the horizontal deviation from the terrestrial meridian of the spot. Their combined action may therefore be graphically represented by three systems of lines, the *isodynamic*, *isoclinic*, and *isogonic* (or those of equal force, equal inclination, and equal declination). The distances apart, and the relative positions of these moving, oscillating, and advancing curves, do not always remain the same. The total deviation (variation or declination of the magnetic needle) has not at all changed, or, at any rate, not in any appreciable degree, during a whole century, at any particular point on the Earth's surface,* as, for instance, the western part of the Antilles, or Spitzbergen. In like manner, we observe that the isogonic curves, when they pass in their secular motion from the surface of the sea to a continent or an island of considerable extent, continue for a long time in the same position, and become inflected as they advance.

These gradual changes in the forms assumed by the lines in their translatory motions, and which so unequally modify the amount of eastern and western declination, in the course of time render it difficult to trace the transitions and analogies of forms in the graphic representations belonging to different centuries. Each branch of a curve has its history, but this history does not reach further back among the nations of the West than the memorable epoch of the 13th of September, 1492, when the re-discoverer of the New World found a line of no variation 3° west of the meridian of the island of Flores, one of the Azores.† The whole of Europe, excepting a small

* A very slow secular progression, or a local invariability of the magnetic declination, prevents the confusion which might arise from terrestrial influences in the boundaries of land, when, with an utter disregard for the correction of declination, estates are, after long intervals, measured by the mere application of the compass. "The whole mass of West Indian property," says Sir John Herschel, "has been saved from the bottomless pit of endless litigation by the invariability of the magnetic declination in Jamaica and the surrounding Archipelago during the whole of the last century, all surveys of property there having been conducted solely by the compass." See Robertson, in the *Philosophical Transactions* for 1806, Part ii., p. 348, *On the Permanency of the Compass in Jamaica since* 1660. In the mother country (England) the magnetic declination has varied by fully 14° during that period.

† I have elsewhere shown that, from the documents which have come down to us regarding the voyages of Columbus, we can, with much certainty, fix upon three places *in the Atlantic line of no declination* for the 13th of September, 1492, the 21st of May, 1496, and the 16th of August, 1498. The Atlantic line of no declination at that period ran from northeast to southwest. It then touched the South American continent a little east of Cape Codera, while it is now observed to reach that continent on the northern coast of the Brazils. (Humboldt, *Examen Critique de l'Hist. de la Géogr.*, t. iii., p. 44–48.)