1. Microstoma, Cuv. Body elongate, cylindrical, covered with large thin silvery scales. Cleft of mouth very small; premaxilla very small; maxillae very short and broad. Eye very large. Narrow series of very small teeth in the lower jaw and across the head of the vomer ; no other teeth. Dorsal fin short, inserted behind the ventrals, but before the anal; adipose fin present in most young specimens, frequently absent in old ones. Pseudobranchiae well developed; air-bladder large. Pyloric appendages absent ; mucous membrane of stomach with numerous large papillae. The genus is allied to *Argentina.*
2. Bathylagus, a genus of deep sea Salmonoids discovered by the “Challenger” in the Atlantic and Antarctic Oceans at depths of 1950 and 2040 fathoms.

*Species.*

1. Genus Salmo. The difficulty of defining and distinguishing the species of this genus is considerable, and much diversity of opinion on the subject exists among ichthyologists. Many of the species are extremely variable, so that some individuals of one resemble the more aberrant individuals of another; the species are seldom separated by conspicuous differences. The individuals of a given species vary considerably with age and sex, and also with habitat and external conditions. Many of the species are capable of breeding together and producing fertile offspring. The characters which are most constant, and on whose differences the distinction of species chiefly rests, are as follows :—(1) the form of the præoperculum (the horizontal breadth of this bone at its lower portion is always small in the young, but in the adult it is greater in some species than in others; (2) width and strength of maxillary in adult); (3) size of teeth; (4) arrangement and permanence of vomerine teeth ; (5) form of caudal fin; (6) pectoral fins; (7) size of scales; (8) number of vertebra ; (9) number of pyloric appendages.

In all the species of *Salmo* there are teeth in the vomer. In the Salmons proper and in the Trouts there are, in the young, teeth both on the head and body of that bone, but in some species on the body only; some of the teeth on the body are deciduous, and are in most of the species shed at an early age. In the Charrs there are teeth on the head of the vomer but none on the body of the bone at any period of life, and none of the vomerine teeth are deciduous. The species of true Trout are confined to fresh water, and are not migratory. In accordance with these peculiarities some zoologists have divided the genus *Salmo* into three subgenera,—*Salmo* sensu restricto, *Fario,* and *Salvelinus.* But modern authorities retain only two subdivisions,—the subgenera *Salmo,* including migratory Salmon and non-migratory Trout, and *Salvelinus,* the Charrs.

A. Subgenus Salmo.—A vast number of species of *Salmo* have been described ; in the *Brit. Mus. Cat.* Dr Gunther distinguishes fifty-two, of which seven are confined to the British Islands and four are found both in the British Islands and other parts of the world. Mr Day on the other hand considers that all the indi­genous Salmon and Trout of the British Islands belong to two species, *Salmo salar* and *Salmo trutta,—Salmo levenensis* and *Salmo fario* being varieties of the latter ; the rest of the described British species he considers as local varieties or subvarieties of these.

1. *Salmo salar,* L. (the Salmon). B. 11-12 ; D. 14 ; A. 11 ; P. 14; V. 9; L. lat. 120; L. transverse 22-26/19-22; Vert. 59-60; Caec. pyl. 53-77. @@1 Attains to a length of 4 to 5 feet; female mature at a length of about 15 inches. Praoperculum with a distinct lower limb and with the angle rounded. Head of vomer subpentagonal, as long as broad, toothless ; the body of the bone with single series of small teeth which are gradually lost from behind forwards so that older examples only have from one to four left Hind part of body elongate and covered with relatively large scales. Young with about eleven dusky transverse bars on the sides ; half-grown and old specimens silvery, with small black spots in small number ; spawning males with numerous large black and red spots, some of the red spots confluent into more or less extensive patches, especi­ally on the belly. An anadromous species, inhabiting temperate Europe southwards to 43° N. lat.; not found in Mediterranean ; in Asia and America southwards to 41° N. lat.

No varieties of *Salmo salar* are recognized in Europe, but in North America there occurs one Salmonoid which is considered by different authorities either as a variety or a sub-species, viz., *Salmo salar,* var. *sebago,* L. lat. 115. Body and dorsal and caudal fins with subquadrangular or subcircular black spots. Is non-migratory and occurs in some of the lakes of Maine and New York in the United States ; these lakes have no communication with the sea. This form is called variously the Landlocked Salmon or the Schoodic Salmon.

The true *Salmo salar* on the American shore of the Atlantic is sometimes called the Penobscot Salmon.

1. *Salmo trutta,* Fleming; *Salmo eriox,* Parnell *(Fishes of Firth of Forth)* (Sea-Trout, Salmon-Trout, Bull-Trout). B. 11 ; D. 13 ;
2. 11; P. 15 ; V. 9 ; L. lat. 120 ; L. transverse ; Vert. 59- 60; Cæc. pyl. 49-61. Attains to a length of about 3 feet; female mature at a length of 10 to 12 inches. Head of vomer triangular, as broad as long, toothless, body of the bone with a longitudinal ridge armed with a single series of teeth, which are deciduous ; generally only the two or three anterior ones found in examples of more than 20 inches in length. Silvery, sometimes immaculate, usually with more or less numerous X-shaped spots; spots on the head and dorsal fin round and readily disappearing. Young (parr) with nine or ten dusky cross bars ; grilse with top of dorsal and pectoral and with hind margin of caudal black. A migratory species, occurring in the rivers falling into the Baltic and German Ocean; numerous in Scotland, less frequent in English and Irish rivers.
3. *Salmo cambricus,* Donov. (*Brit. Fishes)* (the Sewen of Couch, Salmon Peal). B. 10-11; D. 14; A. 11-12; P. 16; V. 9; L. lat. 120-125; L. transverse 27/28-40; Vert. 59; Caec. pyl. 39-47. Attain­ing to a length of 3 feet; female mature at a length of from 12 to 13 inches. Praoperculum with a distinct lower limb, with the angle rounded and with the hind margin convex or undulated, subvertical. Head of vomer triangular, broader than long, toothless in adult examples, armed with a few teeth across its hinder margin in young ones ; body of the bone with a sharp longitudinal ridge, in the sides of which the teeth are inserted, forming a single series, and alternately pointing to right and left. In pure-bred specimens these teeth are lost in the grilse state, so that only the two or three anterior remain in specimens more than 12 or 13 inches long. Fins of moderate length; caudal fin forked in parr stage, slightly emarginate in grilse, truncate in mature specimens. This species loses the parr marks very early, when only 5 to 6 inches long ; it is then bright silvery. Greenish on the back, with few small round black spots on the head and sides. This coloration remains nearly unaltered during the further growth of the fish, but the spots become more irregular, indistinctly X-shaped. An anadromous species, occurring in rivers of Norway, Denmark, Wales, and Ireland. Mr Day *{Fishes of Great Britain)* considers this form as merely a variety of *Salmo trutta.*
4. *Salmo fario,* L. (Trout). Dr Günther distinguishes two varieties :—

(a) *Salmo fario gaimardi; Salmo gaimardi,* Cuv. and Val.; *Salmo trutta,* Gaimard (*Voy. Isl. and Groenl.,* Atl. Poiss., pl. 15, fig. A). D. 13-14 ; A. 11-12 ; P. 14 ; V. 9 ; L. lat. 120 ; L. transverse ; Caec. pyl. 33-46; Vert. 59-60. Largest specimen observed, 15 inches; female mature at a length of 7 or 8 inches. Head of vomer triangular, small, broader than long ; vomerine teeth in a double series sometimes disposed in a zigzag line, persistent throughout life. Sides with numerous round or X-shaped black spots ; upper surface and sides of the head and the dorsal, adipose, and caudal fins usually with crowded round black spots ; dorsal, anal, and ventral with a black and white outer edge. Found in Iceland, North Britain, Ireland, Scandinavia.

*(b) Salmo fario ausonii ; Salmo ausonii,* Cuv. and Val. (the common River-Trout). Formula as in a, but Vert. 57-58. Attains to a length of 30 inches ; female mature at a length of 8 inches. A non-migratory species, inhabiting numerous fresh waters of Central Europe, Sweden, and England, and rivers of the Maritime Alps.

The following forms are peculiar to the British Islands :—

1. *Salmo levenensis,* Walker (*Werm. Mem.,* i. p. 541) (Loch Leven Trout). D. 13; A. 11; P. 14; V. 9; L. lat. 118; L. trans­verse ; Caec. pyl. 68-80; Vert. 59. Maximum length 21 inches. Teeth moderately strong ; the head of the vomer triangular with a transverse series of two or three teeth across its base ; the teeth of the body of the vomer form a single series and are persistent throughout life. Upper parts brownish or greenish olive ; sides of the head with round black spots ; sides of the body with X-shaped, sometimes rounded, brown spots. Dorsal and adipose fins with numerous small brown spots. A non-migratory species, inhabiting Loch Leven and other lakes of southern Scotland and northern England. This species is considered by Mr Day as a variety of *S. trutta.*
2. *S. brachypoma,* Günther ; *S. eriox,* Parnell *{Fish. Firth of Forth).* D. 13 ; A. 10-11; P. 14 ; V. 9 ; L. lat. 118-128 ; L. trans­verse 27/30 ; Caec. pyl. 45-47 ; Vert. 59. Praoperculum with scarcely a trace of lower limb. Teeth rather strong; those of the vomer in double series, but in zigzag line. Most of them are lost in specimens 17 inches long, only a few of the anterior remaining. Sides of the body with X-shaped or ocellated black spots, some red spots along and below’ the lateral line ; dorsal fin with round black spots. Dorsal, anal, and ventral fins with a white and black outer margin in young examples. A migratory species, from the rivers Forth, Tweed, and Ouse. According to Mr Day, it is identical with the White Salmon of Pennant and *Salmo albus* of Cuv. and Val.,

@@@1 In the formula usually preceding the diagnosis or description of a species of fish, B = number of branchiostegal rays; D = number of rays in dorsal fin ; P = ditto in pectoral fin; A = ditto in anal fin; V = ditto in ventral fin; L. lat.= number of scales along the lateral line ; L. transverse=number of scales in the oblique transverse row of the widest part of the body, the numbers above and below the line in the fraction being those of the scales above and below the lateral line respectively.