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GENERAL ZOOLOGY

or

SYSTEMATIC NATURAL HISTORY

by

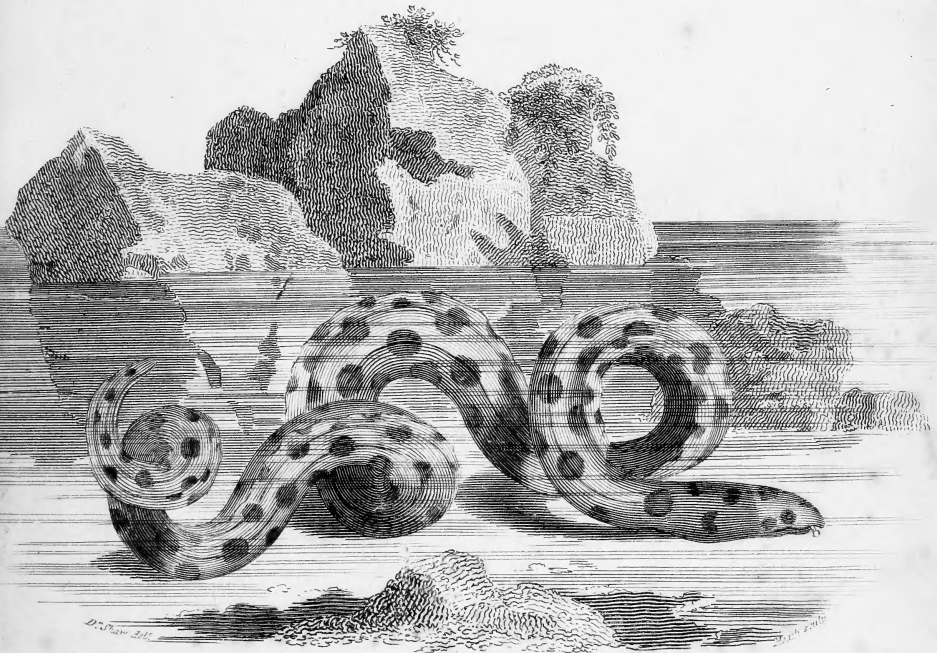
GEORGE SHAW, M.D.F.R.S &c.

WITH PLATES

from the first Authorities and most select specimens

Engraved principally by

MR. HEATH.



VOL. IV. Part 1.

P I S C E S .

London Printed for G. Kearley Fleet Street.

1803.

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GENERAL ZOOLOGY.

VOLUME IV.—PART I.

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PISCES.

LONDON.

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1803.



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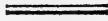
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The Vignette represents a diminished view of the *Anguilla Ophis* described at p. 22.

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ERRATA.—VOL. IV. PART I.

P. 22, l. 13, for *cauda* read *corpore*.

P. 23, l. 9, for *M. Opbis* read *M. Serpens*, and for *conspidata* read *acuta*.

* * * *The fifth volume of this work, which will conclude the Natural History of Fishes, will be published early in the year 1804.*

P I S C E S.

THE general description both of the external and internal parts of Fishes, considered as a distinct tribe of animals, cannot be better detailed than in the works of the ingenious Dr. Monro, who observes that these animals have neither anterior nor posterior extremities, as quadrupeds and birds, their progression being performed in a different method. For this purpose they are provided with machines, properly consisting of a great number of elastic beams, connected to one another by firm membranes, and with a tail of similar texture. Their spine is moveable towards the posterior part, and the strongest muscles of their body are inserted there. Their tails are so framed as to contract to a narrow space when drawn together to either side, and to expand again when drawn to a strait line with their bodies; so that, by the assistance of the broad tail and the fins on the sides, the animals make their progression in the water in much the same way as a boat with oars at its sides, and a rudder at its stern: the perpendicular fins situated

on the superior part of the body keep them in equilibrio, hindering the belly from turning upwards, which it would otherwise easily do; the air-bag in the abdomen rendering that part specifically lighter than the back: but by the resistance which these fins meet with when inclined to either side, the animals are kept with the back uppermost. A more ample explanation of this particular may be found in Borelli's work *de motu animalium*.

Fishes have nothing which can properly be called a neck, since they seek their food in an horizontal direction, and can move their bodies either upwards or downwards, as they have occasion, by the contraction or dilatation of the air-bag. A long neck, as it would hinder their progression, would be very disadvantageous in the element in which they are destined to reside.

The teeth differ in the different tribes, but the generality of Fishes are unprovided with strong teeth, or such as are calculated for breaking and grinding the food, which usually consists of small fishes or other animals that need no trituration in the mouth, but spontaneously dissolve into a liquid chyle; their teeth rather serving to grasp their prey, and hinder it from escaping. For the same purpose the internal cartilaginous basis of the *bronchi* and the two round bodies situated in the posterior part of the jaws have a great number of tender-hooks fixed into them, in such a manner as to permit any thing easily to get down, but to be prevented from returning; the superfluous water, which is necessarily received along with the food, passing between the

interstices of the bronchi and the flap which covers them. The compression of the water on the *bronchi* is of considerable use to the creature, as will afterwards appear.

The œsophagus or gullet is very short, and scarce to be distinguished from the stomach, since the food is retained almost equally in both. The stomach is of an oblong figure, and from the prey contained in it, which commonly preserves its natural form, though reduced to a gelatinous softness, it may be concluded that digestion is performed in it entirely by the dissolvent power of some peculiar menstruum, and not by any trituration.

The intestines are, in general, very short, making only three turns, the last of which terminates in a common outlet or vent, placed towards the middle of the lower part of the body. The appendicular or secondary intestines (*coeca*) are in these animals extremely numerous, composing a large groupe of worm-like processes, all ultimately terminating in two larger canals opening into the first intestine, into which they discharge their peculiar fluid.

The liver in Fishes is remarkably large, and commonly lies almost wholly on the left side: it contains a great proportion of oil or fat.

The spleen is placed near the back-bone, and at a place where it is subject to an alternate constriction and dilatation from the pressure of the air-bag which is situated in its neighbourhood.

The ova, in the females, are disposed into two large oblong bodies, one on each side of the abdo-

men; and the milt or soft roe, in the male, appears in a similar form in the same part.

The swimming or air-bladder is an oblong, white membranous bag, in which is contained a large quantity of elastic air: this organ lies close to the back bone near a red glandular substance, and has a strong muscular coat, by virtue of which it can occasionally contract itself, and, by condensing the contained air, cause the body to be specifically heavier than the water, so as to descend, or, by being again dilated, enable it to ascend by becoming specifically lighter, by which means the animal is enabled to swim in any height of water at pleasure*. Some fishes, as the Flounder, and the whole tribe of flat-fish, are observed to be unprovided with this curious organ, and are in consequence obliged to remain always at the bottom of the waters they inhabit. From the anterior part of the bag pass out two processes or appendices, which, according to the anatomists of the French academy, terminate in the fauces: in some fishes the air-bag communicates with the œsophagus, and in others with the stomach.

The peritonæum, or membrane investing the contents of the abdomen, is thin, and of a blackish colour.

The heart is of a triangular form, with the base downwards, and the apex upwards: it consists of one auricle and one ventricle. The aorta sends out

* The complete theory of the operation of the air-bladder in fishes does not seem to have been yet explained by any physiologist.

numberless branches to the branchiæ or gills, on which it is distributed into subdivisions so small as to escape the eye, unless assisted by a glass. The blood is red, and the red particles are not round, as in the Mammalia, but oval as in the Amphibia.

The gills or branchiæ are seated beneath two large slits or openings on each side the head, and are analogous to the lungs in other animals. Their general form is semicircular, and they commonly consist of four double rows of fringed vascular fibrils attached to four bony arches. The gills are perpetually subject to alternate motion and pressure from the water: they are guarded externally by the gill-covers or opercula, constituting a pair of strong flaps on each side, and which are furnished with a lateral membrane, dilatable at pleasure by a certain number of bony radii or arches, in such a manner as to enable the animal either to open or close the gill-covers. The blood, after being thrown by the heart into the ramifications of the gills, is collected again by a vast number of small veins, somewhat in the same manner as in the Mammalia, but instead of returning to the heart again, these vessels unite and form a descending aorta without the intervention of an auricle and ventricle.

The absorbent system in Fishes is thus elaborately described by Dr. Monro, who gives the Haddock as a general example.

On the middle of the belly, immediately below the outer skin, a lymphatic vessel runs upwards from the vent, and receives branches from the sides of the belly and the fin below the vent: near the

head this lymphatic passes between the two pectoral fins, and having got above them, receives their lymphatics: it then goes under the juncture of the two bones which form the thorax, where it opens into a net-work of very large lymphatics which lie close to the pericardium, and almost surrounds the heart: this net-work, besides that part of it behind the heart, has a large lymphatic on each side, which receives others from the kidney, runs upon the bone of the thorax backwards, and when it has got as far as the middle of that bone, sends off a large branch from its inside to join the thoracic duct: after detaching this branch it is joined by the lymphatics of the thoracic fins, and soon after by a lymphatic which runs upon the side of the fish: it is formed of branches, which give it a beautiful penniform appearance. Besides these branches, there is another set lying deeper, which accompanies the ribs: after the large lymphatic has been joined by the above-mentioned vessels, it receives others from the gills, orbit, nose, and mouth: a little below the orbit another net-work appears, consisting in part of the vessels above described, and of the thoracic duct: this net-work is very complete, some of its vessels lying on each side the muscles of the gills, and from its internal part a trunk is sent out which terminates in the jugular vein,

The lacteals run on each side the mesenteric arteries, anastomosing frequently across those vessels: the receptacle into which they enter is very large in proportion to them, and consists at its lower part of two branches, one of which lies between the

duodenum and stomach, and runs a little way upon the pancreas, receiving the lymphatics of the liver, pancreas, lower part of the stomach, and the lacteals from the greatest part of the small intestines: the other branch of the receptacle receives the lymphatics from the rest of the alimentary canal. The receptacle formed by these two branches lies on the right side of the upper part of the stomach, and is joined by some lymphatics in that part, and also by some from the sound and gall-bladder, which in this fish adheres to the receptacle: the thoracic duct takes its rise from the receptacle, and lies on the right side of the œsophagus, receiving lymphatics from that part; and running up about half an inch, divides into two ducts, one of which passes over the œsophagus to the left side, and the other goes straight upon the right side, passing by the upper part of the kidney, from which it receives some small branches, and soon afterwards is joined by a branch from the large lymphatic that lies above the bone of the thorax, as formerly mentioned: near this part it likewise sends off a branch to join the duct of the opposite side; and then, a little higher, is joined by those large lymphatics from the upper part of the gills and from the fauces.

The thoracic duct, after being joined by these vessels, communicates with the net-work near the orbit, where its lymph is mixed with that of the lymphatics from the posterior part of the gills, and from the superior fins, belly, &c. and then from this net-work a vessel goes into the jugular vein just below the orbit. This last vessel, which may be

called the termination of the whole system, is very small in proportion to the net-work from which it rises; and indeed the lymphatics of the part are so large as to exceed by far the size of the sanguiferous vessels.

The thoracic duct from the left side, having passed under the œsophagus from the right, runs on the inside of the vena cava of the left side, receives a branch from its fellow of the opposite side, and joins the large lymphatics which lie on the left side of the pericardium, and a part of those which lie behind the heart, and afterwards makes, together with the lymphatics from the gills, upper fins, and side of the fish, a net-work, from which a vessel passes into the jugular vein of this side: in a word, the lymphatics of the left side agree exactly with those of the right. Another part of the system is more deeply seated, lying between the roots of the spinal processes of the back-bone. This part consists of a large trunk that begins from the lower part of the fish, and as it ascends receives branches from the dorsal fins and adjacent parts of the body: it goes up near the head, and sends a branch to each thoracic duct near its origin.

The brain in fishes is formed pretty much in the same way as in fowls; only we may observe that the posterior lobes bear a greater proportion to the anterior.

The organ of smelling is large, and the animals have a power of contracting and dilating the entry to it as they have occasion: it seems to be mostly by their acute smell that they discover their food,

for their tongue seems not to have been designed for a very nice sensation, being of a pretty firm cartilaginous substance; and common experience evinces that their sight is not of so much use to them as their smell in searching for their nourishment. If you throw a fresh worm into the water, a fish shall distinguish it at a considerable distance; and that this is not done by the eye is plain from observing that after the same worm has been a considerable time in the water, and lost its smell, no fishes will come near it; but if you take out the bait, and make several little incisions into it, so as to let out more of the odoriferous effluvia, it shall have the same effect as formerly. Now it is certain that had the animals discovered this bait with their eyes, they would have come equally to it in both cases. In consequence of their smell being the principal means they have of discovering their food, we may frequently observe them allowing themselves to be carried down with the stream, that they may ascend again leisurely against the current of the water: thus the odoriferous particles swimming in that medium, being applied more forcibly to their organs of smell, produce a stronger sensation.

The optic nerves in Fishes are not confounded with one another in their middle progress betwixt their origin and the orbit, but the one passes over the other without any communication; so that the nerve which comes from the left side of the brain goes distinctly to the right eye, and vice versa. Indeed it should seem not to be necessary for the optic nerves of fishes to have the same kind of con-

nection with each other as those of man have; for their eyes are not placed in the fore-part, but in the sides of the head; and consequently cannot look so conveniently at any object with both eyes at the same time.

The crystalline lens in Fishes is a complete sphere, and more dense than in terrestrial animals, that the rays of light coming from the water might be sufficiently refracted.

As Fishes are continually exposed to injuries in the uncertain element in which they reside, and as they are in perpetual danger of becoming a prey to the larger ones, it was necessary that their eyes should never be shut; and as the cornea is sufficiently washed by the element they live in, they are not provided with palpebræ: but, as in the current itself the eye must be exposed to several injuries, there was a necessity that it should be sufficiently defended; which, in effect, it is, by a firm, pellucid membrane, seeming to be a continuation of the cuticula stretched over it: the epidermis is very proper for this purpose, as being insensible, and destitute of vessels, and consequently not liable to obstructions, and thus becoming opaque. In the eye of the skate tribe there is a digitated curtain which hangs over the pupil, and which may shut out the light when the animal rests, being somewhat similar to the tunica adnata of other animals.

Although it was formerly much doubted whether Fishes possessed the sense of hearing, yet there can be little doubt of it now; since it is found that they have a complete organ of hearing as well as other

animals, and likewise that the water in which they live is proved to be a good medium. Fishes, particularly of the skate kind, have a bag at some distance behind the eyes, which contains a fluid, and a soft cretaceous substance, and supplies the place of the vestibule and cochlea: there is a nerve distributed upon it, similar to the portio mollis in man: they have semicircular canals, which are filled with a fluid, and communicate with the bag: they have likewise a meatus externus, which leads to the internal ear. The cod-fish and others of the same shape, have an organ of hearing somewhat similar to the former, but instead of a soft substance contained in the bag, there is a hard cretaceous stone.

The cuticle in Fishes is strong and thick, and is defended by an armature of scales, closely laid over each other: the generality of Fishes have a particular line or series of small ducts running along each side of the body, and discharging a soft mucus or slimy substance, serving to lubricate the surface of the body.

The fins of Fishes are named from their situation on the animal, viz. *dorsal* or back-fin, *pectoral* or breast-fins, *ventral* or belly-fins, *anal* or vent-fin, and *caudal* or tail-fin.

The *ventral* fins are considered by Linnæus as analogous to the feet in quadrupeds, and it is from the situation, presence, or absence of these fins that the Linnæan orders of Fishes are instituted,

Such as are entirely destitute of ventral fins are termed *Pisces apodes*, being, as it were, apodal or footless Fishes. Those which have the ventral fins

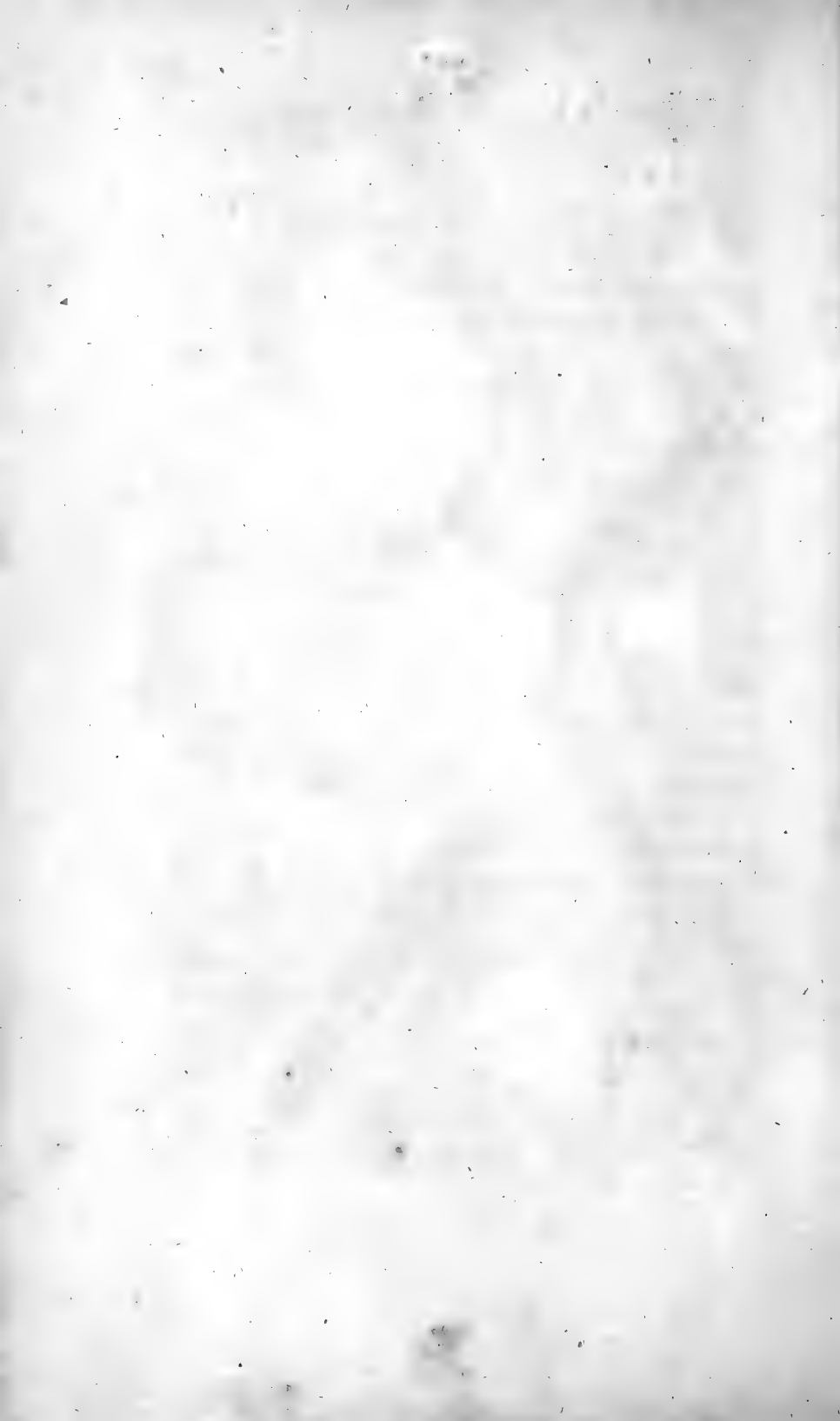
placed more forward than the *pectoral* or breast-fins are termed *Jugulares* or Jugular Fishes. Those which have the ventral fins situated immediately under the pectoral ones are termed *Pisces thoracici*, or thoracic Fishes; while those which have the ventral fins situated behind or beyond the pectoral fins are termed *Pisces abdominales* or abdominal Fishes.

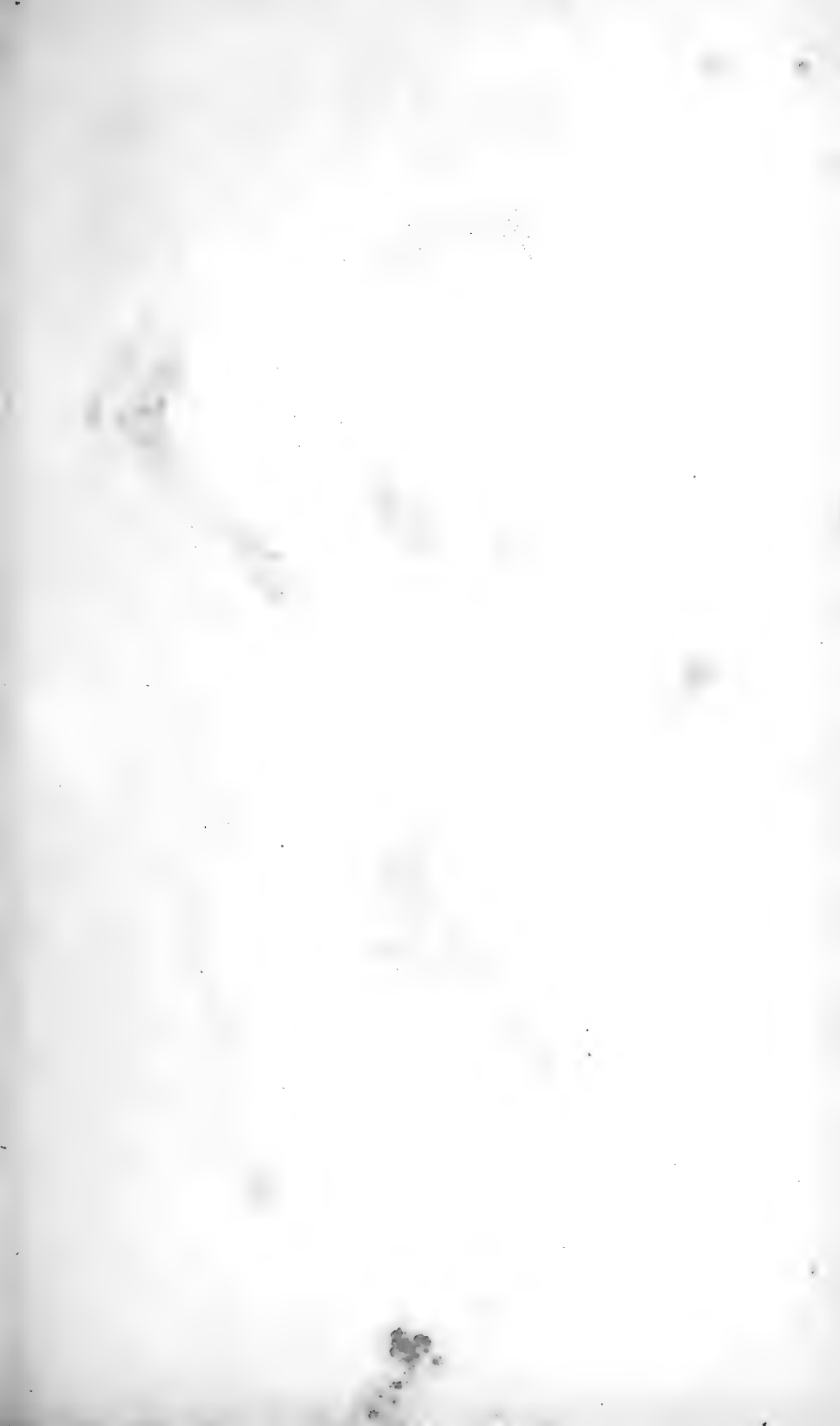
There still remains a particular tribe called Cartilaginous Fishes, *Pisces Cartilaginei*. This tribe was by Linnæus separated from the rest, and placed in the class Amphibia, where it constituted the order *Nantes*.

This particular distribution of the cartilaginous Fishes was made on a supposition of their being furnished both with lungs and gills; an idea which seemed confirmed by the observations of Dr. Garden of South Carolina, who, at the request of Linnæus, examined the organs of the genus *Diodon*, and found, as he conceived, both external branchiæ or gills, and internal lungs*. This idea however has

* Branchiæ horum (*Nantium*) pectinatae ut Piscium, sed adnatæ vasi arcuato cylindrico tubuloso, absque radio osseo, nec piscium similes, nisi externa figura; Branchiostegorum piscium propria structura, eorum larvæ singulares, foetus fere extra ovum, defectus pinnarum ventralium mihi persuasere literis, a D. D. Garden in America habitante, petere, vellet dissecare Diodontis respirationis organa et inquirere numne pulmones haberent: stupefactus ipse dissecuit pisces, reperitque et branchias externas, et pulmones internos, quos descriptos et conservatos remisit, undè constitit eos annumerandos Nantibus.—*Lin. Syst. Nat.* p. 348.

been shewn by later physiologists to have been not strictly correct; the supposed lungs being in reality only a peculiar modification of gills. The cartilaginous fishes, as their name imports, differ from others in having a cartilaginous instead of a bony skeleton.





COMMON EEL.



Head sculp.

CONGER EEL.



FISHES.

ORDER

APODES.



ANGUILLA. EEL.

Generic Character.

<i>Caput læve.</i>	<i>Head smooth.</i>
<i>Nares tubulosæ.</i>	<i>Nostrils tubular.</i>
<i>Oculi cute communi tecti.</i>	<i>Eyes covered by the common skin.</i>
<i>Membrana branchiostegardiis decem.</i>	<i>Gill-Membrane ten-rayed.</i>
<i>Corpus teretiuseulum, lubricum.</i>	<i>Body roundish, smooth, mucous.</i>
<i>Pinna caudæ coadunata dorsali analique.</i>	<i>Dorsal, caudal, and anal fins united.</i>
<i>Spiracula pone caput vel pinnas pectorales.</i>	<i>Spiracles behind the head or pectoral fins.</i>

COMMON EEL.

Anguilla Vulgaris. A. olivaceo-fusca subtus subargentea, maxilla inferiore longiore.

Olive-brown Eel, subargenteous beneath, with the lower jaw longer than the upper.

Muræna Anguilla. *M. maxilla inferiore longiore, corpore unicolore.* *Lin. Syst. Nat. p. 426.*

Muræna corpore immaculato, maxilla inferiore sublongiore. *Bloch.*

The common Eel.

THE Eel, which, in a natural arrangement of the animal world, may be considered as in some degree connecting the fish and serpent tribes, is a native of almost all the waters of the ancient continent, frequenting not only rivers but stagnant waters, and occasionally salt marshes and lakes: it is even found in the spring season in the Baltic and other seas. As a species it is distinguished by its uniform colours, but more particularly by the peculiar elongation of the lower jaw, which advances to some distance beyond the upper: the head is small, and pointed; the nostrils small and cylindric; and at a very small distance from each eye are a kind of additional pair, of a lengthened shape, but not cylindric: the eyes are small, round, and covered by a transparent skin united with the common integument of the body: the opening of the mouth is small, and both jaws and palate are beset with several ranges of small sharp teeth: on each side both of the upper and under jaw are observed several minute pores, through which exsudes a viscid mucus: the orifices of the gills are very small, of a lunated shape, and are seated close to the pectoral fins, which are small and of an ovate shape: the

back-fin commences at some distance beyond the head, and is continued into the tail-fin, which is also united with the vent-fin; the latter being continued as far as the vent, which is situated near the middle of the belly. The general colour of the Eel is olive-brown on the back, and silvery on the sides and beneath: the fins are slightly tinged with violet, and sometimes margined with pale red: the Eel is however occasionally seen of a very dark colour, with scarce any silvery tinge, and sometimes yellowish, or greenish: those are observed to be most beautiful which inhabit the clearest waters. The skin of the Eel is proverbially slippery, being furnished with a large proportion of mucus: it is also furnished with small, deeply-imbedded scales, which are not easily visible in the living animal, but are very conspicuous in the dried skin: their form is a long oval, their colour white, and their texture finely reticular: these scales appear to have been first observed, or at least described, by the celebrated Leewenhoek, who has figured them with great accuracy and elegance. The Eel is extremely tenacious of life, and may be kept many hours, or even days, out of water, provided it be placed in a cool situation: it is even affirmed that it voluntarily leaves the water at certain periods, and wanders about meadows and moist grounds in quest of particular food, as snails &c. it is also said to be fond of new-sown peas, which it has been observed to root out of the ground and devour during the night. If we may credit Albertus magnus, it has been known, during very severe frosts, to take refuge in adjoining hay-ricks:

several having been discovered coiled together in such situations. The usual food of the Eel consists of water insects, worms, and the spawn or eggs of other fishes: it will also devour almost any decayed animal substance which it happens occasionally to find in its native waters. The Eel is viviparous; producing its numerous young during the decline of summer: these at their first exclusion are very small. The errors of the ancients on this subject, and even of some modern writers, are too absurd to be seriously mentioned in the present enlightened period of science: it appears however that both eggs and ready-formed young are occasionally observed in the same individuals, as is known to be the case also with several other animals. It is pretended by several authors that the Eel cannot bear the water of the Danube, and is therefore never found in that river; but Dr. Bloch assures us that this is not strictly true; though it is but rarely found either in that river or the Volga.

During the day the Eel commonly lies concealed in its hole, which it forms pretty deep beneath the banks, and which is furnished with two outlets, in order to facilitate its escape if disturbed. During the winter it chiefly conceals itself beneath the mud, and in spring-time commences its excursions into rivers, &c. In some parts of Europe the Eel-fishery is of surprising magnitude. We are informed by Dr. Bloch that in some places near the mouths of the Baltic so great a quantity are taken that they cannot be used fresh, but are smoked and salted for sale, and conveyed by waggon-loads into Saxony,

Silesia, &c. In Jutland it is said that 2000 have been taken at a single sweep of the net. In the Garonne 60,000 are said to have been taken in one day by a single net. As a food the Eel is by the general run of medical writers rather condemned than recommended: it appears however to be highly nutritious, and is probably only hurtful when taken to excess*.

The general size of the Eel is from two to three feet, but it is sometimes said, though very rarely, to attain to the length of six feet and to the weight of twenty pounds. It is a fish of slow growth, and is supposed to live to a very considerable age.

* That well-known old Manual the *Schola Salernitana* declares the eating of eels to be hurtful to the throat.

† *Faucibus anguillæ pravæ sunt si comedantur :
Qui physicam non ignorant hoc testificantur.*

Which, (to reduce the translation to the same standard with the original), might be thus rendered.

Eating of eels is hurtful to the throat :
So say physicians of no common note.

† In many editions *vocibus*.

CONGER EEL.

Anguilla Conger. *A. fusca, subtus subargentea, linea laterali albo-punctata.*

Brown Eel, silvery beneath, with the lateral line speckled with white.

Muræna Anguilla. *M. maxilla inferiore longiore, corpore unicolore.* *Lin. Syst. Nat. p. 426.*

M. rostro tentaculis duobus, linea laterali ex punctis albida. *Lin. Syst. Nat. Gmel. p. 1135.*

Conger. *Will. ichth. p. 111. t. G. 6.*

THE Conger is so nearly allied in general appearance to the common eel that it might at first view be considered as the same species: it is however in general of a darker colour on the upper part, and of a brighter or more silvery tinge beneath; the whiteness on the sides being sometimes disposed into a kind of large beds or patches: the upper jaw is rather longer than the lower, and the lateral line is broad and whitish; being marked by a row of small white specks: the size of the Conger is also, when full grown, far superior to that of the common eel. This fish is an inhabitant of the Mediterranean and the Northern seas, as well as of those surrounding some of the American islands. It seems however to arrive at a larger size in the Mediterranean than elsewhere; specimens being sometimes taken of the length of ten feet, and of the weight of more than 100 pounds.

The Conger is only an occasional visitant of fresh waters, residing generally in the sea. In the winter

it is supposed to imbed itself under the soft mud, and to lie in an inactive state ; but on the approach of spring it emerges from its concealment and visits the mouths of rivers. In the mouth of the Severn incredible quantities of young Congers are annually taken during the month of April under the name of Elvers : these are taken in a kind of sieve made of hair-cloth and fixed to the end of a long pole : the fisherman standing on the edge of the water during the tide puts in his net as far as he can reach, and drawing it out again takes multitudes at every sweep, and will take as many during one tide as will fill a bushel : they are dressed and reckoned very delicate.

The Conger in its full-grown state is also considered as a useful article of food in many parts of Europe, where it forms an article of commerce. Great numbers are taken on the coast of Cornwall, and are exported into Spain and Portugal, particularly to Barcelona : some are taken by a single hook and line, but because that method is tedious, and does not answer the expence of time and labour, they are chiefly caught by *bulters*, which are strong lines, five hundred feet long, with about sixty hooks, each eight feet asunder, baited with pilchards or mackrel : the bulters are sunk to the ground by a stone fastened to them, and sometimes such a number of these are tied together as to reach a mile : the fishermen are said to be very fearful of a large Conger, lest it should endanger their legs by clinging round them : they therefore kill them as soon as possible, which is said to be best done by striking

them on the belly: they are then slit and hung on a frame to dry in order to drain away the oil or fat which is extremely plentiful, insomuch that a Conger of a hundred weight is said to waste to twenty pounds during the process.

The Conger is a very voracious animal, preying on the smaller fishes, as well as on various kinds of crustacea, and particularly on the smaller kind of crabs during their soft state after having cast their shell.

SPOTTED EEL.

Anguilla Ophis. A. alba, fusco maculata, cauda aptera.

White Eel, spotted with brown, with finless tail.

Muræna Ophis. M. cauda aptera cuspidata, cauda tereti. Lin.

Syst. Nat. p. 425.

Muræna maculata cauda aptera. Bloch. 5. p. 31. t. 164.

Serpens marinus maculosus. Will. append. p. 19. t. G. 9.

THIS species is readily distinguished from both the preceding by its remarkable colours, as well as by the more slender form of the body in proportion to its length: the fins are also much wider, and the tail is naked towards the tip; both dorsal and caudal fins terminating at some distance from that part: the whole body is of a silvery white colour, marked on the back and sides by a triple row of large dark-brown oblong spots or patches: the head is rather slender; the eyes of moderate size; the mouth wide, the teeth strong and slightly curved, and the pectoral

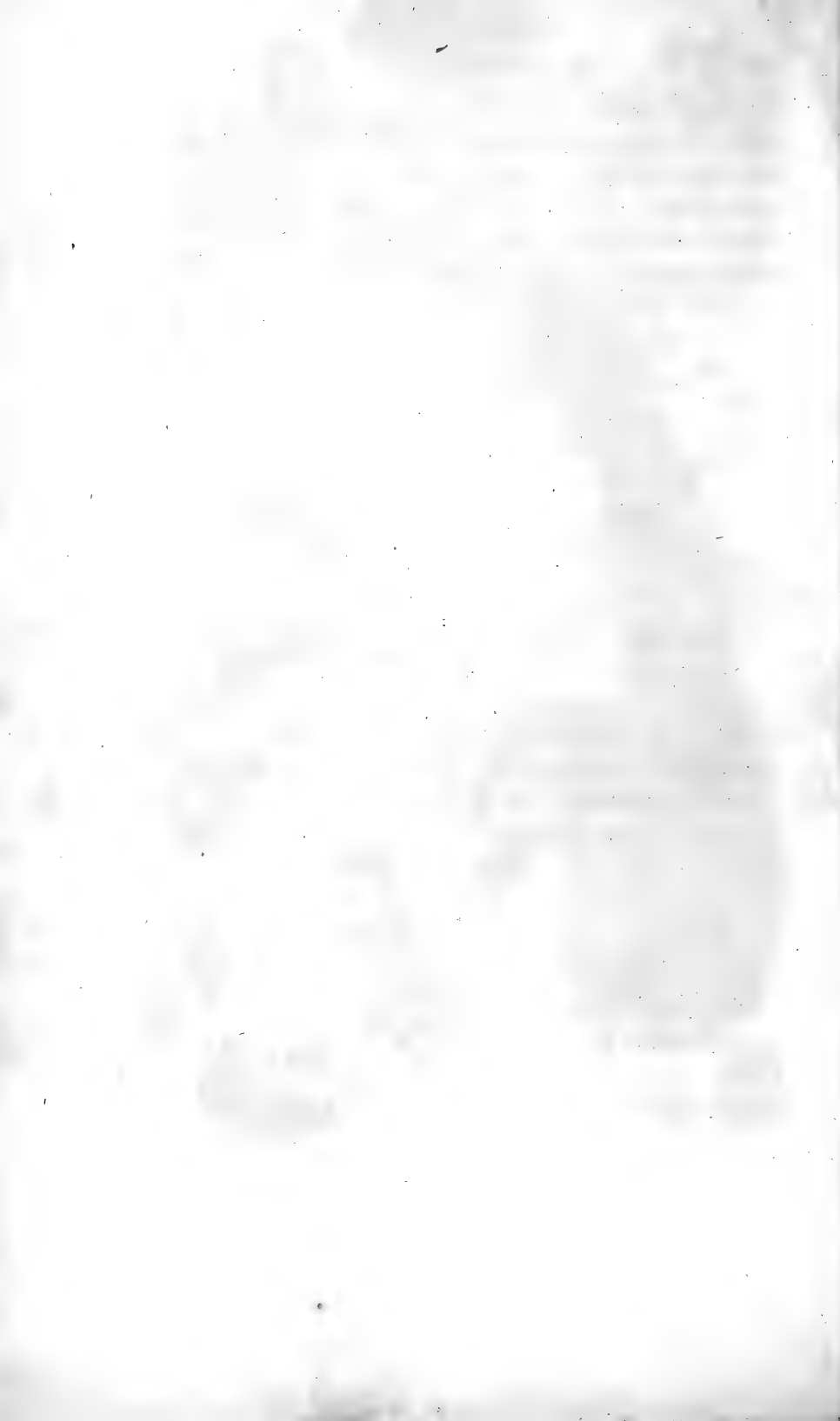
SPOTTED EEL.



ROMAN MURENA.



Heath sculp.



fins small and white. This fish is chiefly found in the Indian seas, but is said to have been occasionally met with in the Mediterranean, &c. It is of the same predacious nature with the rest of this genus, and is said to arrive at a very considerable size, though the specimens usually brought into Europe seldom exceed two or three feet in length.

SNAKE EEL.

Anguilla Serpens. *A. albida rostro elongato, cauda aptera acuta, corpore tereti.*

Whitish Eel, with lengthened snout, finless sharp-pointed tail, and round body.

M. Ophis. *M. cauda aptera cuspidata, corpore tereti. Lin. Syst. Nat. p. 425.*

Serpens marinus. *Salvian? Gesn? Aldr? Will? t. G. 4.*

THIS species, which is of the same general form with the preceding, is a native of the Mediterranean and northern seas, where it often arrives at a very considerable size, and is commonly known by the title of sea-serpent or snake: the head is long and slender, and the gape very wide: the teeth very sharp, those in the front of the mouth being longer than those on the sides: the general colour of the animal is a very pale yellowish brown above, and bluish white beneath: the dorsal and anal fins are shallow, tinged with black toward the edges, and terminate at some little distance before the tip of the tail, which is not of a compressed

form, but round and sharp-pointed: the pectoral fins are small, oval, and furnished with sixteen rays. The habits of this species resemble those of the preceding, and it is said to swim with great vigour and activity. It seems to have given rise to the fabulous narratives recorded by some authors of the vast sea-serpents supposed to be sometimes seen in various parts of the northern ocean.

RONDELETIAN EEL.

Anguilla Myrus. A. nigricans, rostro elongato.

Dusky Eel, with elongated snout.

Muræna Myrus. M. pinna ambiente alba, margine nigro. Lin. Syst. Nat. p. 427.

M. rostro acuto lituris albis vario, margine pinnæ dorsalis nigro. Arted. gen. 24. syn. 40.

Myrus Rondeletii. ? Gesn. Aldr. Will. p. 109.

If the *Muræna Myrus* of Linnæus be the *Myrus* of Rondeletius, it is thus described by that author. It bears a greater general resemblance to a serpent than to an eel; having a long sharp snout, and a thin, round, blackish body, without either spots or scales: it has one branchial orifice on each side, and is furnished with two shallow fins of a skinny substance; one running from the neck to the tail, and the other from the vent to the same part; the border of both being black, as in the Conger: the sides, from the beginning of the neck, are marked with certain yellow specks, more apparent in the

living than in the dead animal: the flesh is tender, and has few or no spines. Linnæus observes that the head is attenuated in front, and that there are two short tentacula on the upper lip. This animal is a native of the Mediterranean, and a supposed variety, entirely of an ash-colour, is mentioned by Forskal as a native of the Red Sea.

MURÆNA. MURÆNA.

Generic Character.

<i>Corpus</i> anguilliforme.	<i>Body</i> eel-shaped.
<i>Pinnæ pectorales</i> nullæ.	<i>Pectoral</i> fins none.
<i>Spiraculum</i> utrinque ad latera colli.	<i>Spiracle</i> on each side the neck.

ROMAN MURÆNA.

Muræna Romana. *M. olivaceo-fusca, flavo variata.*

Olive-brown Muræna with yellow variegations.

Muræna Helena. *M. pinnis pectoralibus nullis.* *Lin. Syst. Nat. p. 425.*

Gymnothorax Muræna. *Bloch. ichth. 12. p. 67. & Muræna Helena. 5. p. 28. t. 153.*

Muræna omnium autorum. *Will. ichth. p. 103. t. G. 1.*

THIS fish, the celebrated favourite of the ancient Romans, who considered it as one of the most luxurious articles of the table, is found in considerable plenty about several of the Mediterranean coasts, where it arrives at a size at least equal, if not superior, to that of an eel. Its colour is a dusky greenish brown, pretty thickly variegated on all parts with dull yellow subangular marks or patches, which are disposed in a somewhat different manner in different individuals, and are generally scattered over with smaller specklings of brown; the whole

forming a kind of obscurely reticular pattern, as expressed in the annexed engraving: the head is rather small; the mouth moderately wide, and the teeth sharp: the dorsal and caudal fins, which are shallow, and covered by the common skin, are united, in the same manner as in the eel, and are of a dusky colour with whitish spots. The Muræna is capable of living with equal facility both in fresh and salt water, though principally found at sea. In its manners it much resembles the eel and the conger, being extremely voracious, and preying on a variety of smaller animals. The ancients, who kept it in reservoirs appropriated for the purpose, are said to have sometimes tamed it to such a degree as to come at the signal of its master in order to receive its food. Pliny records a most disgusting and barbarous instance of tyranny practised by one Veditius Pollio, who was in the habit of causing his offending slaves to be thrown into the reservoirs in which he kept his Murænae; expressing a savage delight in thus being able to taste in an improved state their altered remains. The emperor Augustus, according to Seneca, honoured this man with his presence at one of his entertainments; when a slave happening to break a valuable chrysal vase, was immediately ordered to be thrown to the Murænae; but the poor boy, flying to the feet of Augustus, requested rather to die any death than thus to be made the food of fishes. The emperor, being informed of this extraordinary mode of punishment, immediately ordered all the chrysal vessels in the house to be broken before his face, and the

ponds of the barbarous owner to be completely filled up; at the same time giving the slave his freedom, and sparing the life of the offender in consideration of former friendship.

SPOTTED MURÆNA.

Muræna Guttata. *M. glauca, guttis nigris, macula majori utrinque prope caput.* Forsk. *F. Arab.* p. 22. No. 1. *Lin. Syst. Nat. Gmel.* p. 1135.

Glaucous Muræna, bedropped with black, with a larger spot on each side near the head.

OBSERVED by Forskal: native of the Red Sea: has a rising callus between the eyes, gold-coloured irides, upper lip shorter than the lower, and the dorsal and anal fins united at the tail.

CHAIN-STRIPED MURÆNA.

Muræna Catenata. *M. fusca maculis catenatis albis transversim fasciata.*

Brown Muræna, transversely fasciated with white chain-shaped spots.

Gymnothorax catenatus. *Bloch.* 12. p. 69. t. 415. f. 1.

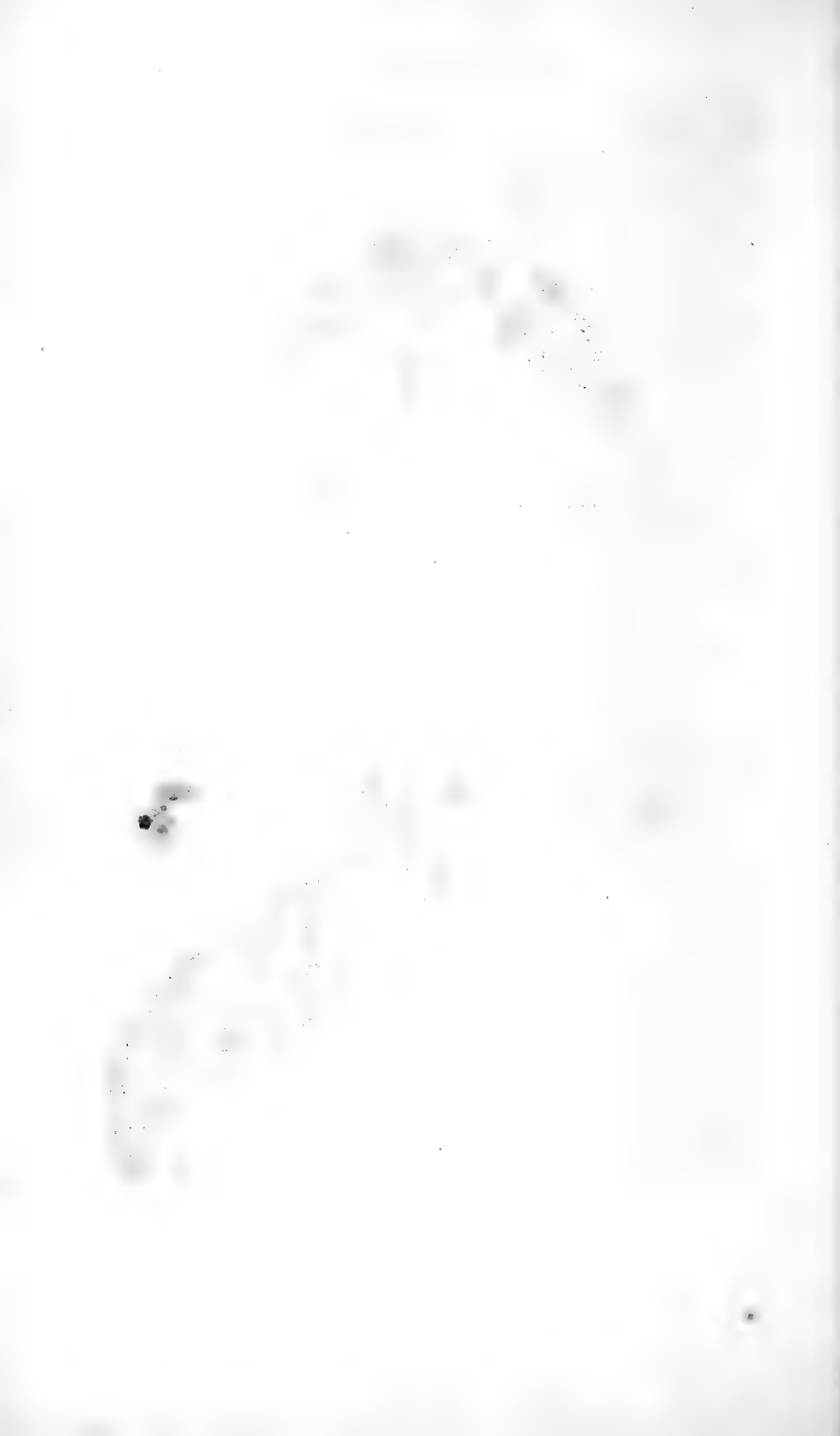
Muræna seu Conger Brasiliensis. *Seb. mus.* 2. t. 69. f. 4.

THIS species, of which the individuals hitherto described appear to be of the size of a smallish eel, is of a brown colour, crossed by large chain-like



CHAIN-STRIPED MURRENA.

Smith's Zool.



white bands, somewhat irregular in their form on different parts of the animal, and marked by numerous brown spots and freckles: the head and orifice of the mouth are small, and the jaws armed with numerous close-set small and sharp teeth: the tongue connate with the palate: the eyes small and blue: the nostrils small, simple, and placed very near the eyes: the snout furnished at the tip with two very small setaceous cirri or beards: the branchial orifices are very small: the lateral line scarce perceptible: the dorsal fin commences at a considerable distance from the head, and is continued round the tail where it meets the anal fin. This fish is a native of Surinam.

RETICULATED MURÆNA.

Muræna Reticulata. *M. albida, fasciis transversis fuscis, lateribus corporis fusco reticulatis, pinna dorsali longitudine trunci.*

Whitish *Muræna*, with transverse brown bands; the sides of the body reticulated with brown, and the dorsal fin as long as the body.

Gymnothorax reticularis. *Bloch. 12. p. 71. t. 416.*

IN size and general form this resembles the preceding species, but differs in colours and in the disposition of the dorsal fin, which commences immediately at the back of the head, and is continued round the tail where it unites with the vent-fin: the head and mouth are small; the eyes rather large, and situated very near the upper lip: the jaws are

edged with sharp, distant teeth, of which those in front are longer than the rest: the colour of the animal is white, with a slight tinge of yellow, and marked throughout by transverse brown bands, continued across the fins: on the sides of the body the appearance of the bands is indistinct, on account of the numerous reticularly disposed variegations of light brown with which those parts are covered. Native of the Indian seas.

AFRICAN MURÆNA.

Muræna Africana. *M. fusca, albido marmorata, pinna dorsalis longitudine trunci.*

Brown Muræna marbled with whitish variegations; the dorsal fin the length of the body.

Gymnothorax afer. *Bloch. 12. p. 73. t. 417.*

THE colour of this species is brown, irregularly marbled with pale or whitish variegations in such a manner as to bear some resemblance to those of the common or Roman Muræna; these variegations are continued on the fins which are moderately broad in proportion to the body: the dorsal fin begins immediately behind the head, and is continued round the tail where it meets the vent-fin, as in others of this genus: the head is of moderate size; the eyes large; the mouth very wide, and armed with sharp, distant teeth, those in front exceeding the rest in size: in the palate are also situated three or four large teeth in a longitudinal

direction. This species is a native of the African seas, being found near the coasts of Guinea, where, though known to be a good food, it is not eaten by the negroes, who consider it as a kind of sea snake.

ZEBRA MURÆNA.

Muræna Zebra. M. atro-fusca, fasciis transversis linearibus distantibus albis, subtus irregulariter concurrentibus.

Blackish-brown finless *Muræna*, with transverse, linear, distant, white bands, meeting irregularly beneath.

Zebra Gymnothorax. Naturalist's Miscellany. pl. 322.

Serpens marina Surinamensis fœmina Murænis valde affinis. Seb. 3. t. 70. f. 3.

THIS species, which grows to the length of two or three feet, is a native of the American seas, and is readily distinguished by the strongly marked distribution of its colours; the rich brown, which constitutes the ground-colour, being surrounded, at considerable distance, by narrow, white bands, which on the lower part of the sides and under the abdomen unite or anastomose here and there, so as to form subtriangular markings in some parts and rounded or ocellated ones in others: the head is rather large or tumid, and the mouth and eyes small: there is no distinct appearance either of dorsal or caudal fins. This animal seems to have been first described by Seba. A beautiful specimen occurs in the Museum of Mr. John Hunter.

SOUTHERN MURÆNA.

Muræna Echidna. *M. fusca, nigro variegata, capite depresso, collo turgidissimo.*

Brown Muræna, with black variegations, depressed head, and very turgid neck.

Muræna Echidna. *M. pinnis pectoralibus nullis, capite depresso, corpore fusco nigroque vario, statim pone caput turgidissimo. Lin. Syst. Nat. Gmel. p. 1135.*

NATIVE of the Southern ocean: grows to a large size, measuring from four to five feet in length and being of a very considerable thickness: the head is small and depressed, but the neck immediately beyond the occiput swells into a very large size, and again diminishes at the commencement of the body: the eyes are small; the mouth wide, and furnished with numerous sharp teeth. The flesh is said to be excellent, but the animal has a peculiarly forbidding appearance on account of its colours and form.

 SPECKLED MURÆNA.

Muræna Meleagris. *M. nigricans, maculis creberrimis albis irrorata.*

Blackish Muræna, very thickly speckled with white.

Muræna Meleagris. *Speckled Eel. Nat. Miscell. pl. 220.*

DESCRIBED from a specimen in the British Museum. Length about two feet: colour deep-brown,

very thickly beset on all parts with innumerable small round white spots, which are somewhat less regular or more confluent on the head and breast than elsewhere: eyes small; mouth wide; teeth sharp and numerous. Native of the Southern ocean.

COLUBRINE MURÆNA.

Muræna Colubrina. *M. corpore fasciis annulatis alternatim flavis nigrisque variegato.*

Muræna with the body variegated by alternate yellow and black bands.

Muræna Colubrina. *Lin. Syst. Nat. Gmel. p. 1133.*

LENGTH about two feet: habit long and slender: colour pale, or yellowish-white: marked throughout by numerous equidistant widish bands of black or brown, passing through the fins: body said to be covered with very small scales: snout sharp-pointed; eyes very small. Native of the Indian seas.

GREEN MURÆNA.

Muræna Viridis. *M. viridis, maculis creberrimis rufo-fuscis.*

Grass-green Muræna, with very numerous rufous-brown spots. Serpens Marinus Americanus, &c. *Seb. 3. t. 70. f. 2.*

THIS, which is sufficiently described as to its general appearance by the specific character an-

nexed, is considered by Seba as a kind of marine snake, and is represented with a bifid or serpentine tongue; but this is probably an error of the engraver; the whole habit shewing it to be either of this genus or the following one.

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MARbled SYNBRANCHUS.



Brach sculp.

SYNBRANCHUS. SYNBRANCHUS.

Generic Character.

<i>Corpus</i> anguilliforme.	<i>Body</i> eel-shaped.
<i>Pinnæ pectorales</i> nullæ.	<i>Pectoral fins</i> none.
<i>Spiraculum</i> unicum sub collo.	<i>Spiracle</i> single, beneath the neck.

THIS genus differs from the preceding merely in the circumstance of the spiracle or branchial orifice being single, and situated beneath the throat.

MARbled SYNBRANCHUS.

Synbranchus Marmoratus. *S. olivaceo-fuscus, maculis nigricantibus variatus, corpore subtus flavescente.*

Olive-brown *Synbranchus*, marbled with blackish spots; the body yellowish beneath.

Synbranchus marmoratus. *Bloch. 12. p. 75. t. 418.*

THE general appearance of the animal is that of a *Muraena*: its length about two feet and a half: head large, short, and thick: mouth moderately wide, and furnished with several rows of small conical teeth: tongue connate: lips fleshy: nostrils simple, seated near the eyes, which are blue: the

skin of the body is thick and loose: the back is of a deep olive-colour with dusky spots: the belly and sides are of a yellowish cast, and the spots on those parts have a tinge of violet: the dorsal, or rather caudal fin, is extremely remote from the head, and surrounding the tail unites with the vent-fin; the vent being situated at the distance of some inches from the end of the tail, which terminates acutely. Native of the fresh waters of Surinam.

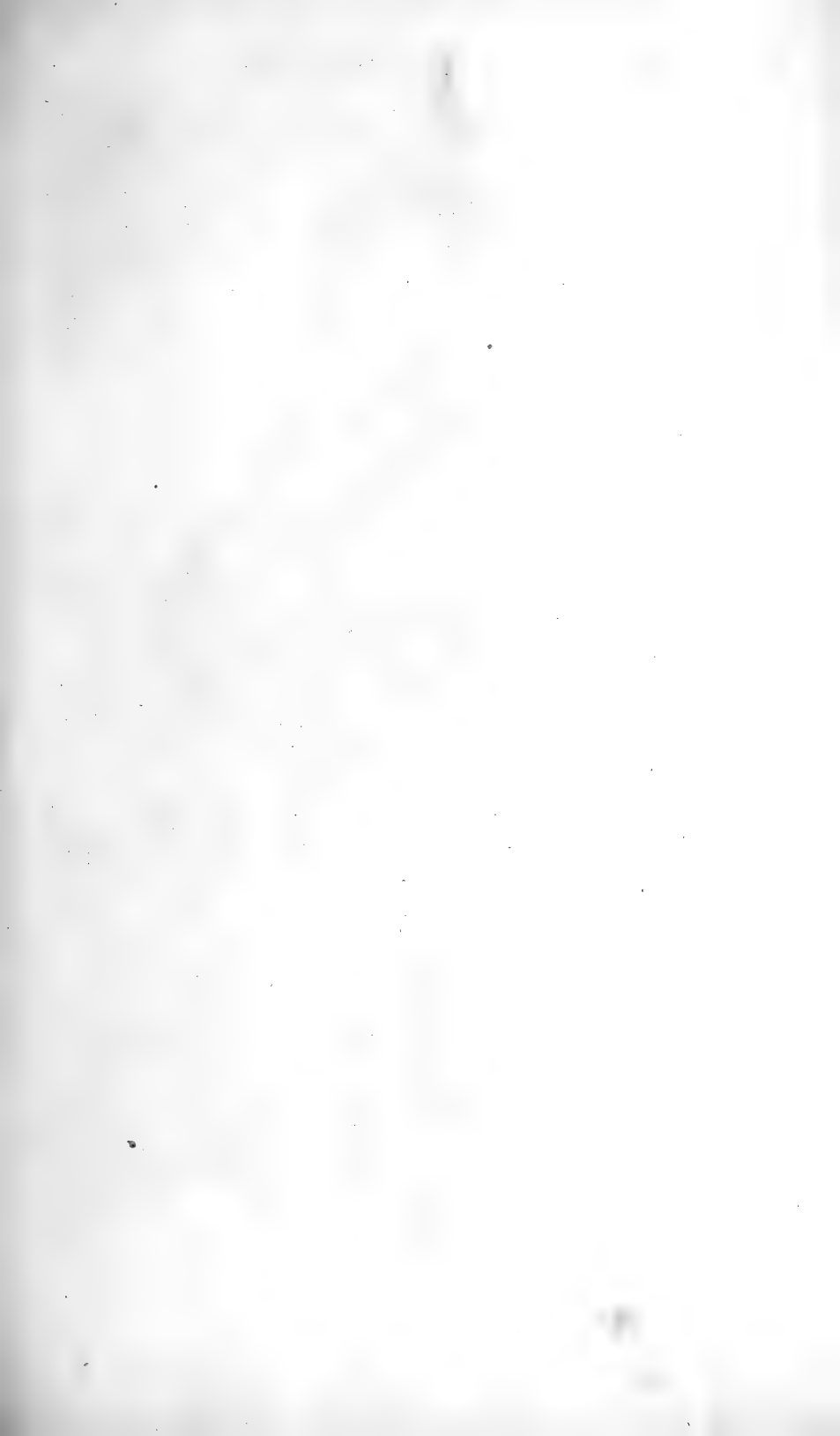
PLAIN SYNBRANCHUS.

Synbranchus Immaculatus. *S. fuscus immaculatus.*

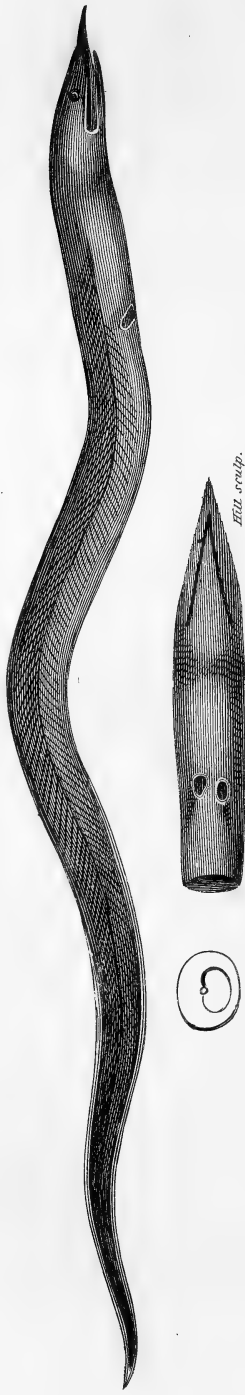
Synbranchus of a plain unvariegated brown colour.

Synbranchus immaculatus. *Bloch. 12. p. 77. t. 419. f. 1.*

THIS is much allied in general form to the preceding, but is considerably smaller, and very different in colour, being nearly of an uniform brown throughout, with the exception of a few very obscure subtransverse dusky shades across the body, and a few whitish marblings on the fins: like the former species it is a native of Surinam.



ROSTRATED SPHAGEBRANCHUS.



SPHAGEBRANCHUS. SPHAGEBRANCHUS.

Generic Character.

<i>Corpus</i> anguilliforme.	<i>Body</i> eel-shaped.
<i>Pinnæ pectorales</i> nullæ.	<i>Pectoral fins</i> none.
<i>Spiracula</i> duo sub collo.	<i>Spiracles</i> two, beneath the neck.

ROSTRATED SPHAGEBRANCHUS.

Sphagebranchus rostratus. *S. capite rostrato.* Bloch. 12. p. 79. t. 419. f. 2.

Sphagebranchus with the upper lip produced into a snout.

Muræna cœca. *M. apterygia, rostro acutiusculo.* Lin. Syst. Nat. p. 426.

THIS genus, which resembles the preceding, except in the circumstance of a double instead of a single branchial aperture beneath the neck, consists at present of a single species only. The specimen mentioned by Dr. Bloch, who appears to have been its first describer, measured about nine inches, and was supposed to be still in a young state: it is represented in its natural size on the annexed plate, and was of a cylindric form, destitute both of fins and scales: the upper jaw was considerably longer than the lower, being produced into a sharpened snout: the eyes were small; the teeth numerous, and the two spiracles or branchial orifices were situated at

about the distance of an inch beyond the mouth, immediately beneath the neck or fore-part of the body: the colour of the whole animal was a pale brown. It was received from Tranquebar.

The *Muraena coeca* of Linnæus, from the slight description given in the Systema Naturæ, seems so nearly allied to the above animal, that there is some reason for supposing it to be in reality the same*.

* Corpus Anguillæ; absque omni pinna: caput in medio 7, anterius 8, ad occiput 7 punctis perforatum: mandibulæ acuminatæ, dentibus acerosis: sub rostro nares tubulosæ: sub collo aperturæ branchiarum: anus propior capiti quam caudæ.

E. BRANDER. *Lin. Syst. Nat. Gmel. p. 1135.*

MONOPTERUS. MONOPTERE.

Generic Character.

<i>Corpus</i> anguilliforme.	<i>Body</i> anguilliform.
<i>Nares</i> inter oculos.	<i>Nostrils</i> placed between the eyes.
<i>Pinna</i> caudalis.	<i>Fin</i> caudal.

JAVAN MONOPTERE.

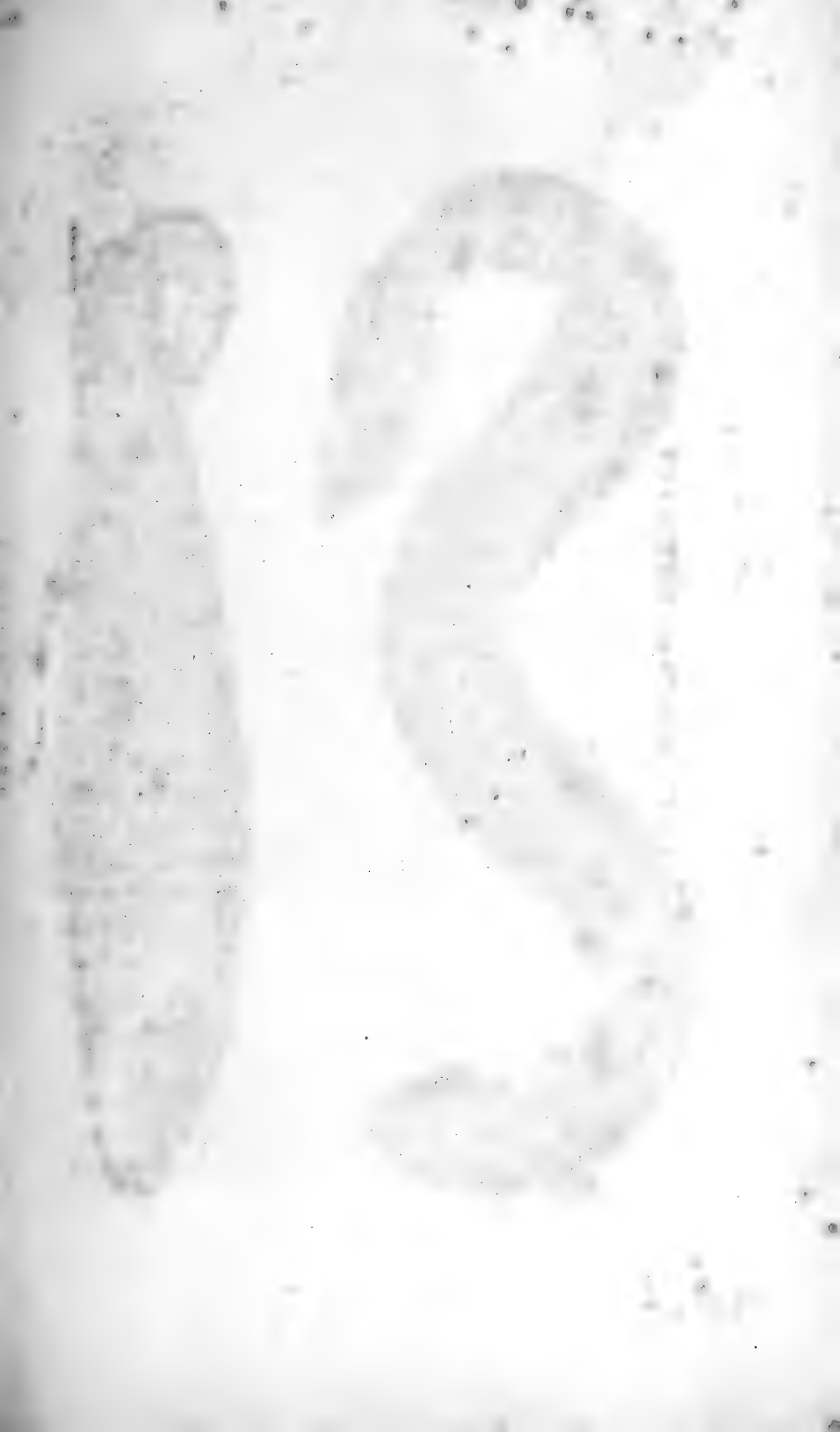
Monopterus Javanicus. *M. nigricans, cauda peracuta.*

Monopterus with very sharp-pointed tail.

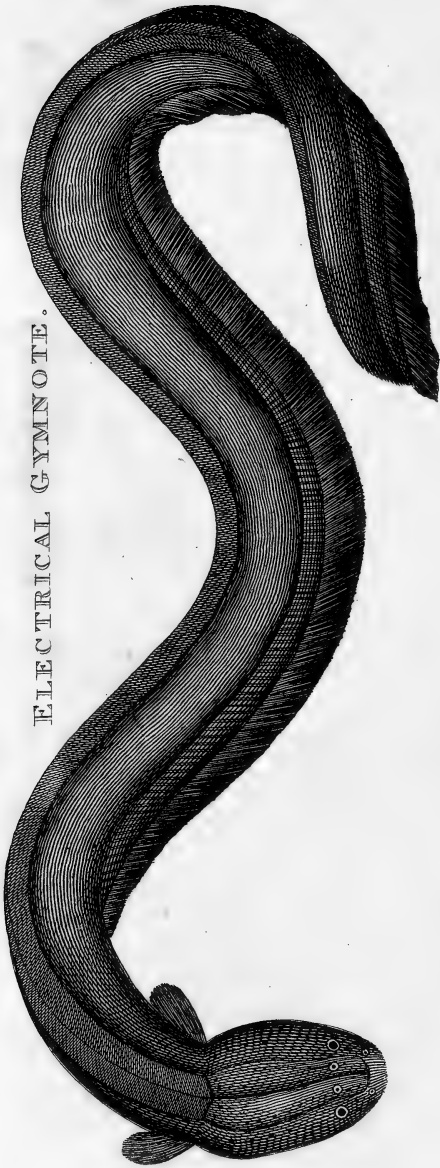
Le *Monoptère* Javanois. *Cepede pisc.* 2. p. 139.

THE *Monopterus Javanicus*, the only animal of this genus hitherto discovered, is thus described by the Count de la Cepede, from the manuscripts of Commerson, by whom it was considered as a species of *Muræna*. The body is serpentiform, viscous, and destitute of conspicuous scales: the head thick, compressed, enlarging towards the back part, and terminated in front by a rounded muzzle: the gape is rather wide; the upper jaw scarce projecting beyond the lower; both being furnished with short close teeth, like those of a file: a row of similar teeth is also situated in the inside of the mouth around the palate: the base of the tongue, which is

cartilaginous, and hollowed above into a channel, is furnished with two whitish tubercles: the openings of the nostrils are not tubular, nor are they situated, as in most fishes, before the eyes, but above them: the gill-covers are soft and flaccid, appearing like a duplicature of the skin: the gill-membrane has only three rays, and the branchiæ are only three in number on each side: the bony arches which support them are but little bowed, and have no denticulated appearance or asperity: the caudal fin has no perceptible rays, and the tail itself being very compressed, resembles the shape of a two-edged sword-blade: the lateral line, which is nearer the back than the belly, extends from the gills to the extremity of the tail, and is almost of a gold-colour: the back is of a livid brown or blackish, and the sides have a similar tinge, with small transverse ferruginous bands: the belly is also of this colour: the general length of the animal is about seven decimetres; the circumference, in the thickest part of the body, one decimetre; and the weight more than a hectogramme. This fish is a native of the Indian seas, and is very common about the coasts of Java, where it is considered as an excellent food.

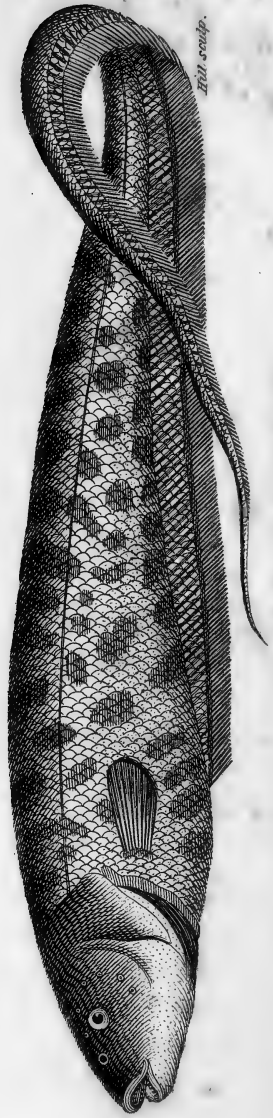


ELECTRICAL GYMNOTE.



Edw. Sculp.

CARAPO GYMNOTE.



GYMNOTUS. GYMNOTE.

Generic Character.

<i>Caput</i> operculis lateralibus.	<i>Head</i> with lateral opercula.
<i>Tentacula</i> duo ad labium superius.	<i>Tentacula</i> two on the upper lip.
<i>Oculi</i> cute communi tecti.	<i>Eyes</i> covered by the common skin.
<i>Membrana</i> branchiostega radiis quinque.	<i>Gill-membrane</i> five-rayed.
<i>Corpus</i> compressum, subtus pinna carinatum, dorso (plerisque) apterygio.	<i>Body</i> compressed, without dorsal fin (in most species), but carinated by a fin beneath.

ELECTRICAL GYMNOTE.

Gymnotus Electricus. *Gymnotus anguilliformis fuscus, cauda obtusa.*

Anguilliform brown Gymnote, with obtuse tail.

Gymnotus electricus. *G. nudus dorso apterygio, pinna caudali obtusissima anali annexa. Lin. Syst. Nat. p. 427.*

Gymnotus electricus. *Bloch. ichth. 5. p. 38. t. 156.*

THE peculiar species of electricity or Galvanism exerted at pleasure by this extraordinary animal is such as greatly to surpass that of the Torpedo, so long the subject of admiration both in ancient and modern times. The electric Gymnotus is a native of the warmer regions of Africa and America,

where it inhabits the larger rivers, and is particularly found in those of Surinam. In Africa it is said chiefly to occur in the branches of the river Senegal. It is a fish of a disagreeable appearance; bearing a general resemblance to a large eel, though somewhat thicker in proportion, and of a much darker colour, being commonly of an uniform blackish brown. It is usually seen of the length of three or four feet, but is said to arrive at a far larger size, specimens occasionally occurring of six, seven, or even ten feet in length. It was first made known to the philosophers of Europe about the year 1671, when its wonderful properties were announced to the French academy by Monsr. Richer, one of the gentlemen sent out by the academy to conduct some mathematical observations in Cayenne. This account however seems to have been received with a degree of cautious scepticism by the major part of European naturalists, and it was not till towards the middle of the late century that a full and general conviction appears to have taken place; the observations of Monsr. Condamine, Mr. Ingram, Mr. Gravesend, and others, then conspiring to prove that the power of this animal consists in a species of real electricity, being conducted by similar conducting substances, and intercepted by others of an opposite nature. Thus, on touching the fish with the fingers, the same sensation is perceived as on touching a charged vial; being sometimes felt as far as the elbows; and if touched by both hands, an electric shock is conveyed through the breast in the usual manner. Fermin, in par-

ticular, who, during his residence in Surinam, had frequent opportunities of examining the animal, demonstrated by experiment that fourteen slaves, holding each other by the hands, received the shock at the same instant; the first touching the fish with a stick*, and the last dipping his hand into the water in which it was kept. The experiments of Dr. Bancroft were equally satisfactory. After this, viz. about the year 1773, Mr. Williamson, in a letter from Philadelphia to Mr. Walsh, so celebrated for his observations relative to the electricity of the Torpedo, communicated his own highly satisfactory experiments on the Gymnotus. On touching the animal with one hand, in such a manner as to irritate it considerably, while the other was held at a small distance from it in the water, he experienced as strong a shock as from a charged Leyden vial. The shock was also readily communicated through a circle formed by eight or ten persons at once; the person at one extremity putting his hand in the water, near the fish, while the other touched the animal. It would be tedious to recite all the various modifications of these experiments, and it is sufficient to add, that all conspired to prove the genuine voluntary electricity of the animal; though occasionally exhibiting some variations from the phenomena of common electricity. It is by this extraordinary faculty that the Gymnotus supports its existence: the smaller fishes and other animals which happen to approach it, being instantly

* Probably a green or moist one.

stupified, and thus falling an easy prey to the electrical tyrant. So powerful is the shock which this fish, in its native waters, is capable of exerting, that it is said to deprive almost entirely of sense and motion those who are exposed to its approach, and is therefore much dreaded by those who bathe in the rivers it inhabits.

A very accurate description of the exterior form of the *Gymnotus* was drawn up by the late ingenious Dr. Garden of Charles Town in South Carolina, addressed to the celebrated Mr. Ellis; and an equally accurate description of its internal structure, and more particularly of its electric or Galvanic organs, is given by Mr. Hunter. Both these are printed in the 65th volume of the *Philosophical Transactions*.

“The largest of these fish,” says Dr. Garden, was three feet eight inches in length, when extending itself most, and might have been from ten to fourteen inches in circumference about the thickest part of the body. The head is large, broad, flat, smooth, and impressed here and there with holes, as if perforated with a blunt needle, especially towards the sides, where they are more regularly ranged in a line on each side. The rostrum is obtuse and rounded. The upper and lower jaws are of an equal length, and the gape is large. The nostrils are two on each side; the first large and tubular, and elevated above the surface; the others small, and level with the skin, placed immediately behind the verge of the rostrum, at the distance of an inch asunder. The eyes are small, flattish, and

of a blueish colour, placed about three quarters of an inch behind the nostrils, and more towards the sides of the head. The whole head seems to be well supported; but whether with bones or cartilages I could not learn. The body is large, thick, and roundish, for a considerable distance from the head, and then gradually grows smaller, but at the same time deeper, or becomes of an acinaciform shape, to the point of the tail, which is rather blunt. There are many light-coloured spots on the back and sides of the body, placed at considerable distances in regular lines, but more numerous and distinct towards the tail. When the fish was swimming, it measured six inches in depth near the middle, from the upper part of the back to the lower edge of the fin, and it could not be more than two inches broad on the back at that place. The whole body, from about four inches below the head, seems to be clearly distinguished into four different longitudinal parts or divisions. The upper part or back is roundish, of a dark colour, and separated from the other parts on each side by the lateral lines; which, taking their rise at the base of the head, just above the pectoral fins, run down the sides, gradually converging, as the fish grows smaller, to the tail, and make so visible a depression or furrow in their course, as to distinguish this from the second part or division, which may be properly called the body, or at least, appears to be the strong muscular part of the fish. This second division is of a lighter and more clear blueish colour than the upper or back part, and seems to swell

out somewhat on each side, from the depression of the lateral lines; but towards the lower or under part, is again contracted, or sharpened into the third part or carina. This carina or keel is very distinguishable from the other two divisions, by its thinness, its apparent laxness, and by the reticulated skin of a more grey or light colour, with which it is covered. When the animal swims gently in pretty deep water, the rhomboidal reticulations of the skin of this carina are very discernible; but when the water is shallow, or the depth of the carina is contracted, these reticulations appear like many irregular longitudinal plicæ. The carina begins about six or seven inches below the base of the head, and gradually widening or deepening as it goes along, reaches down to the tail, where it is thinnest. It seems to be of a strong muscular nature. Where it first takes its rise from the body of the fish, it seems to be about one inch, or one inch and a half thick, and is gradually sharpened to a thin edge, where the fourth and last part is situated; viz. a long, deep, soft, wavy fin, which takes its rise about three or four inches at most below the head, and runs down along the sharp edge of the carina to the extremity of the tail. When it first rises it is not deep, but gradually deepens or widens as it approaches the tail. It is of a very pliable soft consistence, and seems rather longer than the body. The situation of the vent in this fish is very singular, being placed underneath, and being about an inch more forward than the pectoral fins, and consequently considerably nearer the rostrum.

There are two pectoral (if I may call them so) fins, placed one on each side, just behind the head, over the foramina spiratoria, which are small, and generally covered with a lax skin, situated in the axillæ of these fins. These fins are small for the size of the fish, being scarcely an inch in length, and of a very thin, delicate consistence, and orbicular shape. They seem to be chiefly useful in supporting and raising the head of the fish when he wants to breathe, which he does every four or five minutes, by raising his mouth out of the water. This shews that he has lungs and is amphibious, and the foramina spiratoria seem to indicate his having branchiæ likewise* ; but this I only offer as a conjecture, not being certain of the fact. I must now mention the appearances of a number of small cross bands, annular divisions, or rather rugæ of the skin of the body. They reach across the body down to the base of the carina on each side ; but those that cross the back seem to terminate at the lateral lines, where new rings take their rise, not exactly in the same line, and run down to the carina. This gives the fish somewhat of a worm-like appearance ; and indeed it seems to have some of the properties of this tribe, for it has a power of lengthening or shortening its body to a certain degree, for its own conveniency, or agreeably to its own inclination. I have seen this specimen, which I have measured three feet eight inches, shorten himself to three feet two inches ; but besides this power of lengthen-

* This proved an erroneous idea.

ing or shortening his body, he can swim forwards or backwards with apparently equal ease to himself, which is another property of the vermicular tribe. When he swims forwards, the undulations or wavy motions of the fin and carina begin from the upper part, and move downwards; but when he swims backwards, and the tail goes foremost, the undulations of the fin begin at the extremity of the tail or fin, and proceed in succession from that backwards to the upper part of the body: in either case he swims equally swift. Every now and then the fish lays himself on one side, as it were, to rest himself, and then the four divisions of the body above mentioned are very distinctly seen, viz. the vermiform appearance of the two upper divisions; the retiform appearance of the carina, and the last or dark-coloured fin, whose rays seem to be exceedingly soft and flexible, and entirely at the command of the strong muscular carina. When he is taken out of the water and laid on his belly, the carina and fin lie on one side, in the same manner as the ventral fin of the Tetraodon does, when he creeps on the ground. I have been the longer and more particular in the description of the external structure of this animal's body, because I think, as it is of a most singular nature, and endowed with some amazing properties, even the most minute circumstance I was able to observe relating to it should be mentioned. The power it has of giving an electrical shock to any person, or to any number of persons who join hands together, the extreme person on each side touching the fish, is its most singular and

astonishing property. The five we have here are possessed of this power in a very great degree, and communicate the shock to one person, or to any number of persons, either by the immediate touch of the fish with the hand, or by the intervention of any metalline rod. The keeper says that when first caught, they could give a much stronger shock by a metalline conductor than they can do at present. The person who is to receive the shock must take the fish with both hands, at some considerable distance asunder, so as to form the communication; otherwise he will not receive it; at least I never saw any one shocked from taking hold of it with one hand only: though some have assured me that they were shocked by laying one hand on him. I myself have taken hold of the largest with one hand often, without ever receiving a shock; but I never touched it with both hands, at a little distance asunder, without feeling a smart shock. I have often remarked, that when it is taken hold of with one hand, and the other hand is put into the water over its body, without touching it, the person received a smart shock; and I have observed the same effect follow, when a number joined hands, and the person at one extremity of the circle took hold of or touched the fish, and the person at the other extremity put his hand into the water, over the body of the fish. The shock was communicated through the whole circle as smartly as if both the extreme persons had touched the fish. In this it seems to differ widely from the Torpedo, or else we are much misinformed of the manner in which the benumbing

effect of that fish is communicated. The shock which our Surinam fish gives seems to be wholly electrical; and all the phænomena or properties of it exactly resemble those of the electric aura of our atmosphere when collected, as far as they are discoverable from the several trials made on this fish. This stroke is communicated by the same conductors, and intercepted by the interposition of the same original electrics or electrics per se, as they are called. The keeper of these fish informed me that he caught them in Surinam river, a great way up, beyond where the salt water reaches; and that they are a fresh water fish only. He says that they are eaten, and by some people esteemed a great delicacy. They live on fish, worms, or any animal food, if it is cut small, so that they can swallow it. When small live fishes are thrown into the water, they first give them a shock, which kills, or so stupifies them, that they can swallow them easily and without any trouble. If one of these small fishes, after it is shocked, and to all appearance dead, be taken out of the vessel where the electrical fish is, and put into fresh water, it will soon revive again. If a larger fish than they can swallow be thrown into the water, at a time that they are hungry, they give him some smart shocks, till he is apparently dead, and then endeavour to swallow or suck him in; but, after several attempts, finding he is too large, they quit him. Upon the most careful inspection of such fish, I could never see any mark of teeth, or the least wound or scratch upon them. When the electrical fish are hungry, they are pretty keen

after their food; but they are soon satisfied, not being able to contain much at a time. An electrical fish of three feet and upwards in length cannot swallow a small fish above three or at most three inches and a half long. I am told that the electrical fish is sometimes found in the river Surinam upwards of twenty feet in length, and that the stroke or shock proves instant death to the person who receives it."

Mr. Hunter's accurate description of the electric or Galvanic organs of this curious animal, is as follows:

"This fish, on the first view, appears very much like an eel, from which resemblance it has most probably got its name; but it has none of the specific properties of that fish. This animal may be considered, both anatomically and physiologically, as divided into two parts, viz. the common animal part, and a part which is superadded, viz. the peculiar organ. I shall at present consider it only with respect to the last; as the first explains nothing relating to the other, nor any thing relating to the animal œconomy of fish in general. The first, or common animal part, is so contrived as to exceed what was necessary for itself, in order to give situation, nourishment, and most probably the peculiar property to the second. The last part, or peculiar organ, has an immediate connexion with the first; the body affording it a situation; the heart nourishment; and the brain nerves, and probably its peculiar powers. For the first of these purposes the body is extended out in length,

being much longer than would be sufficient for what may be called its progressive motion. For the real body, or that part where the viscera lye, is situated, with respect to the head, as in other fish, and is extremely short; so that, according to the ordinary proportions, this should be a very short fish. Its great length, therefore, seems chiefly intended to afford a surface for the support of the peculiar organ: the tail-part, however, is likewise adapted to the progressive motion of the whole, and to preserve the specific gravity; for the spine, medulla spinalis, muscles, fin, and air-bladder, are continued through its whole length. Besides which parts, there is a membrane passing from the spine to that fin which runs along the belly or lower edge of the animal. This membrane is broad at the end next to the head, terminating in a point at the tail. It is a support for the abdominal fin, gives a greater surface of support for the organ, and makes a partition between the organs of the two opposite sides.

“ The organs which produce the peculiar effect of this fish, constitute nearly one half of that part of the flesh in which they are placed, and perhaps make more than one third of the whole animal. There are two pair of these organs, a larger and a smaller; one being placed on each side. The large pair occupy the whole lower or anterior, and also the lateral part of the body, making the thickness of the fore or lower parts of the animal, and run almost through its whole length, viz. from the abdomen to near the end of the tail. It is broadest on the sides of the fish at the interior end, where

it incloses more of the lateral parts of the body, becomes narrower towards the end of the tail, occupying less and less of the sides of the animal, till at last it ends almost in a point. These two organs are separated from one another at the upper part by the muscles of the back, which keep their posterior or upper edges at a considerable distance from one another: below that, and towards the middle, they are separated by the air-bag; and at their lower parts they are separated by the middle partition. They begin forwards, by a pretty regular edge, almost at right angles with the longitudinal axis of the body, situated on the lower and lateral parts of the abdomen. Their upper edge is a pretty strait line, with small indentations made by the nerves and blood-vessels which pass round it to the skin. At the anterior end they go as far towards the back as the middle line of the animal; but in their approach towards the tail, they gradually leave that line, coming nearer to the lower surface of the animal. The general shape of the organ, on an exterior or side view, is broad at the end next to the head of the animal, becoming gradually narrower towards the tail, and ending there almost in a point. The other surfaces of the organ are fitted to the shape of the parts with which they come in contact: therefore on the upper and inner surface it is hollowed, to receive the muscles of the back. There is also a longitudinal depression on its lower edge, where a substance lies which divides it from the small organ, and which gives a kind of fixed point for the lateral muscles of the fin. Its most internal

surface is a plane adapted to the partition which divides the two organs from one another. The edge next to the muscles of the back is very thin, but the organ becomes thicker and thicker towards its middle, where it approaches the centre of the animal. It becomes thinner again towards the lower surface or belly, but that edge is not so thin as the other. Its union with the parts to which it is attached is in general by a loose, but pretty strong, cellular membrane; except at the partition, to which it is joined so close as to be almost inseparable. The small organ lies along the lower edge of the animal, nearly to the same extent as the other. Its situation is marked externally by the muscles, which move the fin under which it lies. Its anterior end begins nearly in the same line with the large organ, and just where the fin begins. It terminates almost insensibly near the end of the tail, where the large organ also terminates. It is of a triangular figure, adapting itself to the part in which it lies. Its anterior end is the narrowest part: toward the tail it becomes broader; in the middle of the organ it is thickest, and from thence becomes gradually thinner to the tail, where it is very thin. The two small organs are separated from one another by the middle muscles, and by the bones upon which the bones of the fins are articulated. The large and the small organ on each side, are separated from one another by a membrane, the inner edge of which is attached to the middle partition, and its outer edge is lost on the skin of the animal. To expose the large organ to view,

nothing more is necessary than to remove the skin, which adheres to it by a loose cellular membrane. But to expose to view the small organ, it is necessary to remove the long row of small muscles which move the fin. The structure of the organs is extremely simple and regular, consisting of two parts, viz. flat partitions or septa, and cross divisions between them. The outer edge of these septa appears externally in parallel lines, nearly in the direction of the longitudinal axis of the body. These septa are thin membranes, placed nearly parallel to one another. Their lengths are nearly in the direction of the long axis, and their breadth is nearly the semi-diameter of the body of the animal. They are of different lengths, some being as long as the whole organ. I shall describe them as beginning principally at the anterior end of the organ, although a few begin along the upper edge; and the whole, passing towards the tail, gradually terminate on the lower surface of the organ; the lowermost at their origin terminating soonest. Their breadths differ in different parts of the organ. They are in general broadest near the anterior end, answering to the thickest part of the organ, and become gradually narrower towards the tail: however they are very narrow at the beginning or anterior ends. Those nearest to the muscles of the back are the broadest, owing to their curved or oblique situation upon these muscles, and grow gradually narrower towards the lower part, which is in a great measure owing to their becoming more transverse, and also to the organ becoming thinner at that place. They

have an outer and an inner edge. The outer is attached to the skin of the animal, to the lateral muscles of the fin, and to the membrane which divides the great organ from the small; and the whole of their inner edges are fixed to the middle partition formerly described, as also to the air-bladder; and three or four terminate on that surface which incloses the muscles of the back. These septa are at the greatest distance from one another at their exterior edges near the skin, to which they are united; and as they pass from the skin towards their inner attachments, they approach one another. Sometimes we find two uniting into one. On that side next to the muscles of the back they are hollow from edge to edge, answering to the shape of those muscles; but become less and less so towards the middle of the organ; and from that, towards the lower part of the organ, they become curved in another direction. At the anterior part of the large organ, where it is nearly of an equal breadth, they run pretty parallel to one another, and also pretty strait; but where the organ becomes narrower, it may be observed that two join or unite into one; especially where a nerve passes across. The termination of this organ at the tail is so very small that I could not determine whether it consisted of one septum or more. The distances between these septa will differ in fish of different sizes. In a fish of two feet four inches in length I found them one twenty-seventh of an inch distant from one another; and the breadth of the whole organ, at the broadest part, about an inch and a quarter,

in which space were thirty-four septa. The small organ has the same kind of septa, in length passing from end to end of the organ, and in breadth passing quite across: they run somewhat serpentine; not exactly in strait lines. Their outer edges terminate on the outer surface of the organ, which is in contact with the inner surface of the external muscle of the fin, and their inner edges are in contact with the centre muscles. They differ very much in breadth from one another; the broadest being equal to one side of the triangle, and the narrowest scarcely broader than the point or edge. They are pretty nearly at equal distances from one another, but much nearer than those of the large organ, being only about the fifty-sixth part of an inch asunder: but they are at a greater distance from one another towards the tail, in proportion to the increase of breadth of the organ. The organ is about half an inch in breadth, and has fourteen septa. These septa, in both organs, are very tender in consistence, being easily torn. They appear to answer the same purpose as the columns in the Torpedo; making walls or butments for the subdivisions, and are to be considered as making so many distinct organs. These septa are intersected transversely by very thin plates or membranes, whose breadth is the distance between any two septa, and therefore of different breadths in different parts; broadest at that edge which is next to the skin, and narrowest at that next the centre of the body, or to the middle partition which divides the two organs from one another. Their lengths

are equal to the breadths of the septa between which they are situated. There is a regular series of them continued from one end of any two septa to the other. They appear to be so close as even to touch. In an inch in length there are about two hundred and forty, which multiplies the surface of the whole to a vast extent.

“ The nerves in this animal may be divided into two kinds: the first appropriated to the general purposes of life; the second for the management of this peculiar function, and very probably for its existence. They arise in general from the brain and medulla spinalis, as in other fish; but those from the medulla are much larger than in fish of equal size; and larger than is necessary for the common operations of life. The nerve which arises from the brain, and passes down the whole length of the animal (which I believe exists in all fish), is larger in this than in others of the same size, and passes nearer to the spine. In the common eel it runs in the muscles of the back, about midway between the skin and spine. In the cod it passes immediately under the skin. From its being larger in this fish than in others of the same size, one might suspect that it was intended for supplying the organ in some degree; but this seems not to be the case, as I was not able to trace any nerves going from it to join those of the medulla spinalis, which run to the organ. This nerve is as singular an appearance as any in this class of animals; for surely it must appear extraordinary, that a nerve should arise from the brain to be lost in common parts, while there is

a medulla spinalis giving nerves to the same parts. It must still remain one of the inexplicable circumstances of the nervous system. The organ is supplied with nerves from the medulla spinalis, from which they come out in pairs between all the vertebræ of the spine. In their passage from the spine they give nerves to the muscles of the back, &c. They bend forwards and outwards upon the spine, between it and the muscles, and send out small nerves to the external surface, which join the skin near to the lateral lines. These ramify upon the skin, but are principally bent forwards between it and the organ, into which they send small branches as they pass along. They seem to be lost in these two parts. The trunks get upon the air-bladder, or rather dip between it and the muscles of the back, and continuing their course forwards upon that bag, they dip in between it and the organ, where they divide into smaller branches: they then get upon the middle partition, on which they continue to divide into still smaller branches; after which they pass on, and get upon the small bones and muscles, which are the bases for the under fin, and at last they are lost on that fin. After having got between the organ and the above-mentioned parts, they are constantly sending small nerves into the organs; first into the great organ, and then into the small one; also into the muscles of the fin, and at last into the fin itself. These branches, which are sent into the organ, as the trunk passes along, are so small that I could not trace their ramifications in the organs. In this fish as well as in the Torpedo, the nerves which

supply the organ, are much larger than those bestowed on any other part for the purposes of sensation and action; but it appears to me that the organ of the Torpedo is supplied with much the largest proportion. If all the nerves which go to it were united together, it would make a vastly greater chord than all those which go to the organ of this eel. Perhaps when experiments have been made upon this fish, equally accurate with those on the Torpedo, the reason for this difference may be assigned."

It has been affirmed that the *Gymnotus electricus*, even for some time after its death, cannot be touched without feeling its electric shock. This is by no means incredible, when we consider the effect of the Galvanic pile, so well known to modern philosophers.

CARAPO GYMNOTE.

Gymnotus Carapo. G. unicolor, dorso apterygio, pinna ani longitudine caudæ attenuatæ, maxilla superiore longiore. Lin. Syst. Nat. Gmel. p. 1136.

Brown Gymnote, with the vent-fin of the length of the attenuated tail, and the upper jaw longer than the lower.

Gymnotus macrourus. G. macrourus, maxilla superiore longiore. Bloch.

Gymnotus carapo. G. nudus, dorso apterygio, pinna ani longitudine caudæ attenuatæ. Lin. Syst. Nat. p. 427.

THE head of the Carapo is of a compressed form, and the upper jaw projects beyond the lower: the tongue is short, thick, broad, and furnished like the jaws with a great many small sharp-pointed teeth:

the eyes are very small, and the front of the head is marked, as in the preceding species, by a number of small round pores: the body gradually decreases towards the tail, which is extremely slender, and terminates in a point. The colour of the whole animal is brown, marked by a few irregular spots or patches of a deeper cast: the scales are small, and the lateral line strait. This fish is a native of the American seas, and is said to be most frequent about the coast of Surinam. It is supposed to live chiefly on small fishes, sea insects, &c. Whether it possesses any electric power, like the former species, may be doubted; yet the structure of the lower part of the body seems to imply somewhat of a similar contrivance of Nature. The usual length of the Carapo is from one to two feet; but it is sometimes found of the length of three feet, and of the weight of more than ten pounds. It is considered as an esculent fish by the South-Americans.

VAR. ?

SHORT-TAILED CARAPO.

Gymnotus fasciatus. *G. nudus fasciatus*, dorso apterygio, pinna ani longitudine caudæ attenuatæ, maxilla inferiore longiore.

Naked-backed pale-brown *Gymnotus*, with darker transverse fasciæ, short tail, and lower jaw longer than the upper.

Gymnotus carapo. *G. brachyurus maxilla inferiore longiore*.
Bloch.

Gymnotus fasciatus. *Lin. Syst. Nat. Gmel. p. 137.*

IN general appearance this fish so much resembles the preceding that it has been considered both by Artedi and Linnæus as no other than a variety, differing principally in the shortness of the tail, and in the inferior size of the body. By Seba, however, it was regarded as a distinct species, and Dr. Bloch in his Ichthyology observes, that it not only differs from the former in the part above mentioned, but also in the contrary outline of the mouth; the lower jaw advancing beyond the upper: he also adds, that the number of rays in the vent-fin is different, and that the back is marked by a furrow, extending from the neck to the middle of the trunk. This fish inhabits the same seas with the preceding.

ROSTRATED GYMNOTE.

Gymnotus Rostratus. *G. rostro tubulato, pinna ani cauda brevior.* *Lin. Syst. Nat. p. 428.*

Spotted Gymnotus, with tubular snout, and vent-fin shorter than the tail.

Gymnotus varius rostro productiore. *Seb. 3. p. 99. t. 32. f. 5.*

IN its general aspect this species is much allied to the Carapo, but is readily distinguished by the peculiar form of the head, which terminates in a narrow, slightly compressed, tubular snout, the jaws appearing in a manner connate: the colour of the body is pale reddish brown, variegated with differently sized spots of a darker colour, and which are much smaller, as well as more numerous, on the fin than on the other parts: the pectoral fins are round and rather small for the size of the animal: the eyes are very small: the scales, if any, are so small as to be not distinctly visible on a general view. This species is a native of Surinam, and seems to have been first described and figured by Seba.

WHITE GYMNOTE.

Gymnotus Albus. *G. albus, maxilla inferiore longiore, labia superiore utrinque lobulo notato.*

White Gymnotus, with the lower jaw longest, and the upper lip marked with a lobule on each side.

Gymnotus albus. *Pall. Spic. Zool. 7. p. 36.*

Gymnotus albus. *Lin. Syst. Nat. Gmel. p. 1137.*

SIZE and general habit of the Carapo and fasciatus; colour white or whitish; scales moderately large; tail naked for about an inch, and ending in a point, as in others of this tribe; pectoral fins very small; mouth furnished on each side the upper lip with a small lobule or abrupt cirrus, as it were, situated at about half the distance of the gape; eyes very small; head marked on each side by several pores. Native of Surinam.

 WHITE-FRONTED GYMNOTE.

Gymnotus Albifrons. *G. dorso anteriore niveo. Lin. Syst. Nat. Gmel. p. 1139. Pall. Spic. Zool. 7. p. 35. t. 6. f. 1.*

Gymnote with the fore part of the back snow-white.

FIRST described by Dr. Pallas: native of Surinam: head with wider mouth than the rest of its tribe, very obtuse, fleshy, and sprinkled over with small pores: upper lip very thick, including the lower, which is very high on each side: no tongue: palate beset with papillæ: gill-covers with a semi-lunar opening before the fleshy base of the pectoral

fins, which are black and prominent, with the first ray doubled by a small bone at the base: anal fin beginning from the throat: fore part of the back convex, with a soft, brown, fleshy process* behind the middle, beyond which it is destitute of scales: tail compressed, flat, with an ovate fin: from the tip of the lower mandible to the middle of the back runs a snow-white band.

NEEDLE GYMNOTE.

Gymnotus Acus. *G. nudus, dorso ventre caudaque apterygiis, pinna anali ante apicem caudæ terminata radius sexaginta. Lin. Syst. Nat. Gmel. p. 1140.*

Naked Gymnotus, with finless tail and belly; the anal fin terminating before it reaches the tip of the tail.

THIS species is described by Brunnich, in his history of the fish of Marseilles. It is whitish, with reddish and brown spots, which cause a kind of clouded variegation on the back; while a blueish tinge prevails towards the under parts: on the back is a kind of projection, which may be rather considered as a rudiment of a fin than a perfect one: the

* This process, which is of considerable length, is, according to the observations of the Count de Ceppe, attached also at its smaller or opposite extremity to the skin of the back, very near to the origin of the tail: it is also connected throughout its whole length by twelve short, oblique filaments, to the subjacent furrow into which it is received. In the specimen described by Dr. Pallas, it appears to have been imperfect, and is improperly called a cirrus.

whole animal is of a long, compressed, and attenuated form, and the mouth is destitute of tentacula. This is the only European species of Gymnote yet discovered, and is a native of the Mediterranean sea.



FIN-BACKED GYMNOTE.

Gymnotus Notopterus. *G. argenteo-inauratus, dorso pinnato pinnisque cinerascentibus.* *Lin. Syst. Nat. Gmel. p. 1139. Pall. Spic. Zool. 7. p. 40. t. 6. f. 2.*

Silvery Gymnote, with a gilt hue, with the dorsal and other fins of a pale ash-colour.

It must, no doubt, appear in some degree absurd to place a fish which is furnished with a dorsal fin in a genus distinguished by the want of that part: but since in every other respect the present animal agrees with the rest of the Gymnoti, I shall consider it as belonging to that tribe rather than institute for it a separate genus. It is a native of Amboyna, and is of the length of about eight or nine inches, though it probably arrives at a larger size. The head is short and obtuse: the eyes large, and above them is placed a small pore or foramen: the jaws are furnished with sharp teeth, those in the lower jaw being largest: besides these is a row of very minute teeth within the jaw: the palate is also edged with similar small teeth: the gill-covers are scaly, with a membranaceous edge: the scales on the body are very small: the anal fin at its origin is fleshy, and narrower than elsewhere.

ASIATIC GYMNOTE.

Gymnotus Asiaticus. G. squamosus dorso pinnato. Lin. Syst. Nat. Gmel. p. 1140.

Brownish Gymnote, with deeper bands, distinct scales, and finned back.

THIS, like the former, departs, in some degree, from the generic character: it is of a thickish form, and more than a span in length, and is covered both on the head and other parts with moderately large rounded scales: the head is depressed, smoothish, marked with five hollow dots, and by a small foramen in front: before the nostrils are two abrupt tentacula: the tongue is smooth: the teeth in both jaws small, and there is also a row of small teeth within the upper jaw, and a few hollowed points in the lower: the gill-covers have a wide opening: the body is subcylindric, compressed at the hind part: the dorsal fin commences a little behind the neck, and extends as far as the tail, and, together with the hind part of the body, is speckled with white: the lateral line is elevated and strait, but descends over the vent.

OPHIDIUM. OPHIDIUM.

Generic Character.

<p><i>Caput nudiusculum: dentes maxillis, palato, faucibus.</i></p> <p><i>Membrana branchiostega radiis septem, patula.</i></p> <p><i>Corpus ensiforme.</i></p>		<p><i>Head somewhat naked: teeth in the jaws, palate, and throat.</i></p> <p><i>Branchiostegous membrane seven-rayed, patulous.</i></p> <p><i>Body ensiform.</i></p>
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BEARDED OPHIDIUM.

Ophidium Barbatum. *O. cirro utrinque gulari duplici.*

Ophidium with a long double cirrus on each side the throat.

Ophidium barbatum. *O. maxilla inferiore cirris quatuor. Lin. Syst. Nat. p. 431.*

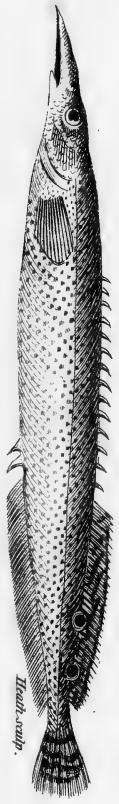
Ophidium cirris quatuor gularibus. *Bloch. 5. p. 58. t. 159. f. 1.*

THE head of this fish is small; the upper jaw rather longer than the lower, and both beset with a great many small teeth: the lips are strong and fleshy: in the throat are several small teeth: between the eyes and mouth are four small pores: the tongue is strait and short: beneath the throat are two long, bifid cirri, representing at first view four distinct ones: the body is long, moderately thick, and of a smooth surface: it is irregularly covered with small scales, resembling in their structure those of an eel, and attached to the skin by

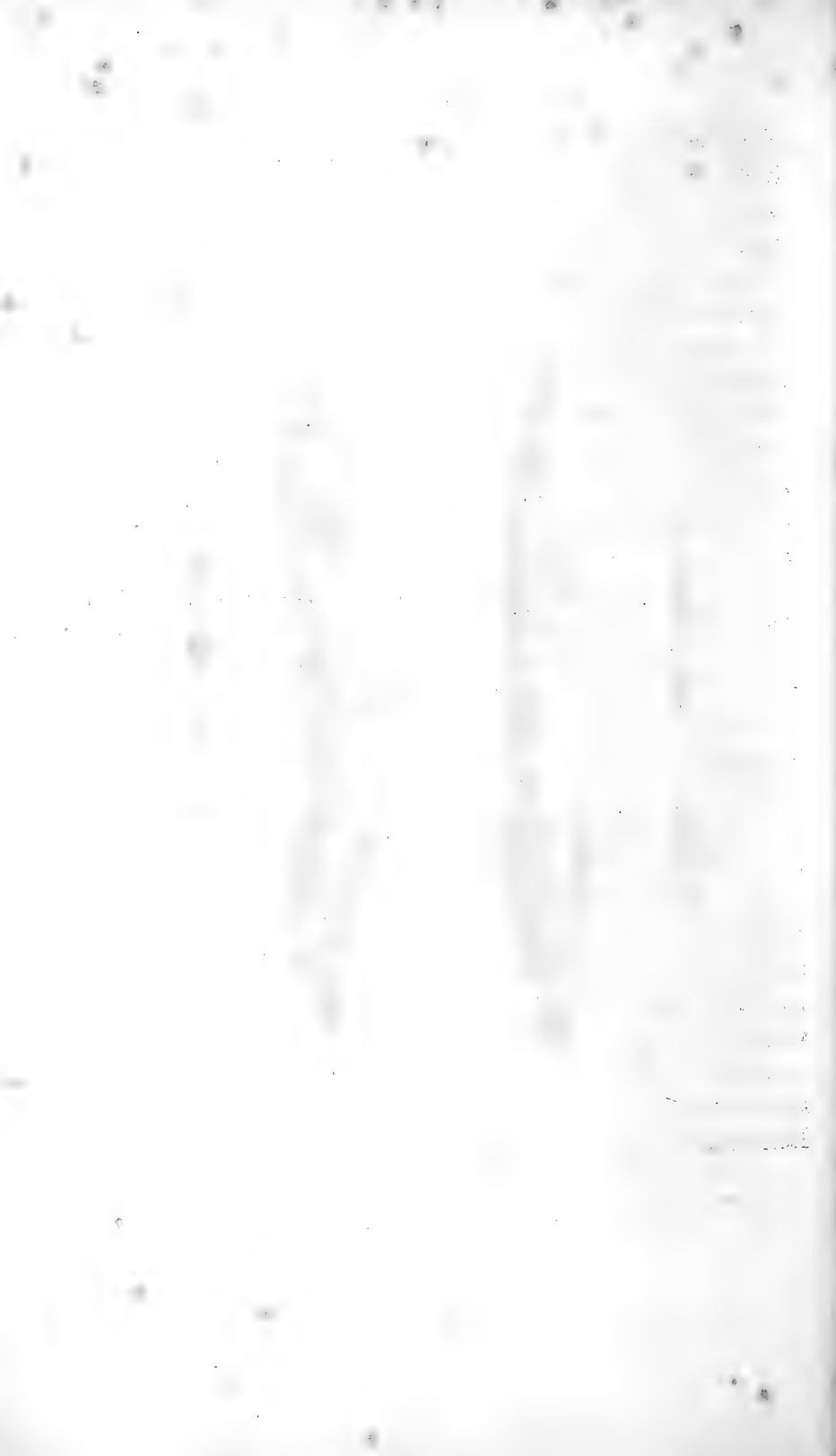
BEARDED OPHIDIUM.



ROSTRATED OPHIDIUM.



Heath sculp.



their middle or central part: the colour of the body is a subargenteous white, with a dusky cast above, reddish beneath, and spotted all over with small, oblong, dusky specks. It is commonly found of the length of eight or nine inches, and sometimes twelve or fourteen, and is met with in all parts of the Mediterranean sea, and in great plenty in the Adriatic. It is often taken by nets in Provence and Languedoc with other kinds of fish, and is most common during the summer season. It is not considered as an elegant fish for the table, the flesh being rather coarse. It feeds on small fishes, crabs, &c. &c.

In the Philosophical Transactions* we meet with some accurate observations on this fish by the ingenious Dr. Broussonet, who has considerably advanced the science of Ichthyology. The first author, according to Dr. Broussonet, to whom we are indebted for a description and figure of the *Ophidium barbatum*, is Bellonius, who seems to have been doubtful to what class to refer it, but has placed it among the Gadi, though of a very different family. Rondeletius, who wrote soon after Belon, has given a better description and a more accurate figure, though the cirri are very ill represented, and the whole fish appears without any spots, whereas in the Rondeletian representation it is spotted all over; and this difference caused Gesner and some others to consider the Belonian and Rondeletian animals as distinct species. Willoughby

* Vol. 71.

has described the scales, which are oblong, distinct, and disposed without regular order, and the difference between the figures of Rondeletius and Belonius arises from the former having expressed the scales, which are omitted by the latter: yet Ray in his Synopsis follows Gesner in supposing two distinct species. Artedi has not noticed the spots, which, however, have been observed by Klein, who has mistakenly followed Rondeletius, in affirming that the fish has two cirri, while, on the contrary, Willoughby asserts that there are four; but it is easy to reconcile these descriptions, since though the cirri are only two, yet each being divided, they appear to be four.

BEARDLESS OPHIDIUM.

Ophidium Imberbe. *O. maxillis imberbibus, cauda obtusiuscula.*
Lin. Syst. Nat. p. 431.

Ophidium with beardless jaws and rather obtuse tail.

Ophidion cirris carens. *Artedi gen. 24. Syn. 42. Gronov.*
Zooph. 1. p. 131.

THIS species seems to be much allied to the former, but is described as altogether destitute of cirri or beards: the body is oblong and slender, gradually decreasing in thickness to the tail, and covered with very small pellucid scales: the head is short, a little flattened, very thick and rounded at the muzzle: the mouth large; the teeth numerous, sharp, and small, as in the former: the upper jaw rather longer than the lower: the gill-covers short,

and ending on the upper part in an angular manner, with a strong and sharp point lying over the valve: the gill-membrane furnished with seven rays: eyes large; irides broad and silvery: lateral line near the back: vent situated almost in the middle of the abdomen: scales on the body and gill-covers very small: dorsal, caudal, and anal fins united: dorsal beginning at a little distance beyond the head: tail sharp: vent-fin of equal length with the dorsal: pectoral fins rather large, and of a lanceolate shape. Native of the Mediterranean.

Ophidium Mastacembalus. *O. maxillis subacutis æqualibus.*

Ophidium with sharpish-pointed equal jaws.

Mastacembalus maxillis subacutis æqualibus. *Gron. Zooph. 1. p. 132. t. 8. a. f. 1.*

Mastacembalus. *Russel Alepp. ed. 2. Vol. 2. p. 208. pl. 6.*

THE first description of this species seems to have been given by Dr. Alexander Russel, in his Natural History of Aleppo. It has so much the general appearance of an eel, that, according to Dr. Russel, it is considered as such by the Europeans resident at Aleppo, where it is often brought to table, and eats like an eel, though somewhat less fat. Its usual length is from a foot to eighteen inches or more: the head is oblong, subcylindric, narrower than the body, and contracted into a subacuminate snout in front: the eyes are small, situated on each side at no great distance from the tip of the snout:

the nostrils are seated at some distance before the eyes: the mouth is small; the jaws are equal, with lax, fleshy lips: the teeth of moderate size, and somewhat confusedly placed in both jaws: the tongue and palate are smooth: the gill-covers smooth, the branchial apertures opening widely beneath: the gill-membrane five-rayed; the body anguilliform, and marked down the back, as far as the beginning of the dorsal fin, by a row of about thirty-two small, sharp spines, set at equal distances, and each recumbent in a small furrow, from which it is erigible at the pleasure of the animal: the dorsal fin commences at about two thirds of the length of the body from the head, is of moderate width, and is continued into the tail and vent-fin in the manner of those of an eel; the vent-fin running beneath to about the same distance with the dorsal above: at the origin of the vent-fin are two strong, short spines, and at a little distance farther on the abdomen is a third: the pectoral fins are very small and rounded: the lateral line is pretty strongly marked, and runs from the top of the gills along the middle of the body to the tail: the whole body is covered with small scales, like those of an eel: the colour on the upper parts is a clouded variegation of whitish and rufous, the under parts being entirely white: it is principally taken in the river Kowick near Aleppo.

ROSTRATED OPHIDIUM.

Ophidium Rostratum *O. rostro acuminato longissimo.*

Ophidium with extremely long sharp-pointed snout.

Ophidium aculeatum. *O. rostro acuminato. Lin. Syst. Nat. Gmel. p. 1147.*

Ophidium rostratum. *Block. 5. p. 60. t. 159. f. 2.*

Pentopthalmos. *Will. Ichth. Append. t. 10. f. 1.*

THIS species is much allied to the *O. Mastacembalus*, having a series of dorsal spines, and two or three immediately before the vent-fin. It is readily distinguished by the very great elongation of the upper lip, which terminates in a very sharp, slender snout: the head is small, and the body very long, and somewhat compressed: the gill-covers large, and the gill membrane lax: the lateral line is placed near the back: the dorsal fin commences at no great distance from the tail, but is not united with it as in the former species: the vent-fin is about the same length, and is situated in a correspondent manner beneath: the tail, which is distinct from both, is of an ovate form, and rather small: the pectoral fins are of moderate size, and of an oval shape: the number of dorsal spines is fourteen, and of those before the vent-fin two: the colour of this fish is rufous brown above, silvery on the sides and beneath: the dorsal fin is variegated with oblique dusky streaks, and is marked with from two to five round, black spots, each surrounded by a pale yellowish circle.

ODONTOGNATHUS. ODONTOGNATHUS.

Generic Character.

<i>Lamina</i> longa, denticulata, mobilis utrinque maxillæ superiori adnata.		<i>Mouth</i> furnished with a strong, moveable lamina or process on each side the upper jaw.
<i>Membr. branch. radiis</i> quin- que.		<i>Gill-membrane</i> five-rayed.

ACULEATED ODONTOGNATHUS.

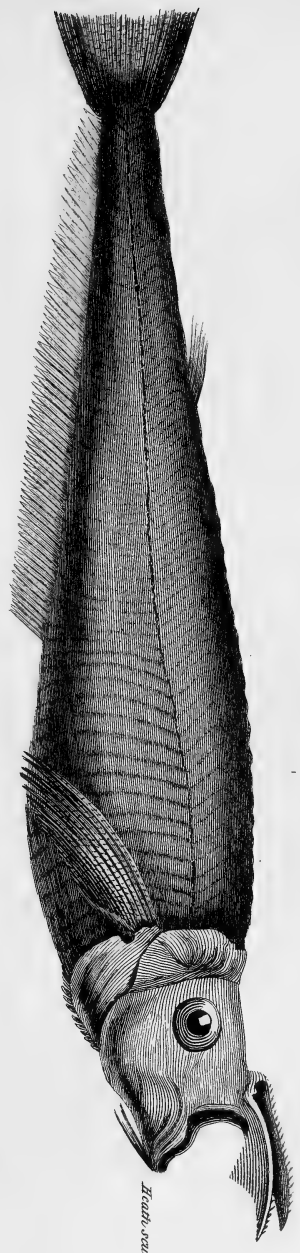
Odontognathus abdomine aculeato.

Odontognathus with aculeated abdomen.

L'Odontognathe aiguillonné. *Cepede pisc. 2. p. 222.*

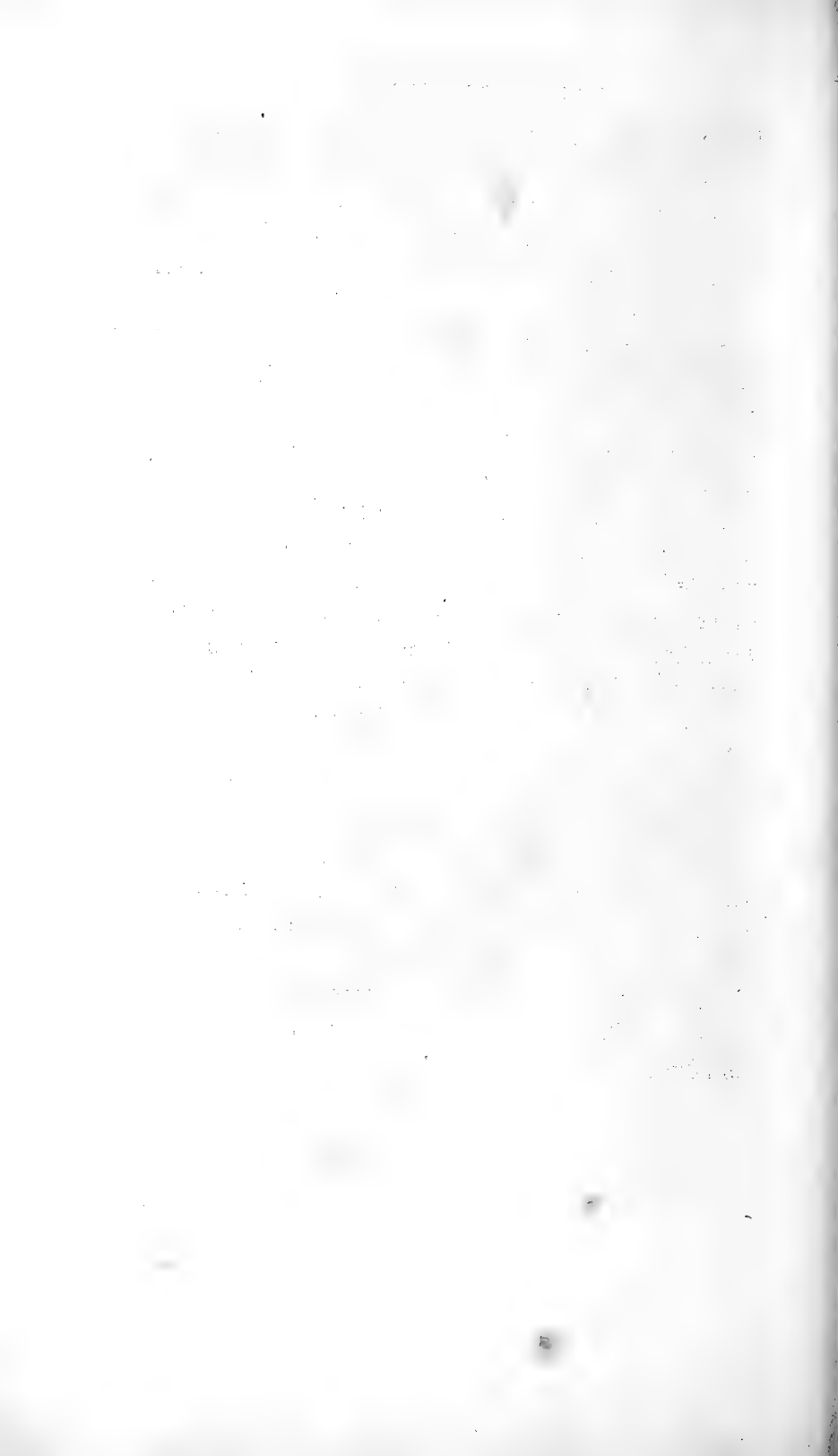
THE genus *Odontognathus*, instituted by *Cepede*, consists of a single species, of which the following is the description. The head, body, and tail are very compressed: the lower jaw, which is longer than the upper, is very much elevated towards the other when the mouth is closed, insomuch as to appear almost vertical, and is lowered somewhat in the manner of a drawbridge when the mouth is opened, when it appears like a small scaly boat, very transparent, furrowed beneath, and finely denticulated on the margins: this lower jaw, in the act of depression, draws forwards two flat, irregular laminæ of a scaly substance, a little bent at their posterior end, and

ACULEATED ODONTOGNATHUS.



Heath sculp.

1863 July 1 London. Published by G. Knappeler, West Street.



larger at their origin than at their tips, denticulated on their anterior margin, and attached, one on one side, and the other on the opposite, to the most prominent part of the upper jaw: when the mouth is closed again, these pieces apply themselves on each side to one of the opercula, of which they represent the exterior denticulated border: in the middle of these jaws is placed the tongue, which is pointed and free in its movements: the gill-covers, which are composed of several pieces, are very transparent at the hind part, but scaly and of a bright silver-colour in front: the gill membrane is also silvery, and has five rays: the breast is terminated below by a sharp carina furnished with eight crooked spines: the carina of the belly is also furnished with twenty-eight spines, disposed in two longitudinal ranges: the anal fin is very long, and extends almost as far as the base of the tail-fin, which is of a forked shape: the dorsal fin is placed on the tail, properly speaking, at about three quarters of the whole length of the animal, but it is extremely small. The general length of this fish is three decimetres, and its colour, so far as may be conjectured from specimens preserved for some time in spirits, is a bright silver. It is a native of the American seas, and is common about the coasts of Cayenne, where it ranks in the number of edible fishes.

COMEPHORUS. COMEPHORUS.

Generic Character.

<i>Caput</i> grande, rostro depresso.	<i>Head</i> large, with depressed snout.
<i>Os</i> amplum, dentibus minutis.	<i>Mouth</i> large, with small teeth.
<i>Corpus</i> elongatum, compressum.	<i>Body</i> elongated, compressed: the second dorsal fin furnished with several long naked rays.
<i>Pinna dorsalis secunda</i> radiis pluribus nudis elongatis.	

BAIKAL COMEPHORUS.

Comephorus Baikalensis. *C. pinna dorsali prima minima, secunda radiis cirrhiferis.*

Comephorus with the first dorsal fin very small, the second with many naked cirrhiform rays.

Callyonimus Baikalensis. *C. pinnis ventralibus nullis, dorsali prima minima, secunda radiis cirrhiferis.* *Lin. Syst. Nat. Gmel. p. 1153. Pall. it. 3. p. 707.*

THIS fish, arranged under the above-named genus by Cope, was by Pallas described as a species of *Callionymus*, and referred somewhat improperly to the *Jugular Fishes*. Its length is about a span; its shape slender, compressed, and gradually decreasing to the tail: its flesh very soft, and oily: the head large, and the mouth wide: the eyes large and black: the gill-membrane lax, with very remote

cartilaginous rays: the pectoral fins lax, very long, reaching half down the body, and furnished with very slender, stiff rays: the first dorsal fin is very small; the second larger, and furnished with fifteen elongated bristle-like rays stretching beyond the membrane: tail bilobate, of a stronger nature than the fins: lateral line nearer the back than the belly. Native of the lake Baikal, where it was discovered by Dr. Pallas. From its conformation it appears to be capable of swimming swiftly, and, perhaps, of occasionally springing out of the water somewhat in the manner of a flying-fish.

TRIURUS. TRIPLE-TAIL.

Generic Character.

<i>Rostrum</i> cylindricum.		<i>Snout</i> cylindric.
<i>Dens</i> unicus in utraque maxilla.		<i>Tooth</i> single in each jaw.
<i>Pinna</i> dorsi anique ultra caudam extensa.		<i>Fin</i> dorsal and anal extended beyond the tail.

COMMERSIONIAN TRIPLE-TAIL.

Triurus Commersonii. *T. orificio operculorum valvula clausili.*
Triple-tail with the branchial orifice closed at pleasure by a valve.

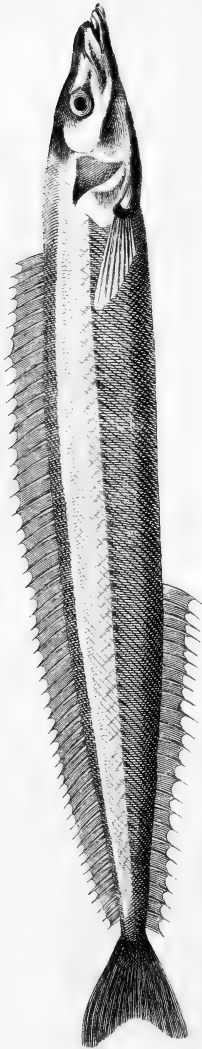
Le Triure Bougainvillien. *Cepede pisc.* 1. p. 201.

THE genus *Triurus* is instituted by Cope from a remarkable fish discovered by Commerson in the Indian seas, and of which the following is the description. Its general appearance and size is that of a herring: the body is much compressed, and covered with scales, so small and deeply seated, that, at first sight, the animal appears destitute of any: the head, which is compressed as well as the body, and a little flattened above, is terminated by a very lengthened snout in form of a strait tube, at the end of which is a round hole by way of mouth, and which the fish has no power of closing: in the bottom of this tube are the two bony jaws, each composed

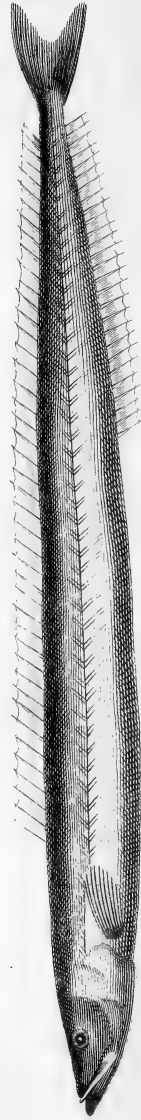
of a single incisive and triangular tooth, no others being observable either on the palate or tongue, which latter is very short, cartilaginous, but rather fleshy at the tip, which is rounded: the nostrils are very small, and placed nearer to the eyes than to the tip of the snout: the eyes are moderately large, slightly convex, not covered by the common skin, as in the Gymnotes and some other apodal fishes, and the irides are of a bright gold and silver colour: the gill-covers are situated beneath the skin, and are each composed of an osseous lamina in form of a sickle: the gill-membrane is five-rayed, and is attached to the head or body round its whole contour, in such a manner as to leave but a small orifice just beyond the snout; in which respect it appears analogous to the Syngnathi or Sea-Needles, as well as to the Callyonimi and some other fishes; but what renders the *Triurus* most remarkable is, a particularity of which we find no example in the whole class of Pisces: this consists in a soft, fleshy, lunated valvule, attached to the anterior edge of the branchial orifice, which it closes at the pleasure of the animal, by applying itself to the posterior edge: the body is not marked by any lateral line; the belly is terminated beneath by a sharp keel almost throughout its whole length, and the vent is situated at the extremity of the abdomen: the pectoral fins are small, delicate, transparent, of an almost triangular form when expanded, and have twelve or thirteen rays: the vent-fin has fifteen soft rays, and is directed backwards, its sharp end stretching almost as far as the posterior edge of the tail-fin, of

which it represents a continuation or appendix, and even seems to form a part: the dorsal fin is in the same manner a kind of auxiliary to the tail-fin: it is formed of an equal number of rays with the vent-fin, but is situated at a greater distance from the head, and is a third part longer, stretching backwards, not only as far as the tail, but beyond it; and as these two fins, viz. the dorsal and anal, reach that of the tail, it follows that the latter, at first view, appears as if composed of three distinct parts, and hence the name of *Triurus*, or *Triple-Tail*, applied to this fish by Commerson. In the mean time the real tail is so short that it appears more like a defective than a finished part, and is fringed at the edge by the terminations of the numerous, soft, divided rays of which it is composed. The colour of this fish is a brownish red, changing into silvery beneath the head, and into flesh-colour on the sides, belly, and tail, while a spot of clear white appears beyond the base of the pectoral fins. This curious genus was discovered by Commerson in the stomach of a species of *Scomber*; five individuals, perfectly uninjured by the action of the stomach, being taken out: several others were afterwards observed sporting on the surface of the sea. In some points this fish seems to bear a near alliance to the genus *Centrus*.





SAND LANCE.



Hill sculp.

AMMODYTES. LAUNCE.

Generic Character.

<i>Caput</i> compressum, corpore angustius: labium superius duplicatum: mandibula inferior angusta acuminata: dentes acerosi.	<i>Head</i> compressed, narrower than the body: upper lip doubled: lower jaw narrow, pointed: teeth small and sharp.
<i>Membrana branchiostega</i> radiis septem.	<i>Gill-membrane</i> seven-rayed.
<i>Corpus</i> teretiusculum squamis vix conspicuis: cauda distincta.	<i>Body</i> long, roundish, with very small scales: tail distinct.

SAND LAUNCE.

Ammodytes Tobianus. *A. maxilla inferiore longiore.*

Launce with the lower jaw longer than the upper.

Ammodytes Tobianus. *Lin. Syst. Nat. p. 430.*

Ammodytes Gesneri. Sand-Eel. *Will. ichth. p. 113.*

Sand Launce. *Penn. Brit. Zool. 3. p. 137. pl. 25.*

THE Launce, so named from its shape, is a native of the northern parts of Europe, commonly frequenting the coasts, and lying imbedded in the sand, in which it conceals itself at the depth of about a foot, with its body rolled into a spiral form. In this situation it is either dug out, or drawn up by means of a hook contrived for that purpose,

and used by the fishermen as a bait: it is also considered as a delicate article of food. The general length of the Launce is from eight to ten inches: its form slightly square, being rather rounded on the sides, and somewhat flattened above and beneath: the head is small and taper, and the under jaw much longer than the upper: the mouth is destitute of teeth, but at the entrance of the throat are two rough oblong bones for retaining the prey: the openings of the gills are large, and the opercula consist of four laminae: the nostrils are double, and placed midway between the eyes and the mouth: along the back runs a furrow, capable of receiving the dorsal fin: the lateral line is strait, running along the middle of the body, and besides this there is another near the back, and a third near the belly: the dorsal fin runs almost the whole length of the back, and is very narrow, and furnished with soft rays: the pectoral fins are small; the anal fin runs from the vent to the tail, and is narrow like that of the back: the tail is slightly forked, but the lobes rounded at their extremities: the general colour of the body is blue or greenish towards the back, and the sides and belly silvery, but sometimes of a yellowish cast, and over the whole fish are commonly seen numerous oblique fibres or markings on the surface of the skin. The Launce lives on worms, water-insects, and small fishes, and even occasionally on those of its own species, since Dr. Bloch informs us, that on opening two individuals, he found a young one of about two inches long in the stomach of each. It is itself preyed upon by the

larger fishes, and particularly by the Mackarel. The Launce spawns in the month of May, depositing its eggs in the mud, near the edges of the coast. It is remarkable that most of the older ichthyologists describe this fish as without scales, their small size apparently causing them to be overlooked. The swimming bladder is wanting, so that the animal is calculated only for a littoral residence.

LEPTOCEPHALUS. MORRIS.

Generic Character.

<i>Caput</i> parvum, angustum.		<i>Head</i> small, narrow.
<i>Corpus</i> tenuissimum, compressum.		<i>Body</i> very thin, compressed.
<i>Pinnæ</i> pectorales nullæ.		<i>Pectoral fins</i> none.

ANGLESEA MORRIS.

Leptocephalus Morrisii. *L. corpore tenuissimo.*

Leptocephalus. *Gronov. Zoophyl. No. 409. t. 13. f. 3.*

Anglesea Morris. *Penn. Brit. Zool. 3. p. 139. pl. 25.*

IT was in the British Zoology of Mr. Pennant that this small fish, the only one of its genus yet observed, made its first public appearance under the name of the Morris, having been first discovered on the coast of Anglesea by a gentleman of that name. Gronovius, to whom Mr. Pennant had some time before communicated it, distinguishes it by the title of *Leptocephalus*. The description given by Mr. Pennant is as follows: The length was four inches; the head very small; the body compressed sideways; extremely thin, and almost transparent; about the tenth of an inch thick, and in the deepest part about one third of an inch: towards the tail it grew more slender, and ended in a point: towards



Thraich snipe.

ANGLESEA MORRIS.



the head it sloped down, the head lying far beneath the level of the back: the eyes large; the teeth in both jaws very small: the lateral line strait; the sides marked with oblique strokes that met at the lateral edge: the aperture to the gills large: it wanted the pectoral, ventral, and caudal fins: the dorsal fin was extremely low and thin, extending the whole length of the back very near the tail: the anal fin was of the same delicacy, and extended to the same distance from the anus.

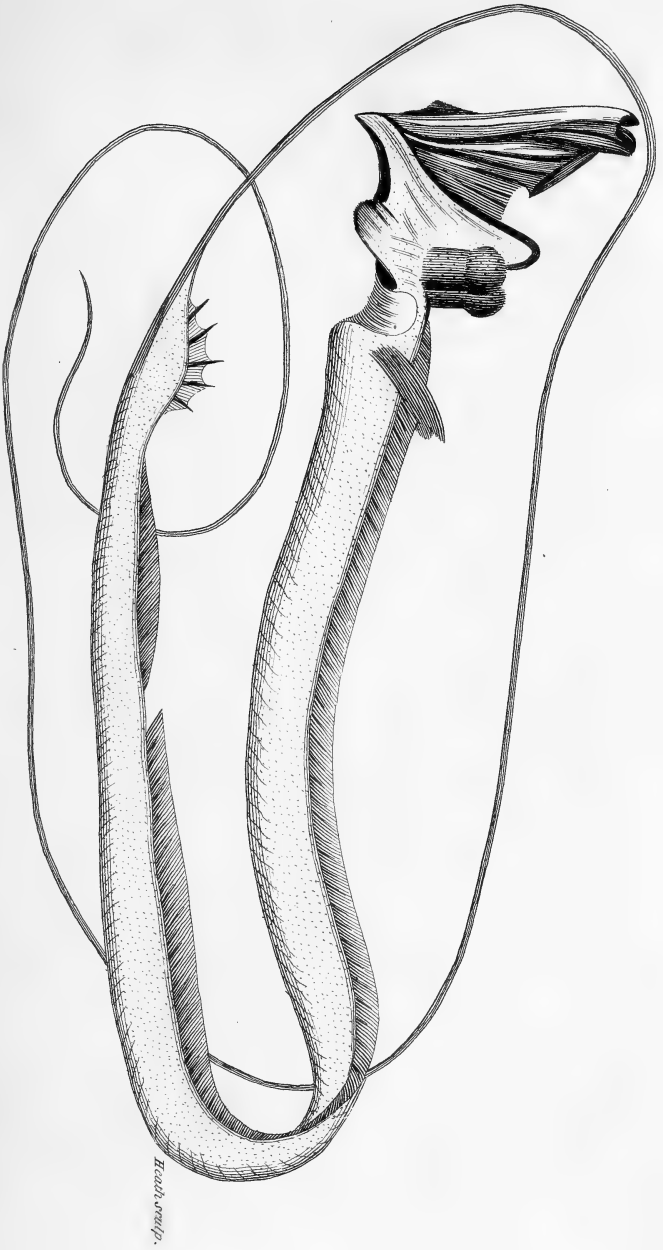
Gronovius observes, that on account of the extreme tenuity of the body, the joints of the vertebræ appear to project so distinctly along the sides that it might almost pass, on a cursory view, for a species of *Tænia* or tape-worm: the vertebral joints, in some measure, expressing the papillary foramina on the bodies of those animals.

STYLEPHORUS. STYLEPHORUS.

Generic Character.

<i>Oculi</i> pedunculati, seu cylindro crasso brevi impositi.	<i>Eyes</i> pedunculated: standing on a short thick cylinder.
<i>Rostrum</i> productum, sursum spectans, versus caput membrana interjecta retractile.	<i>Snout</i> lengthened, directed upwards, retractile towards the head by means of a membrane.
<i>Os</i> terminale, edentulum?	<i>Mouth</i> without teeth?
<i>Branchiæ</i> trium parium sub jugulo sitæ.	<i>Branchiæ</i> three pair beneath the throat.
<i>Pinnæ</i> pectorales parvæ: dorsalis longitudine dorsi: caudalis brevis, radiatospinosa.	<i>Fins</i> pectoral small: dorsal the length of the back: caudal short, with spiny rays.
<i>Corpus</i> longissimum, compressum.	<i>Body</i> very long, compressed.

THIS highly singular genus was first described in the year 1788, from a specimen then introduced into the Leverian Museum, and figured in the first volume of the Linnæan Transactions. I shall therefore repeat my former description from the above-mentioned work, and have only to add, that the genus still consists of a single species, no other having been yet discovered.



CHORDATED STYELPHORIDS.



The first part of the document
 describes the general situation
 and the main objectives of the
 project. It is followed by a
 detailed description of the
 methodology used in the study.
 The results of the study are
 presented in the following
 sections, and a conclusion is
 drawn at the end of the
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CHORDATED STYLEPHORUS.

Stylephorus Chordatus. *S. argenteus, filo caudali longissimo.*

Silvery Stylephorus, with extremely long caudal thread.

Stylephorus chordatus. *Lin. Trans. vol. 1. p. 90. pl. 6. Naturalist's Miscellany, vol. 8. pl. 274.*

THE head of this extraordinary animal bears some distant resemblance to that of the genus *Syngnathus*, and its true structure cannot so easily be described in words as conceived by the figure. The rostrum or narrow part, which is terminated by the mouth, is connected to the back part of the head by a flexible leathery duplicature, which permits it to be either extended in such a manner that the mouth points directly upwards, or to fall back, so as to be received into a sort of case formed by the upper part of the head. On the top of the head are placed the eyes, which are of a form very nearly approaching to those of the genus *Cancer*, except that the columns or parts on which each eye is placed are much broader or thicker than in that genus: they are also placed close to each other, and the outward surface of the eye, when magnified, does not shew the least appearance of a reticulated structure. The colour of the eyes, as well as of the columns on which they stand, is a clear chesnut brown, with a sort of coppery gloss. Below the head, on each side, is a considerable compressed semicircular space, the fore part of which is bounded by the covering of the gills, which covering seems to consist of a single membrane, of a moderately strong

nature. Beneath this, on each side, are three small pair of branchiæ. The body is extremely long and compressed very much, and gradually diminishes as it approaches the tail, which terminates in a string or process of an enormous length, and finishes in a very fine point. This string, or caudal process, seems to be strengthened throughout its whole length, or at least as far as the eye can trace it, by a sort of double fibre or internal part. The pectoral fins are very small, and situated almost immediately behind the cavity on each side the thorax. The dorsal fin, which is of a thin and soft nature, runs from the head to within about an inch of the tail, when it seems suddenly to terminate, and a bare space is left of about a quarter of an inch. I am, however, not altogether without my doubts whether it might not, in the living animal, have run on quite to the tail, and whether the specimen might not have received some injury in that part. From this place commences a smaller fin which constitutes part of the caudal one. The caudal fin itself is furnished with five remarkable spines, the roots or originations of which may be traced to some depth in the thin part of the tail. The general colour of this fish is a rich silver, except on the flexible part belonging to the rostrum, which is of a deep brown: the fins and caudal process are also brown, but not so deep as the part just mentioned. There is no appearance of scales on this fish. From the very singular figure and situation of the eyes I have given it the generic name of *Stylephorus*, and as the trivial name cannot be taken from any

circumstance more properly than from the extraordinary thread-like process of the tail, I have applied to it the title of *chordatus*. It is a native of the West-Indian seas, and was taken between Cuba and Martinico, near a small cluster of little islands about nine leagues from shore, where it was observed swimming near the surface. The whole length of this uncommon animal, from the head to the extremity of the caudal process, is about thirty-two inches, of which the process itself measures twenty-two. The plate represents it in its natural size.

TRICHIURUS. TRICHIURE.

Generic Character.

<i>Caput</i> porrectum, operculis lateralibus.	<i>Head</i> stretched forwards, with lateral gill-covers.
<i>Dentes</i> ensiformes, apice semisagittati.	<i>Teeth</i> ensiform, semisagittate at the tips.
<i>Membrana</i> branchiostega radiis septem.	<i>Gill-Membrane</i> seven-rayed.
<i>Corpus</i> compresso - ensiforme, cauda subulata aptera.	<i>Body</i> ensiform, compressed, with subulate, finless tail.

SILVER TRICHIURE.

Trichiurus Argenteus. *T. argenteus maxilla inferiore longiore.*

Silvery Trichiure, with the lower jaw longer than the upper.

Trichiurus Lepturus. *Lin. Syst. Nat. p. 409.*

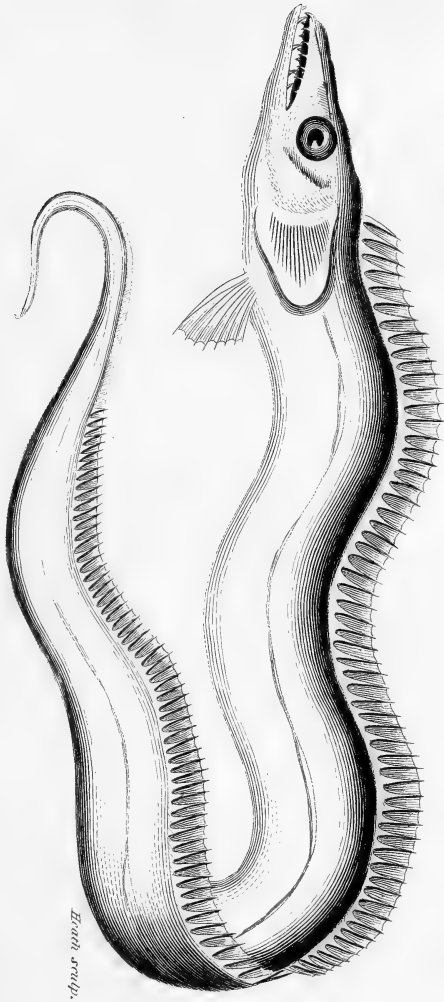
Gymnogaster argenteus compressus, cauda attenuata impinna.

Brown Jam. p. 444. t. 45. f. 4.

Trichiurus maxilla inferiore longiore, dentibus magnis. *Bloch.*

ichth. 5. p. 55. t. 158.

THIS fish is equally distinguished by the singularity of its shape, and brilliancy of its colour: the body is extremely compressed, of a great length, and gradually tapers, as it approaches the extremity, till at length it terminates in a very fine point: the whole fish, except on the fins, is of the brightest silver-colour: the head is narrow; the mouth very



Each sculp.

SILVER TRICHIPTERE.



wide, the lower jaw longer than the upper, and furnished with differently sized teeth, the longest of which are barbed at the tips by a sharp descending process or hook on one side: the tongue is smooth, longish, and triangular: in the throat are two rough bones: the eyes are vertical, approximated, and large: the lateral line is of a gold-colour, and, commencing behind the gill-covers, is continued to the tip of the tail: the dorsal fin, which is of moderate width, transparent, and of a yellowish tinge, commences almost immediately behind the head, and runs to within a very small distance of the extremity of the tail, at which part it degenerates into a mere membrane, being strongly radiated in other parts: the pectoral fins are rather small, and of an ovate shape: there is, properly speaking, no direct vent-fin, but a series of very small naked spines or rays, to the number of about 110, are continued from the vent, which is situated about the middle of the body, to near the tip of the tail. The general length of this fish is from two to three feet: it is said to be of a very voracious nature, swims with rapidity, and in the pursuit of its prey sometimes leaps into small vessels which happen to be sailing by. It is a native of the rivers and larger lakes of South America, and is considered as an eatable fish. It is also said to be found in some parts of India, and in China.

ELECTRICAL TRICHIURE.

Trichiurus Electricus. *T. fuscus, mandibulis æqualibus.*

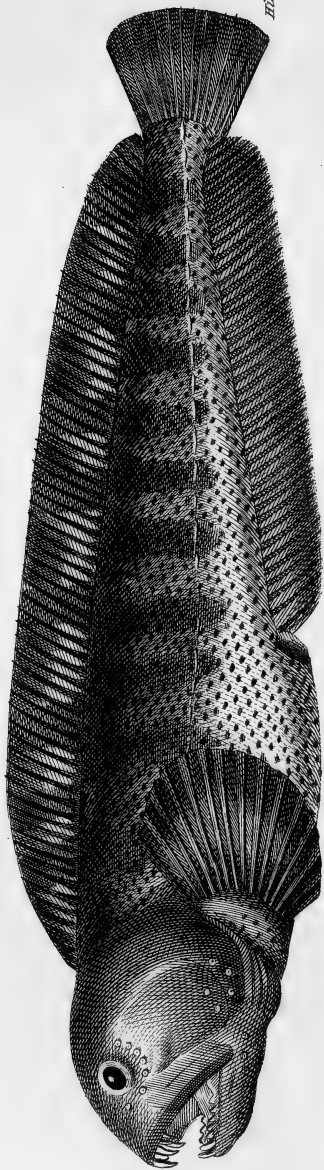
Brown Trichiure with jaws of equal length.

Trichiurus electricus. *T. mandibulis æqualibus. Lin. Syst.*

Nat. Gmel. p. 1142.

Anguilla Indica. *Will. ichth. append. t. 3. f. 3.*

THIS species, which seems nearly equal in size to the preceding, differs not only in the conformation of the jaws, which are both of equal length, but in the form of its teeth, which are all very minute: the tail is not so extremely slender and sharp as in the former, and the colour of the whole animal is pale brown, variegated with spots of a deeper cast. It is a native of the Indian seas, and is said to possess a degree of electrical power.



Will. Sculp.

COMMON WOLF-FISH.

ANARHICHAS. WOLF-FISH.

Generic Character.

<p><i>Caput</i> obtusiusculum.</p> <p><i>Dentes primores</i> supra infraque conici, divergentes, sex pluresve.</p> <p><i>Molares inferiores</i> palatique rotundati.</p> <p><i>Membr: branchiostega</i> radiis sex.</p> <p><i>Corpus</i> teretiusculum. Pinna caudæ distincta.</p>		<p><i>Head</i> rather obtuse.</p> <p><i>Fore-Teeth</i> both above and below conical, divergent, strong, six or more in number.</p> <p><i>Grinders</i> in the lower jaw and palate rounded.</p> <p><i>Gill-Membrane</i> six-rayed.</p> <p><i>Body</i> roundish. Tail-fin distinct.</p>
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COMMON WOLF-FISH.

Anarhichas Lupus. *A. lividus, fasciis transversis fuscis.*

Livid Wolf-Fish, with transverse brown bands.

Anarhichas Lupus. *Lin. Syst. Nat. p. 430.*

Anarhichas dentibus osseis. *Bloch. 3. p. 18. t. 74.*

Ravenous Wolf-fish. *Penn. Brit. Zool. 3. p. 157. pl. 24.*

I KNOW not that any thing material can be added to the descriptions of this fish by Mr. Pennant and Dr. Bloch. The former, in his *British Zoology*, informs us that it is confined to the northern regions of the globe, being met with in the seas of Green-

land, those of Iceland and Norway, and in some parts of the British coasts. It is a most fierce and ravenous fish, and when taken fastens on any thing within its reach: the fishermen, dreading its bite, endeavour, as soon as possible, to beat out its fore-teeth, and then kill it by striking it on the head: Schonfelde relates that its bite is so hard that it will seize on an anchor and leave the marks of its teeth behind; and we are informed by Steller that one which he saw taken on the coast of Kamtskatka seized with great violence a cutlass with which it was attempted to be killed, and broke it in pieces as if it had been made of glass. It feeds almost entirely on crustaceous animals and shell-fish, viz. crabs, lobsters, prawns, muscles, scallops, large whelks, &c. &c. these it grinds to pieces with its teeth, and swallows with the shells. It grows to a large size, being occasionally found on the British coasts of the length of four feet, but on the more northern coasts of Europe has been seen of the length of seven* feet: the head is a little flattened on the top; the nose blunt, the nostrils very small; the eyes small and placed near the end of the nose: the irides are pale yellow: the teeth are very remarkable, and finely adapted to its way of life: the fore-teeth are strong, conical, diverging a little from each other, and stand far out of the jaws: they are commonly six above, and as many below, though sometimes there are only five in each jaw: these teeth are supported withinside by a row of smaller

* According to Dr. Gmelin it has been found of the length of fifteen feet.

teeth, making the number in the upper jaw seventeen or eighteen, and in the lower eleven or twelve: the sides of the under jaw are convex inwards, which greatly adds to their strength, and at the same time allows room for the large muscles with which the head of this fish is furnished: the molares or grinders of the under jaw are higher on the outer than on the inner edges, which inclines their surfaces inwards: they join the canine teeth in that jaw, but in the upper are separate from them: in the centre are two rows of strong flat teeth, fixed on an oblong basis, upon the bones of the palate and nose: these and the grinding teeth are often found fossil, and in that state have been called *Bufonites* or *Toad-Stones*: they were formerly much esteemed for imaginary virtues, and were set in gold and worn as rings: the two bones that form the under jaw are united before by a loose cartilage, which mechanism admitting a motion from side to side, most evidently contributes to the design of the whole; viz. a facility of breaking, grinding, and comminuting its testaceous and crustaceous food: at the entrance of the gullet, above and below, are two echinated bones; these are very small, being the less necessary, as the food is in a great measure comminuted in the mouth by the aid of the grinders: the body is long, and a little compressed sideways: the skin smooth and slippery: the colour is an obscure livid brown, with several deeper transverse bands, which in some individuals are narrower and more irregular than in others: the pectoral fins are moderately large, rounded, and placed very near

the head: the dorsal fin commences almost immediately behind the head, and is continued as far as the tail, which is small and rounded: the vent-fin commences at a little more than half the distance of the whole animal from the head, and is continued, like the dorsal, as far as the tail.

Dr. Bloch observes that the skin of this animal is in reality beset with small scales, though the fish is by the generality of ichthyologists described as scaleless; an error arising from their small size, and their deep situation on the skin: they are thin, and placed at some distance from each other: the body is also marked by a lateral line, though described by Mr. Pennant as destitute of that part. Of three specimens of this fish examined by Dr. Bloch, one had six rows of grinders in the upper jaw, and as many in the lower; another had six rows above, and four below; while a third had five above and three below.

Notwithstanding the ferocity of this fish, which is as dreadful to the small inhabitants of the water as the wolf is to those on land, it is said to be sometimes attacked and destroyed by an enemy of far inferior size and strength; viz. the Lump-Fish (*Cyclopterus Lumpus*), which fastens itself on its neck, and adheres immoveably; tormenting it in such a manner as to cause its death.

The Wolf-Fish commonly frequents the deep parts of the sea, and in spring-time approaches the coasts in order to deposit its spawn among the marine plants, &c. the ova are about the size of peas; and the young, according to Mr. Pennant,

are of a greenish cast, like that of the sea-wrack, among which they reside for some time after their birth.

The Wolf-Fish is taken both in nets and by the line, but much more rarely by the latter method, as it does not easily take the bait. Though the flesh is tolerable, yet from the forbidding appearance of the animal, it is rarely eaten in Europe, except by the fishermen: the Greenlanders however eat it, both fresh and dried, and make convenient satchels of the skin, in which they keep their utensils of various kinds.

The *Anarhichas strigosus*, mentioned in Dr. Gmelin's edition of the *Systema Naturæ*, seems to be nothing more than a variety in which the dusky bands of the body are narrower and somewhat less regular than usual, as in the specimen engraved in the *British Zoology*.

PANTHER WOLF-FISH.

Anarhichas Pantherinus. *A. flavus fusco maculatus*.

Yellow Wolf-Fish, spotted with brown.

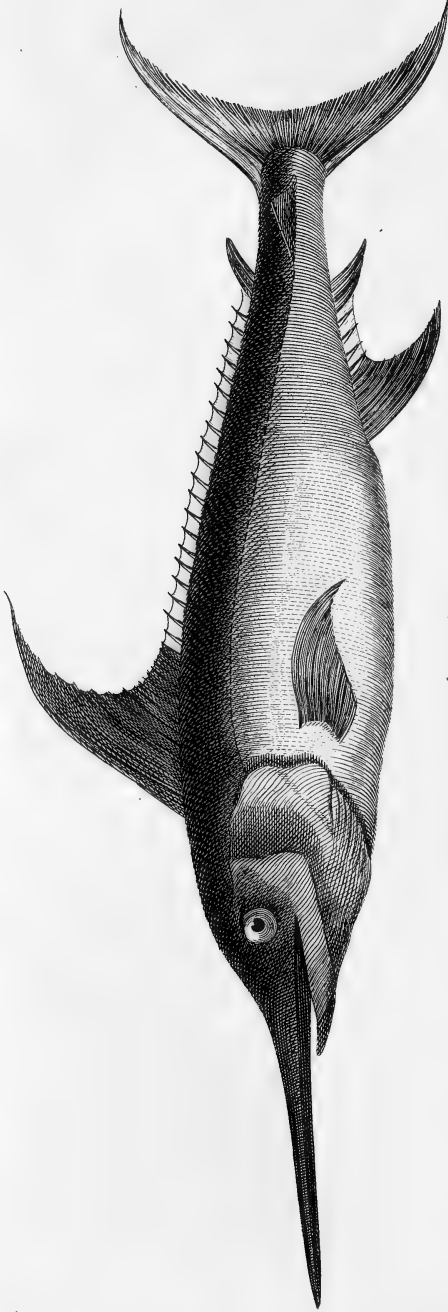
Anarhichas pantherinus. *A. maculis per totum corpus rotundis fuscis*. *Lin. Syst. Nat. Gmel. p. 1144. Act. Petrop. 1781. p. 271. t. 6.*

IN its general appearance this is much allied to the preceding species, but differs greatly in colour, being of a deep yellow or fulvous, variegated on all parts with pretty numerous, round, deep brown or blackish spots of different sizes, the largest of

which are those on the back, upper part of the sides, and dorsal fin : the whole skin is of the same mucous or slippery nature as in the common Wolf-Fish, and is every where covered with small points or specks in place of scales : the head is roundish ; the lips doubled ; the eyes rather large, and the general disposition of the teeth the same as in the preceding : the length of such specimens of this fish as have hitherto been observed is about three feet or rather more : in other particulars it agrees with the common species. Native of the Northern seas.



Heath sculp.



COMMON SWORD - FISH.

XIPHIAS. SWORDFISH.

Generic Character.

<i>Caput</i> maxilla superiore terminatum rostro ensiformi.	<i>Head</i> with the upper jaw terminating in a sword-shaped snout.
<i>Os</i> edentulum.	<i>Mouth</i> without teeth.
<i>Membr. branch.</i> radiis octo.	<i>Gill-Membrane</i> eight-rayed.
<i>Corpus</i> teretiusculum, alepidotum.	<i>Body</i> roundish, without scales.

COMMON SWORDFISH.

Xiphias Gladius. *X. pinna dorsali postice attenuata.*

Swordfish with the dorsal fin attenuated at the hind part.

Xiphias Gladius. *Lin. Syst. Nat. p. 432.*

Xiphias. *Gesner. Will. Jonst. &c.*

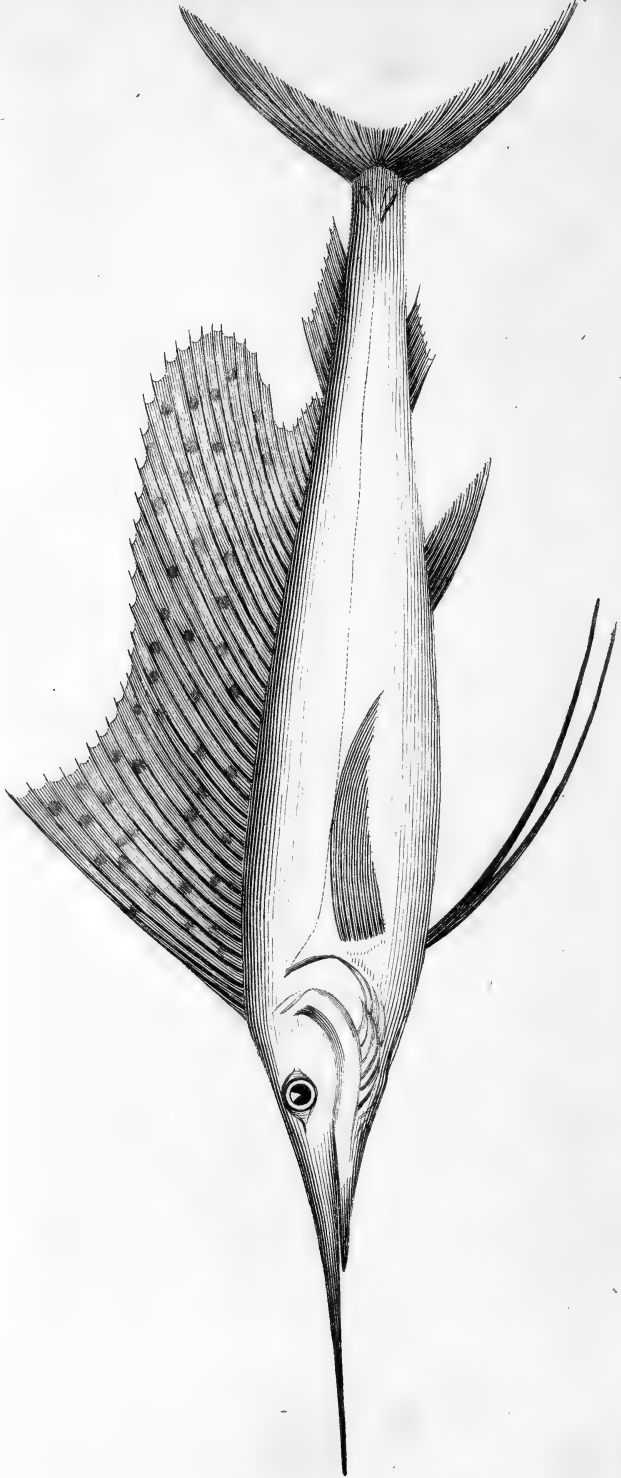
Gladius. *Aldrov. l. 3. c. 21. p. 332.*

Sicilian Sword-Fish. *Penn. Brit. Zool. 4. p. 141. pl. 26.*

THE Swordfish, which is a native of the Mediterranean, and is mostly found in the Sicilian sea, grows to a very large size, sometimes measuring twenty feet in length, and is of an active and predacious disposition, feeding on the smaller kind of fishes, which it kills by piercing with its sword-shaped snout. The body is long, round, and gradually tapers towards the tail: the head flattish, the mouth wide, both jaws ending in a point, but the upper stretched to a great distance beyond the

lower: this part, which is commonly called the sword, is flattish above and beneath, and sharp on the sides: it is of a bony substance, covered by a strong skin or epidermis: down the middle of the upper part runs an impressed line or furrow, and three similar ones on the lower surface: the tongue is free or unconnected with the palate, and is of a strong texture, and in the throat are certain rough bones: the nostrils are double, and seated near the eyes, which are moderately large, and protuberant: the body is covered by a thin skin, having a thick fatty membrane lying beneath: the lateral line is placed near the back, and is formed of a series of longish black specks: the dorsal fin is very high at its commencement, and sinking suddenly, becomes very shallow, and is continued to within a small distance from the tail, terminating in an elevated process: the vent-fin is placed nearly opposite this part beneath, and is moderately small, and much wider at each extremity than at its middle: the pectoral fins are rather small, and of a lanceolate shape: the tail is large and crescent-shaped, and on each side the body, immediately before the tail, is a strong finny prominence or appendage. The general colour of the Swordfish is brown, accompanied by a deep steel-blue cast on the head and upper parts, and silvery white on the sides and abdomen.

Mr. Pennant observes that the ancient method of taking the Swordfish, particularly described by Strabo, agrees exactly with that practised by the moderns at the present day. A man ascends one



Head. s.

BROAD-FINNED SWORD-FISH.

of the cliffs that overhang the sea, and as soon as he spies the fish gives notice, either by his voice or by signs, of the course it takes. Another person, stationed in a boat, climbs up the mast, and, on seeing the fish, directs the rowers to it. As soon as he thinks they are got within reach, he descends, and taking a spear in his hand, strikes it into the fish, which, after wearying itself with its agitations, is seized and drawn into the boat. It is much esteemed by the Sicilians, who cut it in pieces and salt it: this process was anciently performed particularly at the town of *Thurii* in the bay of *Tarentum*, and hence the fish was called *Tomus Thurianus**.

The Swordfish is occasionally found not only in the Mediterranean but in the Northern seas, and sometimes in the Pacific: it is probable however that it has been often confounded with a different species more common in that ocean.

BROAD-FINNED SWORDFISH.

Xiphias Platypterus. *X. pinna dorsali latissima, appendicibus pectoralibus acuminatis longissimis.*

Swordfish with extremely broad back-fin, and very long sharp-pointed thoracic appendages. *Nat. Miscell. vol. 3. pl. 88.*

Guebucu. *Marcgr. Bras. l. 4. c. 15. p. 71.*

Scomber Gladius. *S. rostro ensiformi. Bloch. 10. p. 69. t. 345.*

IN the appearance of the long and sharp-pointed process of the upper jaw this species is very nearly

* *Plin. l. 32. c. 11.*

allied to the common Swordfish, but differs in other striking particulars. It is found of the length of twenty feet, and even sometimes much longer. It was first described by Marcgrave in his *Natural History of Brasil*, who has illustrated his description by a figure, which though not possessing any degree of elegance, is yet sufficient to ascertain the animal. The general colour of this fish is a silvery blueish white, except on the back, head, tail, and fins, which in the living animal are of a deep-blue, fading into brown in the dried specimens, one of which is preserved in the British Museum, to which collection it was presented by Sir Joseph Banks, Bart. President of the Royal Society. Some years ago a letter was sent to the President from the captain of an East-Indiaman, accompanied by an account of an astonishing instance of the powerful strength which this fish occasionally exerts; the bottom of the ship having being pierced through by a fish of this species in such a manner that the sword or snout was completely imbedded or driven through almost to its base; the animal having been killed by the violence of the effort. A most singularly fortunate circumstance for the preservation of the vessel, which, had the fish been enabled to have withdrawn its snout, must inevitably have foundered in consequence of the leak. The wood, together with the sword imbedded in it, is now in the British Museum.

This fish is found not only in the Brazilian and East-Indian seas, but also in the Northern ocean. It is said to be a great enemy to whales, with

which it is reported to have frequent combats. It is remarkable that Pliny mentions the circumstance of the Swordfish being able to transfix vessels; which has generally been regarded as one of those exaggerations so frequent in the works of the ancient naturalists: but since the present fish is well known to possess this power, (several other equally well attested accounts having been received within these few years), it is surely no improbable supposition that Pliny, though not conscious of the difference, in reality spoke of this very species, which at that time was doubtless confounded with the common Swordfish.

In the arrangement of this animal I have ventured to differ from Dr. Bloch, who, notwithstanding its general appearance, its sword-shaped snout, and other particulars in which it evidently proclaims itself a genuine *Xiphias*, has placed it among the *Thoracic Fishes* as a species of the genus *Scomber*, considering the long processes beneath the breast as a kind of pectoral fins. Dr. Bloch seems also to have considered the finny processes above and below the tail, together with the prominences on each side that part, as sufficient to justify his classification of the animal. It may be added that Piso, in his description of this fish, compares its viscera to those of the Tunny.

Dr. Bloch informs us that when this species does not exceed the length of about four feet, it is considered as an eatable fish, but is too coarse when it exceeds that length.

SHORT-SNOUDED SWORDFISH.

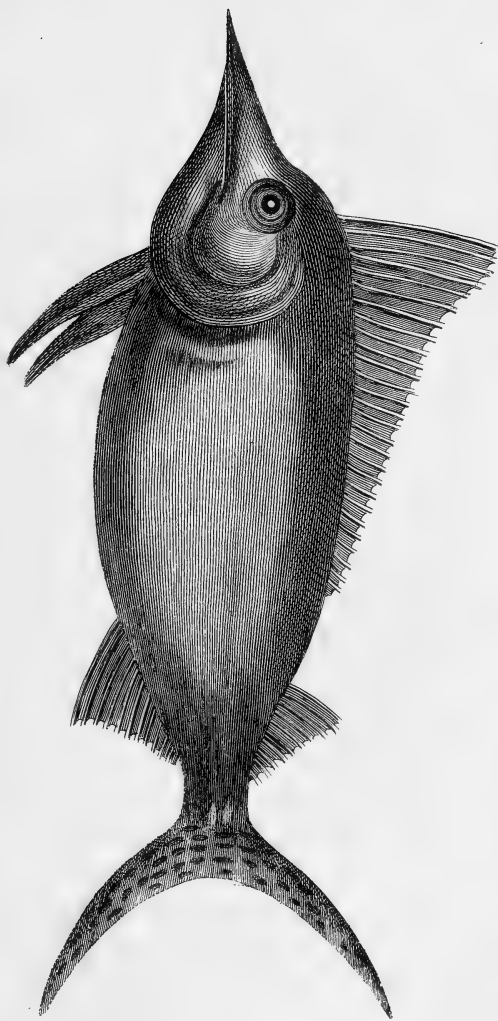
Xiphias Makaira. *X. nigricans, rostro mediocri, cauda utrinque tuberculis duobus osseis.*

Blackish Swordfish, with snout of middling length, and two bony tubercles on each side the tail.

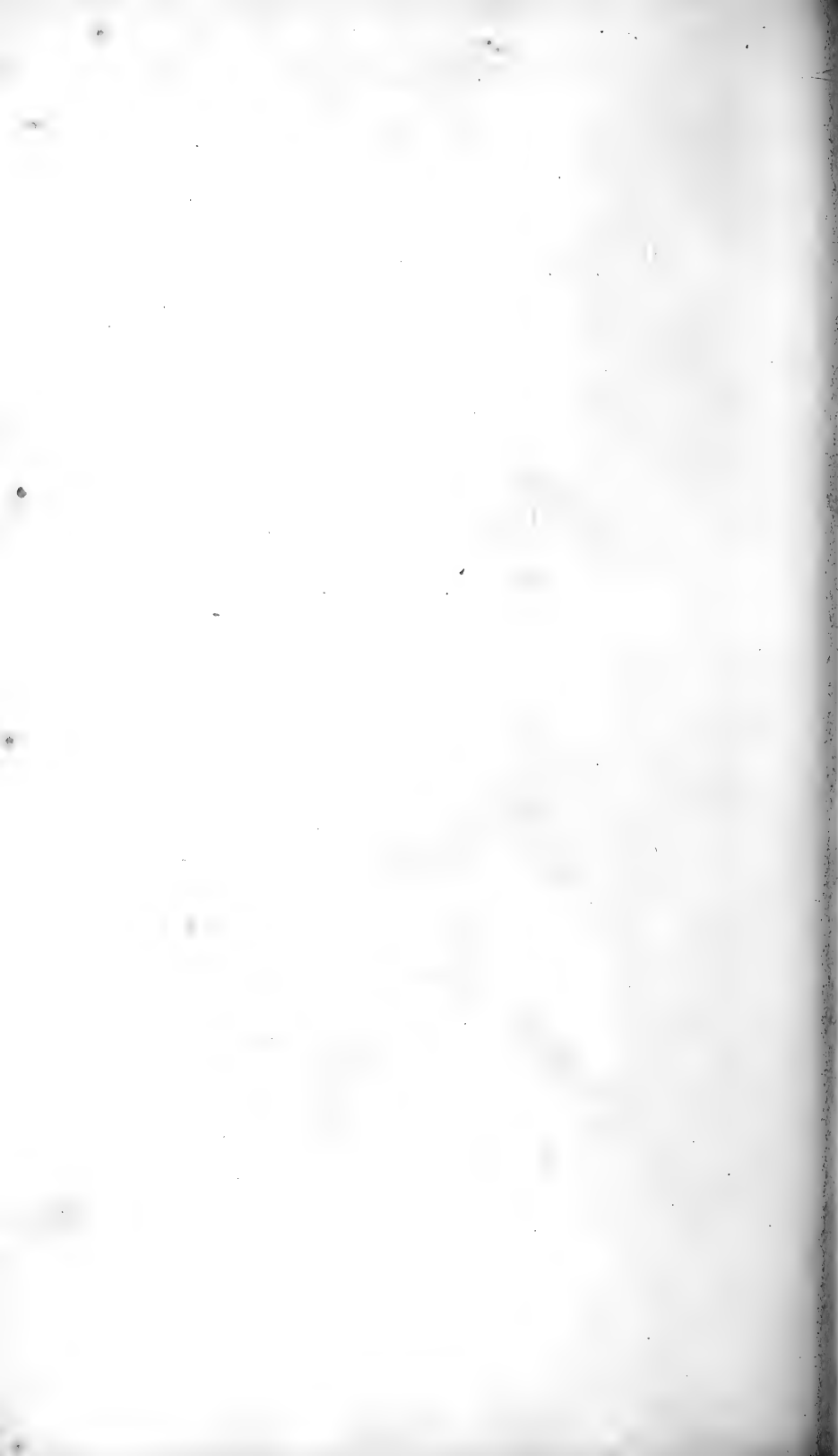
Le Makaira noiratre. *Cepede pisc. 4. p. 689. pl. 13. f. 3.*

THIS species, which has but lately been discovered, is described by Cedepe under the title of *Makaira*. Its general appearance resembles that of the common Swordfish: it seems also to equal that species in size; the principal difference consisting in the much shorter and thicker appearance of the sword-like process of the upper jaw in proportion to the rest of the animal: the lower jaw is about half the length of the upper, and the mouth is destitute of teeth: the eyes are large and round: the gill-covers rounded behind, and composed each of two pieces: the pectoral fins are very narrow and about the same length with the upper jaw: the first dorsal fin is large, and gradually sinks as it passes down the back: it is capable of being so far depressed or lowered at the pleasure of the animal, as to rise but little above the outline of the back: beyond this, at a small distance from the tail, is a second fin, of nearly similar shape, but of much inferior size, and the vent-fin, which is placed opposite to this, is but little larger: the tail is large and crescent-shaped, and is marked by numerous black spots, and on each side the tail are two oblong

SHORT-SNOOTED SWORD-FISH.



Xiphias gladius.



sharpish prominences or bony tubercles. This fish was cast on the isle of Rhe, near Rochelle in France. Its length was 330 French centimetres, and its weight 365 kilogrammes: its colour was blackish: it was eaten by many of the inhabitants of Rochelle, and was found to be tolerable food, though somewhat dry: the flesh was white: on inspecting the mouth it was observed that the palate was extremely rough.

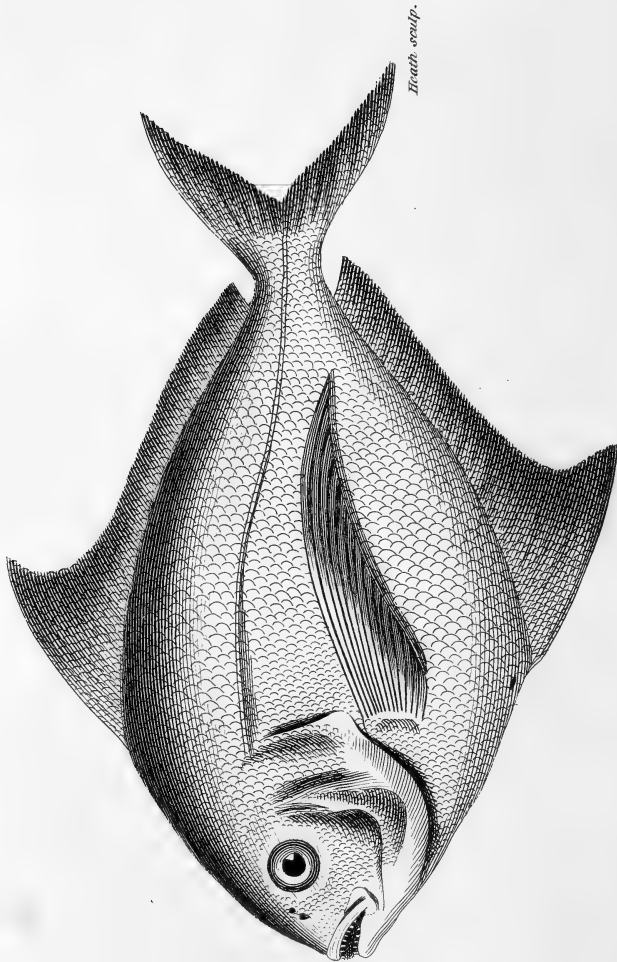
It is probable, as the Count de Ceppe observes, that this species has hitherto been confounded with the common Swordfish, and that it is an inhabitant of the same seas.

ROUND-SNOUDED SWORDFISH.

DESCRIBED by Ceppe from the sword or snout, preserved, with the fore-part of the head, in the Paris Museum. It differs from the snout of the common Swordfish in being convex above, instead of flattish, as in that species, and in having the sides perfectly rounded or incapable of cutting: it is also nearly cylindric in its shape, whereas that of the common Swordfish is much depressed: it has three longitudinal furrows above, and one beneath: (the Count de Ceppe however seems mistaken in supposing that there are no furrows on that of the common Swordfish, though they are differently placed from those of the present): the skin with

which it is covered is of a very rough or shagreen-like surface; the tubercles being much larger than on the common species, and on the under surface or mouth, they are prolonged into a kind of small, curved teeth, lying in a reversed direction.





STRIPED STROMAT.

STROMATEUS. STROMAT.

Generic Character.

<i>Caput</i> compressum.		<i>Head</i> compressed.
<i>Dentes</i> in maxillis, palato.		<i>Teeth</i> both in jaws and palate.
<i>Corpus</i> rhombeo-ovatum, compressum, lubricum.		<i>Body</i> rhombic-ovate, compressed, lubricous.

STRIPED STROMAT.

Stromateus Fiatola. S. Argenteo-cærulescens, fasciis undulatis transversis.

Blueish-silvery Stromat, with transverse undulated bands.

Stromateus Fiatola. S. subfasciatus. Lin. Syst. Nat. p. 432.

Fiatola Romæ dicta. Gesn. Jonst. Will. &c.

THIS species, though a native of the Mediterranean, seems to be somewhat less distinctly known than the rest of the genus. It is described by Belon, Aldrovandus, Willughby, and others, as of a broad and flat form, but thin, the body being much compressed laterally: its colour on the upper parts is blue, of the sides and abdomen silvery; the whole body being marked transversely by numerous undulated or rather zigzag lines of a yellowish or golden cast, and the lips edged with red: on each side the body are two lateral lines, one of which, viz. that nearest the back, is curved; the other

nearly strait: the mouth is small, the tongue large and smooth; in both jaws is a row of minute teeth, and in the palate are two rough bones; the eyes are small, placed near the mouth, and have silvery irides: the skin is covered with very minute scales: the pectoral fins are rather small, with very numerous rays: the dorsal fin commences at about a third part of the length of the whole animal from the head, and is continued almost to the beginning of the tail: it is of a thickish nature, being covered by the common skin: the tail is considerably forked: the vent-fin resembles the dorsal, but commences at a greater distance from the head. This fish is said to be not uncommon in some parts of the Mediterranean, and is known to the modern Romans by the name of *Fiatola*.

PARU STROMAT.

Stromateus Paru. *S. dorso aureo, abdomine argenteo.* *Lin. Syst. Nat. Gmel. p. 1148.*

Stromat with gold-coloured back and silvery abdomen.

Stromateus striis carens. *Bloch. 5. p. 63. t. 160.*

THIS, which is a native of the South-American seas, is of a bright gold-colour on the upper parts, which gradually sinks into bright silver on the lower: the whole body is covered with small, tender scales, which are easily detached from the skin: the fins themselves are also scaly: the head is of moderate size, and brownish in front; the jaws of equal length, and armed with numerous sharp-

pointed teeth: the tongue large and smooth: in the throat are certain rough bones, serving to retain the prey: between the eyes and mouth are two foramina: the gill-covers consist each of a single piece: the lateral line, which is nearer the back than the abdomen, is rather broad, and is curved in the direction of the back. This species is said to be much esteemed as a food. Its general size is that of a turbot.

ASH-COLOURED STROMAT.

Stromateus Cinereus. *S. cinereus, cauda furcata, lobo inferiore longiore.*

Ash-coloured Stromat with forked tail, the lower lobe longer than the upper.

Stromateus cinereus. *S. parte inferiore pinnae caudæ longiore.*
Bloch. 12. p. 81. t. 420.

THE body of this species is of a somewhat more rhomboid form than that of the preceding, and the fins are somewhat more extended or pointed: the tail is more deeply forked, and the lower lobe considerably exceeds the upper in length: the colour of the whole animal is cinereous, with a cast of yellow on the sides of the head and the base of the fins and tail: the pectoral fins are tinged with red. It is a native of the Indian seas, and grows to about the length of a foot or more, and about the thickness of two inches: it is considered as ex-

cellent for the table, those which are largest being generally preferred: the bones are said to be of a soft or nearly cartilaginous nature, and the ribs but few in number: the residents in India use this fish both in its fresh and salted state, prepared in various ways: the native name is *Pampel*.

SILVER STROMAT.

Stromateus Argenteus. S. argenteus caudæ lobis æqualibus.

Silvery Stromat, with the lobes of the tail equal.

Stromateus argenteus. S. partibus utrisque pinnae caudæ æqualibus. Bloch. 12. p. 83. t. 421.

OF the same general form with the preceding, but with rather shorter fins and tail, the lobes of the latter being both of equal length: the mouth is situated considerably beneath the muzzle, which is thick and round, the colour of the whole animal is bright silver, with a blueish or dusky tinge on the back and fins: the scales are small, thin, and easily deciduous. It is a native of the same seas with the preceding, and is in equal estimation as an article of food.

BLACK STROMAT.

Stromateus Niger. S. totus nigricans.

Stromat entirely of a blackish colour.

Stromateus niger maxillis æqualibus. Bloch. 12. p. 85. t. 422.

GREATLY allied to the former in shape, but the mouth is placed in the usual manner, the upper part of the muzzle not rising above it, as in that species: the colour of the whole animal is blackish, with a silvery cast about the breast and sides of the head: the scales are small, and the lateral line, as in others of the genus, is curved in the direction of the back. Native of the Indian seas: not much esteemed as an article of food, on account of a popular prejudice entertained against it from its colour, as well as from its feeding on onisci, which are occasionally found in its mouth.

It may be observed that there is a considerable degree of general resemblance between the habit of the genus *Stromateus* and that of *Chætodon*; but as the *Stromats* are destitute of ventral fins, they cannot be placed in the same artificial order, and must rank among the *Apodes*. The same is the case with some other genera, which are naturally allied to fishes placed in very different orders. This forms the greatest objection to the Linnæan arrangement of Fishes: it would however be difficult to prove that a more natural distribution would lead to a readier investigation of the animals.

STERNOPTYX. STERNOPTYX.

Generic Character.

Caput obtusum.

Os simum.

Dentes minutissimi.

Membrana branch. nulla.

Corpus compressum, alepidotum; *sterno* carinato bifariam plicato; *abdomine* pellucido.

Head obtuse.

Mouth abrupt.

Teeth very minute.

Gill-membrane none.

Body compressed, without visible scales; *breast* carinate, folded both ways; *abdomen* pellucid.

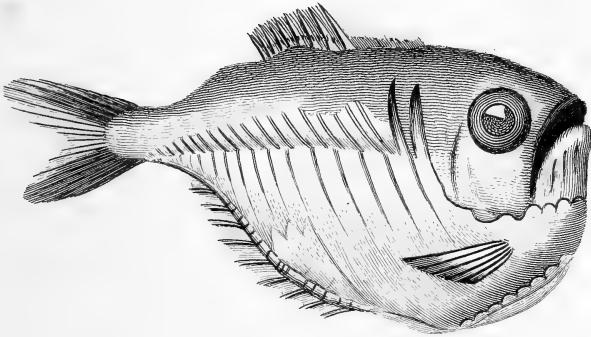
TRANSPARENT STERNOPTYX.

Sternoptyx Diaphana. *S. argentea, sterno carinato, abdomine pellucido.*

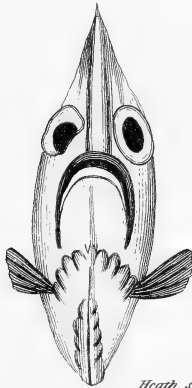
Silvery Sternoptyx, with carinated breast, and pellucid abdomen.

Sternoptyx diaphana. *Lin. Syst. Nat. Gmel. p. 1150. Hern. Naturf. 16. p. 8. t. 1. f. 1. 2.*

THE small fish from which this genus is instituted is a native of the American seas, and is described as of the general length of two or three inches; the shape broad, and pretty much compressed; the back rising into a sharp edge, and the abdomen terminating in a carina: the eyes are large; the mouth rather wide, and suddenly descending, so as to appear abrupt when viewed in front: the breast



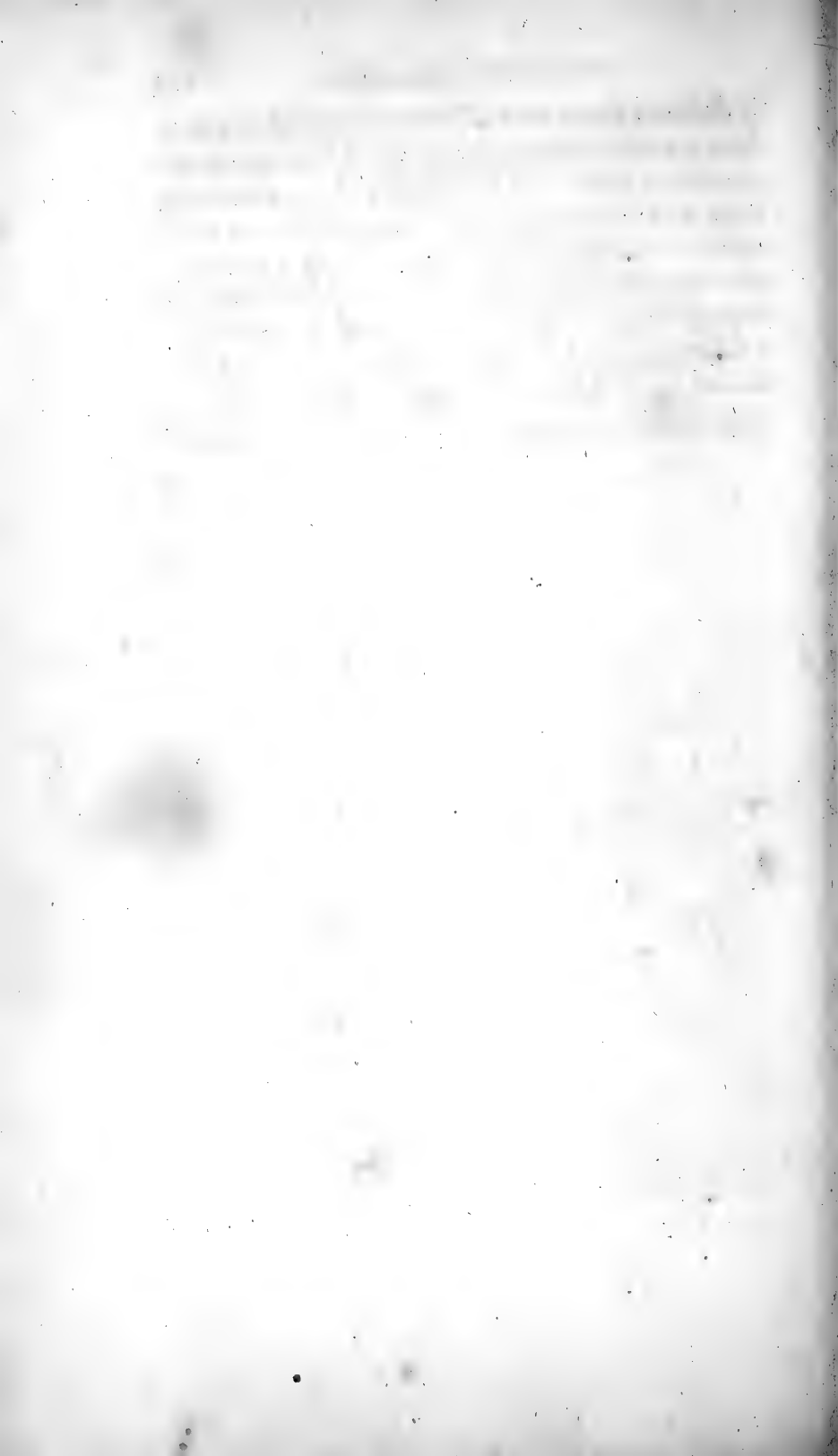
TRANSPARENT STERNOPTYX.



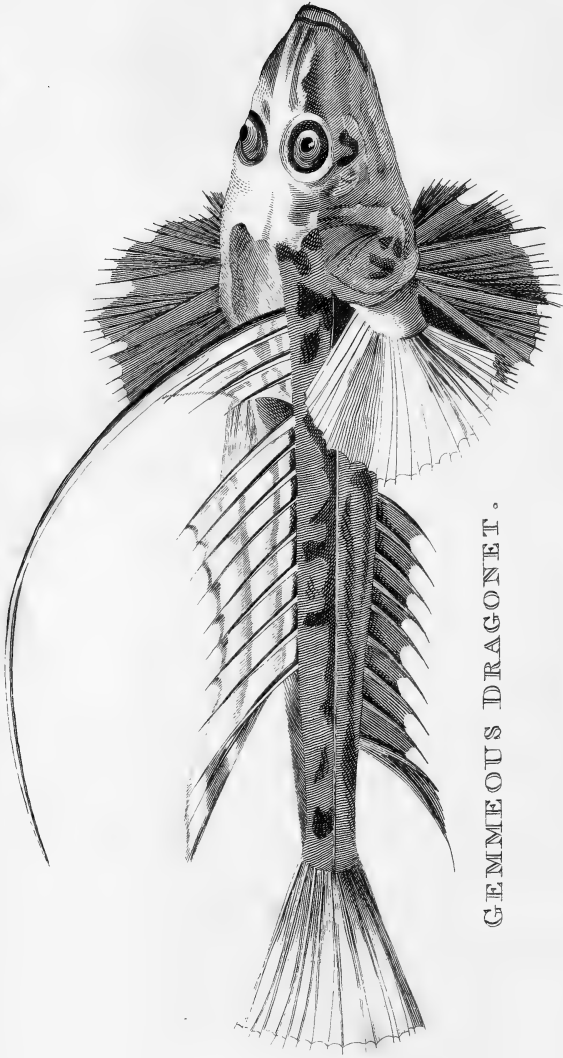
Heath sculp.



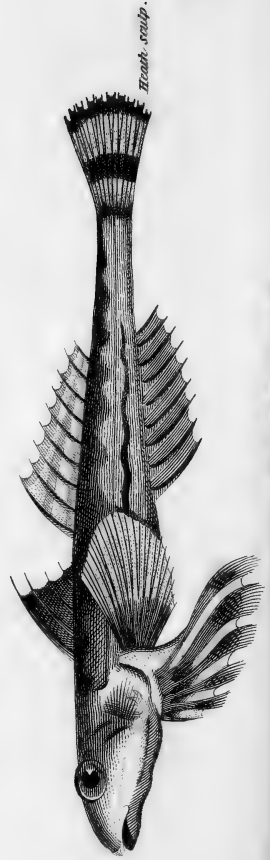
is disposed into a kind of folds on each side, so as to form a pellucid ridge; the pectoral fins are small: the dorsal short, and furnished with an extremely thick and strong ray at its origin: the anal fin is shallow, with distant rays, and extends a considerable way from the vent towards the tail, which is slightly forked. The general colour of this fish is a bright silver; the back inclining to olive, and the fins and tail dull yellow. The particulars of its shape are best exemplified by the annexed figure.







GEMMEOUS DRAGONET.



SORDID DRAGONET.

FISHES.

ORDER

JUGULARES.

CALLIONYMUS. DRAGONET.

Generic Character.

<i>Oculi</i> verticales, approxi- mati.	<i>Eyes</i> vertical, approxi- mated.
<i>Opercula</i> clausa, apertura branchiali utrinque in nucha.	<i>Gill-covers</i> shut, with a small aperture on each side the neck.
<i>Membr. branch.</i> radiis sex.	<i>Gill-Membrane</i> six-rayed.
<i>Corpus nudum</i> : Pinnæ ven- trales remotissimæ.	<i>Body</i> naked, ventral fins very remote.

GEMMEOUS DRAGONET.

Callionymus Lyra. *C. radio primo pinnae dorsalis prioris longi-
tudine corporis.*

Dragonet with the first ray of the first dorsal fin as long as the
body.

Callionymus Lyra. *C. dorsalis prioris radiis longitudine corporis.*
Lin. Syst. Nat. p. 433.
 Dracunculus. *Gesner.* Cottus. *Aldrov. Jonst. Will. Artedi.*
 Gemmeous Dragonet. *Penn. Brit. Zool. 3. p. 145. pl. 27.*

THIS beautiful fish has obtained its specific title from the peculiar form of its first dorsal fin, the shape of which bears a fancied resemblance to that of an ancient lyre or harp. It is a native of the Mediterranean and Northern seas, and measures, when full grown, about a foot in length. The head is large and of a somewhat depressed form: the mouth wide, and the teeth small and numerous: the eyes are placed near each other on the upper part of the head: the gill-covers are joined to the skin of the body, in such a manner as to leave only two small openings on the top of the neck: the body is of a taper form, smooth, and destitute of visible scales: the pectoral and ventral fins are large, rounded, and of a peculiarly thin and delicate structure: the first dorsal fin is of a triangular outline, the first ray extending far beyond the rest, which are very few in number, rarely exceeding four or five. Like most other fishes the Dragonet varies slightly in colour in different individuals and at different seasons of the year; but when in full perfection, generally corresponds with the description given by Mr. Pennant in the *British Zoology*, viz. “the pupils of the eyes rich sapphirine blue; the irides fine fiery carbuncle: the pectoral fins light brown: the side-line strait: the colours of the fish yellow, blue, and white, making a beautiful appear-

ance when fresh taken: the blue is of an inexpressible splendor; the richest cærulean, glowing with a gemmeous brilliancy: the throat black." In the Philosophical Transactions, vol. 24, this fish is described by Dr. Tyson under the name of Yellow Gurnard: Dr. Tyson seems to have ranked it among the Gurnards from its general habit, as well as from the sharp processes of the gill-covers, each of which, at its end, is armed with a triple spine. Linnæus once considered it as a species of Trachinus or Weever, and Gronovius referred it to the genus Uranoscopus.

SORDID DRAGONET.

Callionymus Dracunculus. *C. pinnae dorsalis prioris radiis corpore brevioribus.* *Lin. Syst. Nat. Gmel. p. 1152.*

Dragonet with the rays of the first dorsal fin shorter than the body.

Dracunculus. *Will. ichth. p. 136.*

Callionymus radiis 4 in pinna dorsali brevibus. *Bloch. 5. t. 162.*

Sordid Dragonet. *Penn. Brit. Zool. 3. p. 147. pl. 28.*

THIS species seems so nearly allied to the preceding, that it may perhaps be doubted whether it may not be in reality the same animal in a less advanced state. It is thus described by Mr. Pennant. "Length six inches and a half: head compressed; forehead sloping down to the nose, being not so level as that of the preceding: eyes large

and almost contiguous: mouth small; teeth very minute: over the gills a strong, trifurcated, broad spine: the first dorsal fin had four rays; the first setaceous, extending a little higher than the others; the last very short: the two first rays and webs yellow, the others black: the second had ten soft rays, their ends extending beyond the webs, which were pellucid: the pectoral fins consisted of twenty rays, and were ferruginous, spotted with a deeper cast of the same: the ventral fins consisted of five broad and much-branched rays, like those of the first species: the anal fin was white, and had ten rays: the tail had ten rays: in both species they are bifurcated at their ends, and the ray next the anal fin is in both very short. In colour this species is far inferior to the former, being of a dirty yellow, mixed with white and dusky spots: the belly is entirely white." This fish, like the preceding, is a native of the Mediterranean and Northern seas: both are numbered among edible fishes, and are supposed to live principally on worms and sea-insects.

INDIAN DRAGONET.

Callionymus Indicus. *C. capite levi longitudinaliter rugoso, operculis latere aperiendis.* *Lin. Syst. Nat. p. 434.*

Dragonet with smooth head longitudinally wrinkled, and gill-covers opening at the sides.

THIS species is a native of the Asiatic seas, and is described by Linnæus as having the head de-

pressed, and wrinkled in a longitudinal direction; the mouth rough; the tongue obtuse and emarginated, and the lower jaw rather longer than the upper: the branchial apertures large and lateral: the fore part of the gill-covers furnished with a double spine, and the hind part with a single one: the body much depressed, and of a livid colour: the vent situated in the middle of the abdomen; the first ray of the first dorsal fin very short and remote from the rest: the ventral fins very remote from each other. Linnæus adds that it is a kind of intermediate species, between the Callionymi, the Trachini, and the Uranoscopi.

 BAIKAL DRAGONET.

Callionymus Baikalensis. *C. pinnis ventralibus nullis, dorsali prima minima, secundæ radiis cirrhiferis.* *Lin. Syst. Nat. Gmel. p. 1153. Pall. it. 3. p. 707.*

Dragonet without ventral fins, the first dorsal fin very small, and the second furnished with cirrhiferous rays.

THIS species is described by Dr. Pallas, and is an inhabitant of the deepest parts of the Lake Baikal, from whence it occasionally wanders during the summer months to the shores, appearing in considerable numbers: the head is large, somewhat quadrangular at the base and flat at the top, with two tubercles on each side: the eyes are large and black: the snout broad and depressed, and the

mouth very wide: the mandibles thick at the edges, the lower projecting beyond the upper: both are internally beset with small curved hooks or teeth, but the lower is smooth at the tip and subacute: the gill-membrane is lax and furnished with very remote cartilaginous rays: the pectoral fins are lax and very long, equaling half the length of the body, and have very slender stiff rays: the rays of the second dorsal fin are also slender, and fifteen of them are stiff: the tail is bilobate and stronger than the fins: the lateral line is nearer the back than the abdomen: the length of this species is about a span: it is of a soft oily nature, and of a slender and somewhat compressed shape, gradually tapering from head to tail.

OCELLATED DRAGONET.

Callionymus Ocellatus. C. pinnae dorsalis prioris membrana fasciis fuscis et ocellis quatuor fuscis picta. Lin. Syst. Nat. Gmel. p. 1154. Pall. spic. Zool. 8. p. 25. t. 4. f. 13.

Dragonet with the membrane of the first dorsal fin marked with dusky streaks and four dusky ocellate spots.

A SMALL species, not exceeding the size of the little finger: native of the Indian seas: colour above a variegation of ash and brown, the ash-coloured parts being marked by white specks: beneath white: head smaller and sharper than in

others of the genus; flattish on the top; with the snout obtuse: eyes small and lateral: mouth small, with tumid, fleshy lips, the upper one doubled: gill-covers sharp, armed by a simple spine, and punctated on their membrane: first dorsal fin, in the male, minute, entirely black, with setaceous, flexile rays: in the female broad, the connecting membrane being marked on its lower part by dusky bars included by a white line edged with black; and on its upper part by eye-shaped spots black in the middle, surrounded by a white circle edged with black: the second dorsal fin is more shallow, and of a dusky colour, marked with white parallel lines: pectoral fins hyaline, spotted with white at their base; their rays twice barred with brown; the two middle rays being longer than the rest: ventral fins large, laciniate, black, with a white border, and very thick rays which are very much branched: vent fin serrated, black, with white base; the two first rays setaceous, the rest bifid: vent situated a little before the middle of the abdomen, and behind it, in the female, is a small conical peduncle recumbent in a fossule: lateral line strait: tail rounded: spotted with white at the base; the rays barred or interrupted with brown.

ARROW-HEADED DRAGONET.

Callionymus Sagitta: *C. capite triangulari, membrana branchiostegu triradiata, pinnarum dorsi radiis æqualibus.* *Lin. Syst. Nat. Gmel. p. 1155. Pall. spic. zool. 8. p. 29. t. 4. f. 4. 5.*
 Dragonet with triangular head, three-rayed gill-membrane, and the rays of the dorsal fins equal.

NATIVE of the Indian seas: found about Amboina, &c. Length about three inches: of a slender shape, obscurely quadrangular, and of a brownish colour variegated with grey; beneath of a greyish white: head large and broad, much depressed, with a sharpish snout, at the tip of which is the mouth, which is small, with thin lips, the superior of which is doubled: mandibles rough: tongue very short, and flat: eyes small and approximated; iris silvery: gill-covers soft, with the hinder lamina large and extended as far as the pectoral fins, the first lamina terminated by a long, subulate spine, serrated within with small teeth in a backward direction: first dorsal fin small, and marked at the hind part by a black band: second dorsal fin and pectoral ones hyaline, variegated with brown and white: ventral fins lacinate, spotted with brown, and furnished with very numerous rays: vent fin low, with the last ray branched: vent situated before the middle of the body: lateral line strait, obscure towards the head: tail rounded at the end, and spotted above with brown.

JAPANESE DRAGONET.

Callionymus Japonicus. *C. pinna dorsali priore oculo nigro picta, radio primo in pilos semipollicares terminato.* *Lin. Syst. Nat. Gmel. p. 1155. Houttuyn act. Harl. 20. p. 313.*

Dragonet with the first dorsal fin marked by a black ocellate spot, the first ray terminating in two hairs.

NATIVE of the Japanese sea: head depressed: eyes large, approximate: first dorsal fin with black rays: second dorsal fin whitish: pectoral fins rounded: ventral fins very large: tail four inches long, forked, with unequal rays; length of the fish about nine inches and a half: body variegated, smooth, and roundish.

URANOSCOPUS. STAR-GAZER.

Generic Character.

<i>Caput</i> depressum, scabrum, majus.	<i>Head</i> large, depressed, rough.
<i>Os</i> cirrho interno.	<i>Mouth</i> furnished with an internal cirrus.
<i>Opercula</i> membranaceo-ciliata.	<i>Gill-covers</i> edged by a ciliated border.
<i>Membr. branch.</i> radiis quinque.	<i>Gill-membrane</i> five-rayed.

BEARDED STAR-GAZER.

Uranoscopus Scaber. U. labiis cirrhosis, dorso lævi.

Star-Gazer with bearded lips and smooth back.

Uranoscopus scaber. Lin. Syst. Nat. p. 434.

Uranoscopus. Capite scabro. Bloch. 5. p. 75. pl. 163.

Uranoscopus. Gesn. Aldr. Will. &c.

THE head of this fish is large, squarish, and covered by a strong bony case, roughened by an infinite number of small warts or protuberances: each side of this case is terminated above by two spines, the hindermost of which is the strongest and covered by a skin: the under part has five spines, smaller than those above: the mouth, which



BEARDED STAR-GAZER.

Beard sculp.

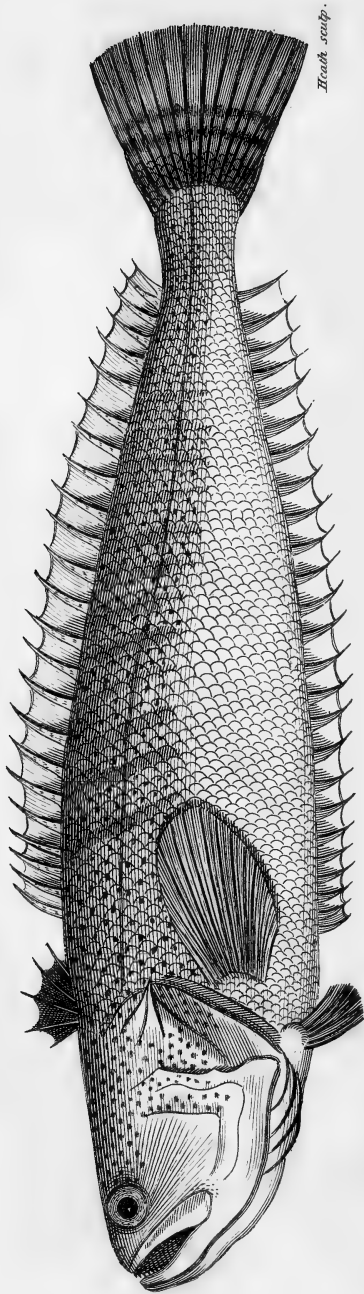


is wide, opens in an almost vertical direction: the tongue is thick, short, and roughened with numerous small teeth: near the interior tip of the lower jaw is a membranaceous process which terminates in a long cirrus or beard extending to some distance beyond the lips, which are themselves edged with smaller ones: the eyes are situated very near each other on the top of the head: the body is of a somewhat squarish form as far as the vent, and from thence becomes cylindrical: it is covered with small scales, and marked near the back by a lateral line composed of small pores or points bending from the neck to the pectoral fins on each side, and from thence in a straight line to the tail: on the back are two fins, of which the first is much shorter than the latter and furnished with stronger spines: the pectoral fins are large, with soft rays: the ventral fins are small; the tail of moderate size and rounded at the end. The colour of the body is brown, with a whitish or silvery cast towards the abdomen; the head, pectoral fins, and tail having a strong ferruginous cast, and the first dorsal fin being marked towards its hind part by a large black spot.

The Star-gazer is an inhabitant of the Mediterranean and Northern seas, chiefly frequenting the shallow parts near the shores, where it lies concealed in the mud, with the tip of the head alone exposed: in this situation it waves the beards of the lips, and particularly the long cirrus of the mouth, in various directions, thus alluring the smaller fishes and marine insects which happen to be swimming near, and which mistaking these organs for worms

are instantly seized by their concealed enemy. The usual length of this fish is about twelve inches. It is in no esteem as an article of food, being generally considered as coarse and of an ill flavour: the gall was anciently considered as of peculiar efficacy in external disorders of the eyes.





DRAGON-WEAVER.

TRACHINUS. WEEVER.

Generic Character.

<i>Caput</i> minus læve, compressum.	<i>Head</i> slightly roughened, compressed.
<i>Membr. branch.</i> radiis sex, operculorum lamina serrata.	<i>Gill-membrane</i> six-rayed. <i>Gill-covers</i> serrated on the edge.
<i>Corpus</i> compressum. Anus prope pectus.	<i>Body</i> compressed. Vent situated near the breast.

DRAGON WEEVER.

Trachinus Draco. *T. subargenteus, striis subobliquis transversis flavescens, pinna dorsali priore quinque-radiata nigra.*

Subargenteous Weever, with suboblique, transverse, yellowish streaks; the first dorsal fin black and five-rayed.

Trachinus Draco. *Lin. Syst. Nat. p. 435.*

Draco marinus. *Belon. Gesn. Aldr. &c.*

Weever. *Willughb. Pennant, &c.*

THIS fish is of a lengthened shape, much compressed on the sides, and covered with small and easily deciduous scales: the mouth is wide, and opens vertically, like that of the Star-gazer: both jaws are armed with sharp teeth: the tongue is strait, smooth, and pointed: the eyes are seated on the

upper part of the head, pretty near each other: the gill-covers are armed at their tips with a strong spine: the first dorsal fin is small, and furnished with five strong spines: the second fin is continued almost to the tail; the vent fin is of similar extent, and the tail is rather large, and even at the end: the pectoral fins are of moderate size, and the ventral very small: the general colour of the Weever is silvery, with a yellowish, or dusky cast on the upper parts, while the sides are commonly varied by numerous obliquely transverse streaks of a similar colour: the scales are small and rounded: the first dorsal fin is of a deep black. The usual length of the fish is about ten or twelve inches.

This fish, like the Star-gazer, is an inhabitant of the Mediterranean and Northern seas, commonly frequenting the coasts, and frequently imbedding itself in the sand; in which situation, if accidentally trodden on, it strikes backwards with great violence, and endeavours to wound the aggressor with the spines of its first dorsal fin. So troublesome are the consequences arising from the punctures inflicted by this part, that a law is said to exist in France obliging the fishermen to cut it away before the fish is exposed for sale. The usual symptoms attending the wound are, violent heat, pain, and inflammation; and it not unfrequently happens that when the hand is thus wounded, a sudden redness extends throughout the whole length of the arm, as far as the shoulder. The usual remedy among the English fishermen is, according to Mr. Pennant, sea-sand, well rubbed on the part: an

application which one might at first suppose would rather aggravate than alleviate the complaint. Many other popular remedies are used in different countries. Notwithstanding the suspicious aspect of the above-mentioned black fin, it does not seem to have any thing in its conformation which can justify the idea of any poisonous fluid conveyed from it into the wound; the spines when microscopically examined shewing no appearance of a tubular structure.

The Weever is considered as an excellent article of food, and is much esteemed in Holland, France, &c. It feeds principally on marine insects, worms, and small fishes: it is tenacious of life, and can exist many hours out of water: the skin is remarkably tough, and the animal may be excoriated with almost the same facility as an eel.

It is maintained by some ichthyologists, that there are in reality two kinds of this fish; viz. the greater and smaller Weever; but the difference, if any, seems to consist merely in size and a slight variation of colour: thus Willoughby mentions his having seen a specimen at Rome which, exclusive of its size, differed from the common kind in being marked along the sides with large black spots instead of the usual oblique yellow streaks: the same variety seems also to be figured in the work of Salvian. Mr. Pennant likewise describes and figures the Great Weever in the British Zoology, but makes no mention of the spots observed by Willoughby.

It may be added that the Weever was by Artedi

considered as not generically distinct from the Uranoscopus. Its English name *Weever* seems, as Mr. Pennant observes, to be a corruption from the French title *la Vive*.

OSBECKIAN WEEVER.

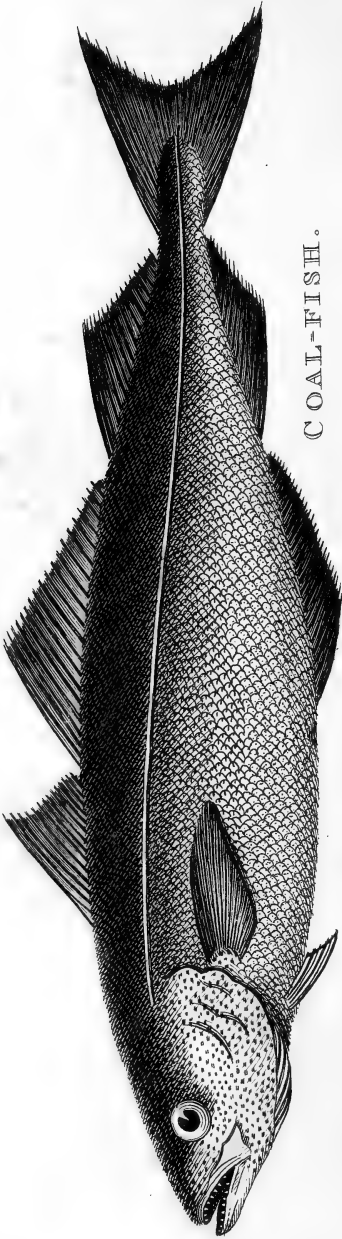
Trachinus Osbeckii. *T. albus, nigro maculatus, maxillis equalibus.*

White Weever, spotted with black, with both jaws of equal length.

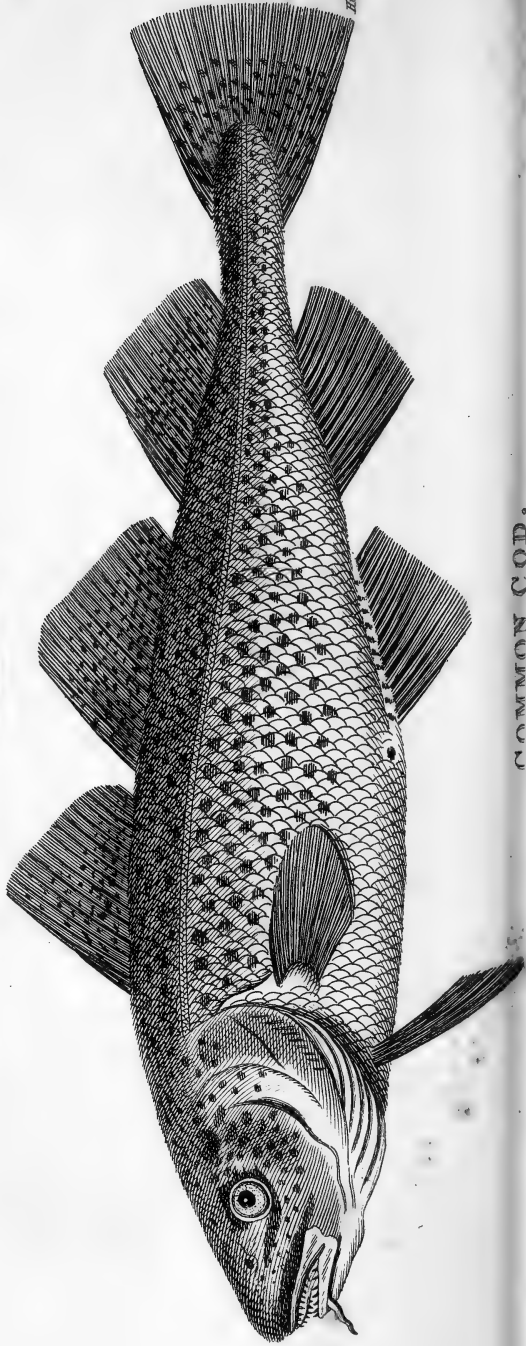
La Trachine Osbeck. *Cepede pisc.* 1. p. 364.

NATIVE of the Atlantic seas, and found about the Isle of Ascension, &c. Colour white, spotted with black: both jaws of equal length, and furnished with several rows of long and pointed teeth, three of which, both above and below, are larger than the rest: some sharp teeth are also situated in the throat: each gill-cover is terminated by two spines of unequal length: tail even. Described by Osbeck in his voyage to China.





COAL-FISH.



COMMON COD.

GADUS. COD.

Generic Character.

<i>Caput læve.</i>		<i>Head smooth.</i>
<i>Membr. branch. radiis septem teretibus.</i>		<i>Gill-membrane seven-rayed.</i>
<i>Corpus oblongum, squamis deciduis.</i>		<i>Body oblong, covered with deciduous scales.</i>
<i>Pinnæ omnes cute communi vestitæ.</i>		<i>Fins all covered by the common skin.</i>
<i>Dorsales anique plures, radiis muticis.</i>		<i>Dorsal and anal generally more than one; the rays unarmed.</i>
<i>Pectorales in acumen attenuatæ.</i>		<i>Ventral fins slender; ending in a point.</i>

COMMON COD.

Gadus Morhua. G. cinereus subflavo maculatus, squamis majoribus, cauda subæquali, radio primo anali spinoso.

Ash-coloured Cod, with yellowish spots, largish scales, and first ray of the vent fin spiny.

Gadus Morhua. G. tripterygius cirratus, cauda subæquali; radio primo anali spinoso. Lin. Syst. Nat. p. 436.

Morhua. Belon. Gesn. Aldr. &c.

Common Cod-Fish. *Penn. Brit. Zool. 3. p. 152.*

THIS highly important and prolific species, which furnishes employment for so many thousands,

and forms so considerable a part of the subsistence of mankind, is an inhabitant of the Northern seas, where it resides in immense shoals, performing various migrations at stated seasons, and visiting in succession the different coasts of Europe and America. Its history is so well detailed by Mr. Pennant, that little can be added to what that author has collected in his *British and Arctic Zoology*.

“The general rendezvous of the Cod-fish,” says Mr. Pennant, “is on the banks of Newfoundland, and the other sand-banks that lie off the coasts of Cape Breton, Nova Scotia, and New England. They prefer those situations on account of the quantity of worms produced in those sandy bottoms, which tempt them to resort there for food; but another cause of this particular attachment to those spots is their vicinity to the polar seas, where they return to spawn: there they deposit their roe in full security, but want of food forces them, as soon as the first more Southern seas are open, to repair thither for subsistence. Few are taken north of Iceland, but on the south and west coasts they abound: they are again found to swarm on the coasts of Norway, in the Baltic, off Orkney and the Western Isles; after which their numbers decrease, in proportion as they advance towards the south, when they seem quite to cease before they reach the mouth of the Straits of Gibraltar.”

Before the discovery of Newfoundland, the greater fisheries of Cod were on the seas of Iceland and our own Western Isles, which were the grand resort

of the ships of all the commercial nations, but it seems that the greatest plenty was met with near Iceland.

Newfoundland, a name in the infancy of discovery common to all North America, was discovered in the year 1496, by the celebrated Venetians Sebastian Cabot and his three sons; who, at their own charges, under a grant of Henry the seventh, giving them possession, as vassals of his, of all lands they might discover, coasted from lat. 67. 30, to the Capes of Florida.

The isle of Newfoundland is of a triangular form, and lies between lat. 46. 40, and 51. 30: visited occasionally, but not inhabited, by savages from the continent. The boasted mine of this island, viz. its sand-bank, is represented as a vast submarine mountain, of above 500 miles long, and near 300 broad, and seamen know when they approach it by the great swell of the sea, and the thick mists that impend over it. The water on the bank is from twenty-two to fifty fathoms; on the outside from sixty to eighty; and on the smaller banks much the same: the increase of shipping that resort to these fertile banks is now unspeakable: our own country still enjoys the greatest share, and ought to be esteemed one of our chiefest treasures, bringing wealth to individuals, and strength to the state. All this immense fishery is carried on by the hook and line only: the principal baits are herring, the small fish called a capelin, the shell-fish called clams, and pieces of sea-fowl; and with these are caught fish sufficient to find employ

for fifteen thousand British seamen, and to afford subsistence to a much more numerous body of people at home, who are engaged in the various manufactures which so vast a fishery demands. The fish, when taken, are properly cleaned, salted, and dried, and in this state sent into various parts of the European continent.

The Cod grows to a very large size. Mr. Pennant commemorates a specimen taken on the British coasts which weighed seventy-eight pounds, and measured five feet eight inches in length, and five feet in girth round the shoulders; but the general size, at least in the British seas, is far less, and the weight from about fourteen to forty pounds; and such as are of middling size are most esteemed for the table.

The Cod is of a moderately long shape, with the abdomen very thick and prominent: the head is of moderate size, and the eyes large: the jaws of equal length, the lower one bearded at the tip by a single cirrus: in the jaws and palate are numerous sharp teeth: the dorsal and anal fins are rather large, the pectoral rather small: the ventral small and slender: the tail of moderate size, and even at the end, the first ray on each side being short, strong, and bony. The usual colour of this fish is cinereous on the back and sides, and commonly spotted with dull yellow: the belly white or silvery; but the colours occasionally vary very considerably, and instances are often seen in which a yellow, orange, or even red tint prevails on the upper parts of the body, while the spots are lighter or deeper accord-

ing to the different seasons in which the fish is taken: the lateral line, which is one of the principal distinctive marks of the species, is broad and whitish, and the scales are somewhat larger than in others of the genus.

The food of the Cod is either small fish, worms, testaceous or crustaceous animals, such as crabs, large whelks, &c. its digestion is so powerful as to dissolve the greatest part of the shells it swallows: it is very voracious, catching at any small body it perceives moved by the water, even stones and pebbles, which are often found in the stomach. The fishermen are well acquainted with the use of the air bladder or *sound* of this fish, and dexterously perforate the living fish with a needle, in order to let out the air contained in that part; for without this operation the fish could not be kept under water in the well-boats, and brought fresh to market. The sounds when salted, are reckoned a delicacy, and are often brought in this state from Newfoundland. A species of Isinglass is also prepared from this part of the fish by the natives of Iceland.

HADDOCK.

Gadus Æglefinus. *G. albicans, cauda biloba, maxilla superiore longiore, macula nigra pone pinnas pectorales.*

Whitish *Gadus*, with bilobate tail, upper jaw longer than the lower, and a black spot beyond the pectoral fins.

Gadus Æglefinus. *Lin. Syst. Nat. p. 435.*

Gadus Æglefinus. *G. cirro unico, linea laterali nigra.* *Bloch. pl. 62.*

Hadock. *Willughb. Pennant, &c.*

THE Haddock is distinguished from the rest of this genus by having a forked tail, and the lower jaw longer than the upper: the colour of the body is silvery or white, with a dusky cast on the back: the lateral line is black, and on each side, at some distance beyond the head, and above the pectoral fins, is a moderately large, squarish black spot: the tip of the lower jaw is furnished with a cirrus: the eyes are large; the scales small, round, and pretty closely attached to the skin.

This species is a native of the Northern seas, where, like the cod, it assembles in prodigious shoals, visiting particular coasts at stated seasons: the shoals are sometimes near six miles in length, and more than a mile in breadth. "The grand shoal of Haddocks," says Mr. Pennant, "comes periodically on the Yorkshire coasts. It is remarkable that they appeared in 1766 on the 10th of December, and exactly on the same day in 1767. These shoals extended from the shore near three miles in breadth, and in length from Flamborough Head to Tinmouth Castle, and perhaps much

farther northwards. An idea may be given of their numbers by the following fact: three fishermen within the distance of a mile from Scarborough harbour frequently loaded their *coble* or boat with them twice a day, taking each time about a ton of fish: when they put down their lines beyond the distance of three miles from the shore they caught nothing but dog-fish, which shews how exactly these fish keep their limits. The best were sold from eight-pence to a shilling per score, and the poor had the smaller sort at a penny, and sometimes a half-penny per score." The Haddock is taken in vast quantities about Heiligiland, and is from thence sent to Hamburgh. In stormy weather this fish is said to imbed itself in the ooze at the bottom of the sea, none being taken in such weather; and those which are taken afterwards are observed to be covered with mud on their backs.

The Haddock is, in general, of moderate size, measuring about eighteen inches or two feet in length: those which are most esteemed for the table weighing from two to four pounds; but it sometimes arrives at the length of three feet, and the weight of fourteen pounds. Its food consists of small fishes, worms, and sea-insects. It spawns in the month of February.

DORSE.

Gadus Callarias. *G. cinereus subtus albus, capite corporeque fusco-maculatis, cauda integra, maxilla superiore longiore.*

Cinereous Gadus, white beneath, with head and body spotted with brown, even tail, and upper jaw longest.

Gadus Callarias. *Lin. Syst. Nat. p. 436.*

Gadus linea laterali lata ænea maculataque. *Bloch. pl. 63.*

The Dorse.

THIS is a somewhat smaller species than the Haddock, those which are usually taken rarely exceeding the weight of two pounds.

The head is smaller than that of the Haddock, and is marked by several spots, which in the summer are generally brown, and in the winter black: the general colour of the fish is cinereous above, and white beneath, several brown spots being scattered over the body, which, in the young fish, are often of an orange-colour: the scales are small, thin, and soft: the upper jaw is longer than the lower, and is furnished with more rows of teeth: at the tip of the lower jaw is a cirrus or beard.

The Dorse is a native of the Northern seas, as well as of the Mediterranean and the Baltic. It is taken both by the line and the net, and is highly esteemed as an article of food. It lives, like most others of this genus, on the smaller fishes, and sea-insects. Instances are adduced by authors in which this fish, like the Haddock, has been found greatly to exceed the usual size, and to weigh seven, eight, ten, or even fourteen pounds. It spawns in the month of February.

WHITING-POUT.

Gadus Barbatus. *G. albus, dorso pinnisque subfuscis, maxilla inferiore punctis utrinque septem.*

White Gadus, with brownish back and fins, and seven punctures on each side the lower jaw.

Gadus barbatus. *Lin. Syst. Nat. p. 437.*

Gadus corpore lato. *Bloch. pl. 166.*

Whiting-Pout. *Penn. Brit. Zool. 3. p. 161.*

THIS species, according to Mr. Pennant, never grows to a large size, rarely exceeding a foot in length, and is distinguished from all others by its great depth; one of the size above mentioned being near four inches deep in the broadest part: the back is very much arched, and carinated: the scales larger than those of the Cod-fish: the mouth small, and the head short: on each side the lower jaw are seven or eight punctures: the first dorsal fin is triangular, and terminates in a long fibre: the colour of the fins and tail is dusky or blackish, and at the bottom of the pectoral fins is a black spot: the body is white, but more obscure on the back than the belly, and tinged with yellow: the lateral line is white, broad, and crooked. This fish is in high estimation as a food, and is found in the Mediterranean and Northern seas.

BIB.

Gadus Luscus. *G. albidus, lateribus subflavis, dorso olivaceo, radio pinnarum ventralium primo setaceo, cauda nigro marginata.*

Whitish Gadus with yellowish sides, olivaceous back, first ray of the ventral fins setaceous, and tail bordered with black.

Gadus luscus. *G. radio pinnarum ventralium primo setaceo.* *Lin. Syst. Nat. Gmel. p. 1163. Mus. Ad. Frid. 2. p. 60.*

The Bib. *Penn. Brit. Zool. 3. p. 162.*

LENGTH a foot : greatest depth three inches and a half : body deep ; sides compressed ; scales large and easily deciduous : eyes covered with a loose membrane, so as to be blown up like a bladder at the pleasure of the animal : mouth small, and beneath the chin a beard of about an inch in length : colour of the back light olive ; the sides finely tinged with gold ; the belly white ; the anal fins dusky, edged with white ; the tail with black. Native of the European seas, and much esteemed as a food.

POOR.

Gadus Minutus. *G. argenteus, dorso subfusco, maxilla superiore longiore, ano in medio corporis.*

Silvery Gadus, with brownish back, upper jaw longest, and vent in the middle of the body.

Gadus minutus. *G. abdomine intus nigro.* Bloch. pl. 67. f. 1. Capelan.

The Poor. Penn. Brit. Zool. 3. p. 163.

THIS is a small species, seldom exceeding six or seven inches in length, and of a more slender form than any of the preceding kinds. It is of a silvery colour, brownish on the back, and marked with dusky specks on the sides: the scales are very small and thin: the head is of a somewhat sharpened form, with the upper mandible longer than the lower, and furnished with several rows of small and sharp teeth: beneath the tip of the lower is a cirrus: the lateral line is strait, and the vent is situated at the middle of the body: it is remarkable of this species that the abdomen is perfectly black within, being lined with a peritonæum of that colour. The Poor is found in the Baltic and the Mediterranean, as well as in some parts of the Northern seas. Its appearance in the Mediterranean is considered by the fishermen as the precursor of the Cod, the Dorse, and the Haddock, of which it is supposed to indicate very plentiful shoals. It is reckoned a wholesome food, and is taken both by the line and net. It is supposed to feed chiefly on worms and sea-insects, and deposits its

spawn among the stones and sea-plants towards the borders of the shore.

BLENNOID GADUS.

Gadus Blenoides. *G. argenteus, dorso subcinereo, pinnis ventralibus didactylis.*

Silvery Gadus, with greyish back, and didactyle ventral fins.

Gadus blenoides. *G. pinnis ventralibus didactylis.* *Pall. spic. zool. 8. p. 47. Lin. Syst. Nat. Gmel. p. 1165.*

DESCRIBED by Dr. Pallas. Habit of a Whiting: length about a span: body plump, soft, convex, compressed, silvery white, with subcinereous back, and covered with very small scales: head thick, conic, obtuse; lips fleshy, doubled: teeth minute, unequal, in the upper jaw extremely minute, hardly more than six, at some distance from each other, being distinctly visible: tongue sharp and fleshy: palate longitudinally striated: eyes large; irides silvery: lateral line arched on the fore-part: fins yellowish white, with very slender rays: dorsal and anal fins reclined; the first dorsal narrow, triangular; the second narrower; the third a little broader and shorter: pectoral fins subfalcated, very thin; first ray of the ventral ones very long, thickish, and bifid: tail forked, with rounded ends. Native of the Mediterranean.

SAIDA.

Gadus Saida. *G. cærulescens, dorso fusco, abdomine albido, pinnarum ventralium radio secundo in setam longam terminato.*

Blueish Gadus, with brown back, white abdomen, and the second ray of the ventral fins terminating in a long bristle.

Gadus Saida. *Lepechin. nov. Comm. Petrop. 18. p. 512. Lin. Syst. Nat. Gmel. p. 1166.*

DESCRIBED by Lepechin. Native of the white sea: length about eight inches: colour blueish, with dusky back, and white abdomen; head compressed on the fore-part, but more round behind, and marked on the top with a black spot: mandibles furnished with sharp, curved, setaceous teeth which are barbed backwards: upper jaw rather obtuse; lower longer and sharper: palate armed with a double row of teeth, and on each side the entrance into the throat is a rough or denticulated bone: eyes large, with whitish pupil and blueish iris: gill-covers silvery, speckled with black, and composed of three laminae, of which the lowest is lunated, the next elliptic, and the third triangular and bicuspidate: back convex, slightly furrowed on the fore-part, and marked by a few confluent blackish specks: lateral line strait, nearest the back: dorsal fins triangular, brown, with whitish rays: anal oblong-triangular, with the fore-part of the base dusky-blue: ventral whitish at the base: tail forked. This species is edible, but of a dry or juiceless nature.

With three dorsal fins, as in the preceding kinds, but with beardless mouth.

WHITING.

Gadus Merlangus. G. argenteus, supra subfuscus, maxilla superiore longiore.

Silvery Gadus, brownish on the upper parts, with the upper jaw longer than the lower.

Gadus Merlangus. G. tripterygius imberbis albus, maxilla superiore longiore. Lin. Syst. Nat. p. 438.

The Whiting. *Penn. Brit. Zool. 3. Bloch. pl. 65.*

THE Whiting is, according to Mr. Pennant, the most delicate as well as the most wholesome of the genus, but does not grow to a large size, the usual length being about ten or twelve inches, and the largest scarce exceeding that of twenty. It is a fish of an elegant make: the body is rather long, and covered with small, round silvery scales: the head and back are of a pale brown, and the sides slightly streaked with yellow: the head is of a pointed form, with the upper jaw longer than the lower, and furnished with several rows of teeth, of which those in front are longest; the lower jaw has only a single row: on each side the palate is a triangular, and in the throat two rough bones above, and two smooth ones beneath: on each side the lower jaw are nine or ten impressed points: the vent is nearer the head than the tail: the lateral line is strait, and at the beginning of the pectoral fins on each side is a black spot. This fish is an inhabitant of the Baltic, and

the Northern seas, and is found in some parts of the Mediterranean. Vast shoals appear in the British seas during the spring; keeping at the distance of about half a mile to that of three from the shore: they are caught in vast numbers by the line, and afford excellent diversion: their food consists of small fishes, sea-insects and worms: they are said to be particularly fond of sprats and young herrings, with which the fishermen generally bait for them, and in defect of these with pieces of fresh herring, one being sufficient, when cut, for twenty baits. According to Dr. Bloch the chief time of the Whiting fishery in France is in the months of January and February, though in England and Holland it is practised at a much later period. The Whiting spawns in December and January.

COAL-FISH.

Gadus Carbonarius. *G. nigricans, subtus subargenteus, maxilla inferiore longiore, linea laterali recta alba.*

Blackish Gadus, subargenteous beneath, with the lower jaw longer than the upper, and strait, white lateral line.

Gadus Carbonarius. *G. tripterygius imberbis, maxilla inferiore longiore, linea laterali recta.* *Lin. Syst. Nat. p. 438. Bloch. pl. 66.*

Coal-Fish. *Penn. Brit. Zool. 3.*

THE Coal-Fish, when full grown, is, in general, readily distinguished from its congeners by its very dark or black colour, though in this respect it some-

times varies: it is of a moderately long and elegant shape, with a small head, sharpened snout, and lower jaw exceeding the upper in length: when full grown the head, dorsal fins, tail, and upper parts of the body are of a dusky black, which gradually softens into a silvery tinge as it approaches the abdomen: the lateral line is strait and white: the mouth is rather small, and black on the inside, though the tongue is of a bright silver-colour: the body is covered with small, thin scales, and the jugular and pectoral fins are generally of a pale colour: the tail is pretty large and forked.

The Coal-fish is an inhabitant of the Baltic, the Northern, and Mediterranean seas: it is common on most of our rocky and deep coasts, but particularly on those of Scotland and the Orkneys, where, according to Mr. Pennant, it swarms, and where the young or fry forms a great part of the support of the poor. In July, according to the same author, the young begin to appear in vast shoals on the coast of Yorkshire, and are at that time about an inch and half long: in August they are from three to five inches in length, and are taken in great numbers with the angling rod, and are then esteemed a very delicate fish, but when about a year old are so coarse that few people will eat them: at this period they are above fifteen inches in length, and begin to blacken on the gills and back; the blackness increasing with their age: the fry of the Coal-fish is known by different names in different places; at Scarborough the young are called *Parrs*, and when a year old, *Billets*: at that place such swarms have

occasionally appeared that for some weeks together it was impossible to dip a pail into the sea without taking several.

The varieties as to colour which this fish sometimes exhibits are different shades of brown rather than black; but in all the lateral line is invariably white, which therefore forms a good specific mark. Though the Coal-fish, in general, in its full grown state is but little esteemed as a food, yet it is frequently salted and dried for sale, in the manner of the Cod and others of this genus.

POLLACK.

Gadus Pollachius. G. subargenteus, dorso pinnisque fuscis, maxilla inferiore longiore, linea laterali curva nigra.

Subargenteous *Gadus*, with dusky back and fins, lower jaw longer than upper, and curved, black lateral line.

Gadus Pollachius. G. maxilla inferiore longiore, linea laterali curva. Lin. Syst. Nat. Gmel. p. 1169. Bloch. pl. 68.

Pollack. *Penn. Brit. Zool. 3.*

“ This species (says Mr. Pennant) is common on many of our rocky coasts: during the summer they are seen in great shoals, frolicking on the surface of the water, and flinging themselves into a thousand forms: they are at this time so wanton as to bite at any thing that appears on the top of the waves, and are often taken with a goose’s feather fixed to a hook: they are a very strong fish, being observed to keep their station at the feet of the

rocks in the most turbulent and rapid sea: they are a good eating fish: they do not grow to a very large size; at least the biggest we have seen did not exceed six or seven pounds; but we have heard of some that were taken in the sea near Scarborough, which they frequent during the winter, that weighed near twenty-eight pounds: they are there called *Leets*. The under jaw is longer than the upper: the head, and body rises pretty high, as far as the first dorsal fin: the side-line is incurvated, rising toward the middle of the back, and then sinking and running strait to the tail: it is broad and of a brown colour: the first dorsal fin has eleven rays, the middle nineteen, and the last sixteen: the tail is a little forked: the colour of the back is dusky, of some inclining to green: the sides beneath the lateral line marked with lines of yellow: the belly white."

Dr. Bloch observes that the scales of the Pollack are small, thin, oblong, and bordered with yellow: according to that author it is found in the Baltic and the Northern sea: it feeds chiefly on small fish, and especially on launces, which are generally found in its stomach.

GREEN GADUS.

Gadus Virens. *G. albus, dorso virescente, cauda bifurca.*

White Gadus, with greenish back, and forked tail.

Gadus virens. *Gadus dorso virescente, cauda bifurca.* Lin.
Syst. Nat. Gmel. p. 1166. Faun. Suec. 309.

THIS species is said to bear a very near general resemblance to the Pollack, but to differ in being of a greenish or olive-colour on the upper parts, and to have the lateral line perfectly strait, instead of curved as in that fish: the jaws are also equal, and the tail distinctly forked; whereas in the Pollack the lower jaw is longer than the upper, and the tail but very slightly inclining to a forked appearance. Notwithstanding these differences it is held in doubt by some authors whether the present fish be really a distinct species from the preceding. It is said to be found plentifully in the Northern seas.

With two dorsal fins.

HAKE.

Gadus Merluccius. *G. albidus, dorso subcinereo, maxilla inferiore longiore.*

Whitish Gadus, with subcinereous back, and lower jaw longer than the upper.

Gadus Merluccius. *G. dipterygius imberbis, maxilla inferiore longiore.* Lin. Syst. Nat. p. 439. Bloch. t. 154.

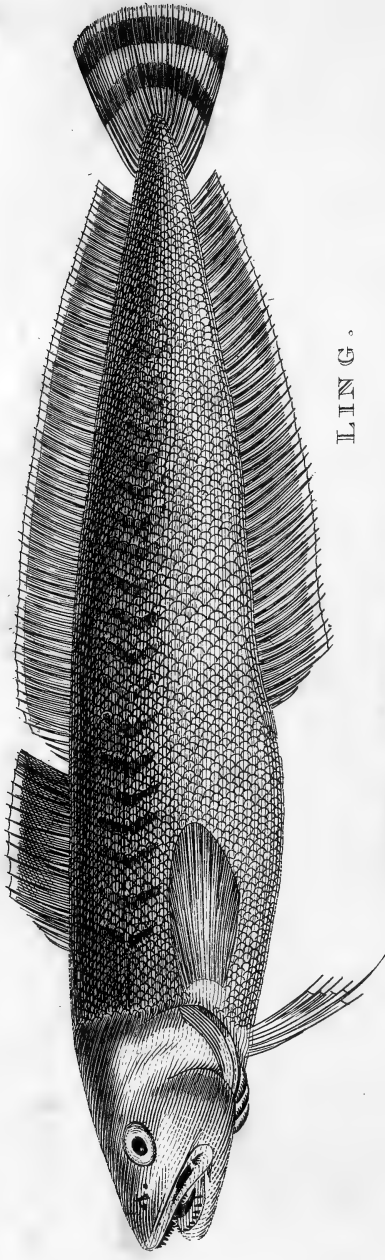
Hake. Penn. Brit. Zool. 3.

THE Hake is a species of a considerably lengthened form: the head is rather large, broad and flat

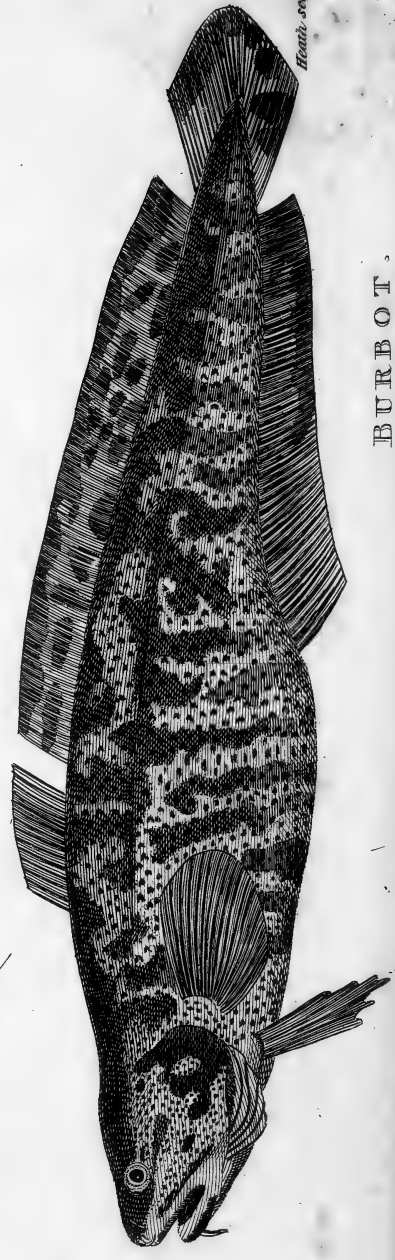
at the top, but compressed on the sides; the opening of the mouth wide, and the jaws armed with two rows of long, sharp-pointed, curved teeth, intermixed alternately with smaller ones: the palate is also furnished with a row of teeth on each side: the lower jaw is longer than the upper, and at a small distance from the eyes are situated four small foramina: the body is covered with small scales, and is of a pale ash-colour on the back, and whitish on the sides and abdomen: the first dorsal fin is small, consisting only of about nine rays, but the second, which commences almost immediately from the former, is continued almost to the tail: the anal fin corresponds with this beneath: the pectoral and ventral fins are of moderate size, and of a sharpened shape, and the tail is nearly even at the end: the lateral line commences by several small warts beyond the head, and is continued in a straight direction to the tail: the usual length of the Hake is from one to two feet, but it is sometimes found of the length of three feet.

This fish is an inhabitant of the Mediterranean and Northern seas, in both of which its fishery is very considerable: it is salted and dried in the manner of Cod, Haddock, &c. but is not considered as a delicate fish either in its fresh or salted state, and is rarely admitted to the tables of the rich and luxurious: it forms however a very useful article of food for the lower orders in many parts both of our own and other countries. It is found in vast abundance on many of our coasts, as well as those of Ireland. We are informed by Mr. Pennant





LING.



BURBOT.

that there was formerly a vast stationary fishery of the Hake on the *Nymph Bank* off the coast of *Waterford*, immense quantities appearing there twice a year; the first shoal coming in June, during the Mackrel season, and the other in September, at the beginning of the Herring season; probably in pursuit of those fish: it was no unusual thing for six men with hooks and lines to take a thousand Hake in one night, besides a considerable quantity of other fish.

At present, as we are informed by Dr. Bloch, one of the greatest Hake-fisheries is carried on about the coasts of Britany, both by the hook and net. It is carried on chiefly by night, in boats properly manned for the purpose: the principal baits for such as are taken by the line are launces, sardines, and other small fishes.

LING.

Gadus Molva. *G. cinereus, subtus albus, maxilla superiore longiore, cauda fascia fusca.*

Cinereous Gadus, white beneath, with the upper jaw longer than the lower, and tail crossed by a dusky bar.

Gadus Molva. *G. dipterygius cirratus, maxilla superiore longiore.*
Lin. Syst. Nat. p. 439. Bloch. t. 69.

Ling. *Penn. Brit. Zool. 3.*

THE Ling (says Mr. Pennant) takes its name from its length, being corrupted from the word long: the body is very slender; the head flat; the

upper jaw longer than the lower, and furnished with very numerous, small teeth, those in the lower jaw being few, slender, and sharp: on the chin is a small beard: the first dorsal fin is small, placed near the head, and consists of fifteen rays: the second is very long, reaching almost to the tail, and consists of sixty-five rays: the anal is placed in a corresponding direction beneath, and consists of sixty-two rays: the pectoral fins have fifteen radiated rays, and the ventral six: the tail is rounded at the end. The usual size of the Ling is from three to four feet, but it is said to have been sometimes seen of the length of seven feet: in colour it varies, being sometimes of an olive hue on the sides and back, and sometimes cinereous: the abdomen is white, as are also the ventral fins, and the dorsal and anal are edged with white: the tail is marked near the end with a transverse black bar, and tipped with white.

The Ling is an inhabitant of the Northern seas, and forms in many places a considerable article of commerce. It chiefly frequents the depths of the sea, living on small fishes, shrimps, &c. It spawns in June, depositing its eggs among the fuci on the oozy bottoms. In the Yorkshire seas, according to Mr. Pennant, the Ling is in perfection from the beginning of February to the beginning of May, and some till the end of that month: as long as they continue in season, the liver is very white, and abounds with a fine flavoured oil; but as soon as the fish goes out of season the liver becomes red and affords no more oil: the same circumstance is

observable in several other fish in a certain degree, but not so remarkably as in the Ling*.

Vast quantities of this fish are salted for exportation as well as for home consumption. When it is cut or split for curing it must measure twenty-six inches or upwards from the shoulder to the tail; if less than that it is not reckoned a sizeable fish, and consequently not entitled to the bounty on exportation†.

LEVERIAN GADUS.

Gadus Leverianus. *G. subcinereus, maculis ocellatis albidis.*
Subcinereous Gadus, with ocellated whitish spots.

DESCRIBED from a specimen in the Leverian Museum. Body extremely long in proportion to its depth, and of nearly uniform diameter as far as the second dorsal fin, from which part it gradually lessens towards the tail: head large: mouth wide: lower jaw longer than the upper; both furnished with a row of sharp, subulated, and slightly curved teeth, of which those in the lower jaw are by far the largest and longest: eyes rather large: gill-membrane six or seven-rayed: pectoral fins of moderate size: ventral rather small and narrow: first dorsal fin subtriangular, situated at a considerable distance from the head, and the second at a great distance from the first, being of similar shape, but rather larger: vent-fin small, shallow, squarish, and

* Brit. Zool.

† Brit. Zool.

situated immediately beneath the second dorsal : tail of moderate size, and even at the end : skin smooth, without perceptible scales, and every where marked by numerous, small, round, whitish, ocellated spots on a pale brown ground-colour : lateral line not distinctly visible, but rather marked by a continued angular elevation of the skin along the whole length of the body, so as to give the fish a squarish form : length about two feet two inches : depth about two inches and a half. Supposed to be a native of the Southern ocean, being placed in a collection of fishes taken during the last voyage of Captain Cook.

BURBOT.

Gadus Lota. *G. olivaceo-flavescens nigro variegatus, ore cirrato, maxillis aequalibus.*

Yellowish-olive Gadus, variegated with black, with barbed mouth and both jaws equal.

Gadus Lota. *G. dipterygius cirratus, maxillis aequalibus.* Lin. *Syst. Nat. p. 440. Bloch. t. 70.*

Burbot. *Penn. Brit. Zool. 3.*

THE Burbot, a fish very highly esteemed for its superior delicacy, is an inhabitant of clear lakes and rivers, and is found in many parts of Europe and Asia. In our own country it occurs chiefly in the lakes of the Northern counties, in some of the fens of Lincolnshire, and the rivers Witham and Trent ; but it is said to arrive at its greatest perfection in the Lake of Geneva, where it is found in

great plenty. In its habit or general appearance the Burbot makes an obscure approach to the *Muraena*, having a remarkably lengthened body of a subcylindric shape: the head is broad and flattened; the eyes small and lateral, with blue pupils and yellow irides: the mouth wide; the jaws armed with several rows of sharp teeth: the lower jaw is furnished with a beard of considerable length, and two small cirri are seated on the top of the nose, at some distance from the eyes: the tongue is broad: the colour of the Burbot, which, like all others, varies as to its particular shades at different seasons and in different individuals, is a dull or brownish yellow, approaching to whiteness on the abdomen, and to olivaceous on the back and fins; while the whole is variegated with numerous and irregularly formed spots and patches of different sizes and of a blackish colour: in some the ground-colour is greenish, and in others rather brown than yellow: the skin is remarkably smooth, and mucous or slippery like that of an eel, and is covered with extremely small scales: the first dorsal fin is small, and situated near the middle of the back; the second commences at a small distance beyond this, and is continued as far as the tail, which is rather short, and of a rounded form: the anal fin is of similar length with the dorsal, and like that is continued as far as the beginning of the tail: the pectoral fins are small and rounded; the ventral narrow and of a sharper form.

The Burbot is considered as a very voracious fish, preying on all the smaller fishes, as well as on frogs,

worms, and aquatic insects : it grows to a considerable size : the largest however of those which are taken in England have been rarely known to exceed the weight of three pounds, but in some parts of Europe they are found of more than double that weight, and of the length of three feet or more. The reputation of this fish as a food has long been established, but its liver is celebrated as an article of peculiar luxury, and we are informed by Aldrovandus that an old German countess carried her epicurism so far as to expend the greatest part of her income in the purchase of this dish. The gall has been famed, like that of the Stargazer, the Barbel, and some other fishes, for its supposed efficacy in external disorders of the eyes.

WEESLE GADUS.

Gadus Mustela. *G. cirris quinque vel tribus, pinna dorsali priore exoleta.*

Gadus with either five or three beards, and the first dorsal fin incomplete.

Gadus Mustela. *G. dipterygius cirratus, cirris quinque, pinna dorsali priore exoleta. Lin. Syst. Nat. p. 440.*

Gadus Mustela. *G. cirris tribus. Bloch. t. 165.*

Mustela vulgaris Rondeletii. *Will. ichth. p. 121.*

Five-Bearded Cod. *Penn. Brit. Zool. 3. Three-Bearded Cod, id. 3.*

THIS species appears to admit of two varieties, the one furnished with four beards on the upper lip and one on the lower ; the other with two on the upper and one on the lower. These varieties or, per-

haps, sexual differences, have been considered by some authors as distinct species. Of this opinion is Mr. Pennant, whose description of both is so accurate as to require no additions.

Three-Bearded Cod.

“ This species commonly frequents the rocky shores of these islands, and is sometimes taken with a bait. It grows to the length of nineteen inches; the weight two pounds two ounces: the head is large and flat: the eyes not remote from the end of the nose: the body is long, slender, and compressed sideways, especially towards the tail: at the end of the upper jaw are two beards; on the chin one: the teeth are numerous and small, disposed along the jaws in form of a broad plate; in the roof of the mouth is a set of small teeth, disposed in a triangular form: the number of branchiostegous rays is seven: the first dorsal fin is lodged in a deep furrow just beyond the head, and consists of a number of short, unconnected rays: the second rises just behind it, and reaches very near the tail: the pectoral fins are broad and round: the ventral fins small; the second ray the longest: the anal fin reaches almost to the tail: the tail rounded at the end: the scales are very small: the colour of the body and head a reddish yellow, marked above the lateral line with large black spots: the back fin and tail are darker; the vent fin of a brighter red, but all are spotted: the lateral line bends in the middle, then passes strait to the tail.”

Five-Bearded Cod.

“ Mr. Willughby makes this species with five beards a variety only of the former ; but having opportunity of examining several specimens, we must dissent from his opinion, having always observed the number of the beards in the spotted kind not to exceed three, nor the number in the brown kind to be less than five : the first ray of the dorsal fin is very long : there is also some difference in the form as well as colour, this species being rather thicker in proportion than the former.

“ Excepting in these particulars, and the number of the beards, there is a general agreement in the parts of both : the beards on the upper jaw are four, viz. two at the very end of the nose, and two a little above them : on the end of the lower jaw is a single one. These fish are of a deep olive brown, their belly whitish. They grow to the same size as the former.”

Russian Gadus.

A third variety of the Weesle Gadus, under the above title is described by Mr. Walbaum, and is introduced into the Gmelinian edition of the *Systema Naturæ* : it differs from the two former in being furnished only with a single beard.

CIMBRIAN GADUS.

Gadus Cimbrius. *G. cirris quatuor, pinna dorsali priore exoleta, radio primo hastato.* Lin. Syst. Nat. Gmel. p. 1174.

Gadus with four beards, first dorsal fin incomplete, with the first ray hastated.

GREATLY allied to the *Mustela*, but with the first ray of the first dorsal fin larger than the rest, subulate, and divided at the tip in form of the letter T. A single barb both on the upper and lower lip, and two over the nostrils: pectoral fins with sixteen rays; ventral seven; anal forty-two; caudal twenty-five. Native of the Atlantic and Northern seas.

 TOAD GADUS.

Gadus Tau. *G. fusco-flavescens, nigro maculatus, labio inferiore cirris cincto, operculis triacanthis, pinna dorsali priore triradiata.*

Yellowish-brown Gadus, spotted with black, with the lower lip fringed with beards, the gill-covers three-spined, and the first dorsal fin three-rayed.

Gadus Tau. *G. dipterygius cirratus, operculis triacanthis, pinna dorsali priore triradiata.* Lin. Syst. Nat. p. 440.

Gadus cirris plurimis. Bloch. pl. 67.

THIS fish is so unlike the rest of the Gadi that it might almost be allowed to constitute a distinct genus: it is in fact more allied to the following genus, *Blennius*, under which however it cannot with strict propriety be placed.

The head and fore-parts are extremely broad and depressed, while the remainder of the animal is

compressed, tapering pretty suddenly towards the tail: the eyes are large, with gold-coloured irides, and are situated towards the upper part of the head: on each side the eyes is a series of small warts: the mouth is wide; the upper jaw furnished with several rows of sharp teeth; the lower with only two rows: the upper lip projects somewhat beyond the lower, which is fringed with a semicircle of short cirrhi or beards: the pectoral and ventral fins are of a sharpened form, and the first ray of the latter is very strong, and of a considerable length: the rays of the first dorsal fin, which is very small, are spiny; those of the second dorsal, as well as of the anal and caudal, are soft, and project somewhat beyond the edge of the membrane: the tail is rounded. The colour of this fish is yellowish brown, paler beneath, and the whole body as well as the fins variegated with pretty numerous and somewhat irregular blackish spots: the tail marked by two or three transverse bars, and between the eyes is commonly observed a transverse yellow bar or band. Native of the American and Indian seas. Grows to the length of about a foot, but is generally found of smaller size. It is supposed to be of a predacious nature, but its particular history seems to be not very distinctly known. The Count de Ceppe places this fish, together with the *Gadus blennoides* of Linnæus, in a distinct genus, to which he gives the title of *Batrachoides*.

With one dorsal fin.

MEDITERRANEAN GADUS.

Gadus Mediterraneus. *G. maxilla superiore cirris duobus, inferiore unico.* *Linn. Syst. Nat. Gmel. p. 1175.*

Gadus with two cirri on the upper lip and one on the lower.

THIS also is very nearly allied to the *Gadus Mustela*, insomuch that it may be doubted whether it be really a distinct species, though furnished with only the second or long dorsal fin: mouth with two beards on the upper, and one on the lower lip. Native of the Mediterranean.

According to Cope this species has but two rays in the ventral fins, for which reason he considers it as a *Blennius*.

 TORSK.

Gadus Brosme. *G. ore cirroso cauda ovata.*

Gadus with the lower lip bearded, and ovate tail.

Brosme. *Ström. sondm. 1. p. 272. t. 1. f. 19. Pontopp. norw. 2. p. 178.*

THIS species is well described in the last edition of the British Zoology under the title of the Torsk. It is an inhabitant of the Northern seas, and is not observed lower than the Orkney islands, and even there is rather a scarce fish. The length of the specimen communicated to Mr. Pennant was twenty inches, and the greatest depth four and a half: the

head small; the upper jaw a little longer than the lower, and both jaws furnished with a multitude of small teeth: on the chin was a small, single beard: from the head to the dorsal fin was a deep furrow: the dorsal fin began within six inches from the tip of the nose, and extended almost to the tail: the pectoral fins were small and rounded: the ventral short, thick, and fleshy; ending in four cirrhi: the belly, from the throat, grew very prominent: the anal fin was long, and reached almost close to the tail, which was small and circular: the number of rays could not be counted with accuracy by reason of the softness and the thickness of the skin: the side-line was scarcely discernible: colour of the head dusky; of the back and sides yellow; of the belly white: the edges of the dorsal, anal, and caudal fins were white; the other parts dusky.

In the seas about Shetland this fish is said to swarm; and forms, both barrelled and dried, a considerable article of commerce.

In the Gmelinian edition of the *Systema Naturæ* this species is described (from Müller) as having an ovate acute tail, but the descriptions and figures of other authors uniformly represent that part as of a rounded shape.

BLENNIUS. BLENNY.

Generic Character.

<i>Caput</i> declive.	<i>Head</i> sloping.
<i>Corpus</i> elongatum, subcompressum, lubricum.	<i>Body</i> lengthened, subcompressed, lubricous.
<i>Memb. branch.</i> radiis sex.	<i>Gill-membrane</i> six-rayed.
<i>Pinnæ ventrales</i> di, tri, s. tetradactylæ, muticæ.	<i>Ventral fins</i> two, three, or four-rayed, unarmed.

With appendiculated head.

CRESTED BLENNY.

Blennius Galerita. *B. fusco-flavescens nigro-punctatus, crista capitis transversa cutacea.*

Yellowish-brown Blenny, with black specks, and a transverse skinny crest on the head.

Blennius Galerita. *B. crista capitis transversa cutanea.* Lin. *Syst. Nat.* p. 441. *Adonis. Bell. aquat.* p. 219.

Crested Blenny. *Penn. Brit. Zool.* 3. pl. 96.

GENERAL length about four or five inches: body long, compressed, smooth and slippery: colour yellowish brown, freckled with darker coloured specks: belly of a paler cast: head furnished on the middle with a transverse finny appendage, which may be

either raised or depressed at pleasure ; and between the eyes is a small triangular prominence, pointing backward, and red about the edges : ventral fins very small, short, and didactyle : dorsal shallow, running from the hind part of the head to the tail, which is of a round shape : vent placed at some distance beyond the pectoral fins : anal fin reaching from the vent to the tail. Native of the European seas, and found about the rocky coasts of Great Britain.

PUNARU.

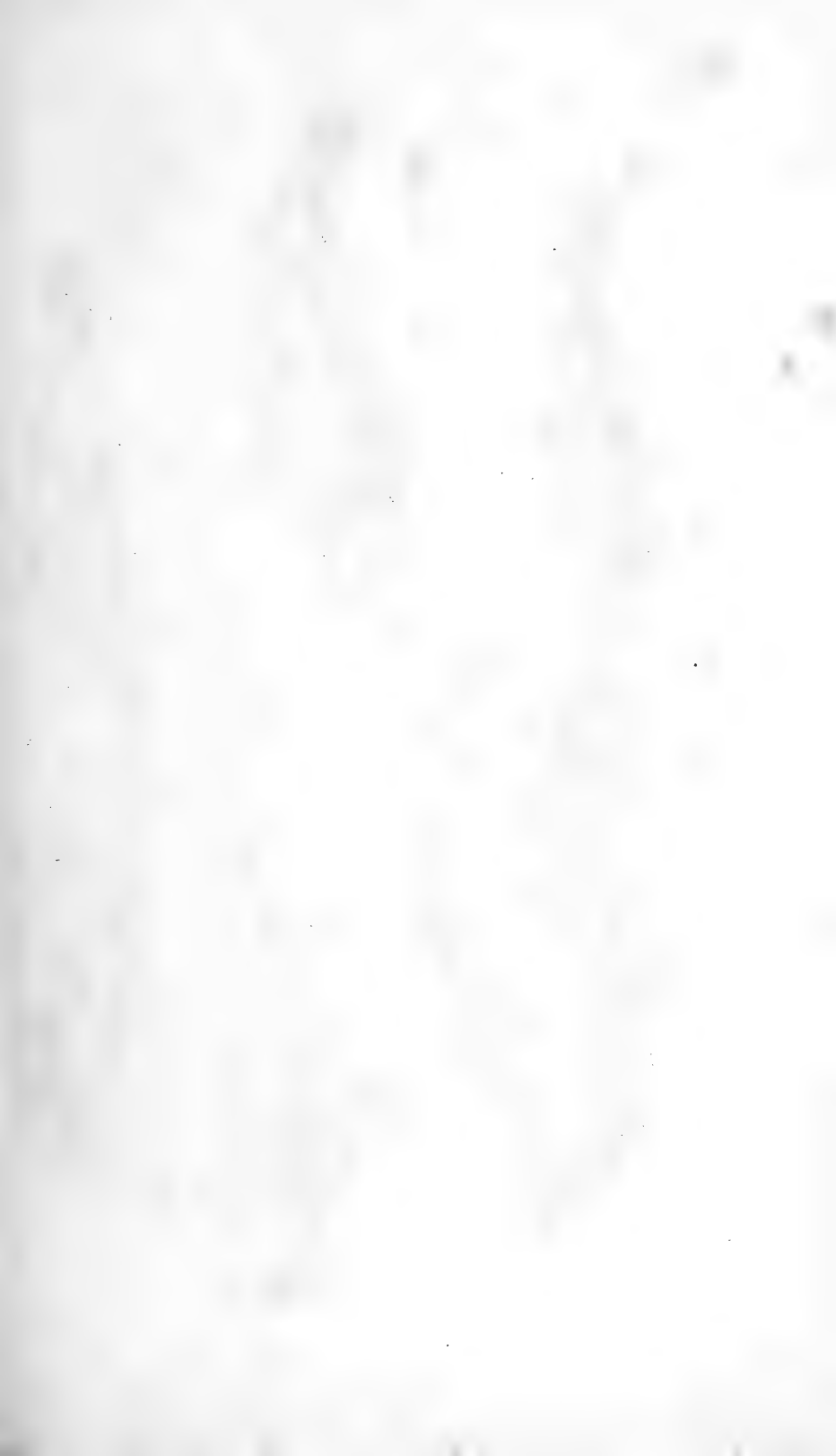
Blennius Cristatus. *B. crista longitudinali setacea inter oculos.*
Lin. Syst. Nat. p. 441. Ray pisc. p. 73. Punaru.
 Blenny with longitudinal setaceous crest between the eyes.

LENGTH about four inches : head thickish ; eyes gold-coloured, situated towards the top of the head : over the eyes two short, red filaments : ventral fins three-rayed. Native of the Indian seas.

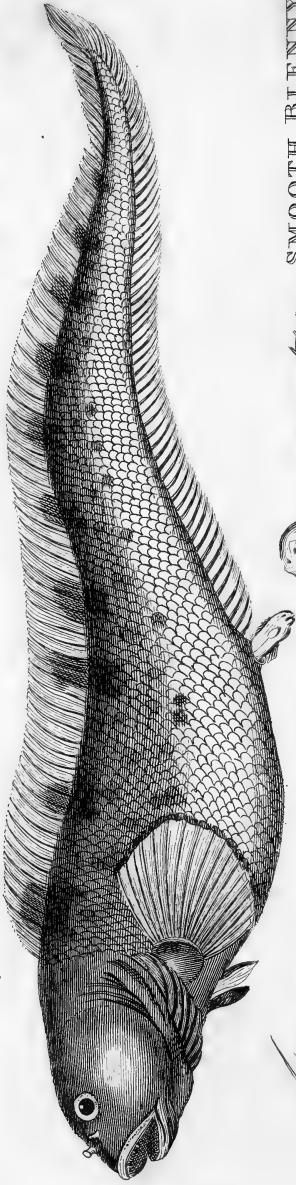
HORNED BLENNY.

Blennius Cornutus. *B. radio simplici supra oculos, pinna dorsali solitaria.* *Lin. Syst. Nat. p. 441. Mus. Ad. Frid. 2. p. 61.*
 Blenny with simple ray between the eyes, and single dorsal fin.

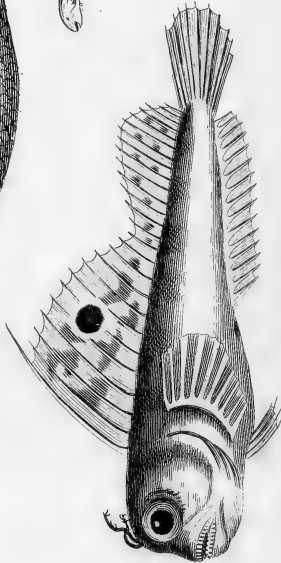
THIS, according to Linnæus, its first describer, is a small species, with a long, thin, and simple process over each eye : on the head are a great many very small or scarcely visible scattered tuber-



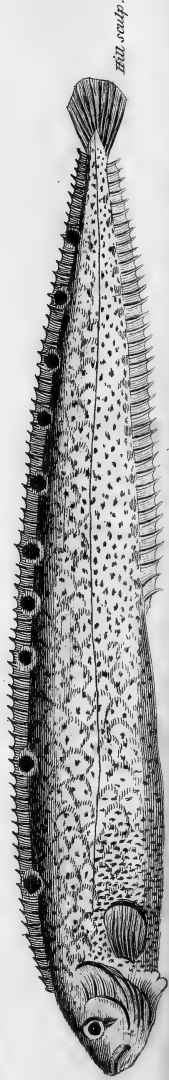
VIVIPAROUS BLENNY.



SMOOTH BLENNY.



OCCELLATED BLENNY.



GUNNEL BLENNY.

Mill. sculp.

cles or points : on each side the lower jaw is a tooth longer than the rest : the skin is mucous, and freckled all over with small reddish specks.

OCELLATED BLENNY.

Blennius Ocellaris. *B. cæruleo-virescens, fusco subfasciatus, pinna dorsali lata, macula ocellari nigra.*

Blueish-green Blenny, subfasciated with brown, with broad dorsal fin marked by a black ocellated spot.

Blennius ocellaris. *B. radio simplici supra oculos, pinna dorsali anteriore oculo ornata.* *Lin. Syst. Nat. p. 441.*

Butterfly Fish. *Will. p. 131. pl. H. 3. f. 2. Bloch. pl. 167. f. 1.*

THIS species is an inhabitant of the Mediterranean sea, and is usually seen of the length of about six or eight inches : it is numbered among edible fishes, though not much esteemed : it is of a thickish form in front, the body gradually declining towards the tail : the head is large, and slopes suddenly downwards : the mouth is wide, and furnished with sharp and close-set teeth : the body is without visible scales, and is generally of a greenish cast, much deeper on the back, and marked by a few large, distant, transverse clouds or bands of a dusky hue : on the head, between the eyes, are placed two long processes or filaments, slightly subdivided at their extremities : the back fin, which is very wide on its fore-part, is of a pale blueish tinge, clouded with dusky variegations, and is marked in the middle by a large black, or deep blue spot, surrounded by a whitish border. This fish is described

by Linnæus and some others* as having two dorsal fins ; but Artedi and Bloch consider it as having in reality only one, the sinking in of the middle part, being in some specimens much deeper than in others, seems to be the cause of this difference of opinion.

FASCIATED BLENNY.

Blennius Fasciatus. *B. fusco-flavescens, fasciis transversis fuscis, cirris duobus simplicibus inter oculos.*

Yellowish brown Blenny, with transverse brown bands, and two simple cirri between the eyes.

Blennius fasciatus. *B. pinnulis simplicibus duabus inter oculos, pinna ani radius novendecim. Bloch. pl. 162. f. 1.*

THIS fish, says Dr. Bloch, is distinguished from the rest by its simple filaments, by a pair of tufts situated between the eyes, and by having nineteen rays in the anal fin : the head is small and sloping : the body broad in front, and taper behind : the lateral line, which runs pretty near the back, is strait : the belly is thick : the vent placed nearer the head than the tail : the body covered with a viscid mucus : the rays of the tail subdivided, those of the other fins simple. Dr. Bloch makes no mention of the colour of this species, but his figure represents it of a pale yellowish brown, fasciated both across the body and dorsal fin with dusky bands. Its length is about six inches. Native of the Indian seas.

* Cepede describes two dorsal fins, but observes that they are sometimes so closely placed as to appear but one.

SALIENT BLENNY.

Blennius Saliens. *B. fuscus, nigro striatus, cirro simplici inter oculos, pinnis pectoralibus maximis.*

Brown Blenny streaked with black, with a simple cirrus on the head, and extremely large pectoral fins.

Le Blennie Sauteur. *Cepede 2. p. 479.*

THIS small species was observed by Commerson about the coasts of some of the Southern islands, and particularly those of New Britain, in the month of July 1768. It seems to be of a gregarious nature, and is seen swimming by hundreds, and as it were flying over the surface of the water, occasionally springing up and down with great rapidity among the rocks: it seems naturally formed for the celerity of its movements; the pectoral fins being very large in proportion to the body: they are nearly of a circular form when expanded, and when contracted reach almost as far as the vent on each side. This approach in point of form to the genera of *Pegasus, Trigla, Scorpaena, Exocoetus*, and others possessed of the power of temporary flight, seems, as Cepede observes, naturally to indicate a similar property. The body is of a very lengthened form, and greatly compressed on the sides: the upper jaw longer than the lower, so that the mouth seems to be placed underneath: the eyes are seated near the top of the head, and are large and round, with gold-coloured irides; and on the occiput rises a cartilaginous longitudinal process, of a simple cylindric form, of about four

millimetres in length: the colour of the body is brown, streaked with black, and the skin is extremely mucous or slippery. When dead, the colour frequently changes to a pale blue: there is no particular appearance of a lateral line, except what results from the longitudinal trace between the dorsal and lateral muscles.

The Count de Cepede farther informs us that the above species, in the manuscripts of Commerson, its first describer, is considered as a distinct genus, under the name of *Alticus*, and called *Alticus saltatorius*, but that it is a genuine species of Blenny. The gill-membrane has at least five rays: the dorsal fin has thirty-five articulated rays; the pectoral fins thirteen; the ventral two filiform rays; the anal twenty-six, and the tail, which is of a lanceolate shape, ten rays.

GATTORUGINE.

Blennius Gattorugine. *B. albidus fusco transversim undulatus, pinnulis superciliarum nuchæque palmatis.*

Whitish Blenny, with transverse brown undulations, and palmated cirri over the eyes and the nape.

Blennius Gattorugine. *B. pinnulis superciliarum nuchæque palmatis.* *Lin. Syst. Nat. p. 441.*

Gattorugine. *Will. p. 132. Penn. Brit. Zool. pl. 96. Bloch. pl. 167.*

THE Gattorugine is a Mediterranean species, usually growing to the length of eight or ten inches. It is of a moderately lengthened and com-

pressed form, and of a whitish or pale ash-colour, variegated, particularly on the upper parts and dorsal fin, by several transverse undulations or streaks of a darker tinge: these colours are observed to vary; the streaks and spots being sometimes olive-coloured with pale blue edges; but what particularly distinguishes the fish from its congeners, is a double pair of ramified tentacula or lengthened processes on the head; the first pair being situated immediately over the eyes, and the latter pair over the back of the head: the mouth is wide, and the teeth very slender and sharp: the dorsal fin runs, as in most others of this genus, nearly along the whole length of the back; and the anal is continued from the vent to the tail. The Gattorugine is considered as an eatable fish, and feeds in the same manner as most others of the genus.

 SUPERCILIOUS BLENNY.

Blennius Superciliosus. *B. flavescens, rubro maculatus, cirris superciliarum palmatis.*

Yellowish Blenny spotted with red, with palmated superciliary cirri.

Blennius superciliosus. *B. pinnulis superciliarum palmatis, linea laterali curva.* *Lin. Syst. Nat. p. 441. Bloch. pl. 168.*

THIS species is of a moderately long and thick form: the head is small; the eyes rather large, with silvery irides, and immediately over each eye

is situated a small palmated crest or appendage, divided into three segments: the lips are large; the mouth rather wide, and the upper jaw furnished with several rows of teeth: the body is covered with very small scales, and is of a yellow or gilded tinge, paler beneath, and marked, as well as the fins, by pretty numerous, and somewhat irregular spots of dusky red: the dorsal fin commences at the back part of the head, and is continued almost to the tail, but not far from its commencement suddenly sinks, so as almost to give the appearance of a smaller anterior dorsal fin, separate from the longer one: the pectoral fins are of moderate size; the ventral ones didactyle, and rather long: the vent is situated in the middle of the abdomen, from which part the anal fin commences, and reaches as far as the tail. This species is viviparous. It is a native of the Indian seas, and grows to the length of about twelve inches.

TENTACULATED BLENNY.

Blennius Tentacularis. *B. exalbidus, fusco maculatus, radio supra oculos simplici, pinna dorsali antice unioculata.*

Whitish Blenny, spotted with brown, with a simple cirrus over the eyes, and a large ocellated spot on the back fin.

Blennius tentacularis. *B. radio supra oculos simplici, pinna dorsali integra antice unioculata.* *Lin. Syst. Nat. Gmel. p. 1179. Brunn. pisc. massil. No. 36.*

THIS small species is greatly allied to the horned Blenny before described, but is scarcely more than two inches and a half long. Cope seems inclined to consider it as a variety of the horned Blenny caused by a difference of climate; this being a Mediterranean and the other an Indian fish. It is of an elongated form, and of a whitish colour, variegated with dusky clouds and specks; and marked on the back fin by a large ocellated spot: above each eye is a simple tentacular process, and the head is marked beneath by three or four transverse white bars: the irides are silvery, with red specks: the dorsal and anal fins are variegated with dusky spots and streaks.

SIMOUS BLENNY.

Blennius Simus. *B. cirro supra oculos minimo, pinnæ dorsali posterioris caudali annexa, linea laterali curva.* *Lin. Syst. Nat. Gmel. p. 1179. Sujet. Act. Petrop. 1779. p. 198. t. 6. f. 2. 4.*

Blenny with very small cirrus over the eyes, dorsal fin united behind to the caudal fin, and crooked lateral line.

LENGTH about three inches and a half: body smooth and very thin: mouth placed beneath: jaws arched: lips membranaceous, very thin, and serrate: teeth small, crowded, equal, in a single row: eyes very large, approximate, and prominent: gill-covers small, flexible, pellucid, and consisting of two pieces: vent in the middle of the body: at the origin of the dorsal fin is a fatty tubercle: tail rounded, with four or five small spurious fins placed near it.

 HAKE BLENNY.

Blennius Phycis. *B. fusco-cinereus, naribus subcristatis, cirro labii inferioris, dorso bipinni.*

Cinereous brown Blenny, with subcristated nostrils, a beard at the lower lip, and two dorsal fins.

Blennius Phycis. *B. naribus subcristatis, cirro labii inferioris, dorso bipenni.* *Lin. Syst. Nat. p. 441.*

Forked Hake. *Penn. Brit. Zool. 3. p. 170.*

THE present species is ranked by Mr. Pennant among the Gadi, but the ventral fins, being fur-

nished with only two rays, seem to justify its being rather considered as a Blenny than a *Gadus*. It has however a general resemblance to that genus, being of a similar shape, and having a beard beneath the lower lip: it is a native of the European seas, and is so well described by Mr. Pennant in the *British Zoology* that nothing need be added to the account there detailed.

“ The length of one that was taken on the Flintshire shores was eleven inches and a half; its greatest depth three inches; but, according to Dr. Borlace*, some grow to be above eighteen inches long. The head sloped down to the nose in the same easy manner with others of this genus (*Gadus*): the mouth large: besides the teeth in the jaws, was a triangular congeries of small teeth in the roof of the mouth. At the end of the lower jaw was a small beard: the first dorsal fin was triangular; the first ray extended far beyond the rest, and was very slender: the second fin began just behind the first, and extended almost to the tail: the ventral fins were three inches long, and consisted only of two rays, joined at the bottom, and separated or bifurcated towards the end: the vent was in the middle of the body; the anal fin extended from thence just to the tail: the lateral line was incurvated: the tail rounded. The colour was a cinereous brown.”

* *Nat. Hist. Cornw.* p. 268.

THIS is introduced by Ray, in his *Synopsis Piscium*, on the authority of Mr. Jago, a judicious ichthyologist of that age, under the title of *Barbus minor Cornubiensis cirris bifurcis*, or the *Lesser Forked-Beard*. Mr. Pennant having never seen the fish, places it next to the preceding, under the name of *Least Hake*. It is said not to exceed five inches in length: the first dorsal fin (according to the figure in Ray's *Synopsis*) is shorter than that of the preceding fish: the second resembles that of the other kind: the ventral fins are bifurcated: it has a small beard, and a rounded tail, but the head is shorter and more steep: the colour black, the skin smooth, and the appearance disagreeable.

With plain or inappendiculated head.

TRIFURCATED BLENNY.

Blennius Trifurcatus. B. fuscus, labiis albis, pinnis ventralibus triradiatis solutis.

Brown Blenny, with white lips, and three-rayed open ventral fins.

Trifurcated Hake. *Penn. Brit. Zool. 3. p. 172. pl. 32.*

FIRST described by Mr. Hugh Davies of Beaumaris in Wales, who communicated it to Mr.

Pennant. Habit resembling that of the *Gadus Tau*, the head being depressed and very broad; the eyes large; the irides yellowish; the mouth very wide, with irregular rows of incurvated teeth: in the roof of the mouth a semilunar congeries of teeth: no tongue; beneath the lower lips a small beard: body compressed from the setting on of the pectoral fins, but remarkably so as it approaches the tail, growing very slender near that part: on the beginning of the back a furrow containing the rudiment of a first dorsal fin: the second dorsal fin reaches almost to the tail, and the anal fin corresponds: above the pectoral fins on each side, is a row of tubercles, nine or ten in number, from the last of which commences the lateral line, which at its middle descends in a curved direction, and from thence continues strait to the tail: the ventral fins were very slender, and deeply trifurcated: the pectoral ones rounded and of moderate size: the length of the specimen described was twelve inches; the colour a deep brown, except the foldings of the lips, which were snow-white, giving a singular appearance to the animal. This species is evidently allied to the *Gadus Tau*, and was first discovered by Mr. Davies near Beaumaris.

PUNCTULATED BLENNY.

Blennius Punctulatus. *B. albidus squamosus, punctis irregularibus fuscis, pinnis ventralibus elongatis.*

Whitish scaly Blenny, with irregular brown points, and elongated ventral fins.

Le Blennie pointillé. *Cepede 2. p. 506. pl. 12. f. 3.*

THE head of this species is large, and scattered over with numerous impressed specks, which extend as far as the gill-covers: the opening of the mouth is narrow, the lips thick, and the teeth sharp and close-set: the eyes very large: the body covered with very visible scales, and marked by several small, irregular clouds and spots on a paler ground: the pectoral fins very large, and ovate: the ventral composed each of two soft rays, almost as long as the pectoral fins: the dorsal commences at the back of the head, and extends as far as the tail: its rays are tipped with small filaments, more especially the eight last, of which six are rather longer and two shorter than the rest: the vent fin is distinct from the tail, which is of a rounded shape. Size, according to Cepede's figure, about five inches. Described from a specimen in the Paris Museum.

SMOOTH BLENNY.

Blennius Pholis. *B. olivaceus, subnigro alboque nebulosus, linea laterali curva, subbifida.*

Olivaceous Blenny, with blackish and whitish clouds, and curved sub-bifid lateral line.

Blennius Pholis. *B. capite lævi, linea laterali curva subbifida.*
Lin. Syst. Nat. p. 443.

Smooth Blenny. *Penn. Brit. Zool. 3. pl. 36. Bloch. pl. 71. f. 2.*

This species, which appears to have been known to Aristotle, is an inhabitant of the Northern and Mediterranean seas, where it commonly frequents the borders of the coasts, lying among the stones, sea-weeds, &c. and occasionally enters the mouths of rivers. It grows to the length of seven or eight inches, but is usually found much smaller: it is a fish of a strong and vigorous nature, biting fiercely when first taken, though incapable of piercing the skin on account of the smallness of its teeth: it is so tenacious of life that, according to Mr. Ray, it may be kept for the space of four and twenty hours out of water. By the help of its ventral fins it is observed to creep with ease up the sides of stones, &c. It feeds on smaller fishes and their spawn, as well as on shell-fish, sea insects, &c. It is caught both by the line and net, but being a coarse fish, is very little esteemed as a food, and is rather used for the purpose of a bait for other fish. In colour it is subject to vary, but is usually of a deep olive-brown, marbled with blackish clouds: sometimes it is nearly black, and

sometimes is marked along the sides by several small whitish specks: the head is large, sloping suddenly to the mouth: the teeth slender, very sharp, and close-set: the irides red: the pectoral fins broad and rounded, consisting of about thirteen rays: the ventral small, consisting of only two thick rays separated at the ends: the dorsal fin reaches from the hind part of the head almost to the tail: the vent is placed about the middle of the abdomen, and the anal fin reaches from thence nearly to the tail, which is rounded at the end.

BOSCIAN BLENNY.

Blennius Boscianus. *B. olivaceus, albido fuscoque nebulosus, ano in medio corporis.*

Olivaceous Blenny with brown and whitish clouds, and vent in the middle of the body.

Le Blennie Bosquien. *Cepede 2. p. 493. pl. 13. f. 1.*

NATIVE of the American seas, and very common in the bay of Charles-Town. It is extremely nearly allied to the Blennius Pholis, and like that species bites hard when taken: length about three inches and a half: colour olive, with whitish clouds or variegations, and obscure brown streaks: head inclining to a sub-triangular form: front whitish and flattish: eyes small: irides yellow: each jaw armed with very numerous, small, crooked teeth: body mucous, compressed, without apparent scales: fins spotted with brown: pectoral fins of moderate

size, and rounded: ventral small, and didactyle: the first eleven rays of the dorsal fin shorter and softer than the rest: the rays of the anal fin bent backwards at their tips: both anal and dorsal fins join the tail, which is of a rounded shape. This species was discovered by Mr. Bosc, by whom it was communicated to the Count de Cedepe.

GUNNEL BLENNY.

Blennius Gunnellus. *B. fusco-flavescens, fusco-punctatus, pinna dorsali ocellis circiter decem nigris.*

Yellowish-brown Blenny, with deeper specks, and about ten ocellated black spots in the dorsal fin.

Blennius Gunnellus. *B. pinna dorsali ocellis decem nigris. Lin. Syst. Nat. p. 443.*

Butter-Fish. *Will. p. 115. Spotted Blenny. Penn. Brit. Zool. 3. pl. 96. Bloch, pl. 71. f. 1.*

THIS species is an inhabitant of the Baltic, Mediterranean, and Northern seas, and grows to the length of about nine or ten inches: the body is of a long and very compressed form; the head small; the lower jaw longer than the upper, and both furnished with a row of small teeth: but what principally distinguishes this fish is a row of moderately distant, round, black spots, with paler circles, disposed throughout the whole length of the dorsal fin, which is shallow, and reaches from the top of the head to the tail: the pectoral fins are very small and rounded, and the ventral most extremely small, each consisting of only two short thick rays: the

vent is situated in the middle of the abdomen, and the vent fin, which is shallow, is continued from thence to the tail; being marked in its progress by several small dusky spots near its base: the tail is small and of a rounded shape: the colour of the body is yellow-brown, clouded and freckled with deeper specks: the skin is extremely slippery, and the rays of the back fin are strong and pungent. This fish inhabits similar situations with the *B. Pholis*; is of similar manners, and like that species is used by the fishermen as a bait. It is however eaten by the Greenlanders, who often dry it for that purpose. It is said to swim with considerable rapidity. Dr. Bloch observes that the specific character given by Linnæus cannot be admitted as sufficiently exact, since the number of spots on the back fin is not constantly ten, but varies from nine to twelve.

VIVIPAROUS BLENNY.

Blennius Viviparus. *B. olivaceus subtus albidus, supra fusco subfasciatus, naribus tubulosis.*

Olivaceous Blenny, whitish beneath, subfasciated above with brown, and with tubular nostrils.

Blennius viviparus. *B. ore tentaculis duobus.* *Lin. Syst. Nat.* p. 443.

Viviparous Blenny. *Penn. Brit. Zool.* 3. pl. 37.

Mustela vivipara. *Will. p.* 122. *Bloch. pl.* 72.

THIS species is considerably larger than either the *Pholis* or *Gunnellus*, being sometimes found of the length of twelve inches. It is of a moderately

slender form, with a smooth, slippery skin, covered by small scales, and is of a yellowish olive-colour, paler beneath, and marked on the upper parts by several moderately large dusky spots, which are peculiarly conspicuous along the base of the dorsal fin, forming a kind of bars on that part and over the back: the dorsal, caudal, and anal fins in this species are united, while the ventral fins are very small and short, each consisting of two thick, rounded rays: the pectoral fins are rounded, and of moderate size: the head is small, the lips thick, and the nostrils prominent and tubular: the rays of all the fins are soft.

This fish, like the *B. superciliosus*, is distinguished by a particularity which takes place in but very few fishes, except those of the cartilaginous tribe; being viviparous, the ova hatching internally, and the young acquiring their perfect form before the time of their birth. Not less than two, or even three hundred of these have been sometimes observed in a single fish. One might be apt to imagine that so great a number of young, confined in so small a space, might injure each other by the briskness of their motions; but this is prevented by the curious disposition of fibres and cellules among which they are distributed, as well as by the peculiar fluid with which they are surrounded. When the fish is thus advanced in its pregnancy, it is scarcely possible to touch the abdomen without causing the immediate exclusion of some of the young, which are immediately capable of swimming with great vivacity: their relative size may

be judged of by an inspection of the annexed plate.

The Viviparous Blenny is a littoral fish, and is found about the coasts of the Mediterranean, the Baltic, and the Northern seas, and sometimes enters the mouths of rivers. It seems to vary as to the period of producing its young, which, according to some authors, takes place in the winter, or in the very early part of spring, and according to others in the summer season.

Like others of its genus it feeds on the smaller fishes, insects, &c. It is taken by the line and net, but is in very small esteem as a food, though perhaps some degree of prejudice may operate in this respect, the bones, like those of the Gar-Fish, acquiring a greenish colour by boiling.



WEESLE BLENNY.

Blennius Mustelarius. B. pinna dorsali anteriore triradiata.
Lin. Syst. Nat. p. 443.

Blenny with the first dorsal fin three-rayed.

A SMALLISH species, slightly described by Linnaeus in the work above referred to, and principally distinguished by having two dorsal fins with only three rays in the first, the other being of considerable extent.

AREOLATED BLENNY.

Blennius Lumpenus. *B. corpore teretiusculo flavicante, areolis dorsalibus fuscis.* O. Fabr. faun. Groenl. p. 151. Lin. Syst. Nat. Gmel. p. 1183.

Yellowish Blenny with subcylindric body marked on the back by brown patches.

A SMALLISH species, of a palish brown colour, whitish beneath, and yellowish towards the hind part: the head is also yellow and narrower than the body: the back marked with brown patches or spots: native of the Mediterranean, inhabiting deep, sandy shores, and concealing itself among fuci, stones, &c. in the manner of the *B. Pholis* and some others.

 FROG BLENNY.

Blennius Raninus. *B. fuscus, pinnis ventralibus subsexfidis, cirro gulari.* Lin. Syst. Nat. p. 444.

Brown Blenny, with obscurely six-cleft ventral fins, and gular cirrus.

Gadus raninus. Müll. Zool. Dan. prodr. No. 359.

NATIVE of the Northern seas, as well as of some of the larger lakes: in habit resembling the *Gadus Tau*, and may be considered as a kind of intermediate species, connecting the genera of *Gadus* and *Blennius*. By Cope it is placed, together with the *Gadus Tau*, in a distinct genus under the name of *Batrachoides*. The head is very much depressed, and broader than the body: the irides

tawny: the mouth turned up, and white within: the jaws are each beset with a double row of sharp teeth: the tongue is obtuse, fleshy, and thick: the fins black, fleshy, and soft: the dorsal and anal equal, and abrupt on the hind part; and the two first rays of the ventral fins terminate in a long bristle. This is not an eatable fish, and it is said that wherever it appears the other fishes retire.



MURÆNOID BLENNY.

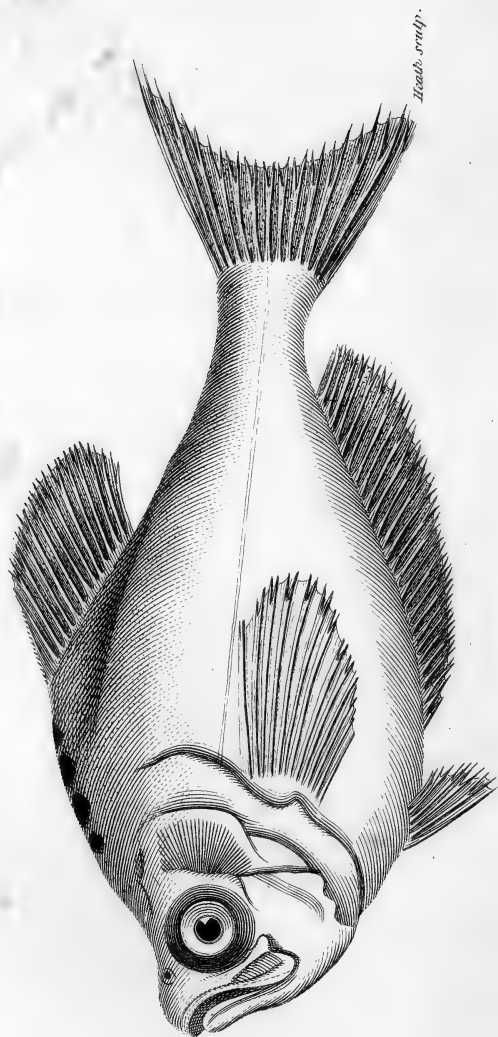
Blennius Murænoïdes. *B. fusco-cinerascens, subtus albidus, pinnis ventralibus uniradiatis spinosis minimis.*

Brownish ash-coloured Blenny, whitish beneath, with very small, single-rayed, spiny ventral fins.

Blennius Murænoïdes. *B. membrana branchiostega triradiata, pinnis ventralibus uniradiatis spinosis minimis. Lin. Syst. Nat. Gmel. p. 1184.*

BODY compressed, sword-shaped, smooth, and without visible scales: length about six inches: colour cinereous brown, the head and belly paler: head marked by minute tubercles: front triangular, rather convex: mouth oblique: jaws equal, with two rows of teeth: lateral line obscure: vent in the middle of the abdomen: dorsal fin prickly: pectoral and caudal oblong: vent fin equal. Native of the northern seas?





INDIAN KURTUS.

KURTUS. KURTUS.

Generic Character.

<i>Corpus</i> latum, utrinque carinatum, dorso elevato.		<i>Body</i> broad, carinated both above and below; with greatly elevated back.
<i>Membrana branchiostegae</i> radiis duobus.		<i>Gill-Membrane</i> two-rayed.

INDIAN KURTUS.

Kurtus Indicus. *K. argenteus, dorso aureo.*

Silvery Kurtus, with gold-coloured back.

Kurtus Indicus. *Bloch. pl. 169.*

THE genus *Kurtus*, instituted by Dr. Bloch, consists at present of a single species only. This is a native of the Indian seas, and is supposed to feed on shell-fish, small cancri, and other sea insects, the remains of which were observed in the stomach of the specimen examined by Dr. Bloch. The length of this fish was about ten inches, including the tail, and its greatest breadth something more than four inches: its shape is deep or broad, the sides being much compressed, and the back rising very high in the middle: the gill-covers consist of a large single membrane on each side: the eyes are large, with silver irides: the mouth is of moderate width, and curves downwards: the teeth are small and numerous, stand-

ing in several rows in each jaw: the nostrils are simple: the rays of the fins are soft, (except the first ray of the dorsal and ventral,) projecting somewhat beyond the membrane of the fin. The colour of the whole body is silvery as if covered with foil, without any appearance of scales: the back is tinged with gold-colour and marked by three or four black spots on its ridge, and the fins have a reddish cast.

END OF PART I.

GENERAL ZOOLOGY

— or —

SYSTEMATIC NATURAL HISTORY

— by —

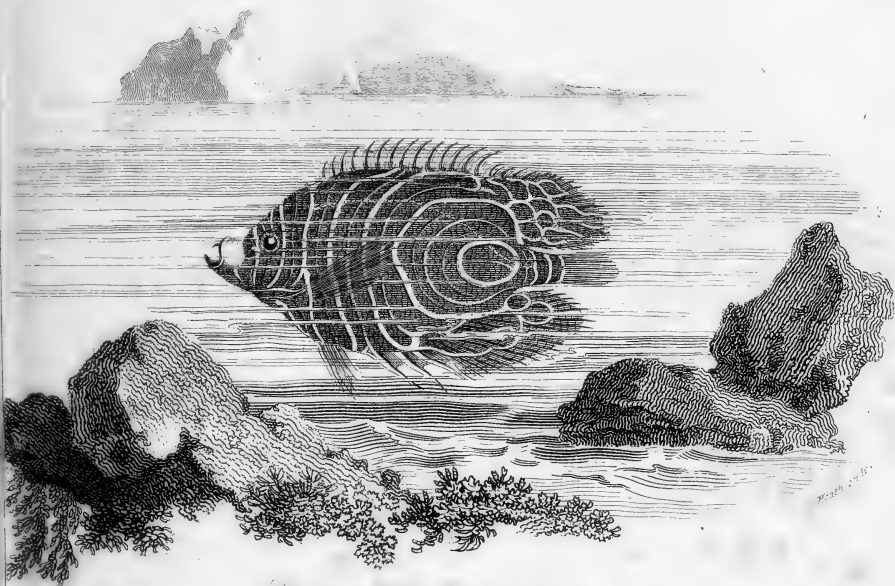
GEORGE SHAW M.D.F.R.S &c.

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VOL. IV. Part 2.

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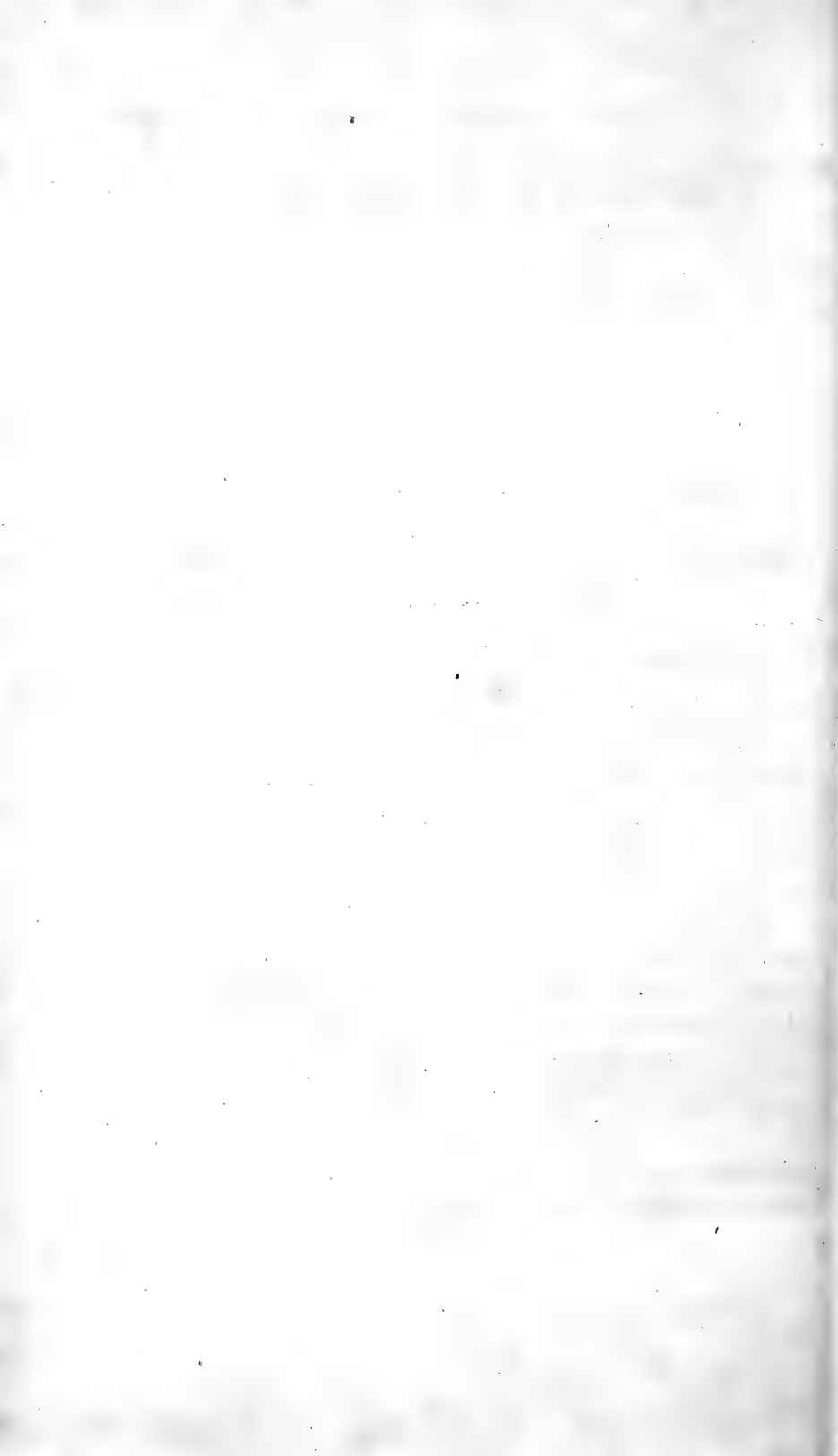
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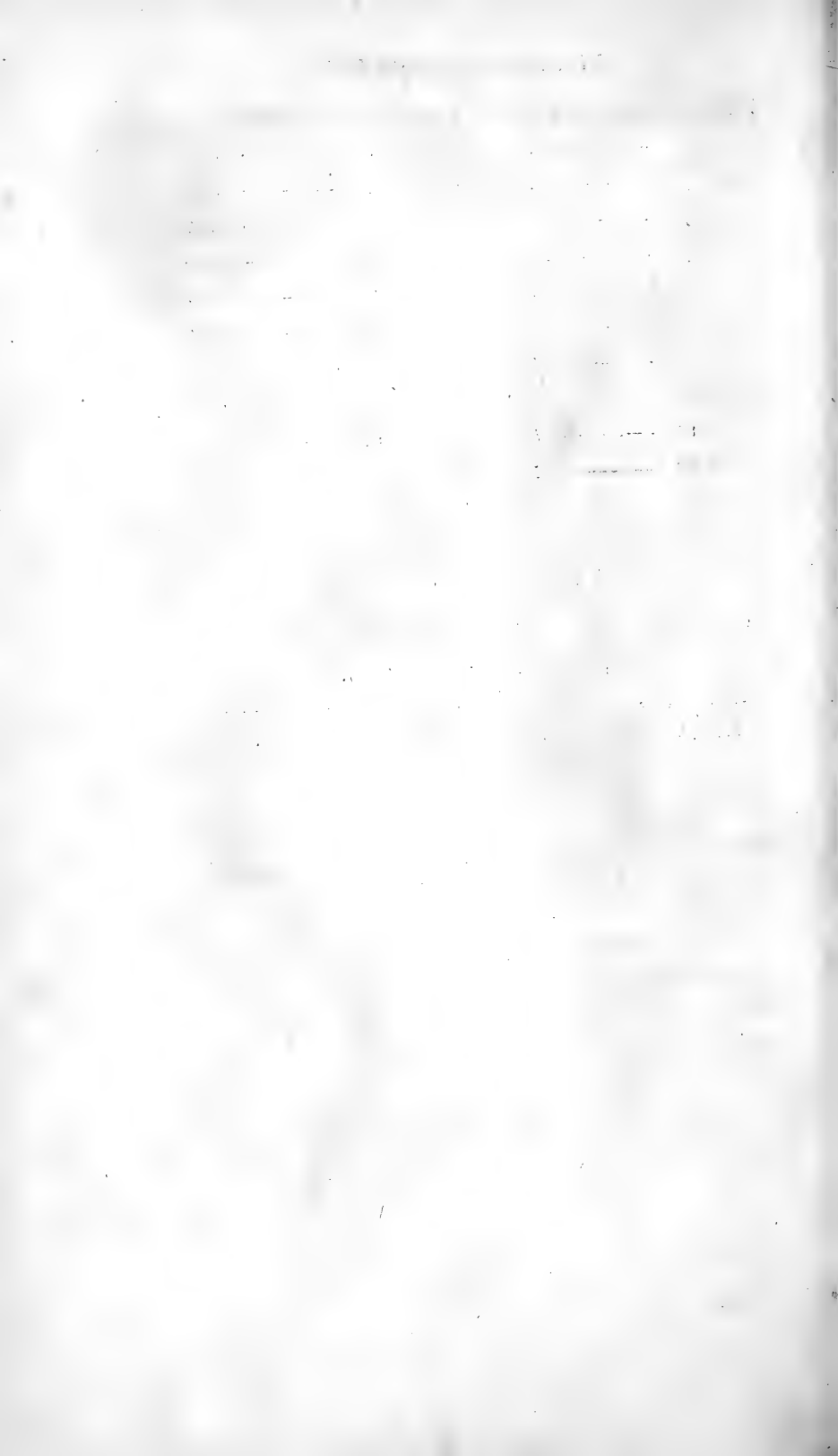
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P. 410, l. 13, for *Sparus chrysops*, Bloch. read *Lutianus Chrysops*, Bloch.

P. 578, l. 22, place the asterisk l. 22, at line 1, after the word *mud*.







HERMANNIAN BAND-FISH.



COMMON BAND FISH.

F I S H E S.

ORDER

T H O R A C I C I.



CEPOLA. BAND-FISH.

Generic Character.

<i>Caput</i> breve: dentes curvati, acuti.	<i>Head</i> short: teeth curved, sharp.
<i>Corpus</i> longissimum, compressum, abdomine brevissimo.	<i>Body</i> very long and compressed: abdomen extremely short.
<i>Membr. branch.</i> radiis sex.	<i>Gill-Membrane</i> six-rayed.

COMMON BAND-FISH.

Cepola Tænia. *C. argentea, pinnis rubris, capite obtusissimo, cauda attenuata.*

Silvery Band-Fish, with red fins, very obtuse head, and attenuated tail.

Cepola Tænia. *C. pinna caudæ attenuata, capite obtusissimo.*

Lin. Syst. Nat. p. 445.

Tænia auctorum. *Artedi gen. 83. syn. 114.*

Cepola capite truncato. *Bloch. pl. 170.*

THIS remarkable species is of a form so thin and flat in proportion to its length as to have obtained among the ancient ichthyologists the title of Tænia or ribband-fish. It is a native of the Mediterranean sea, and is sometimes found of the length of three or four feet, though the generality of specimens do not exceed the length of eighteen inches or two feet: the head is short, and rounded, or rather truncated in front: the mouth is wide, opening downwards; the lower jaw somewhat exceeding the upper in length: both are armed with moderately large, sharp, and curved teeth, placed in a single row in the upper, and in a double one in the lower jaw: the tongue is broad and rough: the eyes very large, with silvery irides: the abdomen, properly speaking, is so very short as scarce to exceed the length of the head, and from this part the body is continued of equal diameter for a great extent, gradually tapering as it approaches the tail: the sides are extremely compressed, and the body, both above and below, sharpens into a kind of carina or ridge: the pectoral fins, which are placed immediately beyond the gills, are ovate, and of moderate size: beneath them are situated the ventral fins, which are of nearly similar form: the dorsal, which is of moderate breadth, and furnished with pretty numerous distinct rays, com-

mences from the back of the head, and is continued as far as the tail, which is of moderate size and of an oval shape: the vent fin commences at a small distance from the ventral ones, and like the dorsal is continued to the beginning of the tail: the colour of the body is bright silver, with a dusky tinge above, and marked along the sides by a few obscure, distant, and rather large reddish spots: the lateral line runs strait through the middle of the body from the head to the tail: the fins are all of a pale red colour, and the skin is covered with extremely small scales. This fish is said to swim with great rapidity, in the manner of the Trichiure, and to present a beautiful spectacle by the undulating flexures of its body. It is of a predacious nature, living principally on the smaller kind of crabs and shell-fish, the remains of which are said to be usually found in its stomach. From its extreme thinness, which is such as almost to permit the vertebræ to be seen through the sides, it is scarcely considered as an eatable fish. It is observed to frequent the neighbourhood of the shores, in order the more readily to obtain its food, and is occasionally used by the fishermen for the purpose of a bait.

RUBESCENT BAND-FISH.

Cepola Rubescens. *C. rubescens*, pinna caudæ attenuata, maxillis acutis.

Reddish Band-fish, with attenuated tail, and pointed jaws.

Myrus alter, sive *Serpens rubescens Rondeletii*. *Aldr. pisc.* p. 367.

Ophidium macrophthalmum. *Lin. Syst. Nat. ed. X.* p. 259.

THIS species, which seems to be far rarer than the preceding, and which is not very distinctly described by those authors who have seen it, is said to have a pointed rather than a rounded head, and to be not so thin in the body: to be of a pale red colour throughout, marked transversely by numerous, narrow, and somewhat undulated streaks: lateral line as in the preceding species: back and vent fin placed as in the former, but shallower, and with more disjointed or separated rays: indeed from the expression of Rondeletius one might doubt whether he meant that the rays were connected by any membrane or not; (“In dorso a capite ad caudam velut capillamenta tenuia a sese disjuncta; in ventre similia.”) It is questioned, and not without reason, by Willughby whether the fish be any thing more than some variety of the former kind; and so far as can be judged from the rude figures of Rondeletius and Aldrovandus, it can scarcely be considered as a distinct species. It is said to be a native of the Mediterranean.

ROUGH-FINNED BAND-FISH.

Cepola Trachyptera. *C. capite declivi, maxilla utraque fornicata, pinnis aculeatis serratis scabris.* *Lin. Syst. Nat. Gmel.* p. 1187.

Band-fish with sloping head, arched jaws, and prickly, serrated, rough fins.

NATIVE of the Mediterranean: observed in the Adriatic Gulf: described as having a strait lateral line, with a single row of scales, and the first rays of the fins strong, sharp, and rough.

 HERMANNIAN BAND-FISH.

Cepola Hermanniana. *C. capite angulato, oculis minimis, ore cirroso, cauda subulata.*

Band-Fish with angular head, extremely small eyes, bearded mouth, and subulate tail.

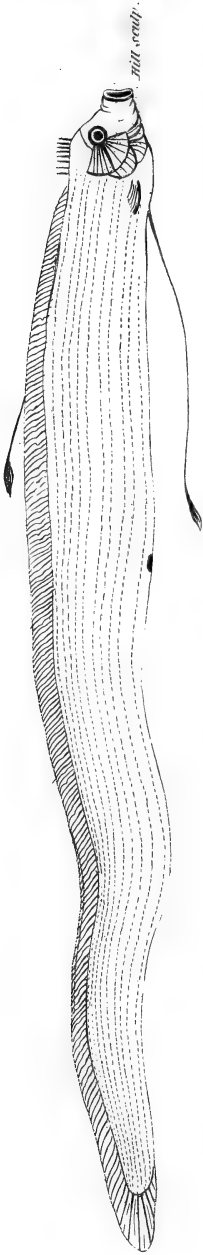
Le Tænioide Hermannien. *Cepede, 2. p. 533, pl. 14.*

DESCRIBED by Cepede, who ranks it in a distinct genus, under the title of *Tænioides*. He observes that though of the same general form, thinness, &c. yet it differs in many points from the true *Cepolæ*. The eyes are so small as to be with great difficulty discovered, and consist of two small black points: there is no caudal fin, the tail terminating in the same manner as in the *Trichiures*, viz. in a fine point: the dorsal fin, which is very shallow, with soft rays, commences at no great distance from the head, and is continued to the extremity of the

tail : the vent is situated opposite the origin of the back fin, and from it commences a very short and shallow vent fin, continued only to a small distance beyond the vent : the pectoral fins are moderately large, rounded, and furnished with numerous, soft, setaceous rays : the head, which is of moderate size, is as it were marked into facets, as represented on the plate, and at the mouth are placed a few cirri or beards of unequal length : there are no visible scales on the skin, and the disposition of the muscles may be traced through it : the pectoral and anal fins are marked by a few small black specks.

This fish takes its specific name from Professor *Hermann*, of Strasburg, so well known by his learned labours in natural history. It seems to have been described from a dried specimen, and in point of natural affinity, may be considered as equally allied to the genera of *Cepola* and *Trichiurus*. No mention is made of its colour or its native region.





mit vord.

ASCANIAN GYMNETRUS.

GYMNETRUS. GYMNETRUS.

Generic Character.

<p><i>Corpus</i> longissimum, compressum.</p> <p><i>Dentes</i> numerosi, subulati.</p> <p><i>Membr. branch.</i> 4—5—radiata.</p> <p><i>Pinna analis</i> nulla.</p>	 	<p><i>Body</i> extremely long, compressed.</p> <p><i>Teeth</i> numerous, subulate.</p> <p><i>Gill-membrane</i> four or five-rayed.</p> <p><i>Anal fin</i> wanting.</p>
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ASCANIAN GYMNETRUS.

Gymnetrus Ascanii. *G. argenteus*, corpore longitudinaliter fusco punctato, cirris ventralibus apice dilatatis.

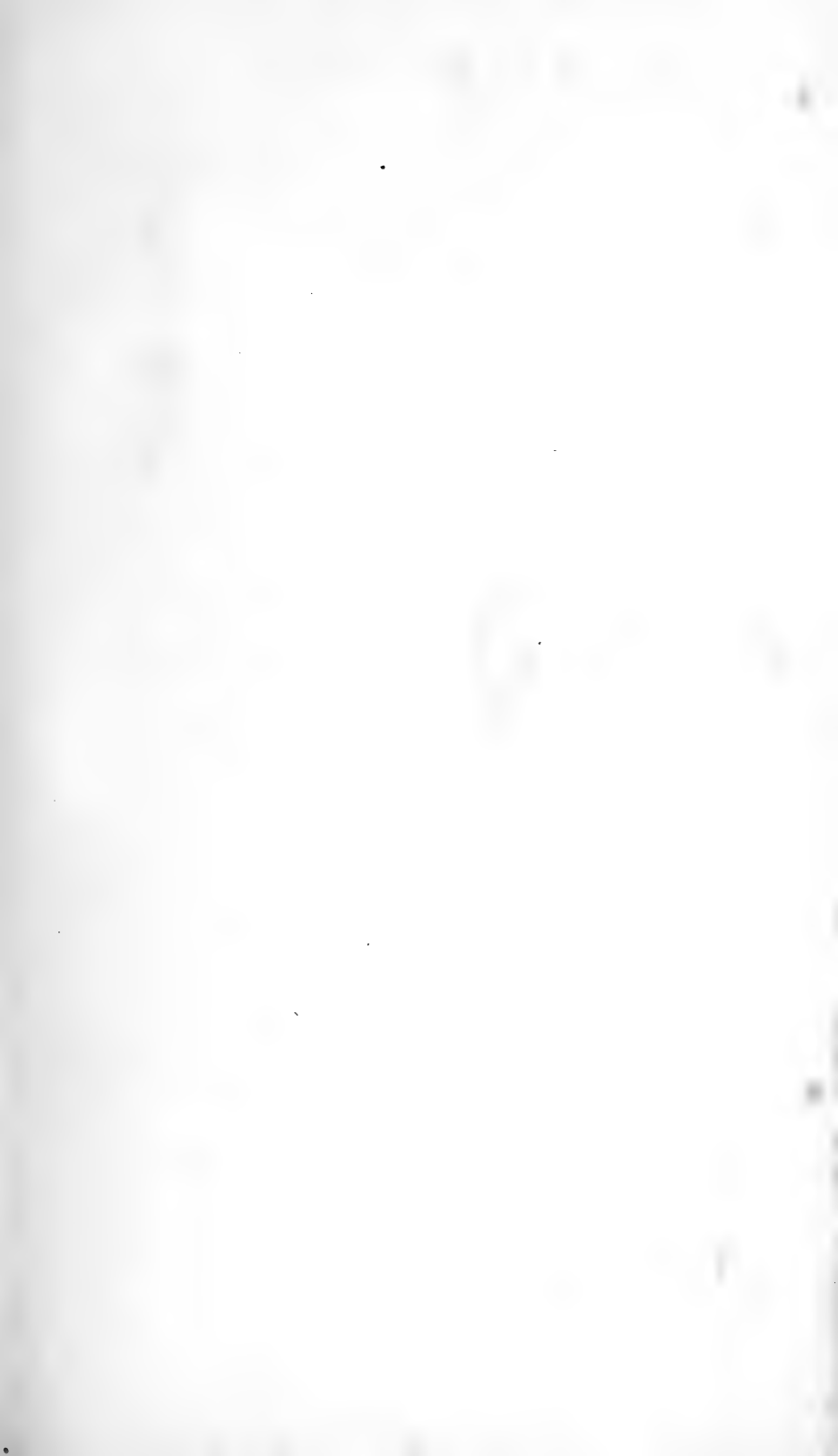
Silvery Gymnetrus, speckled longitudinally with brown points, and with the ventral cirri dilated at the tips.

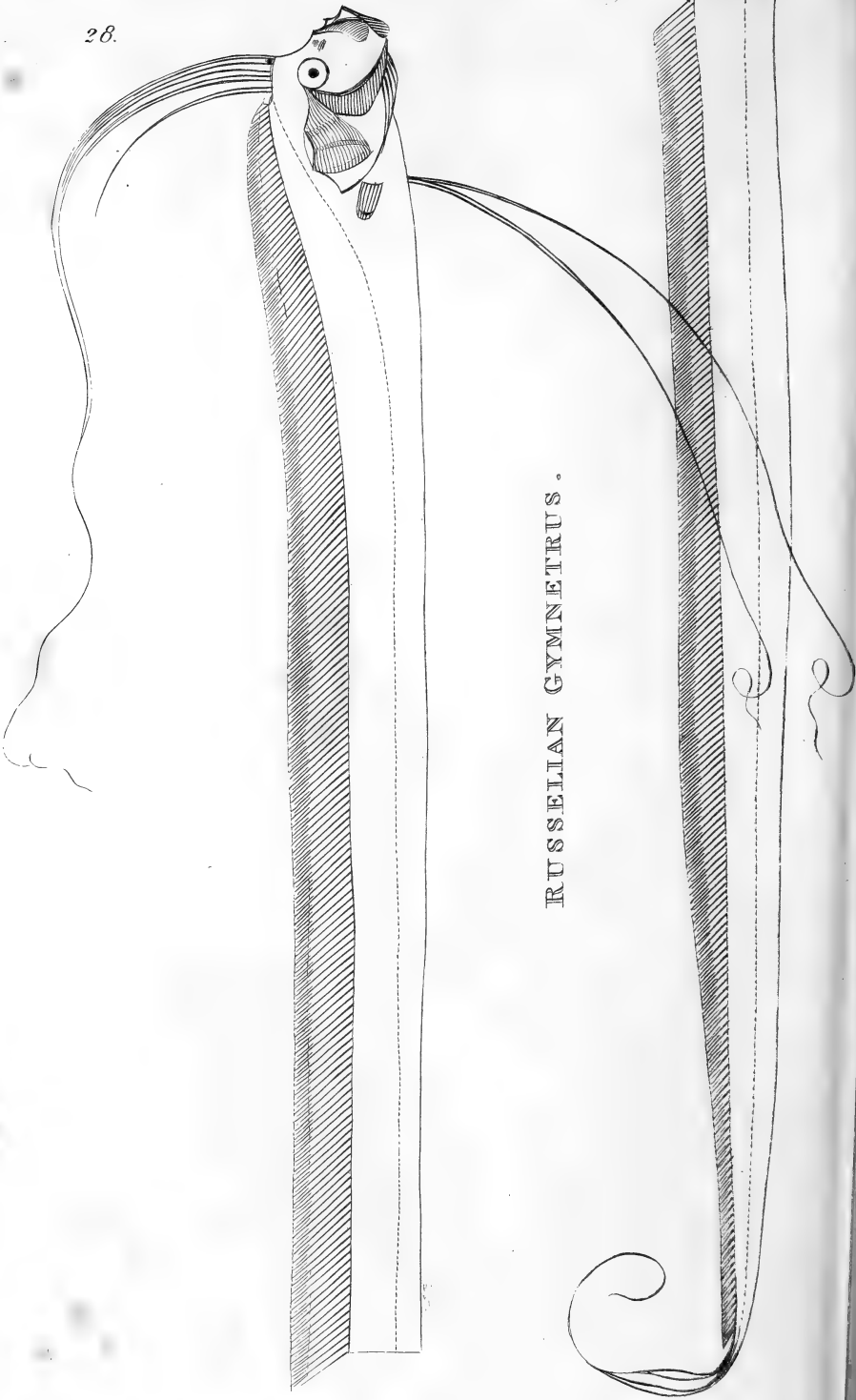
Regalecus Glesne. *Ascan. ic. rer. nat. t. 11.*

THIS extraordinary fish seems to have been almost unknown till within the space of a few years past; nor are its characters and history yet so distinctly ascertained as might be wished. It is a native of the northern seas, and seems to have been first described by Professor Ascanius in his work entitled *Icones rerum naturalium, &c.* The length of the specimen was ten feet, and the diameter, which was equal throughout the whole length,

about six inches: the head short, the mouth small, and the eyes rather large: on the upper part of the head, before the commencement of the dorsal fin, were situated seven or eight upright, naked rays or processes, of moderate length: the dorsal fin, which was rather shallow, commenced at a small distance beyond these, and running along the whole length of the back, formed by its continuation the tail-fin, which was carried to a very small distance beneath the body, there being, properly speaking, no vent-fin: the pectoral fins were very small, of a slightly ovate or rounded shape, and situated at a small distance from the head: the ventral fins, if they can be said to deserve the name, consisted of a pair of extremely long single rays or processes terminated by a small ovate expanded tip or finny extremity: the gill-covers appeared to consist of five or six radiated laminae: the colour of the whole body was bright silver, with a blueish cast diffused over the upper part of the back: the lateral line was strongly marked, and ran from the gill-covers to the tail, and the sides of the body were marked by several longitudinal double rows of slightly extant, very small, dusky specks: the forehead was white; the fins pale brown.

This fish is said to be generally seen either preceding or accompanying the shoals of herrings in the northern seas, for which reason it is popularly known by the title of *King of the Herrings*.





RUSSELLIAN GYMNETRUS .

VAR ?

Russelian Gymnetrus.

DESCRIBED from a drawing in the possession of Dr. Russel. General proportions similar to those of the first described species, except that the dorsal fin is considerably wider : from the top of the head proceeds an extremely long process, passing to a considerable distance over the back : this process is very broad at its base, where it appears to be strengthened by four stout rays, which gradually coalesce in their progress till at length they form a single filament : at some little distance beyond the base is a second process of similar form, but much shorter and consisting but of one ray gradually lessening to its point : the pectoral fins are very small : the ventral processes are of great length, but terminate in mere filaments, without any dilated extremities, and the tail, which consists of a lanceolate membrane strengthened by two external or bounding rays, is furnished with a similar terminating filament : the colour of the whole body is bright silver ; the fins pale brown ; the dorsal fin edged with a dusky border.

The length of the above specimen, which was taken near Vizagapatam in the year 1788, was two feet eight inches from head to tail. It might therefore be considered either as a variety, or a sexual difference of the preceding species in a younger

state; the differences being not such as absolutely to contradict this supposition.

From Dr. Russel's memorandums on this subject, politely communicated during my description of this genus, it appears that no teeth were visible in either jaw, whereas in the Ascanian fish the teeth are expressly said to have been of a subulated form: the opercula consisted of two oblong, flexible, streaked plates: the abdomen was very short, and the vent placed near the head: (in the Ascanian fish it was situated towards the middle of the abdomen.) The caudal fin was not united with the dorsal, and consisted of four rays, connected at the base by a thin membrane, and afterwards joined together and ending in a setaceous thread. The gill-membrane had five rays; the dorsal fin 320: (in the Ascanian fish, notwithstanding its vast length, there were only 120.) The pectoral fin had eleven rays, the ventral two, and the caudal four*.

In the British Museum is a dried specimen of a fish which appears to be nearly allied to the preceding, but which is not sufficiently perfect to admit of very exact description: the body is much shorter in proportion: the lateral line extremely strong or distinct: the colour of the whole animal, except the fins and processes (which are red), a bright silver; and from the top of the

* I must here observe that, (regarding the number of rays in the fins of fishes, and more especially in those which have long and shallow fins, as a character on which no very great dependence is to be placed,) I have not been solicitous to introduce it, except in a few instances, into the present work.



head proceeds a very strong horn-shaped process of the length of several inches, gradually tapering into a slender extremity: the length of this specimen is about four feet and a half, and the breadth about five inches, exclusive of the back fin.

BLOCHIAN GYMNETRUS.

Gymnetrus argenteo-cærulescens, fasciis linearibus obliquis, maculisque rotundatis fuscis, pinnis rubris, ventralibus quatuor.

Blueish-silvery Gymnetrus, with oblique, linear, brown bands, and rounded spots, red fins, and four ventral processes.

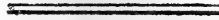
Gymnetrus Hawkenii. G. pinna ventrali biradiata. Bloch. pl. 423.

THIS, which is a native of the Indian seas, and which appears also to be occasionally seen in those of Europe, is described by Dr. Bloch from a drawing communicated by J. Hawkins, esq. In its general appearance it is much allied to the preceding kinds, but appears to be furnished with two pair of ventral processes, which are of considerable length, and terminate in large, dilated, finny extremities of an oval form: the back-fin is continued as far as the tail, which, in the figure given by Dr. Bloch, is represented as of the usual form in the generality of fishes, (a circumstance probably owing to a mistake of the draughtsman*.) The colour of this species is silvery, with a blueish cast

* I am assured by Mr. Hawkins that this is really the case, the specimen from which the drawing was taken having been defective in that part.

on the upper parts, and several transverse, alternate, brownish shades continued along the body, accompanied by large, distant round spots of a similar colour : the fins and processes deep crimson ; the pectoral fins pretty large in proportion.

It appears from a print, published in the year 1798, that a specimen of this fish was thrown on the coast of Cornwall in the month of February in the same year. Its length was eight feet six inches, its breadth in the widest part ten inches and a half, and its thickness only two inches and three quarters : the tail in this specimen was wanting : the colours the same as in the specimen figured by Dr. Bloch.



CEPEDIAN GYMNETRUS.

Le Regalec lanceolé. Cepede pisc. 2. p. 219.

THIS, which must be considered as a doubtful species, is described by Cepede from a coloured Chinese drawing belonging to the Museum of the Prince of Orange. The author refers it to the present genus from the circumstance of its wanting the anal fin, and gives it the trivial name of lanceolatus from the shape of its tail, which is pointed at the tip. This fish is of a gold-colour, shaded with brown, and is destitute of the ventral fins or appendages so remarkable in the other species.



Zoada azip.

CEPEDIAN GYMNETRUS.



VANDELLIUS. VANDEL.

Generic Character.

<i>Corpus</i> longissimum, ensiforme.		<i>Body</i> extremely long, sword-shaped.
<i>Membr. branch.</i> radiis quinque vel sex.		<i>Gill-membrane</i> five or six-rayed.
<i>Dentes</i> subulati, anterioribus majoribus.		<i>Teeth</i> subulate, those in front largest.

LUSITANIAN VANDEL.

Vandellius Lusitanicus. *V. argenteus, cauda furcata.*

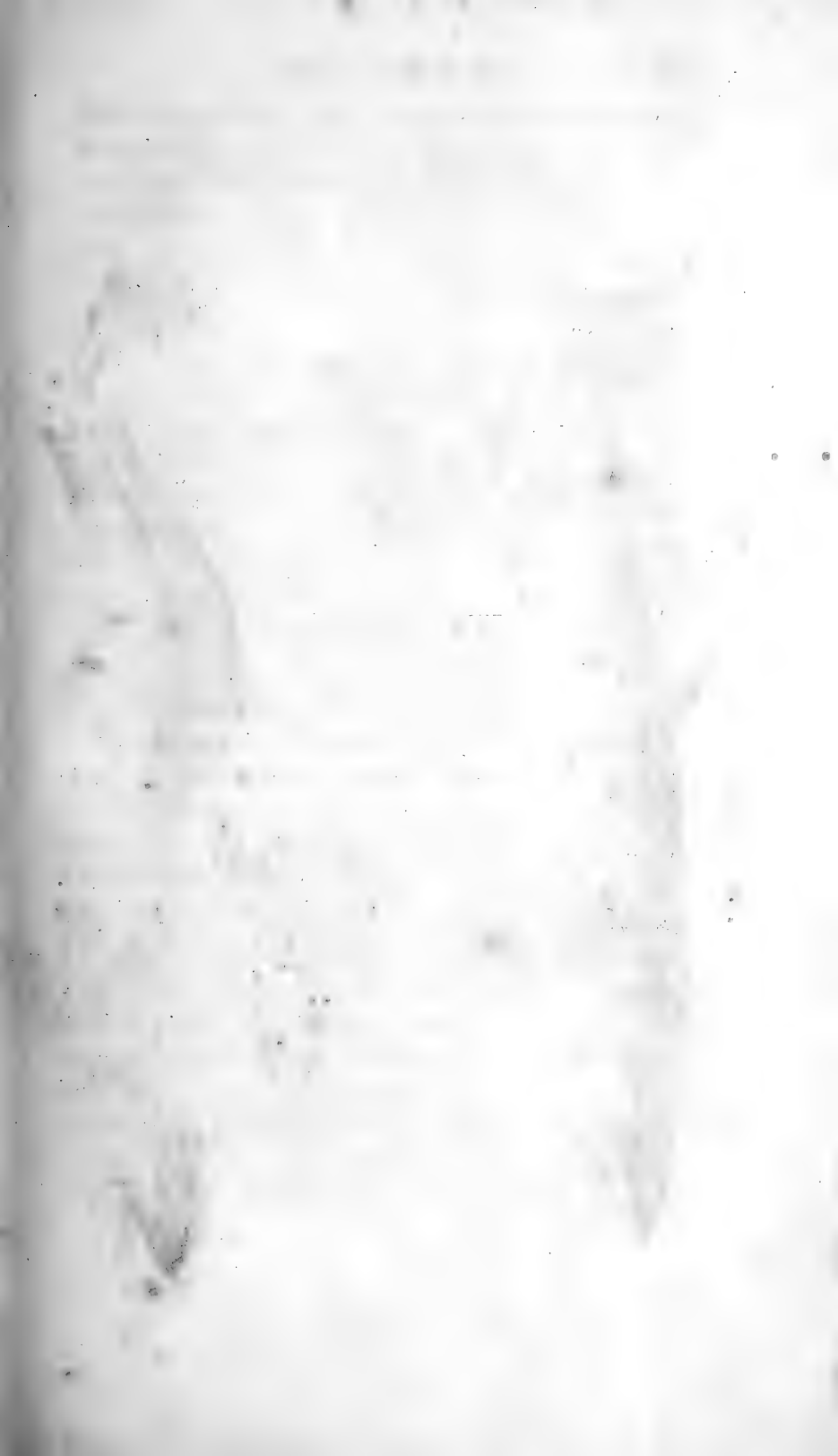
Silvery Vandel, with forked tail.

Trichiurus ensiformis. Vandelli. *Brit. Mus.*

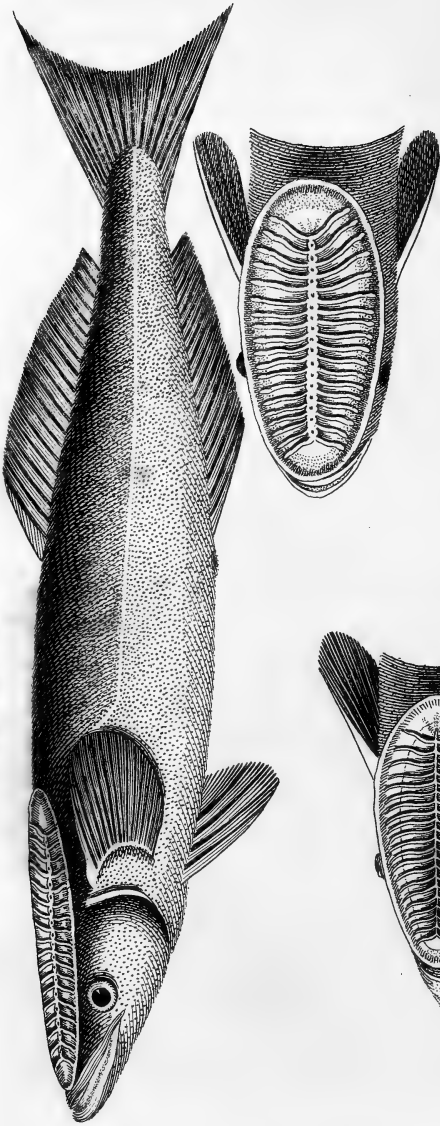
THIS fish, of which a dried specimen, in good preservation, occurs in the British Museum, is found, though very rarely, in the Mediterranean and Atlantic seas; has been sometimes taken near Lisbon, and has been considered by Dr. Vandelli of Coïmbra as greatly allied to the genus Trichiurus.

The length of the specimen in the British Museum is four feet eight inches; the breadth (exclusive of the back fin, which is about an inch

wide) three inches and a half; and the thickness very slight in proportion. The head is of the usual form in the generality of fishes, and the lower jaw somewhat exceeds the length of the upper: the mouth is moderately wide, and furnished, both above and below, with a row of middle-sized, sharp teeth, but of which the two front ones in the upper jaw, as well as two lateral ones at no great distance from them, far exceed the rest in size: the tongue is cartilaginous, spatular, and about three quarters of an inch in length: the eyes very large, with silvery irides: the gill-covers consist of a large single piece on each side, and the gill-membrane is furnished with five rays: the dorsal fin is continued from the hind part of the head throughout the whole length of the back, as far as the tail, which is small and very much forked, with sharp tips: the pectoral fins are of moderate size, thin, ovate, or rather subacute, with about twelve rays: the anal fin is much shallower than the dorsal, and commences at the distance of but a few inches from the tail, to the base of which it is continued: the lateral line commences from the upper part of the head, and runs strait to the tail: the colour of the whole fish, except on the fins and tail, which are pale brown, is rich silver, with a dusky blueish tinge towards the back, and without any appearance of scales: the dorsal fin has 105 pretty strong rays; the pectoral fins about 12; the anal 20, and the tail 20, subdivided at their tips.



MEDITERRANEAN REMORA.



INDIAN REMORA.



ECHENEIS. REMORA.

Generic Character.

<i>Caput nudum, clypeo ovato plano transversim sulcato.</i>	<i>Head furnished above with a flat, ovate, transversly sulcated shield.</i>
<i>Membr. branch. radiis sex.</i>	<i>Gill-membrane six-rayed.</i>
<i>Corpus nudum.</i>	<i>Body without scales.</i>

MEDITERRANEAN REMORA.

Echeneis Remora. *E. fusca, striis capitis octodecim, cauda subfurcata.*

Brown Remora, with about eighteen bars on the shield, and subfurcated tail.

Echeneis Remora. *E. cauda bifurca, striis capitis 18. Lin. Syst. Nat. p. 446.*

Remora Imperati & Aldrovandi. *Will. p. 119.*

Echeneis pinna caudali semilunata. *Bloch. pl. 172.*

THE extraordinary faculty which this fish possesses of adhering at pleasure with the utmost tenacity to any moderately flat surface, was not unobserved by the ancients, and is described in terms of considerable luxuriance by Pliny in particular, who, giving way to the popular prejudices of his time, represents the Remora as

possessing the power of stopping a vessel in full sail, so as to render it perfectly immoveable in the midst of the sea.

“ Ventum est ad summa Naturæ, &c.”

I shall give the translation in the words of Philemon Holland.

“ Having so far proceeded in the discourse of Nature’s historie, that I am now arrived at the very heighth of her forces, and come into a world of examples, I cannot chuse but in the first place consider the power of her operations, and the infinitnesse of her secrets, which offer themselves before our eyes in the Sea: for in no part else of this universal frame is it possible to observe the like majestie of Nature: insomuch as we need not seeke any farther, nay we ought not to make more search into her divinitie, considering there cannot be found any thing equall or like unto this one Element, wherein she hath surmounted and gone beyond her own selfe in a wonderfull number of respects. For first and foremost, Is there any thing more violent than the Sea, and namely when it is troubled with blustering winds, whirlepuffs, storms and tempests? or wherein hath the wit of man been more employed (seeke out all parts of the whole world) than in seconding the waves and billows of the Sea, by saile and ore? Finally, is there ought more admirable than the inenarrable force of the reciprocall tides of the Sea, ebbing and flowing as it doth, whereby it keepeth a current also, as it were the stream of some great river?

“ The current of the sea is great, the tide much, the winds vehement and forcible, and more than that, ores and sailes withall to help forward the rest, are mightie and powerfull: and yet there is one little sillie fish, named Echeneis, that checketh, scorneth, and arresteth them all: let the winds blow as much as they will, rage the storms and tempests what they can, yet this little fish commaundeth their furie, restraineth their puissance, and maugre all their force as great as it is, compelleth ships to stand still: a thing which no cables be they never so big and able as they will, can performe. She bridleth the violence and tameth the greatest rage of this universall world, and that without any paine that she putteth herselfe unto, without any holding and putting backe, or any other meanes save only by cleaving and sticking fast to a vessell: in such a sort as this one small and poore fish is sufficient to resist and withstand so great a power both of sea and navie, yea and to stop the passage of a ship, doe they all what they can possible to the contrarie. What should our fleets and armadoes at sea, make such turrets in their decks, and forecastles? what should they fortifie their ships in warlike manner, to fight from them upon the Sea, as it were from mure and rampier on firme land? See the vanitie of man! alas, how foolish are we to make all this adoe? When one little fish, not above half a foot long, is able to arrest and stay perforce, yea and hold as prisoners our goodly tall and proud ships, so well armed in the beake-head with yron pikes and brazen

tines; so offensive and dangerous to bouge and pierce any enemie ship which they doe encountre. Certes, reported it is, that in the naval battaile before Actium, wherein *Antonius* and *Cleopatra* the queene were defeited by *Augustus*, one of these fishes staid the admirall ship wherein *M. Antonius* was, at what time as he made all the hast and meanes he could devise with help of ores to encourage his people from ship to ship, and could not prevaile, untill he was forced to abandon the said admirall and goe into another galley. Meanwhile the armada of *Augustus Cæsar*, seeing this disorder, charged with greater violence, and soone invested the fleete of *Antonie*. Of late daies also, and within our remembrance the like happened to the Roiall ship of the Emperour *Caius Caligula*, at what time as he rowed backe, and made saile from Astura to Antium; when and where this little fish detained his ship, and (as it fell out afterward) presaged an unfortunate event thereby: for this was the last time that ever this Emperour made his returne to Rome; and no sooner was he arrived, but his own souldiours in a mutinie fell upon him and stabbed him to death. And yet it was not long ere the cause of this wonderfull staie of his ship was knowne: for so soon as ever the vessel (and a galliace it was, furnished with five bankes of ores to a side) was perceived alone in the fleete to stand still, presentlie a number of tall fellows leapt out of their ships into the sea, to search what the reason might be that it stirred not.

and found one of these fishes sticking fast to the very helme: which being reported unto *Caius Caligula*, he fumed and fared as an Emperour, taking great indignation that so small a thing as it, should hold him back perforce, and check the strength of all his mariners, notwithstanding there were no fewer than foure hundred lustie men in his galley that laboured at the ore all that ever they could to the contrarie. But this prince (as it is for certain knowne) was most astonied at this, namely, that the fish sticking only to the ship, should hold it fast; and the same being brought into the ship and there laid, not worke the like effect. They who at that time and afterward saw the fish, report that it resembled for all the world a snaile of the greatest making: but as touching the form and sundrie kinds thereof, many have written diversly, whose opinions I have set downe in my treatise of living creatures belonging to the waters, and namely in the particular discourse of this fish: neither doe I doubt but all the sorte of fishes are able to doe as much: for this we are to beleeve, that Pourcellans also be of the same vertue, since it was well knowne by a notorious example, that one of them did the like by a ship sent from *Periander* to the cape of *Gnidos*: in regard whereof, the inhabitants of *Gnidos* doe honour and consecrat the said Porcellane within their temples of *Venus*. Some of our Latin writers do call the said fish that thus staieth a ship, by the name of *Remora*."

The real fact is, that the Remora, being a fish of very weak powers of fin, takes the advantage of occasionally attaching itself to any large swimming body, whether animate or inanimate, which it happens to encounter; adhering to ships, as well as whales, sharks, and many other of the larger fishes: it has even been observed by Commerson, that the Remora is so ill calculated for supporting a long and laborious course in the water, that when left to its own exertions, it generally swims on its back, and that in an unsteady and feeble manner. It is therefore necessary that it should avail itself of the occasional assistance of some larger floating body. For this purpose the upper part of the head is wonderfully constituted; presenting a large, flat, oval shield or area, traversed by numerous dissepiments or partitions, each of which is fringed at the edge by a row of very numerous perpendicular teeth or filaments, while the whole area or oval space is strengthened by a longitudinal division or septum. So strong is the power of adhesion which the fish by this apparatus is enabled to exert, that we are assured by Commerson, whose observations on this subject are detailed by Cedepe, that, on applying his thumb to the shield of a living Remora, it was affected not only with a strong stupor, but even with a kind of paralysis, which continued for a considerable time after withdrawing his hand. When attached, as is frequently the case, to the skin of a shark or other large fish, it quits not its hold when the former

is drawn out of the water, but continues adhering after the death of the animal; nor is it easy for the strongest arm to effect its separation, unless it be pulled in a lateral direction, so as to force it to slide along the surface of the skin. When a great many of these fishes are thus adhering at once to the sides of a ship, they may in some degree retard its motion, by preventing its easy passage through the water, in the same manner as any other extraneous substances are known to do; nor can it be thought improbable that the adhesion of these fishes in considerable numbers to the side of a small canoe in the earlier ages of mankind, may have operated still more powerfully, and not only have impeded its progress, but even have caused it to incline towards one side; and the tale once related, might have gradually grown into the exaggerated powers afterwards ascribed to the animal.

A second reason of the Remora's thus attaching itself to the larger fishes and to vessels is, that it may be in readiness to avail itself of the occasional remains of the prey of the former, or of the offals thrown out from the latter; being naturally voracious, and by no means delicate in its choice, and frequently following vessels in great numbers in order to obtain occasional supplies of food. The Remora also, especially in stormy weather, adheres to rocks, like the Lump-Fish and some others.

The Remora is principally an inhabitant of the Mediterranean and Atlantic seas. Its general co-

lour is an uniform brown without any material difference of shade either on the upper or lower surface. It sometimes however varies in colour, and Commerson assures us that when a great number of these fishes are attached either to the side of a vessel or to a large fish, it is not very uncommon to see one or two which differ from the rest in being of a whitish colour. The skin is smooth and destitute of scales, but marked with numerous impressed points or pores: the mouth is large, and furnished with very numerous small teeth; and the lower jaw is rather longer than the upper: the eyes are small, with yellow irides: the lateral line commences above the pectoral fins, and from thence pretty suddenly descending, runs strait in the tail, which is of a slightly forked, or rather lunated form. The number of transverse divisions on the shield of this species varies from sixteen to twenty, but the most general number is eighteen. The fish grows to the length of about eighteen inches.

INDIAN REMORA:

Echeneis Neucrates. *E. olivacea, subtus albida, striis capitis viginti quatuor, cauda integra.*

Olive-green Remora, whitish beneath, with twenty-four bars on the head, and ovate tail.

E. Neucrates. E. cauda integra, striis capitis 24. Lin. Syst. Nat. p. 446.

Iperuquiba et Piraqueba Brasiliensibus. *Marcgr. bras. p. 180.*

Echeneis cauda rotundata. Bloch. t. 171.

THIS species may be easily distinguished from the preceding by its more lengthened or slender shape, as well as by the different form of the tail, which is ovate instead of crescent-shaped. It also differs from the former in its colours; the upper parts of the body being olive-green, and the under parts whitish: the fins are yellowish brown, with dusky edges. In its habits it resembles the preceding species, but is more frequently seen in the Indian and American seas than in those of Europe. The Count de Cèpede informs us, from the manuscripts of Commerson, that it is also very common about the coasts of Mozambique, where it is sometimes made use of for the following very singular manner of catching turtles. A ring is fastened round the tail of the fish, in such a manner as to prevent its escape, and a long cord fastened to the ring. When thus prepared, the fish is carried in a vessel of seawater, and when the boatmen observe a turtle sleeping, as is the frequent custom of those ani-

mals, on the surface of the water, they approach as near as possible without disturbing it; and then, throwing the Remora into the sea, and giving it the proper length of cord, it soon attaches itself to the breast of the sleeping turtle, which is thus easily drawn to the boat by the fishermen. If we may depend on the accuracy of this description, it seems to give some degree of confirmation to a mode of fishing recorded by Aldrovandus and others, in which a fish of a very unusual form, and which seems to be not very distinctly described, is said to be employed in a similar manner by the American Indians, and to be naturally furnished with a large pouch at its head, with which it seizes and draws up its prey.

This species is said to arrive at a much larger size than the preceding; being found of the length of two or three feet, and even, according to a description quoted by Dr. Bloch, to that of seven feet. The usual number of divisions on its shield is from twenty-two to twenty-four.

LINEATED REMORA.

Echeneis Lineata. *E. cauda cuneata, striis capitis decem, lineis albis utrinque duabus longitudinalibus.* *Menz. Lin. Trans.* 1. p. 187. pl. 17. f. 1.

Remora with cuneated tail, ten streaks on the shield, and two longitudinal white lines on each side of the body.

THIS species is an inhabitant of the Pacific ocean, and is thus described by Mr. Archibald Menzies, in the first volume of the transactions of the Linnæan Society.

“ The body of this fish is about five inches long, subulate, smooth, and of a dark brown colour, dotted all over with minute darker spots, and ornamented with two whitish longitudinal lines on each side, which begin at the eyes, and end in the tail; the under mandible is a little longer than the upper, and both are furnished with minute teeth: the clypeus on the top of the head has but ten transverse streaks, which is the chief distinction of this species.”

In its general proportions this fish approaches very near to the *E. Neucrates*, but seems to be a truly distinct species; differing not only in the white lines along the body, but much more remarkably, in the far smaller number of divisions on the shield, which, in a young specimen of the *E. Neucrates*, I have observed to be as numerous as in the more advanced animal. The specimen described by Mr. Menzies was found adhering to a turtle.

CORYPHÆNA. CORYPHENE.

Generic Character.

<p><i>Caput</i> maxime truncato-declive.</p> <p><i>Membr. branch.</i> radiis quinque.</p> <p><i>Pinna dorsalis</i> longitudine dorsi.</p>		<p><i>Head</i> sloping suddenly downwards.</p> <p><i>Gill-membrane</i> five-rayed.</p> <p><i>Dorsal fin</i> the length of the back.</p>
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COMMON CORYPHENE.

Coryphæna Hippurus. C. viridi-cærulea, aurantio-maculata, radius dorsalibus sexaginta, cauda furcata.

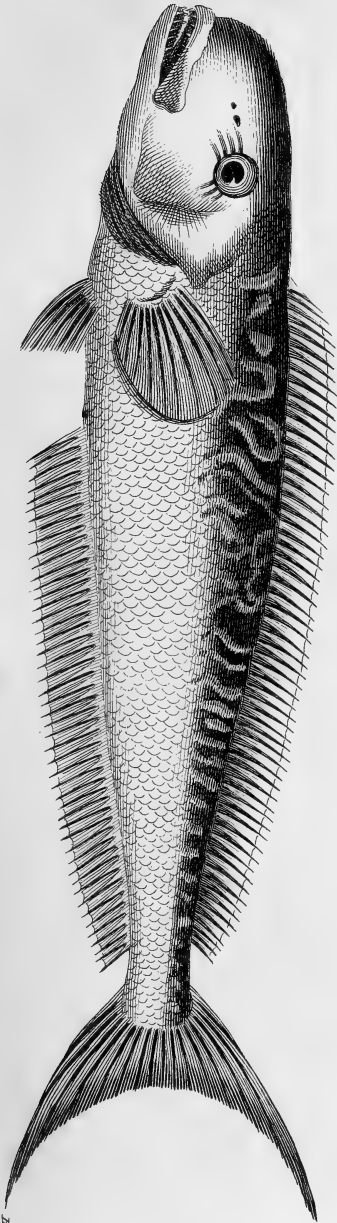
Blue-green Coryphene, with orange-coloured spots, sixty rays in the dorsal fin, and forked tail.

Coryphæna Hippurus. C. cauda bifida, radius dorsalibus sexaginta. Lin. Syst. Nat. p. 446.

Coryphæna Hippurus. C. pinna ani radius viginti quinque. Bloch. pl. 174.

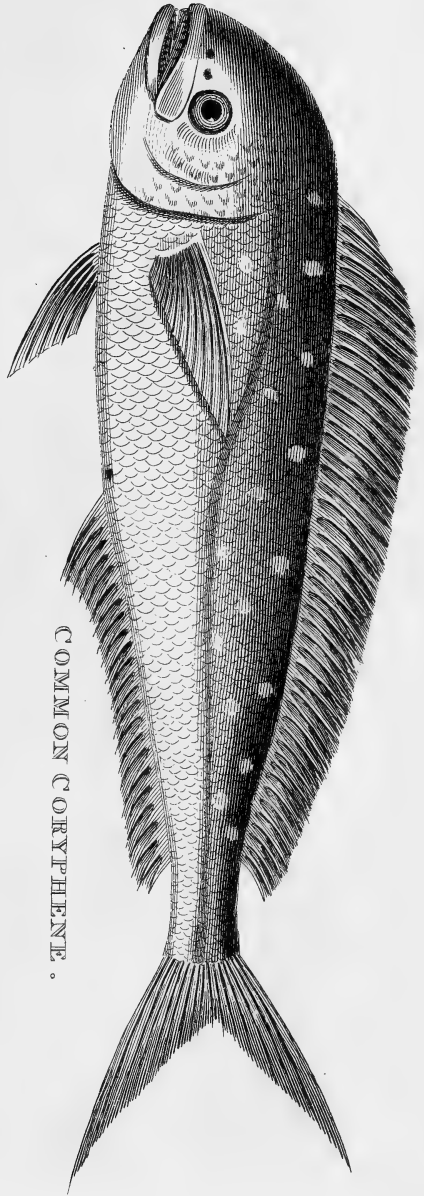
Hippurus. Gesn. Rondel. Aldr. Will. &c.

THE genus *Coryphæna* is, in general, distinguished by a peculiar splendor of appearance most of the species being of highly vivid and elegant colours. The common Coryphene (popularly known by the name of Dolphin) is an inhabitant of the mediterranean, Indian and Atlantic seas, where it often appears in large shoals, and is sometimes observed to follow ships, devouring with



PLUMIER'S CORYPHÆNE.

Zealandi



COMMON CORYPHÆNE.



avidity any occasional articles of food which may happen to be thrown over-board; it will even swallow substances of a very different nature; and we are informed, on the authority of Plumier, that in the stomach of a Coryphene which he examined, were found four iron nails, one of which measured more than five inches. The general length of the common Coryphene is about three feet; but it is often seen of four or even five feet in length: its colour is a bright and beautiful blue-green, accompanied by golden gloss, gradually altering into a silvery cast as it approaches the abdomen: the upper parts are marked by pretty numerous round orange-coloured spots: the head is large, but short and compressed; the lips strong, the mouth wide, and armed with four rows of small curved teeth: the scales are of moderate size, and the whole body is of a compressed form: the fins are green with a tinge of yellow on the rays: the dorsal fin is continued throughout the whole length of the back. When taken out of the water, the beautiful combination of colours fades as the fish expires; the lustre vanishing by degrees, with partial restorations, till at length it becomes of a dull greyish or cinereous cast, without any remains of its former splendor. This gradual evanescence of colour in the dying Coryphene is contemplated by sailors with as much delight as the ancient Romans are said to have exhibited on viewing similar changes in the expiring Mullet, when brought to their tables before the feast began.

The Coryphene is a fish of a very strong and

vigorous nature, swims with great rapidity, is extremely voracious, and is observed to be perpetually engaged in the pursuit of the smaller fishes: it is considered as one of the most cruel persecutors of the flying-fish (*Exocoetus*), which, in order to avoid its pursuit, avails itself of its power of temporary flight, or rather of springing at once to a considerable distance over the surface of the water; in which action however it is often observed to fall a prey to some of the larger gulls, who seize it during its passage. The flesh of the Coryphene is said to be excellent, and it is therefore often taken both by the line and net. It is observed to frequent the shores in spring and autumn in order to deposit its spawn, and sometimes approaches the mouths of the large rivers: the young are said to be of uncommonly quick growth, as is proved from observations made on such as have been kept in reservoirs for any length of time.

 BRASILIAN CORYPHENE.

Coryphæna Equiselis. C. viridi-aurca, cauda bifurca, radiis dorsalibus quinquaginta tribus.

Golden-green Coryphene, with forked tail, and fifty-three rays in the dorsal fin.

Coryphæna Equiselis. C. cauda bifurca, radiis dorsalibus quinquaginta tribus. Lin. Syst. Nat. p. 447.

Guaracapema. *Marcgr. bras. p. 160.*

THIS species is so nearly allied to the former that it has been sometimes considered rather as a variety

than truly distinct. It seems to have been first described by Marcgrave, who informs us that it is known to the Brásilians by the name of *Guaracapema*, that it grows to the length of six or seven feet, and is of a silvery green colour on the head and upper parts, variegated with numerous blue spots of different sizes, but all rather small than large, and that the belly is of a whitish colour. He adds that it is a very swift swimmer, and is considered as an excellent fish for the table.

PLUMIER'S CORYPHENE.

Coryphæna Plumieri. *C. subfusca, lineis curvis cæruleis variata, subtus argentea, cauda lunata.*

Brownish Coryphene, variegated with curved blue lines; beneath silvery, with crescent-shaped tail.

Coryphæna Plumieri. *C. pinnæ analis radiis quinquaginta quinque.* *Lin. Syst. Nat. Gmel. p. 1191. Bloch. pl. 175.*

THIS elegant species takes its title from the celebrated Father Plumier, who appears to have been its first describer. It is a native of the American seas, and in its general form is much allied to the common Coryphene, but the head is longer in proportion: the general colour of the fish is bright yellow, with a silvery cast on the abdomen; while the back is brown, variegated with pretty numerous and somewhat irregular blue streaks, forming so many transverse bars on that part of the animal: the fins are yellow, the tail crescent-shaped and

edged with blue: the whole body is covered with moderately large scales, none being visible on the head. The specimen figured in the manuscripts of Plumier measured about eighteen inches in length, but the fish probably grows to a much larger size.

BLUE CORYPHENE.

Coryphæna Cærulea. *C. tota cærulea, squamis magnis, cauda lunata.*

Blue Coryphene, with large scales, and crescent-shaped tail.

Coryphæna cærulea. C. tota cærulea. Lin. Syst. Nat. Gmel.
1191. *Bloch. pl.* 148.

Novacula cærulea. Catesb. car. 2. pl. 18.

THIS is a native of the American seas, and is easily distinguished from most other species by its uniform blue colour, as well as by its great depth or breadth of body and the superior size of its scales: the head is very large, but short, and is covered with smaller scales than those of the body. It is found of the length of eighteen inches or two feet, and may probably grow to a much larger size. In its manner of living it resembles the rest of the genus. It appears to have been first described and figured by Plumier, in whose manuscripts occurred the representation given by Dr. Bloch, and repeated in the present work. It is also tolerably well represented by Catesby in his *Natural History of Carolina*.

RAZOR CORYPHENE.

Coryphæna Novacula. C. rufo-flavescens, capite pinnaque anali lineis cæruleis cancellatis.

Reddish yellow Coryphene, with the head and vent-fin cancellated with blue lines.

Novacula piscis Rondeletii. Will. p. 214. t. O. 2. Pesce Pettina. Salv.

THIS, according to Salvian, its most accurate describer, is a small species, scarcely exceeding a palm in length: the head is very large and compressed, as is the whole body, rising into an edge both above and below: the mouth is rather small, and furnished with small and very sharp teeth, and with four larger ones in front: the eyes are small, and situated on the upper part of the head: the dorsal fin, which is of moderate breadth, commences from the back of the head, and is continued nearly to the tail: the vent is placed nearer the head than the tail, and from it is continued the vent fin, which terminates, like the dorsal, at a small distance from the base of the tail: the tail itself is broad, and nearly even at the end: the head, jaws, and gill-covers, are marked by numerous blue lines; while the anal fin and tail are beautifully variegated by a kind of cancellated alternation of green and yellowish lines: the dorsal fin is red, and marked with a few scattered blue spots: the rest of the animal is of a reddish yellow colour, and in habit resembles the *C. Cærulea*, being very deep in proportion to its length. It is a native of

the Mediterranean, where it chiefly frequents the shores, feeding on the smaller fishes and sea-insects, and is numbered among the superior kinds of edible fish.

FIVE-SPOTTED CORYPHENE.

Coryphæna Quinque-maculata. *C. subfusca*, *subtus argentea*,
maculis utrinque versus caput quinque nigris.

Brownish Coryphene, silvery beneath, with five black spots on each side towards the head.

Coryphæna pentadactyla. *C. maculis nigris quinque versus caput longitudinalibus.* *Lin. Syst. Nat. p. 447. Bloch. pl. 173.*

THE five-spotted Coryphene is a native of the Indian seas, and is of similar habit with the preceding, having a large abrupt head, and being very deep in proportion to its length, as well as greatly compressed on the sides: the mouth is of moderate width, and each jaw is furnished with a row of sharp teeth, with two larger ones in front: both head and body are covered with middle-sized scales, and a small distance beyond the eyes, on each side, are five black round and slightly ocellated spots in a longitudinal direction. The usual length of this species is about twelve inches. It is of a gregarious nature, and is said to assemble in such vast shoals about the Molucca islands, that it furnishes a branch of commerce among those people almost as important as that of the Cod-fishery among the Europeans.

GILT-TAIL CORYPHENE.

Coryphæna Chrysurus. C. aurea, corpore maculis parvis cæruleis variato.

Gold-yellow Coryphene, with the body besprinkled with small blue spots.

Le Coryphene Chrysure. *Cepede. 3. p. 186.*

OBSERVED by Commerson in the equatorial parts of the Pacific, and described, from his manuscripts, by Cepede. Greatly allied in general appearance to the common Coryphene, but is of a more compressed and lengthened form, and differs in the number and disposition of the teeth, which are very small, short, and sharp, and stand separate from each other: the mouth also is much less wide: the general or ground colour of the animal is bright gold, the tail exceeding the other parts in brilliancy: on the throat and breast is a gloss of silver, and on the back are a few blueish clouds: the fins are tinged with blue, and the whole body is sprinkled over with lenticular bright blue spots. In its manners this elegant species resembles the common Coryphene, and is of equal excellence as an article of food.

STRIPED CORYPHENE.

Coryphæna Pompilus. *C. dorso supra lineam curvam fasciis
flavescentibus picto.* *Lin. Syst. Nat. p. 447.*

Coryphene with the body marked by transverse yellowish stripes over the curved lateral line.

Coryphæna cauda æquali, linea laterali curva. *Artedi gen. 16.
syn. 29.*

THIS species is thicker and shorter in proportion than the common *Coryphene*, with a smaller head and wider mouth: the lower mandible is longer than the upper, and the sides of the head are marked by several small cavities or impressed spots: the lateral line is curved; the pectoral fins very sharp-pointed, and the tail but slightly lunated: over each eye is a gold-coloured spot, and the sides of the body are marked by numerous transverse narrow bands of a similar hue. Native of the Mediterranean and Atlantic seas, where it is said occasionally to accompany vessels in the manner of the common *Coryphene*.

PARROT CORYPHENE.

Coryphæna Psittacus. *C. capite variegato, corpore macula versicolori rhombea.*

Coryphene with variegated head, and body marked by a variously coloured rhomboid spot.

Coryphæna Psittacus. *C. linea laterali intercepta, pinnis longitudinalibus colore lineatis.* *Lin. Syst. Nat. p. 448.*

OBSERVED by Dr. Garden in the American seas : head beautifully variegated : irides flame-colour edged with blue : on the middle of the body towards the back a rhomboid purple spot, accompanied by green, yellow, and blue variegations : vent in the middle of the body : dorsal and anal fin linear ; the former commencing from the head and reaching, like the vent fin, to the tail, which is even at the end : the beautiful colours of this species, like those of the common Coryphene, are observed to vanish as the fish expires.

 MACKREL CORYPHENE.

Coryphæna Scomberoides. *C. argentea, dorso subcæruleo, pinna dorsali analique versus caudam sinuatis.*

Silvery Coryphene, with blueish back, and the dorsal and anal fin sinuated towards the tail.

Le Coryphene scomberoïde. *Cepede 3. p. 192.*

DESCRIBED by Cepede from the manuscripts of Commerson, who observed it in the South seas. Size between that of a Mackrel and a Herring :

colour bright silver, tinged with brownish blue on the back, and with a deeper cast of the same on the top of the head, where it is accompanied by a gilded tinge: all the fins are entirely brown except the ventral, which are white on the exterior sides, while the pectoral are slightly gilt: the lower jaw is longer than the upper, and both are beset with such a number of small teeth in a reversed direction, that the fish may be suspended by introducing the tip of the finger into the mouth: the tongue is large, and shaped somewhat like the human nail; and on its middle is a squarish rough bone: the gill-covers consist of two large, smooth, and rounded laminae: the lateral line is marked by several undulations, which decrease as they approach the tail: the ventral fins are united at their base by a membrane communicating with a longitudinal furrow beneath the belly, and in which the animal can at pleasure conceal them: they consist each of five or six rays: the dorsal fin reaches from the back of the head to the tail, and is scalloped towards that part, so as to bear a resemblance to the small or spurious fins in the Mackrel tribe: the vent fin is of similar structure: the lower part of the tail is bounded by a sharp carina. Vast multitudes of these fishes were observed by Commerson to follow the French ships for many days together: they appeared to prey chiefly on young flying-fishes, which at intervals sprang around the ships like so many butterflies, which they scarcely surpassed in size.

UNDULATED CORYPHENE.

Coryphæna Fasciolata. *C. lacteo-argentea, circulis transversis fuscis a fasciis pinnæ dorsalis super latera defluentibus.*

Silvery-white Coryphene, with transverse brown circles descending on the body from the bands of the dorsal fin.

Coryphæna fasciolata. *C. lacteo-argentea, circulis transversis fuscis a fasciis pinnæ dorsalis defluentibus, in dorso passim coherentibus, in ventre evanidis.* *Lin. Syst. Nat. Gmel. p. 1193. Pall. sp. zool. 8.*

DESCRIBED by Dr. Pallas: length about two inches: colour silvery white, with several transverse brown circular marks descending on each side the body from the back fin, and gradually losing themselves in the whiteness of the sides: head conical, flat above: eyes large: irides gold-coloured: mouth wide: tongue flat, round, and smooth: opening of the gill-covers very large: gill-covers consisting of two rounded laminae: lateral line strait: pectoral and ventral fins hyaline; dorsal and anal variegated by dusky bands: tail deeply forked, and marked by a dusky crescent. Native of the seas about Amboina. Perhaps not arrived at its full size. In the dorsal fin are fifty-four rays.

SAILING CORYPHENE.

Coryphæna Velifera. *C. ex cinereo-argentea, pinna dorsali & anali maximis, ventralibus minimis.* *Lin. Syst. Nat. Gmel. p. 1193. Pall. sp. zool. 8.*

Silvery-grey Coryphene, with the dorsal and anal fin very large, and the ventral fins very small.

A SMALL species, described by Dr. Pallas. Native of the Indian seas: colour silvery grey; body gradually tapering to the tail, and covered by eleven longitudinal rows of rather large, thin, slightly striated scales, each of which is marked at the base by a small recumbent spine, and is emarginated at the tip: dorsal and anal fins very large; ventral very small: in the dorsal fin are fifty-five rays.

 LINEATED CORYPHENE.

Coryphæna Lineata. *C. capite picto lineis transversis coloratis.* *Lin. Syst. Nat. Gmel. p. 1195.*

Coryphene with the head variegated with transverse, coloured stripes.

NATIVE of the American seas, observed by Dr. Garden: size not mentioned: head naked, compressed: two sharp front teeth longer than the rest in both jaws: head, dorsal and anal fin marked by coloured streaks: tail rounded: body covered with large scales.

JAPANESE CORYPHENE.

Coryphæna Japonica. *C. lutea*, *branchiarum apertura rima transversa*. *Lin. Syst. Nat. Gmel. p. 1194. Houtuyn act. Haarl. 20. p. 315.*

Deep-yellow Coryphene, with the branchial aperture transverse.

LENGTH about six inches; colour deep yellow, scales moderately small and tender: described by Houttuyn in the Haarlem Transactions. Native of the Japanese seas. The dorsal fin has twenty-four rays.

 GREENISH CORYPHENE.

Coryphæna Virens. *C. virens*, *pinnis appendiculis filiformibus*.

Greenish Coryphene with filiform appendages to the fins.

Coryphæna virens. *C. pinnis appendiculis filiformibus*. *Lin. Syst. Nat. Gmel. p. 1194.*

GENERAL colour greenish: dorsal and anal fin terminated by a lengthened filiform process: native of the Indian seas: the dorsal fin has twenty-six rays.

CHINESE CORYPHENE.

Coryphæna Sinensis. *C. viridi-argentea, pinna anali brevissima.*
 Silvery-green Coryphene, with very short vent fin.
 Le Coryphene Chinois. *Cepede 3. p. 209.*

THIS is described by the Count de Cepede merely on the authority of a Chinese drawing, and is said to be of a green colour, more or less deep on different parts of the body, and accompanied here and there by a gloss of silver: the dorsal fin is very long, but the vent fin very short; and the tail is of a rounded shape: the body, gill-covers, and tail, are covered with large scales: the lower jaw is longer than the upper, and turns upward in a slight degree.

The volume of Chinese drawings from whence this species is described made a part of the collection of the Prince of Orange, lately ceded to France, and at present in the national museum.

 FLAT-SNOUDED CORYPHENE.

Coryphæna Sima. *C. cauda integra, labio inferiore longiore.*
Lin. Syst. Nat. Gmel. p. 1194.

Coryphene with the lower lip longer than the upper, and even tail.

SIZE uncertain: native of the Indian seas: in the dorsal fin are thirty-two rays.

SHARP-TAILED CORYPHENE.

Coryphæna Acuta. *C. cauda acuminata, linea laterali convexa.*
Lin. Syst. Nat. Gmel. p. 1194.

Coryphene with sharp-pointed tail, and convex lateral line.

SIZE uncertain : native of the Indian seas. In the dorsal fin are forty-five rays.

 HALF-FINNED CORYPHENE.

Coryphæna Hemiptera. *C. maxillis subæqualibus, pinna dorsali brevi.* *Lin. Syst. Nat. Gmel. p. 1194.*

Coryphene with nearly equal jaws, and short dorsal fin.

AN uncertain species ; native of the Indian seas. The dorsal fin has but fourteen rays.

 BRANCHIOSTEGOUS CORYPHENE.

Coryphæna Branchiostega. *C. apertura branchiarum transversa.*
Lin. Syst. Nat. Gmel. p. 1194.

Coryphene with the branchial aperture transverse.

ALLIED to the *C. Japonica*. Native of the Indian seas. In the dorsal fin are twenty-four rays.

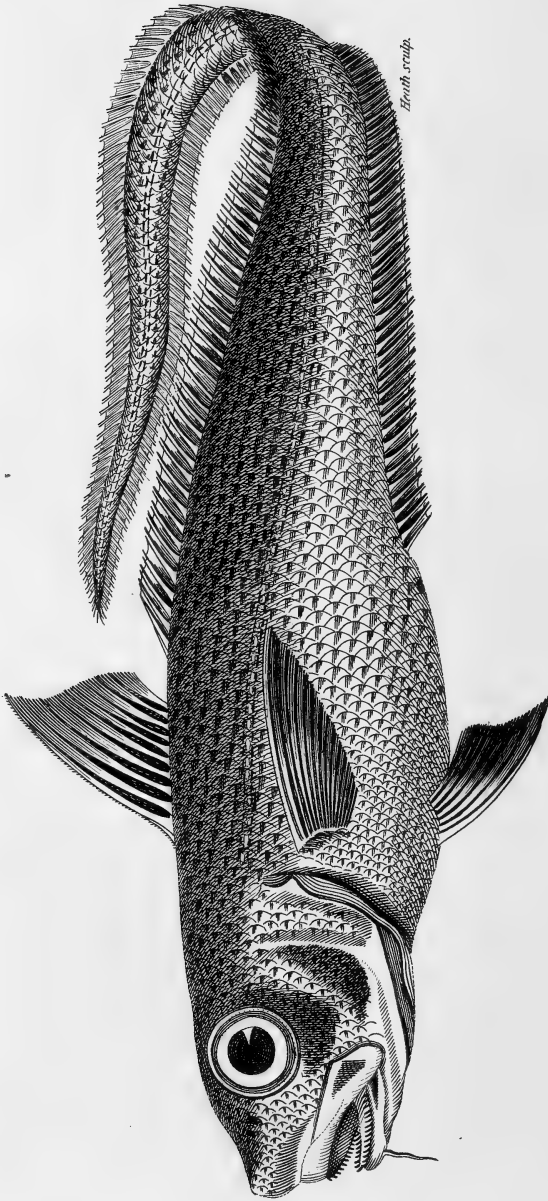
CLYPEATED CORYPHENE.

Coryphæna Clypeata. *C. lamina ossea inter oculos.* Lin. Syst.
Nat. Gmel. p. 1195.

Coryphene with a bony plate between the eyes.

THIS species, which seems at present but obscurely known, is said to be distinguished by a long bony process or lamina situated between the eyes, and is a native of the Indian seas : the dorsal fin has thirty-two rays ; the pectoral fourteen ; the ventral five ; the anal twelve, and the caudal seven.





LONG-TAILED IMMINSET.

MACROURUS. IMMINSET.

Generic Character.

Caput grande: oculi magni. || *Head large: eyes large.*
Corpus postice attenuatum || *Body at the hind part at-*
in caudam. || *tenuated into the tail.*

LONG-TAILED IMMINSET.

Macrourus Rupestris. *M. argenteo-cinereus, squamis carinatis, pinnae dorsalis prioris radio primo retro-dentato.*

Silvery-grey Imminset, with carinated scales, and the first ray of the first dorsal fin toothed at the back.

Macrourus ruspestris. *Bloch. pl. 177.*

Coryphæna rupestris. *C. dorso dipterygio, pinnae dorsalis primæ radio primo retro-dentato. Lin. Syst. Nat. Gmel. p. 195. Mull. prodr. zool. Dan. p. 43.*

THE head of this remarkable fish is large and thick; the upper jaw projecting above into the form of an obtuse snout: the eyes are very large: the mouth wide, with five rows of small, curved teeth in the upper jaw, and two rows in the lower: the tongue white, thick, short, and cartilaginous: beneath the tip of the lower jaw hangs a beard or cirrus: the body gradually tapers from the middle part, and at length is continued into a very long, slender, and pointed tail: the whole fish is covered with moderately large, rounded scales, each of

which is furnished in the middle with a strong, toothed carina, ending in a pointed tip: this causes a remarkable roughness of surface; so that the hand is wounded by drawing it over the fish from the tail towards the head: the carinæ of the scales are much stronger on the head than on other parts: the first dorsal fin is situated near the middle of the back, and is furnished with nine or ten rays, of which the first is very strong, and serrated on the back: the second dorsal fin, which is shallow, commences at a small distance from the first, and running to the tip of the tail, is united with the vent fin, which is in a similar manner continued from the tip of the tail to the vent, near the middle of the body: the pectoral fins are rather small and sharp-pointed: and the ventral are of similar form: the lateral line, which is nearer to the back than to the abdomen, commences at the upper part of the gill-covers, and is from thence continued to the tail: the colour of this fish is a silvery grey, deepest on the upper parts: its usual length is about three feet, but it is occasionally seen of larger size: it is a native of the northern seas, and is mostly seen about the coasts of Greenland and Iceland, and is numbered among the edible fishes of the Greenlanders. It is said to swim very swiftly, and when first taken, to struggle with great violence; endeavouring to defend itself by lashing with its tail; its large eyes projecting at the same time to a surprising degree. It is known in some places by the name of Berg-lax, or Mountain Salmon, and

among the Greenlanders is called Ingminniset*. It was first described by Egede in his natural history of Greenland in the year 1741, and has by some naturalists been considered as a species of Coryphene.

* It is from this word, with a slight alteration in the spelling, that the English generic name has been taken.

GOBIUS. GOBY.

Generic Character.

<i>Caput</i> parvum : Oculi approximat.		<i>Head</i> small : Eyes approximated.
<i>Membrana branch.</i> radiis quatuor.		<i>Gill-Membrane</i> four-rayed.
<i>Pinnæ ventrales</i> unitæ in cavam.		<i>Ventral fins</i> united into the form of a funnel.

COMMON GOBY.

Gobius Niger. *G. albido nigroque varius, pinna dorsali secunda radiis quatuordecim.*

Goby with black and whitish variegations, and about fourteen rays on the second dorsal fin.

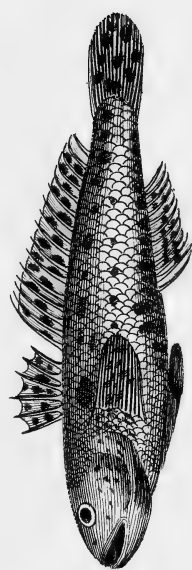
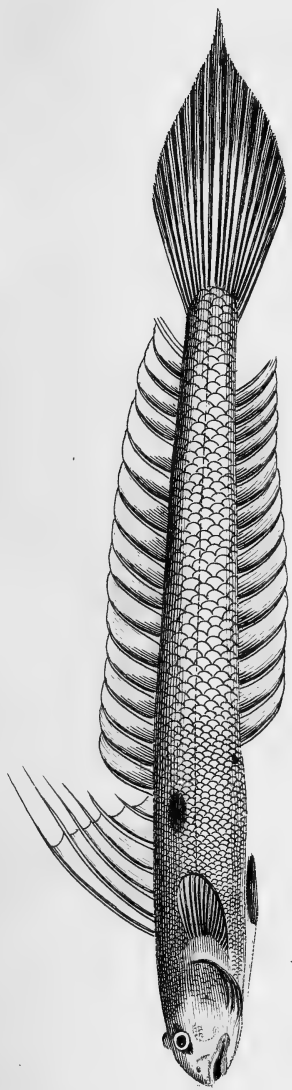
Gobius niger. *G. pinna dorsali secunda radiis quatuordecim. Lin. Syst. Nat. p. 449.*

Gobius ex albo & fusco varius, pinnæ dorsi secundæ radiis sedecim. *Bloch. pl. 38.*

Black Goby. *Penn. Brit. Zool. 3.*

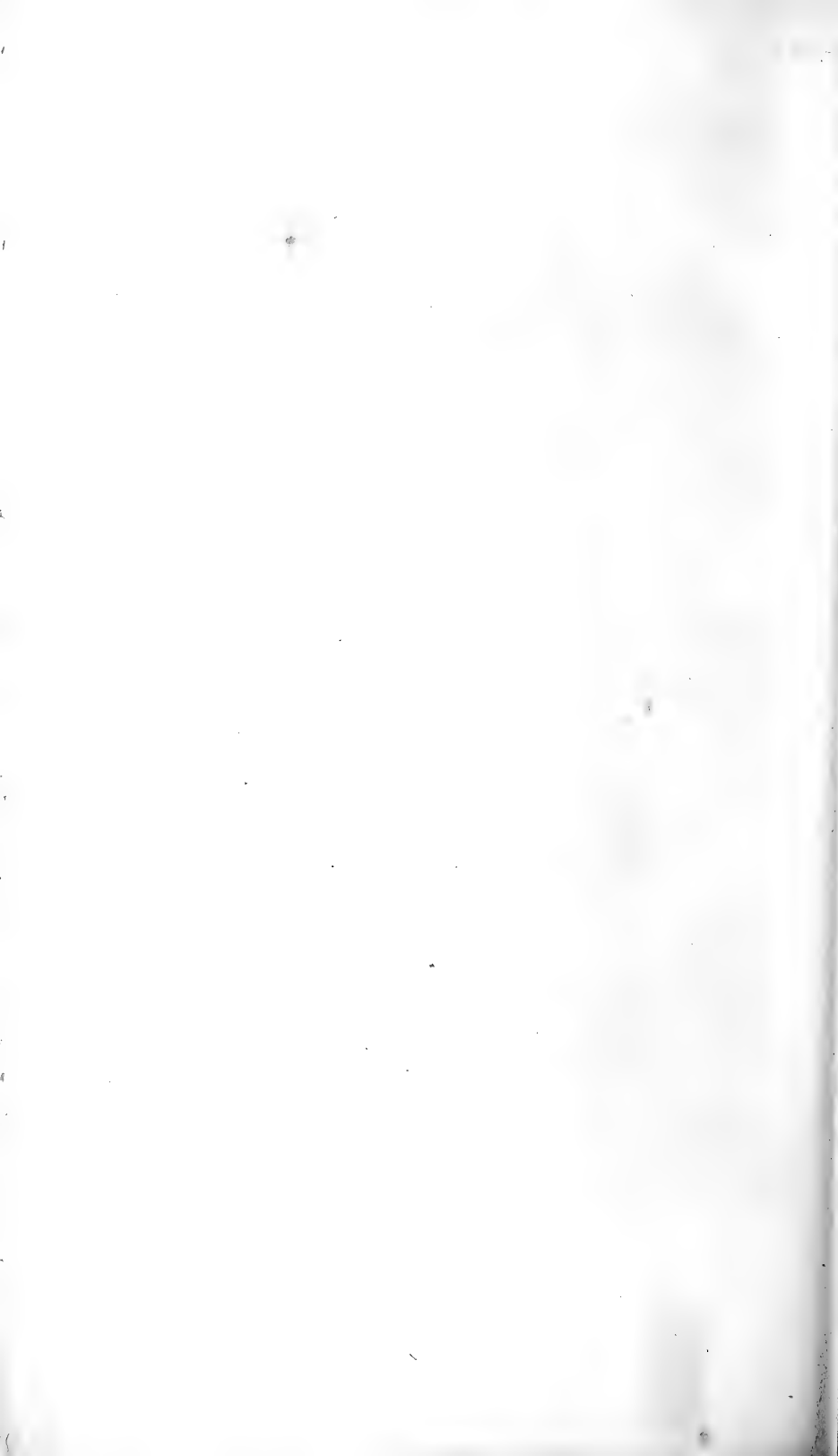
THIS species grows to the length of six inches: the body is soft, slippery, and of a slender form: the head rather large: the cheeks inflated: the teeth small, and disposed in two rows: from the head to the first dorsal fin is a small furrow: the first dorsal fin consists of six rays: the second according to Linnæus, of fourteen, and according to Dr. Bloch, of sixteen: the pectoral of sixteen or seventeen,

LANCE-TAILED GOBY.



COMMON GOBY.





closely set together, and the middlemost the longest: the others on each side gradually shorter: the ventral fins coalesce, and form a sort of funnel, by which these fish are said to affix themselves immovably to the rocks; for which reason they are called by the name of *Rock-Fish*; the tail is rounded at the end: the general colour of the fish is dusky or blackish; but this, on close inspection, is owing to numerous small dusky or blackish specks, accompanied by brown or olive coloured bars and clouds disposed on a whitish ground: the dorsal and anal fins are of a pale blue; the rays marked with minute black spots. This fish is a native of the mediterranean and northern seas, and sometimes enters the mouths of the larger rivers, particularly in the beginning of summer, at which season it deposits its spawn on stones near the shores. It is in the number of edible fish, but is in no particular estimation.

LANCE-TAILED GOBY.

Gobius Lanceolatus. *G. fusco-flavescens, squamis versus caudam majoribus, cauda elongato-acuminata.*

Yellowish brown Goby, with the scales increasing in size towards the tail, which is large, elongated, and sharp-pointed.

Gobius lanceolatus. *G. cauda longissima acuminata.* Bloch. t. 38. f. 1. *Lin. Syst. Nat. Gmel. p. 1203.*

THIS species is distinguished by the peculiar form of its tail, which is large in proportion to the animal, and sharp pointed at the tip: the body is

of a lengthened shape, and nearly of equal diameter throughout: the head is oblong, and truncated in front; the jaws of equal length, and armed with sharp teeth: the gill-covers consist of two small laminæ, and the opening of the gills is large: the vent is situated much nearer the head than the tail: the body is covered with scales, of which those toward the tail are much larger than those on the upper parts. This is a West-Indian species, it is found in the rivers of Martinique and some other islands.

BOSCIAN GOBY.

Gobius Boscii. *G. cinereus, fusco-punctatus, fasciis septem transversis albidis.*

Grey Goby, speckled with brown, and marked by seven whitish transverse bands.

Le Gobie Bosc. *Cepede 2. p. 556. pl. 16. f. 1.*

NATIVE of the American seas, and observed by Bosc in the bay of Charles-Town. Head broader than the body: both jaws of equal length: teeth very small: eyes prominent: nostrils elevated: gill-covers terminating acutely: four first rays of the first dorsal fin prolonged into a small filament: body without scales: general colour grey, spotted with brown, and marked by seven irregular transverse whitish or pale bands, fins brown: length fifty-four millimetres; breadth thirteen. Described by Cepede from the communications of Mr. Bosc.

BLUE GOBY.

Gobius Cæruleus. *G. cæruleus, cauda rubra nigro marginata.*

Blue Goby, with red tail bordered with black.

Le Gobie bleu. *Cepede 2. p. 560.*

DESCRIBED by *Cepede* from *Commerson*. A highly beautiful, though very small species: colour fine blue, rather paler beneath: tail red, with a black border: length about a decimetre: mouth obtuse; teeth in the lower jaw sharp, and rather longer than those of the upper: eyes rather more distant than in others of the genus: body covered with small rough scales: first dorsal fin triangular, with the rays terminating in lengthened filaments: second dorsal terminated by a ray of twice the length of the rest: vent placed nearly in the middle of the body: tail rounded. Inhabits the seas about the eastern coasts of Africa, where it is used by the negroes as a bait for other fish. From the brilliancy of its colours it appears, when swimming in a calm sea, during a bright sunshine, like a small tube of sapphire, tipped with carbuncle.

BROUSSONET'S GOBY.

Gobius Broussonetii. - *G. corpore elongato, compresso, pinna dorsali unica, cauda lanceolata.*

Goby with elongated and compressed body, single dorsal fin, and lanceolate tail.

Le Gobioide Broussonet. *Cepede 2. p. 580. pl. 17. f. 1.*

DESCRIBED by Cèpede from a specimen in the Stadtholder's Museum. Body very long, much compressed, and covered with a skin so transparent as to admit a view of the disposition of the muscles: jaws furnished with very small teeth: ventral fins rather long, and by their union forming a deep funnel: dorsal fin single: pectoral fins small and rounded: dorsal and anal pretty wide, and reaching as far as the tail, which is of a lanceolate shape: rays of the dorsal and anal fins project beyond the membrane. Native of the African seas.

 SPOTTED GOBY.

Gobius Minutus. *G. albidus, ferrugineo maculatus, oculis cæruleis.*

Whitish Goby with ferruginous spots and blue eyes.

Gobius minutus. *G. albicans, ferrugineo maculatus, radius dorsalibus & caudalibus ferrugineo obsolete striatis.* *Lin. Syst. Nat. Gmel. p. 1199. Pall. spic. zool. 8. p. 4.*

THIS species is a native of the European seas, and, according to Mr. Pennant, frequents the sandy shores of our own island during the summer months:

its length is about three inches: the head flat; the eyes large, and very prominent; with blue irides: the tongue large; and both jaws are furnished with teeth: the first dorsal fin consists of six rays: the second of eleven, and is placed at some distance from the other: the vent fin has eleven rays; the tail is even at the end: the body is of a whitish colour, obscurely spotted with ferruginous, and the rays of the dorsal fins and tail are barred with the same colour.

BLUE-FINNED GOBY.

Gobius Jozo. *G. fuscus, subtus albidus, pinnis subcæruleis, radiis dorsalibus eminentibus setaceis.*

Brown Goby, whitish beneath, with blueish fins, and projecting setaceous dorsal rays.

Gobius Jozo. *G. radiis dorsalibus eminentibus setaceis.* Lin.
Syst. Nat. p. 450.

Bloch. t. 107. f. 3.

THIS species grows to the length of four or six inches, and is principally distinguished by the blue colour of its fins, and the streaks on the first dorsal fin: the jaws are of equal length, and armed with small, sharp teeth: the lateral line runs in a straight direction along the middle of the body. It is a native of the Mediterranean and the Baltic, and commonly frequents the muddy shores, living on sea-insects, &c. It deposits its spawn on the soft mud; and though very prolific, is not observed to

be very numerous; owing to the small fry becoming the prey of other fishes: as a food it is held in little or no esteem.

BODDERTIAN GOBY.

Gobius Boddaerti. *G. fusco-cæruleus, subtus gilvus, lateribus fusco maculatis.*

Blueish-brown Goby, buff-coloured beneath, with the sides of the body spotted with brown.

Gobius Boddaerti. *G. pinnæ dorsalis anterioris radius cirriformibus, tertio longissimo. Lin. Syst. Nat. Gmel. p. 1201. Pall. spic. zool. 8. p. 11. t. 2. f. 4. 5.*

NATIVE of the Indian seas: length about five or six inches: colour blueish brown above, and reddish white beneath: head varied with brown and white: lips thick and fleshy: body covered with small scales, and marked above by seven brown spots in a longitudinal direction; beneath which are seven other spots of the same colour but speckled with white: vent surrounded by a black ring, and terminated by a fleshy protuberance: lateral line marked with minute papillæ and snow-white spots: first dorsal fin blackish blue speckled with white, and furnished with long projecting filaments: second dorsal fin traversed by five or six white lines: tail blueish white.

HARE-LIPPED GOBY.

Gobius Lagocephalus. *G. fuscus, labiis emarginatis, superiore crassissimo.*

Brown Goby, with emarginated lips, the upper one very thick.

Gobius lagocephalus. *G. maxilla superiore hemispherica, lingua lineaque laterali nulla.* *Lin. Syst. Nat. Gmel. p. 1202. Pall. spic. zool. 8. p. 14. t. 2. f. 6. 7.*

DESCRIBED by Kolreuter in the Petersburg Transactions. Body round, compressed towards the tail: size of a finger: colour grey or dark brown: covered with minute scales: head short, thick, without scales: mouth transverse; upper jaw very thick; lower with a few larger teeth, which are slightly hooked: lips cleft in the middle, doubled, the upper fleshy and very thick, reaching much beyond the jaw; palate with numerous crowded small teeth on the margin: eyes distant, small, covered with the common skin: rays of the first dorsal fin simple, of the other and the tail branched: tail oval-rounded: pectoral lanceolate-oval: ventral with very short crowded rays: vent in the middle of the body.

PAGANEL GOBY.

Gobius Paganellus. *G. subflavescens, fusco punctatus, pinna dorsali secunda basi subpurpurea, margine lutea.*

Yellowish Goby, speckled with brown, with the second dorsal fin purplish at the base and yellow at the margin.

Gobius Paganellus. *G. pinna caudali dorsalique secunda basi purpurascete, priori linea lutea terminali. Lin. Syst. Nat. p. 449.*

LENGTH from three, or four, to six inches: body rather compressed; general colour white, more or less tinged with yellow, and sometimes with a cast of green: body marked with small blackish spots: first dorsal fin edged with bright yellow: the second dorsal and the anal tinged with purple at the base: tail nearly strait. Native of the Mediterranean, frequenting rocky coasts,

 RED-FRONTED GOBY.

Gobius Cruentatus. *G. albidus, fasciis transversis fuscis, capite pinnisque rubro maculatis.*

Whitish Goby, with transverse brown bands; the head and fins spotted with red.

Gobius cruentatus. *G. ore rubro-pustulato, pinnarum dorsalium radiis ultra membranam prominentibus. Lin. Syst. Nat. Gmel. p. 1197.*

NATIVE of the Mediterranean; much allied to the *G. Paganellus*, but the rays of the dorsal fins project beyond the membrane: mouth, gill-covers,

throat, and most of the fins spotted with red: general colour dull white, with a few transverse brown bands: ventral fins blueish: tail rounded, and marked with obscure blackish bands. This species has been sometimes regarded as a variety of the *G. Jozo*.

OTAHEITEE GOBY.

Gobius Ocellaris. *G. olivaceus, subtus glaucus, pinna dorsali priore oculo nigro prope basin notata.*

Olivaceous Goby, glaucous beneath, with the first dorsal fin marked towards the base by a black ocellate spot.

Gobius Ocellaris. *G. maxilla superiore longiore, pinna dorsali prima ocellata sexradiata.* *Lin. Syst. Nat. Gmel. p. 1204.*
Brouss. ichth. dec. 1. t. 2.

NATIVE of the rivulets of Otaheitee. Body compressed lanceolate, covered on the hind part with imbricate ciliate scales, obscurely clouded with olive and black, beneath glaucous. Head a little compressed, subconic, blackish, slightly curved above, obtusely carinate in the middle, beneath strait, flat; eyes looking obliquely upwards, pupil black, iris glaucous; teeth unequal, minute, those of the lower jaw less: lateral line nearly in the middle, strait, obscure; vent placed a little behind: fins generally with divided rays, the connecting membrane diaphanous: pectoral and ventral fins blackish; first dorsal short, with olive and brown undulations, and simple rays, setaceous and recurved at their tips: second dorsal fin long, greenish,

tinged with dull red at the tip ; the rays annulated with greenish and brown ; the first ray simple : anal fin long, greenish-brown, with transparent tip : tail oval, greenish, with simple rays.

ARABIAN GOBY.

Gobius Arabicus. *G. olivaceus, maculis confluentibus violaceis punctisque cœruleis variatus, radiis dorsalibus quinque elongatis.*

Olivaceous Goby, variegated with confluent violet spots and blue specks, with five of the dorsal rays elongated.

Gobius Arabicus. *G. pinnae dorsalis primæ radiis quinque posterioribus filo rubro terminatis membrana duplo longioribus.*
Lin. Syst. Nat. Gmel. p. 1198. Forsk. arab. p. 23.

A SMALL species, about the size of the little finger, and of a greenish brown colour, variegated with numerous violet-coloured spots and blue specks ; the violet spots becoming confluent on some parts : the skin is very soft, and covered with extremely small, close-set scales : all the fins are spotted, and the tail is of a cuneated shape. Observed by Forskal in the Arabian seas.

BLACK GOBY.

Gobius Ater. *G. ater*, *squamis parvis carinatis, genis prominentibus.*

Deep-Black Goby, with small carinated scales, and prominent cheeks.

Le Gobie noir. *Cepede. 2. p. 568.*

DESCRIBED by Cepede from Commerson: length two or three inches: colour deep black with a blueish or greenish cast: scales very small, carinated: head swelling out on each side: upper lip longer than the lower: teeth small: tongue short and fixed: eyes much approximated: on each side the branchial aperture is a tubercle, and at the vent a small process. Native of the Indian seas; often entering the mouths of small rivers, particularly where there is a muddy bottom: considerably esteemed as a food, and used by convalescents.

 BLACK-FINNED GOBY.

Gobius Bicolor. *G. fuscus*, *pinnis omnibus nigris.* *Lin. Syst. Nat. Gmel. p. 1197. Brünn. pisc. mass. p. 30.*

Brown Goby, with all the fins black.

NATIVE of the Mediterranean: habit of *G. Paganellus*: length three inches; rays of the fins project in a small degree beyond the connecting membrane.

CLOUDED GOBY.

Gobius Nebulosus. *G. albidus, maculis confluentibus fuscis, squamis magnis rhombeis.*

Whitish Goby, variegated with confluent brown spots, and covered with large rhomboid scales.

Gobius nebulosus. *G. pinnae dorsalis primæ radio secundo filo membrana duplo longiore nigro terminato. Lin. Syst. Nat. Gmel. p. 1198. Forsk. arab. p. 24.*

OBSERVED by Forskal in the Arabian sea. Length three inches: colour whitish, variegated with confluent brown spots: beneath plain: scales large, rhomboid, and rough: pupils of the eyes blueish, irides white: pectoral fins glaucous, variegated at the base by obscure brown spots: ventral fins brownish: dorsal and caudal hyaline, spotted with brown: anal hyaline bordered with brown.

 CHINESE GOBY.

Gobius Eleotris. *G. albidus, squamis magnis lævibus, macula prope opercula magna violacea.*

Whitish Goby, with large smooth scales, and a large violet spot near the gill-covers.

Gobius Eleotris. *G. pinnae anali radius novem. Lin. Syst. Nat. p. 449. Gobius Chinensis. Osb. it. p. 260.*

NATIVE of China: colour whitish, and covered with large, round, smooth scales: on the back, near the gill-covers, is a large violet-coloured spot: both the dorsal fins are of equal height, and the tail is rounded.

PLUMIER'S GOBY.

Gobius Plumieri. *G. fusco-flavescens, subtus albidus, maxilla superiore prominente.*

Yellowish-brown Goby, whitish beneath, with thick, projecting upper lip.

Gobius Plumieri. *G. maxilla superiore prominente. Lin. Syst. Nat. Gmel. p. 1203. Bloch. t. 178.*

NATIVE of the American seas: described by Plumier: length three or four inches: habit plump or fleshy: colour yellowish brown above, yellow on the sides, and white beneath: body covered with small scales: upper lip obtuse and longer than the lower: rays of the first dorsal fin project beyond the membrane: pectoral fins rather large: tail rounded: considerably esteemed as an article of food.

 PECTINATED GOBY.

Gobius Pectinirostris. *G. dentibus maxillæ inferioris horizontalibus. Lin. Syst. Nat. p. 451.*

Goby with the teeth of the lower jaw horizontal.

Apocryptes Chinensis. Osb. it. p. 130.

NATIVE of China: size rather small: particularly distinguished by the position of its teeth in the lower jaw, which project horizontally in such a manner as to represent a small semicircular comb: in the first dorsal fin are five rays, in the second twenty-six, in the pectoral fins nineteen, in the ventral ten, in the anal twenty-six, and in the tail fifteen.

SCHLOSSERIAN GOBY.

Gobius Schlosseri. *G. nigricans, subtus albidus, capite magno, corpore squamis magnis, coriaceis, rotundatis.*

Blackish Goby, whitish beneath, with large head, and body covered with large, rounded, coriaceous scales.

Gobius Schlosseri. *G. ex fusco nigricans, subtus exalbidus, pinnæ dorsalis primæ radiis spinosis.* *Lin. Syst. Nat. Gmel. p. 1201. Pall. sp. zool. 8.*

THIS species is a native of the island of Amboina, inhabiting fresh waters, and generally residing on the soft mud, in which it conceals itself on the approach of danger: it is about a span in length, of a somewhat compressed form, and tapering but very slightly towards the tail: the head is longish, and much broader than the body; the eyes protuberant, and placed in front of the head: the body is covered with moderately large, coriaceous, rounded scales, and is of a dusky colour above, and whitish beneath: the pectoral fins are attached, on each side the base, to a kind of fleshy arm or foot-stalk. According to Cope the *Gobius barbarus* of Linnæus is in reality no other than the above species: it is thus distinguished in the *Systema Naturæ*. *G. pinnis pectoralibus flabello insistentibus, pinna dorsali priore radiis 12, posteriore 13.*

EEL GOBY.

Gobius Anguillaris. *G. elongatus fuscus, pinnis rubris, dorsali unica.*

Elongated brown Goby, with red fins ; the dorsal single.

Gobius anguillaris. *G. pinna dorsali unica, cauda rubra.* *Lin. Syst. Nat. Gmel. p. 1201.*

THIS species differs from the generality of the Gobies by its more elongated form, approaching in some degree to that of an eel : the dorsal fin is single, and reaches nearly to the tail, the vent fin being equally extended in the opposite direction : the pectoral fins are very small and rounded : the skin of the body is smooth and slippery ; the colour pale brown, and all the fins red. Native of the Chinese coasts. The dorsal fin has fifty-two rays, the pectoral fins twelve, the ventral ten, the anal forty-three, and the tail twelve.

 CARP GOBY.

Gobius Cyprinoides. *G. cinereus, corpore cyprinaceo, squamis magnis subciliatis.*

Grey Goby with carp-shaped body, and large subciliated scales.

Gobius cyprinoides. *G. squamis magnis subciliatis vestitus, pinna caudæ rotundata : radiis membrana fusco-tessellata nexis.* *Lin. Syst. Nat. Gmel. p. 1202. Pall. sp. zool. 8. t. 1. f. 5.*

NATIVE of Amboina : length about three inches and a half : habit resembling that of the Carp tribe rather than that of the Gobies : colour grey-brown,

whitish beneath : scales large, and slightly ciliated at the edges : head rather broader than the body, and covered by a soft skin, crossed with very fine lines : teeth small : eyes lateral ; between them a blackish, triangular, longitudinal crest, resembling a fin in miniature : behind the vent is a tubular process imbedded in a small channel.

NILOTIC GOBY.

Gobius Aphyia. *G. albidus, nigro-punctatus, fasciis pinnarum fuscis.*

Whitish Goby speckled with black ; the fins barred with brown.

Gobius Aphyia. *G. fasciis etiam pinnarum fuscis. Lin. Syst. Nat. p. 450.*

A VERY small species, found in the Nile, and in some parts of the Mediterranean sea : length scarce more than an inch : colour whitish varied by a few small black spots : dorsal and anal fin marked by brown bands : eyes very small : the second dorsal fin has seventeen rays.

BLACK-TAILED GOBY.

Gobius Melanurus. *G. pinna dorsali unica, cauda nigra. Lin. Syst. Nat. Gmel. p. 1201. Brouss. ichth. dec. 1.*

Goby with single dorsal fin, and black tail.

A SMALL species : sufficiently described by its specific character : native country uncertain.

GOBIOMORUS. GOBIOMORE.

Generic Character.

Habitus generis præcedentis. || *Habit* as in the preceding
genus.
Pinnæ ventrales distinctæ. || *Ventral fins* distinct.

THE genus *Gobiomorus* is instituted by the Count de Cèpede, and contains those species which differ from the genuine Gobies in having the ventral fins separate, instead of being united, as in that genus, into the form of a funnel : in the Gmelinian edition of the *Systema Naturæ* they are associated with the genus *Gobius*.

SOUTHERN GOBIOMORE.

Gobiomorus Australis. *G. thalassinus, rubro-maculatus, subtus albus, capite flavo pinnis rubro variatis.*

Blue-green *Gobiomore* with red spots ; whitish beneath ; the head variegated with yellow, and the fins with red.

Gobius strigatus. *G. pinna ventrali bipartita, dorsali prima sexradiata.* *Lin. Syst. Nat. Gmel. p. 1204. Brouss. ichth. dec. 1.*

Le *Gobiomore Taiboa.* *Cèpede 2. p. 587.*

NATIVE of the Southern ocean, and observed about the coasts of Otaheitee : body compressed, much elongated, and covered with squarish scales :

head compressed, but wider than the body: upper jaw rather longer than the lower: teeth unequal; tongue and palate smooth, but the throat roughened by small sharp teeth: first dorsal fin furnished with very long rays: tail large and rounded: colours of the whole animal very elegant; the back being of a blueish green, and the abdomen whitish: the head yellow, varied with green, and marked by dusky streaks and specks: sides of the body varied with reddish spots: dorsal fin transparent, greenish, with red rays and transverse bars: pectoral fins greenish; ventral white; anal green tinged with red: tail yellowish green, with red rays, and marked on each side by a broad, oblique, curved, red stripe.

SLEEPING GOBIOMORE.

Gobiomorus Dormitor. *G. maxilla superiore longiore, cauda rotunda.*

Gobiomore with the upper jaw longer than the lower, and round tail.

Le Gobiomore Dormeur. *Cepede 2. p. 589.*

NATIVE of the fresh-water lakes and rivers of South America: lower jaw longer than the upper: tail very much rounded: eleven rays in the second dorsal fin: eight in the pectoral and anal fins: colour not mentioned by *Cepede*, who informs us that this species is figured in the drawings of *Plumier*: supposed to take its name from the slowness of its movements, or want of activity.

GRONOVIAN GOBIOMORE.

Gobiomorus Gronovii. *G. argenteus*, corpore scombriformi, dorso subnigro, lateribus nigro-maculatis, cauda furcata.

Silvery Gobiomore, with mackrel-shaped body, blackish back, sides spotted with black, and forked tail.

Le Gobiomore Gronovien. *Cepede* 2. p. 584.

Gobius Gronovii. *Lin. Syst. Nat. Gmel.* p. 1205.

DESCRIBED by Gronovius: native of the equatorial parts of the American seas: has some affinity to the genus *Scomber*: body broad or deep, and of a silvery colour, covered with very small, imbricated scales, and spotted on the sides with black: the back also is of a blackish tinge: the eyes are very large; the mouth small; furnished in both jaws, as well as in the palate, with pretty large teeth: gill-covers roundish; back slightly convex: lateral line following the flexure of the back: vent in the middle of the body.

KOLREUTERIAN GOBIOMORE.

Gobiomorus Kolreuteri. *G. albidus*, pinnis ventralibus ovatis, brachio affixis.

Whitish Gobiomore, with ovate ventral fins affixed to an arm or process.

Gobius Koelreuteri. *G. pinna ventrali bipartita, dorsali prima undecim-radiata*. *Lin. Syst. Nat. Gmel.* p. 1205. *Pall. sp. zool.* 8. t. 2. f. 1. 3.

Le Gobiomore Koelreuter. *Cepede* 2. p. 590.

DESCRIBED by Kolreuter in the Petersburg Transactions. Length about a span: colour greyish

white: allied in habit to the *Gobius Schlosseri*, having the ventral fins attached to a kind of fleshy arm or process on each side: eyes very much approximated, and situated on the top of the head: lips double and fleshy: teeth unequal and conic: upper jaw furnished on each side with a tooth much longer than the rest: lateral line appearing as if impressed: vent situated towards the middle of the body: tail somewhat lanceolate: first dorsal fin brown, bordered with black: second dorsal fin yellowish, with a longitudinal brown stripe: pectoral fins ovate or fan-shaped: processes on which they are seated very broad.

PISONIAN GOBIOMORE.

Gobiomorus Pisonis. *G. maxilla superiore longiore, pinna dorsali unica.*

Gobiomore with the upper lip longer than the lower, and single dorsal fin.

Gobius Pisonis. *G. pinna ventrali bipartita, maxilla inferiore longiore.* *Lin. Syst. Nat. Gmel. p. 1206.*

Amore Pixuma. *Pis. bras. 3. p. 72.*

Le *Gobiomoride Pison*. *Cepede 2. p. 593.*

A SMALL species, described by Piso in his *Natural History of Brasil*: lower jaw longer than the upper; and both armed with several rows of pretty strong and sharp teeth: head both compressed and depressed, and covered with scales of nearly similar size with those on the back: tail rounded: dorsal fin single. *Cepede* places this in a separate genus, which he calls *Gobiomoroides*.

GREAT-HEADED GOBIOMORE.

Gobiomorus Cephalus. *G. rufus*, capite magno, oculis cæruleis, pinna dorsali analique caudæ vicinis.

Rufous Gobiomore, with large, subdepressed head, blue eyes, and dorsal and anal fins placed near the tail.

Le Gobiésoce Testar. *Cepede 2. p. 596.*

NATIVE of the South-American rivers: head very large, rounded in front, and somewhat depressed at the hind part: eyes situated very near each other: lips double and extensile: abdomen very prominent: dorsal fin single, short, and situated near the tail: vent fin placed still nearer the tail, which is very long, and rounded at the tip: general colour bright rufous, deepest on the back: eyes bright blue. Described by *Cepede* from a drawing by *Plumier*. *Cepede* places it in a separate genus under the name of *Gobiesox*, the position of the dorsal and anal fin giving it in some degree the habit of a Pike.

COTTUS. BULLHEAD.

Generic Character.

<p><i>Caput</i> corpore latius, spinosum : <i>Oculi</i> verticales, membrana nictitante instructi.</p> <p><i>Membr</i> : <i>branch</i> : radiis sex.</p> <p><i>Corpus</i> (plerisque) alepidotum, versus caudam attenuatum.</p> <p><i>Pinnæ dorsales</i> (plerisque) duæ.</p>		<p><i>Head</i> broader than the body, spiny : <i>Eyes</i> vertical, and furnished with a nictitating membrane.</p> <p><i>Gill-membrane</i> six-rayed.</p> <p><i>Body</i> (in most species) without scales, attenuated towards the tail.</p> <p><i>Dorsal fins</i> (in most species) two.</p>
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RIVER BULLHEAD.

Cottus Gobio. *C. levis olivaceo-flavescens, pigro nariatus, subtus albicans, capite utrinque mucronato.*

Smooth yellowish-olive Bullhead, variegated with black ; beneath whitish ; the head furnished with a spine on each side.

Cottus Gobio. *C. levis, capite spinis duabus.* *Lin. Syst. Nat.* p. 452.

Cottus spinis curvatis duabus ad utrumque operculum. *Bloch.* t. 38.

Bullhead, or Miller's Thumb. *Will. itchth.*

River Bullhead. *Penn. Brit. Zool.* 3.

THIS species is an inhabitant of clear brooks and rivers, and is found in most parts of Europe. It generally remains at the bottom ; lying on the



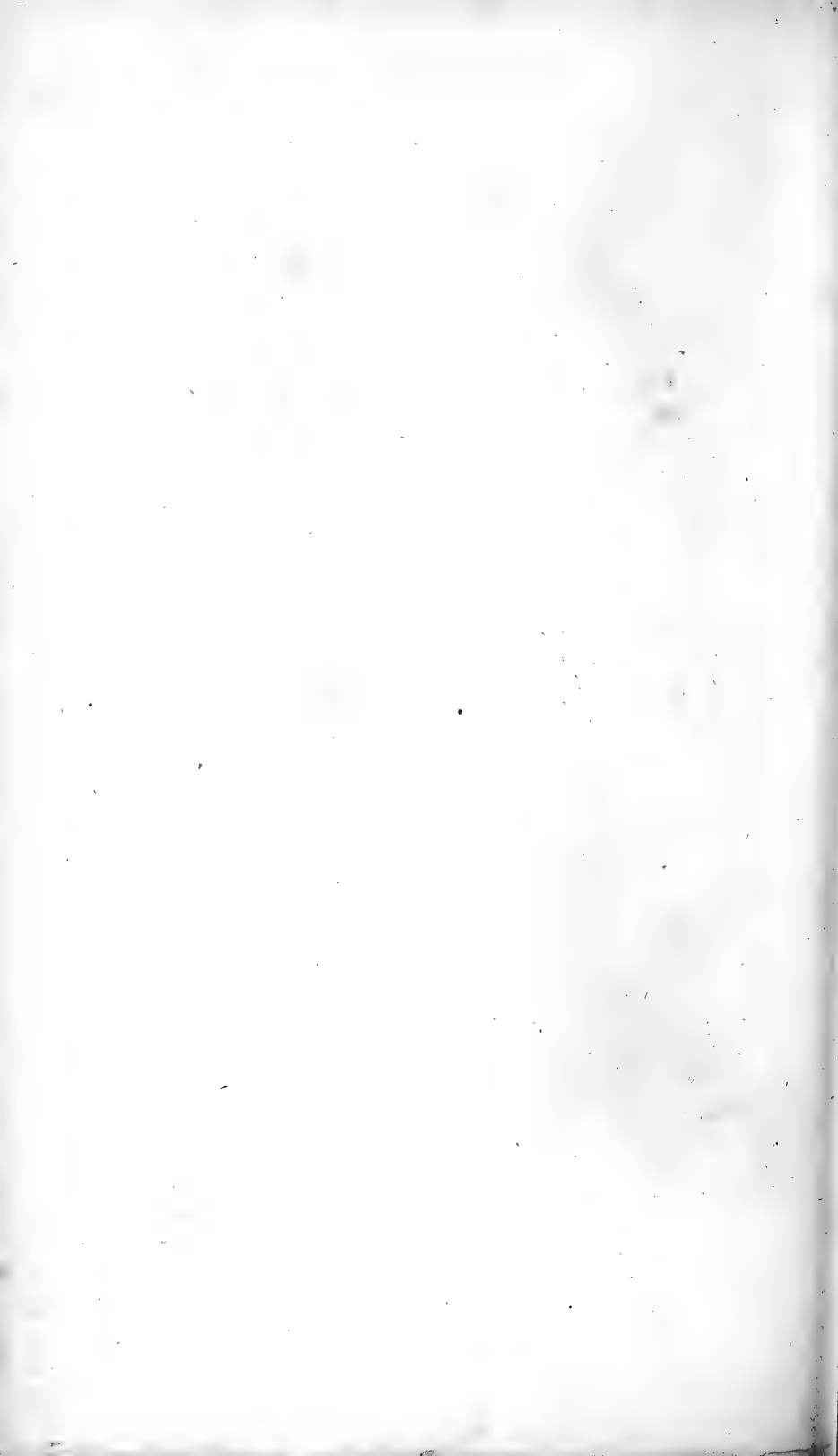
RIVER BULL-HEAD.



MOTTLED BULL-HEAD.



Rock Bass.



gravel, or concealing itself beneath the stones, and preying on worms, water-insects, and very young fishes. It is said to deposit its spawn in a small hollow, which it forms in the gravel, and to quit its charge with great reluctance. Linnæus indeed, in the *Systema Naturæ*, appears to adopt the old idea of some naturalists; viz. that it will sooner suffer itself to be killed than desert its ova. Dr. Bloch however supposes the notion to be erroneous. In our own country this fish rarely exceeds the length of about three inches and a half; but in other parts of Europe it appears to arrive at a superior size, since the specimen figured by Baron Meidinger, in his descriptions of the fishes of Austria, measures five and a half; and it is even sometimes seen of the length of seven inches. Its general colour is yellowish olive, much deeper on the head and upper parts of the back; and the whole body is more or less clouded and speckled with small dusky variations: the fins are yellowish, speckled with brown: the pectoral fins large, round, and elegantly indented or scolloped at the edges: they commonly consist of thirteen or fourteen rays; the dorsal of seven; the ventral of only four; the anal of thirteen, and the tail of twelve: the head is large, broad, flat, and rather thin at its circumference, being well adapted, as Mr. Pennant observes, for insinuating itself under stones, &c. On the middle part of the gill-covers is a small but strong spine, turning inwards, near which on each side is a second of much smaller size: the eyes are small; the mouth wide, and furnished with pretty numerous,

minute teeth: the skin of the whole body is smooth and slippery. This fish occasionally swims with great strength and rapidity, when in pursuit of its prey, though its general habit is that of lying in an apparently inert state. Notwithstanding its disagreeable appearance, it is considered as an edible fish, and is even regarded as delicate: the flesh however turns of a red or salmon-colour on boiling, and the fish is admitted only at the tables of those of inferior rank. It usually spawns in the months of March and April.

GRUNTING BULLHEAD.

Cottus Grunniens. *C. fuscus albedo-variatus, gula ramentis villosa, corpore nudo.*

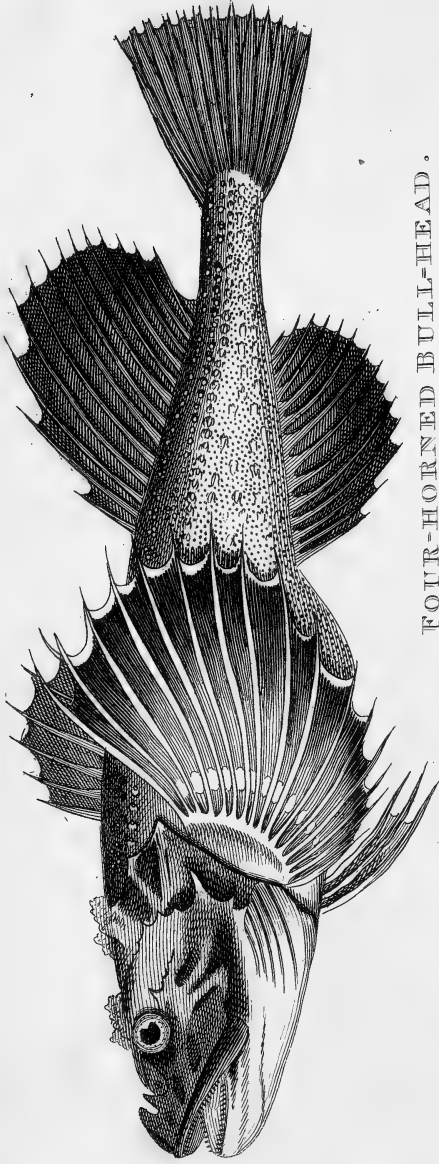
Brown Bullhead, with whitish variegations, naked body, and throat shagged with cirri.

Cottus grunniens. *C. gula ramentis villosa, corpore nudo.*
Lin. Syst. Nat. p. 451.

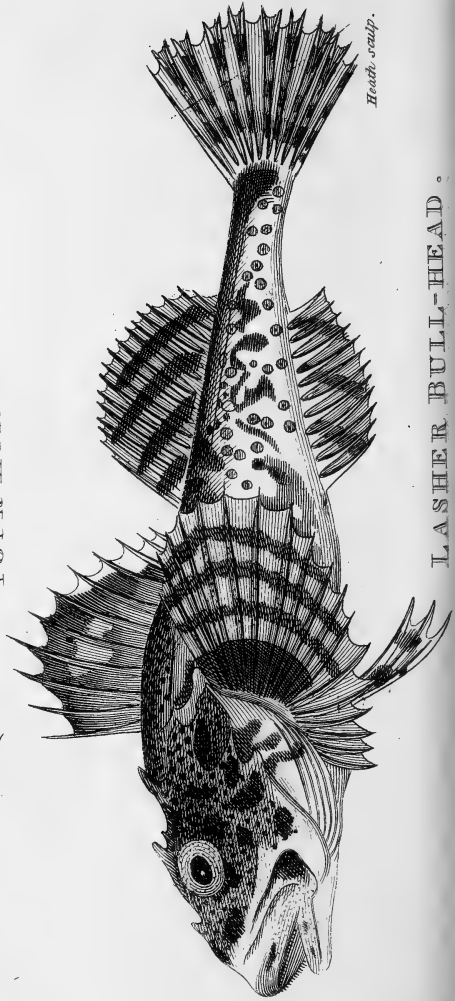
Cottus glaber, maxilla inferiore multum cirrata. *Bloch. t. 179.*

NATIVE of the Indian and American seas: length six or eight inches: colour brown, varied with white on the sides: fins pale, spotted with brown; skin of the whole animal marked by numerous pores, exsuding a mucous fluid, as in most other species: head large; eyes small, mouth very wide; tongue and palate smooth; lower jaw longer than the upper, and furnished with numerous cirri, which appear also on each side the head: lips strong; teeth sharp, distinct, recurved, and placed in several





FOUR-HORNED BULL-HEAD.



Heath, sculp.

LASHER BULL-HEAD.

rows: gill-covers consist of a single piece, armed with three or four spines: branchial orifice very wide. This fish, like some of the Gurnards, &c. when first taken, exerts a kind of abrupt sound, resembling in some degree the grunting of a pig, and which is produced, as in the Gurnards, &c. by the sudden expulsion of air from the internal cavities, through the gill-covers and mouth. It is considered as an esculent fish, but the liver is said to be hurtful.

 LASHER BULLHEAD.

Cottus Scorpius. *C. fuscus albedo-variatus, capite spinis pluribus, maxilla superiore paulo longiore.*

Brown Bullhead, with whitish variegations, several spines on the head, and upper jaw rather longer than the lower.

Cottus Scorpius. *C. capite spinis pluribus, maxilla superiore paulo longiore. Lin. Syst. Nat. p. 452.*

Father-Lasher. *Will. ichth. Penn. Brit. Zool. 3.*

THE general length of this fish, in the Mediterranean sea, is about eight or ten inches, but it is said to arrive at a much larger size in the northern seas: the head is very large, and armed with extremely strong, sharp spines, the largest of which are disposed toward the hind part, and the smallest on the fore-part: the mouth is large, and the jaws are beset with rows of very small teeth: in the roof of the mouth is also a triangular patch of minute teeth: the body tapers pretty suddenly towards the tail, and is covered with a smooth, lubricous skin: the colour is brown, marbled with

white variegations, which are sometimes accompanied by a reddish tinge: the belly is entirely white: the fins and tail are transparent, slightly clouded with brown, and the rays barred regularly with deep-brown: the pectoral fins are very large, rounded, and denticulated or scolloped on the edges: the dorsal and anal of moderate size; the ventral small; the tail even at the end: the lateral line is strait, and formed by a train of small scaly points, covered by the common skin.

This fish is an inhabitant of the mediterranean and northern seas, and is said to be particularly plentiful about the coasts of Greenland, where it is much esteemed as a food. It is a strong fish, swimming with great rapidity, and preying on the smaller fishes, sea-insects, &c. It is said to be able to live a considerable time out of water; having the power of closing the gill-covers in such a manner as to exclude the effects of atmospheric air. When first caught, if held in the hand, it exerts a strong and peculiar sound by the expulsion of air through its mouth, &c. during this action the mouth is opened to the utmost width, the pectoral fins are strongly expanded, and the whole body is agitated by a vibrating or tremulous motion.

FOUR-HORNED BULLHEAD.

Cottus Quadricornis. *C. olivaceus, fusco-variatus, subtus albidus, capite verrucis quatuor osseis.*

Olivaceous Bullhead, variegated with brown, whitish beneath, with four bony tubercles on the head.

Cottus quadricornis. *C. capite verrucis quatuor osseis.* *Lin. Syst. Nat. p. 451.*

Cottus tuberculis quatuor in capite. *Bloch. t. 108.*

GREATLY allied in general appearance to the preceding species, but smaller, and marked on the head by four rough, bony tubercles, two of which are situated towards the middle of the head, and two at the back part: colour olivaceous, marbled with brown: beneath whitish: pectoral fins very large, and rounded. Native of the Mediterranean and Baltic, as well as of the northern seas; and in manners similar to the preceding species.

 ROUGH BULLHEAD.

Cottus Scaber. *C. subfuscus squamosus, fasciis transversis fuscis, capite striis longitudinalibus serratis, linea laterali aculeata.*

Brownish, scaly Bullhead, with transverse brown bands; head marked with longitudinal serrated streaks; and spiny lateral line.

Cottus scaber. *C. capite striis, corporisque squamis serratis linea laterali elevata.* *Lin. Syst. Nat. p. 451.*

Cottus linea laterali aculeata. *Bloch. t. 159.*

NATIVE of the Indian seas: habit rather slender: body compressed, of a silvery colour, tinged with

blue on the back, covered with small scales, and surrounded by six or seven moderately broad and distant rufous bands: length about twelve inches: head oblong, roughened in front by four reversed spines, and covered on the sides with small, rough scales: mouth very wide; lower jaw longer than the upper: lateral line marked by a row of spines: fins blueish, spotted on the rays, and variegated on the membranes with brown: pectoral fins rather small.

INSIDIOUS BULLHEAD.

Cottus Insidiator. *C. griseus, fusco-variatus, capite supra lineis acutis, ad latus spinis duabus scabro.*

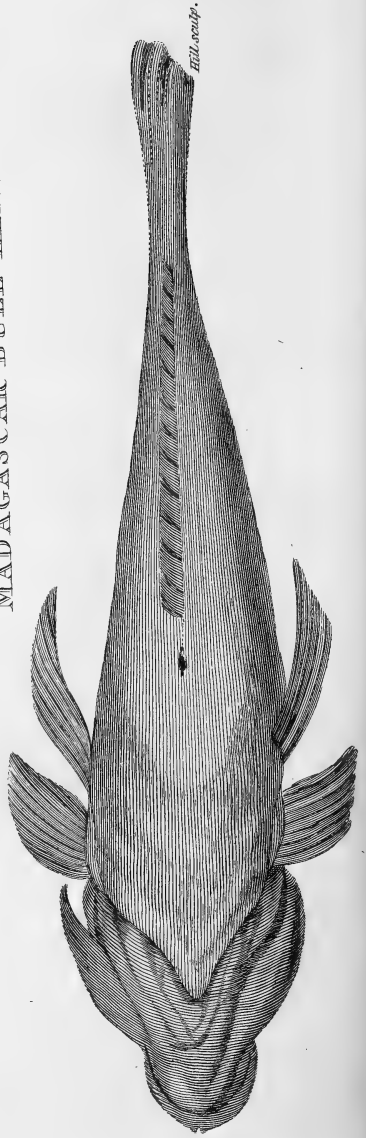
Grey Bullhead, with brown variegations, head marked above by sharp lines and on each side by two spines.

Cottus Insidiator. *C. capite supra lineis acutis, ad latus spinis duabus scabro.* *Lin. Syst. Nat. Gmel. p. 1213. Forsk. arab. p. 25.*

ALLIED to the river bullhead, but a much larger species, exceeding the length of a foot. Native of the Arabian seas, where it frequents the coasts, concealing itself under the sand, and springing on such of the smaller fishes as happen to approach its haunts. It is of a depressed form, tapering towards the tail, and is of a greyish colour variegated with dusky clouds and spots: the abdomen is white; the tail whitish, and marked in the middle by a bifid yellow spot accompanied by two unequal, linear, oblique black bars: on the head are spines similar to those of the river bullhead.



MADAGASCAR BULL-HEAD.



MARSEILLES BULLHEAD.

Cottus Massiliensis. C. capite polyacantho, pinnis dorsalibus coadunatis. Lin. Syst. Nat. Gmel. p. 1213.

Bullhead with many spines on the head, and united dorsal fins.

THIS species is much allied to the *Cottus Scorpio*, but differs in the particulars mentioned in the specific character. ~~It is a native~~ of the Mediterranean, and is said to occur about the coasts of Marseilles.

 MADAGASCAR BULLHEAD.

Cottus Madagascariensis. C. squamosus, capite utrinque spinis duabus curvis sulcoque longitudinali medio.

Scaly Bullhead with two curved spines on each side the head, and a longitudinal middle furrow.

Le Cotte Madégage. *Cepede 3. p. 248. pl. 11.*

DESCRIBED by *Cepede* from the manuscripts of *Commerson*: allied in some degree to the river Bullhead, but longer in proportion, and of larger size: it is also covered with pretty large scales, and the tail is divided by two indentations into three rounded lobes*: the head is depressed, and

* This circumstance appears rather doubtful; and perhaps the figure of this part, as given by *Commerson*, and engraved in *Cepede's* work, may have been meant rather to express two large dusky marks or spots, rather than indentations; especially as it is expressly said by *Commerson* to be *variegated*.

marked by a deep longitudinal furrow; and on each side the head are two sharp curved spines: the eyes are situated very near each other on the upper part of the head: the pectoral fins are of moderate size and of a rounded form: the colour of this fish is not mentioned. Native of the African seas, and observed by Commerson about the coasts of Madagascar.

BLACK BULLHEAD.

Cottus Niger. *C. niger, capite utrinque unispinoso, maxilla inferiore longiore, corpore squamis duris.*

Black Bullhead, with a single spine on each side the head, lower jaw longer than the upper, and body covered with hard scales.

THIS also is a native of the African seas, and is described by Cedepe from Commerson. Size and habit similar to those of the black Goby: general colour black or dark brown, the second dorsal fin as well as the vent fin being speckled and bordered with deep black; and the first dorsal fin clouded with yellow, and marked by two longitudinal blackish bands: head thick, and largest at the hind part, where it is armed on each side by a small spine, and appears as if swelled: mouth very wide: lower jaw longer than the upper, and both armed with a row of small, short, close-set teeth, resembling those on two bony protuberances near its throat: the whole body, as well as the tail itself, covered with very rough scales.

SOUTHERN BULLHEAD.

Cottus Australis. *C. albidus, capite aculeato, corpore fasciis transversis fuscis.*

Whitish Bullhead, with aculeated head, and body marked with transverse livid bands.

Southern Cottus. *White's Journ. Bot. Bay, p. 266.*

A DOUBTFUL species; described by myself in Mr. White's Voyage to Botany Bay. Length about three inches and a half: colour yellowish white, tinged with brown on the upper parts, and variegated by three or four transverse blackish bands: head armed with pretty numerous, strong spines both in front and on the gill-covers: eyes large: body covered with minute scales.

 MAILED BULLHEAD.

Cottus Cataphractus. *C. fuscus subtus albidus, corpore loricato, rostro verrucis duobus bifidis, capite subtus cirroso.*

Brown Bullhead, whitish beneath, with the body mailed, the snout furnished with two bifid warts, and the head cirrated beneath.

Cottus cataphractus. *Lin. C. corpore octogono. Bloch. t. 38.*

Armed Bullhead. *Penn. brit. zool. 3.*

THE general length of this species is about five inches; the head is large, bony, and very rugged: the end of the nose is armed with four upright, short spines, and on the throat are a number of short white beards: the teeth are very small: the

body is octagonal, covered with a number of bony crusts, and divided into several compartments, the ends of which project into a sharp point, and form several echinated lines along the back and the sides from head to tail: the first dorsal fin usually consists of six spiny rays; the second is placed immediately behind it, and consists of seven soft rays: the pectoral are broad and rounded, and are composed of fifteen rays. This fish is an inhabitant of the European seas, and is found in plenty on our own coasts, living on worms and water-insects, and spawning in the month of May. Its colour is brown above, and whitish beneath: and on the back are three or four blackish transverse bands.

JAPANESE BULLHEAD.

Cottus Japonicus. *C. fusco-flavescens, corpore loricato, cirris nullis.*

Yellowish brown Bullhead, with mailed body and without cirri.

Cottus Japonicus. *C. corpore octogono, squamis osseis aculeatis loricato, cirris nullis.* *Lin. Syst. Nat. Gmel. p. 1213.*

THIS, which is a native of the seas about the Kurile islands, was first described by Dr. Pallas, who informs us that it grows to the length of about twelve inches, and is of a yellowish white colour, dusky on the back: its general habit resembles that of the mailed Bullhead, being, like that species, covered with a bony armature, disposed into eight prominent lines along the body, but is destitute of the cirri or beards under the throat,

the head is elongated, compressed, and flattened on the upper part, which is also marked by a longitudinal channel: the snout is obtuse, and divided into two lobes: the jaws are armed with a great number of small teeth: the eyes are situated towards the end of the snout, and over each is a small protuberance: the gill-covers are denticulated at the edges: the fins are marked with dusky streaks, and have very rough rays: the pectoral fins are very large and of a rounded shape, as is likewise the tail.

SINGLE-FINNED BULLHEAD.

Cottus Monopterygius. *C. corpore loricato, elongato, fasciis transversis fuscis, pinna dorsali unica, capite inermi.*

Bullhead with elongated mailed body marked by transverse brown bands, single dorsal fin and unarmed head.

Cottus monopterygius. *C. dorsi pinna unica, capite inermi.*
Lin. Syst. Nat. Gmel. p. 1213.

Cottus monopterygius. *Bloch. t. 178.*

NATIVE of the Indian seas, and found about the coasts of Tranquebar. Habit resembling that of the two preceding species, but the body more slender in proportion: it is covered by an octagonal bony mail, which towards the tail becomes hexagonal: the eyes are situated near the top of the head: the upper jaw is longer than the lower, and furnished with two recurved spines: the gill-covers

consist of a single lamina, and the branchial orifice is very large: the back is marked by a longitudinal furrow: the colour of this species is brown above, and pale or whitish towards the sides, which are marked by a few transverse reddish-brown bands, accompanied by several spots of similar colour: the fins are large, and of considerable length: the dorsal and anal rather short; the ventral narrow; and the tail rounded.

SCORPÆNA. SCORPÆNA.

Generic Character.

<i>Caput</i> magnum, aculeatum, cirrosum, obtusum, squamis nudum, subcompressum: <i>Oculi</i> vicini. <i>Dentes</i> maxillis, palato, faucibusque.	<i>Head</i> large, aculeated, cirrose, obtuse, without scales, subcompressed: <i>Eyes</i> placed near each other. <i>Teeth</i> in the jaws, palate, and throat.
<i>Membr. branch.</i> radiis septem.	<i>Gill-membrane</i> seven-rayed.
<i>Corpus</i> torosum. <i>Pinna dorsalis</i> unica, radiis anterioribus spinosis.	<i>Body</i> fleshy: <i>Dorsal fin</i> single, with the rays of the fore-part spiny.

PORCINE SCORPÆNA.

Scorpæna Porcus. *S. fusca nigro variata, cirris ad oculos naresque.*
Brown Scorpæna variegated with black, with cirri at the eyes and nose.

Scorpæna Porcus. *S. cirris ad oculos naresque.* *Lin. Syst. Nat.*
p. 452.

Scorpæna squamis parvis, maxilla inferiore imberbi. *Bloch. t. 181.*

THE genus Scorpæna is distinguished by a peculiar uncouthness of appearance; the head, in some species, being abruptly truncated in front, of vast

size, and armed with various protuberances and spines. Among the most common of the European species is the Scorpæna Porcus, which is frequently seen in considerable numbers in various parts of the Mediterranean, where it chiefly frequents the shores, lying in ambush among stones, sea-weeds, &c. and preying on the smaller fishes and sea-insects: the head is large, the mouth wide, with many rows of small sharp teeth; the eyes large; the gill-covers armed with strong spines intermixed with cirri; the body covered with small rough scales, of a dusky colour, varied with black on the back, and beneath pale, with a reddish cast: the dorsal fin is furnished with very strong spiny rays, which the fish, when caught, erects, and thus wounds its adversary: its general length is about twelve or fifteen inches.

RUFIOUS SCORPÆNA.

Scorpæna Scrofa. *S. rufa fusco variata, linea laterali cirrosa.*

Rufous Scorpæna, with brown variegations and cirrose lateral line.

Scorpæna Scrofa. *S. cirris duobus ad labium inferius. Lin. Syst. Nat. p. 453.*

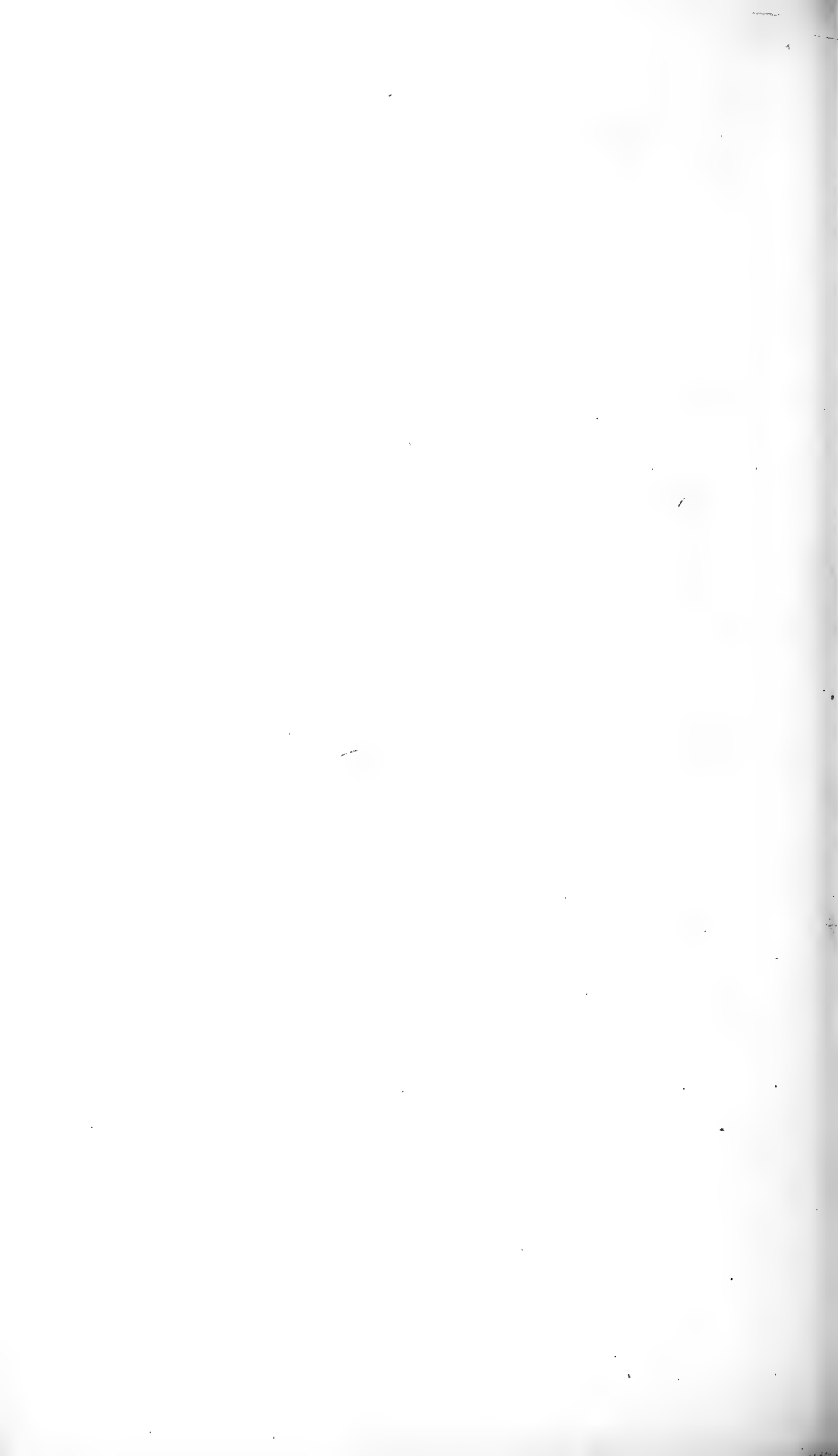
Scorpæna squamis magnis, linea laterali cirrosa. *Bloch. t. 182.*

In general appearance so nearly allied to the preceding, that at first view it might be mistaken for the same species; but differs in its superior size, as well as in its larger scales; and particularly

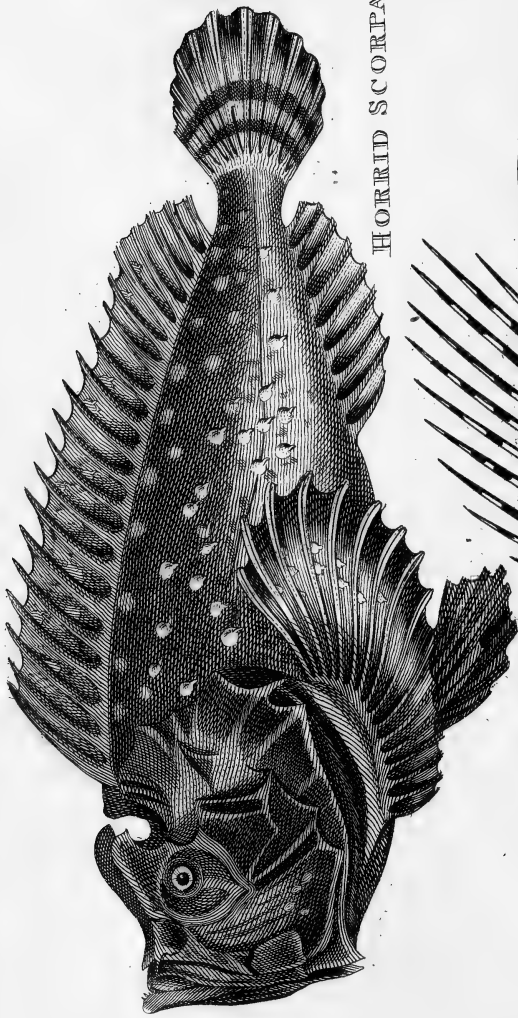


RUFFUS SCORPAENA.

Itzsch sculp.



HORRID SCORPAENA.



Frith sculp.



ANTENNATED SCORPAENA.

in having several cirri or processes disposed along the lateral line: the colour also is rather rufous than brown as in the former kind. Of this species it is reported that it preys not only on the smaller fishes, but even occasionally seizes on such of the marine birds as happen to swim in its way. It grows to a very considerable size, and is said to have been seen of the length of four feet: it must consequently prove a very formidable enemy to the smaller marine animals. Notwithstanding its forbidding appearance, it is considered as an edible fish.

HORRID SCORPÆNA.

Scorpæna Horrida. *S. fusca alepidota, tuberculis callosis adspersa.*
Brown Scorpæna, without scales, and scattered over with callous tubercles.

Scorpæna horrida. *S. tuberculis callosis adspersa. Lin. Syst. Nat. p. 453.*

Scorpæna horrida. *Sc. alepidota. Bloch. t. 183.*

OF all the species yet discovered the present exhibits the most uncouth and forbidding appearance; resembling rather some imaginary monster of deformity than any regular production of Nature. The head is very large, perfectly abrupt in front, and marked by numerous tubercles, depressions, and spines: on the top is a semilunar cavity: the mouth opens from the upper part, and is large and of a shape somewhat resembling a horse-shoe;

and when closed the lower jaw is in a perpendicular direction: both jaws are armed with numerous small teeth: and the upper is furnished with three cirri, viz. one on each side, and one in the middle: the tongue is large and smooth, but the throat is beset with a great number of small sharp teeth: the eyes are very small, and seated at the base of two large tubercles: the head, body, pectoral and dorsal fins, are beset with numerous abrupt cirri or beards: all the fins are very thick or fleshy, and furnished on the fore part with strong rays: the dorsal reaches nearly the whole length of the back; the pectoral are large and ovate; the ventral small; and the tail rounded at the end. The general colour of this hideous fish is a ferruginous brown, deepest on the upper parts; the abdomen being much paler. It is a native of the Indian seas, and measures twelve or fifteen inches in length.

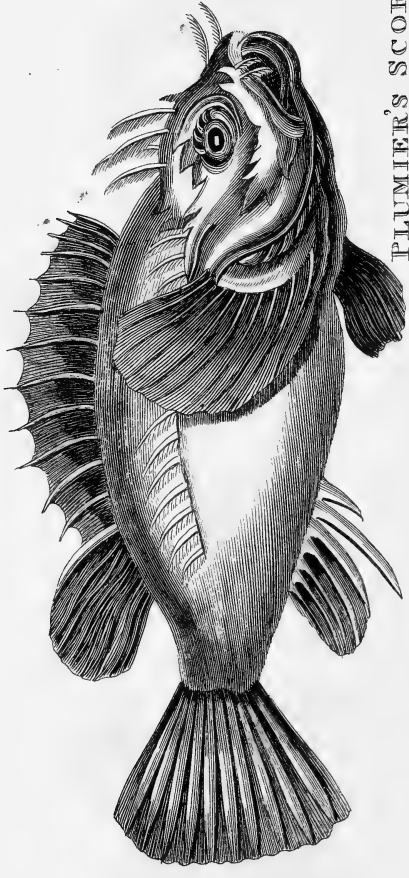
PLUMIER'S SCORPÆNA.

Scorpæna Plumieri. *S. nigricans, capite lineaque laterali cirris plumatis.*

Blackish Scorpæna, with feathered cirri on the head and lateral line.

La Scorpene Plumier. *Cepede 3. p. 282.*

DESCRIBED by Cepede from the manuscripts and drawings of Plumier. Upper part, and sides of the head, together with the gill-covers, armed with



PLUMIER'S SCORPAENA.



Fili sculp.

BICAPILLATED SCORPAENA.

triangular, flat, and sharp spines: between the eyes are situated four fringed cirri, and four others; of similar form but smaller, are placed on the upper lip; while several more are disposed along the lateral line: the body is covered with scales of moderate size: the first part of the dorsal fin, which is of a rounded form, is furnished with spiny rays, and the tail is also rounded: the general colour of the fish is a very deep or blackish brown, and on the pectoral fins are a few small brown spots: size not mentioned: native of the American seas.

COMMERSIONIAN SCORPÆNA.

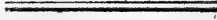
Scorpæna Commersonii. *S. corpore pinnisque fusco flavoque transversim fasciatis, superciliis serratis, maxilla superiore cirrosa.*

Scorpæna with the body and fins transversely banded with brown and yellow, serrated eyebrows, and bearded upper lip.

La Scorpene Mahé. *Cepede 3. p. 279.*

DESCRIBED by Cepede from the manuscripts of Commerson: the back is arched and carinated; the lateral line curving downwards: body covered with small scales: head large, and armed with numerous spines: orbits of the eyes elevated, and forming two denticulated crests, with a furrow between them: lower jaw somewhat longer than the upper, which is extensile and furnished on each side with three or four beards: teeth very small and close: nostrils each marked by a small filament: gill-covers each composed of two plates, the first of

which has two cirri at the lower edge, and three spines at its posterior edge: the second plate is triangular, and greatly elongated behind: the dorsal fin is marked in different parts by large and unequal sinuations: the pectoral fins are so long as almost to reach as far as the extremity of the back fin, and the tail is of a rounded shape: the body is varied with brown and yellow transverse bands, and all the fins variegated with the above colours: this species was observed by Commerson about the isles of Mahé, in the year 1768.



CAPE SCORPÆNA.

Scorpæna Capensis. S. capite utrinque supra oculos quadridentato, cauda subæquali. Lin. Syst. Nat. Gmel. p. 120. Gronov. zooph. p. 88.

Scorpæna with the head marked on each side over the eyes with four teeth or processes, and nearly even tail.

LENGTH near a foot: body covered with small, rough, imbricated scales: head large: eyes large, and situated on each side: mouth wide: jaws equal: gill-covers each composed of two very large scaly plates, the upper of which terminates in four denticulations; and the lower in a single point: back arched and carinated: pectoral fins large and ovate: native of the Cape of Good Hope: described by Gronovius.

BICAPILLATED SCORPÆNA.

Scorpæna Bicapillata. *S. capite truncato, subdepresso, postice filamentis duobus longissimis instructo.*

Scorpæna with abrupt subdepressed head, furnished at the back part with two extremely long filaments.

La Scorpene Double-Filament. *Cepede 3. p. 270.*

DESCRIBED by Cepede from Commerson : length about four inches : body rather thick, and covered with extremely minute scales ; head large, somewhat depressed, and marked with protuberances : lower lip much elevated, so as to make the head appear obliquely truncated in front : eyes very small, and much approximated : pectoral fins very large, and so long as to reach as far as the middle of the body : tail rounded : vent-fin rounded, as is likewise the opposite part of the dorsal fin, while the other part, consisting of spiny rays, has the membrane deeply scalloped : above the neck are seated two very slender filaments, of such a length as to reach beyond the tail : native of the Indian seas : colour not mentioned : dorsal fin has eighteen spiny rays, and seven soft ones : pectoral fins seventeen rays : anal seven, and the tail fourteen.

BRACHIATED SCORPÆNA.

Scorpæna Brachiata. *S. capite truncato subdepresso, pinnis ventralibus brachio adnatis.*

Scorpæna with abrupt depressed head, and ventral fins attached to a brachial process.

La Scorpene Brachion. *Cepede 3. p. 272.*

GREATLY allied to the preceding species, which it resembles in the shape of the head, the size and situation of the eyes, conformation of the jaws, smallness of the scales on the body, and rounded tail; but differs in being destitute of the two filaments, so remarkable in the other species, as well as in having the membrane of the dorsal fin much less deeply scalloped; while each of the pectoral fins forms as it were a band, which reaches from beneath the fore-part of the branchial aperture to the vent, and is attached by a fleshy longitudinal prolongation or root, as in some of the Gobies: described by Cepede from Commerson.

 ACULEATED SCORPÆNA.

Scorpæna Aculeata. *S. aculeis quatuor supra oculos, laminis operculorum spinosis.*

Scorpæna with four spines above the eyes, and both plates of the gill-covers spiny.

La Scorpene Aiguillonée. *Cepede 3. p. 268.*

DESCRIBED by Cepede from specimens in the French Museum: distinguished from the rest of

the genus by having four very strong recurved spines above the eyes: both plates of the gill-covers aculeated: dorsal and anal fins more elevated on one part than the other; the elevated part being of a rounded form, as are the pectoral fins and tail: colour not mentioned: native country unknown: seems allied to the *American Scorpæna*.

AMERICAN SCORPÆNA.

Scorpæna Americana. S. ore cirroso, capite spinoso, pinnis pectoralibus suborbiculatis.

Scorpæna with bearded mouth, spiny head, and suborbicular pectoral fins.

Scorpæna Americana. S. pinnis pectoralibus suborbiculatis. Lin. Syst. Nat. Gmel. p. 1220.

HEAD armed with protuberances and spines: two beards on the upper lip; and five or six on the lower: the last fifteen rays of the dorsal fin form a portion more elevated than the rest of the fin, and of a rounded figure: the anal fin, which is situated just beneath this part, is of similar shape: the pectoral fins and tail are also rounded: native of the American seas: size and colours not particularized by Cope, who describes this species from Duhamel: the dorsal fin has thirty-three rays; the pectoral thirteen; the vent fin sixteen, and the tail thirteen.

SPINY SCORPÆNA.

Scorpæna Spinosa. *S. pinna dorsali a capite ad caudam extensa, linea laterali spinosa.*

Scorpæna with the dorsal fin continued from head to tail, and spiny lateral line.

Scorpæna spinosa. *S. linea laterali spinosa. Lin. Syst. Nat. Gmel. p. 1220.*

BODY compressed : head spiny : lateral line marked by spiny points : dorsal fin longer than in most of the genus, reaching from between the eyes to the tail : an uncertain species, described in the index to the Leskian Museum : native country unknown.

 BEARDED SCORPÆNA.

Scorpæna Barbata. *S. capite cavernoso, cirris geminis in maxilla inferiore. Gronov. mus. ichth. 1. p. 46.*

Scorpæna with head marked by protuberances and cavities, and two cirri at the lower lip.

THE head of this species is marked in some parts by several protuberances, and in others by pretty large depressions or cavities : on the upper lip are two beards, and the pectoral fins are united to each other by a small membrane : the tail is almost rectilinear : size not mentioned by Cedepe, who describes this species from Gronovius.

FLYING SCORPÆNA.

Scorpæna Volitans. *S. fusco flavoque fasciata, pinnis pectoralibus maximis violaceis albo guttatis.*

Scorpæna variegated with brown and yellow transverse bands, with very large violet-coloured pectoral fins spotted with white.

Gasterosteus volitans. *Lin. Syst. Nat. p. 491.*

Scorpæna volans. *S. pinnis pectoralibus trunco longioribus, Bloch. t. 184.*

A FISH of a highly singular appearance: general length ten or twelve inches: colour brownish yellow, variegated by very numerous, deep-brown, transverse stripes, three very narrow or linear ones being interposed between the broader ones: pectoral fins extremely large, and of a deep violet-colour, spotted with white: the ventral fins are of similar colours: the other fins hyaline, with the rays barred with brown; those of the dorsal fin projecting beyond the membrane: tail rounded: head sloping downwards, marked by various inequalities of surface, as well as by several spines and cirri, and striped like the body, which is covered with small scales: native of the rivers of Japan, Amboina, &c. and considered as an excellent food: probably uses its pectoral fins for the purposes of occasional flight, like the fishes of the genus *Exocoetus* and some of the *Triglæ*.

ANTENNATED SCORPÆNA.

Scorpæna Antennata. *S. fusco flavoque fasciata, pinnis pectoralibus magnis violaceis, fascia oculari fusca.*

Scorpæna variegated with brown and yellow, with large violet-coloured pectoral fins, and brown band across the eyes.

Scorpæna antennata. *S. fascia oculari.* *Lin. Syst. Nat. Gmel.* p. 1219. *Bloch. t. 185.*

GREATLY allied to the preceding species in habit or general appearance, but somewhat larger, and with a less sloping head: body variegated with numerous brown and yellow transverse stripes: eyes larger than those of the preceding fish: immediately over the eyes are seated two longish, cylindrical tentacula or cirri, surrounded by several fibrous brown bars: upper jaw longer than the lower: pectoral fins smaller than in the flying Scorpæna, and of a deep violet-colour, with the rays projecting greatly beyond the membrane: dorsal, anal, and caudal fins hyaline, with the rays spotted with brown; those of the dorsal running far beyond the membrane: scales on the body larger than in the flying Scorpæna, and the head nearly plain or whitish in front: native of the rivers of Amboina.

DIDACTYLE SCORPÆNA.

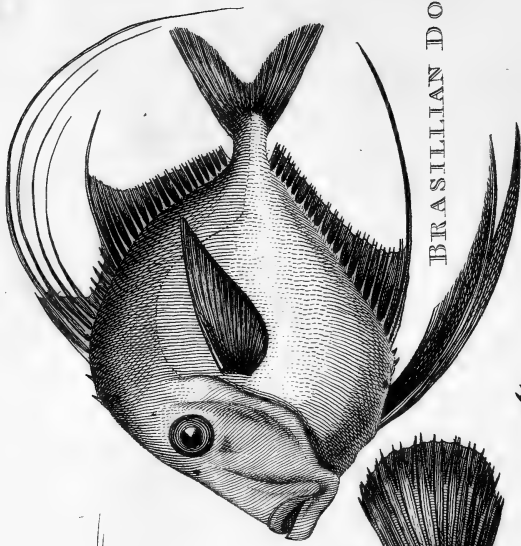
Scorpæna Didactyla. *S. fusca, lituris guttisque flavis variata, digitis duobus distinctis ad pinnas pectorales.*

Brown Scorpæna, blotched and spotted with yellow, with two distinct fingers or processes at the pectoral fins.

Scorpæna didactyla. *S. digitis duobus distinctis ad pinnas pectorales. Lin. Syst. Nat. Gmel. p. 1219. Pall. sp. zool. 7. t. 4.*

GENERAL length about a foot : form extremely grotesque : general colour dusky brown, varied above by transverse yellow streaks, and beneath by roundish spots of the same colour : skin destitute of scales : head depressed, and furnished on different parts with several abrupt fleshy cirri : eyes large, and situated on two approximated protuberances : snout truncated, and marked on the sides by several angular wrinkles, as are also the lower parts of the gill-covers : lower jaw longer than the upper : tongue prominent, and marked with yellow granules and black streaks : on the lower mandible are strong fleshy beards : lateral line near the back : fins furnished with many far-projecting radii, as in the *volitans* and *antennata* : pectoral fins large, ovate, and barred with black ; tail of similar form and colours ; the dorsal fin reaches from head to tail, and the projecting rays are furnished here and there with several small lacerated appendages : the ventral fins, if they may be so called, consist of two long, distinct, naked processes, placed near each of the pectoral fins : this curious species

was first described by Dr. Pallas, and is a native of the Indian seas: it preys on the smaller fishes, sea-insects, &c. and, notwithstanding its forbidding appearance, is considered as an excellent fish for the table.

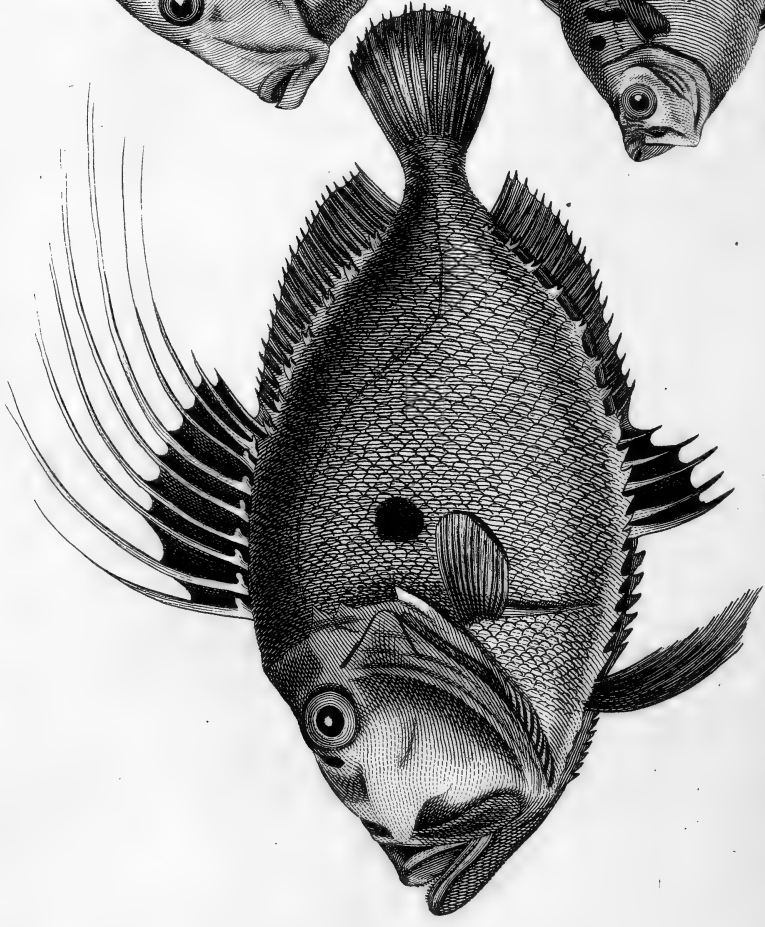


BRASILIAN DORY.



Heath sculp.

INSIDIOUS DORY.



COMMON DORY.

ZEUS. DORY.

Generic Character.

<i>Caput</i> compressum, declive.	<i>Head</i> compressed, sloping down. <i>Upper lip</i> arched by a transverse membrane. <i>Tongue</i> (in most species) subulate.
<i>Labium superius</i> membrana transversa fornicatum. <i>Lingua</i> (plerisque) subulata.	
<i>Corpus</i> compressum, latum, subrhombeum, tenue, splendens.	<i>Body</i> compressed, broad, subrhomboid, thin, and of a bright colour.
<i>Membr : branch :</i> radiis septem perpendicularibus, infimo transverso.	<i>Gill-membrane</i> with seven perpendicular rays, the lowest transverse.
<i>Pinnæ dorsalis</i> radii (plerisque) filamentosi,	<i>Dorsal fin</i> (in most species) furnished with projecting filiform rays,

BRASILIAN DORY.

Zeus Vomer. Z. argenteus, radio dorsali analique secundo longissimis.

Silvery Dory, with the second ray of the dorsal and anal fin very long.

Zeus Vomer. Z. cauda bifurca, &c. Lin. Syst. Nat. p. 454.

Zeus Vomer. Z. radio dorsali analique secundo longissimo. Bloch. t. 193. f. 2.

SHAPE rhomboidal : length six or eight inches, or more : body very thin, without scales, and of a

bright silver-colour, tinged with a blueish cast on the upper parts: head small: mouth furnished with very small teeth: second ray of the dorsal and anal fin reaching far beyond the membrane: tail forked: native of the American seas, and sometimes seen in those of the north of Europe: considered as an edible fish, but not much esteemed, on account of the extreme thinness of its body.

INDIAN DORY.

Zeus Gallus. *Z. argenteus*, radio dorsali decimo analique secundo corpore longioribus.

Silvery Dory, with the tenth ray of the dorsal and second of the anal fin longer than the body.

Zeus gallus. *Lin. Syst. Nat. p. 454. Bloch. t. 192. f. 1.*

SHAPE rhomboidal, like that of the preceding species: length the same: body very thin, silvery, and without scales: back tinged with a greenish hue: the tenth ray of the dorsal fin, and the second of the anal*, stretching far beyond the membrane: head large; mouth wide: native of the American and Indian seas, and numbered among esculent fishes: when first taken is said to make a grunting kind of noise, like some of the Gurnards.

* It may perhaps be doubted whether the species of this genus are accurately distinguishable by this particular character.

CILIATED DORY.

Zeta Ciliaris. *Z. argenteus, radius quibusdam in pinna dorsali analique longissimis.* *Lin. Syst. Nat. Gmel. p. 1223. Bloch. t. 191.*

Silvery Dory, with some of the rays in the dorsal and anal fin excessively long.

BODY rhomboidal, thin, without scales, and of a bright silver-colour, with a blueish or greenish cast on the back: head small, and very sloping: lower jaw rather longer than the upper: teeth small and sharp: several of the last rays both of the dorsal and anal fin extend to a vast distance beyond the membrane, reaching farther than the tail itself: with these long and flexible filaments the Count de Ceppe imagines that the smaller kind of fishes may be attracted, mistaking them for worms, while the animal lies concealed among sea-weeds, &c. waiting for its prey: he also conceives that they may serve to sustain the fish in this situation, by coiling round the stems of sea-plants, &c. This species is a native of the Indian seas, but is not esteemed as a food, the flesh being not only small in quantity, but of a coarse nature: in size it nearly equals the preceding species.

INSIDIOUS DORY.

Zeus Insidiator. *Z. argenteus, lateribus nigro punctatis, ore angusto extensili.*

Silvery Dory, with the sides speckled with black, and narrow extensile mouth.

Zeus Insidiator. *Z. ore angusto. Lin. Syst. Nat. Gmel. p. 1221. Bloch. t. 192. f. 2.*

NATIVE of the rivers and fresh waters of India: shape rhomboidal, like the former: size smaller: colour bright silvery, blueish green above, and speckled with black points: body without scales: mouth of a much more lengthened form than in the preceding kinds, the lower lip being retractile, and the mouth so constituted as to form at pleasure a kind of tubular snout, through which the animal occasionally ejaculates a drop of water against such insects as happen to alight on, or fly about the aquatic plants near the shores of the waters it inhabits, and by this method (like the *Chætodon rostratus*, and some few other fishes) obtains its prey.

COMMON DORY.

Zeus Faber. *Z. viridi-aureo fuliginosus, corpore utrinque macula media fusca.*

Gold-green, fuliginous Dory, with a dusky central spot on each side the body.

Faber. *Salvian* p. 203. *Will. ichth.* p. 294. t. S. 16.

Zeus Faber. *Z. cauda rotundata, lateribus mediis oculo fusco, pinnis analibus duabus.* *Lin. Syst. Nat.* p. 454.

Zeus Faber. *Z. macula fusca in lateribus.* *Bloch. t.* 41.

THE common Dory is a native of the Mediterranean, Northern, and Atlantic seas, and is distinguished by its large and long head, its dusky or smoky green colour, accompanied by a strong gilded tinge, and particularly by a large, oval, dusky spot on each side the body: it is of a less compressed form than others of its genus except the Opah, and is generally found of the length of twelve or fifteen inches, though it sometimes arrives at a far superior size, and to the weight of ten or twelve pounds: the mouth is wide; the lower jaw longer than the upper, the teeth small and sharp, and the eyes large: the whole body is covered with very small scales, and marked by a curved lateral line, which descending pretty suddenly from the gill-covers, passes on to the tail: the back is much arched, and furnished with a row of strong, small prickles, which are also continued along the curve of the abdomen: at the base of the pectoral fins are also two very strong and sharp spines: the first dorsal fin is large, and several of the first rays project to a considerable distance beyond the con-

necting membrane: the tail is of moderate size, and rounded at the end.

Though the reputation of this fish, at least in our own country, is now established as an excellent article of food, yet its introduction to the tables of the higher ranks is of no very distant date; Mr. Quin being generally considered as the first who ventured to recommend it to the attention of the polite world.

The Dory is of an extremely voracious nature, preying on the smaller fishes and their spawn, as well as on various kinds of sea-insects, the smaller shell-fish, &c. When first taken it is said to make the same kind of sound as the Gurnards and Scorpaenas, by violently forcing out the air from its gill-covers. It has been figured in the works of Salvian, Willughby, and others, but perhaps the most accurate representation may be found in that of Dr. Bloch.



OPAH DORY.

OPAH DORY.

Zeus Opah. *Z. cauda sublanari, corpore nunc rubente, nunc viridi, nunc purpureo, albo-guttato. Vivarium Naturæ. 4. t. 140.*

Dory with somewhat lunated tail; the body generally either red, green, or purple, with oval white spots.

Zeus Luna. *Z. cauda sublanari, corpore rubente albo-guttato. Lin. Syst. Nat. Gmel. p. 1225.*

Opah. *Phil. Trans. abr. 11. p. 879. t. 5. Brit. Zool. 3. t. 42. Nat. Misc. 4. pl. 140.*

THIS superb species is sometimes found in the Mediterranean and Northern seas, into which it seems to wander as an occasional visitant; being probably a more regular inhabitant of the warmer regions. In size it exceeds every other species hitherto discovered, measuring between four and five feet in length: in colour it appears to vary, the ground being sometimes a brilliant silvery green, and sometimes a bright gold-colour; but in either case the body is variegated on the sides with pretty numerous, and moderately large, oval white spots, while the fins and tail are bright scarlet: the skin is apparently destitute of scales, and perfectly smooth.

Specimens of this fish have been occasionally thrown on the British coasts, instances of which are recorded in the British Zoology and in the Philosophical Transactions. The first regular description seems to have been drawn up by Dr. Mortimer, in the year 1750, from a specimen shewn to the Royal Society, and taken on the coast of Leith

in Scotland. Dr. Mortimer's description is inserted in the Philosophical Transactions for the same year, and is as follows.

“ This fish is smooth-skinned, has no scales, or teeth: it has one erect fin on its back, which arises below its neck, and runs within a little of its tail: on each side, about the middle, between its back and belly, a little forward of the vent, arise a pair of fins: from behind the vent runs one fin, within a little of the tail: the tail-fin is large and forked: the eyes are large; the irides are scarlet, encompassed with a circle of gold-colour verged with scarlet: its nostrils are placed above its eyes: the back and upper part of the body, quite to the tail, was of a dark blue or violet-colour; these and the sides of the body, which were of a bright green, were all speckled with oblong white spots: the chaps were of a pale red; the nose, gills, and belly, were of a silver-colour, and all the fins of a bright scarlet. It was three feet seven inches long, and three feet ten inches round, in the thickest part: it weighed eighty-two pounds: its mouth was small; its tongue thick, almost like the human tongue in shape, but rough, and thick set with beards or prickles, which pointed backwards; so that any thing might easily pass down, but could not easily slip back again: therefore these might serve instead of teeth for retaining its prey or food: its gills resembled those of the Salmon: its body grows very taper towards the tail; and from being compressed to ten inches thickness, becomes near the tail almost round, and about three inches thick:

the whole shape of this fish much resembles that of the sea-bream, but it differs in size, being much larger, and in not having teeth nor scales: the fin standing erect on the back has some aculei next the neck, and rises up to eight inches; but in the middle diminishes to one inch; and near the tail rises again to about three inches: the belly-fin, opposite to this, spreads three inches near the tail, and diminishes towards the vent: the tail-fin is forked, and spreads twelve inches: the gill-fins are nine inches long, and three wide at their basis: the two belly-fins were eleven inches long, and three wide at their basis: it seems to be a new species of fish, not yet described by any author."

Dr. Mortimer adds, that the Prince of *Anamaboe*, on the coast of Africa, being then in England, immediately knew it, and said it was common on that coast, and very good to eat: the natives call it *Opah*, and the English the King-Fish.

The cavity of the abdomen, in the above specimen, is said to have been extremely small, and the bones very strong, bearing some resemblance to those of quadrupeds, particularly the shoulder-blades (as they are termed), which were thought to resemble those of a sheep.

A second specimen was taken in the year 1769, near Newcastle, and is described in the *British Zoology* by Mr. Robert Harrison.

" *Sept. 12th*, 1769.

" On Saturday last was thrown upon the sands at *Blyth*, a very rare and beautiful fish, weighing between seventy and eighty pounds; shaped like

the sea-bream : the length was three feet and a half ; the breadth from back to belly almost two feet ; but the thickness from side to side not above six inches : the mouth small for the size of the fish, forming a square opening, and without any teeth in the jaws : the tongue was thick, resembling that of a man, but rough, and thick set with beards or prickles, so that any thing might easily pass down, but could not easily return back ; therefore these might serve instead of teeth to retain its prey : the eyes remarkably large, covered with a membrane, and shining with a glare of gold : the cover of the gills like the salmon : the body diminishes very small to the tail, which is forked, and expands twelve inches : the gill-fins are broad, about eight inches long, and play horizontally : a little behind their insertion the back fin takes its original, where it is about seven inches high, but slopes very suddenly, running down very near the tail, and at its termination becomes a little broader : the belly fins are very strong, and placed near the middle of the body : a narrow fin also runs from the anus to the tail : all the fins, and also the tail, are of a fine scarlet ; but the colours and beauty of the rest of the body, which is smooth and covered with almost imperceptible scales, beggars all description : the upper part being of a bright green, variegated with whitish spots, and enriched with a shining golden hue, like the splendour of a peacock's feather : this by degrees vanishes in a bright silvery, and near the belly the gold again predominates in a lighter ground than on the back."

A third specimen was caught at *Brixham* in *Torbay* in 1772. It weighed an hundred and forty pounds, and measured in length four feet and a half, and in breadth two feet and a quarter: its greatest thickness was only four inches, and the general colour was a vivid transparent scarlet varnish over burnished gold, bespangled with oval silver spots of various sizes: the breast appeared like a hard bone, resembling the keel of a ship: the flesh is said to have resembled beef, both in colour and taste.

In the *British Museum* is a dried specimen of this fish, measuring in length about three feet five inches, from the tip of the snout to the tips of the tail, and in breadth about one foot seven inches in the broadest part.

The elegant figure of the *Opah*, given in the *Philosophical Transactions*, is repeated in the present work.

SQUARE DORY.

Zeus Quadratus. *Z. cauda aequali, corpore cinereo transversim nigroque fasciato.* *Lin. Syst. Nat. Gmel. p. 1225.*

Grey Dory with transverse dusky bars, and even tail.

Faber marinus fere quadratus. *Sloane Jam. 2. p. 290. t. 251. f. 4.*

“ THIS fish (says Sir Hans Sloan in his *Natural History of Jamaica*) was almost square, with the fins: it was five inches long, and four broad where broadest in the middle, and decreased from thence

to the head and tail gradually: the mouth was little, and set with rows of small and sharp teeth: the tongue round and cartilaginous, the pupil large and black, in a white circle: it had seven fins, two *post branchias*, and two under them in the belly; one on the highest part of the back, with a black inch and half long *ligula*, and several prickles after it: it had one other after this on the back very large, and another on the belly, having each one ear: the tail was almost square; the whole body was coloured with grey or ash-coloured scales, bating three or four transverse and black lines: it had a very crooked line from head to tail."

RED DORY.

Zeus Aper. *Z. rubens, squamis asperis, cauda æquali.*

Reddish Dory, with rough scales and even tail.

Zeus Aper. *Z. cauda æquali, corpore rubente.* *Lin. Syst. Nat.*
p. 1225.

Aper. *Rondel. Aldrov. Will. &c.*

THIS is a small species, in habit much resembling the common Dory, but scarcely more than three inches in length, and of a reddish colour, like that of the sea-bream (*Erythrinus*): it is covered with rough, ciliated scales: the snout is somewhat produced, sharpish, and turns a little upwards; and the mouth is protruded in the act of opening, like that of the common Dory: there are no perceptible teeth, and the eyes are large, with white irides: the dorsal fins are two in number, the anterior

furnished with nine strong and sharp spines, the first of which is very low and scarcely observable, the second four times longer, and the third very long and thick: the second dorsal fin consists of twenty-three soft rays: the tail is even at the end, and bright red at the tip: the vent fin has twenty-six rays, of which the three first are strong, spiny, and thrice as short as the rest: the pectoral fins have about fourteen rays, and the ventral six, the first strong and spiny, the rest soft and branched: this fish generally resides at the bottom, and is only taken accidentally after great storms: from its small size it is not numbered among edible fishes, and is besides said to be coarse and of an unpleasant odor. It is a native of the Mediterranean, and seems to have been first described by Rondeletius.

PLEURONECTES. FLOUNDER.

Generic Character.

<i>Oculi</i> ambo in eodem latere capitis.		<i>Eyes</i> both on the same side of the head.
<i>Corpus</i> compressum, latere altero dorsum, altero abdomen referente.		<i>Body</i> compressed, one side representing the back, and the other the abdomen.

THE singular structure of this genus is justly considered as one of the most curious deviations from the general uniformity or regularity observed by Nature in the external figure of animals, in which (except in a very few instances) both sides of the body are perfectly similar: but in the genus *Pleuronectes* the animal is so constituted that one side appears to represent the back, and the opposite side the abdomen. They swim laterally, and the eyes are always placed on one side. It is from this circumstance that the division of the species is conducted: viz. into those which have the eyes *dextrous*, or towards the right, when the fish is laid with its coloured side upwards with its abdomen towards the spectator; and *sinistrous* when the eyes are towards the left in the above situation of the fish. It is said however that instances have sometimes occurred in which this natural situation has been

reversed; but such instances must be considered as extremely rare*.

With eyes towards the right.

HOLIBUT.

Pleuronectes Hippoglossus. *P. corpore elongato glabro, supra fusco, subtus albido.*

Flounder with lengthened smooth body, brown above, and white beneath.

P. Hippoglossus. P. oculis dextris, corpore toto glabro. Lin. Syst. Nat. p. 456.

P. pinna caudali lunulata. Bloch. t. 47.

Holibut. *Will. p. 99. t. F. 6. Penn. brit. zool. 3.*

THIS species not only exceeds in size all the rest of the present genus, but may even be considered as one of the largest of fishes; having been sometimes found of the weight of three, and even, according to some accounts, four hundred pounds: it is a native of the Mediterranean and Northern seas, and appears to arrive at its greatest size in the latter: it is considered as the most voracious of its tribe; preying on a variety of other fishes as well as on different kinds of crabs, shell-fish, &c. The Holibut is of a longer or more slender form than most other flat-fish: its colour is deep brown above, and white beneath; the body being quite smooth, and covered with moderately small scales: as a food it is considered as very coarse in com-

* A deviation of this kind sometimes takes place in the univalve shells.

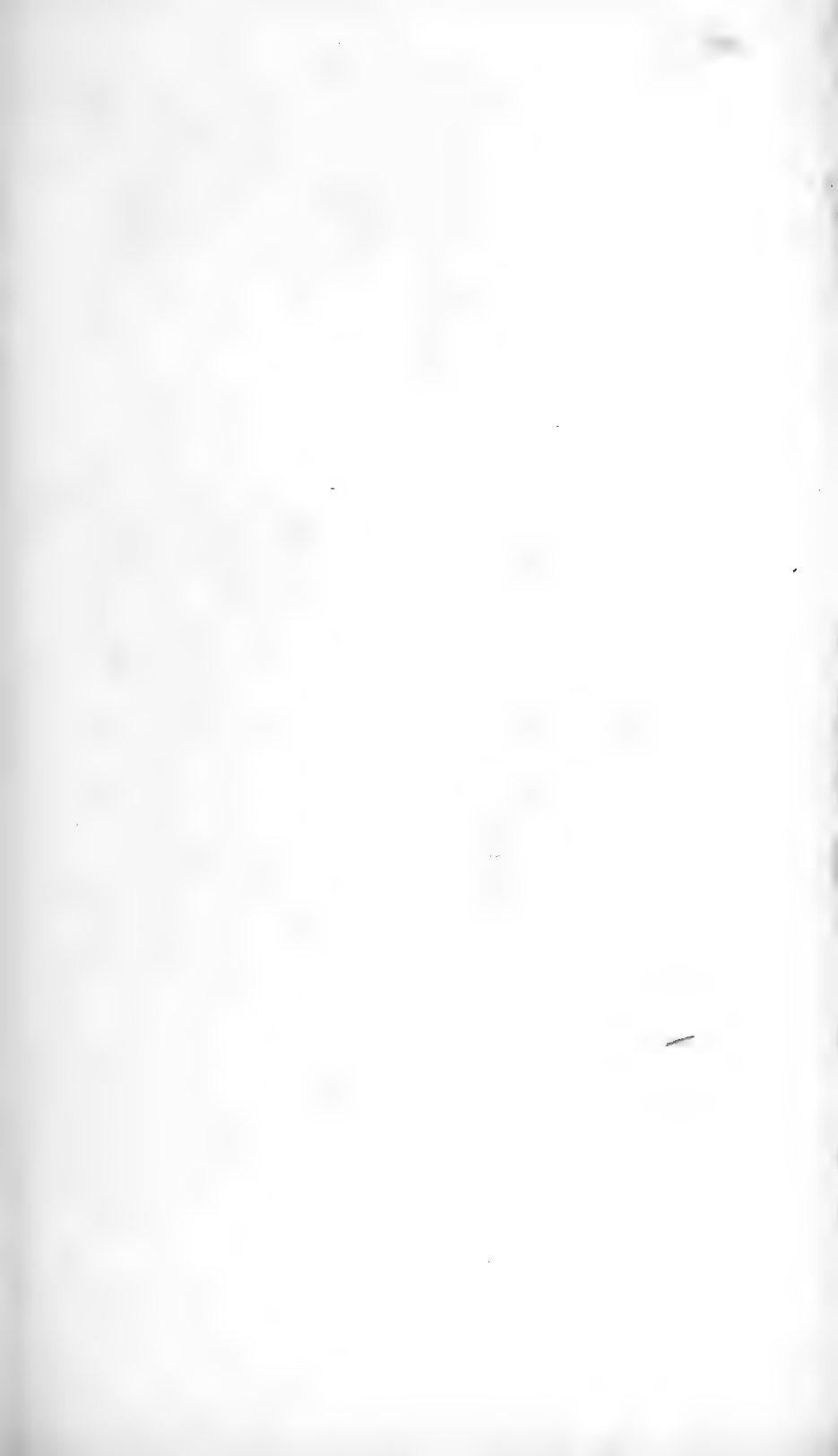
parison with many others of this genus: yet those which are young, or of moderate size, are in some degree of esteem, the part of the body nearest the fins being considered as far superior to the rest of the animal. In the London markets this fish is usually cut into large pieces when exposed to sale: the Greenlanders are said to cut it into thin slips, which they dry in the sun, and thus preserve for winter use.

SMALLER HOLIBUT.

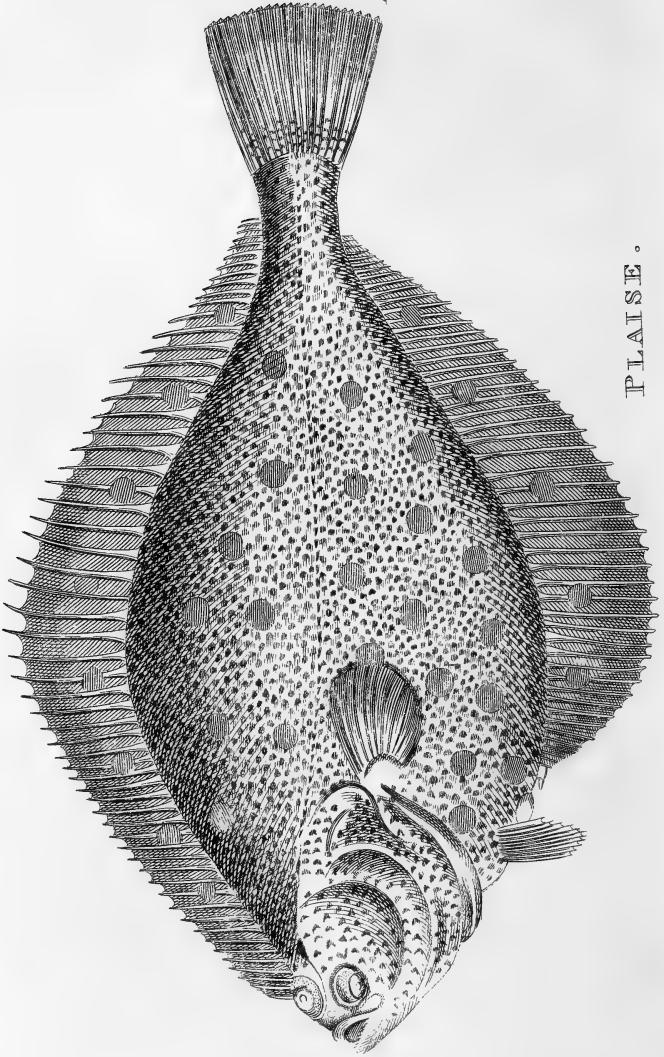
Pleuronectes Cynoglossus. *P. oculis dextris, corpore oblongo glabro, dentibus obtusis, cauda subrotunda.* Lin. Syst. Nat. 456.

Flounder with smooth oblong body, obtuse teeth, and roundish tail.

EXTREMELY allied to the preceding, of which it may, perhaps, be rather considered as a variety than a truly distinct species: length somewhat more than two feet: lateral line oblique, but not bowed or curved: native of the northern seas, and found in considerable numbers in the deep bays about the coasts of Greenland: said to be superior to the common Holibut as an article of food.



Trach. vulp.



PLAISE.

PLAISE.

Pleuronectes Platessa. *P. corpore subfusco glabro maculis rotundis fulvis, capite tuberculis sex.*

Smooth brownish Flounder, with round fulvous spots, and six tubercles on the head.

Pleuronectes Platessa. *P. oculis dextris, corpore glabro, tuberculis sex capitibus.* *Lin. Syst. Nat. p. 456.*

The Plaise. *Penn. brit. zool. 3. Will. ichth. p. 95. Block. t. 42.*

THIS species is, in general, easily distinguished at first sight from others of the genus by its shape and colours, being very broad and flat, and of a fine palish brown above, marked both on the body and fins by pretty numerous, but rather distant, round, and moderately large, orange-coloured spots: the under side is white: behind the left eye is a row of six tubercles, reaching as far as the commencement of the lateral line: the mouth is rather small, the lower jaw longer than the upper, and both furnished with a row of small, and rather blunt teeth.

The Plaise is an inhabitant of the Mediterranean, Baltic, and Northern seas, and is found in considerable plenty about our own coasts. Mr. Pennant observes that it is sometimes taken of the weight of fifteen pounds, but its more general weight is far short of this; one of eight or nine pounds being reckoned a large fish: the best are said to be taken off Rye on the coast of Sussex, and about the Dutch coasts: they spawn in the beginning of May; their general food consists of small fishes,

sea-insects, and the smaller kinds of shell-fish. The Plaise is in considerable esteem as a food, though far inferior to the Sole and Turbot: those are most esteemed which are of moderate size, the smaller ones being less firm than those of more advanced growth. It may be added that the figure of this fish in Willughby's Ichthyology conveys no very striking idea of the animal, the spots being very indistinctly expressed: the representation in Dr. Bloch's work is admirable.

DAB.

Pleuronectes Limanda. *P. subfuscus, squamis asperis, linea laterali supra pinnas pectorales arcuata.*

Brownish Flounder, with rough scales, and lateral line curving over the pectoral fins.

Pleuronectes Limanda. *P. oculis dextris, squamis ciliatis, spinulis ad radicem pinnarum dorsi anique, dentibus obtusis.* *Lin. Syst. Nat. p. 457.*

The Dab. *Penn. brit. zool. 3. Will. ichth. p. 97. Bloch. t. 46.*

THE Dab is of a very broad, ovate shape, of a yellowish brown colour above, and white beneath: it is covered with moderately large* rough scales: the head is small, and the eyes large: the mouth small, and the teeth are more numerous in the upper jaw than in the lower: the dorsal and anal fins are of moderate width, and the tail nearly even at the end: the lateral line curves downwards over

* Mr. Pennant calls them small, but they are certainly rather large in comparison with those of the major part of the genus.

the pectoral fins, and from thence runs strait to the tail.

This species is an inhabitant of the Mediterranean, the Baltic, and the Northern seas, but is less common than either the Plaise or Flounder, to both of which it is superior as a food, though inferior in its general size: it is in its highest season in the months of February, March, and April, after which it is observed to grow less firm: it spawns in May, or, if the spring prove cold, in June. Dr. Bloch observes that the small spines, mentioned by Linnæus as situated at the base of the dorsal and ventral fins, were not observable in the specimens which he examined.

SMEAR-DAB.

Pleuronectes Lævis. *P. fusco-flavescens squamis lævibus, subtus albus, maculis quinque fuscis.*

Yellowish-brown smooth-scaled Flounder, beneath white with five dusky spots.

Rhombus lævis Cornubiensis maculis nigris? (a Kit, Mr. Jago). *Raii syn. pisc.* 162. f. 1.

Smear-Dab. *Penn. brit. zool.* 3.

“ WE found (says Mr. Pennant) one of this species at a fishmonger’s in London, where it is known by the name of the *Smear-Dab*. It was a foot and a half long, and eleven inches broad between fin and fin on the widest part: the head appeared very small, as the dorsal fin began very near its mouth, and extended very near to the tail: it consisted of seventy-nine rays: the eyes were

pretty near each other: the mouth full of small teeth: the lateral line was much incurvated for the first two inches from its origin, then continued strait to the tail: the back was covered with small smooth scales, was of a light brown colour, obscurely spotted with yellow: the belly white, and marked with five large dusky spots: it was a fish of goodness equal to the common Dab."

LONG DAB.

Pleuronectes Limandoides. *P. fusco-flavescens, squamis magnis asperis, linea laterali lata, recta.*

Yellowish-brown Flounder, with large rough scales, and strait, broad lateral line.

Pleuronectes Limandoides. *P. corpore oblongo asperoque, linea laterali recta lataque. Lin. Syst. Nat. Gmel. p. 1232. Bloch. t. 186.*

OF a much longer shape than the Dab, and more approaching to that of the sole: colour pale ferruginous brown above, white beneath: scales larger in proportion than those of the common Dab, and rough: lateral line strait and broad: eyes large; mouth wide, and beset with several rows of small teeth: dorsal and anal fins moderately broad: tail rounded at the end. It is an inhabitant of the northern seas, and like others of this genus, commonly lies at the bottom, where it preys on small crabs, &c. and is in considerable estimation as a food.

FLOUNDER.

Pleuronectes Flesus. *P. fuscus, linea laterali aspera, spinulis ad radices pinnarum.*

Brown Flounder, with rough lateral line, and a series of spines at the base of the fins.

Pleuronectes Flesus. *P. oculis dextris, linea laterali aspera, spinulis ad pinnas.* *Lin. Syst. Nat. p. 457.*

The Flounder. *Will. ichth. p. 98. Penn. brit. zool. 3. Bloch. t. 44.*

THE Flounder is allied to the Plaise in shape, but is generally of smaller size and of more obscure colours, the upper side being of a dull brown, marbled with paler and darker variegations, and the under side of a dull white, sometimes obscurely varied with brown: the body is covered with very small scales, and along the back, at the base of the dorsal fin runs a row of small sharp spines: a similar row runs along the base of the anal fin: the lateral line is marked by a third row, continued almost to the base of the tail, which is slightly rounded at the end: at the commencement of the anal fin is a pretty strong spine.

The Flounder is an inhabitant of the Northern, Baltic, and Mediterranean seas: about our own coasts it is extremely common, and even frequents our rivers, at a great distance from the salt waters: it is in considerable esteem as a food, though much inferior to some others of the genus.

The *Pleuronectes Passer*, of Linnæus, considered by Mr. Pennant and some others as a variety of the Flounder, having the eyes on the left side, is

at present allowed to constitute a distinct species, and will of course be described in its proper division.

ROSE-COLOURED FLOUNDER.

Pleuronectes Roseus. *P. oculis dextris, corpore roseo.*

Rose-coloured Flounder, with eyes towards the right. *Naturalist's Miscellany. Vol. 7. pl. 238.*

GENERAL proportions those of a Flounder: length about nine inches: colour most delicate rose, slightly tinged in some parts with yellowish, and in others with silvery white: lower surface paler, or very nearly white: fins and tail pale yellow-brown: skin apparently destitute of scales, though marked by very minute scale-like reticulations, and void of all asperity either on the side-line or at the origin of the fins. Taken in the Thames, and preserved in the Leverian Museum.

SOLE.

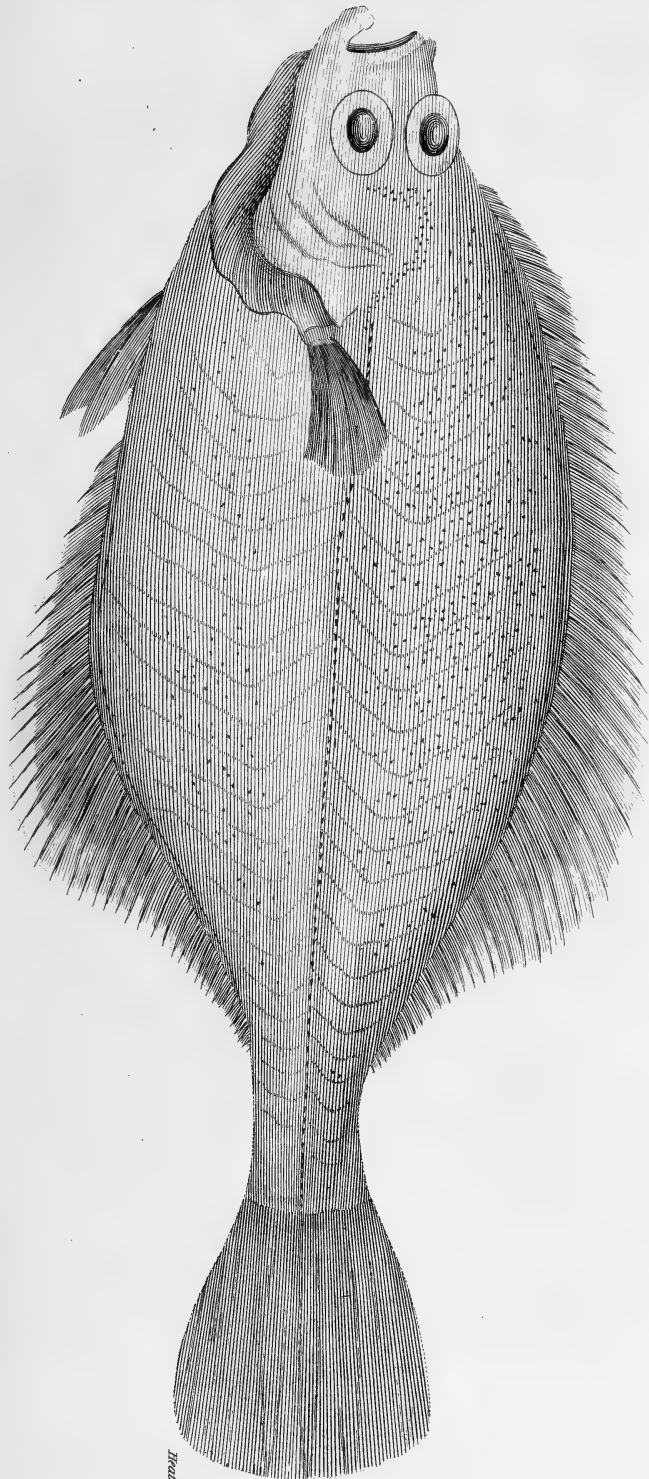
Pleuronectes Solea. *P. oblongus fuscus, squamis asperis, maxilla superiore longiore.*

Oblong brown Flounder, with rough scales, and upper jaw longer than the lower.

Pleuronectes Solea. *P. oculis dextris, corpore aspero oblongo, maxilla superiore longiore. Lin. Syst. Nat. p. 456.*

Buglossus. The Sole. *Will. ichth. p. 100. Penn. brit. zool. 3. Bloch. t. 45.*

THE Sole is an inhabitant of the Northern, Baltic, Mediterranean, and American seas, and



ROSE-COLOURED FLOUNDER.

Heath sculp.



grows to the length of more than two feet, and to the weight of eight pounds : its general size however is much smaller : its shape is that of a very long oval : its colour obscure brown above, and white beneath : it is covered with small rough scales of an oblong form, each terminated by numerous spines, and very strongly fastened to the skin : these scales, from the elegance of their structure, form a favourite microscopic object, and an erroneous idea sometimes prevails that the spiny end of the scale is that by which it was inserted into the skin : the pectoral fins, especially that on the upper side, are commonly tipped with black : the head is small ; the eyes and mouth of moderate size ; the upper jaw longer than the lower, and both fringed round the edges with a row of very small, white beards.

Next to the Turbot, this fish is considered as the most delicate of the genus, and is by many even preferred to the former ; the flesh being remarkably firm, white, and well-flavoured : those of moderate size are, in general, most esteemed. The Sole delights in lying at the bottom of the coasts which it frequents, preying on small shell-fish, spawn, sea-insects, &c. and is generally taken by the trawl-net : the chief fishery, according to Mr. Pennant, is at *Brixham* in *Torbay*.

VENETIAN SOLE.

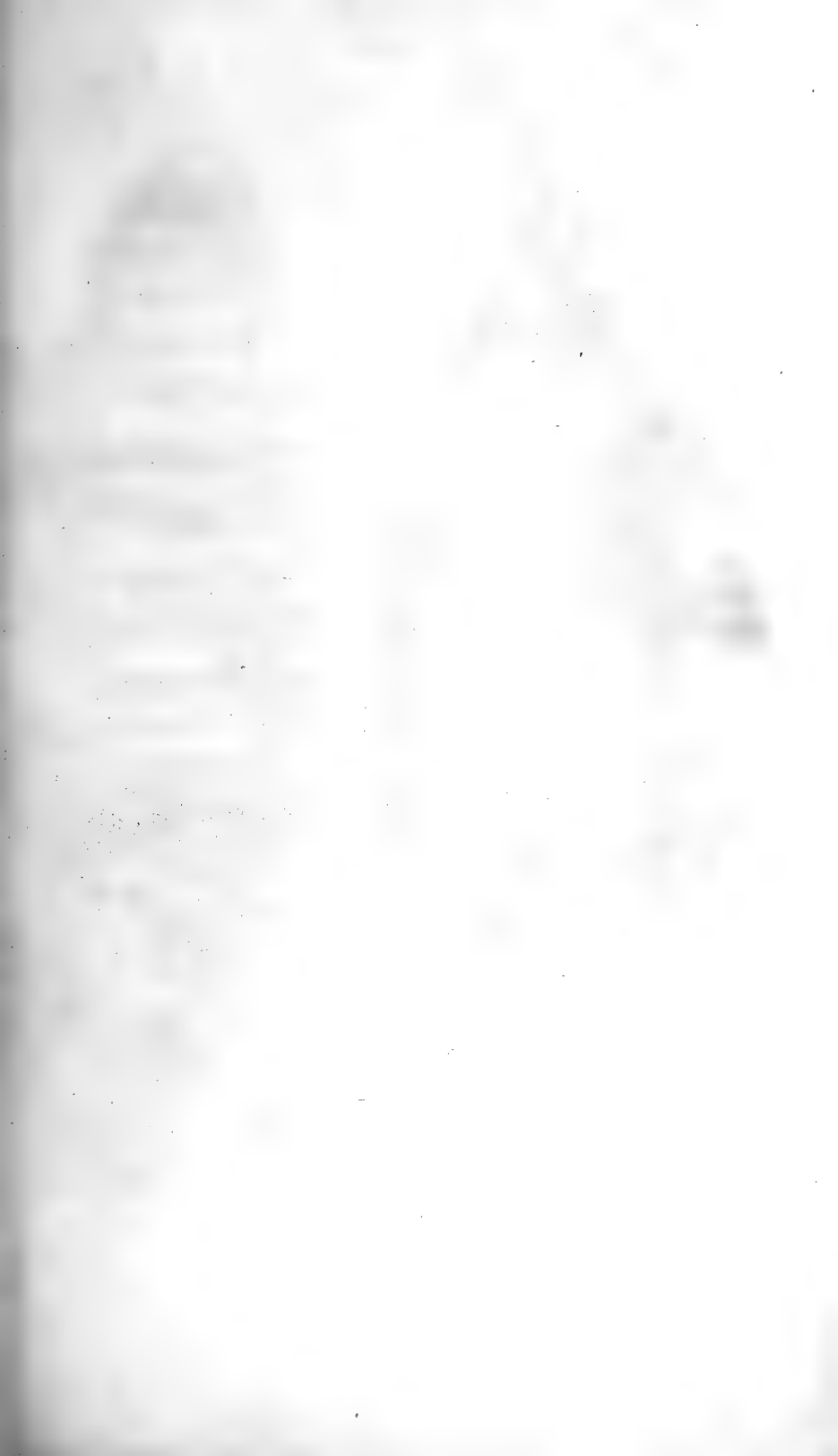
Pleuronectes Linguatula. *P. oblongus subfuscus, squamis asperis, ano sinistro, dentibus acutis.* *Lin. Syst. Nat. Gmel. p. 1233.*

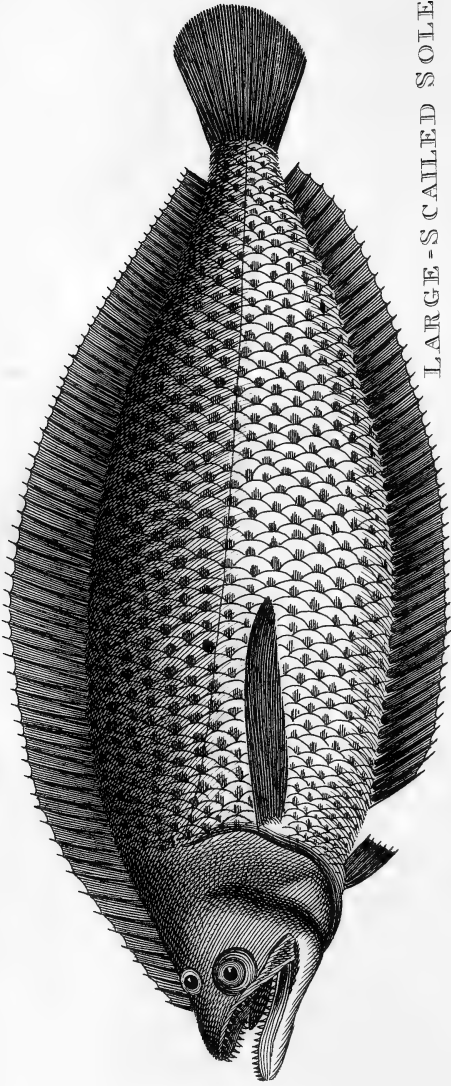
Brownish oblong Flounder, with rough scales, vent on the left side, and sharp teeth.

Pleuronectes Linguatula. *P. oculis dextris, ano sinistro, dentibus acutis.* *Lin. Syst. Nat. p. 457.*

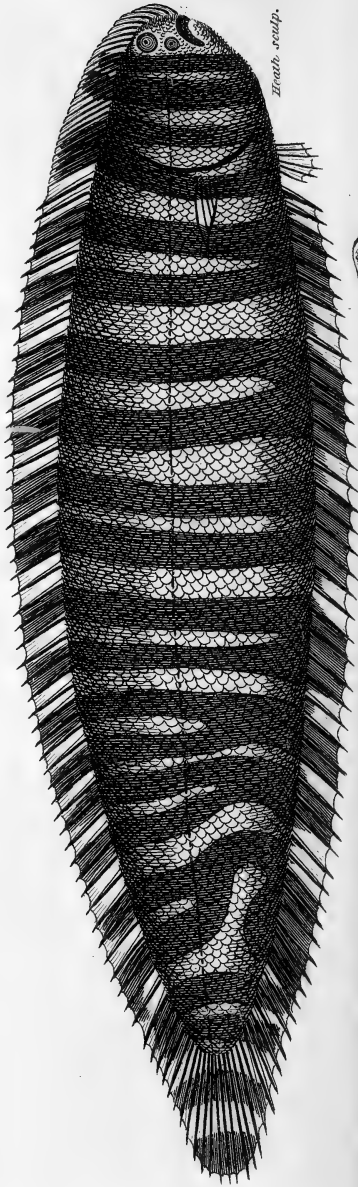
Linguatula. *Will. ichth. Bellon. &c. ?*

IF this be the Linguatula of Bellonius and Willughby, it is thus described. In figure it resembles the Sole, but is not above half as large, and is somewhat shorter in proportion: its colour is paler, and its scales much larger: the vent is placed on the under side, and not on the margin: the mouth is very wide; the tongue round and long; the teeth sharp: the eyes are placed near each other and of moderate size: the iris is gold-coloured: the pectoral and ventral fins have the same number of rays with those of the Sole: the dorsal has sixty-seven rays, and the anal forty-five. This species is said to be found about the coasts of Italy, and Willughby mentions his having seen it at Rome and at Venice.





LARGE-S CAILED SOLE .



Zoath. sculp.



ZEBRA SOLE .

PALLASIAN SOLE.

Pleuronectes Glacialis. *P. lævissimus, supra fuscus, subtus albus, pinnae dorsalis analisque radiis mediis spinis minimis hispidis.* *Lin. Syst. Nat. Gmel. p. 1234. Pall. it. 3. p. 706.*

Very smooth brown Flounder, white beneath, with the middle rays of the dorsal and anal fin roughened by minute spines.

INHABITS the frozen sea, frequenting sandy places: length about nine inches: the bony part of the head, behind the eyes, is prominent and rough: body perfectly smooth, of a brown colour above, and white beneath: observed by Dr. Pallas.

 ZEBRA SOLE.

Pleuronectes Zebra. *P. oblongus albidus, fasciis pluribus transversis duplicatis fuscis.*

Whitish oblong Flounder, with several transverse double brown bands.

Pleuronectes Zebra. *P. fasciis transversis plurimis.* *Lin. Syst. Nat. Gmel. p. 1226. Bloch. t. 187.*

AN elegant species, and readily distinguishable by its colours, the upper part being white, with a brownish cast towards the back, and marked from head to tail by numerous, double, deep brown, transverse bands, passing across the fins themselves: the body is rather longer in proportion than in the common Sole, and the dorsal and anal fin are continued into the tail which is of a slightly pointed shape: the scales are rough and toothed

at their edges, and the lateral line strait. Native of the Indian seas, and in considerable esteem as a food.

SLENDER-FINNED FLOUNDER.

Pleuronectes Trichodactylus. *P. griseus, fusco variegatus, pinnis pectoralibus filiformibus.* *Lin. Syst. Nat. Gmel. p. 1226.*

Grey Flounder, with dusky variegations, and filiform pectoral fins.

Pleuronectes asper canescens, pinnis lateralibus vix conspicuis. *Artedi gen. 18. syn. 33. spec. 60.*

AN uncertain species, known only from the description given by Artedi, who says that it is rough, of a grey colour with dusky variegations; that the eyes are towards the right, and that the pectoral fins are so slender as to be scarce conspicuous, consisting only of four filiform rays on the coloured side of the body, and of one only on the under side. Native of the Indian seas, and found about Amboina.

CAROLINA SOLE.

Pleuronectes Plagiusa. *P. oblongus griseo-fuscus, pinna dorsali caudali analique unitis.*

Grey-brown oblong Flounder, with the dorsal, caudal, and anal fins united.

Pleuronectes Plagiusa. *P. corpore oblongo scabriusculo, pinna dorsali analique caudæ unitis.* *Lin. Syst. Nat. Gmel. p. 1227.*

ALLIED in habit to the common Sole, but has the dorsal and anal fins united with the tail, as in

the Zebra Sole : colour greyish brown : scales roughish. Native of the American seas : observed about Carolina by Dr. Garden.

OCELLATED SOLE.

Pleuronectes Ocellatus. *P. corpore ocellis quatuor atris, iridibus albis. Lin. Syst. Nat. Gmel. p. 1227. Mus. Ad. Frid. 2. p. 68.*
Sole marked with four black spots with white irides.

NATIVE of Surinam : described by Linnæus in the second part of the Museum Adolphi Friderici : dorsal fin plaited : tail marked by a black bar.

RONDELETIAN SOLE.

Pleuronectes Rondeletii. *P. subfuscus, maculis magnis distantibus subnigris, pupillis pallidis.*

Brownish Sole, marked with large, distant, blackish spots with pale pupils.

Solea oculata Rondeletii. *Will. ichth. p. 100. t. F. 8. f. 4.*

SLIGHTLY described by Rondeletius, who represents it as by no means uncommon about Marseilles : shape like that of the common Sole : scales very closely fixed : body marked above by seven large dusky ocellated spots, of which that in the middle is largest : in the figure of this fish given by Rondeletius these spots appear perfectly well defined, round, and with pale or whitish centres.

PLATESSOID FLOUNDER.

Pleuronectes Platessoides. *P. oblongus griseo-fuscus, squamis magnis asperis, corpore supra maculis brunneis notato.*

Oblong grey-brown Flounder, with large rough scales, and body marked above by rufous-brown spots.

Pleuronectes platessoides. *P. corpore supra maculis bruneis.*
Lin. Syst. Nat. Gmel. p. 1234.

NATIVE of the seas about Greenland, chiefly frequenting the sandy mouths of rivers, and is not a common fish: length about a foot: head smooth: eyes middle-sized, with silvery irides: lower jaw longer than the upper, and terminated by a tubercle: tongue slender, smooth, and long: pectoral and ventral fins small: tail large and roundish: general shape like that of the *P. Linguatula*; scales like those of the common Sole, and the colour like that of the Plaise, viz. greyish brown above, with fulvous spots, and white beneath. Observed by Otto Fabricius during his residence in Greenland.

 SILVER SOLE.

Pleuronectes Argenteus. *P. argenteus, subtus subfuscus.*

Silvery Sole, brownish beneath.

Petiv. gazoph. 10. t. 26.

SLIGHTLY described by Petiver: shape like that of the common Sole: upper jaw longer than the lower: lateral line strait: upper side of the body of a silvery colour; under side pale brown: native of the Indian seas.

SMOOTH SOLE.

Pleuronectes Diaphanus. *P. candidus diaphanus, squamis tenuissimis deciduis.*

White, transparent Sole, with small, thin, deciduous scales.

Arnoglossus, vel Solea lævis Rondeletii. *Will. ichth. p. 102.*

Smooth Sole. *Penn. brit. zool. 3.*

DESCRIBED by Ray, from Rondeletius and others, as extremely thin, pellucid, and white, and covered with scales so minute, and those immediately deciduous, as to merit the appellation of *smooth sole*: it is said to be a rare species, and to be found about the coasts of Cornwall, where, from its transparency, it is called the *lantern-fish*.

 BEARDED SOLE.

Pleuronectes Barbatus. *P. oblongus lævis, maxillis utrisque latere albo cirrosis, pinnis pectoralibus nullis, corpore albo-maculoso. Gronov. zooph. 1. p. 75.*

Oblong, smooth Sole, with whitish spots, both jaws deeply bearded on the left side, and no pectoral fins.

DESCRIBED by Gronovius: shape similar to that of the common Sole, but rather wider in proportion: lips bearded on the left or uncoloured side, the series of beards reaching from the under jaw to the beginning of the ventral fins: colour, according to Gronovius, brown with whitish circular spots: native region unknown.

MARBLED SOLE.

Pleuronectes Marmoratus. *P. fuscus, maculis lineisque flexuosis lacteis.*

Brown Sole, with milk-white spots and flexuous streaks.

L'Achire marbré. *Cepede 4. p. 660.*

SLIGHTLY described by Cepede from Commerson: shape like that of the common Sole: colour, on the upper side brown, variegated or marbled with differently shaped milk-white spots and marks, some being circular, others long and confluent: fins varied with grey and blue, and speckled with black points: scales so small as to be difficultly seen: no pectoral fins: along the base of the dorsal and anal fins a row of pores, answering in number to the rays of the fins: from these, in the living animal, Commerson observed a whitish mucus to exsude on pressure: native of the Indian seas, and much esteemed as a food.

 PAVONIAN SOLE.

Pleuronectes Pavoninus. *P. fuscus, maculis irregularibus albidis, medio fuscis.*

Brown Sole, with irregular whitish spots with brown centres.

L'Achire pavonien. *Cepede. 4. p. 660.*

OBSERVED by Cepede in the collection of the Prince of Orange: shape like that of the two preceding species; and equally distinguished by the want of pectoral fins: body brown on the upper

side, and marked by spots somewhat resembling in shape those on the tail of a peacock, being white with brown centres: probably a native of the Indian seas.

This species (if such it be) together with the two preceding, the lineated, the bilineated, and the ornamented Sole, is unnecessarily placed by Cedepe in a distinct genus, under the title of *Achirus*, from the circumstance of wanting the pectoral fins.

LINEATED FLOUNDER.

Pleuronectes Lineatus. *P. corpore fusco, scabro, nigro transversim fasciato, pinnis pectoralibus nullis.*

Brown, rough Flounder, with transverse black lines, and without pectoral fins.

Pleuronectes lineatus. *P. oculis sinistris, corpore scabro nigro fasciato, pinnis pectoralibus nullis.* *Lin. Syst. Nat. p. 458.*

Passer lineis transversis. *Sloane Jam. 2. p. 77.*

FORM that of a Turbot: length seven or eight inches: body covered with small rough scales, and of a deep brown above, marked by seven or eight transverse black streaks: the rays of all the fins and tail roughened by small shagreen-like tubercles: under part of the body white, marked with round, blackish spots. Native of the American seas.

With eyes towards the left.

TURBOT.

Pleuronectes Tuberculatus. *P. griseo-fuscus, subnigro variatus, corpore tuberculis muricato.*

Grey-brown Flounder, with blackish variegations, and body roughened with tubercles.

Pleuronectes maximus. *P. oculis sinistris, corpore aspero.* Lin. *Syst. Nat. p. 459.*

Pleuronectes tuberculis osseis scaber. *Bloch. t. 49.*

The Turbot or Bret. *Will. ichth. p. 94. Penn. brit. zool. 3.*

THE Turbot, generally considered as superior to every other species as an article of food, is an inhabitant of the Mediterranean and Northern seas, where it often arrives at a very large size: it is however far inferior in this respect to the Holibut, and is therefore not very happily distinguished by Linnæus under the name of *Pleuronectes maximus*. It is of a broader and squarer form than any other of the genus except the Pearl, and is of a dark brown above, marbled with blackish spots of different sizes; and white beneath: the scales are so small as to be scarcely observable, but the skin is of a wrinkled appearance, and covered with pretty numerous and moderately large pointed tubercles or abrupt spines, those on the upper or coloured side being far larger than those on the under side; the lateral line forms an arch over the pectoral fins, and from thence runs strait to the tail.

Like the rest of this genus, the Turbot generally lies in deep water, preying on worms, shell-fish,

and marine insects, as well as on various kinds of small fishes: it is taken in great quantities about the northern coasts of England, as well as on those of France, Holland, &c. and is baited for with pieces of herring, haddock, &c. but more particularly with the smaller or river lamprey, vast quantities of which are said to be purchased of our fishermen by the Dutch, to the annual amount of not less than seven hundred pounds: they are chiefly taken about Mortlake, and sold to the Dutch as bait for the cod-fishery, but that people are said to have the art of preserving them till the commencement of the turbot-fishery.

The general manner in which the Turbot-fishery is practised at *Scarborough* is thus detailed by Mr. Pennant in the *British Zoology*, from the communications of Mr. Travis of that place.

“ When they go out to fish, each man is provided with three lines: each man’s lines are fairly coiled upon a flat, oblong piece of wicker-work; the hooks being baited, and placed very regularly in the centre of the coil: each line is furnished with fourteen score of hooks, at the distance of six feet two inches from each other: the hooks are fastened to the lines upon sneads of twisted horse-hair seventeen inches in length: when fishing, there are always three men in each coble, and consequently nine of these lines are fastened together, and used as one line, extending in length near three miles and furnished with 2520 hooks: an anchor and a buoy are fixed at the first end of the line, and one more at each end of each man’s lines, in all four

anchors, which are commonly perforated stones, and four buoys, made of leather and cork : the line is always laid across the current : the tides of flood and ebb continue an equal time upon our coast, and when undisturbed by winds, run each way about six hours : they are so rapid that the fishermen can only shoot and haul their lines at each turn of the tide ; and therefore the lines always remain on the ground about six hours : the same rapidity of the tide prevents their using hand-lines, and therefore two of the people commonly wrap themselves in the sail and sleep, while the other keeps a strict look-out, for fear of being run down by ships, and to observe the weather ; for storms often rise so suddenly, that it is with extreme difficulty they can escape to shore, leaving their lines behind. The coble is twenty feet six inches long, and five feet extreme breadth : it is about one ton burthen, rowed with three pair of oars, and admirably constructed for the purposes of encountering a mountainous sea : they hoist sail when the wind suits."

PEARL.

Pleuronectes Rhombus. *P. fuscus, subflavo maculatus, corpore glabro.*

Brown Flounder, with yellowish spots, and smooth body.

Pleuronectes Rhombus. *P. oculis sinistris, corpore glabro.*
Lin. Syst. Nat. p. 452.

Pleuronectes corpore lato et glabro. *Bloch. t. 36.*

The Pearl. *Will. ichth. p. 95. Penn. brit. zool. 3.*

THE Pearl is distinguished from the Turbot by the perfect smoothness of its skin, which is covered with scales of moderate size, and is of a pale brown colour above, marked by scattered yellowish or rufous spots, and white beneath: the lateral line, as in the Turbot, is first arched over the pectoral fins, and from thence runs strait to the tail: in its general form this fish resembles the Turbot, but is usually inferior in size.

The Pearl is by most modern authors supposed, perhaps erroneously, to have been the Rhombus of the ancient Romans, of which a specimen of enormous size is said to have been taken in the reign of Domitian*, who ludicrously ordained a *Senatusconsultum* relative to the mode of bringing it to table.

* *Juren. sat. 4.*

WHIFF.

Pleuronectes Punctatus. *P. fuscus, maculis nigricantibus, punctis rubris, squamis asperis.*

Brown Flounder, with blackish spots, red freckles, and rough scales.

Pleuronectes punctatus. *P. corpore lato asperoque. Lin. Syst. Nat. Gmel. Bloch. t. 189.*

The Whiff. *Penn. brit. zool. 3. ?*

THIS, says Mr. Pennant, bears some resemblance to the Holibut: the length of a specimen examined by that author was eighteen inches; the greatest breadth not seven, exclusive of the fins: the mouth was extremely large; the teeth very small; the under jaw hooked over the upper; the eyes were large; the scales large and rough; the side-line tuberculated and uncommonly incurvated at the beginning, making a sharp angle, and then going straight to the tail, which is rounded: the colour of the body was cinereous brown, clouded in parts, and obscurely spotted: the under side white, tinged with red.

The figure of this species in the work of Dr. Bloch is represented as of a dusky brown above, with numerous, rather large, roundish black spots of unequal sizes, between which are interspersed several very small red spots. In these particulars it seems to agree much better with the description contained in Ray's synonym than the *Smear-Dab*, which Mr. Pennant supposes to be the *Kit* of the Cornish fishermen.

BILINEATED SOLE.

Pleuronectes Bilineatus. *P. fuscus, pinna dorsali, anali, caudalique unitis, lineis lateralibus duabus.*

Brown Sole, with dorsal, anal, and caudal fin united, and two lateral lines.

Pleuronectes bilineatus. *P. lineis lateralibus duabus.* Bloch. t. 188.

SHAPE resembling that of the Zebra Sole: colour above pale brown, beneath rufous white: scales small, round, and denticulated: head larger than in the rest of the Soles: mouth small: dorsal and anal fin united, as in the Zebra Sole, with the tail, which is of a slightly pointed shape: native of China: particularly distinguished by having two lateral lines, one running straight along the middle, the other near the back.

 ORNAMENTED SOLE.

Pleuronectes Ornatus. *P. subfuscus, maculis ocellatis albis medio fuscis.*

Brownish Sole, with white ocellated spots with brown centres.

Achirus ornatus. *Cepede 4. p. 663.*

SHAPE like that of the preceding: colour pale brown above, with eight or nine deep-brown transverse bands: scales small, round, and denticulated: lateral line running in the direction of the back: observed by Cepede in the collection of the Prince of Orange.

LARGE-SCALED SOLE.

Pleuronectes Macrolépidotus. *P. fuscus, squamis magnis, pinnis pectoralibus lanceolatis.*

Brown Sole, with large scales, and lanceolate pectoral fins.

Pleuronectes macrolepidotus. *P. squamis magnis. Bloch. t. 190.*

SHAPE like that of a Sole, but somewhat broader in proportion: colour yellowish brown above, whitish beneath: scales very large, each marked at the base by a dusky spot: head without scales and spotted with brown: mouth very wide: teeth rather long: pectoral fins rather long and pointed: ventral very small: dorsal, anal, and caudal like those of the common Sole. Native of the South-American seas.

 SINISTROUS FLOUNDER.

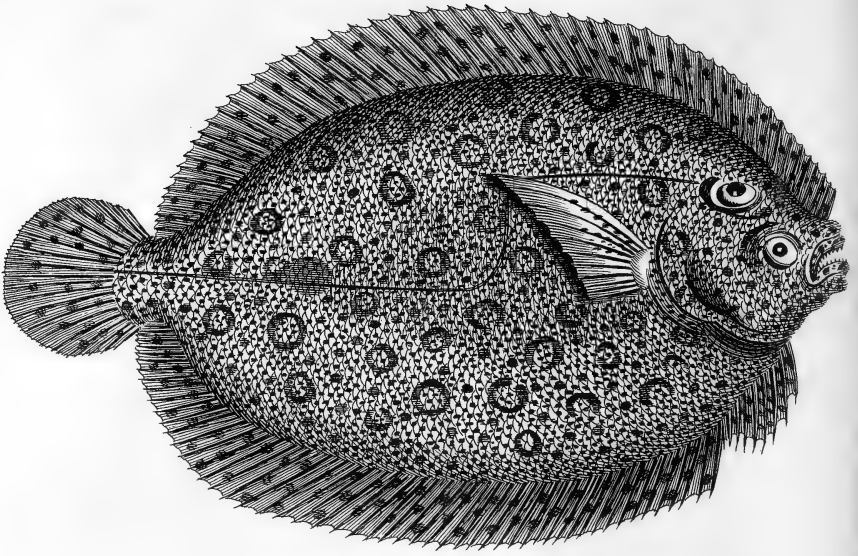
Pleuronectes Passer. *P. fuscus, oculis sinistris, linea laterali aspera, spinulis ad radices pinnarum.*

Brown Flounder, with eyes toward the left, rough lateral line, and a series of spinés at the base of the fins.

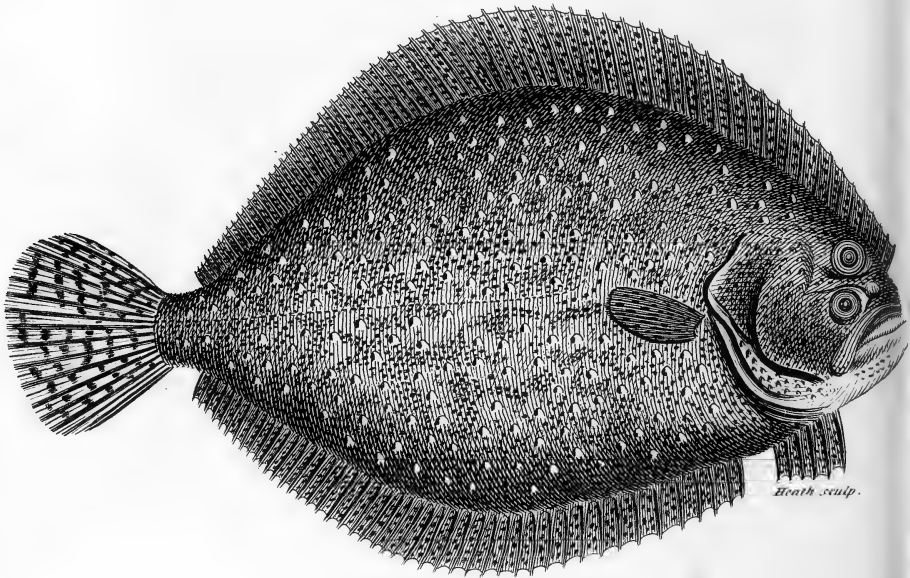
Pleuronectes Passer. *P. oculis sinistris, linea laterali sinistra aculeata. Lin. Syst. Nat. p. 459. Bloch. t. 50.*

So nearly allied in general appearance to the common Flounder that it has been considered by Pennant and some others as a variety of that species differing merely in having the eyes towards the left: Artedi, Linnæus, and Bloch however concur in establishing it as a distinct species: the





ARGUS FLOUNDER.



TURBOT.

lateral line on the upper side is rough or spiny, as in the Flounder, as also the bases of the dorsal and anal fin, but the spines on those parts are all straight, whereas in the former species they are intermixed with curved ones : in colour it resembles the Flounder.

 ARGUS FLOUNDER.

Pleuronectes Argus. *P. albidus, maculis rotundis flavis cæruleo marginatis.*

Whitish Flounder, with round yellow spots margined with blue.

Pleuronectes Argus. *P. corpore vario, pinna caudæ rotundata, Bloch. t. 48. Lin. Syst. Nat. Gmel. p. 1239.*

Passer oculatus. *Plumier, Mss.*

THIS elegant species is of the same general form with the Turbot, and is of a pale yellow, or rather a yellowish white colour on the upper side marked by numerous eye-shaped spots, consisting of bright-blue circles with yellow centres : the whole skin is also marked both on the body and fins with small blue and brown specks, and is covered with small scales : the larger spots first mentioned vary somewhat in different individuals, as well as on different parts of the same fish, being sometimes formed by complete circles of blue, but more commonly by two or three broken crescent-shaped marks of that colour : the under side is of a whitish or pale grey colour ; the lateral line is arched over the pectoral fins, and is thence continued straight to the tail,

which is rounded at the tip. This beautiful fish is a native of the American seas, and some of its varieties seem to have been considered by authors as distinct species.

VAR. ?

Pleuronectes lunatus. *P. corpore ocellis dimidiatis sparsis cæruleis.* *Lin. Syst. Nat. Gmel. p. 1239. Solea lunata et punctata. Catesb. Car. 2. t. 27.*

OBSERVED by Catesby, who in his Natural History of Carolina represents it as of a pale brown colour, with numerous blue crescent-shaped spots, and lunated tail.

VAR. ?

Pleuronectes Mancus. *P. capite tuberculato, pinnis pectoralibus inæqualibus.* *Lin. Syst. Nat. Gmel. p. 1238. Brouss. ichth. dec. 1. t. 3. 4.*

BODY of an oblong elliptic form, covered with rather large scales: right side and fins cinereous, with blackish specks and unequal, blueish, lunated and circular variegations: left side greyish white, with round brown spots: pectoral fin on the left side falcate, on the right oblong-ovate. Native of the American and Indian seas.

STELLATED FLOUNDER.

Pleuronectes Stellatus. *Pl. fuscus, tuberculis numerosissimis albidis spinoso-radiatis.*

Brown Flounder, with very numerous whitish tubercles radiated with spines.

Pleuronectes stellatus. *Pall. nov. act. Petrop. 1787.*

THIS elegant species is frequently found, according to Dr. Pallas, about the mouths of rivers in the Curile islands. Its usual length is supposed to be somewhat less than a foot and half; or nearly that of a Plaise; which it also resembles in shape: the eyes are on the left side, which is of a brown colour, and very thickly muricated all over with small tubercles of a whitish cast, smooth in the centre but radiated round the edge with small spines: the under side is white, and the fins are pale with dusky or blackish streaks here and there in the direction of the rays.

 CAROLINA SOLE.

Pleuronectes Dentatus. *P. subfuscus, dentibus acutis exertis.*

Brownish Sole, with sharp, exerted teeth.

Pleuronectes dentatus. *P. corpore oblongo glabro, dentibus exertis.* *Lin. Syst. Nat. Gmel. p. 1236.*

OBSERVED about Carolina by Dr. Garden: teeth sharp; tail rounded and scaly: in the dorsal fin are eighty-seven rays, in the pectoral twelve, in the ventral sixty-six, and in the caudal seventeen.

JAPANESE FLOUNDER.

Pleuronectes Japonicus. *P. lingua aspera*. *Lin. Syst. Nat.*
Gmel. p. 1240. Houttuyn. act. haarl. 20. 2. p. 317.
Flounder with rough tongue.

LENGTH about six inches: colour brownish above, whitish beneath: rays of the dorsal and anal fin so extremely numerous as to be with difficulty counted: tongue remarkably rough: native of the Japanese seas.

CHÆTODON. CHÆTODON.

Generic Character.

Caput parvum : *Os* exiguum : *Dentes* conferti, flexiles, setacei.

Membr: branch: radiis tribus ad sex.

Corpus latum, compressum, pluribus fasciatum ; pinna *dorsi anique* basi crassa, carnosâ, squamosa.

Head small : *Mouth* small : *Teeth* close-set, flexile, setaceous.

Gill-Membrane three, four, five, or six-rayed.

Body broad, compressed, and, generally, fasciated : *dorsal* and *anal* fin, thick, fleshy, and scaly at the base.

THE numerous genus *Chætodon* is, in a general view, distinguished by the great depth and highly compressed form of the body, which, in most species, is beautifully variegated by transverse, oblique, or longitudinal bands, and covered with strong scales, finely denticulated on the margins : the dorsal and anal fin are remarkably broad, scaly at the base or lower part, and in many species, of an unusual length, and furnished, as in some of the *Dories*, with rays projecting beyond the membrane : the teeth are, in general, small, very slender, and flexible. The species are very numerous, and are mostly natives of the Indian and American seas, being very rarely, if ever, taken in those of Europe.

With single dorsal fin, and even or rounded tail, or at most, but very slightly inclining to crescent-shaped in some few species.

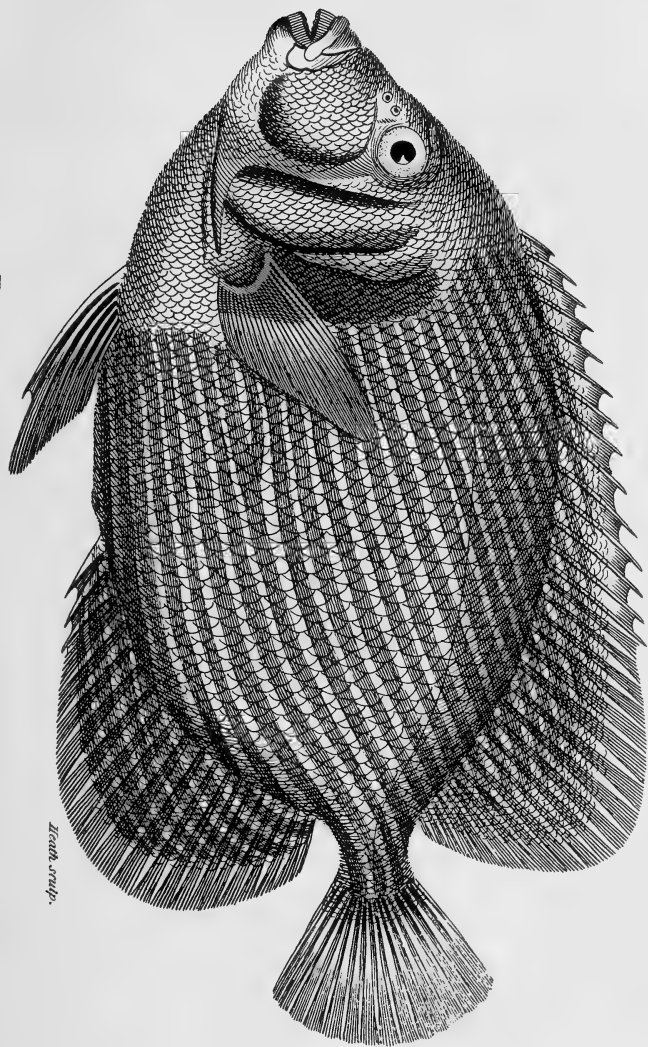
IMPERIAL CHÆTODON.

Chætodon Imperialis. *C. flavus, lineis numerosissimis longitudinalibus obliquis cæruleis.*

Yellow Chætodon, with very numerous oblique longitudinal blue lines.

Chætodon Imperator. *Lin. Syst. Nat. Gmel. p. 1255. Bloch. t. 194.*

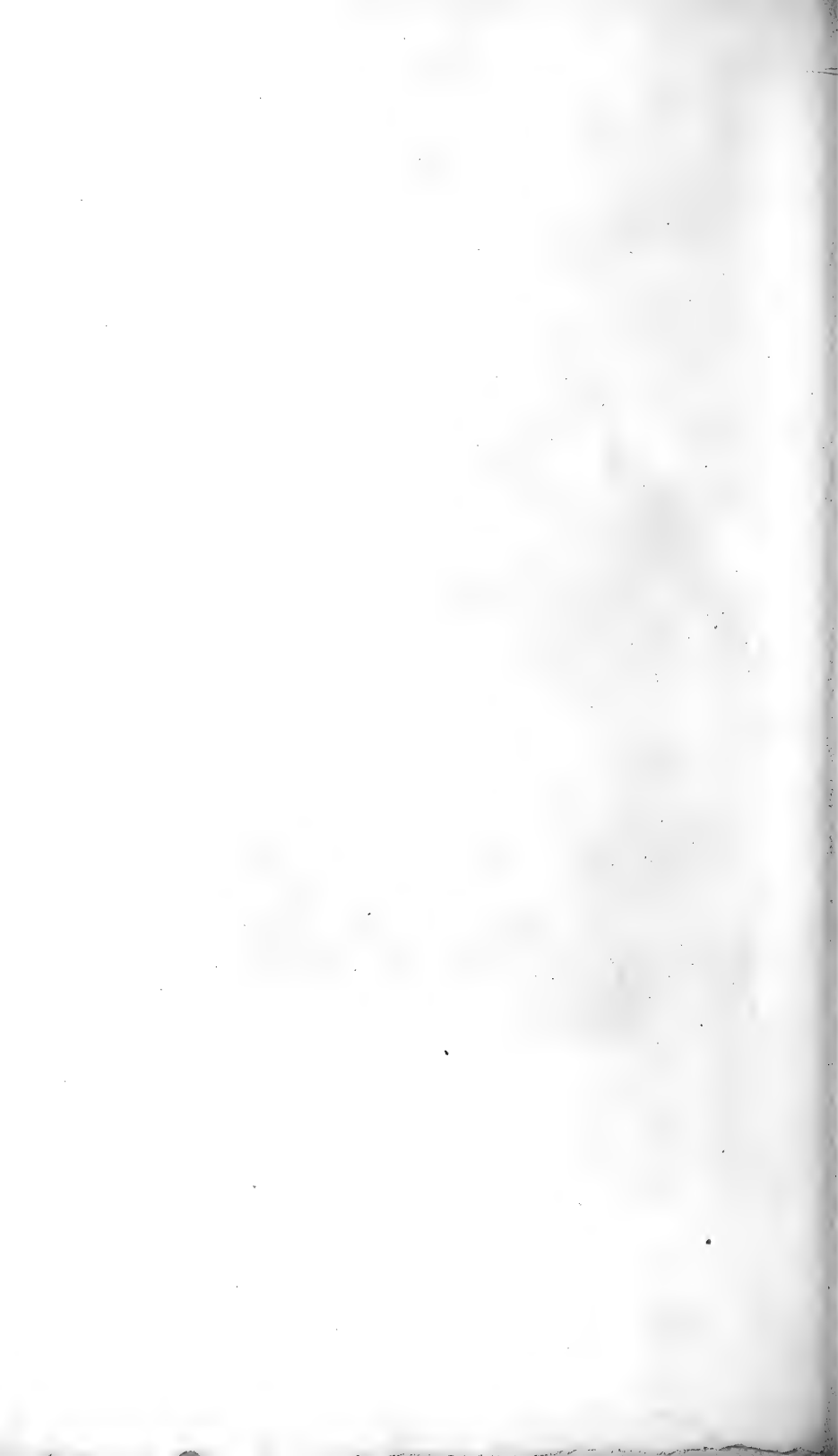
A MOST magnificent species, growing to the length of a foot or more: body oval; dorsal and anal fin broad, and scaled to a considerable distance from the base: gill-covers furnished on each side with a very strong spine: ground-colour of the animal golden yellow, longitudinally, but somewhat obliquely striped with very numerous bright-blue parallel rays. Native of Japan, where it is held in high esteem as an article of food, and is said to be superior to the Salmon in flavour.



IMPERIAL CHAETODON.

Zebr. sculp.

1863, July 1. London, published by G. F. & Co., 7, Fleet Street.



PARU CHÆTODON.

Chætodon Paru. *C. nigricans, squamis aureo marginatis.*

Blackish Chætodon, with the scales bordered with a golden gloss.

Chætodon Paru. *Lin. Syst. Nat. Gmel. p. 1256. Bloch. t. 197.*

A HIGHLY elegant species, though inferior in beauty to the preceding: grows to about the same size, and is of an oval shape, the dorsal and anal fins extending at their tips far beyond the thicker or scaly part of the fin: on the gill-covers a strong spine: colour of the whole animal black, accompanied by a strong golden tinge, most conspicuous toward the edges of the scales, which are large and rounded: native of the South-American seas.

 ANGEL CHÆTODON.

Chætodon Catesbeii. *C. viridi-aureus, squamis squamulosis.*

Gold-green Chætodon, with the scales covered by smaller ones.

Angel-Fish. *Catesb. carol. 2. t. 31.*

DESCRIBED and figured by Catesby in his Natural History of Carolina; who names it the Angel-Fish, and represents it of a golden-green colour, with the pectoral, ventral fins, and tail of a bright orange-colour; the dorsal and anal violet-blue at the base, and bright crimson towards the tips: these fins extend to a great distance, reaching far beyond the tail: the body is very broad, terminating very

abruptly on the hind part, from the middle of which the base of the tail suddenly emerges: the gill-covers are armed with several strong spines, and the whole body is covered with moderately large rounded scales, which are themselves covered with much smaller ones. Native of the American seas, and according to Catesby, common off Carolina and the Bahama isles, where it is much esteemed for its delicacy.

CILATED CHÆTODON.

Chætodon Ciliaris. *C. subargenteus, squamis ciliatis.*

Silvery-grey *Chætodon*, with ciliated scales.

Chætodon ciliaris. *Lin. Gmel. p. 1252. Bloch. t. 214.*

LENGTH about a foot: body oval; dorsal and anal fin extended into sharp semilunar extremities, projecting beyond the tail: colour of the whole animal silvery-grey, with a more dusky tinge on the back, and an annular black spot placed immediately before the origin of the dorsal fin: scales of moderate size, and all ciliated round their edges with numerous hair-like processes, which take their rise from the middle of each scale: gill-covers furnished at the middle with a strong spine, accompanied with a few smaller ones. Native of the Indian seas.

FASCIATED CHÆTODON.

Chætodon Fasciatus. *C. corpore oblongo-ovato albido, fasciis pluribus transversis cæruleis.*

Chætodon with oblong ovate body, marked by several transverse blue bands.

Chætodon fasciatus. *Bloch. t. 195.*

Chætodon Dux. *Lin. Gmel. p. 1255.*

A BEAUTIFUL species: shape oblong-ovate; colour white with a slight silvery cast, and a dusky tinge on the upper parts: body most elegantly banded by several broad, transverse, deep blue bands with brown edges: dorsal and anal fin moderately broad, but obtuse at their extremities, and not extending to the end of the tail: at the gill-covers a very strong spine. Native of the Indian seas.

 SURAT CHÆTODON.

Chætodon Suratensis. *C. corpore subrotundo-ovato subargenteo, fasciis transversis fuscis, maculaque utrinque pectorali nigra.*

Silvery-grey Chætodon with roundish-ovate body banded with brown, and marked on each side by a black pectoral spot.

Chætodon Suratensis. *Bloch. t. 217.*

SHAPE roundish-oval: colour silvery grey, darker on the back and fins: body marked by six or seven moderately broad, transverse, brown bands, and at the base of the pectoral fins by a semi-lunar black spot: dorsal and anal fin broadish at the extremities, but obtuse, and not reaching to

the tip of the tail: scales moderately large, and each marked in the middle by a bright spot. Native of the Indian seas, growing to the length of ten or twelve inches.

KLEINIAN CHÆTODON.

Chætodon Kleinii. *C. flavescens, corpore rotundato-ovato, capite fascia transversa nigra.*

Yellowish Chætodon, with round-ovate body, and head crossed by a black band.

Chætodon Kleinii. *Bloch. t. 218. f. 2.*

SIZE rather small: shape round-ovate: colour pale yellow, with a dusky tinge on the back, and a silvery cast on the sides: from the origin of the dorsal fin to that of the pectoral fins, runs a slightly curved, blackish, or deep-brown stripe, passing through the eye in its course: dorsal and anal fin rather broad at the ends, but not projecting so far as the end of the tail: scales large and rounded. Native of the Indian seas.

EIGHT-BANDED CHÆTODON.

Chætodon Octofasciatus. *C. subargenteus, corpore rotundato-ovato, fasciis octo angustis transversis nigris.*

Silvery-grey Chætodon, with round-ovate body crossed by eight narrowish black bands.

Chætodon octofasciatus. *Lin. Gmel. p. 1262. Bloch. t. 215. f. 1.*

SIZE rather small : shape, round-ovate : colour whitish or silvery-grey, brownish on the back : body marked by eight rather narrow, blackish or deep-brown, transverse bands disposed in pairs, viz. one pair across the head and gills, the first line passing through the eye : two pair across the middle of the body, and the remaining pair across the end of the body and tail : lateral line curving in the direction of the back, and formed by a row of round scales : dorsal fin almost completely scaled, and furnished at the fore-part with extremely strong spines ; rounded at the hind-part and slightly stretched towards the tail, but not reaching farther than the middle of that part : anal fin of similar shape ; and furnished with three very strong short spines at its origin. Native of the Indian seas. This species was arranged by Linnæus, in the twelfth edition of the *Systema Naturæ*, in the genus *Perca*, under the name of *Perca nobilis*.

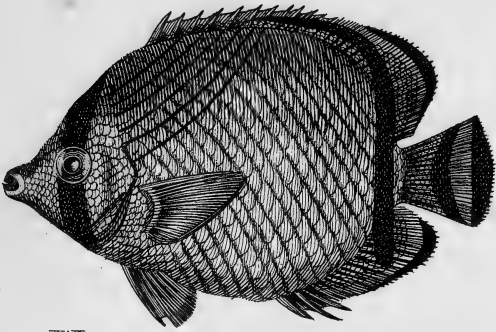
ANNULAR CHÆTODON.

Chætodon Annularis. *C. luteus, corpore rotundo-ovato, fasciis sex obliquis longitudinalibus curvatis annuloque postoculari cæruleis.*

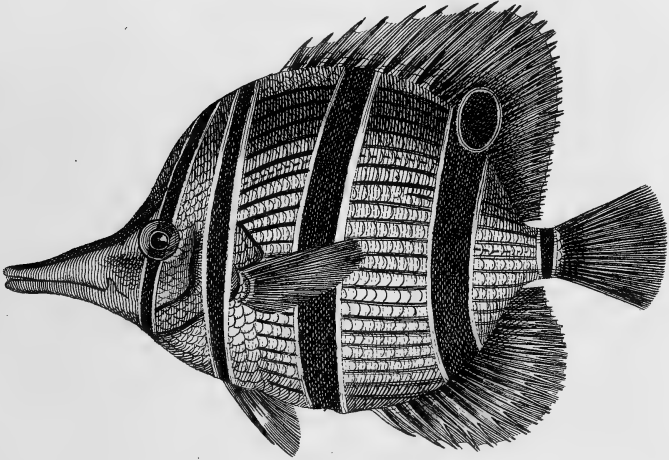
Deep yellow Chætodon, with round-ovate body, marked by six longitudinal curved blue stripes and a blue ring behind the eye.

Chætodon annularis. *Lin. Gmel. p. 1262. Bloch. t. 215.*

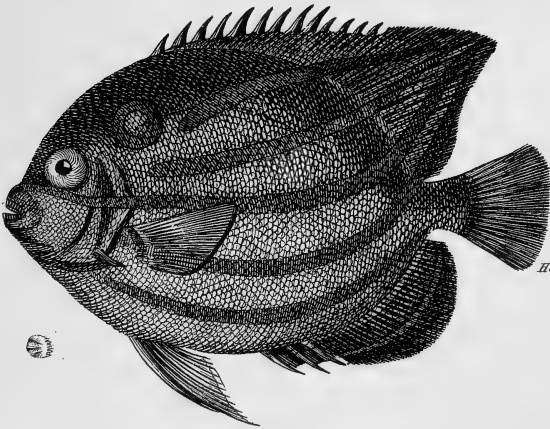
SHAPE round-oval: colour yellow or pale fulvous, with six oblique, longitudinal, curved, bright-blue lines or narrow stripes, of which the four superior are continued into the dorsal fin, at the hind part of which they meet in an angle: the two lower stripes run along the bottom of the abdomen: the dorsal fin is broad at its hind-part, and projects above the tail into an angular form: the anal fin is rounded at the hind-part: on each side the body, beyond the eye, is a bright-blue circle, and at the bottom of the gill-covers is a strong spine. Native of the Indian seas: length about a foot.



WANDERING CHAETODON .



ROSTRATED CHAETODON .



Heath sculp.

ANNULAR CHAETODON .



COLLARED CHÆTODON.

Chætodon Collaris. *C. corpore rotundo-ovato albido, capite fusco fasciis duabus lacteis, fascia caudali nigra.*

Whitish Chætodon, with round-ovate body, brown head marked by two milk-white bars, and tail crossed by a brown band.

Chætodon collare. *Lin. Gmel. p. 1263. Bloch. t. 216.*

SHAPE round-ovate ; colour blueish or greyish white, tinged with brown on the back : head deep-brown, with two milk-white perpendicular stripes, the former immediately before the eyes, the latter behind : the mouth is also white : the dorsal and anal fin are shaped nearly as in the *C. octofasciatus*, and the tail is marked across the middle by a brown bar : the body is covered with large scales. Native of Japan ; length of the specimens described by Seba, Bloch, &c. about six inches.

 BLACK-AND-WHITE CHÆTODON.

Chætodon Mesoleucos. *C. corpore subrotundo-ovato nigricante, antèrius albo, fascia capitis nigra.*

Roundish-ovate blackish Chætodon, with the fore-parts white, and a brown bar across the head.

Chætodon mesomelas. *Lin. Gmel. p. 1263.*

Chætodon mesoleucus. *Bloch. t. 116.*

SHAPE roundish ovate, but less so than the preceding species : colour of the body, dorsal, and anal fin deep-brown, but the fore-part of the body

gradually softens into white : down each side of the head, through the eyes, runs a deep-brown band : the pectoral, ventral fins, and tail are white : the body is covered with moderately small scales, and at the lower part of the gill-covers is a very strong spine : the shape of the fins resembles those of the major part of this division. Native of Japan.

ARGUS CHÆTODON.

Chætodon Argus. *C. subargenteus, maculis numerosis rotundis fuscis, corpore subquadrato-ovati.*

Silvery-grey Chætodon with squarish-ovate body, marked with numerous round brown spots.

Chætodon Argus. *Lin. Gmel. Bloch. t. 204.*

GENERAL shape ovate, or rather squarish-ovate : colour silvery-grey, with a brownish cast on the upper parts, and the whole body, as well as part of the fins, marked by numerous round brown spots : scales very small : first rays of the dorsal fin moderately long, those on the middle part much shorter : terminal part both of dorsal and anal fin rounded and slightly dilated : tail even at the end, but not rounded : gill-covers perfectly smooth : native of the fresh waters of India.

BIMACULATED CHÆTODON.

Chætodon Bimaculatus. *C. albidus, corpore subrotundo-ovato, capite elongato, fascia transversa nigra, pinna dorsali macula nigra alteraque dimidiata.*

Whitish Chætodon, with roundish-ovate body, elongated head crossed by a black bar, and dorsal fin marked by a black spot and a second dimidiated one.

Chætodon bimaculatus. *Bloch. t. 219. f. 1.*

SHAPE of the body roundish-ovate, but the head considerably lengthened, so as to form a kind of snout in front: colour white, with a slight cast of brown on the upper part and fins: scales very large: head marked on each side by a black or deep-brown stripe, beginning at the origin of the dorsal fin, and passing through the eyes downwards, under the throat: pectoral and ventral fins pale red: dorsal marked at the base of the hind-part, by a large, round black spot, bordered with white, and at its extreme edge by a much smaller half-spot of similar colours; native of the seas about Japan.

STRIPED CHÆTODON.

Chætodon Striatus. *C. albidus, corpore subrotundo-ovato, lineis longitudinalibus subfuscis, fasciisque quatuor transversis fuscis.*

Whitish Chætodon, with roundish body, marked by several longitudinal dusky lines, and by four transverse dusky bars.

Chætodon striatus. *Lin. Gmel. Bloch. t. 1249.*

SHAPE roundish ovate: colour whitish, tinged with yellowish brown on the upper parts, and marked by four distant brown bands, the narrowest of which runs on each side the head, passing through the eyes to the breast; the two next, which are much broader, pass, at nearly equal distances, across the body, and the third crosses the setting on of the tail: the pectoral and ventral fins are of a deep brown, and the dorsal, anal fin, and tail, are deeply edged with the same colour: the body is covered with scales of moderate size, and is marked by several narrow longitudinal dusky streaks between the rows of scales. Native of the Indian and American seas.

 DIVIDED CHÆTODON.

Chætodon Bicolor. *C. corpore oblongo-ovato, dimidio antico lacteo, postico fusco.*

Chætodon with oblong-ovate body, the anterior half milk-white, the posterior brown.

Chætodon bicolor. *Lin. Bloch. t. 205.*

A SPECIES of moderate, or rather smallish size, and easily distinguishable by the remarkable distribution

of its colours, the fore-part of the body being milk-white; the hind-part reddish brown, passing through the dorsal and anal fins, which are both edged with white: the tail, pectoral, and ventral fins are also white: the gill-covers are furnished with a very strong spine: the dorsal and anal fins are nearly covered with scales, and are of moderate breadth, extending into an acuminate form above and below the tail, but not reaching to the tip: the body is of an oblong-ovate shape. Native of the Indian and American seas.

SINGLE-SPOTTED CHÆTODON.

Chætodon Unimaculatus. *C. argenteus, supra cærulescens, corpore subrotundo-ovato macula utrinque versus dorsum nigra.*

Silvery Chætodon with roundish-ovate body marked on each side towards the back by a black spot.

Chætodon unimaculatus. *Lin. Gmel. Bloch. t. 201.*

SHAPE roundish-ovate: colour silvery white, with a few obliquely transverse yellow streaks, and tinged on the upper parts with blue-grey: body covered with large scales, and marked on each side, towards the back, with a large oval black or deep-brown spot: the head is marked, as in some others of this tribe, by a deep-brown band, running across the eyes: the base of the tail, and the edges of the dorsal and anal fin are also brown: the tail is even at the end, or, at most, so very slightly lunated as to be scarce perceptibly so. Native of the Indian seas.

WANDERING CHÆTODON.

Chætodon Vagabundus. *C. subluteus, corpore subrotundo-ovato, longitudinaliter striato, postice fascia transversa nigra.*

Yellowish Chætodon, with roundish-ovate body longitudinally striated, and marked at the hind-part by a transverse black bar.

Chætodon vagabundus. *Lin. Bloch. t. 204.*

SHAPE roundish-ovate : head lengthened a little in front : body covered with large scales, and of a pale orange-colour, marked with numerous oblique narrow streaks running in the interstices of the scales : over the shoulders are several similar streaks in an opposite direction, or crossing the former : head marked by a black band running across the eyes, as in many others : end of the body, at the setting on of the tail, marked by a similar band, which runs both into the dorsal and anal fin : tail crossed in the middle by a black or deep-brown crescent, and bordered at the tip with the same colour. Native of the Indian seas, and said to be in considerable estimation as a food.

OCCELLATED CHÆTODON.

Chætodon Ocellatus. *C. corpore ovato argenteo, capite fascia nigra, pinna dorsali macula rotunda nigra albo marginata.*

Chætodon with silvery-white ovate body, head crossed by a black bar, and dorsal fin marked by a round black spot edged with white.

Chætodon ocellatus. *Bloch. t. 211. f. 2.*

A SMALL species: length about four inches: shape ovate: colour silvery white, with a few oblique yellow streaks: dorsal and anal fin broad, rounded at the hind part, and very scaly at the base, dorsal marked with a large, round deep-black spot, edged with white, head marked by a transverse black band, running across the eyes. Native of the Indian seas.

ROSTRATED CHÆTODON.

Chætodon Rostratus. *C. corpore subrotundo-ovato albido, fasciis transversis fuscis, rostro longo, pinna dorsali macula nigra.*

Whitish Chætodon, with roundish-ovate body crossed by brown bands, long snout, and dorsal fin marked by a black spot.

Chætodon rostratus. *Lin. Bloch. t. 202. f. 1.*

Chætodon Enceladus. *Nat. Misc. 2. pl. 67. Jaculator. Phil. Trans. 1765.*

SHAPE roundish-ovate: length about six or eight inches: snout lengthened into a tubular form: colour of the body whitish, with a dusky tinge on the back, and marked by five transverse, and nearly equidistant, brown bands, with milk-white edges: the first band, which is narrower than the rest, passes across the head, through the eyes, the three

next across the body, and the last across the base of the tail: the dorsal and anal fin are very broad at the hind part, and the dorsal is marked in that part by a large black spot, bordered with white: the gill-covers are scaly, but destitute of spines.

This fish is a native of the fresh waters of India, and is celebrated for the extraordinary manner in which it takes its prey, which chiefly consists of the smaller kind of flying insects: when it observes one of these, either hovering over the water, or seated on some aquatic plant, it shoots against it from its tubular snout a drop of water, with so sure an aim as generally to lay it dead, or at least stupefied, on the surface. In shooting at a sitting insect, it is commonly observed to approach within the distance of from six to four feet, before it explodes the water. When kept in a state of confinement in a large vessel of water, it is said to afford high entertainment by its dexterity in this exercise, since if a fly or other insect be fastened to the edge of the vessel, the fish immediately perceives it, and continues to shoot at it with such admirable skill as very rarely to miss the mark.

It may not be improper to observe, that this faculty is not entirely confined to the present fish, but takes place in some few others belonging to very different genera.

ORB CHÆTODON.

Chætodon Orbis. *C. corpore orbiculari, radiis anterioribus pinnæ dorsalis elongatis.*

Chætodon with orbicular body, and the first rays of the dorsal fin elongated.

Chætodon Orbis. *Bloch. t. 202. f. 2.*

A SMALL species: length about four inches: shape of the body remarkably orbicular: colour blueish-grey above, yellowish-white beneath: body covered with large scales: ventral fins narrow and falciform; first rays of the dorsal running beyond the membrane, as in some of the Dories: side-line curving irregularly, with a kind of double descent before it reaches the tail. Native of the Indian seas.

 BUTTERFLY CHÆTODON.

Chætodon Capistratus. *C. corpore ovato fulvo, lineis obliquis oppositis notato, postice macula nigra, capite fascia fusca.*

Chætodon with ovate fulvous body, marked by oblique opposite lines, a black spot on the hind-part, and head crossed by a brown bar.

Chætodon capistratus. *Lin. Bloch. t. 205. f. 2.*

A VERY small species, length about three inches and a half: shape ovate: dorsal and anal fins gradually dilated and rounded at their extremities: ground-colour of the whole animal pale orange, the body being covered with scales of moderate size, and marked on each side the lateral line by

numerous oblique dusky lines, running towards the tail, and forming so many acute angles along the sides of the body : the head is crossed by a brown band passing through the eyes : the base of the tail is crossed by a smaller bar ; the dorsal and anal fin are edged on their broadest part by a brown margin, and on each side the body, a little above the tail, is a large, round, black spot, with a white border. Native of the American seas, and found about the coasts of Jamaica, &c.

CHALYBEAN CHÆTODON.

Chætodon Faber. *C. subargenteus, cæruleo tinctus, pinnis fascisque corporis sex transversis cæruleis.*

Subargenteous Chætodon, tinged with blue, with blue fins, and six transverse blue bands.

Chætodon Faber. *Bloch. t. 212.*

SHAPE roundish ovate : length about twelve inches : ground-colour silvery white, but with a strong tinge of dusky blue on the upper parts, and marked by six unequal, dark-blue, transverse bands, of which the first, which is narrow, passes across the head, through the eyes ; the next, which is much broader, through the body ; the third passes only half way down from the back ; the fourth completely through the body ; the fifth, which is narrower, across the end of the body ; and the sixth, which is the narrowest of all, across the base of the tail : all the fins are of the same deep-blue colour with the bands, and the hind-parts of

the dorsal and anal fin extend in a somewhat falcated manner, as far as the end of the tail: the body is covered with scales of moderate size, and the gill-covers are destitute of spines. Native of the American seas.

 ARCUATED CHÆTODON.

Chætodon Arcuatus. *C. nigricans, fasciis angustis, transversis, arcuatis, niveis.*

Blackish Chætodon, with narrow, arcuated, transverse snow-white bands.

Chætodon arcuatus. *Lin. Bloch. t. 201. f. 2.*

SHAPE of the body ovate; dorsal and anal fin very broad, and terminating in sharpened or slightly falciform extremities, but not extending so far as the tail: colour of the whole fish very deep black-brown, varied by arcuated milk-white transverse bands, which are five in number; the first passing across the mouth, and the next across the thorax, the two next across the body, dorsal, and anal fin, and the last across the tail, which is also tipped with a milk-white margin: gill-covers tipped with a strong spine. Native of the South-American seas: general length from three to six inches.

BIFASCIATED CHÆTODON.

Chætodon Bifasciatus. *C. albo-cærulescens, corpore suborbiculari, fasciis duabus fuscis, radio quarto pinnae dorsalis longissimo.*

Blueish-white Chætodon, with suborbicular body marked by two brown bars, and the fourth ray of the dorsal fin extremely long.

Chætodon macrolepidotus. *Lin. Bloch. t. 200. f. 1.*

SHAPE of the body round-oval; or even orbicular: colour blueish grey above, silvery-white beneath: dorsal and anal fin of moderate breadth, and not extending to the end of the tail; but the fourth ray of the dorsal fin, which is very thick and strong, is extended to a vast distance beyond the rest, reaching considerably farther than the tip of the tail, over which it passes in a curved direction: across the body, are two very broad blackish-brown bands, viz: one from the origin of the dorsal fin to the ventral fins; the other from the middle of the dorsal fin to the bottom of the anal; passing through both: this species is the *C. macrolepidotus* of Linnæus; but as the scales are not so large as in some other species since discovered, I have given it a different trivial name: it is a native of the Indian seas, where it is said to arrive at a very considerable size, sometimes weighing upwards of twenty pounds, and to be much esteemed as a food, resembling the Sole in delicacy.

HORNED CHÆTODON.

Chætodon Cornutus. *C. albo-cærulescens, corpore elevato-orbiculari, antice fasciis duabus, postice unica nigris, radio tertio pinnae dorsalis longissimo.*

Blueish-white Chætodon, with high-orbicular body, crossed on the fore-part by two, on the hind-part by one black band, and the third ray of the dorsal fin extremely long.

Chætodon cornutus. *Lin. Bloch. t. 200. f. 2.*

SHAPE of the body nearly orbicular, but deeper than long, or measuring more from the back to the abdomen than from head to tail: dorsal and anal fins produced in a falciform manner, so as to reach beyond the tail, more especially the dorsal fin, several rays of which, from about the third to the eighth, are gradually extended beyond the length of the rest, though still preserving the outline of the fin; but the third or longest ray curves over the tail to a great distance downwards: colour of the body silvery; with a blueish cast on the upper parts, and marked by three broadish black zones, two passing across the thorax, so as to represent a double band, and the other passing across the hind part of the body, dorsal, and anal fin: tail black, arched by a narrow white crescent near the end: scales on the body rather small: snout rather produced, but in a much less degree than in the *C. rostratus*: over each eye is generally a small pointed or horn-shaped process, which in the younger specimens is scarce perceptible; native of the Indian seas: general length from four to six inches.

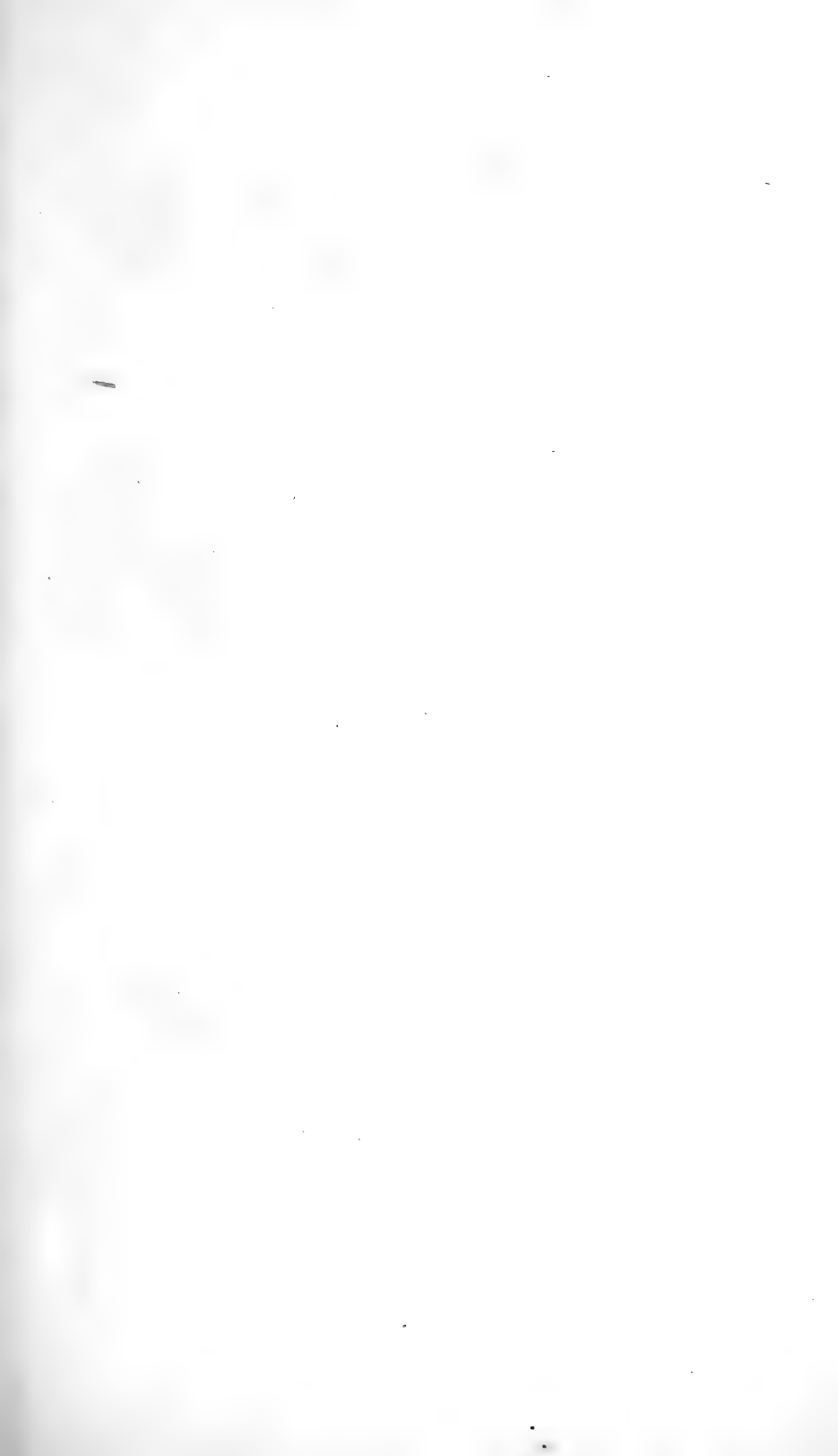
BAT CHÆTODON.

Chætodon Vespertilio. *C. albidus, corpore elevato-orbiculari, pinna dorsali analique maximis, falcatis.*

Whitish Chætodon, with high-orbicular body, and extremely large falcated dorsal and anal fin.

Chætodon Vespertilio. *Lin. Bloch. t. 199. f. 2.*

A VERY singular species, and the most remarkable of all others for the vast extent as well as breadth of the dorsal and anal fin, both which nearly equal the body itself in size, and are of a somewhat triangular shape, the points extending, both above and below, to about the same distance with the tip of the tail: the body in shape bears a considerable resemblance to some of the silvery Dories, the head sloping suddenly down and the general form being similar: the colour silvery, with rather small scales: the base of the tail marked by a black bar: native of Japan: length of a specimen figured by Dr. Bloch, about four inches from head to the end of the tail, but the depth, measured from the opposite tips of the dorsal and anal fins, about six inches and a half.



Frabbescup.



BORDERED CHAETODON.

LONG-FINNED CHAETODON.

LONG-FINNED CHÆTODON.

Chætodon Teira. *C. albus, corpore elevato-orbiculari, pinna dorsali analique magnis, falcatis, longissimis.*

White Chætodon, with high-orbicular body, and large, extremely long, falcated, dorsal and anal fin.

Chætodon Teira. *Lin. Bloch. t. 199. f. 1.*

GENERAL shape similar to that of the preceding species, and the dorsal and anal fin even considerably longer in proportion, but not so broad: colour of the body silvery-white, with rather small scales, and variegated by three broad, transverse black bands, the first of which runs across the head and eyes, the second across the fore-part of the body and dorsal fin, and the third across the hind part of the body, dorsal, and anal fin; the whole forming an appearance singularly elegant: the ventral fins, which are of a lanceolate shape, are also black. This curious fish is a native of the Indian and Arabian seas, and is said to arrive at a considerable size, though the specimens usually seen are but small.

RED-STRIPED CHÆTODON.

Chætodon Setifer. *C. flavescens rubro-striatus, ocello setaque ad pinnam dorsi.*

Yellowish Chætodon, with numerous red stripes on the body, and an eye-shaped spot and bristle on the dorsal fin.

Chætodon setifer. *Bloch. t. 446. f. 1.*

A HIGHLY beautiful species: shape of the body round-ovate, but with the head slightly produced: colour pale yellow, with a strong tinge of crimson towards the back, and beautifully marked in different directions, with numerous crimson stripes, some running obliquely across the sides, and others in an opposite direction across the fore part of the back: scales very large: across the head a broad, black band, passing through the eyes: on the hinder or rounded part of the dorsal fin a large round black spot, bordered with white; over which passes a long setiform single ray, reaching beyond the tip of the tail, which is terminated by a black edge, as are likewise the rounded part of the dorsal and anal fin. Native of the Indian seas: length about six inches.

SICKLE CHÆTODON.

Chætodon Falcula. *C. albo-flavescens, capite fascia curvata nigra, corpore duabus brevibus falciformibus.*

Yellowish-white Chætodon, with a curved black band across the head, and two short sickle-shaped bands across the body.

Chætodon Falcula. *Bloch. t. 426. f. 2.*

IN shape and general appearance very nearly allied to the *C. setifer*, but differs in colours, and in the want of the lengthened ray at the hind part of the dorsal fin: colour white, with a tinge of yellow: scales very large, a black bar across the head, as in the preceding: a second, of a curved form crossing the middle of the body, from the dorsal fin downwards, but vanishing before it reaches the abdomen, and a third still more curved, or of a shape somewhat resembling a sickle, crossing the hind-part of the body, from the middle of the dorsal fin, and like the former vanishing before it reaches the abdomen: the base of the tail is crossed by a black bar, and tipped with black. Native of the Indian seas.

CHARIOTEER CHÆTODON.

Chætodon Auriga. *C. albidus, oblique fasciatus, radio pinnæ dorsalis quinto in filum producto.*

White Chætodon, obliquely striped, with the fifth ray of the dorsal fin lengthened into a filament.

Chætodon Auriga. *Forsk. F. Arab. p. 60. Lin. Gmel. p. 1266.*

BODY subrhomboidal, compressed, and about five inches long: teeth in several rows: general colour blueish white, with several oblique, parallel, dusky streaks: the first six dorsal ones descend forwards; the remaining ten pass perpendicularly backwards: hind part of the body, and tail fulvous: head flattish above, and marked by four transverse fulvous bands: dorsal fin edged with black at the back part: anal fin striped with black and pale yellow: tail marked with a fulvous crescent directed backwards, and tipped with white. Native of the Arabian seas: described by Forskal.

ARUAN CHÆTODON.

Chætodon Aruanus. *C. argenteus, corpore ovato-oblongo, fasciis tribus nigris.*

Silvery Chætodon, with ovate-oblong body crossed by three black bars.

Chætodon Aruanus. *Bloch. t. 198. f. 2.*

BODY ovate-oblong: colour white, with a brownish cast on the upper parts; and marked by three

broad transverse black bars, the first of which crosses the head, the second the middle, and the third the hind-part: both these latter bars pass through the dorsal and anal fin as well as the body: the ventral fins are black: the scales on the body are rather large than small, and the gill-covers are destitute of spines. Native of the Indian and Arabian seas.

In the Museum Adolphi Friderici this species is named *arcuatus*, but as the author had before described a different species under that name, it is to be presumed, according to the opinion of Dr. Bloch, that *aruanus* is the true reading. Perhaps from the Aroo islands among the Moluccas.

CHINESE CHÆTODON.

Chætodon Chinensis. C. albo-flavescens, corpore oblongo, fasciis pluribus fuscis, macula operculorum rotunda.

Yellowish-white Chætodon, with oblong body crossed by several brown stripes, and a round spot on the gill-covers.

Chætodon Chinensis. Bloch. t. 218. f. 1.

Body oblong, and the whole habit more resembling that of the generality of fishes than of the major part of the Chætodons: colour dull yellowish white, brownish towards the back, and transversely barred from head to tail with several deep-brown stripes, some of which appear double: on the gill-cover a large round spot, and behind the eyes two small longitudinal streaks of the same colour: scales moderately large: dorsal and anal

fin resembling those of the generality of fishes.
Native of China.

SPOTTED CHÆTODON.

Chætodon Maculatus. *C. flavus, corpore oblongo-ovato longitudinaliter fusco maculato, fasciisque pallidioribus fuscis.*

Yellow Chætodon, with oblong-ovate body, spotted longitudinally with brown, and crossed with bands of paler brown.

Chætodon maculatus. *Bloch. t. 427. f. 2.*

SHAPE oblong-ovate, and in habit resembling some of the Carp tribe: colour yellow, marked by a longitudinal row of five or six large round brown spots, some of those on the fore and hind part of the body being partly obscured by a transverse bar or cloud of a similar colour passing over each: the middle spot is larger than the rest, and has no accompanying bar: the gill covers are smooth and scaly, the fins simple and of a bright yellow: the scales on the body are of moderate size: the tail rather large, and nearly even at the end, though perhaps, a very little inclining to a lunated shape. Native of India and South America, inhabiting fresh waters.

BIACULEATED CHÆTODON.

Chætodon Biaculeatus. *C. argenteo-cærulescens, corpore oblongo, fasciis tribus distantibus, angustis, ferrugineis.*

Blueish-silvery Chætodon, with oblong body, crossed by three distant, narrow, ferruginous bands.

Chætodon biaculeatus. *Bloch. t. 219. f. 2.*

SHAPE oblong, with the back slightly sinking towards the middle: colour silvery, with a cast of blue, and crossed by three narrow, distant, ferruginous bands, the first across the gill-covers, the second across the middle, and the third across the end of the body: scales rather small: on the gill-covers, behind the eyes, a strong spine: dorsal and anal fins but slightly dilated at the hind part. Native of the Indian seas.

 GOLDEN-SIDE CHÆTODON.

Chætodon Maculosus. *C. cinereus, anteriùs maculis transversis cæruleis, posterius magna transversa aurea.*

Grey Chætodon, marked with transverse blue lines on the fore-part, and with a large transverse gold-coloured spot on the hind-part.

Chætodon maculosus. *Forsk. F. Arab. p. 62. Lin. Gmel. p. 1267.*

SHAPE ovate-oblong: ground-colour bright glossy grey: towards the beginning of the back several transverse blue streaks: on the gill-covers several blue spots: towards the hind part of the body a large transverse gold-coloured patch or bar, some-

what broken into the ground-colour: tail spotted with yellow: gill-covers furnished with a strong spine. Native of the Arabian seas: described by Forskal.

LUNULATED CHÆTODON.

Chætodon Lunulatus. *C. fusco-virescens, lunula superciliari nigra, pectorali duplicata.*

Brownish-green Chætodon, with black crescent over the eyes, and a double one near the breast.

Pomacentre Croissant. *Cepede. 4. p. 511.*

DESCRIBED by Cepede from the MSS. of Commer-son: back elevated: snout projecting, with the upper lip extensile, and shorter than the lower; general colour dusky yellowish green: above each eye a black crescent: a double crescent of the same colour passing in an oblique direction from the pectoral fins to the middle of the back: a black spot on each side the tail, which is crossed by a black bar: a black streak at the extremity of the dorsal and anal fin, and a few longitudinal purple streaks on the abdomen. Native of the Indian seas. Shape of the tail not mentioned.

GOLDEN CHÆTODON.

Chætodon Aureus. *C. luteus, corpore ovato, pinna dorsali analique magnis, falcato-elongatis, apice viridibus.*

Gold-yellow Chætodon, with ovate body, and large, elongated, and falcated dorsal and anal fin green towards the extremities.

Chætodon aureus. *Bloch. t. 193. f. 1.*

CONSIDERABLY allied in point of habit to the Angel Chætodon, having a great breadth of body, with far-extended, falciform dorsal and anal fin, reaching considerably beyond the tail: colour of the body bright gold-yellow, shaded with orange on the upper parts: fins and tail yellow, at the base, gradually changing into green towards the extremities: at the bottom of the gill-covers a very strong spine: body and bases of the fins covered with middle-sized scales: lateral line curving in the direction of the back. Native of the American seas, growing to the length of a foot or more.

 ASFUR CHÆTODON.

Chætodon Asfur. *C. niger, fascia transversa lunari-cuneata flava. Forsk. F. Arab. p. 1267.*

Black Chætodon, with transverse, lunar-cuneated, yellow band.

Chætodon Asfur. *Lin. Gmel. p. 61.*

OBSERVED, and slightly described by Forskal: trunk oval; teeth numerous, filiform, and flexile: anterior opercula furnished with a strong spine;

general colour black, with a transverse sublunar yellow band in the middle of the body, the horns pointing backward: dorsal and anal fin falcated: tail fulvous, rounded, with a black margin: lateral line near the back: scales rhomboid, and finely toothed. Native of the Arabian seas.

VAR.

Of a blueish colour, with violet streaks and bands, disposed in an oblique direction. Observed by Forskal about the Arabian coasts, among corals, &c. the flesh is said to be bitter.

GEOMETRICAL CHÆTODON.

Chætodon Geometricus. *C. fuscus, albo variatus, lateribus circulis pluribus concentricis.*

Dusky Chætodon, with white variegations, disposed on the sides into several concentric circles.

L'Holocanthe geometrique. *Cepede. 4. p. 537*

Douwing formose. *Renard. 1. pl. 5. f. 34.*

SLIGHTLY described by Cepede, from the suspicious authority of Renard: it is named from the geometrical regularity of its pattern, which on a dusky ground exhibits on each side of the body seven or eight concentric white circles, of which the three or four interior are complete, the rest more or less broken: the head is streaked with various lines of the same colour. Native of the Indian seas.

CHÆTODON TRIFASCIATUS.

Chætodon Trifasciatus. *C. longitudinaliter striatus, fasciis tribus capitis nigris.* Park. *Lin. Trans.* vol. 3. p. 34.

Longitudinally striated Chætodon, with three black bands on the head.

LENGTH three inches: colour pale or brownish: body marked with sixteen longitudinal dusky stripes, and covered with rather large, ciliated scales: on the dorsal fin a black band, edged with yellow; another at the base of the anal fin, and a third through the middle of the tail: on the head three black bands. Observed by Mr. Mungo Park about the coast of Sumatra.

 GREAT-FINNED CHÆTODON.

Chætodon Pinnatus. *C. griseus, fascia frontali apiceque caudæ albis, pinna dorsali analique maximis falcatis.*

Grey Chætodon, with the front band and tip of the tail white, and extremely large falcated dorsal and anal fin.

Chætodon pinnatus. *Lin. Gmel.*

IN habit greatly resembling the *Bat Chætodon*, but with the points of the fins more extended: colour grey, with a white band across the head, and the tail tipped with white: scales rather large: described by Linnæus in the *Museum Adolphi Friderici*. Native of the American and Indian seas.

CHILI CHÆTODON.

Chætodon Chilensis. *C. aureus, fasciis quinque discoloribus, cauda integra, spinis dorsalibus undecim.* *Molin. Chil. p. 200. Lin. Gmel. p. 1264.*

Golden Chætodon, with five coloured bands, even tail, and eleven dorsal spines.

NATIVE of the American seas. Observed by Molina about the coasts of Chili. Length twelve inches: shape oval: snout lengthened: scales small: head crossed by a black band; body by two brown ones, and tail by one cinereous and one black band: dorsal fin large and yellow: tail silvery.

 PLEAT-NOSE CHÆTODON.

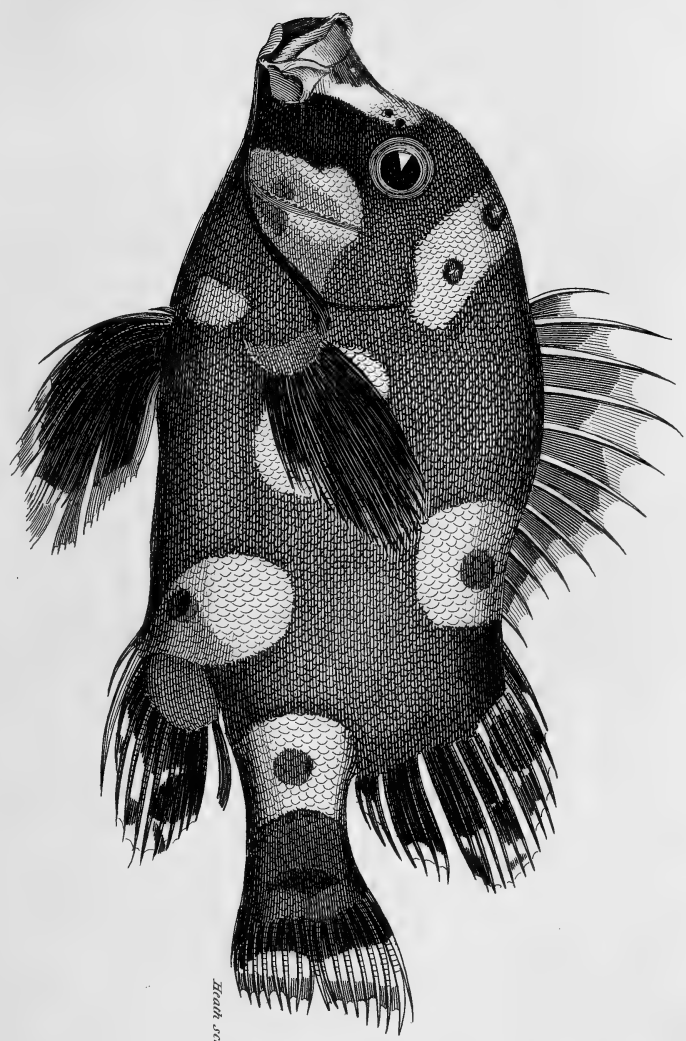
Chætodon Plectorhinchus. *C. nigricans, maculis albis nigro-maculatis, naso plicato.*

Blackish Chætodon, with white patches spotted with black, and pleated snout.

Le Plectorhinque Chetodonoide. *Cepede. 3. p. 135.*

DESCRIBED by Cepede from a specimen in the museum of the Prince of Orange, and, rather unnecessarily, ranked under a distinct genus, by the name of *Plectorhinchus*. Length, according to the plate, about five inches: habit that of the major part of the oblong-bodied Chætodons: colour blackish, or very dark, variegated with several large roundish, white or light-coloured patches, which

PLEAT-NOSE CHAETODON.



From sculp.



have generally one or more round black spots towards the middle: gill-covers without spine: mouth small, and concealed as it were among several membranaceous pleats into which the lips or edges are disposed: eyes rather large: scales small: tail even, or rounded: native region unknown.

With single dorsal fin, and forked or lunated tail

GLAUCOUS CHÆTODON.

Chætodon Glaucus. *C. corpore rhombico-ovato, supra caeruleo fasciis transversis nigris, subtus argenteo.*

Blue Chætodon, with rhombic-ovate body; the upper parts crossed by black bands; the sides and abdomen silvery.

Chætodon glaucus. *Lin. Gmel. Bloch. t. 210.*

A HIGHLY elegant species: body rhombic-oblong: colour on the upper parts fine blue, on the lower silvery white with a tinge of rose-colour: on each side the upper part of the body are five or six narrow black bands, descending only half way down: dorsal and anal fin blue, very long, slightly falcated, and reaching as far as the tips of the tail, which is very widely forked: at the origin of the dorsal fin are five pretty strong spines, but none on the gill-covers: the scales are of moderate size. This species is a native of the American seas, and grows to a considerable size, often exceeding a foot or eighteen inches in length, and is in considerable esteem as a food.

RHOMBOID CHÆTODON.

Chætodon Rhomboides. *C. corpore rhombico-ovato, supra cæruleo-virescente, subtus flavescente, aculeis analibus duobus, dorsalibus quinque.*

Chætodon with rhombic-ovate body, greenish-blue above, yellowish beneath, two spines before the anal fin, and five before the dorsal.

Chætodon rhomboides. *Bloch. t. 209.*

OF a broader shape in proportion to its length than the former, and with a much larger and blunter head: colour on the upper parts grey or greenish blue, on the sides white, and on the abdomen pale yellow: the blue of the upper parts breaks into the white of the sides, in two or three acuminate bars or fasciæ reaching almost to the abdomen: the dorsal and anal fin are shaped as in the preceding species, but are much shorter, the points not reaching beyond the base of the tail, which is very widely forked: both fins and tail are blue, tinged with yellow at the base: pectoral and ventral fins yellow: scales moderately large: a few strong spines at the origin of the dorsal fin, but none on the gill-covers. Native of the American seas, where it grows to a very considerable size.

BORDERED CHÆTODON.

Chætodon Marginatus. *C. flavus, fasciis transversis fuscis, pinnis fusco-marginatis.*

Yellow Chætodon, with transverse brown bands, and fins bordered with brown.

Chætodon marginatus. *Bloch. t. 207.*

A SPECIES of considerable beauty: body ovate: colour on the upper parts yellow, on the lower dull rose-colour: back of a dusky cast: body crossed by seven or eight equidistant deep-brown bars, the last crossing the base of the tail: all the fins are yellow, bordered with deep brown: dorsal fin broad and falcated at its extremity, but not reaching to the end of the tail: anal fin much smaller than the dorsal and situated more backward, being placed beneath the dilated part of the dorsal: tail very much forked, the points turning inwards in a falcated manner: scales moderately large: none at the base of the fins: no spines, either at the origin of the dorsal fin or at the gill-covers. Native of the American seas: grows to the length of a foot, and is numbered among the edible fishes.

TRICOLOR CHÆTODON.

Chætodon Tricolor. *C. antice flavus, postice niger, cauda marginibusque pinnarum rubris.*

Yellow Chætodon with the hind-part black, the tail and fins bordered with red.

Chætodon tricolor. *Bloch. t. 425.*

A HIGHLY superb species, and remarkable for the singular disposition of its colours: general shape resembling that of the *golden, angel, and ciliated* Chætodons, but longer in proportion: colour of the fore-part golden-yellow, of the hind-part, except the tail, jet-black, the two colours abruptly separated, in an oblique direction: edges of the gill-covers and of all the fins bright red: tail yellow, growing red towards the end, and terminating in pretty long tips, but not deeply divided in the middle: scales rather large: falcatures of the dorsal and anal fin not reaching to the tips of the tail: at the gill-covers a very large, long spine: mouth surrounded by a black zone. Native of the Indian and American seas: length about a foot.

SPECKLED CHÆTODON.

Chætodon Guttatus. C. griseo-albidus, corpore oblongo, maculis creberrimis rotundatis rufis.

Whitish-grey Chætodon, with oblong body sprinkled with very numerous round rufous spots.

Chætodon guttatus. Bloch. t. 196.

SHAPE oblong, or resembling that of the generality of fishes: length about ten or twelve inches: colour grey, with a dusky tinge on the upper parts, and every where speckled, except on the head, pectoral, ventral, dorsal, and anal fins, with numerous, small, round, rufous spots: scales small: none at the bases of the fins: gill-covers smooth: dorsal and anal fin of moderate breadth: tail slightly inclining to a forked or rather lunated shape, and speckled like the body: native of Java.

This species is supposed by Dr. Bloch and Cèpede to be the *Teuthis javus* of Linnæus (the genus *Teuthis* being now very properly absorbed in those of *Chætodon* and *Acanthurus*). The description however given by Linnæus of his *Teuthis javus* does not agree in the disposition of its colours with those of the present fish; being expressly said to be marked with longitudinal streaks: in this state it is also figured in the work of Gronovius. The Gronovian variety (if such it be) occurs in the British Museum, and perfectly corresponds with that author's figure, being marked by numerous abrupt or short longitudinal streaks.

PEACOCK CHÆTODON.

Chætodon Pavo. *C. fulvus, lateribus glaucis fusco transversim undulatis, capite cæruleo variegato.*

Fulvous Chætodon, with glaucous sides transversely undulated with brown, and head variegated with blue.

Chætodon Pavo. *Bloch. t. 198.*

IN shape somewhat resembling the preceding, but the body not tapering so much on the hind part: length about seven inches: colour dull orange, the sides glaucous, and marked by numerous, slightly undulated brown lines passing over the scales, which are rather large: head and fore-parts sprinkled with numerous pale-blue spots: from each eye to the mouth three pale-blue streaks: dorsal and anal fin of moderate width and pointed at the ends: tail rather large and pretty deeply forked: native of the Indian seas.

 CURASSAO CHÆTODON.

Chætodon Curacao. *C. corpore rotundato-ovato subargenteo, fasciis tribus obscuris semidecurrentibus, squamis magnis.*

Subargenteous Chætodon with round-ovate body, marked by three obscure semi-decurrent bands, and covered with large scales.

Chætodon Curassao. *Bloch. t. 212.*

SHAPE roundish-ovate: scales very large: colour blueish silvery white, tinged with brown on the upper parts, which colour descends on the sides in

the form of three obscure bands or clouds: fins and tail, pale brown: dorsal and anal of moderate breadth, and scaled at the base: gill-covers smooth, or without spines: tail moderately forked or divided: native of the American seas, where it often grows to a considerable size, and is esteemed as an edible fish.

 BENGAL CHÆTODON.

Chætodon Bengalensis. *C. corpore subrotundato-ovato grisea, fasciis transversis fusco-flavescentibus.*

Grey Chætodon, with roundish-ovate body marked by yellowish-brown transverse bands.

Chætodon Bengalensis. *Bloch. t.*

IN shape resembling the preceding, but not quite so broad or deep: colour grey, with five or six yellowish brown bars across the body: scales rather large, like those of a carp: dorsal and anal fin of moderate breadth, scaled at the base, and pointed at the tips: gill-covers smooth: tail of moderate size, and rather deeply, but not sharply forked: native of the Indian seas: length about six inches.

ROCK CHÆTODON.

Chætodon Saxatilis. *C. griseus, corpore ovato, fasciis quatuor pinnis caudaque nigricantibus.*

Grey Chætodon, with ovate body, and with the fins, tail, and four transverse bands blackish.

Chætodon saxatilis. *Bloch. t. 206. f. 2.*

ALLIED to the preceding species, but of a more oblong shape: colour grey, darkest on the back: body crossed by four equidistant blackish bars: fins and tail blackish: gill-covers smooth: tail deeply forked, with subfalcated lobes: scales rather large, and resembling those of a carp. Native of the South-American and Indian seas, seldom growing to a greater length than six or eight inches, and not much esteemed as a food.

 MAURITIAN CHÆTODON.

Chætodon Mauriti. *C. supra cæruleus, fasciis sex angustis transversis decurrentibus nigris, subtus argenteus.*

Chætodon with the upper parts blue crossed by six narrow decurrent bands, the lower parts silvery white.

Chætodon Mauriti. *Bloch. t. 213.*

SHAPE similar to that of a carp: scales of moderate size: body dusky blue above, silvery white beneath: across the upper parts six narrow blackish bands, reaching almost to the abdomen: fins and tail brown: gill-covers smooth. Native of the Brazilian seas, growing to the length of two feet, and esteemed as a food. Described by Dr. Bloch

from the drawings and manuscripts of the celebrated Prince *John Maurice of Nassau-Sigen*, under whose conduct the Dutch, in the years 1637 and 1638, became possessed of the richest part of Brasil, where he afterwards resided some years in the character of Governor. During his residence he amused his hours of leisure in making drawings and composing descriptions of the most remarkable animals of the country: these drawings and manuscripts are preserved in the royal library at Berlin.

PUNCTATED CHÆTODON.

Chætodon Punctatus. *C. argenteus, fusco-punctatus, spinis pinnae dorsalis octo, pinnis pectoralibus falcatis.*

Silvery Chætodon, speckled with dusky points, with eight rays in the dorsal fin, and falcated pectoral fins,

Chætodon punctatus. *C. spinis pinnae dorsalis octo, pinnis pectoralibus falcatis. Lin. Gmel. p. 1243.*

SHAPE resembling that of a Carp: colour white or silvery, scattered over with dusky points: eyes red: lateral line curving upwards: the three first rays of the anal fin distant: in the dorsal fin are eight rays, in the caudal seventeen: native of the Indian seas?

ROUND CHÆTODON.

Chætodon Rotundus. *C. rotundatus cinereus, fasciis quinque pallidis.* *Lin. Syst. Nat. p. 466.*

Orbicular grey Chætodon, with five pale bands.

THIS seems a species very little known: from the name applied to it by Linnæus it should seem to have the body more orbicular in its outline than any other species.

 SINGLE-SPOTTED CHÆTODON.

Chætodon Unimaculatus. *C. corpore rotundato-ovato griseo, macula utrinque prope dorsum ovata nigra, capite fascia transversa nigra.*

Grey Chætodon, with round-ovate body, marked on each side near the back with an oval black spot, and with a transverse black bar across the head.

Chætodon unimaculatus. *Bloch. t. 201.*

BODY round-ovate: colour grey, with a moderately large oval black spot on each side, near the back; across the head a black bar, passing through the eye: dorsal and anal fin rounded and edged with black: scales rather large: gill-covers smooth. Native of India.

ORBICULAR CHÆTODON.

Chætodon Orbicularis. *C. corpore rotundato grisco punctis fuscis aspero, abdomine albido.*

Chætodon with orbicular body freckled with dusky specks, and whitish abdomen.

Chætodon orbicularis. *Forsk. F Arab. p. 59. Lin. Gmel. p. 1265.*

LENGTH about a foot : colour dusky grey ; variegated with dusky specks, especially towards the back and tail : abdomen whitish, tinged behind with yellow : scales of moderate size : tail slightly divided. Native of the Arabian seas : observed by Forskal, who adds that it has something of the habit of a Pleuronectes.

 SILVER CHÆTODON.

Chætodon Argenteus. *C. cauda bifida, spinis pinnae dorsalis octo, pinnarum ventralium loco spinis duabus. Lin. Syst. Nat. Gmel. p. 1242. Am. Acad. 4. p. 240.*

Silvery Chætodon, with bifid tail, eight spines in the dorsal fin, and two spines in the place of ventral fins.

THIS, which appears to be an anomalous species, is said by Linnæus to differ from the rest of the genus in the defect of the pectoral fins, in place of which are two small spines : the first spines of the dorsal fin are so small as to be scarce perceptible. Native of the Indian seas.

LONG-SNOURED CHÆTODON.

Chætodon Longirostris. *C. corpore rhombeo-oblongo subflavo, rostro elongato, pinna anali macula nigra.*

Chætodon with rhombic-oblong yellowish body, lengthened snout, and black spot on the anal fin.

Chætodon longirostris. *Lin. Gmel. Brouss. dec. 1.*

SHAPE oblong-rhomboid: head sloping, and produced into a cylindrical snout, as in the *rostratus*, to which this species is allied: head brown above, and of a silvery flesh-colour beneath: body yellowish or citron-colour, covered with unequal, obliquely imbricated scales: lateral line strait: dorsal and anal fins citron-colour with a black streak on the hind-part, edged with white; and towards the tip of the anal fin a black ocellated spot: pectoral fins and tail glaucous, the former tinged with yellow at the base. Native of the Pacific ocean.

 BODDAERTIAN CHÆTODON.

Chætodon Boddaerti. *C. fasciis fuscis et cærulescentibus, spinis pinnarum ventralium duabus. Lin. Syst. Nat. Gmel. p. 1243.*

Chætodon variegated with brown and blueish bands, and with two spines at the ventral fins.

A SPECIES hitherto but very little known: native of the Indian? seas.

SARGOID CHÆTODON.

Chætodon Sargoides. *C. luteus, capite fasciisque sex transversis violaceis.*

Gold-yellow Chætodon, with the head and six transverse bands violet-colour.

Le Chetodon Sargoide. *Cepede. 4. p. 473.*

SLIGHTLY described by Cope from the drawings and manuscripts of Plumier. Allied, as it should seem by the title, to the Sparus Sargus in habit: general colour gold yellow; head and six transverse bands, together with the edges of the dorsal, anal, and caudal fin of a fine violet-colour: in the dorsal fin are thirteen spiny rays, and one in each pectoral fin: a depression before the eyes; the opening of the mouth small, and the upper lip thick: gill-covers rounded. Native of the American seas.

 CANESCENT CHÆTODON.

Chætodon Canescens. *C. cauda bifida, spinis dorsalibus duabus, radio tertio longissimo, ore bidentato. Lin. Gmel. p. 1240.*

Greyish Chætodon, with bifid tail, two dorsal spines, the third ray very long, and bidentated snout.

Chætodon canescens. *Seb. mus. 3. t. 25. f. 7.*

SHAPE resembling that of the *C. cornutus* and *bifasciatus*: colour greyish: scales very small: on each side the mouth a sort of spine or process: third ray of the dorsal fin extremely long, as in the two species just mentioned. Native of the American and Indian seas.

SCALELESS CHÆTODON.

Chætodon Alepidotus. *C. cauda bifida, spinis dorsalibus tribus, pinnis ventralibus nullis.* *Lin. Syst. Nat. Gmel. p. 1240.*

Chætodon with bifid tail, three dorsal spines, and no ventral fins.

SHAPE rhomboid: colour blueish above, whitish beneath: scales either none or so small as to be difficultly seen: teeth in a single row: lateral line parallel with the back: tail bifid: no ventral fins: dorsal and anal falcated: native of the American seas: observed by Dr. Garden.

 SORDID CHÆTODON.

Chætodon Sordidus. *C. ex fusco cinereus, ovatus, fasciis transversis obsoletis quatuor.* *Lin. Gmel. p. 1267. Forsk. Arab. p. 62.*

Dusky-grey Chætodon with four obscure transverse bands.

LENGTH about a span: body ovate: colour dull grey, with four paler transverse bands: scales large and membranaceous: native of the Arabian seas, frequenting the shores among corals, &c. observed by Forskal, who informs us that it is much esteemed as an edible fish.

LAMARK'S CHÆTODON.

Chætodon Lamarkii. *C. luteus, striis tribus longitudinalibus fuscis.*

Gold-yellow Chætodon, with three longitudinal dusky stripes.

Chætodon Lamarck. *Cepede. 4. p. 526.*

GENERAL colour gold-yellow, with three longitudinal dusky stripes on each side the body: lower jaw longer than the upper: scales rounded, striated, and denticulated: fifteen spiny rays and sixteen soft ones in the dorsal fin: three spiny and twenty soft ones in the anal: gill-covers armed with a very long spine. Described by Cepede from a specimen in the Prince of Orange's museum.

With two dorsal fins.

PLUMIER'S CHÆTODON.

Chætodon Plumieri. *C. subflavus, subtus subargenteus, corpore fasciis sex virentibus, pinna dorsali analique falcatis.*

Yellowish Chætodon, subargenteous beneath, with six greenish bands across the body, and dorsal and anal fin falcated.

Chætodon Plumieri. *Bloch. t. 211.*

SHAPE rhombic-ovate, in habit resembling the *angel, rhomboid,* and *ciliated* Chætodons. Colour dull yellow above, silvery beneath: across the body six greenish stripes: first spines of the back connected by a membrane, so as to form a small separate fin: second dorsal and caudal, large, long, and falcated, so as to extend beyond the tail, which is

of moderate size, and slightly lunated : gill-covers without spine. Native of the American seas, where it arrives at a considerable size.

CONSTRICTED CHÆTODON.

Chætodon Constrictus. *C. griseo-flavescens, nigro transversim fasciatus, corpore medio constricto.*

Yellowish-grey Chætodon, with transverse black bands and body constricted in the middle.

Chætodon constrictus. *New Holl. zool. p. 27. t. 6.*

LENGTH about eight inches : shape of the body inclining to an oblong square, and remarkably contracting in diameter about the middle, so as to appear constricted in that part : scales of moderate size : colour yellowish grey, tinged on the back and part of the fins with blue : across the body eight black bands, that in the middle narrowest : on the back two very distinct fins, the rays of the first being all spiny : tail inclining, though very slightly, to a lunated form. Native of the Indian seas, and observed about the coasts of New Holland.

ARMED CHÆTODON.

Chætodon Armatus. C. argenteus, fasciis septem transversis nigris, capite elongato, pinnis dorsalibus duabus.

Silvery Chætodon, with seven transverse black bands, lengthened head, and two dorsal fins.

Chætodon albescens, corpore fasciis septem nigris, spinis pinnæ dorsalis sex, tertia longissima. White journ. New South Wales, p. 254. pl. 39. Naturalist's Miscellany, vol. 2. pl. 57.

LENGTH of the specimen described about four inches: colour silvery white, darker and with a blueish tinge on the back: head of a somewhat lengthened form: across the body seven black bands: on the back two distinct dorsal fins, of which the first consists of very strong spiny rays, the third exceeding the rest in length; tail very slightly inclining to a lunated form at the extremity. Native of the Indian seas, and observed about the coast of New Holland.

ACANTHURUS. ACANTHURUS.

Generic Character.

<i>Dentes parvi, plerisque lobati.</i>	<i>Teeth small, in most species lobated.</i>
<i>Cauda utrinque aculeata.</i>	<i>Tail aculeated on each side.</i>
<i>Habitus generis præcedentis.</i>	<i>Habit or general appearance as in the preceding genus.</i>

THE genus *Acanthurus* consists of such species of the Linnæan genus *Chætodon* as, in contradiction to the principal character of that genus, have, in general, moderately broad and strong teeth, rather than slender and setaceous ones: they are also furnished on each side the tail with a strong spine.

UNICORN ACANTHURUS.

Acanthurus Unicornis. A. griseo-fuscus, cornu frontali antrosum porrecto, cauda utrinque biaculeata.

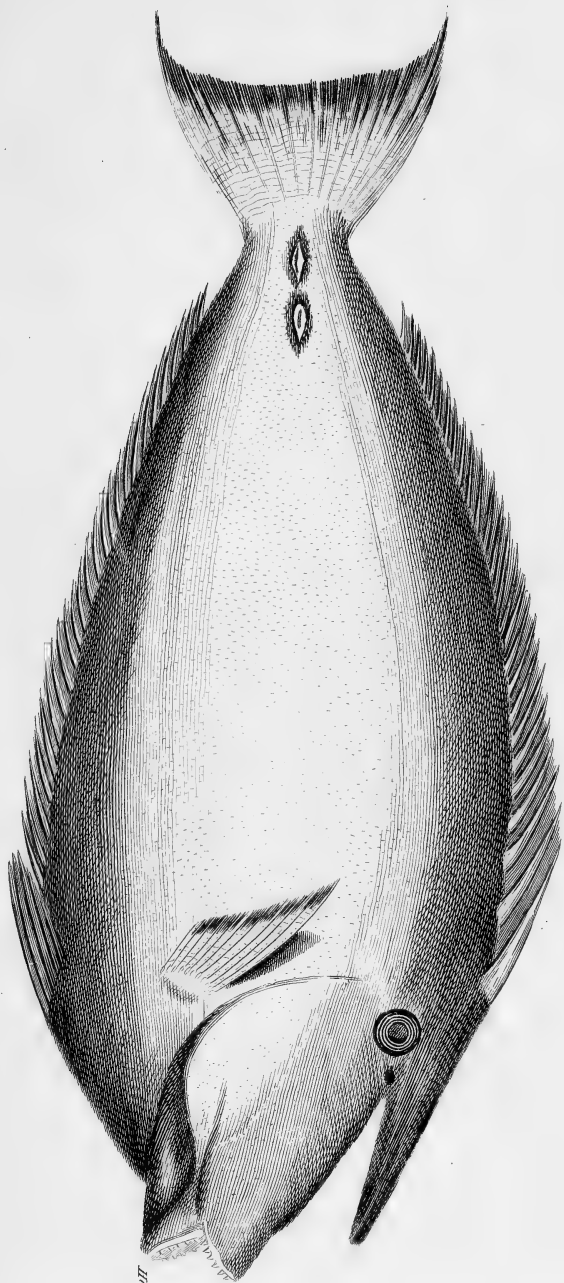
Grey-brown *Acanthurus*, with a frontal horn stretching forwards over the snout, and two spines on each side the tail.

Monoceros minor. Will. ichth. p. 216. t. O. 4.

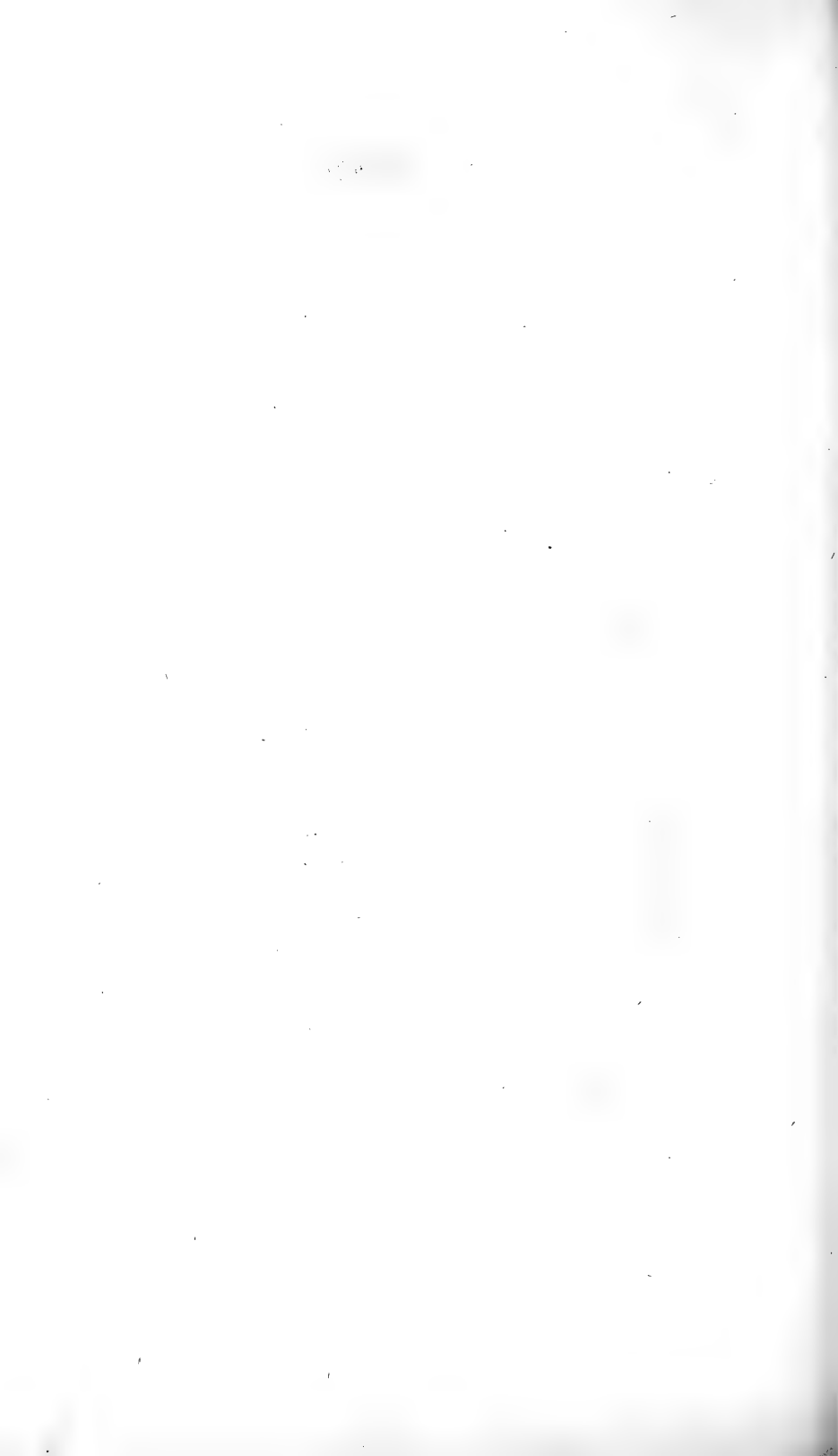
Le Nason Licornet. Cèpede. 3, p. 103.

THIS and the following are by far the largest of the genus, growing to the length of three feet or

UNICORN ACANTHURUS.



Branch sculp.



more: the present species is of the same general shape with the major part of the *Chaetodons*, being of a moderately broad or deep form, tapering pretty suddenly at each extremity: from the front proceeds a strong, conical, horn-shaped process, extending forwards nearly as far as the tip of the snout, and terminating somewhat obtusely: the mouth is rather small, and the teeth moderately strong: the skin is somewhat rough, of a greyish brown colour, and destitute of apparent scales: the dorsal fin, which is rather shallow than broad, commences almost immediately behind the head, and is continued very nearly to the tail: at its origin are two or three very strong spines: the anal fin commences immediately beyond the breast, and like the dorsal, is continued nearly to the tail, which is moderately broad and of a lunated shape: on each side the tail are situated two strong, but short spines, rising from a very broad base: these, as well as the horn in front, are much less conspicuous in the young than in the more advanced specimens.

It is a native of the Indian and Arabian seas, in the latter of which it is generally seen in large shoals of two or four hundred each, swimming with great strength, and feeding principally on the different kinds of sea-weed. Forskal, in his *Fauna Arabica*, tells us he was assured by a fisherman that he saw an eagle (probably an Osprey) dart among a shoal of these fishes, which swim pretty close together, and happening to seize two at once in his claws, was, in consequence of their sudden

and violent separation in different directions, torn asunder in the conflict and destroyed.

This fish appears to have been first described by Grew in his Museum of the Royal Society, under the name of the *lesser unicorn fish*; he observes that the head, when viewed in profile, bears some resemblance to that of a baboon: the caudal spines seem to have been wanting in this specimen; otherwise it is scarcely to be imagined that so accurate an observer as Grew would have omitted to particularize them. Willughby repeats Grew's description, and his figure is evidently engraved from the same specimen. It is singular that so remarkable a fish should have been entirely overlooked by Linnæus, even in the twelfth edition of the *Systema Naturæ*. In the British and Leverian museums it occurs in fine preservation, and in the former are specimens in a young state, shewing the comparatively inconspicuous appearance both of the frontal process and caudal spines at that period of its growth.

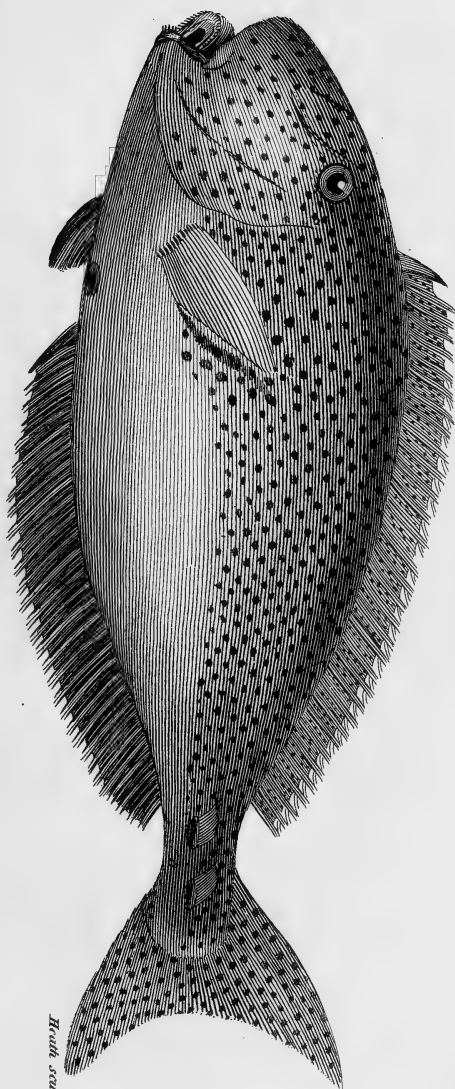
ROUND-FRONTED ACANTHURUS.

Acanthurus Nasus. *A. griseus, nigro irroratus, gibbere frontali rotundato, cauda utrinque biaculeata.*

Grey Acanthurus, freckled with black, with a rounded frontal tubercle and two spines on each side the tail.

Le Nason Loupe. *Cepede*, 3. p. 111.

IN size this species equals, or even exceeds, the preceding: the body is of a more oblong shape,



Round snail.

ROUND-FRONTED ACANTHURUS.

and is of a greyish colour, speckled on the upper parts, dorsal fin, and tail, with black: the head is rather large, and is formed in front into a rounded protuberance immediately above the mouth which is rather small and furnished in each jaw with a row of numerous small teeth: the dorsal fin commences at a small distance from the head, and is continued nearly to the tail: at its commencement is a strong spine, but the rest of the rays are soft: the anal fin is placed in an opposite situation beneath, and extends, like the former, almost to the tail, which is moderately broad, and lunated: on each side the base, at a small distance from the commencement of the finny part, are situated two very strong, slightly curved, sharp-pointed spines, in a reversed direction, or with the points towards the head, as in most others of the present genus. This species is a native of the Indian seas, and according to Cope, was first described by Commerson.

BLUE ACANTHURUS.

Acanthurus Teuthis. *A. cæruleus, corpore medio pallidiorè, cauda utrinque aculeata.*

Blue Acanthurus, with the middle of the body paler, and a spine on each side the tail.

Chætodon cærulescens, &c. *Seb. 3. t. 33. f. 3.*

Teuthis Hepatus. *Lin. Syst. Nat. p. 507.*

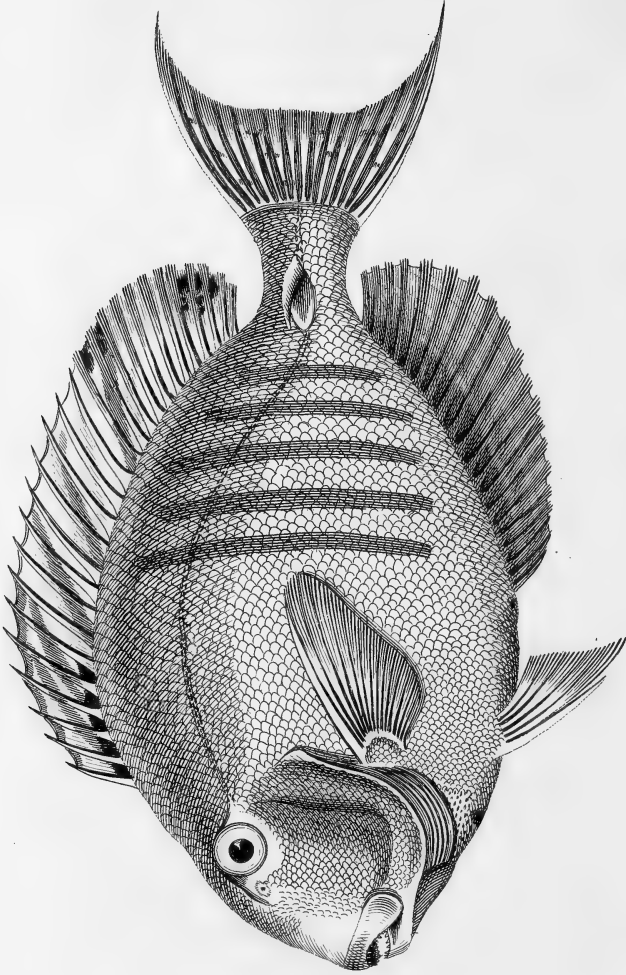
LINNÆUS, in the twelfth edition of the *Systema Naturæ*, thought it necessary to arrange this fish under a distinct genus among the *pisces abdominales*, under the name of *Teuthis*. It is however a genuine

Acanthurus, and the genus Teuthis is, in consequence, annulled. The blue Acanthurus is a native of the Indian and American seas, and is said to arrive at the length of ten or twelve inches, or even more, though the specimens usually seen are considerably smaller: in shape it resembles the major part of the Chætodons, the head sloping in front from the origin of the dorsal fin: the colour, in the recent fish, is a deep or blackish blue, which in specimens preserved in spirits of wine, usually fades into a ferruginous brown: on each side the body is a very large, oblong-ovate whitish patch or spot, surrounded by a border of a deeper cast: the skin is roughened by very small scales: the tail is slightly lunated, dusky on the upper and lower part, and marked towards the base by a whitish ovate spot: the teeth are crenated, and on each side the base of the tail, is a very strong spine, which, as in most others of the present genus, is erigible at the pleasure of the animal, in an horizontal direction, from the channel in which it lies.

The fish figured by Catesby in his Natural History of Carolina, under the name of the *Tang**, is generally considered as representing the present species: yet, if Catesby's description be accurate, the Tang is destitute of teeth; and, from the figure accompanying the description, appears to want the ventral fins, is covered with middle-sized scales, and is entirely of a deep blue colour without any variegation. As Catesby however was not remark-

* *Turdus rhomboidalis*. *Catesb. Car. 2. t. 10.*

Heath, sculp.



LANCET ACANTHURUS.

From the Fishes of the British Museum, Vol. 1, Plate 1, Fig. 1.

able for minute accuracy either in his descriptions or figures, it is probable that it may have been intended for the present species. Catesby informs us that it grows to the length of a foot and half, and is in request as an edible fish.

LANCET ACANTHURUS.

Acanthurus Chirurgus. *A. luteus, corpore postice struis transversis fuscis, cauda utrinque aculeata.*

Orange-yellow *Acanthurus*, with the body crossed on the hind-part by transverse brown stripes, and a spine on each side the tail.

Chætodon Chirurgus. *Bloch. t. 208.*

LENGTH about nine or ten inches : shape ovate : colour orange-yellow : scales rather small : on each side the hind part of the body five or six narrow, transverse, dusky stripes : gill-covers smooth or unarmed : on each side the base of the tail a very strong, curved spine, erigible at pleasure from the furrow in which it lies : tail lunated : dorsal fin pale violet, without scales at the base, and marked by several oblique, narrow, dusky streaks : pectoral and ventral fins tinged with crimson towards the base : native of the American seas, where it is generally known by the name of the Surgeon or Lancet-Fish, a title however which seems not entirely confined to the present species.

BLACKISH ACANTHURUS.

Acanthurus Nigricans. *A. nigricans, subtus subargenteus, cauda utrinque aculeata.*

Blackish Acanthurus, subargenteous beneath, with a spine on each side the tail.

Chaetodon nigricans. *Lin. Bloch. t. 203.*

OF nearly the same size with the preceding, but with the front sloping more suddenly downwards from the origin of the dorsal fin: colour dusky, or blackish brown, with the under parts inclining to a subargenteous cast: scales rather small: dorsal and anal fin scaled at the base: gill-covers unarmed: on each side the tail a strong and sharp spine, as in the former species: tail nearly entire, or but slightly lunated: teeth broad and crenulated or lobed on the edges: native of the Indian, American, and Arabian seas, and said to grow to the length of two feet, and to be esteemed for the table.

MILITARY ACANTHURUS.

Acanthurus Militaris. *A. corpore rhombeo-ovato fusco, cauda utrinque aculeata.*

Brown Acanthurus, with rhombic-ovate body, and strong spine on each side the tail.

LENGTH about five inches: shape rhombic-ovate: head sloping suddenly downwards: colour brown: scales extremely small: teeth denticulated or cre-

nated: a strong spine at the base of the pectoral fins. Tail slightly lunated: spine on each side very strong and sharp: native of the Indian and American seas: in the British and Leverian Museums.

TRIRADIATED ACANTHURUS.

Acanthurus Triostegus. *A. fusco-virescens, fasciis quatuor transversis fuscis, cauda utrinque aculeata.*

Greenish-brown Acanthurus, with four transverse dusky bands, and a spine on each side the tail.

Chætodon triostegus. *Lin. Chætodon, &c. Seb. 3. t. 25. f. 4.*

LENGTH about four inches: shape rhombic-ovate: head suddenly sloping: general colour pale greenish brown, marked with four narrow transverse brown stripes or bands: scales very small: gill-covers unarmed: gill-membrane three-rayed: in the throat three small rough bones: teeth crenated: tail lunated: spine on each side very strong. Native of the Indian seas.

GUARDED ACANTHURUS.

Acanthurus Harpurus. *A. corpore rhombeo-ovato fusco, squamis minutissimis, cauda utrinque biaculeata.*

Rhombic-ovate, brown Acanthurus, with extremely minute scales, and two spines on each side the tail.

SHAPE rhombic-ovate: length about six inches: colour dusky brown, without any variegation:

scales most extremely small, so as to be scarce visible : gill-covers unarmed : teeth crenated : tail lunated, and furnished on each side the base with two very strong spines. Native of the Indian seas. In the British Museum.

VIOLET-STRIPED ACANTHURUS.

Acanthurus Sohal. *A. fuscus striis longitudinalibus violaceis, cauda utrinque aculeis duobus in fossula rubra.*

Dusky Acanthurus, with longitudinal violet streaks, and two spines on each side the tail imbedded in a red depression.

Chætodon Sohal. *Forsk. Arab. p. 63.*

LENGTH about three spans : shape ovate : colour dusky, with longitudinal violet streaks : abdomen whitish : fins violet-coloured : pectoral fins marked by a yellow spot : teeth crenated : tail lunated : on each side the base a long, red carina, imbedded in a depression of the same colour, at each * extremity of which is a strong spine. Native of the Red sea : not esteemed as an edible fish.

* Spina pone et ante hanc carinam. *Forsk. arab. p. 64.*

DUSKY ACANTHURUS.

Acanthurus Nigro-fuscus. *A. nigro-fuscus, corpore ovato, cauda utrinque aculeata.*

Dusky Acanthurus, with ovate body, and spine on each side the tail.

Acanthurus nigro-fuscus. *Forsk. Arab. p. 64.*

MUCH allied, according to Forskal, to the *A. Sohal*, but differs in being entirely of a blackish-brown colour, as well as in having the lobes of the tail much shorter, and a single spine on each side.

A variety of the above, entirely of a black colour, is mentioned by Forskal, under the title of *Gahm*. Both are natives of the Red sea.

 ACHILLEAN ACANTHURUS.

Acanthurus Achilles. *A. corpore ovato fusco, posterius macula ovata nuda rubra, medio aculeata.*

Brown, ovate Acanthurus, with a bare ovate red spot on the hind-part, aculeated in the middle.

LENGTH about five or six inches: shape ovate: colour brown: scales small: gill-covers unarmed: teeth broad and crenated: on each side the hind-part of the body or base of the tail a large, ovate, bare, red patch or spot, in the middle of which is a strong spine imbedded in a furrow: tail lunated and tipped by three concentric crescents, the first of which is white, the next black, and the third ferruginous, edged with ash-colour. An elegant

specimen of this fish occurs in the Leverian Museum. In some particulars it seems allied to the *A. Sohal*, but, if Forskal's description of that fish be accurate, must be a very distinct species.

LINEATED ACANTHURUS.

Acanthurus Lineatus. *A. ovatus fuscus, lineis numerosis longitudinalibus albis, cauda utrinque aculeata.*

Ovate brown *Acanthurus*, with numerous longitudinal white stripes, and spine on each side the tail.

Chætodon lineatus. *Lin.*

LENGTH about six inches: shape ovate: colour brown, marked by pretty numerous, longitudinal, narrow, white stripes, running from head to tail: each stripe edged with a darker colour than that of the ground: scales small: gill-covers unarmed: teeth crenated: tail lunated: tail-spines very strong, of moderate length, and sharp-pointed. Native of the Indian and American seas: in the Leverian Museum.

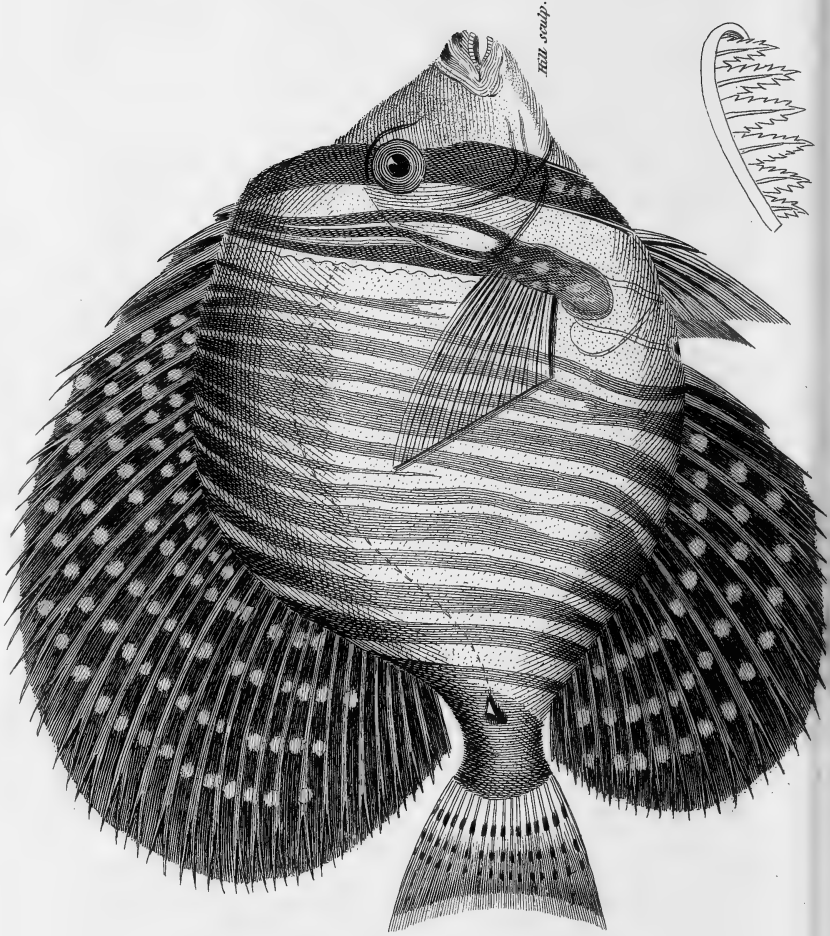
UMBRE ACANTHURUS.

Acanthurus Umbratus. *A. corpore ovato fusco, squamis minutissimis, cauda utrinque aculeata.*

Brown ovate *Acanthurus*, with extremely minute scales, and a spine on each side the tail.

LENGTH about four inches: shape ovate: colour brown: scales extremely minute: gill-covers un-

BROAD-FINNED ACANTHURUS.



armed: tail slightly lunated: tail spines very sharp and strong. Native of the Indian seas. In the British Museum.

SPECKLED ACANTHURUS.

Acanthurus Meleagris. *A. fusco-nigricans, maculis creberrimis rotundis albis, cauda utrinque aculeata.*

Blackish-brown *Acanthurus*, thickly marked with round white spots, and spine on each side the tail.

LENGTH about four inches: shape roundish-ovate: colour deep brown, thickly marked on all parts with small, round, white spots: teeth crenated: gill-covers unarmed: scales extremely small: tail lunated: spines moderately strong. Native of the Indian and American seas. In the British Museum.

BROAD-FINNED ACANTHURUS.

Acanthurus Velifer. *A. corpore rotundato-ovato albido, fasciis plurimis transversis fuscis, cauda utrinque aculeata.*

Whitish *Acanthurus*, with roundish-ovate body, marked by numerous brown transverse bands, and spine on each side the tail.

Acanthurus Velifer. *Bloch. t. 427. f. 1.*

LENGTH about four inches and a half: body roundish-ovate: ground-colour whitish, with pretty numerous narrow transverse stripes of yellowish-brown: across the head a broader black stripe, passing through the eyes: teeth crenated, and

pointed at the tips: dorsal and anal fin very broad, and thickly marked with round blue spots: tail slightly lunated, and furnished on each side the base with a spine. Native of the American seas.





Heath sculp.

AMERICAN KNIGHT-FISH.

1848 Fishes of America. The Knight-Fish. P. 11. Heath sculp.

EQUES. KNIGHT-FISH.

Generic Character.

Dentium ordines plurimi. || *Teeth* in several rows.
Corpus fasciatum. || *Body* banded.

AMERICAN KNIGHT-FISH.

Eques corpore oblongo flavescente, fasciis tribus nigris, oculari, pectorali, longitudinalique.

Yellowish oblong-bodied Knight-Fish, with three black bands, the first across the eyes, the second across the thorax, and the third along the body.

Chætodon lanceolatus. *Lin.* *Eques Americanus.* *Bloch. t. 347.*

THIS fish, which by Linnæus was associated with the *Chætodons*, has been formed into a distinct genus by Dr. Bloch on account of its teeth, which, instead of being arranged in a single row, as in those animals, are disposed into several concentric ranges. It is a native of the American seas, and is found of the length of near twelve inches.

TRICHOPUS. TRICHOPUS.

Generic Character.

<i>Corpus</i> compressum.		<i>Body</i> compressed.
<i>Pinnæ ventrales</i> filamento longissimo.		<i>Ventral fins</i> with an extremely long filament.

THE fishes belonging to this new genus are described by Cope from the manuscripts and drawings of Commerson. Cope however, very unnecessarily, divides them into two distinct genera, to one of which he assigns the title of *Osphronemus* (*Osphroneme*), and to the other of *Tricopodus* (*Trichopode*). These fishes are natives of the Indian seas or rivers, and are distinguished, except in one species, by the remarkable length of one ray of the ventral fins, which extends the whole length of the body, or even beyond it.

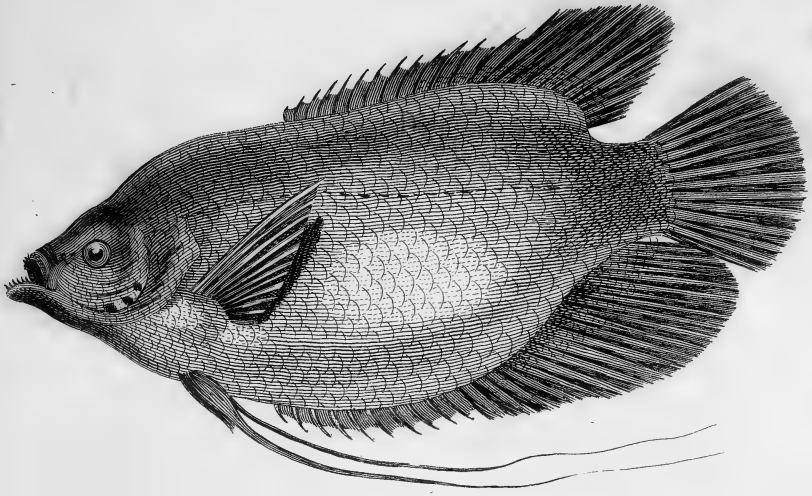
GORAMY TRICHOPUS.

Trichopus Goramy. *T. subargenteo-rufescens, radio secundo pinnarum ventralium longissimo.*

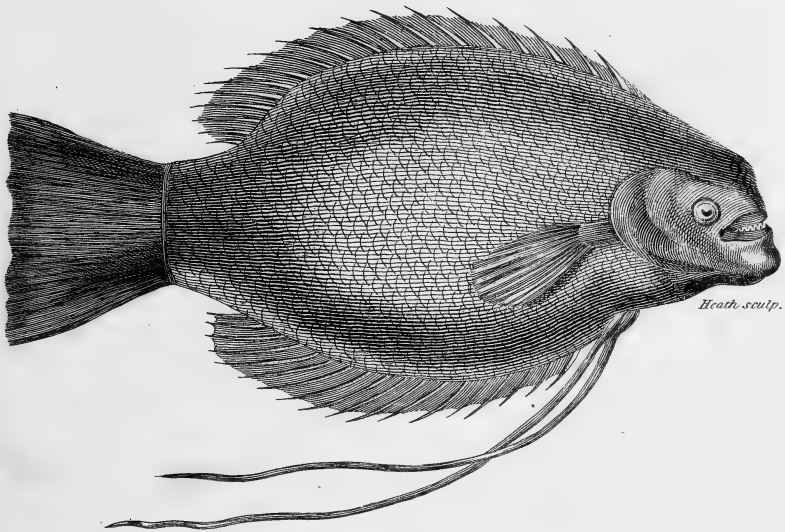
Rufescent *Trichopus*, with a silvery cast on the sides, and the second ray of the ventral fins extremely long.

Osphronemus Goramy. *Cope. 3. p. 116.*

NATIVE of the fresh waters of China: length two metres: depth very great in proportion: body much compressed, and covered with large scales,



GORAMY TRICHOPUS .



SATYR TRICHOPUS .

the hind part of the back, and the lower part of the abdomen sharpening into a carina: the bases of the dorsal and anal fin are also scaly, as in the genus *Chaetodon*: mouth somewhat extensile, each jaw being furnished with a double row of teeth, those of the outer row short and slightly curved, those of the inner row smaller and more closely set: in the palate is a callous protuberance: the tongue is situated deep in the fauces, and in the inside of the mouth, above the gills, is a kind of ethmoid bone, the use of which does not appear to be well ascertained: the dorsal fin is of moderate width, and reaches from the back of the head almost to the tail, near which it is very much rounded: the vent is situated towards the fore-part of the body, and the anal fin reaches from it in the manner of the dorsal, but is much wider: the pectoral fins are of moderate size: the ventral consist each of about six rays, of which the first is strong and sharp, and the second terminated by an extremely long filament, reaching as far as the end of the tail which is of a rounded shape: the lateral line is strait, and seated somewhat nearer the back than the abdomen: the colour of this species is reddish brown, somewhat paler on the under parts: the sides are tinged with a silvery hue, and the scales are bordered with brown: it is greatly esteemed in China as an article of food, and is known by the name of *Goramy*: it is a prolific species, and is easily introduced into new situations; having been imported into Java and many other of the eastern islands.

ARABIAN TRICHOPUS.

Trichopus Arabicus. *T. virescens violaceo cæruleoque striatus, pinnarum ventralium radio secundo longissimo.*

Greenish Trichopus, with violet and blue stripes, and second ray of the ventral fins extremely long.

Osphroneme Gal. *Cepede. 3. p. 122.*

Labrus Gallus. *Lin. Syst. Nat. Gmel.*

Scarus Gallus. *Forsk. arab.*

OBSERVED by Forskal in the Arabian seas, and referred by him to the genus *Scarus*: considered by the Arabians as a poisonous fish, owing, probably, to its feeding on some noxious kinds of Mollusca, and sea-insects: size not particularized: colour dull green, with violet stripes; on the abdomen two blue stripes, with a green one in the middle: scales lax, membranaceous at the edges, striated, and marked by a transverse purple stripe: teeth in a single row, those in front larger than the rest, and standing separate from each other: lateral line slightly branched: pectoral fins ovate violet-blue: ventral blue, with the second ray extremely long: dorsal and anal greenish, edged with blue; tail yellow in the middle, violet-coloured on the sides, and bordered with blue.

SATYR TRICHOPUS.

Trichopus Satyrus. T. fronte descendente, mento prominente, pinnis ventralibus uniradiatis longissimis.

Trichopus with sinking forehead, projecting chin, and extremely long, single-rayed ventral fins.

Trichopode Mentonier. *Cepede. 3. p. 126.*

DESCRIBED by Cepede from the manuscripts of Commerson: size not particularized: body very deep, much compressed, and covered with moderately large scales: dorsal and anal fin widish, like those of the first species; pectoral short, large, and rounded: ventral consisting each of a single filament, thickish at the base, and gradually lessening in its progress, reaching beyond the tail: head of an extremely singular aspect, being so formed as to bear a rude general resemblance to the human face, or rather to that of a monkey, the chin projecting, the forehead somewhat sinking in, and the gill-covers on each side representing the cheeks: colour and size not mentioned: native of the Indian seas. This fish, like the first species, is known in some countries by the name of *Goramy* or *Gouramy*.

PALLASIAN TRICHOPUS.

Trichopus Pallasii. *T. fuscus albido-undulatus, corpore caudaque macula utrinque nigra, pinnis ventralibus uniradiatis longis.*

Brown Trichopus, with pale undulations, a black spot on each side the body and tail, and long single-rayed ventral fins.

Labrus pinnis ventralibus uniradiatis. Lin. Syst. Nat. Gmel. p. 1286. Pall. spic. zool. 8. p. 45.

Sparus, &c. Kolreuter nov. comm. petrop. 9. p. 452. t. 10. f. 1.

DESCRIBED by Dr. Pallas as a species of *Labrus*, and by Kolreuter, in the Petersburg Transactions, as a *Sparus*: length about four inches: head rather small, and covered with scales: mouth small, ascending; jaws extensile, and rough on the edges: colour brownish, with paler undulations, each side of the body and tail being marked with a black ocellate spot: lateral line somewhat broken or interrupted towards the tail: pectoral fins thin and pale: the rest brown: anal and caudal roundish-bilobate, and spotted with white: ventral consisting each of a long single ray: native of the Indian seas.

 MONODACTYLE TRICHOPUS.

Trichopus Monodactylus. T. argenteus, dorso subfusco, pinnis ventralibus uniradiatis, rigidis, brevibus.

Silvery Trichopus, with brownish back, and short, single-rayed, rigid ventral fins.

Monodactyle Falciforme. Cope. 3. p. 132.

DESCRIBED by Cope in a distinct genus, under the name of *Monodactylus*. Differs from the rest

in having two short spines only, by way of ventral fins: is a small fish; measuring only about twenty-six centimetres in length: body much compressed, and covered with small, rounded, smooth scales; as are also the bases of the dorsal and anal fin: colour silvery, tinged with brown on the upper parts: eyes large: mouth semicircular: teeth short, sharp, and close-set: dorsal and anal fin of nearly equal size and of a somewhat falciform shape, extending nearly to the tail, which is crescent-shaped; lateral line curved in the direction of the back, and placed pretty near to it: vent almost immediately behind the pectoral fins, which are of a pointed shape: gill-covers composed of two laminae, of which the hindmost is irregularly scolloped on the edges: native of the Indian seas: described from the manuscripts of Commerson.

SCARUS. SCARUS.

Generic Character.

<i>Maxillæ</i> osseæ, medio divisæ, margine crenatæ, dentibus connato-glomeratis.		<i>Jaws</i> bony, divided in the middle, crenated on the edge; the teeth connate and conglomerate.
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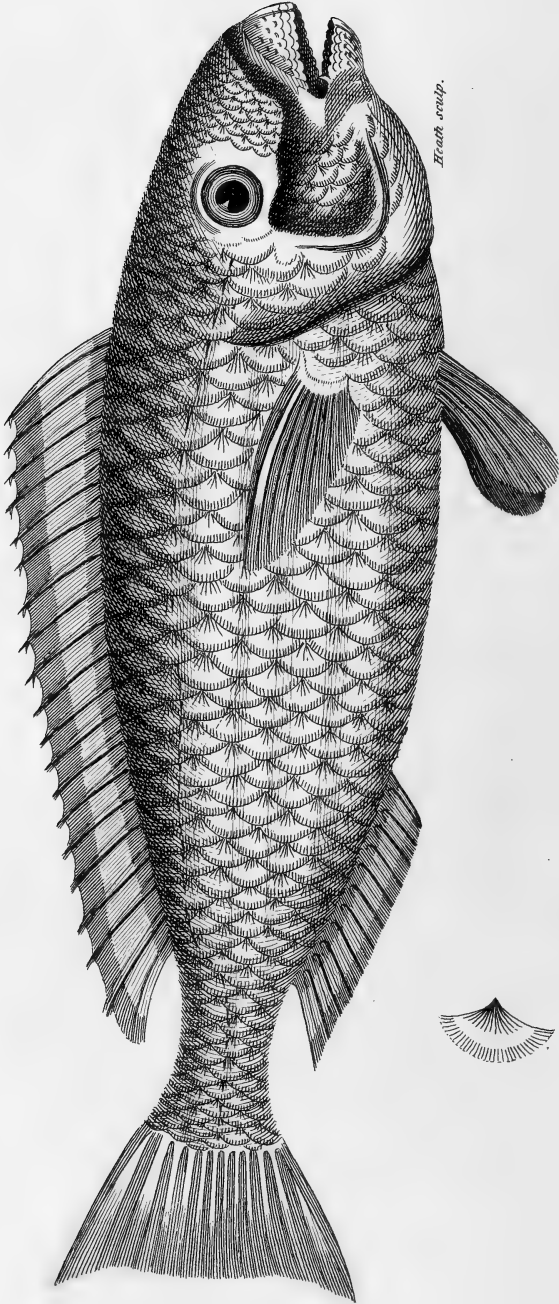
CRETAN SCARUS.

Scarus Cretensis. *S. viridis, subtus flavescens, squamis permagnis, linea laterali ramosa, cauda sublunata.*

Green Scarus, yellowish beneath, with very large scales, ramified lateral line, and sublunated tail.

Scarus Cretensis. *Bloch. t. 220.*

GENERAL length about twelve inches: body broad, sloping, scales extremely large, lateral line ramified on every scale over which it passes. Native of the Mediterranean, and particularly about the coasts of Crete, but is also found in the Indian seas.



Teeth, sculp.

GREEN SCARUS.

GREEN SCARUS.

Scarus Viridis. *S. viridi-flavescens, squamis magnis viridi marginatis, linea laterali versus caudam interrupta.*

Yellowish-green Scarus, with large scales edged with green, and lateral line interrupted towards the tail.

Scarus viridis. *Bloch. t. 222.*

LENGTH ten or twelve inches : head strait : scales large, and each bordered with a deeper green than the ground-colour : tail slightly sublunated. Native of the Japanese seas.

 RIVULATED SCARUS.

Scarus Rivulatus. *S. cærulescens nigro-maculatus, rivulis longitudinalibus flavis.*

Blueish Scarus, spotted with black, and marked by longitudinal yellow undulations.

Scarus rivulatus. *Forsk. arab. p. 25.*

NATIVE of the Red sea : observed by Forskal : said to arrive at a great size : scales very small : dorsal and anal fin occasionally recumbent in a channel : tail forked : supposed to feed principally on the different kinds of fuci, and considered as an edible fish ; but said to be sometimes productive of disagreeable symptoms from the wounds inflicted by the sharp rays of its dorsal fin.

STELLATED SCARUS.

Scarus Stellatus. *S. ovalis nigricans, annulis subhexagonis pallidis variatus.*

Oval blackish Scarus, variegated with subhexagonal pale rings.
Scarus stellatus. *Forsk. arab. p. 26.*

LENGTH about half a foot: colour dusky or blackish, variegated on all parts by small, contiguous, pale, subhexagonal rings: native of the Arabian seas: observed by Forskal: an edible species.

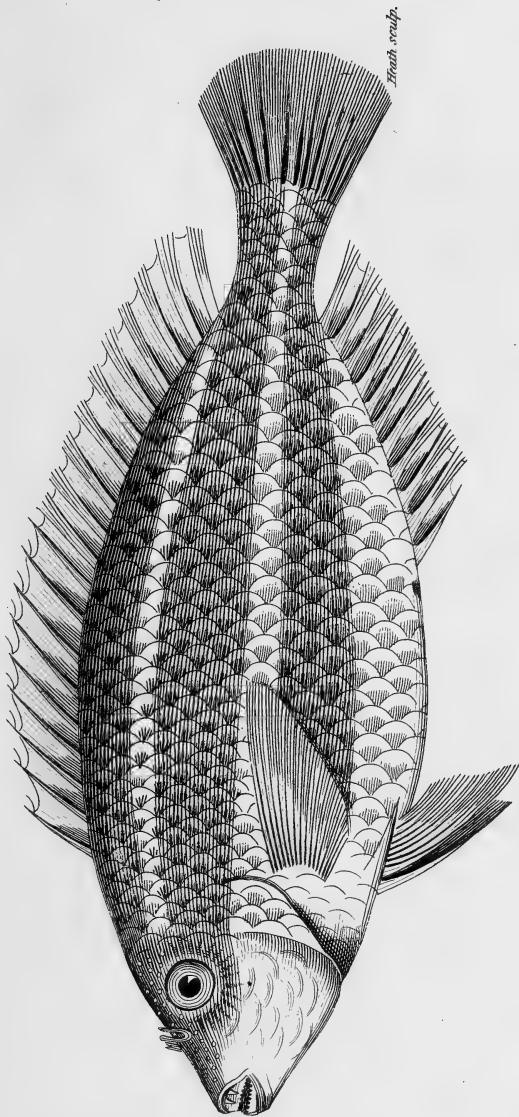
 RED SCARUS.

Scarus Croicensis. *S. roseus, abdomine argenteo.*

Rose-red Scarus, with silvery abdomen.

Scarus Croicensis. *Bloch. t. 221.*

LENGTH about ten inches: shape like that of a Carp: colour strong rose-red, with silvery abdomen; and in some specimens two longitudinal silvery stripes on the body: scales large: fins pale: tail slightly lunated. Native of the Indian seas.



RED SCARUS.

PARROT SCARUS.

Scarus Psittacus. *S. virescens, lineis flavicantibus, pinnarum margine, vitta abdominali, characteribusque capitis cæruleis.*
Forsk. arab. p. 29.

Greenish Scarus, marked with yellowish lines, and with the edges of the fins, abdominal band, and variegations of the head blue.

Scarus Psittacus. *Forsk. arab. p. 29.*

JAWS blue: fins purple, edged with blue: back straiter in its outline than the abdomen: tail rising, spotted with blue, and subfurcated: lateral line double and ramified: eyes small. Native of the Arabian seas.

PURPLED SCARUS.

Scarus Purpuratus. *S. obscure viridis, vittis utrinque tribus purpureis longitudinalibus serratis, ventre cæruleo.*

Dull-green Scarus, with three longitudinal serrated purple bands on each side, and blue abdomen.

Scarus purpureus. *Forsk. arab. p. 27.*

AN elegant species; in habit allied to the *Labri*: body abruptly lanceolate; the purple stripes on the body serrated at their upper edges: pectoral fins green, and marked at the tip by a large, lunated, marginal, black spot: dorsal and anal marked towards the base by a purple stripe: ventral fins blue: tail marked with longitudinal purple spots, and on each side by a purple stripe: shape slightly rounded: lateral line ramified: scales lax, as in the Mullet. Native of the Arabian seas: observed by Forskal.

BLACK SCARUS.

Scarus Niger. *S. ovato-oblongus, nigro-fuscus, labiis rubris, pinnarum marginibus viridi-cæruleis.*

Ovate-oblong, blackish-brown Scarus, with red lips, and the margins of the fins greenish-blue.

Scarus niger. *Forsk. arab. p. 28.*

NATIVE of the Arabian seas : lateral line double and ramified : tail greenish, and obtusely forked.

 SCHLOSSERIAN SCARUS.

Scarus Schlosseri. *S. aureus, maculis utrinque quinque fuscis, dorso fuscescente, cauda subæquali. Lin. Syst. Nat. Gmel. p. 1282. Pall. spic. zool. 8. p. 41.*

Gold-coloured Scarus, with five dusky spots on each side, brownish back, and nearly even tail.

SIZE of a roach : body compressed and broad : scales large : eyes large : irides fulvous : lower mandible rather longer than the upper : ventral fins triangular, and connected to the abdomen by the intervention of a perpendicular membrane. Native of Java.

BLUE-STRIPED SCARUS.

Scarus Ghobban. *S. albidus, squamis transversim subcæruleo fasciatis, linea laterali duplici.*

Whitish Scarus, with the scales marked by transverse blueish bands, and double lateral line.

Scarus Ghobban. *Forsk. arab. p. 28.*

SHAPE ovate: head marked by greenish-blue streaks: fins edged with a similar colour: tail entire: lateral line ramified. Native of the Arabian seas: observed by Forskal.

 FERRUGINOUS SCARUS.

Scarus Ferrugineus. *S. fusco-ferrugineus, maxillis marginibusque pinnarum viridibus, cauda æquali.*

Brown-ferruginous Scarus, with the jaws and margins of the fins green, and even tail.

Scarus ferrugineus. *Forsk. p. 29.*

SHAPE ovate-oblong: jaws green: body ferruginous-brown: pectoral fins of the same colour: ventral and anal violet: dorsal and tail yellowish: at the base of the tail several long lanceolate scales: tail itself broad and rounded. Native of the Arabian seas.

SORDID SCARUS.

Scarus Sordidus. *S. fusco-ferrugineus elongatus, pinnis obscurioribus, cauda surgente æquali.*

Brown-ferruginous Scarus, with darker coloured fins, and rising, even tail.

Scarus sordidus. *Forsk. arab. p. 30.*

SHAPE slender: colour brown: dorsal fin of a deeper colour: pectoral fins and tail yellowish: ventral violet: lateral line double and ramified: native of the Arabian seas.

 SCALY-TAILED SCARUS.

Scarus Harid. *S. squamis magnis, abdomine violaceo, cauda furcata, media basi squamosa.*

Scarus Harid. *Forsk. arab. p. 30.*

NATIVE of the Arabian seas: lateral line double, strait, ramified: dorsal, anal, and caudal fin violet-coloured: pectoral fins yellowish.

 TRILOBATE SCARUS.

Scarus Trilobatus. *S. varius, cauda triloba.*

Variegated Scarus, with trilobate tail.

Le Scare trilobé. *Cepede. 4. p. 21.*

SLIGHTLY described by Cepede from the drawings and MSS. of Plumier: its principal character seems to be its very distinctly trilobate tail: the upper

jaw is longer than the lower : colours of the body various : two spiny rays and sixteen soft on the dorsal fin. Native of the American seas : size not particularized.

ROSTRATED SCARUS.

Scarus Rostratus. *S. maxillis productis.*

Scarus with elongated jaws.

L'Ostorhinque Fleurieu. *Cepede. 4. p. 24.*

SLIGHTLY described by Cepede from the MSS. of Commerson : differs, according to Cepede, from the Scari in no other respect except in having the jaws much elongated : the lower jaw is rather longer than the upper : the eyes large : the head without scales : the dorsal and anal fin rather short : the tail very large, lunated : and near it is a transverse band of a deep colour : no lateral line could be perceived : on the dorsal fin are eight spiny rays. No particular description is given either of the size or colour of this fish, which Cepede names *Fleurieu* in honour of Monsr. Fleurieu, of the national institute, well known by his hydrographical and other publications.

SPARUS. SPARUS.

Generic Character.

<i>Dentes</i> validi: <i>Primores</i> in aliis ordine simplici, in aliis, duplici, triplici, vel quadruplici dispositi.	<i>Teeth</i> strong: <i>front-teeth</i> , in some species disposed in a single row, in others in a double, treble, or quadruple row.
<i>Molares</i> (plerisque) validi, convexi, læves, in series dispositi, et quasi pavementum in ore efformantes.	<i>Grinders</i> (in most species) convex, smooth, and disposed in ranges, forming a kind of pavement in the mouth.
<i>Labia</i> crassa: <i>Opercula</i> multica, squamosa.	<i>Lips</i> thick: <i>Gill-covers</i> unarmed, smooth, scaly.

THE genus *Sparus* is extremely numerous, and as the greater number are exotic, very little is known of their history: a general survey is therefore all that can be expected: it may be observed that they are much allied to the *Labri*, and that the distinction between these two genera is not, in all cases, so clear as might be wished: in the *Systema Naturæ* of Linnæus an evident confusion takes place with respect to the characters of both.

With forked tail.

GILTHEAD SPARUS.

Sparus Aurata. *S. argenteo-cærulescens, superciliis auratis, macula utrinque pone caput purpurea.*

Silvery-blueish Sparus, with gold-coloured brows, and a purple spot beyond each side the head.

Sparus Aurata. *Lin. Bloch. t. 266.*

GENERAL length about fifteen inches, but occasionally found of far larger size: body broad and thin, the back rising into a carina: colour as expressed in the specific character, but sometimes with the addition of several brownish longitudinal stripes: native of the Mediterranean, Atlantic, and Indian seas, and held in considerable esteem as a food: much admired by the ancient Greeks and Romans, and by the former nation consecrated to Venus.

 SARGY SPARUS.

Sparus Sargus. *S. subargenteus flavo longitudinaliter striatus subnigro transversim fasciatus, macula ad basin caudæ nigra.*

Subargenteous Sparus, with yellow longitudinal streaks, blackish transverse bands, and black spot at the base of the tail.

Sparus Sargus. *Lin. Bloch. t. 264.*

SIZE nearly that of the Gilthead: shape not dissimilar, but deeper in proportion: native of the Mediterranean: esteemed as a food.

RAJAN SPARUS.

Sparus Raii. *S. subargenteo-cærulescens, dorso subfusco, capite truncato-declivi.*

Silvery-blueish Sparus, with dusky back, and abruptly-sloping head.

Sparus Raii. *Bloch. t. 273.*

SIZE that of the Gilthead: shape very broad, the head sloping abruptly downwards, nearly as in the Coryphenes: eyes large: all the fins scaly at the base: pectoral fins long and sharp: native of the Mediterranean.

 LUTIAN SPARUS.

Sparus Lutianus. *S. griseo-argenteus, corpore supra lineam lateralem fasciis transversis cæruleis, infra lineis longitudinalibus flavis.*

Silvery-grey Sparus, marked above the lateral line with transverse blue streaks, and below it with longitudinal yellow lines.

Lutianus Lutianus. *Bloch. t. 244.*

SIZE and habit of a Gilthead: scales large: colour silvery grey, with pretty numerous deep yellow lines longitudinally disposed on the upper parts of the body, following the curve of the back: abdomen plain: fins yellow: native of the American seas.

RED-TAILED SPARUS.

Sparus Erythrourus. *S. argenteus, dorso subcæruleo, pinnis et præsertim cauda rubris.*

Silvery Sparus, with blueish black, and red fins, particularly the tail.

Sparus erythrourus. *Bloch. t. 261.*

SIZE and habit of the Gilthead: colours as mentioned in the specific character: eyes red: native of Japan.

 BREAM SPARUS.

Sparus Brama. *S. argenteus, dorso subfusco, pinnis roseis, squamis supra lineam lateralem parvis.*

Silvery Sparus, with brownish back, rose-coloured fins, and scales small above the lateral line.

Sparus Brama. *Lin. Bloch. t. 269.*

HABIT of the Gilthead: native of the Mediterranean and Atlantic: in considerable esteem as a food: grows to the length of about twelve inches.

MENDOLE SPARUS.

Sparus Mæna. *S. griseo-argenteus, pinnis roseis, macula utrinque laterali fusca.*

Silvery-grey Sparus, with rose-coloured fins, and dusky spot on each side.

Sparus Mæna. *Lin. Bloch. t. 270.*

HABIT of the Bream Sparus, but of a less deep shape: length about ten inches: scales large: eyes red. Native of the Mediterranean sea, where it is a very common fish, but not much esteemed as a food.

 ANNULAR SPARUS.

Sparus Annularis. *S. subargenteo-flavescens, dorso olivaceo fasciis quinque semidecurrentibus subnigris, cauda rubra apice nigra.*

Subargenteo-flavescient Sparus, with olivaceous back crossed by five semi-decurrent blackish bands, and red tail tipped with black.

Sparus Annularis. *Bloch. t. 271.*

HABIT of the Mendole. Size the same: colour resembling that of the common Perch: at a certain distance from the base of the tail a round black spot, situated at the bottom of the last dusky bar of the body: pectoral fins and tail red, the rest blackish: native of the Mediterranean: not much esteemed for the table.

GREAT-EYED SPARUS.

Sparus Macrophthalmus. *S. flavescens, roseo longitudinaliter striatus, oculis magnis, dentibus caninis quatuor in maxilla superiore.*

Yellowish Sparus, with rose-coloured longitudinal streaks, large eyes, and four canine teeth in the upper jaw.

Sparus macrophthalmus. *Bloch. t. 292.*

HABIT of the Gilthead : size that of a Perch : scales large and very finely ciliated at the edges : eyes very large, with red irides : native of the Indian seas ?

 ROSE SPARUS.

Sparus Erythrinus. *Sp. roscus, abdomine argenteo.*

Rose-red Sparus, with silvery abdomen.

Sparus Erythrinus. *Bloch. t. 274.*

SIZE and shape of a Perch : colour most beautiful rose-red, deepest towards the back : abdomen silvery : scales of moderate size : dorsal fin paler than the body, but edged with deep rose. Native of the Mediterranean : found also in the Indian seas, where it is said to acquire noxious qualities.

PAGRE SPARUS.

Sparus Pagrus. *S. roseus, maculis duabus nigris utrinque ad opercula.*

Rose-red Sparus, with two black spots on each side near the gill-covers.

Sparus Pagrus. *Lin. Bloch. t. 267.*

HABIT of Sparus Aurata, but of a somewhat longer shape : size that of a Carp : colour beautiful rose-red, with numerous longitudinal streaks of a deeper red : abdomen silvery, slightly marked by yellowish longitudinal streaks : eyes large and silvery. Native of the Mediterranean.

 ROUGH SPARUS.

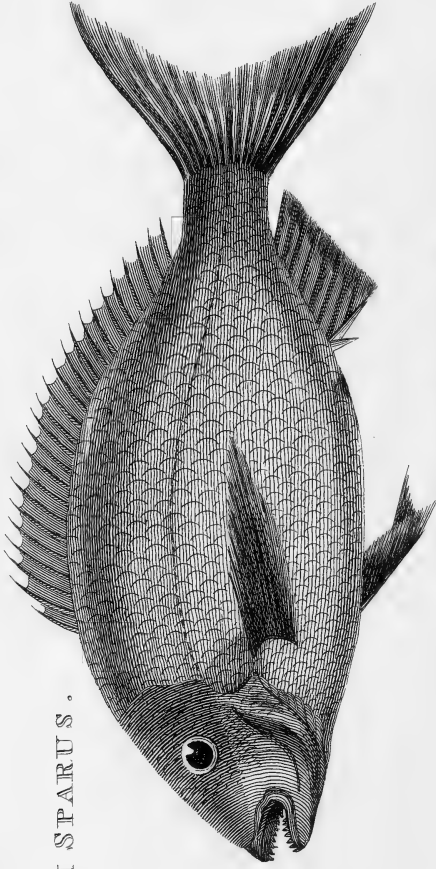
Sparus Dentex. *S. subargenteo-flavescens, dorso rubro-fusco, capite virente, dentibus acutis parvis, caninis quatuor.*

Subargenteo-flavescient Sparus, with reddish-brown back, green head, sharp, smallish teeth, with four large canine in each jaw.

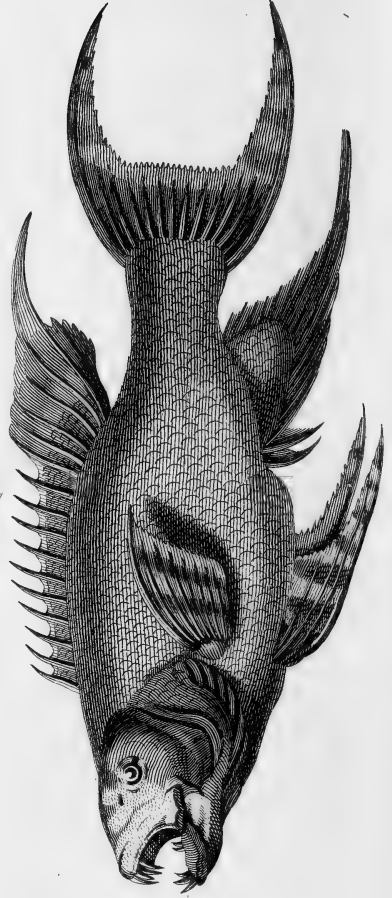
Sparus Dentex. *Lin. Bloch. t. 268.*

GENERAL size and shape of a Carp : varies much in colour, being said to grow purple when old, and sometimes white ; it is also occasionally spotted and streaked with black : lateral line pretty strongly marked, and curving in the direction of the back : scales middle-sized : tail scaly at the base, and but slightly forked. Native of the Mediterranean, where it arrives at a considerable size, and is a very strong and voracious fish.

BROWNISH SPARUS.



Hill sculp.



FALCATED SPARUS.

FALCATED SPARUS.

Sparus Falcatus. *S. flavus, pinnis virentibus, dorsali analique subfalcatis.*

Yellow Sparus, with greenish fins, the dorsal and anal fin sub-falcated.

Sparus tetracanthus. *Bloch. t. 279.*

Le Harpé bleu-doré. *Cepede. 4. p. 428. pl. 8. f. 2.*

A LARGE and handsome species: colour yellow, with the head, back, and fins strongly tinged with green: scales middle-sized: dorsal and anal fin scaly at the base, widened and somewhat falcated at their extremities: tail deeply lunated: mouth wide: front teeth strong, the rest much smaller, except towards the back part of each jaw: eyes gold-colour. Native of the American seas: described and figured by Bloch from the drawings of Plumier.

I cannot help imagining this fish to be the same with the *Harpé bleu doré*, of the Count de Cepede, which he informs us was described from a drawing by Plumier. The Count places it in a distinct genus.

SALP SPARUS.

Sparus Salpa. *S. griseo-argenteus, dorso subfusco, corpore striis longitudinalibus subflavis, dentibus superioribus apice bifidis.*

Silvery-grey Sparus, with brownish back, body marked by yellowish longitudinal streaks, and upper teeth bifid at the tips.

Sparus Salpa. *Lin. Bloch. t. 265.*

SIZE and shape of a Carp; scales rather large: lateral line very distinctly marked: eyes yellow: tail scaly at the base. Native of the Mediterranean.

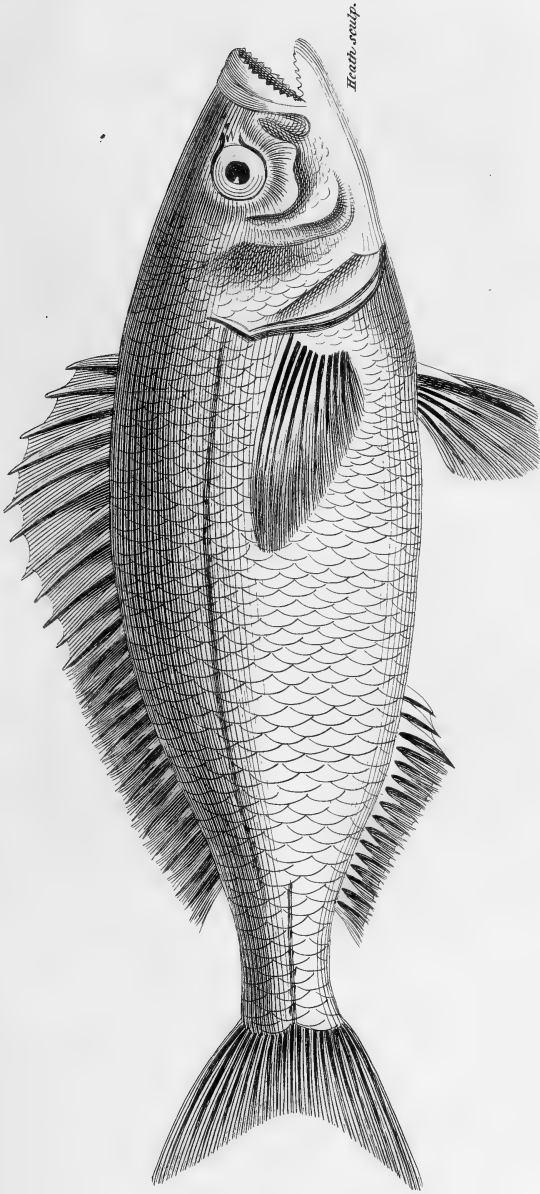
 VIOLET SPARUS.

Sparus Violaceus. *S. violaceus, subtus subargenteus, pinnis subfuscis, oculis flavis.*

Violet-coloured Sparus, silvery beneath, with brownish fins and yellowish eyes.

Sparus chrysops. *Bloch. t. 248.*

SIZE and shape of a Carp, but rather longer bodied in proportion: scales rather large: lateral line interrupted near the tail: native regions unknown: introduced into the ichthyology of Dr. Bloch on the authority of a drawing in the collection of Mr. Link of Leipzig.



VIOLET SPARUS .

1868. July L.London. Published by G. Ecarstey, Fleet-Street.



ANCHOR-TOOTHED SPARUS.

Sparus Anchorago. *S. flavescens, fusco transversim fasciatus, pinnis rubris, dentibus curvatis.*

Yellowish Sparus, with transverse brown bands, red fins, and curved teeth.

Sparus Anchorago. *Bloch. t. 276.*

SIZE and shape of a middling Carp: head tinged with red: dorsal fin dusky, with reddish tip, and between the spines of the fore-part are small elongations: rest of the fins red: scales rather large: eyes blue. Native of the Indian seas?

 DOG-TOOTHED SPARUS.

Sparus Cynodon. *S. subargenteo-flavescens, pinnis rubris, dentibus caninis quatuor in maxilla superiore.*

Subargenteo-flavescent Sparus, with red fins, and four canine teeth in the upper jaw.

Sparus Cynodon. *Bloch. t. 278.*

SIZE and shape as in the preceding species: scales rather small than large: fins red, except the back-fin, which is yellow: eyes blue. Native of the Mediterranean.

FASCIATED SPARUS.

Sparus Fasciatus. *S. elongato-subquadratus albidus, subnigro transversim fasciatus, pinnis nigro marginatis.*

Lengthened subquadrate Sparus, with transverse dusky bands, and fins edged with black.

Sparus fasciatus. *Bloch. t. 257.*

A SINGULAR and curious species: size rather large: shape squarish-elongated: scales very large: head, gills, and abdomen cinereous, finely freckled with small whitish specks, as are also the edges of the fins: orbits of the eyes radiated with pale diverging streaks: dorsal and anal fin somewhat dilated behind, and stretching towards the tail, which is strongly lunated. Native of Japan.

 ABILDGAARD'S SPARUS.

Sparus Abildgaardi. *S. albidus dorso subfusco, squamis magnis hexagonis.*

Whitish Sparus, with dusky back, and large hexagonal scales.

Sparus Abildgaardi. *Bloch. t. 259.*

SIZE and shape of a Carp: scales very large, and hexagonal; but those on the head and gill-covers are rounded: lateral line ramified on each scale over which it passes, and interrupted a little before the tail: eyes blueish; orbits radiated in a singular manner round the lower half by a series of tubular pores: native of the American seas, and named by Dr. Bloch from Professor Abildgaard, by whom the drawing was communicated.

GREEN-TAILED SPARUS.

Sparus Chlorourus. *S. subflavescens, squamis viridi arcuatis, pinnis viridibus, operculis roseis.*

Yellowish Sparus, with large scales crossed by a green band, green fins, and rose-coloured gill-covers.

Sparus Chlolourus. *Bloch. t. 260.*

A HIGHLY elegant species: in size and shape allied to the *S. falcatus*, but with a sharper front: scales large, and each marked across the middle by a curved green band; fins and tail green; the latter strongly lunated, and marked by minute pale specks: sides of the head marked by several small round spots: dorsal and anal fin somewhat dilated, and lengthened at the hind-part. Native of the American seas.

 RED-FINNED SPARUS.

Sparus Erythropterus. *S. subargenteus, dorso subfusco, pinnis rubris.*

Subargenteous Sparus, with brownish back, and red fins.

Lutianus Erythropterus. *Bloch. t. 259.*

HABIT of a Perch: scales rather small than large: fins bright red, except the first part of the dorsal: tail but very slightly inclining to a divided form, being nearly even: teeth of moderate size, and sharp. Native of Japan.

BOAR SPARUS.

Sparus Verres. *S. albidus, dorso violaceo, pinna caudali rubra, dorsali & anali apice rubris.*

Whitish Sparus, with the back violet, the tail and tips of the dorsal and anal fin red.

Lutianus Verres. *Bloch. t. 255.*

HABIT somewhat resembling that of the Sparus falcatus, but size smaller: scales rather large: dorsal and anal fins scaly at their base, and dilated and extended backwards towards the tips: eyes yellow: front teeth in both jaws very strong and curved somewhat like the tusks of a boar: the rest rather small: pectoral fins red at the base, and violet-coloured at the tips: ventral pale violet. Native of the Japanese sea.

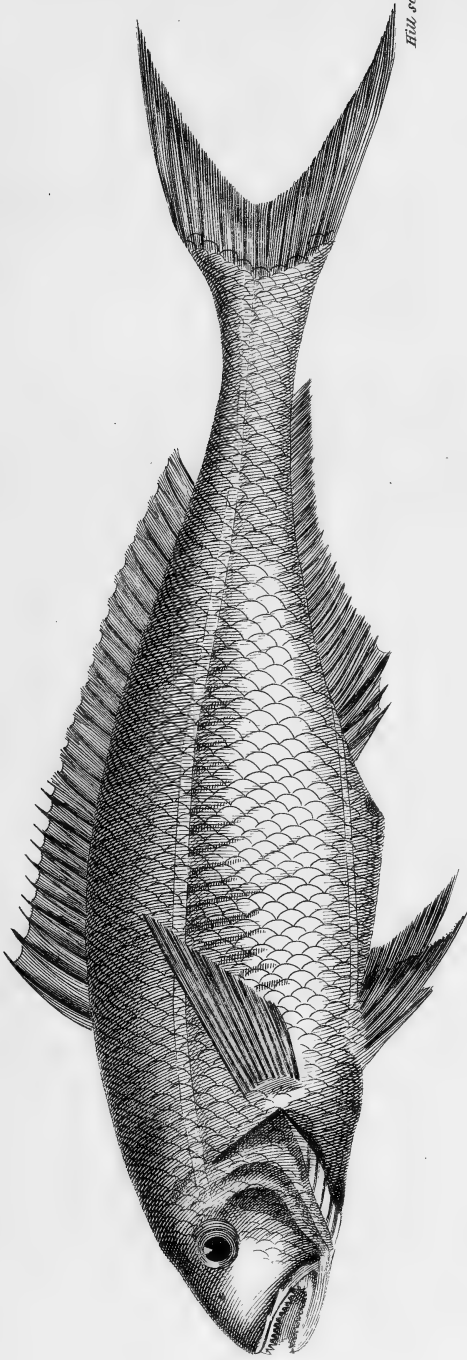
 GOLD-TAILED SPARUS.

Sparus Chrysurus. *S. roseus, fuscia longitudinali media pinnisque dorsali, anali, & caudali luteis.*

Rose-red Sparus, with longitudinal middle band, dorsal and anal fin and tail gold-yellow.

Sparus Chrysurus. *Bloch. t. 262.*

A HIGHLY elegant species: length about twelve inches: shape long and slender: colour bright rose-red, deepest on the back: from the gills to the tail on each side a gold-yellow stripe: a second on each side the bottom of the abdomen: scales of moderate size: pectoral and ventral fins dusky-violet: tail very sharply forked: teeth small and of equal size: native of the South-American seas.



Hill sculp.

GOLD-TAILED SPARUS.

1803. July. London. Published by G. Hearsley, Fleet Street.



BLUE-BANDED SPARUS.

Sparus Vittatus. *S. flavescens, vittis utrinque tribus longitudinalibus cæruleis.*

Yellowish Sparus, with three longitudinal blue bands on each side.

Sparus vittatus. *Bloch. t. 275.*

OF a somewhat lengthened shape, like that of a Grayling : scales of moderate size : pectoral and ventral fins red : the rest yellow tinged with pale blue at the base : eyes red : tail large, and pretty deeply lunated. Native of Japan.

 ORIENTAL SPARUS.

Sparus Cuning. *S. argenteus, dorso subcæruleo, corpore longitudinaliter flavo-striato, pinnis flavis, dorsali subviolaceo.*

Silvery Sparus with blueish back ; the body striped longitudinally with yellow, the fins yellow, the dorsal pale-violet.

Sparus Cuning. *Bloch. t. 263.*

LENGTH about seven inches : habit of a Dace, or rather more slender : tail greatly forked : scales of moderate size. Native of the Indian seas.

RUFIOUS-BANDED SPARUS.

Sparus Hurta. *S. cauda bifida, corpore fasciis transversis rubris, dentibus laniariis exertis.* Lin. Gmel. p. 1272.

Fork-tailed Sparus, with red transverse bands, and front teeth exerted.

HABIT broad and thin: dorsal fin occasionally withdrawn into a longitudinal furrow: fore-teeth in the upper jaw prominent and strong: body marked by a few transverse reddish bands: native of the Mediterranean.

 SPINED SPARUS.

Sparus Spinifer. *S. argenteo-rubescens, dorso lineisque corporis obscurioribus, spinis dorsalibus quinque mediis elongatis.*

Reddish-Silvery Sparus, with the back and lines on the body dusky, and the five middle spines of the dorsal fin elongated. Sp. spinifer. Lin. Gmel. Forsk. Arab. p. 32.

SHAPE ovate: scales large: front-teeth in each jaw four, conic, strong, and remote: length a foot and half: native of the Red sea, inhabiting deep places: esteemed a very delicious fish for the table.

BULL-EYED SPARUS.

Sparus Boops. *S. olivaceo-flavus, subtus argenteus, lateribus aureo longitudinaliter striatis.*

Olivaceous-yellow Sparus, silvery beneath, with longitudinal gold-coloured streaks along the sides.

Sp. boops. *Lin. Gmel.*

HABIT longish and subcylindric: colour olivaceous yellow, varying in splendour at different seasons: front teeth in the upper jaw obtuse and denticulated: native of the Mediterranean, but found also in the Indian seas.

 SARB SPARUS.

Sparus Sarba. *S. ovato-oblongus argenteus, vittis longitudinalibus, subfuscis, linea aurea utrinque ad pinnas ventrales.*

Ovate-oblong silvery Sparus, with longitudinal brownish bands, and a gold-yellow line on each side near the ventral fins.

Sp. Sarba. *Lin. Gmel. Forsk. Arab. p. 31.*

SCALES large: front-teeth close, conic: ventral fins yellow: dorsal recumbent occasionally in a longitudinal channel. Native of the Arabian seas.

TWO-BANDED SPARUS.

Sparus Bicinctus. *S. subviolaceus, vittis pluribus longitudinalibus flavis, capite cingulis duabus transversis nigris.*

Subviolaceous Sparus, with several longitudinal yellow bands, and two transverse black fillets round the head.

Sp. bivittatus. *Bloch. t. 263.*

LENGTH near six inches: habit of a Carp: all the fins pale yellow: scales middle-sized: tail pretty deeply forked. Native of the Indian seas?

 SMARE SPARUS.

Sp. Smaris. *S. argenteus, ocello nigro laterali, pinnis pectoralibus caudaque rubris.*

Silvery Sparus, with a black lateral spot, and red pectoral fins and tail.

Sparus Smaris. *Lin.*

BACK of a reddish tinge: head marked by several pores: front teeth somewhat blunt and intermixed with smaller teeth: native of the Mediterranean.

BLACK-TAIL SPARUS.

Sparus Melanurus. *S. argenteus, dorso cæruleo, lateribus fusco longitudinaliter striato-maculatis, ocello nigro ad basin caudæ.*

Silvery Sparus, with blue back, sides stripe-spotted longitudinally with brown, and a black spot at the base of the tail.

Sparus melanurus. *Lin.*

LOWER jaw thickly set with small sharp teeth: sides marked by dusky spots, and generally by a black spot on each side the tail. Native of the Mediterranean.

 SILVER SPARUS.

Sparus Argenteus. *S. argenteus, macula utrinque prope caput nigra.*

Silvery Spare, with a black spot on each side near the head.

Sparus argentatus. *Lin. Gmel.*

SHAPE very deep, or like that of the Gilthead: length a few inches: native of the Japanese sea.

 SYNAGRE SPARUS.

Sparus Synagris. *S. purpurascens, lineis utrinque septem aureis.*
 Purplish Spare, with seven gold-coloured lines on each side.

S. Synagris. Lin. Gmel. Catesb. Car. 2. t. 17.

LENGTH about ten inches: eyes large. Native of the American seas.

BROAD SPARUS.

Sparus Latus. *S. flavicans, capite argenteo, squamis longitudinaliter imbricatis.* *Lin. Gmel. p. 1276.*

Yellowish Sparus, with silvery head with longitudinally-imbri-
cated scales.

A SMALL species: length three inches: habit
broad and thin. Native of the Japanese sea.

 VIRGATED SPARUS.

Sparus Virgatus. *S. depressus, oblongus, squamis virgatus.*

Depressed, oblong Sparus, with the scales disposed in rows.

Sp. virgatus. *Lin. Gmel.*

ALLIED to the Salp Sparus: head obtuse: native
of Japan.

 HASSARA SPARUS.

Sparus Hassara. *S. argenteus, lineis longitudinalibus fusco-
flavescentibus.*

S. Hassara. *Lin. Gmel. Forsk. Arab.*

LENGTH about a span: on each side fourteen
dusky streaks: front-teeth in each jaw strong, re-
mote, obtuse: native of the Arabian seas, and
esteemed for the table.

BERDA SPARUS.

Sparus Berda. *S. squamis lateralibus singulis fascia transversa fusca, spinis dorsalibus recumbentibus.*

Whitish Sparus, with each of the side-scales marked by a transverse brown band, and with the rays of the dorsal fin recumbent in a furrow.

S. Berda. *Lin. Gmel. Forsk. Arab.*

SHAPE oval: scales large and rounded: native of the Arabian sea.

 CHILI SPARUS.

Sparus Chilensis. *S. subargenteus, lineis utrinque transversis fuscis.*

Subargenteus Sparus, with five transverse brown lines on each side.

S. Chilensis. *Lin. Gmel. Motin. Chil.*

A VERY large species: shape ovate: head small: front-teeth strong and conic: scales large, rhomboidal, and spotted with white: lateral line curved in the direction of the back. Native of the South-American seas, and esteemed for the table.

GOLDEN-EYED SPARUS.

Sparus Chrysops. *S. cærulescens, dorso canaliculato, iridibus aureis.*

Blueish Sparus, with channelled back, and golden irides.

S. chrysops. Lin. Gmel. Aurata Bahamensis. Catesb. Car. 2. t. 16.

HEAD variegated with blue streaks: pectoral, ventral, anal, and caudal fins blue: native of the American seas.

 SPINE SPARUS.

S. Spinus. S. cæruleo-variatus, spina dorsali recumbente.

Sparus with blue variegations, and recumbent dorsal spine.

S. Spinus. Lin. Gmel.

NATIVE of the American and Indian seas.

 MORMYRE SPARUS.

Sparus Mormyrus. *S. argenteus, fasciis plurimis transversis nigris.*

Silvery Sparus, with numerous transverse black bands.

S. Mormyrus. Lin. Gmel.

NATIVE of the Mediterranean: length five or six inches: tail bordered with black at the tip.

BROWNISH SPARUS.

Sparus Fuscescens. *S. fuscescens, squamis aureis, macula nigra ad pinnas pectorales.* *Lin. Gmel. p. 1279.*

Brownish Sparus, with the scales tinged with gold-colour, and a black spot at the pectoral fins.

HABIT rather broad : length about four inches : native of the Japanese sea.

 OSBECK'S SPARUS.

Sparus Osbeckii. *S. corpore longitudinaliter cæruleo flavoque fasciato, capite rubro cæruleoque variato.*

Sparus with the body longitudinally striped with blue and yellow, and the head varied with red and blue.

Spare Osbeck. *Cepede. 4. p. 107.*

LENGTH a few inches : on each side, above the lateral line a black spot : native of the Mediterranean.

 VARIEGATED SPARUS.

Sparus Variegatus. *S. argenteus, corpore nigro transversim variato, cauda nigro marginata.*

Silvery Sparus, with the body transversely variegated with black, and the tail bordered with black.

S. bigarré. Cepede. 4. p. 109.

SHAPE oval : native of the Mediterranean.

MARSEILLES SPARUS.

Sparus Massiliensis. *S. flavus, lateribus fusco maculatis, fasciis longitudinalibus brevibus versus caudam.*

Yellow Sparus, with the sides spotted with brown, and marked by short longitudinal bands toward the tail.

S. Massiliensis. *Cepede.*

NATIVE of the Mediterranean.

 CASTANEOLA SPARUS.

Sparus Castaneola. *S. dorso nigro, lateribus cæruleis, abdomine argenteo.*

Sparus with black back, blue sides, and silvery abdomen.

S. Castagnole. *Cepede. 4.*

LOWER jaw longer than the upper: fore parts deeper or more elevated than the hind: head rounded in front: mouth prominent, and rounded: fins blue, except the pectoral, which are yellow. Native of the Mediterranean.

 BRUNNICH'S SPARUS.

Sparus Brunnichii. *S. ovalis argenteus, linea laterali fusca.*

Oval silvery Sparus, with brown lateral line.

S. Bogaraveo. *Cepede. 4. p. 112.*

LENGTH a few inches: in the dorsal fin are twelve sharp, and thirteen soft rays: in the anal fin three sharp, and thirteen soft: native of the Mediterranean: observed by Brunnich.

MAHSENA SPARUS.

Sparus Mahsena. *S. fuscus lineatus, fasciis transversis nebulosis argenteis.*

Dusky, lineated Sparus, with clouded, transverse, silvery bands.

Sciæna Mahsena. *Lin. Gmel. Forsk. Arab.*

SHAPE ovate oblong: in each jaw eighteen strong conic teeth, besides some setaceous ones in the jaws, and the obtuse grinders: fins reddish-violet, with small ramenta or appendices. Native of the Arabian seas.

 HARAK SPARUS.

Sparus Harack. *S. virescens, pinnis rubescentibus, macula utrinque lineari nigra infra lineam lateralem.*

Greenish Sparus, with reddish fins, and a linear black mark on each side near the lateral line.

Sciæna Harak. *Lin. Gmel. Forsk. Arab.*

MUCH allied to the S. Mahsena: four pretty strong front-teeth in each jaw: the remainder growing gradually larger: besides these are several setaceous ones: the lateral mark mentioned in the specific character is rectangular, and bounded by a dusky cloud. Native of the Arabian seas.

RAMAK SPARUS.

Sparus Ramak. *S. albido-virescens, lineis longitudinalibus obsolitis violaceo-flaventibus, pinnis rubentibus.*

Whitish-green Sparus, with longitudinal yellowish-violet lines, and reddish fins.

Sciæna Ramak. *Lin. Gmel. Forsk. Arab.*

GREATLY allied, except in colour, to the *Mahsena*, and native of the same seas.

GREAT-EYED SPARUS.

Sparus Grandoculis. *S. cærulescens, oculis magnis, labio inferiore gibbo.*

Blueish Sparus, with large eyes, and gibbous lower lip.

Sciæna grandoculis. *Lin. Gmel. Forsk. Arab.*

ALLIED to *S. Mahsena*: shape ovate-oblong, with obscure longitudinal streaks: in each jaw six front-teeth: fins pale violet: pectoral fins pale red: the dorsal and anal each increased by a lobe at the hind part: native of the Arabian seas.

SILVER-EYED SPARUS.

Sparus Argyrops. *S. cauda lunata, dorso canaliculato, oculorum iridibus argenteis. Lin. Syst. Nat. Gmel. p. 1277.*

Sparus with lunated tail, channelled back, and silvery irides.

Zanthurus Indicus. *Will. ichth. app. t. 3.*

ALLIED to *Sp. Chrysops*: the three first rays of the dorsal fin are elongated. Native of the American seas.

GOLD-GREEN SPARUS.

Sp. Viridi-Aureus. *S. olivaceo-flavescens, fasciis quinque annularibus nigris, pinnis pectoralibus basi atrocæruleis.*

Olivaceo-flavescient Sparus, with five annular black bands, and the pectoral fins blueish-black at the base.

Le Spare Vertor. *Cepede. 4. p. 131.*

A VERY small species: described by Cepede from Commerson, who observed it in vast shoals following the ships in the Indian seas, particularly about the coasts of New Guinea: body covered with small scales.

 MYLOSTOME SPARE.

Sparus Mylostomus. *S. aureo cæruleoque longitudinaliter undulatus, macula utrinque versus caudam nigra.*

Sparus longitudinally undulated with blue and yellow, with a black spot on each side near the tail.

Spare Mylostome. *Cepede. 4. p. 131.*

IN habit resembling a Coryphene, except that the front is less sloping: jaws beset with fine teeth, in the manner of a file: tongue short and cartilaginous: eyes large and prominent: scales striped, and slightly crenated on the edges: general colour deep yellow, paler on the pectoral fins, and mixed with green on the dorsal fin and tail, at the end of which are two black spots, so placed as to resemble in some degree the figure of a pair of spectacles. Observed by Commerson in the Indian seas: size not particularized.

MYLIO SPARUS.

Sparus Mylio. *S. flavescens, lineis longitudinalibus interruptis fuscis, corpore antice fascia duplici transversa nigra.*

Yellowish Sparus, with interrupted longitudinal brown bands, and the fore-part marked by a double transverse black band.

Spare Mylio. *Cepede. 4. p. 132.*

MUCH allied to the Mylostome: size that of a common Carp: scales large: in the upper jaw six somewhat prominent front-teeth: upper lip extensile: Native of the Indian seas: observed by Commerson.

 COMMERSONIAN SPARUS.

Sparus Commersonii. *S. argenteus, lineis lateralibus interruptis fuscis maculatus.*

Silvery Sparus, spotted with interrupted brown lateral lines.

Spare Breton. *Cepede. 4. p. 132.*

A SMALL species: lower lip extensile to a very considerable degree: observed about the coasts of the Isle of France.

GOLDEN-LINED SPARUS.

Sparus Aureo-lineatus. *S. lineis aureis longitudinalibus, dorso postico macula oblonga argentea, pinnis rubris.*

Sparus with longitudinal gold-coloured lines, hind part of the back marked by an oblong silvery spot, and red fins.

Sp. aureo-lineatus. *Cepede. 4. p. 132.*

A SMALL species: native of the Indian seas.

 BLACK-TAIL SPARUS.

Sparus Melanurus. *S. fuscus, abdomine albido, corpore lineis longitudinalibus luteis, cauda nigra albo-marginata.*

Brown Sparus, with whitish abdomen; body marked by longitudinal yellow lines, and black tail bordered with white.

Perca melanura. *Lin. Catesb. Car. 2. t. 7.*

SIZE of a small Perch: native of the American seas.

 LEAPING SPARUS.

Sparus Saltator. *S. griseus, cauda bifurca postice rubra, abdomine lateo griseo-lineato.*

Greyish Sparus, with the tail red towards the tip, and abdomen yellow streaked with grey.

Perca sectatrix. *Lin. Catesb. Car. 2. t. 8. f. 2.*

SIZE of a small Perch: has a habit of frequently leaping out of the water, and, according to some, of following ships, in their swiftest course.

POISONOUS SPARE.

Sparus Venenosus. *S. griseus, corpore punctis sanguineis notato, pinnis pectoralibus apice flavis.*

Greyish Sparus, with the body sprinkled with sanguine spots, and the pectoral fins yellow at the tips.

Perca venenosa. *Lin. Catesb. Car. 2. p. 5.*

A MIDDLE-SIZED species : native of the American seas ; and, like several other fishes in those regions, reputed poisonous at some particular seasons : probably, from feeding on some acrimonious kinds of Mollusca, &c.

 SALIN SPARUS.

Sparus Salin. *S. argenteo-cæruleus, macula utrinque nigra, pinnis flavis.*

Silvery-blue Sparus, with a black spot on each side, and yellow fins.

Sparus Salin. *Cepede. 4. p. 137. Perca unimaculata. Bloch. t. 308. f. 1.*

A SMALL species : native of the Brazilian seas : habit broad : beneath the lateral line a few longitudinal yellow streaks.

JUBA SPARUS.

Sparus Juba. *S. argenteus, dorso violaceo, pinnis flavo luteoque variatis, cauda bimaculata.*

Silvery Sparus, with violet back, fins varied with yellow and orange, and tail marked by two spots.

Perca Juba. *Bloch. t. 311. f. 1.*

BACK much elevated: head marked by a black band from eye to eye: on the tail two black spots: size rather larger than that of the Selim. Native of the American seas.

 DUSKY-BACKED SPARUS.

Sparus Melanotus. *S. argenteus, dorso nigricante, pinnis apice rubentibus.*

Silvery Sparus, with dusky back, and fins reddish at the tips.

Perca argentata. *Bloch. t. 311. f. 1.*

NATIVE of the Japanese seas: teeth small.

 NIPHON SPARUS.

Sparus Nippon. *S. albus, dorso subfusco, lateribus lineis longitudinalibus flaventibus.*

White Sparus, with brownish back, and sides marked by longitudinal yellowish lines.

Perca Japonica. *Bloch. t. 311. f. 2.*

Sparus Nippon. *Cepede. 4. p. 141.*

NATIVE of the Japanese seas, in which the isle of Nippon forming the principal feature, Cepede calls

this species by its name. Dr. Bloch, with perhaps equal propriety, considered it as a Perch, under the title of *Perca Japonica*. In fact, in the numerous tribe of thoracic fishes many species may be found which can hardly be said to belong, with strict propriety, to any of the established genera.

BLUE SPARUS.

Sparus Cæruleus. *S. totus cæruleus, squamis magnis hexagonis radiatis.*

Sparus entirely of a blue colour, with large hexagonal radiated scales.

S. Holocyaneose. *Cepede. 4. p. 141.*

SLIGHTLY described by Cepede from one of Plumier's drawings, in which it is called *Turdus marinus totus cæruleus*, a fine blue being the universal colour of the fish. It is dangerous to attempt descriptions of animals from drawings alone: a practice to which the Count de Cepede seems in many instances too much devoted. The pectoral fins in this species are falcated, and the tail deeply lunated: the head without scales, and the jaws of equal length: native of the American seas.

SCALY-TAILED SPARUS.

Sparus Lepisurus. *S. maculis utrinque duabus fuscis, cauda ultra basin squamosa.*

Sparus with two brown spots on each side, and tail scaled beyond the base.

S. Lepisure. *Cepede. 4. p. 142.*

NATIVE of the Indian seas: mentioned by Cepede from the MSS. of Commerson: dorsal and anal fin scaly at the base; the tail still more so.

 MOON SPARUS.

Sparus Luna. *S. latus, ruber, dorso cæruleo, lateribus luteo variatis, linea laterali lutea.*

Red Sparus, with broad body, blue back, sides varied with yellow, and yellow lateral line.

S. Demi-Lune. *Cepede. 4. p. 142.*

DESCRIBED by Cepede from a drawing by Plumier: size considerable: body deeper than long: pectoral fins twice the length of the ventral: sides marked by several irregular gold-coloured spots: back blue: tail deeply lunated: native of the American seas.

BILOBATE SPARUS.

Sparus Bilobatus. *S. cauda biloba, lobis rotundatis.*

Sparus with bilobate tail, with the lobes rounded.

Le Bilobé. *Cepede. 4. p. 143.*

MENTIONED by Cepede from Commerson: native of the Indian sea.

 CARDINAL SPARUS.

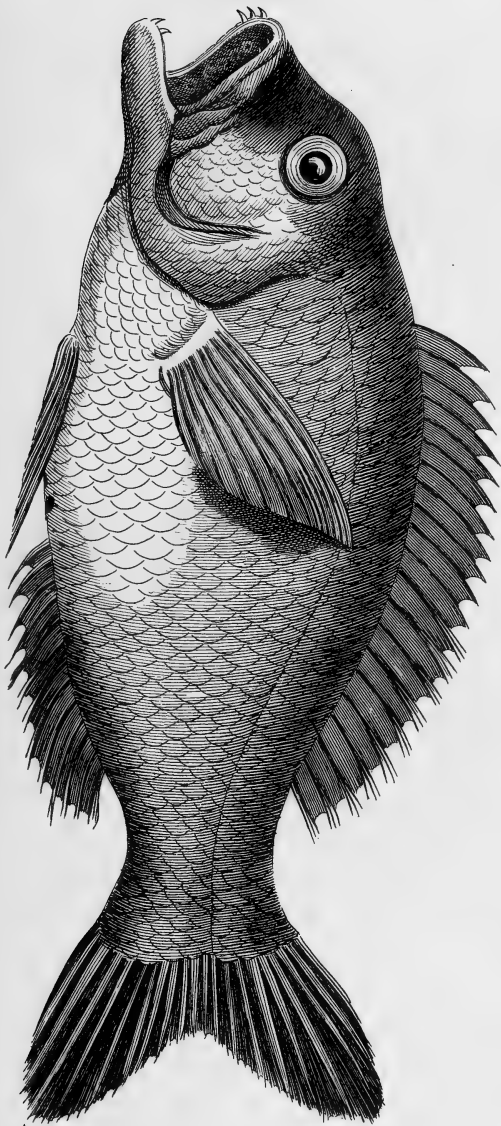
Sparus Cardinalis. *S. ruber, abdomine roseo.*

Deep-red Sparus, with rose-coloured abdomen.

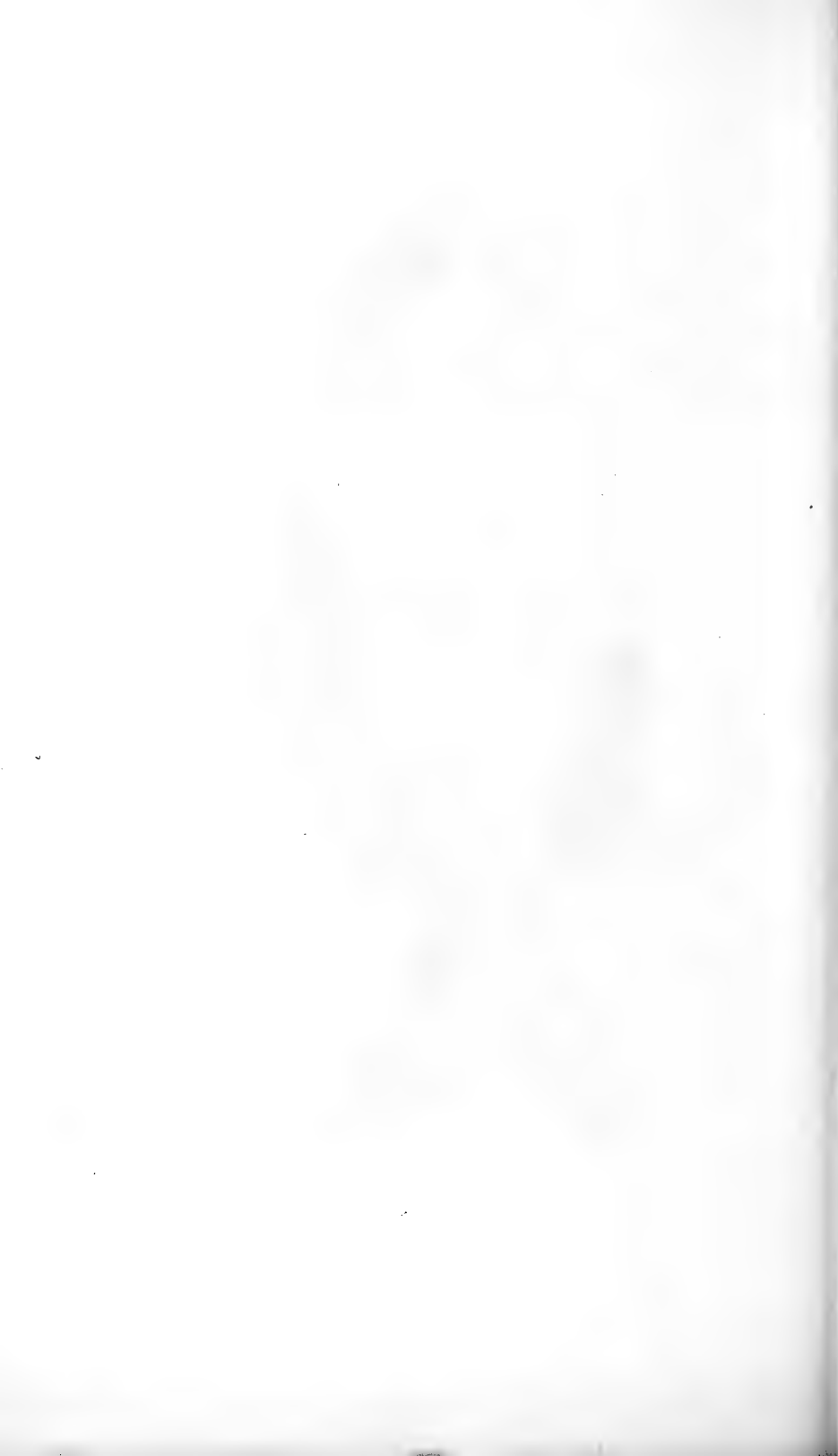
Spare Cardinal. *Cepede. 4. p. 143.*

DESCRIBED by Cepede on the authority of some Chinese drawings in the Prince of Orange's collection: the deep-red colour of the upper parts and the rose-colour of the lower are abruptly separated: between the eyes is a kind of raised skin, reaching forwards like a hood as far as the tip of the upper jaw.

BILORATE SPARUS .



Brach. sculp.





BUFONITE SPARUS.

CHINESE SPARUS.

Sparus Sinensis. *S. ruber, lineis quatuor longitudinalibus flavis, abdomine flavo, cauda supra radio elongato nudo.*

Red Sparus, with four longitudinal yellow lines, abdomen yellow, and tail furnished at the upper part with a long naked ray.

MENTIONED by Cope from the same Chinese drawings which afforded the former species: pectoral and ventral fins yellow.

 BUFONITE SPARUS.

Sparus Bufonites. *S. pallidus, striis utrinque longitudinalibus numerosis fuscis.*

Pale Sparus, with numerous longitudinal brown lines on each side.

Sp. Bufonite. *Cope. 4. p. 143.*

DESCRIBED by Cope from Commerson, who presented its figure to the Count de Buffon: habit that of a Gilthead, and the pavement of molares * in the mouth exactly resembling those of the Gilthead: all that is said of the colour of this species is that on each side are eleven or twelve longitudinal stripes.

* These, when found fossil, are often termed *bufonites*, as well as those of the *Anarhichas Lupus* or Wolf-fish.

PARROT SPARUS.

Sparus Psittacus. *S. rostro curvato, corpore utrinque longitudinaliter striato.*

Sparus with curved snout, and longitudinally-striated body.

Spare Perroquet. *Cepede. 4. p. 47.*

MUCH allied to the preceding species : observed by Commerson in the Indian seas.

 VIRGINIAN SPARUS.

Sparus Virginicus. *S. fasciis duabus transversis nigris, lineis plurimis longitudinalibus cæruleis.*

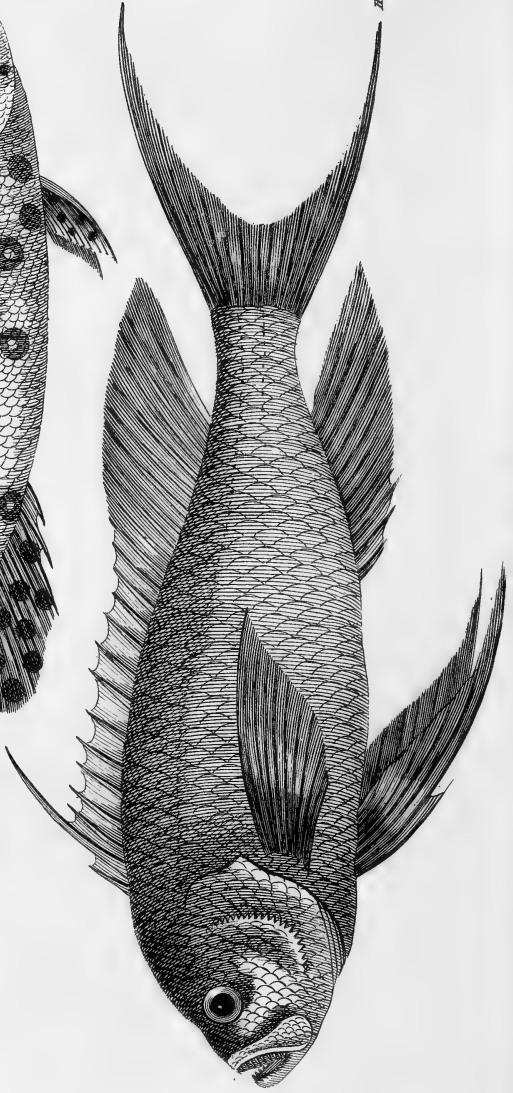
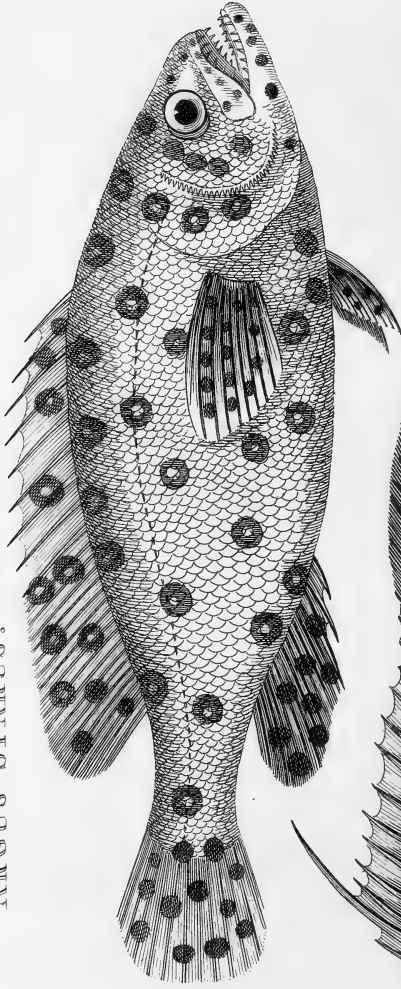
Sparus with two black transverse bands, and numerous longitudinal blue lines.

Sparus Virginicus. *Lin. Gmel.*

GILL-COVERS subserrated : body marked by numerous parallel longitudinal streaks: the first black band passes across the eyes : the second from the shoulders, over the sides of the thorax, to the pectoral fins ; tail bilobate and obtuse. Native of the American seas.



ARGUS SPARUS.



ANTHIA SPARUS.

ANTHIA SPARUS.

Sparus Anthias. *S. argenteo-rosaceus, pinnis ventralibus falcatis, radio secundo dorsali elongato, cauda elongato-furcata.*

Silvery rose-coloured Sparus, with falcated ventral fins, second ray of the dorsal fin elongated, and long-forked tail.

Labrus Anthias. *Lin. Gmel. Anthias sacer. Bloch.*

COLOUR a beautiful rose red, deepest on the back, fins and tail: sides and abdomen silvery: tail extremely forked: scales of moderate size: length about twelve or fifteen inches: native of the Mediterranean, and popularly known by the title of Barber-fish, on account of the long and sharp ray of the dorsal fin.

 ASCENSION SPARUS.

Sparus Ascensionis. *S. gracilis, supra rubescens, subtus albicans, squamis transversis,*

Slender reddish Sparus, whitish beneath, with scales disposed in transverse ranges.

Sparus Ascensionis. *Lin. Gmel.*

NATIVE of the Isle of Ascension: gill-covers serrated, with two of the teeth longer than the rest.

STIGMA SPARUS.

Sparus Stigma. *S. pinna dorsali ramentacea, operculis inustis.*
Lin. Syst. Nat.

Sparus with ramentose dorsal fin and gill-covers marked by a spot resembling the impression of a hot iron.

Perca Stigma. *Lin. Gmel.*

PENTAGRAM SPARUS.

Sparus Pentagramma. *S. fasciis quinque longitudinalibus albis fuscisque alternis, pinna dorsali ramentacea.*

Sparus with the body marked by five longitudinal alternate brown and white bands.

Perca lineata. *Lin. Gmel.*

DESCRIBED by Linnæus in the Museum Adolphi Friderici as a species of *Sciæna*. Native region unknown.

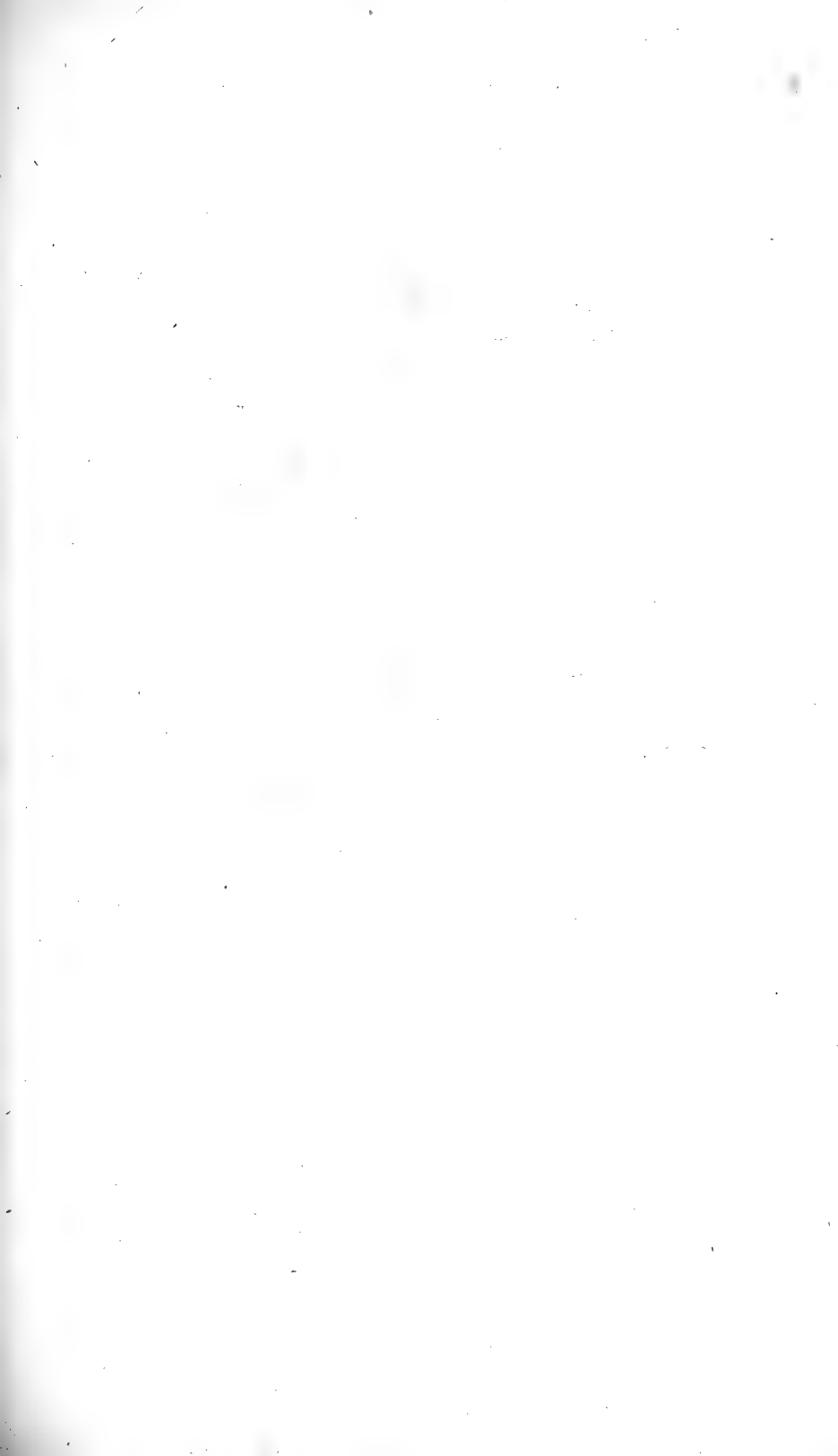
SILVERY SPARUS.

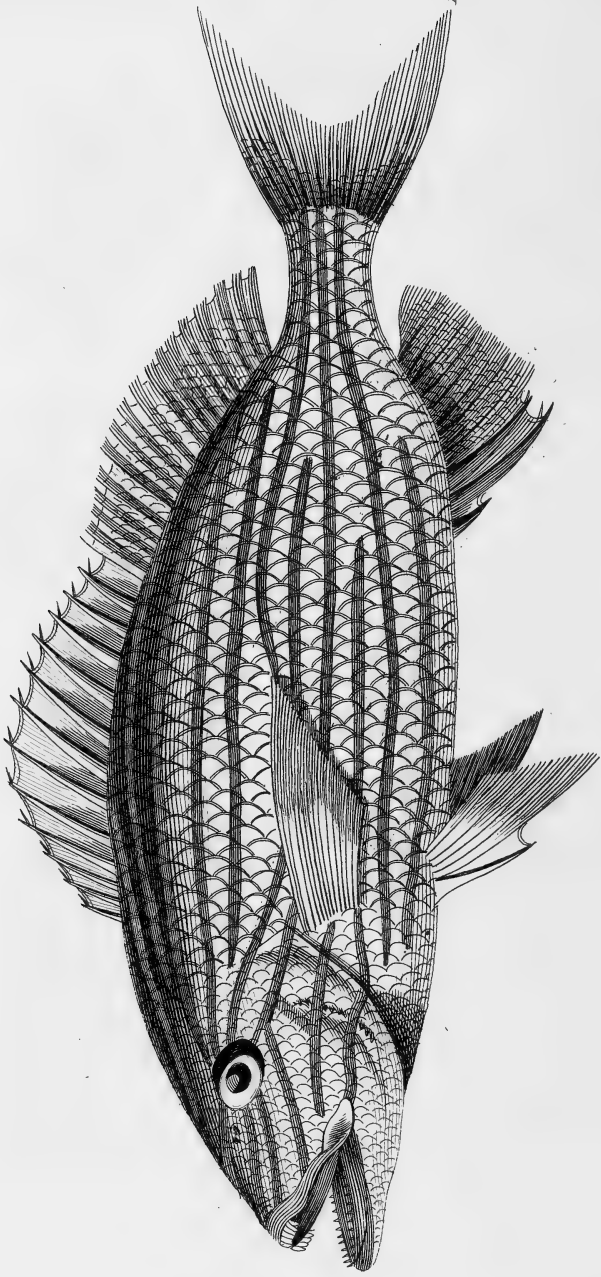
Sparus Argenteus. *S. argenteus, pinna dorsali macula nigra, naribus tubulosis.*

Silvery Sparus, with tubular nostrils, and a black spot on the dorsal fin.

Perca argentea. *Lin. Gmel.*

NATIVE of the American seas: described by Linnæus in the Museum Adolphi Friderici.





Tail sculp.

SQUIRREL SPARUS.

SERRAN SPARUS.

Sparus Serran. *S. flavicans, fasciis quatuor longitudinalibus sanguineis.*

Yellowish Sparus, with four longitudinal blood-red bands.

Perca Cabrilla. *Lin. Mus. Ad. Frid. 2.*

• DORSAL fin sometimes slightly ramentose. Native of the Mediterranean: said sometimes to vary, in having the stripes rather violet than red.

 SQUIRREL SPARUS.

Sparus Sciurus. *S. griseus, squamis magnis flavo marginatis, capite longitudinaliter cæruleo flavoque lineato.*

Grey-brown Sparus, with large scales bordered with yellow, and head marked longitudinally by numerous blue and yellow lines.

Perca formosa. *Lin. Anthias formosus. Bloch.*

SIZE of a common Perch: native of the American seas, where it is known by the name of the Grunt, or Squirrel-fish. In colours it seems to vary, Dr. Bloch's plate representing it of a yellow colour, striped along the body as well as the head with blue lines.

HAMRUR SPARUS.

Sparus Hamrur. *S. cupreo-ruber, pinnis obscurioribus, ore subverticali.*

Copper-red Sparus, with darker-coloured fins, and subvertical mouth.

Sciæna Hamrur. *Lin. Forsk. Arab.*

SCALES small and membranaceous at the margin: teeth small, subulate, and of equal size: tail lunated. Native of the Arabian seas.

 DIAGRAM SPARUS.

Sparus Diagramma. *S. albus, fasciis longitudinalibus fuscis.*

White Anthias, with longitudinal brown bands.

Perca Diagramma. *Lin. Anthias Diagramma. Bloch.*

SIZE of a Perch: colour white, elegantly marked on the upper part by four or five longitudinal deep-brown bands: fins and tail varied with brown. In the living fish the bands are probably yellow, since in the *Systema Naturæ* they are so described: in spirits however they appear brown: scales small: native of the Indian seas?



DIAGRAM SPARUS.

Will. Sculp.



SILVER-EYED SPARUS.

Sparus *Argyrophthalmus*. *S. flavus abdomine argenteo, oculis maximis, cauda subcærulea.*

Yellow Sparus, with silvery abdomen, extremely large eyes, and blueish tail.

Anthias macrophthalmus. *Bloch. t. 319.*

SIZE of a Perch: scales rather small: eyes silvery with a tinge of blue: native of Japan.

STRIATED SPARUS.

Sparus *Striatus*. *S. corpore luteo longitudinaliter striato, cauda albida.*

Sparus with longitudinal yellow streaks, and whitish tail.

Perca striata. *Lin. Gmel.*

GREATLY allied to the *Sparus melanurus*, from which it is said principally to differ in having the tail whitish instead of black. Native of the American seas.

VOSMAER'S SPARUS.

Sparus *Vosmaeri*. *S. rubro-purpureus, fascia utrinque longitudinali flava, pinna dorsali analique violaceis.*

Purplish-red Sparus, with a longitudinal yellow stripe on each side, and violet dorsal and anal fin.

Anthias Vosmaeri. *Bloch. t. 321.*

SIZE of a Perch: scales rather large than small: mouth and teeth small: pectoral, ventral, and caudal fins bright red. Native of Japan.

ELLIPTIC SPARUS.

Sparus Ellipticus. *S. albidus, dorso subfusco, ellipsi duplicata violacea notato.*

Whitish Sparus, with brownish back, marked by a doubled, violet-coloured ellipsis.

Anthias bilineatus. *Bloch. t. 325. f. 1.*

SIZE of a small Perch: along the back several dusky streaks, and on each side two parallel, deep-violet stripes, curving upward in such a manner as to form two large concentric ellipses on the back: scales middle-sized: anal fin black on the fore-part, and orange behind. Native of Japan.

 JAPANESE SPARUS.

Sparus Japonicus. *S. luteus, dorso transversim cœruleo-lineato, pinnis rubentibus.*

Yellow Sparus, with the back crossed by blue lines, and reddish fins.

Anthias Japonicus. *Bloch. t. 325. f. 2.*

SIZE and habit of the preceding species: dorsal fin marked along its fore-part by a dusky band; the hind-part, with the other fins and tail red. Native of Japan.

 HEXAGONAL SPARUS.

Sparus Hexagonus. *S. corpore hexagono-elongato.*

Sparus with hexagonally-elongated body.

Lutianus hexagonus. *Cepede. 4. p. 214.*

EYES very large: scales strongly striated: vertical diameter of the tail much less than that of the body: all the laminae of the gill-covers denticulated: teeth rather blunt, and in several rows in each jaw: described by Cedepe from a specimen in the Prince of Orange's Museum.

 LUNULATED SPARUS.

Sparus Lunulatus. *S. rubescens, lunula caudali nigra.*

Reddish Sparus with black caudal crescent.

Perca lunata. *Lin. Trans. 3. p. 33.*

SIZE of a small Perch: scales middle-sized: pectoral and ventral fins lanceolate: tail slightly forked. Observed by Mr. Mungo Park about the coasts of Sumatra.

 GOLD-BANDED SPARUS.

Sparus Aureo-vittatus. *S. albicans, vitta longitudinali flava.*

Whitish Sparus, with yellow longitudinal band.

Perca aurata. *Lin. Trans. 3. p. 33.*

OBSERVED by Mr. Park about the coasts of Sumatra.

NAKED-HEADED SPARUS.

Sparus Gymnocephalus. *S. capite squamis destituto, pinna dorsali antice triangulari elevata, radio secundo elongato.*

Sparus with head destitute of scales, and dorsal fin high and triangular in front, with the second ray elongated.

Lutianus gymnocephalus. *Cepede. 4. p. 181.*

HEAD and gill-covers destitute of scales : lower lip longer than the upper : first part of the dorsal fin very high and triangular, and the second ray longer than the rest. Described by Cepede from Commerson : native of the Indian seas.

 TRIANGLE SPARUS.

Sparus Triangulum. *S. labiis duplicatis, macula caudali nigra trigona albo-marginata.*

Sparus with doubled lips, and tail marked by a triangular black spot, edged with white.

Lutianus Triangulum. *Cepede.*

MENTIONED by Cepede from Commerson : native of the Indian seas.

SMALL-MOUTHED SPARUS.

Sparus Microstomus. *S. albidus, fusco-maculatus, capite conico-elongato, ore parvo.*

Whitish Sparus, with conically-elongated head, and small mouth.

Lutianus Microstomus. *Cepede.*

NATIVE of the Indian seas: described by Cepede from Commerson: body covered with minute, irregular, dusky spots.

 INSIDIOUS SPARUS.

Sparus Insidiator. *S. ruber, lateribus flavescens, cauda subforcipata, rostro longissimo.*

Red Sparus, with yellowish sides, subforcipated tail, and very long snout.

Sparus Insidiator. *Lin. Gmel.*

LENGTH about ten inches: head compressed, scaly: snout very long: mandibles divided, and each furnished in front with two teeth of larger size than the rest: scales on the body rather large: fins yellowish; the dorsal and anal varied with green stripes: native of the Indian seas, where it preys chiefly on insects, exploding against them a drop of water from its tubular snout, in the same manner as the *Chaetodon rostratus*.

With even, or rounded tail.

ORPH SPARE.

Sparus Orphus. *S. rubro-purpureus, macula utrinque nigra prope caudam.*

Reddish-purple Sparus, with a black spot on each side near the tail.

Sparus Orphus. *Lin. Gmel.*

INHABITS the Mediterranean : said to be remarkably tenacious of life.

MAROON SPARUS.

Sparus Chromis. *S. fuscus, striatus, macula utrinque nigra ad pinnas ventrales, radio secundo elongato.*

Brown, striated Sparus, with a black spot on each side at the base of the ventral fins, of which the second ray is elongated.

Sparus Chromis. *Lin. Gmel.*

HEAD small : sides marked with longitudinal streaks of a lighter hue than the ground-colour. Native of the Mediterranean, where it is often observed in small shoals.

RHOMBOID SPARUS.

Sparus Rhomboides. *S. subrhombeus griseus, luteo longitudinaliter striatus, macula utrinque versus caput nigra.*

Subrhomboid grey Sparus, with yellow longitudinal streaks, and a black spot on each side towards the head.

S. rhomboides. Lin. Gmel.

SHAPE subrhomboid, and very deep: size of a Perch: colour cinereous, with yellow stripes: fins and tail yellow. Native of the American seas. If this species be the *Perca rhomboidalis* of Catesby there must be a mistake either in his figure, or in the arrangement of the species, since he represents it with the tail pretty deeply forked.

 RETICULATED SPARUS.

Sparus Reticulatus. *S. fuscus, corpore albo-reticulato.*

Brown Sparus, with the body reticulated with white.

Sparus capistratus. Lin. Gmel.

SHAPE oblong, resembling that of a Holibut: scales loosely imbricated, and each marked towards the end by a squarish white spot or bar, causing a reticular appearance on the body: in the upper jaw two large front-teeth, and in the lower four: dorsal fin almost the length of the back: native of the American seas.

GALILÆAN SPARUS.

Sparus Galilæus. *S. virescens, abdomine albido.*

Greenish Sparus, with whitish abdomen.

Sparus Galilæus. *Lin. Hasselq. it. 343.*

NATIVE of Palestine, inhabiting the lake Gene-
sareth, in which being very common it is supposed
to have been the principal species in the miracu-
lous draught of fishes recorded by St. Luke.

 ROCK SPARUS.

Sparus Rupestris. *S. griseus, fusco transversim fasciatus, pinna
dorsi ramentacea, antice macula fusca.*

Grey Sparus, with dusky transverse bands, and ramentose
dorsal fin, marked on the fore-part by a black spot.

Labrus rupestris. *Lin. Gmel. Lutianus rupestris. Bloch.*

NATIVE of the Northern seas, frequenting the
shores: size of a small Perch: from the eyes to
the mouth on each side three blue stripes.

PEACOCK SPARUS.

Sparus Pavo. *S. albidus, dorso subfusco, ocello utrinque nigro ad humeros et ad basin caudæ.*

Whitish Sparus, with brownish back, and an ocellated black spot on each side the shoulders and base of the tail.

Sparus saxatilis. *Lin. Gmel. Bloch. t. 309.*

LENGTH about twelve inches: shape somewhat like that of a Pike: from the eye strait along the gill-covers on each side a black line: dorsal, anal, and caudal fin marked with numerous round white spots: pectoral and ventral plain: the black spot on each side at the shoulders and tail bordered with white. Native of the South-American seas, and esteemed as a food.

 RADIATED SPARUS.

Sparus Radiatus. *S. olivaceo-fuscus, cæruleo-maculatus, subtus flavescens, oculis rubris, orbitis cæruleo-radiatis.*

Olive-brown Sparus, spotted with blue, beneath yellowish, with red eyes and blue-rayed orbits.

Sparus radiatus. *Lin. Turdus oculo radiato. Catesby.*

SIZE of a Carp: at the base of each scale a blue spot: fins yellow, with a narrow border of blue: tail brown at the base, and orange at the tip: beneath the breast a transverse orange band: native of the American seas.

LIVID SPARUS.

Sparus Lividus. *S. livens, gula marginibusque pinnarum cæruleis, pinna dorsali ramentacea.*

Livid-brown Sparus, with the fins bordered with blue, and the dorsal fin ramentose*.

Labrus livens. *Lin. Gmel.*

LENGTH about twelve inches: colour livid brown: lateral line at first curved, and afterwards strait. Native of the Mediterranean.

 VARIEGATED SPARUS.

Sparus Varius. *S. purpureo, viridi, cæruleo, nigroque varius.*

Sparus variegated with green, purple, black, and blue.

Sparus varius. *Lin. Gmel. Will. p. 306.*

A BEAUTIFUL species: teeth in the upper jaw strong and close-set: beneath the abdomen two purplish red spots: tail blue: native of the Mediterranean, and said to be excellent for the table.

* Furnished with small processes projecting beyond the membrane.

BLACK-FINNED SPARUS.

Sparus Melanopterus. *S. purpurascens, abdomine flavo-virente, oculis viridi-radiatis, pinnis nigris.*

Purplish Sparus, with yellow-green abdomen, green-rayed orbits, and black fins.

Labrus melapterus. *Bloch. t. 285.*

A BEAUTIFUL species: length about twelve inches: in each jaw two large front-teeth: pectoral fins pale. Native of Japan.

 GREEN-FINNED SPARUS.

Sparus Chloropterus. *S. viridis, abdomine subflavente, capite fusco cæruleo-lineato.*

Green Sparus, with yellowish abdomen, and brown head striped with blue.

Labrus chloropterus. *Bloch. t. 288.*

LENGTH about ten inches: scales rather large: two pretty large front-teeth in each jaw: fins green; the dorsal marked on the hind-part by small pale spots. Native of Japan.

ZONATED SPARUS.

Sparus Zonatus. *S. fuscus, fasciis transversis albidis, capite virescente.*

Brown Sparus, with transverse whitish bands, and greenish head.

Labrus fasciatus. *Bloch. t. 290.*

LENGTH about a foot: scales middle-sized: eyes red: dorsal, anal, and caudal fin blackish. Native of Japan.

PUNCTULATED SPARUS.

Sparus Punctulatus. *S. subfuscus, punctis numerosis cæruleis, abdomine albido.*

Brownish Sparus, with numerous blue specks, and whitish abdomen.

Perca punctulata. *Lin. Gmel. Bloch. t. 314.*

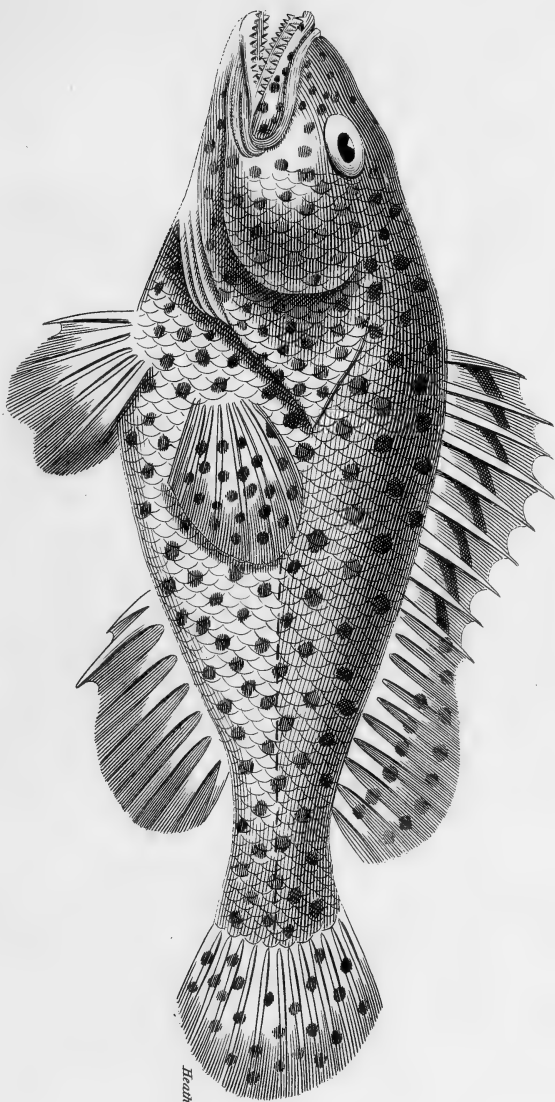
SIZE of a Perch: upper parts pale rufous-brown, lower parts white or silvery: the whole body thickly marked with small round blue spots: fins reddish: teeth rather small, and of equal size: native of the American seas.

SANGUINE SPARUS.

Sparus Cruentatus. *S. roseo-argenteus, sanguineo-punctatus,*
Silvery-rose-coloured Sparus, with blood-red specks.

Perca guttata. *Lin. Bloch. t. 312.*

SIZE of a common Perch: colour a beautiful deep rose-red, with a silvery cast on the sides and abdo-



SANGUINE SPARUS.

Heath sculp.



men, and the whole fish pretty thickly marked with small, round, deep blood-red spots: eyes yellow. Native of the American seas.

ATLANTIC SPARUS.

Sparus Atlanticus. *S. fusco-flavescens, punctis numerosis rubris.*

Yellow-brown Sparus, with numerous red specks.

Perca maculata. *Bloch. t. 313.*

Sparus Atlanticus. *Cepede. 4. p. 158.*

Var? *Catesb. Carol. 2. t. 14.*

COLOUR yellowish, with the back brownish, and abdomen pale: the whole fish thickly marked on all parts with small, round red spots, with dark centres: size of the two preceding species: native of the American seas.

Of this species a supposed variety is mentioned by Cepede, from a drawing by Plumier, and is of a brown or blackish colour, each of the red spots being marked in the middle by a deeper red. It is called by Plumier *Turdus alius niger, maculis purpureis oculatus*. This is probably the fish figured by Catesby under the name of the *Hind*.

BLACK-BANDED SPARUS.

Sparus Chrysomelanos. *S. luteus, fasciis novem transversis nigricantibus.*

Yellow Sparus, with nine transverse blackish bands.
Spare chrysomelane. *Cepede. 4. p. 53.*

DESCRIBED by Cepede from a drawing by Plumier: lower jaw longer than the upper: lips thick: eyes large: all the fins marbled with pale blue and flesh-colour: length four or five decimetres: native of the American seas.

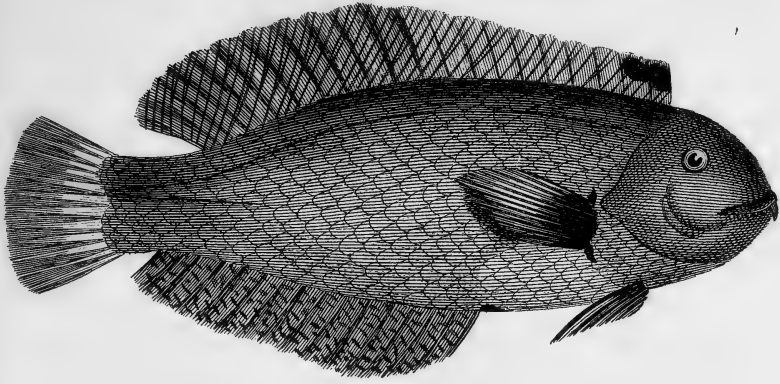
 HEMISPHERIC SPARUS.

Sparus Hemisphæricus. *S. capite antrorsum hemisphærico, linea laterali duplici, pinnis pectoralibus dorsalique macula nigra.*

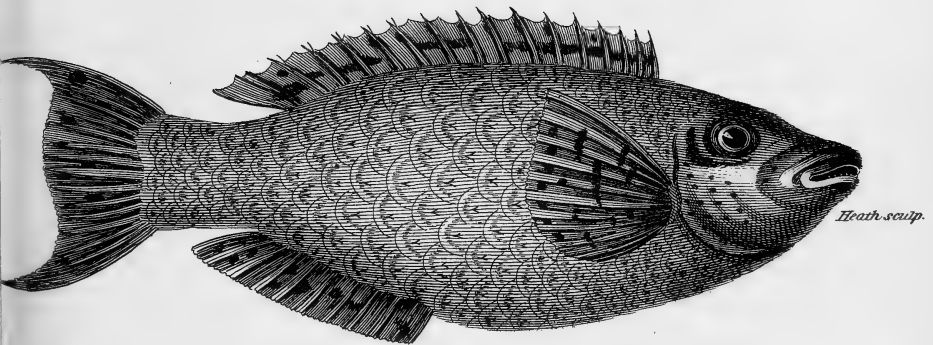
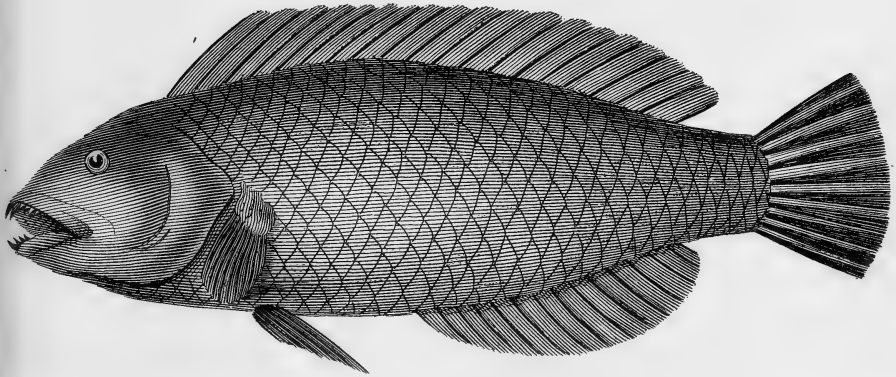
Sparus with the head hemispherical in front, double lateral line, and the dorsal and anal fin marked by a black spot.

S. Hemisphærium. Cepede. 4. p. 160.

MENTIONED by Cepede from Commerson: front-teeth in the upper jaw longer than the rest: lateral line double: at the base of the pectoral fins a black spot, and another on the fore part of the dorsal. Native of the Indian seas.



BRACHIATED SPARUS.



SPARUS AUREORUBER. *Cepede*



ACARA SPARUS.

Sparus Acara. *S. subargenteus, dorso subfusco, macula utrinque humerali & ad basin caudæ.*

Subargenteous Sparus, with brownish back, and a black spot on each side at the shoulders and at the base of the tail.

Sparus Acara. *Cepede. Perca bimaculata. Bloch.*

SIZE of a small Perch: habit rather broad or deep: scales of moderate size: teeth rather small, and equal: fins brown. Native of the Brazilian seas, and in esteem as an edible fish.

 NOCHUNDA SPARUS.

Sparus Nochunda. *S. argenteus, pinnis flavescens, linea laterali nigro-maculata.*

Silvery Sparus, with yellowish fins, and lateral line spotted with black.

Sparus Nochunda. *Cepede. Perca Brasiliensis. Bloch.*

SIZE of a gudgeon: shape rather slender: scales rather small than large: lateral line strait and marked from the gill-covers to the tail by seven equidistant, oval, black spots. Native of the Brazilian seas.

PANTHER SPARUS.

Sparus Pantherinus. *S. griseus, capite abdomineque nigro-punctatis.*

Grey Sparus, with the head and abdomen speckled with black.
Spare pantherin. *Cepede, 4. p. 53.*

LOWER jaw elevated against the upper, and furnished with four large teeth: head, gill-covers, and abdomen freckled with unequal, round, black spots: neck raised and rounded: native of the Indian seas: observed by Commerson.

 BRACHIATED SPARE.

Sparus Brachiatus. *S. pinnis ventralibus basi brachiatis.*

Sparus with the ventral fins brachiated at the base.

Spare brachion. *Cepede, 4. p. 160.*

MENTIONED by Cepede from the MSS. of Commerson, who observed it in the Indian seas: neither size nor colours specified: dorsal and anal fin very broad and long: the anal is also marked by small specks: six very large and flat teeth in front of the upper jaw, and eight in the lower: head and gill-covers without scales.

MEACO SPARUS.

Sparus Meaco. *S. fuscus, fasciis sex transversis albis, macula caudali fusca.*

Brown Sparus, with six transverse white bands, and brown caudal spot.

Sparus Meaco. *Cepede. Mullus fasciatus. Thunb. Japan.*

HEAD compressed: in each jaw two large front-teeth: scales large, oval, and striated: fins spotted with brown. Native of Japan.

 DESFONTAINE'S SPARUS.

Sparus Desfontainii. *S. pinna dorsali radiis viginti tribus, anali undecim, macula operculorum nigra.*

Sparus with twenty-three rays in the dorsal fin, eleven in the anal, and a black spot on the gill-covers.

Sparus Desfontainii. *Cepede. 4. p. 161.*

INHABITS the warm waters of the town of Cassa in Tunis: these waters, in the month of January, are about thirty degrees of Reaumur's thermometer above the freezing point: they are very pure, and the only waters used for drinking by the inhabitants of Cassa: the fish is also found in the cold and brackish waters surrounding the date-plantations at Tozzar.

NORWEGIAN SPARUS.

Sparus Noryegicus. *S. flavus, dorso violaceo, corpore fusco-maculato.*

Yellow Sparus, with violet-coloured back, and the body spotted with brown.

Lutianus Norvegicus. *Bloch. 256.*

HABIT of a Carp, but the head somewhat more oblong : scales rather large for the size of the fish : dorsal fin yellowish with violet clouds : the rest pale violet : at the base of the tail a round dusky spot : eyes blue : orbit radiated by tubular pores : the pavement of grinders is in this species situated so deep as not to be visible in the mouth, being rather seated at the entrance of the stomach.

 SURINAM SPARE.

Sparus Surinamensis. *S. subruber, fasciis semidecurrentibus nigris, abdomine subalbente, macula utrinque fusca.*

Reddish Sparus, with black semidecurrent bands, and whitish abdomen with a black spot on each side.

Lutianus Surinamensis. *Bloch. t. 253.*

SIZE and shape of a Perch : fins dusky : last band on the body rather broader than the rest : upper part of the tail tinged with red : eyes blue : scales middle-sized : dorsal and anal fin scaly at the base : native of Surinam.

TEN-SPINED SPARUS.

Sparus Decacanthus. *S. fusco-flavescens, albo longitudinaliter lineatus, pinna dorsali ramentacea, radiis decem spinosis.*

Yellowish-brown Sparus, with longitudinal white lines, and ramentose dorsal fin with ten spiny rays.

Labrus striatus. *Lin. Gmel. Lutianus decacanthus. Cope.*

NATIVE of the American seas.

SCINA SPARUS.

Sparus Scina. *S. virescens, nebulis albis flavisque, oculis viridibus.*

Greenish Sparus, with white and yellow clouds, and green eyes.

Labrus Scina. *Lin. Gmel. Forsk. Arab.*

FRONT-TEETH very large : pectoral fins yellowish, and not spotted : the rest obscurely yellow, spotted with blue : inhabits the Constantinople sea.

LAPINA SPARUS.

Sparus Lapina. *S. fuscus, subtus albicans, lateribus linea rubropunctata triplici, pinnis pectoralibus flavis, ventralibus cæruleis, cæteris violaceis.*

Brown Sparus, whitish beneath, with the sides marked by a triple red-spotted line, the pectoral fins yellow, the ventral blue, and the rest violet.

Labrus Lapina. *Lin. Gmel. Forsk. Arab.*

SHAPE ovate-oblong : head marked on the sides with red spots, and beneath the eyes with blue undulations : inhabits the seas about Constantinople.

RAMENTOSE SPARUS.

Sparus Ramentaceus. *S. fusco-virescens, capite pinnisque violaceo-maculatis, pinnae dorsalis ramentis spinis longioribus.*

Greenish-brown Sparus, with the head and fins spotted with violet, and the processes of the dorsal fin longer than the spines.

Labrus ramentaceus. *Lin. Gmel.*

SHAPE rather slender: scales large, and disposed in nine rows on each side: upper lip moveable: four large front-teeth in each jaw: native of the Arabian seas.

 OCELLATED SPARUS.

Sparus Ocellatus. *S. virescens, capite caeruleo-undulato, ocello postoculari coccineo.*

Greenish Sparus, with head undulated with blue, and a scarlet-ringed spot behind each eye.

Labrus ocellatus. *Lin. Gmel.*

SHAPE subovate: on the gill-covers a large oblong blue spot edged with red: tail linear: native of the Arabian seas.

GIBBOUS SPARUS.

Sparus Gibbus. *S. cæruleo aurantioque varius, pinna dorsali analique nigro-maculatis.*

Sparus with blue and orange variegations, and the dorsal and anal fin spotted with black.

Labrus gibbus. *Lin. Gmel.* Gibbous Wrasse. *Penn.*

DESCRIBED by Mr. Pennant in the British Zoology : shape and size of a Perch, but the back more arched : scales large : dorsal and anal fin sea-green spotted with black : pectoral yellow, crossed with red at the base : ventral and anal large, and of a pea-green colour : native of the British seas.

 OLIVACEOUS SPARUS.

Sparus Olivaceus. *S. olivaceo-viridis, subtus argenteus, operculis apice macula cærulea rubro marginata, macula caudali nigra.*

Olive-green Sparus, beneath silvery, with the gill-covers marked at the tip by a blue spot edged with red, and a black spot on each side the tail.

Sparus olivaceus. *Lin. Gmel.*

A VERY small species : front-teeth sharp : the middle ones remote : fins of the same colour with the body : tail rufous : native of the Mediterranean.

BRUNNICH'S SPARUS.

Sparus Brunnichii. *S. fuscus, lineis maculisque cæruleis.*

Brown Sparus, with blue lines and spots.

Labrus fuscus. *Lin. Gmel.*

A SMALL species of a compressed oblong shape : head sharp : mouth small : teeth sharp : dorsal and anal fin brown, spotted with blue : pectoral rufous with blue tips : ventral red : anal rufous spotted with blue : native of the Mediterranean.

 MARSEILLES SPARUS.

Sparus Massiliensis. *S. olivaceus, cæruleo longitudinaliter lineatus, macula nigra versus finem pinnae dorsalis.*

Olivaceous Sparus, lineated longitudinally with brown, and with a black spot towards the end of the dorsal fin.

Labrus unimaculatus. *Lin. Gmel.*

A SMALL species of about three inches in length : number of blue lines about ten ; a variety is mentioned by Brunnich, which is said to be reticulated as it were with dull red and silvery-green : native of the Mediterranean.

ADRIATIC SPARUS.

Sparus Adriaticus. *S. pallidus, fasciis quatuor transversis latis fuscis, pinna dorsali postice nigro-ocellata.*

Pale Sparus, with four broad transverse brown bands, and dorsal fin marked at the back part by an ocellate black spot.

Labrus Adriaticus. *Lin. Gmel.*

A SMALL species, about three inches in length: head marked by oblique fulvous stripes: teeth small: ventral and anal fin black, but the latter tipped with yellow. Native of the Mediterranean.

MAGNIFICENT SPARUS.

Sparus Magnus. *S. argenteus, fasciis octo transversis fuscis.*

Silvery Sparus, with eight transverse brown bands.

Perca nobilis. *Lin.*

COLOUR bright silver; banded as expressed in the specific character: spiny rays of the dorsal fin silvery: native of the American seas: extremely allied to the Chætodons.

POLYMNA SPARUS.

Sparus Polymna. *S. niger, fasciis tribus transversis albis.*

Black Sparus, with three transverse white bands.

Perca Polymna. *Lin.* Anthias Polymna. *Bloch. t. 216. f. 1. 3.*

HABIT broad: considerably allied to the Chætodons: length about four inches: scales of mode-

rate size : the middle band runs through part of the dorsal fin: native of the American seas. Bloch mentions a variety, with white fins and tail, edged with black.

PALPEBRAL SPARUS.

Sparus Palpebratus. *S. macula palpebrali fusca, linea laterali curva.*

Sparus with a brown spot on the brows, and curved lateral line.

Perca palpebrosa. *Lin. Gmel.*

A SMALL species : native of the American seas.

BLACK SPARUS.

Sparus Atrarius. *S. corpore nigro, pinnis albedo-maculatis.*

Black Sparus, with the fins spotted with white.

Perca Atraria. *Lin. Gmel.*

GILL-COVERS denticulated on the fore-part, and ciliated behind : lateral line strait : dorsal fin streaked with white lines.

GOLDEN-FINNED SPARUS.

Sparus Chrysopterus. *S. fuscus, pinnis inferioribus flavis fusco-maculatis.*

Brown Sparus, with the lower fins yellow spotted with brown.

Perca chrysoptera. *Lin. Gmel. Catesb. Car. 2. t. 2.*

BACK gibbous: upper mandible longer than the lower: ventral, anal, and caudal fins yellow spotted with brown: tail erroneously represented as forked in Catesby's plate.

 MEDITERRANEAN SPARUS.

Sparus Mediterraneus. *S. viridis, supra lineam lateralem striis longitudinalibus obscuris, infra cæruleis, pinnis fulvis.*

Green Sparus, marked above the lateral line with longitudinal dusky stripes, below it with blue ones, and with fulvous fins.

Perca Mediterranea. *Lin. Gmel.*

NATIVE of the Mediterranean.

 VITTATED SPARUS.

Sparus Vittatus. *S. lineis quinque transversis albis fuscisque.*

Sparus with five transverse equidistant brown and white linear bands.

Perca vittata. *Lin. Gmel.*

LENGTH about eight inches: teeth rather large: native of the American seas.

 SCRIBE SPARUS.

- Sparus Scriba. *S. griseus, capite scripto, corpore fasciis transversis fuscis, pinnis pectoralibus caudaque flavis.*
- Greyish Sparus, with the head marked by letter-shaped characters, the body banded transversely with brown, and the pectoral fins and tail yellow.
- Perca Scriba. *Lin. Gmel.*

 CHINESE SPARE.

- Sparus Sinensis. *S. flavescens, cauda ovali, maxilla inferiore brevior.*
- Yellowish Sparus, with even tail, and lower jaw shorter than the upper.
- Perca Chinensis. *Lin. Gmel.*

HABIT of a common Perch, but smaller: lateral line curved: dorsal fin extending from head to tail. Native of China.

 SPEAR SPARUS.

- Sparus Hasta. *S. flavescens, lineis longitudinalibus cæruleis, abdomine argenteo, pinnis pectoralibus ventralibus caudaque rubris.*
- Yellowish Sparus, with longitudinal blue lines, silvery abdomen, and red pectoral, ventral fins, and tail.
- Lutianus Hasta. *Bloch. t. 246. f. 1.*

SIZE and habit of a small Perch: dorsal fin pale, with two blackish stripes: scales of moderate size:

teeth rather small: second ray of the anal fin longer than the rest and very strong and sharp. Native of Japan.

SADDLED SPARUS.

Sparus Ehippium. *S. ruber, nebula magna dorsali nigra.*

Red Sparus, with a large black cloud on the back.

Lutianus Ehippium. *Bloch. t. 250. f. 2.*

LENGTH about five inches: habit broad or deep: scales middle sized: fins pale dusky grey: the dorsal and anal somewhat scaled at the base: orbits and plates of the gill-covers marked with striated denticulations: mouth small: teeth nearly equal. Native of the Indian seas.

BIDENT SPARUS.

Sparus Bidens. *S. roseus, abdomine argenteo, pinnis subcæruleis, maxilla superiore dentibus duobus.*

Rose-coloured Sparus, with silvery abdomen, blueish fins, and two teeth in the upper jaw.

Lutianus bidens. *Bloch. t. 251. f. 1.*

LENGTH about six inches: shape somewhat lengthened: at the base of the pectoral fin on each side a black spot: eyes yellow: scales rather large: an elegant species: native of the Northern parts of the Atlantic ocean.

MARKED SPARUS.

Sparus Notatus. *S. flavescens fusco maculatus, macula utrinque nigra ad basin caudæ.*

Yellowish Sparus, spotted with brown, and with a black spot on each side the base of the tail.

Lutianus notatus. *Bloch. t. 251. f. 2.*

LENGTH about five inches: scales of moderate size: orbit surrounded with tubular pores: dorsal and caudal fin striped with brown: native of the Indian seas.

 LINKIAN SPARUS.

Sparus Linkii. *S. violaceus, abdomine subargenteo, rostro subelongato, pinnis pectoralibus rotundatis.*

Violaceous Sparus, with subargenteous abdomen, subelongated snout, and rounded pectoral fins.

Lutianus Linkii. *Bloch. t. 252.*

LENGTH near a foot: scales rather large: eyes blue: lips doubled: teeth small: fins pale. Native region unknown: described by Bloch from the Linkian collection.

GREENISH-FINNED SPARUS.

Sparus Virescens. *S. subflavus, lineis longitudinalibus fuscis, pinnis virescentibus, dorsali ramentacea.*

Yellowish Sparus, with longitudinal brown lines and greenish fins, the dorsal ramentose.

Lutianus virescens. *Bloch. t. 254.*

LENGTH about eight inches : lips doubled : teeth small : fins streaked with brown : scales middle-sized : habit, as in many others of this genus, resembling that of the Labri.

 LONG-HEADED SPARUS.

Sparus Rostratus. *S. subviolaceo-flavescens, capite producto, linea laterali duplici, pinna dorsali ramentacea.*

Violaceo-flavescent Sparus, with lengthened head, double lateral line, and ramentose dorsal fin.

Lutianus rostratus. *Bloch. t. 254. f. 2.*

A SMALL species, scarce five inches in length : scales rather large than small : the second or lower lateral line is rather a dusky streak than a proper *linea lateralis* : eyes blue : native region unknown.

BIFASCIATED SPARUS.

Sparus Bifasciatus. *S. fuscus, fasciis duabus albis transversis, cauda utrinque alba.*

Brown Sparus, with two white transverse bands, and the tail white on each side.

Anthias bifasciatus. *Bloch.*

A SMALL species, with the habit of a Chætodon, and allied to the *Polymna*: scales small: the second band runs through the hind-part of the dorsal fin. Native of the Indian seas, and found about the coasts of Amboina.

 ARGUS SPARUS.

Sparus Argus. *S. argenteo-cærulescens, maculis numerosis, ocellaribus, fuscis.*

Silvery-blueish Anthias, with numerous ocellated brown spots.

Anthias Argus. *Bloch. t. 317.*

A MOST elegant species: length about a foot: colour silvery white, tinged with fine blue on the upper parts, and marked all over with pretty numerous annular spots of brown. Native country uncertain: figured by Bloch from a specimen in the Linkian collection at Leipzig.

TRANQUEBAR SPARUS.

Sparus Tranquebaricus. *S. griseo-flavescens, dorso fasciis transversis semidecurrentibus fuscis, pinnis rubris.*

Yellowish-grey Sparus, with the back marked by transverse semidecurrent bands, and red fins.

Anthias Johnii. *Bloch. t. 318.*

HABIT of the Gilthead Spare, but somewhat less deep : back marked by dusky longitudinal lines : scales middle-sized : fins red, except the fore-part of the dorsal, which is pale. Native of Tranquebar : communicated to Bloch by a Mr. John, a missionary in that country.

TORTOISE-SHELL SPARUS.

Sparus Testudineus. *S. fusco-flavescens, squamis magnis, oculis cæruleis.*

Yellowish-brown Sparus, with large scales, and blue eyes.

Anthias testudineus. *Bloch. t. 322.*

HABIT of a Carp : colour brown, with a strong suffusion of pale yellow on the sides and head : scales paler on the margin than on the middle : mouth moderate : teeth small : dorsal and anal fin pale at the fore-part and black at the hind-part, rest of the fins brown. Native of the Indian seas.

SEMIFASCIATED SPARUS.

Sparus Semifasciatus. *S. fulvus, fasciis semidecurrentibus subnigris, imo dorso macula rotundata nigerrima, pinnis rubris.*

Fulvous Sparus, with semidecurrent blackish bands, a deep-black round spot at the bottom of the back, and red fins.

Anthias Striatus. *Bloch. t. 324.*

SIZE and shape of a Carp: scales small: teeth rather small, and equal: eyes yellow: native of the American seas.

 TRILINEATED SPARUS.

Sparus Trilineatus. *S. subflavus corpore utrinque lineis tribus longitudinalibus maculatis fuscis, pinna dorsali nigro-maculata.*

Yellowish Sparus, with the body marked on each side by three longitudinal spotted brown lines, and dorsal fin spotted with black.

Anthias lineatus. *Bloch. t. 326. f. 1.*

A SMALL species, a few inches in length, with the habit of a Perch: scales middle-sized: fins tinged with red. Native of the Indian seas.

PATCHED SPARUS.

- Sparus Maculatus. *S. griseo-flavescens, supra nigro-varius.*
 Yellowish grey Sparus, variegated above with black.
 Anthias maculatus. *Bloch. t. 326.*

LENGTH about five inches: habit of a Perch: scales middle-sized: dorsal fin reddish at the tip: back crossed by two or three blackish bands and varied by several irregular spots. Native of the Indian seas.

ORIENTAL SPARUS.

- Sparus Orientalis. *S. fulvus, nigro-fusco varius.*
 Fulvous Sparus, variegated with blackish-brown.
 Anthias Orientalis. *Bloch. t. 326. f. 3.*

A SMALL species about four inches in length: head and fore-parts rather deep: mouth small: scales middle-sized: dorsal, anal fin, and tail varied with brown: eyes rather large: native of Japan.

CEPEDIAN SPARUS.

- Sparus Cepedianus. *S. albus, lineis utrinque longitudinalibus flavis, cauda nigra albo-marginata.*

White Sparus, with longitudinal yellow lines on each side, and black tail bordered with white.

- Lutian Blancor. *Cepede. 4. p. 240.*

SIZE rather small: native of the Indian seas: described by Cepede from Commerson.

PERCULINE SPARUS.

Sparus Percula. *S. aurantius, fasciis utrinque tribus transversis subcæruleis nigro-marginatis.*

Orange-coloured Sparus, marked on each side by three transverse blueish bands bordered with black.

Lutian Perchot. *Cepede. 4. p. 240.*

A VERY small species, observed by Commerson in the Indian seas: fins yellow, except the tail, which is coloured as mentioned in the specific character: scales of a lengthened shape near the ventral fins.

 SEALED SPARUS.

Sparus Sigillatus. *S. ruber, fascia utrinque longitudinali pallidior, ellipsi utrinque postoculari rubro-flava.*

Red Sparus, marked on each side by a longitudinal paler stripe, and a yellow-red ellipse behind each eye.

Lutian jaune-ellipse. *Cepede. 4. p. 241.*

SIZE nearly that of a Perch: near each eye an elliptic spot, red on the outside and yellow on the inside: dorsal and anal fin bright-red: pectoral and ventral pale-red: tail varied with brown, and on the hind part of the dorsal fin are a few blackish spots: beneath the throat a black line: on the gill-covers four or five deep-red spots: front-teeth rather small, standing separate, and behind them others of a smaller size. Observed by Commerson in the Indian seas.

CLIMBING SPARUS.

Sparus Scandens. *S. olivaceus, subtus flavescens, oculis aureis.*
Olive-green Sparus, with yellowish abdomen, and gold-coloured eyes.

Perca scandens. *Lin. Trans. 3. p. 62.*

LENGTH about a span; skin covered by a blackish mucus: dorsal fin occasionally sunk in a longitudinal fossule: it has seventeen spiny, and eight soft rays: the pectoral fins have twelve rays: the ventral six, the tail eighteen, of which ten are spiny, the rest soft.

This fish is remarkable for its power of climbing, which it performs by the assistance of the spines of its gill-covers, moving itself at pleasure up the stems of trees growing near the waters it frequents. In this situation it was observed in the month of November 1791 at Tranquebar, by Lieutenant Daldorff, who communicated its description to Sir Joseph Banks. It was seen ascending a fissure in the stem of the palm called *Borassus flabellifer*, growing near a pool of water, and was observed to move itself forwards by alternately applying the spiny sides of the gill-covers to the sides of the fissure, assisting itself at the same time by the spines on each side the tail, and had already ascended to the height of more than five feet above the water when it was first observed: it was found to be very tenacious of life, moving about on dry sand, many hours after it was taken. The spines of the gill-covers are considered by the natives as of a poisonous nature.

CHÆTODONTOID SPARUS.

Sparus Chætodontoides. S., *maculis magnis albis fusco-punctatis, labiis extensilibus carnosis.*

. Sparus, with large white spots speckled with brown, and with extensile, fleshy lips.

Lutian chætodonoide. *Cepede. 4. p. 290.*

THIS species, says Cepede, exhibits on its whole surface large white patches marked either by one or more small dark spots, and is described from an individual in the National Museum of France.

This fish seems in some degree allied to the *Chætodon plectorynchus*, before described by the same author.

 TWO-SPINED SPARUS.

Sparus Diacanthus. S., *corpore pinnisque fusco-punctulatis pinna anali biaculeata.*

. Sparus, freckled on the body and fins with dusky specks; the caudal fin biaculeated.

Lutian diacanthé. *Cepede. 4. p. 240.*

DESCRIBED by Cepede from a dried specimen in the Prince of Orange's museum: teeth rather large, curved, and distant; with smaller behind: dorsal fin with eleven spiny and twenty-two soft rays: anal with two spiny and seven soft: pectoral with nineteen rays: ventral with one spiny and five soft: tail with eighteen rays.

CAYENNE SPARUS.

Sparus Cayanensis.

Lutian Cayenne. *Cepede. 4. p. 196.*

No mention is made of the size or colour of this fish by the Count de Cepede: in the dorsal fin are eleven spiny and nineteen soft rays: in the ventral one spiny and five soft: in the anal two spiny and seven soft: teeth equal and close: lower jaw rather longer than the upper. Native of Cayenne.

 TRIDENT SPARE.

Sparus Tridens. *S. griseus, fasciis septem transversis cæruleis, cauda trifida.*

Greyish Sparus, with seven transverse blue bands, and trifold tail.

Lutianus tridens. *Cepede. 4. p. 246. Perca trifurca. Linn. Gmel.*

NATIVE of the American seas: head beautifully variegated: third and fourth rays of the dorsal fin spiny, and lengthened by a setaceous filament.

TRILOBATE SPARE.

Sparus Trilobatus. *S. operculis elongatis, cauda trilobata.*

Sparus with elongated gill-covers, and trilobate tail.

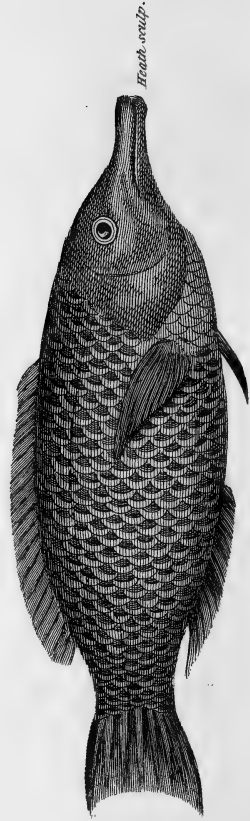
Spare trilobé. *Cepede, 4. p. 196.*

TEETH small and equal: neck rising: lateral line imperceptible: dorsal fin marked by several unequal and irregular streaks situated between the rays: native country unknown: described by Cepede from a specimen in the Paris Museum.

A GENERAL apology must here be made for any inaccuracies which in a tribe so numerous as the present may occasionally have crept into the descriptions; and it is by no means improbable that some of these fishes may in reality be rather varieties than species truly distinct. Some of those observed by Commerson, and described by the Count de Cepede seem scarcely distinguished with sufficient accuracy, and indeed the specific characters in general, though composed with every possible attention to precision, must be regarded with a proper degree of indulgence. It is necessary to observe that in the present arrangement are included the genera of *Lutianus* and *Anthias*, as well as some of the Blochian Labri.



BLUE GOMPHOSUS.



VARIEGATED GOMPHOSUS.

GOMPHOSUS. GOMPHOSUS.

Generic Character.

<i>Maxillæ</i> productæ in rostrum truncatum.		<i>Jaws</i> lengthened into a tubular snout.
<i>Dentes</i> minuti, anterioribus majoribus.		<i>Teeth</i> small: those in front larger.

THE genus *Gomphosus* instituted by the Count de Cèpede, from the MSS. of Commerson, contains two species, both natives of the Indian seas, and both agreeing in the remarkable form of the mouth, which consists of a tubular process, somewhat truncated at the tip.

BLUE GOMPHOSUS.

Gomphosus Cæruleus. *G. totus cæruleus.*

Gomphosus entirely of a blue colour.

Le Gomphose bleu. *Cèpede.* 3. p. 101.

THIS species is about the size of a tench, and entirely of a deep blue, with a blackish cast on the pectoral fins: the body is slightly arched above, and much more so beneath: the head is of moderate size, and is terminated by a lengthened snout, equal to about one seventh of the whole animal, and which bears some resemblance to that of a

bear : the upper jaw is somewhat extensile, and rather longer than the lower : each jaw is composed of a bone furnished with a single row of very small and close-set teeth, and the two front teeth in the upper jaw are larger than the rest : the inside of the mouth is smooth and blue : the head and gill-covers are plain : the rest of the body covered with large scales : the fins are of moderate size, and the tail crescent-shaped : the lateral line follows the flexure of the back as far as the dorsal fin, and from thence bending downwards runs strait to the tail : throughout its whole course it is marked with small streaks resembling Chinese characters. Native of the Indian seas.

VARIEGATED GOMPHOSUS.

Gomphosus Variegatus. *G. rubro flavo cœruleoque varius.*

Gomphose variegated with red, yellow, and blue.

Le Gomphose varié. *Cepede. 3. p. 104.*

THIS, which is smaller than the former, was observed by Commerson about the coasts of Otaheitee, and is a very beautiful fish, exhibiting an elegant mixture of red, yellow, and blue, in which the yellow predominates, though the blue is sufficient to shew its alliance to the preceding species.

LABRUS. LABRUS.

Generic Character.

<i>Dentes</i> robusti, subacuti :		<i>Teeth</i> strong and subacute :
molares interdum, ut in Sparis, conferti, convexi :		the grinders sometimes, as in the Spari, convex and
<i>labia</i> crassa, duplicata :		crowded : <i>lips</i> thick and
<i>pinnae dorsalis</i> radii in certis speciebus ramento elongati.		doubled : rays of the <i>dorsal fin</i> , in some species, elongated into soft processes.
<i>Opercula</i> mutica, squamosa.		<i>Gill-covers</i> unarmed and scaly.

With divided or forked tail.

HEPAT LABRUS.

Labrus Hepatus. *L. rufescens, lineis transversis nigris, maxilla inferiore longiore, pinna dorsali macula nigra.*

Rufescent Labrus, with transverse black lines, lower jaw longer than the upper, and dorsal fin marked by a black spot.

Labrus Hepatus. *Lin.*

SNOUT rather pointed : teeth small : palate furnished with a rough bone. Native of the Mediterranean, sometimes wandering into rivers.

EARED LABRUS.

Labrus Auritus. *L. griseus, subtus luteus, operculis pinniformibus fusco-striatis, macula rubro-nigra terminatis.*

Grey Labrus, yellow beneath, with pinniform gill-covers marked by a black-and-red spot.

Labrus auritus. *Lin.*

SIZE and habit of a small Perch: gill-covers produced at the back part into a membranaceous tip: native of the Indian and American seas.

OYENA LABRUS.

Labrus Oyena. *L. oblongus argenteus (interdum rubro interrupte vittatus) squamis latis, pinnis glaucis.*

Oblong silvery Labrus (sometimes marked by interrupted red bands), with broad scales, and glaucous fins.

Labrus Oyena. *Lin. Gmel.*

LENGTH about six inches: teeth small and numerous: lips protractile: scales striated: native of the Arabian seas.

FALCATED LABRUS.

Labrus Falcatus. *L. argenteus, pinna dorsali analique falcatis.*

Silvery Labrus, with falcated dorsal and anal fin.

Labrus falcatus. *Lin. Gmel.*

HABIT of a Carp, or rather of a Bream: the five first soft rays both of the dorsal and anal fin elongated, giving those fins a falcated appearance: the spiny rays of the dorsal fin seven in number: teeth small and sharp: native of the American seas.

OPERCULATED LABRUS.

Labrus Operculatus. *L. griseus, fasciis decem transversis maculaque operculari fuscis.*

Grey Labrus, with ten brown dusky transverse bands and spot on the gill-covers.

Labrus operculatus. *Lin. Gmel.*

IN the dorsal fin are thirteen spiny and seven soft rays : native of the Indian seas.

 CEYLONESE LABRUS.

Labrus Zeylanicus. *L. viridis, subtus purpurascens, capite cæruleo, operculis purpureo-variis.*

Green Labrus, purplish beneath, with blue head, and gill-covers variegated with purple.

Zeylon Wrasse. *Pennant Ind. Zool. t. 13. f. 3.*

A BEAUTIFUL species : length about eighteen inches : pectoral fins edged with blue, and marked in the middle by a purple spot : ventral fins blue : dorsal and anal blueish purple, with green edges : tail blue at the base, yellow in the middle, and striped on each side with red : native of Ceylon, where it is numbered among esculent fish.

RUFIOUS LABRUS.

Labrus Rufus. *L. totus fulvus, squamis magnis, labiis duplicatis, cauda lunata.*

Fulvous Labrus, with large scales, doubled lips, and lunated tail.

Labrus rufus. *Lin. Gmel. Hog-Fish. Catesb. 2. t. 11. f. 1.*

GROWS to the length of about two feet: front teeth both above and below considerably larger than the rest, and sharp-pointed: colour of the whole fish rufous or orange-tawny. Native of the American seas.

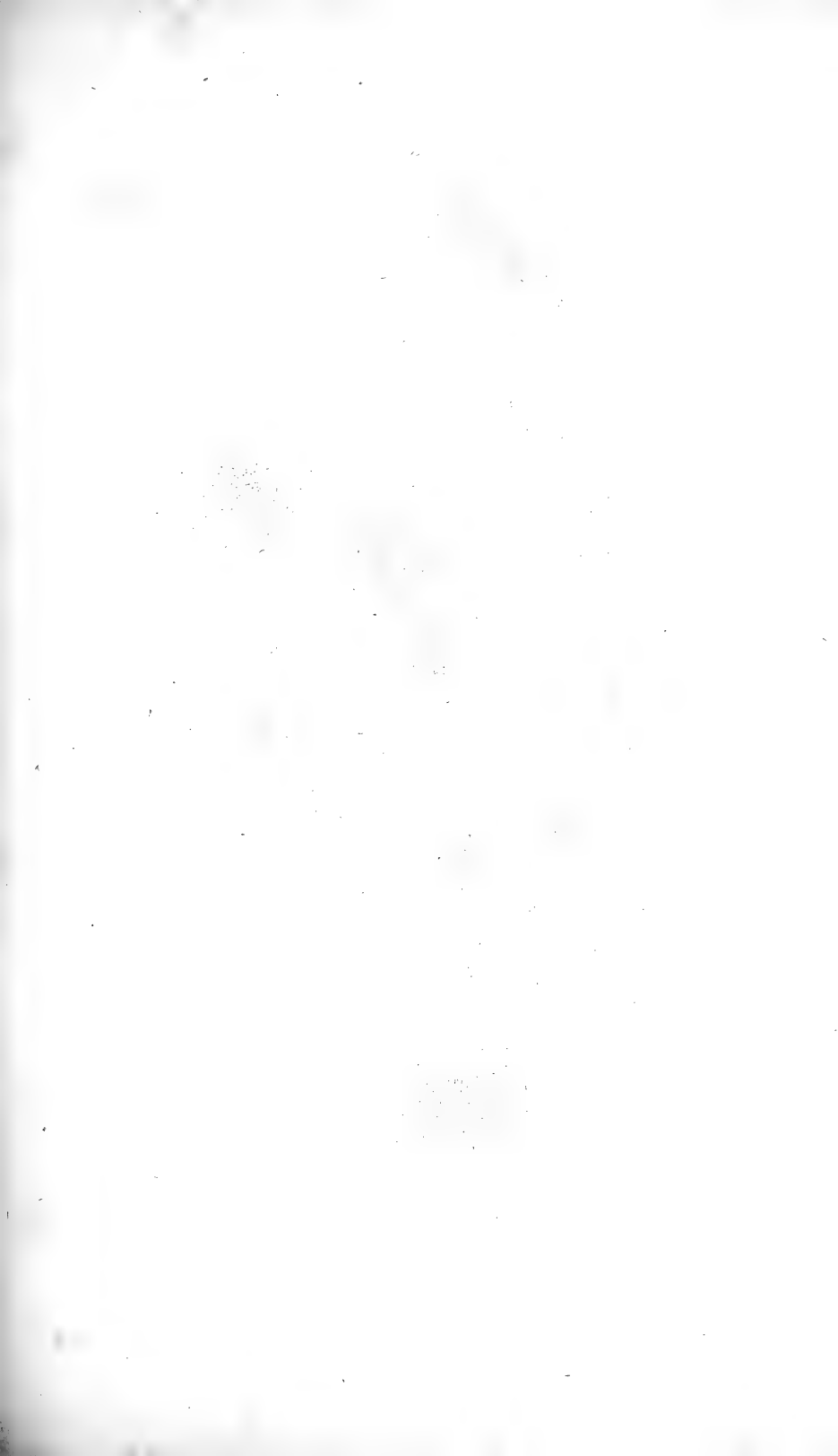
GREY LABRUS.

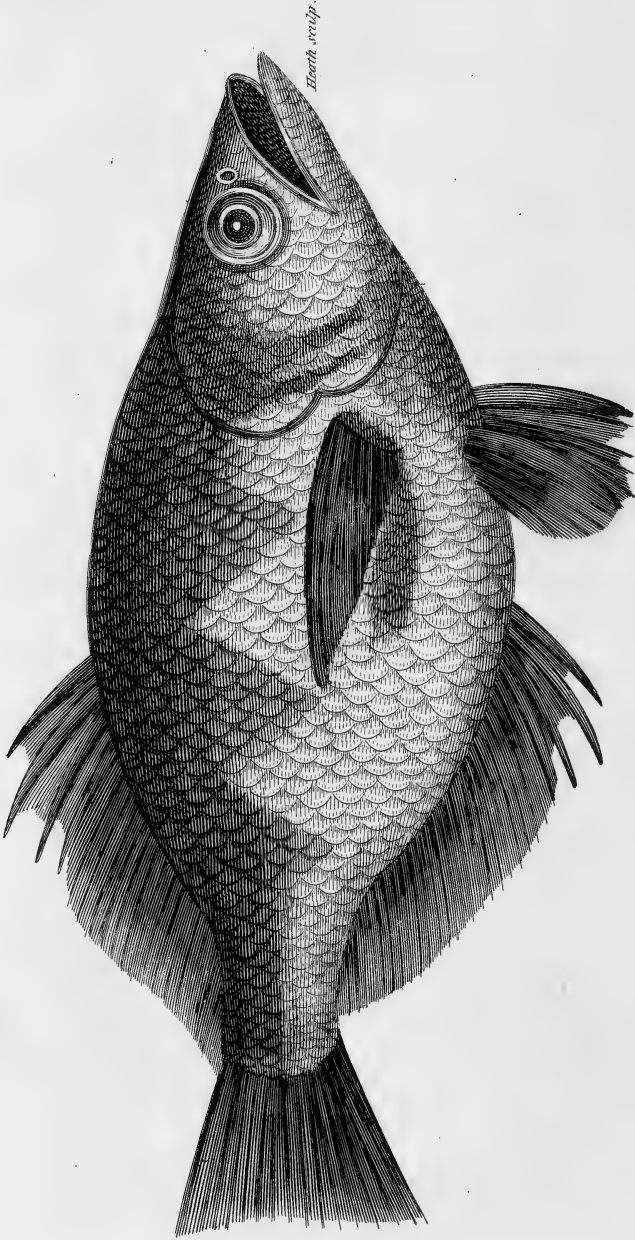
Labrus Griseus. *L. fusco-griseus, squamis magnis, dentibus primoribus majoribus, cauda lunata.*

Brownish-grey Labrus, with large scales, front teeth larger than the rest, and lunated tail.

Labrus griseus. *Lin. Gmel. p. 1283.*

LENGTH about fifteen inches: colour subferruginous or brownish grey: in each jaw two pretty strong and sharp-pointed front teeth: irides red: native of the American seas, and according to Catesby esteemed a pretty good food. Catesby, who has figured it under the name of the Mangrove Snapper, has (probably through oversight) represented it without pectoral fins.





JACULATOR LABRUS.

JACULATOR LABRUS.

Labrus Jaculator. *L. griseus flavo nebulosus, fasciis quinque transversis fuscis, maxilla inferiore longiore.*

Grey Labrus, clouded with yellow, with five transverse dusky bands, and lower jaw longer than the upper.

Labrus jaculatrix. *Phil. Trans. vol. 56. p. 187.*

Sciæna jaculatrix. *Lin. Gmel.*

SIZE of a Roach: mouth wide: scales middle-sized: first spines of the dorsal, anal, and ventral fin very strong: eyes rather large: nostrils placed pretty near the eyes: native of the Indian seas, preying on insects in the same manner as the *Chætodon Jaculator*.

 LUNAR LABRUS.

Labrus Lunaris. *L. griseus violaceo tinctus, labiis plicatis, pinna caudali medio truncata, dorsali analique linea purpurea.*

Grey Labrus, tinged with violet, with plaited lips, caudal fin truncated in the middle, and dorsal and anal fin marked by a purple line.

Labrus lunaris. *Lin. Gmel.*

NATIVE of the American and Indian seas.

LONG-SNOUTED LABRUS.

Labrus Longirostris. *L. griseus, lineis longitudinalibus strisque maculatis fuscis, rostro elongato.*

Grey Labrus, with brown longitudinal lines, spotted streaks, and elongated snout.

Labre long-museau. *Cepede. 3. p. 427.*

MENTIONED by Cepede from Commerson: native of the Indian seas.

 HOOPED LABRUS,

Labrus Doliatus. *L. griseus, fasciis viginti-tribus transversis fuscis.*

Grey Labrus, with twenty-three transverse brown bands.

Labre cerclé. *Cep. 3. p. 429.*

MENTIONED by Cepede from Commerson: native of the Indian seas.

 HIRSUTE LABRUS.

Labrus Hirsutus. *L. linea laterali spinosa.*

Labrus with lateral line roughened by spines.

Labre herissé. *Cepede.*

NATIVE of the Indian seas: observed by Commerson.

HALF-RED LABRUS.

Labrus Semiruber. *L. antice ruber, postice flavus.*

Red Labrus, with the hind part yellow.

Demi-rouge. *Cepede.*

MOUTH furnished with four teeth larger than the rest in the upper jaw: the sixteenth soft ray of the dorsal fin longer than the rest: dorsal and anal fin scaly at the base: native of the Indian and American seas: observed by Commerson.

 TRILOBATE LABRUS.

Labrus Trilobatus. *L. lividus, capite maculato, cauda triloba, basi squamosa.*

Livid Labrus, with spotted head, and trilobate tail scaly at the base.

Cheiline trilobé. *Cepede.*

SIZE of a Carp: general colour blueish brown, the head and gill-covers marked with red and yellow specks: pectoral fins yellow: ventral varied with red: tail furnished on each side with three or four nearly membranaceous appendages composed of a kind of lengthened floating scales: native of the African seas: observed by Commerson.

SCARE LABRUS.

Labrus Scarus. *L. albidus rubro mixtus, appendicibus transversis ad caudæ latera.*

Whitish Labrus mixed with red, with transverse appendages on each side the tail.

Labrus Scarus. *Lin. Gmel.* Cheiline Seare. *Cepede.*

LENGTH about twelve inches: scales large and thin: front teeth broad and blunt, resembling in some degree those of quadrupeds: native of the Mediterranean, swimming in shoals, and feeding principally on various kinds of fuci; in high esteem with the ancients as a food, and considered by the Romans as one of the principal delicacies of the table.

 CHAIN LABRUS.

Labrus Catenula. *L. albidus, capite fasciis duabus transversis nigris, corpore lineis utrinque octo fusco-maculatis.*

Whitish Labrus, with two black transverse bands on the head, and eight brown-spotted bands on each side the body.

L. Chapelet. *Cepede.*

COLOUR pale; in the upper jaw six large teeth: on the head two black transverse bands, and along each side the body eight rows of small dusky spots: back considerably arched. Native region uncertain: described by *Cepede.*

BLACK-BELLIED LABRUS.

Labrus Melagaster. *L. rufescens, pectore abdomine pinnisque nigricantibus.*

Rufescent Labrus, with the breast, abdomen, and fins black.

Labrus melagaster. *Bloch. t. 296.*

LENGTH about eight inches: scales large: pectoral and ventral fins lanceolate: dorsal ramentose on the fore part: mouth and teeth small: eyes yellow: native of the American seas.

 BIFASCIATED LABRUS.

Labrus Bifasciatus. *L. glaucus, capite rufo, corpore antice fasciis duabus transversis fuscis, cauda fusco arcuata.*

Glaucous Labrus, with rufous head, body marked by two transverse brown bands, and tail by a brown crescent.

Labrus bifasciatus. *Bloch. t. 383.*

LENGTH about ten inches: shape elegant: scales large: dorsal and anal fin tinged with pale red; tail deeply lunated. Native of the Indian seas.

FOUR-SPINED LABRUS.

Labrus albidus, corpore utrinque macularum subrotundarum fuscarum seriebus quatuor.

Whitish Labrus, marked on each side with four rows of roundish brown spots.

Le tetracanthé. *Cepede.*

SIZE not mentioned : tail freckled with black points : dorsal fin furnished with four spiny and twenty-one soft rays : native of the Indian seas ? mentioned by *Cepede.*

 DEMIDISC LABRUS.

Labrus Semidiscus. L. pallidus, fasciis novendecim transversis nigris, cauda lunula terminali pallida.

Pale Labrus, with nineteen transverse black bands, and tail marked by a pale terminal crescent.

Le demidisque. *Cepede.*

MENTIONED by *Cepede* from *Commerson* : native of the Indian seas.

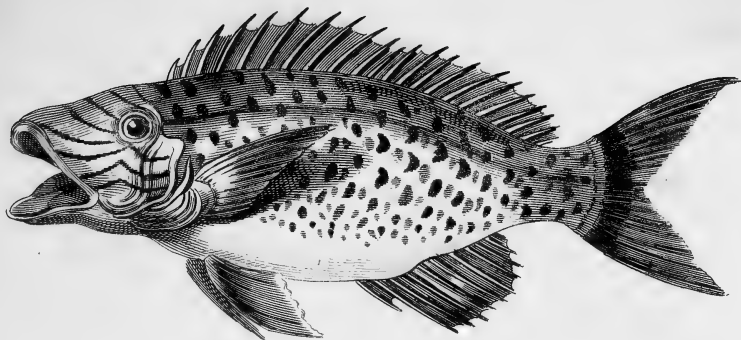
 FORKED LABRUS.

Labrus Furcatus. L. maxilla inferiore longiore, radio ultimo pinnæ dorsalis analisque elongato, cauda longa forficata.

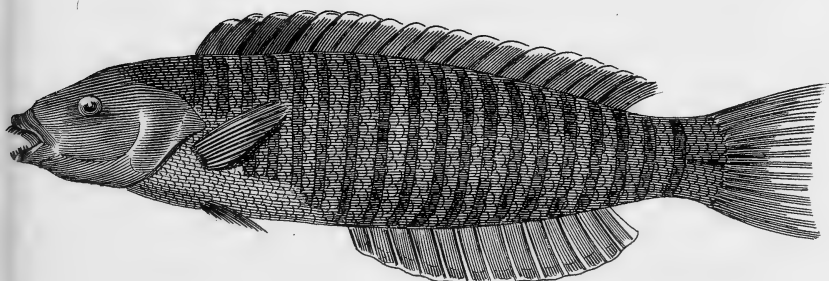
Labrus with the lower jaw longer than the upper, the last ray of the dorsal and anal fin elongated, and long forked tail.

L. fourché. *Cepede.*

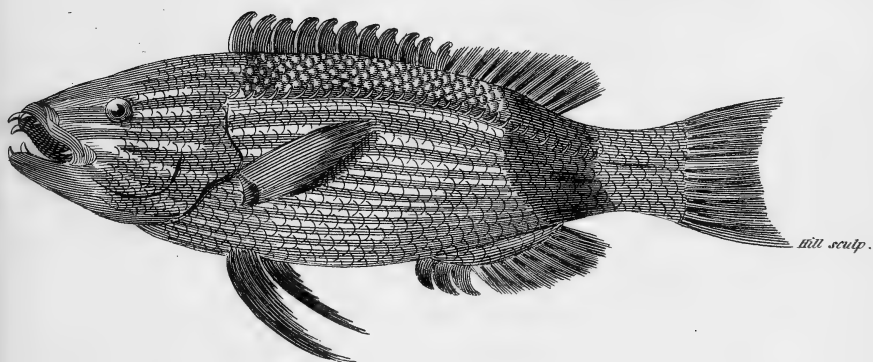
NATIVE of the Indian seas : observed by *Commerson.*



PLUMIER'S LABRUS.



DEMIDISC LABRUS.



HIRSUTE LABRUS.



SIX-BANDED LABRUS.

Labrus Sexfasciatus. *L. ore parvo, corpore fasciis sex transversis fuscis, cauda furcata.*

Labrus with small mouth, body marked by six transverse bands, and forked tail.

L. six-bandes. *Cepede.*

SNOUT lengthened: mouth small: lower jaw longer than the upper: six transverse bands across the body: native of the Indian seas: observed by Commerson.

BELLIED LABRUS.

Labrus Macrogaster. *L. corpore fasciis sex transversis, abdomine descendente, cauda furcata.*

L. with six transverse bands on the body, descending abdomen, and forked tail.

L. macrogastere. *Cepede.*

NATIVE of the Indian seas: observed by Commerson.

FILAMENTOUS LABRUS.

Labrus Filamentosus. *L. dorso fasciis quinque transversis, pinne dorsalis radiis quindecim spinosis ramentaceis.*

Labrus with five transverse dorsal bands, and fifteen spiny rays of the dorsal fin ramentose.

L. filamenteux. *Cepede.*

NATIVE of the Indian seas: observed by Commerson.

ANGULAR LABRUS.

Labrus, corpore utrinque lineis fusco-punctatis, operculis angulosis, labiis tumidis, pinna dorsali postice dilatata.

. . . . Labrus, marked on each side by brown-spotted lines, with tumid lips, angular gill-covers, and dorsal fin dilated behind.

L. anguleux. *Cepede.*

NATIVE of the Indian seas: observed by **Com-
merson.**

 EIGHT-STRIPED LABRUS.

Labrus Octo-vittatus. *L. corpore fasciis utrinque quatuor subobliquis fuscis, dentibus superioribus majoribus.*

Labrus with the body marked on each side by five suboblique brown bands, and the upper teeth largest.

L. Huit-raies. *Cepede.*

NATIVE of the Indian seas: observed by **Com-
merson.**

 PUNCTULATED LABRUS.

Labrus Punctulatus. *L. , undique fusco punctulatus, ore magno, dentibus elongatis, maxilla inferiore longiore.*

. Labrus, spotted on all parts with brown points, with wide mouth, elongated teeth, and lower jaw longer than the upper.

L. moucheté. *Cepede.*

NATIVE of the Indian seas: observed by **Com-
merson.**

COMMERSIONIAN LABRUS.

Labrus , *supra fusco-punctatus, dentibus fere æqualibus.*
 Labrus, spotted above with brown, and with nearly
 equal teeth.

L. Commersonien. *Cepede.*

UPPER parts marked with small round equal-sized black spots: teeth of both jaws nearly equal: in the dorsal fin nine spiny and sixteen soft rays: in the anal one spiny and seventeen soft: native of the Indian seas: observed by Commerson.

 SMOOTH LABRUS.

Labrus Lævis. *L. squamis minimis, dentibus magnis curvis, maxilla inferiore longiore.*

Labrus with very small scales, large curved teeth, and lower jaw longer than the upper.

L. lisse. *Cepede.*

BODY covered with scales so small as to be very difficultly distinguished: lower jaw longer than the upper: teeth large, crooked, and of equal size: tail slightly lunated. Native of the Indian seas: observed by Commerson.

LARGE-FINNED LABRUS.

Labrus Macropterus. *L. , pinna dorsali analique magnis ramentaceis.*

Labrus with large, ramentaceous dorsal and anal fin.

L. macroptere. Cope.

TAIL slightly lunated : behind the gill-covers, on each side, a round black spot. Native of the Indian seas : observed by Commerson.

 FIFTEEN-SPINED LABRUS.

Labrus Quindecim-aculeatus. *L. , corpore supra fasciis sex transversis fuscis, pinna dorsali radiis quindecim aculeatis.*

Labrus marked above by six transverse brown bands, and with fifteen spiny rays in the dorsal fin.

L. Quinze-epines. Cope.

UPPER jaw longer than the lower : teeth small and equal : six transverse bands over the neck and back.

 GREAT-HEADED LABRUS.

Labrus Macrocephalus. *L. capite grandi, dentibus distinctis, pinnis pectoralibus trapeziformibus.*

Labrus with large head, distinct teeth, and trapeziform pectoral fins.

Le Macrocephale. Cope. 3. p. 432.

HEAD large and greatly arched upwards from the mouth into the curvature of the back : lower

jaw rather longer than the upper : teeth curved, equal, and distant : pectoral fins trapeziform : native of the Indian seas : observed by Commer-
son.

PLUMIER'S LABRUS.

Labrus Plumieri. *L. caruleo luteoque maculatus, pinnis luteis.*

Labrus spotted with blue and yellow, with yellow fins.

L. Plumerien. *Cepede. 3. p. 432.*

MENTIONED by Cepede from a drawing by Plumier : native of the American seas.

GOUAN'S LABRUS.

Labrus Gouanii. *L. . . . , linea laterali inconspicua, appendice thoracica subacuta.*

. . . . Labrus, with inconspicuous lateral line, and subacute thoracic appendage.

L. Gouan. *Cepede. 3. p. 433.*

NINE-SPINED LABRUS.

Labrus Enneacanthus. *L. , squamis magnis, corpore fasciis sex transversis, cauda duabus.*

. Labrus, with large scales, six transverse bands on the body, and two on the tail.

L. enneacantho. *Cepede.*

IN front of each jaw four large curved teeth : lateral line interrupted : nine sharp, and ten soft

rays in the dorsal fin: native region unknown: mentioned by Cope from a specimen in the Prince of Orange's collection.

RED-LINED LABRUS.

L. subfuscus, lineis utrinque duodecim longitudinalibus rubris, macula ocellata in pinna dorsali.

Brownish Labrus, with twelve longitudinal red lines on each side, and an ocellate spot on the dorsal fin.

L. rouge-raies. Cope.

BROAD-STRIPED LABRUS.

Labrus Latovittatus. *L. subfuscus? vitta utrinque longitudinali lata.*

Brownish? Labrus, marked on each side by a broad longitudinal stripe.

L. large-raie. Cope.

NATIVE of the Indian seas: observed by Comerson.

UNDULATED LABRUS.

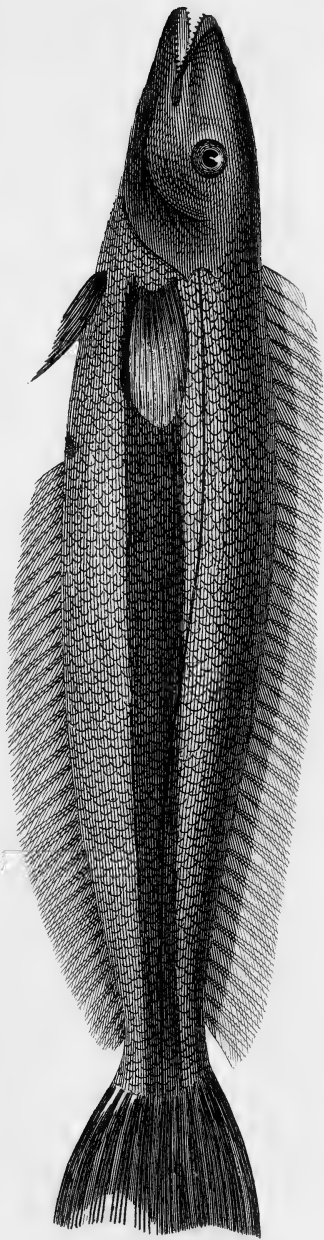
Labrus Undulatus. *L. viridis, lineis flavescens transversim undulatus, abdomine capiteque flavis viridi-striatis.*

Green Labrus undulated with transverse yellow lines, with the head and abdomen yellow striped with green.

Labrus viridis. *Bloch. t. 282.*

LENGTH about twelve inches: habit rather slender: colour deep green, scales large, and edged

BROAD - STRIPPED LABRYS .

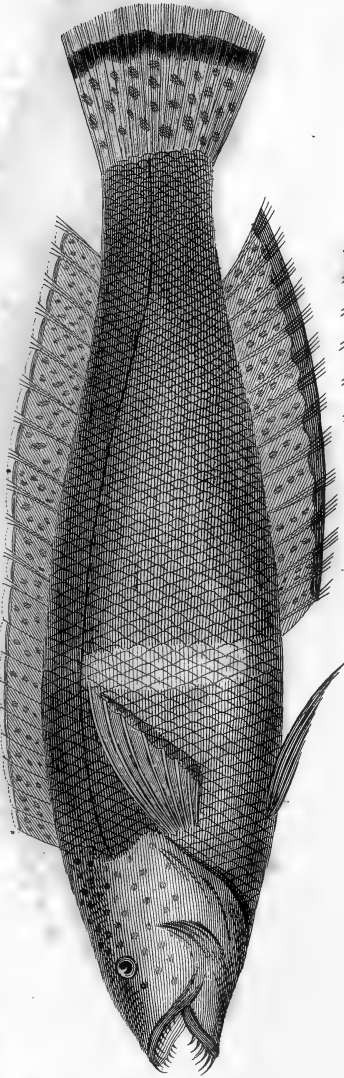


Broad-sulp.

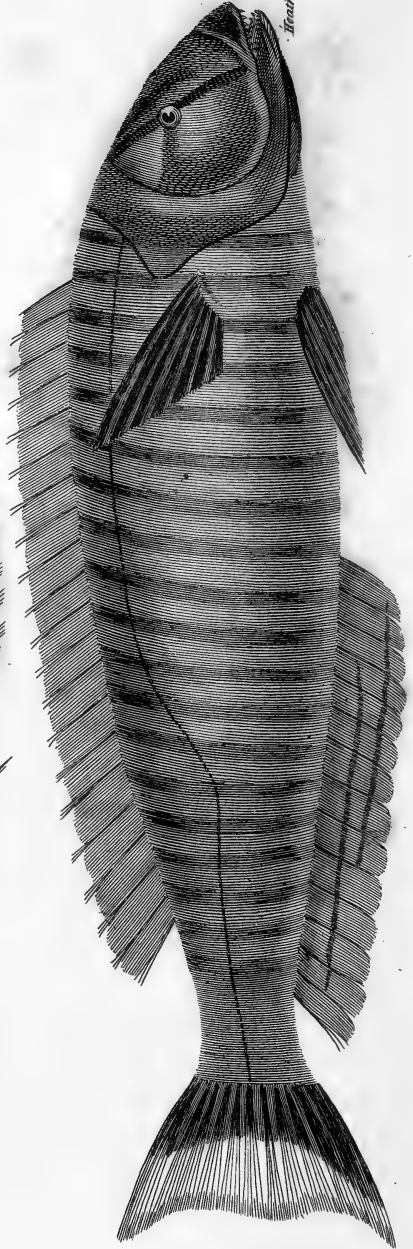
TABLE DEUX - CROISSANT *Capde.*



LABRE CEINTURE. *Cepede*



Head sculp.



ANNULATED LABRUS.

with yellow; so as to form numerous obliquely transverse undulations over the whole body: head pale yellow, and marked on each side by green stripes, one or two of which are continued down the fore part of the abdomen: dorsal and anal fin yellow, edged with green: tail obscurely trilobate, with long forks. Native of Japan.

ANNULATED LABRUS.

Labrus Annulatus. *L., squamis minutis, fasciis utrinque novendecim fuscis, cauda subtriloba.*

. Labrus, with minute scales, subtrilobate tail, and body surrounded by nineteen dusky bands.

L. annelé. Cope.

NATIVE of the Indian seas: observed by Com-
merson.

BRASILIAN LABRUS.

Labrus Brasiliensis. *L. flavus, dorso lunulis cæruleis, pinna dorsali analique cæruleo striatis.*

Yellow Labrus, with the back marked by blue crescents, and the dorsal and anal fin with blue stripes.

Labrus Brasiliensis. *Bloch. t. 280.*

LENGTH about twelve inches: habit that of a tench: colour beautiful yellow, the scales on the back being edged with blue, thus giving the appearance of numerous blue crescents on that part: pectoral, ventral fins, and tail blue: the latter

slightly trilobate : dorsal and anal fin yellow, with two blue stripes across the whole length of each : native of Brasil.

With strait or rounded tails.

PEACOCK LABRUS.

Labrus Pavo. *L. viridi, cæruleo, rubro, flavoque varius.*

Labrus variegated with green, blue, red, and yellow.

Labrus Pavo. *Lin. Gmel. Pavo. Salvian. Turdus perbellus dictus. Will. p. 322. t. X. 3.*

LENGTH about twelve inches : body and tail green mixed with yellow, and beset, as well as the gill-covers, with red and blue spots : a large brown spot near each pectoral fin, and a similar one on each side the tail. Native of the Mediterranean, as well as of the Indian seas.

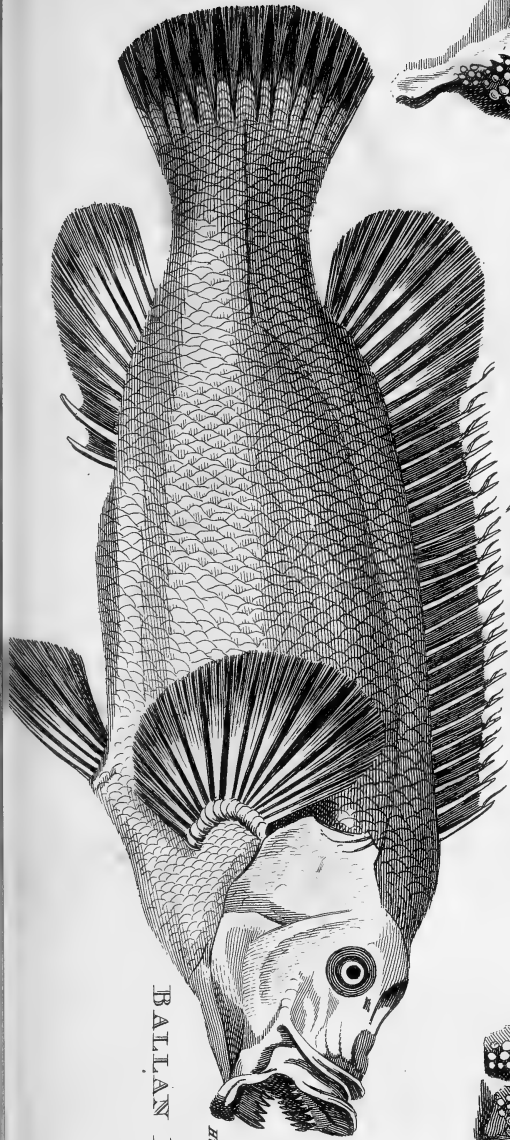
 BALLAN LABRUS.

Labrus Ballanus. *L. flavus, fulvo-maculatus, labiis reflexis, pinna dorsali ramentacea.*

Yellow Labrus, with fulvous spots, reflex lips, and ramentose dorsal fin.

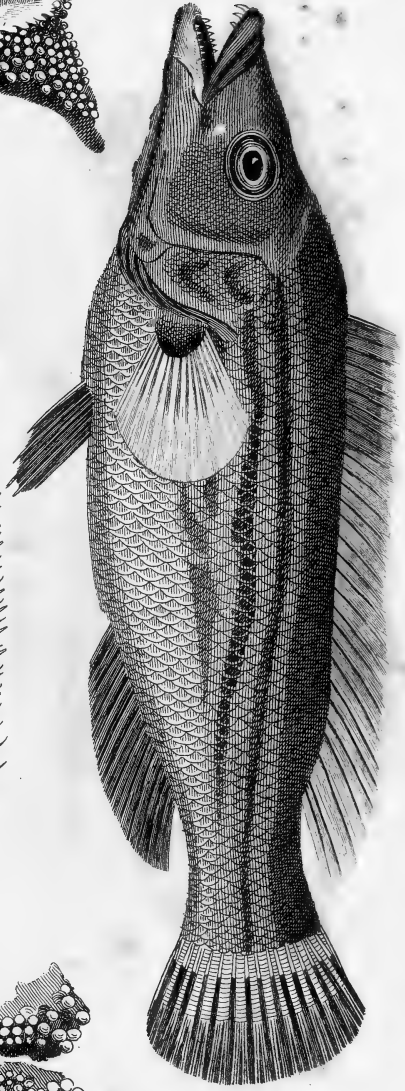
Ballan Wrasse. *Penn. Brit. Zool.*

THE weight of this species, according to Mr. Pennant, is about five pounds : form rather broad : between the dorsal fin and tail a considerable depression : above the nose a deep furrow ; and on



BAITIAN LABRUS.

Hill sculp.

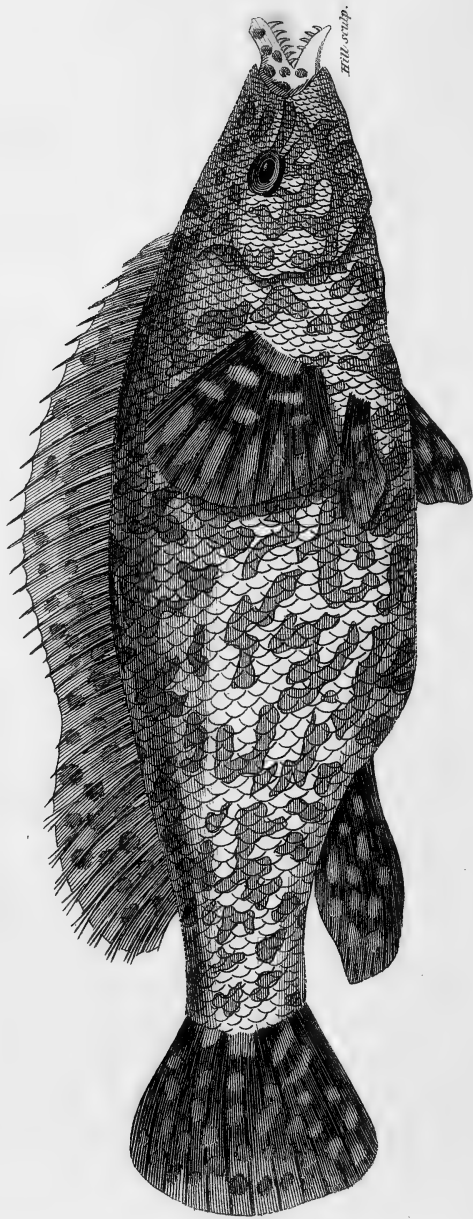


STRIPED LABRUS.









ANCIENT LABRUS . variety.?

the gill-covers a radiated depression : the dorsal fin has twenty spiny, and ten soft rays : the pectoral fourteen rays : the ventral six, of which the first is short and spiny : the anal twelve, of which the three first are spiny : the tail is marked between each ray with a row of scales reaching about a third part of the tail : the general colour of the fish is yellow, spotted and marked with orange. This species, according to Mr. Pennant, appears annually in great shoals off Filey bridge near Scarborough.

 ANCIENT LABRUS.

Labrus Tinca. *L. rubens* (sæpe cæruleo, rubro, flavoque varius),
pinna dorsali ramentacea, labiis reflexis.

Reddish Labrus (often varied with blue, red, and yellow), with
ramentaceous dorsal fin, and reflex lips.

Labrus Tinca. *Lin.* Turdus vulgarissimus. *Will. p.* 319.
Ancient Wrasse. *Penn. Brit. Zool.*

SIZE and habit of a Carp or rather of a Tench : scales large : nose prominent : lips large, doubled, fleshy, reflex, and retractile : eyes red : teeth disposed in two rows, the first being conic, the second very minute, and as if designed for supporters to the rest : in the throat three tuberculated bones, two above, and one below : these serve to comminute the testaceous food on which the animal chiefly lives : general colour red, more or less tinged either with orange or brown, but sometimes elegantly varied with blue, red, and yellow : pectoral fins large and rounded : native of the European seas, and usually found in deep waters about rocky coasts.

VAR. ?

THE variety described in the eleventh volume of the Naturalist's Miscellany was of a whitish colour, with a dusky blueish tinge on the back: the whole body variegated with irregular orange-red spots and streaks, those about the gill-covers and abdomen flexuous: all the fins red; spotted and streaked with blue.

 VARYING LABRUS.

Labrus Turdus. *L. viridis, albo, luteo, vel rubro variatus.*

Green Labrus, with white, yellow, or red variegations.

Labrus Turdus. *Lin. Gmel.* Turdus viridis major. *Will. p.*
322. ?

LENGTH about ten or twelve inches: front teeth larger than the rest: general colour yellowish green, often varied with white or whitish spots and streaks; and sometimes with orange or red, with the abdomen silvery. It is said to admit of three principal varieties, viz. 1. yellow, with white spots, accompanied by some black ones above, and some red streaks on the sides, the abdomen silvery, streaked with red, and the fins red, spotted with white: 2. green, with the pectoral fins yellow, and the ventral blueish: 3. green, above, with gold-coloured spots about the mouth, and the abdomen yellow, with irregular white spots bordered with red; the lateral line being marked by a row of white spots. Native of the Mediterranean.

GREEN LABRUS.

Labrus Viridis. *L. viridis, subtus flavescens, corpore utrinque fascia longitudinali cærulea.*

Green Labrus, yellowish beneath, with a longitudinal blue stripe on each side the body.

Labrus viridis. *Lin. Gmel. L. Psittacus. Cepede.*

Turdus viridis, seu decimus Rondeletii. *Will. p. 320. ?*

NATIVE of the Mediterranean: said to vary occasionally in its colours.

 STRIPED LABRUS.

Labrus variegatus. *L. ruber, striis utrinque longitudinalibus quatuor olivaceis, totidemque cæruleis.*

Red Labrus, longitudinally marked on each side with four olive and four blue stripes.

Labrus variegatus. *Lin. Gmel. Striped Wrasse. Penn. Brit. Zool.*

GENERAL shape resembling the rest of the oblong Labri: length about ten inches: beginning of the back a little arched: lips large, double, and reflex: back and abdomen red: sides marked with four parallel olive-green, and as many bright-blue stripes: at the base of the pectoral fins a dark-olive spot: dorsal fin marked at the beginning with a broad band of rich blue; the middle part white, the rest red: tail blue at the upper, and yellow at the lower half. Native of the European seas; the specimen described in the British Zoology was taken off the *Sherry Isles*, on the coast of *Anglesea*.

BIMACULATED LABRUS.

Labrus Bimaculatus. *L. griseus, macula utrinque media rotundata fusca, alteraque ad caudam.*

Grey Labrus, marked on each side by a spot on the middle of the body, and a second near the tail.

Labrus bimaculatus. *Lin. Gmel. Sciæna, &c. Lin. Mus. Ad. Frid. p. 66. Bimaculated Wrasse. Penn. Brit. Zool.*

BODY pretty deep, and of a light colour, with two brown spots on each side, as mentioned in the specific character. Native of the European seas: found about the coasts of Cornwall.

 TRIMACULATED LABRUS.

Labrus Trimaculatus. *L. ruber, squamis magnis, maculis tribus nigris ad finem dorsi.*

Red Labrus, with large scales, and three black spots towards the end of the back.

Labrus trimaculatus. *Lin. Gmel. Labrus carneus. Bloch. t. 289.*

Labrus ruber. *Ascan. No. 2. t. 13. Trimaculated Wrasse. Penn. Brit. Zool.*

SHAPE oblong: length about ten inches: teeth rather slender: fore-teeth much longer than the rest: colour rose-red: scales large: fins, except the pectoral and ventral, edged with blue. Native of the European seas: that described by Mr. Pennant taken off the coast of Anglesea.

COMBER LABRUS.

Labrus Comber. *L. gracilis miniatus, subtus flavus, fascia utrinque longitudinali argentea.*

Slender red Labrus, yellow beneath, with a longitudinal silvery streak on each side.

Comber Wrasse. *Penn. Brit. Zool.*

BACK, fins, and tail red ; belly yellow, and on each side the body, beneath the lateral line, a silvery streak from gills to tail. Native of the British seas: observed by Mr. Jago about the coasts of Cornwall, and received by Mr. Pennant from the same parts.

 COOK LABRUS.

Labrus Coquus. *L. gracilis purpureus et obscure cæruleus, abdomine flavo.*

Slender Labrus of a purple and dark-blue colour with yellow abdomen.

Labrus Coquus. *Lin. Gmel.* Cook Wrasse. *Penn. Brit. Zool.*

SHAPE similar to that of the Comber: back purple and dark-blue: belly yellow: inhabits the coasts of Cornwall.

CORNUBIAN LABRUS.

Labrus Cornubicus. *L. rubens, pinnis flavis, radiis pinnae dorsalis nigris, maculae utrinque nigra ad caudam.*

Reddish Labrus, with yellow fins, the rays of the dorsal fin black, and a black spot on each side near the tail.

Labrus Cornubicus. *Lin. Gmel.* Gold-Finny. *Penn. Brit. Zool.*

ALLIED in habit to the *L. Tinca*, being similar in the form of the body, teeth, lips, and fins, but is said never to exceed a palm in length: near the tail a black spot, and the first rays of the dorsal fin tinged with black: mentioned by Mr. Pennant from Mr. Jago, who observed it about the coast of Cornwall: the colours are not particularly specified, but from its being compared to the *L. Tinca* we may suppose them nearly the same, and from the name *Gold-finny* it should seem that the fins are yellow.

 LEOPARD LABRUS.

Labrus Leopardus. *L. fusco-punctatus, squamis inconspicuis, linea nigra ab oculis super opercula.*

. Labrus, speckled with brown, with inconspicuous scales, and a dark line from the eyes over the gill-covers.

L. Leopardus. Cepede.

HEAD, body, dorsal, and anal fin, and tail marked with dark spots composed of smaller ones: tail marked by a deep-black band: two teeth larger than the rest in front of each jaw. Native of the Indian seas: observed by Commerson.

MARGINAL LABRUS.

Labrus Marginalis. *L. fuscus, pinna dorsali analique rufo marginatis.*

Brown Labrus, with the dorsal and anal fin bordered with rufous : native of the Indian seas.

 OCELLATE LABRUS.

Labrus Ocellaris. *L. pinna dorsali ramentacea, ocello in medio ad basin caudæ.*

Labrus with the dorsal fin ramentose, and marked by an ocellate spot near the base of the tail.

L. ocellaris. Lin. Gmel.

 BLACK-EYED LABRUS.

Labrus Melops. *L. pinna dorsali ramentacea anique variegata, lunula fusca pone oculos. Lin. Gmel.*

Labrus with the ramentose dorsal fin and tail variegated, and a dusky crescent behind the eyes.

DESCRIBED by Linnæus in the second part of the *Mus. Ad. Frid.* Native of the European seas.

NILOTIC LABRUS.

Labrus Niloticus. *L. albidus, pinna dorsali anali caudalique nebulatis.*

Whitish Labrus, with the dorsal, anal, and caudal fins clouded.

Labrus Niloticus. *Lin. Gmel.*

DESCRIBED by Linnæus in the second part of the *M. A. F.* Native of the Nile.

BROWED LABRUS.

Labrus Luscus. *L. flavescens, pinnis luteis, palpebra superiore nigra.*

Yellowish Labrus, with deep-yellow fins, and black upper eye-lids.

L. luscus. Lin. Gmel.

MENTIONED by Linnæus in the second part of the *M. A. F.* Native regions unknown.

CINEREOUS LABRUS.

Labrus Cinereus. *L. griseus, obscurius punctatus, pinnis rubris, macula ad basin caudæ nigra.*

Grey Labrus, with dusky specks, red fins, and black spot at the base of the tail.

L. griseus. Lin. Gmel. p. 1296.

A SMALL species: length about three inches: shape oblong and compressed: eyes green: cheeks marked by a few blue lines. Native of the Mediterranean.

MIXED LABRUS.

Labrus Mixtus. *L. e flavo cæruleoque varius, dentibus anterioribus majoribus.* *Lin. Gmel. p. 1297.*

Labrus varied with a mixture of blue and yellow, with the front teeth larger than the rest.

UPPER parts blue, lower yellow, clouded with brown variegations: front teeth larger than the others: native of the Mediterranean: suspected by Gmelin to be a variety of the *L. Pavo*.

 FULVOUS LABRUS.

Labrus Fulvus. *L. fulvus, rictu amplo, maxilla inferiore longiore.*
Fulvous Labrus, with wide mouth, and lower jaw longer than the upper.

L. fulvus. *Lin. Gmel. Yellow-Fish. Catesb. Car. 2. t. 10.*

LENGTH about ten inches: native of the American seas.

 DARK LABRUS.

Labrus Merula. *L. nigro-cæruleus, squamis magnis, dentibus curvis,*

Blackish-blue Labrus, with large scales, and curved teeth.

L. Merula. *Lin. Gmel. Aldrov. p. 35. ? ?*

LENGTH about twelve inches: eyes red. Native of the European seas: said to vary sometimes into whiteness.

FULIGINOUS LABRUS.

Labrus Fuliginosus. *L. capite viridi rubro luteoque vario, corpore fasciis transversis quatuor vel quinque fuscis.*

Labrus with head varied with green, red, and yellow, and body marked by four or five transverse dusky bands.

L. fuliginosus. Cepede.

MENTIONED by Cepede from Commerson: native of the Indian seas.

 FUSCOUS LABRUS.

Labrus Fuscus. *L. fuscus, fasciis utrinque duabus longitudinalibus viridibus.*

Brown Labrus, with two longitudinal green bands on each side.

L. brun. Cepede. 3. p. 437.

THE two front teeth in each jaw longer than the rest: dorsal and anal fin bordered with green: pectoral light green: ventral yellow at the base, and brown at the tips: lateral line branched. Described by Cepede from Commerson: native of the Indian seas.

MARBLED LABRUS.

Labrus Marmoratus. *L. maculis fuscis albidisque marmoratus.*

Labrus marbled with brown and whitish variegations.

L. marbré. Cope.

ALMOST the whole surface of the animal scattered over with small dark spots, accompanied by larger whitish ones, so as to appear marbled: teeth equal and distinct: native of the Indian seas: observed by Commerson.

 LARGE-TAILED LABRUS.

Labrus, *supra striis plurimis longitudinalibus fuscis, cauda magna nigricante.*

Labrus marked above by numerous longitudinal brown streaks, with large dusky tail.

L. large-queue. Cope.

DORSAL fin dusky on the back-part, and marked in front by a dusky spot: anal fin dusky: mouth small: teeth strong and triangular: native of the Indian seas: observed by Commerson.

 CRENULATED LABRUS.

Labrus Crenulatus. *L. flavus, dorso purpureo, pinna a capite ad caudam continuata, dentibus crenulatis.*

Yellow Labrus, with purple back, dorsal fin continued to the tail, and crenulated teeth.

L. Cinædus. Lin. Gmel.

NATIVE of the Mediterranean: esteemed as an edible fish.

PARTERRE LABRUS.

Labrus Hortulanus. *L. corpore caudaque striis decussatis, macula inter singulas areolas.*

Labrus with body and tail marked by decussating stripes, and a spot in each division.

L. Parterre. *Cepede.*

MENTIONED by *Cepede* from *Commerson*, who observed it in the Indian seas.

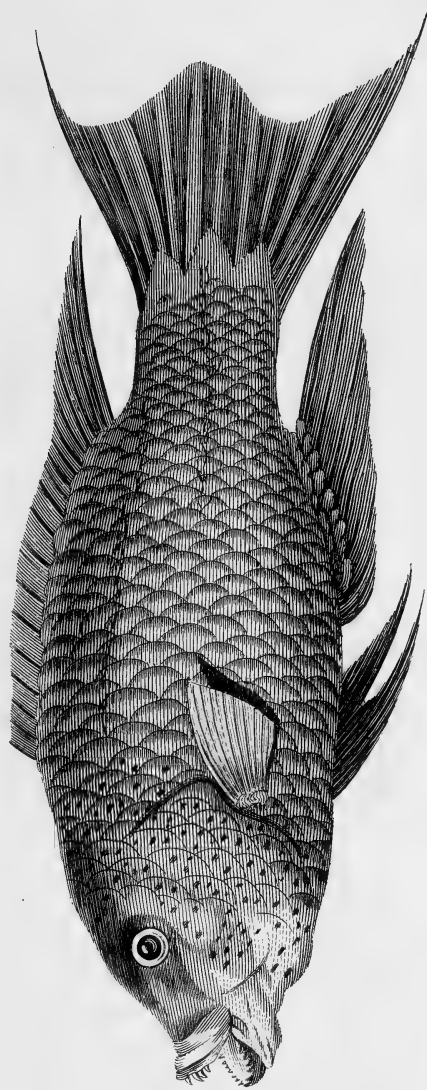
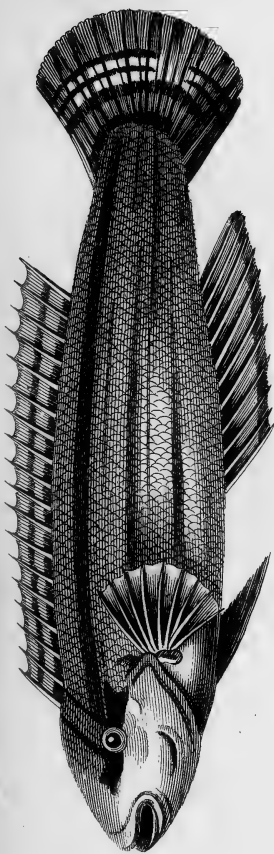
 PARRAKEET LABRUS.

Labrus Psittaculus. *L. viridis, fasciis utrinque tribus longitudinalibus rubris, pinna dorsali flava, fascia longitudinali rubra.*

Green Labrus, with three longitudinal red stripes on each side, and yellow dorsal fin marked by a longitudinal red band.

L. Perruche. *Cepede.*

A BEAUTIFUL species: over each eye a black streak, and a red band bordered with blue from the eye to the beginning of the dorsal fin, and along the edges of the gill-covers: anal fin yellow, with a red border: tail yellow, with four or five curved transverse bands of red and blue: native of the American seas: described by *Cepede* from a drawing by *Plumier*.



Heath sculp.



BLOOD-SPOTTED LABRUS.

Labrus Cruentatus. *L. argenteus, maculis magnis irregularibus sanguineis tessellatus, pinnis flavis.*

Silvery Labrus, tessellated with large irregular blood-red spots, with yellow fins.

L. ensanglanté. Cope.

TEETH small, short, and separate: eyes very large: lateral line near the back: end of the tail of smaller diameter than the base: described by Cope from a drawing by Plumier: native of the American seas.

 FULL-EYED LABRUS.

Labrus Calops. *L. argenteus, dorso fusco, squamis magnis, oculis grandibus nigris.*

Silvery Labrus, with dusky back, large scales, and very large black eyes.

L. Calops. Cope.

NATIVE of the Mediterranean, near the mouths of the rivers of the ancient *Neustria* *: a large dusky patch over the base of each of the pectoral fins.

* Comprehending Normandy, &c.

ASCANIAN LABRUS.

Labrus Ascanii. *L. supra ruber, maculis stris que viridibus, subtus flavescens punctis rubris.*

Labrus with the upper parts red, varied by green spots and streaks, and the under parts yellowish specked with red.

L. rone. Cepede. Le Rone. Ascan. t. 14.

LENGTH about seven inches: dorsal and anal fin red, with two or three green stripes: tail green, tipped with red. Native of the Northern seas.

 BEAUTIFUL LABRUS.

Labrus Formosus. *L. ruber, stris longitudinalibus flexuosis interruptis ceruleis, pinnis ceruleo marginatis.*

Red Labrus, with longitudinal, interrupted, flexuous blue streaks, and fins edged with blue.

Paon bleu. *Ascan. t. 12. Sparus formosus. Nat. Misc. 1. pt. 31.*

LENGTH about twelve inches: back of a deep, purplish red: belly inclining to yellow: dorsal fin marked at its origin by a broad patch of blue: gill-covers varied with blue streaks: scales rather large than small: a very beautiful species: allied to the *Striped Labrus*: extremely well figured both in the work of *Ascanius*, and in the Naturalist's Miscellany; the latter figure being taken from a specimen in the Leverian Museum.



BLUE FINNED LABRUS.



CHEILODIPTERE CHRYSOPTERE. Cepede.

BULL-EYED LABRUS.

Labrus Boops. *L. maxilla inferiore longiore, oculis permagnis, pinnis dorsalibus duabus.*

Labrus with the lower jaw longer than the upper, very large eyes, and two dorsal fins.

Labrus Boops. *Lin. Gmel.*

TEETH in the lower jaw large and sharp : eyes extremely large : native of Japan.

BLUE-FINNED LABRUS.

Labrus Cyanopterus. *L. supra rubro flavo viridique varius, subtus viridi fuscoque, pinnis cæruleis.*

Labrus varied above with red, yellow, and green, beneath with green and brown, with blue fins.

Cheilodiptere cyanoptere. *Cepede.*

A BEAUTIFUL species : body above the lateral line varied with undulated oblique stripes of yellow, green, and red ; below the lateral line with brown and green : pectoral, ventral and anal fins yellow, the dorsal fins and tail blue : beneath the lower jaw a short cirrus : native of the American seas : described by Cepede from a drawing by Plumier : perhaps more properly belonging to the genus *Sciæna* than *Labrus*.

CHEQUERED LABRUS.

Labrus Centiquadrus. *L. albido purpureoque tessellatus.*
 Labrus tessellated with alternate purple and whitish marks.
L. echiquier. Cèpede.

HEAD and fins varied with red: whole body tessellated with blackish-purple and whitish areolæ: a black spot on each of the pectoral fins: tail yellow: size not mentioned: native of the Indian seas: observed by Commerson.

 SMALL-SCALED LABRUS.

Labrus Microlepidotus. *L. argenteus, dorso subfusco, pinnis albis.*
 Silvery Labrus, with brownish back and white fins.
L. microlepidotus. Bloch. t. 292.

LENGTH about twelve inches: colour silvery, tinged with yellowish brown on the back, and dorsal fin: rest of the fins white: scales rather small for the size of the fish. Native regions unknown: described by Dr. Bloch from a specimen in the Linkian collection at Leipzig.

GIRDLED LABRUS.

Labrus Cingulum. *L. antice lividus, postice fuscus, cingulo intermedio albido, capite punctis atropurpureis.*

Labrus with the fore-parts livid, the hind-parts brown, with an intermediate white girdle.

L. Cingulum. *Cepede.*

DORSAL fin edged with white: at the tip of the gill-covers a black spot edged with white. Native of the Indian seas: observed by Commerson.

DIANA LABRUS.

Labrus Diana. *L., lunulis fuscis maculatus.*

. Labrus, spotted with brown crescents.

L. Diane. *Cepede.*

MENTIONED by *Cepede* from Commerson: native of the Indian seas: in the upper jaw are four large teeth, and in the lower two.

GREAT-TOOTHED LABRUS.

Labrus Macrodon. *L. dentibus quatuor magnis curvis.*

Labrus with four large curved teeth.

L. Macrodon. *Cepede.*

SCALES rather large: hind part of the head ascending: four strong curved teeth at the tip of each jaw, and one on each side the corners of the mouth: native regions unknown.

NEUSTRIAN LABRUS.

Labrus Neustriæ. *L. dorso fusco luteo et subviridi, lateribus fusco luteo alboque marmoratis.*

Labrus with the back varied with brown, yellow, and greenish, the sides marbled with brown, yellow, and white.

L. Neustriæ. Cepede.

TEETH equal, strong, and separate: dorsal fin marked with the same colours as the sides: pectoral, ventral, anal, and caudal of the same colour with the back: inhabits the Mediterranean.

 PERDIC LABRUS.

Labrus Perdica. *L. dorso recto, vittis utrinque longitudinalibus undulatis subflavis, pinnis pectoralibus basi macula cærulea.*

Labrus with strait back, marked on each side with longitudinal, undulated, yellowish stripes, and a black spot at the base of the pectoral fins.

L. Perdica. Cepede.

HEAD brown: dorsal and anal fin red: native of the Arabian seas: described by Forskal.

SOFT-BACKED LABRUS.

Labrus Malapteronotus. *L. , maxilla inferiore longiore, fasciis utrinque longitudinalibus? albidis, pinna dorsali molli*.*
 **Labrus,** with the lower jaw longer than the upper, longitudinal? whitish bands on each side, and soft dorsal fin.
L. Malapteronote. *Cepede.*

FRONT teeth in the lower jaw inclining forwards: head and gill-covers destitute of scales: gill-covers terminated by a dark-coloured spot: dorsal fin furnished with soft rays only: native of the Indian seas.

 GUAZA LABRUS.

Labrus Guaza. *L. fuscus, cauda rotundata ramentacea.*
Brown Labrus, with rounded ramentose tail.
L. Guaza. *Cepede.*

OBSERVED by Leoffling: native of the European seas.

* Many of the specific characters affixed to the Labri must be received with proper latitude, and are by no means to be regarded as absolutely decisive, it being hardly possible to form such.

OBSURE LABRUS.

Labrus Exoletus. *L. corpore lineis longitudinalibus cæruleis, pinna dorsali ramentacea.*

L. with blue longitudinal lines on the body, and ramentose dorsal fin.

L. exoletus. *Lin. Gmel. Cinque-Epines. Cepede.*

ANAL fin furnished with five sharp rays and eight soft : native of the Mediterranean and Northern seas.

 CHINESE LABRUS.

Labrus Chinensis. *L. pinna dorsali ramentacea, corpore livido, vertice retuso. Lin. Gmel. p. 1291.*

Livid Labrus with retuse head, and ramentose dorsal fin.

DESCRIBED in the above specific character by **Dr. Gmelin** : native of China.

 JAPANESE LABRUS.

Labrus Japonicus. *L. totus flavissimus.*

Labrus entirely of a deep yellow.

L. Japonicus. *Lin. Gmel.*

DESCRIBED by **Houttyn** in the 20th vol. of the **Haarlem Transactions** : length six inches : teeth small : colour of the whole fish deep yellow.

LINEAR LABRUS. :

Labrus Linearis. *L. oblongus albidus, pinnæ dorsalis radio ultimo inermi.*

Oblong Labrus, with the last ray of the dorsal fin soft.

L. linearis. Lin. Gmel.

BODY of an elongated form: head compressed: dorsal fin very long, with twenty sharp rays and one soft: described by Linnæus in the first volume of the *Amœnitates Academicæ*. Native of the American and Indian seas.

 LUNULATED LABRUS.

Labrus Lunulatus. *L. fusco-virescens, squamis singulis fascia ferruginea, capite pectoreque rubro guttatis.*

Greenish-brown Labrus, with each scale marked by a ferruginous band, and the head and breast spotted with red.

L. lunulatus. Lin. Gmel. Forsk. Arab.

LENGTH about twelve inches: scales broad and striated: eyes brownish-green: gill-covers commonly marked at the hinder edge with a fulvous crescent bordered with black: native of the Arabian seas: observed by Forskal.

RETICULATED LABRUS.

Labrus Reticulatus. *L. viridis, rubro reticulatus, macula operculorum pinnæque dorsalis nigra.*

Green Labrus, reticulated with brown, and with a black spot on the gill-covers and dorsal fin.

L. venosus. Lin. Gmel.

A SMALL species: length three inches: shape ovate: dorsal fin ramentose and marked with a red band: native of the Mediterranean.

 GUTTATED LABRUS.

Labrus Guttatus. *L. rubescens, nigro varius, punctis seriatis albis.*

Reddish Labrus, with black variegations and white spots disposed in a row.

L. guttatus. Lin. Gmel.

LENGTH three inches: under each eye two oblique black streaks: fins reddish; anal marked with white spots: native of the Mediterranean.

GUTTULATED LABRUS.

Labrus Guttulatus. *L. albo confertim guttatus, dorso subfusco, squamis minutis.*

Labrus thickly marked with round white spots, with brownish back and minute scales.

L. guttatus. Bloch, t. 287.

A BEAUTIFUL species: length about five inches: colour blueish with a cast of brown on the back: the whole fish beautifully and thickly marked with small, round, white or silvery spots: those on the back fin yellowish, and on each side the back an undulated silvery line: scales very small: native regions unknown.

 BERGYLT LABRUS.

Labrus Bergylta. *L. fusco-flavescens, lateribus subfasciatis, pinnis maculatis.*

Brownish-yellow Labrus, with subfasciated sides, and spotted dorsal fin.

L. maculatus. Bloch, t. 294,

LENGTH about a foot: scales large: lips reflex: dorsal fin ramentose: all the fins spotted with brown: native of the European seas.

 CARINATED LABRUS.

Labrus Carinatus. *L. squamis bicarinatis.*

Labrus with bicarinated scales.

L. aristatus. Cope.

SHAPE oval : teeth separate : the two front teeth in the lower jaw longer than the rest : native of the fresh waters of China.

 WHITE-BANDED LABRUS.

Labrus Albovittatus. *L. subflavus, fasciis utrinque tribus longitudinalibus albis.*

Yellowish Labrus, with three longitudinal white bands on each side.

L. albovittatus. Cope.

NATIVE of the Northern seas ?

 PUNCTATED LABRUS.

Labrus Punctatus. *L. subfuscus, lineis longitudinalibus plurimis fusco-punctatis, pinna dorsali ramentacea.*

Brownish Labrus, with many longitudinal brown-spotted lines, and ramentose dorsal fin.

L. punctatus. Lin. Gmel. Bloch. t. 295.

LENGTH about five inches : colour whitish, with the back brown : scales large : body marked by several rows of dusky spots ; owing to a spot at the base of each scale : dorsal fin produced in a

falciform manner at its extremity: anal fin the same: both, as well as the tail, marked by rows of blackish spots: pectoral and ventral fins long and dusky: on each side the body three black spots; one on the gill-covers, another in the middle, and a third near the tail: habit broad, like a bream: native of Surinam, inhabiting rivers.

PLEAT-LIPPED LABRUS.

Labrus Ossifagus. *L.*, *labiis plicatis, pinna dorsali radiis triginta.* *Lin. Gmel. p. 1290.*

. Labrus, with pleated lips, and thirty rays in the dorsal fin.

INTRODUCED by Dr. Gmelin into his edition of the *Systema Naturæ*, but no mention made of any farther particulars than those announced in the specific character, except that it is a native of Europe.

ONITE LABRUS.

Labrus Onitis. *L. fuscus, subtus albido-maculatus, pinna dorsali ramentacea.*

Brown Labrus, spotted with white beneath, and with ramentose dorsal fin.

L. Onitis. Lin. Gmel.

DESCRIBED by Linnæus in the second part of the *Mus*: Ad: Frid: native regions unknown.

ANILE LABRUS.

Labrus Vetula. *L. flavescens, capite caudaque carnis, corpore fusco variato, pinnis ventralibus anali caudalique nigro marginatis.*

Yellowish Labrus, with flesh-coloured head and tail, body varied with brown, and ventral, anal, and caudal fins edged with black.

L. Vetula. *Bloch. t. 293.*

HABIT that of *L. maculatus*: fins pale: dorsal and anal spotted with black along the base: tail marked by a transverse row of spots: lips reflex: irides blue. Native of the Mediterranean and Northern seas: esteemed as an edible fish.

 NORWEGIAN LABRUS.

Labrus Suillus. *L. pinna dorsali ramentacea, macula nigra supra caudam, spinis dorsalibus novem. Lin. Gmel.*

Labrus with ramentose dorsal fin, black spot above the tail, and nine dorsal spines.

Bergsnyltra. *Lin. Faun. Suec. 330.*

NATIVE of the Northern seas; observed about the coasts of Norway.

IURELLA LABRUS.

Labrus Julis. *L. lateribus cærulescentibus, vitta longitudinali fulva utrinque dentata.* Lin. Gmel.

Labrus with blueish sides, marked by a longitudinal, fulvous, dentated or undulated band.

L. Julis. *Lin. Syst. Nat. p. 476. Mus. Ad. Frid. 2. p. 75. Bloch. t. 287. f. 1.*

LENGTH about eight inches : form rather lengthened : general colour blueish or violet on the upper parts, with an undulating yellow stripe on each side towards the back : abdomen whitish : pectoral, ventral fins, and tail pale : dorsal fin fulvous or orange-coloured at its origin, and marked along the base by a brown or purplish stripe : scales small : lateral line placed pretty near the back, and descending suddenly at a small distance from the tail. Native of the Mediterranean, generally swimming in small shoals : the male is said to be distinguished from the female by having the back of a green colour. By the more ancient ichthyologists this species seems to have been considered as the most beautiful of the finny race, but this must have been owing to the very confined state of natural history at the time those authors lived. It has also been regarded as a poisonous fish, and capable of inflicting a dangerous wound, but this, like many other errors of antiquity, is now entirely exploded.

PARROT LABRUS.

Labrus Paroticus. *L. griseus, subtus albidus, linea laterali curva, pinnis rufis, operculis cyaneis.*

Grey Labrus, whitish beneath, with curved lateral line, and blue gill-covers.

L. paroticus. Lin. Syst. Nat. p. 476. Mus. Ad. Frid. 2. p. 76.

NATIVE of the Indian seas.

 KARUT LABRUS.

Labrus Karuta. *L. supra nigricans, stria utrinque longitudinali flava, subtus flavescens pinnis rufis.*

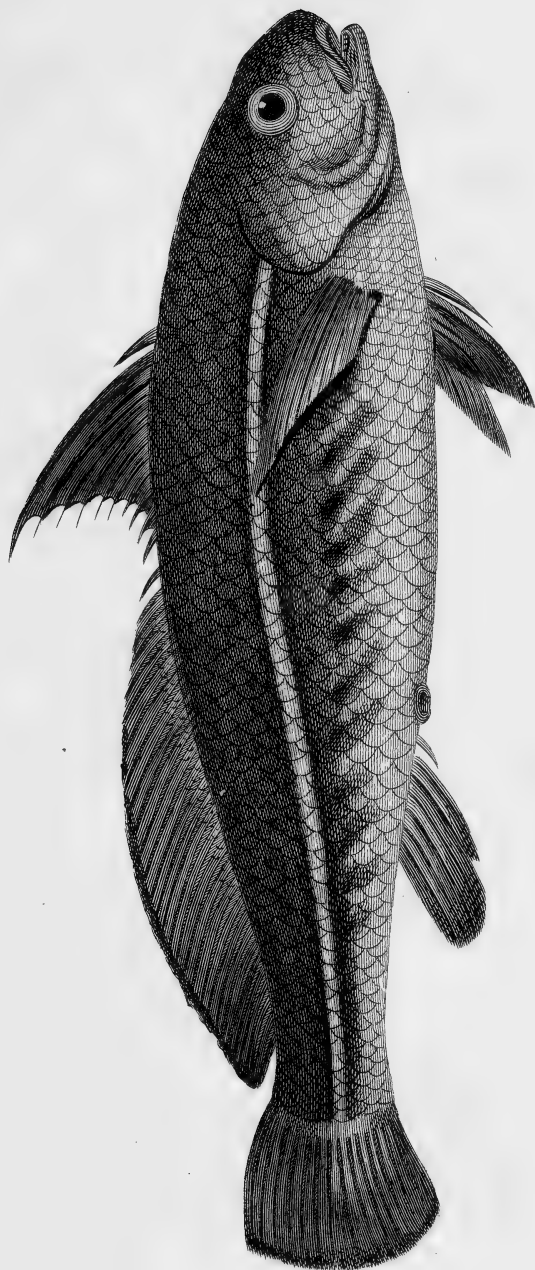
Labrus with the body blackish above with a longitudinal yellow stripe on each side, and beneath yellowish with rufous fins.

Johnius Karutta. Bloch. t. 356.

Labre Karut. *Cepede.*

LENGTH about twelve inches : form oblong : upper jaw very obtuse, the mouth being situated beneath it : dorsal fins two, the former triangular, the latter of moderate width and continued to the tail : both these fins as well as the tail, which is slightly rounded, are of a blackish colour : the other fins reddish : scales rather large : irides red : teeth small.

By Dr. Bloch this and the succeeding species are stationed in a distinct genus under the title of *Johnius*, so named from a correspondent of Dr. Bloch's to whom he was obliged for specimens of the fish, which is a native of the Indian seas.



KARUT LABRUS.

1803 July 1. London, Published by G. Kearsley, Fleet Street.

CUPREOUS LABRUS.

Labrus Cupreus. *L. subargenteus, capite dorso pinnisque subcupreis.*

Subargenteous Labrus, with head, back, and fins tinged with copper-colour.

Johnius Aneus. *Bloch. t. 357.*

GENERAL habit that of the former species, but rather broader: lower jaw rather longer than the upper: teeth sharp, and of moderate size: scales rather large: back, dorsal fins, and tail of a dusky tinge, but with a strong cast of coppery red towards the base, pectoral and ventral fins bright copper-red, and, as in the former species, of a lanceolate shape. Native of the Indian seas, and called by the natives of Malabar by the name of *Anei Kattalei*.

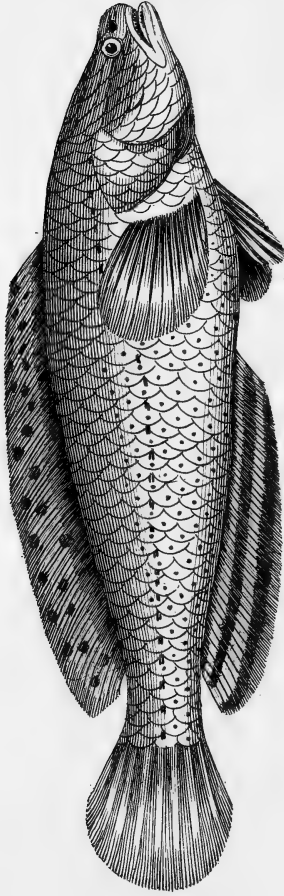
These fishes seem equally allied to the Labri and the *Sciænæ*, and might perhaps be arranged with equal propriety under the latter genus, with which they agree in many particulars relative to habit or general appearance.

THE same apology must be made for the history of this genus as of the preceding; the species being extremely numerous and very little understood. It is by no means improbable that many of the Labri may be rather varieties than species truly distinct; and it may be added, that several may with equal

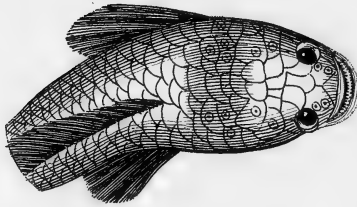
propriety rank under the genus Sparus. It follows therefore, that any repetitions, which in arranging these two genera may, through oversight, have easily taken place, must be rather an advantage than an inconvenience; as tending to facilitate the investigation of the species.



Heath. sculp.



PUNCTATED OPHICEPHALUS.



OPHICEPHALUS. OPHICEPHALUS.

Generic Character.

Caput squamis difformibus || *Head* coated with dissimilar
tectum. || scales.
Corpus elongatum. || *Body* elongated.

PUNCTATED OPHICEPHALUS.

Ophicephalus Punctatus. *O. nigricans, subtus pallidior, capite poroso, corpore nigro-punctulato.*

Dusky *Ophicephalus*, paler beneath, with the head pierced by pores, and the body speckled with black points;

Ophicephalus punctatus. *Bloch, t. 358.*

LENGTH about ten inches: dorsal fin commencing at no great distance from the head, and continued nearly to the tail: it is of moderate breadth, and of a dusky colour spotted with black; anal fin of similar shape and colour: tail rounded: pectoral fins rounded, and of moderate size: ventral smaller: scales rather large; those on the head dissimilar, viz. on the upper part angular, as in snakes: on the sides ovate or rounded: lateral line nearly strait. Native of India, inhabiting rivers and lakes, and is considered as a delicate and wholesome food.

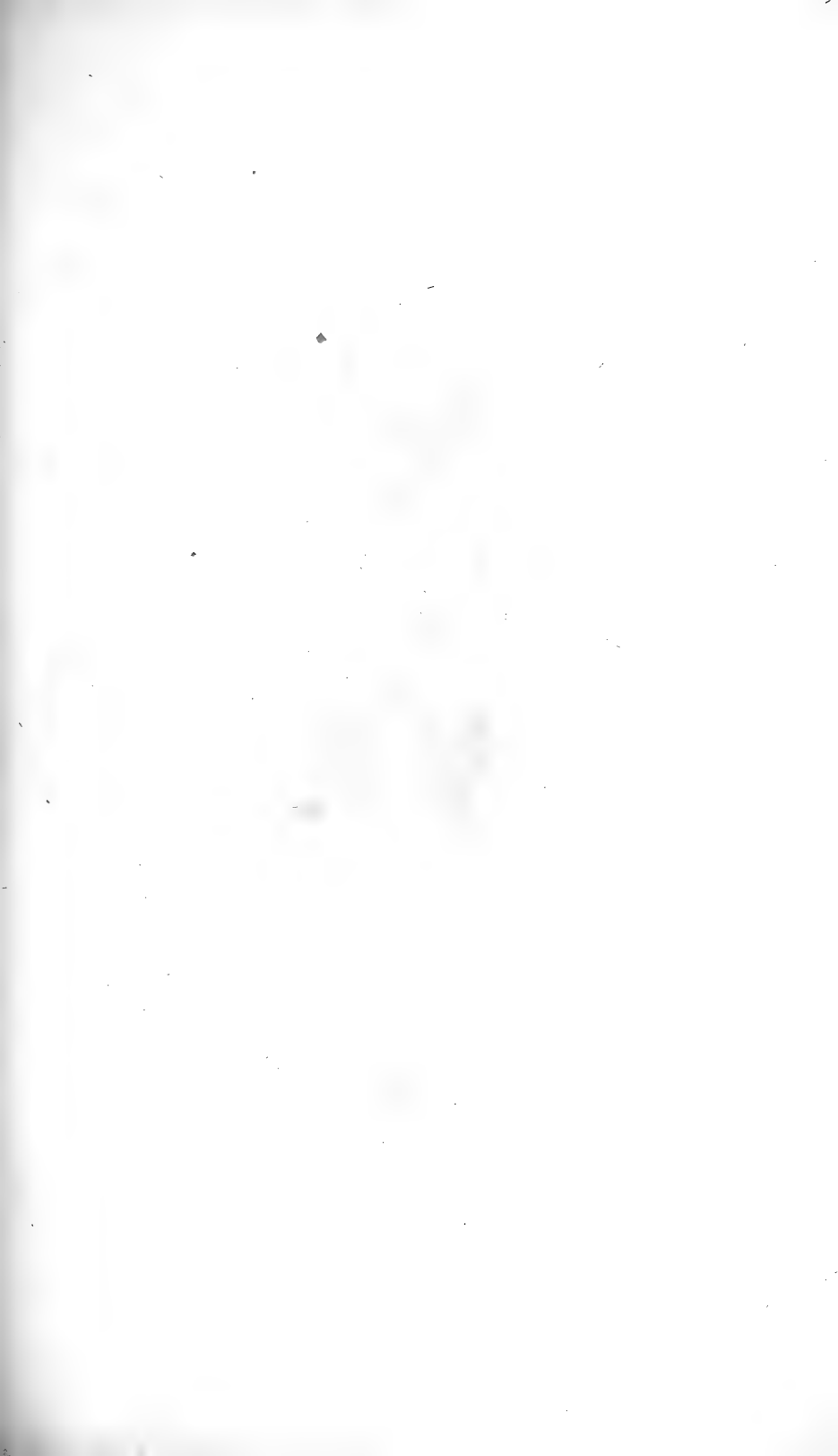
STRIATED OPHICEPHALUS.

Ophicephalus Striatus. *O. nigricans, abdomine pinnisque albido fuscoque striatis.*

Dusky Ophicephalus, with the abdomen and fins striated with dusky and whitish variegations.

Ophicephalus striatus. *Bloch. t. 359.*

LENGTH about twelve inches: shape rather longer than that of the preceding species: abdomen whitish, varied with obliquely transverse dusky blotches or streaks: dorsal and anal fin of similar proportions to those of the former species, and of a pale colour, marked by numerous obliquely transverse narrow dusky stripes: tail, pectoral and ventral fins rounded: scales rather large: teeth rather small, sharp, and of equal size. Native of India, inhabiting lakes, where it often grows to a much larger size than first mentioned: it is in equal esteem as a food with the former species, and even recommended as a proper diet for convalescents: native name *Wrahl*.





BEARDED LONCHURUS.

LONCHURUS. LONCHURUS.

Generic Character.

<i>Caput squamosum.</i>	<i>Head scaly.</i>
<i>Pinnæ ventrales discretæ.</i>	<i>Ventral fins separate.</i>
<i>Cauda lanceolata.</i>	<i>Tail lanceolate.</i>

BEARDED LONCHURUS.

Lonchurus Barbatus. *L. fusco-ferrugineus, naso subproducto, maxilla inferiore bicirrata, pinnarum ventralium radio primo elongato setaceo.*

Ferruginous-brown *Lonchurus*, with slightly lengthened nose, two beards at the lower jaw, and the first ray of the ventral fins elongated into a bristle.

Lonchurus barbatus. *Bloch. t. 360.*

LENGTH about twelve inches: shape somewhat lengthened tapering gradually to the tail, which is of a lanceolate form: scales middle-sized: pectoral fins long, narrow, and sharp: ventral fins sharp, and placed at some distance from each other: dorsal fin double, or at least so deeply divided as to appear two: the former triangular, the latter of moderate width, and continued nearly to the tail: nose or upper lip produced into an obtuse short snout, so as to cause the mouth to appear as if placed somewhat beneath: teeth small: beneath the tip of the lower jaw two small short beards. Native of Surinam.

THE two preceding genera of *Ophicephalus* and *Lonchurus*, considered in point of natural arrangement, seem to have a greater affinity to the genus *Sciæna* than to any other: both were instituted by Dr. Bloch.





BEARDED SCIAENA.

SCIÆNA. SCIÆNA.

Generic Character.

<i>Caput squamosum.</i>	<i>Head scaly.</i>
<i>Pinnæ dorsales duæ, in fossula recondendæ.</i>	<i>Dorsal fins two, seated in a furrow*, into which they may occasionally withdraw.</i>
<i>Membr. branch. radiis sex.</i>	<i>Gill-membrane six-rayed.</i>

With divided or lunated tail.

BEARDED SCIÆNA.

Sciæna Cirrosa. S. flavescens, subtus subargentea, lineis longitudinalibus obliquis nigricantibus, mento barbato.

Yellowish *Sciæna*, subargenteous beneath, with obliquely longitudinal dusky lines, and a beard on the lower jaw.

Sciæna cirrosa. Lin. Gmel. Bloch.

Σκιάνα. Arist. Aelian, &c. Umbra. Rondel, &c.

HABIT that of a Carp: length from one to two feet: colour pale yellow, brownish on the back, and marked on each side by many obliquely longitudinal dusky-blue lines, which assume a slightly silvery cast towards the abdomen: upper lip obtuse,

* This is not equally conspicuous in all the *Sciænæ*, nor confined to this genus; occurring in some of the *Spari, Percæ, &c.*

and longer than the lower: teeth small: first dorsal fin triangular, and pale brown; the second white with a brown stripe; pectoral, ventral, and caudal, dusky; anal red: tail slightly lunated: at the base of the gill-covers a black spot, and beneath the chin a short fleshy beard; native of the Mediterranean and other seas; known to the ancient Greeks and Romans, by whom it was held in considerable estimation as a food.

BASSE SCIÆNA.

Sciæna Labrax. *S. subargentea*, dorso fusco, pinnis flavo-rubentibus, caudali fusca.

Subargenteous Sciæna, with brown back, yellowish-red fins, and dusky tail.

Sciæna Labrax. Bloch. Perca Labrax. Lin.

Basse. Penn. Brit. Zool.

HABIT of a Salmon: size considerable, growing, according to some authors, to the length of several feet: colour blueish silvery, with a dusky cast on the back: scales rather small: eyes reddish: mouth and gill-covers tinged with pale red: tail slightly forked: lateral line nearly strait: native of the Mediterranean and Northern seas, and often entering rivers: known to the ancients by the names of *Labrax* and *Lupus*, and much esteemed as a food, particularly by the Romans.

TWO-SPINED SCIÆNA.

Sciæna Diacantha. *S. subargentea, lineis longitudinalibus flavis, dorso glauco, operculis bispinosis.*

Subargenteous Sciæna, with longitudinal yellow lines, and two-spined gill-covers.

Sciæna diacantha. Bloch.

LENGTH about twelve inches: habit allied to that of *S. Labrax*: fins glaucous, but the pectoral, ventral fins, and tail, reddish at the base: tail slightly lunated: eyes yellow: scales rather large: native of the Mediterranean.

 PIKE-HEADED SCIÆNA.

Sciæna Undecimalis. *S. rubescens, abdomine argenteo, pinnis dorsalibus caudaque subfuscis.*

Reddish Sciæna, with silvery abdomen, and brownish dorsal fins and tail.

Sciæna undecimalis. Bloch.

LENGTH about twelve inches: habit somewhat resembling that of a Pike, the shape of the head being greatly similar, and the lower jaw longer than the upper: teeth small: back rising pretty suddenly from the eyes: scales middle-sized: lateral line blackish and very distinct: tail slightly forked: native of the American seas, and said to be common about the coasts of Jamaica. In the second dorsal fin are eleven rays, from which circumstance is derived the trivial name applied to this species by Dr. Bloch.

LINEATED SCIÆNA.

Sciæna Lineata. *S. argentea, lineis longitudinalibus flavis, dorso violaceo, pinnis subflaventibus.*

Silvery Sciæna, with longitudinal yellow lines, violaceous back, and yellowish fins.

Sciæna lineata. *Bloch.*

LENGTH about a foot: habit of a Trout: lower jaw rather longer than the upper: scales middle-sized: eyes yellow: native of the Mediterranean.

 PUNCTATED SCIÆNA.

Sciæna Punctata. *S. subargentea, dorso subviolaceo nigro-punctato.*

Subargenteous Sciæna, with subviolaceous back, spotted with black points.

Sciæna punctata. *Bloch.*

LENGTH about twelve inches: habit that of a Trout: head short and thick: gill-covers tinged with violet; head with yellow: dorsal fins glaucous: pectoral and ventral pale red: anal and tail glaucous with pale red base: scales middle-sized: eyes yellow: native of the Mediterranean.

PLUMIER'S SCIÆNA.

Sciæna Plumieri. *S. subviolacea, fasciis transversis fuscis, lineis longitudinalibus pinnisque flavis.*

Subviolaceous Sciæna, with transverse brown bands, and yellow longitudinal lines and fins.

Sciæna Plumieri. *Bloch.*

HABIT that of a Perch: head very short: scales middle-sized: eyes yellow: teeth small: pectoral fins lanceolate: tail large and slightly lunated: native of the American seas: described by Bloch from a drawing by Plumier.

 MAURITIAN SCIÆNA.

Sciæna Mauritiæ. *S. argentea, dorso subfusco, pinna dorsali prima spinosa, radiis novem.*

Silvery Sciæna, with brownish back, and the first dorsal fin spiny, with nine rays.

Sciæna Mauritiæ. *Bloch.*

LENGTH about six inches, but said to grow to the size of a Perch: habit that of a Salmon, and extremely resembling, except in size, the *S. Labrax*, but the scales are larger in proportion: colour silvery, with a slight dusky tinge on the back, and the fins pale: tail slightly lunated, yellowish at the base, and dusky towards the end: native of Brasil: described by Bloch from a drawing by Prince Maurice.

CORO SCIÆNA.

Sciæna Coro. *S. argenteo-cærulescens, dorso subfusco, corpore utrinque striis octo transversis fuscis.*

Silvery-blueish Sciæna, with brownish back, and body marked on each side with eight transverse brown bands.

Sciæna Coro. *Bloch.*

LENGTH from six to twelve inches : habit that of *S. Mauriti* : scales middle-sized : fins pale : tail slightly forked, yellowish at the base, and dusky at the end. Native of the Brazilian seas.

CILIATED SCIÆNA.

Sciæna Ciliata. *S. squamis trapeziformibus, transversim carinatis, ciliatis.*

Sciæna with trapezoid, transversely ciliated scales.

Sciene ciliée. *Cepede.*

MENTIONED by Cepede from a specimen in the Prince of Orange's Museum, but neither size, colours, nor native region, particularized.

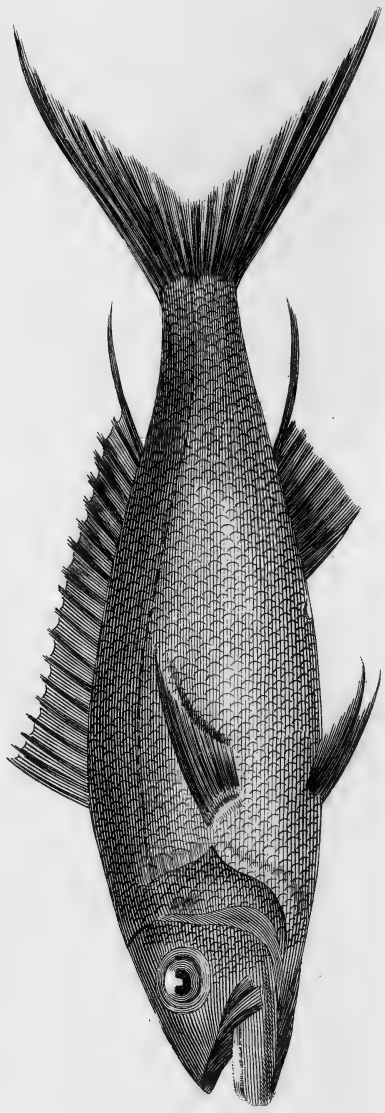
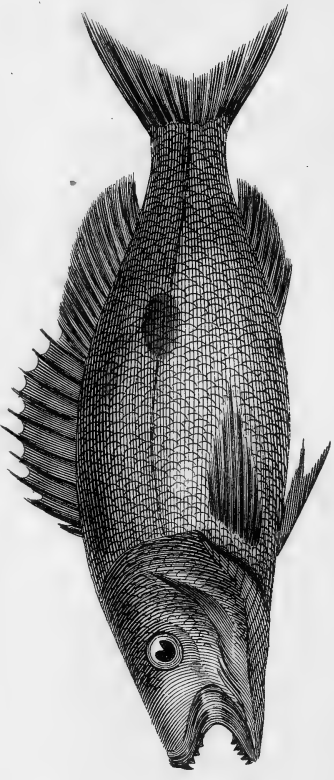
CAPPA SCIÆNA.

Sciæna Cappa. *S. capitis lateribus squamarum ordine duplici.*
Lin. Syst. Nat. p. 480. Mus. Ad. Frid. 2. p. 81.

Sciæna with a double row of scales on each side the head.

NATIVE of the Mediterranean : mentioned by Linnæus in the second part of the Museum Adolphi Friderici.

SINGLE-SPOTTED SCIÆNA, p 539



FORKED LABRUS.

Heath sculp.

SCALE-BACKED SCIÆNA.

Sciæna Lepisma. *S. pinna dorsali intra duo folia squamea recondenda.* *Lin. Syst. Nat. p. 480.*

Sciæna with the dorsal fin retractile between two scaly leaves.

NATIVE of the Mediterranean ?

SINGLE-SPOTTED SCIÆNA.

Sciæna Unimaculata. *S. macula fusca in medio utriusque lateris.*
Lin. Syst. Nat. p. 480.

Sciæna with a brown spot on each side the middle of the body.

NATIVE of the Mediterranean.

BOHAR SCIÆNA.

Sciæna Bohar. *S. oblonga rubescens, lineis nebulisque albertibus.*

Oblong, reddish Sciæna, with whitish lines and clouds.

Sciæna Bohar. *Forsk. arab.*

NATIVE of the Arabian seas.

GIBBOUS SCIÆNA.

Sciæna Gibbosa. *S. rubescens, albo-punctata, dorso gibbo.*

Reddish Sciæna, with white specks and gibbous back.

Sciæna gibba. *Forsk. arab.*

NATIVE of the Arabian seas: body oval: scales red, tipped with white: greatly allied to *S. Bohar.*

SILVER-SPOTTED SCIÆNA.

Sciæna Argentata. *S. fusca, argenteo-maculata.*

Brown Sciæna, with silvery spots.

Sciæna argenteo-maculata. *Forsk. arab.*

Much allied to *S. Bohar*: lower lip longer than the upper: from each eye to the mouth a curved blue streak: colour of the scales on the upper parts blackish, with silvery margins and tips: on the abdomen rufescent, with pale margins: fins dusky rufous: the dorsal fin glaucous. Native of the Arabian seas.

 RED SCIÆNA.

Sciæna Rubra. *S. obscure rubra, vittis utrinque octo longitudinalibus subalbentibus.*

Dull-red Sciæna, with eight longitudinal whitish bands on each side.

S. rubra. Forsk. arab. Lin. Gmel.

EYES red; orbit spiny and serrate: teeth short and setaceous: dorsal fins connected; the first whitish, with two longitudinal red bands: scales spiny at the edges: native of the Arabian seas.

LONG-SPINED SCIÆNA.

Sciæna Spinifera. *S. rubra, pinnis dorsalibus connexis, capite spinoso, operculi anterioris spina longissima. Lin. Gmel. Forsk. arab.*

Red Sciæna, with connected dorsal fins, spiny head, and a very long spine on the anterior gill-cover.

NATIVE of the Arabian seas, growing to a considerable size, and yielding a great quantity of oil: the wounds inflicted by the spine of the gill-covers are said to be very painful.

 JARBUA SCIÆNA.

Sciæna Jarbua. *S. argentea, vittis utrinque duabus fuscis in annulos super dorsum confluentibus.*

Silvery Sciæna, with two brown bands on each side, uniting into rings over the back.

Sciæna Jarbua, *Lin. Gmel. Forsk. arab.*

MIDDLE of the back marked by a dusky spot: teeth subulate: eyes blue: dorsal fin spotted with black: native of the Arabian seas.

GOLD-STRIPED SCIÆNA.

Sciæna Fulviflamma. *S. albedo-flavescens, vittis quinque vel sex longitudinalibus aureis, macula media nigra.*

Whitish-yellow *Sciæna*, with five or six longitudinal gold-coloured bands, and a middle black spot.

Sciæna fulviflamma. *Lin. Gmel. Forsk. arab.*

FIRST dorsal fin dusky; the second and the other fins yellow: the gold-coloured lines on the body are sometimes rather obscure: teeth strong, distant, and conic-subulate. Native of the Arabian seas.

With even or rounded tail.

BLACK SCIÆNA.

Sciæna Nigra. *S. subtus subargentea, oculis rubris.*

Black *Sciæna*, with subargenteous abdomen, and red eyes.

Sciæna nigra Bloch. Sciæna Umbra. Lin.

SIZE of a Perch: scales middle-sized, and marked with small black specks: fins black: tail rounded. Native of the Mediterranean.

LARGE-SCALED SCIÆNA.

Sciæna Macrolepidota. *S. flava, fasciis transversis fusco-violaceis, pinnis maculatis.*

Yellow Sciæna, with transverse brownish-violet bands and spotted fins.

Sciæna macrolepidota. *Bloch.*

LENGTH about a foot : head short, and sloping rather suddenly : scales pretty large : dorsal, anal, and caudal fin spotted with brown : pectoral fins plain and tinged with violet : ventral fins red : eyes blue : native of India.

 SPOTTED SCIÆNA.

Sciæna Maculata. *S. fusco flavoque varia, pinnis maculatis.*

Sciæna varied with brown and yellow, with spotted fins.

Sciæna maculata. *Bloch.*

LENGTH about five inches and a half : shape oblong ; back rising at the fore-part, and sloping towards the tail : scales middle-sized ; dorsal fins, anal, and caudal spotted with brown : dorsal fins placed at some distance from each other : pectoral and ventral fins unspotted : tail of an ovate shape : native regions unknown.

CYLINDRIC SCIÆNA.

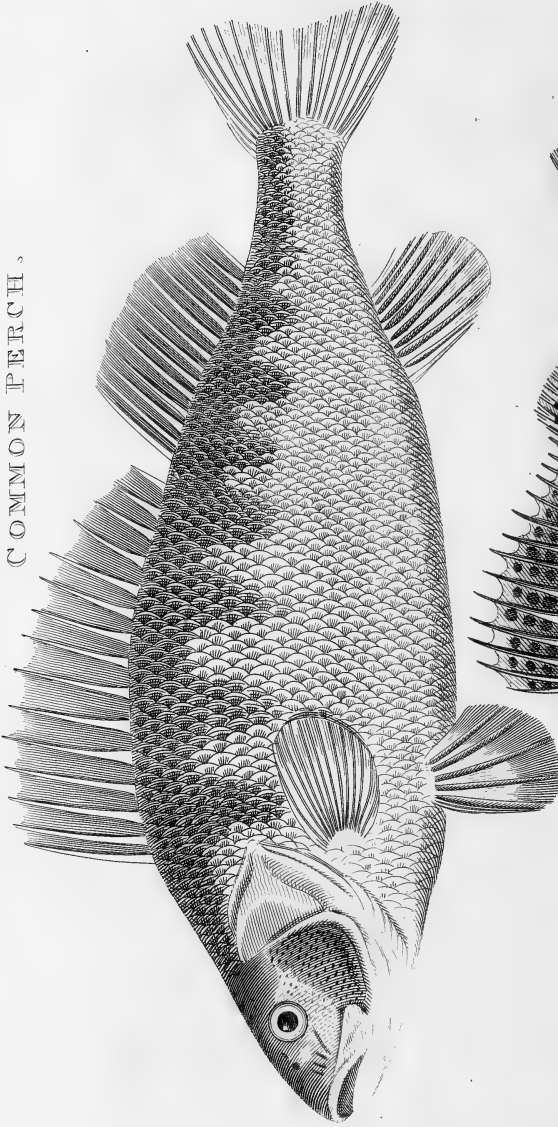
Sciæna Cylindrica. *S. cylindrica, flavescens, cingulis pluribus fuscis, pinnis maculatis.*

Cylindric, yellowish Sciæna, with several dusky girdles, and spotted fins.

Sciæna cylindrica. *Bloch.*

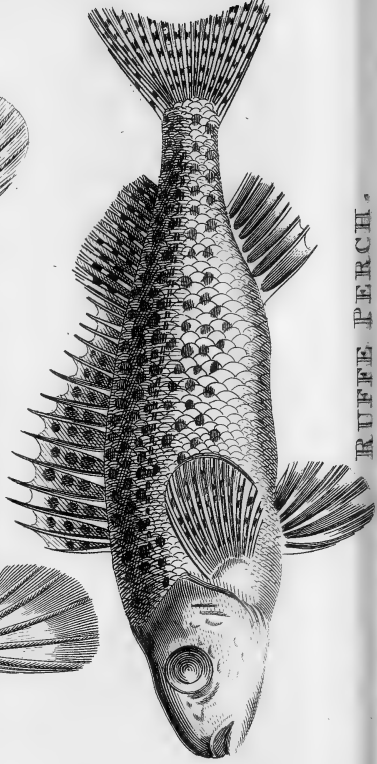
LENGTH about six inches: habit rather long: head longish: eyes rather prominent, and situated near each other at the upper part of the head: lower jaw rather longer than the upper: scales middle-sized: first dorsal fin dusky; the second, as well as the anal fin and tail, pale yellow spotted with brown: ventral fins plain. Native regions unknown.

COMMON PERCH.



Heath sculp.

RUFFE PERCH.



PERCA. PERCH.

Generic Character.

<i>Dentes acuti, incurvi.</i>	<i>Teeth sharp, incurvate.</i>
<i>Opercula triphylla, squamosa, serrata.</i>	<i>Gill-covers triphyllous, scaly, serrated.</i>
<i>Pinna dorsalis antice spinosa.</i>	<i>Dorsal fin spiny on the fore-part.</i>
<i>Squamæ (pluribus) duræ, asperæ.</i>	<i>Scales (in most species) hard and rough.</i>

COMMON PERCH.

Perca Fluviatilis. *P. olivacea, fasciis utrinque transversis semidecurrentibus subnigris, pinna dorsali subviolacea, cæteris rubris.*

Olivaceous Perch, with transverse semidecurrent blackish bands, dorsal fin subviolaceous, the rest red.

Perca fluviatilis. *Lin. Bloch. &c.*

THE Perch is an inhabitant of clear rivers and lakes throughout almost all parts of Europe, arriving sometimes to a very large size, and to the weight of eight, nine, or ten pounds: its general size however is far smaller, usually measuring from ten or fifteen inches to two feet in length, and weighing from two to four pounds. The colour of the Perch is brownish olive, sometimes accompanied by a slight gilded tinge on the sides, and commonly marked by five or six moderately broad, blackish, transverse, semidecurrent bars: the dorsal fin is of a

pale violet-brown, marked at the back of the spiny part by a roundish black spot accompanied by a smaller one : the rest of the fins, with the tail, are red. Sometimes this fish varies in colour, the olive assuming a richer cast of gilded green, and the dusky bars appearing more numerous, and of a blueish black. It is also occasionally observed to vary in having the back unusually elevated, and the hind part of the body, near the tail, distorted and curved downwards : this variety, if such it may be called, is commemorated by Mr. Pennant in the *British Zoology*, and it appears, from the *Fauna Suecica* of Linnæus that the same takes place in some parts of Sweden.

The Perch usually spawns in the early part of the spring, depositing a kind of extended bands of gluten, throughout which are disposed the ova in a sort of reticular direction. It is of a gregarious disposition, and is fond of frequenting deep holes in rivers which flow with a gentle current : it is extremely voracious, and bites eagerly at a bait : it is tenacious of life, and may be carried, according to Mr. Pennant, to the distance of sixty miles in dry straw, and yet survive the journey. It is one of those fishes which were held in repute at the tables of the ancient Romans, and is in general esteem at the present day, being considered as remarkably firm and delicate. In some of the Northern regions a species of isinglass is prepared from the skin.

SANDRE PERCH.

Perca Lucioperca. P. griseo-argentea, fasciis dorsalibus numerosis transversis subfuscis, pinna dorsali maculata.

Silvery-grey Perch, with numerous, transverse, dusky dorsal bands, and spotted dorsal fin.

Perca Lucioperca. Lin. Bloch. t. 51.

GENERAL length from one to two feet, but said sometimes to arrive at four feet: shape longer than in the preceding species, having something of the habit of a Pike, the head being rather produced, and the mouth furnished with large teeth: general colour silvery grey, deepest on the back, and with a pretty strong tinge of blue on the head and gill-covers: sides of the back marked by pretty numerous, slightly decurrent, blackish bands; dorsal fins by numerous dusky spots: pectoral fins reddish; the rest dusky. Native of clear rivers and lakes in the middle parts of Europe, and highly esteemed for the table: in general manners said to resemble the common Perch, but to be far less tenacious of life.

 VAR. ?

Perca Volgensis. Lin. Gmel. Pall. it. 1. p. 461.

GENERAL colour gilded olive, with five or six transverse semidecurrent blackish bands: dorsal fin banded in a similar manner: habit between that of the common Perch and the Sandre, for which reason

it has been sometimes considered as a hybrid fish between these two species : observed principally in the Volga and some other rivers opening into the Caspian Sea.

RUFFE PERCH.

Perca Cernua. *P. subolivacea, fusco-punctata, pinnae dorsalis spinis quindecim.*

Subolivaceous Perch, speckled with black, with fifteen spines in the dorsal fin.

Perca cernua. *Lin. Bloch. &c,*

The Ruffe. *Penn. Brit. Zool.*

LENGTH about six inches : shape more slender than that of the common Perch : head rather large, and somewhat flattened : teeth small : colour subolivaceous, with numerous dusky spots disposed over the body, dorsal, pectoral fins, and tail : abdomen whitish : native of many parts of Europe ; chiefly frequenting clear rivers, assembling in large shoals, and keeping in the deepest part of the water.

WHITING PERCH.

Perca Alburnus. *P. subfusca, fasciis plurimis obliquis fuscis, radio primo pinnae dorsalis spinoso.*

Pale-brown Perch, with numerous oblique dusky bands, and the first ray of the dorsal fin spiny.

Perca Alburnus. *Lin. Gmel.*

NATIVE of the American seas.

ARABIAN PERCH.

Perca Arabica. *P. argentea, lineis longitudinalibus nigris, macula caudali viridi-aurea medio nigra.*

Silvery Perch, with longitudinal black lines, and tail marked by a green-gold spot with black middle.

Perca Arabica. *Lin. Gmel. Forsk. Arab.*

TEETH long, subulate, strait, and distant, three of which on each side are larger than the rest: at the bottom of the palate are also several small setaceous teeth: scales broad, lax, and deciduous, disposed in about ten rows on each side: tail slightly bifid, with pointed lobes: gill-covers scarce distinctly serrated: native of the Arabian seas.

 LOPHAR PERCH.

Perca Lophar. *P. argentea, dorso olivaceo, pinnis ventralibus adnatis.*

Silvery Perch, with olivaceous back, and adnate ventral fins.

Perca Lophar. *Lin. Gmel. Forsk. Arab.*

SIZE and habit of a Herring: ventral fin united at the base and affixed by a membrane to the keel of the abdomen: tail forked, with the tips of the rays black: native of the Arabian seas.

NILOTIC PERCH.

Perca Nilotica. *P. fusca, pinnis dorsalibus subdistinctis, cauda integra.*

Brown Perch, with subdistinct dorsal fins, and entire tail.

Perca Nilotica. *Lin. Gmel.*

NATIVE of the Nile, but has also been observed in the Caspian seas.

OCELLATED PERCH.

Perca Ocellata. *P. pinnis dorsalibus subunitis, ocello ad pinnae caudæ basin. Lin. Gmel.*

Perch with subunited dorsal fins and an ocellate spot at the base of the tail.

FIRST ray of the dorsal fin very short: tail marked on the upper part of the base by a black ocellated spot bordered with white. Native of the American seas.

SMALL PERCH.

Perca Pusilla. *P. rubroargentea, scabra, ovata, compressa.*

Silvery-red, rough, ovate, compressed Perch.

Perca pusilla. *Lin. Gmel. Brunn. pisc. massil.*

AN extremely small species, scarcely exceeding the length of an inch and half: back convex: scales small, pointed, and rough: head spiny: native of the Mediterranean.

ZINGEL PERCH.

Perca Zingel. *P. olivaceo-flavescens, elongata, supra fusco transversim fasciata, capite subacuminato-dilatato, maxilla superiore producta.*

Olivaceo-flavescent elongated Perch, with transverse brown bands above, dilated and subacuminated head, and lengthened upper jaw.

Perca Zingel. *Lin. Bloch.*

LENGTH twelve or fifteen inches: head flattened, and when viewed from above, of a heart-shaped, or rather triangular form; the sides bulging out very considerably, and then sloping into the obtuse point of the snout: eyes vertical, moderately distant, and furnished with red or golden-orange irides: scales middle-sized, hard and rough: tail slightly divided, with obtuse lobes. Inhabits the Danube and other rivers in Germany, and is in considerable esteem as a food: deposits its spawn in March and April: is tenacious of life, and may be easily transported to a considerable distance.

 ZINGELIN PERCH.

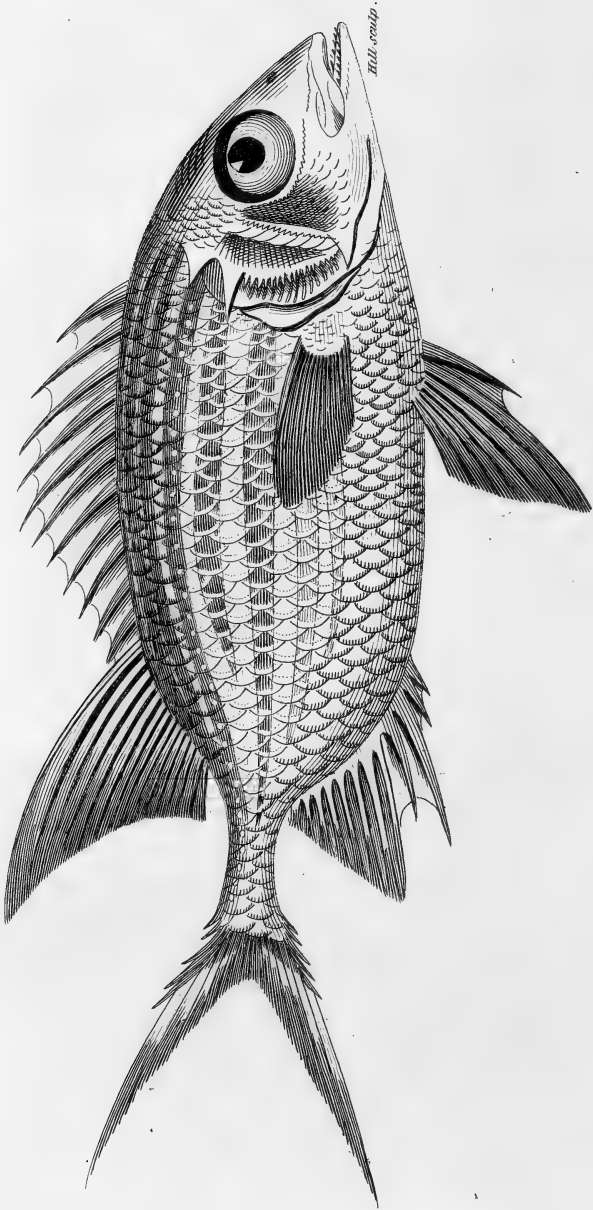
Perca Asper. *P. subolivacea, supra fusco transversim fasciata, capite dilatato-acuminato, pinna dorsali secunda radiis tredecim.*

Subolivaceous Perch, with transverse brown bands above, dilated and subacuminated head, and thirteen rays in the first dorsal fin.

Perca asper. *Lin. Bloch.*

EXTREMELY allied to the Zingel in general appearance, so that it might at first view be supposed

the same ; but is much smaller, and of a somewhat darker colour: the second dorsal fin has but thirteen rays, whereas the former species has usually nineteen: the body gradually diminishes towards the tail, where it is very slender; and the tail is rather more forked than in the Zingel: the scales are middle-sized, hard, and rough: inhabits clear rivers in several parts of Germany, France, &c. and is much esteemed for the table. By some authors this species has been considered merely as a variety of the Zingel.



SOGO HOLOCENTRUS.

HOLOCENTRUS. HOLOCENTRUS.

Generic Character.

<i>Habitus</i> generis Percæ.	<i>Habit</i> of the genus Perca.
<i>Opercula</i> squamosa, serrata, aculeata.	<i>Gill-covers</i> scaly, serrated, and aculeated.
<i>Squamæ</i> (pluribus) duræ, asperæ.	<i>Scales</i> (in most species) hard and rough.

With forked or lunated tail.

SOGO HOLOCENTRUS.

Holocentrus Sogo. *H. rubro-argenteus, lineis utrinque longitudinalibus flavis.*

Silvery red Holocentrus, with longitudinal yellow lines on each side.

Holocentrus Sogo. *Bloch.*

A HIGHLY beautiful species: general length about a foot: habit somewhat resembling that of a Carp, but of a squarer form, growing suddenly slender near the tail: eyes very large and gold-coloured: scales large and denticulated at the edges: tail very much forked. Native of the Mediterranean, Indian, and American seas, and considered as an excellent fish for the table.

SCHRAETSER HOLOCENTRUS.

Holocentrus Schraetser. *H. subfuscus, lineis utrinque quatuor longitudinalibus nigris, abdomine argenteo, capite nudo.*

Brownish Holocentrus, with four longitudinal black lines on each side, silvery abdomen, and naked head.

Gymnocephalus Schraetser. *Bloch.* Perca Schraetser. *Lin. Gmel.*

LENGTH about ten inches : shape somewhat lengthened : head destitute of scales, for which reason this species is by Dr. Bloch arranged under a distinct genus by the name of *Gymnocephalus* : scales rather small than large : tail slightly divided : lowest of the longitudinal lines composed of a row of spots : dorsal fin spotted with black : native of the Danube and its tributary streams : in considerable esteem as an article of food.

 RADULA HOLOCENTRUS.

Holocentrus Radula. *H. corpore punctis albis lineato.*

Holocentrus with the body lineated by white specks.

Perca Radula. *Lin. Gmel. Am. Acad.*

DORSAL fin very long : scales crenulated : native of India.

GATERINA HOLOCENTRUS.

Holocentrus Gaterina. *H. cærulescens, nigro-guttatus maculis sparsis.*

Blueish Holocentrus with black specks and scattered spots.

Sciæna Gaterina. *Lin. Gmel. Forsk. Arab.*

LENGTH about three spans: pectoral and ventral fins yellow and unspotted: native of the Arabian seas, varying in size and colours.

 GREENISH HOLOCENTRUS.

Holocentrus Virescens. *H. virescens, nebulis utrinque dorsalibus transversis semidecurrentibus olivaceis, capite flavo-striato.*

Greenish Holocentrus with transverse dorsal semidecurrent olivaceous bands, and head streaked with yellow.

Holocentrus virescens. *Bloch.*

LENGTH about twelve inches: head and gill-covers marked by somewhat irregular longitudinal yellow streaks: eyes fulvous: scales middle-sized: tail slightly lunated. Native of the Indian seas.

 FIVE-LINED HOLOCENTRUS.

Holocentrus Quinquelineatus. *H. subflavus dorso subfusco, corpore lineis utrinque quinque longitudinalibus cæruleis.*

Yellowish Holocentrus with brownish back, and body marked on each side by five longitudinal blue lines.

Holocentrus quinquelineatus. *Bloch.*

LENGTH as in the preceding species: eyes rather large, and reddish: scales middle-sized: fins red, except the fore-part of the dorsal fin, which is pale-brown: tail slightly lunated. Native of Japan.

BENGAL HOLOCENTRUS.

Holocentrus Bengalensis. *H. subfulvus, subtus argenteus, supra fasciis utrinque longitudinalibus cærulescentibus nigro-marginatis.*

Subfulvous Holocentrus, silvery beneath, and marked on each side the upper part by five longitudinal blueish bands margined with black.

LENGTH about six inches: scales middle-sized: eyes rather large: fins pale: tail slightly lunated. Native of Bengal.

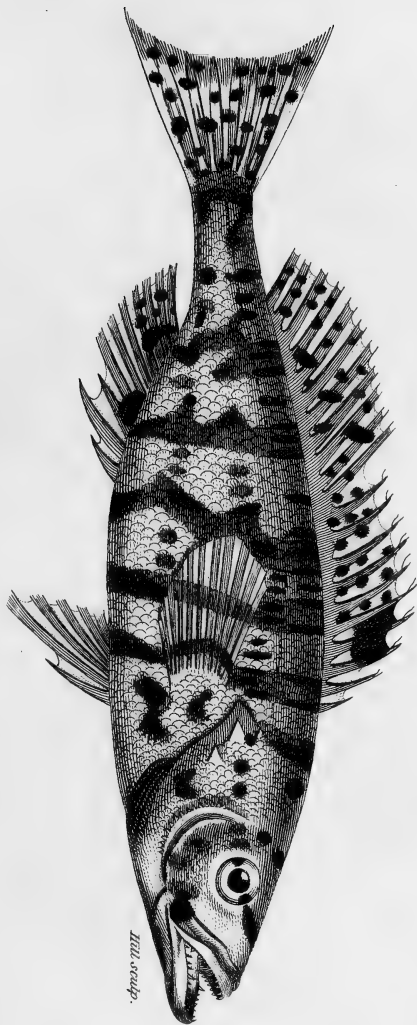
 TIGRINE HOLOCENTRUS.

Holocentrus Tigrinus. *H. albus, corpore fasciis transversis, pinnis maculis fuscis.*

White Holocentrus, with the body transversely banded and fins spotted with black.

Holocentrus Tigrinus. *Bloch.*

LENGTH a foot: colour subargenteous white: variegations deep-brown: head shaped somewhat like that of a Pike; scales rather small: tail slightly lunated: native of the Indian seas: esteemed for the table.



TIGRIDAE HOLOCENTRUS.



DECUSSATED HOLOCENTRUS.

Holocentrus Decussatus. *H. albus, dorso fusco, corpore fasciis duabus longitudinalibus septemque transversis fuscis.*

White *Holocentrus*, with brown back, and body marked by two longitudinal and seven transverse brown bars.

Epinephelus striatus. *Bloch.*

LENGTH about twelve inches: back dusky brown; sides marked by two longitudinal brown stripes from the gills to the tail, and by seven transverse ones, each continued to some little distance into the dorsal fin, which is white or pale: scales middle-sized: eyes blue: tail brown, and slightly lunated. Native of the American seas: referred by Bloch to a distinct genus, under the title of *Epinephelus*; the eyes of this, as well as of some other species, appearing covered with the common skin, as in the *Murænæ*, &c.

 STRIATED HOLOCENTRUS.

Holocentrus Striatus. *A. subluteus, dorso subfusco, corpore fasciis transversis fuscis, pinna dorsali postice ramentacea macula nigra.*

Subluteous *Holocentrus*; with brownish back, body marked by transverse brown bands, dorsal fin ramentose behind and marked by a black spot.

Holocentrus Striatus. *Bloch.*

LENGTH about six inches: scales middle-sized: exterior gill-covers sharp-pointed: eyes large: fins, except the ventral, pale: tail nearly strait, or but very slightly lunated: native regions unknown.

ARGENTINE HOLOCENTRUS.

Holocentrus Argentinus. *H. subfuscus, lateribus argenteis.*

Brownish Holocentrus with silvery sides.

Holocentrus argentinus. *Bloch.*

LENGTH about five inches : second lamina of the gill-covers marked by three short spines: eyes rather large : scales small : fins pale, with the rays bifid and continued a little beyond the membrane : tail very nearly straight, or scarce perceptibly lunated, so that it might rank with nearly equal propriety under either division of the genus. Native regions unknown.

 BLACK HOLOCENTRUS.

Holocentrus Niger. *H. niger, squamis minutissimis.*

Black Holocentrus with extremely minute scales.

Black-Fish. *Penn. Brit. Zool. Borl. Cornw. t. 25. f. 8.*

SAID to resemble the *Perca cernua*, of which it has even been sometimes considered as a variety : length fifteen inches : head somewhat like that of a trout : teeth very small : dorsal fin reaching far down the back : tail forked : described by Ray, Pennant, &c. on the authority of Mr. Jago : found about the coast of Cornwall.

ACERINE HOLOCENTRUS.

Holocentrus Acerinus. *H. pinnæ dorsalis radiis 31, spinis 17.*

Holocentrus with fourteen soft and seventeen spiny rays in the dorsal fin.

Perca acerina. Lin. Gmel.

IN general appearance allied to the *Perca cernua*, but differs in having a larger head, and in the number of rays in the fins. Native of the Euxine sea: in esteem as an edible fish.

 BLUEISH HOLOCENTRUS.

Holocentrus Cærulescens. *H. cærulescens, pinnis omnibus flavis.*

Blueish Holocentrus, with all the fins yellow.

Holocentrus flavo-cæruleus. *Cepede.*

NATIVE of the Indian seas: observed by Commer-
son.

With undivided or rounded tails.

VARIEGATED HOLOCENTRUS.

Holocentrus Variegatus. *H. ruber, lineis septem transversis nigris, capite abdomineque lituris cæruleis variato.*

Red Holocentrus, with seven transverse black lines, and the head and abdomen varied with blue streaks.

Perca marina. Lin. Gmel.

NATIVE of the Mediterranean and Northern seas.

COTTOID HOLOCENTRUS.

Holocentrus Cottoides. *H. pinnis omnibus lineis duabus punctatis.*
Lin. Gmel. Mus. Ad. Frid.

Holocentrus with all the fins marked by two speckled lines.

BODY marked with roundish brown spots : native of the Indian seas.

 PHILADELPHIC HOLOCENTRUS.

Holocentrus Philadelphicus. *H. fasciis maculisque transversis
 nigris, subtus rubens, pinna dorsali macula media nigra.*
Perca Philadelphica. Lin. Gmel.

NATIVE of the American seas : observed by Dr. Garden.

 GREAT HOLOCENTRUS.

Holocentrus Gigas. *H. ochraceus fusco-nebulosus, operculis
 trispinosus, spinis dorsalibus undecim.*
 Ochraceous Holocentrus, with brown clouds, three-spined gill-covers, and eleven dorsal spines.
Perca gigas. Lin. Gmel.

LENGTH three feet : shape ovate : body compressed : mouth large : eyes yellow : teeth sharp and in several rows : dorsal fin ramentose, with eleven spiny and fifteen soft rays. Native of the Mediterranean.

FORSKAL'S HOLOCENTRUS.

Holocentrus Forskalii. *H. ruber, fasciis transversis latis subalbidis quaternis.*

Red Holocentrus, with four broad transverse whitish bands.

Perca fasciata. *Lin. Gmel.*

SIZE considerable: scales small: head large: eyes large, with two longitudinal furrows between them: pectoral fins slightly pedunculated, and almost connected by a membrane. Native of the Red Sea: observed by Forskal.

TAUVIN HOLOCENTRUS.

Holocentrus Tauvinus. *H. lineari-oblongus fuscus, guttis ferrugineo-nigris.*

Linear-oblong Holocentrus, with blackish-ferruginous spots.

Perca Tavina. *Lin. Gmel.*

HEAD cuneated and sloping: lips obtuse: the upper retractile: scales small: fins dusky ferruginous, with darker-coloured spots. Native of the Arabian seas.

ONGO HOLOCENTRUS.

Holocentrus Ongo. *H. fuscus, corpore maculis elongatis transversim notato, pinnis dorsali caudali analique flavo-guttatis.*

Brown Holocentrus, with the body marked transversely by elongated spots, and the dorsal, anal, and caudal fins spotted with yellow.

Holocentrus Ongo. *Bloch.*

NATIVE of Japan where it is known by the name of *Ongo*.

GOLDEN HOLOCENTRUS.

Holocentrus Auratus. *H. luteus, rubro-punctulatus.*

Gold-yellow Holocentrus, with red specks.

Holocentrus auratus. *Bloch.*

NATIVE of the East Indies.

FOUR-LINED HOLOCENTRUS.

Holocentrus Quadrilineatus. *H. argenteus, dorso subfusco, corpore supra lineis utrinque quatuor longitudinalibus nigris.*

Silvery Holocentrus, with brownish back, and body marked above by four longitudinal black lines on each side.

Holocentrus quadrilineatus. *Bloch.*

LENGTH about five inches: scales small: spiny part of the dorsal fin marked on the edge by a black patch. Native of the East Indies.

FASCIATED HOLOCENTRUS.

Holocentrus Fasciatus. *H. subviridi-flavesceus fasciis transversis fuscis subtus bifidis.*

Green-yellowish Holocentrus with transverse brown bands divided beneath.

Holocentrus fasciatus. *Bloch.*

LENGTH twelve inches: shape rather lengthened: head somewhat like that of a Pike: scales middle-sized: bands of the body continued through the dorsal fin: rest of the fins and tail plain, and of a pale colour. Native region unknown.

PUNCTATED HOLOCENTRUS.

Holocentrus Punctatus. *H. flavus, guttis nigris punctisque rubris aspersus.*

Yellow Holocentrus, sprinkled over with black spots and red points.

Holocentrus punctatus. *Bloch.*

SIZE and habit of the *Atlantic Sparus* (*Perca maculata, Bloch.*): colour pale yellow, marked on all parts with numerous small round black spots, with smaller red ones interspersed: fins and tail strongly tinged with red. Native of the Brazilian seas.

SPUR-GILLED HOLOCENTRUS.

Holocentrus Calcarifer. *H. subargenteus dorso subfusco, squamis magnis, operculis calcaratis.*

Subargenteous Holocentrus, with brownish back, large scales, and spurred gill-covers.

Holocentrus calcarifer. *Bloch.*

LENGTH about a foot: habit that of a Carp, but rather more lengthened in proportion: body marked by dusky lines along each row of scales: anterior gill-covers furnished with four strong sharp spines, so placed as to bear some resemblance to the rowel of a spur: posterior gill-covers armed with a single spine: fins and tail marked across the rays by brown spotted streaks. Native of Japan.

SURINAM HOLOCENTRUS.

Holocentrus Surinamensis. *H. subfuscus, nebulis subluteis, capite rubro, operculis anterioribus ciliato-spinosis.*

Brownish Holocentrus, with subluteous clouds, red head, and anterior gill-covers spine-ciliated.

Holocentrus Surinamensis. *Bloch.*

LENGTH twelve inches : habit of a Carp : general colour brown, with several large, roundish, obscurely-yellow patches on each side ; the scales on the brown parts being each marked by a white speck : head and gill-covers red : mouth small : dorsal fin scaly at the base of the back-part : tail crossed near the base by a brown bar. Native of Surinam, where it is highly esteemed for the table, being considered as one of the best fishes which the country produces.

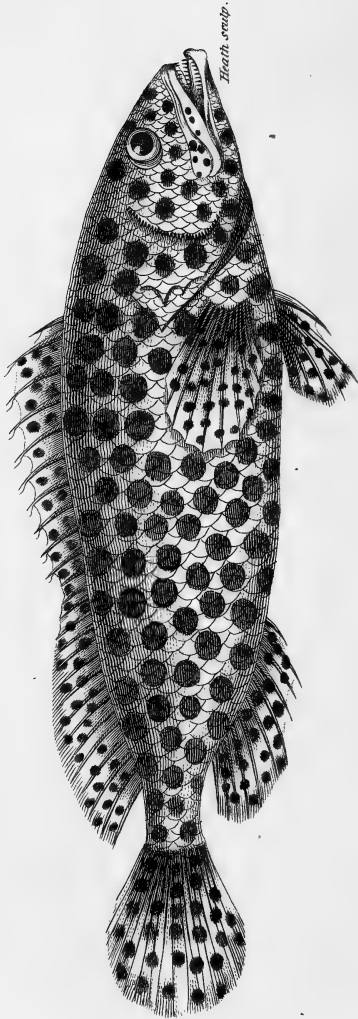
 AFRICAN HOLOCENTRUS.

Holocentrus Afer. *H. oblongo-ovatus fuscus, squamis parvis, cauda brevi.*

Oblong-ovate brown Holocentrus, with small scales and short tail.

Holocentrus Afer. *Bloch.*

LENGTH twelve inches : outline of the body, exclusive of the fins, somewhat resembling that of a Sole : thickness considerable : scales very small, but those on the posterior gill-covers considerably larger than the rest : dorsal fin covered with small



MERRIA HOLOCENTRUS.

scales, and furnished on the fore-part with extremely thick or strong spines: back-part and anal fin rounded, and reaching to within a little distance of the tail, which is remarkably small for the size of the fish, and of a round shape: pectoral fins whitish: ventral pale red: native of the coasts of Guinea, feeding on marine insects, &c. and in considerable estimation as a food.

JAPANESE HOLOCENTRUS.

Holocentrus Japonicus. *H. ruber, squamis parvis, iridibus cæruleis flavisque.*

Red *Holocentrus*, with small scales and blue and yellow irides.

Epinephelus ruber. *Bloch.*

SIZE of a Perch: scales small: eyes furnished with a double iris, the first or nearest the pupil being yellow, and the second blue: abdomen and spiny part of the dorsal fin of a paler colour than the other parts of the fish: native of Japan.

MERRA HOLOCENTRUS.

Holocentrus Merra. *H. albus, undique fusco-maculatus.*

White *Holocentrus*, spotted on all parts with brown.

Epinephelus Merra. *Bloch.*

SIZE and habit of a Trout: scales small: body very thickly marked with middle-sized, subhexagonal, deep-brown spots; those on the head and towards the tail smaller than the rest: fins and tail marked with very numerous spots also: native of the Japanese seas.

TORTOISE-SHELL HOLOCENTRUS.

Holocentrus Testudineus. *H. subluteus, fasciis transversis subramosis fuscis, operculis cæruleo fasciatis, pinnis nigricantibus.*

Subluteous Holocentrus, with slightly branching brown bands, blue-striped gill-covers, and blackish fins.

Epinephelus bruneus. *Bloch.*

LENGTH about six inches: shape rather lengthened: scales middle-sized: mouth wide: fins marked by a pair of dusky bars towards their base, and deepening into blackness towards their edges: dorsal fin scaly at the base. Native of the Northern seas.

MARGINED HOLOCENTRUS.

Holocentrus Marginatus. *H. cærulescens, dorso subfusco, pinnis rubris, dorsali antice nigro-marginato.*

Blueish Holocentrus, with brownish back, red fins, and dorsal fin edged on the fore-part with black.

Epinephelus marginalis. *Bloch.*

SIZE of a small Perch: scales rather small: eyes yellow: mouth wide. Native region unknown.

SONNERAT'S HOLOCENTRUS.

Holocentrus Sonneratii. *H. subflavus, fasciis tribus transversis argenteis fusco-marginatis.*

Yellowish Holocentrus, with three transverse silvery bands edged with brown.

Holocentrus Sonneratii. *Cepede.*

NATIVE of the Indian seas: mentioned by Cepede from Sonnerat.

 LANCEOLATE HOLOCENTRUS.

Holocentrus Lanceolatus. *H. argenteus, fusco transversim fasciatus, pinnis dorsali anali caudalique apice sublanceolatis.*

Silvery Holocentrus, transversely banded with brown, and with the dorsal, anal, and caudal fins sublanceolate.

Holocentrus lanceolatus. *Bloch.*

SIZE of a small Perch: allied in some degree to the Chætodons: scales extremely small: pectoral fins and tail marked by a few black spots: tail slightly inclining to a lanceolate shape: native of the East Indies.

BLUE-SPOTTED HOLOCENTRUS.

Holocentrus Cæruleo-punctatus. *H. albido-cærulescens, sub-
flavo-nebulosus, pinnis fuscis cæruleo-maculatis.*

Blueish Holocentrus, with pale-yellow clouds, and deep-brown
fins spotted with blue.

Holocentrus cæruleo-punctatus. *Bloch.*

LENGTH about three inches and a half: body
whitish, slightly clouded with pale blue; fins and
tail deep brown, with numerous round blue spots;
scales extremely small. Native country unknown.

 PIED HOLOCENTRUS.

Holocentrus Bicolor. *H. nigricans, maculis transversis irregu-
laribus albis.*

Blackish Holocentrus, with irregular white spots,

Holocentrus maculatus.

A VERY small species: length about three inches:
colour deep blackish brown, marked by three or
four interrupted white bands or patches: tail marked
by a white bar: scales as in the two preceding
species.

BODIANUS. BODIAN.

Generic Character.

Habitus Percæ.

Opercula squamosa, serrata,
aculeata.

Squamæ (pluribus) læves.

Habit of the genus Percæ.

Gill-covers scaly, serrated,
and aculeated.

Scales (in most species)
smooth.

With divided or forked tails.

PURPLE-BACKED BODIAN.

Bodianus Bodianus. *B. luteus, dorso purpureo,*

Gold-yellow Bodian, with purple back.

Bodianus Bodianus. *Bloch.*

LENGTH about fourteen inches: shape somewhat like that of a trout: colour yellow, each scale being deeply edged or tipped with orange colour: back purplish rose-colour, with the scales tipped with blue: fins lanceolate: tail nearly even in the middle, but running into a lanceolate tip at each side. Native of the South American seas.

FIVE-SPINED BODIAN.

Bodianus Pentacanthus. B. roseus, abdomine argenteo, pinna dorsali antice flava.

Rose-coloured Bodian, with silvery abdomen, and dorsal fin yellow on the fore-part.

Bodianus pentacanthus. Bloch.

LENGTH about thirteen inches: shape nearly as in the preceding, but rather more slender: colour beautiful deep rose, with a silvery cast on the abdomen: fore-part of the dorsal fin yellow; remainder, together with the rest of the fins, deep rose: tail deeply forked, the upper lobe stretching beyond the lower: anterior gill-covers armed with five strong spines: native of the Brazilian seas, and in considerable esteem as a food.

 AYA BODIAN.

Bodianus Aya. B. ruber, abdomine argenteo, operculis unispinosis, cauda lunata.

Red Bodian, with silvery abdomen, single-spined gill-covers, and lunated tail.

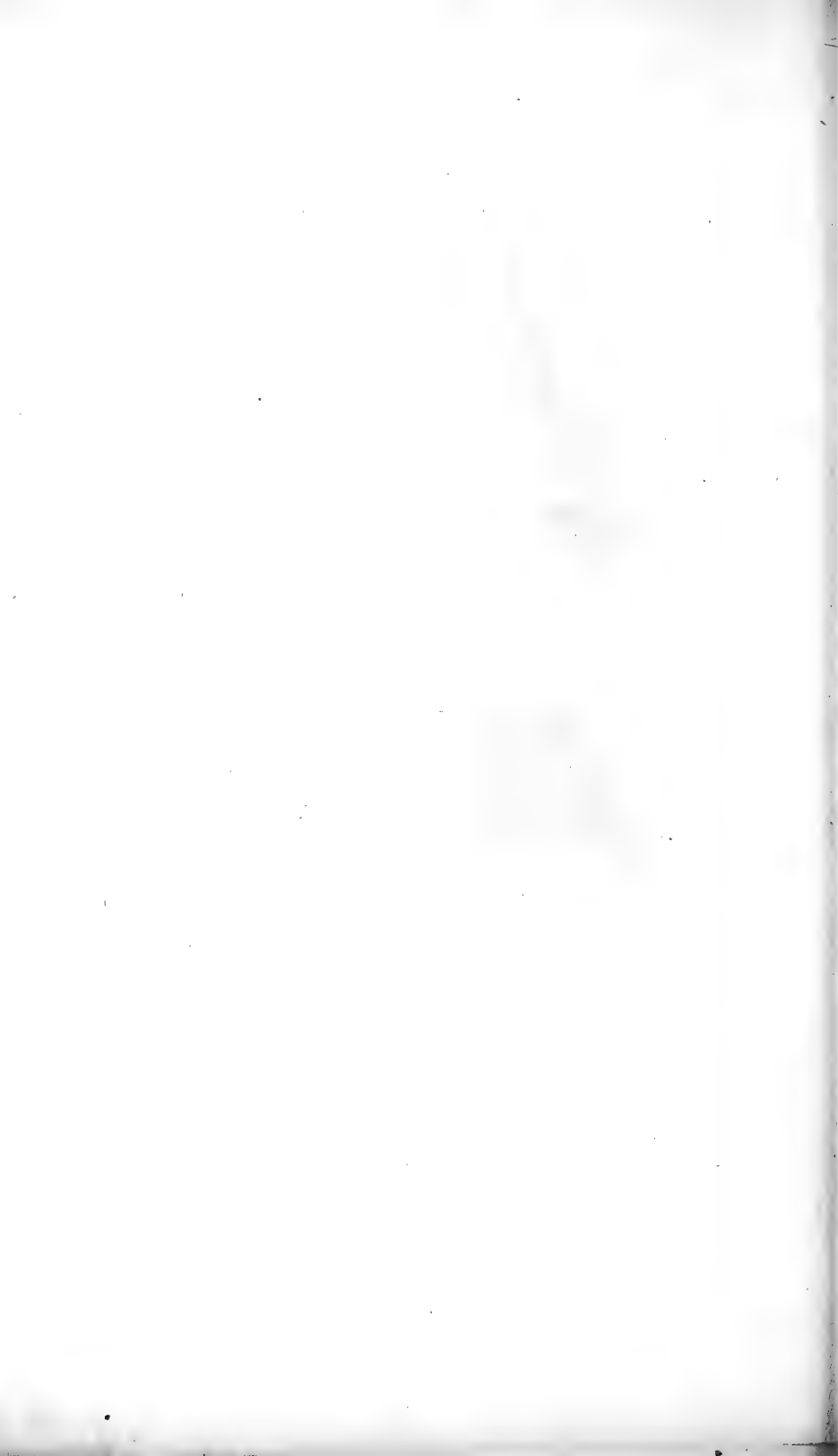
Bodianus Aya. Bloch.

A HIGHLY beautiful species: size and habit of a Carp: colour bright red, with silvery abdomen, and most of the scales on the body edged with silver: back blood-red: dorsal fin rounded at the tip: tail lunated: scales middle sized: eyes red. Native of the Brazilian seas, and in much esteem as a food: said to grow to the length of three feet.



FIVE-SPINED BODIAN.

1803 July 1. London. Published by G. Hearslev. Fleet Street.



LARGE-SCALED BODIAN.

Bodianus Macrolepidotus. *B. griseo-fuscus, squamis magnis rotundatis, margine denticulatis.*

Grey-brown Bodian, with large rounded scales denticulated at the edges.

Bodianus macrolepidotus. Bloch.

LENGTH about a foot : shape moderately broad : mouth small : scales very large, with pale edges : eyes large and yellow : pectoral and ventral fins pale yellow ; the rest brown : tail slightly forked. Native of the East Indies.

 SPOTTED BODIAN.

Bodianus Maculatus. *B. olivaceo-flavescens, cæruleo-maculatus, pinnis subrubentibus.*

Olivaceous-yellow Bodian, with blue spots, and reddish fins.

Bodianus maculatus. Bloch.

LENGTH about a foot : shape like that of a Trout : head rather large and short : scales small : head, body, fins, and tail, marked by numerous smallish blue spots edged with black : tail slightly lunated. Native of Japan.

LOUTI BODIAN.

Bodianus Louti. *B. oblongo-lanceolatus miniatus, guttis violaceis, pinnis margine flavis.*

Oblong-lanceolate Bodian, with smallish violaceous spots, and fins edged with yellow.

Perca Louti. *Lin. Gmel. Forsk. Arab.*

LENGTH between two and three feet : eyes red : teeth setaceous and flexile, with some stronger conical ones intermixed : tail linear, and bifalcate. Native of the Arabian seas : observed by Forskal.

 PALPEBRAL BODIAN.

Bodianus Palpebratus. *B. spadiceus, oculis ochraceis valvula libera flavescente munitis.*

Subferruginous Bodian, with ochre-coloured eyes, guarded by a moveable yellow valve.

Sparus palpebratus. *Lin. Gmel. Pall. nord. beytr. 2.*

SHAPE resembling that of a Perch, but the head more obtuse : length a few inches : eyes guarded externally by an oval moveable yellow valve or cover, attached by the anterior extremity : native of the seas about Amboyna.

SILVERY BODIAN.

Bodianus Argenteus. *B. argenteus, dorso subcærulescente.*

Silvery Bodian, with blueish back.

Bodianus argenteus. *Bloch.*

LENGTH about six inches: shape like that of a Herring: scales middle sized: fins slightly tinged with yellow: tail pretty deeply forked: native of the Mediterranean.

With even, or rounded tail.

APUA BODIAN.

Bodianus Apua. *B. ruber, dorso maculis, corpore punctis nigris, pinnis nigro marginatis.*

Red Bodian, with the back spotted, the body specked, and the fins edged with black.

Bodianus Apua. *Bloch.*

LENGTH twelve or fourteen inches: habit that of a Carp: colour blood-red, with a silvery cast towards the abdomen: scales middle-sized: spiny rays of the dorsal fin extremely strong: eyes red: tail nearly even, or but very slightly rounded: native of the Brazilian seas.

GUTTATED BODIAN.

Bodianus Guttatus. *B. fusco-flavescens*, corpore pinnisque guttis ocellatis fuscis.

Yellowish-brown Bodian, with body and fins marked by small ocellated deep-brown spots.

Bodianus guttatus. *Bloch*. *Jacob Evertsen*. *Ray*.

LENGTH about a foot: scales rather small than large: whole fish pretty thickly sprinkled with small round deep-brown spots, of which those towards the back, tips of the fins, and tail, are marked with a pale central spot: tail rounded. Native of the Indian and American seas, and in the latter known to the English by the name of the *Jew-Fish* or *Jacob Evertsen*: in considerable esteem as an edible fish.

 ZEBRA BODIAN.

Bodianus Zebra. *B. subluteus*, corpore fasciis transversis, capite longitudinalibus fuscis.

Subluteous Bodian, with the body marked by transverse and the head by longitudinal brown bands.

Bodianus Boenack. *Bloch*.

LENGTH about ten inches: breadth moderate: colour dull luteous, paler beneath: body crossed by about seven brown bands, continued into the dorsal fin: head marked by three, or four longitudinal stripes: tail rounded, and crossed towards the base by a brown band: eyes pale yellow: scales rather small than large: native of Japan, where it is known by the name of *Boenack*.

ROGAA BODIAN.

Bodianus Rogaa. *B. nigro-rufescens, pinnis nigris.*

Blackish-rufescent Bodian, with black fins.

Perca Rogaa. *Lin. Gmel. Forsk. Arab.*

LENGTH about three spans: lips broad, and very obtuse: teeth very numerous, setaceous, and often accompanied by two strong conic-subulate front-teeth: dorsal fin ramentose: tail even: native of the Arabian seas: observed by Forskal.

 LUNATED BODIAN.

Bodianus Lunulatus. *B. nigro-ferrugineus, pinnis nigris pone hyalino-albis.*

Blackish-ferruginous Bodian, with black fins, whitish-transparent towards the back-part.

Perca lunaria. *Lin. Gmel. Forsk. Arab.*

ALLIED to the *Rogaa* Bodian: anal and dorsal fins marked towards the edge by a dull reddish band, and afterwards by a whitish subtransparent one: tail marked by a pale crescent, and tipped with dull rufous. Native of the Arabian seas: observed by Forskal.

BLACK-AND-WHITE BODIAN.

Bodianus Melanoleucos. *B. argenteus, fasciis transversis, irregularibus, nigris.*

Silvery Bodian, with irregular, transverse, black bands.

Bodianus melanoleucos. *Cepede.*

LENGTH, according to Cepede, four or five decimetres: shape lengthened: mouth and fins yellow: pectoral and ventral fins marked at the base by a black spot: teeth unequal, and in several rows: palate also beset in one part with small teeth. Observed by Commerson in the Indian seas.

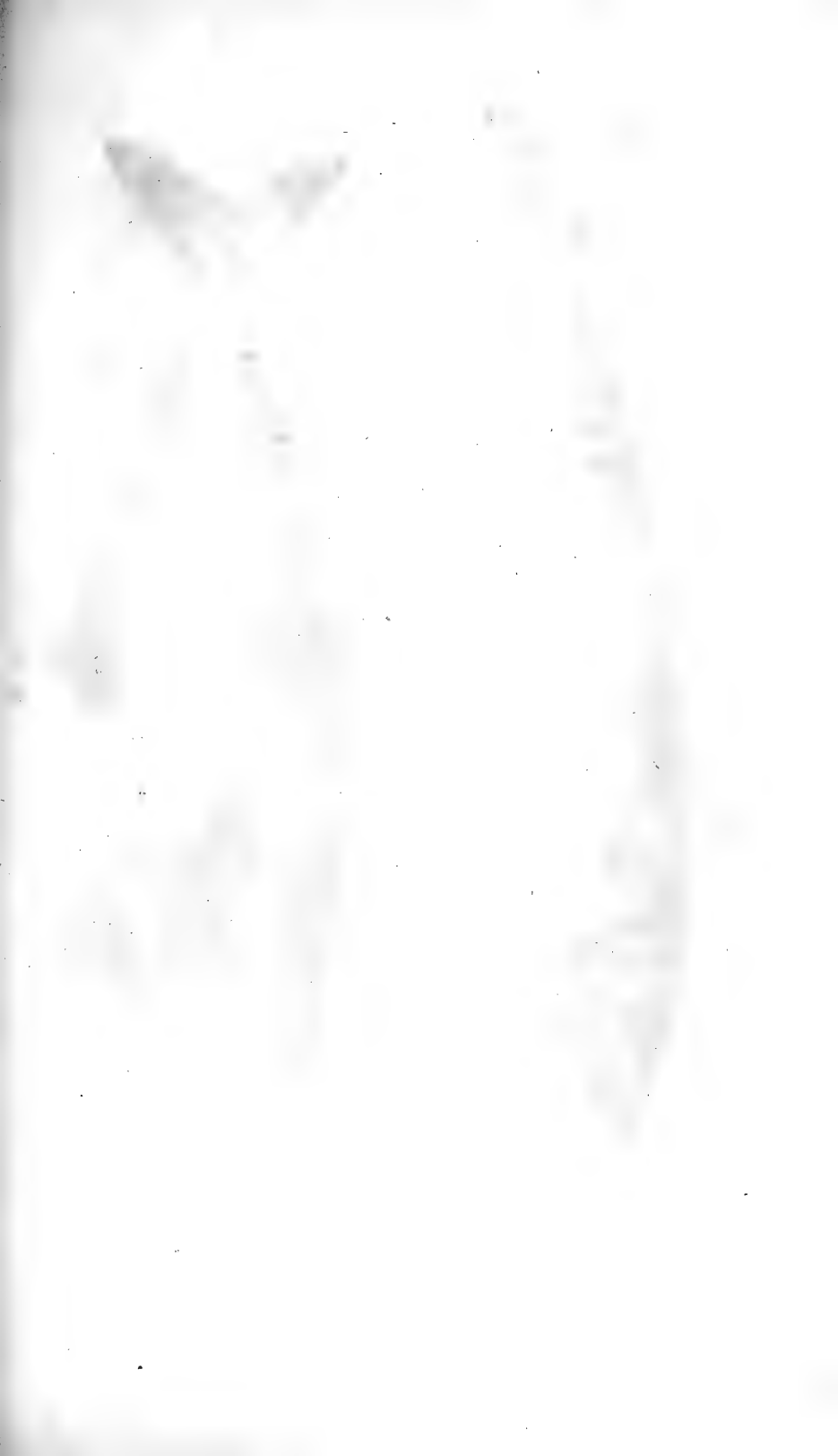
 STAR-EYED BODIAN.

Bodianus Stellifer. *B. argenteus, dorso subluteo, orbitis subtus spinosis.*

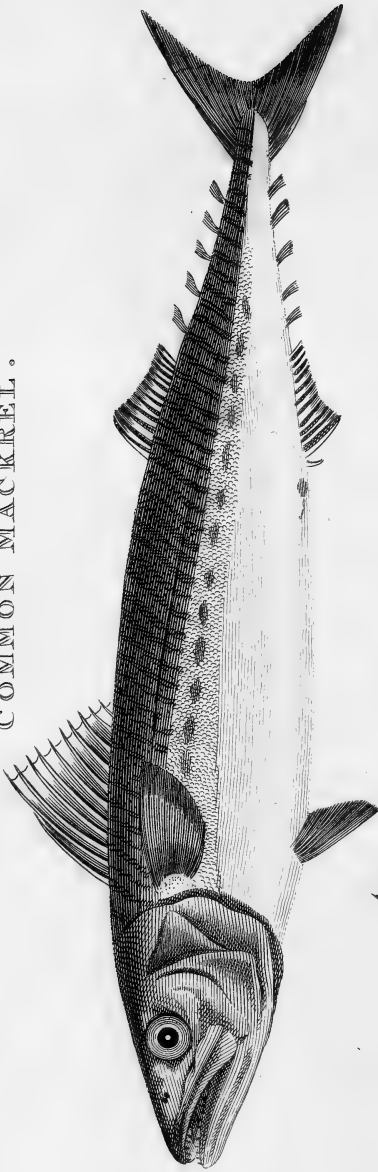
Silvery Bodian, with subluteous back, and orbits spiny beneath.

Bodianus stellifer. *Bloch.*

A SMALL species: length about five inches and a half: shape somewhat like that of a small Tench, but rather longer: head short and obtuse: scales middle sized: orbits denticulated beneath in such a manner as to appear furnished with a series of small short spiny processes: tail oblong-rounded. Native of the seas about the Cape of Good Hope.

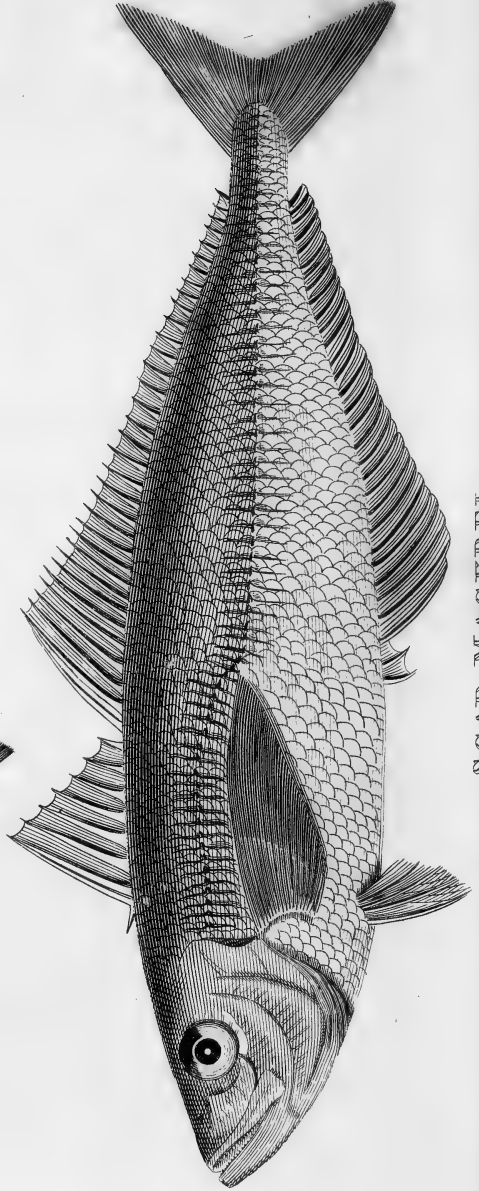


COMMON MACKREL.



Keen's sculp.

SCAD MACKREL.



SCOMBER. MACKREL.

Generic Character.

<i>Corpus</i> oblongum, læve, linea laterali interdum carinatum.	<i>Body</i> oblong, smooth, some- times carinated by the lateral line.
<i>Pinnulæ</i> sæpius supra in- fraque versus caudam.	<i>Finlets</i> (in most species) above and below, towards the tail.

COMMON MACKREL.

Scomber Scomber. *S. cæruleus, lineis numerosis transversis nigris, abdomine argenteo, pinnulis supra infraque quinque.*

Blue Mackrel, with numerous transverse black lines, silvery abdomen, and five finlets above and below.

Scomber. *Pliny.* Scomber Scomber. *Lin. Bloch. t. 54.*

Common Mackrel. *Penn. Brit. Zool. Will. ichth. &c. &c.*

THIS beautiful fish is a native of the European and American seas; generally appearing at stated seasons, and swarming, in vast shoals, round particular coasts. Its great resort however seems to be within the Arctic circle, where it resides in innumerable troops, grows to a larger size than elsewhere, and is supposed to find its favourite food, consisting chiefly of marine insects, in far greater plenty than in warmer latitudes. During the severity of the northern winter it is said to lie im-

bedded in the soft mud, beneath the vast crusts of ice surrounding the polar coasts; being thus sufficiently protected from the effects of frost; and, on the return of spring, is generally believed to migrate in enormous shoals, of many miles in length and breadth, and to visit the coasts of more temperate climates in order to deposit its spawn. Its route has been supposed nearly similar to that of the Herring; passing between Iceland and Norway, and proceeding towards the northern part of our own island, where a part throws itself off into the Baltic, while the grand column passes downwards, and enters the Mediterranean through the straits of Gibraltar.

This long migration of the Mackrel, as well as of the Herring, seems at present to be greatly called in question: and it is thought more probable that the shoals which appear in such abundance round the more temperate European coasts, in reality reside during the winter at no very great distance; immersing themselves in the soft bottom, and remaining in a state of torpidity*; from which they are awakened by the warmth of the returning spring, and gradually recover their former activity. At their first appearance their eyes are observed to

* Of this the Count de Cepede adduces the testimony of an eye-witness; viz. *Monsr. Pleville-le-Peley*, who, about the coasts of Hudson's bay, observed the mud, at the bottom of the small clear hollows encrusted with ice round those coasts, entirely bristled over by the tails of Mackrels imbedded in it nearly three parts of their length.

appear remarkably dim, as if covered with a kind of film, which passes off as the season advances, when they appear in their full perfection of colour and vigor.

The general length of the Mackrel is from twelve to fifteen or sixteen inches; but in the northern seas it is occasionally found of far greater size, and among those which visit our own coasts instances sometimes occur of specimens far exceeding the general size of the rest. The colour of this fish, on the upper parts, as far as the lateral line, is a rich, deep blue, accompanied by a varying tinge of green, and marked by numerous black transverse streaks, which in the male are nearly strait, but in the female beautifully undulated: the jaws, gill-covers, and abdomen, are of a bright silver-colour, with a slight varying cast of gold-green along the sides, which are generally marked in the direction of the lateral line by a row of long dusky spots: the scales are very small, oval, and transparent: the pinnules or spurious fins are small, and are five in number both above and below. The shape of the Mackrel is highly elegant, and it is justly considered as one of the most beautiful of the European fishes. Its merit as an article of food is universally established, and it is one of those fishes which have maintained their reputation through a long succession of ages; having been highly esteemed by the ancients, who prepared from it the particular condiment or sauce known to the Romans by the title of *Garum*, and made by salting the fish, and

after a certain period, straining the liquor from it. This preparation, once so famous, has been long superseded by the introduction of the Anchovy for similar purposes.

COLY MACKREL.

Scomber Colias. *S. lete viridis et azureus.* Lin. Gmel. Cetti pesc. &c. Sardin. p. 196.

Bright-green Mackrel varied with blue.

Colias. Aldr. Gesn. Will. &c.

THIS is said to be extremely allied to the common Mackrel, but somewhat smaller, and is occasionally observed about the coasts of Sardinia.

JAPANESE MACKREL.

Scomber Japonicus. *S. cærulescens, pinnulis quinque spuris.* Lin. Gmel. Houttuyn Act. Haarl. 20.

Blueish Mackrel, with five spurious fins.

THIS also is so nearly allied to the common Mackrel, that it may be doubted whether it be a truly distinct species. It is said to be about eight inches long; shaped like a Herring, with silvery head, small scales, and ciliated or denticulated mandibles. Native of the Japanese sea.

GILDED MACKREL.

Scomber Auratus. *S. aureus, pinnulis spuris quinque.* *Lin.*
Gmel. Houtuyn Act. Haarl. 20.

Gold-coloured Mackrel, with five spurious fins.

MUCH allied to the preceding, as well as to the common Mackrel, but differs in colour, as well as in the number of rays in the anal fin, which amounts to six only. Native of the Japanese sea.

 TUNNY.

Scomber Thynnus. *S. fusco-cærulescens, abdomine argenteo, pinnulis supra infraque subdenis flavis.*

Dusky-blueish Mackrel, with silvery abdomen, and about ten yellow finlets above and below.

Scomber Thynnus. *Lin. Bloch.*

Thynnus. *Plin. l. 9. c. 15. Coretta alba Pisonis. Will.*

Tunny. *Penn. Brit. Zool. 3.*

THE Tunny is a very large species, growing to the length of eight, or even ten feet, but much more commonly seen of about the length of two feet. It is an inhabitant of the Mediterranean, Northern, Indian, and American seas, and is of a gregarious nature, frequently assembling in large shoals. It is an animal of great strength and fierceness, preying on all kinds of smaller fishes, and is said to be the peculiar persecutor of the Mackrel and the Flying-Fish. Its flesh, though rather coarse, was much esteemed by the ancient Greeks and Romans, who established their Tunny-Fisheries as in modern

times, on many parts of the Mediterranean coasts, where this fish still continues to be taken in great plenty, more especially round the island of Sicily. In the British seas it is rarely observed in shoals; the individuals which occur being rather considered as accidental stragglers. Mr. Pennant records an instance of one which he saw on the northern coasts of Scotland, weighing 460 pounds, and measuring seven feet ten inches in length. Much larger specimens however are occasionally taken in the Sicilian sea. In the Indian ocean this species is said to be seen of an enormous size, and to assemble in vast shoals. Pliny pretends that the fleet of Alexander the Great was impeded in its progress by a shoal of Tunnies, so strongly wedged together that he found it necessary to dispose his ships into battle array, in order to force through the opposing phalanx of fishes*.

The Tunny-Fishery is of equal importance to the inhabitants of the Mediterranean coasts as the Herring-Fishery to those of the more northern parts of Europe. The smaller fishes are chiefly sold fresh, while the larger are cut in pieces and salted, and barrelled up for sale.

The general colour of the Tunny is a dark or dull blue on the upper parts, and silvery with a cast of flesh-colour on the sides and abdomen: the first dorsal fin and the tail deep grey, the second, together with the pectoral, ventral, anal, and spurious fins yellow: the pectoral fins are of a lanceolate

* *Plin. lib. 9. cap. 3.*

shape, and the tail pretty strongly lunated: the finlets or spurious fins appear to vary in number in different specimens, and consequently can afford no very certain specific mark. In the specimen observed by Mr. Pennant the number was eleven above, and nine below. In the Gmelinian edition of the *Systema Naturæ*, as well as in the preceding one by Linnæus himself, the number is said to be eight both above and below.

 THAZARD MACKREL.

Scomber Regalis. S. supra cæruleus, subtus argenteus, lateribus flavo striato-maculatis.

Mackrel with the body blueish above, silvery below, and the sides striped and spotted with yellow.

Scomber regalis. Bloch. Scomber Thazard. Cepede.

ALLIED to the Tunny in general form, but of a rather more slender shape: size sometimes nearly equal to that of the Tunny: colour blueish brown on the back, and silvery on the sides and abdomen: along each side runs a longitudinal yellow stripe or band, accompanied both above and below by a series of oval or lengthened spots of the same colour: fins yellow: the pectoral ones rather small and short: tail strongly forked or lunated, and furnished, as in the Tunny, on each side the base, with a small semi-coriaceous process: finlets eight above and seven below. Native of the American seas, and in considerable esteem as a food.

GERMON MACKREL.

Scomber Germon. *S. cæruleus, abdomine argenteo, pinnis pectoralibus elongatis, pinnulis supra infraque novem.*

Blue Mackrel, with silvery abdomen, elongated pectoral fins, and nine finlets both above and below.

Scomber Germon. *Cepede.*

GENERAL size that of a small Tunny: colour blackish blue on the back, bright blue on the sides, and silvery on the abdomen: on several individuals are seen a few slight traces of transverse blue bands, which disappear as soon as the fish expires, and sometimes even immediately on taking out of the water: body and tail covered with small pentagonal, or rather rounded scales. Native of the Indian seas: observed by Commerson.

 SARDA MACKREL.

Scomber Sarda. *S. argenteus, supra fasciis numerosis transversis fuscis.*

Silvery Mackrel, marked above by numerous transverse brown bands.

Scomber Sarda. *Bloch.*

SHAPE as in the preceding: length about two feet: colour bright silvery; the back blueish, and marked on each side, as in the Mackrel, with pretty numerous, short, transverse, brown bars: dorsal fins and tail dusky; the latter strongly forked: upper part of the body, from the head to a small distance beyond the base of the pectoral fins, covered by small

scales; the remainder of the fish presenting only the appearance of a smooth, silvery skin: finlets seven above, and six below: on each side the base of the tail a projecting lamina, as in the preceding kinds: native of the Mediterranean, and in some esteem as a food.

SALIENT MACKREL.

Scomber Saliens. *S. argenteus*, dorso viridi-cæruleo, spinis quatuor armato, pinnulis supra infraque octo.

Silvery Mackrel, with blue-green back armed with four spines, and eight pinnules above and below.

Scomber saliens. *Bloch.*

SIMILAR in shape to the Tunny: length about eighteen inches: colour darkish blue on the back, and silvery on the sides and abdomen: fins pale, with a yellowish cast: tail dusky, and strongly forked: before the dorsal fin four very strong separate spines: a single spine at the base of each pectoral fin, and two very strong separate ones before the ventral fin: finlets eight both above and below: lateral line pretty strongly marked: no projecting lamina on each side the base of the tail: native of the American seas: is a strong fish, swimming rapidly, and occasionally springing with considerable force out of the water, and escaping out of the nets thrown for it: in considerable esteem as a food.

PILOT MACKREL.

Scomber Ductor. *S. argenteo-cærulescens, fasciis quatuor transversis cæruleis, spinis dorsalibus quatuor, cauda nigro-fasciata.*

Silvery-blueish Mackrel, with four transverse blue bands, four dorsal spines, and tail barred with black.

Scomber Ductor. *Bloch.* Gasterosteus Ductor. *Lin.*

GENERAL shape that of a Tunny, but with a much blunter or shorter head : length about eighteen inches : colour blue above, and silvery on the sides and abdomen : scales small : body crossed by four broad blue bands, the first commencing at some distance beyond the gills, and the last crossing the extremity of the body : tail strongly forked, each lobe marked obliquely by a broad black band : dorsal fin single, pale, commencing at a considerable distance from the head, and reaching nearly to the tail : before its commencement are situated four strong, short, separate spines : anal fin pale, and continued nearly to the tail : on each side the base a projecting lamina with serrated edges ; but no finlets either above or below : native of the American and Indian seas : often observed swimming near or before sharks, and hence sometimes called by the name of the Pilot,

ZEBRA MACKREL.

Scomber Zebra. *S. subargenteus, dorso-subfusco, corpore fasciis transversis angustis subduplicatis fuscis.*

Subargenteous Mackrel, with brownish back, and body marked by narrow transverse subduplicate brown bands.

Scomber fasciatus. Bloch.

SHAPE that of a Carp: length about a foot: bands of the body continued nearly through the dorsal and anal fin: from eye to eye a brown crescent over the head: first dorsal fin small: the second continued nearly to the tail, which is strongly forked: no finlets or lateral lamina: lateral line pretty distinct, especially towards the tail, where it is minutely subliricated. Native regions unknown.

 TOOTHLESS MACKREL.

Scomber Edentulus. *S. argenteus dorso subfusco, corpore supra fasciis transversis subbifidis semi-decurrentibus fuscis.*

Silvery Mackrel, with brownish back, and body marked above by transverse, subbifid, semidecurrent, brown bands.

Scomber edentulus. Bloch.

LENGTH about twelve inches: habit broad, and almost approaching to subrhomboid, as in some of the Spari, &c. mouth small and without visible teeth: first rays of the dorsal fin excessively strong, the remainder suddenly growing shallower, and continuing nearly to the tail, appearing as if composed of united finlets: anal fin of similar aspect: tail strongly forked. Native of the Indian seas, and much esteemed for the table.

BONITO MACKREL.

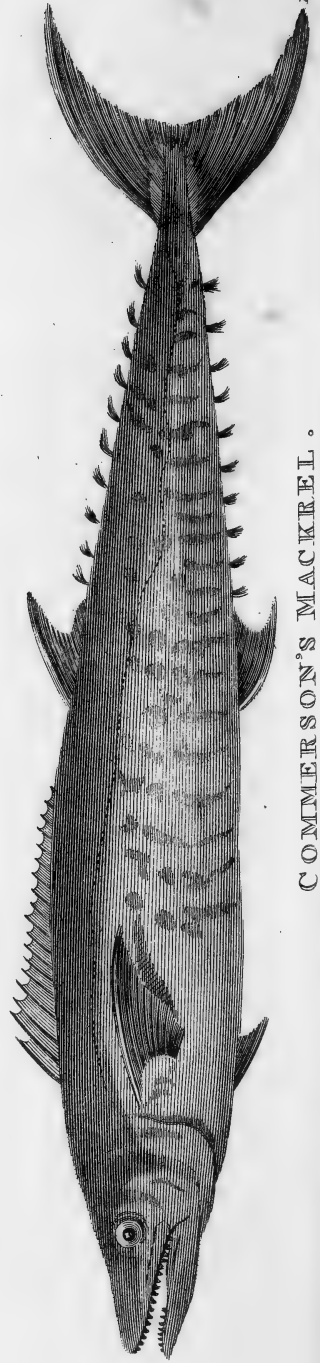
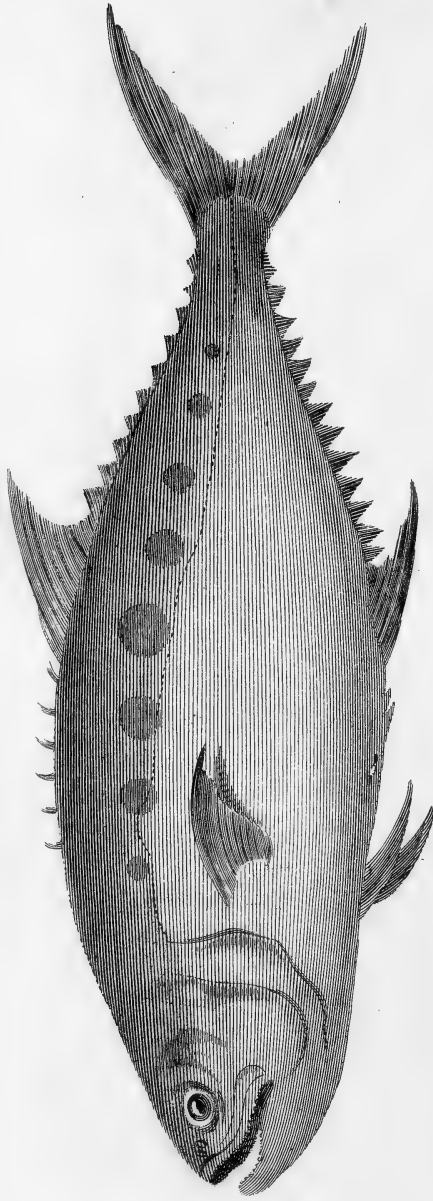
Scomber Pelamis. *S. argenteus, dorso caeruleo, corpore lineis utrinque quatuor longitudinalibus nigricantibus.*

Silvery Mackrel, with blueish back, and body marked on each side by four longitudinal blackish streaks.

Scomber Pelamis. *Lin.*

GENERAL appearance that of the Tunny, but more slender: colour the same as in the Tunny, but distinguished by four linear stripes on each side beneath the lateral line: scales very small: ventral fins long and narrow, and occasionally received, as in several others of this genus, into a kind of channel beneath: first dorsal fin falciform, and depressed at pleasure into a fossule, so as to be quite concealed: tail strongly lunated: finlets eight above, and seven below; and on each side the base a coriaceous lamina: native of the Atlantic and tropical seas, and a very active, strong, and voracious species, persecuting flying-fishes, &c. in the manner of the Tunny, and is itself tormented by several species of intestinal worms; the *Fasciola clavata* being often found in considerable numbers in its stomach, and various kinds of *Tæniæ* and *Ascarides* in the bowels.

MADAGASCAR MACKREL.



COMMERSON'S MACKREL.

COMMERSON'S* MACKREL.

Scomber Commersonii. *S. elongatus argenteus, dorso subfusco, lateribus maculis irregularibus fuscis.*

Silvery Mackrel, with elongated body, brownish back, and sides marked with irregular brown spots.

Scomber Commerson. *Cepede.*

SIZE not mentioned : habit remarkably long : jaws of equal length, and furnished with strong, sharp, distinct teeth : snout pointed : eyes large : gill-covers composed of two rounded laminæ : first dorsal fin long, and very shallow as it approaches the tail : second very short, and emarginated in the middle : vent fin similar : lateral line undulated in an unusual manner, especially towards the tail : general colour silvery, growing dusky towards the back, and varied on the sides by numerous, irregular, dusky spots : pinnules ten both above and below, each composed of four or five small rays united by a membrane : native of the Pacific ocean. Described by *Cepede* from the MSS. of *Commerson*.

* *Philibert Commerson*, an excellent naturalist, was born at *Chatelon les Dombes* near *Boury* in *Bresse* in the year 1727, and died in the Isle of France, whither he had accompanied *Bougainville* in his voyage round the world in the year 1773.

ALATUNGA MACKREL.

Scomber Alatunga. *S. pinnis pectoralibus longissimis, pinnulis caudæ utrinque septem.* Lin. Gmel.

Mackrel with very long pectoral fins, and seven finlets both above and below.

Scomber Alatunga. *Lin. Gmel.*

HABIT of the Tunny, but considerably smaller: pectoral fins so long as to reach almost to the end of the second dorsal: pinnules seven both above and below: native of the Mediterranean, appearing, like the Tunny, in large shoals, and in considerable esteem as a food.

 MADAGASCAR MACKREL.

Scomber Madagascariensis. *S. subargenteus: dorso cæruleo, corpore maculis rotundatis nigris serie laterali dispositis.*

Subargenteous Mackrel, with blue back, and body marked by a lateral row of round black spots.

Scomberoides Commersonii. *Cepede.*

ALLIED to the Tunny, growing to a very considerable size: colour nearly as in the Tunny: on each side the back, immediately above the lateral line, a row of eight or nine pretty large, round, blackish spots, those near the head and tail smaller than the rest: lower jaw rather longer than the upper: before the dorsal fin six distinct, strong, and sharp spines: pectoral and ventral fins rather short, and pointed: tail strongly forked: finlets ten

or twelve both above and below; they are of a triangular or pointed shape, and situated very close to each other at their bases: native of the African seas: observed by Commerson.

BOTLA MACKREL.

Scomber Botla. *S. subflavescens*, dorso plumbeo, corpore squamoso, maculis lateralibus rotundatis fuscis.

Yellowish Mackrel, with lead-coloured back, scaly body, and roundish, brown, lateral spots.

Botla Parah. *Russel's Indian Fishes*. pl. 142. and VAR.? pl. 137.

ALLIED to the preceding, and spotted in the same manner, but covered with middle-sized oval scales: length about eighteen inches: dorsal and anal fin long and somewhat falciform: finlets as in the former: seems to vary as to the number and size of the lateral spots.

LEOPARD MACKREL.

Scomber Leopardus. *S. cæruleus*, subtus argenteus, lateribus maculis numerosis ovatis nigris.

Blue Mackrel, silvery beneath, with numerous ovate lateral black spots.

Wingeram. *Russel. Ind.* pl. 134.

GENERAL shape of the Tunny, but rather more slender: length from two to three feet: colour dusky blue above, and silvery on the sides and abdomen: sides marked from the gills to the tail by pretty numerous and rather large oval black spots:

between the first and second dorsal fin five or six distinct spines: tail deeply forked; and on each side the base furnished with a projecting lamina: finlets eight above and seven below: native of the Indian seas: esteemed as a food by the Europeans, especially when not exceeding the length of about eighteen inches or two feet. Described by Dr. P. Russel.

MOTTLED MACKREL.

Scomber Maculosus. *S. supra cæruleo-virescens, maculis numerosis subalternis transversis elongatis nigris.*

Mackrel of a blue-green colour above, with numerous, sub-alternate, transverse, elongated black spots.

Konam. *Russel. Ind. pl. 135.*

SHAPE similar to that of the common Mackrel: length two feet eight inches: colour on the upper parts changeable greenish-blue, variegated by numerous transverse, alternate, short, blackish bars or spots: first dorsal fin rather shallow, sinking in the middle, and extending almost to the commencement of the second: tail much forked, and furnished with a slightly projecting lamina on each side the base: finlets ten above and twelve below. Native of the Indian seas. Described by Dr. Russel.

BLACK MACKREL.

Scomber Niger. *S. niger, subtus subargenteus, spinis dorsalibus octo, pinna dorsali unica.*

Black Mackrel, silvery beneath, with eight dorsal spines, and single dorsal fin.

Scomber niger. *Bloch.*

LENGTH from two to six feet : habit resembling that of the Pilot Mackrel ; the head being short, and rounded in front : scales middle-sized : head without scales : before the dorsal fin a row of eight strong spines : dorsal fin single, the first part being of moderate length and of a subfalcated shape, suddenly sinking into the remainder, which is continued nearly to the tail : anal fin of similar shape : tail greatly forked : ventral fins white, with black edges : no pinnules either above or below : native of the African and American seas.

 ASCENSION MACKREL.

Scomber Ascensionis. *S. glaucus, spina dorsali recumbente.*

Glaucous Mackrel, with recumbent dorsal spine.

Scomber glaucus. *Lin. Gmel. Mus. Ad. Frid.*

SECOND ray of the dorsal fin extremely long : no finlets : observed by Osbeck about the Isle of Ascension.

SMALL MACKREL.

Scomber Minutus. *S. squamosus argenteus, corpore dilatato, dorso subfusco.*

Scaly, silvery Mackrel, with dilated body, and brownish back.
Scomber minutus. *Bloch.*

LENGTH about five inches: habit broad, resembling that of some of the Spari: scales middle-sized: dorsal fin commencing at the middle of the back, and continuing nearly to the tail: anal nearly opposite and of similar shape: eyes large: tail deeply forked: native of the Indian seas, sometimes entering rivers, and much esteemed as a food.

 ACULEATED MACKREL.

Scomber Aculeatus. *S. argenteus, dorso subfusco, spinis dorsalis octo decussantibus.*

Silvery Mackrel, with brownish back, and eight decussating dorsal spines.

Scomber aculeatus. *Bloch.*

LENGTH seven or eight inches: habit that of the common Mackrel, but rather broader: before the dorsal fin about eight distinct and strong spines, some of which are placed in opposite directions, so as to cross each other at the tips: before the ventral fins two spines united by a membrane: dorsal and anal fin placed nearly opposite: tail forked: finlets about eleven, both above and below: native of the European and American seas, and esteemed nearly equal to the common Mackrel as a food.

SPUR MACKREL.

Scomber Calcar. *S. argenteus, dorso subfusco, spinis dorsalibus quatuor divergentibus.*

Silvery Mackrel, with brownish back, and four diverging dorsal spines.

Scomber Calcar. *Bloch.*

SOMEWHAT allied to the former species, but of a broader or shorter shape: length ten or twelve inches: before the dorsal fin four very strong spines, diverging in such a manner as to bear some resemblance to a spur: first ray of the dorsal fin consists also of a strong spine: before the anal fin two strong spines connected by a membrane: dorsal and anal fin of similar size, and continued nearly to the tail, which is strongly forked. Native of the African seas.

 RHOMBOID MACKREL.

Scomber Rhombeus. *S. argenteus, corpore rhombeo, squamis parvis.*

Silvery Mackrel, with rhombic body and small scales.

Centrogaster argenteus. *Lin. Gmel.*

LENGTH about five inches: shape rhomboid: colour silvery, with very minute scales: dorsal and anal fin triangular at the fore-part and scaly at the base: tail glaucous, and slightly divided. Native of the Arabian seas. Observed by Forskal.

SADDLED MACKREL.

Scomber Equula. *S. argenteus, fronte carinis duabus ossis, occipite spinis duabus retroversis.*

Silvery Mackrel, with the front marked by two long keels and the hind-head by two reversed spines.

Centrogaster Equula. *Lin. Gmel.*

LENGTH nearly as in the preceding species: body ovate, compressed, smooth, silvery, and covered with very minute scales: head marked by two converging bony keels, and beyond the eyes furnished with two reversed spines: dorsal and anal fin continued to the tail, which is bilobate or forked: ventral fins connected by a membrane with four sharp spines and six soft rays. Native of the Arabian seas: observed by Forskal.

 BROWNISH MACKREL.

Scomber Fuscescens. *S. fuscus, subtus albicans, cauda sub-bifurca.*

Brownish Mackrel, whitish beneath, with subbifurcate tail.

Centrogaster fuscescens. *Lin. Gmel.*

LENGTH five inches: upper mandible armed with sharp teeth: dorsal fin continued along the whole length of the back. Native of the Japanese sea.

BLACK-NECKED MACKREL.

Scomber Nigricollis. *S. argenteus, nuchæ gutta magna fusca, pinnae dorsalis nigricante.*

Silvery Mackrel, with a large brown spot on the nape, and a blackish one on the dorsal fin.

Centrogaster argentatus. *Lin. Gmel.*

LENGTH about three inches and a half: tail forked.

Native of the Japanese seas.

With mailed lateral line.

SCAD MACKREL.

Scomber argenteus, squamis magnis, linea laterali late loricata.

Silvery Mackrel with large scales and widely-mailed lateral line.

Scomber Trachurus. *Lin.* The Scad Mackrel. *Penn. Br. Zool.*

LENGTH from twelve to eighteen inches: shape rather broader than that of the common Mackrel: scales large and thin: lateral line strongly mailed from head to tail by a row of very broad scales, pointed at the middle: second dorsal, and anal fin continued to the tail, which is forked. Native of the European seas, and considered as nearly equal to the common Mackrel in point of flavour.

ROTTLERIAN MACKREL.

Scomber argenteo-flavescens, dorso viridi-cæruleo, pinnis pectoralibus lanceolatis rubris, linea laterali late loricata.

Yellowish-silvery Mackrel, with blue-green back, red, lanceolate pectoral fins, and widely mailed lateral line.

Scomber Rottleri. Bloch.

LENGTH about fourteen inches: shape like that of the common Mackrel: scales small: lateral line pretty distinctly marked at its beginning, curving over the base of the pectoral fins, and afterwards becoming very strongly mailed by broad acuminate scales, and running strait to the tail, which is strongly forked: finlets ten both above and below: before the anal fin two strong spines, connected by a membrane. Native of the Indian seas: not much esteemed as a food, the flesh being rather coarse.

 PLUMIER'S MACKREL.

Scomber viridi-cæruleus, subtus argenteus, squamis magnis, pinnis pectoralibus lanceolatis, linea laterali rotundato-loricata.

Blue-green Mackrel, silvery beneath, with large scales, lanceolate pectoral fins, and roundly-mailed lateral line.

Scomber Plumieri. Bloch.

SIZE and habit nearly similar to that of the Scad: scales large and rounded: lateral line at a small distance beyond the pectoral fins becoming strongly and elegantly mailed by a row of dilated scales with pointed tips: fins and tail similar to those of the Scad.

PURSE-EYED MACKREL.

Scomber Crumenophthalmus. S. argenteus, dorso subfusco, squamis parvis, oculis subobtectis, linea laterali rotundato-loricata.

Silvery Mackrel, with brownish back, small scales, coated eyes, and roundly-mailed lateral line.

Scomber crumenophthalmus. Bloch.

OF similar size and habit with the two immediately preceding species: lower jaw longer than the upper: eyes large, and seated in a large, brown, transversely oval surrounding skin: scales small: lateral line, fins and tail as in the two preceding: native of the African seas, and found in considerable plenty about the coasts of Guinea.

 CARANG MACKREL.

Scomber Carangus. S. viridi-cæruleus, subtus argenteus, capite obtuso, pinnis flavis, linea laterali rotundato-loricata.

Blue-green Mackrel, silvery beneath, with obtuse head, yellow fins, and roundly-mailed lateral line.

Scomber Carangus. Bloch.

LENGTH about sixteen inches: shape like that of the Tunny, with a rounder, shorter, and blunter head, and thicker body in proportion: colour greenish blue, with a silvery tinge on the sides and abdomen: at the upper tip of the exterior gill-covers a black spot: scales middle-sized: lateral line pretty strongly mailed as it approaches the tail, which is deeply forked and of a yellow colour, as are also the other fins: no finlets, the dorsal and anal fin being continued to within a small distance of the tail: native of the American and Indian seas.

RED MACKREL.

Scomber Ruber. *S. ruber, subtus argenteus, squamis parvis, linea laterali versus caudam rotundato-loricata.*

Red Mackrel, silvery beneath, with small scales, and lateral line roundly-mailed towards the tail.

Scomber ruber. *Bloch.*

A HIGHLY beautiful species: length twelve or fourteen inches: general shape as in the Tunny and many others: colour beautiful rose-red, silvery on the sides and abdomen: scales small: fins yellowish at the base, and dusky towards their ends: pectoral fins long and lanceolate: lateral line mailed as it approaches the tail: no finlets, the second dorsal, as in the preceding species, being continued nearly to the tail, which is very deeply and sharply forked: native of the Indian and American seas: in no great esteem as a food, being considered as rather a coarse fish.

 CHLOROTIC MACKREL.

Scomber Chloris. *S. flavo-virescens, dorso olivaceo, linea laterali rotundato-loricata, angusta.*

Pale Yellowish-green Mackrel, with olivaceous back, and narrow, roundly-mailed lateral line.

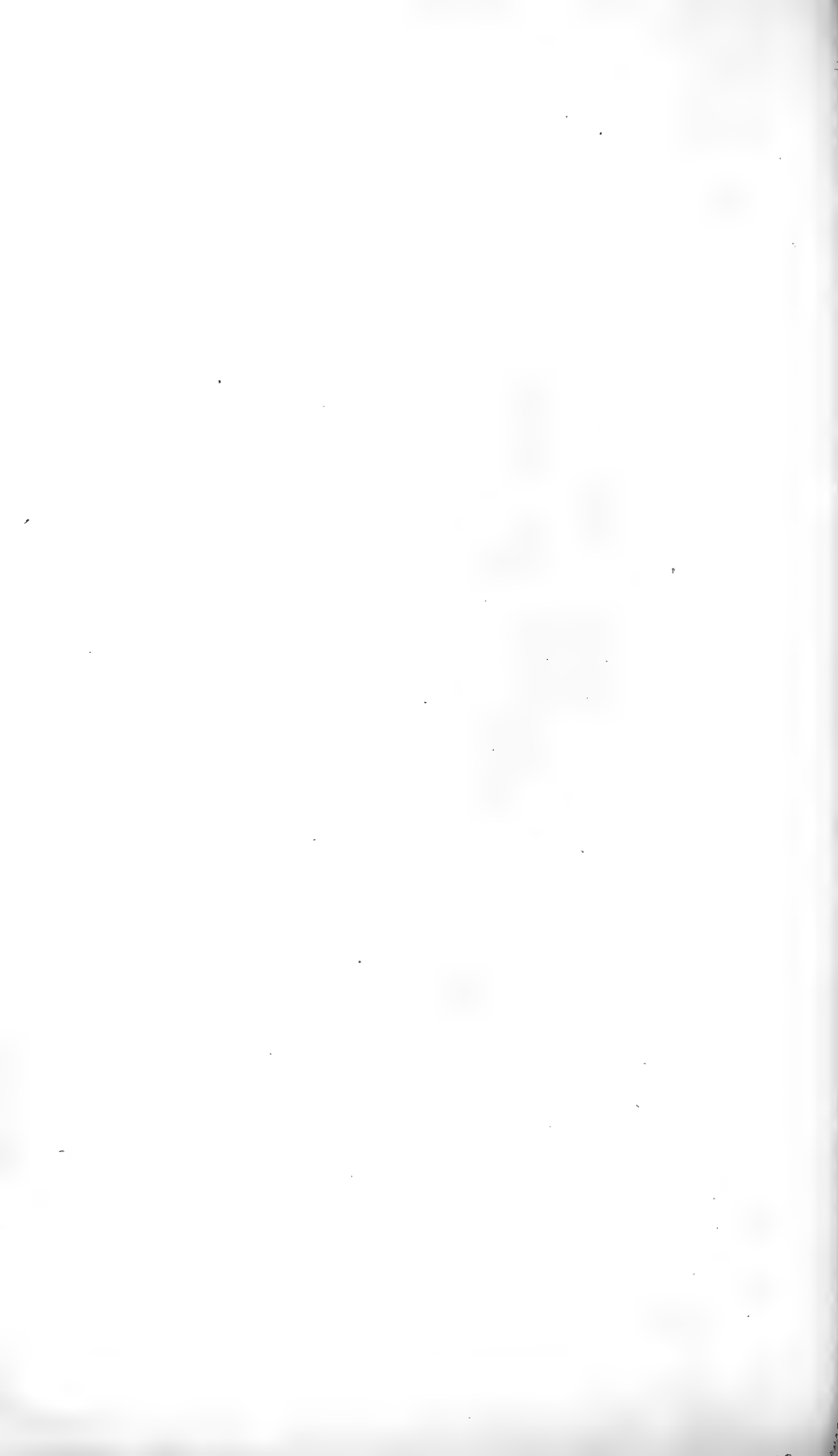
Scomber Chloris. *Bloch.*

LENGTH twelve inches: shape rather broad or deep, and thin; tapering greatly towards the tail: colour very pale yellowish green, with a brownish tinge on the back: scales rather small: mouth small: eyes rather large: lateral line mailed throughout its whole length, from gills to tail, by a

RED MACKREL.



1863. July 1. London. Published by G. Heursley Fleet Street.



row of small, rounded, but not pointed, scales: pectoral fins lanceolate, and reddish at the base, as is also the tail, which is deeply forked: native of the African seas.

KLEINIAN MACKREL.

Scomber Kleinii. *S. argenteo-flavescens, dorso violaceo, linea laterali versus caudam dilatato-loricata.*

Yellowish-silvery Mackrel, with violaceous back, and lateral line widely-mailed towards the tail.

Scomber Kleinii. *Bloch.*

A SMALLISH species: length from six to ten inches: habit nearly as in the immediately preceding species: colour silvery, with dusky back: scales rather small: lateral line mailed with very broad scales as it approaches the tail, which is very strongly forked: all the fins pale, and shaped as in the preceding species. Native of the Indian seas.

HIPPOS MACKREL.

Scomber Hippos. *S. macula operculari nigra, pinna dorsali posteriore rubra.*

Mackrel with a black spot on the gill-covers, and hinder dorsal fin red.

Scomber Hippos. *Lin. Gmel.*

WITH a single row of teeth, and two large in front: lateral line bending very much, and somewhat spiny or mailed as it approaches the tail: dorsal fin red; ventral and anal yellow: no finlets:

gill-covers marked by a black spot : native of the American seas : observed by Dr. Garden.

YELLOW-TAILED MACKREL.

Scomber Chrysurus. *S. pinnulis luteis, ore edentulo.* Lin.
Gmel.

Mackrel with yellow finlets, and toothless mouth.

Scomber chrysurus. Lin. Gmel.

WITHOUT teeth: spines placed at some distance before the anal fin: no finlets: tail yellow: inhabits the American seas: observed by Dr. Garden.

FERDAU MACKREL.

Scomber Ferdau. *S. ovali-oblongus argenteus, guttis aureis lateralibus, fasciis transversis fuscis quinque obsoletis.* Lin.
Gmel.

Oval-oblong silvery Mackrel, with lateral gold-coloured spots, and five transverse brown bands.

Scomber Ferdau. Forsk. Arab.

SCALES small and deciduous: between the two dorsal fins a single spine: tail forked, and strongly keeled on each side: native of the Arabian seas: observed by Forskal.

SPECIOUS MACKREL.

Scomber Speciosus. *S. flavus, fasciis verticis obliquis, corporis septem nigris alternis.*

Yellow Mackrel, with oblique black bands on the head, and seven transverse ones on the body.

Scomber speciosus. *Forsk. Arab.*

SCALES small and deciduous: fins yellow: no finlets: tail forked: native of the Arabian seas: observed by Forskal.

GASTEROSTEUS. STICKLEBACK.

Generic Character.

<i>Corpus</i> subelongatum.	<i>Body</i> somewhat lengthened.
<i>Spinæ dorsales</i> distinctæ.	<i>Dorsal spines</i> distinct.
<i>Pinnæ ventrales</i> spinosæ.	<i>Ventral fins</i> spiny.
<i>Abdomen</i> utrinque carinatum, subtus osseum.	<i>Abdomen</i> carinated or shielded on the sides, and bony beneath.

COMMON STICKLEBACK.

Gasterosteus Aculeatus. *G. olivaceus, subtus rubro-argenteus, spinis dorsalibus tribus.*

Olivaceous Stickleback, silvery-red beneath, with three dorsal spines.

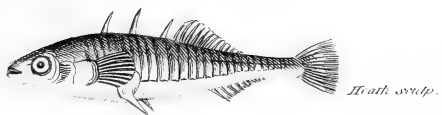
Gasterosteus aculeatus. *Lin.* Common Stickleback, Banstickle, &c.

THIS minute fish is an almost universal inhabitant of ponds, rivers, and marshes, occurring sometimes even in salt or brackish waters. When in its full perfection of colour it is highly beautiful; the gills and abdomen being of a bright red, the back a fine olive green, and the sides silvery. It is chiefly in the early part of summer that it appears thus decorated; the colours in a great degree fading as the season advances. The general length of this species is about two inches, but it sometimes arrives to the length of three: the ventral fins consist

SMALLER STICKLEBACK .



FIFTEEN - SPINED STICKLEBACK .



With sculp.

COMMON STICKLEBACK .



merely of a very strong and serrated spine on each side, accompanied by a single short ray.

The Banstickle is a fish of an extremely active and vigorous nature, swimming rapidly, and preying on the smaller kind of water insects and worms, as well as on the spawn of other fishes, and is from this circumstance considered as highly prejudicial to fish-ponds. In the Philosophical Transactions we find some observations relative to the natural history of this fish by Mr. Henry Baker, who informs us that it will spring occasionally to the perpendicular height of not less than a foot out of the water, and to a much greater space in an oblique direction, when wishing to get over stones or other obstacles. "It is scarce to be conceived," says this writer, "what damage these little fish do, and how greatly detrimental they are to the increase of all the fish in general among which they live: for it is with the utmost industry, sagacity, and greediness that they seek out and destroy all the young fry that come in their way, which are pursued with the utmost eagerness, and swallowed down without distinction, provided they are not too large: and in proof of this I must assert that a Banstickle which I kept for some time did on the 4th of May devour in five hours time seventy-four young Dace, which were about a quarter of an inch long, and of the thickness of a horse-hair: two days after, it swallowed sixty-two, and would, I am persuaded, have eat as many every day, could I have procured them for it."

The Stickleback is sometimes observed to swarm

in prodigious multitudes in some particular parts of Europe. We are told by Mr. Pennant that at *Spalding* in *Lincolnshire*, there are, once in seven years, amazing shoals, which appear in the *Welland*, and come up the river in the form of a vast column: they are supposed to be the multitudes that have been washed out of the fens by the floods of several years, and collected in some deep hole, till, overcharged with numbers, they are periodically obliged to attempt a change of place: the quantity is so great that a man employed to take them has got for a considerable time four shillings a day by selling them at the rate of a halfpenny per bushel.

SMALLER STICKLEBACK.

Gasterosteus Pungitius. *G. olivaceus, subtus subargenteus, spinis dorsalibus decem.*

Olivaceous Stickleback, subargenteus beneath, with ten dorsal spines.

Gasterosteus pungitius. *Kin.* Smaller Stickleback or Banstickle.

FOUND in similar situations with the preceding species, but is far less common: in size it is considerably smaller, rarely exceeding the length of an inch and three quarters, or two inches at the most: its shape is rather more slender, and its colours far less brilliant: it is readily distinguished by the number of its dorsal spines, which however are not always precisely constant in this respect, sometimes amounting only to nine, and sometimes, though very rarely, to eleven.

FIFTEEN-SPINED STICKLEBACK.

Gasterosteus Spinachia. *G. olivaceus, subtus subargenteus, linea laterali scutata, spinis dorsalibus quindecim.*

Clivaceous Stickleback, subargenteous beneath, with shielded lateral line, and fifteen dorsal spines.

Gasterosteus Spinachia. *Lin.* Fifteen-spined Stickleback. *Penn. Br. Zool.*

MUCH larger than either of the preceding species, and of a much more slender form: general length from five to six, or seven inches: head of a produced and somewhat tubular shape: hinder parts very slender towards the tail: lateral line broad and composed of a series of small dusky laminæ or scuta: dorsal spines concealed at pleasure in a longitudinal channel: ventral fins each composed of two spines; the first long, the next short: native of the European seas, frequenting shallow places, and preying on marine insects, and the spawn of other fishes: sometimes seen in vast numbers about the coasts of Holland, &c. and occasionally used, like the Common Stickleback, for the purpose of manuring land, as well as for the preparation of oil for lamps, &c.

 MINUTE STICKLEBACK.

Gasterosteus Spinarella. *G. capitis postice spinis quaternis serrulatis, lateralibus longitudine abdominis.* Lin. Gmel.

Banstickle with four serrulated spines at the hind-part of the head, the lateral ones equalling the abdomen in length.

A VERY small species: head furnished on the back part with four serrulated spines, of which the lateral ones are as long as the abdomen. Native of India.

 TWO-SPINED STICKLEBACK.

Gasterosteus Biaculeatus. *G. spinis dorsalibus duabus.*

Stickleback with two dorsal spines.

Two-spined Stickleback. *Penn. Arct. Zool. suppl.*

MENTIONED by Mr. Pennant on the authority of Dr. Forster: found about New York.

 CAROLINA STICKLEBACK.

Gasterosteus Carolinensis. *G. spinis dorsalibus octo, analibus tribus.*

Stickleback with three dorsal and two anal spines.

Gasterosteus Carolinus. *Lin. Gmel.*

BODY oblong-oval: lateral line subcarinated towards the tail: dorsal and anal fin falcated: tail forked: allied to the genus Scomber. Native of the seas about Carolina.

CANADA STICKLEBACK.

Gasterosteus Canadensis. *G. spinis dorsalibus octo, analibus nullis.*

Stickleback with eight dorsal and no anal spines.

Gasterosteus Canadus. *Lin. Gmel.*

DORSAL and anal fin subfalcated: tail slightly bilobate: native of the American seas.

 SKIPPING STICKLEBACK.

Gasterosteus Saltatrix. *G. spinis dorsalibus octo membrana connexis.*

Stickleback with eight dorsal spines connected by a membrane.

Gasterosteus Saltatrix. *Lin. Gmel.*

ALLIED in some degree to the genus *Perca*: in the upper jaw two rows of teeth; in the lower one: dorsal spines weak, connected by a fine membrane, situated low on the back, and received at pleasure into a furrow or channel: colour of the back green: tail forked. Native of the seas of Carolina, where it is observed to be very frequently skipping out of the water.

JAPANESE STICKLEBACK.

Gasterosteus Japonicus. *G. spinis dorsalibus quatuor, membrana branchiostega quinquoradiata*. Lin. Gmel.

Stickleback with four dorsal spines, and five-rayed gill-membrane.

LENGTH about five inches: head obtuse: body covered with large rhombic scales, each ciliated at the edges and terminating in a spine: dorsal spines thick, strong, moveable, and of unequal lengths: ventral fins furnished with a thick, strong, and scarcely moveable spine of about half an inch in length: native of the Japanese seas.

MULLUS. SURMULLET.

Generic Character.

<i>Caput</i> compressum, declive, squamosum.	<i>Head</i> compressed, scaly.
<i>Os</i> cirratum.	<i>Mouth</i> bearded.
<i>Membr: branch:</i> triradiata.	<i>Gill-membrane</i> three-rayed.
<i>Corpus</i> squamis magnis sub- deciduis.	<i>Body</i> covered with large subdeciduous scales.

RED SURMULLET.

Mullus Ruber. *M. corpore rubro.*

Surmullet with red body.

Mullus barbatus. *Lin.*

THE red Surmullet is principally found in the Mediterranean and Northern seas, where it arrives at the length of twelve or fifteen inches: its colour is an elegant rose-red, tinged with olive-colour on the back, and of a silvery cast towards the abdomen: the scales are thin and easily separated, and when rubbed off, the skin itself appears of a brighter red. The Surmullet is a fish of a strong and active nature, swimming briskly, and feeding principally on the smaller fishes, worms, and sea-insects. It is generally considered as a very delicate fish, and is celebrated for having been the fashionable object of Roman luxury, and for which such enormous sums

are reported to have been sometimes given; though it is probable that the high estimation in which it was held by the ancient Greeks and Romans was more owing to a prejudice entertained on account of its elegant appearance, than to its real merit as a food. The Romans practised a singular refinement in luxury by first bringing the fish alive to the table in a glass vessel, in order that the guests might enjoy the pleasure of contemplating the beautiful changes of its evanescent colours during the time of its gradual expiration; after which it was prepared for their repast*.

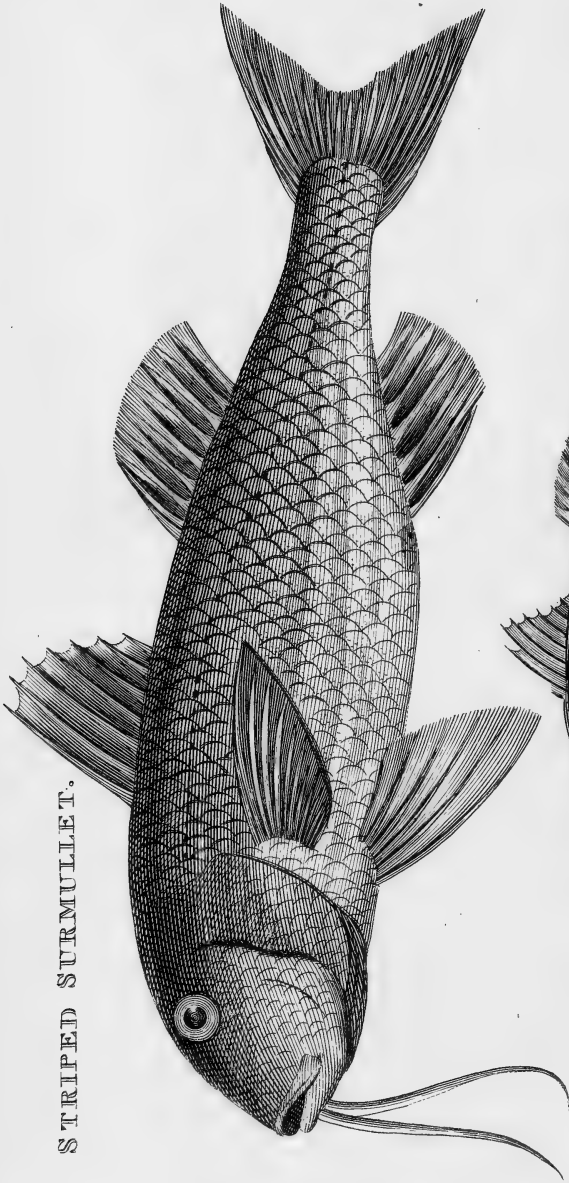
* *Mullum expirantem versicolori quadam et numerosa spectari, proceres gulæ narrant, rubentium squamarum multiplici mutatione pallescentium, utique si vitro spectetur inclusus.*

Plin. lib. 9. cap. 17.

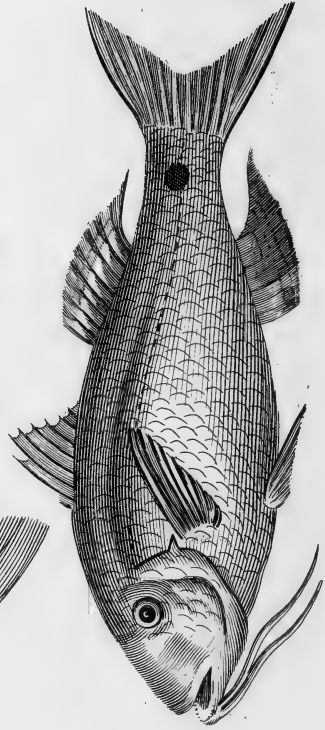
Ad hunc fastum pervenere ventres delicatorem, ut gustare non possint piscem, nisi quem in ipso convivio natantem palpitantemque viderint. Quanto ad solertiam luxuriæ plures eunt, tanto subtilius quotidie et elegantius excogitat furor, usitata contemnens: illa audiebamus nihil esse melius saxatili Mullo: at nunc audimus, nihil est moriente formosius. Da mihi in manus vas vitreum in quo exultet, in quo trepidet: ubi multum diuque laudatus in illo perlucido vivario extrahitur, tunc ut quisque peritior est monstrat. Vide quomodo exarserit rubor omni acrior minio! vide quas per latera venas agat! ecce! sanguinem putes ventrem! quam lucidum quiddam cæruleumque sub ipso tempore effulsit! jam porrigitur et pallet, et in unum colorem componitur!

Seneca.

STRIPED SURMULLET.



Each sculp.



ORIFLAMME SURMULLET.

STRIPED SURMULLET.

Mullus Surmuletus. *M. ruber, lineis utrinque duabus vel tribus longitudinalibus flavis.*

Red Surmullet, marked on each side with two or three longitudinal yellow streaks.

Mullus Surmuletus. *Lin. Gmel.*

Striped Surmullet. *Penn. Brit. Zool.*

OF similar size and general appearance with the preceding, but marked on each side by two, and sometimes three longitudinal yellow stripes. Native of the Mediterranean, but found occasionally in the Atlantic and other seas: in equal esteem as a food with the former, of which it has even been considered by some authors as a variety.

 ORIFLAMME SURMULLET.

Mullus Auriflamma. *M. fusco-flavescens, vitta utrinque longitudinali fulva.*

Yellowish-brown Surmullet, with a longitudinal fulvous band on each side the body.

Mullus auriflamma. *Forsk. Arab.*

LENGTH about eight or ten inches: colour gilded brown, paler beneath, with a longitudinal stripe on each side the body of an oriflamme or fulvous colour, situated above the lateral line, and accompanied by a dusky spot near the base of the tail, which, together with the dorsal fin, is yellow: the other fins, with the beards or cirri beneath the under jaw, are whitish. Native of the Arabian seas.

INDIAN SURMULLET.

Mullus Indicus. *M. supra purpureus, infra albicans, corpore utrinque bimaculato.*

Surmullet with the body purple above, whitish below, and marked on each side by two spots.

Rahtee Goolivinda. *Russel ind. pl. 157.*

SIZE and habit of the common or red Mullet : colour extremely beautiful in the living fish, but fading very soon after death : upper part of the head, and back, dark changeable purple, growing faint on the sides, which are marked by a few longitudinal azure and golden lines, and by two oblong spots on each side : the first situated about the middle of the body, smallish, and of an opaline or changeable golden and white colour : the second situated near the tail, larger, and of a dark purple : abdomen white : dorsal fin purple, streaked with light blue : pectoral and anal pink-colour : native of the Indian seas : observed by Dr. Russel near *Visgapatam* : inferior as a food to the red Mullet, and not much esteemed.

BANDI SURMULLET.

Mullus Bandi. *M. albidus, fasciis utrinque duabus longitudinalibus flavis.*

Whitish Surmullet, with two longitudinal yellow bands on each side.

Bandi Goolivinda. *Russel ind. pl. 158.*

HABIT similar to the former: length about six inches: body white, with two yellow fillets on each side from gills to tail: breast and belly greenish white: dorsal and caudal fin streaked obliquely with yellow and dusky lines: ventral and anal greenish white: inhabits the river near *Visgapatam*: observed by Dr. Russel: in little or no esteem as a food.

 JAPANESE SURMULLET.

Mullus Japonicus. *M. corpore flavo.*

Surmullet with yellow body.

Mullus Japonicus. *Lin. Gmel.*

HABIT of the red Surmullet; of which it has sometimes been supposed a variety: length about six inches: teeth very small: native of the Japanese seas.

BANDED SURMULLET.

Mullus Vittatus. *M. albus, fasciis utrinque duobus longitudinalibus fuscis, tribus flavis.*

White Surmullet, marked on each side by two longitudinal brown and three yellow bands.

THE two brown bands in this species are above the lateral line, and the three yellow ones below it: of these the first or uppermost is of a deep, and the two lower ones of a pale yellow; fins whitish; the dorsal and caudal streaked obliquely with black lines: native of the Arabian seas; observed by Forskal.

 TRIFASCIATED SURMULLET.

Mullus Trifasciatus. *M. albidus, fasciis utrinque tribus transversis fuscis.*

Whitish Mullet, with three transverse brown bands on each side.

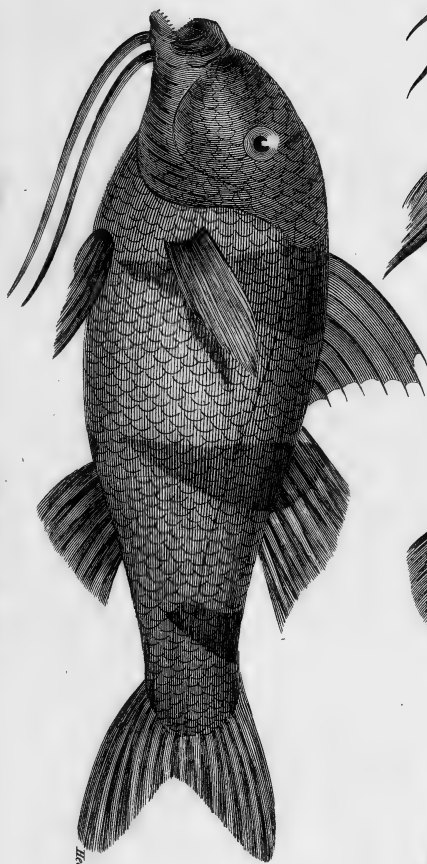
Mullus trifasciatus. *Cepede.*

HABIT similar to the rest of the genus: beards very long. Native of the Indian seas: observed by Commerson.

BANDED SURMULLET.



TRIFASCIATED SURMULLET.



Keen, sculp.



BIFASCIATED SURMULLET.

Mullus Bifasciatus. *M. albidus, fasciis utrinque duabus transversis fuscis.*

Whitish Surmullet, with two transverse brown bands on each side.

Mullus bifasciatus. *Cepede.*

HABIT nearly similar to the preceding: body marked by two very deep or dusky transverse bands, each terminating in a point towards the abdomen: beards rather short: native of the Indian seas: observed by Commerson.

 SPOTTED SURMULLET.

Mullus Maculatus. *M. ruber, corpore utrinque maculis tribus rotundatis nigris.*

Red Surmullet, with the body marked on each side by three rounded black spots.

Mullus maculatus. *Bloch.*

SIZE of the common Surmullet: shape rather more lengthened than in the rest of the genus: colour of the whole animal bright red, with three large round black spots along each side. Native of the Brazilian seas.

RADIATED SURMULLET.

Mullus Radiatus. *M. ruber, orbitis flavo radiatis, macula lutea ad finem dorsi.*

Red Surmullet, with the orbits radiated with yellow, and a deep yellow spot towards the end of the back.

Mulle Rougeor. *Cepede.*

SECOND dorsal, and anal fin marked by oblique yellow streaks: native of the Indian seas: observed by Commerson.

 GOLD-STRIPED SURMULLET.

Mullus Aureovittatus. *M. supra fusco-cærulescens, subtus albus, linea utrinque longitudinali aurea.*

Surmullet with the body brownish-blue above, whitish beneath, and marked on each side by a longitudinal gold-coloured line.

Mulle Cordon-jaune. *Cepede.*

TAIL and tips of the dorsal fins yellow: native of the Indian seas: observed by Commerson.

 BEARDLESS SURMULLET.

Mullus Imberbis. *M. ruber, ore imberbi.*

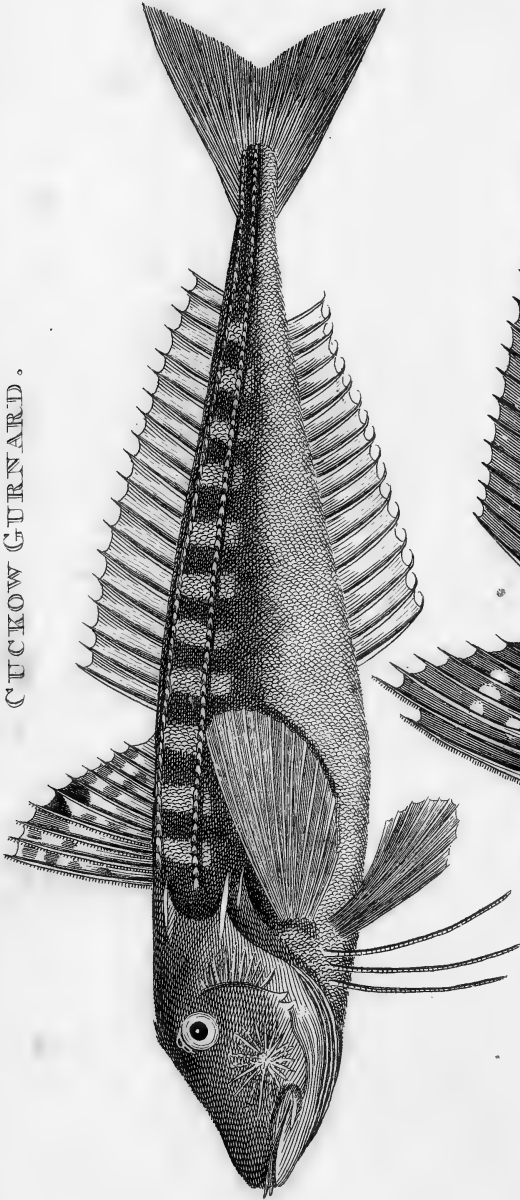
Red Surmullet, with beardless mouth.

Mullus imberbis. *Lin. Gmel.*

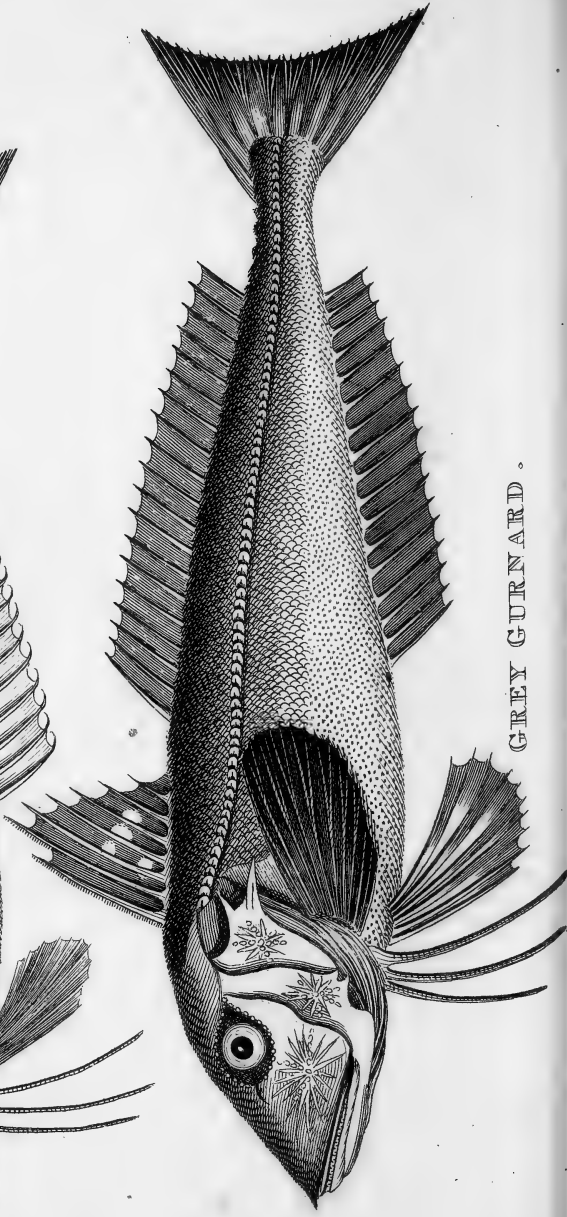
NATIVE of the Mediterranean: mouth wide: differs from the rest of the genus in wanting the cirri beneath the lower lip.



CUCKOW GURNARD.



GREY GURNARD.



TRIGLA. GURNARD.

Generic Character.

<i>Caput</i> magnum, loricatum, lineis scabris.	<i>Head</i> large, mailed, and marked by rough lines.
<i>Opercula</i> spinosa.	<i>Gill-covers</i> spiny.
<i>Membr: branch:</i> radiis sep- tem.	<i>Gill-membrane</i> seven-rayed.
<i>Digiti</i> (plerisque) liberi ad pinnas pectorales.	<i>Finger-shaped processes</i> (in most species) near the pectoral fins.

GREY GURNARD.

Trigla Gurnardus. T. grisea, digitis ternis, linea laterali squamis rotundatis albidis loricata.

Grey Gurnard, with triple fingers, and lateral line mailed with rounded whitish scales.

Trigla Gurnardus. Lin. Grey Gurnard. Penn. Brit. Zool.

LENGTH from one to two feet, or more : colour above deep grey, with blackish and red spots : beneath silvery : scales small : lateral line very strongly marked, and consisting of a series of larger, rounded, whitish scales with a dusky central spot. Native of the European seas, and not uncommon about our own coasts, feeding on worms, insects, &c.

PIPER GURNARD.

Trigla Lyra. *T. rubra, subtus argentea, digitis ternis, rostro bifido denticulato.*

Red Gurnard, silvery beneath, with triple fingers, and bifid denticulated snout.

Triga Lyra. *Lin.* Piper Gurnard. *Brit. Zool.*

SIZE nearly equal to the former species: lateral line formed of small scales: colour bright rose-red, silvery beneath: scales small: pectoral fins large, and slightly tinged with dull blue: tail of similar colour: the other fins yellowish, with red rays. Native of the European seas, and considered as an excellent fish for the table.

 CUCKOW GURNARD.

Trigla Cuculus. *T. rubra, subtus argentea, digitis ternis, pinna dorsali priore macula nigra.*

Red Gurnard, silvery beneath, with triple fingers, and first dorsal fin marked by a black spot.

Trigla Cuculus. *Lin.* Red Gurnard. *Brit. Zool.*

AN elegant species: length about a foot: shape more slender than in the preceding kinds: colour, on the upper parts, a beautiful red, more or less distinctly marked by whitish transverse bars: beneath silvery: scales extremely small: lateral line composed of pointed white scales edged with black: a similar row on each side the back: fins transparent; the first dorsal marked on the edge by a

black spot ; the second tinged near its edge with yellow : native of the European seas, and esteemed as a food.

ASIATIC GURNARD.

Trigla Asiatica. *T. argentea, digitis quaternis.*

Silvery Gurnard, with quadruple fingers.

Trigla Asiatica. *Lin. Gmel.*

Body smooth ; of a silvery colour : snout smooth and prominent : anterior gill-covers serrated : pectoral fins falcated. Native of the Indian seas.

SAPPHIRINE GURNARD.

Trigla Hirundo. *T. griseo-fusca, subtus argentea, digitis ternis, pinnis pectoralibus maximis olivaceis cæruleo-maculatis.*

Grey-brown Gurnard, silvery beneath, with triple fingers, and very large olivaceous pectoral fins spotted with blue.

Trigla Hirundo. *Lin.* Sapphirine Gurnard. *Brit. Zool. Tub-Fish. Will.*

Size equal to that of the grey Gurnard : scales middle-sized : lateral line rough : pectoral fins very large, of a violaceous olive, sometimes, according to Mr. Pennant, richly edged and spotted with blue : native of the European seas, occasionally springing out of the water to some distance by means of its large pectoral fins.

FLYING GURNARD.

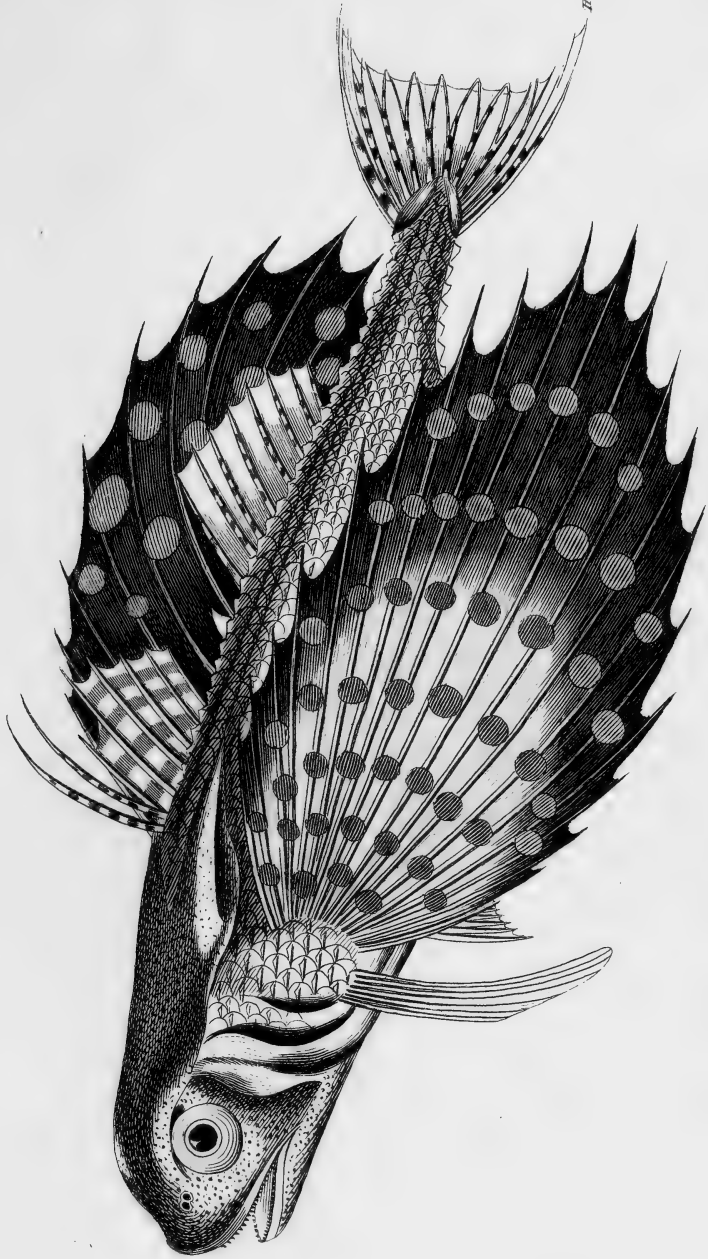
Trigla Volitans. *T. rubra, aculeato-squamosa, pinnis pectoralibus maximis cæruleo-maculatis, digitis senis membrana connexis.*

Red Gurnard, with aculeated scales, very large pectoral fins spotted with blue, and sextuple fingers connected by a membrane.

Trigla volitans. *Lin. Milvus. Salvian. Aldr. Will. &c.*

A HIGHLY singular and beautiful species : length about twelve inches : colour crimson above, pale or whitish beneath : head blunt, and armed on each side with two very strong and large spines pointing backwards : whole body covered with extremely strong carinated and sharp-pointed scales, so united as not to be distinctly separable : first dorsal fin pale violet, crossed with deeper lines, and at its origin two separate rays longer than the rest : second dorsal fin pale, with the rays barred with brown : pectoral fins extremely large, transparent, of an olive-green, richly varied with numerous bright-blue spots : pectoral processes six* in number, and not separate, as in other species, but united into the appearance of a small fin on each side the thorax : tail pale violet, with the rays crossed by dusky spots, and strengthened on each side the base by two obliquely transverse bony ribs or bars. Native of the Mediterranean, Atlantic, and Indian seas, where it swims in shoals, and is often seen flying out of the water to a considerable distance, in the manner of the genus *Exocætus*.

* By a singular oversight in the *Systema Naturæ* the thoracic processes or fingers in this species are said to be twenty in number "*digitis vicenis.*"



Both sculp

FLYING GURNARD.

1863 July 1. London Published by G. W. Marsley Fleet Street.



SPRINGING GURNARD.

Trigla Evolans. *T. digitis ternis, mucronibus tribus serratis pinnis dorsalibus interpositis.* Lin. Gmel.

Gurnard with triple fingers, and three serrated spines between the dorsal fins.

Trigla evolans. Lin. *Trigla volitans minor.* Brown Jam. t. 47.

ALLIED to the preceding species, but furnished with three separate pectoral processes: the pectoral fins very large, but not equal to those of the preceding: between the dorsal fins three serrated spines: pectoral fins blackish. Native of the American seas.

 LUCERNA GURNARD.

Trigla Lucerna. *T. digitis ternis, rostro subbifido, linea laterali ad caudam bifida.* Lin. Gmel.

Gurnard with triple fingers, subbifid snout, and lateral line bifid at the tail.

NATIVE of the Northern seas: perhaps a variety of the *T. Hirundo*.

CAROLINA GURNARD.

Trigla Carolina. *T. albida rubro-punctata, digitis ternis, pinnis pectoralibus fuscis nigro transversim fasciatis.*

Whitish Gurnard, speckled with red, with triple fingers, and brown pectoral fins transversely banded with black.

Trigla Carolina. *Bloch.*

LENGTH about ten inches: upper parts marked by numerous small red spots: dorsal fins pale, with the rays spotted with brown; the first fin marked by a black spot: tail slightly rounded at the end, and crossed by three or four rows of brown spots. Native of the American seas.

 JAPANESE GURNARD.

Trigla Japonica. *T. digitis undenis membrana palmatis.*

Gurnard with eleven fingers on each side, palmated by a membrane.

Trigla alata. *Lin. Gmel.*

A SMALL species: of about four inches in length: head angular: lower jaw and hinder margin of the gill-covers furnished with two strong spines: native of the Japanese sea.

MINUTE GURNARD.

Trigla Minuta. *T. digitis ternis, dorso bicarinato.* Lin. Gmel.
Gurnard with triple fingers, and bicarinated back.

A SMALL species: at least the specimen described by Linnæus measured only three inches in length; though perhaps not arrived at its full size: head hard and rough; emarginated and denticulated in front, and furnished with two spines above the eyes, two at the hind-head, and two stronger ones at the back part of the crown: posterior gill-covers spiny: pectoral and ventral fins very sharp-pointed: tail rounded. Native of the Indian seas.

 CAVILLONE GURNARD.

Trigla Cavillone. *T. rubra, capite spina utrinque super oculos,*
& sex utrinque ad occiput.

Red Gurnard with a single spine above each eye, and six on each side the back of the head.

Cavillone. *Rondel. Cepede.*

DESCRIBED and figured by Rondeletius: length about three inches: head furnished with a spine above each eye, and six large ones at the hind part: body covered with small, denticulated, rough scales: colour red: pectoral fins white above, and dark-green or olive beneath: native of the Mediterranean, and known about some parts of the French coasts by the title of *Cavillone*.

PUNCTATED GURNARD.

Trigla Punctata. *T. rosea, sanguineo-punctata, capite lato, obtuso, postice spinoso.*

Rose-red Gurnard, with blood-red specks, and broad obtuse head, spined on the hind-part.

Trigla punctata. *Bloch.*

LENGTH about eight inches: head very broad, obtuse, and furnished behind with strong spines: colour of head and whole body bright rose-red, sprinkled over on the upper parts with numerous deep-red specks: scales middle-sized: pectoral fins very large, rounded, and of a dusky blue colour, speckled with red, and inclining to yellow towards their tips: rest of the fins and tail yellow, speckled with red. Native of the American seas.

 LINEATED GURNARD.

Trigla Lineata. *T. rubra, maculis supra fusco-sanguineis, corpore utrinque lineis numerosis transversis.*

Red Gurnard, marked above by dusky-sanguine spots, with the body crossed on each side by numerous perpendicular lines.

Trigla lineata. *Lin. Gmel.* Streaked Gurnard. *Brit. Zool.*

SIZE and habit of *T. Cuculus*: colour bright red, marked on the upper parts with dark-red patches or spots: abdomen silvery: on each side the back, close to the base of the dorsal fins, a row of broad, serrated, short processes of a yellow colour: lateral line formed by a row of similar ones: body covered

with small scales: sides marked above and below the lateral line into very numerous, narrow, perpendicular divisions: pectoral fins pretty large, rounded, and of a dusky brown, spotted with black: rest of the fins yellowish, with a tinge of red, especially the tail, which is slightly lunated: native of the Mediterranean.

VAR. ?

Trigla Adriatica. *T. corpore squamis verticillato, linea laterali aculeata, pinnis pectoralibus subtus nigris, digitis ternis.* Lin. Gmel.

Gurnard with the body verticillated by scales, with aculeated lateral line, pectoral fins black beneath, and triple fingers.

THIS chiefly differs from the preceding in being varied with bands of black spots, and having the spots of the pectoral fins disposed into two transverse bands, while the edges are marked beneath by a row of blue spots: observed in the Adriatic sea.

PINE TRIGLA.

Trigla Pini. *T. rubra, digitis ternis, corpore utrinque lineis numerosis transversis convexis.*

Red Gurnard, with triple fingers, and body marked on each side by numerous transverse convex lines.

Trigla Pini. Bloch.

HABIT similar to that of the Piper; but in other respects greatly allied to the lineated Gurnard:

colour red, with the abdomen yellowish : scales small : dorsal and lateral line aculeated : from the latter pass numerous perpendicular convex lines of division, terminating rather obtusely both above and below, and not ill resembling the form of pine-leaves : fins and tail yellowish : ventral fins red, with an obscure blueish cast : native regions unknown.

MAILED GURNARD.

Trigla Cataphracta. *T. rubra, rostro bifurcato elongato, digitis binis, corpore octogono cataphracto.*

Red Gurnard, with lengthened forked snout, double fingers, and octagonal mailed body.

Trigla cataphracta. *Lin. Cornuta. Rondel. Gesn.*

LENGTH about twelve inches: snout deeply bifurcate, with the forks of considerable length, and rounded at their tips: body octagonal, and completely mailed by bony scales: the longitudinal rows or divisions of the body being marked by so many serrated or aculeated lines: beneath the throat a pair of ramified cirrhi: pectoral fins and tail pale brown: the other fins pale yellow, and nearly transparent: rays of the first dorsal fin running out beyond the membrane: native of the Mediterranean.

CHABRONTERA GURNARD.

Trigla Chabrontera. *T. corpore subtus cataphracto, pinnis rubris.*
Gurnard with the body mailed beneath, and red fins.

Trigla Chabrontera. *Cepede.*

EXTREMELY allied to the preceding, but differs in not having the body marked into an octagonal form; the under parts only being furnished with bony divisions: above the snout are several spines pointing backwards; and above and below the tail are also placed three spines: all the fins, except the tail, are of a bright red. Native of the Mediterranean.

TRACHICHTHYS. TRACHICHTHYS.

Generic Character.

<p><i>Caput</i> antice rotundatum : oculi magni: os amplum, edentulum, descendens.</p> <p><i>Membr</i> : <i>branch</i> : radiis octo, quorum quatuor in- feriores margine scabri.</p> <p><i>Squamæ</i> scabræ : abdomen carinato-cataphractum.</p>	<p><i>Head</i> rounded in front: eye large: mouth wide, tooth- less, descending.</p> <p><i>Gill-membrane</i> furnished with eight rays, of which the four lowermost are rough on the edges.</p> <p><i>Scales</i> rough : abdomen mailed with large carinat- ed scales.</p>
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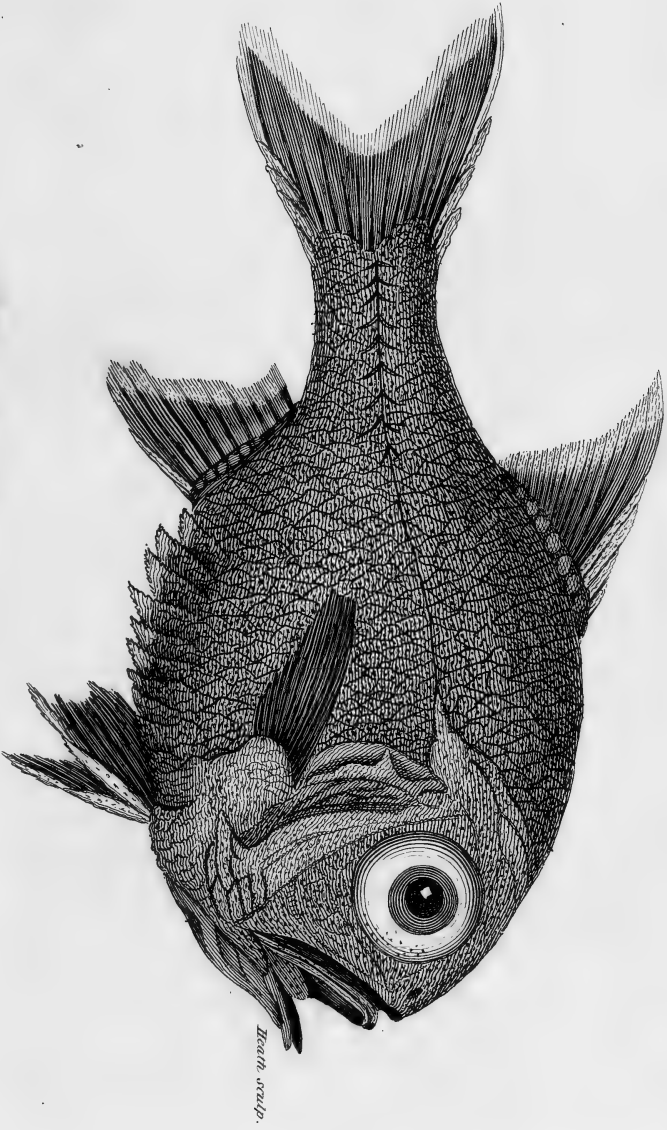
SOUTHERN TRACHICHTHYS.

- Trachichthys Australis. T. abdomine loricato.*
Trachichthys with mailed abdomen.
Trachichthys Australis. Nat. Misc. t. 378.

THIS genus, consisting of a single species only, was first described in the Naturalist's Miscellany. I shall therefore repeat my former description from that publication.

This remarkable fish is represented on the plate in its natural size. The body is moderately thick, more especially on the fore-part: the head is very large; the mouth opening downwards in an almost perpendicular direction, but in a curved line, and, when closed, the outline of the head or front is completely oval: the eyes are extremely large, and the

SOUTHERN TRACHICHTHYS.



iris appears to have been of a silvery hue, or as in the generality of fishes. The mouth is destitute of teeth, and the tongue, which is moderately large, is adnate, or fixed to the lower jaw, to the extremity of which it almost reaches. The opercula or gill-covers are furnished on the upper part with a large, strong, and rough spine, which is very thick at its base: a smaller and shorter spine also occurs at the lower part: the outline of each operculum is somewhat sinuated by two very short and subacute processes towards the middle; and the remainder is composed of five or six rough-edged lamellæ resembling the surface of the body. The *membrana branchiostega* has about eight rays, of which the four lowermost are rough-edged, and thicker than the rest. Perhaps no fish yet known, if we except what are called mailed or cataphracted fish, is so strongly coated as the present; the scales forming a kind of processes, which are so strongly and closely inserted, that it is not possible by means of a forceps to detach one from the rest, without bringing away with it a small portion of the corium or general integument itself; the skin in this respect resembling in some degree that of the genus *Balistes*. These scales or processes, as to their general structure, are analogous to those of the *Chaetodons*; terminating outwardly in a fringe of small, strong spines, besides several scattered ones on the surface. They differ somewhat in shape on different parts of the animal, and as they approach the abdomen become more dilated. The abdomen itself is carinated and cataphracted by a row of eight strong, rough incisures or scales, each of which

projects into a shortish spine, pointing backwards, and forming a sharp keel beneath, while the sides are continued upwards near a quarter of an inch on each side the abdomen. The scales of the abdomen, as before observed, are also somewhat broader in this part, and gradually lessen towards the middle of the body. On each side the tail is a slightly prominent line, or an approach to a carinated appearance, owing to the middle of each scale on that part rising up a little above the level of the rest: the scales also along this part are rather larger than elsewhere; otherwise the appearance of a lateral line is scarce distinct. The dorsal fin has fourteen rays, of which the seven hindermost subdivide towards their tips into softer ramifications. The pectoral fins have thirteen rays: the ventral fins seven; and the anal fin twelve rays, most of which subdivide into softer ramifications at the tip. The tail is strongly furcated, and consists of about twenty-four rays, of which the external or shorter ones are strong or spiny; the rest of a similar appearance to those of the anal fin. The three first rays of all the fins, except the pectoral ones, are very strong, rough, and finely serrated outwards, but more particularly those of the ventral fins.

The *Trachichthys Australis* is a native of the coasts of New Holland. Its colour is a bright pink-ferruginous, or fair reddish-brown; the middle part of all the fins of a deeper colour than the rest of the animal, and the edges lighter, or of a yellowish tinge.

END OF VOLUME IV.

London: printed by Thomas Davison, White-friars.

