

developed. If the plevic fins in fishes really represent the legs and feet of higher animals, while the pectoral fins are homologous with the arms and hands, the change of function described is of great interest, for the hind limbs in this case have not only lost their principal locomotor purpose, but have assumed the complicated functions of the fore-limbs. Mr. H. Charles Williamson, an able expert officer of the Scottish Fishery Board, published in 1893 a thorough research upon the free fin rays of the gurnard's pectoral fin, and described in detail the bones, myology, and nerve supply in the finger-like rods of the breast fins in that fish,\* illustrated with nearly a hundred figures, and his conclusion is that, in view of their abundant sensory nerve supply, and the remarkable structure of their tips, and apart from any mechanical uses they may have, the free rays of the gurnard's fins are primarily extremely sensitive organs of touch. Mr. Williamson points out that it is generally agreed that the fin-rays in these cases are sensitive, "but one zoologist, Deslongchamps, has maintained that they also have a mechanical action. He had the opportunity of watching some gurnards, which were confined by means of a net in shallow water. He states that he observed the gurnards marching about on the fin rays, and also stirring up sand by means of these structures. Bloch, according to Tiedmann, suggested that the free rays may be lures to attract prey." The use of such rays as lures, or for digging or other mechanical purposes is questionable, when we find it proved that they are extremely sensitive. In the case of the Goose-fish (*Lophius*), which uses its breast fins as legs, or the still more remarkable Jumping Goby of Ceylon and Fiji we have a change of function scarcely inferior in interest. Moseley describes the latter extraordinary fish as follows:—"Hopping about on the mud, beneath the mangroves on the (Fiji) shore was the *Periophthalmus*, at which I had often been astonished in Ceylon. This little fish skips along the surface of the water, by a series of jumps, of the distance of as much

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\* 11th Ann. Rep. Scottish Fishery Board, pp. 322-332.