

# ANNALS OF NATURAL HISTORY.

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XVI.—*Observations on the Coregoni of Loch-Lomond.* By  
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(With a Plate.)

IN Loch-Lomond, one of the largest and most picturesque lakes in the west of Scotland, are found two species of *Coregonus*, one of which I believe to be an undescribed British species, and the other, which was first noticed by Lacépède under the name of “*Coregone Clupeoïde*,” has been confounded by British naturalists with the *Coregonus Lavaretus* or Ulswater Gwiniad. Pennant, in his third volume of British Zoology, considers the *Coregonus* of Loch-Lomond to be the same as the Vendace of Lochmaben, the Gwiniad of Ulswater, and the Pollan of Loch Neagh in Ireland. Dr. Fleming in his work on British Animals entertains the same opinion. Sir William Jardine, Bart. in the third volume of the Edinburgh Journal of Natural and Geographical Science has given an interesting account of the Vendace of Lochmaben, and has clearly shown it to be a distinct species from the other British *Coregoni*. Mr. Thompson of Belfast has satisfactorily proved the Pollan of Loch-Neagh to be also a distinct species, and has minutely pointed out the characters in the first volume of the Zoological and Botanical Magazine; nor should I be surprised still to find additional species were attention directed to the Gwiniads of Cumberland, since the whole of the *Coregoni* are so closely allied. From Lacépède’s short and imperfect description of the *Coregone Clupeoïde*, and as two species are found inhabiting the same locality, it is impossible to state with certainty to which he alludes; therefore to prevent the confusion which otherwise might arise from synonyms, I propose for the one species the name of *Coregonus Lacepedei*, and for the other *Coregonus microcephalus*.

THE LONG-NOSED POWAN, *Coregonus Lacepedei*, Parnell.

DESCRIPTION: from a specimen of fourteen inches in length. Head long and narrow, of an oval form, about one fifth the length of the whole fish, caudal fin included; depth of the body between the dorsal and ventral fins less than the length of the head. Colour of the back and sides dusky blue, with the margin of each scale well defined by a number of minute dark specks; belly dirty white; the lower portion of the dorsal, caudal, pectoral, ventral, and anal fins dark bluish grey; irides silvery; pupils blue. First ray of the dorsal fin commencing half-way between the point of the snout and the base of the short lateral caudal rays; the first ray simple\*, the rest branched; the second and third the longest, equalling the length of the pectorals; the seventh as long as the base of the fin; the last one third the length of the fourth; adipose fin large and thin, situate midway between the base of the fourth dorsal ray and the tip of the long ray of the caudal fin; anal fin commencing half-way between the origin of the ventrals and the base of the middle caudal ray; the first ray simple, the rest branched; the second rather the longest; the third as long as the base of the fin; the last half the length of the fifth; ventrals commencing under the middle of the dorsal; the third ray the longest, equalling the length of the same ray of the dorsal; pectorals long and pointed, one sixth the length of the whole fish, caudal fin included; the first ray simple; the second and third the longest, the last short, not one fourth the length of the first; tail deeply forked, with the upper portion of the long rays curving slightly inwards, giving the fin a peculiar form. Gill-cover produced behind; the basal line of union between the operculum and sub-operculum oblique; the free margin of the latter slightly rounded; pre-operculum angular; snout prominent, somewhat of a conical form, extending beyond the upper lip; jaws of unequal length, the lower one the shortest. The maxillary bone broad, the free extremity extending back to beneath the anterior margin of the orbit. Teeth in the upper jaw long and slender, about

\* The first three short simple rays of the dorsal fin, and the short lateral rays of the caudal, are not here taken into consideration, as when recent they are liable, from their size, to be overlooked.

six in number ; those on the tongue shorter and more numerous. Eyes large, extending below the middle of the cheeks ; lateral line commencing at the upper part of the operculum, and running down the middle of the sides to the base of the middle caudal ray. Scales large and deciduous, eighty-four in the lateral line, eight between the dorsal fin and lateral line, and the same number between the lateral line and the base of the ventrals. Number of fin rays,

D. 12 ; P. 16 ; V. 12 ; A. 11 ; C. 20. Cæca 120.

This fish occasionally grows the length of sixteen inches, and is distinguished by the great length of the head compared to that of the body ; the snout extending beyond the upper lip ; the under jaw the shortest ; the length of the pectoral and dorsal fins ; the large scales ; the number of rays in the anal fin, the peculiar shape of the caudal, and the position of the dorsal fins. It agrees in figure with the *Salmo Wartmanni* of Bloch, but not in description. In the stomach of one of the specimens I examined were found several species of entomostrea, larva of insects, a few coleoptera, a number of small tough red worms little more than half an inch in length, and about the thickness of a coarse thread, besides a quantity of gravel which the fish had probably accumulated when in search of the larva.

THE SHORT-HEADED POWAN, *Coregonus microcephalus*, Parn.

DESCRIPTION : from a specimen thirteen inches in length. Head short, of a triangular form, one sixth the length of the whole fish, caudal fin included ; depth of the body between the dorsal and ventral fins considerably more than the length of the head. Colour of the back and sides dusky blue, with the margin of each scale well defined by a number of minute dark specks ; belly dirty white ; the lower portion of the dorsal, caudal, pectoral, ventral, and anal fins dark bluish grey ; irides silvery ; pupils blue. First ray of the dorsal fin commencing half-way between the point of the snout and the adipose fin ; the first ray simple, the rest branched, the second and third the longest, more than equalling the length of the pectorals ; the sixth as long as the base of the fin, the last one third the length of the fourth ; adipose fin large and thin, situated midway be-

tween the base of the eighth dorsal ray and tip of the long ray of the caudal fin ; anal fin commencing half-way between the origin of the ventrals and the base of the middle caudal ray ; the first ray simple, the rest branched ; the second rather the longest ; the third as long as the base of the fin ; the last half the length of the fifth ; ventrals commencing under the middle of the dorsal, the second ray the longest, equalling the length of the fourth ray of the dorsal ; pectorals short and pointed, one seventh the length of the whole fish, caudal fin included ; the first ray simple, the second and third the longest ; the last short, about one third the length of the first ; tail deeply forked with the long rays curving slightly inwards. Gill cover very slightly produced behind ; the basal line of union between the operculum and sub-operculum very oblique, the free margin of the latter rounded ; pre-operculum angular. Snout truncated, not projecting beyond the upper lip ; under jaw rather the shortest ; maxillary broad, extending back to beneath the anterior margin of the orbit. Teeth in the upper jaw long and slender, about six in number ; those on the tongue shorter and more numerous. Eyes large, reaching below the middle of the cheeks ; lateral line commencing at the upper part of the operculum, and running down the middle to the base of the centre caudal ray. Scales large and deciduous, eighty-four in the lateral line, eight between the dorsal fin and lateral line, and the same number between the lateral line and the base of the ventral. Number of fin rays,

D. 12 ; P. 16 ; V. 12 ; A. 11 ; C. 20. Cæca 116.

Stomach filled with entomostracous animals, presenting in the mass a granular appearance, and a reddish brown colour.

This fish differs from *C. Lacepedei* in the shortness of the head and pectoral fins, and in the snout not projecting beyond the upper lip, as well as in other respects, as will be best seen by comparing the descriptions and accompanying figures. It is at once removed from *C. Willoughbigii* of Jardine, the Lochmaben Coregonus, and *C. Pollan* of Thompson from Loch Neagh, by the under jaw being the shortest. On comparing it with *C. Lavaretus* of Jenyns, it is a much deeper fish ; the head and pectorals are much shorter, the upper jaw rather the



longest, and furnished with distinct teeth; anal fin with fewer rays: it besides grows to a larger size. The descriptions of continental authors are not sufficiently minutè to identify this species.

These fish are found in Loch-Lomond in great numbers, where they are named *Powans* or *Freshwater Herrings*. They are caught from the month of March until September with large drag nets, and occasional instances have occurred in which a few have been taken with a small artificial fly; a minnow or bait they have never been known to touch. Early in the morning and late in the evening large shoals of them are observed approaching the shores in search of food, and rippling the surface of the water with their fins as they proceed. In this respect they resemble in their habits those of the Loch-maben Vendace and the common saltwater herring. They are never seen under any circumstances during the middle of the day. From the estimation these fish are held in by the neighbouring inhabitants, they are seldom sent far before they meet with a ready sale, and are entirely unknown in the markets of Glasgow. In the months of August and September they are in best condition for the table, when they are considered well-flavoured, wholesome, and delicate food. They shed their spawn in October and December, and remain out of condition until March\*.

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XVII.—*An account of a Journey to, and a Residence of nearly Six Months in, the Organ Mountains, with Remarks on their Vegetation.* By Mr. GEORGE GARDNER.

(Communicated by the Author to Sir W. J. Hooker.)

HAVING packed up all the collections which I made in the neighbourhood of Rio de Janeiro, and left them in the city to be forwarded in the first ship for London, I started on the morning of the 25th of December for the Organ Mountains. The peaks which receive this appellation are part of a mountain range stretching from beyond Bahia in the north to Bue-

\* Communicated to the Royal Society of Edinburgh, when specimens of all the *British Coregoni* were at the same time exhibited.