

ANNUAL CHANGE IN THE DISTRIBUTION OF MAGNETIC ELEMENTS.

Its application to the drawing up of Magnetic Maps.

(Extracted from the *Annales de l'Institut de Physique du Globe de l'Université de Paris et du Bureau Central de Magnétisme Terrestre*, Volume IX - *Les Presses Universitaires de France*, Paris, 1931, pages 85 to 95).

The greater number of the magnetic observations taken in France have been utilised for the drawing up of an isogonic map for 1931.0. In the article referred to above, the method used for the reduction of the declination, dip and the horizontal constituent for a determined epoch is developed. An observation of declination carried out in one place, at a given moment, is of no value except for that place and at that moment. Should it be necessary to obtain this information for another place and at another epoch, a series of corrections must be applied.

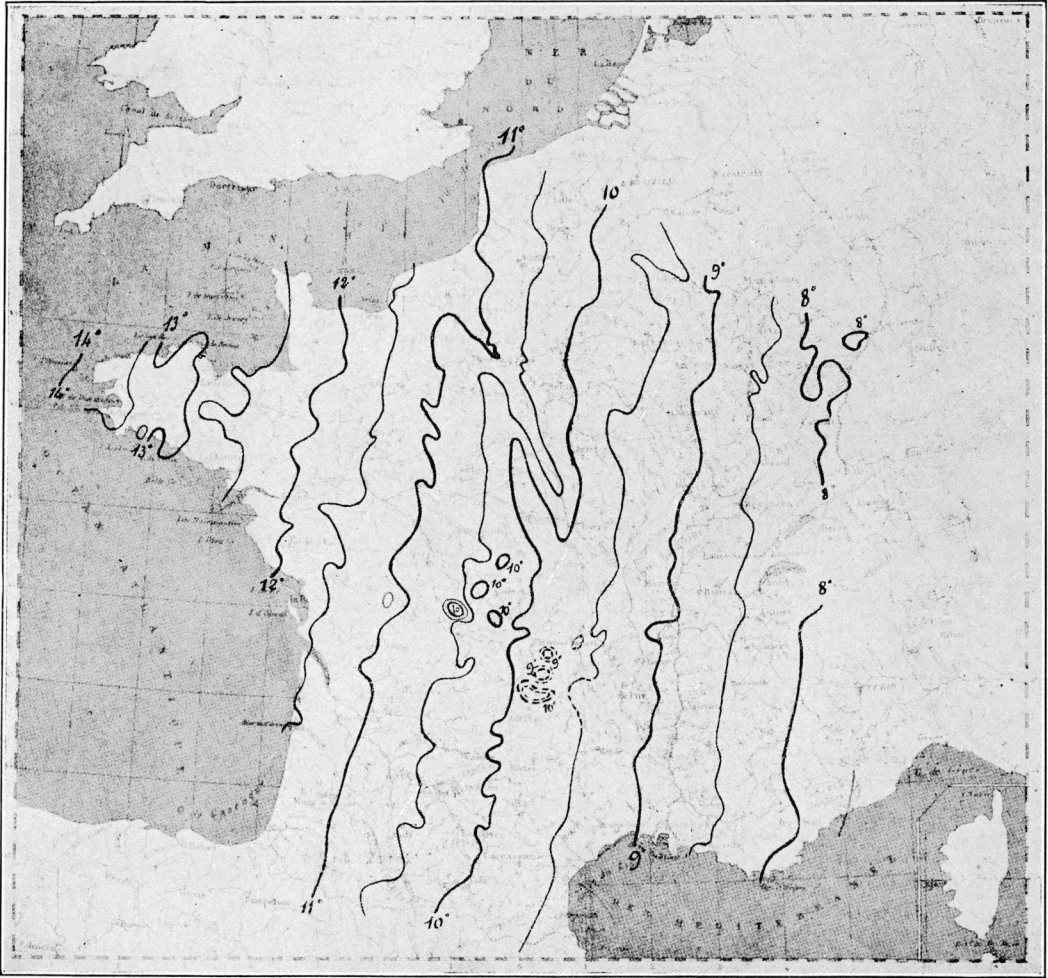
To meet the numerous demands made upon it, the *Institut de Physique du Globe de l'Université de Paris* has felt the necessity of establishing a magnetic map of France which is kept up to date. In order to transfer a map from one epoch to another, it is necessary to know the changes at a certain number of stations; these changes are recorded by means of magnetographs, but the results are only published every year or at intervals of several years. Comparison between a map prepared in advance and a map established afterwards will confirm the calculations and the formulas given in this article.

To draw up the isogonic map for 1st January, 1931, practically all observations made in France since those of LAMONT were used, *i. e.* those by the authors of the new system (1924), EBLÉ (1913), MATHIAS (1896), MOUREAUX (1905, 1896 and 1885), D'ABBADIE (1886,5), DE BERNARDIÈRES (1879), MARIÉ-DAVY and DESCROIX (1875 and 1876,5), PERRY (1869), PAGEL (1867), LAMONT (1858), PETIT (1858), GOUJON and LIAIS (1855,7). The series of values obtained from records of old magnetic observatories have not been treated separately, as they are incorporated in the MOUREAUX system for 1896.

All observations have been taken to be correct. It appeared justifiable to accord greater weight to recent observations; the following has therefore been assumed: - weight 3 for the new system, weight 2 for observations reduced to dates between 1896 and 1924 inclusive, weight 1 for earlier observations. Thus several values of the declination are obtained reduced to the same date for a great number of points in the country.

The declination is then plotted on an outline map and the isogons drawn. The map for 1931.0 was constructed thus and a reproduction thereof is given here. It is evident that it differs but little from that obtained from the new system alone, the latter being very complete, though some additional values allow for greater precision in certain details.





Isogonic Map of France
1931.0.

Carte des Isogones de la France
1931.0.