

given nature from some essential property, which resides in many things."

(365.) Magnetism is remarkable in another important point of view. It offers a prominent, or "*glaring instance*" of that quality in nature which is termed *polarity* (267.), and that under circumstances which peculiarly adapt it for the study of this quality. It does not appear that the ancients had any knowledge of this property of the magnet, though its attraction of iron was well known to them. The first mention of it in modern times cannot be traced earlier than 1180, though it was probably known to the Chinese before that time. The polarity of the magnet consists in this, that if suspended freely, one part of it will invariably direct itself towards a certain point in the horizon, the other towards the opposite point; and that if two magnets, so suspended, be brought near each other, there will take place a mutual action, in consequence of which, the positions of both will be disturbed, in the same manner as would happen if the corresponding parts of each repelled, and those oppositely directed attracted, each other; and by properly varying the experiment, it is found that they really do so. If a small magnet, freely suspended, be brought into the neighborhood of a larger one, it will take a position depending on the position of the *poles* of the larger one, with respect to its point of suspension. And it has been ascertained that these and all other phenomena exhibited by magnets in their mutual attractions and repulsions are explicable on the supposition of two forces or virtues lodged in the particles of the magnets, the one predominating at one end, the other at the other; and such that each particle shall attract those in which the *opposite* virtue to its own prevails, and repel those in which a *similar* one resides with a force proportional to the inverse square of their mutual distance.

(366.) The direction in which a magnetic bar, or needle of steel, freely suspended, places itself, has been ascertained to be different at different points of the earth's surface. In some places it points exactly north and south, in others it deviates from this direction more