

specific gravity produced; followed, of course, by a quick descent. When, by any accident, the air bladder has been opened, or has burst, so that all the air has escaped, the fish is seen to grovel at the bottom, lying on its back, and can never afterwards rise to the surface. On the other hand, it occasionally happens that a fish which has remained too long at the surface of the sea, exposed to the scorching rays of a tropical sun, suddenly finds itself retained against its will at the surface, because the bladder has become over distended by the heat, and resists all the efforts which the animal can make to compress it. It thus continues floating, until the coolness of the night has again condensed the air in the bladder to its former bulk, and restored the power of descending.

Some tribes of fish are totally unprovided with an air-bladder. This is the case with the flounder, the sole, and other genera of a flat shape, forming the family of *Pleuronectes*. They are chiefly inhabitants of sand-banks, or other situations where they are comparatively stationary, seldom moving to a distance, or rising much in the water; and when they do so, it is with manifest effort, for their ascent must be accomplished entirely by the continued beating and flapping of the water with their expanded pectoral fins. It is only the larger fish of this form, such as rays, which have very voluminous and powerful pectoral fins for striking the water downwards with considerable force, that can rise with facility without the assistance of an air-bladder. In these, the lateral fins, which are enormous expansions of the pectoral fins, may be compared to wings, their vertical action on the water being similar in effect to the corresponding movements of a bird, when it rises vertically in the air. Those fishes which swim rapidly, and frequently ascend and descend in the water, are, in general, provided with the largest air-bladders.

In studying the varieties presented by the forms of the fins in different tribes of fishes, we find the same constant relation preserved with the particular situations and circumstances in which they are placed. The dorsal fins, which