

Lowe as well as Johnson deposited their treasures in the British Museum, and from these materials chiefly I formed the idea of a special adaptation of the ichthyic type to bathybial life. The comparison of fishes so widely different as *Plagyodus* (*Alepidosaurus*), *Regalecus*, *Trachypterus*, *Stylophorus*, *Saccopharynx*, *Chiasmodus*, *Melanocetus*, showed nevertheless a singular agreement in important points of organisation, and even in the circumstances under which their capture took place. And having recognised that the diminished amount of earthy matter in the osseous system, the extreme thinness of the muscular layers of the trunk and tail, the easily ruptured connective ligaments and tissues of the muscles and bones, the increase in size or degradation of the organ of sight, the distensibility of the stomach, the shrinking of the gills, the development of the muciferous system with or without special organs of luminosity, the black coloration of the pharynx and peritoneum, were peculiarities which, either singly or combined, either by themselves or in connection with other evidence, indicated the bathybial nature of the fish, I relegated to the deep-sea fauna *Plagyodus* in 1860, the Trachypteridæ and Lophotidæ in 1861, *Halargyreus* and *Saccopharynx* in 1862, *Melamphaës*, *Melanocetus*, *Chiasmodus*, a part of the Sternoptychidæ, Scopelidæ and Stomiatidæ in 1864, the Halosauridæ in 1866, *Pseudophycis* in 1867, and *Synaphobranchus* in 1870.<sup>1</sup>

I had no definite information at the time with regard to the depth at which these types habitually live, but I thought it probable that some of them descend to much greater depths than were recorded hitherto, and that the degree of adaptation to a bathybial life increased with the depth reached by the fish; in fact, that the successive vertical zones of the deep sea were inhabited by fishes of a different and peculiar organisation. This last surmise has not been verified by the facts obtained during the Challenger and subsequent expeditions. But I ascertained, at a time previous to the British Deep-Sea expeditions,<sup>2</sup> that deep-sea fishes must have a wide horizontal range, and that consequently the physical conditions of the depths of the ocean must be the same or nearly the same over the whole globe,—a fact already recognised by Risso, though his observations were limited to the district of the Gulf of Genoa (*vide supra*, p. xix.).

The materials brought home by the Challenger laid a broad and sure foundation of our knowledge of the abyssal fish-fauna, and the preliminary notices of the new and remarkable forms which were published in the years 1877 and 1878<sup>3</sup> could not fail to draw the attention of the succeeding explorers of the deep sea to this class of animals.

1. Of the three Norwegian North Atlantic expeditions undertaken in the years 1876, 1877, and 1878, the last furnished much information as regards the deep-sea

<sup>1</sup> See Cat. Fish., under the headings of the genera enumerated; *Proc. Zool. Soc. Lond.*, 1864, p. 301 (*Melanocetus*); *Proc. Zool. Soc. Lond.*, 1866, p. 336 (*Ausonia*).

<sup>2</sup> Cat. Fish., vol. v. p. 420, 1864.

<sup>3</sup> *Ann. and Mag. Nat. Hist.*, 1877, vol. xx., and 1878, vol. ii.