



## FOOTLESS FISHES.

THE *Apodal*, or footless fishes (*Mala-copterygii*), are so called because they are destitute of ventral fins. The fishes of this order are elongated in form, and have a soft and slimy skin, which, although not without minute scales, may be called scaleless, as far as an ordinary observer is concerned. The eels (*Mura-nidæ*) constitute the typical family.

Mr. Yarrell discriminates three distinct species of freshwater eels, if not four, and Cuvier distinguishes four, which have all been confounded together, although, when the species are compared, the distinctive characters are not difficult to be discovered. The species figured and described by Mr. Yarrell are the sharp-nosed eel (*Anguilla acutirostris*), the broad-nosed, or glut eel (*A. latirostris*), and the snig eel (*A. mediorostris*), which last is a yellow colour, and found in the Hampshire Avon, and

in the Worcestershire Avon, where, in contradistinction to the silver eel, it is termed the yellow eel. In some counties, the term snig is applied to eels in general, and the term grig to young eels; there is, however, a small eel in the Thames, called grig by the fishermen, which is Cuvier's *anguille plat-bec*, and regarded by him as a distinct species.

Of these species the broad-nosed, or glut eel, called by the Severn fishermen the frog-mouthed eel, is thicker in the body in proportion to its length than the others, and has a thicker, softer, and more slimy skin. The sharp-nosed eel is the species most usually seen in the London markets, and of which thousands are imported from Holland.

The eel inhabits rivers, meres, lakes, and ponds, but it is highly susceptible of cold, and during intense frosts, accompanied by a piercing east wind, thousands of eels, though buried in the mud, have been known to perish, and, crawling from their lurking holes in the agonies of death, have been washed down the stream to the tideway, and

thrown upon the beach. Many instances of this kind are on record. In the high northern regions there are no eels—none exist in the great rivers of Siberia, in the Volga, or in the lower Danube, which receives a vast influx of Alpine water, brought by the Inn, the Fraun, the Save, and Drave. Few or no eels exist in our mountain streams.

In lakes and ponds, or in rivers remote from the sea, the eel breeds, depositing its spawn about the end of April or beginning of May. But when the way is clear, eels migrate in vast numbers to the mixed and brackish water of the estuaries of rivers, during the autumn, where they deposit their spawn in warmer water during that season, or very early in the spring; and in the months of April and May following, myriads of young eels, about three inches in length, ascend the rivers, and fix their stations in different localities. Doubtless, many of the young remain permanently in the brackish water of the estuary, or even in the salt water near the river's mouth. With respect to the adult eels, their return is not clearly ascertained; nor are we to suppose that all the adult eels in tidal rivers descend to the sea, for we know that they bury themselves in the mud to the depth of twelve or fifteen inches, and generally in such a spot as is covered by the water of a land-drain, when the tide is at its ebb. In Somersetshire, the people know how to find the holes in the banks of rivers in which eels are laid up, by the hoar-frost not lying over them as it does elsewhere, and dig them out in heaps. Nevertheless, that numbers of eels make an autumnal descent is unquestionable, and in tideway rivers, such as the Thames, permanent erections are constructed for their capture during their progress, trap-baskets of wicker-work, and other kinds of cages, being fixed in a proper manner, so as to intercept and secure them. Eels are also captured by night-lines and by eel-spears.

The eel lives long out of the water, and sometimes, during the warm nights of summer, when the dew is on the grass, voluntarily quits the pond or river, and proceeds with an undulatory motion on land, either in quest of worms and other prey, or in order to gain some other piece of water; and thus it often happens that meres or ponds become stocked with this fish, though none had been purposely introduced. One of the finest eels we ever saw we caught in a swampy spot, several hundred yards from the river Bollen, in Cheshire; and we have seen them in the dusk of evening, moving over the wet grass of fields bordering the Severn.

The eel is extremely voracious; it preys upon worms, insects, small fishes, and the eggs of fish; it also eats vegetable matters, and, as we have more than once seen, will swim about the surface of a pond, nibbling the floating leaves of the water-plants.

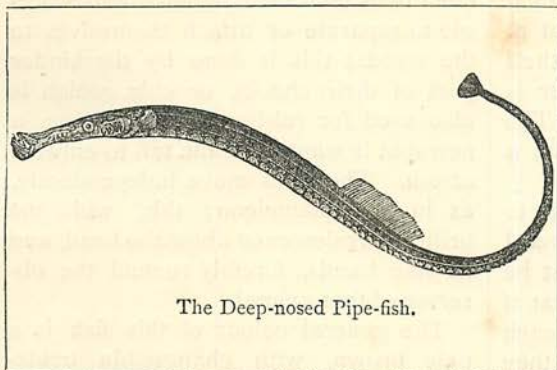
Unlike most fishes, the eel is of slow growth, and does not breed until two or three years have passed. The common sharp-nosed species attains, sometimes, to a very large size, and individuals have been occasionally caught weighing upwards of twenty pounds.

Along the rocky parts of our shore, and about the mouths of rivers, where sand-banks stretch out into the sea, that large marine species, the conger-eel (*Conger vulgaris*), is often very abundant. It is caught in great numbers on the Cornish coast, by night-lines; and a single boat will often capture a ton, or even two tons' weight of this fish. Its flesh is principally used by the poorer classes; it is white and firm, but of indifferent flavour.

Congers hide in the holes of rocks beneath the sea, or in recesses covered with masses of sea-weed, and often, also, bury themselves in the sand or mud; they are extremely ferocious, and a diver, residing at Herne Bay, told us that, on one occasion, a large conger,

which he had disturbed, swam several times around him, as if meditating an attack, but ultimately, to his relief, swam slowly away. It must be confessed that a large conger, the strength of which is prodigious, and its powers of jaw terrible, must be no very despicable antagonist to contend with in its native element. We have seen specimens of this fish eight and ten feet in length, and upwards of a hundred pounds in weight; such a fish, when dragged into a boat, would require both skill and courage to manage.

The conger feeds on fishes and crabs and other crustacea; it breeds in the winter. Vast numbers of congers are taken by the French fishermen, who find a ready sale for this fish in the French markets.



The Deep-nosed Pipe-fish.

We may here allude to that voracious fish, the muræna, so much esteemed by the epicures of ancient Rome. The muræna (*Muræna Helena*) can scarcely be classed among British fishes, though one specimen was caught by a fisherman of Polperro, in 1834. It is, however, common in the Mediterranean, and is noted for its voracity and the severity of its bite; though extremely beautiful in colouring, it is a hideous fish, with small eyes, tumid cheeks, and wrinkled skin; its teeth are in single rows, long and sharp; the body is rounded anteriorly, compressed and tapering towards the tail. The ground colour of the anterior parts is a fine

yellow, of the hinder parts a rich purple, the whole surface being marbled with somewhat annular markings, and sprinkled with innumerable spots of white, yellow, golden, brown, and purple.

On many parts of our shores a little slender eel-like fish, five or six inches in length, is very common. It is termed the sand-lance (*Ammodytes lancea*), and is of a silvery brightness. It is captured in large quantities, but principally as a bait for the sea-lines, and bushels are sold to the French fishermen. Its under-jaw projects in a singular manner, and enables it to burrow into the sand, which it does on the ebbing of the tide, and emerges from its hole on the reflux.

This fish is known as the riggle on the coast of Sussex. We have an allied species of larger size, but similar habits, called the sand-eel (*Ammodytes tobianus*). It is not very common.

The fifth order of osseous fishes, established by Cuvier, is termed *Lophobranchii*, in reference to the structure of the gills, which present the appearance of little rounded tufts, disposed in pairs along the branchial arches. They are covered by a large gill-flap attached all round, leaving only a small aperture for the passage of the water. These fishes, besides, have the whole body invested in a sort of cuirass, or tessellated armour, producing ridges and angularities. To this group belong five species of pipe-fishes found upon our coasts, remarkable for the length and slenderness of their body, and the tenacity and prolongation of the snout into a sort of tube, with a small mouth at its extremity. The males of some of the species have an elongated pouch under the tail, closed by two folding membranes, and in which the eggs deposited by the female are hatched, although the time and mode in which they are transferred to this

receptacle is unknown. Unlike most fish, the pouched pipe-fishes are strongly attached to their young, and when danger threatens, the pouch serves them as a place of retreat. Of these fishes, the great-fish (*Syngnathus acus*) is one of the most common, and is often kept by the fishermen in a dried state to sell as a curiosity to sea-side visitors. It is from one to two feet in length, when fully grown, and is of a pale yellowish brown, with dark and broad bands at regular intervals. This species may be seen slowly moving about, in a singular manner, horizontally or perpendicularly, with the head downwards or upwards, and in every attitude of contortion in search of food, which seems chiefly to be water insects. Mr. Yarrell observes, that these fishes "are supposed to be able, by dilating their throat at pleasure, to draw their food up their cylindrical beak-like mouth, as water is drawn up the pipe of a syringe." The male of this species is furnished with a pouch.

The attachment of the *Syngnathi* to their young has been noticed by several authors; and Mr. Yarrell says, that he has been assured by fishermen, that if the young be shaken out of the pouch into the water, close to the boat, they do not swim away; but when the parent fish is held in the water, in a favourable position, the young again enter the pouch. The most remarkable circumstance, however, connected with this is, that the pouch-bearer is the male fish, and that the female is quite destitute of any such organ.

Closely allied to the pipe-fishes are the *Hippocampi*, of which one species, the short-nosed hippocampus, is to be met with on different parts of our coast. This fish, often called the sea-horse, is of a singular form, the head resembling that of a hog or tapir, with a slender tubular snout, at the end of which is a small mouth. The neck is arched like that of a horse, and the protuberant

abdomen may represent the chest; the tail is long, tapering, and prehensile; the dorsal fin is high; the mail-clad body and tail are traversed by longitudinal and transverse ridges, with angles of intersection.

Specimens of this fish have, it is said, been occasionally found curled up in oyster-shells, but of their general habits little is known.

When swimming about they maintain a vertical position, but the tail is ready to grasp whatever it meets in the water, quickly entwines in any direction round the weeds, and when fixed the animal intently watches the surrounding objects, and darts at its prey with great dexterity.

When both approach each other, they often twist their tails together, and struggle to separate or attach themselves to the weeds; this is done by the hinder part of their cheeks, or chin, which is also used for raising the body when a new spot is wanted for the tail to entwine afresh. The eyes move independently, as in the chameleon; this, with the brilliant iridescence about the head, and its blue bands, forcibly remind the observer of that animal.

The general colour of this fish is a pale brown, with changeable iridescence, and variable tints of blue. The males are furnished with a pouch. Total length, about five inches.

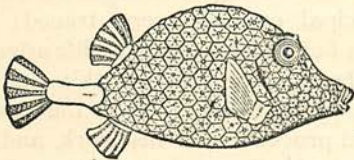
Cuvier terms his sixth order of osseous fishes, *Plectognathi*, from the imperfection of their jaws, the bones of which are firmly attached to the palate bones. The general structure of the skeleton is not so hard as in most other osseous fishes, and the gill-aperture is merely a small fissure, and the ribs are rudimentary. In some, as the globe-fishes, or diodons, tetraodons, etc., there are no true teeth, but the jaws are armed with a substance like ivory, resembling in form a parrot's beak, but of laminated structure. These successive layers succeed each other in proportion, as the



SEA-HORSES AND PIPE-FISH.

more anterior are worn by the effect of crushing and grinding the sea-weeds and crustaceous animals on which they feed.

In another family, containing the file-fishes (*Balistes*), and the box-fishes (*Ostracion*), the muzzle is protruded and conical, with a small mouth, armed with



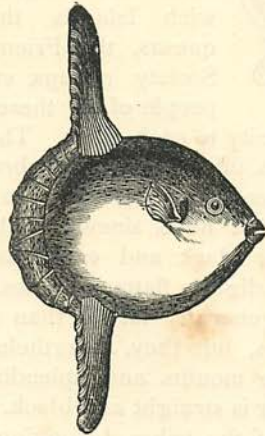
The Trunk-fish.

distinct but not numerous teeth in each jaw. Some of these fishes feed on corals and sea-weed.

There are three instances on record of a species of globe-fish having been taken on the coast of Cornwall, wanderers by accident from warmer latitudes. A species of file-fish has once been taken off the Sussex coast.

Two species of sun-fish are occasionally seen off our coasts, of which the short sun-fish (*Orthogoriscus mola*) is the most common. This fish is of a circular form, and though there is a caudal fin, united to the dorsal fin and the under fin, there is no tail. The jaws are armed with an undivided cutting edge. This fish is very shining; it often grows to a great size, and has been taken weighing three hundred pounds, but such large specimens are very rare. Generally these fishes are observed drifting along as if asleep on their side, but sometimes swimming in the ordinary manner; they keep much at the bottom of the water, and there feed on sea-weeds. They often, however, ascend in calm sunny weather, and lie basking on the surface, carried along gently with the tidal current.

The flesh of the *Orthogorisci* is soft and very indifferent, and possesses a disagreeable odour; qualities which cause it to be very little esteemed. It is, however, fat, and yields a considerable quantity of oil. When alive, these fishes have a silvery appearance, and at night



The Sun-fish.

they are said to be exceedingly phosphorescent; from which circumstance, coupled with their more or less rounded form, it is probable that the names of Sun-fish and Moon-fish, applied to them in different places, are derived.

On very dark nights the sun-fish is sometimes seen swimming in the soft light which emanates from its body, the rays rendered undulating by the rippling of the water which it traverses, so as to resemble the trembling light of the sun half veiled in misty vapours. When many of these fishes rove about together, mingling their silvery trains, the scene suggests the idea of dancing stars. The sun-fish is common on the west coast of Ireland, also in the Mediterranean.