

154.0.5-

GENERAL ZOOLOGY

or

SYSTEMATIC NATURAL HISTORY

by

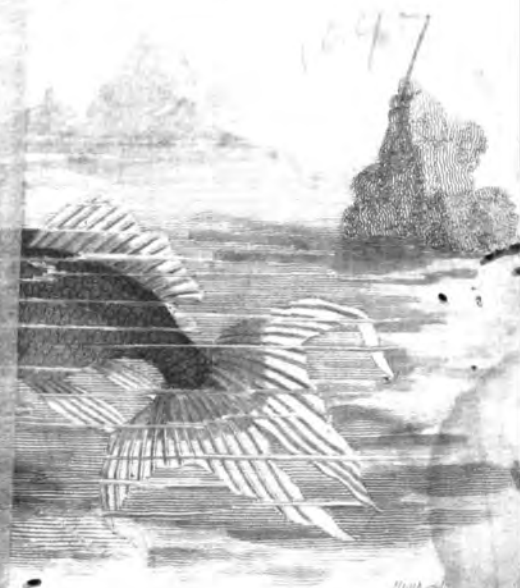
GEORGE SHAW, M.D. F.R.S. &c.

WITH PLATES

from the first Authorities and most select specimens

Engraved principally by

M^r HEATH.



Vol. V. Part 1.

P L A T E S .

Printed for G. Kearney Fleet Street

1804.

154 D.S



184.D.5.

GENERAL ZOOLOGY.

VOLUME V.—PART I.

PISCES.

LONDON.

PRINTED FOR GEORGE KEARSLEY, FLEET-STREET;
BY THOMAS DAVISON, WHITE-FRIARS.

1804.

XIII f. 14

CONTENTS

OF

VOL. V.—PART I.

	Page		Page
<i>LAMIA</i> GENUS	9	Atherine, Jamaica	131
Andis, Carolinian	9	——— Sihama	132
<i>ACANTHONOTUS</i> GENUS 93		——— Japanese	132
———, elongated 93		———, transparent	133
<i>ATARETES</i> GENUS	7	<i>CLUPEA</i> GENUS	159
———, four-eyed	7	<i>COBITIS</i> GENUS	1
<i>ARGENTINE</i> GENUS	127	<i>CYPRINUS</i> GENUS	179
Argentine, tooth-tongued 127		Carp, common	179
———, pearl-colored 128		——— large-scaled	193
———, Machin	129	——— Rondeletian	194
———, Carolina	129	——— Crusian	195
<i>AMERINIA</i> GENUS	131	——— Bream	196
Amerin, Mediterranean 131		——— Gibel	197
		——— Rud	197
		——— Roach	198
		——— Bordeliere	200

b

Carp, Sope . . .	201	Carp, Grayning . . .	234
— Pomeranian . . .	202	— Caspian . . .	235
— fringe-lipped . . .	203	— fin-back . . .	236
— cirrhated . . .	203	— thick-snouted . . .	236
— falcated . . .	204	— thin-headed . . .	237
— American . . .	204	— sucking . . .	237
— Biorka . . .	205	— Bleak . . .	238
— Faren . . .	205	— Galian . . .	239
— Grislagine . . .	206	— Herring . . .	240
— Bynni . . .	206	— Gudgeon . . .	241
— Bulatmai . . .	207	— Gronovian . . .	242
— Capoeta . . .	207	— Minow . . .	242
— tuberosus . . .	208	— Aphyia . . .	243
— conical . . .	208	— rivulet . . .	245
— lobe-tailed . . .	208	— white-bait . . .	246
— golden . . .	209		
— telescope . . .	211	ESOX GENUS . . .	100
— four-lobed . . .	212		
— Orf . . .	213	ELOPS GENUS . . .	125
— Tench . . .	217	— Saury . . .	125
— golden tench . . .	217		
— ferruginous . . .	218	EXOCOETUS GENUS . . .	141
— golden-black . . .	219		
— punctated . . .	220	FISTULARIA GENUS . . .	95
— Bitterling . . .	220	— slender . . .	95
— silken . . .	221	— Chinese . . .	97
— Barbel . . .	222	— paradoxical . . .	98
— Cyral . . .	224		
— razor . . .	225	Flying-Fish, Mediterranean . . .	141
— Chub . . .	227	— oceanic . . .	144
— round-tailed . . .	228	— American . . .	146
— Raphe . . .	229	— Commersonian . . .	146
— Ide . . .	230		
— Nase . . .	231	He . . . common . . .	159
— Serte . . .	232	— Pilchard . . .	164
— Dobule . . .	233		
— Dace . . .	234		

CONTENTS.

iii

Herring, Shad	165	LORICARIA GENUS	32
— Sprat	167	— ribbed	32
— Anchovy	168	— armed	33
— Malabar	170	— Soldier	34
— African	170	— speckled	35
— Chinese	171	— sturgeon	36
— Thrissa	172	— toothed	37
— Giant	173	— yellow	38
— silver-striped	174		
— bristle-jawed	174	MULLUS GENUS	134
— Dorab	175		
— tuberculated	175	Mullet common	134
— yellow-finned	176	— crenated	136
— banded	176	— American	137
— nasal	177	— Indian	137
— long-headed	177	— Tang	138
— tropical	178	— Plumier's	139
		— blue-spotted	139
Loche, common	1	— Chili	140
— great	3	— Forskal's	140
— spiny	4		
— heteroclit	5	Pike, common	100
— Japanese	6	— sea	104
		— Barracuda	105
MORMYRUS GENUS	247	— Fox	106
— Kannuma	248	— Malabar	107
— sharp-snouted	248	— West-Indian	108
— anguilliform	248	— silver-stripe	108
— Salaya	249	— silver	109
— Bebé	249	— naked-headed	109
— Hersé	249	— Brazilian	109
— cyprinoid	250	— spur-finned	110
— Bané	250	— Chinese	111
— Hasse	250	— gold-green	111
		— Becuna	112
		— Gar	112

Pike, Saury	114	Salmon, Leach	58
— bony-scaled	115	— Nebris	59
— Cepedian	117	— a. n. ischa	59
— Leverian	118	— Parana	59
— Chili	119	— Buche	59
— green	120	— red-bellied	59
— viper-mouthed	120	— Gunter	58
PLATYSTACUS GENUS	28	— Lake	62
— acetabulated	28	— Umble	63
— plain	29	— silvery	63
— warted	30	— Arctic	64
— eel-shaped	30	— Pool	65
POLYNEMUS GENUS	147	— rivulet	65
Polyneme, Paradise	147	— stream	65
— Seban	149	— Saury	60
— plebeian	150	— Tumb	67
— Nilotic	151	— Smelt	68
— ten-fingered	154	— Greenland	70
— Indian	155	— green toothed	71
— four-fingered	155	— gibbose	72
— Virginian	156	— marked	72
— Commerson's	156	— unspotted	73
— Plumier's	157	— cyprinoid	73
POLYPTERUS GENUS	122	— Nilotic	74
— Nilotic	122	— Egyptian	74
SALMO GENUS	39	— not-nosed	75
Salmon, common	39	— thornic	75
— Salmon-Trout	46	— large-scaled	76
— grey	47	— scaled	77
		— isolated	77
		— Virginian	78
		— single-spotted	79
		— black-streaked	79
		— white	80
		— silver	80
		— common	81
		— rainbow's	82

CONTENTS.

v

Salmon, Grayling	83	Silure, ascitic	18
— Carpio	85	— four-spotted	19
— Golden Gurnard	86	— red-finned	20
— Trout	87	— frog	20
— Mackerel	87	— fossil	21
— Mackerel	88	— vittated	22
— Pelec	89	— atherinoid	22
— Pidschan	89	— asote	23
— Mudschn	89	— mystic	23
— Schokur	90	— eel	23
— Muller's	90	— undecimal	24
— Vimba	91	— horned	24
— sharp-snouted	91	— feline	24
— bristled	91	— cat	25
— trout-like	92	— Coan	25
SILURE'S GENUS	10	— carinated	26
—	10	— Docmac	26
Silure, common	10	— Chilian	27
— military	12	— Bajad	27
— Bagre	12		
— Herzbergian	13	Trout, common	51
— unarm'd	14	— Whiting	54
— galeated	14	— Schieffermüller's	57
— knobbed	15	— Goedenian	58
— bicusculated	16	— Salvelin	59
— fasciated	16	— Salmarin	60
— electric	17	— Alpine	60
— Clarias	18	— Carp	61
		— Lepechin's	62

Directions for placing the Plates in vol. V. part I.

The Vignette represents a diminished view of the Four
Lobed Carp. See p. 212.

The plate following the Vignette represents the gradual
progress of the generality of fishes from the egg or spawn.
Fig. 1. 2. part of a water-plant with some ova adhering to
the leaves. Fig. 3. an egg magnified. Fig. 4. the appearance
of the eggs on the seventh day, the eyes of the incipient
embryo being visible in the form of two black specks.
5. 6. magnified views of the egg on the point of hatching.
Fig. 7. natural size of the young, the smallest figure shewing
it newly hatched, the next eight hours after, and the third of
three weeks' growth. Fig. 8. a young Bream of one day's
growth, viewed from above by a microscope. Fig. 9. profile
view of the same. Fig. 10. microscopic view of a young
Bream of four days' growth, shewing the heart, with the
aorta, cava, &c. &c. &c. Fig. 11. magnified view of the
incipient scales. Fig. 12. the heart and commencement of
the aorta by the microscope.

Plate 93 to face page	1	Plate 103 to face page	59
94 —————	7	104 —————	76
95 —————	10	105 —————	83
96 —————	12	106 —————	93
97 —————	18	107 —————	95
98 —————	28	108 —————	100
99 —————	30	109 —————	110
100 —————	33	110 —————	117
101 —————	38	111 —————	120
102 —————	39	112 —————	122



Fig. 1.

Directions for placing the Plates.

Plate 113 to face page 130

114 ————— 134

115 ————— 136

116 ————— 141

117 ————— 144

118 ————— 147

119 ————— 158

120 ————— 165

121 ————— 179

122 ————— 193

Plate 123 to face page 194

124 ————— 196

125 ————— 206

126 ————— 209

127 ————— 210

128 ————— 211

129 ————— 213

130 ————— 217

131 ————— 218

132 ————— 223

ERRATA.—VOL. V. PART I.

P. 89, in the description of the Mudschan Salmon, l. 4, dele *of the above fishes.*

P. 141, in the generic character of Exocoetus, after Head scaly, read *Jaws connected on each side.*

P. 206, in the description of the Bynni Carp, l. 9, dele *and.*

* * *The sixth and succeeding Volumes of this Work
will be published with all reasonable expedition.*

GREAT LOACH



STICKLE LOACH

Hand-drawn



COMMON LOACH

FISHES.

ORDER

ABDOMINALES.

COBITIS. LOCHE.

Generic Character.

<i>Os</i> (plerisque) cirrosum.	<i>Mouth</i> , in most species, bearded.
<i>Oculi</i> in suprema capitis parte.	<i>Eyes</i> situated in the upper part of the head.
<i>Corpus</i> fere æquale.	<i>Body</i> nearly of equal thickness from head to tail.
<i>Squamæ</i> parvæ.	<i>Scales</i> small, easily deciduous.
<i>Vesica natatoria</i> ossea.*	<i>Air-Bladder</i> hard or osseous.

COMMON LOCHE.

Cobitis Barbatula. *C. flavo-cinerea fusco variata, capite levi compresso, cirris sex.*

Yellow-grey Loche, with dusky variegations, smooth compressed head, and six beards.

Cobitis cirris sex, capite inermi compresso. *Lin. Syst. Nat.* p. 499. *Bloch. t. 31. f. 3.*

Bearded Loche. *Penn. Brit. Zool.* 3.

THE common Loche is found in many parts of Europe, as France, Germany, Italy, &c. &c. It is

* *Bloch.*

an inhabitant of clear rivulets, where it commonly resides at the bottom among gravel, &c. and is on that account called in some parts of England by the name of Groundling. It is well described by Mr. Pennant, who informs us that it sometimes, though rarely, arrives at the length of four inches and three quarters, though it is generally found much smaller, viz. about three inches in length: the mouth is small, placed beneath, and destitute of teeth: on the upper mandible are six small beards, viz. one at each corner of the mouth, and four at the end of the nose: the body is smooth, slippery, and almost of an uniform thickness throughout: the colour of the head, back, and sides is in some white, in others of a dirty yellow, very elegantly marked with large spots consisting of numberless minute black specks: the pectoral, dorsal, and caudal fins are also spotted: the belly and ventral fins are of a pure white: the tail broad, and a little rounded. Dr. Bloch informs us that this fish is covered with small scales; a particular which seems to have escaped the attention of the generality of describers: he also informs us that the Loche dies very soon after being taken out of the water, and even when it is placed for any length of time in still water; and as it is a fish which is supposed very soon to lose its fine flavour, it is usual to agitate from time to time the vessel of water in which it is carried to any distance in order to be dressed for the table. In point of delicacy it is said to be equal, if not superior, to most other fishes, and is cultivated with much care in some

part of Europe as an article of diet. It is supposed to live principally on aquatic insects, &c. In Germany it is observed to spawn in the month of March, and is a very prolific animal.

GREAT LOCHE.

C. fusco-flavescens, striis longitudinalibus nigricantibus, cirris octo, spina utrinque supraoculari.

Yellowish-brown Loches, with longitudinal blackish stripes, eight lateral, and a spine above each eye.

C. fusco-flavescens, cirris octo, spina supraoculari. *Lin. Syst. Nat.*

Block. c. 31. f. 1.

This species is the largest of the genus, and is a native of Germany and other midland parts of Europe, inhabiting large lakes and marshes. It attains at the length of eight, ten, or even sometimes fifteen inches, and is of a dull yellowish-brown colour, marked above by several longitudinal, deep-brown or blackish stripes from head to tail: the body is covered with very small and tender scales. This species conceals itself during the winter, and even at other times when the marshes it inhabits begin to grow dry, at some distance beneath the surface of the mud, out of which it is occasionally dug, and has in consequence been erroneously represented by some authors as capable of living in the ground in the manner of the slow-worm. On

This did not escape the observation of Shakespeare.

the approach of stormy weather it is observed to be unusually restless ; quitting the muddy bottom in which it generally resides, and swimming about, near the surface of the water. It has therefore been sometimes kept by way of a living barometer, since when placed in a vessel of water with some earth at the bottom, it never fails to predict the approach of a storm by rising from the bottom of the vessel, and swimming about in an unquiet manner near the surface. When kept for this purpose it should be provided with fresh water and earth two or three times a week in summer, and once a week, or once in ten days, in the winter : it must also be kept during frosty weather in a warm room. It is a prolific fish, and is remarkably tenacious of life.

SPINY LOCHE.

Cobitis Tænia. *C. griseo-flavescens, fusco maculata, cirris sex brevibus, spina utrinque suboculari.*

Yellow-grey Loche, with dusky spots, six short beards, and a spine beneath each eye.

Cobitis Tænia. *C. cirris sex, spina suboculari.* *Lin. Syst. Nat.*
p. 499. Bloch. t. 31. f. 2.

THIS is distinguished by a double spine situated on each side the head, at a small distance before the eyes. In colour and size it much resembles the common loche, and is a native of Germany, &c. inhabiting similar situations with the common species. Dr. Bloch informs us that on placing a

pair of these animals in a glass of river water with a quantity of mud, they shewed an opposite disposition to that of the great loche with respect to the changes of the weather; since they moved briskly during calm weather instead of remaining still like that species.

HETEROCLITE LOCHE.

Cobitis Heteroclita. *C. fusca, subtus flavescens, squamis magnis, ore imberbi.*

Brown Loche, yellowish beneath, with large scales, and beardless mouth.

Cobitis heteroclita. *C. capite imberbi, pinna dorsali analique albo-punctata, caudali nigro-fasciata. Lin. Syst. Nat. p. 500.*

LENGTH about four inches: dusky above, and yellowish beneath: body covered with large smooth scales: head flattish; lips denticulated: dorsal and anal fins opposite, and seated at a great distance from the head, or beyond the balance of the fish: they are blackish, and powdered with pale transparent specks: tail rounded, spotted with white, and barred with black; the edge being transparent. Native of Carolina, where it is called by the name of mud-fish. Described by Dr. Garden; but doubtful whether, strictly speaking, of this genus.

JAPANESE LOCHE.

Cobitis Japonica. C. imberbis, capite depresso, mandibulis denticulatis.

Beardless Loch, with depressed head and denticulated mandibles.

Cobitis Japonica. C. capite imberbi depresso, mandibulis denticulatis.
Lin. Syst. Nat. Gmel. p. 1352. Houttuyn. Act. Regiæ, 20.
p. 337.

LENGTH about five inches: native of Japan: first described by *Houttuyn* in the 20th vol. of the *Haarlem Transactions*. In the dorsal fin are twelve rays; in the pectoral eleven; in the ventral eight; in the anal nine; and in the caudal twenty.



POM. G. P. N. C. D. X. S. A. B. G. P. S.

ANABLEPS. ANABLEPS.

Generic Character.

<i>Caput</i> subdepressum. <i>Osc.</i>	<i>Head</i> subdepressed. <i>Mouth</i>
terminale. <i>Dentes</i> parvi	terminal. <i>Teeth</i> small,
in maxillis.	on the jaws.
<i>Oculi</i> protuberantes pupillis	<i>Eyes</i> protuberant, with
geminatis.	double pupils.
<i>Membr.</i> branch. radiis sex.	<i>Gill-membrane</i> six-rayed.

FOUR-EYED ANABLEPS.

Anableps Tetrophthalmus. *A. cinereo-flavescens, lineis utrinque longitudinalibus nigris.*

Yellowish grey Anableps, with longitudinal black lines on each side.

Cobitis Anableps. *C. cirris duobus, capite depresso, oculis prominulis. Lin. Syst. Nat. p. 499.*

Anableps tetrophthalmus. *Bloch, t. 361.*

THIS extraordinary fish in its general form bears a near affinity to the genus *Cobitis*, with which it was indeed united by Linnæus; but the marked particularity of its eyes, &c. amply justify its separation from the rest of the Loches. It seems to have been first described by Artedi, who examined some specimens which occurred in the collection of Seba. The usual length of the animal is from six to eight or ten inches, and its general habit, when viewed laterally, is similar to that of the Loche;

but when viewed from above, it appears of a much more compressed form. It is every where covered with moderately large, rounded scales, proportionally smaller on the head than on other parts. Its colour is a pale yellowish brown, marked on each side by four or five longitudinal blackish stripes; thus resembling in the disposition of its pattern the *Cobitis fossilis* or great Loche. The most striking particularity in the animal is the extraordinary structure of its eyes, which differ from those of every other known fish: they are extremely protuberant, situated on the upper part of the head, and seem each divided into two distinct eyes united in a common case or tubular receptacle: it appears however, on dissection, that though the anterior half of each eye may be said to be double, or furnished with two pupils, yet the crystalline is in reality single; the appearance of a double eye on each side resulting merely from the deep division of the anterior region. Another particularity in this animal is that the anal fin, according to Gronovius, varies in its structure in different individuals; being in some of a simple or regular form, and furnished with nine soft rays, while in others it is formed into a tube*, which is either solitary, or accompanied by a small additional fin. This curious fish is a native of South America, and is said principally to inhabit the rivers of Surinam, near the sea-coasts. It appears, on dissection, to be viviparous.

* This is probably peculiar to the female fish: its structure is described by Gronovius as internally cartilaginous.

... which is probably peculiar to the female fish: its structure is described by Gronovius as internally cartilaginous.

AMIA. AMIA.

Generic Character.

<i>Caput</i> osseum, nudum, scabrum, suturis conspicuum.	<i>Head</i> bony, naked, rough, with visible sutures.
<i>Dentes</i> in mandibulis palatoque, acuti, conferti.	<i>Teeth</i> both in jaws and palate, close-set, sharp, numerous.
<i>Cirri</i> nasales duo.	<i>Cirri</i> or beards two, near the nostrils.
<i>Membr. branch. radiis</i> duodecim.	<i>Gill-membrane</i> twelve-ray'd.
<i>Cornus</i> squamosum.	<i>Body</i> scaly.

CAROLINIAN AMIA.

Amia Calva. A. cauda macula nigra. Lin. Syst. Nat. p. 500.

Amia with a black spot at the base of the tail.

THIS is a small fresh-water fish inhabiting some parts of Carolina. The body is slender: the lateral line strait: on the throat are two shield-like bones, striated from the centre: the gill-covers are obtuse and bony: the head bare, as if excoriated: the pectoral and ventral fins are of equal size: the dorsal fin long and sloping: the tail rounded, and marked with a black spot at the upper part of the base. Described by Linnæus from a specimen sent from Carolina by Dr. Garden.

SILURUS. SILURE.

Generic Character.

<i>Caput</i> magnum, depressum.	<i>Head</i> large, depressed.
<i>Os</i> amplum, cirris longis tentaculatum.	<i>Mouth</i> wide, bearded by long tentacula.
<i>Corpus</i> elongatum, nudum : <i>pinnarum pectoralium aut dorsalis prioris</i> radius primus retro dentatus.	<i>Body</i> lengthened, naked : first ray of the <i>pectoral fins</i> , or of the <i>first dorsal fin</i> , toothed backwards.

EUROPEAN SILURE.

Silurus Glanis. *S. olivaceus*, pinna dorsali minima, anali ad caudam continuata.

Olivaceous Silure, with very small dorsal fin, and anal fin continued to the tail.

Silurus Glanis. *S. pinna dorsali unica mutica, cirris sex.* Lin. *Syst. Nat. p. 501.*

Silurus Glanis. Bloch. t. 34. Meiding Austr. t. 9.

THE great or common Silure may perhaps be considered as the largest of all European river fishes ; growing to the length of eight, ten, or even fifteen feet, and to the weight of three hundred pounds. Its more general length however is from two to three or four feet. The head is broad and depressed ; the body thick and of a lengthened form, with the abdomen very thick and short. It is a fish of a remarkably inert or sluggish disposition,

5
 RATTOPPEAN SQUID



W. H. G. 1840

being rarely observed in motion, and commonly lying half imbedded in the soft bottom of the rivers it frequents, under the projecting roots of trees, rocks, logs, or other substances. In this situation it remains, with its wide mouth half open, gently moving about the long cirri or tentacula situated on each side the jaws, which the smaller fishes mistaking for worms, and attempting to seize, become a ready prey to the sluggish Silure. The usual colour of this species is dark olive, varied with irregular spots of black; the abdomen and lips being of a pale flesh-colour, and the fins tinged with violet. It is an inhabitant of the larger rivers of Europe, as well as some parts of Asia and Africa; but appears to be most plentiful in the north of Europe. It is in no very high estimation as a food, the flesh being of a somewhat glutinous nature, but, from its cheapness, is in much request among the inferior ranks, and is eaten either fresh or salted: the skin also, which is smooth, and destitute of apparent scales, is dried and stretched, and after rubbing with oil, becomes of a horny transparency and strength, and is used in some of the northern regions instead of glass for windows. The Silure is not a very prolific fish; depositing but a small quantity of spawn, consisting of large globules or ova: these, as well as the newly hatched young, are frequently the prey of other fishes, frogs, &c. and thus the great increase of the species is prevented. The ova, according to Dr. Bloch, usually hatch in the space of seven or nine days from their exclusion.

MILITARY SILURE.

Silurus Militaris. *S. olivaceus, ossiculis duobus frontalibus sub-
erectis, radio pinnae dorsalis validissimo, linea laterali flexuosa.*

Olivaceous Silure, with two suberect frontal bony spines, first ray of dorsal fin very strong, and flexuous lateral line.

Silurus militaris. *S. pinna dorsali postica adiposa, cirris duobus rigidis. Lin. Syst. Nat. p. 503.*

Silurus militaris. Bloch. t. 362.

LENGTH from twelve to eighteen inches: head and fore-parts broad and depressed: mouth very wide: teeth small and numerous: eyes large: on each side the head, near the nostrils, a very strong, suberect serrated spine or bony process: first ray of the first dorsal fin, (which is lanceolate, and situated near the head,) excessively large, strong, and sharply serrated both on the middle-part and towards the tip: tail slightly bilobate, with rounded lobes. Native of the Indian rivers.

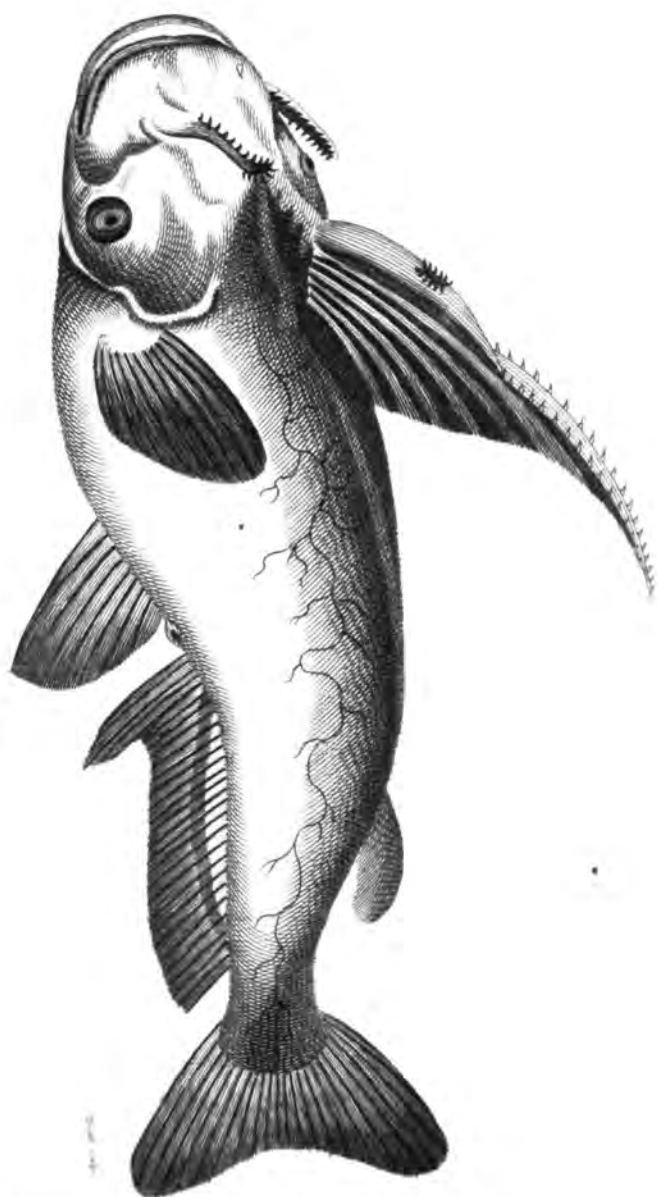
BAGRE SILURE.

Silurus Bagre. *S. virescens, abdomine subargentco, pinnis pectoralibus dorsalique elongatis, cauda furcata.*

Greenish Silure, with silvery abdomen, elongated dorsal and pectoral fins, and forked tail.

Silurus Bagre. *S. pinna dorsali postica adiposa, radio primo dorsalis pectoraliumque setacco, cirris quatuor. Lin. Syst. Nat. p. 505. Bloch. t. 365.*

LENGTH from twelve to eighteen inches: mouth furnished with four beards, those on the upper lip



long, on the lower short: dorsal fin narrow, with the first ray serrated at the base, and continued into a long filament extending to the tail: at some distance beyond the dorsal fin a single insulated filament, rising from the middle of the back: pectoral fins similar to the dorsal, but the first ray not so long: adipose fin small, and situated near the tail, which, as well as the rest of the fins, is of a pale red, and deeply forked: anal fin bilobate: ventral longish, and rather small. Native of the Indian rivers: seems to vary as to the number of beards on the mouth, which are either four or six.

HERZBERGIAN SILURE.

Silurus Herzbergii. S. olivaceus, abdomine argenteo, pinnis pectoralibus dorsalique radio primo serrato, cauda furcata.

Olivaceous Silure, with silvery abdomen, first ray of dorsal and pectoral fins serrated, and forked tail.

Silurus Herzbergii. S. corpore argenteo, radiis tredecim in pinna ani. Bloch. t. 367.

LENGTH from twelve to eighteen inches; and probably much more in the full-grown fish: habit resembling that of *Silurus Bagre* and *inermis*: mouth furnished with six beards, the upper pair being of considerable length: first dorsal fin rather small, with the first ray very strong, and serrated: pectoral fins of similar appearance: adipose and ventral fin placed opposite: tail deeply forked. Native of the South-American rivers.

UNARMED SILURE.

Silurus Inermis. *S. subolivaceus, fusco transversim maculato-fasciatus, pinnis inermibus, linea laterali flexuosa.*

Subolivaceous Silure, transversely banded with brown spots, with unarmed fins, and flexuous lateral line.

Silurus inermis. *S. pinna dorsati adiposa, pinnis inermibus, cirris duobus.* *Lin. Syst. Nat. p. 503.*

Silurus inermis. *Bloch. t. 363.*

LENGTH about a foot: habit more slender than in the preceding: head bony, but smooth, and destitute of spiny processes: mouth without cirri*? first dorsal fin small and lanceolate; second adipose and situated near the tail, which is forked, and of a pale or whitish colour, as is likewise the anal fin. Native of the Indian and South-American rivers.

GALEATED SILURE.

Silurus Galeatus. *S. subfuscus, capite supra in areas sub-quadratas osseas diviso, linea laterali flexuosa.*

Brownish Silure, with the head divided above into bony squares, and flexuous lateral line.

Silurus galeatus. *S. pinna dorsali postica adiposa, ani radiis viginti quatuor, cirris sex, cauda integra.* *Lin. Syst. Nat. p. 503.*

S. galeatus. *Bloch. t. 369.*

LENGTH eight or ten inches: habit very thick, broad, and short: head large, and covered at the

* Cirri two, according to Linnaeus, but very short, resembling tentacula above the nostrils.

top by roughish bony plates, marked into separate divisions, and terminating in a point behind: first ray of the dorsal and of the pectoral fins extremely strong and serrated: beards six: lateral line flexuous: adipose fin small, and placed near the tail, which is short and rounded. Native of South America.

NOBBED SILURE.

Silurus Nodosus. *S. olivaceus, subtus argenteus, pinnae dorsalis basi gibbosa.*

Olivaceous Silure, silvery beneath, with the base of the dorsal fin gibbous.

Silurus nodosus. *S. radio primo dorsali nodoso.* Bloch. t. 368.

LENGTH about a foot: habit lengthened: head and foreparts rather large: eyes moderately large: mouth wide, and furnished with six cirri, of which the two upper ones are of considerable length: lateral line flexuose: first ray of the dorsal and pectoral fins very strong and serrated: tail deeply forked. Native of the Indian rivers.

BIMACULATED SILURE.

Silurus Bimaculatus. *S. olivaceus, subtus argenteus, pinna dorsali minima, cauda furcata apicibus nigris.*

Olivaceous Silure, silvery beneath, with very small dorsal fin, and forked tail with black tips.

Silurus bimaculatus, S. maxilla inferiore longiore. Bloch. t. 364.

LENGTH twelve inches: body compressed: habit lengthened: head small: upper lip furnished on each side with a long cirrus: lateral line strait: dorsal fin single, most uncommonly small, and situated at the beginning of the back: pectoral fins slightly rounded: ventral very small: vent situated almost immediately beyond the ventral fins: anal fin shallow, extending from the vent to within a small distance of the tail, which is pretty deeply lunated, and of a dull yellowish colour with black tips. Native of the Indian rivers.

FASCIATED SILURE.

Silurus Fasciatus. S. capite producto, depresso, corpore fasciis numerosis transversis subfuscis.

Silure with lengthened depressed head, and body marked by numerous transverse brownish bands.

Silurus fasciatus. S. pinna dorsali postica adiposa, ani radius tredecim, cirris sex. Lin. Syst. Nat. p. 505.

Silurus fasciatus. S. capite longo spatulæformique. Bloch. t. 366.

LENGTH twelve or fifteen inches: habit long: head long, much depressed, produced and rounded.

in front: mouth furnished with six long beards, two on the upper, and four on the lower lip: body elegantly banded with numerous transverse dusky stripes placed in a ternate manner: fins pale, with the rays barred with black: dorsal unarmed and situated near the middle of the back: tail sharply forked. Native of the Indian and South-American rivers.

 ELECTRIC SILURE.

Silurus Electricus. *S. cinerascens, versus caudam maculis nigricantibus varius, pinna dorsali unica adiposa, cirris sex.*

Subcinereous Silure, variegated towards the tail with blackish spots, with single, adipose dorsal fin, and six beards.

Silurus electricus. *S. pinna dorsali unica adiposa, cirris sex.*

Lin. Syst. Nat. Gmel. p. 1354. Brouss. act. Paris. ann. 1782.

Length about twenty inches: head and fore-parts very broad and depressed: on the upper lip two cirri; on the lower four: teeth small and numerous. Native of the African rivers: observed by Forskal in the Nile: possesses a degree of electric or galvanic power, but in a much slighter degree than the Torpedo. Forskal in his *Fauna Arabica* improperly names it Raja Torpedo.

CLARIAS SILURE.

Silurus Clarias. S. fuscus subfus canus, cirris corpore longioribus, cauda furcata.

Brown Silure, grey beneath, with beards longer than the body, and forked tail.

Silurus Clarias. Bloch. t. 35.

Silurus Clarias. S. pinna dorsali postica adiposa, ani radiis undecim, cirris sex. Lin. Syst. Nat. p. 504.

LENGTH twelve or fifteen inches: first ray of the pectoral fins very strong, and serrated: mouth furnished with six beards, two of which, viz. those on the upper lip, are longer than the whole body: back covered by a strong bony shield: upper lobe of the tail longer than the lower, and both sharply terminated. Native of the Indian and South-American rivers.

ASCITIC SILURE.

Silurus Ascita. S. fuscus, subfus cinereus, cirris corpore longioribus, cauda furcata, pinna ani radiis sex.

Brown Silure, ash-coloured beneath, with beards longer than the body, forked tail, and eleven rays in the anal fin.

Silurus Ascita. Bloch. t. 35.

Silurus Ascita? Lin. Syst. Nat. p. 505.

HABIT greatly similar to that of *S. Clarias*: beards six; those of the upper lip longer than the body. This species may be almost said to be viviparous, the young being excluded in the form of very large ova in which the animal is fully formed



(SARDINIA) SARDINIA.

and clearly seen through the surrounding integuments, which it soon breaks; still adhering to the parent for some time, till the yolk of the ovum is consumed. Native of India.

FOUR-SPOTTED SILURE.

Silurus Quadrimaculatus. *S. subfuscus, abdomine argenteo, cirris corpore longioribus, thorace utrinque maculis quatuor nigris.*

Brownish Silure, with silvery abdomen, beards longer than body, and thorax marked on each side by four black spots.

Silurus quadrimaculatus. *S. pinna adiposa longa, radiis novem pinnae ani.* Bloch. t. 368.

LENGTH about six inches: head and fore-parts rather large: beards six in number, and of considerable length, the upper pair extending nearly to the tip of the tail, which is strongly forked: fins pale yellow: first dorsal rather broad and without any very strong first ray: second or adipose fin broad and shallow: first ray of the pectoral fins strong and serrated: sides of the body marked by the muscles into numerous transverse streaks. Native of the South-American rivers.

RED-FINNED SILURE.

Silurus Erythropterus. S. rufus, subtus argenteus, pinnis rubris.

Rufous Silure, with silvery abdomen, and red fins.

Silurus erythropterus. S. pinna adiposu caudæque longa. Bloch. t. 369. f. 2.

HABIT similar to that of *S. quadrimaculatus*, but of a longer shape: length seven or eight inches: beards eight in number, viz. two pair above and two below; the lowest pair of those on the upper lip extending nearly to the middle of the tail, which is long, very deeply and sharply forked, and, like the rest of the fins, of a red colour: first ray of the dorsal and pectoral fins very strong and serrated: second or adipose dorsal fin broad and shallow: body marked by transverse streaks as in the *S. quadrimaculatus*. Native of South America.

FROG SILURE.

Silurus Batrachus. S. elongatus fuscus, pinna dorsali molli a nucha fere ad caudam continuata.

Elongated, brown Silure, with soft dorsal fin continued from the neck almost to the tail.

Silurus Batrachus. S. pinna dorsali unica, radiis sexaginta, cirris octo. Lin. Syst. Nat. p. 502.

Silurus Batrachus. S. pinna ani dorsique longa. Bloch. t. 370. f. 1.

LENGTH eight or ten inches: habit long, as in some of the Biennies; and the divisions of the muscles visible on the sides in the form of so many

Imp 92569 Dt 30/10/10

राष्ट्रीय पुस्तकालय, कोलकाता
National Library, Kolkata

transverse lines : head mailed by bony plates, and terminating in a point behind : dorsal fin moderately broad, extending from the beginning of the back to the tail, and without any strong or serrated ray : adipose fin wanting : first ray of the pectoral fins strong and serrated : ventral fins placed at the middle of the abdomen : anal fin commencing at a small distance beyond them, and, like the dorsal, extending nearly to the tail, which is short and rounded : beards eight in number : the lowest pair of those on the upper lip reaching almost as far as the pectoral fins. Native of America.

 FOSSILE SILURE.

Silurus Fossilis. *S. fusco-nigricans, sublus canus, capite scutato, pinna anali ad caudam continuata.*

Blackish-brown Silure, grey beneath, with shielded head, and anal fin continued to the tail.

Silurus fossilis. *S. pinna dorsi brevi, ani longa, caudæ rotunda.*
Bloch, t. 370. f. 2.

LENGTH eight inches : body marked by transverse linear streaks as in the preceding species : head covered by bony shields, and pointed behind : beards eight in number, and of moderate length : dorsal fin small, and situated towards the beginning of the back : adipose fin wanting : pectoral fins small, with the first ray moderately strong : anal broad and continued from the vent to the beginning of the tail, which is small and rounded. Native of the East Indies, inhabiting lakes, where it is sometimes dug out of the mud at the bottom, in the manner of the *Cobitis fossilis*.

VITTATED SILURE.

Silurus Vittatus. *S. fuscus, subtus argenteus, vitta laterali flava supra infraque cæruleo marginata.*

Brown Silure, with subargenteous abdomen, and yellow lateral stripe with blue edges.

Silurus vittatus. *S. vittis longituinalibus.* Bloch. t. 371. f. 2.

HABIT resembling that of the *S. quadrimaculatus* and *erythropterus*: shape of the fins and tail nearly the same: length about seven inches: beards eight, of moderate length: sides of the body slightly marked by linear streaks, as in some of the preceding species. Native of India.

ATHERINOID SILURE.

Silurus Atherinoides. *S. subflavescens, dorso subfusco, vitta laterali argentea.*

Subflavescient Silure, with brownish back, and silvery lateral stripe.

Silurus atherinoides. *S. stria longitudinali argentea.* Bloch. t. 371. f. 1.

LENGTH about six inches: head small: beards eight, slender, and of moderate length: sides of the body slightly marked by the muscles into linear transverse streaks: first ray of the dorsal, and of the pectoral fins, strong and serrated: adipose fin small and placed near the tail; anal fin slightly coated by very small scales at the base, and reaching from the vent to within a small distance of the tail, which is deeply forked: colour of all the fins pale yellowish brown. Native of the rivers of Malabar.

ASOTE SILURE.

Silurus Asotus. *S. pinna dorsali unica, cirris quatuor.* Lin.
Syst. Nat. p. 501.

Silure with single dorsal fin and four beards.

MOUTH furnished with four beards, two above and two below: teeth numerous: first ray of the pectoral fins strong and serrated: that of the dorsal fin smooth: anal fin long, and joined to the tail. Native of Asia.

MYSTIC SILURE.

Silurus Mystus. *S. pinna dorsali unica, radius sex, cirris octo.*
Lin. Gmel. Mus. Ad. Frid.

Silure with single eight-rayed dorsal fin, and eight beards.

Silurus Schilde Niloticus. *Hasselq. it. p. 376.*

NATIVE of the Nile: tail forked.

EEL SILURE.

Silurus Anguillaris. *S. pinna dorsali unica, radius septuaginta,*
cirris octo. Lin. Gmel. Mus. Ad. Frid.

Silure with single dorsal fin of seventy rays, and eight beards.

Black-Fish. *Russel. Alepp. p. 73, t. 12, f. 1.*

UPPER cirri two: lateral two; lower four. Native of the Nile.

UNDECIMAL SILURE.

Silurus Undecimalis. *S. pinnae dorsae unica, radius undecim, cirris octo.* Lin. Gmel. Mus. Ad. Frid.

Silure with single dorsal fin of eleven rays, and eight beards.

NATIVE of Surinam: tail forked.

HORNED SILURE.

Silurus Cornutus. *S. pinnis pectoralibus inermibus, radio primo pinnæ dorsalis primæ dentato,* Lin. Gmel. Forsk. Arab.

Silure with unarmed pectoral fins, and first ray of the dorsal fin toothed.

LENGTH about a span; shape oval: body carinated beneath: snout strait, compressed, a little recurved at the tip, and about half the length of the body: first ray of the first dorsal fin extending as far as the middle of the tail, and serrated beneath for about half its length. Native of the Mediterranean.

FELINE SILURE.

Silurus Felis. *S. pinna dorsali postica adiposa, anæ radius viginti tribus, cirris sex, cauda bifida.* Lin. Syst. Nat. p. 503.

Silure with the hinder dorsal fin adipose, twenty-three rays in the anal fin, six beards, and bifid tail.

FOUR beards on the lower lip; and one on each side the upper: back blueish: ventral and anal fins red: tail bifid. Native of the American seas, and observed about Carolina by Dr. Garden.

CAT SILURE.

Silurus Catus. *S. pinna dorsali postica adiposa, ani radiis viginti, cirris octo.* *Lin. Syst. Nat. p. 504.*

Silure with the hinder dorsal fin adipose, twenty rays in the anal fin, and eight beards.

LENGTH about two feet: form rounded and thick: colour dusky above, pale flesh-colour beneath: head round: mouth very large: on the upper jaw, beneath each eye, a very long beard: on the lower jaw four short beards: first dorsal fin small and conic: second or adipose fin without rays: rest of the fins small and red: tail forked. Inhabits the sea and rivers of North America, preying on all kinds of smaller fishes; and not sparing even those of its own kind: in taste resembles an eel, and is much esteemed by the Americans: is a fish of slow motion, like the European Silure.

 COAN SILURE.

Silurus Cous. *S. pinna dorsali postica adiposa, ani radiis octo, cirris octo, cauda bifurca.* *Lin. Syst. Nat. p. 504.*

Silure with the hinder dorsal fin adipose, eight rays in the anal fin, eight beards, and forked tail.

NATIVE of Syria.

CARINATED SILURE.

Silurus Carinatus. *S. pinna dorsali postica adiposa, linea laterali spinosa, cirris sex pinnatis.* *Lin. Syst. Nat. p. 504.*

Silure with the hinder dorsal fin adipose, spiny lateral line, and six pinnated beards.

SHAPE compressed: beard on each side the mouth slightly pinnated beneath: the other four or lower ones shorter, and papillated beneath: lateral line subserrated and carinated with spines, as in some of the *Scombri*: first ray of the first dorsal fin strong, and serrated both above and beneath: that of the pectoral fins toothed in a reversed direction: tail forked. Native of Surinam.

DOCMAC SILURE.

Silurus Docmac. *S. pinna dorsali postica adiposa, ani radiis decem, cirris octo.* *Lin. Syst. Nat. Gmel. p. 1357. Forsk. Arab. p. 65.*

Silure with the hinder dorsal fin adipose, ten rays in the anal fin, and eight beards.

LENGTH near three feet: colour grey, whitish beneath: head depressed: body convex above: mouth furnished with eight beards; the exterior ones of the upper lip extending half the length of the body: lateral line strait, and situated nearer the back than the abdomen: first ray of dorsal and anal fins long and serrated, with soft tip. Native of the lower Nile, towards the Delta.

CHILIAN SILURE.

Silurus Chilensis. *S. pinna dorsali postica adiposa, cirris quatuor, cauda lanceolata*. *Lin. Syst. Nat. Gmel. p. 1359. Molin. Chil. p. 199.*

Silure with the hinder dorsal fin adipose, four beards, and lanceolate tail.

LENGTH about ten inches: colour brown, whitish beneath: head large, snout obtuse. Native of the fresh waters of Chili, and much esteemed as a food.

BAJAD SILURE.

Silurus Bajad. *S. pinna dorsali postica adiposa, ani radius duodecim, cirris octo*. *Lin. Syst. Nat. Gmel. 1359. Forsk. Arab. p. 66.*

Silure with the hinder dorsal fin adipose, twelve rays in the anal fin, and eight beards.

LENGTH about a foot: colour glaucous: head obtuse, depressed, and marked on each side, before the eyes, by an unequal pit or depression: upper jaw longer than the lower: exterior beards of the upper lip very long: lateral line at first descending, then strait: above the pectoral fins on each side a very strong spine serrated in a reversed direction: fins rufous: second dorsal or adipose fin long: tail long, dilated towards the tip, and forked. Native of the Nile.

PLATYSTACUS. PLATYSTACUS.

Generic Character.

Habitus Siluri.

Os subtus, cirris barbatum.

Corpus alepidotum, depressum; cauda longa, compressa.

Habit of Silurus.

Mouth beneath, bearded with cirri.

Body scaleless, depressed; tail long, compressed.

ACETABULATED PLATYSTACUS.

Platystacus Cotylephorus. *P. cirris sex, cotyledonibus ventralibus.*

Platystacus with six beards, and ventral acetabula.

Platystacus cotylephorus. *P. cirris sex, cotyledonibus in ventre.*
Bloch. t. 372.

Silurus Aspredo. *Lin. Syst. Nat. p. 502.*

Batrachus fuscus, &c. *Klein. misc. pisc. 5. p. 85.*

Mystus cirris sex, &c. *Seb. mus. 3. p. 36. t. 29. f. 9.*

THE genus Platystacus, first instituted by Dr. Bloch, is extremely nearly allied to that of Silurus. The species are but few in number: the present is remarkable for the numerous small acetabular processes or suckers with which the under surface of the body is beset, and which in young specimens are but obscurely visible. It grows to the length of a foot or more, and is a fish of a very uncouth



and forbidding appearance, of a dusky brown colour on the upper parts, and pale cinereous beneath: the upper lip is furnished with a strong or callous edge, which is continued on each side into a moderately long cirrus; and on each side the lower lip are two smaller ones: the first ray of the pectoral fins is excessively strong, and edged by a double, serrated border: the dorsal fin is of moderate size, and furnished with six rays: the anal shallow, and continued nearly to the tail, which is small and forked. This fish is a native of the Indian seas and rivers.

 PLAIN PLATYSTACUS.

Platystacus Lævus. Platystacus cirris octo, ventre lævi.

Platystacus with eight beards, and smooth abdomen.

Platystacus cirris, octo, pinna ani longa. Bloch.

Silurus Aspredo. Lin. Syst. Nat.

Mystus, &c. Seb. mus. 3. p. 86. t. 29. f. 10.

THIS species in its general appearance so perfectly represents the preceding that it is not to be distinguished from it without particular examination: the colour, number of rays in the fins, and shape, are the same in both; but the abdominal acetabula or suckers are wanting: the mouth is furnished with eight beards: the teeth are stronger than in the preceding fish, and the skin on the upper parts smoother. By Linnæus it was considered as the same species with the former; but Dr. Bloch appears to be of a different opinion. May it not differ in sex only?

WARTED PLATYSTACUS.

Platystacus Verrucosus. *P. fuscus, supra lineis longitudinalibus verrucosis, pinna ani brevi.*

Brown *Platystacus*, marked above by longitudinal warted lines, with short anal fin.

Platystacus verrucosus. *P. pinna ani brevi.* Bloch. t. 373. f. 3.
Aspredo cauda subrotunda, &c. Gronov. mus. 2. p. 5. t. 5. f. 3.

MUCH allied in general appearance to the two preceding species, but smaller and of a less elongated form: mouth furnished with six beards: first ray of the pectoral fins of similar appearance with those of the former species: dorsal fin slightly rounded: anal fin rather short: tail short and rounded: body marked above by three or four longitudinal rows of smaller warts on each side from breast to tail: colour brown above, paler beneath. Native of the Indian seas.

EEL-SHAPED PLATYSTACUS.

Platystacus Anguillaris. *P. fuscus, striis longitudinalibus albis, pinna ani, caudæ, dorsique secundo connatis.*

Brown *Platystacus*, with longitudinal white stripes, and the second dorsal, anal, and caudal fin united.

Platystacus anguillaris. *P. pinna ani caudæ dorsique secundo connatis.* Bloch. t. 373. f. 1.

LENGTH twelve or fifteen inches: form less broad in front than in the preceding species; mouth furnished with eight beards of moderate length; two

KEEL-SHAPED PLATYSTICTS.



on each side the upper, and the same number on each side the lower lip: first dorsal fin rather small, with the first ray strong and serrated: pectoral fins of similar size and structure: second dorsal shallow, and continued along the lower part of the back into the tail, which is shaped like that of an eel, and meets the anal fin in a similar manner, which is about the same length with the second dorsal: colour deep brown above, marked on each side the back by two longitudinal white lines: abdomen pale: teeth placed in several rows, and less sharp than in the former kinds. Native of the Indian seas.

LORICARIA. LORICARIA.

Generic Character.

Habitus Siluri.

Corpus cataphractum.

|| *Habit* of a Silurus.

|| *Body* mailed.

RIBBED LORICARIA.

Loricaria Costata. *L. fusco-flavescens, ordine utrinque scutorum simplici, cauda furcata.*

Yellowish-brown *Loricaria*, mailed by a single row of shields on each side, with forked tail.

Silurus costatus. *S. pinna dorsali postica adiposa, squamis serie simplici, cirris sex, cauda bifida.* *Lin. Syst. Nat. p. 506.*

Cataphractus costatus. *C. ordine scutorum simplici, pinna caudæ lunata.* *Bloch. t. 376.*

IN its general habit this fish resembles a species of *Silurus*, the mouth being furnished with long cirri, and the first rays of the dorsal and pectoral fin serrated: the head is large, depressed, covered by a rough bony shield, projecting on each side the thorax into an excessively strong and obtusely pointed spine or process of considerable length: the first ray of the dorsal and pectoral fins is very thick, strong, sharp, and serrated on both edges: the whole body, from the thorax, is strongly mailed along each side by a continued series of very broad bony plates or scales, each of which projects in the



middle into a short hooked spine or curved process: the upper and under parts of the body, from the small or adipose dorsal fin to the tail, are mailed in the same manner, but with smaller plates than on the sides: the tail is moderately large and sharply forked: the beards in this species are six, viz. two on the upper, and four on the lower lip: the colour of the whole fish is yellowish-brown, deepest on the head and back. It is a native of the Indian and Chinese seas. It is a fish of great strength and courage, and is said to be much dreaded by fishermen: the strength and sharpness of its spines enabling it to inflict very painful and dangerous wounds.

 ARMED LORICARIA.

Loricaria Cataphracta. *L. fusca*, ordine utrinque scutorum simplici, cauda rotundata.

Brown Loricaria, mailed by a single row of shields on each side, with rounded tail.

Silurus cataphractus. *S. pinna dorsali postica uniradiata, squamis ordine simplici, cirris sex, cauda integra.* *Lin. Syst. Nat. p. 506.*

Cataphractus Americanus. *Catesb. Carol. Append. t. 19.*

GREATLY allied to the preceding, but differs in having a rounded tail and in some other particulars: length about ten inches: head covered by smooth, angular, bony plates: the sides of the body with a continued series of strong perpendicular, bony scales or plates, each notched in the middle, and furnished, as in the former kind, with a

sharp hook, each plate lapping over the other a little: pectoral fins said to consist of only a strong bone, serrated on each side: dorsal fin formed in a similar manner, but serrated only on the upper side; placed in a socket, and capable of being erected or depressed at pleasure: colour of the whole animal dull brown. Native of the American seas.

SOLDIER LORICARIA.

Loricaria Callichthys. *L. fusca, capite rotundato, depresso, squamis utrinque ordine duplici, cauda rotundata.*

Brown Loricaria, with depressed, rounded head, double row of scales on each side, and rounded tail.

Silurus Callichthys. *S. pinna dorsali postica uniradiata, squamis ordine duplici, cirris quatuor.* Lin. Syst. Nat. p. 506.

Cataphractus Callichthys. *C. capite depresso, ordine scutorum duplici.* Bloch. t. 377. f. 1.

THIS remarkable species grows to the length of ten or twelve inches, and is of a dusky brown colour throughout, with a tinge of reddish or yellowish brown on the fins and under parts: the head is short, flat, rounded and of a bony hardness; and on each side is a very strong and thick conical process or blunt spine: the sides of the body are mailed by large strong scales or plates in a double series, to the number of about thirty on each side: they are serrated on the edges, and by their disposition form a furrow along the middle of each side, resembling a lateral line: the back is marked by a similar furrow: the abdomen is flat: the fins

are rather small, and slightly rounded, and the first spine of all the fins is strong and rough; the tail is rather small, rounded, and marked with several small black spots: the eyes are small: the mouth of moderate width and furnished with four long cirri or beards.

It is pretended by Maregrave that this fish, when distressed by a want of water, or the streams bits becoming too shallow, contrives to way over land in order to discover some stream; and occasionally perforates the ground for the same purpose; which latter method should seem to be the most probable of the two.

It is said to be in considerable esteem among the inhabitants of Surinam and other parts as a food, and is, according to Piso, fried and eaten with salt and pepper.

SPECKLED LORICARIA.

Loricaria Punctata. L. flava, dorso subfusco, squamis utrinque ordine duplici, pinnis nigro-punctatis, cauda furcata.

Yellow Loricaria, with brownish back, double row of scales on each side, fins speckled with black, and forked tail.

Cataphractus punctatus. C. capite compresso. Bloch. t. 377. f. 2.

A SMALL, but elegant species: length five or six inches: shape like that of the generality of fishes: head compressed and pretty much rounded in front: mouth furnished with four beards: sides, from the thorax, mailed by a double series of scales

or shields, finely serrated at the edges, and marked along the middle of the body by small black specks: head and back marked by numerous specks of a rather larger size: colour of the whole fish pale yellow, with a strong cast of reddish brown on the top of the head and back: fins pale-yellow, speckled with black: dorsal fin marked by a large black spot at the tip: tail forked, and barred by rows black specks. Native of the rivers of Surin

STURGEON LORICARIA.

Loricaria Accipenser. *L. elongata fusco-flavescentes, ore edentulo, fronte rotundata, pinnis maculatis.*

Lengthened yellowish-brown Loricaria, with toothless mouth, rounded front, and spotted fins.

Loricaria maculata. *L. dentibus carens. Bloch. t. 375. f. 1.*

Plecostomus, &c. *Gronov. zooph. p. 127. n. 391.*

Loricaria cataphracta. *L. pinna dorsi unica, cirris duobus. Lin. Syst. Nat. p. 508.*

HABIT long and slender; not ill resembling that of a Sturgeon: head large, and marked into several angular divisions: mouth small, and placed beneath: body mailed on each side the fore-part by a triple row of scaly plates, each marked on the middle by a spiny point; hinder part compressed, and mailed by a single row on each side, the spiny points running down the back and forming a carina on that part: pectoral, ventral, and dorsal fin pale yellow spotted with brown: tail lunated, spotted in a similar manner, with the addition of a large brown patch on the lower lobe: anal fin situated beneath

the middle of the body, and plain or unspotted: colour of the whole fish dull yellowish brown, with a few distant bands of deep-brown spots: surface roughened with small points. Native of the Indian seas, growing to the length of twelve or fifteen inches or more.

TOOTHED LORICARIA.

Dentata. *L. elongata fusco-flavescentis, ore dentato, cirris, naso subacuminato.*

Lengthened yellowish-brown Loricaria, with toothed, cirrated mouth, and slightly pointed snout.

Plecostomus dorso monopterygio, &c. *Gronov. zooph. p. 127.*

Loricaria Cataphracta. *L. dentata, pinna dorsi unica. Bloch. t. 375. f. 3. & 4.*

Loricaria cataphracta. *L. pinna dorsi unica, cirris duobus. Lin. Syst. Nat. p. 508.*

THIS is so very nearly allied to the preceding, that it might readily pass for the same species, but differs in having the mouth furnished with teeth, and in having a slightly pointed snout: the region surrounding the mouth is also roughened by numerous small filaments or processes: the abdomen is covered rather with middle sized scales than with the broad processes of the former fish; and lastly, the first ray of the tail is much longer in proportion, equalling in some specimens, the length of the whole body. It is a native of the Indian seas.

YELLOW LORICARIA.

Loricaria Flava. *L. flava fusco maculata, cauda striis transversis fuscis, dorso dipterygio.*

Yellow Loricaria, spotted with brown, with two dorsal fins, and tail marked by transverse bands.

Loricaria Plecostomus. *L. pinnis dorsi duabus.* Bloch. t. 37^A

Accipenser Indicus. *Lin. Mus. Ad. Frid. p. 55. t. 28. f.*

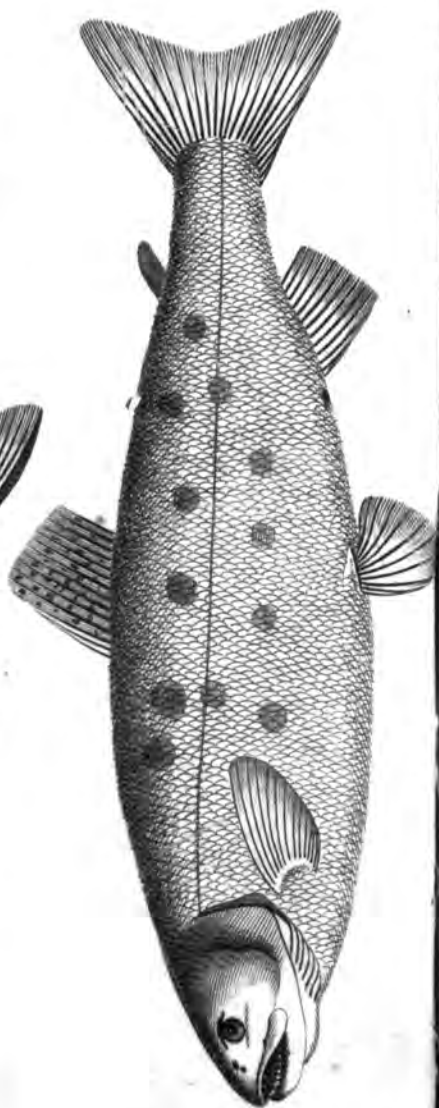
Loricaria Plecostomus. *Lin. Syst. Nat. p. 508.*

An elegant species: length about ten inches: habit much less slender than in the two preceding: head large, and roughened by minute points: mouth placed beneath: body mailed by four rows of scales or plates on each side, each scale terminated by a short spine: dorsal fin large: second dorsal or spurious fin very small, and blackish: tail lunated, with pointed lobes, the lower somewhat longer than the upper: colour of the whole animal orange-yellow, thickly spotted, except on the head, by small round, deep-brown spots: tail barred by several stripes of the same colour. Native of the Indian seas. *and British Islands.*

YELLOW LOBSTARIA.



COMMON SALMON, male.



G. S. S. S.

SALMO. SALMON.

Generic Character.

<i>Caput</i> læve, compressum :	<i>Head</i> smooth, compressed :
<i>Lingua</i> cartilaginea ;	<i>Tongue</i> cartilaginous.
<i>Dentes</i> in maxillis, lingua.	<i>Teeth</i> both in the jaws and on the tongue.
<i>Membr</i> : branch : radiis quatuor ad decem.	<i>Gill-membrane</i> from four to ten-rayed.
<i>Corpus</i> elongatum, postice pinna adiposa.	<i>Body</i> compressed, furnished at the hind part with an adipose fin.

COMMON SALMON.

Salmo Salar. S. griseo-argenteus, corpore maculato, maxillis maris apice incurvatis.

Silvery-grey, spotted Salmon, with the jaws (in the male) incurvated.

Salmo Salar. S. rostro ultra inferiorem maxillam prominente.
Lin. Syst. Nat. p. 509.

Salmo. Will. ichth. p. 189. t. 11. f. 2.

THE Salmon, so highly esteemed for the delicacy of its flavour, and so important an article in a commercial view, is chiefly an inhabitant of the northern regions, where it occurs at different periods both in salt and fresh waters; quitting the sea at certain seasons to deposit its spawn in the gravelly beds of rivers, at a great distance from their mouths. In

order to arrive at the spots proper for this purpose there are scarce any obstacles which the fish will not surmount. They will ascend rivers* for hundreds of miles; force themselves against the most rapid streams, and spring with amazing agility over cataracts of several feet in height. They are taken, according to Mr. Pennant, in the Rhine as high as Basil: they gain the sources of the Lapland rivers, in spite of their torrent-like currents: they surpass the perpendicular falls of Leixlip†, Kennerth‡, and Pont-Aberglastyn§. At the latter of these places Mr. Pennant assures us that he has himself witnessed the efforts of the Salmon, and seen scores of fish, some of which succeeded, while others miscarried in the attempt during the time of his observation. It may be added, that the Salmon, like the Swallow, is said to return each season to the self-same spot to deposit its spawn. This has been ascertained by the experiments of Monsr. De la Lande, who fastening a small ring of copper to the tails of some individuals, and then setting them at liberty, found that some of them made their appearance in the same place for three succeeding seasons§. The experiment of fastening gold or silver rings to Salmon is said by Dr. Bloch to have been occasionally practised by some of the Eastern princes, and it is added that by this method a communication has been

* Brit. Zoology.

† Near Dublin.

‡ On the Tivy in S. Wales.

§ Amid Snowdon hills.

§ So Monsr. De la Lande was assured by the fishermen.

proved between the Caspian and Northern seas and the Persian Gulf.

The general history of the Salmon fishery on the river Tweed is amply detailed by Mr. Pennant in the third volume of the British Zoology, chiefly from the communications of Mr. Potts, an inhabitant of the town of Berwick. The principal particulars are as follows.

“ At the latter end of the year, or in the month of November, the Salmon begin to press up the river as far as they can reach, in order to spawn. When that time approaches they seek for a place fit for the purpose: the male and female unite in forming a proper receptacle for it in the sand or gravel, about the depth of eighteen inches: in this the female deposits the spawn, which they afterwards cover carefully up by means of their tails, which are observed to have no skin on them for some time after this period. The spawn lies buried till spring, if not disturbed by violent floods, but the Salmon hasten to the sea as soon as they are able, in order to recover their strength: for after spawning they are observed to become very lean, and are then called by the name of Kippers. When the Salmon first enter the rivers they are observed to have a great many small animals adhering to them; especially about the gills: these are the *Lernææ Salmonæ* of Linnæus, and are signs that the fish is in high season: soon after the Salmon have left the sea, the *Lernææ* die, and drop off. About the latter end of March the spawn begins to exclude the young, which gra-

dually increase to the length of four or five inches, and are then called Smelts or Smouts. About the beginning of May the river is full of them; it seems to be all alive; and there is no having an idea of their numbers without seeing them; but a seasonable flood then hurries them all to sea, scarce any or very few of them being left in the river. About the middle of June the earliest of the fry begin to drop as it were into the river again from the sea, at that time about twelve, fourteen, or sixteen inches in length, and by a gradual progress, increase in number and size, till about the end of July, which is at Berwick termed the Gilse time (the name given to the fish at that age). At the end of July, or the beginning of August, they lessen in number, but increase in size, some being six, seven, eight, or nine pounds weight. This appears to be a surprising growth; yet we have received from a gentleman at Warrington an instance still more so. A Salmon weighing seven pounds three quarters, taken on the seventh of February, being marked with scissars on the back fin and tail, and turned into the river, was again taken on the seventeenth of the following March, and then found to weigh seventeen pounds and a half*.

“All fishermen agree that they never find any food in the stomach of this fish. Perhaps during

* According to Dr. Bloch the growth of the Salmon appears to be much slower than here stated. He informs us that a Salmon of five or six years old weighs from ten to twelve pounds.

the spawning time they may entirely neglect their food, as the *Phocæ* called sea-lions and sea-bears are known to do for months together during the breeding season, and it may be that, like those animals, the Salmon return to sea lank and lean, and come from it in good condition. It is evident that at times their food is both fish and worms, for the angler uses both with good success, as well as a large gaudy artificial fly, which the fish probably mistakes for a gay *Libellula* or dragon-fly. The capture about the Tweed is prodigious: in a good fishery, often a boat load, and sometimes near two, are taken in a tide. Some few years ago there were above seven hundred fish taken at one hawl, but from fifty to an hundred is very frequent: the coopers in Berwick then begin to salt both Salmon and Gilses in pipes and other large vessels, and afterwards barrel* them to send abroad, having then more than the London markets can take off their hands. Most of the Salmon taken before April, or to the setting in of warm weather, is sent fresh to London in baskets, unless now and then the vessel is disappointed by contrary winds of sailing immediately, in which case the fish is brought ashore again to the cooper's offices and boiled, pickled, and kitted, and sent to the London markets by the same ship, and fresh Salmon put into the baskets in lieu of the stale ones. At the beginning of the season, when a ship is on the point of sailing,

* The Salmon barrel holds above forty-two gallons wine measure.

a clean fresh Salmon shall sell from a shilling to eighteenpence a pound, and most of the time that this part of the trade is carried on, the prices are from five to nine shillings per stone*, the value rising and falling according to the plenty of fish, or the prospect of a fair or foul wind†. Some fish are sent in this manner to London the latter end of September, when the weather proves cool, but the fish are then full of large roes, grow very thin-bellied, and are not esteemed either palatable or wholesome. The price of fresh fish in the month of July, when they are most plentiful, has been known to be as low as 8d. per stone.

“ The season for fishing in the Tweed begins Novr. the 30th, but the fishermen work very little till after Christmas. It ends on Michaelmas-day; yet the corporation of Berwick (who are the conservators of the river) indulge the fishermen with a fortnight past that time, on account of the change of the style.

“ There are on the river forty-one considerable fisheries extending upwards, about fourteen miles from the mouth (the others being of no great value), which are rented for near £5400 per annum. The expence attending the servants' wages, nets, boats, &c. amounts to £5000 more, which together makes

* A stone of Salmon weighs 18lb. 20 ounces and a half, or in other terms, four stones, or forty-six pounds avoirdupoise, is only 3 stones or 42lb. fish-weight at Berwick.

† The Salmon sent from Berwick to London are at present generally packed in ice, which is preserved in ice-houses throughout the winter for that purpose.

- up the sum £10400. Now in consequence the produce must defray all, and no less than twenty times the sum of fish will effect it, so that 208000 Salmon must be caught there one year with another."

The general length of the Salmon is from two and a half to three feet, but sometimes much more*: the male is principally distinguished by the curvature of the jaws; both the upper and lower mandible bending towards each other more or less in different individuals, and at different seasons. The general colour of both sexes is a silvery grey, of a much darker cast on the back: the sides of the male are marked with numerous, small, irregular, dusky and copper-coloured spots, while those of the female exhibit only several rather large, distant, roundish, or somewhat lunated spots of a dark colour. Exclusive of these differences, the male is of a somewhat longer or more slender shape than the female: the scales in the Salmon are middle-sized, and not very strongly adherent.

In the intestinal canal of the Salmon is often found a species of *Tænia* or tape-worm of about three feet in length. Dr. Bloch informs us that in a Salmon which had been three weeks dead, he found one of these worms still living.

* It is said to be sometimes found of the length of six feet. Mr. Pennant mentions one of seventy-four pounds weight as the largest he ever heard of.

SALMON-TROUT.

Salmo Trutta. *S. griseo-purpurascens, capite, corpore, pinnaque dorsali nigro, guttatis.*

Purplish-grey Salmon, with the head, body, and dorsal fin bedropped with black spots.

Salmo Trutta. *S. ocellis nigris iridibus brunnis, pinna pectorali punctata.* *Lin. Syst. Nat. p. 509.*

Sea Trout. *Penn. Brit Zool.*

Trutta Salmonata. *Will. ichth. p. 193.*

GREATLY allied in point of general appearance to the Salmon, but rarely of equal size: colour purplish or violet, with the head and whole body pretty thickly marked with rather small round dark or blackish spots, surrounded by a paler circle: scales rather small. Native of the European seas, passing, like the Salmon, into rivers to deposit its spawn: is of equal delicacy with the Salmon, and the flesh of similar colour: varies occasionally both in colour and spots, which are sometimes rather angular than round: possesses a considerable degree of phosphoric quality, which seems to reside in the viscid mucus covering the skin. Dr. Bloch observes that the Linnæan specific character of this fish, as given in the *Systema Naturæ*, cannot be depended upon; since he could not observe on his specimen the points or specks on the pectoral fins. Like the Salmon, this fish is prepared in different methods for sale, being sold both fresh and salted, as well as smoked, pickled, &c. &c.

GREY SALMON.

Salmo Eriox. *S. cinereus, purpureo maculatus, abdomine subargenteo.*

Grey Salmon, with purple spots and subargenteous abdomen.

Salmo Eriox. *S. maculis cinereis, caudæ extremo aequali.* Lin.
Syst. Nat. p. 509.

Salmo cinereus seu griseus. Will. ichth. p. 193.

Grey Salmon. Penn. Brit. Zool.

THE inhabitants of the North of England and of South-Wales seem, according to Mr. Pennant, extremely well assured that this is a distinct species from the common Salmon. Mr. Ray also considered it as distinct. The head is larger in proportion than in the Salmon; in the jaws are four rows of teeth, and in the tongue are eight teeth: the back, and sides, above the lateral line, are of a deep grey, spotted with a number of purplish spots: the belly silvery: the tail even at the end. The lower jaw grows hooked when the fish is out of season. It is a strong fish, and does not ascend the fresh water till August, when it rushes up the rivers with great violence, and is rarely taken. It appears in the Esk in Cumberland from July to September, and is then in spawn. Mr. Pennant supposes this to be the fish called by the name of *Sewin* or *Shewin* in South-Wales.

LENOK SALMON.

Salmo Lenok. S. subaureolus, punctis sparsis fuscis, supra fuscescens, subtus flavescens. Lin. Syst. Nat. Gmel. p. 1373. Pall. it. 2. p. 716.

Slightly gilded Salmon, with scattered brown spots, with brownish back, and yellowish abdomen.

LENGTH three feet; of a broadish and thick form: pupils of the eyes angulated in front: dorsal fin spotted: pectoral fins yellowish: ventral reddish: anal deepish red: tail dusky-red and bifid. Inhabits the rocky torrents of the most rapid rivers in Siberia.

 NELMA SALMON.

Salmo Nelma. S. ex albo argenteus, capite maxime elongato, mandibula inferiore multo longiore. Lin. Syst. Nat. Gmel. p. 1372. Pall. it. 2. p. 716.

Silvery white Salmon, with greatly elongated head, and lower jaw much longer than the upper.

LENGTH from three to six feet: snout depressed: mouth rather large, and furnished with large lateral laminae: scales large: tail forked. Inhabits the larger rivers of Siberia.

KUNDSCHA SALMON.

Salmo Kundscha. S. argenteus, guttis albis, cauda bifurca.
Lin. Syst. Nat. Gmel. p. 1373. Pall. it. 2. p. 716.
 Silvery Salmon, with white spots, and forked tail.

LENGTH about two feet: allied to *S. Eriox*, but with a forked tail: body blueish below the lateral line: irides silvery-yellow: adipose fin small and serrated. This species is said to be common in summer in the bays of the Northern sea, scarcely ever entering rivers.

 TAIMEN SALMON.

Salmo Taimen. S. fuscescens, guttis crebris fuscis adpersus, cauda bifurca. Lin. Syst. Nat. Gmel. p. 1372. Pall. it. 2. p. 716.

Brownish Salmon, with numerous brown spots, and forked tail.

LENGTH three feet and a half: colour brownish, with numerous dusky spots: sides slightly silvery: abdomen white: head long; snout a little depressed: teeth hooked: lower jaw rather longer than the upper: dorsal fin brown; ventral whitish; anal deep red; tail dusky-red: flesh white. Inhabits the rivers running into the frozen sea.

HUCHO SALMON.

Salmo Hucho. *S. subelongatus subfuscus, corpore pinnisque fusco-guttatis, cauda bifurca.*

Brownish subelongated Salmon, with body and fins bedropped with brown spots, and forked tail.

Salmo Hucho. *S. oblongus, dentium lineis duabus palati, maculis tantummodo nigris.* Lin. Syst. Nat. Gmel. p. 1369.

Salmo Hucho. *S. maculis rotundis in trunco pinnisque.* Bloch. t. 100.

SHAPE like that of a Salmon but considerably longer in proportion: length from two to four or five feet: colour silvery-grey, with numerous round, deep-brown spots: back dusky: fins (except the ventral which are yellowish) pale purple, thickly spotted with brown, not excepting even the adipose or small fin: tail forked: abdomen plain or unspotted: scales rather small: lateral line nearly straight. Inhabits the Danube, the Bavarian and Austrian lakes, and the rivers of Russia and Siberia: not much esteemed as a food, the flesh wanting firmness.

RED-BELLIED SALMON.

Salmo Erythrinus. *S. supra fuscus ocellis coccineis, abdomine postice coccineo.*

Brown Salmon with red ocellate spots, with the hind part of the abdomen bright-red.

Salmo Erythrinus. *S. ocellis coccineis, mandibulis æqualibus.*
Lin. Syst. Nat. Gmel. p. 1368. Georg. it. p. 156. t. 1. f. 1.

LENGTH about two feet: habit that of *S. Eriox*: body plump: head slightly compressed: snout conic, obtuse: teeth in the palate and jaws in a double arch: tongue broad, toothed: back brown; abdomen red: dorsal fin grey, marked with dirty-red ocellate spots: spurious or small dorsal fin brown and lengthened: pectoral fins paler: ventral and anal deep scarlet: tail reddish-brown and forked. Inhabits the lakes and rivers of Siberia.

COMMON TROUT.

Salmo Fario. *S. griseo-flavescens, maculis rubris, maxilla inferiore sublongiore.*

Yellowish-grey Salmon, with red spots, and lower jaw rather longer than the upper.

Salmo Fario. *S. maculis rubris, maxilla inferiore sublongiore.*
Lin. Syst. Nat. p. 509.

Salmo Fario. *S. ocellis rubris, iridibus lucidioribus, pinna anali radiis undecim.* *Bloch. t. 22. 23.*

Trutta fluviatilis. *Will. ichth. Trout. Penn. Brit. Zool.*

THE TROUT is an inhabitant of clear and cold streams and lakes in most parts of Europe, and

admits of considerable variety as to the tinge both of its ground-colour and spots. Its general length is from twelve to fifteen or sixteen inches, and its colour yellowish-grey, darker or browner on the back, and marked on the sides by several rather distant, round, bright-red spots, each surrounded by a tinge of pale blue-grey. Sometimes the ground-colour of the body is a purplish grey; the red spots much larger, more or less mixed with black, and the belly of a white or silvery cast: the fins are of a pale purplish brown; the dorsal fin marked with several darker spots: the head is rather large, the scales small, and the lateral line strait. The female fish is of a brighter and more beautiful appearance than the male.

Mr. Pennant informs us that in the Lake Llyn-divi in South-Wales are Trouts marked with red and black spots as large as sixpences; and others unspotted and of a reddish hue, sometimes weighing near ten pounds; but these latter are said to be bad tasted.

In general the Trout prefers clear, cold, and briskly-running waters, with a stony or gravelly bottom: it swims with rapidity, and, like the Salmon, springs occasionally to a very considerable height in order to surmount any obstacle in its course. It lives on worms, small fishes, shell-fish, and aquatic insects, and is particularly delighted with may-flies (*Ephemerae*), as well as with *Phryganeæ*, Gnats, and their larvæ. It generally spawns in September, or in the colder parts of Europe, in October, and at those times gets among

the roots of trees, stones, &c. in order to deposit its eggs, which are observed to be far less numerous than those of other river-fish*. Yet the Trout, as Bloch observes, is a fish that admits of very considerable increase; owing, no doubt, to the circumstance of most of the voracious kind of fishes avoiding waters of so cold a nature as those which Trouts delight to inhabit; and their increase would be still greater, were they not themselves of a voracious disposition, frequently preying even on each other.

The merit of the Trout as an article of food is too well known to require particular notice. In this respect however, as in other fishes, those are most esteemed which are natives of the clearest waters.

The stomach of this fish is uncommonly strong and thick; but this circumstance is observed to be no where so remarkable as in those found in some of the Irish lakes, and particularly in those of the county of Galway. These are called Gillaroo Trouts: on the most accurate examination however, it does not appear that they are specifically different from the common Trout, but by living much on shell-fish, and swallowing small stones at the same time, their stomachs acquire a much greater degree of thickness, and a kind of muscular appearance, so as to resemble a sort of gizzard.

Mr. Pennant observes, that it is matter of sur-

* They are about the size of peas, and of a bright orange-colour.

prise that the Trout, though so common a fish, should appear to be unnoticed by the ancients, except Ausonius, who is supposed to have intended it by the name of Salar. He mentions it however merely on account of its beauty, and without any thing relative to its merit as a food.

"Purpureisque Salar stellatus tergora guttis."

And Salar stain'd with purple drops above.

WHITING SALMON.

Salmo Phinoc. S. griseo-argenteus, abdomine nitidissimo, pinna dorsali nigra-maculata, cauda nigra furcata.

Silvery-grey Salmon, with very light abdomen, dorsal fin spotted with black, and black forked tail.

White Salmon. *Penn. Brit. Zool.*

This species, says Mr. Pennant, migrates out of sea into the river Esk in Cumberland from July to September, and is called from its colour the Whiting. When dressed the flesh is red, and most delicious eating: these fishes have, on their first appearance from the salt-water, the *Lernæa Salmonea* or Salmon-louse adhering to them: both sexes are observed in the river, some having the milt or soft roe, and some the hard or ovarium; but their fry, has not yet been observed. This fish is by the Scots called by the name of *Phinoc*. It never exceeds a foot in length: the upper jaw is a little longer than the lower: in the first are two rows of teeth; in the latter one: on the tongue are six teeth: the back is strait: the body of an elegant form: the

lateral line strait: the colour between that and the top of the back is dusky and silvery intermixed; beneath the line of an exquisite silvery whiteness: the first dorsal fin spotted with black: the tail black, and much forked: the first dorsal fin has eleven rays; the pectoral thirteen; the ventral and anal nine.

SAMLET SALMON.

Salmo Salmulus. S. griseo-cærulescens, maculis distantibus sub-rubris, cauda furcata.

Blueish-grey Salmon, with distant reddish spots, and forked tail.

Samlet. *Penn. Brit. Zool.*

Salmulus, Samlet. Will. ichth. p. 192.

THE Samlet is, according to Pennant, the least of the British species of this genus, and is frequently seen in the river Wye, in the upper part of the Severn, and in the rivers that run into it, in the North of England, and in Wales. It is by several imagined to be the fry of the Salmon; but Mr. Pennant dissents from this opinion for the following reasons: first, it is well known that the Salmon fry never continue in fresh water the whole year, but, as numerous as they appear on their first escape from the spawn, all vanish on the first vernal flood that happens, which sweeps them into the sea, and leaves scarcely one behind: secondly, the growth of Salmon fry is so quick and so considerable as suddenly to exceed the bulk of the largest Samlet; for example, the fry that have quitted the fresh

water in spring, not larger than gudgeons, return into it again a foot or more in length: thirdly, the Salmon obtains a considerable bulk before it begins to breed; the Samlets, on the contrary, are found both male and female of their common size, and are readily distinguished by being furnished with either the hard or soft roe: fourthly, they are found in the fresh waters all times of the year, and even at seasons when the Salmon fry have gained a considerable size. It is well known that at Shrewsbury (where they are called Samsons), they are found in such quantities in the month of September, that a skilful angler, in a coracle, will take with a fly from twelve to sixteen dozen in a day. They spawn in November and December, at which time those of the Severn push up towards the head of that river, quitting the smaller brooks, and return into them again when they have done spawning. They have a general resemblance to the Trout, and must therefore be described comparatively.

The head is proportionally narrower, and the mouth smaller: the body deeper: the length seldom more than six or seven inches; or at most about eight and a half: the pectoral fins have generally but one large black spot, though sometimes a single small one attends it; whereas the pectoral fins of the Trout are more numerously marked: the spurious or fat fin on the back is never tipped with red, nor is the edge of the anal fin white: the spots on the body are fewer, and not so bright: the body is also marked from back to sides with six or seven large blueish bars; but

this Mr. Pennant allows to be not a certain character, as the same is sometimes observed in young Trouts: lastly, the tail of the Samlet is much more forked than that of the Trout. The Samlet is very frequent in the rivers of Scotland, where it is called the *Parr*. It is also common in the Wye, and is there known by the title of *Skirling* or *Laspring*.

SCHIEFFERMÜLLER'S TROUT.

Salmo Schieffermülleri. S. griseo-purpurascens, maculis parvulis lunatis fuscis, abdomine argenteo.

Purplish-grey Salmon, with small lunated dusky spots, and silvery abdomen.

Salmo Schieffermülleri. S. maxilla inferiore longiore, maculis nigris. Lin. Gmel. Bloch. t. 103.

SHAPE like that of a Salmon, but somewhat longer in proportion: head sharpish: lower jaw rather longer than the upper: general length about eighteen inches: colour silvery, with a slight cast of purple on the upper parts, deepening into brown on the back: sides obscurely marked by pretty numerous, small, crescent-shaped spots: lateral line strait, and blackish: scales middle-sized, and so slightly fixed as to be easily rubbed off: fins blueish; ventral and anal of a yellowish tinge: tail forked. Inhabits the Baltic sea, and some of the Austrian lakes: as an article of food is in equal esteem with the Salmon, and is sometimes called by the name of the Silver Salmon.

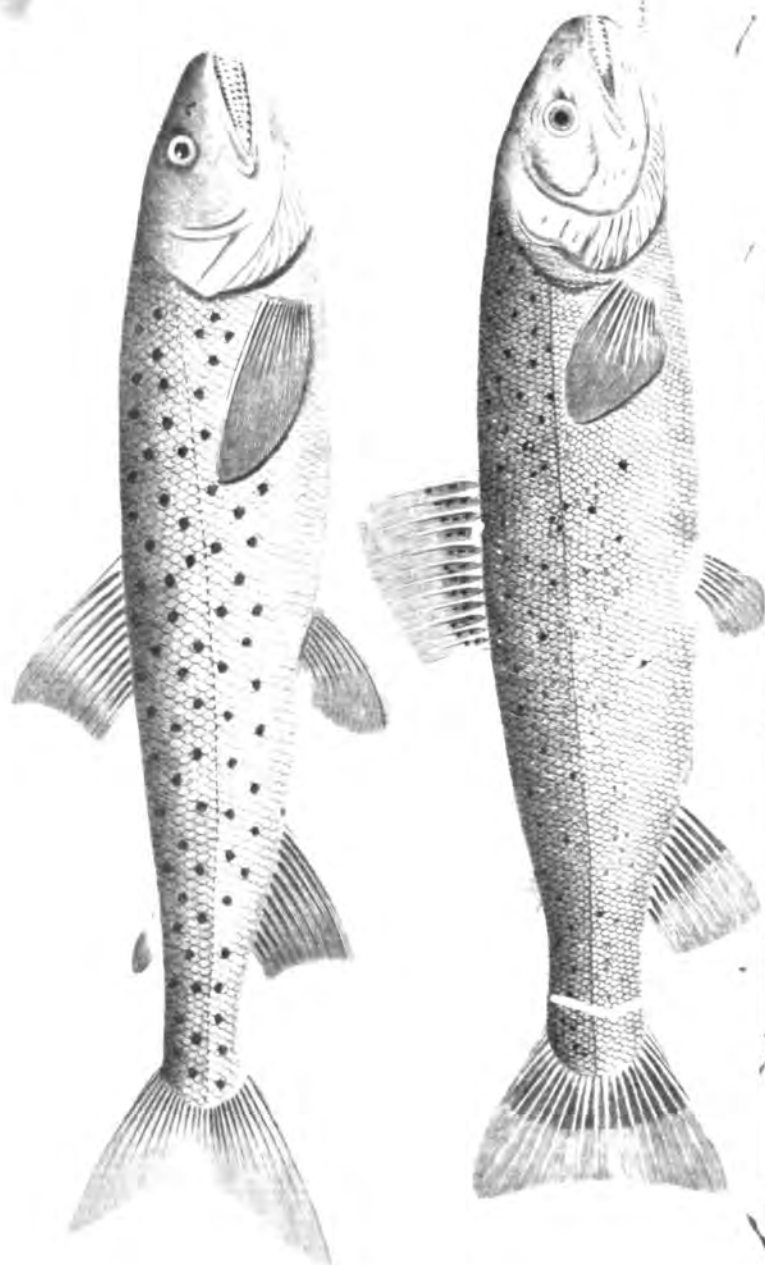
GOEDENIAN TROUT.

Salmo Goedenii. *S. griseo-argenteus, rubro-maculatus, capite parvo, pinna dorsali maculata.*

Silvery-grey Trout, with red spots, small head, and spotted dorsal fin.

Salmo Goedenii. *S. capite parvo, maculis rubris ad truncum.*
Lin. Gmel. Bloch. t. 102.

LENGTH about eighteen inches: habit that of a trout, but with a longer and thinner body, and a shorter and smaller head: colour silvery, with a dusky or blueish tinge on the back, and the whole body marked with pretty numerous and rather small, round, red spots with pale or whitish edges: scales small: fins blueish or dusky, except the ventral and anal, which are tinged with yellow: dorsal fin marked with small blackish spots. tail forked. Native of the European seas: known in general by the title of Silver Trout.



SALVELIN TROUT.

Salmo Salvelinus. *S. griseo-purpurascens, rubro maculatus, abdomine pinnisque inferioribus coccineis.*

Purplish-grey Trout, with red spots, and lower fins and abdomen scarlet.

Salmo Salvelinus. *S. pedalis, maxilla superiore longiore.* Lin. *Syst. Nat. p. 511.*

Salmo radio primo in pinna ventrali analique albo, *Bloch. t. 99.*

Red Charr? *Penn. Brit. Zool.*

LENGTH about twelve inches: shape resembling that of the Salmon, but rather more slender: colour of the back dark brownish blue; of the sides silvery, marked with pretty numerous, moderately distant, small, round, red spots, which are sometimes surrounded with a pale margin: belly red or orange-colour: pectoral, ventral, and anal fins the same, but with the two first rays white: dorsal and caudal fin blueish brown: adipose fin small, pale, and tipped with brown: scales rather small than large: lateral line strait: tail moderately bifurcated: both jaws of equal length: irides silvery. Native of mountainous lakes in several parts of Germany, and of several of the rivers in Siberia, and (if this species be the Red Charr of the English) in some of the lakes of our own country, as those of Westmoreland, &c. As in others of this genus, those which inhabit the clearest and coldest waters are observed to be of the richest colours. It is a fish of great delicacy of flavour, and much esteemed as a food.

SALMARIN TROUT.

Salmo Salmarinus. S. dorso fulvo maculis luteis, cauda bifurcata.
Linn. Syst. Nat. p. 511. Art. syn. 24.

Trout with fulvous back spotted with yellow, and forked tail.
Salmarinus. Salv. aquat. p. 101. Jonst. pisc. p. 155.

So nearly allied to the *S. Salvelinus* that it seems doubtful whether it ought to be considered as a distinct species: found in cold rivers with a stony channel or bottom in some parts of Italy.

ALPINE TROUT.

Salmo Alpinus. S. griseo-argenteus, rubro nigroque irroratus, operculis subauratis, dorso olivaceo, pinna dorsali maculata.

Silvery-grey Trout, with red and black freckles, slightly gilded gill-covers, olivaceous back, and spotted dorsal fin.

Salmo Alpinus. S. maculis non ocellatis variis, pinna caudali truncata. Bloch. t. 104.

Gilt Charr? *Penn. Brit. Zool.*

LENGTH about a foot: shape rather broader in proportion than in the two preceding species: colour silvery, with the back strongly tinged with olive-green, and the sides pretty thickly freckled with very minute bright red and blackish specks: scales very small: head rather large: jaws of equal length: gill-covers slightly tinged with gold-colour: fins reddish, except the dorsal, which is pale olive-brown, and marked between the rays with black specks: adipose fin small, and tipped with red: tail nearly even, or but very obscurely subfurcated.

Native of the Alpine lakes and rivers, as well as those of Germany, Sweden, Lapland, &c. It is also found in the English lakes, and particularly in that called Winandermere in Westmoreland. It appears likewise to inhabit the lakes of Ireland, though not particularized by the writers on the natural history of that country. As an article of food it is in equal esteem with the two preceding species, with which it appears to have been confounded by several authors.

 CARP TROUT.

Salmo Carpio. S. argenteus, albo-maculatus, iridibus albis, pinnis inferioribus nigricantibus.

Silvery Trout, with white spots, white irides, and dusky lower fins.

Salmo Carpio. S. pede minor, dentium ordinibus quinque palati. Lin, Syst. Nat. p. 510. Art. gen. 13. syn. 24.

RESEMBLES the *S. Alpinus*, but is of considerably smaller size; scarcely ever arriving at the length of twelve inches: colour silvery, speckled with white on the sides: back marked with black spots: scales very small: pectoral, ventral, and caudal fins dusky, with a slight reddish cast: palate furnished with five rows of teeth: on each side the lower jaw eight specks or points.

This species seems rather obscure: in the Gmelinian edition of the *Systema Naturæ* no figure is quoted. In some points it seems to agree with the *Carpio Lacus Benaci* of Rondeletius and Willughby.

LEPECHIN'S TROUT.

Salmo Lepechini. *S. dorso fusco, lateribus ocellis parvis nigris rubro cinctis, ventre luteo.*

Trout with brown back, sides marked by small black spots with red margins, and yellow abdomen.

Salmo Lepechini. *S. maxilla superiore parum prominula, dorso fusco, lateribus exiguis ocellis nigris rubedine circumdati, ventre flammeo.* *Lân. Gmel. Lepechin it. 3. p. 229. t. 14. f. 2.*

ALLIED to the Charr, but larger: head large, above greenish and compressed: eyes large, with yellow irides: cheeks silvery: mandibles furnished with strong, sharp teeth; the lower with sixty: dorsal fin dusky, varied with square black spots: the others flame-colour. Native of the Russian and Siberian rivers: flesh red, firm, and agreeable: described by Lepechin.

LAKE SALMON.

Salmo Lacustris. *S. cauda sub-bifurca, maxillis aequalibus, lateribus et capite maculis minutis nigris rubris.* *Gron. zooph. p. 362.*

Salmon with subbifurcate tail, equal jaws, and sides and head marked by small black and red spots.

Salmo lacustris. *S. cauda bifurca, maculis solum nigris, sulco longitudinali ventris.* *Lân. Syst. Nat. p. 510.*

NATIVE of the lakes and other fresh waters of Switzerland, Norway, and Siberia: said to grow to a very great size.

UMBLA SALMON.

Salmo Umbra. *S. subolivaceus, ventre argenteo, squamis minutis, cauda furcata.*

Subolivaceous Salmon, with silvery abdomen, very small scales, and forked tail.

Salmo Umbra. *S. lineis lateralibus sursum recurvis, cauda bifurca.* Lin. Syst. Nat. p. 511.

S. immaculatus pinna ani radiis undecim. Bloch. t. 101.

GENERAL weight about a pound and a half, but sometimes the fish grows to so large a size as to weigh ten, or, according to Dr. Bloch, even fifteen pounds: habit that of a Trout: colour silvery, with the back tinged with olive-brown: scales very small: eyes reddish: lateral line furnished with small processes turning upwards: fins pale olive: tail forked: inhabits the lakes of Switzerland and Italy: flesh tender, turning red when boiled, and esteemed more delicate even than that of the Trout,

SILVERY SALMON.

Salmo Argentinus. *S. subvirescens, vitta utrinque longitudinali argentea, cauda furcata, lobo inferiore longiore.*

Greenish Salmon, with a longitudinal silvery stripe on each side the body, and forked tail, with the lower lobe longer than the upper.

Salmo tænia longitudinali argentea, pinna ani longissima. Lin. Gmel. Bloch. t. 382. f. 1.

LENGTH about nine or ten inches: shape somewhat lengthened towards the tail: head small:

mouth small: colour greenish, with silvery abdomen, and a bright silvery band running from head to tail at some distance above the lateral line: fins pale or white: tail forked, with the upper lobe considerably shorter than the lower: at the base of the tail a black, oval, longitudinal spot. Inhabits the South-American rivers, and is esteemed a delicate fish.

ARCTIC SALMON.

Salmo Arcticus. S. argenteus, punctis lineolisque fuscis per quatuor utrinque series digestis, cauda bifurca. Lin. Gmel. Pall. it. 3. p. 706.

Silvery Salmon, with four rows of black points and streaks on each side the body, and forked tail.

SHAPE not unlike that of a Smelt: length three or four inches: head but very slightly compressed: front flat, with three longitudinal ridges: snout rounded, rather obtuse: jaws of equal length: eyes silvery: inhabits, in great plenty, the stony rivulets running into the Arctic sea.

POOL SALMON.

Salmo Stagnalis. *S. supra fuscescens, infra albus, corpore subtereti, maxilla superiore longiore.* Lin. Gmel. p. 1374. O. Fabr. Faun. Groenl. p. 175.

Brownish Salmon, white beneath, with subcylindric body, and upper jaw longer than the lower.

LENGTH about eighteen inches: shape lengthened, tapering towards the tail: unspotted: head large and oblong-ovate, with a sharpish snout: tongue long, and rather obtuse: mandibles denticulated on the edges: teeth large, curved, and very sharp: palate armed with a triple series of close-set teeth: lower fins greenish, with white base: pectoral rather longer than the dorsal: tail subfurcate, large; adipose fin falcated, and rounded at the tip: rays of the dorsal fin about two inches long: flesh white. Inhabits the waters of the mountains of Greenland.

RIVULET SALMON.

Salmo Rivalis. *S. elongatus fuscus, ventre rubente, capite obtuso.* Lin. Gmel. O. Fabr. Faun. Groenl. p. 176.

Elongated brown Salmon, with reddish abdomen, and obtuse head.

A SMALL species; allied to the *S. Carpio*, but smaller, hardly growing to the length of six inches: body smooth, mucous, covered with very small scales, and speckled with black: beneath reddish: irides flame-coloured: feeds on insects. Inhabits the smaller rivers and pools of Greenland, in which it is very common.

STROEMIAN SALMON.

Salmo Stroemii. S. pinnis dorsolibus et ventralibus margine albis.
Lin. Gmel. Ström. Söndmör. 1. p. 292.

Salmon with the dorsal and ventral fins edged with white.

NATIVE of Denmark, inhabiting waters with a muddy bottom.

SAURY SALMON.

Salmo Saurus. S. argenteo-cærulescens, supra fusco transversim undulatus, rictu amplo, cauda bifurca.

Silvery-blueish Salmon transversely undulated on the upper parts with brown, with wide mouth, and forked tail.

Salmo Saurus. S. radiis pinnæ ani decem. Lin. Syst. Nat. p. 511.

Salmo radiis duodecim pinnæ dorsi, undecimque pinnæ ani.
Bloch. t. 384. f. 1.

SHAPE much elongated: length about twelve inches: colour on the upper parts an elegant greenish blue, varied with pretty numerous, slightly undulated; narrow, brown, transverse bands, reaching as far as the lateral line, which is itself bounded beneath by a continued stripe of brown: abdomen silvery, with a cast of flesh-colour: scales middle-sized: mouth very wide, with large, sharp teeth: eyes rather large, and between them a remarkable depression on the top of the head: fins pale; the dorsal and pectoral crossed by a few brown bars: tail forked. Native of the Mediterranean, American, and Red seas, but considered as a rare species in the Mediterranean.

TUMBIL SALMON.

Salmo Tumbil. *S. flavescens, fasciis transversis semidecurrentibus rubris, rictu amplo, cauda furcata.*

Yellowish Salmon, with semidecurrent transverse red bands, wide mouth, and forked tail.

Salmo Tumbil. *S. ordinibus pluribus dentium tenuium.* Bloch. t. 430.

Of a rather lengthened shape: head taper: mouth very wide, and armed with numerous sharp teeth: lower jaw somewhat longer than the upper: eyes orange-coloured, and seated near the tip of the upper jaw: scales large: fins pale, tinged with dusky blue at their tips: tail forked. Native of the Indian seas, and called by the inhabitants of the Malabar coast by the name of Tumbil: general length about twelve inches.

FETID SALMON.

Salmo Foeteus. *S. argenteo-cærulescens, capite truncato, maxilla inferiore longiore, pinnis rubris, cauda furcata.*

Silvery-blucish Salmon, with truncated head, lower jaws longer than the upper, red fins, and forked tail.

Salmo foeteus. *S. radiis dorsalibus analibusque duodecim.* Lin. Syst. Nat. p. 513.

Salmo capite squamato truncatoque. Bloch. t. 384. f. 2.

SHAPE lengthened: head rather large, somewhat truncated in front, and scaly: mouth wide, with the lower jaw longest: both furnished with sharp teeth: eyes large, and near the tip of the upper

jaw: colour silvery, with a blueish tinge on the back: fins reddish; the dorsal crossed by two or three dusky bars. Native of the American seas, and found about the coasts of Carolina: in no great esteem as a food: length about ten or twelve inches: said to have a strong, unpleasant smell. The gill-membrane in this species has only four rays.

SMELT SALMON.

Salmo Eperlanus. *S. argenteus, subcæruleo-virescens, capite diaphano, radius pinnae ani septendecim.* *Lin. Syst. Nat. p. 511.*

Blueish-virescent silvery Salmon, with diaphanous head, and seventeen rays in the anal fin.

Salmo maxilla inferiore longiore, pinna ani radiis septendecim.
Bloch. t. 28. f. 1. 2.

Smelt. Will. ichth. 202. Penn. Brit. Zool.

Of this species there appears to be two varieties: one not exceeding the length of three or four inches; the other arriving at the general length of six, eight, or nine inches, and sometimes even to twelve or thirteen. The larger variety seems to be that so frequently seen about the British coasts, and which is distinguished by Dr. Bloch under the name of *Eperlano-marinus*, or Sea-Smelt. These fishes are found about our coasts throughout the whole year, and rarely go to any great distance from the shores, except when they ascend rivers either at or some time before the spawning-season. It is observed by Mr. Pennant that in the river Thames and in the Dee they are taken in great

abundance in November, December, and January; but in other rivers not till February, spawning in the months of March and April. The Smelt is a very elegant fish: its form beautifully taper: the skin thin, and the whole body, but particularly the head, semitransparent: the colour of the back is whitish, with a cast of green; beneath which it is varied with blue; and then succeeds the beautiful silvery gloss of the abdomen: the scales are small, and easily rubbed off: the eyes are silvery: the under jaw longer than the upper: in front of the upper are four large teeth; those in the sides of the jaws being small: the tail is forked. This fish, which, as before observed, is the largest kind, is an inhabitant of the European seas: it has generally a peculiar odour, which in those of British growth is commonly compared to that of a cucumber, but by some to that of a violet.

VAR.

Salmo Eperlanus (minor.)

Eperlanus. Rondel. Gesn. Aldr. Jonst. &c.

Eperlan. Duhamel. tr. des peches. 2. p. 280.

THIS, which in every thing except size and odour appears to resemble the former, is said principally to inhabit lakes and rivers, and is rarely taken, except during the spawning-time; generally residing in the muddy bottom; but at that season it enters rivers, and is taken in large shoals: it is a very prolific fish, and is sold in vast quantities in

the northern regions. According to Linnæus, the streets of Upsal, during the sale of this species, are filled with an extremely unpleasant fetid smell.

GREENLAND SALMON.

Salmo Groenlandicus. S. olivaceo-argenteus linea laterali (maris) villosa, cauda furcata.

Olivaceous-silvery Salmon, with the lateral line (in the male) villous, and forked tail.

Salmo Groenlandicus. S. cauda latiore ventre. Bloch. t. 381. f. 1.

Clupea villosa. C. linea laterali prominula, hirta. Lin. Gmel. p. 1409. Müll. prodr. zool. dan. p. 50.

LENGTH about seven inches, which it very rarely exceeds: shape lengthened, contracting somewhat suddenly towards the tail: dorsal fin placed in the middle of the back: fins rather large for the size of the fish: scales small: tail forked: colour pale green, with a tinge of brown above: abdomen and sides silvery: in the male fish, just above the lateral line, is a rough fascia, beset with minute pyramidal scales standing upright like the pile of a shag: the use of this villous line is highly singular, since it is affirmed that while the fish is swimming, and even when thrown on shore, two, three, or even as many as ten will adhere, as if glued together, by means of this pile, insomuch that if one is taken, the rest are also taken up at the same time*. This species swarms off the coasts of Green-

* Penn: Arct: Zool: intr. p. 127.

land, Iceland, and Newfoundland, and is said to be one of the chief supports of the Greenlanders, and a sort of desert at their most delicate repasts. The inhabitants of Iceland are said to dry great quantities of it, in order to serve as a winter food for their cattle, whose flesh is apt to acquire an oily flavour in consequence. This fish lives at sea the greatest part of the year, but in April, May, June, and July, comes in incredible shoals into the bays, where immense multitudes are taken in nets, and afterwards dried on the rocks. When fresh they are by some said to have the smell of a cucumber, though others affirm that the scent is highly unpleasant. They feed on small crabs and other marine insects, as well as on the smaller fuci and conservæ, on which they are also observed to deposit their ova.

GREAT-TOOTHED SALMON.

Salmo Dentex. *S. argenteus, supra fusco albidoque lineatus, pinnis albidis, caudæ dimidio inferiore rubro.* Lin. Gmel. p. 1384. Forsk. Arab. p. 66.

Silvery Salmon, lineated above with brown and whitish, with white fins, and lower half of the tail red.

Cyprinus Dentex. *C. pinnae radiis viginti sex, ore dentibus undique molaribus.* Lin. Syst. Nat. p. 531.

MENTIONED by Forskal in his Fauna Arabica: chiefly distinguished by its very large, subulate exerted teeth, in which it differs from the rest of the Salmon tribe; gill-membrane furnished with only four rays. Inhabits the Nile, and is also found in Siberia.

GIBBOUS SALMON.

Salmo Gibbosus. *S. dorso compresso gibboso, pinna ani radiis quinquaginta.* Lin. Gmel. p. 1385.

Salmon with gibbous compressed back, and fifty rays in the anal fin.

Charax dorso admodum prominulo, pinna ani radiis quinquaginta-quinque. Gronov. mus. 1. n. 53.

INHABITS Surinam : gill-membrane four-rayed.

MARKED SALMON.

Salmo Notatus. *S. macula utrinque nigra versus opercula.* Lin. Gmel. p. 1385.

Salmon with a black spot on each side towards the gill-covers.

SHAPE oblong ; marked with a black spot above the lateral line : gill-membrane four-rayed : allied to the *S. bimaculatus*.

BIMACULATED SALMON.

Salmo Bimaculatus. *S. griseo-argenteus, dorso subfusco, macula utrinque nigra versus opercula et ad basin caudæ furcata.*

Silvery-grey Salmon, with a black spot on each side towards the gill-covers and at the base of the forked tail.

Salmo bimaculatus. *S. corpore compresso bimaculato, pinna ani radiis triginta-duobus.* Lin. Syst. Nat. p. 513.

Salmo maculis duabus rotundis nigris. Bloch. t. 382. f. 2.

LENGTH six inches : shape broad-ovate, tapering towards the tail : head and mouth small : gill-

membrane four-rayed: scales middle-sized: colour yellowish, tinged with brown on the back: abdomen silvery: dorsal, pectoral, and ventral fins pale yellow: adipose fin, anal, and caudal brown: on each side the body, a little beyond the gills, an oval black spot, and a second at the base of the tail. Inhabits the rivers of Amboina, and those of South-America, and is in considerable esteem as a food.

 UNSPOTTED SALMON.

Salmo Immaculatus. S. corpore immaculato, pinna ani radiis duodecim. Lin. Syst. Nat. p. 513.

Salmon with unspotted body, and twelve rays in the anal fin.

NATIVE of the American seas: gill-membrane four-rayed.

 CYPRINOID SALMON.

Salmo Cyprinoides. S. niveus, pinnae dorsalis radiis anticis elongato-setaceis. Lin. Syst. Nat. p. 514.

Snow-white Salmon, with the first rays of the dorsal fin setaceous and elongated.

HABIT of the *Cyprinus rutilus*, but of a snow-white colour: head flattened above: eyes protuberant: tail forked: gill-membrane four-rayed.

NILOTIC SALMON.

Salmo Niloticus. *S. pinnis omnibus flavescentibus, corpore toto albo.* *Lin. Syst. Nat. p. 514.*

White Salmon, with all the fins yellowish.

INHABITS the Nile: tail forked: gill-membrane four-rayed.

EGYPTIAN SALMON.

Salmo Ægyptius. *S. dorso virescente, dentibus maxillæ inferioris majoribus.* *Lin. Gmel. Forsk. Arab.*

Salmon with greenish back, and the teeth of the lower jaw larger than the rest.

NATIVE of Egypt, where it is called *Nefosch*: it is mentioned by Hasselquist under the name of *S. Niloticus*: the tail is scaly at the base: gill-membrane four-rayed.

DUSTY SALMON.

Salmo Pulverulentus. *S. pinnis subpulverulentis, linea laterali descendente.* *Lin. Syst. Nat. p. 514.*

Salmon with the fins of a dusty aspect, and descending lateral line.

NATIVE of America: gill-membrane four-rayed.

FLAT-NOSED SALMON.

Salmo Anastomus. S. ore simo. Lin. Syst. Nat. p. 514.

Salmon with flattened nose.

Anastomus. Gronov. mus. 2. n. 165. t. 7.

NATIVE of the South-American and Indian seas :
gill-membrane four-rayed.

RHOMBIC SALMON.

Salmo Rhombeus. S. rufescens, abdomine argenteo serrato, cauda nigro marginata.

Rufescent Salmon, with silvery serrated abdomen, and tail edged with black.

Salmo rhombeus. S. abdomine serrato, pinna anali caudalique basi margineque nigris. Lin. Syst. Nat. p. 514.

Salmo abdomine serrato. Bloch. t. 383.

HABIT broad, not unlike that of the Chaetodons : colour dusky red above, and marked with a few small, scattered dusky spots : sides and abdomen silvery : mouth moderate : teeth strong, especially those in the lower jaw : gill-membrane four-rayed : abdomen strongly carinated, and serrated by a series of aculeated processes : scales small : fins yellowish at the base, and dusky at their tips : tail lunated, and terminated by a black border : immediately before the dorsal fin stands a small but strong trifid spine, one point directed forwards, and the other two backwards ; and before the anal fin, which is scaly at the base, is a smaller spine of nearly similar structure : native of the rivers of

Surinam, where it is said to arrive at a very considerable size, and to be of a very voracious nature, sometimes attacking ducks, which happen to be swimming on the river: it is much esteemed as a food, the flesh being white, firm, and delicate.

SHARP-BELLIED SALMON.

Salmo Gasteropelecus. S. argenteus, compressus, minimus, abdomine prominente.

Silvery, compressed, very small Salmon, with projecting abdomen.

Salmo Gasteropelecus. S. pinnis ventralibus & adiposa minimis. Lin. Syst. Nat. Gmel. p. 1384.

Clupea Sterniclus. Lin. Syst. Nat. p. 524.

Gasteropelecus Sternicla. Bloch. t. 97.

AN extremely small species; of a very broad, compressed form, with the abdomen sharply carinated beneath: colour silvery: back tinged with pale blue: fins grey: pectoral ones very long, and falcated: tail forked: inhabits the waters of India, Amboina, and South-America: found also in Carolina: said to swim very swiftly. This little fish is made a distinct genus by Gronovius, under the title of *Gasteropelecus*. In the gill-membrane are only four rays.

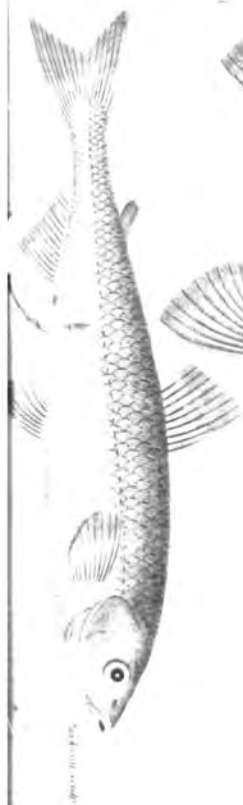
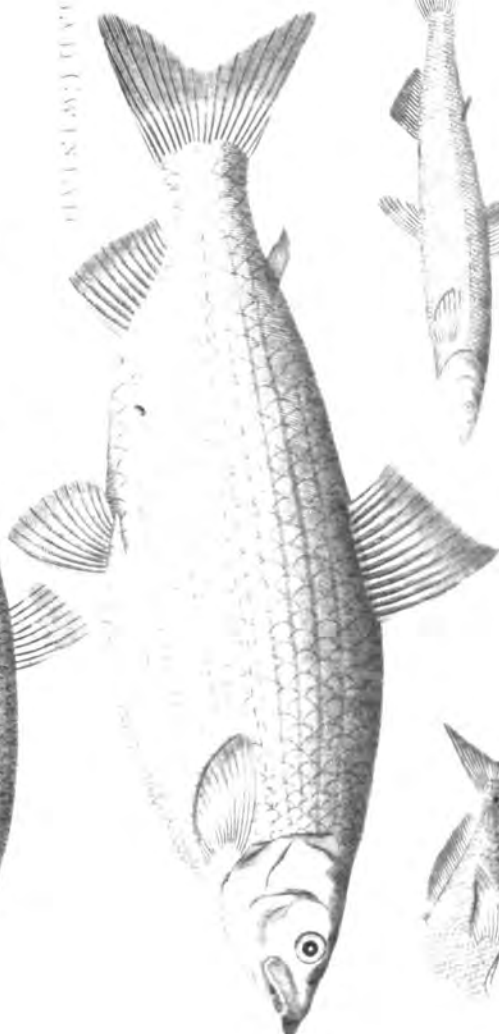
THE GREAT SALMON



THE BELLEFLORE SALMON



THE GREAT SALMON



THE GREAT SALMON

FALCATED SALMON.

Salmo Falcatus. S. argenteo-cærulescens, dorso pinnisque sub-fuscis, macula utrinque nigra ad opercula & basin caudæ.

Silvery-blueish Salmon, with brownish back and fins, and a black spot on each side near the gill-covers and at the base of the tail.

Salmo falcatus. S. bimaculatus, radiis viginti-sex in pinna ani falcata. Bloch, t. 385.

LENGTH twelve or fourteen inches: shape like that of a common Salmon, but with a distant resemblance to a Pike: mouth wide: laminae of the upper jaw serrated on the edge: colour of the whole fish silvery, with a blueish tinge on the sides, deepening into brown on the back: scales middle-sized: beyond the gill-covers, immediately above the lateral line, a round black spot, and a similar one at the base of the tail, which is forked: pectoral fins lanceolate: first dorsal situated low on the back: anal falcated, and rather wide: ventral rather small. Native of Surinam.

FASCIATED SALMON,

Salmo Fasciatus. S. flavus, fusco transversim fasciatus, cauda furcata.

Yellowish Salmon, with transverse brown bands, and forked tail.

Salmo fasciatus. S. corpore fasciato. Bloch, t. 379.

LENGTH about a foot: colour pale yellow, deepening on the back into a dull brownish orange-colour:

whole body crossed by several transverse dusky or blackish bands, some of which are divided at the back and abdomen: scales large: dorsal, anal, and caudal fins dusky: pectoral and ventral pale: dorsal fin and tail each obscurely crossed by a blackish band: tail forked: native of Surinam.

FRIDERICIAN SALMON.

Salmo Friderici. S. flavus, dorso rubro, corpore utrinque maculis tribus nigris, cauda furcata.

Yellow Salmon, with red back, and body marked on each side with three black spots.

Salmo Friderici. S. trimaculatus, basi pinnæ ani squamata. Bloch. t. 378.

An elegant species: length twelve inches: colour silvery yellow, deepening into dull crimson on the top of the head and back: snout obtuse: scales large: on each side the body three rather large black spots, the first of which is situated near the middle, the second at some distance beyond, and the third at the base of the tail, which is forked: fins pale. Native of Surinam. This species takes its specific name from Mr. Friderici, governor of Surinam, by whom it was communicated to Dr. Bloch: it is much esteemed for the table.

SINGLE-SPOTTED SALMON.

Salmo Unimaculatus. *S. argenteo-cærulescens, macula utrinque nigra, cauda elongata furcata.*

Silvery-blueish Salmon, with a black spot on each side the body, and lengthened forked tail.

Salmo unimaculatus. S. maxilla superiore sublongiore, macula nigra ad lineam lateralem. Bloch. t. 381. f. 3.

Curimata Brasiliensibus. Marcgr. Pisc. Will. &c.

LENGTH about eighteen inches: colour silvery, with an olive or dusky tinge on the back: fins pale: tail rather long, and very deeply forked: scales rather large than small: on each side the middle of the body a moderately large round black spot: snout obtuse: upper jaw rather longer than the lower. Native of the lakes and other fresh waters of South-America: considered as a very delicate fish by the inhabitants of Brasil, Surinam, &c.

BLACK-TAILED SALMON.

Salmo Melanurus. S. argenteo-cærulescens, squamis magnis, pinnis flavis, cauda furcata medio nigra.

Silvery-blueish Salmon, with large scales, yellow fins, and forked tail black in the middle.

Salmo melanurus. S. radiis triginta in pinna annati, maculaque nigra in caudali. Bloch. t. 381. f. 2.

LENGTH of the specimen described by Bloch about four inches: colour silvery, with a blueish cast; the back brown: snout obtuse, with the lower jaw rather longer than the upper: scales

large: fins white: tail forked, and marked by a longitudinal black patch in the middle: native of the South-American seas.

FULVOUS SALMON.

Salmo Fulvus. *S. fulvus, dorso pinnisque fuscis, cauda furcata.*
 Fulvous Salmon, with brown back and fins, and forked tail.
Salmo Ode. *S. pinnis nigro-fuscis.* *Bloch. t. 386.*

HABIT like that of a Pike: length from two to three feet: colour orange or fulvous, deepening into brown on the back and fins: dorsal fin spotted with black: lower fins darker than the upper: tail forked: scales large: lateral line nearer the belly than the back: inhabits the African seas, and is a very predacious fish: the flesh is of a reddish colour and much esteemed by the inhabitants of Guinea.

With inconspicuous teeth.

MIGRATORY SALMON.

Salmo Migratorius. *S. griseo-argenteus, maxillis subaequalibus, pinna dorsi radiis duodecim.*
 Silvery-grey Salmon, with nearly equal jaws, and twelve rays in the dorsal fin.
Salmo migratorius. *S. maxillis subaequalibus, pinna dorsi radiis duodecim.* *Lin. Gmel. Georg. ii. p. 182.*

LENGTH from one to two feet: body rather compressed, silvery, grey above: head compressed: irides orange: mouth toothless: snout subconic:

upper lip grey: lower reddish-white: inhabits Lake Baikal in Siberia, out of which it migrates at the spawning season up the rivers: flesh white: eggs yellow: in considerable esteem as a food.

 AUTUMNAL SALMON.

Salmo Autumnalis. *S. argenteus, maxilla inferiore longiore, radius pinnae dorsi undecim.*

Silvery Salmon, with the lower jaw longer than the upper, and eleven rays in the dorsal fin.

Salmo autumnalis. *S. maxilla inferiore longiore, radius pinnae dorsi undecim.* *Lin. Gmel. Pall. it. 3, p. 705.*

LENGTH near a foot and a half: body plump, but compressed, with the back very slightly angulated: scales large and silvery: irides pale gold-colour: mouth toothless: tail forked: inhabits the frozen sea, out of which it ascends the rivers of Putzora and Jencesei, and, by the Angara, into the Lake Baikal; returning in autumn in immense multitudes: dies very soon after being taken out of the water.

WARTMANN'S SALMON.

Salmo Wartmanni. *S. caruleus*, abdomine carneo, pinnis fusco-flaventibus, maxilla superiore truncata.

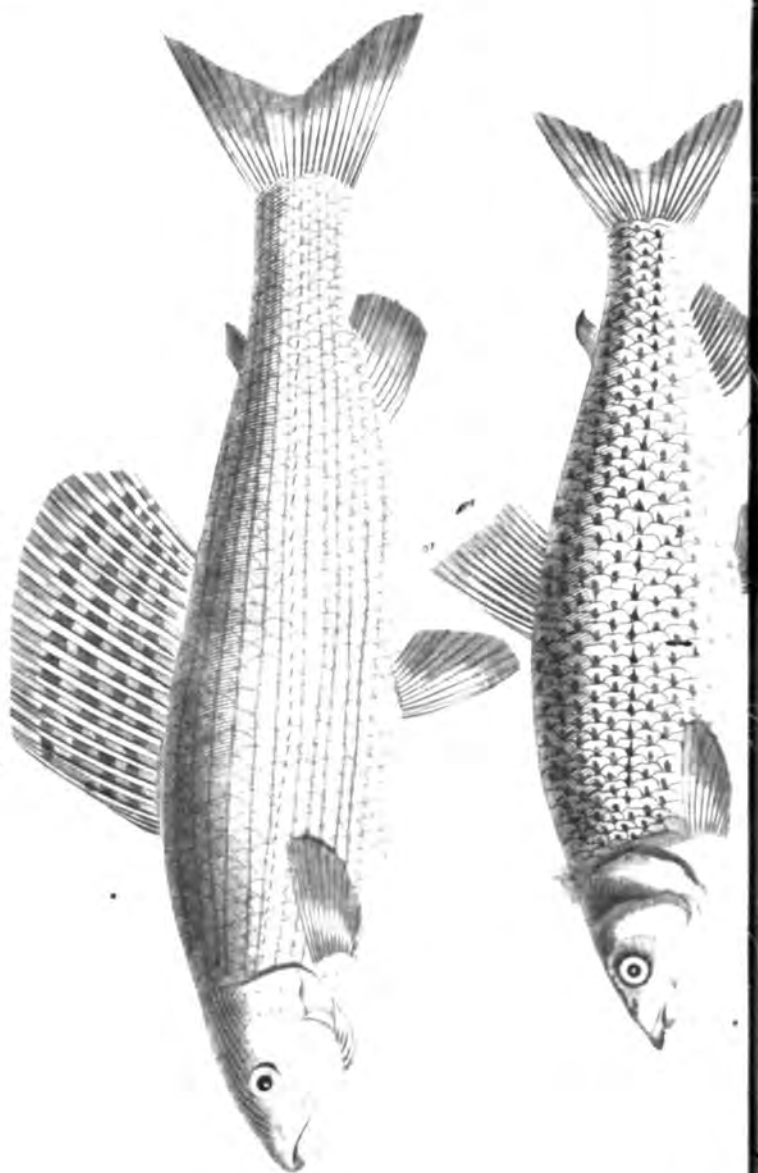
Blue Salmon, with flesh-coloured abdomen, yellowish-brown fins, and truncated upper jaw.

Salmo Wartmanni. *S. cæruleus*, maxilla superiore truncata. *Lin. Gmel. Bloch. t. 105.*

Albula nobilis, *Albula cærulea*, &c. *Gesn. Aldr. Will. &c. Guiniad? Penn. Brit. Zool.*

GENERAL length from twelve to eighteen inches: shape like that of a Salmon, but with smaller and sharper head: colour blue, with a dusky tinge on the back: abdomen silvery: fins pale olive: scales large: lateral line nearly strait, and pretty strongly marked: tail forked, or rather lunated. Inhabits the Alpine lakes of Switzerland, more especially lake Constance, where it is extremely plentiful, and constitutes a very considerable article of commerce among the cantons of Switzerland, as well as other parts of Europe, where it is sent prepared in different ways, and is in considerable esteem as an article of food. Dr. Bloch informs us that this species grows to the length of about two inches in the first year; from three to four in the second; from five to seven in the third; from eight to nine in the fourth, to thirteen in the sixth: and from fourteen to seventeen in the seventh. It generally spawns in the month of December, at which time it seeks out shallows, and afterwards returns into deep water.

GRAYLING SALMON.



GRAYLING SALMON.

Salmo Thymallus. *S. griseus, lineis longitudinalibus fusco-cæruleis, pinna dorsali violacea fusco-fasciata.*

Grey Salmon, with longitudinal dusky blue lines, and violet-coloured dorsal fin barred with brown.

Salmo Thymallus. *S. maxilla superiore longiore, pinna dorsi radiis viginti-tribus.* *Lin. Syst. Nat. p. 512.*

Salmo pinnæ dorsi radiis viginti-tribus. *Bloch. t. 24.*

Grayling. *Penn. Brit. Zool. Will. ich. Ray. &c.*

THIS elegant species grows to the length of about eighteen inches, and is an inhabitant of the clearer and colder kind of rivers in many parts of Europe and Asia; particularly such as flow through mountainous countries. In England it is found in the rivers of Derbyshire; in some of those of the North; in the Tame near Ludlow; in the Lug and other streams near Leominster, and in the river near Christchurch in Hampshire*. In Lapland it is said to be very common, where the natives make use of its intestines instead of rennet, in preparing the cheese which they make from the milk of the Rein-Deer.

The shape of the Grayling resembles that of the Trout, but is rather more slender: its colour is a beautiful silvery grey, with numerous longitudinal deeper stripes, disposed according to the rows of scales, which are of a moderately large size: the head, lower fins, and tail, are of a brownish or rufous

* Brit. Zool.

cast: the dorsal fin, which is deeper and broader than in the rest of the genus, is of a pale violet-colour, crossed by several dusky bars: the adipose fin is very small, and the tail forked. The largest English Grayling recorded by Mr. Pennant was taken at Ludlow, and measured above half a yard in length; its weight being four pounds eight ounces: the general size of the British specimens being far short of this measure.

The Grayling, says Mr. Pennant, is a voracious fish, rising freely to the fly, and will very eagerly take a bait: it is a very swift swimmer, disappearing like the transient passage of a shadow, from whence perhaps is derived its ancient name of *Umbra*. It is said to be a fish of very quick growth, feeding on water insects, the smaller kind of testacea, and the roe of other fishes, as well as on the smaller fishes themselves: its stomach is so strong as to feel almost cartilaginous. It spawns in April and May, the full-grown ova being nearly of the size of peas. The Grayling is much esteemed for the delicacy of its flesh, which is white, firm, and of a fine flavour, and is considered as in the highest season in the depth of winter.

GWINIAD SALMON.

Salmo Lavaretus. *S. cærulescens, squamis latis, rostro nasiformi.*
Blueish Salmon, with broad scales, and nose-like snout.

Salmo Lavaretus. *S. maxilla superiore longiore, radius pinnae dorsi quatuordecim.* Lin. Syst. Nat. p. 512.

Salmo Lavaretus. The Gwiniad. Bloch, t. 25.

THIS species is an inhabitant of the lakes of the Alpine parts of Europe. It is found in those of Switzerland, Savoy, and Italy; in Norway, Sweden, and Lapland. In our own island it occurs in Cumberland, and in some parts of Wales. It is also found in the lakes of Ireland. According to Mr. Pennant it is a gregarious fish, approaching the shores in vast multitudes, in spring and summer. A fisherman at Hulse-Water is said to have taken between seven and eight thousand at one draught. In the shape of its body it resembles a Trout, but is thicker in proportion: the head is small, and very taper in front, the upper lip being produced very considerably beyond the lower, in form of a blackish fleshy snout, so that the mouth, which is small, appears placed beneath: the general colour of the fish is a silvery grey, with a dusky tinge on the upper parts, and the base of each scale marked by a dusky speck, particularly along the lateral line: the fins are pale brown, the adipose fin small and sharp, the tail forked, the scales large and of a somewhat dilated form, and the lateral line strait. This fish, according to Dr. Bloch, is not only found in rivers, but in the northern sea and the Baltic;

entering the rivers at the time of spawning, and forcing its way up the most violent streams, generally advancing in two ranges, and forming in front an acute angle, the whole being conducted by a single fish. The largest specimen mentioned by Mr. Pennant weighed between three and four pounds, its general weight being much less, and its length from ten to twelve inches. I must not omit to observe that it may be doubted whether the *Gwiniad* of Mr. Pennant be not rather the *S. Wartmanni* of Bloch than the present species.



BROAD GWINIAD.

Salmo Rostratus. *S. fusco-caulescens, lineis longitudinalibus subfuscis, squamis rotundatis, rostro nasiformi.*

Dusky-blueish Salmon, with longitudinal dusky streaks, rounded scales, and nose-like snout.

Salmo Thymallus latus. *Bloch. t. 26.*

Salmo Lavaretus β . *Lin. Gmel.*

GREATLY allied to the preceding in general appearance, so as readily to pass for a variety at most, but is of a larger size, and a somewhat broader shape: the scales are perfectly rounded, without the slight sinking in which takes place on the middle of those of the former species: the mouth is larger and more transverse; and the sides of the body are marked by grey or blueish stripes, which are not visible on the preceding species. The weight of the Broad Gwiniad is from four pounds to four and a half. It is found in the Baltic, and in the rivers of some parts of Germany, Sweden, &c.

SNOUTED SALMON.

Salmo Nasus. *S. latiusculus, capite crasso, maxilla superiore longiore, squamis magnis, pinna dorsali radiis duodecim.*

Broadish Salmon, with thick head, upper jaw longer than the lower, large scales, and twelve-rayed dorsal fin.

Salmo Nasus. *S. maxilla superiore longiore, radiis pinnae dorsales duodecim, capite crasso.* Lin. Gmel. Pall. it. 3. p. 705.

LENGTH about a foot and a half: habit similar to that of *S. Lavaretus*, the upper mandible extending beyond the lower, and being gibbous or convex as far as the eyes: scales large: tail forked. It inhabits the channel of the river Oby: observed by Dr. Pallas.

MARÆNA SALMON.

Salmo Maræna. *S. argenteo-cærulescens, squamis magnis, pinnis fuscis, maxilla superiore truncata.*

Silvery-blueish Salmon, with large scales, brown fins, and truncated upper jaw.

Salmo Maræna. *S. maxilla superiore truncata.* Lin. Gmel. Bloch. t. 27.

LENGTH two feet or more: habit that of a Trout: head obtuse, eyes rather large: pupil acutangular on the fore-part: irides silvery: mouth small and without apparent teeth: upper jaw longer than the lower, with two small punctures at the edge: upper lip thick, and as if doubled: colour of the fish bright silvery-grey, with a dusky or blueish tinge on the back: fins blueish: tail forked: scales large and

but slightly fixed: lateral line marked with white specks, and somewhat bent towards the head: native of the Austrian and Helvetian lakes, especially such as have a sandy bottom: a prolific species, and in considerable esteem as a food.

MARÆNULA SALMON.

Salmo Marænula. *S. argenteo-carulescens, subelongatus, maxilla inferiore longiore, pinna dorsi radiis quatuordecim.*

Silvery-blueish Salmon, with subelongated body, lower jaw longer than the upper, and fourteen rays in the dorsal fin.

Salmo Albula. *Lin. Syst. Nat.*

Salmo Marænula. *Lin. Gmel. Bloch. t. 28. f. 3.*

GENERAL length about six inches: shape like that of a Trout, but more slender in proportion: colour silvery white, with a tinge of blue on the back: head somewhat taper: lower jaw longer than the upper: scales large: fins pale yellow: tail forked, and blueish towards the tip: lateral line nearly strait: the whole fish has a delicate appearance, and the head, like that of the Smelt, exhibits a degree of transparency. Native of several of the European lakes, viz. those of Germany, Sweden, Denmark, &c. much esteemed for the table, being a very delicate fish, and a very prolific species.

PELED SALMON.

Salmo Peled. *S. edentulus*, radiis pinnæ dorsalis decem. Lin.
Gmel. Lepechin, it. 3. p. 226.

Toothless Salmon, with ten-rayed dorsal fin.

LENGTH eighteen inches: body thick: head conic, spotted with black: snout obtuse; lower jaw rather longer than the upper: back blueish: sides and abdomen white: very nearly allied to the *S. Albula* of Linnæus, and perhaps only a variety. Inhabits rivers in the north of Russia: described by Lepeschin.



PIDSCHAN SALMON.

Salmo Pidschan. *S. maxilla superiore longiore*, radiis pinnæ dorsi gibbi tredecim. Lin. Gmel. Pall. it. 3. p. 705.

Salmon with the upper jaw longer than the lower, and thirteen-rayed gibbous dorsal fin.



MUDSCHAN SALMON.

Salmo corpore latiore, pinnæ ani radiis quatuordecim. Lin.
Gmel. Pall. it. 3. p. 705.

Salmon with broadish body, and fourteen rays in the anal fin.

BOTH the above are so much allied to the *S. Lavaretus* as to leave it doubtful whether they may not be varieties of that species: the length of each of the above fishes is about two spans: their general

appearance that of the Lavaretus, but rather broader in proportion: mentioned by Dr. Pallas as inhabiting the river Oby.

SCHOKUR SALMON.

Salmo Schokur. S. maxilla superiore longiore, capite parvo, radiis pinnae dorsi antierius angulati duodecim. Lin. Gmel. p. 1378.

Salmon with small head, upper jaw longest, and twelve-rayed dorsal fin angular in front.

THIS is about two feet in length, and so much allied to the Lavaretus as scarce to differ materially, except in being rather larger and broader, with a more obtuse snout, which is obscurely bituberculated: observed by Dr. Pallas in the river Oby.

MÜLLER'S SALMON.

Salmo Mülleri. S. maxillis edentulis, inferiore longiore, ventre punctato. Lin. Gmel. Müll. prodr. zool. Dan. p. 49.

Toothless Salmon, with lower jaw longest, and punctated abdomen.

NATIVE regions unknown.

VIMBA SALMON.

Salmo Vimba. *S. pinna adiposa subserrata.* Lin. Gmel. Lin. Faun. Suec. p. 351.

Salmon with subserrated dorsal fin.

INHABITS the rivers of Sweden: dorsal fin furnished with twelve, pectoral with sixteen, ventral with ten, anal with fourteen rays: mentioned by Linnæus in the Fauna Suecica.

SHARP-SNOURED SALMON.

Salmo Oxyrhynchus. *S. maxilla superiore longiore conica.* Lin. Gmel. p. 1383.

Salmon with the upper jaw longest and conical.

FOUND in the Atlantic ocean: in the dorsal fin are thirteen or fourteen rays; in the pectoral from thirteen to seventeen; in the ventral from ten to twelve, and in the anal fourteen or fifteen.

BRIGHT SALMON.

Salmo Leucichthys. *S. maxilla superiore latissima integra recta brevior, inferiore ascendente, apice tuberculosa.* Lin. Gmel. Guldenstadt. nov. comm. Petrop. 16. p. 351.

Salmon with very broad strait upper jaw, shorter than the lower, which is ascendent, and tuberculated at the tip.

A RATHER large species; growing to the length of three feet or more: shape oblong; body rather

compressed, and of a bright silvery grey, spotted with black; of a dusky hue above, and covered with middle-sized scales: eyes large: snout extremely obtuse: mouth toothless, very wide, and square: tongue flat and triangular: dorsal fin pale brown: pectoral acuminated and white: ventral rounded, white, spotted with brown on the fore-part: anal reddish, spotted with brown: tail semilunar. Inhabits the Caspian sea: described by Guldenstadt.

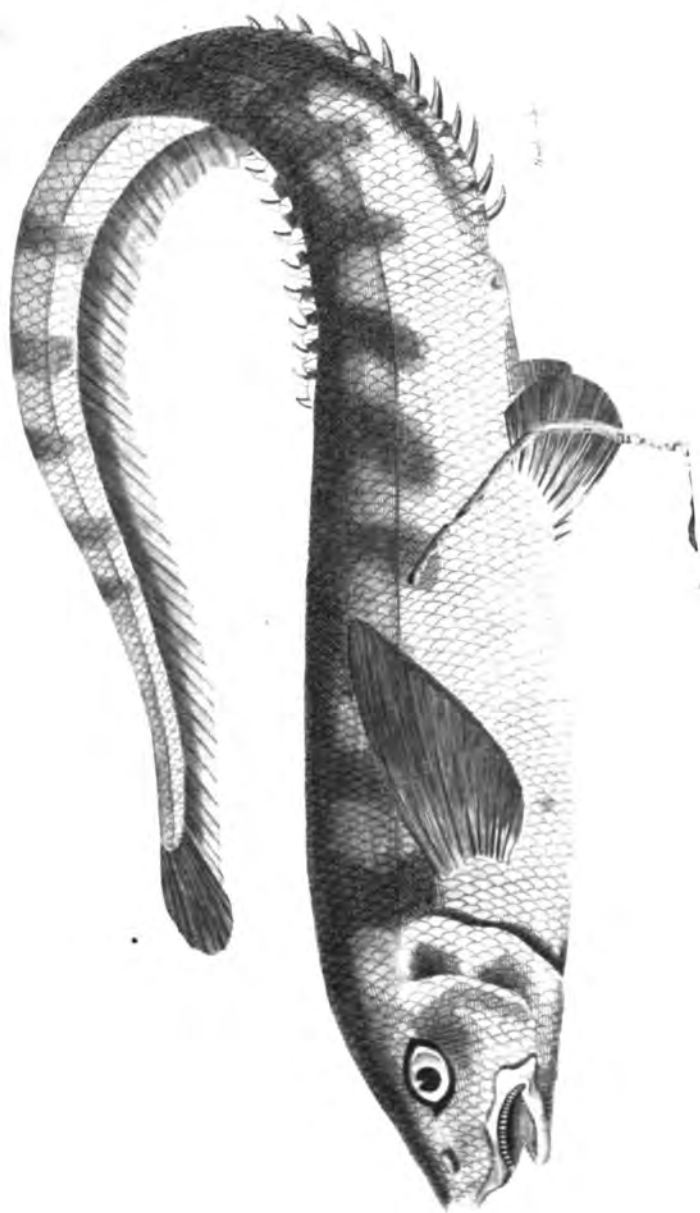
TOOTHLESS SALMON.

Salmo Edentulus. *S. argenteo-olivaceus, capite compresso, fl. pinnis lanceolatis rubris, cauda furcata.*

Silvery-olive Salmon, with compressed yellow head, lanceolate red fins, and forked tail.

Salmo edentulus. S. oculis magnis, ore edentulo. Bloch. T. 380.

LENGTH twelve inches: shape like that of a Carp: scales large: colour silvery, with a slight greenish tinge: back olive-brown: head yellowish, sinking in above the eyes, which are very large: snout obtuse: mouth small, and toothless: lateral-line strait: fins of a sharp, subfalcated form, and of an orange-colour: tail large and forked. Native of Surinam, where it is said to be highly esteemed for the table.



ACANTHONOTUS. ACANTHONOTUS.

Generic Character.

Corpus elongatum, sine
pinna dorsali.

Aculei plures dorsales & ab-
dominales.

Body elongated, without
dorsal fin.

Spines several, on the back
and abdomen.

SNOUTED ACANTHONOTUS.

Acanthonotus Nasus. *A. griseus, dorso transversim fusco-
fasciato.*

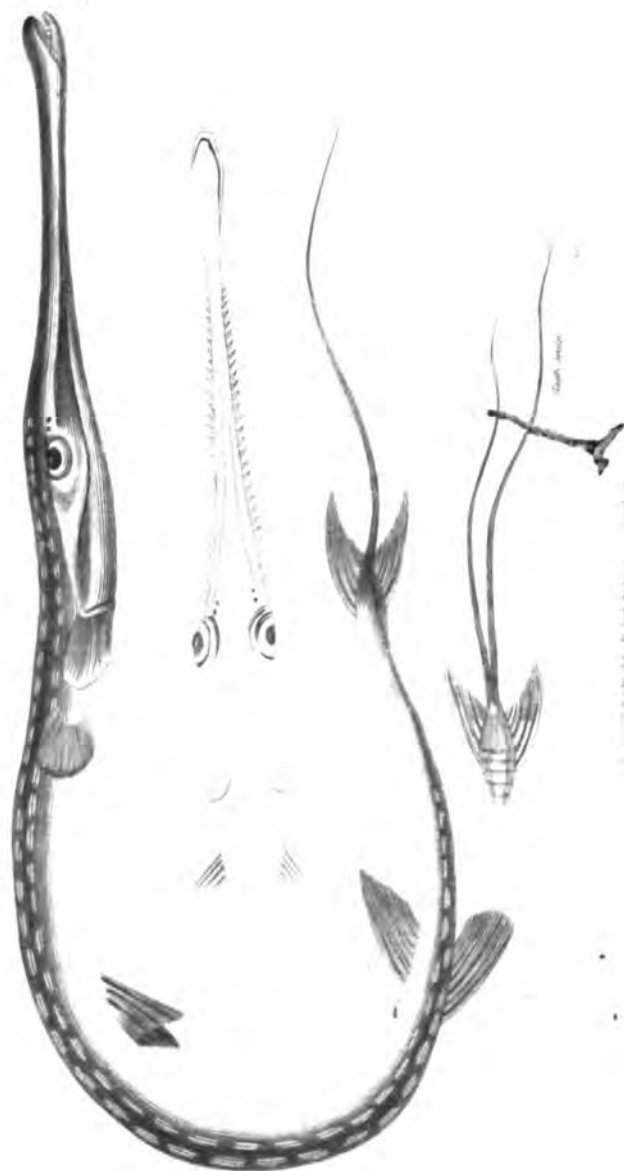
Grey *Acanthonotus*, with the back transversely barred with
brown.

Acanthonotus Nasus. *A. rostro nasiformi.* Bloch. 12. p. 113.
t. 431.

THIS fish grows to a considerable size, the length of the specimen described by Dr. Bloch being two feet and a half: the head is large, the upper part of the snout extending forwards in such a manner as to make the mouth appear as if situated beneath: the teeth are small, forming a row along each jaw: the eyes large, and the nostrils conspicuous: the body, which is of moderate width for about a third of its length, gradually decreases or tapers towards the extremity: both head and body are covered with small scales, and are of a blueish tinge, with a silvery cast on the abdomen,

the back being barred throughout the greatest part of its length by several broad, semidecurrent, brown fasciæ: the pectoral fins are brown, and of moderate size: the ventral rather small, and of similar colour: the lateral line is strait, and situated nearer to the back than to the abdomen: along the lower part of the back are disposed ten strong but short spines, and beneath the abdomen are about twelve or thirteen others, commencing almost immediately beyond the vent: these are followed by the anal fin, which is shallow, and continued into the tail, which is very small. This fish is a native of the East Indies.





FISTULARIA. FISTULARIA.

Generic Character.

<i>Rostrum</i> cylindricum, apice maxillosum.	<i>Snout</i> cylindric: mouth ter- minal.
<i>Corpus</i> elongatum.	<i>Body</i> lengthened.
<i>Membr: branch: radiis</i> septem.	<i>Gill-membrane</i> seven-rayed.

SLENDER FISTULARIA.

Fistularia Tabacaria. F. cauda bifida setifera. Lin. Syst. Nat.
p. 515.

Fistularia with bifid tail, furnished with a long bristle-shaped
process.

Petimbuaba. Marcgr. Bras. p. 148. Piso. Raj. &c.

The Tobacco-Pipe Fish. *Will. ichth. p. 233.*

Fistularia Tabacaria. Bloch. t. 387.

THIS highly singular fish seems to have been first described by Marcgrave in his Natural History of Brasil, under the name of *Petimbuaba*. He informs us that it grows to the length of three or four feet, and is of a shape resembling that of an Eel, with the mouth toothless and pointed, and the upper lip longer than the lower; the head about nine inches long, from the eyes to the tip of the mouth; the eyes are large and ovate, with a bright-blue pupil and silvery iris, marked on the fore and hind part by a red spot; the skin smooth, like that

of an eel, and of a liver-colour, marked both above and on each side by a row of blue spots, with greenish ones intermixed. Marcgrave adds that it is an edible fish, though of no particular delicacy. Dr. Bloch observes that both the jaws are in reality beset with minute teeth; that the tongue is smooth and loose; the body flattened in front but rounded on the back, the lateral line strait, the abdomen silvery, and the fins of a pale red. The appearance of the tail is highly singular, being pretty deeply forked, as in the generality of fishes, while from the middle of the furcaturé springs a very long and thickish bristle or process, of a substance resembling that of whalebone, and gradually tapering to a fine point. A variety has been observed by Dr. Bloch, in which this part was double, and the snout serrated on each side. This variety, or perhaps sexual difference, appears from the observations of Commerson, detailed by Cope, to be of a brown colour above, and silvery beneath, but without the blue spots so remarkable on the smooth-snouted kind. The Count de Cope informs us also that the spine of this fish is of a very peculiar structure; the first vertebra being of immoderate length, the three next much shorter, and the rest gradually decreasing as they approach the tail: he adds that there are no visible ribs.

Dr. Bloch's highly accurate and beautiful figure of this curious fish is repeated in the present work, together with a representation of the remarkable variety above-mentioned, in which the tail-process is double and the snout serrated.

This species is said to live chiefly on the smaller fishes, sea-insects, and worms, which the structure of its snout enables it readily to obtain, by introducing that part into the cavities of rocks, under stones, &c. where those animals are usually found.

 CHINESE FISTULARIA.

Fistularia Chinensis. *F. squamosa rufescens, nigro maculata, cauda rotundata mutica.*

Scaly rufescent Fistularia, with black spots and simple rounded tail.

Fistularia Chinensis. *F. cauda rotundata mutica.* Lin. Syst. Nat. p. 515.

Fistularia Chinensis. *F. edentata, cauda rotundata.* Bloch. t. 388.

The Chinese Trumpet-Fish.

LENGTH from three to four feet: general shape like that of an eel, but the body thicker in proportion than in the preceding species: head lengthened into a strong cartilaginous, or rather bony and laterally-compressed, tubular snout, much broader than in the former species: mouth small: eyes rather large: scales of moderate size, strong, and much resembling in their structure those of the genera of *Perca* and *Chaetodon*: from the middle of the back to the dorsal fin run several strong, short, and rather distant spines: dorsal and anal fin of similar shape, and placed opposite each other, pretty near the tail, which is short, rounded, and marked by a pair of black stripes: pectoral fins rounded:

ventral small, and placed considerably beyond the middle of the body: general colour pale reddish-brown, with several deep or blackish spots on various parts of the body, and three or four pale or whitish longitudinal stripes on each side, from the gills to the tail: fins pale yellow. Native of the Indian seas, preying on worms, sea-insects, &c. Though observed only in the tropical seas, yet its fossil impressions have been found under the volcanic strata of mount Bolca in the neighbourhood of Verona*.

PARADOXICAL FISTULARIA.

Fistularia Paradoxa. *F. cinereo-flavescens, fusco variata, pinnis pectoralibus ventralibusque magnis, cauda lanceolata.*

Yellowish ash-coloured Fistularia, with brown variegations, large pectoral and ventral fins, and lanceolate tail.

Fistularia paradoxa. *F. lineis argute prominulis reticulata, cauda lanceolata.* Lin. Gmel. 1388. Pall. spic. zool. 8. p. 32. t. 4. f. 6.

A SMALL species, described by Seba, and, more accurately, by Dr. Pallas. Length from two to four inches: body angular, and beset at the interstices of the lines with small spines: head small: eyes large, and situated at the base of the snout, which much resembles that of a Syngnathus, and is long, slightly descending, strait, horny, compressed, sharp above, and bicarinated beneath: it is armed on each side, near the base, by a small, conic spine:

* Gazola's Ichthiologie des environs de Verone, pl. 5. f. 1.

mouth small: nape trimuricated: gill-openings very shallow and small, and radiated by a few prominent lines: first dorsal fin long, and reclining: pectoral fins very broad: ventral very large, with deeply divided rays, and connected longitudinally by a lax saccular membrane: general colour cinereous, or yellowish-white, with obscure brown undulations, which are darker or blackish on the first dorsal fin and tail. Native of the Indian seas, and appears in some degree allied to the *Syngnathi* or *Sea-Needles*, among the *Cartilaginous Fishes*.

ESOX. PIKE.

Generic Character.

<i>Caput supra planiusculum :</i>	<i>Head somewhat flattened</i>
<i>os amplum.</i>	<i>above : mouth wide.</i>
<i>Dentes acuti, in maxillis,</i>	<i>Teeth sharp, in the jaws, pa-</i>
<i>palato, lingua.</i>	<i>late, and tongue.</i>
<i>Corpus elongatum : pinnæ</i>	<i>Body lengthened : dorsal and</i>
<i>dorsalis analisque (pleris-</i>	<i>anal fin (in most species)</i>
<i>que) prope caudam, op-</i>	<i>placed near the tail, and</i>
<i>positæ.</i>	<i>opposite each other.</i>

COMMON PIKE.

Esox Lucius. E. griseo-olivaceus subflavo maculatus, rostre depresso subæquali.

Greyish-olive Pike, with yellowish spots, and depressed subequal jaws.

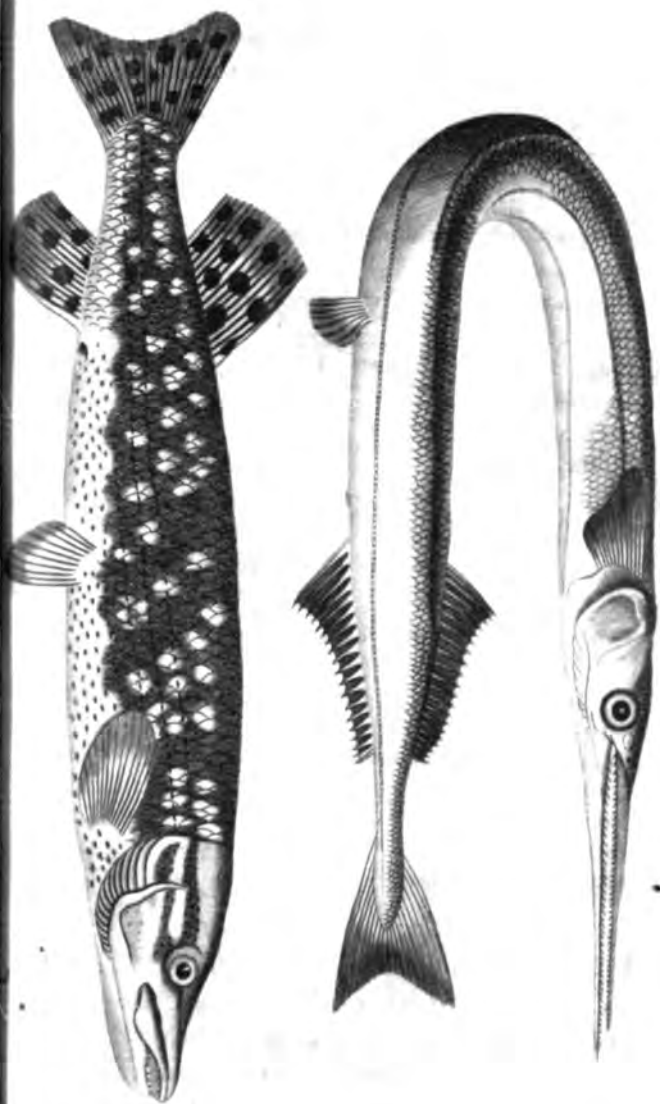
Esox Lucius. E. rostre depresso subæquali. Lin. Syst. Nat. p. 516.

Lucius. Rondel. Gesn. &c. &c.

Esox Lucius. E. capite compresso, rictu amplo. Bloch, t. 32.

Pike. Penn. Brit. Zool. Pike or Pickerel. Will. ichth. p. 236.

TO the general history of this fish perhaps little can be added to what Mr. Pennant has already detailed in the third volume of the British Zoology. It is, says that agreeable writer, a native of most of the lakes and smaller rivers in Europe, but the largest are those of Lapland, which, according to



GAR PIKE.

Schæffer, are sometimes eight feet in length: they are taken there in great abundance, dried, and exported for sale. The largest specimen of English growth is said by Mr. Pennant to have weighed thirty-five pounds. The head of the Pike is very flat; the upper jaw broad, and shorter than the lower, which turns up a little at the end, and is marked with minute punctures: the teeth are very sharp, disposed only in front of the upper jaw, but in both sides of the lower, as well as in the roof of the mouth, and often on the tongue: the number, according to Bloch, is not less than seven hundred, without reckoning the farthest of all or those nearest the throat: it is also to be observed that those which are situated on the jaws are alternately fixed and moveable: the gape is very wide, and the eyes small: the dorsal fin is placed very low on the back, and consists of twenty-one rays; the pectoral of fifteen; the ventral of eleven, and the anal of eighteen: the tail is slightly forked, or rather lunated. The usual colour of this fish is a pale olive-grey, deepest on the back, and marked on the sides by several yellowish spots or patches: the abdomen is white, slightly spotted with black. When in its highest perfection however the colours are frequently more brilliant; the sides being of a bright olive, with yellow spots, the back dark green, and the belly silvery. Dr. Bloch assures us that in Holland the Pike is sometimes found of an orange-colour, marked with black spots: the scales are rather small, hard, and of an oblong shape.

The voracity of the Pike is commemorated by all ichthyological authors. Mr. Pennant observes that he himself has known one that was choaked in attempting to swallow one of its own species which proved too large a morsel. It will also devour water-rats, and young ducks which happen to be swimming near it. In a manuscript note to a copy of Plott's History of Staffordshire, and which Mr. Pennant afterwards found was inserted, on good authority, by a Mr. Plott of Oxford, the following highly singular anecdote is recorded. "At Lord Gower's canal at Trentham, a Pike seized the head of a swan as she was feeding under water, and gorged so much of it as killed them both: the servants, perceiving the swan with its head under water for a longer time than usual, took boat, and found both swan and pike dead." But there are instances, says Mr. Pennant, still more surprising, and which indeed border a little on the marvellous. Gesner relates that a famished Pike in the Rhone, seized on the lips of a mule that was brought to water, and that the beast drew the fish out before it could disengage itself: he adds that people have been bitten by these voracious animals while they were washing their legs, and that they will even contend with the Otter for its prey, and endeavour to force it out of his mouth.

The smaller kind of fishes are said to shew the same uneasiness and detestation at the presence of a Pike as the smaller birds do at the sight of a hawk or an owl, and when the Pike, as is often the case, lies dormant near the surface of the water, are ob-

served to swim around in vast numbers, and in the greatest anxiety. In the ditches near the Thames Pike are often haltered in a noose, and taken while they lie thus asleep, as they are frequently found in the month of May.

The longevity of the Pike is very remarkable, if, as Mr. Pennant observes, we may credit the accounts given by authors. *Rzaczyński* in his *Natural History of Poland* tells us of one that was ninety years old; but *Gesner* relates that in the year 1497, a Pike was taken near Hailburn in Suabia, with a brazen ring affixed to it, on which were these words in Greek characters. "I am the fish which was first of all put into this lake by the hands of the Governor of the Universe Frederick the second, the fifth of October 1230," so that, adds Mr. Pennant, the former must have been an infant to this *Mathusalem* of a fish.

The Pike spawns in March and April, according to the warmth or coldness of the season; depositing its ova among the weeds, &c. near the water's edge: the young are said to be of very quick growth: indeed *Bloch* considers it as the quickest grower of all the European fishes whose progress he has had an opportunity of observing. The first year, according to this author, it arrives at the length of from six to ten inches; the second to twelve or fourteen; and the third to eighteen or twenty. The stomach of the Pike is strong and muscular and of very considerable length: it is also furnished with several large and red pleats: in the intestinal canal have been observed several kinds of worms

and particularly tæniæ, of which not fewer than an hundred have been seen in a single fish.

The Pike is generally supposed to have been introduced into England in the reign of King Henry the eighth, and it is said that they were then so rare that a Pike was sold for double the price of a house-lamb in February, and a Pickrel or Jack for more than a fat capon: yet as it occurs in the famous inthronization feast of Archbishop Nevil in the year 1466, it was probably known in our island at a much earlier period.

SEA PIKE.

Esox Sphyræna. E. argenteo-carulescens dorso dipterygio, maxilla inferiore longiore, pinnis inferioribus rubentibus.

Silvery-blueish Pike, with two dorsal fins, lower jaw longer than the upper, and lower fins reddish.

Esox Sphyræna. E. dorso dipterygio, antica spinosa. Lin. Syst. Nat. p. 515.

Esox pinnis dorsi duabus. Bloch. t. 339.

Sphyræna. Salv. Aldr. Will. Jonst. &c. &c.

Sea Pike, or Spit-Fish. *Charlt. onomast. p. 136.*

This species in its general habit or appearance is considerably allied to the common Pike, but is of a silvery blueish colour, dusky on the back, and slightly tinged with yellow on the head and about the gills: the first dorsal fin is situated on the middle of the back, and is furnished with only four rays, which are all strong or spiny: the second, which is placed opposite the anal fin, consists of about ten rays, of which the first only is spiny:

both these dorsal fins, together with the tail, which is deeply forked, are of a dusky tinge: the pectoral, ventral, and anal are of a pale red: the eyes are moderately large; the lower jaw longer than the upper; the scales middle-sized, and the lateral line nearly strait. This fish is an inhabitant of the Mediterranean and Atlantic seas; growing to the length of about two feet. It is said to be in considerable esteem for the table, the flesh resembling that of the Cod-Fish.

 BARRACUDA PIKE.

Esox Barracuda. E. elongatus fuscus, subtus albidus, dorso dipterygio, cauda furcata.

Brown, elongated Pike, whitish beneath, with two dorsal fins, and forked tail.

Barracuda. *Catesb. Carol. 2. t. 1.*

HABIT of the common Pike, but of a longer form, and more slender or taper in proportion towards the tail: size very great, some having been seen of ten feet in length; but the more common size, according to Catesby, is from six to eight feet. eyes large; mouth very wide, with the under jaw longer than the upper, which is armed with four large teeth placed at the fore-part of the jaw: next the head are placed ten smaller teeth, being five on each side; and in the fore-part of the under jaw grows a large single tooth: the dorsal fins are two in number; the first situated on the middle of the

back, and the second towards the tail, opposite the anal fin: the tail is pretty deeply forked: general colour brown, with whitish abdomen. This is said to be an extremely strong, fierce, and dangerous fish, swimming with great rapidity, and preying on most others: it is even said sometimes to attack and destroy bathers, in the same manner as the Shark. It is found in great plenty in the tropical seas, and is frequent about the West-Indian islands. It is in no estimation as a food, the flesh being rank, and even, sometimes, according to common report, highly noxious, occasioning all the symptoms of the most fatal poisons; yet, in spite of these bad qualities, we are assured by Catesby that the hungry Bahamians frequently make their repast "on its unwholesome carcase." The situation of the teeth of this fish, as described by Catesby, seems rather anomalous, and I know not whether it may be considered as sufficiently correct or not.

FOX PIKE.

Esox Vulpes. E. fuscus, pinna in medio dorsi, membrana branchiostega triradiata. Lin. Syst. Nat. p. 516.

Brown Pike, with dorsal fin in the middle of the back, and three-rayed gill-membrane.

Vulpes Bahamensis. *Catesb. Car. 2. t. 1. f. 2.*

GENERAL length about sixteen inches: habit somewhat similar to that of a common Pike, but remarkably slender or taper towards the tail, which is very deeply and widely forked: mouth of mode-

rate width: jaws equal, and with a single row of sharp teeth in each: dorsal fin situated in the middle of the back: scales rather large, thin, and rounded: colour of the whole fish brown, paler or lighter beneath: native of Carolina and the West-Indian islands.

MALABAR PIKE.

Esox Malabaricus. E. subflavescens, pinna in medio dorsi, pinnis fusco transversim fasciato-maculatis, cauda rotundata.

Yellowish Pike, with dorsal fin on the middle of the back, fins transversely barred with brown spots, and forked tail.

Esox Malabaricus. E. dentibus caninis quatuor, radiis quinque membranæ branchiostegæ. Bloch. t. 392.

LENGTH of the specimen described about twelve inches: habit distantly allied to that of the common Pike, but with the tail rounded, and the dorsal fin placed on the middle of the back: colour yellowish, dusky on the back: lower jaw longer than the upper: eyes rather large: scales large, and very distinct: lateral line bending a little downwards at its origin from the gill-covers, and then running straight to the tail: all the fins, together with the tail, of a very pale, transparent brown, barred by several rows of deep-brown spots. Native of Malabar, inhabiting rivers and rivulets, and in considerable esteem for the table.

WEST-INDIAN PIKE.

Esox Synodus. E. pinna in medio dorsi, membrana branchiostega quinqueradiala. Lin. Syst. Nat. p. 516.

Pike with the dorsal fin on the middle of the back, and five-rayed gill-membrane.

GREATLY allied to the *E. Vulpes*. Native of the American seas, and according to Cope sometimes found in the Mediterranean: body marked by a few transverse dusky bands: scales large: abdomen silvery: fins striped with black.

SILVER-STRIPE PIKE.

Esox Hepsetus. E. linea laterali argentea. Lin. Syst. Nat. p. 517. Piquitinga. Marcgr. Bras. p. 159.

Pike with silvery lateral line.

Esox marginatus. E. pinna dorsali anique oppositis, linea laterali argentea, maxilla inferiori sextuplo longiori. Lin. Gmel. p. 1393. Forsk. Arab. p. 67.

A SMALL species: body elongated, somewhat transparent, and covered with rather large scales: tail bilobate, and scaled like the body: upper jaw short; lower six times as long, and rather soft at the tip: general colour brownish above, and whitish beneath. Native of the Indian and American seas.

SILVER PIKE.

Esox Argenteus. E. fuscus, litteris flavicantibus pictus. Lin. Gmel. G. Forst. it. circa orb. 1. p. 159.

Dusky Pike, variegated with yellowish characters.

NATIVE of New Zealand and other islands in the Southern Ocean, inhabiting fresh waters.

NAKED-HEADED PIKE.

Esox Gymnocephalus. E. maxillis aequalibus, operculis obtusissimis, capite denudato. Lin. Syst. Nat. p. 517.

Pike with naked jaws, very obtuse gill-covers, and naked head.

NATIVE of India: said by Linnæus to be of the size of a Lance.

BRASILIAN PIKE.

Esox Brasiliensis. E. maxilla inferiore longissima, corpore serpentino. Lin. Syst. Nat. p. 517.

Pike with snake-shaped body, and very long under jaw.

Esox Brasiliensis. Bloch. t. 391.

LENGTH about twelve or fifteen inches: body long and subcylindric: scales rather large: colour pale green, with five or six broad, semidecurrent, brown bands across the back: abdomen silvery: head formed in such a manner as to resemble that of a Swordfish inverted; the lower jaw being semi-cylindric, and vastly longer than the upper: both

are edged with small sharp teeth: eyes large: fins pale: tail sharply forked, with the lower lobe rather longer than the upper. Native of the Indian and American seas: considered as an excellent fish for the table, according to some.

SPUR-FINNED PIKE.

Esox Chirocentrus. *E. maxilla inferiore longiore, spina utrinque thoracica super pinnas pectorales.*

Pike with the lower jaw longer than the upper, and the breast armed on each side by a spine over the pectoral fin.

Esox Chirocentrus. *Cepede. 5. p. 317.*

SLIGHTLY described, and figured by Cepede from the manuscripts of Commerson: habit like that of the common Pike: lower jaw longer than the upper but rounded at the tip: teeth sharp and rather large in both jaws: scales middle-sized: dorsal fin single, and placed opposite the anal: on each side the thorax, immediately over the pectoral fin, a very strong and slightly curved spine about two thirds the length of the fin, and of which it appears to be in reality no other than a kind of first ray standing separate from the fin itself: tail forked. Native of the Indian seas.

GOLD-DRUM FISH



CHINESE PIKE.

Esox Chinensis. *E. capite gracili, maxilla inferiore longiore, oculis magnis prominulis.*

Pike with slender head, lower jaw longer than the upper, and large protuberant eyes.

Sphyræna Chinensis. *Cepede. 5. p. 327.*

SLIGHTLY described by Cepede from the MSS. of Commerson; scales middle sized: native of the Indian seas: general colour green with a cast of silver.

 GOLD-GREEN PIKE.

Esox Aureoviridis. *E. aureo-viridis, pinnis dorsalibus duabus, ore acuto, maxilla inferiore longiore.*

Gold-green Pike, with two dorsal fins, and sharp-pointed mouth with the lower jaw longer than the upper.

Sphyræna aureo-viridis. *Cepede. 5. p. 329.*

AN elegant species, according to Cepede, who describes and figures it from the drawings of Plummer. Habit resembling some of the Spari: head pointed: colour as expressed in the specific character: scales middle-sized: at the base of the first dorsal fin a somewhat strong spine: tail forked or lunated. Native of the American seas.

BECUNA PIKE.

Esox Becuna. *E. elongatus, argenteo-cærulescens, corpore utriusque cæruleo maculato pinnis dorsalibus duabus, cauda furcata.*

Silvery-blueish Pike, marked on each side by a row of deep-blue spots, with two dorsal fins, and forked tail.

Sphyræna Becuna. *Cepede. 5, p. 329.*

DESCRIBED by Cepede from the drawing of Plumier: shape considerably elongated: head slender, with lower jaw longer than the upper: scales middle-sized: general colour silver-blue, with a series of pretty large, round, dark-blue spots along each side the body, tail spotted with blue. Native of the American seas.

GAR PIKE.

Esox Belone. *E. anguilliformis viridi-cæruleus, abdomine argenteo, maxillis subulatis.*

Eel-shaped Pike, blue-green above, with silvery abdomen, and very long, taper jaws.

Esox Belone. *E. rostro utraque maxilla subulato. Lin. Syst. Nat. p. 517.*

Esox Belone. *E. rostro subulato. Bloch. t. 33.*

Gar Pike. *Penn. Brit. Zool.*

To the history of this fish little can be added to what has already been detailed by Mr. Pennant in the third volume of the British Zoology. It is a native of the European seas, and arrives in shoals on the British coasts towards the beginning of summer, preceding the Mackrel. Its general

length is from two to three feet ; sometimes more : the jaws are very long, slender, and sharp-pointed ; the lower extending much farther than the upper, and the edges of both armed with numerous, short, slender teeth : the inside of the mouth is purple : the tongue small : the eyes large, with silvery irides : the body is slender, and the belly flat, bounded on both sides by a rough line : the colours of the living fish are extremely beautiful ; the back being of a very fine green, beneath which is a rich changeable blue and purple cast, while the sides and belly are of a bright silver-colour : the pectoral fins consist of fourteen rays, the ventral, which is small, and very remote from the head, of seven, the first of which is spiny : the dorsal and anal fins are situated near the tail, and grow gradually shallower as they approach that part, which is pretty deeply forked. This fish is in considerable esteem as a food, but is rarely admitted to superior tables, on account of a prejudice entertained against the appearance of the spine, and bones, which acquire a green colour by boiling.

SAURY PIKE.

Esox Saurus. E. anguilliformis subfuscus, abdomine argenteo, maxillis subulatis aequalibus, pinna dorsali analique in pinnulas versus caudam continuatis.

Brownish Eel-shaped Pike, with silvery abdomen, slender tapering jaws of equal length, and the dorsal and anal fin continued into pinnules towards the tail.

Saurus. Rondel. pisc. p. 232.

Saury Pike. *Penn. Brit. Zool.*

THE Saury Pike may be considered as a comparatively rare species, and seems to have been first described by Rondeletius, who mentions it among the Mediterranean fishes, under the title of *Saurus*. Its general length is about a foot: the body eel-shaped, growing suddenly taper as it approaches the tail: the snout is about an inch long, slender, and with the jaws produced, like those of the Gar, but both of equal length, and the upper mandible is a little incurvated: the pectoral fins are small; the ventral still smaller: the dorsal and anal shallow, situated near the tail, and are each continued into the appearance of six or seven finlets above and below, like those in the genus *Scomber*, as far as the base of the tail, which is deeply forked. The colour of the whole animal is dusky above, and silvery beneath; or with equal propriety, it might be said to be silvery, with dusky or blueish-brown back. According to Rondeletius it resembles the Mackrel in taste, being in that respect much allied to the Gar. Mr. Pennant in-

forms us that in the month of November 1768, great numbers of this species were thrown by a storm on the shores of Leith near Edinburgh. In an elegant drawing of this fish, communicated by the Rev^d. Mr. Rackett, F.L.S. I observe that the skin appears reticulated by fine lines, decussating each other at equal distances; and that the tail is obliquely streaked by several transverse dusky lines.

In a specimen figured in the work of Cepede the jaws are represented curving upwards, contrary to what has hitherto been observed; the specimen figured in the work of Mr. Pennant, as well as that in Rondeletius, and the last mentioned drawing by Mr. Rackett having the jaws strait.

BONY-SCALED PIKE.

Esox Osseus. E. virescens, abdomine subroseo, squamis quadratis osseis, rostro prælongo.

Greenish Pike, with slightly rose-coloured abdomen, square bony scales, and very long snout.

Esox osseus. E. maxilla superiore longiore, squamis osseis.
Lin. Syst. Nat. p. 516.

Esox radiis primis serratis. Bloch. t. 390.

THIS is a fish of very considerable size, and of a highly remarkable appearance, being covered every where, except on the head and gill-covers, with very large, square, bony or very strong scales disposed in oblique rows along the sides: each individual scale is itself marked into four triangular spaces: the head is large, without scales, and slightly marked into subhexagonal divisions; the

gill-covers radiated; the snout very long; the upper jaw longer than the lower, and both beset along the edges with very numerous sharp teeth of unequal sizes; three small ones succeeding each of the longer throughout the whole length of the jaws: the eyes are rather small than large, and the nostrils are double on each side, and placed near the tip of the snout: the pectoral and ventral fins are small, and of an ovate shape: the dorsal and anal of similar form, and placed opposite each other at a small distance from the tail, which is rather short, and rounded or ovate: the first ray of all the fins, as well as that on each side the tail, is extremely strong, being edged with a double row of very strong scaly processes: a similar row, but still stronger, runs along the ridge of the back, consisting of pretty large, heart-shaped scales: the body is nearly cylindrical, or but very slightly compressed. The general colour of this fish is green, with a tinge of red about the gills, abdomen, and fins, of which the dorsal and anal, with the tail, are spotted with black. It is a native of the American lakes and rivers, growing to the length of three or four feet, and is said to be of a very voracious nature, swimming briskly, and preying on almost all the smaller fishes. It is considered as an excellent fish for the table, the flesh being white, firm, and well-flavoured.



CERAPIDON FORK

CEPEDIAN PIKE.

Esox Cepedianus. *E. squamis quadratis osseis, rostro longo, maxillis spatulaformibus.*

Pike with square bony scales, long snout, and spatule-shaped jaws.

Lepisosteus Spatula. *Cepede, 5. p. 331. pl. 6. f. 2.*

SIMILAR to the preceding species in general appearance, bony scales, &c. but with the head more compressed, flattened, and radiated with large bony divisions: the sides of the upper jaw, which is a trifle longer than the lower, are divided into four or five radiated bony plates, and about the eyes are several smaller divisions: the gill-covers are composed, as in the former species, of three plates, but the principal difference consists in the form of the snout, which is not so long in proportion, is dilated towards the tip into the form of a spatula, and is beset on each side with short, unequal, and crooked teeth, besides which the upper jaw is furnished with another row of longer and sharper ones, at unequal distances: the palate is also beset with several small teeth: the fins, in their form and situation, perfectly resemble those of the preceding species, but differ in the number of their rays; the dorsal having eleven, and the anal nine, whereas in the former species both the dorsal and anal have nine only. Native of the American seas and rivers. Described by *Cepede*.

LEVERIAN PIKE.

Esox Leverianus. E. squamis quadratis osseis, maxillis latis, subæqualibus, rotundatis.

Pike with square bony scales, and broad, nearly equal, rounded jaws.

Manjuari. *Descripcion de diferentes piezas de Historia Natural las mas del ramo maritimo, representadas en sententia y cinco laminas. su autor Don Antonio Purra. t. 40. f. 2. ?*

SIMILAR to the first species in all particulars except that of the head, which is much flatter, and wider in proportion, with a broad and flat snout of very moderate length: the jaws are very nearly equal, the tip of the upper just curving slightly over that of the lower: teeth rather small for the size of the animal, and set in a single row in each jaw; those in front being larger and longer than the rest, as in both the preceding kinds: outline of the upper jaw somewhat undulated, and when viewed in direct profile slightly resembling the shape of that of the Nilotic Crocodile: length of the specimen about five feet: colour an uniform pale whitish or yellowish brown.

Whether this and the immediately preceding be truly distinct, or whether they may not constitute a variety of the same species, may, perhaps, be doubted.

CHILI PIKE.

Esox Chilensis. E. supra aureus, subtus argenteus, squamis quadratis osscis, maxillis æqualibus, linea laterali cærulea.

Gold-coloured Pike, silvery beneath, with square bony scales, equal jaws, and blue lateral line.

Esox Chilensis. E. maxillis æqualibus, linea laterali cærulea. Lin. Gmel. p. 1392. Molina Chili p. 196.

ALLIED to the preceding kinds, but of a different colour, being described by Molina, who seems to have been its first scientific observer, as of a golden cast above, and silvery beneath: the body is cylindrical, covered with square and bony, but easily deciduous scales: the head large and flattened: the eyes large, orbicular, and lateral: the gape moderate: the teeth small, fixed, and close-set: the tongue entire, and the palate smooth: the branchial aperture lunated: the gill-covers composed of two plates: the lateral line blue, and the fins short and radiated. Native of the seas about Chili, where it is much esteemed for the table, having a white, flaky, semi-transparent, and delicious flesh: length from two to three feet.

GREEN PIKE.

Esox Viridis. *E. viridis*, maxilla inferiore longiore, squamis tenuibus. *Lin. Gmel. p. 1389.*

Green Pike, with large square thin scales, and lower jaw longer than the upper.

SIMILAR to the above kinds as to habit, but of a smaller size, and covered with large, thin, soft, square scales; lower jaw longer than the upper: dorsal and anal fin exactly opposite: colour green. Native of the seas about Carolina, where it was observed by Dr. Garden. It appears to have been confounded by some with the *Acus maxima squamosa viridis* of Catesby, which, though not accurately figured by that author, is undoubtedly intended for the *Esox osseus* or *Bony-scaled Pike*. In the present species, according to Garden, the dorsal fin is furnished with eleven rays, and the anal with seventeen.

 VIPER-MOUTHED PIKE.

Esox Stomias. *E. dentibus quatuor cæteris multo longioribus ore clauso prominentibus.*

Pike with four of the teeth much longer than the rest, and projecting from the mouth when shut. *Nat. Misc. 9 pl. 344.*

Vipera marina. The Viper-Mouth. *Catesb. Carol. 2. pl. 19. Append.*

THIS curious fish, which might perhaps more properly constitute a distinct genus than be ranked