

and to produce phenomena of a peculiar description, which are termed *induced* electricity. Curious and artificial as this theory may appear, there has hitherto been produced no phenomenon of which it will not afford at least a plausible, and in by far the majority of cases a very satisfactory, explanation. It has one character which is extremely valuable in any theory, that of admitting the application of strict mathematical reasoning to the conclusions we would draw from it. Without this, indeed, it is scarcely possible that any theory should ever be fairly brought to the test by a comparison with facts. Accordingly, the mathematical theory of electrical equilibrium, and the laws of the distribution of the electric fluids over the surfaces of bodies in which they are accumulated, have been made the subject of elaborate geometrical investigation by the most expert mathematicians, and have attained a degree of extent and elegance which places this branch of science in a very high rank in the scale of mathematico-physical inquiry. These researches are grounded on the assumption of a law of attraction and repulsion similar to those of gravity and magnetism, and which, by the general accordance of the results with facts, as well as by experiments instituted for the express purpose of ascertaining the laws in question, are regarded as sufficiently demonstrated.

(371.) The most obscure part of the subject is, no doubt, the original mode of disturbance of electrical equilibrium, by which electricity is excited in the first instance, either by friction or by any other of those causes which have been ascertained to produce such an effect: analogies, it is true, are not wanting;* but it

* We will mention one which we do not remember to have seen noticed elsewhere, in the case of a disturbance of the equilibrium of heat produced by means purely mechanical, and by a process depending entirely on a certain order and sequence of events, and the operation of known causes. Suppose a quantity of air enclosed in a metallic reservoir, of some good conductor of heat, and suddenly compressed by a piston. After giving time for the heat developed by the condensation to be communicated from the air to the metal, which will be thereby more or less raised in temperature *above* the surrounding atmosphere, let the piston be suddenly retracted and the air restored to its original volume in an instant. The whole apparatus is now precisely in its initial situa-