

and ascending on its west side. Hence, we must suppose currents of electricity to circulate within the earth, more especially near its surface, and to be constantly passing from east to west, in planes parallel to the magnetic equator; which electrical currents, if such can be demonstrated to exist, will in their turn completely account for the magnetic directive property of the earth. The next question is, therefore, how far are we justified in assuming the existence of such electric currents within the earth?

We have already alluded to the opinion, that heat occasionally passes into the electric and magnetic energies; an opinion, which some consider to derive much probability from the phenomena of what has been termed *thermo-electricity*; that is to say, electricity (and magnetism) developed by the unequal distribution of heat through bodies. Now, whether the phenomena of thermo-electricity actually depend on the decomposition of heat, latent or sensible, or upon any other cause, is of little importance; the phenomena themselves are well established; and they seem to account, in the most satisfactory manner, for the general distribution of electricity and magnetism over the earth. The explanation is this: the earth during its diurnal motion on its axis from west to east, has its surface successively exposed to the solar rays in an opposite direction, or from east to west.