

where the magnetic and terrestrial equators cross each other, and there are strong probabilities that there may be even more.

But the dip is subject to change, as well as the variation. When Norman made his experiment, in 1576, the inclination was $71^{\circ} 50'$. In 1828 Captain Sabine found it to be $69^{\circ} 47'$, and Captain Segelcke measured it at Woolwich in November, 1830, as $69^{\circ} 38'$. The magnetic equator is not, therefore, a fixed line, but varies with the position of the magnetic poles. According to the experiments of Captain Sabine, the dip has been decreasing about three minutes annually for the last fifty years.

There are many subjects of great interest connected with the magnetism of the earth, to which we cannot even allude in this outline sketch, but must close the chapter with an account of some of those opinions which have been entertained as to the origin of terrestrial magnetism.

ORIGIN OF TERRESTRIAL MAGNETISM.

The name of Gilbert will ever be associated with the science of magnetism, for we are equally indebted to him for the variety and accuracy of his experiments, and the soundness of his deductions, so far at least as the state of the science in his day admitted. This eminent philosopher, to whose memory posterity has not awarded justice, considered the earth to act upon a needle, as though it were itself a magnet, and that the direction of the magnet was due to the earth's magnetic power. That end of the needle which points to the north pole of the earth he called the south pole of the magnet, and that which points to the south he called the north pole. Although the names of the poles have been changed, they were accurately designated by Gilbert, and the names by which they are now known contradict the acknowledged principle that poles of the same name repel each other.

Halley accounted for the variation and dip by supposing the existence of four terrestrial magnetic poles, two in each hemisphere. One of the northern he conjectured to be about 7° from the pole of the earth, in the meridian of the Land's End, and the other about 15° from the pole, in the meridian of California. One of the south poles he supposed to be situated about 16° from the terrestrial pole of the southern