

would be but a feeble part of the stroke which re-establishes the equilibrium in the interior of the fish.* As the gymnotus directs its stroke wherever it pleases, it must also be admitted that the discharge is not made by the whole skin at once, but that the animal, excited perhaps by the motion of a fluid poured into one part of the cellular membrane, establishes at will the communication between its organs and some particular part of the skin. It may be conceived that a lateral stroke, out of the direct current, must become imperceptible under the two conditions of a very weak discharge, or a very great obstacle presented by the nature and length of the conductor. Notwithstanding these considerations, it appears to me very surprising that shocks of the torpedo, strong in appearance, are not propagated to the hand when a very thin plate of metal is interposed between it and the fish.

Schilling declared that the gymnotus approached the magnet involuntarily. We tried in a thousand ways this supposed influence of the magnet on the electrical organs, without having ever observed any sensible effect. The fish no more approached the magnet, than a bar of iron not magnetic. Iron-filings, thrown on its back, remained motionless.

The gymnoti, which are objects of curiosity and of the the deepest interest to the philosophers of Europe, are at once dreaded and detested by the natives. They furnish, indeed, in their muscular flesh, pretty good aliment; but the electric organ fills the greater part of their body, and this organ is slimy, and disagreeable to the taste; it is

* The heterogeneous poles of the double electrical organs must exist in each organ. Mr. Todd has recently proved, by experiments made on torpedos at the Cape of Good Hope, that the animal continues to give violent shocks when one of these organs is extirpated. On the contrary, all electrical action is stopped (and this point, as elucidated by Galvani, is of the greatest importance) if injury be inflicted on the brain, or if the nerves which supply the plates of the electrical organs be divided. In the latter case, the nerves being cut, and the brain left untouched, the torpedo continues to live, and perform every muscular movement. A fish, exhausted by too numerous electrical discharges, suffered much more than another fish deprived, by dividing the nerves, of any communication between the brain and the electromotive apparatus (Philosophical Transactions, 1816).