous line of an isogon, where the line is omitted altogether, or where it is drawn in broken form to one or other side, so as to go round an isolated station whose declination would otherwise correspond to the wrong side of the isogon. This concession to the observations is interesting in view of the generally draconic mood in which these isogonals are drawn. In the previous maps outstanding observations were effective in diverting not only one but several isogon lines out of an otherwise smooth course; the observations, as it were, beckoned the lines this way or that, and their call was heeded. On the new map a deaf ear, or a blind eye, is turned towards these beckonings, and the isogonals stride headlong across the country; yet conscience doth make cowards of them all when their bold march would actually place a sheep among the goats, or in other words, when the straight course of the isogon

would leave an observation on the wrong side of the line. Hence the line is broken here and there.

The difficulties which the observations present to the map-maker are evident, and no simple solution of them is possible; but it does not seem to the writer that the solution now adopted is the best: deflections quite as large as those actually made at certain points along the isogonals could with equal justice have been made elsewhere along them. The fact is, there seems to be much in favour of combining the old plan, of much-curved isogonals taking detailed account of the observations, with the new plan carried however to its logical conclusion, of quite plain lines disregarding *all* small anomalies. That is, one may suggest that future editions of these maps should give isogonals like those of the 1928 edition (of course embodying any corrections indicated by further observations) together with bolder isogonals, at  $1^\circ$  intervals, showing the general trend of the isogonals. These might be accompanied by a rubric similar to that now introduced in the 1933 maps, though preferably with the omission of the prophecy contained in the last sentence.

One new feature in the 1933 edition which seems to be wholly commendable is the indication, by shading, of the magnetically disturbed regions where great anomalies are probable, rendering it useless to draw isogonals in those regions.

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The Geographical Journal, Vol.80, no.6, December 1932, p.553

#### PROGRESS OF THE ORDNANCE SURVEY, 1931-32

The year under review in this Report was marked by the publication of the first sheet (Plymouth) of the new Fifth Relief Edition of the 1-inch map, and also the Special District Map of Aldershot North. These sheets have already been discussed in the *Journal* (vol. 78, p. 353, and vol. 80, p. 358). From this Report of Progress it appears that another sheet in this edition has been completed for reproduction, and four further sheets and Aldershot South are nearing completion. Eight sheets are in process of compilation and drawing. Two special 1-inch District Maps of the Chilterns and the Norfolk Broads have been published. It is interesting to note that the number of sheets sold was greater than in any previous year: this was largely due to the popularity of the 1-inch maps, for there was a falling-off in the sale of 25-inch plans. A considerable amount of time was given to work for the Land Valuation scheme and for the review of county administrative boundaries.

A Gravity Survey was carried out in the west of Scotland with the pendulum apparatus lent by the School of Geodesy, Cambridge. The result was to treble the number of precise gravity stations in Great Britain, which is now thirty. Greater gravitational anomalies than any in Southern England were recorded. The stations along the west coast gave small, those in the Outer Hebrides somewhat larger, positive anomalies.

In the section on archaeology it is noted that the collection of air-photographs, now numbering nine thousand, is in constant use. Detailed study is to be made of air-photographs of Salisbury Plain, to determine the plan and purpose of the prehistoric fields and earthworks. For the series of historical maps, which already includes Roman Britain and Stuart England, two more are being compiled—Early Scotland and Anglo-Saxon England. A catalogue of the four hundred photographs of old cadastral plans has been printed.