

SAW-SNOUTED SHARK.

the coasts, and feeding on flat-fish, &c. and is sometimes observed in small shoals. It produces twelve of thirteen young at a birth.

With servated snout.

SAW-SNOUTED SHARK.

Shark with sword-shaped bony snout denticulated on both sides with equal teeth.

Squalus Pristis. S. pinna ani nulla, rostro ensiformi osseo pluno utrinque dentato. Lin. Syst. Nat. Serra. Plin. hist. mund. l. 9. c. 2.

berra. 1 m. mar. munu. 1, 9, c. 2.

Pristis s. Serra. Rond. Gesn. Aldr. Will. &c.

THE Saw-Fish is a large species of Shark, growing to the length of fifteen feet or more: the head is slightly flattened at the top, and is produced in front into a very long, flat, strait, and slightly tapering bony snout, covered, like the rest of the animal, by minute scales : along the edges project a great number of very strong, large, slightly flattened, and very sharp-pointed tooth-like processes: the mouth, as in other Sharks, is placed beneath, and is furnished on the edges of the jaws with several rows of small and somewhat blunt teeth, paving the lips, as in some of the Rays. The habit of the fish is rather slender; the body convex above, and somewhat flattened beneath : the dorsal fins placed as in the Squalus Acanthias and several others: the ventral situated nearly beneath the first dorsal;

SAW-SNOUTED SHARK.

and the tail shaped as in other slender-bodild Sharks, with the upper lobe longer or more produced than the lower: the colour of the animal is grey-brown above, paler beneath: the general length of the snout is almost a third of the whole fish, and the number of teeth or processes on each side varies from eighteen to twenty-four. The Saw-Fish is an inhabitant of the Mediterranean and Northern seas, and was known to the ancient writers by the title of *Pristis*. In the embryo enimal the edges of the snout are observed to be nearly smooth, or but slightly undulated by the projection of the incipient teeth or processes, which are supposed to be of very quick growth.

In the second volume of the Transactions of the Linnæan Society we find a description, by the ingenious Mr. Latham, of three varieties or differences in the snout of the Saw-Fish or Pristis, which he considers as constituting so many distinct species. In the first of these the teeth are more numerous than in the Pristis Antiquorum or common Sawfish, as well as of a much narrower and sharper shape: their number is thirty-one or thirtytwo on each side, those towards the base being situated more distant from each other than those towards the tip. This kind Mr. L. names P. pectinatus. In the second the snout is of a more slender form than in the common Swordfish, the teeth shorter, smaller, flat, and sharp-pointed: they are twenty-eight in number on each side : this he names P. cuspidatus. The third has the snout of nearly similar proportions to that of the common

TENTACULATED SHARK,

Sa vfish, and the teeth only seventeen in number on each side: they are also very short, projecting but a very little way beyond the edge of the snout. This supposed species is described from a complete specimen of the animal, preserved in the Leverian Museum: the total length of the specimen is twenty-eight inches, the snout measuring ten. Mr. L. terms this P. microdon.

TENTACULATED SHARK.

Squalus Tentaculatus. S. rostro utrinque tentaculato, spinoso, spinis longioribus brevioribusque intermediis.

Shark with serrated snout tentaculated on each side, with short teeth interposed between the longer ones.

Squalus cirratus. S. rostro cirrato, spinis longioribus; brevioribusque intermediis. Lath. Lin. Trans. 2, p. 281.

This rare and curious species constitutes one of the numerous zoological acquisitions obtained by our late voyages to the Southern Hemisphere, having been discovered about the coasts of New-Holland, &c. The specimens hitherto observed have not exceeded the length of about three feet and a half, but it is probable that the animal grows to a far larger size, and indeed this is evident from a snout preserved in the British Museum. In its general shape this fish resembles the rest of the slender Sharks, and is of a pale brown colour above, and whitish beneath: the head is shaped like that of the common Sawfish, but the snout is more slender in proportion: the teeth or processes are very numerous, of unequal size, and are disposed

TENTACULATED SHARK.

along the edges in a singular manner; three or your or more of the smaller ones being interposed between each of the larger and longer ones: the total number on each side is not less than ninety-two or ninety-three: a row of small and distant spines also runs along the under part of the edges: at about the middle of the snout beneath, from each side, springs a long and flexible tentaculum or feeler, of a flattened shape, gradually tapering to the tip, and appearing covered entirely, if closely inspected, by minute scales of similar structure to those with which every other part of the skin is clothed : these scales are of a somewhat triangular shape, of a lucid surface, and marked by a small carina or midrib: the mouth is placed beneath the head, as in other Sharks, and the teeth, which are of moderate size, subtriangular, and sharp-pointed, are disposed in five rows in each jaw: the dorsal," pectoral, and ventral fins are disposed as in most of the slender-bodied Sharks, and the tail is of similar structure, viz. slightly bilobate at the tip, the fin or lobe being broader and continued to a greater distance beneath than above.

SEMISAGITTATED SHARK.

Spualus Semisagittatus. S. rostro ensiformi plano utrinque dentato denticulis semisagittatis.

Shark with flat sword-shaped snout denticulated on both sides with semisagittated teeth.

Yahla. Russ. ind. t. 13.

I AM induced to consider this fish as a distinct speakes, from the remarkable circumstance announced in the specific character. The length of the specimen observed by Dr. Russel was about thirty-four inches, of which the snout measured something more than seven inches: the general shape of the animal is similar to that of the preceding species; the back and sides are convex, and the belly flat: the mouth furnished with numerous granular teeth: the number of spines or processes on the snout is about twenty-six on each side: every tooth or process being semisagittated, or pretty deeply denticulated on one side, viz. that towards the back of the fish. Native of the Indian seas.

I may here observe that these long-snouted Sharks seem considerably allied to the long-bodied Rays, such as the R. Rhinobatos, &c. and may be said in some degree to connect the two genera of Squalus and Raja.

SPATULARIA. SPATULARIA.

Generic Character.

Habitus Squali.
Spiraculum utrinque unicum ad latera colli, operculo magno tectum.
Rostrum productum, spatulatum.
Os sub capite, amplum, dentibus acutis serratis. Habit that of a Shark. Spiracles single on each side the neck, concealed by a

large gill-cover.

Snout produced, spatuleshaped.

Mouth beneath the head, large, and furnished with sharp, serrated teeth.

RETICULATED SPATULARIA.

Spatularia Reticulata, *S. rostro reticulato*. Spatularia with reticulated snout. Polyodon feuille. *Cepede*. Chien de mer feuille. *Bonaterre encyclop*, *methodique*.

THIS remarkable fish, the only species hitherto discovered, is greatly allied to the Sharks in its general appearance, and more particularly to those constituting the Saw-Fish tribe; but differs essentially from the genus Squalus in having only a single spiracle on each side the neck: this spiracle is very large, and covered by a large, soft and pointed operculum, which, on being raised, exhibits the gills consisting of five cartilaginous laminæ with



RETICULATED SPATULARIA.

fringed edges, as in the generality of fishes: the body is moderately slender, subcylindric, and tapering towards the tail: the head is terminated by a very long, flat, and thin snout, nearly equalling the length of the whole remainder of the animal: it is perfectly even on the edges, gradually dilated towards the tip, and of a form not ill resembling that of a spatula: the upper surface of this part is divided by a longitudinal midrib or carina, while the space on each side is marked with numerous, slightly prominent lines or fibres, forming a kind of reticular and somewhat stellated pattern: the eyes are rather small: the mouth wide, placed beneath the head, and furnished in the upper jaw with a double, and in the lower with a single row of sharp, curved, and serrated teeth: the skin on the whole body, so far as can be judged from small specimens preserved in spirits, is smooth, and destitute of visible scales: the colour is uncertain, but the gill-covers appear marked with numerous spots of a paler cast than the rest of the skin: the lateral line is strongly marked, and runs in a strait direction from the gills to the tail, which is large and strongly lunated: the dorsal fin is single, of moderate size, of a somewhat falcated shape, and placed rather beyond the middle of the back: the pectoral and ventral rather small, and the anal The internal parts of this fish, according to large. the Count de Cepede, who professes to have examined a young specimen, exhibit nothing very remarkable, except a pretty large air-bladder, which proves this genus to be in reality more nearly allied

RETICULATED SPATULARIA.

to the Sturgeons than to the Sharks. The particular history of the animal is at present unknown, and we are even unacquainted with its usual residence: it is probable however that it is found in the Indian seas: the size of the young specimens observed by Cepede scarce exceeded the length of a foot, the snout alone measuring nearly half: in, the British Museum is a specimen of this part measuring about fifteen inches in length, and it is probable that the fish, at its full growth, is of very considerable size.



CHIMÆRA, CHIMÆRA,

Generic Character.

Caput supra acuminatum. || Head pointed on the upper part.

Os sub capite, labio superiore quinquepartito. Dentes primores incisores bini supra infraque.

Mouth placed beneath, with the upper lip five-cleft. Cutting Teeth two in front, both above and below.

NORTHERN CHIMÆRA.

Chimæra Borealis. C. argentea, supra fusco variata, rostro plicato poroso.

Silvery Chimæra, varied above with brown, with pleated porous snout.

Chimæra monstrosa. C. vostro subtus plieis pertusis. Lin. Syst. Nat.

Genus Galei. Clus. exot.

Simia marina. Gesn. p. 877. Jonst. pisc. t. 44. f. 2. Chimæra-cauda filiformi. Bloch. t. 124.

THIS fish, so remarkable for the singularity of its appearance, is a native of the Northern ocean, where it generally inhabits the deepest recesses, and is supposed to prey on the smaller kind of fishes, as well as on various sorts of Mollusca and Testacea: its general length is from three to four feet : the body is of a lengthened shape, compressed, and gradually tapering towards the tail, which is con-

NORTHERN CHIMÆRA.

tinued into a long and slender filament : the head is very large and thick, rising up in front into a conical or pyramidal form; and at some distance beyond this, on the top of the head, in the male fish, is a short upright process with a fringed or subdivided tip, resembling a tuft: the mouth is placed beneath, and is of moderate width, and fur- . nished in each jaw with a pair of broad, bony laminæ, notched at the margin into a resemblance of numerous teeth; while in front, both above and below, stand two large, subtriangular, flattish cutting-teeth : the upper lip is divided above into five clefts, and the front, from the mouth to the eyes, is marked by transverse undulations and pores, in such a manner as to resemble a kind of embroidery: a line of this kind runs across the forehead, beneath the point or tip, and is continued in a serpentine course into the lateral line, after sending up a side-branch beyond the eyes, and back again towards the nostril on each side : the intervening space between these lines is filled up by numerous, distinct pores: the lateral line is very strongly marked, of a whitish colour with dark edges, and runs strait from the place before-mentioned to the tip of the tail: the eyes are very large, placed on each side the head, and are of a greenish colour with silvery irides. in the living fish they are said to shine with a phosphoric splendour: the whole body is of a yellowish brown above the lateral line, and of a bright silver-colour beneath it, variegated, more particularly above the lateral line, with numerous, irregular deep-brown or blackish

NORTHERN CHIMÆRA.

spots and patches: the fins are yellowish brown, varied with darker shades: the first dorsal fin is triangular, and furnished at its origin with an extremely strong and sharp spine, projecting somewhat beyond the finny part : the second dorsal fin commences at a small distance beyond the first, and is shallow, soft-rayed, and continued to a great distance: the third, which is of similar appearance, commences immediately after this, and is continued to the end of the tail, being gradually lost in the terminal filament : the pectoral fins, which are very large, and of a subtriangular shape, are situated beneath the first dorsal: the ventral are of similar shape, but much smaller, and placed at about the middle distance from the head to the end of the tail : at the base of each, in the male, is a lengthened, subcylindric process, roughened by numerous sharp prominences in a reversed direction: these organs, as appears from the examination of Dr. Bloch, are analogous to the lengthened processes observed in the males of Sharks and Rays.

The Chimæra is observed seldom to approach the shores, except during the breeding-season; it is also said to swim chiefly by night, and to prey on young herrings, cod, and other smaller fishes. Its flesh is considered as coarse and uneatable, resembling that of most of the Shark tribe, but the Norwegians are said to use the eggs in the composition of their pastry; and from the liver is drained an oil, which is considered as of singular efficacy in disorders of the eyes, and as an embrocation for bruises and wounds; while the long process

V. V. P. II.

SOUTHERN CHIMÆRA.

or filament at the end of the tail is dried and used for the purpose of a pipe-cleaner.

From the Linnæan title of this fish, both generic and specific, we might be led to imagine it one of the most deformed and monstrous of all the inhabitants of the deep: its appearance however, on the whole, is rather grotesque than formidable, and its colours highly elegant. I have sometimes thought it not improbable that the Bishop-Fish, described and figured in the works of Rondeletius, may have taken its rise from distorted preparations of the upper part of this animal, with the addition of some other articles to form the lower part.

SOUTHERN CHIMÆRA.

Chimæra Australis. C. subargentea, rostro subtus labro inflexo . lævi.

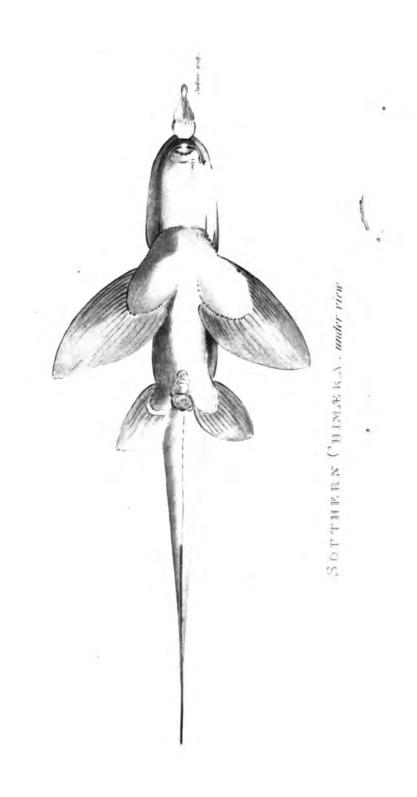
Subargenteous Chimæra, with the snout produced beneath into an inflected lip.

Chimæra Callorhynchus. C. rostro subtus labro inflexo lævi. Lin. Syst. Nat.

Callorynchos. Gronov. mus. 59. t. 4. Elephant-Fish. Cook. it. 1. p. 18.

SIZE nearly similar to that of the preceding species, but with the front rather sloping downwards, and the upper lip extended into a lengthened cartilaginous flap or appendage, bending downwards in a reversed direction beneath: mouth as in the former fish: eyes large: front marked by undulating lines, but with less numerous pores: first dorsal fin like that of the *C. borealis*; second re-





SOUTHERN CHIMÆRA.

sembling the first, but without the spine : the third very shallow, and continued into a thread, as in the former species, but of less extent : pectoral fins large : ventral middle-sized ; anal small : lateral line commencing from the upper sides of the head, and thence continued, in a strait direction, to the beginning of the caudal fin, at which place it terminates : general colour of the whole fish silvery, with a yellowish-brown cast on the upper parts : fins pale brown. Native of the Southern seas, where its manner of life is similar to that of the *C. borealis* in the Northern Hemisphere.

ACIPENSER. STURGEON.

Generic Character.

Rostrum subtus cirratum. Os sub capite, ovatum, edentulum, retractile. Corpus elongatum, supra tuberculis cataphractum. Snout bearded beneath. Mouth beneath the head, ovate, toothless, retractile. Body elongated, mailed above by tubercles.

COMMON STURGEON.

Acipenser Sturio. A. griseus, subtus albidus, corpore supra serial quintuplici tuberculato, cute scabro.

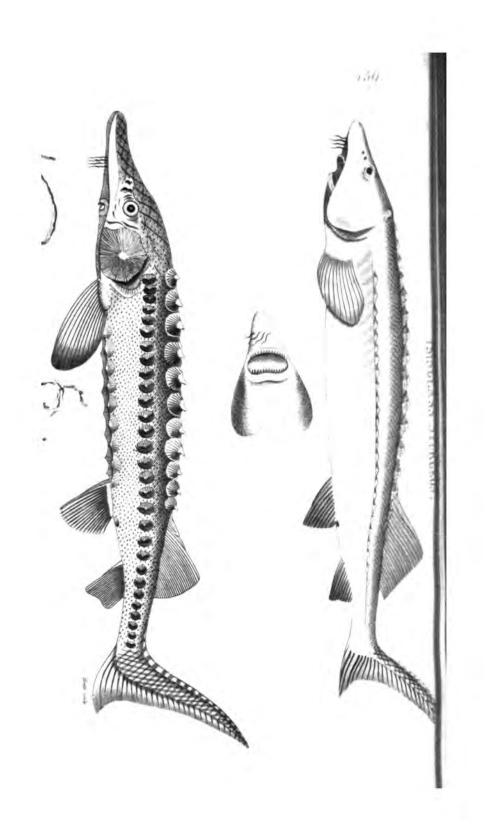
Grey rough-skinned Sturgeon, whitish beneath, with the body shielded above by a quintuple series of tubercles.

Acipenser Sturio. A. cirris quatuor, squamis dorsalibus undecim. Lin. Syst. Nat.

Acipenser scutorum ordinibus quinque ad corpus asperum. Bloch, t. 88.

Acipenser. Rondel. Gesn. &c. Sturio. Salvian. aquat. 113. Sturgeon. Penn. Brit. Zool. Will. ichth. &c.

HE Sturgeon is a fish of very great size, growing to the length of eighteen or twenty feet: it is an inhabitant of the Northern European and American seas, migrating during the early summer months into the larger rivers and lakes, and returning to the sea again in autumn, after having deposited its spawn. Its form is long and slender;



COMMON STURGEON.

the body pentagonal, gradually tapering towards - the tail, and covered throughout the whole length by five rows of strong, large, bony tubercles, rounded at the base, radiated from the centre, and terminated above by a sharp curved point in a reversed direction: of these five rows of tubercles one is situated on the top of the back, and two on each side the body, the lowermost forming the edges of the abdomen, which is flat: the whole skin also, except on the belly, is roughened by very small tubercles of similar structure: the head is rather large, sloping on each side, and covered with bony plates; the snout long and slender, obtuse at the tip, and furnished beneath, at some distance from the end, with four long, worm-shaped beards or cirrhi: the mouth is placed immediately beneath the upper part of the head, and consists of a transverse oval orifice, totally destitute of teeth, but containing a thick and strong tongue, and is bounded above and below by a strong, cartilaginous edge or lip, which it has the power of retracting and closing at pleasure: the gill-cover, on each side, consists of an oval, radiated plate: the pectoral fins are oval, and middle-sized: the dorsal small, and situated very near the tail; the ventral and anal fins are also small, and placed nearly opposite the dorsal: the tail is lobed or slightly forked, the upper lobe being strengthened above by a bony ridge or carina, and extending far beyond the lower: the general colour is cinereous above, with dusky variegations or specks and whitish or yellowish beneath : the tops of the tubercles are also of a similar cast,

COMMON STURGEON.

The Sturgeon is generally considered as a fish of slow motion, and is observed to lie for a considerable time in the same situation : it even makes but a very faint resistance when first taken, except by sometimes striking with its tail; having great strength in that part: it is however sometimes seen to swim with considerable rapidity and to spring with great force out of the water at intervals. During its residence in the sea it is supposed to live principally on the smaller fishes, and particularly on young Herrings, Mackrel, &c. and in rivers on various kinds of worms, &c. It is rarely taken at any great distance from shore, but frequents such parts of the sea as are not remote from the æstuaries. of great rivers. Catesby informs us that in those of North America Sturgeons appear in great abundance in the months of May, June, and July, occasionally springing out of the water to the height of some yards, and falling on their sides with a noise that may be heard to the distance of some miles. In some of the rivers of Virginia they are so numerous that six hundred have been taken in the space of two days, by merely putting down a pole, with a strong hook at the end, and drawing it up again on perceiving that it rubbed against a fish*. According to Mr. Pennant and Dr. Bloch great numbers are taken during summer in the lakes Frischhaff and Curischaff near Pillau, in large nets made of small cord : the adjacent shores are formed into districts, and farmed out to com-

* Penn, Arct. Zool. append. p. 106. Burnaby's Trav. Sco. p. 15.

COMMON STURGEON.

panies of fishermen, some being rented for six thousand guilders, or near three hundred pounds per annum. Dr. Bloch informs us that in France the Sturgeon-fishery commences in February in the river Garonne on the coast of Bourdeaux, and lasts till July or August.

The Sturgeon is admired for the delicacy and firmness of its flesh, which is white, and when roasted is thought to resemble veal : it is however generally eaten pickled, and the major part of what we receive in that state comes either from the Baltic rivers or those of North America. Of the roe, properly salted and dried, is prepared the substance known by the name of *Caviar*, a superior kild of which is however made from that of a smaller species, hereafter to be described.

In our own country the Sturgeon annually ascends rivers, but in no great quantity, and is occasionally taken in the Salmon-nets: the largest recorded by Mr. Pennant, as taken in England, was of the weight of four hundred and sixty pounds. In its manner of breeding the Sturgeon forms an exception among the cartilaginous fishes, since, as before observed, it is oviparous: it is a very prolific fish, and the globules of the roe or spawn are about the size of hemp-seeds.

The Sturgeon was a fish in high repute among the Greeks and Romans, and, according to Pliny, was brought to table with much pomp, and ornamented with flowers, the slaves who carried it being also adorned with garlands, and accompanied by music. The flavour of the Sturgeon is said to vary

SMALLER STURGEON.

according to the food on which it has principally fed; for which reason it is distinguished in Sweden_ and other northern regions into Mackrel-Sturgeon, Herring-Sturgeon, &c. Dr. Bloch observes that the Linnæan specific character of this fish is not quite correct, since the number of dorsal tubercles varies from eleven to thirteen; neither is the number of the lateral or ventral rows more constant, varying in a similar manner. Some have supposed the tubercles of the Sturgeon to be annually cast, in the same manner as those on Rays. It may be added that the Sturgeon is able to survive some days when taken out of water; the gill-covers being edged by a soft membranaceous border, which by closing accurately, prevents the access of atr.ospheric air to the branchiæ.

SMALLER STURGEON.

Acipenser Schypa. A. rostro obtuso, oris diametro tertiam partem longiore, cirris rostri apici propioribus, labiis bifidis. Lin. Gmel. Guldenst. nov. comm. Petrop. 16. p. 532.

Sturgeon with obtuse snout, a third part larger than the diameter of the mouth; the beards nearer the end of the snout, and the lips bifid.

It is doubtful whether this be a distinct species, or a variety of the common Sturgeon, from which it principally differs in its smaller size, rarely exceeding the length of five feet, and in the few particulars mentioned in the specific character given by its describer Guldenstadt. It is a native of the Caspian sea, and some of the lakes of Siberia.

ISINGLASS STURGEON.

Acipenser Huso. A. fusco-carulescens, tuberculis lateralibus subobsoletis, abdomine subargenteo.

Dusky-blueish Sturgeon, with somewhat obliterated lateral tubercles, and slightly silvery abdomen.

Acipenser Huso. A. cirris quatuor, squamis dorsalibus tredecim, caudalibus quadraginta-tribus. Lin. Syst. Nat.
Acipenser apertura branchiali partim nuda. Bloch. t. 129.
Huso. Aldr. pisc. p. 534. Jonst. pisc. t. 25. f. 1. 3.

A LARGER fish than the common Sturgeon, having been often found of the length of twenty-five feet : general shape the same; colour dusky or blackish blue above, silvery on the sides and abdomen, with a) tinge of rose-colour on the latter : general appearance smoother than in the common Sturgeon, the dorsal tubercles being less protuberant, and those along the sides much smaller, and in some specimens of a very advanced growth altogether wanting: mouth much larger than in the *A. Sturio*, with thick, crescent-shaped lips : skin smooth and viscid. Native of the Northern, Caspian, and Mediterranean seas, migrating from them into the adjoining rivers : found more particularly in the Volga and the Danube.

It is from the sound or air-bladder of this species that the well-known substance called isinglass is prepared: this is done by cleansing, splitting, and drying that part, either in the air, or occasionally by a fire, and either twisting or flattening it, according to the particular sorts by which it is distinguished in commerce. An ample account of the

STERLET.

preparation of this useful article may be found in the sixty-third volume of the Philosophical Transactions: the skin, tail, stomach, and intestines of the fish are used for the same purpose; and indeed an isinglass of a somewhat inferior kind may be prepared from the same parts of many other fishes

STERLET.

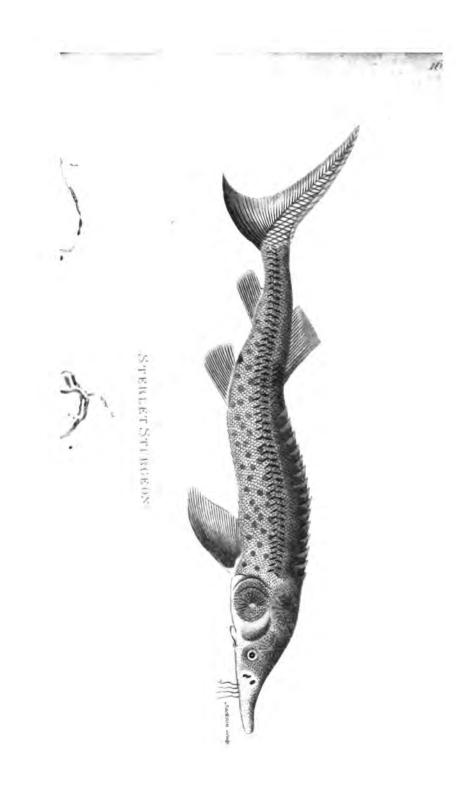
Acipenser Ruthenus. A. subfuscus, lateribus subrubro maculatis, corpore supra serie triplici tuberculato.

Brownish Sturgeon, with the sides spotted with pale red, and the body shielded above by a triple series of tubercles.

Acipenser Ruthenus. A. cirris quatuor, squamis dorsalibus quindecim. Lin. Syst. Nat.

Acipenser ordinibus scutorum tribus. Bloch. t. 89. Sterlet. Bruyn. it. 93. t. 33.

THE Sterlet is the smallest species of Sturgeon yet discovered; in length it rarely exceeds three feet, and is principally found in the Caspian sea and the adjoining rivers Volga and Ural: it is also found, though much less frequently, in the Baltic sea. It is said to have been introduced into some of the large lakes of Sweden by Frederick the first; and into some parts of Brandenburg and Pomerania by the King of Prussia. The head of this species is longer in proportion than in other Sturgeons, and flattened both above and below: the body rather more slender, and the bony shields with which the upper parts are covered less protuberant and of a thinner substance: along the belly are also disposed two ranges of small, flat shields: the general



STERLET.

colour is dusky above, whitish, and variegated with rose coloured spots beneath: the rows of tubercles are of a yellow cast, and the whole skin is slightly roughened into a kind of scaly appearance: the ventral and anal fins are of a deep rose-colour: the rest blueish-brown: the usual number of shields or tubercles is, according to Dr. Bloch, fourteen along the back, and fifty-nine along each side.

The Sterlet is in much higher esteem as an article of food than any other species, and is even considered as one of the most delicate of fishes. Sterletsoup, it is well known, formed one of the favourite luxuries of that gigantic epicure Prince Potemkin of Russia, who in seasons when the fish happened to be unusually dear, was content to purchase it at a price so extravagant, that a single tureen, forming the mere prelude to his repast, stood him in the sum of three hundred rubles !

The Sterlet indeed in Russia makes its appearance chiefly at the entertainments of the higher nobility, and the Caviar prepared from its roe is said to be confined almost exclusively to the use of the royal table.

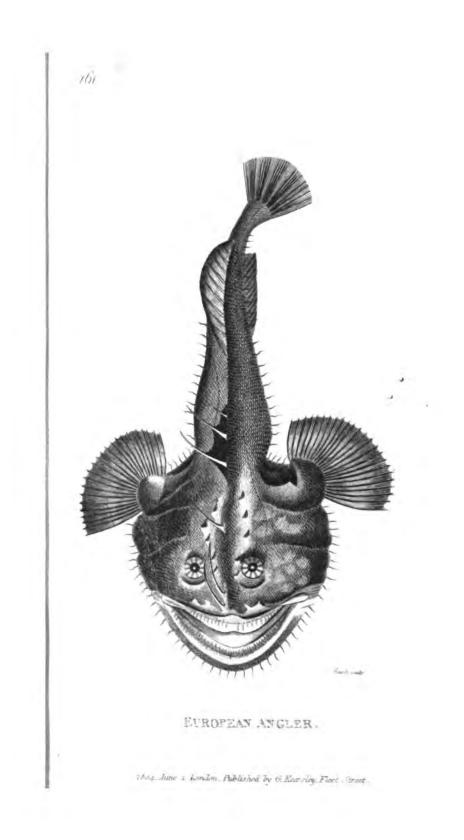
Like the rest of this genus it is a prolific fish, and usually spawns in the months of May and June: it is said to live on worms and small fishes, and is particularly fond of the roe of the common Sturgeon, for which reason it often follows that species in its migrations.

STELLATED STURGEON.

Acipenser Stellatus. A. rostro spatulato subrecurvo, diamet oris transverso sextuplo longiore, cirris ori propioribus, labiis integris. Lin. Gmel. Guldenst. nov. comm. Petrop. 16.'p, 533.

Sturgeon with spatulate subrecurved snout, and entire lips. Acipenser Kostar. *Gmelin. it. 3. p. 238.*

LENGTH from four to five feet: body more slender than in the Sterlet: head subtetragonal, and roughened with stellated marks and tubercles: skin roughened by crenated scale-like rudiments: form pentangular, owing to five rows of shields, each of which is keeled and sharp-pointed: in the dorial row are thirteen, and in the superior lateral rows thirty-five: besides these is a row of smaller ones on each side the abdomen, and beyond the vent are placed three shields: general colour dusky above, spotted with white on the lower part of the sides, and milk-white beneath: fins longer than in other Sturgeons. Inhabits the Caspian sea, out of which it migrates in innumerable shoals into the rivers.



LOPHIUS. ANGLER.

Generic Character.

•Caput depressum. Dentes plurimi, acuti. Lingua dentibus armata. Corpus crassum. Head depressed. Teeth numerous, sharp. Tongue armed with teeth.

Pinnæ pectorales brachiatæ. || Pectoral fins brachiated.

EUROPEAN ANGLER.

Lophius Europæus. L. depressus fuscus, antice rotundatus, subtus albidus, lateribus fimbriatis.

Brown depressed Angler, rounded in front, whitish beneath, with fringed sides.

Lophius piscatorius. L. depressus, capite rotundato. Lin. Syst. Nat.

Lophius capite corpore latiore. Block. t. 87. Rana marina. Bellon. aq. p. 85. Jonst. pisc. t. 11. f. 8. Rana piscatrix, Toadfish, &c. Will. ichth. p. 85. t. E. 1. Common Angler. Penn. Brit. Zool.

THE genus Lophius is remarkable for a peculiarly uncouth appearance; the body being thick and shapeless, and the fins short and broad: the largest of the genus is the Lophius piscatorius, popularly known by the title of the Frog-Fish. It is an inhabitant of the European seas, where it sometimes arrives at a great size, having been seen to measure six or seven feet in length: its more

TORAPEAN ASCLER.

EUROPEAN ANGLER.

general length however is from two to three or four feet. The shape bears some resemblance to . that of a Tadpole, the head being lost as it were in the outline of the sides, and the hind-parts taper . ing pretty suddenly towards the tail : the skin is smooth, but the upper parts of the animal are marked by various inequalities of surface, rising here and there into the appearance of short spines: the eves are large, and of a whitish colour, with the iris radiated by several dusky stripes: the mouth excessively wide, with the lower jaw considerably longer than the upper: the teeth very sharp and numerous, both in the mouth and on the tongue: from the upper part of the head spring two or three long and linear tentacula or processes, situated in a longitudinal direction behind each other, and followed by a few shorter ones down the back: the sides or edges of the body are fringed, at intervals, with many shorter appendages of a somewhat similar nature: the pectoral fins are large, of a rounded and slightly scolloped outline, and are seated on very thick, arm-like processes : the ventral fins are short, cartilaginous, of a whitish colour, and strongly palmated : the dorsal fin is rather shallow and situated at the lower part of the back: the ventral is placed nearly opposite and is of similar appearance, but somewhat smaller : the tail is short and rounded. The colour of the whole animal on the upper parts is brown, with a few deeper and paler variegations, and beneath whitish. This fish is observed chiefly to frequent the shallow parts of the sea, lying in ambush, half-covered by

CORNISH ANGLER.

the weeds and mud: in this situation it is said to move about the tentacula or long processes on the head, &c. in such a manner that the smaller fishes, deceived by their resemblance to worms, and attempting to seize them, become an easy prey to the Lophius. This practice, which is mentioned by Pliny and others, induced Mr. Pennant, in the British Zoology, to distinguish the genus by the English title of *Angler*.

CORNISH ANGLER,

Lophius Cornubicus. L. depressus subelongatus, corpore postice fimbriato.

Depressed subelongated Angler, with the body fringed at the hind part.

Fishing-Frog of Mount's-Bay. Borl. Cornw. 266. pl. 27. f. 6. Long Angler. Penn. Brit. Zool.

It may perhaps be doubted whether this be truly distinct from the preceding fish, or whether it may not rather constitute a sexual difference or a variety. It is mentioned by Dr. Borlace in his Natural History of Cornwall, and is said to be of a longer form than the common Angler, with the head more bony, rough, and aculeated, as well as destitute of the fringed appendages, which take place only towards the hind-part of the body : the pectoral fins are tipped with spines of about an inch and three quarters in length, and on the tail are similar ones but somewhat shorter, measuring only an inch. Observed about Mount's Bay in Cornwall.

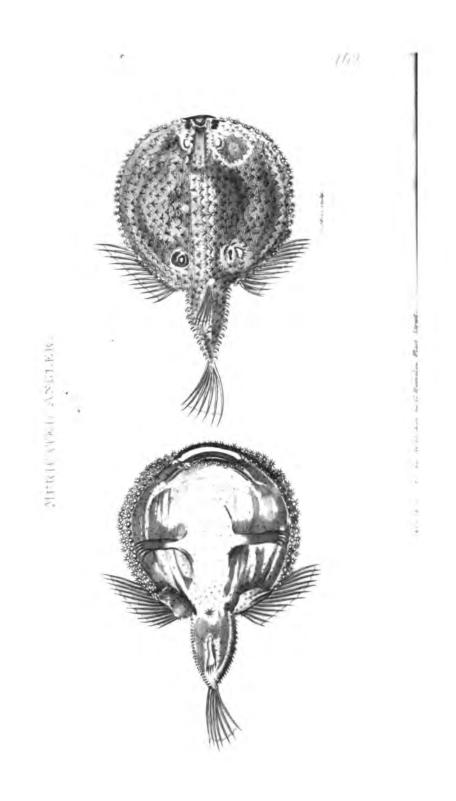
MURICATED ANGLER.

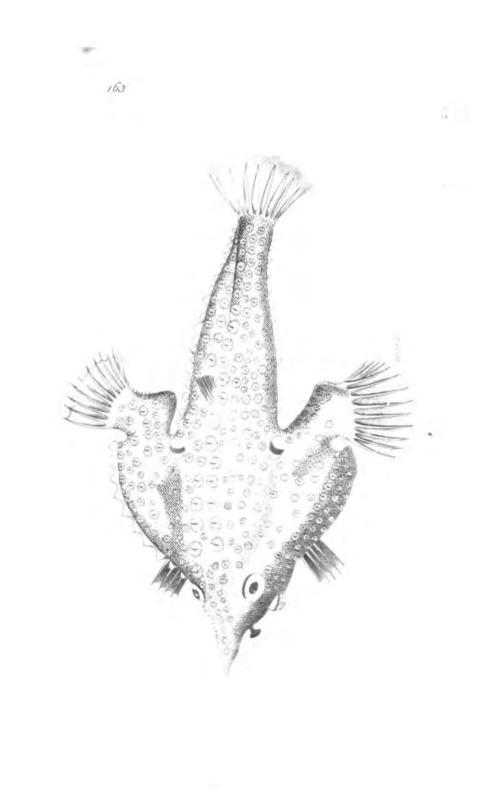
Lophius Muricatus. L, depressus antice orbiculatus, supra spinis radiatis muricatus.

Depressed Angler, with the fore-parts orbicular, and muricated above by radiated spines.

Lophie Faujas. Cepede.

DESCRIBED by Cepede, from a specimen in the Museum of the Prince of Orange: body very flat, orbicular, and covered above with very numerous, small tubercles tipped with divided or radiated spines : hind part contracting suddenly, covered with similar spines, and terminated by the tail-fin, which is of moderate size and slightly rounded : > pectoral fins large, and situated lower than, in the common Angler: ventral on each side the middle of the body beneath: dorsal fin small, and placed" low on the back; anal nearly opposite: mouth of moderate width, and terminal, with equal jaws: eyes small: lower lip slightly fringed, as are likewise the sides of the body: branchial orifices placed on each side the disk of the body, and at no great distance from the beginning of the tail: length of the specimen examined about four inches.





BEAKED ANGLER.

Lophius Rostratus. L. depressus subferrugineus, supra tuberculatus, capite rostrato.

Depressed subferruginous Angler, tuberculated above, with beaked head.

Lophius Vespertilio. L. depressus, capite rostrato. Lin. Syst. Nat.

Rana piscatrix Americana. Seb. mus. 3. t. 74, f. 2. Lophius capite retuso? Brown Jam. pl. 48. f. 3. ? Guacucuja. Marcgr. Bras. p. 143.

LENGTH from ten to eighteen inches: body broad in the middle, tapering towards the tail, and strongly acuminated in front, so as to form a sharppointed, lengthened snout : mouth of moderate width, and situated at a considerable distance beneath the tip of the snout: above each nostril a short cartilaginous filament, with a dilated tip: pectoral fins situated on very strong arm-shaped bases : ventral smaller and placed nearer the front : dorsal very small, and situated at a small distance beyond the pectoral: tail rounded at the end: whole animal covered above with numerous, scattered, roundish, crenated tubercles, with pointed tops: the interstices of the skin are roughened by minute points: under surface also roughened by small points but destitute of tubercles : colour above pale red-brown; beneath whitish. Native of the South-American seas, lying among weeds, &c. and preying, like the common Angler, on small fishes, worms, &c.

V. V. P. H.

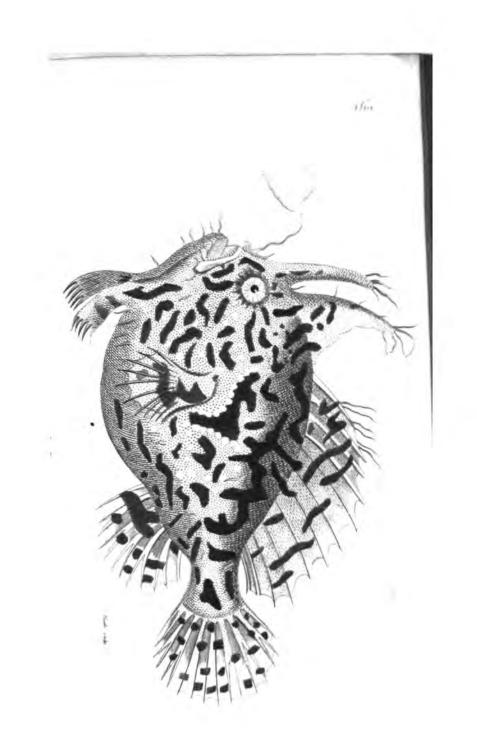
HARLEQUIN ANGLER.

Lophius Histrio. L. compressus fusco-flavescens, maculis irregularibus nigricantibus, capite corporeque cirrhosis.

Yellowish-brown compressed Angler, with irregular blackish spots, and cirri on the head and body.

Lophius Histrio. L. compressus. Lin. Syst. Nat. Piscis Brasiliensis cornutus. Petiv. gaz. t. 20. f. 6. Guaperva. Marcgr. Bras. 150. Will. ichth. 50. t. E. 2. f. 2. Lophius corpore scabro, capite obtuso. Bloch. t. 111.

ONE of the most grotesque and singular of fishes: body thick, but much compressed: mouth of moderate width : eyes large, with radiated irides : pectoral fins middle sized : ventral resembling a kind of short arms, situated very forwards, and palmated at their tips: dorsal fin large, and extending from the middle of the back to within a small distance of the tail, which is of a rounded shape : vent-fire opposite the hind part of the dorsal: at a small distance above the upper lip rises a long and slender cartilaginous process or filament, dividing at top into two dilated oval and pointed appendages : beyond this a strong and thick fleshy process, terminated by a few filaments : beyond this a similar process but much larger and thicker, and tipped, like the former, with several filaments : lower lip, sides of the body, and fore part of the dorsal fin bearded with scattered cirri: general colour of the whole animal yellow-brown, irregularly marbled or blotched with very deep brown or blackish variegations, here and there edged with white. This species is a native of the Indian and American seas,



STRIPED ANGLER.

growing to the length of ten or twelve inches, and in manners resembling the European Angler. Mons^r. Renard, in his History of Fishes, affirms that he knew an instance of an individual of this species kept for three days out of water, and walking about the house in the manner of a dog !!!

STRIPED ANGLER.

Lophius Striatus. L. compressus, fusco-flavescens, striis undique confertissimis nigris. Viv. Nat. 5. t. 175.

Compressed yellowish-brown Angler, marked on all parts with very numerous black streaks.

Striated Lophius. Nat. Misc. 5. t. 175.

MUCH allied to the L. Histrio, but differing in being marked all over, chiefly in a transverse direction, by very numerous and closely-placed, narrow, black streaks, of unequal lengths, with fine black lines interposed: the streaks round the eyes are placed in a radiated direction: fins as in the Histrio, and marked with black spots: mouth wide: tongue broad, and paved above with flattened teeth: from the top of the mouth a long filament, slightly dilated into an oval shape at the tip; at some distance beyond this two strong and thick processes, as in the former species, but without filaments at their tip : rays of the dorsal fin each terminating in a fine cirrus. Native of the Southern seas: observed about the coasts of Otaheitee during the first voyage of Captain Cook. Length of the specimen described about five inches.

PAINTED ANGLER.

- Lophius Pictus. L. compressus fuscus, lituris subflavis rubro marginatis.
- Compressed brown Angler, with yellowish blotches margined with red.

Lophius pictus. Variegated Lophius. Nat. Misc. 5. pl. 176.

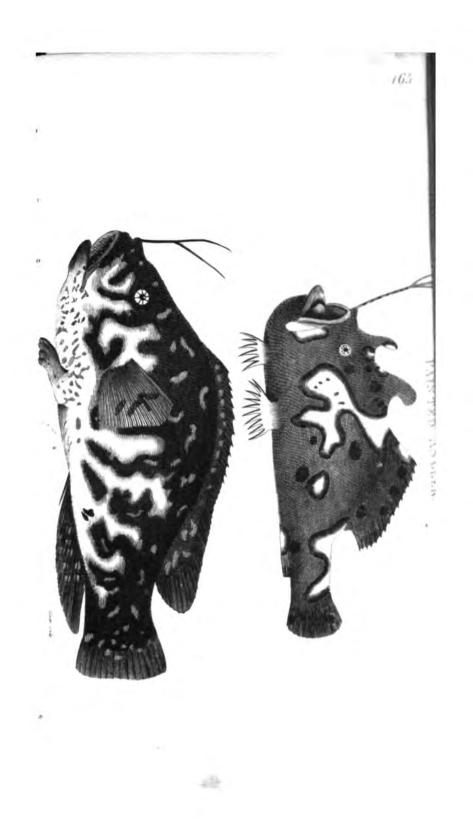
ALLIED in some degree to the Lophius Histrio : length of the specimen described about four inches: colour dull brown, with a few very large, irregular patches of pale yellow, strongly clouded on the edges with deep crimson : between these blotches are interposed a few rather small, roundish, black spots : over the mouth a long filament, dividing into three at the top : beyond this a pair of thick processes as in the two preceding species : pectoral and ventral fins strongly radiated at the ends by the fibres : native of the Pacific : observed about Otaheitee, New-Holland, &c.

MARBLED ANGLER.

Lophius Marmoratus. L. subcompressus lividus, albido ferrugineoque varius, pinna dorsali simplici.

Subcompressed livid Angler with whitish and ferruginous variegations, and simple dorsal fin. Nat. Misc. 5. t. 176.

LENGTH of the specimen described about five inches: shape oval, or nearly resembling that of the generality of fishes: body slightly compressed: back arched, and furnished with a single and rather



COMMERSONIAN ANGLER.

shallow fin, commencing at some distance beyond the head, and extending to within a small distance from the tail, where it is somewhat broader than at its origin: pectoral fins much resembling those of the generality of fishes, the bases or arms being scarce apparent: ventral short, arm-shaped, and terminated by thick and slightly marked lobes, so as to resemble the paws of a quadruped : anal fin longish, and situated near the tail, which is slightly rounded : colour on the upper parts blackbrown with a few blueish clouds and spots: on the lower parts whitish, both colours breaking into each other on the sides of the fish, and white parts being edged with dull red : eyes white, radiated with black: mouth wide: above the upper lip a long filament, forking into two at the tip. Native of the Pacific: observed about the coast of Otaheitee, &c.

COMMERSONIAN ANGLER.

Lophius Commersonii. Lophius compressus niger, macula utrinque rotundata alba.

Compressed black Angler, with a rounded white spot on each side.

Lophie Commerson. Cepede.

ALLIED to the *Harlequin Angler*, but entirely of a black colour, except a small, round, milk-white spot on each side: skin rough or granulated: tongue roughened with small teeth: above the eyes a long and slender filament with a clavated tip: tips of the fins rather pale: length a few inches: observed by Commerson in the Indian seas.

CYCLOPTERUS. SUCKER.

Generic Character.

Caput obtusum: Dentes maxillares: Lingua brevis, crassa. Corpus crassum, squamis Body thick, without scales.

nudum.

Pinnæ ventrales in orbiculum connatæ, Ventral fins united into a circle.

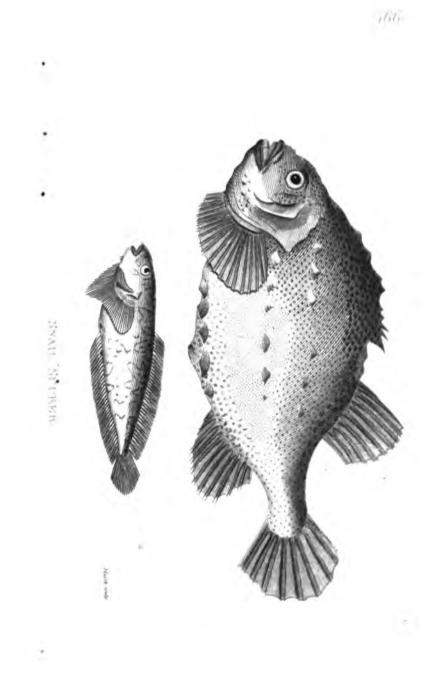
LUMP SUCKER.

- Cyclopterus Lumpus. C. nigricans, subtus ruber, corpare tuberculis osseis angulato.
- Blackish Sucker, red beneath, with the body angulated by bony tubercles.

Cyclopterus Lumpus. C. corpore squamis osseis angulato. Lin. Syst. Nat.

Cyclopterus ordinibus tuberculorum septem. Bloch. t. 90. Lumpus Anglorum. Gesn. Will. &c. Lump Sucker. Penn. Brit. Zool.

" THIS singular fish (says Mr. Pennant), encreases to the weight of seven pounds, and to the length of nineteen inches: the shape of the body is like that of the bream, deep and very thick, and it swims edgeways: the back is sharp and elevated, the belly flat: the irides are of a cherry-colour, the lips, mouth, and tongue of a deeper red: the jaws



LUMP SUCKER.

lined with innumerable small teeth; the tongue very thick : along the ridge of the back is a row of large bony tubercles; from above the eye to within a small space of the tail is another row; beneath that a third, commencing at the gills; and on each side the belly a fourth row, consisting of five tubercles like the other : the whole skin is rough, with small tubercles: on the upper part of the back is a thick ridge, improperly called a fin, being destitute of spines; beneath that is the dorsal fin. of a brownish hue, reaching within an inch of the tail: on the belly, just opposite, is another of the same form: the belly is of a bright crimson colour: the pectoral fins are large and broad, almost uniting at their base: beneath these is the part by which it adheres to the rocks, &c. it consists of an oval aperture, surrounded with a fleshy muscular and obtuse soft substance, edged with small threaded appendages, which concur as so many claspers: (tail and vent fins purple.) By means of this part it adheres with vast force to any thing it pleases : as a proof of its tenacity, we have known, that on flinging a fish of this species, just caught, into a pail of water, it fixed itself so firmly to the bottom, that on taking the fish by the tail, the whole pail was lifted, though it held some gallons, and that without removing the fish from its hold."

"These fish resort in multitudes, during the spring, to the coast of Sutherland, near the Ord of *Cathness*. The seals, which swim beneath, prey greatly on them, leaving the skins; numbers of which, thus emptied, float at that season ashore.

PYRAMIDAL SUCKER.

It is easy to distinguish the place where seals are devouring this or any unctuous fish, by a smoothness of the water immediately above the spot: this fact is now established, it being a tried . property of oil to still the agitation of the waves and render them smooth*. Great numbers of these fish are found in the Greenland seas, during the months of April and May, when they resort near the shore to spawn : their roe is remarkably large, which the Greenlanders boil to a pulp and eat : they are extremely fat, which recommends them the more to the natives, who admire oily food : they call them Nipisets or Cat-Fish, and take quantities of them during the season. This fish is sometimes eaten in England, being stewed like Carp, but is both flabby and insipid."

Var.?

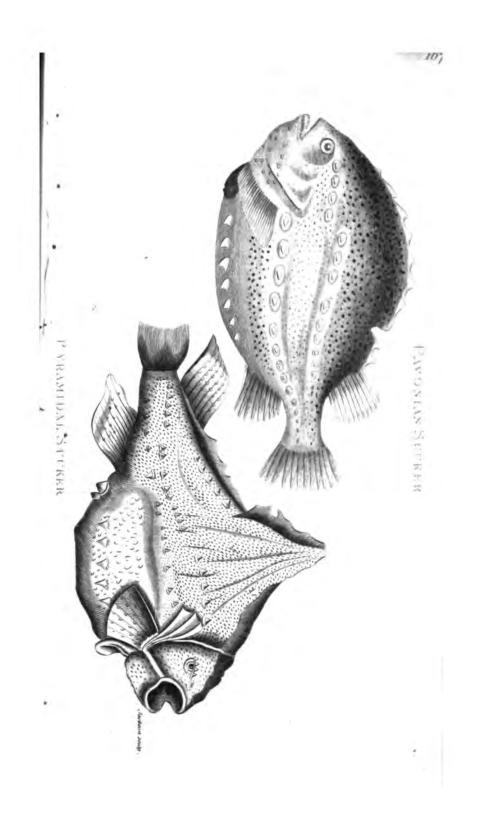
PYRAMIDAL SUCKER.

Cyclopterus Pyramidatus. C. dorso pyramidato, Sucker with pyramidal back.

Lumpus gibbosus. Will. ichth. p. 209. t. N. 10. f. 2.

HABIT or general appearance that of the common Sucker, but with the back raised into a high pyramidal elevation: colour, so far as may be judged from a dried specimen, the same as in the common Sucker, of which it seems to be generally considered

* See Phil, Trans. 1774. p. 445.



PAVONIAN SUCKER.

as a variety: first described by Gesner, and from him by Willughby: said to be found in the Baltic sea and the Northern ocean, and, like the former
kind, is occasionally seen about the coasts of Scotland. In the Leverian Museum is a very fine specimen of this fish.

PAVONIAN SUCKER.

Var.

Cyclopterus Pavoninus. C. argenteo-thalassinus, lateribus subroseis, dorso caruleo.

Silvery-green Sucker, with the sides subrosaceous, and the back blue.

Cyclopterus pavoninus. Nat. Misc. 9. t. 310.

An accurate description of this highly beautiful variety was transmitted to me some years ago by the Revd. Mr. Hugh Davies, of Aber near Bangor, in North-Wales, and was introduced into the ninth volume of the Naturalist's Miscellany. Mr. Davies observes that it seems to have escaped the notice of every English Ichthyologist, but is described by Klein in his Historia Piscium under the title of Oncotion dilute viridis et vivide coloribus pavoneis resplendens, dorso parum nigricante, pinnis viridibus, ad ambitum deauratis. In all particulars, except in size and colours, it agrees with the common Lump-Fish: the back is of a fine azure, deepening towards the ridge: the sides are tinged with crimson: the mouth, sides of the head, and all the

LARGE-TOOTHED SUCKER.

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under parts, to the tail, are of a delicate sea-green, with a silvery tinge on the cheeks, the pectoral fins, and the part of the body next the tail: the iris is likewise silvery, the pupil black : the fins and tail . terminate in a fine pale yellow. It has been cbserved by Dr. Pallas that the Lump-Fish probably exhibits this variety of splendid colours in its younger state only, but Mr. Davies remarks that this observation does not hold good, (universally at least,) since he has seen a specimen of smaller size than the beautiful variety above described, which was entirely of a brown colour. The pavonian variety observed by Mr. Davies measured about six incles in length, and about three and a half in breadth. and Mr. D. is inclined to suppose that it does not attain to the size of the common Lump-Fish.

LARGE-TOOTHED SUCKER.

Cyclopterus Dentex. C. corpore nudo, capite inermi glaberrimo, pinnis sejunctis. Lin. Gmel. Pall. spic. zool. 7. t. 1. f. 1.-4. Sucker with naked body, very smooth unarmed head, and separate fins.

HEAD very large, much broader than the body, depressed, flat beneath: eyes oval, with silvery irides: mouth as wide as the head: lips thick, wrinkled, and doubled, with two very soft fleshy caruncles within: tongue short, of an ellipticrounded shape: mandibles rounded: teeth conic, unequal; in the upper jaw four to the right, and three to the left: in the lower ten middle-teeth,

GELATINOUS SUCKER.

and seven lateral: gill-covers large and bony: abdomen ventricose: vent situated close to the tail, which is compressed, flattish, and subattenuated: fins soft and whitish, with thick, setaceous, cartilagnous rays: dorsal fin somewhat anterior to the anal: pectoral fins semicircular: tail rounded: size of the fish about thrice that of the *Cottus grunniens*: colour reddish. Native of the American seas.

GELATINOUS SUCKER.

cyclopterus Gelatinosus. C. gelatinosus, subdiaphanus, roscus, prena dorsali analique violaceis.

Gelatihous, subtransparent, rose-coloured Sucker, with violetcoloured dorsal and anal fin.

Cyclopterus gelatinosus. C. corpore nudo subdiaphano gelatinoso, pinnis pectoralibus latissimis. Lin. Gmel. Pall. spic. zool. 7. p. 19.

LENGTH about eighteen inches : body slender, oblong, compressed : thicker towards the head, and gradually tapering to the tail : colour whitish with a rosy tinge : skin smooth ; flesh very soft, insomuch as to tremble like jelly when touched : dorsal and anal fin dark violet : pectoral fins flaccid and rounded : native of the seas about the eastern parts of Kamtschatka and the opposite American shores : not eatable, being refused even by the Kamtschatkan dogs, which are fed during part of the year with fish of various kinds.

VENTRICOSE SUCKER.

Cyclopterus Ventricosus. C. olivaceus, abdomine ventricoso. Olivaceous Sucker, with ventricose abdomen.

Cyclopterus ventricosus. C. corpore nudo, vesica urin via amplissima gemina, abdomen distendente. Lin. Gmel. Pall. spic. zool. 7. p. 15.

LENGTH about a foot: skin covered with livid mucous: habit approaching to that of the Weesle Gadus: head thick, blunt, and flattish on the top: eyes lateral, on the upper part of the head: do^{*}sal fin whitish-yellow with black rays, of which *he sixth is longer than the rest: pectoral fins wide: tail suddenly attenuated beyond the vent: instrument of suction orbicular or suboval, with a fleshy, yellow, wrinkled disk, and a smooth, contractile, border. Native of the seas between America and Kamtschatka.

SNAIL SUCKER.

Cyclopterus Liparis. C. subjascus, maculis nigricantibus, subtus albidus, radio primo pinnarum pectoralium elongato.

Brownish Sucker, with blackish spots, beneath whitish, with the first ray of the pectoral fins elongated.

Cyclopterus Liparis. C. corpore nudo, pinnis dorsali anali candalique unitis. Lin. Syst. Nat. p. 414.

Cyclopterus pinna pectorali barbiformi. Bloch. t. 133. f. 3. 4. Unctuous Sucker. Penn. Brit. Zool.

LENGTH from five to sixteen or eighteen inches: shape lengthened, thick, compressed, soft, unctu-

LINEATED SUCKER.

ous, and mucous like a snail: body subtransparent; brownish above, with darker stripes, beneath white, with a cast of yellow on the head and sides: head large, thick, and rounded: eyes small: fins brown: tail short and rounded: instrument of adhesion round, of a blueish colour, and marked with twelve radiate spots. Native of the Northern seas, as far as Kamtschatka: occasionally observed about the British coasts: sometimes ascends rivers.

Var.?

LINEATED SUCKER.

Cyclopterus Lineatus. C. subferrugineus, lineis longitudinalibus albidis undulatus.

Subferruginous Sucker, undulated with longitudinal whitish , lines.

Cyclopterus lineatus. C. corpore nudo, pinnis dorsali et anali sensim in caudalem excurrentibus. Lin. Gmel. Lepechin. nov. comm. Petrop. 18, p. 522.

GREATLY resembles the preceding fish, of which it is perhaps a variety: colour chesnut, with strait and undulated whitish longitudinal bands: body very thick on the foreparts, and tapering behind: head depressed: back gibbous: dorsal fin and anal fin marked by small, pale-green bands: pectoral fins large, and lunate: tail small: orb of adhesion thick and fleshy, protuberant at the edge, and beset with reddish papillæ. Native of the White Sea,

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SPINE-HEADED SUCKER.

Cyclopterus Bispinosus. C. capite postice utrinque unispinoso. Sucker with the head armed on each side the back part with a single spine.

Cyclopterus nudus. C. corpore nudo, capite postice utrinque unispinoso. Lin. Syst. Nat. p. 414.

A SMALL species : described by Linnæus in the Musæum Adolphi Frederici. Native of India.

SMALL SUCKER.

 Cyclopterus Minutus. C. corpore nudo, rostro supracos tribus tuberculis inæquali. Lin. Gmel. Pall. spic. 2000. 7. p. 12.
 Sucker with naked body, and snout marked above the mouth by three tubercles.

A VERY small species : allied in habit to the common Sucker: colour whitish; body compressed, with two white, unequal bony tubercles on each side: at the beginning of the back a long, attenuated, reclinate process : tail even : orb of adhesion hollow in the middle, oval, with a dilated edge with about seven lobes. Native of the Atlantic ocean.

CORNISH SUCKER.

Cyclopterus Cornubicus. C. fusco-purpurascens, fronte producto. Purplish-brown Sucker, with lengthened front. lepadogaster. Gouan. pisc. 177. t. 1. f. 6. 7. Lesser Sucking-Fish. Borlase Cornw. 269. t. f. 28. Jura Sucker. Penn. Brit. Zool.

LENGTH about four inches : skin without scales, slippery, and of a dusky colour : the body taper, the nose growing slender from the head, and ending round : the teeth small : before each eye a small filament: behind the eves two semilunar marks: in the middle of the back an oval mark, formed by small dots of a whitish colour : dorsal fin near the tail, and consisting of eleven rays : anal fin opposite, nine-rayed : ventral four-rayed, the rays joined by an intervening membrane with an oval depression in the middle : beyond that another strong membrane with a similar depression. Native of the European seas: found by Dr. Borlase on the coast of Cornwall, and by Mr. Pennant in the Sound of Jura. Dr. Borlace describes his specimen as of a purple colour.

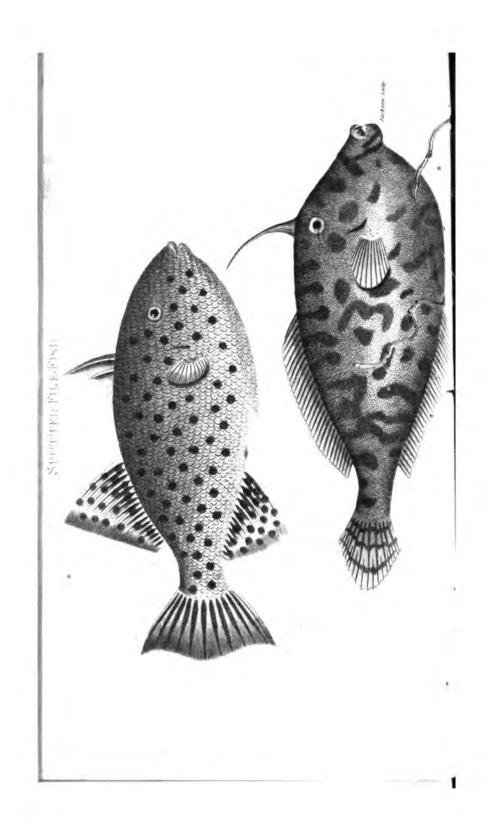
BIMACULATED SUCKER.

Cyclopterus Bimaculatus. C. roseus, macula utrinque ventral nigra.

Rose-coloured Sucker, with a black spot on each side the abdomen.

Bimaculated Sucker. Penn. Brit. Zool.

A VERY small species: head flat, and tumid on each side: body taper: pectoral fins placed unusually high: dorsal fin single, and placed low, or near the tail, which is even at the end: colour of the head and body bright pink; of the fins whitch: on each side the engine of adherence on the belly is a round black spot. Native of the Faropean seas: observed near Weymouth.



BALISTES. FILE-FISH.

Generic Character.

Dentes plures in maxilla || Teeth several in both jaws. utraque.

Corpus compressum, abdomine carinato.

Cutis coriacea, scabra, sæpe squamis coadunatis reticulata.

Body compressed : abdomen carinated. Skin tough, often reticulated by scale-like divisions.

UNICORN FILE-FISH.

Balistes Monoceros. B. griseus, fusco variatus, radio super caput longo, acuminato, postice servato.

Grey File-Fish, variegated with brown, and furnished over the head with a long, sharp-pointed ray serrated behind.

Balistes Monoceros. B. pinna capitis uniradiata, radiis caudalibus carinatis. Lin. Syst. Nat.

Balistes unicornu, radiis quinquaginta in pinna ani. Blach. t. 147.

THIS species grows to a considerable size, often exceeding the length of two feet: the body is of an oval shape, and, like most others of this genus, it possesses the power of inflating at pleasure the sides of the abdomen, by means of a pair of bony processes within that part : the skin is every where covered with very minute spines, and the general 27 V. V. P. II.

HISPID FILE-FISH.

colour is grey, inclining to brown on the upper parts, and varied with irregular, dusky, subtransverse undulations and spots : immediately over the head, just above the eyes, is a very strong single, and slightly recurved spine of considerable length, and serrated on the hind part : the dorsal fin conmences at some distance beyond this, and is rather shallow, reaching to within a small distance of the tail, which is of an oval or slightly rounded shape : the anal fin is placed opposite the dorsal and is of similar form : the pectoral are small and rounded : the ventral consist of a pair of concealed, rough bony processes: both fins and tail are of a pall brown colour, the latter marked by a few cusky bars. This fish is a native of the Indian American seas, feeding chiefly on crustaceous and testaceous marine animals. In the North-American seas is found a variety, of a larger size, and variegated with red and blue streaks : this, according to Catesby, is esteemed a poisonous fish.

HISPID FILE-FISH.

Balistes Hispidus. B. pinna capitis uniradiata, rostro subulato, pinna cauda ocello nigro. Lin. Syst. Nat.

Spotted File-Fish, with subulate snout, and a black spot on the tail-fin.

Balistes varius, dorso monocantho, &c. Seb. mus. 3. p. 126 t. 34. f. 2.

LENGTH about three inches: shape oval: snout produced into a tubular form : colour pale yellow-

DOWNY FILE-FISH.

brown, varied with numerous ocellated or areolated dusky spots: at some distance beyond the top of the head a long serrated spine: ventral spines slightly projecting: tail rounded, and marked in the middle by a black spot: on each side the extlemity of the body immediately adjoining to the tail are situated very numerous small recurved spines, to the number of an hundred on a side. Native of the American and Indian seas. The Indian variety is said by Commerson to be of a dusky or blackish colour.

DOWNY FILE-FISH.

- Balistes Tomentosus. B. abdomine ventricoso maculato, lateribus versus caudam hirsutis.
- File-Fish with spotted ventricose abdomen, and sides setaceous towards the tail.

Balistes tomentosus. B. pinna capitis biradiata, corpore posterius subvilloso. Lin. Syst. Nat.

LENGTH a few inches: shape broad oval, with the abdomen projecting greatly beyond the outline of the other parts: colour yellowish brown, the projecting abdomen being marked with numerous, small, dusky, semilunar streaks: ventral spines very strong: above the head a very strong and thick spine, serrated on the hind part : pectoral fins small: dorsal and anal opposite, and rather shallow: tail rounded; the extremity of the body immediately preceding it being furnished on each side with numerous, small, reversed spines: whole skin

PAPILLOSE FILE-FISH.

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rough with very small prickles, those on the abdomen giving it a kind of downy appearance. Native of the Indian seas.

PAPILLOSE FILE-FISH.

Balistes Papillosus. B. pinna dorsali anteriore biradiata, corpore papilloso. Lin. Syst. Nat.

File-Fish with two spines above the head, and body covered by granular papillæ.

Balistes granulatus. B. pinna dorsali anteriore biradiata, corpore granoso. White's Journ. of Voy. to N. S. W. p. 254.

LENGTH about four inches: colour grey: whole body roughened by minute papillæ or grafiules: above the head a very strong and thick serrated spine, with a smaller and shorter placed immediately behind it: pectoral fins lanceolate: dorsal and anal rather shallow, and placed opposite: ventral spines short and rough: tail slightly rounded. Native of the Indian and American seas: observed about the coasts of New Holland.

CHINESE FILE-FISH.

- Balistes Chinensis. B. cinercus maculis parvis aurantiis, radio capitis unico, pinna ventrali unica.
 - Cinereous File-Fish, with small orange spots, ray over the head single, and single ventral fin.
 - Balistes Sinensis. B. radio in capite unico, pinna ventrali unica. Bloch. t. 152.

LENGTH a few inches: colour pale grey, with a cast of yellow-brown on the upper parts : sides marked with minute red spots: above the head a kery strong serrated spine : ventral fin single, with the first ray strong and serrated : dorsal and anal fins rather shallow, and placed opposite ; tail rounded: lateral line commencing behind the eyes, and curving downwards as it approaches the end of the body, which is beset, on each side the tail, with two rows of spines curving forwards, to the number of four in each row: skin rough with minute points, growing rather longer towards the Native of the Indian seas about the Chinese tail. coasts, and in the South-American seas about those of Brasil.

RINGENT FILE-FISH.

Balistes Ringens. B. niger, cute in rhombos divisa.
Black File-Fish, with the skin marked into rhombic divisions
Balistes ringens. B. pinna dorsali anteriore triradiata, lateribus capitis triplicatis, cauda bifida. Lin. Syst. Nat.

Balistes pinna anali brevi, aculeis duobus in pinna dorsali prima. Bloch. t. 152. f. 2.

LENGTH ten or twelve inches: shape oval: colour entirely black, except a streak of blue along the base of each of the pectoral fins, and across the tail: skin strongly marked by cross lines into lozenges or scale-like squares: above the eres a small fin, with two or three rays, the next very strong and serrated: dorsal and anal opposite: tail slightly lunated: teeth strong, and by their white colour forming a striking contrast with the jetty hue of the skin: eyes blue. Native of the Indian and American seas.

Var.

WHITE-FINNED FILE-FISH.

SIMILAR to the preceding, but with the pectoral, dorsal, and anal fins white, with a narrow black border: tail white at the base, the remainder orange-coloured. Observed about the coasts of Otaheitee by Capt. G. Tobin.

BLUE-STREAKED FILE-FISH.

Balistes liturosus. B. elongatus niger, lituris carulcis, spina capitis longissima, pinnis albis, cauda fascia carulea.

Elongated black File-Fish, with blue streaks, very long spine over the head, and white fins, with a blue bar across the tail.

LENGTH nearly two feet : habit long and slender: colour jet-black, with numerous, abrupt, blue streaks in an obliquely longitudinal direction : fins and tail white ; a blue bar across the latter : under ; aw longer than the upper : over the eyes a very long, slender, black spine : along each side of the head, from the eyes to the mouth, a narrow white stripe : eyes yellow. Native of the Indian seas : observed about the coasts of Otaheitee by Captain G. Tobin.

SMOOTH FILE-FISH.

Balistes Lævis. B. subflavescens, antice fasciis longitudinalibus, postice transversis subcæruleis.

Yellowish File-Fish, with longitudinal blueish bands on the fore-part, and transverse on the hind-part. Balistes corpore lævi. Bloch. t. 414.

LENGTH about twelve inches: habit rather lengthened: skin smooth: colour pale yellowish brown, marked on the fore-parts by four or five longitudinal pale-blue stripes reaching to the middle of the body, and on the hind by several transverse stripes of similar colour: on the stripes, as well as on the other parts of the skin, are several small black spots:

SONNERAT'S FILE-FISH.

dorsal and anal fin placed opposite: tail large, oval, and of a blackish cast: the rest of the fins pale: ventral spines not apparent: above the eyes a single smooth spine of moderate length. Native of the Indian seas.

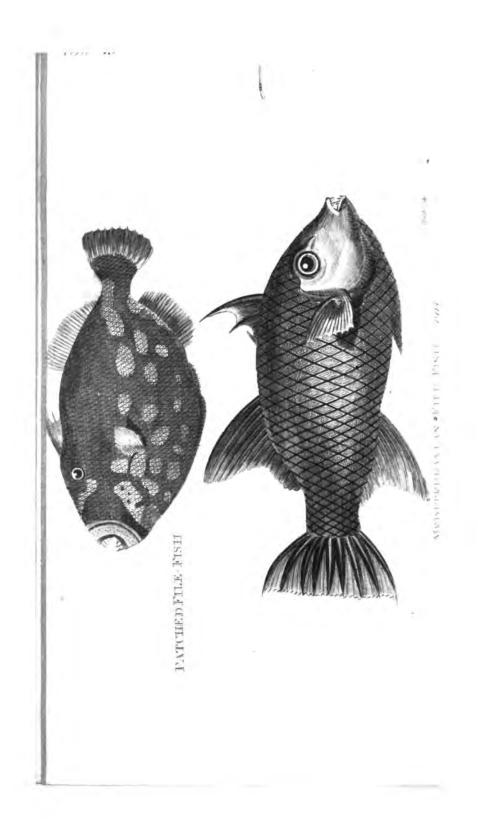
SONNERAT'S FILE-FISH.

Grey File-Fish, with the thorax whitish beneath, and marked on each side by a black crescent.

Le Baliste Bourse. Cepede.

LENGTH from six to ten inches: shape ovate: colour grey-brown above, and blueish white beneath from the mouth to the beginning of the ventral fin, the two colours being separated by a line of white: skin rough; fin above the head consisting of four or five rays, united by a membrane; the first ray stronger than the rest: on each side the head, crossing the eyes, a black crescent, passing downwards as far as the base of the pectoral fin: the horns pointing backwards: beyond this an oblong, slightly forked spot: dorsal and anal fin placed opposite, and of a white colour: ventral spines rough, slightly prominent, and black, the colour being continued along the lower part between them and the vent: tail nearly even. Native of the Indian seas : observed by Sonnerat about the coasts / of the Isle of France: by Capt. G. Tobin about those of Otaheitee.

Balistes Sonneratii. B. griseus, thorace subtus albido, fascia utrinque lunata nigra.



PATCHED FILE-FISH.

Balistes Bicolor. B. miger, maculis magnis albis. Black File-Fish, with large white spots. Balistes Americanus. Lin. Gmel. p. 1473 ?

LENGTH about ten inches: shape broad oval, or similar to that of the ringent file-fish: colour black, or very deep brown, marked about the lower or under parts by numerous large ovate white or vellowish-white spots, of unequal size : in some parts, as about the breast and towards the tail, the spots are more or less confluent so as to form abrupt bands : across the head, from eye to eye, a white band or crescent : mouth edged by two coucentric white bands, of which the first is broadest ; dorsal and anal fin white or pale: tail rounded, and tipped by a broad white band : fin above the head consisting of two or three rays united by a membrane; the first ray very thick, rough, and much depressed : ventral processes of similar appearance: skin marked into squares as in the B. ringens : teeth strong and white. Native of the Indian seas. An elegant specimen is preserved in the Leverian Museum.

GREENISH FILE-FISH.

Balistes Virescens. B. virescens, nigro-punctatus. Greenish File-Fish, speckled with black. Le Baliste verdatre. Cepede.

A LARGE species: habit similar to that of the, preceding species : colour greenish, with a tinge of brown and yellow on different parts : skin marked into large squares, each of which has a dusky, spot in the centre: sides of the head deep goldcolour; the top of a blackish blue, with small vellow specks: lower part of the head, and breast, of a pale blue: from the eyes to the base of the pectoral fins an indistinct blackish band : fins and tail whitish, edged with black: pectoral fin's tipped with yellow : tail rounded : extremities of the body beset with four longitudinal rows of small reversed prickles or spines : from the ventral processes to the vent a double row of short spines: teeth strong: first dorsal fin, or that situated above and beyond the head consisting of three or four rays united by a membrane; the first ray very strong and rough. Native of the Indian seas : observed by Sonnerat.

FASCIATED FILE-FISH.

 Balistes Fasciatus. B. flavus, fascia utrinque obliqua nigra. Yellow File-Fish, with an oblique black band on each side. Baliste echarpe. Cepede.

SHAPE rhombic-ovate, very slightly lengthened : colour of the upper parts pale yellow : head deep vellow: upper lip surrounded by a bright-blue band : aross the body, but in an oblique direction, a broad black band, including the eyes, and passing to the base of the anal fin : end of the body on each side marked by a large black triangle, pointing forwards: in the area of this triangle are placed three or four longitudinal rows of small spines : first or small dorsal fin situated beyond the eyes, and consisting of three rays with a membrane; the first ray very thick, and rough: ventral spines of similar appearance : pectoral fins, second dorsal, anal, and caudal pale, but the pectoral marked by a red spot: it is also to be observed, that the extremity of the body or base of the tail is surrounded by a black band; that the lower parts of the body are of a red-brown colour, and that a narrow pale-blue stripe descends from the front of each eye to the base of the pectoral fins, forming an accompanyment to the broad black band before mention-This beautiful species is a native of the Ined. dian seas, and is described by Cepede from the MSS. of Sonnerat, but without any mention of the size.

SINGLE-SPOTTED FILE-FISH.

Balistes Unimaculatus. B. viridis, macula utrinque magnanigra, abdomine albo.

Green File-Fish, with a large black spot on each side, and white abdomen.

Le Baliste Pralin. Cepede.

Size of a Perch: colour deep green above, white beneath: on each side the body a very large black spot: from the snout to the base of the pectoral fins on each side a purple stripe: and from the base of the pectoral fins to the eye five stripes, of which the middle and two exterior are blueish, and the two others reddish: pectoral fins red: edges of the tail yellow: head large, measuring nearly a third of the whole fish: lips somewhat extensile: first or small dorsal fin three-rayed: native of the Indian seas: observed by Sonnerat: said to be esteemed as a food, and to frequent rocky places.

CINEREOUS FILE-FISH.

Balistes Cinereus. B. cinereus, fascia utrinque thoracica nigra, tribusque lunatis caruleis prope caudam.

Cinereous File-Fish, marked on each side by a black thoracic band, and by three lunated blue bands near the tail. Le Baliste cendré. *Cepede*.

SIZE large: habit similar to that of B. Monoceros: small dorsal fin consisting of three rays: the first strong and rough: dorsal and anal fin op-

MEDITERRANEAN FILE-FISH.

posite: on each side the extremity of the body two transverse rows of short spines: tail slightly lunated. Native of the Indian seas: observed by Commerson.

MEDITERRANEAN FILE-FISH.

Balistes Capriscus. B. grisco-violaceus, rubro caruleove variatus, pinna ventrali solitariu, cauda rotundata,

Violet-grey File-Fish, with red or blue variegations, single ventral fin, and rounded tail.

Balistes Capriscus. B. dorso triucantho, squamis undique aculeatis. Seb. nus. 3. p. 63. t. 24. f. 16.

Capriscus, Aldr. Gesn. Rondel. Jonst. Will, &c.

LENGTH from one to two feet : shape ovate, as in the Balistes Vetula: general colour violaceous grey, sometimes variegated both on the body and lins with blue or red spots: irides yellow; pupils blue: first or small dorsal fin furnished with three or four rays; the first of which is very strong: tail rounded. Native of the American, Indian, and Mediterranean seas. This is almost the only species of the genus Balistes that is found in the European seas, and has in consequence been described by most Ichthyologists. The peculiar structure of the first or small dorsal fin is well observed by Salvian, who remarks that the bones or rays are so contrived as to act in concert with considerable force in suddenly elevating the fin at the pleasure of the animal; and though the foremost or largest be pressed never so hard, it will not stir; but if the last or least of all be pressed never so slightly, the other

ANCIERT FILE-FISH.

two immediately fall down with it; as a cross-bow is let off by pulling down the trigger. For this reason the fish is called at Rome by the name of *Pesce Balestra*.

ANCIENT FILE-FISH.

Balistes Vetula. B. olivacco-flavescens, capite lineis caruleis variato, pinna ventrali solitaria, cauda lunata.

Olivaceous-yellowish File-Fish, with head varied by blue streaks, single ventral fin, and forked tail.

Balistes Vetula. B. pinna dorsali anteriore triradiata, ventrali longitudinali, caudali bifida. Lin. Syst. Nat.

Guaperva maxime caudata. Will. ichth. app. 21. t. I. 23.

LENGTH from one to two feet or more : shape subrhombic ovate: general colour yellowish olive, paler beneath : from the eye to the upper parts of the head and front run several blue streaks, one or two are also drawn from beneath the eye towards the pectoral fins; and the cheeks are marked by others which curve slightly downwards: a few short obliquely transverse stripes pass along the sides of the back, others across the extremity of the body, and others near the base of the anal fin: the colour of the fins is pale brown with numerous violaceous transverse stripes: the first or small dorsal has three rays, the first of which is extremely strong and rough: beneath the abdomen is placed a single ventral fin, with the first ray strong and hispid : the second dorsal, as well as the anal fin, is broad and falcated: the tail is large, very strongly lunated, and edged with blue: on each side the abdomen.

SPOTTED FILE FISH.

above the base of the ventral fin, are three or four parallel longitudinal rows of short spines : the skin is every where marked into scale-like divisions. Native of the Indian and American seas. It is supposed to have obtained its popular title of the Old Wife Fish from the appearance of the mouth when viewed in front, as well as from the slightly murmuring noise which it utters when first taken.

SPOTTED FILF-FISH.

Balistes Maculatus. B. subpiolaceus, caruleo maculatus, abdomine albido.

Subviolaceous File-Fish, with blue spots and whitish abdomen. Balistes pinna anali lata, aculeis duobus in prima pinna dorsali. Lin, Gmel. Bloch. t. 151.

• SHAPE oval: length from one to two feet: colour pale violet, browner on the back, and pale or whitish beneath: skin strongly marked into lozengeshaped reticulations: first dorsal fin three-rayed; the first very strong: ventral spines rough and but slightly projecting: tail somewhat convex in the middle of its outline, with falcated tips: whole body, dorsal, and anal fin marked with numerous round, blue spots. Native of the Indian and American seas.

ACULEATED FILE-FISH.

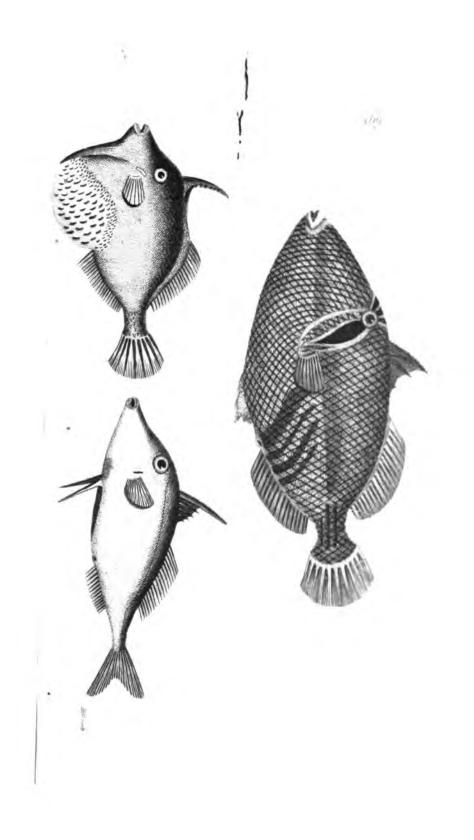
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Balistes Aculeatus. B. ferrugineus, vertice thoracisque lateribus carulco-striatis, cauda lateribus epinis recumbentibus.

Ferruginous File-Fish, with the top of the head and sides of the thorax streaked with blue, and the sides of the tail beset with rows of recumbent spines.

Balistes aculeatus, B. pinna dorsali anteriore triradiata, cauda " lateribus spinis recumbentibus. Lin. Syst. Nat. Bloch. t. 149.

SHAPE oval: length twelve or more inches: colour rufous brown, with a few purplish bands across the hinder part of the abdomen, and sometimes along the middle of the body: from the top of the eye to the crown four bright-blue lines, diverging in such a manner as to form a blue-striped lozenge on that part: from the bottom of the eye three or four longer lines of the same colour running as far as the pectoral fin ; the space between the lines being blackish: skin rough, and strongly crossed into reticular squares: on each side the end of the body three longitudinal rows of spines: ventral processes very rough: first dorsal fin triradiate, with the first ray very rough: tail rounded : native of the Indian, American, and Red seas: varies in colour, and is sometimes of a gilded hue.



WARTER FILE-FISH.

Balistes Veirucosus. B. pinna dorsali anteriore triradiata, cauda ordine triplici verrucarum. Lin, Syst. Nat.

File-Fish with the first dorsal fin three-rayed, and a triple row of warts on each side the tail.

So closely allied to the B. aculeatus as to appear rather a variety of that species than truly distinct; the chief difference consisting in the extremities of the body being furnished on each side with three rows of warts rather than spines.

TWO-SPINED FILE-FISH:

Balistes Biaculeatus. B. griscus, dorso fusco, spinis ventralibus elongatis acutis.

Grey File-Fish, with dusky back, and elongated, sharp-pointed ventral spines.

Balistes biaculeatus. B. aculeis in ventre binis: Lin. Gmel. Bloch. t. 148. f. 2.

LENGTH six or eight inches: shape rather lengthened: colour dusky on the upper parts, whitish on the sides and abdomen: snout lengthened: skin roughened by very minute aculei: first or small dorsal fin blackish; four or five-rayed, the first ray strong, rough, and extending considerably beyond the rest: the other fins pale: tail forked: ventral spines very long, rough, and sharp-pointed. Native of the Indian seas.

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FORCIPATED FILE-FISH.

Balistes Forcipatus. B. cauda bifurca, pinna dorsi maculosa. Lin. Gmel.

File-Fish with forked tail, and spotted dorsal fin.

Guaperva cauda forcipata, pinnis maculosis. Will. ichth. p. 90. t. I. 22.

LENGTH about sixteen inches: habit similar to that of *B. Vetula*, from which it hardly seems to be sufficiently distinct: skin marked into scale-like areæ: first dorsal fin three-rayed; the first ray extremely thick and strong: second dorsal fin and anal marked with numerous, small, round spots: tail forcipated: ventral processes rough, strong, and short. Native of the Indian seas.

WHITE-SIDED FILE-FISH.

Balistes Signatus. B. lividus, macula utrinque magna alba, pinnis albo marginatis.

Livid File-Fish, with a large white spot on each side, and fins edged with white.

Baliste grand-tache. Cepede.

A LARGE species, equal in size to the *B. virescens*: colour livid brown, paler beneath: on each side the body a very large white spot: almost all the fins edged with white: on each side the head six longitudinal rows of warts: tail lunated, with very long tips. Native of the Indian seas: observed by Commerson.

SPECKLED FILE-FISR.

Balistes Punctatus. B. supra cinereus albo punctatus, subtus albidus.

Cinereous File-Fish speckled with white, beneath whitish. Balistes punctatus. B. corpore punctato. ? Lin, Gmel. Baliste etoilé. Cepede.

HABIT that of *Balistes maculatus*: skin marked into scale-like divisions: colour grey above, marked with numerous, small white spots: sides and abdomen whitish: first dorsal fin four-rayed; the first ray longest and thickest: second dorsal and anal streaked with whitish bars: pectoral process strong, and succeeded by a sort of finny continuation: tail slightly lunated. Native of the Indian seas.

BRIDLED FILE-FISH.

Balistes Capistratus. B. nigricans, ore capistro albido subtus duplicato.

Blackish File-Fish, with the mouth surrounded by *s* whitish bridle doubled beneath.

Baliste bridé. Cepede.

SHAPE subrhombic-ovate: colour dusky; mouth surrounded by a whitish band, produced on each side the head as far as the base of the pectoral fin: at some distance beneath the mouth is another band, joining the side stripe just mentioned, and forming a half collar beneath the chin: fins as in the *B. aculeatus, virescens, &c.* tail lunated. Native of the Indian seas: slightly described by Cepede from the MSS. of Commerson.

KLEINIAN /ILE-FISH.

Balistes Kleinii. B. oblongiusculus, maxillis porrectis, radio dorsali primo utrinque scabro, ventrali nullo. Lin. Syst. Nat. Gmel.
Somewhat oblong File-Fish, with extended jaws, first ray of first dorsal fin rough on both sides, and ventral fin wanting.
Capriscus capite triangulato, &c. Klein, misc. pisc. 3. p. 25.

COLOUR whitish: body compressed: mouth small and bearded: teeth strong: in the second dorsal and anal fin more than forty-five rays: tail rounded. Native of the Indian seas.

CURASSAO FILE-FISH.

Balistes Curassavicus. B. radio dorsali anterius scabro, ventrali humili retuso, cauda truncata, rostro obtuso. Lin. Gmel. Gronov. zooph. 196.

File-Fish with the first dorsal ray rough in front, the ventral low and blunt, the tail truncated, and the snout obtuse.

Allied to B. Capriscus. Length of the specimen described three inches: colour yellow, with a black speck in each of the scales or divisions: back brown: tail even. Native of the seas about the Curassao islands.

FORSKAL'S FILE-FISH.

Balistes Assasi. B. fuscus, subtus albidus, vertice nigro, striis transversis cæruleis, corpore verrucoso.

Brown File-Fish, whitish beneath, with the top of the head black, marked by transverse blue lines, and warted body.

Balistes Assasi. B. corpore verrucis fuscis muricato, cauda triplici nigrarum ordine. Lin. Gmel. Forsk. Arab. p. 75.

LENGTH about a span: colour brown above, whitish beneath: top of the head marked by four transverse blue, and three alternate black stripes: lips yellow: from the mouth to the base of the pectoral fins on each side a ferruginous-brown line: from this to the eye a lanceolate black streak, in front of which is a yellow one, with a blueish edge: • tail marked with an oblong white spot. Native of the Red sea: described by Forskal.

UNDULATED FILE-FISH.

Balistes Undulatus, B, corpore nigro lineis obliquis rubris undulato.

Black File-Fish, with the body undulated by oblique red lines. Balistes undulatus. B. pinna dorsali anteriore triradiata, caudæ lateribus spinis valde robustis recumbentibus, corpore nigro lineis rubris undulato. Lin. Trans. vol. 3. p. 37.

NATIVE of the Indian seas: observed about the shores of Sumatra by Mr. Mungo Park: from the mouth to the base of the pectoral fins run three red lines, and the body is obliquely undulated by twelve lines of the same colour.

OSTRACION. 'TRUNK-FISH,

The ridge of the back of the abbone tent - and the ridge of the back of the abbone being this the back of the track even of the within - mall distance

Generic Character.

White B and Party Sector 50% and appropriate house

Dentes porrecti, teretes, obtusiusculi. Corpus osse integro loricatum.

TRIQUETRAL TRUNK-FISH.

Ostracion Triqueter. O. trigonus, muticus. Lin. Syst. Nat, p. 407.

Triangular-bodied, unarmed Trunk-Fish.

APPROPRIATE AND LOS

antering of the states

Ostracion triangularis muticus, tessulis convexis. Bloch. t. 130.

THE Ostracions or Trunk-Fishes are so strikingly distinguished by their bony crust or covering, that no difficulty can arise to the ichthyological student in referring them to their proper genus. The investigation of the species however demands a greater degree of attention, and such is the similarity between some of these, that it remains doubtful whether they should be considered as truly distinct, or as constituting mere sexual differences.

The triquetral Trunk-Fish measures about twelve inches in length, and is, as its name imports, of a trigonal shape, the sides sloping obliquely from

TRIQUETRAL TRUNK-FISH.

the ridge of the back, and the abdomen being flat: the whole animal, except to within a small distance from the tail, is completely enveloped in a bony covering, divided into well-defined hexagonal spaces, and covered (as in the whole genus) with a transparent epidermis like that of the Armadillo among quadrupeds: the usual colour is a subferruginous brown, with a white spot in the centre of each hexagon, which is also marked by fine rays diverging from the centre to the edges; the fins are vellowish, and the tail rounded; the naked part of the extremity of the body or base of the tail being marked with white specks, similar to those on the crustaceous part of the animal : the pectoral fins are rather small than large, and of a rounded shape : the dorsal and anal are also rather small, and are situated opposite each other towards the extremity of the body, and, like all the rest of the genus, this fish is destitute of ventral fins. It is a native of the Indian and American seas, and is supposed to feed on the smaller crustacea, shell-fish, and sea worms. It is said to be considered as an excellent fish for the table, and is held in high estimation among the East-Indians.

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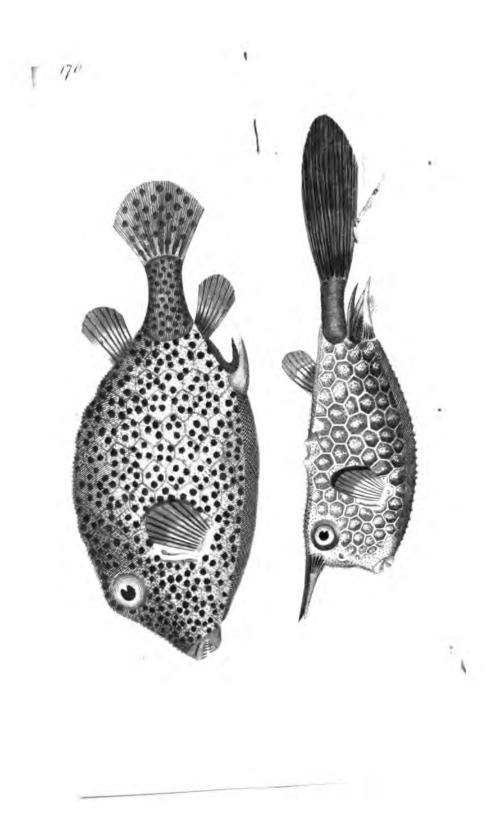
TRIGONAL TRUNK-FISH.

Ostracion Trigonus. O. trigonus, spinis subcaudalibus duabus, pinna dorsali radiis quatuordecim. Lin. Syst. Nat.

Triangular-bodied Trunk-Fish, with two subcaudal spines, and fourteen rays in the dorsal fin.

Ostracion dorso arcuato, pinna anali radiis duodeciin. Bloch. t. 135.

MUCH allied to the preceding in general appearance, but with the back more convex or of a rounder outline when viewed in profile : shield divided, as in the former species, into large hexagonal areæ, but marked with numerous small tubercles rather than streaks : towards the extremity of the body, a little before the anal fin, on each side the abdomen, a very strong, sharp-pointed, slightly curved and striated spine, directed towards the tail, which, as well as the fins, is shaped as in the preceding fish : the colour is a pale ferruginous brown, with pale or whitish fins. Native of the Indian seas: said to make a kind of grunting noise when first taken, owing to the sudden expulsion of air from its branchial orifices.



Var.?

BIACULEATED TRUNK-FISH.

Ostracion Biaculeatus. O. trigonus, spinis subcaudalibus duabus, pinna dol sali radiis decem. Iin. Syst. Nat.

Triangular-bodied Trunk-Fish, with two subcaudal spines, and ten rays in the dorsal fin.

Ostracion bicaudalis. O. triangularis, maculosus, aculeis binis subcaudalibus. Bloch. t. 132.

This, in all probability, is either a variety, or a sexual difference, of the former fish, from which it differs in being marked all over with numerous small black spots, and in having the spines smooth or not channeled as in the former fish. It is a native of the Indian seas.

HORNED TRUNK-FISH.

Ostracion Cornutus. O. tetragonus, spinis frontalibus subcaudalibusque binis. Lin. Syst. Nat.

Quadrangular-bodied Trunk-Fish, with two frontal and two subcaudal spines.

Ostracion quadrangularis, spinis quatuor. Bloch. t. 133.

LENGTH eight or ten inches: shape squarish; broad and abrupt towards the head, and tapering considerably towards the hind part: back nearly strait: crust or mail strongly marked into large hexagons: from the top of the head project two strong, lengthened, sharp spines pointing strait forwards; and on each side the anal fin is a similar

FOUR-HORNED TRUNK-FISH.

spine pointing directly backwards: tail very large, long, and of an oval shape: colour of the whole animal yellow-brown, deeper beneath: tip of the tail dusky. Native of the Indian and Ar, erican seas.

THREE-HORNED TRUNK-FISH

Ostracion Tricornis. O. trigonus, spinis frontalibus duabus, dorsali unica. Lin. Syst. Nat.

- Triangular-bodied Trunk-Fish, with two frontal spines, and one on the back near the tail.
- Ostracion triangulatus, aculeis duabus in capite, & unico longiore superne ad caudam. Artedi.

LENGTH eight or ten inches: in front of the head two short, pointed spines directed forwards: above the naked part of the body, near the tail, a long, upright, pointed spine: shield divided into hexagons, each obscurely marked into triangular spaces: native of the Indian seas.

FOUR-HORNED TRUNK-FISH.

- Ostracion Quadricornis. O. trigonus, spinis frontalibus subcaudalibusque binis. Lin. Syst. Nat.
- Triangular-bodied Trunk-Fish, with two frontal and two subcaudal spines.
- Ostracion triangularis, aculeis quatuor. Bloch. t. 134.

LENGTH twelve inches: shape subtrigonal; the back, when viewed in profile, strongly arched, and having a smooth outline: mail divided into large hex-

PYRAMIDAL TRUNK-FISH.

agons marked with numerous and very small tubercies: on the top of the head two very strong spines pointing forwards; and from the hind part of the abdomen, immediately before the anal fin, two more spines, boointing backwards: colour of the mailed part sub iolaceous brown, with darker streaks irregularly dispersed over the whole: naked part of the body hear the tail yellowish brown, marked with deep brown spots: fins and tail yellowish brown. Native of the Indian and American seas.

PYRAMIDAL TRUNK-FISH.

Ostracion Turritus. O. subtetragonus, spinis frontalibus duabus, dorso pyramidato, abdomine utrinque spinis quatuor.

Subquadrangular-bodied Trunk-Fish, with two frontal spines, pyramidal back, and four spines on each side the abdomen.

Ostracion turritus. O. subtetragonus, superciliis dorsoque spinis solitariis, abdomine utrinque quatuor. Lin. Gmel. Forsk. Arab.

Ostracion quadrangularis, processu magno in dorso. Bloch. t. 136.

LENGTH ten or twelve inches: shape squarish, the back rising into a pyramidal protuberance, terminated by an extremely strong, short, sharppointed and striated spine, curving slightly backwards: above the eyes a pair of short and sharp spines: on each side the abdomen four strong, sharp, short, striated spines, curving slightly backwards: mail marked into numerous triangular spaces, the hexagonal or primary divisions being subdivided by radii from the centre to the sides:

SNOUTED TRUNK-FISH.

colour yellowish brown, darkest on the back and abdomen: fins, tail, and spines lead-coloured. Native of the Indian and American seas.

CONCATENATED TRUNK-FISH.

- Ostracion Concatenatus. O. triangularis muticles fuscus, figuris concatenatis albidis.
- Triangular-bodied unarmed Trunk-Fish, with whitish concatenated variegations.

Ostracion concatenatus. O. triangularis muticus, figuris catenulatis. Bloch. t. 131.

HABIT similar to that of the trigonal and triangular Trunk-Fish, but with the back somewhat less elevated : mail marked into triangular, ovate, subquadrangular, and other-shaped spaces in a kind of reticular pattern: colour brown, the lines dividing the spaces being of a pale rose-colour: fore parts and abdomen of the same colour : end of the body brown : tail and fins pale brown. Native of the American seas.

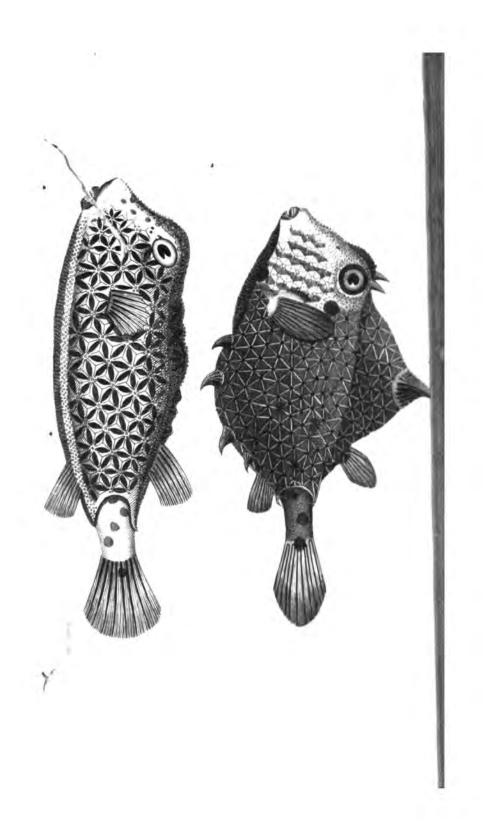
SNOUTED TRUNK-FISH.

Ostracion Nasus. O. subquadrangularis albidus, figuris concatenatis fuscis.

Whitish subquadrangular-bodied Trunk-Fish, with brown concatenated variegations.

Ostracion. Nasus. O. rostro nasiformi. Bloch. t. 138.

HABIT approaching to that of the preceding species, but more slender: head very convex over



CUBIC TRUNK-FISH.

the eyes, sloping downwards, and rounded off in front into an obtuse snout, beneath which is situated the mouth: colour greenish white or ash, with the nail marked into very large hexagons by means of broad, ovate-lanceolate, blackish lines, with similar ones radiating from the centre of the hexagons, to the number of five in each, and thus elegantly dividing the whole into triangles, with finer lines or margins accompanying each: naked or projecting part of the body, towards the tail, marked with round black spots: fins and tail reddish brown. Native of the Indian and American seas.

CUBIC TRUNK-FISH.

Ostracion Cubicus. O, tetragonus muticus, punctis albis nigro marginatis.

Quadrangular-bodied Trunk-Fish, with white specks edged with black.

Ostracion cubicus. O. tetragonus muticus, lateribus planiusculis. Lin. Syst. Nat.

O. quadrangular, ocellatus. Bloch. t. 137.

HABIT somewhat resembling that of O. triqueter, &c. but with the body square: mail marked into tuberculated hexagons, each of which has a white or blueish central spot, surrounded with a darker border: ground colour of the whole mailed part pale yellowish brown: of the naked or projecting part towards the tail yellow-brown, with a few dusky variegations: tail and fins reddish brown. Native of the Indian seas, and said to be an excellent fish for the table, and to be kept for that pur-

SPECKLED TRUNK-FISH.

pose in reservoirs, growing, according to Renard, so familiar as to come at a given signal to the surface of the water, and take its food from the hand.

SPECKLED TRUNK-FISH.

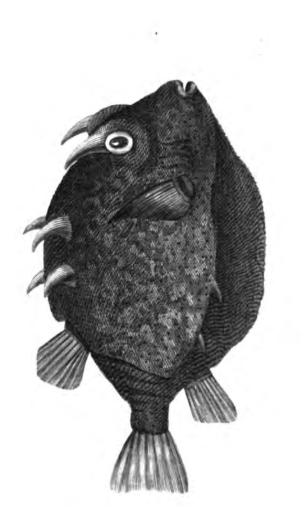
Ostracion Meleagris. O. tetragonus, nigro-fucus, albo-punctatus.

Quadrangular bodied blackish-brown Trunk-Fish, speckled with white.

Ostracion Meleagris, Nat. Misc. 7. t. 253.

LENGTH from six to eight inches: habit similar to that of the O. cubicus, being of the same square shape: mail divided into hexagons, and of a deep blackish chesnut-colour, each division being marked with numerous, small, white spots: naked or projecting part of the body marked in the same manner: fins and tail whitish, with chesnut-coloured rays: eyes white: native of the Indian seas: observed during Captain Cook's voyages about the coasts of New-Holland, Otaheitee, &c.





K. VIVANA TURA ANA

EARED TRUNK-FISH.

Ostracion Auritus. O. fuscus; spina utrinque supraoculari, duabus utrinque dorsalibus, duabus ventralibus, unica laterali.

Brown Trunk-Fish, with a spine over each eye, two on each side the back and abdomen, and one on each side the body. Ostracion auritus. Nat. Misc. t. 338.

HABIT thick, broad, and short, with the back very convex : shape slightly subtriangular : above each eye a very strong, thick, sharp-pointed spine, curving backwards, so as to give the resemblance of a pair of ears: on each side the middle of the ridge of the back two others of similar appearance: on each side the abdomen two more, and on each side the middle of the body a single spine, shorter than the rest: colour of the whole animal deep brown, except the spines and fins, which are pale: length of the specimen described about four inches and a half: pectoral fins somewhat lanceolate: tail nearly even, but with a slight approach towards a lunated shape. Native of the Indian seas: observed during the voyages of Captain Cook, and preserved in the British Museum.

STRIPED TRUNK-FISH.

Ostracion Striatus. O. cæruleo flavoque lineatus, spina utrinque supraoculari, duabus utrinque dorsalibus ventralibusque, unica laterali.

Trunk-Fish with yellow and blue stripes, and spine over each eye, two on each side the back and abdomen, and one on each side the body.

Size and habit of the preceding fish : colour a beautiful variation of bright blue and yellow, in the form of lines disposed in different directions, but principally in a longitudinal one, over the whole fish: above each eye a strong spine as in the former : on the ridge of the back two pair, disposed as in that species; and on each side the domen three, the middle of which is higher than the rest : fins and tail pale blue, the dorsal and anal fin blue and yellow at the base, and the tail (which is slightly lunated), edged with yellow : all the spines are of a blue colour. Whether this fish be a sexual difference of the preceding, or a distinct species, may perhaps be doubted. It may also be added that the Eared Trunk-Fish may in reality be no other than the present animal, changed entirely in colour from having been long preserved in spirits of wine. Described from a drawing by Captain G. Tobin, by whom it was observed about the coasts of Adventure Bay in Van Dieman's Land.

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TUBERCULATED TRUNK-FISH.

- Ostracion Tuberculatus. O. tetragonus muticus, tuberculis dorsalibus quatuor. Lin. Syst. Nat.
- Quadrangular-bodied unarmed Trunk-Fish, with four dorsal tubercles.
- O. quadrangulus, tuberculis quatuor majoribus in dorso. Artedi.

NATIVE of the African seas: perhaps a mere variety of the O. triqueter.

GIBBOSE TRUNK-FISH.

Cettacion Gibbosus. O. tetragonus muticus gibbosus. Lin. Syst. Nat.

Quadrangular-bodied unarmed gibbose Trunk-Fish-Ostracion quadrangulus gibbosus. Artedi.

NATIVE of the Indian seas : supposed by Gronovius to be a variety of the Ostracion triqueter.

V. V. P. II.

DIODON. DIODON.

Generic Character.

Maxillæ osseæ, indivisæ. Corpus spinis mobilibus adspersum. Jaws bony, undivided. Body beset with moveable spines.

PORCUPINE DIODON.

Diodon Hystrix. D. sphericus, aculeis triquetris.
Spherical-bodied Diodon, with triangular spines.
Diodon Atinga. Lin. Syst. Nat.
Hystrix Piscis, seu Orbis echinatus major. Seb. mus. 3. I. 23. f. 1. 2.
Diodon Hystrix. Bloch. t. 126.

IN point of habit or external appearance the remarkable genus Diodon may be said to connect in some degree the tribe of fishes with that of the spiny quadrupeds, such as the Porcupines and Hedgehogs: it is also allied in a similar manner to the Echini or Sea-Urchins.

The Diodon Hystrix, commonly termed the Sea-Porcupine, is a species of considerable size, sometimes measuring not less than two feet in length: its usual form is nearly spherical, but it possesses the power of inflating or contracting itself at pleasure by means of an internal skin or membrane situated beneath the exterior or spiny covering:



PORCUPINE DIODON.

its colour is a pale or whitish grey, the back being of a somewhat deeper cast; and the whole body is marked, at the base of each spine, by a round black spot: the fins themselves are also spotted. This 'fish is said to afford an amusing spectacle when taken by a line and hook, properly baited with some small species of crab or other crustaceous animal: after having played round the bait for some time in various directions, it seizes it with a sudden spring; but finding itself hooked, it exhibits every appearance of the most violent rage; inflating its body and elevating its spines to the highest possible degree, as if endeavouring to wound in all directions; till, after having tired itself by its vain efforts, it suddenly expels the air from its body Lica Lecomes entirely flaccid for some time ; but, when drawn towards the shore, redoubles its rage, "and again inflates its body : in this state it is left on the sand; it being impossible to touch it without danger till it is dead. It is a native of the Indian and American seas, and is considered as a coarse and worthless fish, but is sometimes eaten by the inhabitants of the West-Indian islands. It varies as to the length of its spines in different individuals.

OBLONG DIODON.

Diodon Atinga. Diodon oblongus, aculeis teretibus. Oblong Diodon, with round spines. Diodon Hystrix. Lin. Syst. Nat. Diodon Atinga. Bloch. t. 125.

This species is much allied to the preceding, but differs in being of a more lengthened shape, and ir. having the spines rather round than triangular : its general colour is grey, deeper on the back, and with a cast of pink on the lower parts: the whole body is marked, as well as the fins, by numerous round, black spots as in the former species: it arrives at the length of twelve or fifteen inches. and in its general manner of life resembles the Porcupine Diodon. It is considered as a poisonous fish, unless very carefully cleaned, and, according to Piso, if the least quantity of the gall should happen to mix with the flesh, it produces the most violent symptoms; the tongue becomes immoveable, the limbs stiffen, and a cold sweat ensues; followed by certain death, unless the poison be fortunately expelled by immediate medical aid. The Oblong Didon is a native of the Indian and American seas.

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and so the

ROUND DIODON.

Diodon Orbicularis. D. corpore rotundo, aculeis brevibus. Bloch. t. 127.

Diodon with round body and short spines. Diodon Atinga. Var. β . γ . Lin. Syst. Nat.

LENGTH nine or ten inches: shape almost pericctly spherical: spines strong, short, with broad bases forming the appearance of a kind of reticular pattern on the skin: colour rufous-brown above, paler beneath: native of the tropical seas: considered as a poisonous fish.

PLUMIER'S DIODON.

Diodon Plumieri. D. elongatus subcaruleus, albo-maculatus, collo coarciato.

Elongated blueish Diodon, with white spots, and contracted neck.

Diodon Plumier. Cepede.

VERY nearly allied to the Oblong Diodon, but considered by Cepede, who describes it on the authority of a drawing by Father Plumier, as a distinct species: body longer than in the former fish: behind the head a considerable stricture, resembling a kind of short neck: colour blueish, with numerous, small, round, white spots: native of the American seas in the warmer latitudes.

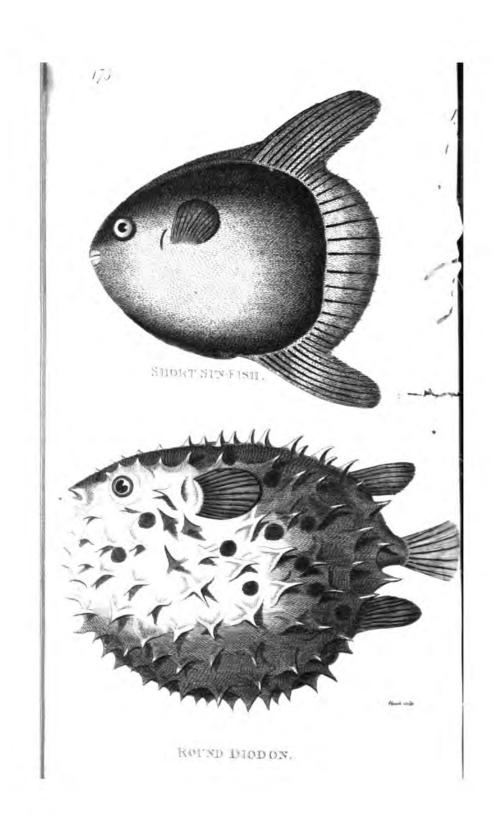
PATCHED DIODON.

Diodon Liturosus. D. subfuscus, supra lituris nigris, subtus.

Brownish Diodon, whitish beneath, and marked on the upper part with black patches.

Diodon tacheté, Cepede.

SHAPE more approaching to globular than oblong. colour brown above, whitish beneath: on the nape a large, crescent-shaped black spot or patch, with the points toward the eyes: on each side the body a somewhat oval patch, situated above the pectoral fin, and two transverse ones, the first situated beneath the eye, the second between the eye and the pectoral fin: throat marked by a dusky cloud, and on the back a round spot encircling the dorsal fin: spines white, with brown tips, and considerably longer on the back than towards the abdomen: all the fins greenish yellow. Native of the Indian seas: observed by Commerson.



CEPHALUS. SUN-FISH.

Generic Character.

Maxillæ osseæ. Corpus ovatum, postice truncatum, caput piscis simulans. Jares bony. Body terminating abruptly, so as to resemble the head of a fish.

SHORT SUN-FISH.

Cephalus Brevis. C. corpore suborbiculato.
Sun-Fish with suborbicular body.
Tetrodon Mola. T. lævis compressus, cauda truncata, pinna brevissima dorsali analique annexa. Lin. Syst. Nat.
Mola. Sun-Fish. Will. ichth. p. 151.
Short Diodon. Penn. Brit. Zool.
Diodon Mola. Bloch. t. 128.

THE present genus is very strikingly distinguished by its unusual shape : the species composing it have hitherto been united with those of the genera of *Diodon* and *Tetrodon*. This led to great confusion, on account of an error in the Systema Naturæ, in which the Short Sun-Fish was referred to the genus *Tetrodon* instead of *Diodon*, in which latter, according to the Linnæan principles of arrangement, it should have been placed. Another species, described by Dr. Pallas, was also introduced into the Gmelinian edition of the Systema Naturæ under the name *Diodon Mola*; so that the restor-

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SHORT SUN-FISH.

ing the Short Sun-Fish, even under a different title, to its true Linnæan genus would but have increased the confusion. I therefore thought it advisable to place the Sun-Fishes in a distinct genus.

The Short Sun-Fish is a native of the European seas, and from the singularity of its aspect has long since attracted the particular observation of naturalists: its general appearance rather represents the head of some large fish than a complete, animal; the body being very short and broad, and terminating abruptly on the hind part, where it is edged by a shallow fin: the general colour is brown with a silvery cast on the sides and abdomen : the skin is rough: the pectoral fins small, rounded, and placed horizontally: the dorsal and anal fins are placed opposite, and are of a slightly lengthened shape, with rounded tips continued into the tail This fish is sometimes observed to lie on its fin. side, on the surface of the water, in which state it is taken without difficulty: it arrives at a vast size in the northern seas, and is said to have been found of the length of eight, or even ten feet, and of the weight of five hundred pounds: it is supposed to feed principally on shell-fish, and is said to exhibit during the night a high degree of phosphoric splendor.



OBLONG SUN-FISH.

Cephalus Oblongus. C. corpore oblongo, truncato. Sun-Fish wirh oblong, truncated body. Tetrodon truncatus. Var. β . Tetr. Mola. Lin. Gmcl. Oblong Diodon. Penn. Brit. Zool.

MUCH allied to the preceding species, but of a more lengthened shape; resembling a Bream or some deep fish cut off in the middle: the colour of the back is dusky with some variegations; the abdomen silvery, and between the eyes and the pectoral fins are a few dusky streaks pointing downwards. It has been supposed by some however that the oblong Sun-Fish is in reality rather a variety of the preceding, or a sexual difference, than a distinct species: Cepede in particular affirms that, on examining several specimens, he has observed intermediate gradations between the oblong and the short Sun-Fish.

VARIEGATED SUN-FISH.

Cephalus Varius. C. corpore fasciis undulatis maculisque alludis variato.

Sun-Fish with the body variegated by whitish undulations and spots.

SIMILAR in proportions and general appearance to the Oblong Sun-fish, but distinguished by a different distribution of colours; the whole body being marked by numerous undulations of a lighter colour than

440 PALLASIAN SUN-FISH.

the rest of the skin, intermixed, towards the hind part especially, with numerous pale spots. This also is probably a variety of the oblong Sun Fish, and is mentioned by Cepede from the MSS. and. drawings of Commerson, who observed it in the Indian seas.

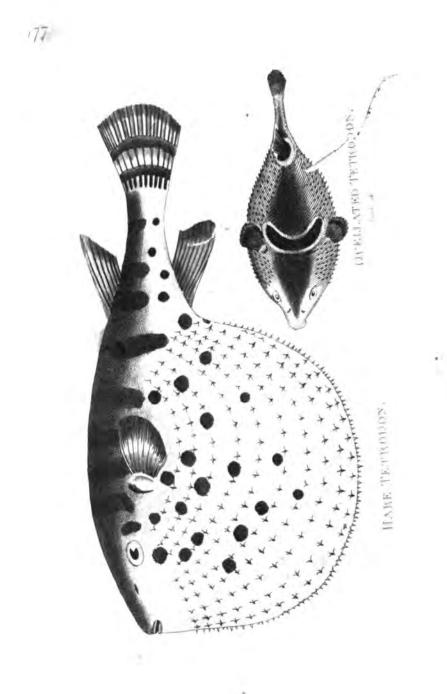
PALLASIAN SUN-FISH.

Cephalus Pallasianus. C. argenteus, dorso subfusco, abdomine carinato spinoso.

Silvery Sun-Fish, with brownish back, and spiny carinated abdomen.

Diodon Mola. D. verticaliter semiovalis, posterius fere truncatus, ventre carinato semidiscoideo. Lin. Gmel. Pull. spic. zool. 8. p. 39.

SIMILAR in point of habit to the two preceding,. having a thin body and a lengthened semi-oval shape: size of the specimen observed by Pallas not exceeding a few inches: colour silvery, with dusky back: mouth prominent: jaws rather cartilaginous than osseous: back armed with two spines and three tubercles: near the throat two spines, and some others on each side the carina of the abdomen: pectoral fins furnished with fourteen rays. Native of the tropical seas.



TETRODON. TETRODON.

Generic Character.

Maxillæ osseæ, apice divisæ. Corpus subtus muricatum. Pinnæ ventrales nullæ. Jaws bony, divided at the tip. Body conghened beneath. Ventral fors wanting.

HARE TETRODON.

 Tetrodon Lagocephalus, T. abdomine spinis radiatis aculeato,
 Tetrodon with the abdomen aculeated by radiated spines.
 Tetrodon lagocephalus. T. abdomine aculeato, corpore lavi, humeris prominentibus. Lin. Syst. Nat.

Tetrodon aculeis stellas in ventre efformantibus. Block. t. 140. Globe Diodon. Penn. Brit. Zool.

THE fishes of this genus, like the Diodons, have the power of inflating their body at pleasure, by means of an internal membrane for that purpose, and during the time of inflation the small spines dispersed over their sides and abdomen are raised in such a manner as to operate as a defence against their enemies: they are chiefly natives of the tropical seas, though sometimes seen in the higher northern and southern latitudes, and are supposed to live principally on the crustaceous and testaceous animals.

The present species grows to the length of about

442 . LINEATED TETRODON.

twelve inches, and is of a thick form in front, the hinder parts tapering suddenly towards the tai: the colour is yellowish brown above, and whitish with a slight silvery cast beneath : across the back. are several short black or dark-brown bars of different sizes, and over the sides are dipersed many round blackish spots: the sides" and abdomen are beset with very numerous, short, radiated spines: the fins are small; the dorsal and anal placed opposite each other, and the tail slightly rounded. This species is a native of the Indian and American seas, but occasionally strays into the northern latitudes, and has been taken, according to Mr. Pennant, about the British coasts, viz. near Penzance in Cornwall. It has the power of inflating the abdomen to a vast size: the Linnæan title seems to have been given from a fancied resemblance which the fore-part of the head bears to that of a hare.

LINEATED TETRODON.

- Tetrodon Lineatus. T. abdomine fasciis longitudinalibus fuscis variato.
- Tetrodon with the abdomen variegated by longitudinal brown bands.

Tetrodon lineatus. T. fasciis longitudinalibus fuscis pallidisque. Lin. Syst. Nat.

Tetrodon ventre prominente, fronte elevata. Bloch. t. 141.

LENGTH ten or twelve inches: shape somewhat square, but when inflated resembling that of the T. lagocephalus: whole body beset with numerous

HISPID TETRODON.

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small spines: colour grey on the abdomen, with numerous, longitudinal, deep-brown streaks: fins and cail as in the preceding species. Native of the Medit granean and American seas: sometimes found in the river Nile, where Hasselquist was assured by the fishermen that on being taken the hands were stung in the same manner as with nettles.



Tetrodon Hispidus. T. totus hispidus papillis setaceis. Tetrodon entirely hispid with bristly papillæ. Tetrodon ventre prominente, fronte plana. Bloch, t. 142.

LENGTH two feet; shape, when inflated, similar to that of the T. lagocephalus: colour whitish, with the upper parts marked across the back by three or four semi-decurrent brown bands, dividing somewhat irregularly over the sides at their termination: whole body beset with numerous small spines, as in the two preceding species. Native of the Mediterranean and Indian seas: according to Belon it may be numbered among edible fishes. The fossil remains of this species are said to occur among the petrifactions of Mount Bolca near Verona.

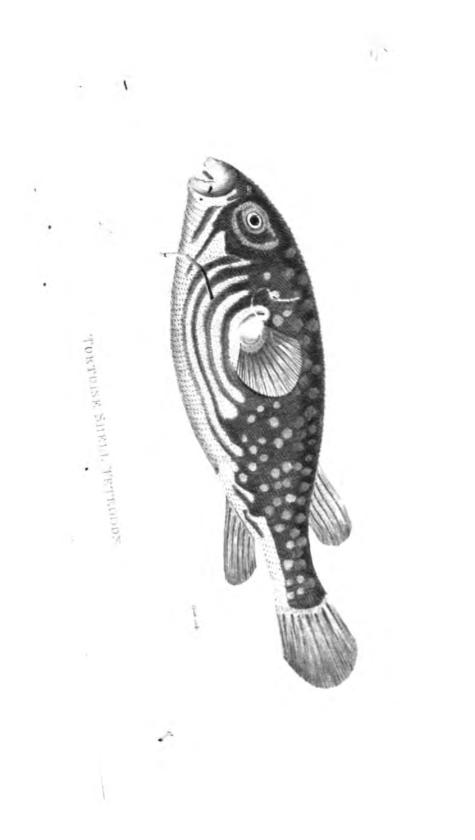
TORTOISE-SHELL TETRODON.

Tetrodon Testudineus. T. supra fusco-ferrugineus caruleo maculatus, subtus carulescens, fasciis longitudinalibus uscis. Ferruginous-brown Tetrodon with blue spots, bepeath blueish with longitudinal brown bands.

Tetrodon testudineus. T. abdomine Allio Leviore, dorso suturis curvis albis picto. Lin. Syst. Nec.

Tetrodon corpore oblongo, maxilly superiore longiore. Bloch. t. 139.

LENGTH two feet's shape lengthened: colour rufous brown above, marked by numerous round, pale-blue spots: beneath blueish or ash-coloured, beautifully varied by longitudinal brown streaks: fins and tail bright ferruginous: the whole abdomen is furnished with numerous small spines, which, when the animal is in a quiet state, are imbedded in so many corresponding cavities in the skin: but are elevated when the fish, on any alarm, distends its body. Native of the Indian seas. The Linnæan name of this fish is supposed to have been given from its tortoise-like beak, but perhaps, with more propriety, from its variegated skin.



SPENGLER'S TETRODON.

Tetrodon Spengleri. T. subfusons, maculis migricantibus, corpore cirrhato.

Brownish Tetrodon, with blackish spots, and cirrhated body. Tetrodon Spengleri. T. cirris plurimis. Bloch. t. 144.

SHAPE lengthened: colour brown above, varied with roundish deep-brown spots, largest on the sides: abdomen tumid, whitish, and thickly beset with small spines: about the upper parts of the body are dispersed several short cirrhi or soft processes: fins as in the rest of the genus. Native of the Indian seas, growing to the length of ten or twelve inches.

HONKENIAN TETRODON.

Tetrodon Honkenii. T. fuscus albido nebulosus, maxilla inferiore longiore.

Brown Tetrodon, with whitish clouds, and lower jaw longer than the upper.

Tetrodon Honkenii. T. maxilla inferiore longiore. Bloch. t. 143.

LENGTH eight or ten inches: general appearance that of T. Spengleri: colour brown above, with small whitish clouds or spots: beneath whitish with numerous small spines, resembling a kind of pointed tubercles: native of the Indian seas: named by Dr. Bloch from a Mr. Honkeney, by whom it was sent from India to that author.

OBLONG TETRODON.

Tetrodon Oblongus, T. oblokgus, dorso fasciis transversis fuscis. Oblong-bodied Tetrodon, with the back crossed by brown bands.

T. oblongus. T. oblongus, maxillis æqualibus. Bloch. t. 146.

LENGTH six inches: shope lengthened: colour whitish, with the back grey, and marked by numerous, semi-decurrent, brown bands: fins and tail cinereous: lateral lines two, viz. one near the back, the other near the abdomen. Native of the Indian seas.

SMOOTH TETRODON.

Tetrodon Lævigatus. T. cærulescens, subtus albidus, abdomine antice aculeato.

Blueish Tetrodon, whitish beneath, with the abdomen aculeated in front.

Tetrodon lævigatus. T. abdomine antice aculeato, Lin. Syst. Nat.

A LARGE species: colour blueish above, marked on each side with two white stripes: under parts white, and from beneath the mouth to the end of the pectoral fins aculeated; the other parts being smooth. Native of the American seas: observed about Carolina by the late Dr. Garden.

STELLATED TETRODON.

Tetrodon Stellatos. T. sphæricus griseus, subtus albidus, corpore spinis radiatis obsito.

Spherical grey Tetrodon, whitish beneath, with the body beset with radiated spines.

Tetrodon etoilé. Conede.

LENGTH twelve or fourteen inches: shape, when inflated, nearly spherical, so as to resemble a football: colour greyish, deeper on the back, and marked with dusky specks: under parts whitish: vent surrounded by a black circle: whole body covered by very numerous small stellated or radiated spines: dorsal fin rounded at the tip, and attached at the base by a kind of footstalk: tail oval: native of the Indian seas: observed by Commerson.

PUNCTATED TETRODON.

Tetrodon Punctatus. T. spharicus fuscus nigro-punctatus, subtus albidus, pinna dorsali angustissima.

Spherical brown Tetrodon with black specks, whitish abdomen, and very narrow dorsal fin.

Tetrodon pointillé. Cepede.

Size that of the stellated Tetrodon: shape, when inflated, nearly globular: upper parts brown, with numerous black specks: under parts whitish, with large irregular black spots. first ray of the pectoral fins large and black: dorsal fin extremely narrow, and hardly shewing any distinct appearance of V. V. P. II. 30

OCELLATED TETRODON.

rays. Native of the Indian seas: observed by Commerson.

NOXIOUS TETRODON.

Tetrodon Sceleratus. T. tetragonus, capite maximo. Lin. Syst. Nat. Gmel.

Tetragonal Tetrodon, with very large head.

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LENGTH two feet or mole: native of the Indian and American seas, and considered as highly noxious, producing very severe symptoms when eaten.

OCELLATED TETRODON.

Tetrodon Ocellatus. T. obscure viridis, subtus albidus, lunula humerali nigra maculaque dorsali flavo marginatis.

Dull-green Tetrodon, whitish beneath, with a black crescent over the shoulders and spot on the back both edged with yellow.

Tetrodon ocellatus. T. fascia humerali ocellata. Lin. Syst. Nat.

Tetrodon fascia semilunari in dorso. Bloch. t. 145.

LENGTH six or eight inches: shape thick, ovate, contracting pretty suddenly towards the tail: mouth slightly produced: colour deep green above, gradually growing paler on the sides and abdomen, which are whitish: across the middle of the back, reaching to each pectoral fin, a broad black crescent, edged with yellow, and pointing towards the tail: dorsal fin situated on a round black spot with yellow edges: lateral line commencing from beneath

PINTADO TETRODON.

the eyes, and following the direction of the back till it reaches the tail, which is small, and slightly rounded: under parts thickly beset with small spines; native of the Indian seas, and sometimes of the adjoining rivers, particularly those of China and Japan. It is of an extremely poisonous nature, if eaten without the greatest care in properly cleaning it before dressing, and is said to have sometimes proved fatal in the short space of two hours. Kæmpfer adds that the poisonous quality is still increased by the addition of a species of Illicium, but the symptoms, according to Rumphius, may be cured by the timely administration of a vegetable which he calls rex amaroris*. The Emperor of Japan prohibits his soldiers, under very severe penalties, from eating this fish : the rest of his subjects may, as Mr. Pennant observes, run the risque of being poisoned with impunity.

PINTADO TETRODON.

Tetrodon Meleagris. T. fuscus albo-punctatus. Brown Tetrodon speckled with white. Tetrodon Meleagris. Copcile.

COLOUR as in the specific character: skin roughened by innumerable small spines: native of the

* Linnæus says "curatur rege amaroris," an expression which seems to have been frequently minunderstood : rex amaroris is a vegetable described by Rumphius in his Herbarium Amboinense, In the Count de Cepede's Ichthyology I observe a singular mistake, perhaps owing to typographical negligence; viz. rege amoris.

SNOUTED TETRODON.

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Indian seas: observed by Commerson: when taken, makes a kind of grunting noise like several other fishes of this and the neighbouring genera.

ELECTRIC TETRODON.

Tetrodon Electricus. T. maculis ruby s viridibus et albis, supra fuscus, subtus thalassinus, ad latera flavus, pinnis viridibus. Lin. Gmel. Paters. Act. Angl. 76. 2. p. 382. t. 13.

Tetrodon with the body brown above, yellow on the sides, sea-green beneath, and varied with red, green, and white spots.

LENGTH seven or eight inches: eyes large, with red irides: native of the Indian and American seas, inhabiting rocky places among corals: when touched affects the hand with an electric or galvanic shock.

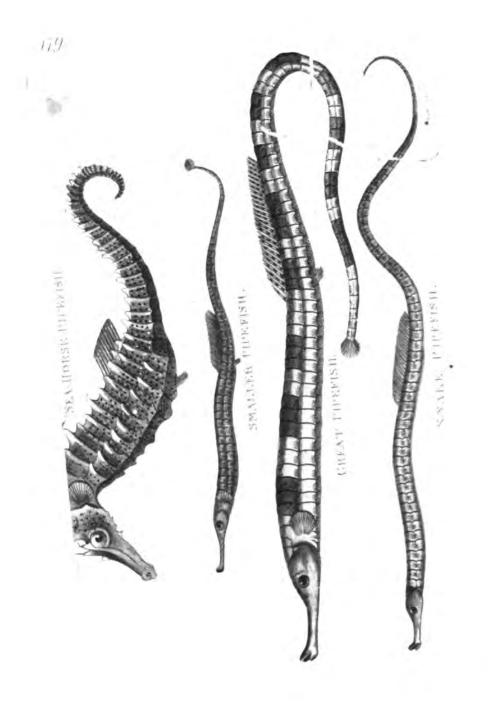
SNOUTED TETRODON.

Tetrodon Rostratus. T. fusco-carulescens, subtus albidus, ore elongato, abdomine antice spinoso.

Blueish-brown Tetrodon, whitish beneath, with elongated mouth, and abdomen spiny in front.

Tetrodon maxillis in rostrum elongatis. Bloch. t. 146.

SHAPE oblong-ovate : suddenly contracting towards the mouth and tail : length a few inches : snout lengthened, so as to appear slightly tubular : colour blueish brown, whitish beneath : fore-part of the abdomen beset with spines : a few spines are also dispersed over the back : fins brown, Native of the Indian seas.



YNGNATHUS, PIPEFISH.

Generic Character.

Rostrum subcylindricum, ore terminali. Corpus elongatum, articulatum, cataphractum. Pinnæ ventrales nullæ. Snout subcylindric, with terminal mouth. Body lengthened, jointed, mailed. Ventral fins none.

GREAT PIPEFISH.

Syngnathus Acus. S. heptagonus albidus fusco fasciatus, cauda pinnata.

Heptagonal whitish Pipefish, with brown bands and pinnated tail.

Syngnathus Acus. S. pinnis caudæ ani pectoralibusque radiatis, corpore septemangulato. Lin. Syst. Nat.

Syngnathus corpore heptagono, cauda pinnata. Bloch. 1. 91.

THE fishes of the present genus are inhabitants of the sea, and are observed to frequent the shallower parts near the shore, feeding on the smaller worms and insects: they are easily distinguished by their slender habit, and angular, jointed body. The Syngnathus Acus or Great Pipefish is usually seen of the length of twelve or fifteen inches, but is sometimes found, especially in the northern seas, of far greater extent, measuring from two to three feet : it is of an extremely slender form, gradually tapering towards the extremity, and is of a pale yellowish

SMALLER PIPEFISH.

brown colour, varied throughout its whole length with broad alternate zones of a deeper or olivebrown, with a few smaller variegations intermixed : the shields or laminæ with which are joints of the body are covered, appear, if narrowly inst .ed. to be finely radiated from the centre by nu nerous lines or streaks: the dorsal fin is placed rather nearer the head than the tail, and is thin, tender, shallow, and of no great extent: the pectoral fins small, and slightly rounded, and the tail of similar shape and size. In spring, as in others of this genus, the ova are found lying in a longitudinal channel or division at the lower part of the abdomen, and are large in proportion to the size of the animal: from these are hatched the young, completely formed. Native of the European seas.

SMALLER PIPEFISH.

Syngnathus Typhle. S. hexagonus, cauda pinnata. Hexagonal Pipefish, with pinnated tail.

Syngnathus Typhle. S. pinnis caudæ ani pectoralibusque radiatis, corpore sexangulato. Lin. Syst. Nat.

Syngnathus corpore hexagono anoque pinnato. Bloch. t. 91. f. 1.

This is by some considered as a variety of the preceding fish, from which it chiefly differs in being of smaller size, seldom measuring more than a foot or fifteen inches, and in having the body rather hexagonal than heptagonal. It is chiefly found in the Northern seas.

SNAKE PIPEFISH.

Syngnathus Ophilion. S. corpore subtereti, cauda aptera.
Pipefish with roundish body, and finless tail.
Synght us Ophidion. S. pinnis cauda ani pectoralibusque nulls, corpore tereti. Lin. Syst. Nat.
Syngnathus corpore tereti. Bloch. t. 91. f. 3.

This differs from both the preceding in having the body nearly round, or at least so obscurely cornered as to appear round on a cursory view : it is also entirely destitute of a tail-fin, the body terminating in a naked point : it grows to the length of two feet, and is chiefly found in the Northern and Baltic seas.

BIACULEATED PIPEFISH.

Syngnathus Biaculeatus. S. ferrugineus, corpore tetragono, copite supra biaculeato.

Ferruginous Pipefish, with quadrangular body, and two spines above the head.

Syngnathus biaculeatus. S. corpore quadrangulato, aculeis duobus ad caput. Bloch. t. 121.

LENGTH six or eight inches: body somewhat broader in proportion to its length than in the preceding kinds: dorsal fin placed low on the back: tail hexagonal at its origin, gradually becoming tetragonal in its progress, and terminating in a finless point or tip: colour of the whole animal rufous brown. Native of the Indian seas, and also said to be found in the Baltic.

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PELAGIC PIPEFISH.

Syngnathus Pelagicus. S. ferrugineus, fosciis angustis fuscis, corpore heptagono.

Ferruginous Pipefish, with narrow brown bands to hepta-

Syngnathus pelagicus. S, pinnis pectoralibus caudaq e radiatis, ani nulla, corpore septemangulato. Lin. Syst. Nat.

Syngnathus corpore heptagono, lineis transversis brunneis. Bloch. t. 109.

GENERAL appearance similar to that of the Smaller Pipefish: length about a foot, or more: colour yellow-brown, variegated with narrow, transverse, deep-brown bars placed at intervals along the body: tail-fin small and slightly rounded. Native of the Indian and African seas.

ÆQUOREAL PIPEFISH.

Syngnathus Æquoreus. S. pinna caudæ radiata, pectoralibusque anique nullis, corpore angulato. Lin. Syst. Nat.

Pipefish with rayed tail-fin, and angular body, without pectoral or anal fins.

INHABITS, according to Linnæus, the European seas.

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BARBARIC PIPEFISH.

Syngnathus Barbains. S. pinnis cauda anique nullis, corpore sexangulato Lin. Syst. Nat.

Pipefish h hexagonal body, without caudal or anal fins.

NATIV. of the European seas.

SEA-HORSE PIPEFISH.

Syngnathus Hippocampus. S. capite crasso, corpore subhexagono tuberculato, cauda quadrangula aptera.

Pipefish with thick head, subhexagonal tuberculated body, and quadrangular finless tail.

Syngnathus Hippocampus. S. pinna caudæ quadrangulæ nulla, corpore septemangulato tuberculato, Lin. Syst. Nat, Syngnathus corpore tuberculoso. Bloch. t. 109. Hippocampus. Rond. Gesn. Aldr. Will. &c.

A FISH of a highly singular appearance: general length from six to ten inches: body much compressed; colour greenish brown, varied with darker and lighter specks: head large, thickish, and beset on the upper part, as well as along some of the first joints of the body, with several small, weak, lengthened spines or cirrhi, which are sometimes slightly ramified: snout slender: neck contracting suddenly beyond the head: body rather short, and contracting suddenly towards the tail, which is long, quadrangular, and terminates in a naked or finless tip. In its dry or contracted state this animal exhibits the fancied resemblance from which it takes its name, but in the living fish this appearance is

FOLIATED PIPEPISH.

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somewhat less striking, the head and tail being carried nearly strait. It is a native of the Mediterranean, Northern, and Atlantic seas.

FOLIATED PIPEFISH,

Syngnathus Foliatus. S. olivacco-nigricans, alloido-punctatus, appendicibus foliaceis.

Blackish-olive Pipefish, with white specks, and leaf-shaped appendages.

A most extraordinary species; far exceeding all the rest of the genus in the singularity of its appearance, which is such as at first view rather to suggest the idea of some production of fancy than of any real existence. In its general shape it is greatly allied to the preceding species, but is considerably longer in proportion, or of a more slender * habit: its great particularity however consists in the large leaf-shaped appendages with which the back, tail, and abdomen, are furnished : these appendages are situated on very strong, rough, square spines or processes, and were it not for the perfect regularity of their respective proportions, might be mistaken for the leaves of some kind of fucus adhering to the spines. The colour of the whole animal is a dusky or blackish olive*, thickly sprinkled on all parts, except on the appendages, with small round whitish specks, and accompanied by a kind of metallic gloss on the abdomen : the fins are soft,

* Perhaps greener in the living animal.



FOLIATED PIPEFISH.

tender, and transparent. This curious species is a native of the Indian seas. The specimen represented in its natural size on the annexed plate was taken near the coasts of New Holland, and was sent, tog ber with a second of exactly similar appearance, but of rather smaller size, to the Right Honourable Sir Joseph Banks, Baronet, President of the Royal Society, through whose polite permission it was engraved for the present work. Nothing particular seems to be known relative to its habits or natural history.

CENTRISCUS. CÉNTRISCUS.

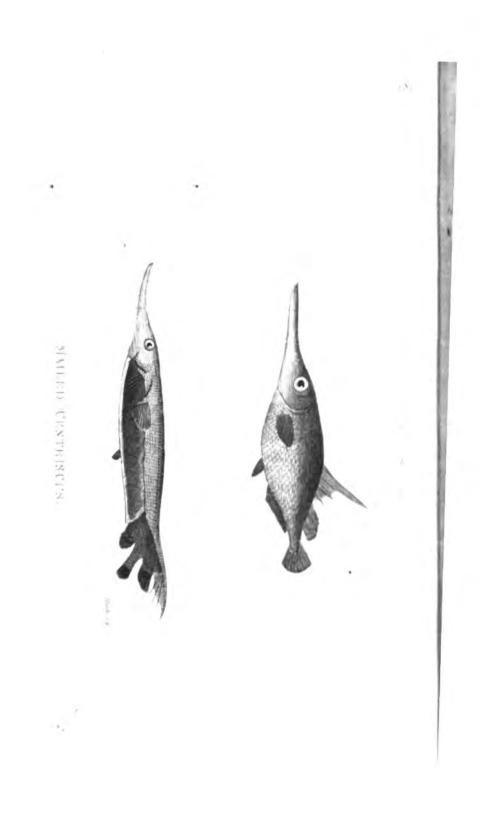
Generic Character.

Rostrum elongatum. Corpus compressum, abdomine carinato? Pinnæ ventrales unitæ. Snout lengthened. Body compressed, carinated beneath. Ventral fins united.

MAILED CENTRISCUS.

Centriscus Scatatus. C. loricatus lævis aureo-ferrugineus. Smooth, mailed Centriscus, of a golden-ferrugineus colour. Centriscus scatatus. C. dorso loricato lævi. Lin. Syst. Nat. Centriscus scatatus. Bloch. t. 123.

THE Centriscus scutatus is a fish of a remarkable aspect, having the body so much compressed as to resemble a mere lamina, particularly on the lower part, where it is membranaceous: the whole upper part of the body is formed into a kind of mail, divided into several broad segments, to the number of twelve on each side; and terminates in a projecting point at the end of the back, dilating into a small shallow fin beneath: the head is oblong, and terminates in a lengthened, tubular snout: the pectoral fins are situated at a considerable distance from the branchial orifices, and the hind part of the



SNIPE CENTRISCUS.

body is terminated, beneath the mailed coating, by three fins or processes, the middle of which is rather longer than the others, being seated on a kind of lengthened base: the back is of a fine darkferruginous brown colour, accompanied by a gilded tinge; the sides are yellowish, with a cast of silver, and the abdomen reddish, the divisions of the shield being marked by so many transverse white lines: the whole fish is semitransparent, and appears as if inclosed in a sheath or case of the finest tortoiseshell. It arrives at the length of six or eight inches, and is a native of the Indian seas, where it is supposed to live on the smaller kinds of marine insects, worms, &c.

SNIPE CENTRISCUS.

Centriscus Scolopax. C. ferrugineus squamosus.
Ferruginous scaly Centriscus.
Centriscus Scolopax. C. corpore squamoso scabro, cauda recta extensa. Lin. Syst. Nat.
Centriscus squamosus. Bloch. t. 123.
Balistes Scolopax. Artedi.

LENGTH from four to six or eight inches: shape long-oval; snout greatly lengthened: body covered with numerous, small, pointed-scales: colour rufous-brown above, paler beneath, with a slight silvery cast on the sides: dorsal fin subtriangular, and furnished with a very thick and strongly serrated spine: second smaller, and slightly rounded: pectoral and ventral fins rather small: anal shallow:

LIGHT-ARMED CENTRISCUS.

tail small and slightly rounded. Native of the Mediterranean and Indian seas : numbered among edible fishes, but from its size and thinness esteemed of no great importance.

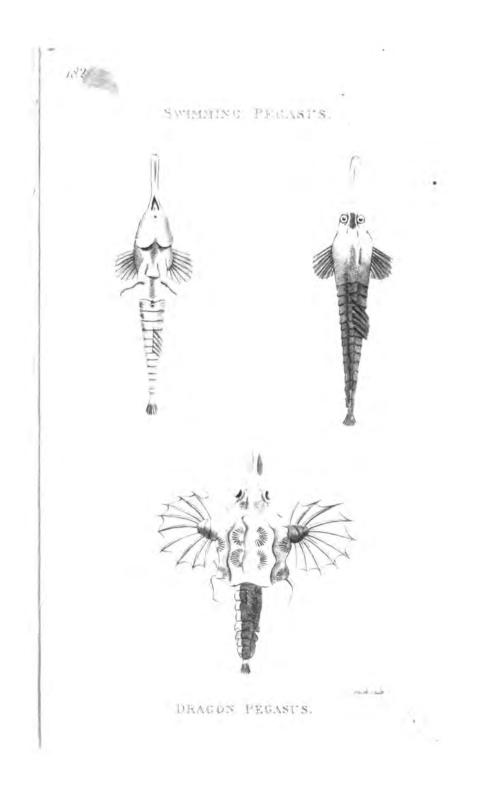
LIGHT-ARMED CENTRISCUS.

Centriscus velitaris. C. corpore ex oblongo lanceolato, setulis recumbentibus ad nates hispido. Lin. Syst. Nat. Gmel. Pall, spic. zool. 8, p. 36.

LENGTH about two inches: colour silvery, with yellowish-grey back: abdomen formed into a triangular keel before the ventral fins: back mailed by a rhombic shield, marked by four oblique lines: in the middle a strong, recumbent, somewhat moveable, and very sharp, serrated spine, beneath which is a second: vent-fin broad: tail slightly rounded. Native of the Indian seas.

Centriscus Velitaris. C. semiscutatus argenteus, spina dorsali subrecumbente.

Half-shielded silvery Centriscus, with subrecumbent dorsal spine.



PEGASUS. PEGASUS.

Generic Character.

Rostrum elongatum.

Pinnæ pectorales amplæ: ventrales uniradiatæ.

Corpus depressum, cataphractum, abdomine osseis incisaris articulatum.

Os Snout elongated: mouth beneath.

Pectoral fins large: ventral single-rayed.

Body depressed, mailed, with the abdomen divided into bony segments.

DRAGON PEGASUS.

Pegasus Draco. P. thorace subtetragono, humeris prominentibus, abdomine brevi.

Pegasus with subtetragonal thorax, prominent shoulders, and short abdomen.

Pegasus Draconis. P. rostro conico. Lin. Syst. Nat.

Cataphractus corpore tetragono, brevi, scabro. Gronov. zooph. Pegasus corpore lato tetragonoque. Bloch. t. 209.

THE genus Pegasus is in some degree allied to that of Syngnathus. The principal species, the Pegasus Draco, is a small fish of about the length of three or four inches, and is remarkable for the size of its pectoral fins, which are supposed to enable it, like the Exocoeti and some other fishes, to support itself for some moments in air, while it springs occasionally over the surface of the water: the thorax or superior part of the body is of a

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FLYING PEGASUS.

broad, slightly flattened, squarish form, and is marked both above and beneath by several radiated shields or bony tubercles of considerable size: from each side the abdomen springs a lengthened cirrus, which may be considered as supplying the place of a ventral fin: from the thorax the body decreases suddenly in diameter, and is marked into several divisions or transverse segments : the tail is small and slightly rounded : the pectoral fins, as before observed, are large in proportion to the size of the animal, and of a rounded shape, with a kind of scolloped or indented outline: the eyes are large and protuberant, and the snout of a subconical form, but with a slight dilatation towards the tip, so as to appear spatule-shaped when viewed from above: the colour of the whole animal is whitish, with a slight cast of pale-brown. It is a native of the Indian seas.

FLYING PEGASUS.

Pegarus Volans. P. rostro ensiformi denticulato. Lin. Syst. Nat.

Pegasus with ensiform denticulated snout.

LENGTH about three inches: snout much elongated, flattened, rounded, and slightly dilated at the tip; marked by a longitudinal channel, and crenated or denticulated on the edges: on the head a rhomboidal depression, and behind it two deep subpentagonal cavities: last joints of the body, next the tail, pointed on each side. Native of the Indian seas.

SWIMMING PEGASUS.

Pegasus Natans. P. thorace abdomineque elongatis. Pegasus with lengthened thorax and abdomen. Pegasus natans. P. rostro ensiformi inermi. Lin. Syst. Nat. Pegasus corpore oblongo tetragonoque. Bloch. t. 121.

LENGTH three or four inches: shape much more slender than that of the P. volans: colour yellowish brown, whitish beneath: snout slender, slightly dilated and rounded at the tip, and marked both above and beneath by a middle furrow: pectoral fins rounded and of moderate size: dorsal situated on the middle of the back: segments of the abdomen about eleven or twelve in number: tail small and slightly rounded: ventral cirri slender and flexible. Native of the Indian seas.

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