

premises, so we must be permitted to believe that the letter is not a fabrication, and that the variation of the needle was known as early as the thirteenth century.

There are some places where there is no variation, and the line which connects all these places together is called the line of no variation. This line is very complicated, and appears to have no relation to those great circles which are called by the geographer meridians. It may be traced from the north magnetic pole of the earth, supposed to be situated to the westward of Baffin's Bay, to the United States of North America; crossing this continent, it enters the Atlantic, passing to the east of the windward West India isles towards the northeastern point of South America, over the southern Atlantic into the antarctic circle, but its course here is unknown. It is found again to the south of Van Diemen's Land, and crosses the western part of the Australian continent. In the Indian Archipelago it is divided; one branch crossing the Indian Sea to Cape Comorin, traverses Hindostan, Persia, and the western part of Siberia, and enters the North Sea: the other branch traverses China, Chinese Tartary, and the eastern part of Siberia.

It is almost certain that there are at least two magnetic poles in each hemisphere, but their exact situation is not known. If we could determine the magnetic equator, there would be less difficulty in calculating the position of the poles; but, in the present state of our knowledge, this problem cannot possibly be solved in any other manner than by experiment. Attempts have been made by voyagers; but those who are acquainted with the local disturbance to which the needle is subject, must be aware that the circumstances under which the experiments have been made were so unfavourable that we can scarcely depend upon the results.

It was long supposed by philosophers that the magnetic poles were situated on or near to the surface of the earth, but the accuracy of this supposition was afterward doubted. M. Biot was the first to attempt the solution of this question by calculations founded on the observations which had been made, in various parts of the world, upon the dip and variation, and more especially upon those furnished by M. Humboldt. Professor Kraft, of St. Petersburg, also undertook the same examination, and the two philosophers arrived at the same law, proving the inaccuracy of the first supposition