

The gymnoti, like our eels, are fond of swallowing and breathing air on the surface of the water; but we must not thence conclude that the fish would perish if it could not come up to breathe the air. The European eel will creep during the night upon the grass; but I have seen a very vigorous gymnotus that had sprung out of the water, die on the ground. M. Provençal and myself have proved by our researches on the respiration of fishes, that their humid bronchiæ perform the double function of decomposing the atmospheric air, and of appropriating the oxygen contained in water. They do not suspend their respiration in the air; but they absorb the oxygen like a reptile furnished with lungs. It is known that carp may be fattened by being fed, out of the water, if their gills are wet from time to time with humid moss, to prevent them from becoming dry. Fish separate their gill-covers wider in oxygen gas than in water. Their temperature however, does not rise; and they live the same length of time in pure vital air, and in a mixture of ninety parts nitrogen and ten oxygen. We found that tench placed under inverted jars filled with air, absorb half a cubic centimetre of oxygen in an hour. This action takes place in the gills only; for fishes on which a collar of cork has been fastened, and leaving their head out of the jar filled with air, do not act upon the oxygen by the rest of their body.

The swimming-bladder of the gymnotus is two feet five inches long in a fish of three feet ten inches.† It is separated by a mass of fat from the external skin; and rests upon the electric organs, which occupy more than two-thirds of

specifically different. The Indians mentioned to us a black and very powerful species, inhabiting the marshes of the Apure, which never attains a length of more than two feet, but which we were not able to procure. The *raton* of the Rio de la Magdalena, which I have described under the name of *Gymnotus æquilabiatus* (*Observations de Zoologie*, vol. i.) forms a particular sub-genus. This is a Carapa, not scaly, and without an electric organ. This organ is also entirely wanting in the Brazilian Carapo, and in all the rays which were carefully examined by Cuvier.

† Cuvier has shown that in the *Gymnotus electricus* there exists, besides the large swimming-bladder, another situated before it, and much smaller. It looks like the bifurcated swimming-bladder in the *Gymnotus æquilabiatus*.