

A Supernumerary Pelvic Fin in the Powan (*Coregonus clupeioides* Lacépède)

AN abnormal pelvic structure in the form of an additional median fin (Fig. 1) was first observed in the powan during field studies on the population of this species of whitefish in Loch Lomond in 1951. Between 1951 and 1953 eighteen fish, representing 1.5 per cent of the total number examined, were found to have this abnormality; its occurrence is independent of sex of the fish or of their regional location in the lake. All these fish were two or more years old, but one specimen reared in the laboratory showed that the structure first appears at the age of about six months.

The additional fin occupied the same position in all specimens, lying in a median vertical plane with its base set symmetrically between and slightly in front of the bases of the paired pelvic fins. Externally, it projected from the ventral surface to an extent which varied widely without relation to size of fish. In its smallest form it appeared as a mere knob 2 mm. in length, in better developed forms as a translucent and rigid spike or blade and in the most highly developed example it was three-quarters of the length of the pelvic fin, flexible and with dark pigmentation towards the free edge.

The skeletal features of the abnormal specimens were examined initially by radiography and some visually after staining with alizarin red for bone or victoria blue for cartilage and clearing. The skeleton of a well-developed additional fin consisted of a pair of small anterior bones, presumably the elements of a fin ray, behind which there were nine separate rays, long and halved, with their bases enlarged. The stems of the rays were jointed and branched distally into tapering filaments as in normal lepidotrichia. The ray bases were hinged to an elongate structure of bone and cartilage consisting of an anterior and a posterior element closely apposed. The anterior and larger element possessed lateral cartilages with which the inner surfaces of the half-rays articulated, and the hind end of the posterior element lay just in front, and quite independent of, the median symphysis of the broad posterior part of the normal pelvic bones. As there were no other bones in the abnormal structure, these two elements may correspond to radial bones. They had a shallow seating on the median ventral tendon connecting the protractor and retractor ischial muscles to the pelvic arch but appeared to have no connexion with this tendon, being held in position by connective tissue only. No

muscles appeared to be associated with the abnormal fin, and the muscles serving the paired pelvic fins were similar to those in normal powan.

The average complement of rays and their pattern was the same in the paired fins of normal fish and those with the additional median fin. This fin therefore does not appear to have been derived from elements of the pelvics or to be connected in any way with them. It may be regarded as a true supernumerary fin the origin of which is uncertain. A more detailed description of its structure will be given elsewhere.

The occurrence of an additional fin in the pelvic region is now known to be present in two other members of the genus *Coregonus*. It has been reported (M. Dottrens, personal communication, 1953) to exist in approximately one per cent of the population of whitefish in Lac de Thoune, Switzerland, in a variety of *Coregonus wartmanni* known as the albeck. In 1953 a similar abnormality was discovered in one of sixty specimens of the schelly (*Coregonus clupeioides stigmaticus*) from Ullswater in the English Lake District (G. J. Thompson, personal communication, 1953). The powan and schelly belong to the same British species and *C. wartmanni* is generally considered to be their closest relation among the numerous coregonid fishes in the continent of Europe. Since this abnormality has appeared in three isolated populations, further study may reveal whether it is attributable to a mutant genetic factor in this particular group of coregonids or in the genus as a whole. If it is restricted to the former, then it may provide a clue to their distribution in the Old World.

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A Curious Ecological 'Niche' among the Fishes of Lake Tanganyika

PREVIOUS studies on certain Tanganyika Cichlids¹ have shown that, in species of the genus *Plecodus*, the stomach content is often composed of fish scales. It was not known if this was an indication of a very peculiar diet, and whether these scales had been taken from live or dead fish.

By collecting live and dead specimens of *Plecodus straeleni* Poll, *Plecodus paradoxus* Boulenger and a dead specimen of a *Pl. elaviae*, we are in a position to answer these questions. In one dead specimen of *Pl. straeleni* we have found the stomach full of ctenoid scales and in another one, of *Pl. paradoxus*, the stomach was full of Cichlid and Cyprinid scales, and did not contain any other food. In an aquarium we have been able to observe two *Pl. straeleni* feeding on the scales of a new species of *Lamprologus*, on those of *Lamprologus compressiceps* and of *Callochromis macrops*, all of which are bigger than the *Plecodus*.

It seems very difficult to feed *Pl. paradoxus* on earthworms, fish powder or insects. As for *Pl. straeleni*, we have been unable to feed them on any-

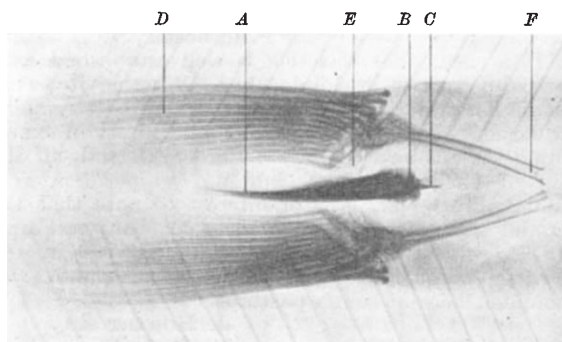


Fig. 1. X-ray positive of supernumerary fin, ventral view. A, Flexible rays; and B, their massive bases; C, bony projection of anterior element of supporting structure; D, normal pelvic fin (right); E, broad post-mesial part of pelvic bone (right); and F, its elongate anterior end