so that the point of a needle will readily penetrate them without breaking. The bones, especially the vertebræ, appear to be most loosely connected with one another, and it requires the most careful handling to prevent the breaking of the connective ligaments. The muscles, especially the great lateral muscles of the trunk and tail, are thin, the fascicles being readily separated from one another or torn, the connective tissue being extremely loose, feeble, or apparently absent. Some of the deep-sea fishes being most rapacious creatures, must be able to execute rapid and powerful movements in catching and overpowering their prey; and for that object their muscular system, thin as its layers may be, must be as firm, and the chain of the segments of their vertebral column as firmly linked together as in surface fishes. Therefore, it is evident that the change which the body of these fishes has undergone on their withdrawal from the pressure under which they live is a much aggravated form of the affection experienced by persons reaching great altitudes in their ascent of a mountain or in a balloon.

In fishes inhabiting depths of 1000 fathoms or more, the whole muciferous system is dilated, and it is especially the surface of the skull which is occupied by large cavities, while the whole body seems to be covered with a layer of mucus. The physiological use of this secretion is unknown; it has been observed to have phosphorescent properties in perfectly fresh specimens.

The organ of sight is the first to be affected by a sojourn in deep water. In the greatest depths blind fishes occur with rudimentary eyes and without special organs of touch. A very remarkable modification of the eye is found in *Ipnops murrayi* (see p. 239). Whenever a fish has long delicate filaments, developed in connection with the fins or the extremity of the tail, it may be concluded that it is an inhabitant of still water and of quiet habits. Many deep-sea fishes are provided with such filamentous prolongations, the development of which is perfectly in accordance with their sojourn in the absolutely quiet waters of abyssal depths (see *Bathypterois longipes*, p. 217).

Many fishes of the deep sea are provided with more or less numerous, round, shining mother-of-pearl-coloured bodies imbedded in the skin. These so-called phosphorescent or luminous organs are either larger bodies of an oval or irregularly elliptical shape placed on the head, in the vicinity of the eye, or smaller round globular bodies arranged symmetrically in series along the side of the body and tail, especially near the abdominal profile, less frequently along the back (see *Echiostoma micripnus*, p. 412). These organs are all supposed to be producers of light, and they have been observed to be phosphorescent in two species of Sternoptychidæ.

Some of the raptatorial deep-sea fishes have a stomach so distensible and capacious that it can receive a fish of twice or thrice the bulk of the destroyer, as for example *Chiasmodus niger*. Deglutition is performed in them not by means of the muscles of the pharnyx, as in other fishes, but by the independent and alternate action of the jaws.

Before the voyage of H.M.S. Challenger, scarcely thirty deep-sea fishes were known;