

by sudden and violent transilience of the interval of separation, from one body to another, under the form of sparks and flashes;—traversing with perfect facility the substance of the densest metals, and a variety of other bodies called conductors, but being detained by others, such as glass, and especially *air*, which are thence called non-conductors,—producing painful shocks and convulsive motions, and even death itself if in sufficient quantity, in animals through which they pass, and finally imitating, on a small scale, all the effects of lightning.

(369.) The study of these phenomena and their laws until a comparatively recent period occupied the entire attention of electricians, and constituted the whole of the science of electricity. It appears, as the result of their inquiries, that all the phenomena in question are explicable on the supposition that electricity consists in a rare, subtle, and highly elastic fluid, which in its tendency to expand and diffuse itself pervades, with more or less facility, the substance of conductors, but is obstructed and detained from expansion more or less completely by non-conductors. It is supposed, moreover, that this electric fluid possesses a power of attraction for the particles of all ponderable matter, together with that of a repulsion for particles of its own kind. Whether it has weight, or is rather to be regarded as a species of matter distinct from that of which ponderable bodies consist, is a question of such delicacy, that no direct experiments have yet enabled us to decide it; but at all events its *inertia* compared with its elastic force must be conceived excessively small, so that it is to be regarded as a fluid in the highest degree *active*, obeying every impulse, internal or external, with the greatest promptitude; in short, a fluid whose energies can only be compared with those of the ethereal medium by which, in the undulatory doctrine, light is supposed to be conveyed. The properties of hydrogen gas compared with those of the denser aëriiform fluids will, in some slight degree, aid our conception of the excessive mobility and penetrating activity of a fluid so constituted. Electricity, however, must be regarded as differing in some remarkable points from all those fluids to which