

twelve hundred of these tubes have been counted in individuals of different age and size, some regular but others irregular, which may form electric batteries. Each organ is also traversed by arteries, veins, and nerves, in every direction, which last are remarkable for their size. The tubes, like those above mentioned, are also found in the non-electric rays, but these terminate in pores without the skin, which are so many excretory organs of the matter contained in their interior; in the Torpedo, on the contrary, the tubes are completely closed, not only by the skin which is nowhere perforated, but further by the aponeuroses, or tendinous expansions of the muscles, which extend all over the electric organ; the gelatinous matter not being able to expand itself externally, is forced to accumulate in these tubes, from whence doubtless arise their size and their progressive numerical increase. The two surfaces of the electric organ are supposed to be one positive and the other negative. Reaumur observed that the back of the animal is rather convex, but when about to strike its convexity diminishes, and it becomes concave, but after the stroke it resumes its convexity. These organs not only affect the animals upon which they act, by an agency imperceptible to the eye, but they are also stated to emit sparks; and they can strike at some distance, as well as by immediate contact. The author last named put a torpedo and a duck into a vessel filled with sea water, and covered it to prevent the escape of the latter, which, after about three hours, was found dead. These wonderful and complex organs, and their many-phialled batteries, the effect of which has attracted the notice of scientific men for so long a period, were doubtless given to these animals by their Creator, in lieu of the offensive and defensive arms which enable the rest of their tribe to act the part assigned to them, that they might procure the means of subsistence, and to defend themselves when in danger. Almost always concealed in the mud, like