stratum of water between the gold and the muscles is more than half a line thick. In the same manner, by employing a conducting arc composed of two pieces of zinc and silver soldered together endways; and resting, as before, one of the extremities of the metallic circuit on the femoral nerve, it is necessary, in order to produce contractions, to bring the other extremity of the conductor nearer and nearer to the muscles, in proportion as the irritability of the organs diminishes. Toward the end of the experiment the slightest stratum of water prevents the passage of the electrical current, and it is only by the immediate contact of the arc with the muscles, that the contractions take place. These effects are, however, dependent on three variable circumstances; the energy of the electromotive apparatus, the conductibility of the medium, and the irritability of the organs which receive the impressions: it is because experiments have not been sufficiently multiplied with a view to these three variable elements, that, in the action of electric eels and torpedos, accidental circumstances have been taken for absolute conditions, without which the electric shocks are not felt.

In wounded gymnoti, which give feeble but very equal shocks, these shocks appeared to us constantly stronger on touching the body of the fish with a hand armed with metal, than with the naked hand. They are stronger also, when, instead of touching the fish with one hand, naked, or armed with metal, we press it at once with both hands, either naked or armed. These differences become sensible only when one has gymnoti enough at disposal to be able to choose the weakest; and when the extreme equality of the electric discharges admits of distinguishing between the sensations felt alternately by the hand naked or armed with a metal, by one or both hands naked, and by one or both hands armed with metal. It is also in the case only of small shocks, feeble and uniform, that they are more sensible on touching the gymnotus with one hand (without forming a chain) with zinc, than with copper or iron.

Resinous substances, glass, very dry wood, horn, and even bones, which are generally believed to be good conductors, prevent the action of the gymnoti from being transmitted to man. I was surprised at not feeling the least shock on