

(see Plate IV., fig. 1,) may be regarded as illustrative of the general type. It was one of the first discovered of the Caithness fishes, and received its name in the days of Cuvier, from the osseous character of its scales, ere it was ascertained that it had numerous contemporaries, and that to all and each of these the same description applied. The scales of the fishes of the Lower Old Red Sandstone, like the plates and detached prickles of the purely cartilaginous fishes, were composed of a bony, not of a horny, substance, and were all coated externally with enamel. The circumstance is one of interest.

Agassiz, in his system of classification, has divided fishes into four orders, according to the form of their scales; and his principle of division, though apparently arbitrary and trivial, is yet found to separate the class into great natural families, distinguished from one another by other and very striking peculiarities. One kind of scale, for instance, the placoid or broad-plated scale, is found to characterize all the cartilaginous fishes of Cuvier except the sturgeon;—it is the characteristic of an otherwise well-marked series, whose families are furnished with skeletons composed of mere animal matter, and whose gills open to the water by spiracles. The fish of another order are covered by ctenoid or comb-shaped scales, the posterior margin of each scale being toothed somewhat like the edge of a saw or comb; and the order, thus distinguished, is found wonderfully to agree with an order formed previously on another principle of classification, the Acanthopterygii, or thorny-finned order of Cuvier, excluding only the smooth-scaled families of this previously formed division, and including, in addition to it, the flat fish. A third order, the Cycloidean, is marked by simple marginated scales, like those of the cod, haddock, whiting, herring, salmon, &c.; and this order is found to embrace chiefly the