

of fishes and the feet of quadrupeds, there is none in the manner in which they are instrumental in effecting progressive motion. The great agent by which the fish is impelled forwards is the tail: the fins, which correspond to the extremities of land animals, are useful chiefly for the purposes of turning, stopping, or inclining the body, and for retaining it in its proper position. The single fins, or those which are situated in a vertical plane, passing through the axis of the body, (the mesial plane,) prevent the rolling of the body, while the fish darts forwards in its course. The fins which are in pairs (that is the pectoral and the ventral fins,) by their alternate flexions and extensions, act like oars; while they are capable, at the same time, of expanding and of closing the rays, like the opening and shutting of a fan, according as their action is required to be effective, or the contrary. All these auxiliary instruments are chiefly serviceable in modifying the direction, and adjusting the variations of force derived from the impulse of the tail. They are employed, also, in suddenly checking or stopping the motion, and giving it a more rapid acceleration. But still the tail is the most powerful of the instruments for progression, being at once a vigorous oar, an accurate rudder, and a formidable weapon of offence.

Independently of these external instruments of progression, most fishes are provided with internal means of changing their situation in the water. The structure by which this effect is accomplished is one of the most remarkable instances that is met with of an express contrivance for a specific purpose, and of the employment of an agency of a class different from that of the mechanical powers usually resorted to for effecting the same object. We have seen that if the body of a fish were heavier than an equal bulk of water, and if no muscular exertions were made, it must necessarily descend in that fluid. If, on the contrary, it were specifically lighter, it would as necessarily rise to the surface. Were the animal to acquire the power of altering, at pleasure, its specific gravity, it would then possess the means of rising