

VIPER-MOUTHED PIKE.

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under that of Esox, is a native of the Mediterranean sea, and seems to have been first described by Catesby from a specimen presented to Sir Hans Sloane. The specimen above-mentioned is preserved in the British Museum, but does not exhibit on its surface any of that reticulated or hexagonally marked appearance expressed in the figure of Catesby: this perhaps may have been obliterated by length of time. The representation here given is considerably smaller than the natural size; the fish being eighteen inches in length: its colour, when living, is said to be an obscure greenish brown. A specimen occurs also in the Leverian Museum.

POLYPTERUS. POLYPTERUS.

Generic Character.

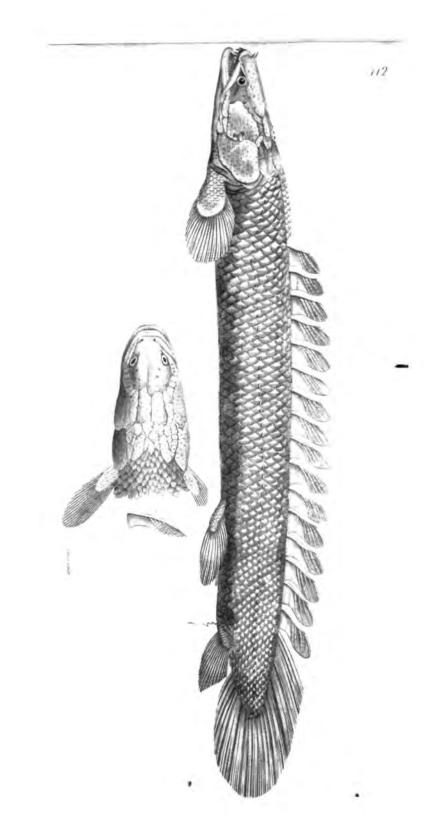
Membr : branch : uniradiata. Pinnæ dorsales numerosæ. Dorsal fins numerous.

NILOTIC POLYPTERUS.

Polypterus Niloticus. P. viridis, abdomine nigro maculato.
Green Polypterus, with the abdomen spotted with black.
Polyptere Bichir. Geoffroy. Annales du Museum d'Histoire Naturelle. 1. p. 57. pl. 5.

THE fish which constitutes this new and highly remarkable genus appears to have been first scientifically described by Mons^r. E. Geoffroy, who considers it as forming in some degree a connecting link between the osseous and the cartilaginous fishes. Mons^r. Geoffroy's observations relative to its form and nature may be found in the work mentioned at the close of the specific character.

In point of general affinity it seems mo., nearly allied to the genus Esox, and especially to those species which are furnished with large, strong and bony scales. Its shape is long and serpentiform, the body being nearly cylindrical: the head is defended by large bony pieces or plates, and the body covered with large and strong scales, very



NILOTIC POLYPTERUS.

closely affixed to the skin, so that it may be considered as in some degree a mailed fish : the pectoral and ventral fins, but particularly the former, are attached by a sort of strong and scaly base or cubit, allowing the same kind of motion as in those of the genus Lopius among the cartilaginous fishes: the pectoral fins are placed immediately beyond the head; the ventral at a vast distance beyond it. the abdomen in this fish being of a very unusual length: the anal fin is seated at some distance beyond the ventral, very near the tail, and is of an ovate, but slightly pointed shape : the tail, which is rather small and short for the size of the animal, is of a rounded or ovate form, and consists only of soft. strait, articulated rays, so disposed in the membrane as to allow but little freedom of motion in this part: at a small distance beyond the head, along the whole length of the back, runs a continued series of small dorsal fins, to the number of sixteen, seventeen, or eighteen, the number varying slightly in different individuals : each of these fins is of an ovate shape, upright, or but very slightly inclining backwards, and is furnished with a very strong spine at its base or origin, while the remaining part consists of four or five soft and branched rays, connected by their uniting membrane: the first or spiny ray, at about two thirds of its height from the base, sends off a small secondary point or spine: the lateral line commences at a small distance from the gill-covers, from which it slightly descends for a small space, and then runs strait to the tail: the eyes are small and round :

NILOTIC POLYPTERUS.

the mouth of moderate width; the jaws furnished with a row of rather small and sharp teeth, and the upper lip with a pair of small and short tentacula at its tip: the vent is placed very near the tail, at the commencement of the anal fin: the branchial aperture is large, and in place of a membrane there is only a single bony plate or semicircular arch. The usual length of this fish is about eighteen inches, and its colour sea-green, paler or whitish on the abdomen, which is marked by some irregular black spots, more numerous towards the tail than towards the head: in the pectoral fins are usually about thirty-two rays; in the ventral twelve; in the anal fifteen; and in the tail nineteen. The stomach is long and large, measuring about four inches and a half; the liver long, and composed of two unequal lobes: the swimming-bladder double, and loose: the ovaries long, and the eggs about the size of millet-seeds.

This fish is known to the Egyptians by the name of *Bichir*, and is considered as a very rare animal: it is supposed in general to inhabit the depths of the Nile, remaining among the soft mud, which it is thought to quit only at some particular seasons, and is sometimes taken in the fishermen's nets at the time of the decrease of the river. It is said to be one of the best of the Nilotic fishes, having a white and savoury flesh; and as it is hardly possible to open the skin with a knife, the fish is first boiled, and the skin afterwards drawn off whole.

HEARING - CONTROLLARD

FLOPS.

Generic Character.

brities in maxillarum margine, palato. Membr : branch : radiis tri-

ginta; præterea exterius in medio armata dentibus quinque.

Caput lave. Dentium sca- || Head smooth: edges of the jaws and palate rough with teeth.

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Gill-membrane with thirty rays, and armed on the outside in the middle with five teeth.

SAURY ELOPS.

Elops Saurus. E. cauda supra infraque armata. Lin. Syst. ALCONTRACTOR AND A CONTRACTOR Nat. p. 518.

Elops with the tail armed above and below with a spine. Saurus maximus. Sloane Jam. 2. p. 284. t. 251.

Elops scuto mentali, pinna dorsali anali opposita. Bloch. t. 393.

HE Saury Elops, according to Sir Hans Sloane, is known in Jamaica by the name of the Sein-Fish, or Sea Gally-Wasp. He describes it in the following manner.

" This fish was about fourteen inches long, in the middle five inches round, and tapering to both ends: the mouth in both jaws had one row of small sharp teeth, and on the upper two more within, parallel to them, and a row of the same on the upper part of the cartilaginous tongue: three

SAURY ELOPS.

quarters of an inch from the end of the snout were the eyes, round and grey: there were two *pinnæ post branchias*, two under the belly, one on the middle of the back, *post anum* another, and a forked tail: it was all over scaly, the back of a dark brown, and the belly of a white colour."

In general habit the Saury Elops bears some resemblance to a Pike, or rather to a Salmon : the scales are of moderate size; the head smooth and without scales; the tail much forked, and armed both above and below by a strong spine, forming a first or spiny ray on each side the tail: from the base of the tail, in the specimen figured by Dr. Bloch, runs a black stripe to the end of the middle division : the general colour of the fish is a silvery grey, dusky on the back, silvery on the abdomen, the head being slightly tinged with yellow: the fins are of a blueish brown. "In the specimen above mentioned Dr. Bloch was not able to perceive the spine or strong ray on each side the tail. In a fine specimen in the British Museum it is very con-Dr. Bloch observes, as a distinguishing spicuous. character of this fish, that the chin or under part of the mouth is armed by a kind of small, oblong, bony shield, interposed between the sides of the gill-membrane.

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ARGENTINA. ARGENTINE.

Generic Character.

Dentes in maxillis, lingua.

Membr: branch: radiis octo.

Corpus ano caudæ vicino. Pinnæ ventrales multiradiatæ. Teeth in the jaws and tongue. Gill-membrane with eight rays. Vent near the tail. Ventral fins many-rayed.

TOOTH-TONGUED ARGENTINE.

Argentina Glossodonta. A. fusco-argentea, lingua palatoque imo osseo-tuberculatis, pinna ani octo-radiata.

Silvery-brown Argentine, with the back of the palate and tongue beset with bony tubercles, and eight-rayed anal fin. Argentina glossodonta. A. pinna ani radiis octo. Lin. Gmel. p. 1394. Forsk. Arab. p. 68.

A HIGHLY elegant species: general size and proportion that of the Mugil Cephalus or grey mullet: colour dusky brown, accompanied by a most resplendent silvery gloss: scales rather large, rounded, and well defined, and disposed into a kind of stripes, as in the Grayling: irides silvery: upper jaw longer than the lower, and forming a kind of obtuse snout: teeth in front of the upper jaw, very numerous, small, setaceous, and disposed in two

128 PEARL-BLADDERED ARGENTINE.

parallel ranges: those in front of the lower jaw disposed in a single range: base of the upper jaw, towards the throat, beset or paved with numerous, small, orbicular grinders or bony tubercles: tongue like that of some small quadruped, but on its backpart, or towards the throat paved with similar tubercles to those of the upper jaw: lateral line strait: tail bifid, and scaly between the lobes. Native of the Red Sea.

PEARL-BLADDERED ARGENTINE.

Argentina Sphyræna. A. argentea nitidissima, pinna ani radüs novem.

Bright-Silvery Argentine, with nine rays in the anal fin.

Argentina Sphyræna. A. pinna ani radiis novem. Lin. Syst. Nat. Gmel. p. 1394.

Pisciculus Romæ Argentina dictus. Will, ichth. p. 229.

This is a small fish inhabiting the Mediterranean sca, and is remarkable for the brilliancy of its appearance, being of a bright silver-colour, with a cast of green on the upper parts, and a purplish tinge on the head: the air-bladder is of as bright a colour as the body, resembling polished silver, and, together with the scales, affords some of the best kind of silvery matter used in the preparation of artificial pearls, being washed off, collected, and introduced into the small globes of glass blown for that purpose. The scales of many other fishes however are used in the same manufactory, which is said to be principally carried on in the city of Paris.

MACHNATA ARGENTINE.

Argentina Machnata. A. lineari-lanceolata argentea, pinna ani radiis septendecim.

Linear-lanceolate Argentine, with seventeen rays in the anal. fin.

Argentina Machnata. A. pinna ani radiis septendecim. Lin. Gmel. Forsk. Arab.

LENGTH about two spans, or more: colour silvery, with the back of a dusky blueish tinge: shape slender, not unlike that of an Anchovy: scales middle-sized: dorsal, anal, and caudal fins blueishgreen; pectoral and ventral yellowish: lower jaw somewhat longer than the upper: eyes large: teeth small and numerous. Native of the Red Sea.

CAROLINA ARGENTINE.

Argentina Carolina. A. argentata, dorso subfusco, pinna anali radiis quindecim. Lin. Gmel. p. 1395.

Silvery-Argentine, with dusky back, and fifteen rays in the anal fin.

Harengus minor Bahamensis. Catesb. Car. 2. t. 24.

SIZE of a small Herring: colour silvery: lateral line strait: tail forked. Native of Carolina, inhabiting fresh waters.

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ATHERINA. ATHERINE.

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Generic Character.

Caput maxilla superiore planiuscula.

Membr: branch: radiis sex. Corpus fascia laterali argentea. Head somewhat flattened over the upper jaw. Gill-membrane six-rayed. Body marked by a silver lateral stripe.

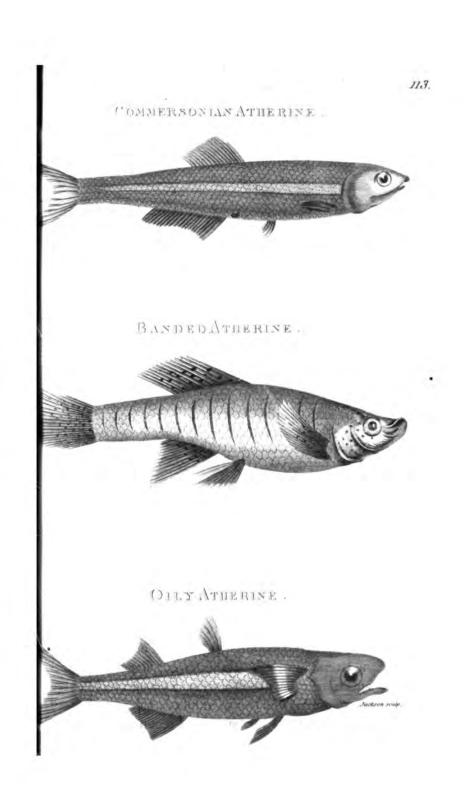
MEDITERRANEAN ATHERINE.

Atherina Hepsetus. A. subflavescens, dorso subolivaceo, pinna ani radiis duodecim.

- Subflavescent Atherine, with subolivaceous back, and about twelve rays in the anal fin.
- Atherina Hepsetus. A. pinna ani radiis fere duodecim. Lin. Syst. Nat. p. 519.

Atherina squamis rhombeis, radiis tredecim in pinna ani. Bloch. t. 393. f. 3.

AN elegant species: shape not unlike that of a Smelt: length six or seven inches: colour yellowish or pale, with some degree of transparency, and subolivaceous or dusky on the back: along the sides, from gills to tail, a bright, well-defined silvery band or stripe, through the middle of which passes the lateral line: eyes rather large: lower jaw somewhat longer than the upper: scales large: fins and tail white: dorsal fins two in number; the first situated on the middle of the back; the second opposite the



JAMAICA ATHERINE ...

anal fin: tail forked. Native of the Mediterranean and Northern seas. We are told by Mons'. Somnini, in his Grecian travels, that this species, which is named Athernos by the modern Greeks, is seen in vast shoals about the coasts of the Grecian islands, and is easily taken in great quantities by the simple device of trailing in the water a horse's tail or a piece of black cloth fastened to the end of a pole; the fishes following all its motions and suffering themselves to be drawn into some deep cavity formed by the rocks, where they are readily secured by means of a net, and may be taken at Mr. Pennant informs us that they are pleasure. taken at almost all times of the year, except in very cold weather, about the coast of Southampton, where they are often called by the name of Smelts.

JAMAICA ATHERINE.

Atherina Menidia. A. subflavescens, subpellucida, fuscia laterali argentea, pinna ani radiis viginti-quatuor.

Subflavescent, subpellucid Atherine, with silvery lateral stripe, and twenty-four rays in the anal fin.

Atherina Menidia. A. pinna ani radiis viginti-quatuor. Lin. Syst. Nat. p. 519.

Menidia corpore subpellucido. Brown Jam. p. 141.

A SMALL species, usually measuring about three inches in length: the head is pretty large in proportion to the body: the silvery lateral band is broad in proportion to the fish, and of a brilliant silver-colour. It is said to be an extremely delicate fish, and is in much esteem with the inhabitants of

SAPANESE ATHERINE.

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Jamaica, in the harbours of which island it is very common, and is called by the name of the Silver-Fish, or Small Anchovy.

SIHAMA ATHERINE.

Atherina Sihama. A. viridi-cærulescens subpellucida, pinna ani radiis viginti-tribus.

Blueish-green subpellucid Atherine, with twenty-three rays in the dorsal fin.

Atherina Sihama. A. pinnis ventralibus subthoracicis, radiis dorsalis pinnæ undecim. Forsk. Arab. p. 70.

SHAPE lanceolate: length about a span and half: silvery band opake and rather obscure: ventral fins situated almost beneath the thoracic ones, so that the fish might be referred to the tribe of Thoracic Fishes: scales middle-sized: native of the Red Sea.

JAPANESE ATHERINE.

Atherina Japonica. A. fusco-rubescens, fascia laterali latissima.
Reddish-brown Atherine, with very broad lateral band.
A. Japonica. A. pinna dorsi unica quinqueradiata. Lin. Gmel. Houttuyn Act. Haarl. 20. p. 340.

LENGTH three or four inches: head without scales: no visible teeth in the jaws. Native of the Japanese sea.

TRANSPARENT ATHERINE.

Atherina Pinguis. A. hyalina, dorso obscuriore, pinnis pectoralibus fascia transversa argentca.

Hyaline Atherine, with the pectoral fins marked by a transverse silver band.

Atherina pinguis. Cepede. 5. p. 371.

NATIVE of the Indian seas: mentioned by Cepede from the MSS. of Commerson: dorsal fin and tail brown; lower fins white: inside of the mouth of a bright silver-colour: esteemed a very delicate fish for the table.

MUGIL. MULLET.

Generic Character.

rius introrsum carinatum. Dentes nulli: Callus inflexus supra sinus oris.

Membr: branch: radiis septem curvis. Corpus carnosum : squamæ magnæ: pinnæ dorsales duæ.

Labia membranacea: infe- || Lips membranaceous; the inferior carinated within: Teeth none: at the corners of the mouth an inflected Callus.

> Gill-membrane with six curved rays.

Body fleshy : scales large : dorsal fins two.

COMMON MULLET.

Mugil Cephalus. M. grisco-argenteus, dorso subfusco, strus lateralibus longitudinalibus subnigris.

Silvery-grey Mullet, with dusky back, and sides striped with longitudinal blackish lines.

Mugil Cephalus. M. pinna dorsali anteriore quinqueradiata. Lin. Syst. Nat. p. 520.

Mugil. Plin. lib. 9. c. 15. 17.

Mugil & Mugilis. Salo. 75. Gesn. Aldr. &c.

Mugil Cephalus. Will, ichth, p. 274.

Mugil corpore nigro lineato, Bloch. t. 394.

Mullet. Penn. Brit. Zool.

HIS fish, the Mugil and Mugilis of the ancient Romans, is a very common inhabitant of the Medi-



COMMON MULLET.

terranean and Northern seas, frequenting chiefly the shallow parts near the shores, and feeding on the smaller kind of worms, sea-insects, and vegetables: its general length is from twelve to fifteen or sixteen inches, and its colour blueish grey, darker on the back and silvery on the abdomen: the sides are marked, like those of the Grayling, with several dusky stripes, according to the rows of scales, which are large and rounded: the fins are blueish: the head is rather large, pointed in front, and somewhat flattened at the top: the mouth small; the tongue rough, and the throat armed at its entrance with two roughened bones: the first dorsal fin, which is situated on the middle of the back, consists of four very strong rays*: the second dorsal fin is placed opposite the anal, and has only soft rays: the base of the dorsal and anal fin, as well as that of the tail, is scaly, and the tail is forked or lunated.

The Mullet is found not only in the European seas, but in the Indian and Atlantic oceans: it is observed to assemble frequently in small shoals near the shore, in quest of food, burrowing into the soft mud and leaving the trace of its head in the form of a round hole.

In the spring and early summer months this fish, like the Salmon, ascends rivers to a considerable distance, and when preparing for these expeditions is observed in shoals near the surface of the water, at which time the fishermen endeavour to avail themselves of the opportunity of surrounding them

* Of five, according to Linnæus.

CRENATED MULLET.

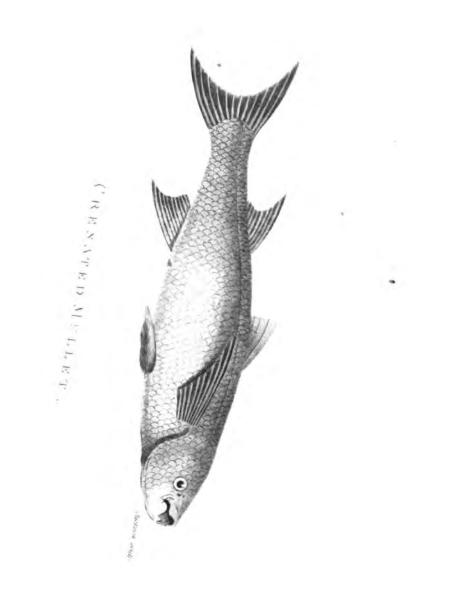
with their nets, which the fish are said to shew great address in escaping from.

The Mullet is considered as an excellent fish for the table, though not a fashionable one in our own country. Dr. Bloch informs us that it is generally eaten with the addition of oil and lemon-juice. The spawn is often prepared into an inferior kind of Caviar called Botargo, by drying and salting it; in which manner also the fish itself, in plentiful seasons, is occasionally preserved.

CRENATED MULLET.

Mugil Crenilabis. M. albidus, subfusco lineatus, labris crenatis.
Whitish Mullet, with brownish stripes, and crenated lips.
Mugil crenilabis, M. pinna dorsali anteriore radiis quatuor flexilibus, posteriore inermibus, labiis crenatis, inferiore bicarinato. Lin, Gmel. Forsk. Arab.

Size of the common Mullet: length about twelve inches: colour whitish; scales rather large, and marked by a dusky streak: upper lip gaping; lower bicarinated within, and both lips crenulated on the edges: fins glaucous white; the pectoral marked at the base by a round black spot: tail forked. Native of the Red sea: observed by Forskal, who mentions what he considers as three varieties, in one of which, called *Seheli*, the lips are not crenated; in the second, called *Our*, both the lips are ciliated, and the lower furnished with a single carina; and in the third, called *Tade*, the upper lip is finely ciliated, and the pectoral fins are without the black spot.



AMERICAN MULLET,

Mugil Albula. M. albido-argenteus, pinna dorsali anteriore radiis quatuor.

Silvery-white Mullet, with four rays in the first dorsal fin. Albula Bahamensis. Catesb. 2. t. 6. Mugil argenteus minor, &c. Brown. Jam. p. 450.

GREATLY allied to the common Mullet, but of a more slender form : mouth small and toothless : tail large and forked : inhabits the American seas, and is very frequent about the Bahama islands. It is considered as an excellent fish for the table.

INDIAN MULLET.

Mullus Malabaricus. M. griseus, squamis magnis ciliatis, pinna dorsali secunda analique falcatis.

Grey Mullet, with large ciliated scales, and the first dorsal and anal fin falcated.

Peddaraki Sovero. Russ. pisc. ind. t. 182.

LENGTH about two feet: head small; nape sinking in a little before the rise of the back: scales large and ciliated, both on the body and gill-covers: those on the head somewhat smaller: colour similar to that of the common Mullet, but with less conspicuous longitudinal streaks: first dorsal fin fourrayed: second dorsal fin falcated at the back-part: anal fin of nearly similar shape: tail large, and widely lunated. Native of the Indian seas.

TANG MULLET.

Mugil Tang. M. griseo-argenteus, lineis longitudinalibus subflavis, operculis desquamatis.

Silver-grey Mullet, with yellowish longitudinal streaks, and scaleless gill-covers.

Mugil Tang. M. ore angustato, operculis desquamatis. Bloch. t. 395.

LENGTH about a foot: shape rather shorter and thicker than that of the common Mullet: head large; mouth small: eyes rather large: gill-covers without scales: those on the body large: colour silvery white, with longitudinal yellowish streaks: back brown: fins reddish: first dorsal four-rayed: tail slightly lunated. Native of Guinea, inhabiting fresh waters: called by the natives *Tang*, and considered as an excellent food.

Of this species a supposed variety is described by Dr. Bloch, in which the gill-covers were scaled, the colour of the fish brighter, the eyes more vertical, and the head smaller.

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STALLING TOUCH SOLE MALLER

PLUMIER'S MULLET.

Mugil Plumieri. M. luteus, ore amplo, pinnis dorsalibus duabus spinosis.

Yellow Mullet, with wide mouth, and both dorsal fins spiny. Mugil ore amplo. Bloch. t. 396.

LENGTH about twelve inches: shape like that of the Tang, but with a very large head, wide mouth, and fleshy lips, which appear beset with a row of very small teeth round the edges: colour yellow, deeper or brownish-orange above: fins pale yellow: the first dorsal with four very strong rays: second dorsal with six strong rays also: scales large, rounded, striated, and each marked at the base by a dusky spot: tail slightly lunated. Native of the American seas: observed by Plumier, from whose drawing Dr. Bloch's figure of this species was engraved.

BLUE-SPOTTED MULLET.

Mullus Cæruleomaculatus. M. fusco-cærulescens, abdomine argenteo, pinna dorsali radiis novem, pectoralibus macula cærulea.

Blueish-brown Mullet, with silvery abdomen, nine rays in the dorsal fin, and a blue spot in the pectoral fins.

Mugil cæruleo-maculatus. Cepede. 5. p. 389.

SIZE of common Mullet : colour blueish brown, with silvery abdomen : dorsal and caudal fins brown: lower fins pale : at the base of the pectoral

FORSKAL'S MULLET.

fins a blue spot: the dorsal fin has nine rays, the pectoral sixteen, and the anal ten. Native of the Indian seas: observed by Commerson.

CHILI MULLET.

Mugil Chilensis. M. pinna dorsali unica, cauda simplici. Lin. Gmel. Molin. Chil. p. 198.
Mullet with single dorsal fin, and simple or even tail.

LENGTH about twelve inches: general appearance extremely similar to that of the Common Mullet, but distinguished by having only one dorsal fin. Native of the American seas, and in much esteem as a food.

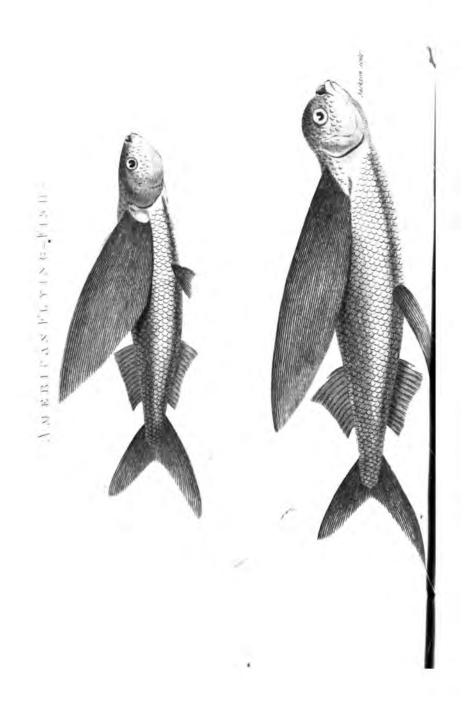
FORSKAL'S MULLET.

Mugil Chanos. M. pinna dorsi unica, caudæ utrinque bialata. Lin. Gmel.

Mullet with single dorsal fin, and tail furnished with two wings or processes on each side.

Mugil magnus. Forsk. Arab. p. 74.

A MUCH larger fish than the common Mullet: colour silvery: scales large, rounded, and finely striated: head slightly flattened: tail widely forked, and furnished on each side, towards the middle, with two membranaceous wings or processes. Native of the Red sea: observed by Forskal.



EXOCOETUS. FLYING-FISH.

Generic Character.

utroque latere connexis. Membr : branch : radiis decem.

Caput squamosum: maxillis || Head scaly: connected on each side. Gill-membrane ten-rayed.

Pinnæ pectorales maximæ, volatiles.

Pectoral fins very large, giving the power of flight.

MEDITERRANEAN FLYING-FISH.

Exocoetus Exiliens. E. argenteus, dorso subfusco, pinnis ventralibus pone medium abdominis.

Silvery Flying-Fish, with brownish back, and ventral fins situated beyond the middle of the abdomen.

Exocoetus exiliens. E. pinnis ventralibus caudam attingentibus. Lin. Gmel. p. 1400.

Ekocoetus pinnis ventralibus elongatis prope anum. Bloch. t. 397.

Hirundo Plinii. Aldrov. p. 144.

Rondine. Salv. p. 185. Mugil alatus. Rondel. Will. &c.

THE fishes of this genus, which are very few in number, are remarkable for the extreme length and size of their pectoral fins, by which they are enabled to spring occasionally from the water, and to support a kind of temperary flight or continued motion through the air, to the distance of two or three hundred feet, when, the fins becoming dry,

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they are again obliged to commit themselves to their own element. The species at present to be described is chiefly observed in the Mediterranean and Atlantic seas, where, according to an ingenious naturalist, " it leads a most miserable life: in its own element it is perpetually harassed by the Dorado and other fish of prey; and if it endeavours to avoid them by having recourse to the air, it either meets its fate from the Gull and the Albatross, or is forced down again into the mouth of the inhabitants of the water, which keep pace with its aerial excursion." This however ought to be considered as an exaggerated representation of the creature's state of existence, since, by the admirable balance ordained by Nature, the weaker animals have powers of escape in exact proportion to their danger*.

It should be observed that this power of flight or temporary skimming through the air to a con-

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* To this purpose I may quote the observation of an ingenious gentleman (Capt. G. Tobin) who has had frequent opportunities of observing the habits of the Flying-Fish, and who thus expresses himself in a note annexed to a drawing of this species observed about the coasts of Otaheitee. "The lower half of the tail, in the Flying-Fish, is full twice the length of the upper: the use of it has always appeared evident to me. I have by the hour watched the Dolphins and Bonitos in pursuit of them, when, without wholly immersing themselves, which would have proved fatal to them, they have disposed iv. their progressive motion the lower part of the tail in such a manner as to supply their wings with moisture, so as to support them above the surface. I never saw one exceed the distance of an hundred yards in its flight, without being obliged to dip for a fresh supply."

MEDITERRANEAN FLYING-FISH.

siderable distance, is not entirely confined to this genus, but takes place in some species of the genus Scorpæna, as well as in that of Trigla, &c. as the reader may perceive in recurring to the descriptions of those genera in the former part of the present work.

The general length of the Mediterranean Flying-Fish is from twelve to fifteen or sixteen inches ; and its general shape is not unlike that of a Herring: the body is subcylindrical but with a slight approach to square, if a transverse section be supposed: the head is rather large, and sloping pretty suddenly in front: the mouth small, and edged on both jaws with minute, pointed teeth : the eyes large, and of a silver-colour with a cast of gold: the scales are large, thin, and rounded: the whole animal is of a bright silvery cast, with a blue or dusky tinge on the upper part ; the fins are also of a dusky colour: of these the pectoral extend as far as the beginning of the tail, and are of a sharply lanceolate form: the dorsal and anal fins are shallow, and placed opposite each other near the tail, which is deeply forked with sharp-pointed lobes, of which the lower is nearly twice the length of the upper: the ventral fins are rather large, of a lengthened and pointed shape, and situated a little beyond the middle of the abdomen towards the anal fin : on each side the lower part of the abdomen runs a kind of cariea or lateral line formed by a series of small, inclining points, or spicules.

This species is frequently decorved in the Mediterranean, sometimes singly, and sometimes ap-

OCEANIC FLYING-FISH.

pearing in small shoals. Instances are not infrequent of its falling into ships during the decline of its flight. It is considered as an agreeable fish for the table, and by some is even preferred to the Herring. The general height at which it is observed to exercise its flight is about three feet above the surface of the water.

OCEANIC FLYING-FISH.

Exocoetus Evolans. E. argenteus, dorso subfusco, pinnis ventralibus ante medium abdominis.

Silvery-Flying-Fish, with brownish back, and ventral fins situated before the middle of the abdomen.

- Exocoetus evolans. E. abdomine tereti. Lin. Syst. Nat. p. 521.
- Exocoetus volitans. E. abdomine utrinque carinato. Lin. Syst. Nat. p. 520.

Exocoetus pinnis ventralibus parvis prope pectus. Bloch, t. 398

This species has so great a general resemblance with the preceding as to be easily mistaken by a common observer for the same fish. An accurate view however will inform the spectator that the body is somewhat longer or more slender in proportion, and the head less sloping; but the principal difference consists in the position and size of the ventral fins, which instead of being placed, as in the preceding species, near the anal fin, are, on the contrary, seated at no great distance from the pectoral ones: they are also much smaller and of a different shape, doing of a slightly lunated form. This species is of a bright silver-colour, gradually



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OCEANIC FLYING-FISH.

deepening into purplish brown on the back: the pectoral fins are dusky, the dorsal and anal yellowish, and the ventral fins and tail reddish. It is a native of the American and Indian seas, but is occasionally observed, like the former, in the Mediterranean. Mr. Pennant records an instance of its being seen about the British coasts.

Dr. Bloch quotes, from Plumier, a very remarkable circumstance relative to the Flying-Fish : viz. that the spawn is of a quality so highly acrimonious, that the smallest particle cannot be tasted without an immediate partial excoriation of the tongue and palate. It is not certain however, from the account of Plumier to which particular species this acrimonious spawn belongs.

The air-bladder in this, and doubtless in the rest of the genus, is very large, and consequently well calculated for occasionally diminishing the specific. gravity of the animal: there is also, according to Bloch, a peculiar kind of membrane on the sides of the mouth, which have the power, by their junction, of closing that part, even though the jaws be open, when air is blown into it through the aperture of the gill-covers, and this he imagines may still hrther contribute to the remarkable power of flight possessed by this genus, which has often been considered, and especially by the celebrated Bonnet, in his scale of Nature, as forming a kind of connecting link between Fishes and Birds, similar to that which the Bats may be supposed to form between Birds and Quadrupeds.

V. V. P. I.

AMERICAN FLYING-FISH.

Exocoetus Mesogaster. E. argenteo-carulescens, pinnis ventralibus in medio abdominis.

Silvery-blueish Flying-Fish, with the ventral fins situated on the middle of the abdomen.

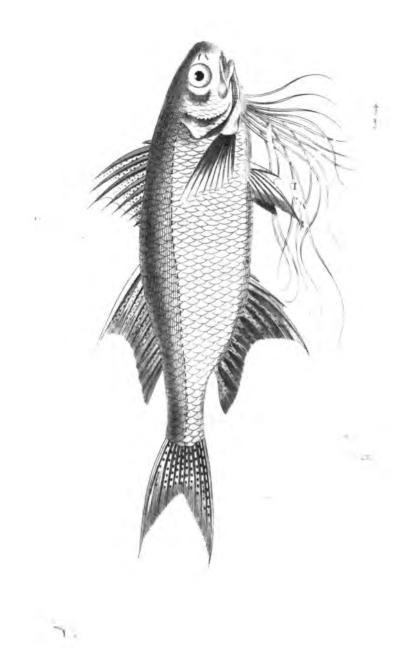
Exocoetus pinnis ventralibus in æquilibrio. Bloch. t. 399.

Allieb in the highest degree to the immediately preceding as to general appearance, but differs in the size and situation of the ventral fins, which in this species are placed exactly in the middle of the abdomen, and are moderately large, and of a rounded form. The colour of the fish is bright silvery, with a dusky tinge on the back : the fine are blueish, the dorsal and anal somewhat less shallow than those of the two preceding species. Native of the Atlantic ocean : observed by Plumier about the coasts of the Antilles.

COMMERSONIAN FLYING-FISH,

Exocoetus Commersonii. E. macula atrocarulea in pinna dorsali. Flying-Fish with a dark-blue spot on the dorsal fin. Exocoetus Commersonii. Cepede. 5. p. 401.

ALLIED to the E. evolans, but with the ventral fins placed beyond the middle of the abdomen, ' their tips reaching to about the middle of the anal fin: the dorsal fin is marked, on the part nearest the tail, with a large deep-blue spot. Native of the Indian seas: observed by Commerson.



POLYNEMUS. POLYNEME.

Generic Character.

Caput compressum, undique || Head compressed, covered squamosum, rostro tusissimo, prominent, Membr : branch : r diis quinque vel septe p. Digiti liberi seta ei ad pinnas pectorales.

with scales: snout very obtuse and prominent. Gill-membrane five or sevenrayed. Separate Filaments or setaceous processes near the base of the pectoral fins.

PARADISE POLYNEME.

- Polynemus Paradiseus. P. luteus, digitis utrinque septem, cauda bifida.
- Yellow Polyneme, with seven filaments on each side, and forked tail.
- Polynemus Paradiseus. P. digitis septem, cauda bifida. Lin. Syst. Nat. p. 522.

The Fish of Paradise. Edw. vol. 4. pl. 208.

Polynentus radiis septem jugularibus, pinna caudæ bifurca. ? Plan. t. 402.

HE genus Polynemus may be considered as holding the same station among the Abdominal Fishes which the genus Trigla does among the Thoracic ones; being distinguished by a similar circumstance, viz. that of being furnished on each side, near the base of the pectoral fins, with

PARADISE POLYNEME.

several separate processes or articulated rays: these are, in general, much longer and more setaceous than in the Triglæ, and, in some species, even exceed the length of the whole body. The species of Polyneme are not very numerous, and are chiefly confined to the warmer latitudes.

The Polynemus Paradiseus or Mango-Fish, as it is generally called, which seems to have been one of the first of the genus known to the Europeans, is an inhabitant of the Indian and American seas, and grows to the length of abe "twelve or fifteen inches: it is a fish of an elegant shape, moderately broad in the middle, and gradually tapering towards the tail, which is very deeply forked : the scales are of moderate size, those towards the head and tail smaller than the rest: the thoracic filaments are of excessive length, the superior or outward ones often extending far beyond the tail; the others gradually shorten, the first or lowermost extending about half the length of the body. The colour of this fish is generally described as yellow, and its popular name of Mango-Fish is supposed to have been given it from that circumstance, as resembling the colour of a ripe Mango. Dr. Bloch however describes his specimen as of a silvery co with a tinge of blue on the upper parts: this may have been owing to a change of colour on being kept for a considerable time in spirits: the filaments also in Dr. Bloch's specimen seem to have met with some accidental mutilation, since they are far short of the length usually represented by other authors. Dr. Russel, in his work on the

SERAN POLYNEME.

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Indian fishes, informs us that the Mango-Fish is reckoned by much the most delicate of any found at Calcutta. It is known to the natives by the name of *Tupsee Mutchey*.

SEBAN POLYNEME.

Polynemus Quinquarius. P. digitis quinque, corpore longioribus. Lin. Syst. Nat. p. 52

Polyneme with nee framents longer than the body. Pentanemus. Seb. us. 3. 27. f. 2.

EXTREMELY illied in general appearance to the Paradise Polyneme, resembling it in almost all particulars except in colour, which is described by Seba as whitish or silvery, and in the number of thoracic processes, which are only five on each side; the three superior ones far exceeding the length of the whole fish; the two inferior reaching to about a third of the body. Native of the American seas: perhaps, in reality, no other than a variety, or sexual difference of the preceding fish.

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PLEBEIAN POLYNEME.

- Polynemus Plebeius. P. griseus, lineis supra longitudinalibus subnigris, digitis utrinque quinque, pinnis basi squamosis, cauda furcata.
- Grey Polyneme, marked above by longitudinal blackish lines, with five thoracic filaments on each side, all the fine scaly at the base, and forked tail.
- Polynemus radiis quinque curtis lilerisque jug faribus. Bloch. t. 400.
- Polynemus plebeius. Brouss. ichth. Sast. 1. Lin. Gmel. p. 1401.

GENERAL appearance that of A Mullet, but with the head very obtuse in front, the shouth appearing as if placed beneath: colour silvery-grey, with a dusky tinge on the upper parts, and several dusky lines running from head to tail above the lateral line: scales rather large: all the fins scaly to some distance from the base: tail forked: thoracic fuaments five in number on each side: the first of these is said by Gmelin to exceed the length of the body, the rest decreasing gradually: in Dr. Bloch's figure however, they are all represented as comparatively short, scarcely reaching half the length of the body, and he forms his specific character ff the fish from this very circumstance, distinguishing it by the shortness of the filaments. It must however be obvious to every one that in a particular of , this nature no great dependance can be placed on descriptions made from an individual specimen, which may have easily met with some accidental mutilation of these delicate organs.

NILOTIC POLYNEME.

This species is a native of the Indian and American seas, and is found about the coasts of several of the Southern Islands: it arrives at a very large size, measuring upwards of four feet in length. It is considered as an excellent fish for the table, and is in much esteem among the inhabitants of the Malabar coast: it is dressed in various ways, and is sometimes dried and salted for sale. Dr. Bloch informs us of the av nority of a correspondent on whom he could rev, that this fish is commonly known in India by the title of *Royal Fish*, on account of its excellency, and laments that Broussonet (who seems to have named it from its want of particular splendor) should have given it the title of *P*. *plebeius*.

NILOTIC POLYNEME.

Polynemus Niloticus. P. argenteus, digitis utrinque quinque mediocribus, naso subrubente.

Silvery Polyneme, with five moderately long thoracic filaments on each side, and reddish snout.

Binni. Bruce's Travels. Appendix.

This, according to Mr. Bruce, who describes and figures it in the Appendix to his travels, is a large species, and may vie, for the elegance both of its form and taste, with any fish inhabiting the rivers running either into the Mediterranean or the Ocean. The specimen from which Mr. Bruce's figure was taken weighed thirty-two pounds, but is said often to arrive at the weight of seventy pounds

NILOTIC POLYNEME.

or more. It is an inhabitant of the river Nile, where it is by no means uncommon, as far up the river as Syene and the first cataract: the whole.body is covered with scales of a brilliant silvercolour, so as to resemble spangles lying close together; and there is no variety of tinge on the fish, except a shade of red on the end of the nose, which is fat and fleshy : the effe is large and black, with a broad yellowish-white iris : the teeth are small, very sharp, and close-set the first dorsal fin has eight spiny rays, the first of which is very short: the second dorsal fin has eleven ant or branched rays: the pectoral and ventral find ale also furnished with rays of a similar kind : the setaceous processes are five in number on each side, gradually lengthening as they recede from the mouth ; the last appearing nearly to equal half the length of the body: the tail is deeply and sharply forked, the upper lobe extending somewhat beyond the lower.

We are informed by Mr. Bruce that in order to take this fish the Egyptian peasants prepare a pretty large mass or cake, consisting of oil, clay, flour, honey, and straw, kneading it with their feet till it is well incorporated : they then take two handfuls of dates, and break them into pieces about the size of the point of a finger, and stick them in different parts of the mass, into the heart of which they put seven or eight hooks with dates upon them, and a string of strong whipcord to each : this mass of paste is then conveyed by the fisherman or shepherd into the stream, the man sitting for this purpose on a blown-up goat-skin. When

NILOTIC POLYNEME.

arrived at the middle, he drops the mass in the deepest part of the stream, and cautiously holding the ends of each of the strings slack, so as not to pull the dates and hooks out of the middle of the composition, he makes to shore again, a little below the spot where he has sunk the mass, and separating the ends of the strings, ties each of them, without straining, to a ralm-branch fastened on the shore, to the end of which is fastened a small bell. He then goes and feeds his cattle, or digs his trenches, or lies down to sleep: in the mean time the cake, begin, ing to dissolve, the small pieces of date fall off, and flowing down the stream, are eagerly seized on by the fishes as they pass; they rush up the stream, picking up the floating pieces as they go, till at length they arrive at the cake itself, and voraciously falling to work at the dates which are buried in it, each fish in swallowing a date, swallows also the hook in it, and feeling himself fast, makes off as speedily as possible : the consequence is that in endeavouring to escape from the line by which he is held, he pulls the palmbranch to which it is fastened, and thus gives notice of his capture by ringing the bell. The fisherman runs, and having secured the fish, puts a strong iron ring through his jaw; ties a few yards of cord to it, and again commits him to the water, · fastening the cord well to the shore. This is practised in order to presesve the fish ready for sale, since fish in general, when dead, will not keep long in these regions. It is rarely that on these occasions a single hook is found empty. The inhabitants of

154 TEN-FINGERED POLYNEME.

the towns of *Achmim*, *Girge*, and others, repair at intervals to the shores as to a fish-market, and are thus supplied by the country people.

TEN-FINGERED POLYNEME.

Polynemus Decadactylus. P. argent o-fuscus, capite obcusissimo, oculis maximis, digitis utrinque do em, cauda furcata.

Silvery-brown Polyneme, with very obtuse, head, very large eyes, ten shortish thoracic filaments in eych side, and forked tail.

Polynemus decadactylus. P. radiis de an liberis jugularibus. Bloch. t. 401.

This is a species of considerable size, generally measuring from one to two feet: its colour is an uniform deep yellowish brown, darker on the back, and glossed with silver on the sides and abdomen, the silvery tinge appearing like a spot or patch on the middle of each scale: the head is abruptly rounded off in front, so as to appear excessively obtuse: the eyes are very large, with a bright silvery iris: the mouth of moderate width, and the tongue smooth and loose: the thoracic filaments are ten in number on each side, and of very moderate length, extending only a few inches: the teil is deeply forked.

This species is a native of the African seas, and is not uncommon about the coasts of Guinea, occasionally entering the rivers of that country, and is considered as a wholesome and agreeable fish for the table.

INDIAN POLYNEME.

Polynemus Indicus. P. plumbeus, abdomine albido atomis nigris, digitis utrinque quinque breviusculis, cauda falcato-furcata stuamosa.

Lean-coloured Polyneme, with whitish abdomen freckled with black points, five rather short thoracic filaments on each side, and falcate-forked scaly tail.

Maga Booshee. Russel Pisc. Ind. t. 184.

LENGTH sixter or eighteen inches: shape somewhat lengthened is scales middle-sized, covering not only the body and head, but also the tail itself to the very extremity of the forks: thoracic processes five in number on each side, the upper or longest reaching nearly half the length of the body, the rest gradually shortening to about the length of an inch and half: snout obtusely-acuminate: fins dark or blackish: eyes rather large. Native of the Indian seas: in much esteem for the table, and called by the English *Rowball*.

FOUR-FINGERED POLYNEME.

Polynemus Tetradactylus. P. fusco-cæruleus, subtus canus, digitis utrinque quatuor brevibus, cauda furcata squamosa. Dusky-blue Polyneme, grey beneath, with four short thoracic filaments on each side, and scaly, forked tail.

Maga Jellee. Russel. Pisc. Ind. t, 183.

Size and habit of a Common Mullet: colour dusky blue above, and grey beneath: behind the orbits a lunated yellow spot: scales middle-sized:

150 COMMERSON'S POLYNEME.

tail forked, but less deeply than in the preceding species, and covered with scales to the edge of the fin: thoracic processes on each side four in number, and remarkably short, scarce exceeding the length of an inch and half. Native of India; estermed for the table, and, like the former, called Rewball by the English.



VIRGINIAN POLYNUMES

Polynemus Virginicus. P. digitis septeris, cauda integra. Lin. Syst. Nat. p. 1400.

Polyneme with seven thoracic filaments on each side, and entire tail.

GILL-COVERS serrated: first ray of the dorsal fin very short: tail broad and with sharp-pointed tips: native of Virginia, and sometimes, like the Polynemus Paradiseus, called by the name of Mango-Fish.

COMMERSON'S POLYNEME.

Polynemus Commersonii. P. argenteus, lineis longitudinalibus fuscis, digitis utrinque quinque ad pinnas ventrales extensis.

Silvery Polyneme, with longitudinal brown stripes, and five thoracic filaments on each side reaching as far as the ventral fins.

Polynemus lineatus. Cepede. 5. p. 409.

LENGTH about ten or twelve inches: colour silvery, with a blueish cast on the upper parts, and marked on each side from head to tail by about

PLUMIER'S POLYNEME.

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twelve brown stripes: snout semitransparent and produced: both jaws furnished with small teeth, and the throat with four rough bones or tubercles: theracic filaments five on each side, reaching as far as the ventral fins. Native of the Indian seas: observed by Commerson.

PLUT MER'S POLYNEME.

Polynemus Plumie . P. argenteus, digitis utrinque sex. Silvery Polyneme with six thoracic filaments on each side. Polydactylus Plumieri. Cepede. 5. p. 418.

NATIVE of the American seas: mentioned by Cepede from a drawing by Plumier: shape rather deeper or broader than in most of the genus: scales middle-sized: eyes large: thoracic filaments of nearly equal length, and reaching rather farther than the middle of the body: tail large and widely lunated.

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CLUPEA. HERRING.

Generic Character.

Side

Mystaces maxillarum superiorum serrati. Membr : branch : radiis octo. Branchiæ intus setaceæ. Abdomen acutum, sæpius

carinatum.

ma dible serrated. Gill-monbrane eight-rayed: gills fiternally setaceous.

Plates of the upper

Abdomen sharp, and, generally, serrated.

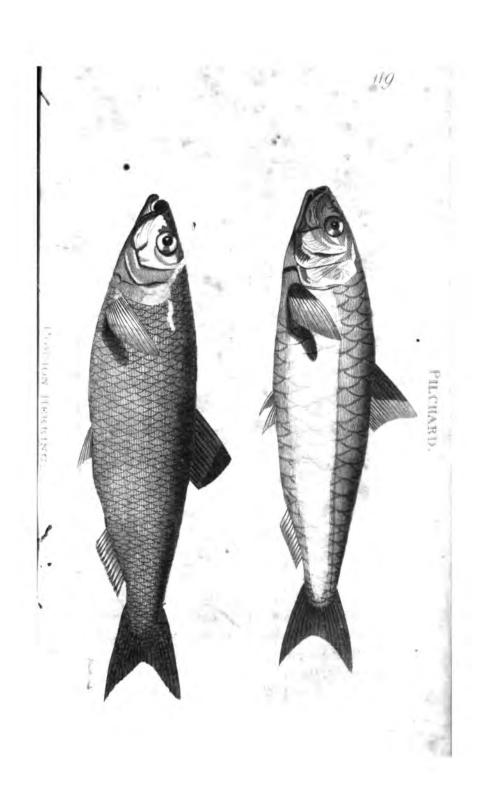
COMMON HERRING.

- Chupea Harengus. C. argentea, dorso subfusco, maxilla inferiore longiore, squamis facile deciduis.
- Silvery Herring, with dusky back, lower jaw longer than the upper, and easily deciduous scales.
- Clupea Harengus. C. immaculata, maxilla inferiore longiore. Lin. Syst. Nat. p. 522.

Clupea maxilla inferiore longiore, pinnæ ani radiis septendecim. Bloch. t. 29. f. 1.

British Herring. Penn. Brit. Zool.

THIS fish, so eminently important in a commercial view, and which may justly be said to form one of the wonders of the northern world, is principally distinguished by the brilliant silvery colour of its body, the advancement of the lower jaw beyond the upper, and by the number of rays in the anal



fin, which, in by far the greater number of specimens, are found to amount to seventeen *: the back is of a dusky blue or greenish cast, and in the recent or living fish the gill-covers are marked by a reddish, and sometimes by a violet-coloured spot: the eyes are large; the mouth without visible teeth; the openings of the gill-covers very large; the scales rather large, and easily decidnous; the lateral line not very distinctly visible; the abdomen pretty sharply carinated, and in some specimens, slightly serrated: the fins are rather small than large for the size of the fish, and the tail strongly forked. In size the Herring is observed to vary greatly, and there are probably some permanent varieties of this species which yet want their exact description. The general size is perhaps from ten to twelve or thirteen inches.

Important as is this fish to the inhabitants of modern Europe, it is doubted whether it was distinctly known to the ancient Greeks and Romans: at least we find no certain description in. their writings either of its form or uses. The herring fishery however is of very considerable antiquity: We Dutch are said to have engaged in it so long ago as the year 1164, and were in possession of it for several centuries, and Flanders had the honour of discovering the method of preserving this fish by pickling it. One William Beukelen, of Biervlet, hear Shuys, is said to have been the inventor of this

* Mr. Pennant says fourteen : the number indeed is not absolately constant, but the most general appears to be seventeen.

useful expedient, and from him, according to Mr. Pennant, is derived the word *pickle*, which we have borrowed from the Dutch and Germans. Beukelin died in the year 1397. The Emperor Charles the fifth is said to have held his memory in such veneration for the service he had done mankind, as to have paid a solemn visit to his tomb in honour of so distinguished a citizen. "The Dutch (says Mr. Pennant) are most extravagantly fond of this fish when pickled; a premium is given to the first vessel that arrives in Holland laden with this their ambrosia: we have been in the country at that happy minute, and have observed as much joy among the inhabitants on its arrival as the Egyptians shew at the first overflowing of the Nile."

Mr. Pennant, in his British Zoology, has so well detailed the general history of the Herring, and its supposed migrations, that it is impossible to do better than to repeat his own words.

"The great winter rendezvous of the Herring is within the Arctic circle: there they continue many months in order to recruit themselves after the fatigue of spawning, the seas within that space swarming with insect food in a far greater degree than in our warmer latitudes.

"This mighty army begins to put itself in motion in the spring: we distinguish this vast body by that name, for the word Herring is derived from the German, Heer, an army, to express their numbers.

"They begin to appear off the Shetland isles in April and May: these are only forerunners of the

grand shoal which comes in June, and their appearance is marked by certain signs, by the numbers of birds, such as Gannets and others, which follow to prey on them: but when the main body approaches, its breadth and depth is such as to alter the very appearance of the ocean. It is divided into distinct columns of five or six miles in length and three or four in breadth, and they drive the water before them with a kind of rippling : sometimes they sink for the space of ten or fifteen minutes; then rise again to the surface, and in bright weather reflect a variety of splendid colours, like a field of the most precious gems, in which, or rather in a much more valuable light, should this stupendous gift of Providence be considered by the inhabitants of the British isles.

" The first check this army meets in its march. southward, is from the Shetland isles, which divide it into two parts; one wing takes to the east, the other to the western shores of Great Britain, and fill every bay and creek with their numbers : others pass on towards Yarmouth, the great and ancient mart of Herrings : they then pass through the British channel, and after that, in a manner disappear : those which take to the west, after offering themserves to the Hebrides, where the great stationary fishery is, proceed towards the North of Ireland, where they meet with a second interruption, and are obliged to make a second division : the one takes to the western side, and is scarce perceived, being soon lost in the immensity of the Atlantic; but the other, which passes into the Irish sea, re-

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joices and feeds the inhabitants of the coasts that / border it.

"These brigades, as we may call them, which are thus separated from the greater columns, are often capricious in their movements, and do not shew an invariable attachment to their haunts."

The reality of the migration of the Herring, so well detailed by Mr. Pennant, begins at present to be greatly called in question ; and it is rather supposed that this fish, like the Mackrel, is in reality at no very great distance during the winter months from the shores which it most frequents at the commencement of the spawning season; inhabiting in winter the deep recesses of the ocean, or plunging itself beneath the soft mud at the bottom ; but at the vernal season it begins to quit the deeper parts, and approach the shallows in order to deposit its spawn in proper situations; and this is thought a sufficient explanation of the glittering myriads which at particular seasons illumine the surface of the ocean for the length and breadth of several miles at once*. As a proof of this Dr. Bloch observes that Herrings are in reality found at almost all seasons of the year about some of the European coasts, and that the northern voyages, supposed by Pennant and others, are impracticable in the short period assigned by naturalists; the fish, in its swiftest progress being utterly incapable of moving, at so rapid a rate as this migration necessarily sup-

• Herrings spawn at different seasons; some in spring, some in summer, and some in autumn.

poses. For these and other reasons Dr. Bloch is inclined to believe the long voyage of the Herring to exist only in the minds of its describers.

Among the principal enemies of this fish may be numbered the various species of Whales^{*}, some of which are observed to pursue large shoals, and to swallow them in such quantities, that in the stomach of a single whale no less than six hundred herrings are said to have been found. Besides the whale, various species of marine birds of prey are perpetually assailing them either on the water or from above. The Herring itself is supposed to feed principally on sea-insects and the smaller kind of marine worms.

Exclusive of the various methods of preparing this fish for sale in different countries, a great quantity of oil is drawn from it, forming a great and important commercial article among the northern nations, and particularly among the Swedes.

* Particularly a Whale called the Nord-Caper, a very swift animal of the Orc tribe.

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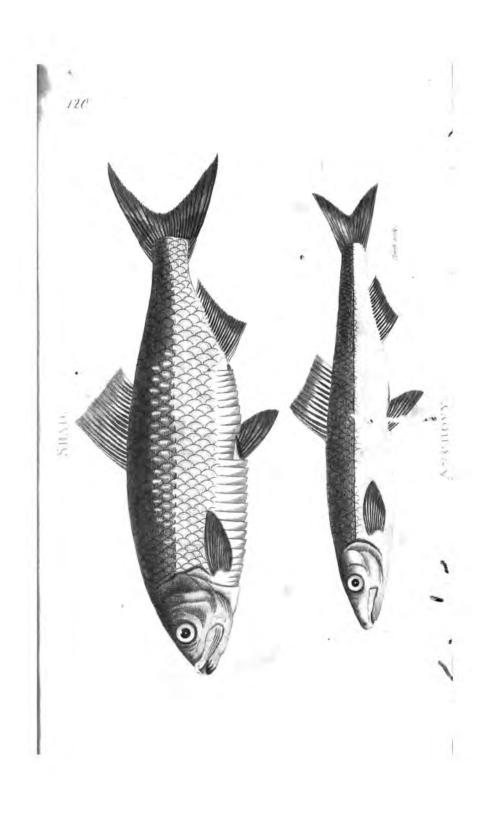
PILCHARD.

Clupea Pilchardus. C. argentea, dorso subfusco, squamis magnes arcte infixis.

Silvery Herring, with dusky back, and large, strongly adherent scales.

Pilchard. Will. ichth. p. 223. Penn. Brit. Zool. Clupea Pilchardus. Bloch. t. 406.

THE Pilchard is very nearly allied in general appearance to the Herring, but is of a somewhat thicker or less compressed form, with the back more elevated and the belly less sharp; the nose rather shorter in proportion and turning upwards, and the under jaw shorter: the scales are considerably larger than in the Herring, and are pretty strongly fixed; those of the Herring on the contrary being very easily displaced. A still more remarkable difference consists in the situation of the dorsal fin, which is placed exactly in the centre of gravity, so that when the fish is taken up by it the body preserves an equilibrium; whereas if the Herring be taken up by the same part the head will be observed to dip considerably : to these differences it may be added that the Pilchard is in general of inferior size to the Herring, and rarely measures more than about eight inches in length: its colour is bright silvery, with a green or blueish cast on . the upper parts. It is a fish which seems to have escaped the notice of many ichthyologists, by whom it has been confounded with the Herring, or at most considered as a variety of that species. Its



general habits seem to resemble those of the Herring, and it appears in almost equal plenty about several of the European coasts, particularly about those of the southern parts of our own island, where it is taken in vast quantities. The numbers, says Mr. Pennant, from the attestation of Dr. Borlace, that are taken at one shooting out of the nets is amazingly great. On the fifth of October 1767 there were at one time included in St. Ives's bay 7000 hogsheads, each hogshead containing 35000 fish, in all 24000000.

The Pilchard, according to Mr. Pennant, usually appears in vast shoals off the Cornish coasts about the middle of July, disappearing in the beginning of winter, though a few return again after Christmas: their winter retreat, the same author observes, is supposed to be the same with that of the Herring.

SHAD.

Clupea Alosa. C. argentea, dorso subfusco, abdomine squamis dilatatis carinato.

Silvery Herring, with dusky back, and abdomen carinated with dilated scales.

Clupea Alosa, C. lateribus nigro maculatis, rostro bifido, Lin. Syst. Nat. p. 523.

Chupea maculis nigris utrinque. Bloch. t. 30. f. 1. Shad. Penn. Brit. Zool.

This species resembles the Pilchard in general appearance, but is of much larger size, much thinner or flatter in proportion, and is farther distinguished by the scales on the lower part of the abdomen,

SHAD.

which are dilated on each side into a kind of laminæ, the bottom forming a sharp carina down the belly: the colour of the body is bright silver, inclining to dusky on the back, and marked on each side, at a small distance from the gills, by four or five or more rounded black spots, of which the first or that nearest the gills is the largest: the scales are rather large: the upper lip is divided by a deep incisure on the lower part: the fins are of a blueish tinge, the tail forked, and marked on each side the base by a subtriangular dusky patch: the lateral line runs nearly strait from the gills to the tail: on each side the abdomen, at the base of the ventral fins, is a small pointed appendage or process.

This fish is a native of the Mediterranean and Northern seas, and, like the Salmon, ascends rivers at particular seasons, for the purpose of depositing its spawn, being found, according to Bloch in the Rhone in the month of March, and in the Volga, the Rhine, and the Elbe in April. It is observed to deposit its spawn in the deepest part of the river, and towards autumn returns again to the sea. It grows to the length of two or three feet. It is generally observed to be poor and meagre when it first quits the sea, but grows fatter the longer it continues in fresh water. Like the Herring, it dies almost immediately after being taken out of the water, and is supposed to feed chiefly on worms, insects, and young fish.

According to Mr. Pennant the Shad is found in greater perfection in the Severn than in any other British river, making its first appearance in April

SPRAT.

or May, according to the temperature of the season. The Thames Shad, according to the same author, does not appear till the latter end of May or beginning of June, and is esteemed but a coarse and insipid fish. It seems to be subject to some variety: is not always marked by the black spots mentioned in the specific character; and is sometimes seen of a dusky and sometimes of a cupreous or rufous tinge.

SPRAT.

Chupea Sprattus. C. argentea, dorso subfusco, maxilla inferiore longiore, abdomine serrato.

Silvery Herring, with brownish back, lower jaw longer than the upper, and serrated addomen.

Clupea Sprattas. C. maxillu inferiore longiore, pinnæ ani radiis septendecim. Bloch. t. 29. f. 2.

Clupea Sprattus. Lin. Syst. Nat. p. 523.

La Sardine. Duham. 2. p. 418,

Sprat. Penn. Brit. Zool.

So much allied to the Herring in almost all points except in size as to have been frequently considered as the young of that fish: indeed the differences are, at first view, so slight, that it is not very easy to form a true specific character. Mr. Pennant observes that the chief difference consists in the abdomen, which in the Sprat is strongly serrated: he adds that the vertebræ in the back bone of the Sprat are forty-eight in number, but in that of the Herring fifty-six: the back fin is placed more remote from the head than in the

ANCHOVY.

Herring, and is, in general, furnished with about sixteen or seventeen rays*.

The Sprat, says Mr. Pennant, appears in the river Thames, below bridge, in the beginning of November, and leaves it in March, and during its appearance is a great relief to the poor of the Capital. At Gravesend and Yarmouth Sprats are cured like red Herrings, and are sometimes pickled, being in that state little inferior to the Anchovy, though the bones will not dissolve as in that fish. Like the Herring and the Pilchard the Sprat often visits the coasts of the Mediterranean and Northern seas in prodigious shoals, and usually spawns in autumn in the deeper parts of the coast.

ANCHOVY.

Clupea Encrasicolus. C. argentea, dorso subfusco, maxilla superiore longiore.

Silvery Herring, with dusky back, and upper jaw longer than the lower.

Clupea Encrasicolus. C. maxilla superiore longiore. Lin. Syst. Nat. p. 523

Clupea maxilla superiore prominente, rictu amplo. Bloch. t. 30, f. 2.

Anchovy. Will. ichth. 225. Penn. Brit. Zool.

THE general length of this species is from three to four inches, but it is sometimes seen of the length of six inches and upwards: it is of a somewhat

• There appears to be some mistake on this subject in the Systema Naturæ; the specific character announcing thirteen rays, while in the note annexed the number is seventeen.

ANCHOVY.

lengthened form, and is covered with large thin, and easily deciduous scales: the eyes are large, the upper jaw considerably longer than the lower, and the tongue doubly ciliated on each side: the back is of a dusky greenish cast, with a degree of transparency; the abdomen smooth, and the tail forked.

The Anchovy is found in great plenty in the Mediterranean, Northern, and Atlantic seas, and like the Herring, is supposed to leave at particular periods the deep recesses of the ocean, and to seek the shallower parts for the purpose of depositing its spawn: this commences at the vernal season and continues for a very considerable time. The great fishery for Anchovies is said to be at Gorgona, a small isle to the west of Leghorn. They are taken in yest quantities, and prepared for sale by salting and pickling : the bones dissolve entirely in boiling, which renders this species so peculiarly convenient in the preparation of various sauces, &c. It is supposed to have been well known to the ancient Greeks and Romans, who prepared from it one kind of Garum or condiment for their tables, though the principal article of that name is rather thought to have been prepared from other fishes.

MALABAR HERRING.

Clupea Malabarica. C. albo-curulescens, maxilla inferiore curva, squamis magnis, abdomine serrato.

Blueish-white Herring, with curved lower jaw, large scales, and serrated abdomen.

Clupea Malabarica. C. maxilla inferiore curva. Bloch. t. 432.

LENGTH about twelve inches: shape like that of the common Herring, but deeper: colour white, slightly shaded with pale blue on the edges of the scales: head and back brownish: head rather large and short: lower jaw a trifle longer than the upper, and turning up: lips or side-plates pretty strongly serrated: fins pale, or whitish: the anal fin shallow, but of greater extent than in mose of this genus: tail forked: lateral line nearer the back than the abdomen. Native of the Indian seas, and observed about the coasts of Malabar, but in no esteem as a food, and only occasionally eaten by the lowest orders.

AFRICAN HERRING.

Clupea Africana. C. argentea, dorso olivaceo, abdomine serrato, pinnis ventralibus minimis.

Silvery Herring, with olivaceous back, serrated abdomen, and very small ventral fins.

Clupea Africana. C. pinna ani longa, maxilla inferiore longiore. Bloch. t. 407.

LENGTH a foot : shape much deeper than that of the common Herring, and rather approaching to

CHINESE HERRING.

that of a Carp: body much compressed, with the abdomen very sharp, and strongly serrated or carinated as far as the vent by dilated scales, as in the Shad: colour silvery, with a dusky blueish tinge on the upper parts: orbits of the eyes serrated beneath: scales moderately large: lateral line nearer the back than the abdomen, and slightly curving: fins pale; anal shallow and of still greater extent than in the preceding species: ventral fins so very small as to bear the appearance of mere rudiments or slightly expanded processes on that part: tail forked. Native of the African seas, and said to be extremely plentiful during the summer months about the coasts of Guinea.

CHINESE HERRING.

To attan rit

Clupea Sinensis. C. argentea, dorso subviolacco, abdomine serrato, pinnis flavis, dorsali caudaque nigro marginatis.
Silvery Herring, with subviolaceous back, serrated abdomen, and yellow fins, the dorsal fin and tail edged with black.
Clupea Sinensis. C. ore edentulo, radio infimo branchiostegaque truncato, Bloch. t. 405.

LENGTH ten or twelve inches: shape deeper than that of the preceding, and the abdomen compressed and sharply serrated, or carinated by dilated scales as far as the vent: colour silvery, brownish above, and marked by several obscure longitudinal yellowish stripes: head small and short: eyes large: mouth small: scales large: fins yellowish white, the dorsal marked at the base and along the edge

THRISSA HERRING.

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by a black band : tail forked, and terminated with a broad black band. Native of the Indian and American seas, and sometimes found in rivers : in considerable esteem as an edible fish.

THRISSA HERRING.

Chupea Thrissa. C. argenteo-cærulescens, pinnis pectoralibus rubris, radio ultimo pinnæ dorsalis elongato.

Silvery-blueish Herring, with red pectoral fins, and the last ray of the dorsal fin elongated.

Chupea Thrissa. C. pinna ani radiis viginti-octo, dorsalis radio postremo setaceo. Lin. Syst. Nat. p. 524.

C. radio ultimo dorsali elongato, pinna ani recto. Bloch. t. 404.

LENGTH about twelve inches : shape of the body deep, the abdomen projecting considerably, and being serrated beneath, but without any dilatation on the sides of the scales : colour blueish silvery, with a dusky cast on the back: head small: mouth small: scales large: lateral line running nearly strait from gills to tail: dorsal fin slightly scaled at the base, and terminated behind or at the shallowest part by a very long single ray, extending nearly as far as the base of the tail, which is strongly forked all the fins blueish, except the pectoral, which are red. Native of the American seas: observed by Plumier: inhabits rivers at the spawning season, and deposits its eggs among aquatic plants, &c.

GIANT HERRING,

Chupea Gigantea. C. argenteo-carulescens elongata, abdomine rosco, squamis subhexagonis, radio ultimo pinnæ dorsalis elongato. Silvery-blueish elongated Herring, with rose-coloured abdomen, subhexagonal scales, and the last ray of the dorsal fin elongated.

Clupea cyprinoides.

C. radio ultimo dorsali longissimo, pinna ani lunata. Bloch. t. 403.

This is a species of very large size, arriving sometimes, according to Marcgrave, at the length of twelve feet, and having a mouth of sufficient width to receive a man's head : the general shape of the fish is not unlike that of a Pike: the lower jaw is tongen than the upper, and the lips or side-plates pretty strongly curved: the eyes moderately large: the scales very large, and approaching to a slightly hexagonal form: the general colour is a silvery blue. tinged with dusky on the back, and with rose-colour on the abdomen, which is smooth or not serrated : the dorsal fin is distinguished by the same particularity as in the Clupca Thrissa, being slightly scaled at the base, and terminating behind in a strong and greatly lengthened ray, arching over the lower part of the back, and reaching almost to the base of the tail, which, as in the former species, is strongly forked : all the fins are of a pale blue colour. This gigantic species is a native of the Indian and American seas: it is not much esteemed as a table fish, except when young, the flesh of the larger ones being coarse and insipid.

SILVER-STRIPED HERRING.

Clupea Atherinoides. C. fusca, fascia utrinque longitudinali argentea.

Brown Herring, marked on each side by a longitudinal silvery band.

Chupea atherinoides. C. linca laterali argente. Lin. Syst. Nat. Chupea stria longitudinali argentea. Bloch, c. 408. f. 1.

LENGTH about ten inches: shape lengthened, and the habit or general appearance greatly resembling that of an Atherine: colour brown, with a broad and well defined silvery band running from the gills to the tail: scales large: abdomen carinated as far as the vent by a series of dilated scales: snout obtuse: upper jaw longer than the lower: dorsal fin placed at some distance beyond me middle of the back: tail lunated: anal fin shallow and of considerable extent: ventral fins very small. Native of the Indian and American seas, and sometimes found in those of Europe.

BRISTLED-JAWED HERRING.

Clupea Setirostris. C. maxilla superioris ossiculis lateralibil setaceis, pinna ani radiis triginti duobus. Lin. Gmel. p. 1407. Brousson. ichth. fasc. 1. t. 11.

Clupea Bealama. Forsk. Arab. p. 72.

Herring with the lateral bones of the upper jaw terminating in a setaceous process.

SHAPE lanceolate : colour silvery, tinged with blue above : head short ; mouth wide : scales ob-

TUBERCULATED HERRING.

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scurely rhomboid, deciduous, and disposed in obliquely imbricated rows: fins grey: tail forked: native of the Indian and Red seas.

DORAB HERRING.

Clupea Dorab C. pinnis ventralibus minutis, labio superiori dentibus porrevis bicorni, inferiori longiori, dentibus validioribus, erectis. Lin. Gmel. Forsk. Arab.

Herring with minute-pectoral fins, upper jaw horned by prominent teeth, and lower furnished with strong upright teeth.

SHAPE linear: colour silvery, tinged with dusky blue above: head flattish: upper jaw furnished in front with exserted teeth, standing remote from each other, and of which the two middle ones are larger than the rest and very sharp: gill-covers marked by rivular stripes: scales rounded and deciduous: dorsal fin placed considerably beyond the middle of the back: ventral fins very small: tail forked. Native of the Red Sea: observed by Forskal.

TUBERCULATED HERRING.

Clupea Tuberculata. C. mandibula inferiore breviore, rostroapice tuberculo verrucaformi, macula miniata ad superiores branchiarum commissuras. Commerson. Cepede. 5. p. 460. Herring with the lower jaw shorter than the upper, a wart-like prominence on the snout, and a red spot at the upper commissures of the jaws.

A vERV small species: colour silvery, with a slight tinge of blue above: mouth wide: dorsal fin

BANDED HERRING.

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and tail rufous: scales easily deciduous: lateral line wanting: tail forked. Native of the Indian seas: observed by Commerson: said to be an excellent table fish.

YELLOW-FINNED HERRING.

Clupea Chrysoptera. C. argentea, supra cardeo-nebulosa, pinnis Inteis, cauda furcata.

Silvery Herring, clouded above with olue, with yellow fins, and forked tail.

MANDE DEWRA

Clupea chrysoptera. Cepede. 5. p. 460.

Size of a Sprat or very small Herring: colour silvery, clouded above with blue and white: head shaped like that of an Anchovy-gill-covers of a gilded cast: on each side the body a black spot: all the fins yellow: tail forked. Native of the Indian seas: observed by Commerson.

BANDED HERRING.

Chupea Fasciata. C. argentea, supra fasciis semidecurrentibus fuscis, subtus maculis rotundatis.

Silvery Herring, marked above by semidecurrent dusky bands and below by rounded spots.

Clupea fasciata. Cepede. 5. t. 460.

COLOUR silvery, marked above by several semidecurrent dusky bands; and beneath the lateral line by several small rounded spots: scales so deciduous that the fish is often seen nearly naked: eyes very large: first ray of the dorsal fin prolonged into an extended filament: ventral fins placed pretty near the thorax: tail forked. Native of the Indian seas: observed by Commerson.

NASAL HERRING.

Clupea Nasu. C. argentea, dorso carulescente, naso obtuso, prominente, redio ultimo pinna dorsalis elongato.

Silvery Herring with obtuse, prominent snout, and the last ray of the dorsal in elongated.

Chupea Nasas. C. maxilla superiore prominente, &c. Bloch. t. 429.

LENGTH about seven or eight inches: shape not unlike that of a Carp: snout blunt, rounded, and projecting, so that the mouth appears placed beneath: colour silvery, with a dusky blueish tinge above: scales large and rounded: dorsal fin of similar shape with that of the C. Thrissa, and terminated behind by a long filament: tail forked. Native of the Indian seas, and sometimes observed in rivers: in no esteem as a food, being considered as unwholesome.

LONG-HEADED HERRING.

Clupea Macrocephala. C. argentea, supra carulescens, capite elongato, maxilla superiore longiore, pinnis rubentibus.
Silvery Herring, bluejsh above, with lengthened head, upper jaw longer than the lower, and reddish fins.
Clupea macrocephala. Cepede. 5. p. 460.

SHAPE lengthened: head long, equalling about 3 sixth of the whole fish: upper lip extending bev. v. p. 1. 12

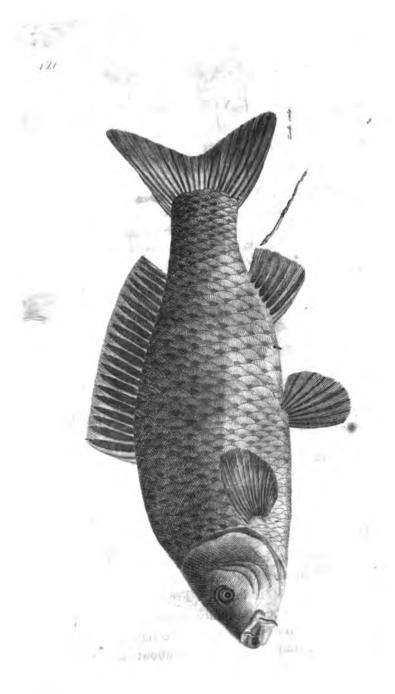
178 TROPICAL HERRING.

yond the lower: scales large and rounded: dorsal fin placed rather beyond the middle of the back: tail forked: colour of the whole fish silvery, with the upper parts blue, and the fins reddish. Described by Cepede from a drawing by Plumier, Native of the American seas.

TROPICAL HERRING.

Clupea Tropica. C. alba, abdomine servito, cauda cuneiformi. White Herring, with servated abdomen, and cuneiform tail. Clupea tropica. C. cauda cuneiformi. Lin. Syst. Nat.

SHAPE broad or carp-like: mouth wide: abdomen serrated: gill-covers coated with small scales: lateral line strait, but nearer the back than the abdomen: native of the Indian seas.



CYPRINUS. CARP.

Generic Character.

Os parvum, edentulum, Dentes gutturales. Pinnæ ventrales sæpius novemradiatæ.

Mouth small and toothless. Teeth in the throat.-Membr : branch : triradiata. Gill-membrane three-rayed. Ventral fins, in general, ninerayed.

Of a broad or deep shape.

COMMON CARP.

- Cyprinus Carpio. C. luteo-olivaceus, pinna dorsali lata, radiotertio postice servato.
- Yellowish-olive Carp, with wide dorsal fin, with the third ray serrated behind.

Cyprinus Carpio. C. pinna ani radiis novem, cirris quatuor, pinnæ dorsalis radio secundo postice serrato. Lin. Syst. Nat. p. 525.

Carp. Will. Pennant. S.c. S.c.

HIS fish is a native of the Southern parts of Europe, inhabiting lakes and small rivers, and differs considerably in size and colour according to the waters in which it is found. From the south of Europe it has been gradually dispersed into the more northern parts, and is said to have been introduced into our own country about the year

COMMON CARP.

1514, and into Denmark in the year 1560. It is said to decrease in size the farther it is removed into a northern region. The usual length of the Carp in our own country is from about twelve to fifteen or sixteen inches; but in warmer climates it often arrives at the length of two, three. or four feet, and the weight of twenty, thirty, or even forty pounds. Its general colour is a yellowish olive, much deeper or browner on/the back, and accompanied with a slightly gilded tinge on the sides : the scales are large, rounded, and very distinct: the head is large, and the mouth furnished on each side with a moderately long cirrus or beard, and above the nostrils is a much smaller and shorter pair: the lateral line is slightly curved, and marked by a row of blackish specks: the fins are violetbrown, except the anal, which has a reddish tinge : the dorsal fin is broad or continued to some distance from the middle of the back towards the tail, which is slightly forked, with rounded lobes.

The usual food of the Carp consists of worms and water-insects: it is a fish so tenacious of life that it may be kept for a very considerable time in any damp place, though not immersed in water, and it is said to be sometimes fattened with success by being enveloped in wet moss, suspended in in net, and fed at intervals with bread steeped in milk, taking care to refresh the animal now and then by throwing fresh water over the net in which it is suspended.

The Carp is an extremely prolific fish, and the quantity of roe is so great that it is said to have

COMMON CARP.

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sometimes exceeded the weight of the emptied fish itself when weighed against it. The age to which the Carp arrives is very great,

The age to which the Carp arrives is very great, and several well authenticated instances are adduced of its arriving at that of considerably more than a century at least. Many of those which were introduced into the ponds at Versailles, &c. in the reign of Lewis the fourteenth are either still in being, or at least were so a very short time before the French Revolution. Dr. Smith, in his *Tour to the Continent*, mentions these, and observes that they were grown white through age. Buffon assures us that he had seen, in the fosses at Pontchartrain, carps which were known to be of the age of an hundred and fifty years. Others affirm that they have been known to arrive at the age of two hundred years.

The Carp is commonly supposed to have been introduced into this country so lately as the reign of King Henry the eighth: it is however more than probable that it must have been known at an earlier period, since, as Mr. Pennant observes, it is mentioned by Juliana Barnes in her well-known work the "*Boke of St. Albans*," the earliest publication of which is in the year 1496.

The Carp is chiefly cultivated in some parts of Germany and Poland, where it forms a very considerable article of commerce; the merchants or dealers purchasing the fish of the noblesse, who draw a good revenue from the produce of their ponds. The method of feeding and managing carp on this large scale is thus detailed by Dr. Forster in the Philosophical Transactions.

" It would be needless to speak of the natural history of this well-flavoured fish, after the satisfactory account given of it in the British Zoology by that most accurate zoologist Mr. Pennant. I will only observe that though the carp is now commonly found in ponds and rivers, and generally thought to be a fresh-water fish, the ancient zoologists ranged it among the sea-fish; and I know instances of its being caught in the harbour of Dantzig, between that city and a little town called Hela, which is situated at the extremity of a long, narrow, sandy promontory, projecting eastwards into the sea, and forming the gulf before Dantzig, of about 30 English miles diameter. These carp were forced, as I suppose, by a storm from the mouth of the Vistula, which here enters the Baltic, into the sea: and as the other two branches of the Vistula or Weixel disembogue into a large fresh-water lake called the Trish-Haff, which has a communication with the sea at Pillau, it is equally probable that these fish came round from Pillau to the harbour of Dantzig; especially as they are frequently found in the Trish-Haff."

"The sale of carp makes a part of the revenue of the nobility and gentry in Prussia, Pomerania, Brandenburgh, Saxony, Bohemia, Mecklenburgh, and Holstein; and the way of managing this useful fish is therefore reduced in these countries into a kind of system, built on a great number of experiments, made during several generations, in the families of gentlemen well skilled in every branch, of husbandry."

"" The first thing which must be attended to, in case a gentleman chooses to have carp-ponds, is to select the ground where they are to be made : for upon the soil, water, and situation of a pond the success in the management greatly depends. The best kind of ponds ought to be situated in a wellmanured, fertile plain, surrounded by the finest pastures and corn-fields of a rich black mould, having either mild or soft springs on the spot, or a rivulet that runs through the plain. The water ought to be mild and soft; by no means too cold, or impregnated with acid, calcareous, or selenitic, or other mineral particles. The exposure must be sheltered against the cold, blasting, easterly, or northern winds, by a ridge of hills, situated at some distance from the pond, enjoying fully the benign influence of the sun, far from any thick, shady wood, that might intercept the beams of the sun or where the leaves of trees might cause a putrefaction, or impregnate the water with astringent particles. Such ponds as are surrounded by poor, cold and stiff soils, are open to the east and north winds, have a wood on one or two sides, and hard or cold water, or such as issues from mines, moors, or mosses, are inferior in goodness. Ponds in a poor, dry, or sandy soil, surrounded by pines or firs, with the just-mentioned inconveniences, are considered as the worst of all. The ground towards the pond ought to have a gentle slope; for deep vallies are subject to great floods, and will then endanger the dikes in a wet rainy season; and often the expectations of many years are carried away. The soil

cannot be altered : it is therefore a chief qualification of a pond to be contrived in a good soil. The sun is a less material article; provided therefore a pond can enjoy the morning and noon-tide sun, it matters not much if the wood be on one or two of its sides. The water is a material point; but in case the springs that supply the ponds are very cold and hard, it may be softened and tempered . by exposing it to the sun and air in a large reservoir above the pond, or by leading it for a long way in an open exposure, before it enters the pond. The quantity of water to supply the pond with, is another requisite: too much water makes too great a canal necessary, for carrying its superfluity off; and this is very expensive : too little water has another inconvenience, viz. that of keeping the water too long in the pond, and to cause a stagnation without any fresh supplies; and often, in a dry season, the scantiness of fresh water distresses the fish, and causes diseases and mortality among them. These remarks are general, and must be applied to all ponds: I shall now enter into a more minute detail: it is found by experience most convenient to have three kinds of ponds for carp: the first is called the spawning-pond, the second the nursery, and third or largest the main-pond. There are two, methods for stocking the ponds with carp; either to buy a few old fish, and to put them into the spawning-pond, or to purchase a good quantity of one year's old fry, for the nursery. I shall treat of both these methods, and shall add something relative to the management of carp in the main-pond.

and building and the and the actual and

A pond intended for spawning must be well cleared of all other kinds of fish; especially such as are of a rapacious nature, viz. pike, perch, eel, and trout : and also of all newts or larvæ of lizards, as well as of the dytisci or water-beetles, which frequently destroy quantities of the fry, to the great loss of the owner. A rich soil, gently sloping banks, mild springs, or a constant supply of good soft water, with a fine exposure to sun and air, are the chief requisites for a good spawning-pond. A pond of the size of about one acre requires three or four male carp, and six or eight female ones; and thus further, in proportion to each acre, the same number of males and females. The best carp for breeders are five, six, or seven years old, in good health, in full scale, without any blemish or wound, especially such as are caused by the Lernea Cyprini Lin. (a kind of cartilaginous worm with fine full eyes and a long body). Such as are sickly, move not briskly; have spots, as if they had the smallpox, have either lost their scales, or have them sticking but loosely to the body, whose eyes lie deep in their heads, are short, deep, and lean, will never produce a good breed. Being provided with a set of carp such as are here described, and sufficient to stock a pond with, it is best to put them, on a fine calm day, the latter end of March, or in April, into the spawning-pond. Care must be taken that the ish be not too much hurt by being transported in a hogshead, nor put into the pond on a stormy day; for they are easily thrown upon the shallows on the sides, being weak, and harrassed by being caught, removed, and not yet acquainted with the

deep holes for their retreat in their new habitation. Carp spawn in May, June, or July, according as the warm season sets in earlier or later. At this/ season they swim to shallow, warm, and sheltered places, where the female deposits the spawn where the bottom is somewhat gritty about the roots of grass, osier-roots, hanging branches, &c. The milter or male fish, by a natural instinct, follows the spawner, and the milt or soft roe is spread over the spawn, which thus becomes impregnated. Carp at this season are frequently seen swimming, as it were in a circle, about the same spot. The finest and calmest summer days are commonly those on which carp spawn; providence having thus made a provision for the greater security of the fry of so useful a fish; as otherwise in a stormy day the spawn would be washed towards the banks, where it would be eaten up by birds, or trampled on by men and quadrupeds, or dried up by the heat of the sun, and a whole generation of carp entirely destroyed. During the spawning-season the carp may be approached, with some degree of address, so that they will pass and repass between a person's hands held under the water, without being in the least disturbed; but if any noise, or quick motion be made, they dart away with surprising velocity. Great care must be taken, during the spawning season, to prevent the approach of all aquatic fowl, wild and tame, to the poinds; for geese and ducks not only swallow the spawn, but destroy still more of it by searching among the weeds and aquatic plants: it is therefore a general rule, to send twice a day, a man round the pound, to scare

all wild fowl, viz. swans, geese, ducks, cranes, and herons. It sometimes happens that crusians and carp, or tench and carp, being put together in a pond, and the males and females of each kind not being is a just proportion, the different species mix their roe and milt, and thus produce mules or mongrel breeds. The mules between carp and erusians* seldom and slowly attain the size which carp are capable of: they are very deep, and shorter in proportion than carp, but of a very hardy nature. The mules between carp and tench partake of the nature of both fish; grow to a good size, but some part of their body is covered with the small slimy scales of a tench, while some other parts have the larger scales of a carp †: their flesh approaches nearer to that of a tench, and they are likewise of a less tender nature than the common carp: this latter kind of mule is called in Germany Spiegel-Karpe, or mirror-carp, the blotches with large scales being considered as mirrors. Whether these mules are capable of continuing their species I cannot affirm; never having made any experiments on the subject ; nor have I heard any thing said on that head with any degree of precision, or founded on experience. In some ponds in Lancashire, I have been told by a gentleman of great worth and honour, both these kinds of mules are

*** Dr. Forster supposes the fish thus named to be the same with the *rud* or *finscale* (Br. Zool. 3. p. 310). It is not very common in England, and is generally esteemed much inferior to the carp in flavour.

+ The fish here alluded to is the Rex Cyprinorum of Bloch,

RUTESHI DA BOAR AND STRUCT

now and then found. I think it however not adviseable to put carp and tench, or carp and crusians, in one pond, unless it be done for experiment's sake; in which latter case a small pond, free from other fish, with one or two fish of each kind, will be sufficient to gratify curiosity, without debasing the breed of carp in a large pond. The young fry being hatched from the spawn, by the benign influence of the sun, they are left the whole summer, and even the next winter, in the spawning-pond, in case the pond be so deep that the suffocation of the young tender fry under the ice in a severe winter is not to be apprehended, for it is by no means advantageous to take them out in the first months of their existence. If however the shallowness of the pond, its cold situation and climate, make it necessary to secure the fry against the rigours of the ensuing winter, the water of the pond must be let. off; in which case the fry and old fish will gradually retire to the canal and ditches, which communicate with the hole in the middle of the pond, and a net, with small meshes, is then employed to catch both the fry and old ones. The old breeders are then separated from the fry, and both kinds put into separate ponds that are warmer, and more convenient for the wintering these delicate fish. Care must be taken to fix on a calm, mild day, at the latter end of September, for the catching of the fry. out of the spawning-pond. The nurseries are the second kind of ponds intended for the bringing up the young fry. The best time to put them into the nursery is in March or April, on a fine and

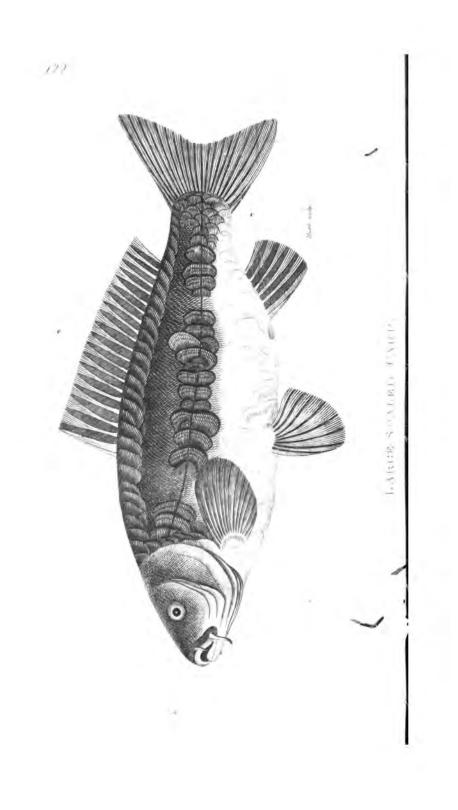
calm day. A thousand, or twelve hundred of this fry may be allotted to each acre of a pond. The choice of the fry must be made according to the above enumerated characters of good and healthy fish, and must be carefully removed from one pond to another. It is likewise requisite to send people with long sticks, all the first day, round the pond. in order to drive the tender and weak fry from the sides of the pond, because they are bewildered in a strange place, and often become the prev of rapacious birds. If the pond be good, and the place not overstocked before, and the fry well-chosen and well preserved, it is almost certain that they will grow within two summers so much as to weigh. four, five, and sometimes six pounds, and to be fleshy and well-tasted. A great many Prussian gentlemen make a good profit by selling their carp, after two years standing in the nursery, and export them even to Finland and Russia. The main-ponds are the last kind. In these carp are put that measure a foot, head and tail inclusive. Every square of fifteen feet in the pond is sufficient for one carp, and will afford food and room for the fish to play in. The more room carp have, and consequently the more food the pond affords, the quicker will be the growth of the fish. The longer the pond has been already in use, the longer you intend to keep the carp in it, the more you desire to quicken the growth of them, the more you ought to lessen the number of fish destined for the pond. Spring and autumn are the best seasons for stocking your main-ponds. The growth of your fish will always 0.174

be in proportion to the food they have, for carp are observed to grow a long time, and to come to a very considerable size, and a remarkable weight. I recollect to have seen a carp above a yard long, and of twenty-five pounds weight; but I had no opportunity of ascertaining their real ages. In the pond at Charlottenburg, a palace belonging to the King of Prussia, I saw more than two or three hundred carp between two and three feet long; and I was told by the keeper that they were between fifty and sixty years standing: they were tame, and came to the shore in order to be fed: they swallowed with ease a piece of white bread of the size of half a halfpenny roll.

" During winter, ponds ought to have their full complement of water; for the deeper the water is, the warmer lies the fish. In case the pond be covered with ice, some holes must be made every day for the admission of fresh air into the pond, for want of which carp frequently perish. In the summer observe to clean the rails and wire-works in the water-courses, of the weeds and grass, which frequently stop them up. Birds that feed on fish must be carefully kept out of the ponds. In a great drought, provision must be made for keeping the water at the same height that it commonly stands at in the pond; i. e. between four and five feet. If the water stagnates and grows putrid, it must be let off, and a supply of fresh water be introduced from the reservoirs. If the weeds, especially reed and flags, and some of the aquatic grasses, over-run the pond too much, scithes fixed

on poles of sixteen or twenty feet, with a lead fastened to them to keep the scithes on the bottom of the pond, are thrown out, and then again drawn to the person who works with them, and the weeds will be all cut; after which operation they must be drawn up with long harrows, and set in heaps on the shore for putrefaction, and in length of time, for manure. This cleaning of ponds must never be done in a spawning-pond, where it would be the destruction of thousands of fish. The best season for catching such carp as are intended for the market is Autumn. After the pond has been for five or six years in constant use, it is likewise time to let the water entirely off, and clear the. pond of the mud, which often increases too much, and becomes a nuisance. When the pond is dry it may be ploughed before the frost sets in, and next spring oats or barley should be sown in it, after a new ploughing; and it will repay the trouble to the owner with a rich and plentiful crop. When the loose, superfluous mud is carried off, out of the pond, care should be taken not to take the soil below the original level of the pond. Some people sow a pond which has been laid for dry some months with oats; and when they are growing, they fill up the pond with water, and introduce carp for spawning; thinking by this contrivance to procure food for the fish; as well as an agreeable substance for them to rub themselves against; but this practice seeins to be more noxious than beneficial: for thegrowing oats will putrefry, and communicate putridity to the water, which can by no means be

Epicures sometimes feed salutary to the fish. carp, during the colder season, in a cellar. The following method is the best that can be devised for that purpose. A carp is laid on a great quantity of fresh wet moss, spread on a piece of net. which is then gathered into a purse, and the moss so contrived, that the whole fish be entirely wrapped up in it : care however must be taken to give the fish ease, and not to squeeze it, so that it may have room to breathe in this confined attitude. The net, with the fish and moss, is then plunged into water, and hung up to the ceiling of the cellar. In the beginning this operation must be very frequently repeated, at least every three or four hours : by length of time the fish will be more used to the new element, and will bear to be out of water for six or seven hours. Its food is bread soaked in milk, which in the beginning must be administered in small quantities: in a short time the fish will bear more, and will grow fatter. I saw the experiment tried in a nobleman's house in the principality of Anhalt-Dessau; and during a fortnight I visited myself, every day, the fish, which after it had been kept in this manner during a fortnight, was dressed and served up at dinner, when every one present found it excellent in its flavour."



Var.

LARGE-SCALED CARP.

This variety, which occurs in some parts of Germany, is figured by Bloch under the title of Rex Cuprinorum. In shape and colour it resembles the common Carp, but is distinguished by the extraordinary magnitude of the scales, which are often so large as nearly to equal the size of a half-crown piece: they are also placed rather irregularly on the fish, some parts of which appear bare, while the. others are covered by the broad plates or scales before-mentioned: in general they are disposed in two rows on each side, one parallel with the back, and the other with the abdomen, which part is covered by others disposed in a less regular manner. This variety is said to be superior to the common Carp in point of flavour, and often grows to a great size. The young are observed to exhibit the same proportional size and disposition of scales with the full-grown animals, for which reason Dr. Bloch is inclined to suppose this fish to be really distinct from the common Carp.

Var. ?

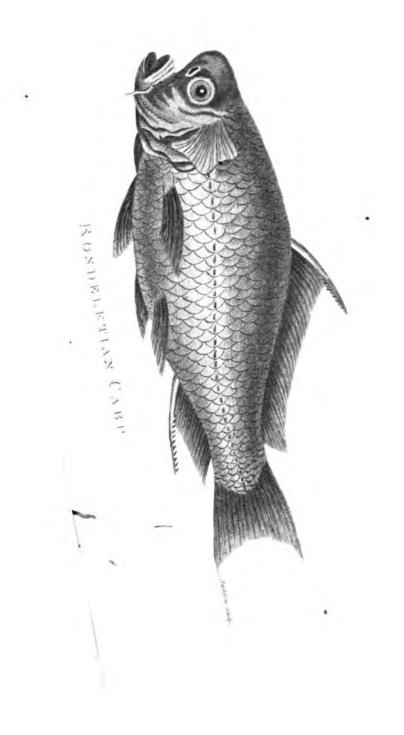
RONDELETIAN CARP.

Cyprinus Rondeletii. Nat. Misc. vol. 14. t. 556. Cyprini mira species. Rondel. aquat. 2. p. 155. Spur-Fish. Edw. glean, pl. 282.

This singular variety seems to have been first described by Rondeletins, from a living specimen brought into the fish-market at Lyons at the time his work was printing.

" No one," says he, " who saw the fish (supposing the head taken away), would imagine it to be any thing but a Carp, which it exactly resembles in the shape and colour of its scales, and situation of the fins and tail. The dorsal fin at its commencement has a strong serrated spine, as in the Carp, and a similar one at the commencement of the vent-fin, which latter, as also the tail, is of a reddish colour, and shaped like that of a Carp: at the gills are two fins, and likewise two at the abdomen: the head is not stretched forwards as in the Carp, but resembles that of a Dolphin*, having a longish but obtuse snout, as represented in the figure: from the upper part of the snout, on each side the oper ing of the mouth, hangs a fleshy appendix or beard, as in the Carp, and above this, on each side, is a much smaller one, scarce perceptible without close inspection."

* Meaning the true Dolphin, or Delphinus Delphis.



CRUSIAN.

Other varieties, still more remarkable, are figured by Aldrovandus, &c. having the head sloped off in front in such a manner as to bear a rude resemblance to a human face. These varieties Dr. Bloch imagines to be entirely accidental, and to have arisen from a wound casually inflicted by some sharp instrument, as a scythe or sickle, &c. employed for the purpose of cutting weeds, while the fish was lying near the edge of the water.

CRUSIAN.

Cyprinus Carassius. C. luteo-olivaccus, pinnis subviolaceis, linea. laterali recta, cauda subintegra.

Yellow-olive Carp, with subviolaceous fins, strait lateral line, and nearly even tail.

Cyprinus Carassius. C. pinna ani radiis decem, cauda integra, linea laterali recta. Lin. Syst. Nat. p. 526.

Cyprinus linea laterali recta, pinna ani radiis decem. Bloch. 1, 11.

Crusian, Penn. Brit. Zool.

LENGTH from eight to ten inches: shape very deep, with a considerable thickness: colour deep olivaceous yellow, with a slight silvery tinge on the abdomen: lateral line strait: fins dull violet: dorsal fin broad, and extending a considerable distance from the middle of the back towards the tail, which is slightly lunated, with obtuse lobes. Native of many parts of Europe, inhabiting ponds and large stagnant waters. It may be doubted whether it be a genuine native of our own country, but is extremely common, and not much esteemed

BREAM.

as a food, being considered as a coarse fish*. According to Dr. Bloch a hybrid breed often takes place between this species and the Carp, when they happen to inhabit the same waters.

BREAM. !

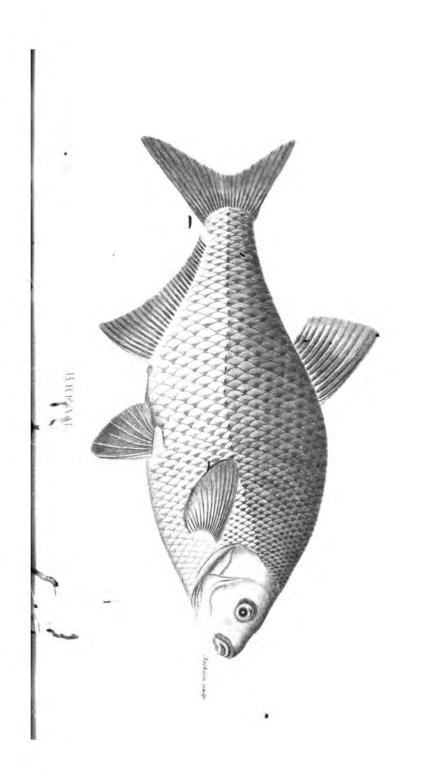
Cyprinus Brama. C. latus olivaceus, abdomine carneo, pinne dorsali parva, ani radiis viginti-septem.

Broad olivaceous Carp, with flesh-coloured abdomen, smallish dorsal fin, and twenty-seven rays in the anal fin.

C. Brama. Lin. Bloch, t. 13. Penn. Brit. Zool.

A LARGE species: shape very broad or deep: length from two feet to two and a half: colour olive, with a pale or flesh-coloured tinge on the under parts: scales rather large: dorsal fin rather small, and situated a little beyond the middle of the back: anal fin extending from the vent nearly to the tail, which is pretty deeply forked: at the base of the ventral fins, on each side, an oblong conical process. Native of many parts of Europe. inhabiting the larger kind of lakes, still rivers, &c. and sometimes seen in the Caspian sea. It is a fish but little esteemed for the table, being considered as coarse and insipid.

* This is the case in our own country, but, according to Dr. Bloch, it is in considerable esteem in many parts of Germany. Like many other fishes, it probably differs considerably in flatter according to the nature of the waters in which it is found.



GIBEL.

 Cyprinus Gibelio. C. latus flavescens, dorso olivaceo, squamis magnis, pinna dorsali lata, cauda lunulata.

Broad yellowish Carp, with olivaceous back, large scales, broad dorsal fin, and lunulated tail.

Cyprinus Gibelio. C. pinna dorsali radiis novendecim, cauda lunulata. Blach. t. x.

ALLED in habit to the Bream, Crusian, &c. being very deep and thick: length from ten to twelve inches: general colour yellowish, with olive-coloured back: scales very large: dorsal fin moderately wide, or extending to some distance from the middle of the back towards the tail, which is short, and slightly divided, with obtuse lobes. Native of Germany and other midland parts of Europe, inhabiting lakes and rivers, and not often exceeding the weight of half or three quarters of a pound.



Cyprinus Erythrepathalmus. C. subaureo-olivaceus, dorso obscurior, oculis rubentibus, pinnis rubris.

Slightly gilded olivaceous Carp, with brownish back, reddish eyes, and red fins.

Cyprinus erythrophthalmus. C. pinna ani radiis quindecim, pinnis rubris. Lin. Syst. Nat.

Cyprinus latus, iride crocea, pinnis ventralibus, ani, caudæque cinnabarinis, Bloch. t. 1.

nud. Penn. Brit. Zool.

GENERAL length about eight or ten inches: head 'small: irides orange: back arched, and sloping

ROACH.

pretty suddenly towards the head and tail: scales large: lateral line slightly curved: general colour pale gilded olive, deeper or browner on the back: abdomen reddish: fins deep red: dorsal fin rather small, and placed beyond the middle of the back: tail forked. Native of several parts of Europe, where it is extremely plentiful in lakes and rivers/ with a gravelly bottom. In our own island it/is found, according to Permant, in the Cherre end ear Oxford, in the Witham in Lincolnshire, and in the fens in Holderness.

ROACH.

Cyprinus Rutilus. C. argenteo flavescens, dorso subfusco, linca laterali deorsum curvata, pinnis inferioribus rubris.

Yellowish-silvery Carp, with brownish back, lateral line curver downwards, and red lower fins.

Cyprinus Rutilus. C. iride pinni que omnibus rubris, ani radius duodecim. Bloch. t. 2.

Roach. Penn. Brit. Zool.

MUCH allied to the Rud, but of a shape somewhat less deep, and moderately thin, with the back pretty sharply arched: scales large and existly deciduous: lateral line curving pretty much lowards the abdomen: general colour silvery with a cast of dull yellow, growing more dusky or brownish on the upper parts: fins red: dorsal fin to ther small, and situated on the middle of the back: tail sub-

The Roach is a gregarious fish, and is a native, of most of the middle parts of Europe, inhabiting

ROACH.

deep, still, and clear rivers, and frequently appearing in large shoals. Dr. Bloch informs us that on draining the marshes about the Oder, so great a quantity were taken that they were used about all the neighbouring villages for the purpose of fattening swine.

In Walton's well-known work the Complete ngler, mention is made of a Roach weighing two unds; and Mr. Pennant speaks, on the authority of an intelligent fishmonger, of one which weighed five pounds ; but the general weight of the fish is scarcely more than a pound or a pound and half. It is considered in many parts of Europe as an excellent fish for the table, having a white, firm, and well-tasted flesh. In our own country however it is not held in any great repute, being rather regarded as a coarse fish. It generally spawns bout the middle of May, and is a very prolific species. It is also said to have the habit of hiding itself in the bottom he instant it perceives any one near the water. The shoals are observed to be generally preceded by one, or more, apparently stationed as a kind of guard, in order to warn the main body of the approach of any danger.

tentive and end est organis

BORDELIERE.

Cyprinus Blicca. C. argenteo-olivaceus, dorso subfusco, pinna dorsali parva, pectoralibus ventralibusque rubentibus.

Silvery-olive Carp, with brownish back, smallish dorsal fin, and reddish pectoral and ventral fins.

Cyprinus Blicca, C. latus, pinnæ ani radiis viginti-quinque. Bloch. t. 10.

15

LENGTH about ten inches: shape KK "thes' of the Bream : colour also similar : dorsal' fin rather small, and placed nearly in the middle of the back, or not so low as in the Bream : anal fin of similar shape to that of the Bream, being continued for a considerable distance from the vent towards the tail, which is forked : head small, with a sharpish snout, the upper lip projecting slightly over the lower: scales moderately large: lateral line curving towards the abdomen: pectoral and ventral firs' a reddish; the rest blueish. Native of many parts of Germany, inhabiting lates and still rivers: in no great request as a food, on account of its numerous bones, and want of substruce; it is a very prolific fish, usually spawning in the month of May, at which period it is so intent on depositing, its ova in proper situations, as to suffer itself to be easily taken by the hand. Like most others of this genus, it lives on worms, water-insects, and the spawn of other fishes, and, as it is said, on that of the Rud in particular.

SOPE.

Cyprinus Ballerus. C. argenteo-cærulescens, dorso obscuriore, pinna dorsali parva, ani lata, cauda bifida.

Silvery-blueish Carp, with dusky back, small dorsal fin, wide anal fin, and bifid tail.

C. Ballerus. C. pinna ani radiis quadraginta. Lin. Syst. Nat. Bloch. t. 9.

LENGTH ter or fifteen inches: shape allied to that of the Bream, &c. but less deep: head rather small than large: gill-covers bright silvery, forming the appearance of very large scales towards the sides of the head: body covered by middle sized scales: colour silvery, with the back dusky, or blueish: fins blueish, with a slight cast of dull red: dorsal fin rather small, and situated a trifle beyond

hiddle of the back; anal fin broad, or extending nom the vent nearly to the tail, which is forked, with the lower lobe somewhat longer than the upper: lateral line nearly strait. Native of several parts of the German empire, inhabiting lakes and rivers.

POMERANIAN CARP.

- Cyprinus Pomeranicus. C. argenteus, dorso pinnisque fuscocarulescentibus, capite convexo, cauda furcata.
- Silvery Carp, with dusky-blueish back and fins, convex head, and forked tail.

Cyprinus Buggenhagii. C. pinnæ ani radiis novendecim. Blo t. 95.

LENGTH from twelve to fifteen inches: shape, moderately deep, tapering pretty suddenly towards the tail: head rather large, convex above, and sinking rather inwards towards the back : eyes large and silvery : colour of the whole fish silvery, with a blueish or dusky tinge on the upper parts and fins: scales large: lateral line slightly bending from the gills downwards, and then running strait to the tail, which is pretty sharply forked : dorsal fin " and placed in the middle of the back : ventral his small, and situated in the middle of the abdoment anal fin small, and rathe, falcated. Native of some parts of Germany and Poland, inhabiting lakes and rivers, and often seen accompanying or preceding shoals of Breams, to which, as will as to the Sope, it is much allied, but may be relidily distinguished from those fishes by the small number a rays in the anal fin.

FRINGE-LIPPED CARP.

Cyprinus Fimbriatus. C. violaceo-fuscus, rubro punctatus, abdomine argenteo, labiis fimbriatis, cauda furcata.

Violet-brown Carp, speckled with red, with silvery abdomen, fringed lips, and forked tail.

Cyprinus fimbriatus. C. lebis fimbriatis. Bloch. t. 409.

LENGTH 2 out twelve inches: shape somewhat allied to that of the common Carp: colour above violet-brown, marked with numerous red specks: below silvery or white: scales rather large: lips deeply crenated or fringed round the margin: dorsal fin rather broad, slightly falcated, and extending a considerable distance from the middle of the back towards the tail, which is deeply forked, and, I¹ II the rest of the fins, of a deep violet-colour.

sidered as a good fish for the table.



Cyprinus Cathosus. C. argenteus, dorso violaceo-fusco, labia superiori bicirrhato.

Silvery Cap, with violet-brown back, and two beards on the upper 13.

prinus cirrhos. C. cirrhis duobus supra labium superior. Bloch. t. 411

LENGTH twelve inches: shape nearly similar to that of the preceding, but rather more slender: clour silvery, with a violet-brown cast on the upper

AMERICAN CARP.

parts: fins of similar shape and size with those of the preceding species, and of a pale or whitish colour. Native of India, inhabiting fresh waters.

FALCATED CARP.

Cyprinus Falcatus. C. argenters, dorso subferrugineo, Apue obtuso, pinnis rubris, dorsali Col, ata.

Silvery Carp, with subfaruginous back, object the sub-

Cyprinus falcatus. C. pinna dorsi anique falciformi. Bloch. t. 412.

Size equal to that of the preceding : head rather short, large, and very obtuse, with the upper lip projecting over the lower : colour silvery, with a cast of reddish brown on the upper parts, and of yellow on the lower : scales large : fins red of shaped as in the two preceding species, but a dorsal more deeply falcaged. Native of India, inhabiting fresh waters.

AMERICAN CARI.

Cyprinus Americanus. C. pinna ani radiis oct decim. Lin. Syst. Nat.

Carp with thirteen rays in the anal fin.

SIZE and shape of the Roach: literal line volume much bowed towards the abdomen: no we of the American seas: observed by Dr. Garden.

BIORKA CARP.

Cyprinus Björkna. C. pinna ani radiis triginta quinque. Lin. Syst. Nat. p. 532.

Carp with thirty-five rays in the anal fin.

LENGTH about five inches: habit short and broad: colour silvery a scales rather large: fins cincreous: taff forked: native of the Swedish lakes: allied to the Lud and Roach: spawns in the month of June, and is in some esteem as a food.

FAREN CARP.

Cyprinus Farenus. C. fusco-argenteus, squamis magnis subangulatis, pinnis fuscis, cauda furcata.

silvery Carp, with large subangular scales, dusky fins, and torked tail.

Cyprinus Farenus. C. piana di radiis triginta-septem, iridibus flavis. Lin. Syst. Nat.

HABIT similar to that of the former species: body compressed and broad: colour dull silvery, with a dusky image on the upper parts: scales rather large and subhexagonal: fins dusky: anal fin very long: tail forked; the lower lobe exceedthe upper in length: native of the Swedish thes, but, according to Artedi, considered as a of species

GRISLAGINE CARP.

Cyprinus Grislagine. C. pinna ani radiis undecim, pinnis albentibus. Lin. Syst. Nat.

Carp with whitish fins, and eleven rays in the anal fin. Cyprinus oblongus figura Rutili, &c. Art. syn. 5. spec. 12

LENGTH about seven inches: shape somewhat like that of a Roach, but rather longer : colour elivery, with a dusky cast on the upper parts : irides silvery: scales large : tail forked. Native of the Swedish lakes.

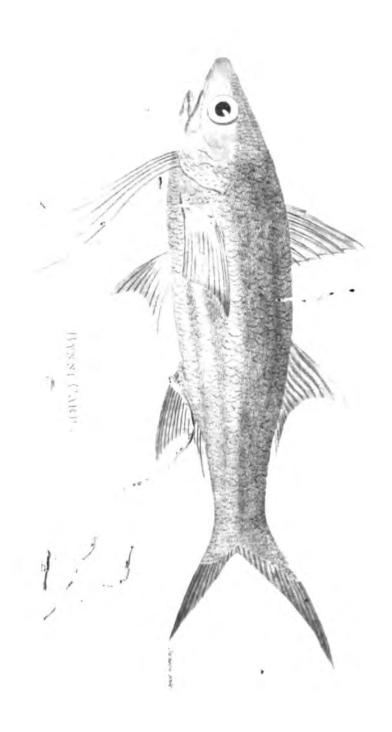
BYNNI CARP.

Cyprinus Bynni. C. argenteus, cirris quatuor, cauda linean bifida.

Silvery Carp, with four beard, and linear bifid tail.

Cyprinus Bynni. C. pinna corsali radiis tredecim, tertio crasso corneo, cauda lineari bifide cirris quatuor. Lin. Gmel. Forst. Arab.

LENGTH about twelve inches: shape ovate-oblong head rather compressed: back and abdomen sloping: colour silvery: lateral line curving upwards anal and caudal fin red with white base: the red whitish, with a thickish dull-red margin. Nativ of the Nile: considered as an excellent table and known to the Egyptians by the name Bynni: perhaps confounded by some with the Binni described by Mr. Bruce, and which is ear dently a species of Polynemus.



BULATMAI CARP.

Cyprinus Bulatmai. C. pinna ani radiis octo, dorsalis secundo maximo, non serrato, cirris quatuor. Lin. Gmel. p. 1414.

Carp with eight rays in the anal fin, the second ray of the dorsal fin very large and not serrated, and four beards at the mouth.

Size of a common Carp: general colour steelblue, with a gloss of gold; beneath inclining to a silvery cast: scales middle-sized: head oblong, brownish above: irides of a mixed gold and silver colour: lateral line strait: dorsal fin blackish; pectoral greyish with reddish tips: ventral white at the base and red at the tips: anal red, with whitish base: tail reddish brown, and forked. Native of the Caspian sea: a rare species.

CAPOETA CARP.

Cyprinus Capoeta. C. pinna (ni radiis novem, dorsalis et analis radio tertio longissimo, il¹-us deorsum serrato, cirris duobus, Lin, Gmel, p. 1415.

Carp with nine rays in the anal fin, the third ray of the dorsal and anal fin very long, that of the former serrated downwards, and two beards at the mouth.

LENGTH about twelve inches: habit similar to that of the O:f: colour silvery, with a dusky cast of the upper parts: abdomen white: scales middlesized, and speckled with brown points: fins brown with dusky specks: dorsal fin trapezoid: pectoral acuminated: ventral opposite the dorsal, and obtusely trapezoid: anal of similar shape: tail forked. Native of the Caspian sea; entering rivers during the winter season.

TUBEROUS CARP.

Cyprinus Caucus. C. pinna ani radiis tredecim, corpore tuberos, argenteolo. Lin. Gmel. p. 1419. Molin. Chil. p. 198. Carp with thirteen rays in the anal fin, and slightly silvery

tuberous body.

LENGTH about eighteen inches: colour silvery, more obscure on the upper parts. Native of the South-American seas.

CONICAL CARP.

Cyprinus Malchus. C. pinna ani radiis octo, corpore conico subcaruleo. Lin. Gmel. p. 1420. Molin. Chil. p. 199. Carp with eight rays in the anal fin, and conic, blueish body.

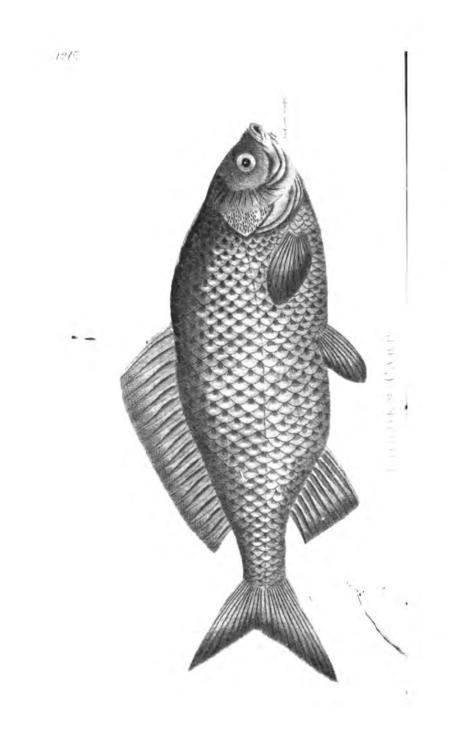
LENGTH about twelve inches: native of the Sput! American seas.

LOBE-TALLED CARP.

Cyprinus Julus. C. pinna ani radiis decem, cauda lobata. Lin. Syst. Nat. Gmel. p. 1420.

Carp with ten rays in the anal fin, and lobated tail.

LENGTH about a span : tail divided into two very distinct lobes. Native of the South American stas.



GOLDEN CARP.

Cyprinus Auratus. C. aureus splendidissimus, pinnis rubris, cauda sæpius trifida, pinnaque ani duplici.

Brilliant golden Carp, with red fins, tail frequently trifid, and anal fin double.

Cyprinus auratus. C. pinrp ani gemina, caudæ transversa bifurca. Lin. Syst. Nat.

Cyprinus colore rubro: Bloch. t. 94. Gold-Fish, Penn, Brit, Zool. Edwards. t. 209.

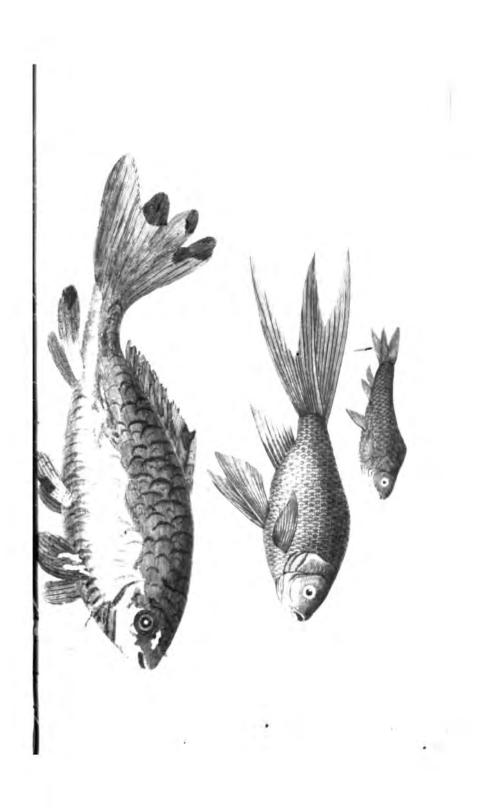
This most beautiful fish, which far surpasses in the brilliancy of its appearance every other inhabitant of the waters, is a native of the Southern parts of China, and is particularly found in the province of Kiang, where it exists in its natural state in a large lake, situated near a mountain at a small distance from the town of Tchanghau. From this spot it has been dispersed into all parts of that extensive empire, and is justly considered as one of the most elegant ornaments which can be introduced into the gardens and houses of persons of the highest distinction. The Chinese ladies in particular are said to spare no pains in cultivating with the most assiduous attention so beautiful an animal. which pleases by the perpetual gaiety of its appearance, the liveliness of its motions, and the ease with which it may be rendered susceptible of a kind of attachment. Large glass and porcelain vessels of the ichest kind are prepared for its reception in their apartments, and small ornamental ponds and pasons in their gardens.

No fish is subject to so many variations, in its v. v. p. 1. 14

GOLDEN CARP.

domestic or cultivated state, as the Gold-Fish ; not only the colour of the body, but even the form and number of the fins differing greatly in different individuals. The most general colour, in the fullgrown animal, is a rich and splendid metallic golden hue, accompanied by a cast of scarlet on the upper parts, and of silver on the lower, the fins being of a bright and vivid red : in others the upper part of the fish is varied with several large black or deep blue patches : in some the colour is an irregular mixture of gold and silver, and when the animal is in a very young state it is frequently seen entirely of a black or dusky tinge; the back fin is sometimes either wanting altogether, or consists only of a very few rays united by their connecting membrane : the anal fin is very frequently double, having a similar appearance with the ventral fins : the tail, which even in its natural state is said to be often trifid, becomes still more strikingly so in the cultivated kind, and so formed as to appear horizontal, the middle part or lobe rising up between the side-parts.

The Gold-Fish has been so long a favourite in our own country, where it now breeds with almost equal facility with the Carp, that a very particular description of the manner of keeping and feeding it becomes in a great degree unnecessary: it is nourished with fine bread-crumbs, small works and water-snails, yolk of eggs dried and powdered, and many other substances both of an animal and vegetable nature: it should at all times, except in .





TELESCOPE CARP.

change of water, and should be kept in vessels of sufficient width to permit a free access of air, yet so formed as, by curving inwards, in a proper degree, at the edge, to prevent the fish from escaping.

The Gold-Fish is said by Pennant to have been first introduced into England in the year 1691, but was not generally known till about the year 1728, when a great number were brought over, and presented to Sir Matthew Decker, and by him disiributed into all parts of the kingdom. Their general length is from four to six inches; but they have been known to arrive at that of twelve or fourteen.

The Gold-Fish, like the Carp, is said to be a very longlived species. We are informed by Mr. Van Braam that, during his stay at a town near Peking, he was shewn several Gold-Fish in a small pool, of which the smallest were fifteen inches in length, and the rest a great deal larger. The Mandarins who accompanied Mr. Van Braam assured him that these fishes were all of a very great age

TELESCOPE CARP.

Cyprinus Buphthalmus. C. sanguinens, oculis prominentibus, pinnis omnibus dimidato-albis, cauda trifida. Not. Misc. 8. t. 262.

Scarlet-Carp, with protuberant eyes, all the fins half white, the tail trifid.

Cyprinus macrophthalmus. Bloch. t. 410.

A HIGHLY elegant species; greatly allied to the Gold-Fish: length ten inches: colour most beauti-

FOUR-LOBED CARP.

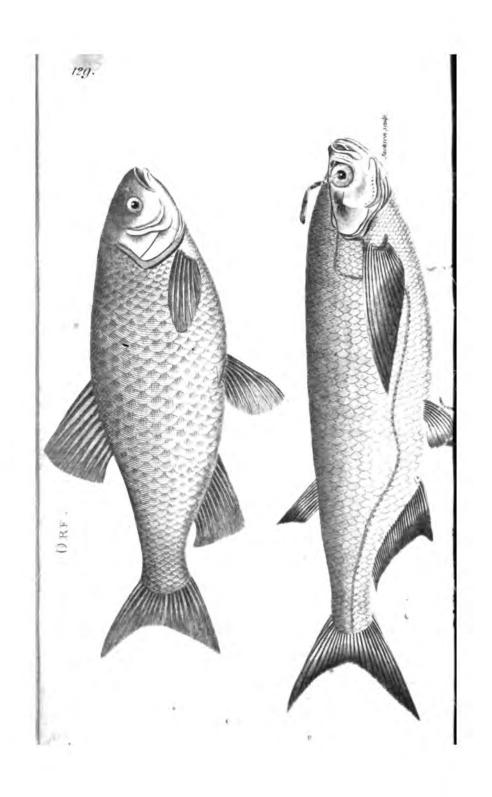
ful vivid sanguine red : head short : eyes extremely protuberant, and appearing in some degree extensile : fins shaped as in the Gold-Fish, and of similar colour with the body for about half their length, the remainder being of a beautiful white, with rosecoloured rays or fibres : tail viry broad, transverse, and deeply trifid, the points extending to a considerable distance : scales very large. Native of China, where it is kept in a similar manner with the Gold-Fish, of which it should, perhaps, be rather considered as a variety than a truly distinct species.

FOUR-LOBED CARP.

This which is described and figured in the Count de Cepede's History of fishes as a distinct species, seems rather to be a variety of the preceding, from which it chiefly differs in having the tail divided into four instead of three lobes.

Cyprinus Quadrilobus. C. sanguineus, pinnis roseo-albentibus, cauda quadriloba.

Sanguine-red Carp, with whitish rose-coloured fins and fourlobed tail.



ORF.

Cyprinus Orfus. C. croceus, abdomine argenteo, pinna dorsi parca, cauda lui 4a.

Orange-coloured Carp, with silvery abdomen, small dorsal fin, and lunated tail.

Cyprinus Orfus. C. pinna ani radiis tredecim. Lin, Syst. Nat. Cyprinus corpore colore croceo, pinna ani radiis quatuordecim. Bloch. t. 96.

A BEAUTIFUL species; allied in point of habit to the Gold-Fish, which it in some degree resembles in colour, being of a rich golden orange, accompanied by a silvery gloss, more especially towards the abdomen: all the fins are of a bright red: the dorsal fin is rather small, and placed a little beyond the middle of the back: the tail is slightly forked or lunated. Native of many parts of Germany, Russia, &c. and often kept like the Gold-Fish in small ponds on account of its beautiful appearance : length from ten to twelve inches or more.

TENCH.

ERIM!

Put Thill in

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Cyprinus Tinca. C. mucosus olivacco-nigricans, squamis minimis, cauda subintegra.

Mucous blackish-olive Carp, with very small scales, and nearlyeven tail.

Cyprinus Tinca. C. pinna ani radiis undecim*, cauda integra, corpore mucoso, cirris duobus. Lin. Syst. Nat. p. 526.
Cyprinus squamis parvis, pinnis crassis. Bloch. t. 14.
Tench. Penn. Brit, Zool.

This fish appears to be a native of most parts of the globe, inhabiting chiefly large stagnant waters with a muddy bottom, and varying considerably in the tinge of its colours according to the situation in which it resides. Its general length is about twelve or fourteen inches, but, like most other fishes, it is occasionally found of far greater magnitude, and we are told that it has sometimes been found to measure two or three feet in length, and to weigh no less than eight, ten, or even twenty poundst. Its usual colour is a deep blackish olive, accompanied by a slight gilded cast; the abdomen being paler or yellower than the other parts, and the fins, which are thick and opake, are of a dull violetcolour: the shape of the fish is thick, and the skin is covered, like that of an Eel, with a tenacious mucus or slime, beneath which appear the scales, which are very small, and closely affixed to the

* By some mistake in the Systema Naturæ the number is said to be twen.y-five.

+ Salvian mentions Tenches of twenty pounds weight.

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Thurse Sails out?

Things of Instanting

TENCH.

skin*: the head is rather large, the eyes small, and on each side the mouth is situated a small beard or cirrus.

The Tench, like the Carp, is remarkably tenacious of life: it is supposed by some to lie, during the winter, in a tory id state, concealed beneath the mud of the waters A inhabits, being rarely taken during that season. In the months of May and June it deposits its spawn, consisting of very small greenish ova, among water-plants, &c. It is considered as a very prolific species, and is said to be of quick growth. According to the difference, or capriciousuess, of taste and fashion, the Tench is held in greater or less repute as a table-fish in different countries. In many parts of Germany it is but little esteemed ; while in our own country it is considered as a very delicate fish. It varies however so much, according to the nature of the waters in which it resides, that these differences of opinion may easily be accounted for. In general, the males are firmer and richer than the females, and are therefore generally preferred. The ancients appear to have esteemed the Tench an inferior kind of fish, and it is mentioned by Ausonius in terms of contempt,

> ------ virides, vulgi solatis, Tincas. Green Tenches, fav'rites at plebeian boards.

The Tench, as before observed, is sometimes found

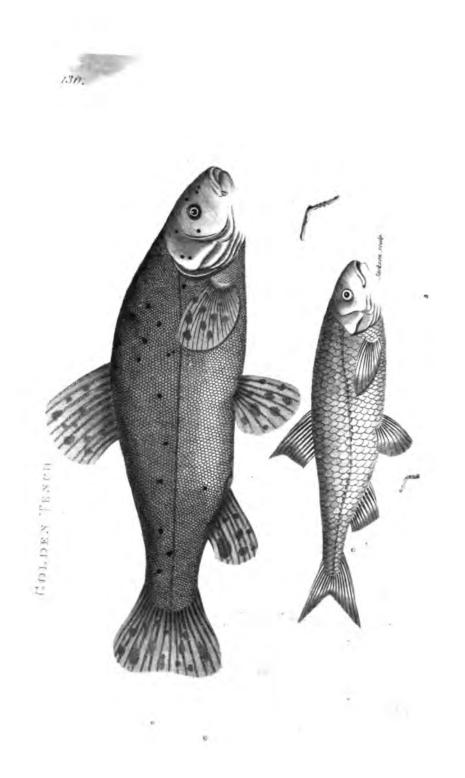
* According to Richter, the scales of the Tench amount to no less than thirty thousand.

TENCH.

of an unusual size and weight. The most remarkable instance of this in our own country, seems to be that recorded in the second volume of Mr. Daniel's Rural Sports, the account of which runs as follows.

" The Tench that has occasioned most animadversion is that which the englaving represents *; the unusual size and form are alike impossible to be accounted for : its bulk perhaps exceeds that of any one ever known to be an inhabitant of the most extensive waters of this country, and the shape. which seems to have accommodated itself to the scanty space allotted for its residence, together stamp it a Lusus Naturæ. Its history is that a piece of water; at Thorville Royal, Yorkshire, which had been ordered to be filled up, and wherein wood, rubbish, &c. had been thrown for years, was, in November 1801, directed to be cleared out. Persons were accordingly employed, and, almost choaked up by weeds and mud, so little water remained, that no person expected to see any fish, except a few Eels, yet nearly two hundred brace of Tench, of all sizes, and as many Perch were found. After the pond was thought to be quite free, under some roots there seemed to be an animal, which was conjectured to be an Otter; the place was surrounded, and on opening an entrance among the roots, a Tench was found of a most singular form, having literally assumed the shape of the hole, in which he had of course for many years been confined. His

* See the plate opposite page 264 of the above-mentioned publication, in which a figure is given of the gigantic specimen described by Mr. Daniel.



GOLDEN TENCH.

length, from fork to eye, was two feet nine inches; his circumference, almost to the tail, was two feet three inches; his weight eleven pounds, nine ounces and a quarter: the colour was also singular, his belly being that or a Charr, or a vermillion. This extraordinary fish, after having been inspected by many gentlemen, was carefully put into a pond; but, either from confinement, age, or bulk, it at first merely floated, and at last, with difficulty, swam gently away. It is now alive and well."

Var.

GOLDEN TENCH.

Cyprinus Tincaurea. C. mucosus aurantius, nigro maculatus, squamis minimis, pinnis rubris pellucidis, cauda subintegra. Mucous orange-coloured Carp, with black spots, very small scales, red pellucid fins, and nearly even tail. Cyprinus Tinca auratus. Bloch. t. 15.

THIS most beautiful variety, which appears to be permanent, is found in some parts of Germany, and differs from the common Tench in being of the richest orange-yellow, variegated with small black spots, while the fins are thin, transparent, and of a bright red colour: the head also in this variety is observed to be somewhat smaller than in the common Tench. It is principally found, according to Dr. Bloch, in Silesia and Bohemia, and is from thence transplanted into other parts of Europe, and kept as an ornamental fish in the waters of

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FERRUGINOUS CARP.

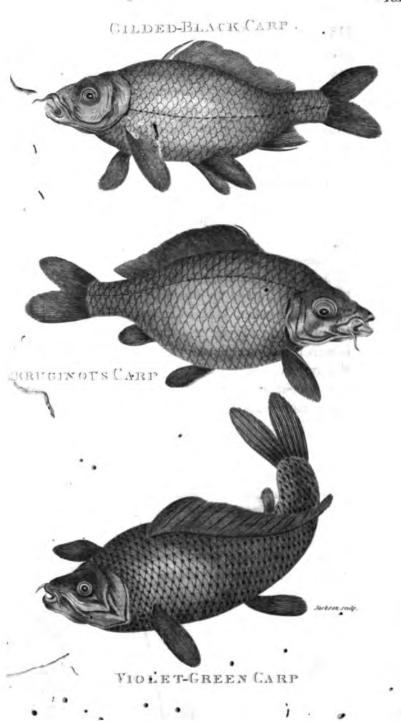
218 .

gardens and pleasure-grounds. It is said to be of slow growth, and to live, like most others of this genus, on worms, water-insects, &c. It is usual to throw into the waters in which it is kept breadcrumbs, peas, &c. in the same manner as is practised with respect to Carps. Ibr. Bloch also informs us that it is usual in some places to call the Carp to the accustomed feeding-spot by means of a beli, which signal they readily obey; but that the Golden Tenches in the same water are not observed to be susceptible of the sound. They are delighted with warmth, and in bright weather are observed to swim in small shoals near the surface; and this, as is supposed, rather for the sake of warmth than of light, since when kept in a warm chamber, they are observed to prefer the shady side of the vessel in which they are placed. Like the common Carp. this variety is said to be tenacious of life. It does not appear to have been distinctly described by any ichthyological writer except Dr. Bloch.

FERRUGINOUS CARP.

Cyprinus Ferrugineus. C. totus ferrugineus. Carp entirely ferruginous or red-brown. Cyprin rouge-brun. Cepede. 6. p. 490

SIZE uncertain : habit resembling that of the Gold-Fish. Native of China.



GILDED-BLACK CARP.

Cyprinus Nigro-auratus. C. nigro-auratus, pinnis ferrugineis, Gilded-black Carp, with ferruginous flus. Cyprin mordoré. Cepede. 6. p. 492.

HABIT similar to that of the preceding, of which is seems rather a variety than a species truly distinct. Native of China.

VIOLET-GREEN CARP.

Cyprinus Viridi-violaceus. C. viridi-violaceus, pinnis violaceis, Violet-green Carp, with violet-coloured fins. Cyprin verd-violet. Cepede. 6. p. 492.

SIZE and habit similar to that of the two preceding. Native of China. This, and the two sermer are slightly described, and figured by Cepede, on the authority of some Chinese drawings belonging to the collection of the Prince of Orange, and now deposited in the Parisian Museum.

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PUNCTATED CARP.

Cyprinus Punctatus. C. olivaceo-flavescens, squamis nigropunctatis, linea laterali rubra, serie duplici punctorum nigrorum. Yellowish-olive Carp, with the sches speckled with black, and red lateral line with a double row of black specks. Cyprinus bipunctatus. Spirling, Bloch. t. 8. f. 1.

A SMALL species, scarcely exceeding three or four inches in length: shape similar to that of the following species, but with the head larger, and the dorsal fin less broad in proportion: colour pale yellowish brown, or olive; white or silvery beneath: upper fins blueish: lower reddish: scales speckled with black: lateral line red, and marked throughout by a double row of black points, giving an elegant appearance to the living fish, but fading after death: tail forked. Native of Germany, inhabiting rivers and brooks, and considered as an agreeable fish for the table.

BITTERLING.

Cyprinus Amarus. C. latux, subargenteo-flavescens, dorso olivaceo, squamis magnis nigro-punctatis, pinnis pectoralibus ventralibusque radiis septem.

Broad yellowish-olive Carp, with a cast of silver: large scales speckled with black, and pectoral and ventral fins sevenrayed.

C, amarus. Der Bitterling. Bloch. t. 8. f. 3.

A VERY small species, scarcely exceeding two inches in length: shape resembling that of a Carp, or

SILKEN CARP.

-rather a Bream in miniature : colour yellowish olive above, pale or whitish beneath : scales large for the size of the fish : dorsal fin placed in the middle of the back, and resembling that of a Carp in shape : anal fin of similar appearance also : tail slightly divided : all the fins of a pale yellow colour, except the pectoral, which are small, and of a pale blue. Native of Germany, and several other parts of Europe, inhabiting lakes and rivers : it is hardly considered in the light of an edible fish, being of a bitter flavour, and so small and thin as to be not worth the trouble of preparation.

SILKEN CARP.

Cyprinus Sericeus. C. violaceo-argenteus nitidissimus, abdomine roseo, fascia utrinque longitudinali viridi-cyanea.

Brilliant violet-silvery Carp, with rose-coloured abdomen, and a blue-green longitudinal stripe on each side.

Cyprinus sericeus. C. pinna dorsali radiis decem, anali undecim, Vauda ex fusco rubente. Lin. Gmcl. Pall, it. 3, p. 704.

A VERY small, but highly elegant species : length scarcely two inches : shape like that of the Crusian : colour bright silvery, accompanied by a blue or violet cast, and towards the abdomen pale rosecolour : on each side the body a longitudinal broadish blue-green stripe : ventral and anal fins bright red, tipped with black : tail brown. Native of slowly-running streams in many parts of Dauria, where, according to Dr. Pallas, it is extremely plentiful.

Of a more lengthened shape.

BARBEL.

Cyprinus Barbus. C. albo-carulescens, cirris quatuor, dorso olivaceo, pinna dorsalis radio secundo utrinque serrato.

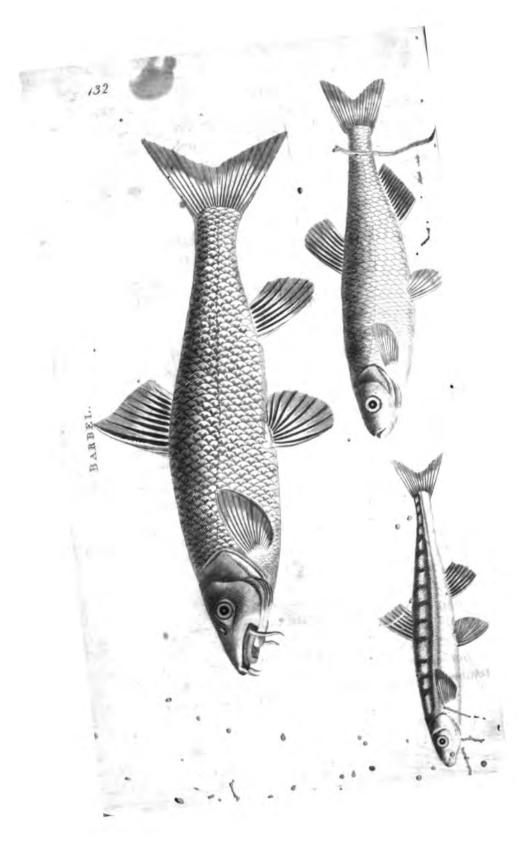
Blueish white Carp, with four beards, olive-coloured back, and the first ray of the dorsal fin serrated on both sides.

Cyprinus Barbus. C. pinna ani radiis septem, cirris quatur, pinnæ dorsi radio secundo utrinque serrato. Lin. Syst. Nat. p. 525,

Barbel. Penn. Brit. Zool.

THE Barbel, which is a native of most of the middle and southern parts of Europe; is readily distinguished from most others of its genus by the lengthened form of its body, somewhat resembling the habit of a Pike, as well as by the length of the upper lip, which extends considerably beyond the lower, and is furnished with two pair of long and unequal cirri or beards, of which the interior or those nearest the tip of the nose are shorter than the exterior: the colour of the whole fish is a slightly silvery grey, with a darker cast on the upper parts, and the scales are middle-sized, rounded, and well defined : the dorsal fin is rather small than large, situated on the middle of the back, and is of a blueish brown colour, with the second ray extremely strong, sharp, and serrated on both sides: the pectoral and ventral fins are pale-brown tipped with yellow; the tail dull purple and forked: the snout or upper lip reddish : the lateral line strait.

The Barbel is usually found in deep and rapid



BARBEL.

rivers, and is a fish of considerable strength, swimming with rapidity, and living not only on worms and water-insacts, but occasionally preving on the smaller fishes. It grows to a great size, having been sometimes seen of the length of five or six, and even, according to some authors, of eight, ten, or twelve feet. Its more general length however is from eighteen inches to two feet. It is said to be of quick growth, and to arrive at a great age. It is generally observed to frequent the deeper and stiller parts of the rivers in which it resides, frequently assembling in small shoals, and rooting among the mud and stones at the bottom in quest of worms, &c. It is sometimes either so intent on this, or so careless at particular seasons, as to suffer itself to be taken by the hand by divers employed for that purpose. Mr. Pennant observes that in summer the Barbel is chiefly in motion during the night, but towards autumn, and in winter, generally confines itself to the deepest holes. It is a very coarse fish, and never admitted at superior tables. being used only by the lower ranks : it has even the reputation of being in some degree noxious; the roe in particular is said to operate as a very strong emetic and cathartic, and is sometimes taken in a small quantity by the country people for the purpose of common physick, but is observed, in general, to operate rather too roughly. We are assured, by Sir John Hawkins, in his edition of Walton's Complete Angler, that the flesh itself is not always safe, " About the month of September (says he) in the year 1754, a servant of

CYRAL BARBEL.

mine, who had eaten part of a Barbel, though, as Ihad cautioned him, he abstained from the spawn, was seized with such a violent purging and vomiting, as had like to have cost him his life." Notwithstanding this observation, Dr. Bloch affirms that the Barbel, when not overgrown, is a sufficiently delicate fish, and even assures us that he himself, together with his whole family, had eaten the roe or spawn without any bad effect. Like most other fishes, the Barbel probably differs very much in different situations. It usually spawns in May, or June, according to the warmth or coldness of the season. At that period it rushes up the rivers, and deposits its eggs in stony places in the most rapid part of the current. Dr. Bloch informs us that the Barbel, among other baits, is fished for with leeches, which are collected by the country people, and dried, and on immersion in water, are sufficiently restored to their natural appearance as to be used with success for this purpose. Alleral Trust

CYRAL BARBEL.

Bris Linghtony Lat.

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 Cyprinus Capito. C. cirris quatuor, pinnæ dorsalis radio tertio utrinque postice serrato, dorso acuto, lateribus pinnisque inferioribus albidis. Lin. Gmel. Guldenst. Nov. Comm. Petrop.
 Carp with four beards, sharp back, third ray se the dorsal fin serrated on both sides, and whitish lower fins.

VERY much allied to the Barbel, but rather more compressed, and with a longer and broader head in

RAZOR CARP.

proportion: snout more obtuse; beards longer, and eyes larger: dorsal fin situated lower than in the Barbel. Found in the rivers running into the Caspian sea, particularly in the Cyrus.

RAZOR CARP.

Cyprinus Cultratus. C. argenteo-cærulescens capite parco, corpore compresso, abdomine carinato.

Silvery-blueish Carp, small head, compressed body, and carinated abdomen.

Cyprinus cultratus. C. pinna ani radiis triginta, linea laterali declinata, ventre acutissimo. Lin. Syst. Nat. p. 531. Cyprinus pinna dorsi anali opposita. Bloch. t. 37.

This species is of a lengthened form, and of a remarkably compressed shape, with the back nearly strait, the abdomen projecting downwards; and forming a sharp keel on the lower part : the head is small, with the mandibles turning upwards, and in shape resembling those of a Herring : the eyes are large and silvery : the body of similar colour, with a slight cast of dusky blue above : the scales middle-sized, thin, and deciduous, and the lateral line remarkably flexuous, descending first pretty deeply from the gill-covers, and from thence continuing with an unequal flexure to the tail, which is pretty strongly forked : the dorsal fin is small, and situated very low on the back, or at no great distance from the tail : the anal fin is shallow and subfalcated : the pectoral rather large and lanceolate, and the ventral smaller, but of nearly similar shape: all the fins are of a pale or whitish colour.

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V. V. P. I.

CHUB.

This fish is a native of Russia, Pomerania, &c. inhabiting rivers running into the Baltic. In other parts of Europe it is rather a rare fish it arrives at the length of eighteen inches or two feet, and is held in but slight repute as a table-fish, on account of its thinness, and the want of firmness of its flesh; it is said chiefly to frequent the banks of the rivers, to prey on worms and insects, and to spawn in the month of May.

Cyprinus Jeses. C. argenteo-carulescens, dorso olivaceo, capite crasso, rostro rotundato.

CHUB.

Silvery-blueish Carp, with olivaceous back, thick head, and rounded snout.

Cyprinus Jeses. C. pinna ani radiis quatuordecim, rostro rotundato. Lin. Syst. Nat. p. 530.

Chub. Penn. Brit. Zool.

This fish in some degree resembles the Carp, or rather the Tench, in shape, but is of a more lengthened form, and has a thicker or larger head in proportion. Its general length is from fourteen to eighteen inches: its colour silvery, with a blueish olive cast on the upper parts: the scales are very large or broad, and the lateral line nearly strait: the dorsal fin is rather small, and situated on the middle of the back : the tail is slightly forked, and of a dull blueish colour, all the rest of the fins being of a ferruginons brown.

The Chub is a native of many parts of Europe, and is not uncommon in our own island ; it is

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Store at

CHUB.

chiefly found in clear and rapid rivers, being a fish of a strong nature, and swimming very swiftly: it generally frequents the deepest parts of the water, and is of a shy or timid disposition : it spawns in the months of March and April. According to Bloch, the Chub weighs from five to eight pounds : those of British growth however are very rarely equal in point of size to those found in many other parts of Europe. The young are said to be of slow growth; scarcely arriving at a greater length than three inches in the space of the first year. The Chub is generally considered as a coarse, unpalat able fish, and is apt to acquire a yellowish cast on boiling; for which reason it is held in no esteem at our tables. Walton however, in his well-known work The Complete Angler, gives us a receipt for dressing it in such a manner as to form no unpleasant repast. .

"The Chub (says he), though he eat well thus drest, yet as he is usually drest, he does not : he is objected against, not only for being full of small forked bones, disperst through all his body, but that he eats watrish, and that the flesh of him is not firm, but short and tasteless. The French esteem him so mean, as to call him Un Villain; nevertheless he may be so drest as to make him very good meat; as namely, if he be a large Chub, then dress him thes.

"First, scale him, and then wash him clean, and then take out his guts; and to that end make the hole as little and as near to his gills as you may conveniently, and especially make clean his

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ROUND-TAILED CHUB.

throat from the grass and weeds that are usually in it, for if that be not very clean, it will make him to taste very sour : having so done, put some sweet herbs into his belly, and then tye him with two or three splinters to a spit, basted often with vinegar, or rather verjuice and butter, with good store of salt mixed with it.

"Being thus drest, you will find him a better dish of meat than you, or most folk, even than anglers themselves, do imagine; for this dries up the fluid watrish humour with which all Chubs do abound."

It seems somewhat singular in the above receipt, that Walton should first insist on the throat of the fish being well cleaned, lest it should taste sour, and then recommend it to be well basted with verjuice or vinegar.

ROUND-TAILED CHUR.

"the the instant slightly corring

Cyprinus Cephalus. C. pinna ani radiis undecim, corpore subcylindrico, cauda rotundaid.

Carp with eleven rays in the anal fin, subcylindric body, and rounded tail.

Cyprinus Cephalus. C. pinna ani radiis undecim, cauda integra, corpore subcylindrico. Lin. Syst. Nat. p. 527.

GREATLY allied to the Chub, but, according to Dr. Bloch, specifically different: appears to have been confounded by Mr. Pennant and others with the Chub or Cyprinus Jeses of Linnæus, from which it differs in having the tail rounded.

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LEURO CENTATORION

Cyprimus Aspius. C. griseo-argenteus, dorso subfusco, maxilla inferiore longiore in curva.

Silvery-grey Carp, with brownish back, and incurved lower jaw longer than the upper.

 C. Aspius. C. pinna ani radiis sedecim, maxilla inferiore longiore incurva. Lin. Syst. Nat. p. 530.
 Cyprinus Aspius. Bloch. t. 7.

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GREATLY allied in appearance to the Chub, but rather more slender, with the back less elevated, the abdomen more prominent, and the head rather smaller: colour silvery, growing dusky on the back : scales large : lateral line curving slightly towards the abdomen: fins similar in situation, shape, and colour to those of the Chub, except that the pectoral fins are whitish: the lower jaw is rather longer than the upper, slightly curving up at the tip. In the young of this species the body is often marked by a longitudinal series of dusky lines in the direction of the scales, as in the Grayling, the Mullet, and several other fishes. Native of the rivers of Germany : said to be a good table fish, but not a fashionable one, the flesh breaking in pieces on boiling, and being thought too fat for delicate stomachs. It is said to die soon when taken out of the water, in which particular it differs remarkably from the Chub.

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Cyprinus Idus. C. argenteo-cærulescens, pinna dorsali caudaque violaceo-fuscis, cæteris rubentibus.

IDE.

- Silvery-blueish Carp, with the dorsal fin and tail violet-brown, the rest red.
- Cyprinus Idus. C. pinna ani radiis tredecim, rubra. Lin. Syst. Nat. p. 529. C. Idbarus ? Lin. Syst. Nat.

Cyprinus corpore crasso, pinna ani radiis tredecim. Bloch. t. 36.

LENGTH from eighteen inches to two feet : shape somewhat lengthened or Salmon-form, yet with a considerable degree of depth: colour silvery, with a blueish or dusky tinge on the upper parts : head rather large than small, and slighly sharpened in front : cheeks tinged with yellow : irides silvery :* scales rather large : dorsal fin smallish, placed on the middle of the back, and of a pale violet-brown colour, as is likewise the tail, which is slightly forked: pectoral fins reddish: ventral and anal red. Native of lakes and rivers in many of the northern parts of Europe, ascending rivers principally in the month of May, during the spawning-season; and is observed to select for this purpose the most rapid places, and to deposit its ova on the bare stones. It is said to be of slow growth, and to be held in considerable esteem as a table fish.

NASE.

Cyprinus Nasus. C. argenteo-carulescens, capite paroo naso prominente.

Silvery-blueish Carp, with small head, and prominent snout, Cyprinus Nasus. C. pinnu ani radiis quatuordecim, rostro prominente. Lin. Syst. Nat. p. 530.

Cyprinus abdomine intus nigro. Bloch. t. 3.

SHAPE like that of a Salmon : length about twelve or fifteen inches: head small: snout prominent. with the mouth placed considerably beneath: scales large: colour silvery, with a strong cast of dusky blue on the upper parts : dorsal fin rather small than large, placed in the middle of the back, and of similar colour; tail forked, and of the same colour, but with a tinge of dull red : pectoral, ventral, and anal fins bright red. Native of lakes and rivers in many parts of Germany, Russia, &c. It is not held in much consideration as a table fish, from a prejudice entertained against it, on account of the black colour of the peritonæum or investing and another to all the membrane of the intestines. month of Mar, during the spar-ome

is observed to release for this surpose the rates rapid planes, and in depent its or a rapid bare scanes. It is said to be of slow aborationed to be held in

considerable integri of a table field.

SERTE.

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Cyprinus Serta. C. argenteo-carulescens; supra olivaceus, naso producto, pinna dorsali anali caudalique subcaruleis, cateris subrubentibus.

Silvery-blueish Carp, olivaceous above, with the dorsal, caudal, and anal fin blueish, the rest reddish, and the snout produced.
Cyprinus Vimba. C. pinna ani radiis viginti-quatuor, rostro nasiformi. Lin. Syst. Nat.
Cyprinus Vimba. Bloch. t. 4.

LENGTH from twelve to eighteen inches: shape nearly similar to that of the preceding ; but rather thicker: snout shaped in the same manner, with the mouth beneath : colour dusky blueish-olive above, silvery or whitish beneath : eyes gold-coloured: dorsal fin as in the preceding, and of the same colour with the back, as is also the forked tail, and the anal fin: pectoral and ventral fins vellow: the cheeks and gill-covers are also pretty strongly tinged with yellow : scales middle-sized, and bordered with small radii at the edges. Native of Germany, Russia, Sweden, and other parts of Europe, inhabiting rivers, from which it occasionally migrates into the Baltic sea. It is held in considerable estimation as a food, either fresh, salted, or prepared in various ways by pickling, &c. The peritonæum in this species is not black, but of a silvery whiteness; it seems however to have been confounded by some authors with the former fish, in which that part is of a deep black colour.

DOBULE.

Cyprinus Dobula. C. argenteo-cærulescens, naso subproducto, pinag dorsali caudaque subcæruleis, pinnis inferioribus rubentibus.

Silvery blueish Carp, with subproduced snout, dusky back, blueish dorsal fin and tail, and reddish lower fins.

Cyprinus Dobula. C. pinna ani dorsalique radiis decem. Lin. Syst. Nat.

C. oblongus, pinna ani dorsalique radiis undecim. Bloch. t. 5.

LENGTH ten or twelve inches: shape similar to that of the Nase, but with the snout much less produced, the upper jaw being but very little longer than the lower: colour as in the Nase: eyes yellow: situation, shape, and proportion of the fins the same: dorsal fin and tail dusky; pectoral pale yellow; ventral and anal red. Native of Germany, &c. inhabiting large lakes, and ascending rivers in the months of March and April for the purpose of spawning: feeds on worms, leeches, and waterinsects: but little esteemed as a table-fish, on account of its numerous bones, though otherwise not an unpleasant food.

the Baltic seat. It is heat in considerable estimate that as a food ruber from subet, or prepared in various ways by plothing, &c. The periconcentr in this species is not black, but of a silvery whiteness a it seems however to itsee best confounded by some authors with the former with in which that part is of a deep black colour.

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Cyprinus Leuciscus. C. argenteo-flavescens, dorso olivaceo, pinna dorsali fusca, cæteris rubentibus cauda furcata.

Yellowish-silvery Carp, with olivaceous back, dorsal fin brown, the rest reddish, and forked tail.

Cyprinus Leuciscus. C. pinna ani radiis decem, dorsali novem. Lin. Syst. Nat.

Dace or Dare. Will. ichth. Penn. Brit. Zool.

LENGTH from six to eight or ten inches: colour silvery, with yellowish olive back: scales middlesized: dorsal fin rather small, of a dusky colour, and placed on the middle of the back : rest of the fins slightly tinged with red : tail pretty sharply forked. In its manners the Dace resembles the Roach, being of a gregarious nature, inhabiting lakes and rivers in many parts of Europe, and by means uncommon in our own island.

GRAYNING.

Cyprinus Lancastriensis. C. argenteus, dorsoo subrecto carulescente, oculis pinnisque inferioribus rubentibus. Silvery Carp, with almost even, blueish back, and reddish eyes and lower fins. Grayning. Penn. Brit. Zool,

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THIS, says Mr. Pennant, is found in the Mersey near Warrington, and has much the appearance of a Dace, but is more slender, and has the back *straiter: the usual length is about seven inches and a half: the depth to the length is as one to

CASPIAN CARP.

five; of the Dace as one to four: the colour of the back is silvery with a blueish cast: the eyes, ventral and anal fins red, but paler than in the Dace, and the pectoral fins are redder: in the dorsal fin are eight rays, in the pectoral fifteen, in the ventral nine, in the anal ten, and in the tail thirty-two.

CASPIAN CARP.

Cyprinus Mursa. C. pinna ani radiis septem, primo longissimo, dorsalis tertio longissimo, crassissimo, retrorsum ultra medium serrato, cirris quatuor. Lin. Gmel. p. 1415. Guldenst. Nov. Comm. Petrop. 17. p. 513.

Carp with four beards, seven rays in the anal fin, the first very long, and the third ray of the dorsal fin very long and thick, and serrated beyond the middle.

LENGTH about twelve inches: habit resembling that of a Pike, being of a squarish oblong shape: scales small, and obtusely square: colour gilded olive, shaded with dusky on the upper parts: abdomen white: skin mucous: anal and ventral fins white, spotted on the upper part with brown: the rest of the fins brown: the dorsal placed in the middle of the back, the tail forked. Native of the Caspian sea, ascending rivers in the spring season in order to deposit its ova in proper situations.

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FIN-BACK CARP.

Cyprinus Regius. C. pinna ani radiis undecim, dorsali per totam dorsi longitudinem excurrente. Lin. Gmel. p. 1419, Molin. Chil. p. 198.

Carp with eleven rays in the anal fin, and the dorsal fin running down the whole length of the back.

NATIVE of the South-American seas: size of a Herring: shape cylindric: colour golden above, silvery beneath: irides purple: fins soft and yellow: in great esteem for the table, being a very delicate fish.

THICK-SNOUTED CARP.

Cyprinus Labeo. C. subargenteo-fuscus, rostro subcarnoso conico-obtuso, pinnis inferioribus rubris, cauda fusca.

Subargenteous brown Carp, with somewhat fleshy obtuselyconic snout, red lower fins, and brown tail.

Cyprinus Labeo. C. phna ani radiis septem dorsali octo, pectoralibus novendecim. Lin. Gmel. p. 1420. Pall. it. 3. p. 703.

A LARGE species, more than two feet in length: body roundish, subcompressed, and covered with large scales: head thick, with an obtuse, conical, and somewhat fleshy snout: mouth placed beneath, as in the Sturgeon: eyes rather large, with yellowish-silvery irides: pectoral, ventral, and anal fins red: tail forked: first ray of the dorsal strong and bony. Native of rocky rivers in Dauria, where it is very common; is a very swift swimmer, and is highly esteemed as a table fish.

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THIN-HEADED CARP.

Cyprinus Leptocephalus. C. capite producto, depresso, maxilla inferiore longiore, pinnis, excepta darsali, rubris.

Carp with produced and depressed head, with the lower jaw longer than the upper, and red fins, the dorsal excepted.

Cyprinus leptocephalus. C. pinna ani radiis novem, dorsali octo. Lin. Gmel. Pall. it. 3. p. 703.

SIZE equal to that of C. Labeo: shape resembling that of the Salmo Coregonus, but the head somewhat like that of a Pike, having the snout much produced, depressed, and rounded, with the lower jaw longer than the upper: scales middle-sized: fins, except the dorsal, red. Inhabits the rivers of Dauria.

SUCKING CARP.

Cyprinus Catastomus. C. albidus, corpore elongato, capite subtetragono, rostro subproducto, ore lunulato inferiore.

Whitish Carp, with lengthened body, subtetragonal head, subproduced snout, and lunulated mouth placed beneath.

Cyprinus catastomus. C. pinna ani radiis acto, labio imo caruncula bilobata papillosa, cauda bifida. Forst. Act. Angl. vol. 63. p. 158. t. 6.

SHAPE lengthened; body compressed; colour whitish; length from ten to fifteen or sixteen inches: hear lengthened, flattened on the top, and marked by rough lines: mouth small, and placed beneath: scales middle-sized: dorsal fin situated on the middle of the back: tail lunated. Native

of North America, inhabiting inland lakes and rivers, where it is found in the greatest plenty: said to live chiefly by suction, from which circumstance its name is taken.

BLEAK.

This variety has smaller scales than the former, and is farther distinguished by a broad red stripe on each side the body, accompanying the lateral line: it is found chiefly at sea, and very rarely in fresh waters.

VAR.

Cyprinus Alburnus. C. argenteus, dorso olivaceo, pinna ani radiis viginti, cauda furcata.

BLEAK.

- Silvery Carp, with olivaceous back, twenty rays in the anal fin, and forked tail.
- Cyprinus Alburnus. C. pinna ani radiis viginti. Lin. Syst. Nat. p. 531.
- Cyprinus maxilla inferiore prominente, pinna ani radiis viginti. Bloch. t. 8. f. 4.

LENGTH five or six inches: shape slender, with the body much compressed : colour bright silvery, with the back olive-green: scales middle-sized, and easily deciduous: tail forked : native of rivers in many parts of Europe, and common in our own island. It is from the scales of this fish that the beautiful silvery matter used in the preparation of artificial pearls is chiefly taken : the invention is of

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GALIAN.

French origin, and is principally practised at Paris. which city has long been famous for this elegant manufacture: we are informed by Dr. Lister, in his Journey to Paris, that an artist in that city used about thirty hampers-full of Bleak in a single winter. Other bright-coloured fishes may however · be used for the same purpose: the scales are said to be first washed, or slightly beaten, in order to afford all the silvery matter with which they are covered, and which, by repeated affusions of water, is purified, and suffered to settle for use : this preparation, which is termed oriental essence, is then mixed with a small quantity of melted isinglass, and introduced, by means of proper tubes, into the thin glass beads used in the process, and which are of different casts of colour, as pale rose, blueish, When the silvery matter or essence has &c. &c. been distributed round the whole internal surface of the bead, it is suffered to dry, and, in the ordinary kinds, is afterwards filled up with melted wax.

 Cyprinus Galian. C. olivaceus, fusco-maculatus, abdomine rubro.
 Olivaceous Carp, with brown spots, and red abdomen.
 Cyprinus Galian. C. pinna ani radiis septem, dorsali octo, pectoralibus quatuordecim. Lin. Syst. Nat. Gmel.

GALIAN.

An elegant species: size and habit of a small Gudgeon: scales small, and closely infixed: native of rocky rivers in some parts of Siberia.

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HERRING CARP.

Cyprinus Clupeoides. C. argenteo-cærulescens, compressus, abdomine serrato, ore sursum curvato, pinna unali subfalcata, cauda furcata.

Silvery-blueish compressed Carp, with serrated abdomen, mouth curving upwards, subfalcated anal fin, and forked tail. • Cyprinus clupeoides. C. abdomine serrato. Bloch. t. 408. f. 2.

LENGTH about six inches: habit resembling that of a Herring: body compressed, with the abdomen sharply carinated: scales middle-sized: lateral line curving downwards from the gills, pretty near the abdomen', and then running almost strait to the tail: mouth shaped as in the genus Clupea, but having the teeth in the throat as in the Cyprini: gill-membranes also furnished with rays: colour blueish-silvery, with a dusky cast on the back, and yellowish at the base of the fins: tail forked. Native of India, and seeming to form, as it were, a connecting link between the genera of Cyprinus and Clupea.

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GUDGEON.

Cyprinus Gobio. C. argenteo-olivaceus, labio superiore utrinque barbato, pinna dorsali caudaque nigro-maculatis.

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Silvery-olive Carp, with the upper lip bearded, and the dorsal fin and tail spotted with black.

Cyprinus Gobio. C. pinna ani radiis undecim, cirris duobus. Lin. Syst. Nat. p. 526.

Cyprinus oblongus varius, cirris duobus ad angulum oris. Block, t. 8. f. 2.

THE Gudgeon is an inhabitant of the smaller kind of lakes and gentle rivers in most parts of Europe, especially those with a gravelly bottom. It is observed by Mr. Pennant that those which are caught in the Kennet and the Cole are thrice the weight of those taken elsewhere : the largest commemorated by the above-mentioned author was taken near Uxbridge, and weighed half a pound : the general measure is from four to five or six inches. The Gudgeon is of a lengthened shape. with a thick or subcylindrical body : its usual colour is pale olive-brown above, sometimes slightly spotted with black; the sides silvery, and the abdomen white : the scales middle-sized, or rather large : and the lateral line strait : the dorsal fin is placed in the middle of the back, opposite the ventral fins, and is of a pale brown, commonly marked with numerous black spots disposed in a kind of transverse rows: the tail is slightly forked, and of similar colour: the rest of the fins are generally of a pale reddish" or yellowish brown, the irides of the 16 V. V. P. I.

GRONOVIAN CARP.

eyes are red: the upper jaw rather longer than the lower, and furnished on each side with a shortish beard or cirrus. The Gudgeon is observed to reside principally at the bottom of the streams which it frequents, and it is usual with anglers to rake the bottom at intervals, by which means these fish are assembled in small shoals, expecting, on the raising of the mud, a supply of their favourite food, viz. small worms and water-insects. The Gudgeon generally spawns in the spring, and is observed not to deposit all its ova at once, but at distant periods, so that the spawning-time lasts near a month. It is a very prolific species, and is to the last degree plentiful in the lakes of some parts of Germany, where it chiefly abounds in the autumnal season. As a table-fish it is in high estimation, being of a delicate flavour, and considered as not greatly inferior to the Smelt.

GRONOVIAN CARP.

Cyprinus Gonorhynchus. C. rostro prominento angulato-rotundato, corpore cylindrico.

Carp with prominent obtusely-cornered shout, and cylindric body.

Cyprinus Gonorhynchus. C. pinna ani radiis octo, corpore cylindrico. Lin, Gmel. p. 1422.

Gonorhynchus, Gronov. zooph. p. 55. t. 10.f. 2.

LENGTH about nine inches: scales small: lateral line strait: dorsal fin situated towards the hind part of the body as in a Pike: ventral-fins opposite

MINOW.

the dorsal: anal pretty near the tail, which is slightly forked. Native of the seas about the Cape of Good Hope, and first described by Gronovius, from a dried specimen: colour uncertain.

MINOW.

Cyprinus Phoxinus. C. atro-viridis flavo caruleoque varius, abdomine argenteo-rubescente, cauda furcata.

Blackish-green Carp, with blue and yellow variegations, reddish-silvery abdomen, and forked tail.

Cyprinus Phoxinus. C. pinna ani radiis octo, macula fusca ad caudan, corpore pellucido. Lin. Syst. Nat.

Cyprinus teretiusculus, pinnis ventralibus anali dorsalique radiie decem. Bloch. t. 8, f. 5.

This well-known species may be numbered among the most beautiful of the European fishes : it seldom exceeds the length of three inches, and is of a slender and elegant shaper the colours are generally as stated in the specific character, but vary greatly in different specimens, and at different seasons of the year: sometimes the colour of the upper parts is rather blue than green, and the abdomen in some is of a bright red, in others white or silvery with a tinge of yellow: the scales are very small: , the lateral line strait and of a golden yellow. The Minow is frequent in clear gravelly streams and rivulets in many parts of Europe. In our own country it is observed to appear first in March, and to disappear in the beginning of October, at which period it secretes itself beneath the mud, &c. It is of a gregarious nature, and fre-

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APHYA CARP.

quently assembles in small shoals near the surface of the water, especially in bright weather, being fond of warinth : it usually spawns in the month of June, and is often observed to be found in spawn during the greatest part of the summer. From its small size the Minow is not much regarded in the list of edible fish, though it is said to be extremely delicate, and, where found in great plenty, is occasionally used for the table. It is much more frequently the victim of anglers, who procure it for the purpose of a bait for various fishes, and particularly for trout.

APHYA CARP.

Cyprinus Aphya. C. subfuscus, subtus albo-ferrugineus, iridibus rubris.

Brownish Carp, whitish-ferruginous beneath, with red irides. Cyprinus Aphya. C. pinna ani radiis novem, iridibus rubris, corpore petuardo. Lin. Syst. Nat.

Cyprinus radiis novem in pinna anali dorsalique. Bloch. t. 97. f. 2.

This is a small species, somewhat al'Rd to the Gudgeon in appearance, but scarcely measuring more than two or three inches in length, and is of a pale brown colour on the upper parts, and whitish or reddish beneath: the scales are middle-sized, and easily deciduous, and the fins of a greenish grey. It is of a gregarious nature, and is found in great plenty about the coasts of the Baltic, and in the rivers of the northern regions; particularly Sweden and Norway. It is also said to be frequent

RIVULET CARP.

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in those of Siberia. It is said to be a delicate fish, but, from its very small size, is more frequently used as a bait than for the table. It may not be improper to observe that the name *Aphya*, by which this species is distinguished by Linnæus, seems to have been applied by the ancient writers, in a sort of vague manner, to such small fishes as they supposed rather to have been produced from the foam of the sea, or in an irregular manner, than by the usual process of Nature.

RIVULET CARP.

Cyprinus Rivularis. C. pinna anali dorsalique radiis octo, corpore fusco-maculato. Lin. Syst. Nat. Gmel. Pall. it. 2. p. 717.

Carp with eight rays in the dorsal and anal fin, and body spotted with brown.

A VERY small species, not exceeding the size of the C. Aphya: shape slightly cylindric, and subcompressed: scales very small: head obtuse, subtetragonal, with several large scattered pores on the upper part: irides silvery: lateral line strait: fins pale; the pectoral fins of a rounded shape. Native of the region of the Altaic mountains, inhabiting small streamlets and hollows.

WHITE-BAIT.

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THIS small fish, which is extremely plentiful a particular seasons in the river Thames, is suppose to be the young of some species of the genus Cyprinus, though it is not agreed to what species . should be most properly referred : its general history is so well detailed by the ingenious author of the British Zoology that it will be best given his own words.

"It is evident that it is of the Carp or Cyprin genus: it has only three branchiostegous rays, ar one dorsal fin; and in respect to the form of the body is compressed like that of the Bleak. I usual length is two inches: the under jaw is the longest: the irides silvery, the pupil black: the dorsal fin is placed nearer to the head than to t tail, and consists of about fourteen rays: the sid line is strait: the tail forked: the tips black: to head, sides, and belly are silvery; the back ting d with green."

During the month of July, adds M&?Penna there appear in the Thames innumerable multudes of these small fishes, which are known to the Londoners by the name of White-Bait. They a esteemed very delicious when fried with fine flo and occasion, during the season, a vast resort of the lower order of epicures to the tayerns contiguous the places they are taken at.

MORMYRUS. MORMYRUS.

Generic Character.

 Rostrum
 productum : Os
 Snout
 produced : Mouth

 terminale.
 terminal.

 Dentes plures, emarginati.
 Teeth, several, emarginated.

 Apertura
 linearis, absque

 operculo.
 Gill-membrane single-rayed.

Body scaly.

Corpus squamosum.

THE genus Mormyrus, hitherto but obscurely understood, and differently arranged by different ichthyologists, has been lately examined with a greater degree of attention by Mons'. Geoffroy, who has increased the number of species from three (as stated in the Gmelinian edition of the Systema Naturæ), to nine. Mr. Geoffroy observes that the body is compressed, and that the structure of the tail is unusual, being of a considerable length, and of a subcylindric and inflated appearance, on account of its containing the glands from which the oily matter along the lateral line is secreted: he also observes that the stomach is strongly muscular; that the ovarium is single; and that the swimmingbladder is almost the length of the abdomen.

KANNUMA MORMYRUS.

Mormyrus Kannume. M. rostro decurvo, cauda bifida obtusa, pinna dorsali radiis sexaginta-tribus.°

Mormyrus with decurvate snout, bifid obtuse tail, and sixtythree rays in the dorsal fin.

Mormyrus Kannume. Forsk. Arab. Lin. Gmel.

COLOUR whitish : body much compressed : lower lip longer than the upper: lateral line strait: dorsal fin half the length of the back. Native of the Nile.

SHARP-SNOUTED MORMYRUS.

Mormyrus Oxyrhynchus. M. rostro recto, maxilla inferiore . longiore, pinna dorsali longitudine dorsi.

Mormyrus with strait snout, lower jaw longer than the upper, and dorsal fin running the whole length of the back. • Mormyre Oxyrhynche. Cepede. 5. p. 619.

NATIVE of the Nile: supposed by Mons^r. Geoffroy to have been the Oxyrhynchus of the ancients.

ANGUILLIFORM MORMYRUS.

Mormyrus Anguilloides. M. rostro acuto, maxillis aqualibus, pinna dorsali radiis viginti-sex, cauda bifida obtusa.

Mormyrus with sharp snout, equal jaws, twenty-six rays in the dorsal fin, and bifid acute tail.

Mormyrns anguilloides. Lin. Gmel. Mormyre Dendera. Cepede. 5. p. 619.

DORSAT fin placed opposite the anal, and somewhat shorter than that fin. Native of the Nile.

SALAYA MORMYRUS.

Mormyrus Salahia. M. rostro obtuso, maxilla inferiore longiare, pinna dorsali anali breviore.

Mormyrus with the lower jaw longer than the upper, and dorsal fin shorter than the anal.

Mormyre Salahie. Cepede, 5. p. 619.

DORSAL fin placed opposite the anal: observed by Geoffroy in the desert near Salaya, where they had been thrown by an inundation, and left in a dry state.

BEBE' MORMYUS. .

Mormyrus Bebé. M. rostro obtuso, maxillis aqualibus, pinna dorsali anali sexies breviore.

Mormorus with obtuse snout, and dorsal fin six times shorter than the anal.

Mormyre Bebé. Cepede. 5. p. 619.

DORSAL fin placed opposite the anal as in the preceding: native of the Nile: observed in plenty near the egion of Bebe.

HERSE MORMYRUS.

Mormyris Hersé. M. rostro obtuso, maxilla superiore longiore, pinna devsali longitudine dorsi.

Mormyrus with obtuse snout, upper jaw longer than the lower, and dorsal fin running the whole length of the back, Mormyre Hersé. Cepede. 5. p. 620.

NATIVE of the Nile: called by the Arabians Hersé.

CYPRINOID MORMYRUS.

Mormyrus Cyprinoides. M. rostro obtuso, maxilla superiore longiore, pinna dorsali radiis viginti-septem, cauda furcata.
Mormyrus with obtuse snout, upper jaw longer than the lower twenty-seven rays in the dorsal fin, and forked tail.
Mormyrus cyprinoides. M. cauda bifida acuta. Lin. Gme Mus. Ad. Frid.

HABIT somewhat resembling that of the genue. Cyprinus: dorsal fin opposite the anal, and of equal length. Native of the Nile.

BANE MORMYRUS.

Mormyrus Bané. M. rostro obtuso, maxilla superiore multi longiore, pinna dorsali analique aqualibus.

Mormyrus with obtuse snont, upper jaw much longer than the lower, and dorsal fin of equal length with the anal. Mormyre Bané. Cepede. p. 620.

NATIVE of the Nile : called by the Arabs Bané.

HASSELQUIST'S MORMYRUS.

Mormyrus Hasselquistii: M. pinna dorsali radiis viginti, anac radiis duodecim, cauda furcata.

Mormyrus with twenty rays in the dorsal fin, twelve in the anal, and forked tail.

Mormyre Hasselquist. Cepede, p. 620.

NATIVE of the Nile : observed by Hasselquist.

END OF PART I.

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