NATURAL HISTORY PICTURE BOOK

REPTILES
FISHES INSECTS &C.

KE24549

Philadelphia, Tuesday, Jan. 20, 1880.

ROMEO, THE ELEPHANT, amused himself in various ways during a recent steamboat voyage on the Mississippi from New Orleans to Cincinnati. He made himself quite free with the freight that was within his reach, and tumbled boxes, barrels and bales around quite promiscuously. At Vicksburg the hawser, a heavy cable some three inches in diameter, was used to tie up the boat. The observing Romeo saw the deck-hands haul it in once or twice, when he concluded that he could do it himself quite as well as the dozen men. As long thereafter as he was kept on the forecastle he handled the hawser, so far, at least, as hauling it was concerned. The deck-hands dragged it out and made it fast, but the moment it was untied the elephant seized it with his trunk and hauled it aboard. The bell-wires running from the pilot-house to the engine-room passed under the cabin floor directly over his back. He evidently noticed that when the wires moved the bell rang. He began to ring the bells himself by pulling the wires with his trunk. The first time he jerked the bell-wire the engineer stopped the boat. "What's the matter?" asked the pilot through the speaking-tube. "Nothing," responded the engineer. "What did you stop her for?" "Because you rang the bell." "I didn't ring." "Ting-a-ling-ling-ling!" clattered the bell, as if there were spirits in it. The engineer rushed out just in time to catch Romeo jerking the wire, and the mystery was explained.

NATURAL HISTORY PICTURE BOOK.

REPTILES, FISHES, INSECTS, ETC.

BY

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WITH TWO HUNDRED AND FORTY ILLUSTRATIONS,

BY WOLF, ZWECKER, COLEMAN, SOWERBY, TUFFEN WEST, ETC.

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PREFACE.

THIS little book, although similar in form and treatment to its companion volumes, differs from them in many respects.

The two Picture Books of Mammalia and Birds were restricted to those two classes, but the present volume has a much wider range. In this book may be found short accounts of the principal members of several large and important classes, and in it are described the most remarkable beings among the Reptiles, the Fishes, the Molluscs, Crabs and Lobsters, the Spiders, Insects, and various other groups of animal life.

As in the former cases, the arrangement is that which is pursued in the splendid collections placed in the British Museum, so that the book will form a trustworthy guide to those who visit the Zoological department of that Institution, and enable them to examine the various creatures in a systematic and instructive manner. Without some such help, the various objects pass before the eye in a disorderly mass, and nothing but a confused idea of bright plumage, strange furs, odd shapes, and glass cases, is brought away by the visitor.

Much pains have been taken to render the language of the descriptions intelligible and easy, and in those few cases where scientific terms have been employed, they have only been used because no simpler words are as yet coined.

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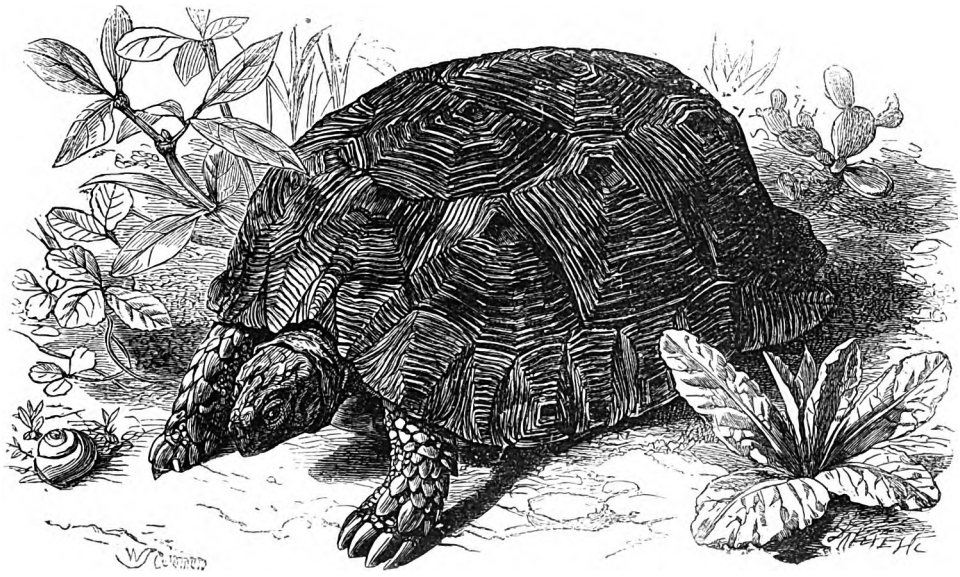
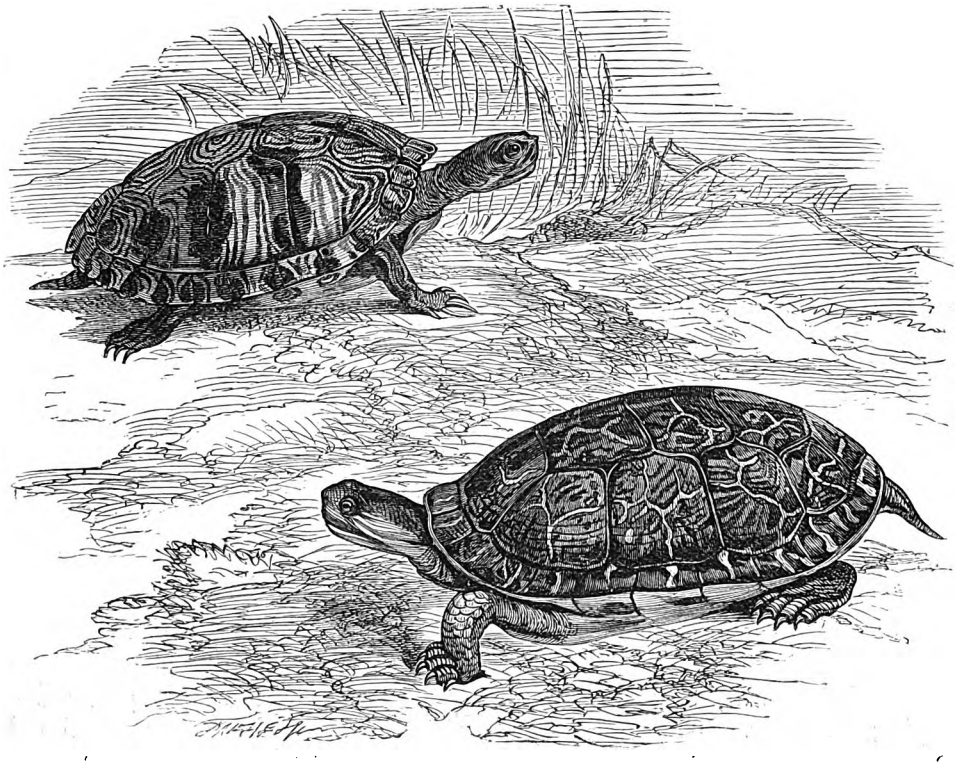


COMMON LAND TORTOISE.—*Testúdo Græca.*

The Reptiles derive their name from a Latin word which signifies to creep, and are so called on account of their movements, which for the most part are of a creeping character. They are spread all over the world, but are mostly found in the warmer parts, the Tropics absolutely swarming with them, while towards either Pole they are seldom to be seen. They are chilly creatures, retiring during the cooler months to some sheltered nook, usually a deep burrow in the earth or a hole in the mud, and not showing themselves again until the warm breath of spring summons them to renewed and active life.

The Land Tortoise is common in many of the warm parts of Europe, and on the shores of the Mediterranean is quite plentiful. It is easily kept, even in England, feeding freely upon cabbage and lettuce-leaves, and digging for itself a burrow into which it retires during the winter. Tortoises have been known to live for a great many years in gardens, without requiring any care except supplying them with food. I have had several of these reptiles, and have found them to be easily managed and soon tamed. They were very fond of milk, and used to drink by putting their heads fairly into the saucer, scooping up some milk in their ladle-like lower jaw, and letting it run down their throats by holding up their heads like fowls while drinking. They lay very pretty eggs, about as large as those of a pigeon, but much rounder, and of a pure white. I have several of these eggs that were laid in England.



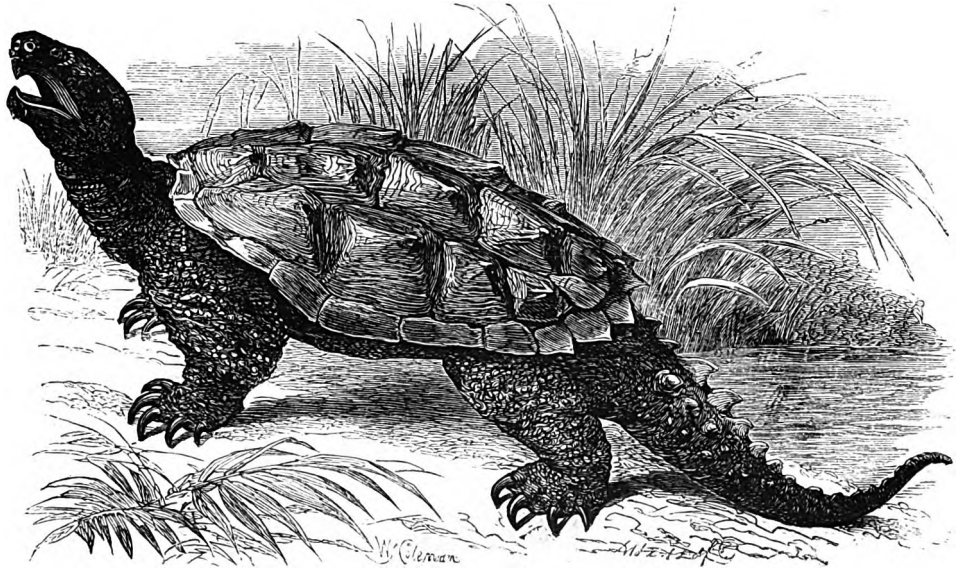
LETTERED TORTOISE.—*Emys scripta.*

CHICKEN TORTOISE.—*Emys reticulária.*

The Lettered Tortoise is a native of North America, and lives in ponds, lakes or waters, where it finds plenty of food. It is a voracious creature, catching and killing frogs, lizards, and other inhabitants of the waters. Anglers detest the Lettered Tortoise because it is apt to take their bait, and like the Green Crab of England, irritates them sadly by deluding them with the idea that they have caught a fine fish. It is rather a pretty Tortoise, being dark-brown above and yellow below, with a row of scarlet marks along the sides that look like the letters of some strange language.

The Chicken Tortoise is so called because its flesh is thought to be like that of a tender chicken. It is sold in the markets for food, and bought for the table.

It swims very well, but not rapidly, and as it passes through the water it likes to remain near the surface and to keep its head well elevated, so that it looks something like a dark-coloured snake swimming along with its head raised.



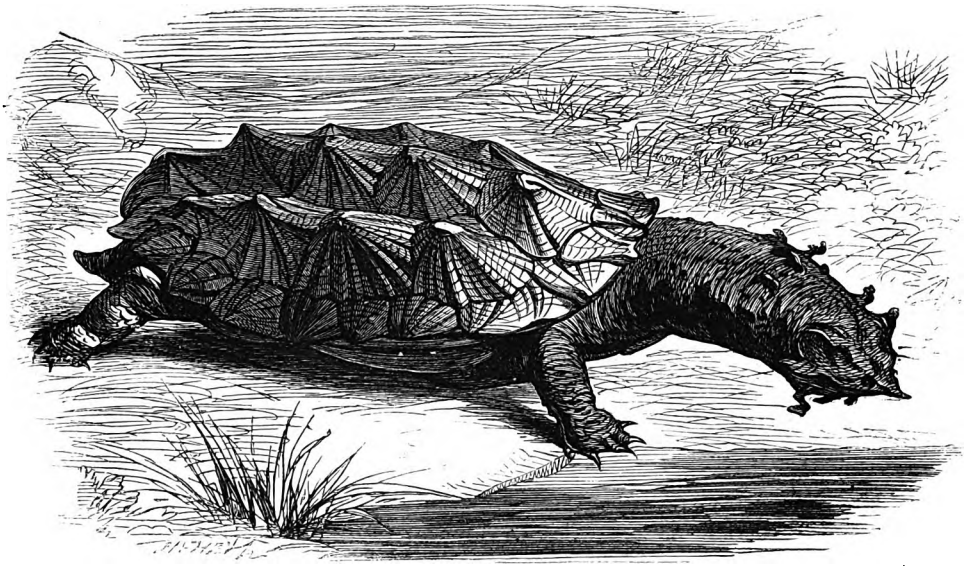
ALLIGATOR TERRAPIN.—*Chelydra Serpentina.*

THIS very strange and fierce-looking creature is called the ALLIGATOR TERRAPIN, because its wide mouth, sharp jaws which cut like teeth, and long saw-edged tail, make it bear a strong resemblance to the reptile from which it derives its name.

It is not only a very large Tortoise, but a very fierce one, darting its long and flexible neck in every direction, and snapping with fearful violence. So strong are its jaws, and so sharp are their edges, that it has been known to shear asunder a stick of half an inch diameter at a single bite. Those therefore who catch the Alligator Terrapin always take the precaution of cutting off its head as soon as it is secured. Although it is so ugly, it is nevertheless a very valuable reptile, its flesh being tender and delicately flavoured, and is in consequence caught and sent to market. The usual means for catching the Alligator Terrapin are a hook and line.

It swims well and strongly, and has a habit of floating with the stream so as to come unexpectedly upon its prey. It feeds upon reptiles of various kinds, and on fishes, and is able to catch even the swift and active fish. Pieces of fish are generally used as bait. When on shore it is clumsy and awkward in its movements, holding itself very upright, and stretching out its legs and tail.

Some persons prefer to keep the Alligator Terrapin alive, and supply it well with food so as to preserve it in good condition. It does not seem to fatten when in captivity, or even to increase in weight, but appears to live very contentedly in tubs of fresh water, and feeds heartily on the offal with which it is supplied. It is a native of North America.

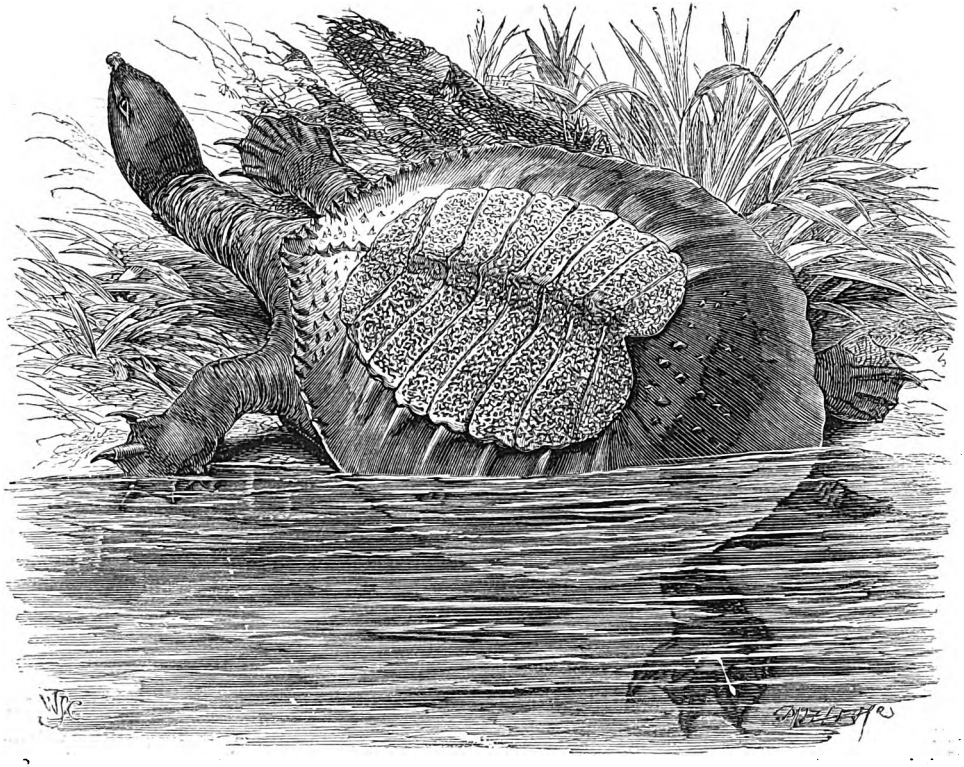


MATAMATA.—*Chelys Matamata.*

THE MATAMATA is, if possible, a still stranger and odder-looking reptile than the creature which has just been described. It is a native of America, but resides in the southern and warmer parts of that vast continent. It is a very swift swimmer, being aided by the webbed feet, and while in the water keeps the whole of the shell below the surface. In habits, it is very like the other river tortoises, being extremely voracious, chasing and catching with ease the reptiles, fish and other creatures on which it feeds. It has also a habit of hiding itself among the reeds that grow thickly at the edges of the river, and from its place of concealment darting out its long neck, and snapping at any passing object.

The whole of the appearance of the Matamata is very strange, the neck being long and flexible, the head large, covered with tufts of skin, and the snout lengthened into a kind of double tube. It does not possess the long tail of the Alligator Terrapin, that member being comparatively short. The flesh of the Matamata is very excellent, and the animal is caught in great numbers for the table. It was formerly very plentiful in Cayenne, but it has been so persecuted that its numbers have greatly fallen off.

The shell of this reptile is remarkable for the manner in which the back is covered with hilly projections, which are arranged in three rows. The length of a large Matamata is about three feet.

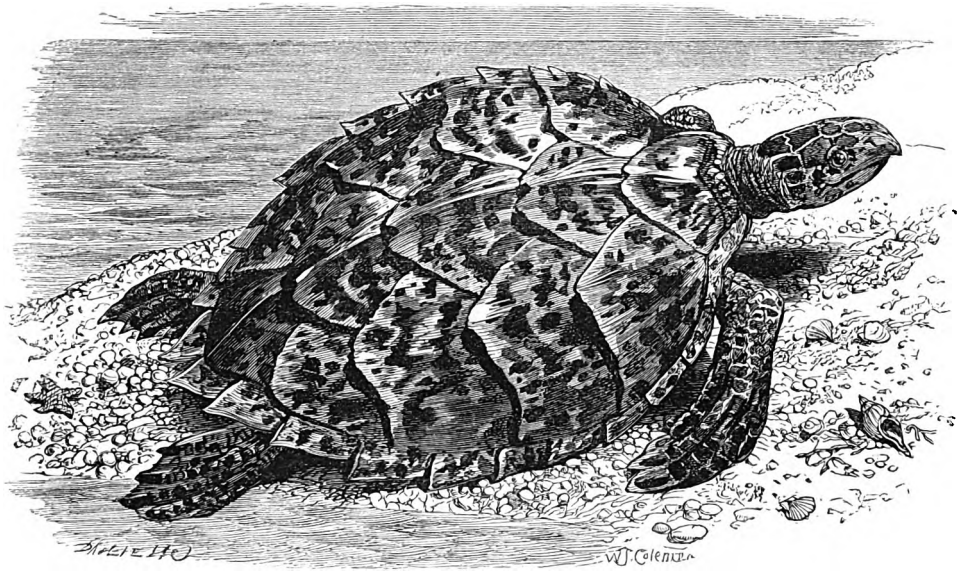


SNAPPING TURTLE.—*Triónyx ferox.*

The Snapping Turtle is so called from its habit of snapping violently at any object with which it may be angry.

It is one of the fiercest inhabitants of the waters, killing not only fish and reptiles, but even the smaller animals that come to drink at the river-side, or the water-fowl that float on its surface. It will even attack human beings, and many men can show large scars on their limbs, which have been caused by the bite of the Snapping Turtle. Its flesh is remarkably excellent, and in consequence it is caught in great numbers for the market, the hook and line being the usual means employed. Any kind of meat will do for a bait.

On looking at the body of this creature, the construction of the shell is very plainly seen. The ribs are only partially flattened and widened, their ends being of the ordinary dimensions. On turning it over, the manner in which the breast-bone forms the shield is very well seen, and even the points of junction are evident. The Snapping Turtle lays a great quantity of eggs in the sand, always choosing a dry and elevated spot. It is a native of North America.

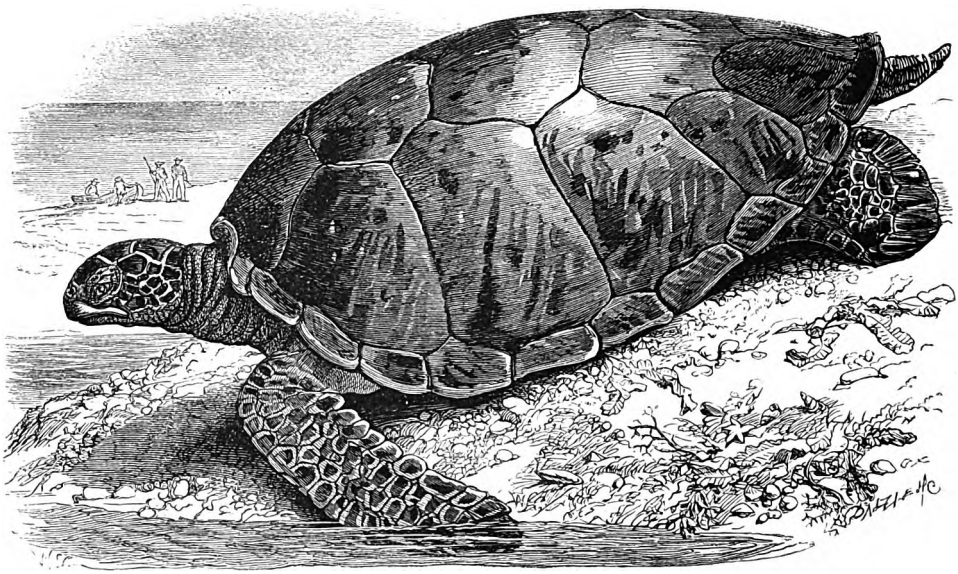


HAWKSBILL TURTLE.—*Caretta imbricata.*

The Hawksbill Turtle, or Caret, deserves notice, because it is the creature from which is obtained the beautiful substance known as Tortoise-shell.

As may be seen from the engraving, the scales or shields of this Tortoise are very large, and overlap each other like the slates of a house. The plates are removed by heat, boiling water being the best plan, but fire is often used by the ignorant fishermen, and takes away much of their value. When the plates are sent to Europe they are quite unfit for use, being very dirty, crumpled, and brittle, and require much management. They are carefully washed, boiled and steamed, and afterwards flattened by being put into a powerful press while they are still warm and moist. This useful reptile is a native of the warmer American and Ionian seas, and one or two specimens have been taken off the British shores.

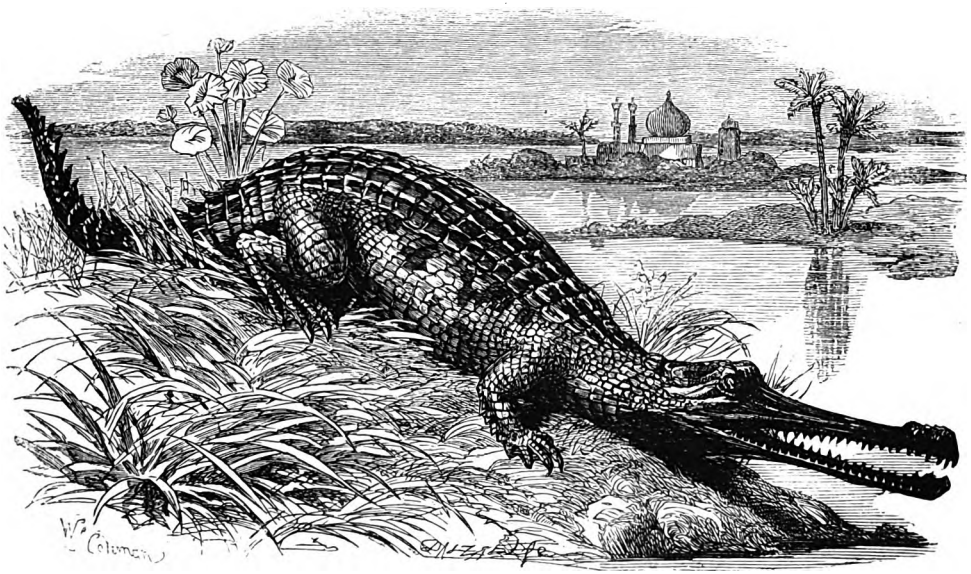
The flesh of the Hawksbill Turtle is seldom used for food, and the natives of the coast where the reptile is most frequently found, have a cruel custom of removing the shields while the poor creature is alive, and then turning it into the sea for the purpose of obtaining a second set of plates. It is found however, that the second supply is not equal to the first, the plates being thin and of an inferior quality. Their eggs are large, nearly round, and are covered with a shell that resembles wet parchment. When boiled, the white does not become firm as is the case with the eggs of birds. They are laid in several sets and placed in hot sand. In about three weeks the young Turtles are hatched; odd-looking little things, without shells, the centre of each plate being marked by a dark spot.



GREEN TURTLE.—*Chelónia víridis.*

THE reptile which is shown in this engraving is the GREEN TURTLE, and is famous for the excellence of its flesh, and especially of the green fat with which a fine specimen is absolutely loaded.

The Green Turtle is found in many warm seas, and is very plentiful about the islands of Ascension and the Antilles, where it is constantly chased. There are many methods of Turtle catching. Sometimes the creature is caught while on shore, and as it turns round and makes for the sea, its course is checked by the hunters, who rush at it, catch it by the edge of the shield, and turn it over on its back. As its legs are very short and will not reach the ground, it is unable to right itself, and is easily lifted up and carried into the boat. Sometimes, the Turtles are so heavy that the men cannot turn them over by main strength, and are forced to have recourse to handspikes, which are used as levers. Care must be taken while chasing the Turtle, as it flings up the sand and stones in showers from its hind-legs, and hurls them with such force that they would do some damage were they to strike the pursuers. The hunters therefore, always keep on one side of the animal, and take care not to place themselves in a line with its course. Another method is by the harpoon. The Turtle is fond of coming to the surface of the sea, and lying asleep in the sun, and is often seen on the bed of the sea, in only a few feet of water.



GAVIAL, OR GANGETIC CROCODILE.—*Gaviális Gangéticus.*

The Gavial, or Gangetic Crocodile, is an Indian species, and is easily known by the great length and narrowness of its jaws. The natives call it by the name of Nakoo.

This is one of the largest of the Crocodiles, sometimes growing to a length of twenty-five feet, and being strong and stout in proportion to its length. When the Gavial is just hatched from the egg, its jaws are not larger than those of the common crocodiles and alligators, but as it increases in age, its jaws increase in length, and attain their full size when the animal has reached full age. These long jaws are furnished with a great number of teeth, one hundred and twenty having been found in some animals. As in catching prey these teeth may be seriously injured, and the animal would then be unable to secure its prey, they are so made, that in process of time they fall out of the jaw, and are replaced by others which have grown in the same sockets. The shape of the teeth is conical, and they are all alike in form, round, pointed, being slightly curved backwards, and exceedingly strong.

All these creatures possess a very powerful odour something like musk, but so coarse and strong as to be smelt at a considerable distance. The glands which produce this musky substance are situated under the throat. I may here mention that it is always possible to distinguish the Crocodiles from Alligators by the shape of their jaws. In the upper jaw of the Crocodile there is a notch, in which are received certain teeth of the lower jaw, and in the Alligator there is a pit or depression instead of a notch.

CROCODILES AND ALLIGATORS.

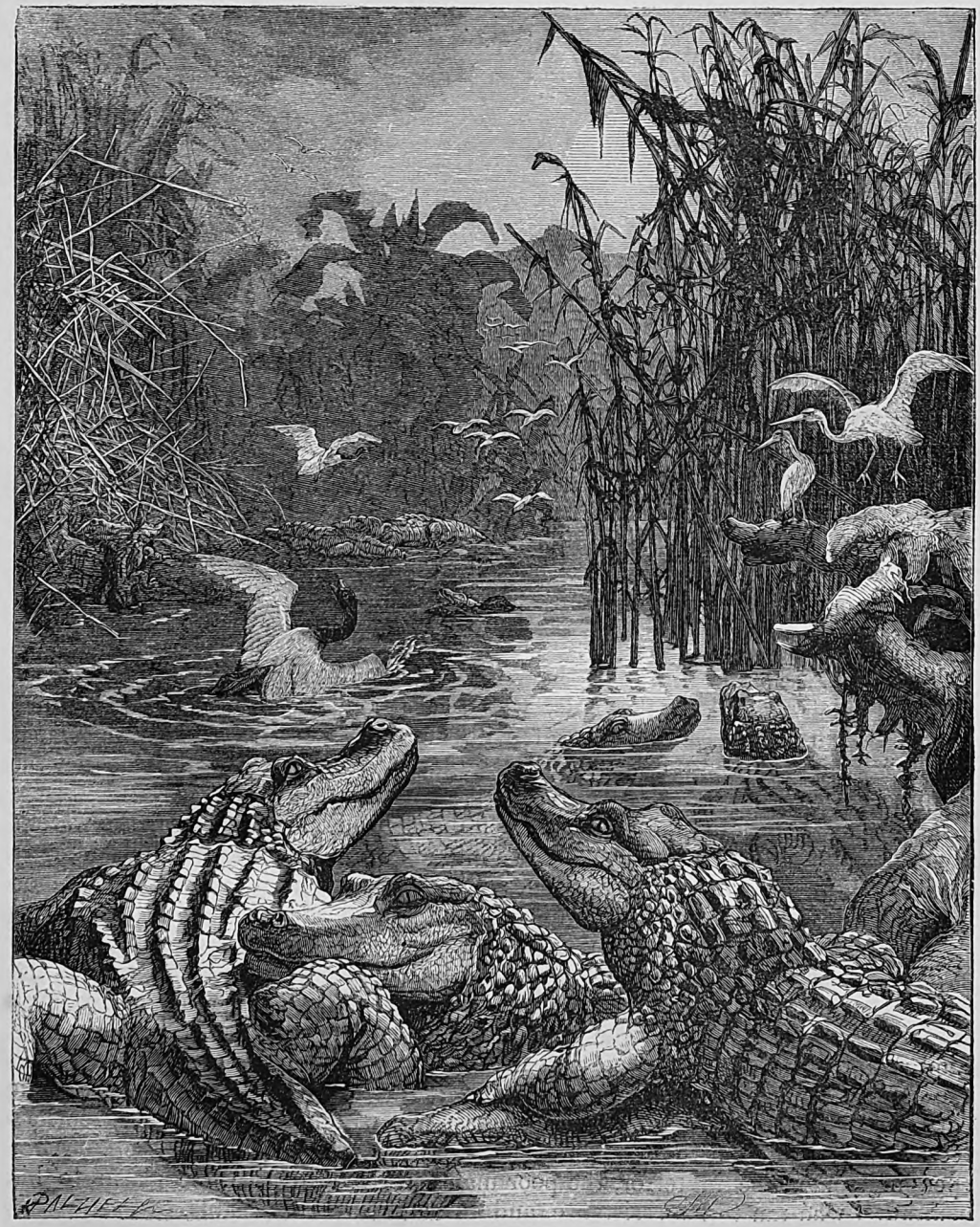
On the engraving opposite is given a beautiful view of an African river, in order to show the wonderful appearance of rivers in tropical countries. Heavy mists are rising from its surface, drawn up by the action of the burning sunbeams, the banks are so thickly clothed with reeds and the river vegetation, that it is hardly possible to say exactly where the water ends and the land begins. Aquatic birds, swimmers and waders, are seeking food, or flapping their way through the air, while the great Crocodiles crawl lazily over fallen trees, push their terrible snouts out of the reeds, or swim quietly along the surface.

The whole series of reptiles known as Crocodiles and Alligators are among the largest living inhabitants of the earth; and are as terrible in action as their appearance suggests. They are most voracious beings, though capable of passing a wonderfully long time without taking food. They can all swim with very great speed, driving themselves through the water by sweeping strokes of their legs and powerful tail, and urging their course with exact precision, the tail answering the purpose of rudder as well as of a propeller. Though they can be thus speedy, and on occasions can be lashed to a furious pitch of excitement, bellowing with fury, and whirling round and round until they churn the water into a white foam with their movements, these reptiles are usually very sluggish and indolent, and will remain for many hours without moving in the least.

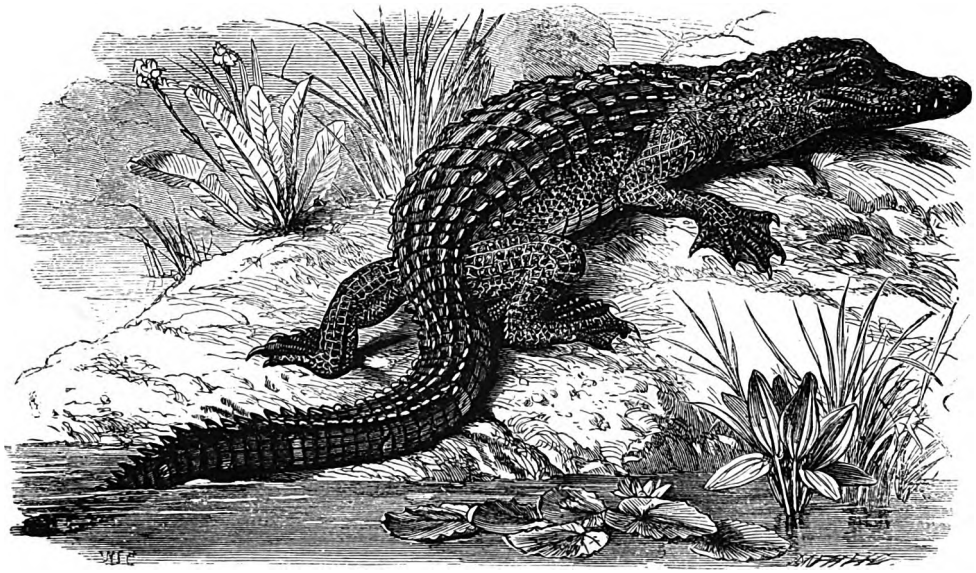
Those who have visited the Zoological Gardens will doubtless have noticed how the Crocodiles and Alligators, small as they are, act in just the same manner as their larger relations in their native regions. There may be seen the Alligator, lying flat at the bottom of the water-tank, straight as if cut out of stone, with all its limbs stretched from the body, and as motionless as if it were a stuffed figure. Others again, lie half out of the water, supported by the stones and logs on which they are crouching, and hardly to be distinguished from the objects on which they repose.

In all these reptiles there are several wonderful structures that adapt for their peculiar life. The position of their nostrils enables them to breathe without exposing more than the very tip of the snout above the water, and the eyes are so placed as to allow the creature to make a survey of surrounding objects without raising a vital part of the head above water.

As they kill the larger animals by seizing them in their jaws and holding them under water until dead, it is necessary that they should be defended against the water, which would pour down their throats unless prevented by some device. This object is attained by a wonderful valve, composed of two thin gristly plates, which are closed by the pressure of the water, and do not allow a single drop to pass. It will be seen therefore, how the Crocodile or Alligator can easily drown its prey without suffering any inconvenience from the water.



AMERICAN CROCODILES AT HOME.

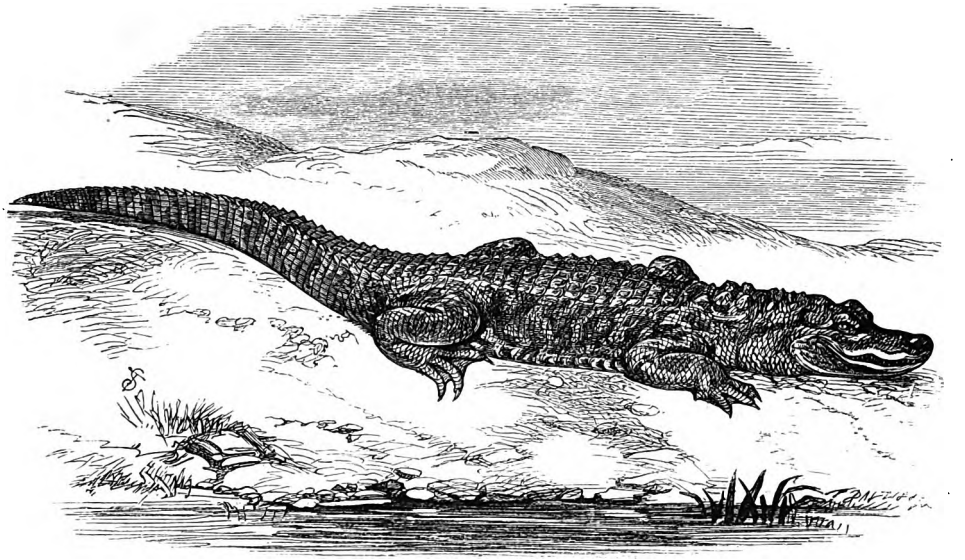


EGYPTIAN CROCODILE.—*Crocodílus vulgáris.*

The Egyptian Crocodile is the most celebrated of these great reptiles.

It is chiefly found in the Nile, where it absolutely swarms, and is much dreaded both by man and beast. It will eat almost any living being, and feeds principally on fish, and on the animals that approach the water-side for the purpose of drinking.

Many instances are known where men have been surprised near the water's edge, or captured when they have fallen into the river. There is, it is said, only one way of escape from the jaws of the Crocodile, and that is to turn boldly upon the scaly foe, and press the thumbs into his eyes, so as to force him to relax his hold, or relinquish the pursuit. Mr. Petherick relates a curious instance, where a man was drawing water, and was chased by a Crocodile into the recess in the earth in which he was standing while working the lever of the "shadoof," or engine for drawing water. The man crouched as far back as he could squeeze himself, and the Crocodile tried to follow him, but got itself so firmly wedged in the narrow channel through which it was endeavouring to force its way, that it could neither reach the man, whose breast was within a span of the reptile's teeth, nor retreat from the strange position into which it had forced itself. After spending some time in terror, the poor man contrived to give the alarm to his comrades, who ran to his assistance, and despatched the Crocodile.

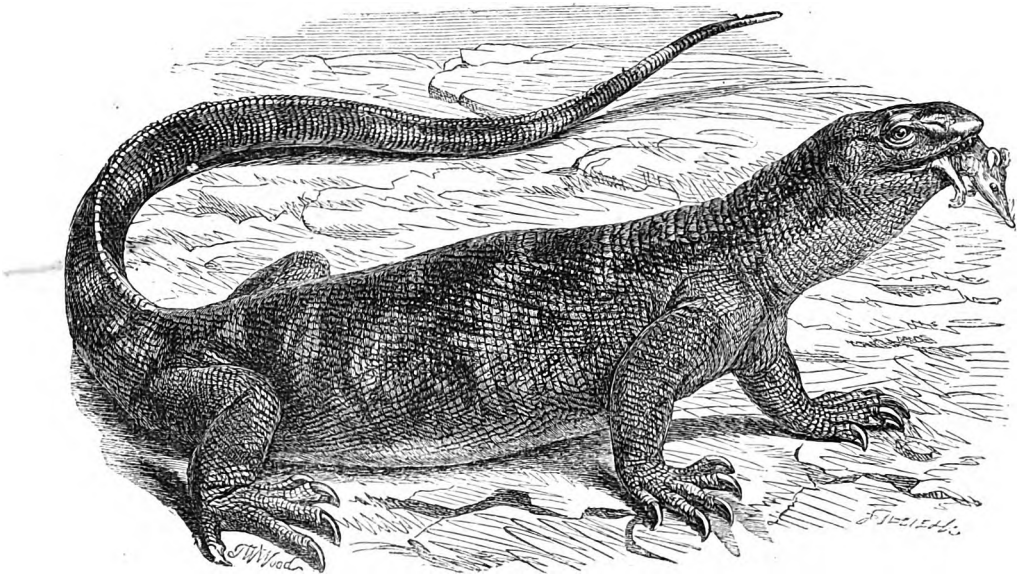


ALLIGATOR.—*Alligátor Mississipensis.*

THE ALLIGATOR is a native of Northern America, and is very common in the Mississipi, and the lakes of Louisiana and Carolina. It sometimes goes by the name of Cayman.

It feeds mostly on fish, which it catches by dashing among the shoals as they pass up the stream, and snapping at its prey so quickly that they are unable to escape. Human beings stand in great fear of the Alligator, whose voracious appetite, sharp teeth, and powerful jaws, render it a very terrible foe; they accordingly try to kill and catch it in various ways. Sometimes they employ the gun, and sometimes a hook and line, the hook being ingeniously made from four pieces of wood. If possible, they find the spot where the Alligator has laid its eggs, and destroy the whole.

The eggs of the Alligator are small and numerous. The parent deposits them in the sand of the river-side, scratching a hole with her paws, and placing the eggs in a regular layer therein. She then scrapes some sand, dry leaves, grass and mud over them, smooths the materials and deposits a second layer upon them. These eggs are then covered in a similar manner and another layer deposited, until the mother reptile has laid from fifty to sixty eggs. Although they are hatched by the heat of the sun and the decaying vegetable matter, the mother does not desert her young, but leads them to the water and takes care of them until they are sufficiently strong to roam the waters without assistance.

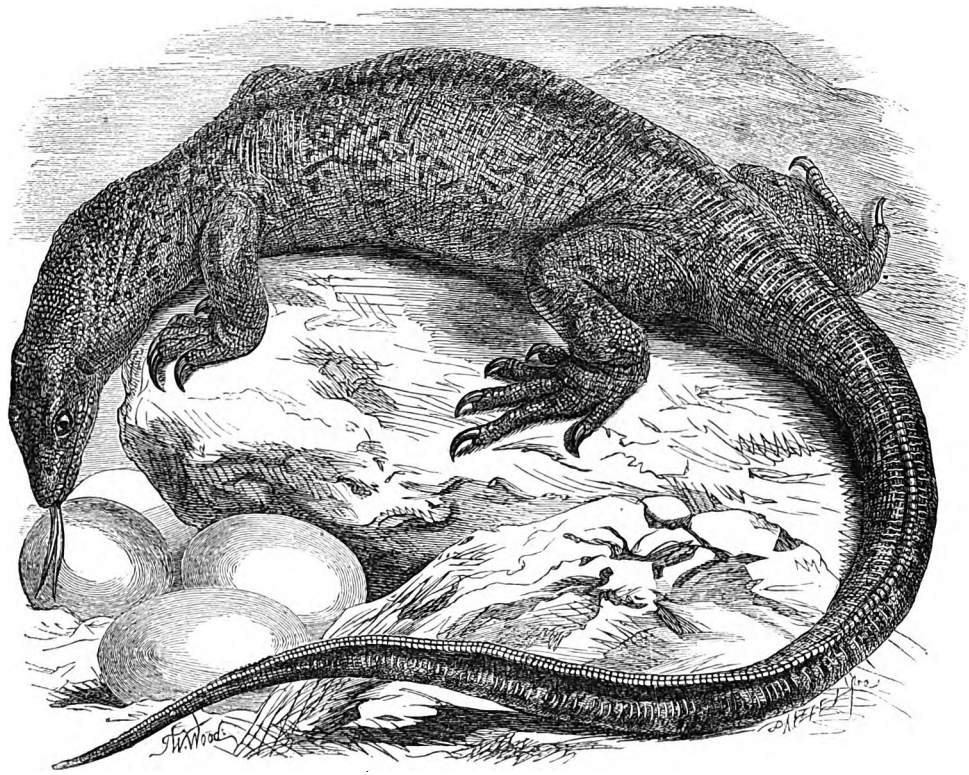


WHITE-THROATED REGENIA.—*Regénia alboguláris.*

The Lizards which we are about to inspect have their bodies covered with scales, which in some species overlap each other like the tiles of a house, and in others form a kind of rough armour of many-sided scales.

The large and handsome Lizard called the White-Throated Regenia, is a native of Southern Africa, and is moderately common in the regions which it inhabits. Dr. Smith gives the following interesting account of the White-Throated Regenia and its habits:—

"It is usually discovered in rocky precipices or on low stony hills, and when surprised seeks concealment in the chinks of the former or the irregular cavities of the latter, and where any irregularities exist on the surface of the stones or rocks, it clasps them so firmly with its toes that it becomes a task of no small difficulty to dislodge it, even though it be easily reached. Under such circumstances the strength of no one man is able to withdraw a full-grown individual, and I have seen two persons required to pull a specimen out of a position it had attained, even with the assistance of a rope tied in front of its hinder legs. The moment it was dislodged it flew with fury at its enemies, who by flight only saved themselves from being bitten. After it was killed, it was discovered that the points of all the nails had been previously broken or at the moment it lost its hold."

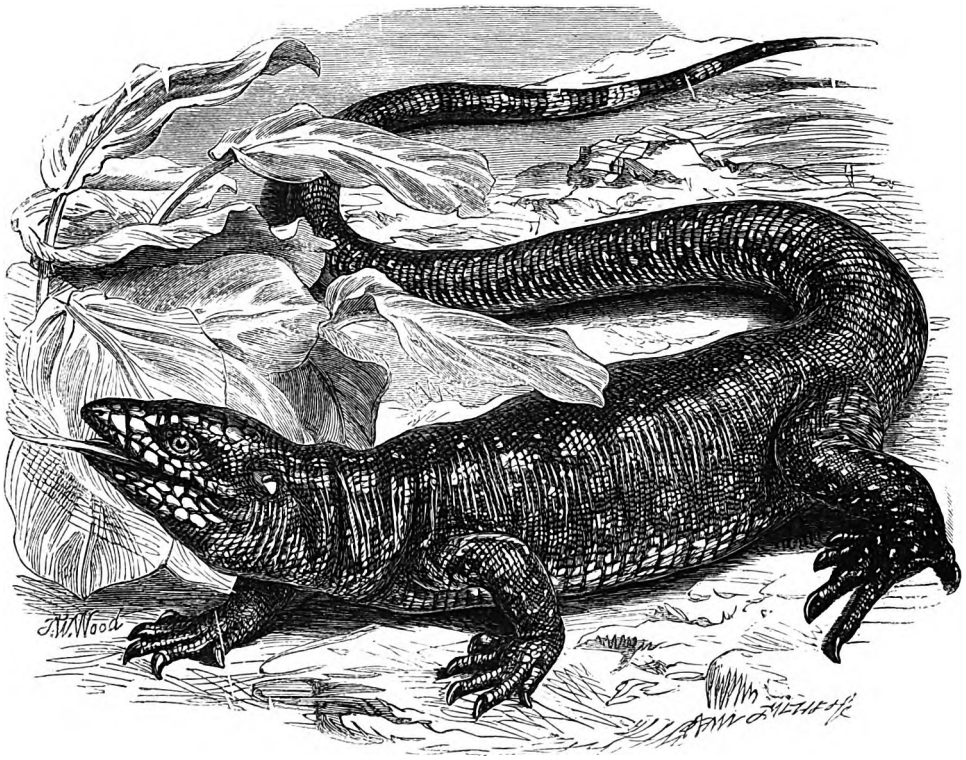


NILOTIC MONITOR.—*Mónitor Niloticus.*

The Monitors are so called, because they are thought to give warning of the Crocodile's approach so as to enable the intended victim to escape.

Though this idea seems not to be according to fact, the Nilotic Monitor or Varan, as it is sometimes called, is a very useful creature; for the Monitor is very fond of the eggs of the Crocodile, and spies them out even in their places of concealment, and destroys them by thousands. In fact, without the aid of the Monitor and the Ichneumon, (the one belonging to the Reptiles, and the other to the Mammalia), the land through which the Nile flows would be fairly overrun with Crocodiles, and the country rendered unfit for the residence of human beings.

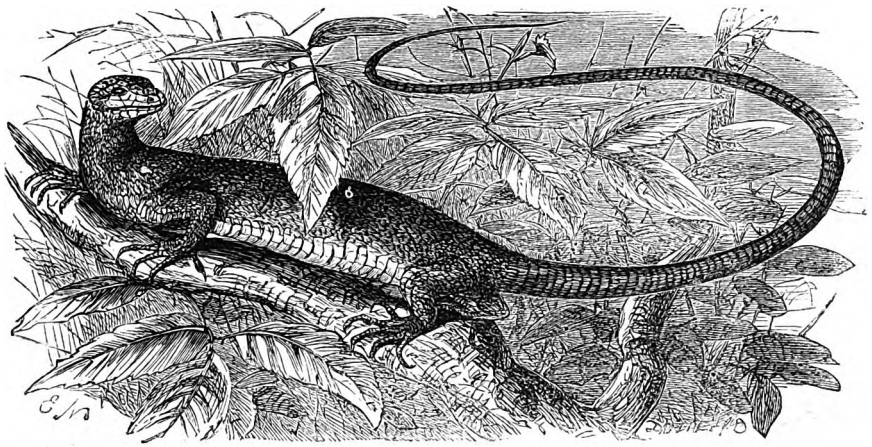
The Monitor even eats the young Crocodiles, chasing them through the water, and securing them before they can place themselves under the protection of some full-grown Crocodile, too large and strong for the Monitor to attack. The full length of this reptile is about five feet.



TEGUEXIN.—*Teius Teguexin.*

THE long-tailed and swift-footed TEGUEXIN is a native of the warmer parts of America, and is mostly found in Brazil and the neighbouring districts. It is a most fierce and voracious creature, feeding upon frogs, toads, snakes, and similar animals. Sometimes it gains access to the farm-yard and kills the poultry; and that it eats insects, is clearly proved by the wing-cases of beetles and the skins of caterpillars that have been found within the stomach.

The jaws of the Teguexin are powerful, and the teeth sharp and strong, and when it seizes an enemy, it grasps as tightly as a bull-dog, and can hardly be induced to loosen its hold as long as it lives. Its flesh is said to be very good, and is much eaten. The natives think that some healing power resides in the skin of its tail, and are in the habit of stripping the skin, cutting it into rings, and wearing them on the wrists and ankles. The colour of this reptile is mostly black, mottled with green and yellow, and with some white spots along the sides. When full-grown, it is about five feet in length.



GREEN LIZARD.—*Lacerta víridis.*

The beautiful Green Lizard, or Jersey Lizard, is found plentifully in the island from which it takes its name, and is among the most beautiful of its tribe.

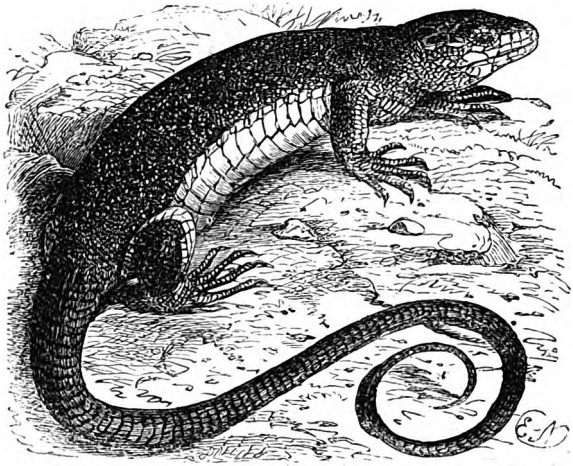
Since the pretty fern-cases have come so largely into fashion, and become the ordinary ornaments of the drawing-room and the conservatory, the Green Lizard has been imported into this country in very great numbers; its brilliant hues, elegant shape, and great activity making it a fit inhabitant of the glass home with the waving ferns and cool green mosses.

It seems to revel in the sunshine, and there are few objects more beautiful than the emerald-green hues of this Lizard as the sunbeams flash and glitter on its resplendent surface.

It is susceptible of kindness, and can soon be tamed by those who choose to take the trouble of familiarizing themselves with their bright and lively favourite. Although sufficiently bold, and apt to bite if it fancies itself aggrieved, it can be so thoroughly tamed that it will come and take flies out of the hand.

In its native country, it is found in orchards, gardens, shrubberies, and similar places, looking out for the insects on which it feeds, and basking in the warm sunshine. Sometimes it lies as if sleeping without moving a limb, and at others, moves slowly as if it could crawl no faster than a snail; but if the hand is moved towards the spot where it lies, a sudden green flash is seen, and the Lizard is gone.

The colour of this beautiful creature is rich shining green above, a little blue sometimes appearing upon the head, and the quality of the green being rather variable in different individuals. A multitude of little golden spots are also perceptible on the back, and similar dots of black are not unfrequently sprinkled over the surface. Underneath, the green fades into a yellower hue.

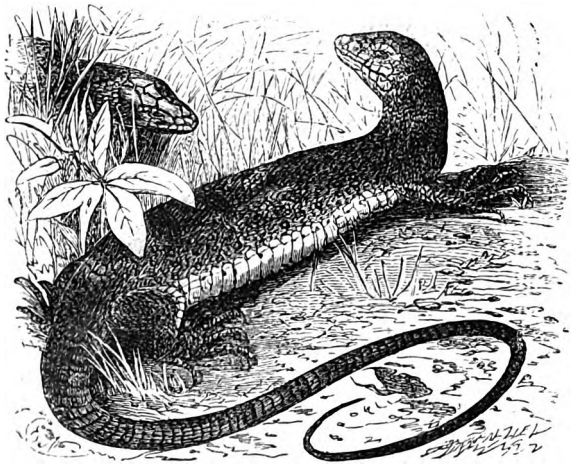


EYED LIZARD.—*Lacerta ocellata.*

THE lovely EYED LIZARD is even a more beautiful creature than that which has just been described. It lives in the warmer countries, such as the South of Europe, parts of Africa and even in America.

It is a brave and fierce little being, and if it be threatened with a stick it will turn at once on the offending article, and bite with all its power. Even a dog cannot frighten this courageous creature; it jumps at the enemy, grasps him by the nose, and holds with such force and determination, that it will often allow itself to be killed rather than loosen its hold.

The home of this Lizard is generally made under the roots of trees, if the soil be sufficiently dry and sandy to suit its habits. Otherwise it will scoop a tunnel in the side of a bank or under a hedge, always choosing a southern aspect so as to ensure the warmth which it seems to require.

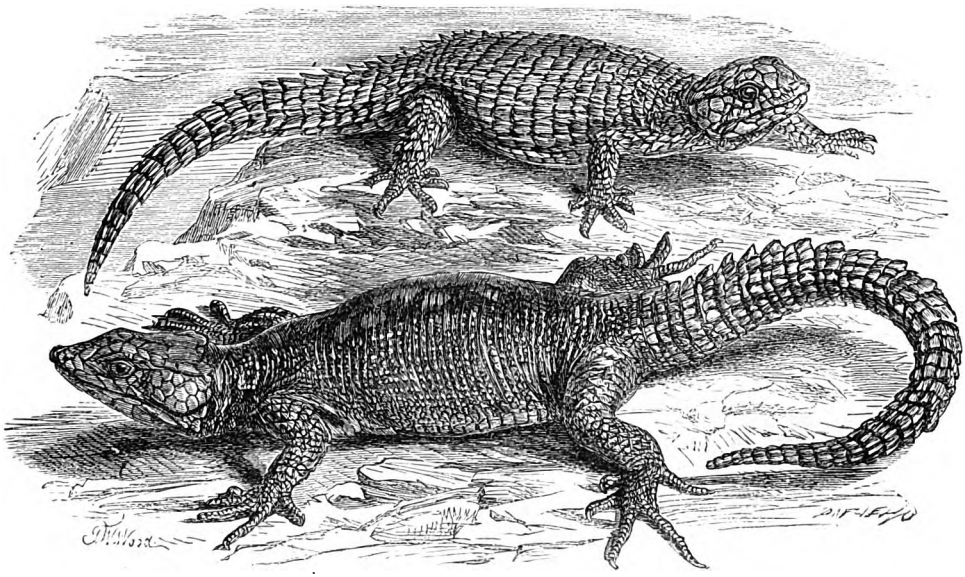


SAND LIZARD.—*Lacerta agilis.*

The colour of this Lizard is very beautiful. Its length when full-grown is about fifteen or sixteen inches.

The common SAND LIZARD of England, is rather a curious little creature, its colour being very uncertain; some species having a greenish tint, and others coloured with a brown hue. It is thought that this difference of colour is intended for the purpose of concealment, the brown Lizards living on sandy heaths, and the green upon grass and commons.

This Lizard can mostly be found on sandy banks that have a southern aspect, and as it is not so active as some of its relations, may be caught without much difficulty. Its colour is greenish or brown above, with some black spots and white below.



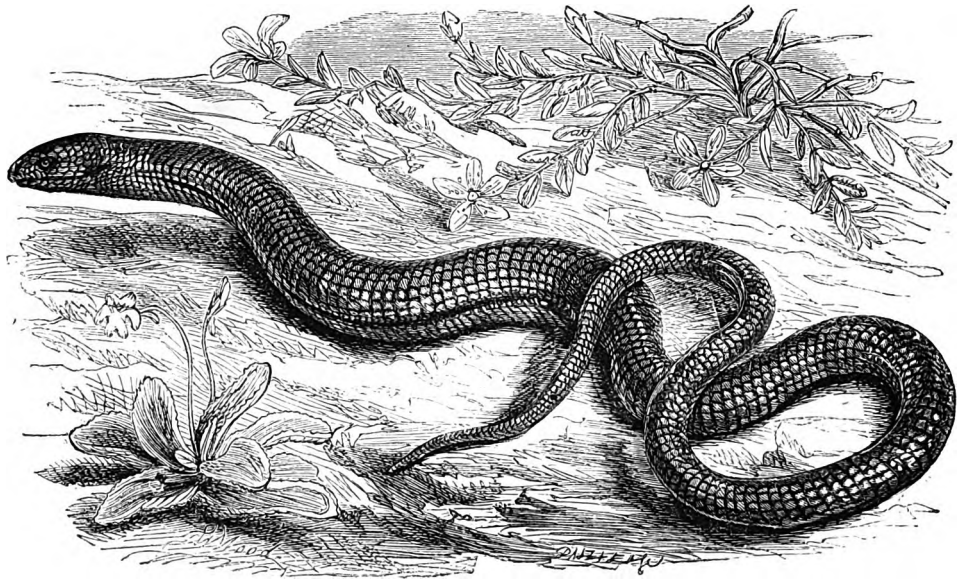
ROUGH-SCALED CORDYLE.—*Zonúrus Cordýlus.*

FALSE CORDYLE.—*Pseudocordýlus Microlepidótus.*

The Common Zonurus, or Rough-scaled Cordyle, is a native of Southern Africa, and very plentiful at the Cape, where it may be seen among the rocks or in sunny localities flitting from spot to spot with some speed, though not exhibiting the singular activity which is possessed by many of the smaller Lizards. It is chiefly remarkable for the curious aspect of the tail, with its whorls of spike-tipped scales, which looks as if a number of thimbles had been deeply notched round their edges and then thrust into one another.

The colour of this Lizard is generally orange yellow over the whole of the upper part of the body, changing into yellow on the head, and fading into white on the under side. It is a flat-bodied, stoutly made Lizard, and not very active. The upper figure represents the Rough Cordyle.

The False Cordyle is known by the very little scales which cover the back and sides, those of the tail being large and overlapping each other. It is a timid creature, and if alarmed makes for the nearest hole, into which it presses itself so closely that it can hardly be drawn out. In order to retain its hold, it hitches the scaly projections of the head into the sides of the burrow, and will allow its tail to be pulled off rather than loosen its hold. It is about eighteen inches long, and very variable in colour; some specimens being bright green, others yellow, others dark olive, and others brown. It lives in Southern Africa.

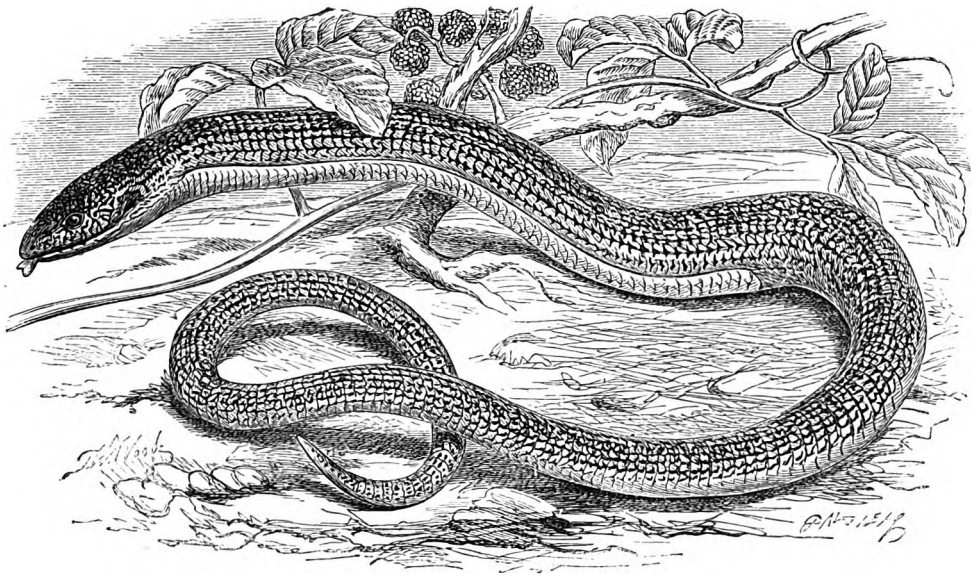


SCHELTOPUSIC.—*Pseudopus Pallásii.*

ALTHOUGH the SCHELTOPUSIC has no legs on which to walk, and altogether looks like a snake, it really belongs to the Lizard tribe. It lives in some parts of Europe, and is also found in Northern Africa. It feeds on insects, smaller reptiles and birds' eggs, to which it seems to be a great enemy, gliding into the nests and swallowing the eggs and even the newly-hatched young.

Thickly-wooded valleys, where the underwood is dark, and the vegetation is rank, are favourite localities of this reptile, which has no mode of defence if attacked, and can only retreat from the approach of danger by gliding silently under the brushwood and insinuating itself into some dark crevice, where it lies secure. So watchful is this creature, that although its movements are rather slow, it is not very easily captured, mostly gliding away in so silent a manner that it reaches its haven of safety before its presence is even suspected.

Even if it be seen and followed, it is not readily taken after once it has succeeded in burying itself among the brushwood, for its colour is sufficiently sombre to harmonize so well with the dark soil and dead sticks and leaves among which it resides, that its outline can with difficulty be discerned, even by a practised eye. As is the case with most reptiles, it loves to emerge from its retreat, and crawl to some spot where the sunbeams have thoroughly warmed the ground, and there to lie basking in the genial heat.

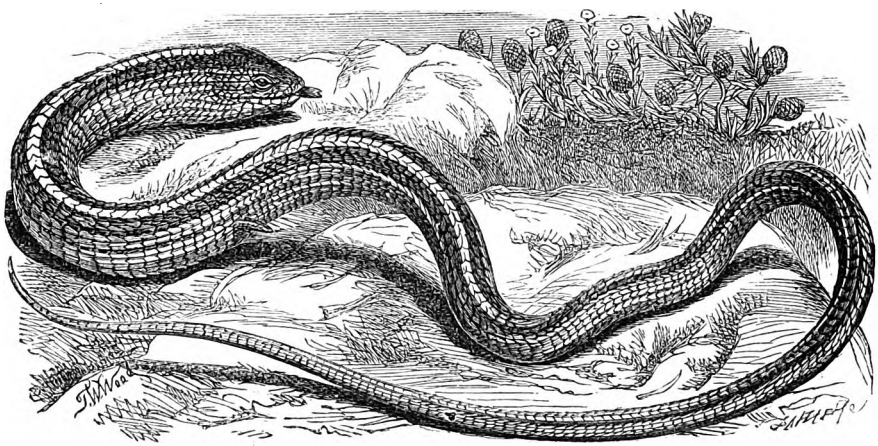


GLASS SNAKE.—*Ophisaurus ventrális.*

The Glass Snake is so called because, when struck with a stick, it snaps asunder as if it had been made of glass. It is however not a snake at all, but a simple harmless Lizard. It lives in North America, and is very variable in colour, green being the tint most generally prevailing. The head is very small, and a deep double groove runs along each side of the body. Owing to its curious habit of snapping itself into two pieces, it is no easy matter to secure a perfect specimen. At the spot where the tail joins the body, the muscles pass entirely through the vertebræ and enable the creature to throw off that member without difficulty.

The Glass Snake is one of the earliest of the reptile tribe to make its appearance in the spring, shaking off its lethargy and coming out of its home to bask in the sunbeams and look after the early insects, long before the true snakes show themselves. It is generally found in spots where vegetation is abundant, probably because in such localities it finds a plentiful supply of the insects, small reptiles, and other creatures on which it feeds.

It is fond of frequenting the plantations of sweet potato (*Convolvulus batatas*), and during harvest-time is often dug up together with that vegetable. The home of this reptile is made in some very dry locality, and it generally chooses some spot where it can be sheltered by the roots of an old tree, or a crevice in a convenient bank. It moves with tolerable rapidity, and its pursuer must exercise considerable quickness before he can secure it.



ANGUINE LIZARD.—*Chamæsaura anguina.*

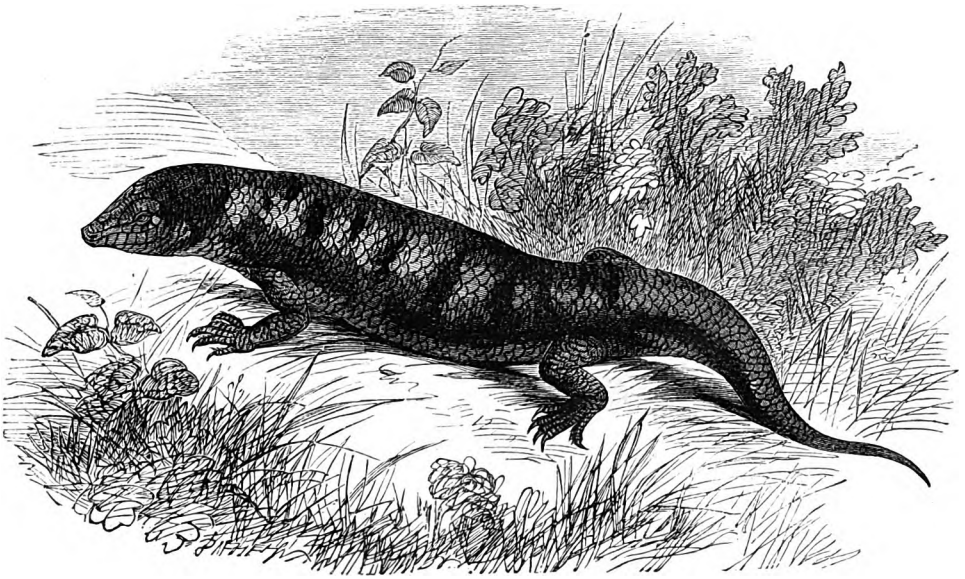
In the Anguine Lizard, the reader may see some indications of the manner in which a true Lizard is made to look like a snake.

On carefully examining the illustration, and looking towards the upper part of the body, a very small projection may be seen, showing itself on the side. This is one of the legs, as it appears when reduced to the smallest size which a limb seems capable of assuming.

There are no visible joints and no claws, and the whole limb is little larger than one of the long scales with which the body is clothed. Of course, these small and feeble limbs are quite useless for walking, and are nothing more than indications of the missing legs. As it looks like a serpent it is obliged to crawl like a serpent, passing along with tolerable speed by means of the writhing movements employed by the snake.

The place where the tail joins the body is scarcely to be seen, so regularly does the creature diminish in size. The tail is extremely long, measuring more than double the length of the body. In this, as well as in all the singularly formed Lizards, the scales are arrayed in a series of rings that surround the body.

The Anguine Lizard, sometimes called the Chamæsaura, is a native of Southern Africa, and may be obtained from the Cape of Good Hope. Its colour is almost entirely brown, and a yellow streak runs along each side.



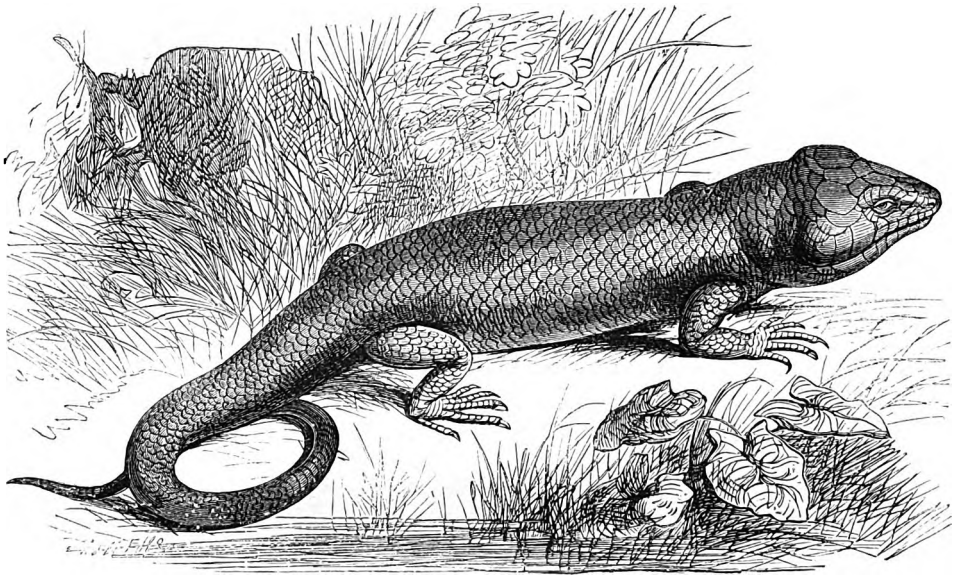
COMMON SKINK.—*Scincus officinális.*

The Common Skink is a native of Northern Africa, and one or two other warmer parts of the earth.

It is a tolerably active little Lizard, not running fast or far, but contenting itself with hanging about the same locality, and feeling itself more secure on the sandy soil of its native districts, than if wandering at large on the plains. Indeed, unless it is alarmed, or except when it is aroused to short exertions by the presence of its prey, the Skink seldom troubles itself to hurry its pace beyond a slow crawl; and not even when most startled, does it attempt to seek safety in flight. No sooner does it perceive the approach of danger, than it slips below the sand with such speed, that those who have witnessed this performance say that it seems rather to be gliding into some ready-made hole than to be engaged in the labour of sinking a tunnel.

If quietly approached, it may often be detected sleeping in the hot sunbeams, lying stretched at length upon the stones or rocks, and so steeped in slumber, that it may be approached quite closely without taking alarm.

In its habits, this Skink much resembles the generality of Lizards of its size and locality. As it seeks for safety below the sand, it is mostly to be seen upon the hillocks of fine loose sand which are collected by the south wind, at the foot of any tree which may manage to survive in so ungenial a soil, or are blown against the hedges of the more cultivated land.

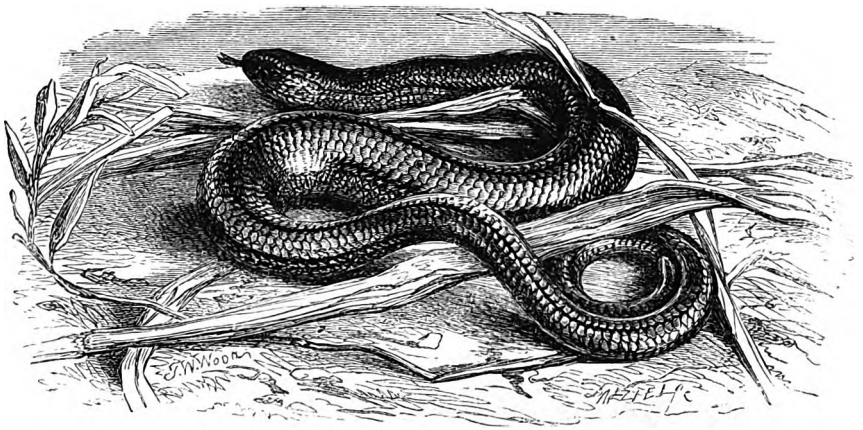


BROAD-HEADED PLESTIODON.—*Plestiödon láticeps.*

The Broad-Headed Plestiodon is a native of Northern America, where it is known by the name of the Scorpion Lizard, and is an object of fear to the population. In reality, it is as harmless a creature as any being that crawls upon four legs, and only bites and scratches when it is attacked or taken in the hand. It has no poison, but its jaws are strong, its teeth sharp, its claws pointed, and its legs powerful.

The Scorpion Lizard is naturally a very timid and retiring creature, and on approach of danger slips quietly out of the way, wisely preferring flight to combat. But if seized, the captor will have no small struggle before he can fairly secure his small but determined quarry, for the creature bites fiercely with its sharp teeth, retains its hold with bull-dog tenacity, and kicks and scratches with hearty goodwill. The bite is severe, and the wounds inflicted are always exceedingly painful for an hour or two. It is seldom seen except upon trees, where it can mostly find a sufficiency of food among the insects that always haunt the branches of trees, and of drink in the dew-drops that collect at morning and evening. When however it needs a more abundant diet, it descends to the ground for a short visit.

The upper part of its head is bright red, and its body is olive-brown above and whitish below. It is about one foot in length.



BLIND WORM.—*Anguis frágilis.*

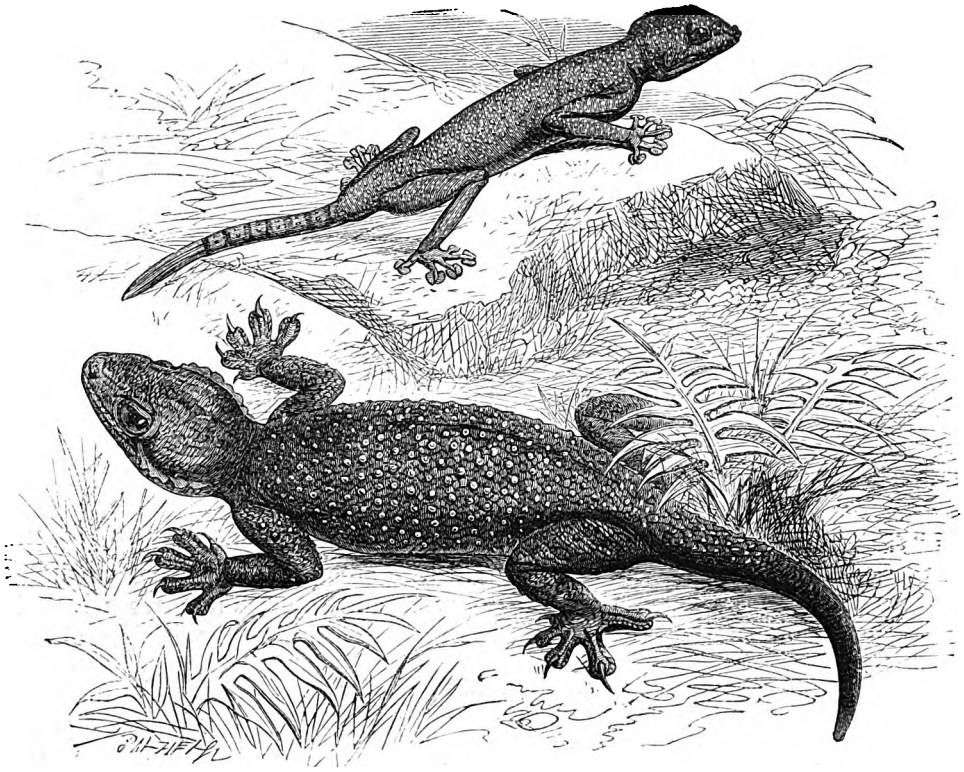
The Blind Worm is rather wrongly named, for it is not a worm but a lizard, and has a pair of good, useful eyes, bright as diamonds though very small.

As in the Glass Snake, the Scheltopusic, and other creatures which have already been noticed, the Blind Worm has no outward limbs, and looks, of course, like a snake.

In this country, where it is common enough, and ought to be well understood, it is greatly feared, nearly every one believing it to be as poisonous as the viper. I have often frightened the field labourers dreadfully by taking up a Blind Worm in my hand. They were not convinced that the animal was really harmless, but thought that I had charmed it in some way, and were nearly as afraid of me as of the reptile, both of us being equally harmless.

Not only is the Blind Worm harmless, but absolutely useful, being one of the best friends of the gardener and the farmer. Every one who cultivates even a few square yards of ground, knows well how terribly the best plants are often cut off by the slugs, those pests that hide in the ground all day, and at night slide out of their hiding-places, and devour under the shades of darkness, and how difficult it is to avert the destruction that they cause. Now, the Blind Worm feeds almost entirely on slugs, and being also a darkness lover, it performs great services by sallying out at night, and eating the slugs as they crawl over the leaves.

The creature is easily tamed, and if carefully watched is a much more interesting animal than would be supposed. I have kept a whole brood of them for many months, a mother and nine young, and have been greatly amused by watching their habits. The colour of the Blind Worm is dark olive-brown above with a silvery lustre, greyish white mottled with black along the ribs, and deep black below. Its length is about a foot, or fourteen inches.

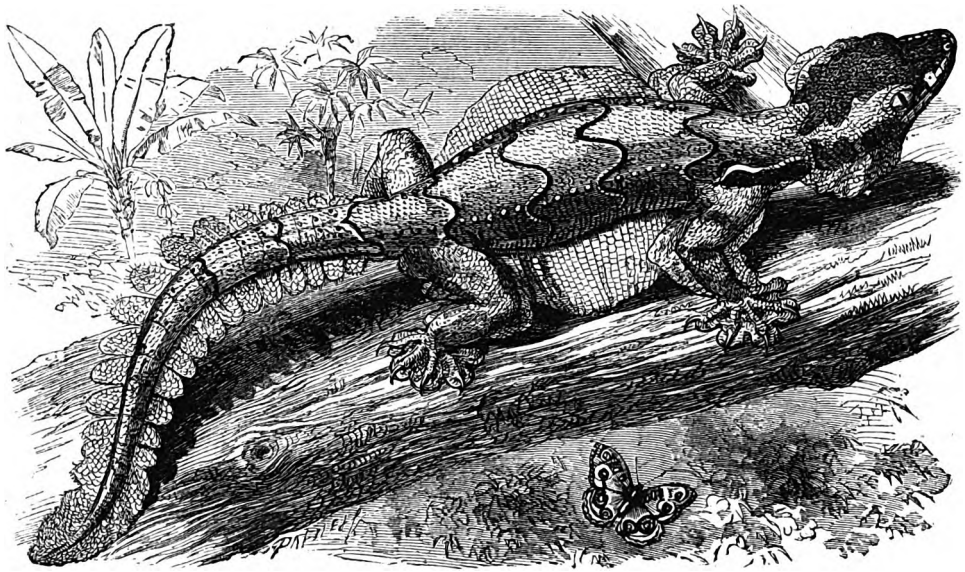


COMMON GECKO.—*Gecko verus.* FAN-FOOT.—*Ptyodactylus Gecko.*

The Geckos are a curious group of Lizards, remarkable for the peculiar formation of the foot, which enables them to run about upon perpendicular walls, or to traverse ceilings like the flies. Their toes are made so as to form rounded suckers at the ends, which exhaust the air, and enable the creature to cling firmly even to a pane of glass. The pneumatic pegs, now so common in shop windows, afford a good illustration of this structure. The Common Gecko lives in Asia, and is very plentiful in India.

During the day-time it conceals itself in some chink or dark crevice, but in the evening it leaves its retreat, moving rapidly and with such perfectly silent tread that the ignorant natives may well be excused for classing it among supernatural beings. The Gecko occasionally utters a curious cry, which has been compared to that peculiar clucking sound employed by riders to stimulate their horses, and in some species the cry is very distinct and said to resemble the word Geck-o, the last syllable being given smartly and sharply. On account of this cry, the Geckos are variously called Spitters, Postilions, and Claqueurs.

The Fan-Foot is an African species, and has much the same habits as the Common Gecko of Asia.



FRINGED TREE GECKO.—*Ptychozóön homalocéphala.*

The strange-looking Lizard that is represented in this drawing is a native of Java, and one of the oddest beings imaginable.

As may be seen by reference to the picture, the skin of the ribs is flattened and greatly expanded, and even along the tail the skin is wide and scooped out in a series of regular scollops. The object of this curious structure of the tail is not precisely known, but it is evident that the wide flaps of the sides enable the creature to support itself in the air as it leaps from one tree to another. The earlier naturalists thought that this was a water reptile, but it is now known to be entirely a land lover, and to pass its life upon the trees.

All the Geckos are supposed to be poisonous by the natives of the country in which they reside, and are believed to make food injurious if they even pass over it. So strong is this feeling that the Fan-Foot Gecko is called by a name which signifies Father of Leprosy, and is believed to occasion that dreadful disease to those whom it touches. Several species of Gecko are able to throw off the tail, and will replace it within a few weeks.

The colour of the Fringed Tree Gecko is soft brown above, with a yellowish tinge along the spine, and the body is crossed with several narrow, dark-brown lines, deeply waved. The under parts are whitish-grey. The name Ptychozóön is derived from two Greek words; the former signifies the fold of a garment, and the latter an animated being.

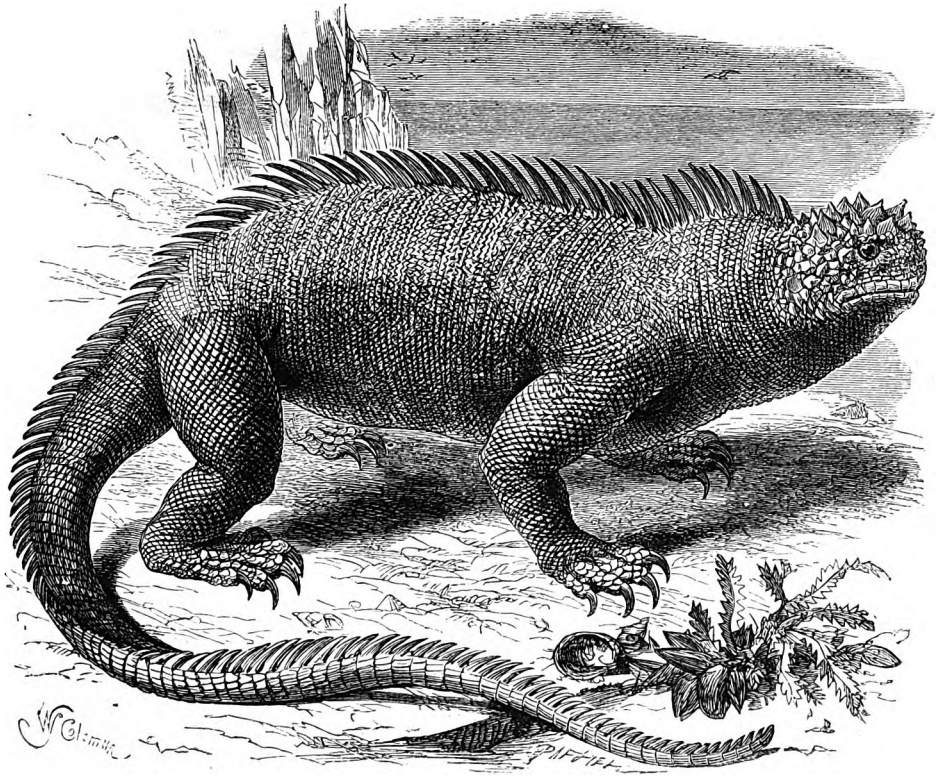
THE curious and rather interesting little Lizard called the CAPE TARENTOLA, is an inhabitant, as its name signifies, of the Cape of Good Hope, and is found spread over a considerable portion of Southern Africa.

CAPE TARENTOLA.—*Taréntola Capensis.*

This reptile is of slower habits than the generality of the Geckos, and moves along with deliberate steps. It is almost invariably seen upon or near decayed wood, and is frequently found under the bark of dead trees, clinging tightly to the trunk, and shielded by the bark from the glare of daylight. In all probability it finds abundance of food in the same locality, for the space between the bark and wood of a decaying or dead tree, is generally filled with insects of various kinds, besides being the chosen home of millipedes, spiders, and similar creatures.

Although a slow mover, the Cape Tarentola can ascend smooth and perpendicular objects with perfect ease and noiseless motions, and can even traverse and cling to a ceiling or a cross-beam without difficulty, and there remain motionless for hours.

It is quite a little creature, rarely measuring more than four inches in length. Its general tints are as follows:—The back and upper portions of the body are yellowish brown. Scattered over the body are certain scales of a lighter hue. The tail is a pale brownish purple and speckled with warm chestnut-brown. The abdomen, and the under portions of the body and limbs are ochry yellow, and the eyes are, although devoid of expression and of a passionless brightness like polished stone, very shining and of a bright orange brown. The whole form of this Lizard is rather thick and clumsy.



MARINE OREOCEPHALE.—*Oreocéphalus cristátus.*

Here is truly a strange object, looking as if one of the great reptiles of the fossil world had come to life, with its spiked back, its hooked claws, and its oddly shaped head.

The Marine Oreocephale inhabits the coasts of the Galapagos islands, and passes the greater part of its life in the sea, where it swims with great speed and adroitness. In order to fit the creature for its peculiar life, it is able to exist for a long time without breathing, a specimen having been sunk under water for an hour, and being none the worse for its immersion when hauled up. The powerful hooked claws are useful in clambering over the seaside rocks, between which and the water the Oreocephale passes the whole of its existence. It swims solely by means of the long and flexible tail, aided by certain writhings of its body, and keeps its limbs pressed against its sides. Although it looks so fierce and dangerous a creature, it is perfectly harmless, feeding upon vegetable diet, and living mostly upon sea-weeds. Its colour is greyish black, and when full grown, its length is about three or four feet.

IGUANAS.

THE fine Lizards which are known by the name of Iguanas are inhabitants of the New World, and may be known from all other reptiles by the shape of the teeth, which have the crown leaf-like, spear-headed, and notched on both sides. There are mostly some teeth on the palate.

The common IGUANA is a very fine and really handsome Lizard, its colours being beautiful, and its form elegant, though at first sight it seems quite a repulsive being. Unlike many creatures, it looks uglier in an engraving than when seen in a living state, as the plain black and white of the printer can give no idea of the beautiful colours with which it is decorated. It is plentiful in many parts of Brazil, in Cayenne and Jamaica, but from the last-mentioned place it seems likely to be driven, being now much rarer than was the case a few years ago.

For, the flesh of the Iguana is justly reckoned among one of the delicacies of the country where it resides, being tender, and of a peculiarly delicate flavour, not unlike the breast of a spring-chicken. There are various modes of cooking the Iguana, roasting and boiling being the most common. Making it into a fricassee, however, is the mode which has met the largest general approval, and a dish of Iguana cutlets, when properly dressed, takes a very high place among the delicacies of a well-spread table.

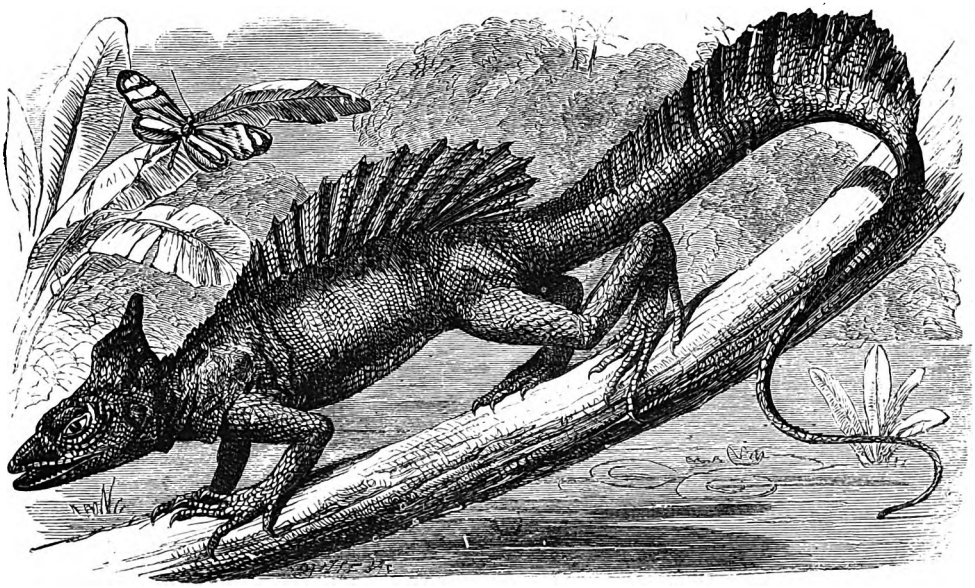
The eggs too, of which the female Iguana lays from four to six dozen, are very well flavoured and in high repute. It is rather curious that they contain very little white, the yolk filling almost the entire shell. As is the case with the eggs of the turtle, they never harden by boiling, and only assume a little thicker consistence. Some persons of peculiar constitutions cannot eat either the flesh or the eggs of the Iguana, and it is said that this diet is very injurious to some diseases. The eggs are hid by the female Iguana in sandy soil near rivers, lakes, or the sea-coast, and after covering them with sand, she leaves them to be hatched by the heat of the sun.

In consequence of the excellence of the flesh and eggs, the Iguana is greatly persecuted by mankind, and its numbers considerably thinned. Those who hunt the animal for sport or merely to supply their own homes, generally employ a noose for the purpose, which they cast dexterously round the neck of the reptile as it sits on a branch, and then by a sudden jerk loosen its hold, and secure it. The creature is very bold, having but little idea of running away, and in general is so confident of its capability of frightening away its antagonist by puffing out its long dewlap, and looking ferocious, that it is captured before it discovers its mistake.

The Iguana can swim well, and when alarmed will often leap from the branch into the water and swim rapidly away. It is a large reptile, sometimes measuring six feet in length. The general colour is olive-green, but the tints are very changeable, and alter with the weather or the creature's state of health.

IGUANA.—*Iguana Tuberculáta.*

NAKED-NECKED IGUANA.—*Iguana delicatissima.*

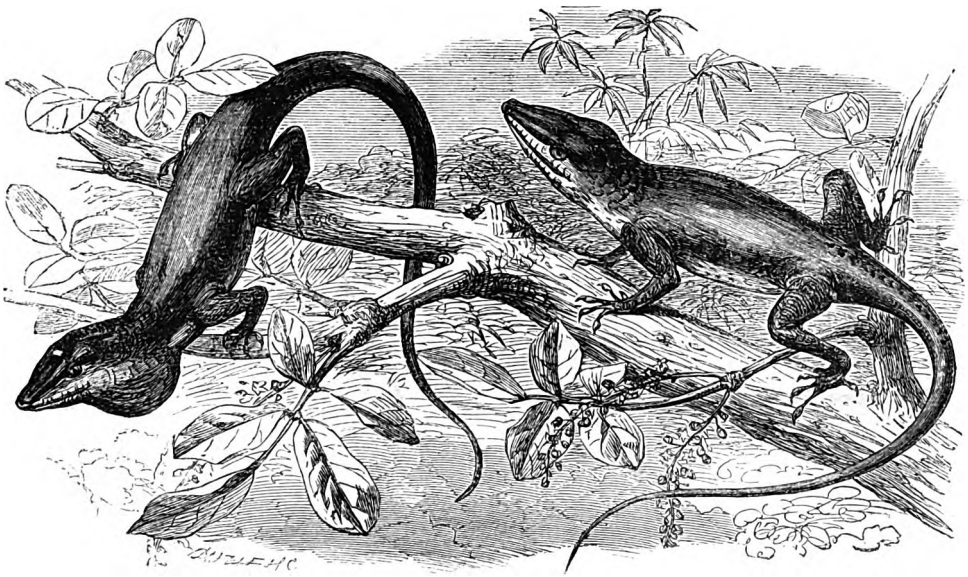


BASILISC.—*Basiliscus Americánus.*

In the olden days of natural history, when so many strange accounts were afloat, mixed with much that was perfectly true, no living creature was more dreaded than the terrible Basilisc, the king of the reptiles. The name Basilisc is Greek, and signifies kingly, and the old writers all asserted that it wore a crown on its head. I have several old prints of Basiliscs, in all of which the animal is represented as wearing a crown.

What was its origin no one exactly knew, but the received accounts stated that it was born from an egg that was laid by a cock and hatched under a snake or a toad. It was thought to be so poisonous that its breath infected the air, and killed every living thing, animal or vegetable, that came within its influence, and once, when a horseman killed a Basilisc with his spear, the poison ran up the lance and killed, not only the man, but the horse on which he sat. Even the glance of the Basilisc was certain death to those on whom it cast its eyes, and the only creature that could endure its presence, was a loud-voiced cock, from whom the Basilisc was forced to run.

But the real Basilisc is a harmless reptile, inhabiting Tropical America, and injurious to nothing except the insects on which it feeds. It is a good tree-climber, and can swim well. Its length when full grown is about a yard.

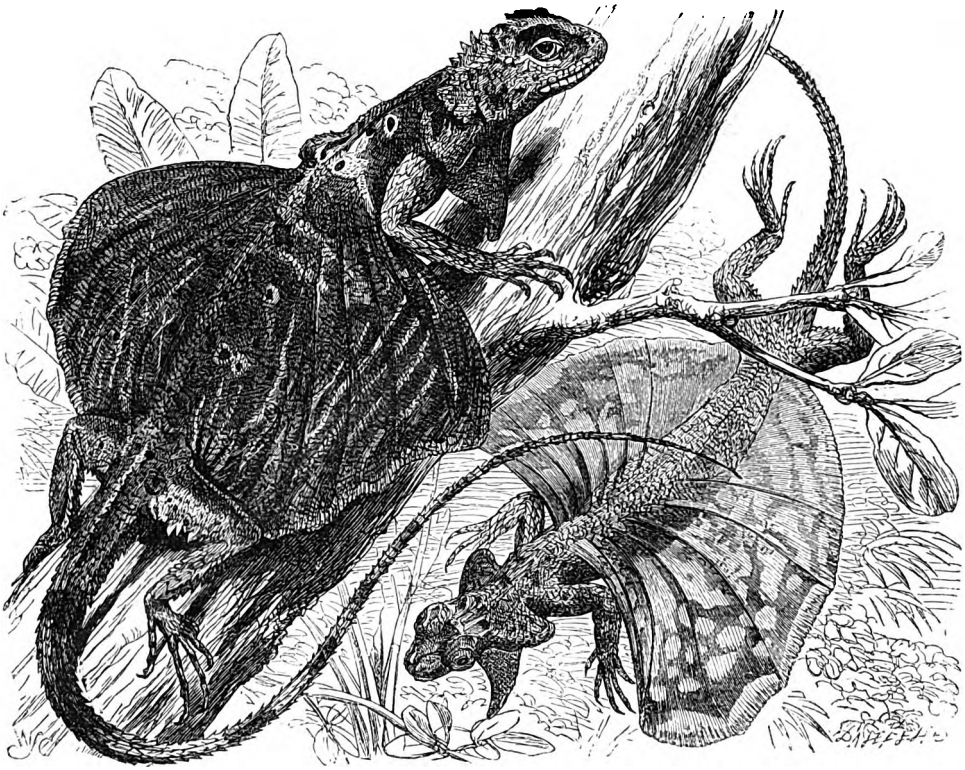


RED-THROATED ANOLIS.—*Anolius bullâris.*
GREEN CAROLINA ANOLIS.—*Anólius principâlis.*

The two Lizards that are represented in the engraving, are natives of America. The Green Carolina Anolis is a bold and daring little creature, even entering houses and walking coolly over the furniture in search of flies. It is a very active Lizard, leaping considerable distances, and fixing itself with absolute certainty upon the object to which it springs. It is a useful little creature, feeding almost entirely on insects, and devouring great numbers of them, even when close to human beings.

Towards the spring the Green Anolis becomes quarrelsome, and is so exceedingly pugnacious that the adult males hardly ever meet without a fight, the vanquished usually coming off with the loss of his tail—a misfortune, however, that sometimes occurs to both the combatants. This Lizard is seldom seen in all its beauty except when engaging in battle, for at the sight of its antagonist it remains stationary for a moment, nods its head up and down two or three times, as if to work itself into a proper state of fury, puffs out its dewlap, which then becomes of a light scarlet, and having gone through all these preliminaries, it leaps on its foe and the struggle begins.

The Red-Throated Anolis is quite as quarrelsome as its green relation, and fights desperately with its own kind. The beaten reptile is sometimes eaten by the victor, but often escapes with the loss of his tail, which is left in the mouth of the conqueror, and is soon swallowed.



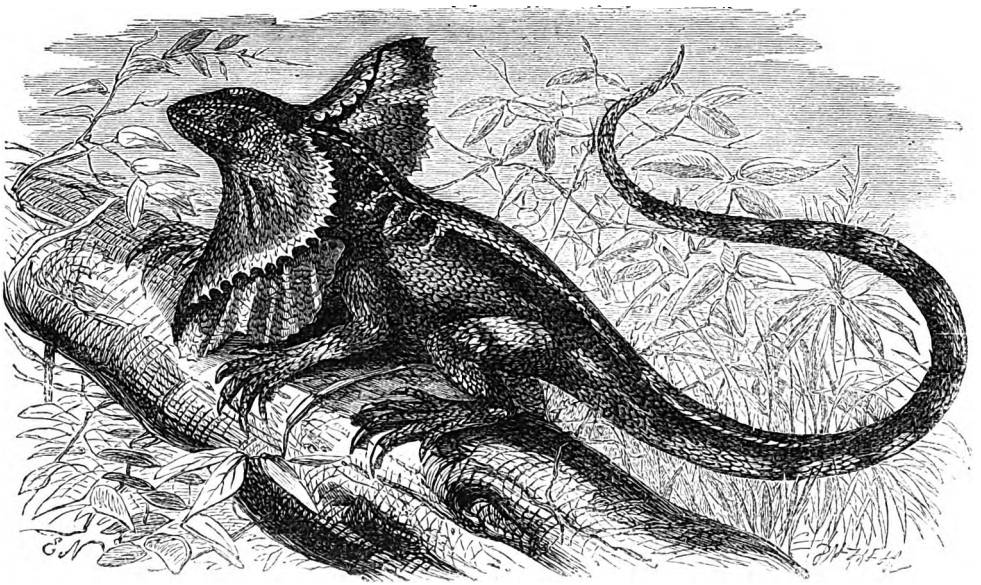
FRINGED DRAGON.—*Draco fimbriátus.* FLYING DRAGON.—*Draco volans.*

THE two curious reptiles which are given in this engraving may be classed with the Basilisc in one respect, namely, as furnishing the very small amount of truth on which a vast quantity of error has been founded. Just as the harmless, though ungainly Basilisc was the means of giving to the public all kinds of strange stories, and leading every reader to believe it to be the most dreadful of living beings, so the small and harmless Lizards which are called by the name of FLYING DRAGONS are but feeble indications of the terrible reptiles called by the same title.

The Flying Dragon, of Java, is remarkable for the construction of its body. The ribs, instead of being bent into an arched form, are stretched straight out on either side, and support a large fold of skin, which enables the creature to sweep from tree to tree like the flying squirrel and opossums.

It feeds upon insects, and is quite harmless. Its colour is grey, with a tinge of olive, and many mottlings of brown. It only measures a few inches in length.

The FRINGED DRAGON is a native of Sumatra, and in most of its habits resembles the creature just described. It may be easily known by the black spots on its wings, each being surrounded with a ring of greyish white.

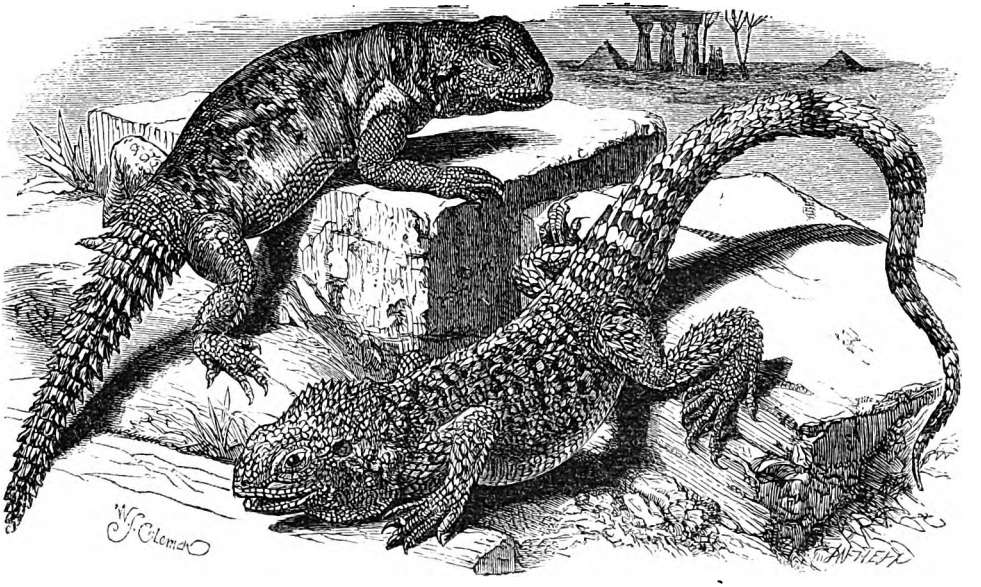


FRILLED LIZARD.—*Chlamydosaurus Kingii.*

All this group of Lizards is remarkable for the strange forms which they exhibit, and the manner in which certain portions of their bodies are altered, enlarged or diminished.

The Frilled Lizard can at once be known by the extraordinary frill of membrane which nearly encircles its neck, and which bears some resemblance to the enormous ruff introduced by Queen Elizabeth. It is one of the tree-loving Lizards, running about the branches with great rapidity, and being as active as any of the group to which it belongs. It was first discovered by Mr. Allan Cunningham, who found it perching on the stem of a decayed tree. The following account is given by Captain Grey:—"As we were pursuing our walk in the afternoon, we fell in with a specimen of the remarkable Frilled Lizard. It lives principally in trees, though it can run very swiftly along the ground. When not provoked or disturbed, it moves quietly about, with its frill lying back in plaits upon the body; but it is very irascible, and directly it is frightened, it elevates the frill or ruff, and makes for a tree, where, if overtaken, it throws itself upon its stern, raising its head and chest as high as it can upon the fore-legs; then, doubling its tail underneath the body, and displaying a very formidable set of teeth from the concavity of its large frill, it boldly faces an opponent, biting furiously whatever is presented to it, and even venturing so far in its rage as to fairly make a charge at its enemy."

The Frilled Lizard is a native of Australia.



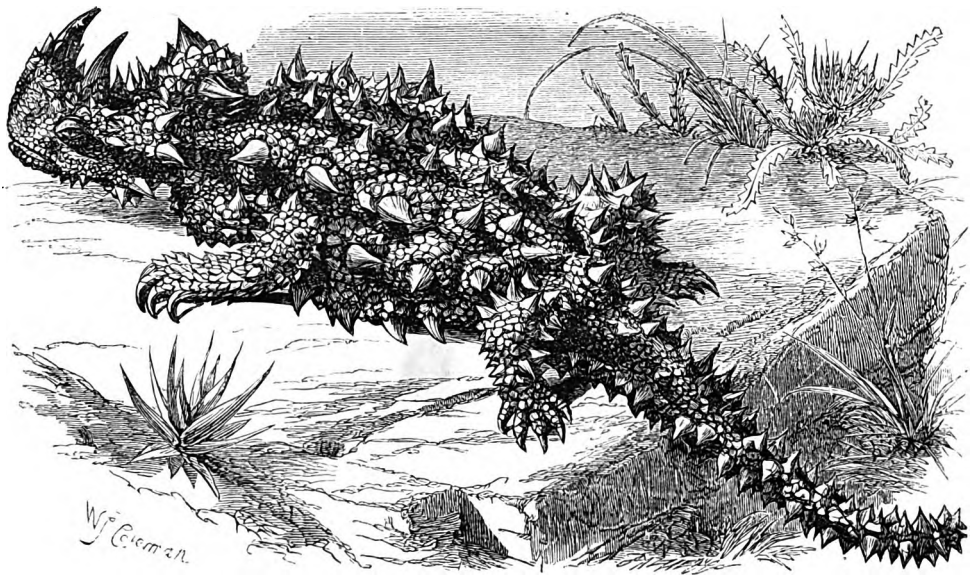
EGYPTIAN MASTIGURE.—*Uroprastiæ spínipes.*

STELLIO OR HARDIM.—*Stellio Cordylína.*

THE EGYPTIAN MASTIGURE, sometimes called the Spine-footed Stellio, is a native of Northern Africa, and not very uncommon.

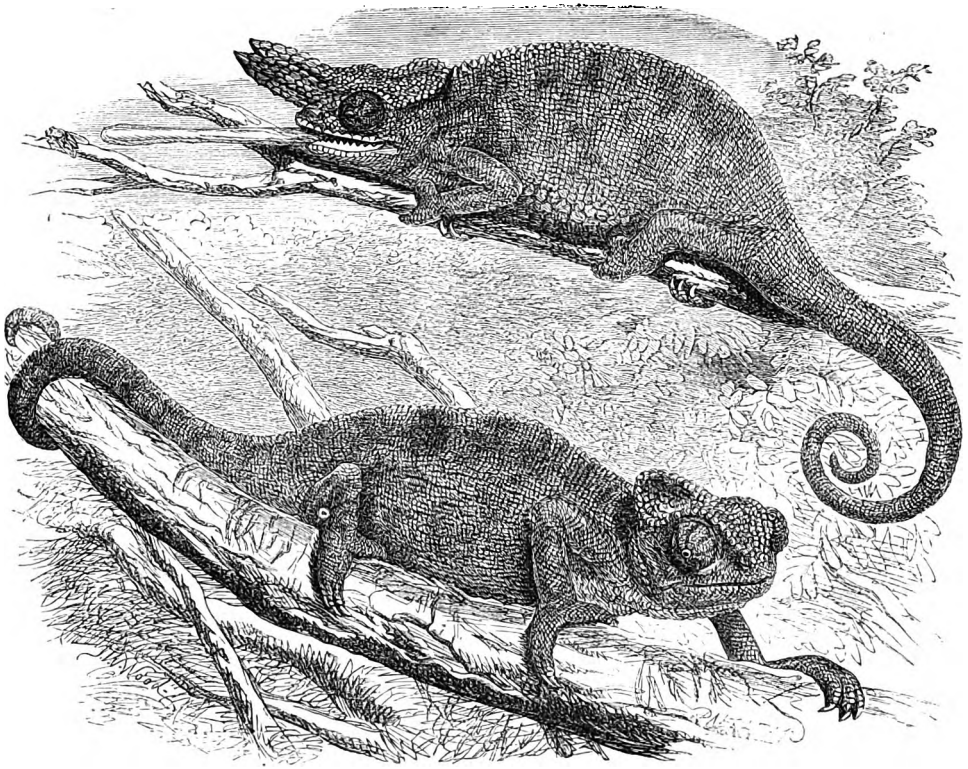
This species attains a rather large size, a full-grown specimen sometimes measuring a yard in length. It is an inhabitant of desert spots. The colour of this reptile is bright grass-green. The head of this creature is rounded, the back without a crest, the skin of the throat so folded as partly to cover the ears, and the ears themselves are oblong, and toothed in front. The tail is rather flattened, and furnished with transverse rows of large scales, keeled and pointed. A few conical spines are scattered upon the upper part of the thigh, the sides, and loins.

The common STELLIO, or HARDIM is also a native of Northern Africa, but is also found in Greece and Syria. It is a very active little creature, flitting from spot to spot with ceasless activity. It has a curious habit of bending its head downwards, a movement which is resented by the stricter Mahometans, who consider the Lizard as offering an insult to their religion by imitating them in their peculiar actions of prayer. It lives almost entirely upon insects, and darts upon them with wonderful rapidity as they flit about the sand. The Turks think that the body of the Stellio is very useful as a drug, and at the present day it is much used for the purposes of the toilet. Its colour is olive-green above, daubed with black, and the under parts are yellow, sometimes with a slight green tinge.



MOLOCH.—*Moloch hórridus.*

THERE seem to be no bounds to the strange and wondrous shapes which are assumed by some of the Lizards; shapes so entirely unexpected, that in many cases they seem to be rather the work of some human impostor than real productions of nature. No artist, however fertile his imagination might be, could have fashioned a creature more extraordinary than the MOLOCH LIZARD. Many creatures have spikes projecting from different parts of the body, but it is reserved for the Moloch to have the whole body bristling with spines like the spurs on a game-cock's heel; these spurs being so thickly sown, that the shape of the body is nearly concealed by them. Upon the top of the head two very large spikes are seen, projecting from each eyebrow, and on the back of the neck is a large rounded protuberance, covered with little spiny scales, and having one long projecting spine on each side. On the back, the arrangement is very curious. A number of long spines are scattered at intervals over the surface, each surrounded by a circle of lesser spines. These large spines are hollow, and fit upon protuberances of the skin much in the same way that a cow's horn is sheathed on its core. The whole head and limbs are covered with spines similar in formation, but smaller in size. The tail is guarded with long, sharp, spiny scales, arranged in rings, and boldly radiating from their centre; and even the toes are covered as far as the long, sharp claws, with deep keeled scales. The general colour of this reptile is palish yellow, spotted regularly with brown above, and below with dark red blotches edged with black. It is a native of Australia.



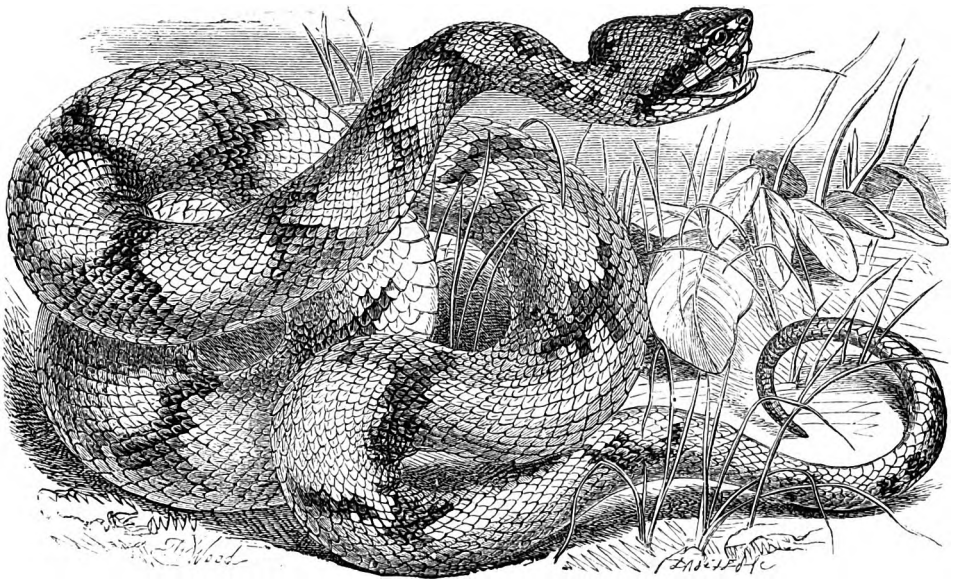
LARGE-NAPED CHAMELEON.—*Chaméleo bifurcus.*

CHAMELEON.—*Chaméleo vulgáris.*

Every one has heard of the Chameleon, and its wonderful power of changing its colours.

In former days it was thought that the creature was able to become blue, scarlet, or yellow, provided that it was placed on some substance of the same colour. Although it can certainly alter the hues of its skin very completely and quickly, it has but a very few colours, and only one of them can be called bright. I have kept a Chameleon for some time, and tried many experiments upon it for the purpose of finding out how many colours it can assume. As it now sits before me on a branch, its upper parts are of a green just like verdigris, and below it is greyish-yellow. Sometimes however it is nearly black, and at others it is covered with spots of black, brown, or buff.

The Chameleon feeds on insects, which it catches by means of a very long tongue, which it darts out rather rapidly. The eyes are very large and projecting, and are entirely covered with skin except a little hole just the size of the pupil.

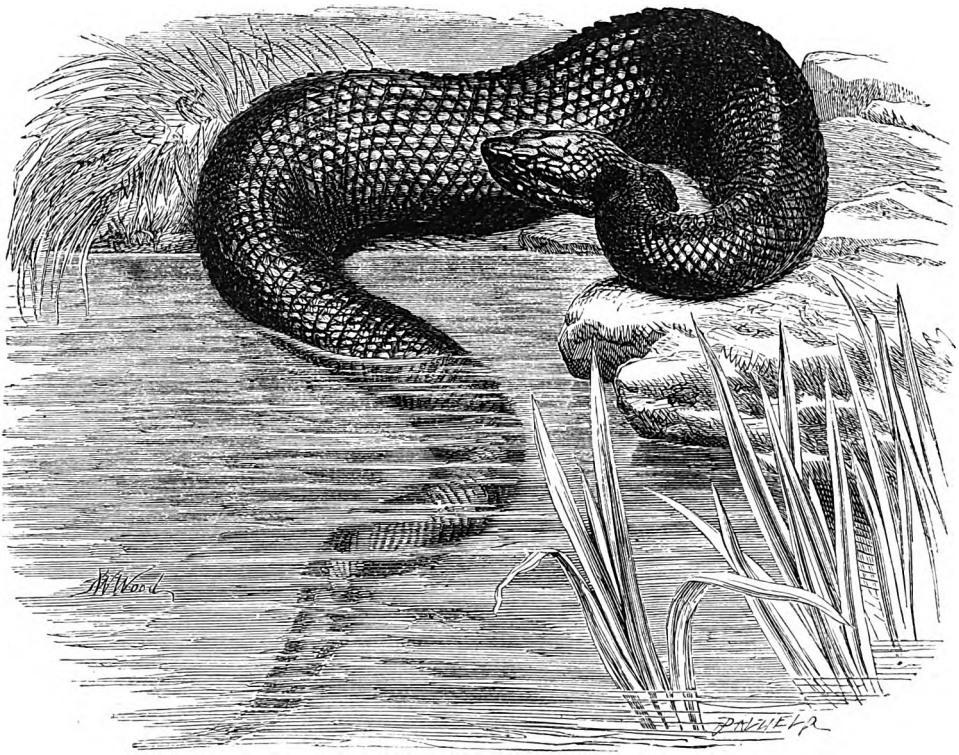


FER-DE-LANCE.—*Craspedocéphalus lanceolátus.*

We now come to the Snakes, those beautiful but fearful reptiles which are so dreaded by nearly all animals, and greatly feared even by mankind. They have no limbs, at all events none that project beyond the skin, and crawl by means of writhing the body and hitching the edges of their scales on the object over which they are crawling. In order to enable them to bend their bodies in any direction, the back-bone is composed of a great number of parts, each being fastened to the next by a regular ball and socket joint, such as is used in many philosophical instruments.

Many Snakes are furnished with a pair of fangs, through which a poisonous liquid is poured when the creature bites, and which is something like the poison of a bee's sting, but a thousand times more deadly. The Fer-de-Lance is one of the poisonous snakes, and lives in Bengal, being mostly found in the sugar plantations. Though it is so venomous, and would kill any human being whom it might bite, it is really a very useful reptile to the owner of the plantation; for the Fer-de-Lance is very fond of the rats which swarm among the sugar canes, and follows them into places where they could not be caught except by so slender an enemy.

If the Fer-de-Lance bites a human being, he is nearly certain to die from the effects of the poison. It is rather a pretty snake, being olive-green with dark cross-bands, and sometimes reaches the length of six or seven feet.

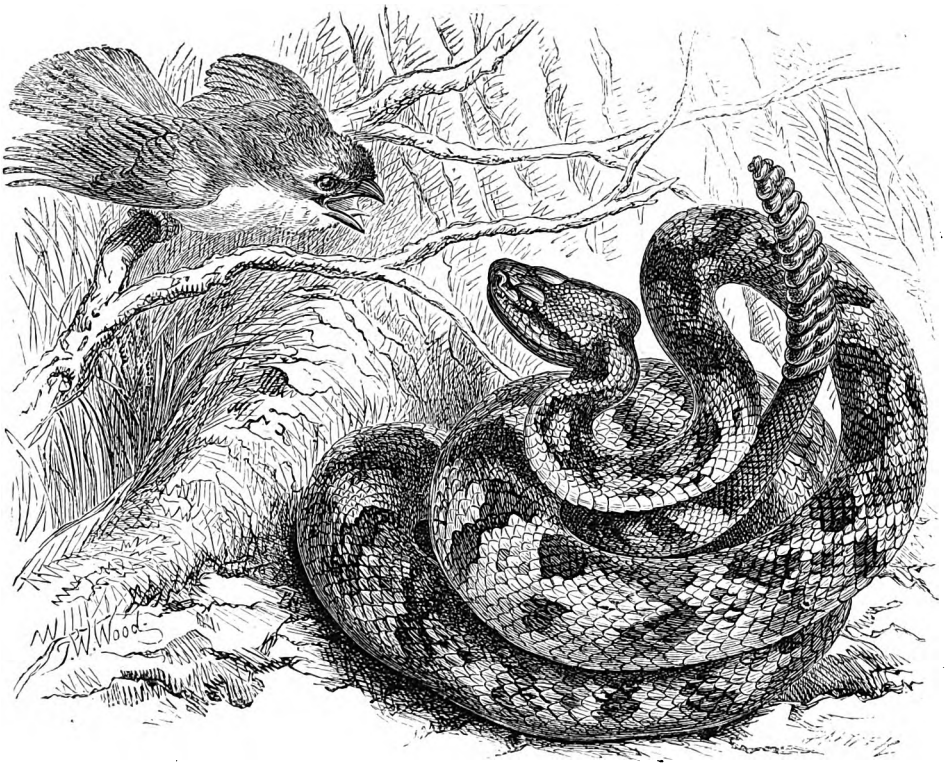


WATER VIPER.—*Cenchris piscivorus.*

The drawing of this black and dangerous-looking snake was taken from a living specimen in the Zoological Gardens as it appeared when leaving the water, and about to seize its prey.

The Water Viper is an American species, and is always found near water, whether still or running. It is sometimes called the Water Mocassin Snake, because its colours have some likeness to the embroidery on the Indian mocassins or shoes, and it is also known by the name of Cotton-Mouth, on account of the white, frothy substance that issues from its jaws. It is a very venomous snake, and more fierce than is generally the case with poisonous snakes, which as a rule are content with the knowledge of their fearful powers and seldom exercise them. But the Water Viper likes to be master, and if put into a cage with snakes not of the same species, will chase and bite them in spite of their attempts to escape.

The Water Viper feeds upon reptiles, birds, and even fishes, which it is able to catch by its rapid movements. The colour of this snake is greenish-brown, banded with black. It is generally about two feet long.

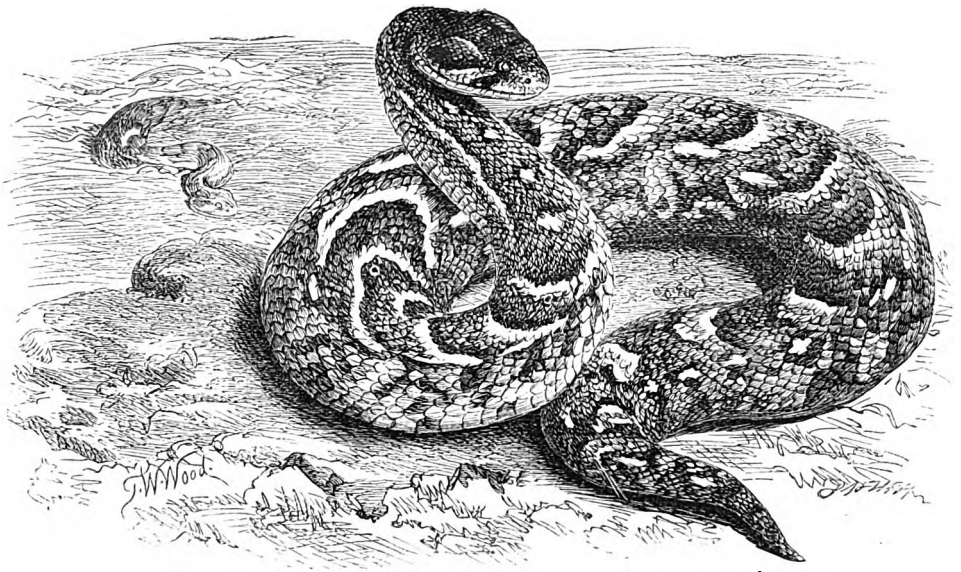


RATTLESNAKE.—*Uropsophus durissus.*

THE terrible RATTLESNAKE has long been known by the venomous nature of its fangs and the peculiar apparatus at the end of the tail. This rattle as this structure is called, is composed of a number of horny rings slipped loosely into each other, something like a string of thimbles.

When in repose the Rattlesnake usually lies coiled in some suitable spot, with its head lying flat, and the tip of its tail elevated in the middle of the coil. Should it be irritated, or feel annoyed or alarmed, it gives a quivering movement to the tail, which causes the joints of the rattle to shake against each other, with a peculiar skirring ruffle not easily described.

Fortunately for those who inhabit North America, where this serpent is to be found, it is very dull and sluggish, and never bites unless made angry. Mr. Waterton, the celebrated naturalist, will handle these reptiles without scruple, and a few years ago at Leeds, he carried with his bare hands nearly thirty Rattlesnakes from one room into another. The colour of this snake is brown, streaked and banded with a darker hue.



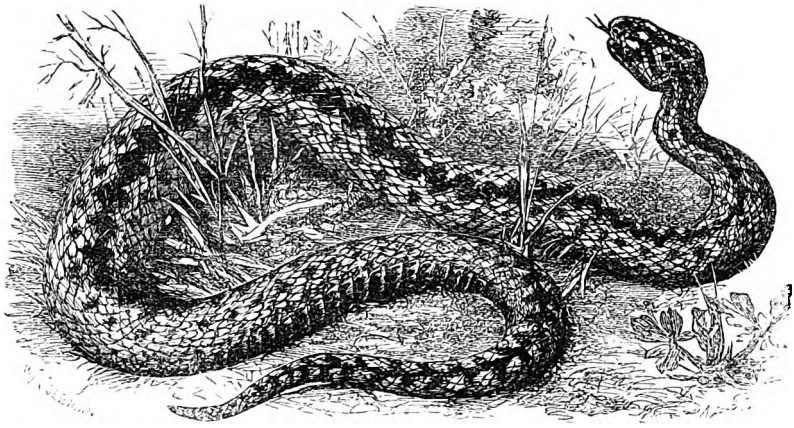
PUFF ADDER.—*Clotho arïëtans.*

The Puff Adder is one of the most poisonous of serpents, its bite being almost certain to produce death.

Fortunately, the creature is very dull and slow in its movements, and is not much inclined to bite, unless attacked or hurt. It is common in South Africa, but is not so very often seen on account of its habit of lying on the ground, partly buried under the sand, which it resembles in colour. The Bushmen obtain the deadly poison of their arrows from this reptile.

There is certainly in nature no more fearful an object than a full-grown Puff Adder. The creature grovels on the sand, winding its body so as to bury itself almost wholly in the tawny soil. The steady, stony glare of those eyes is absolutely freezing as the creature lies motionless, confident in its deadly powers, and when roused by the approach of a passenger, merely showing its annoyance by raising its head an inch or two, and uttering a sharp angry hiss. Even horses have been bitten by this reptile, and died within a few hours after the injury was inflicted. The peculiar attitude which is exhibited in the illustration is taken from life, one of the Puff Adders in the collection of the Zoological Society having been purposely irritated. In the background is seen another individual of the same species, as it usually lies, half-buried in the sandy soil.

When the Kaffirs kill a Puff Adder, they always cut off the head and bury it deeply in the earth, lest any one should tread upon the fangs and be poisoned.



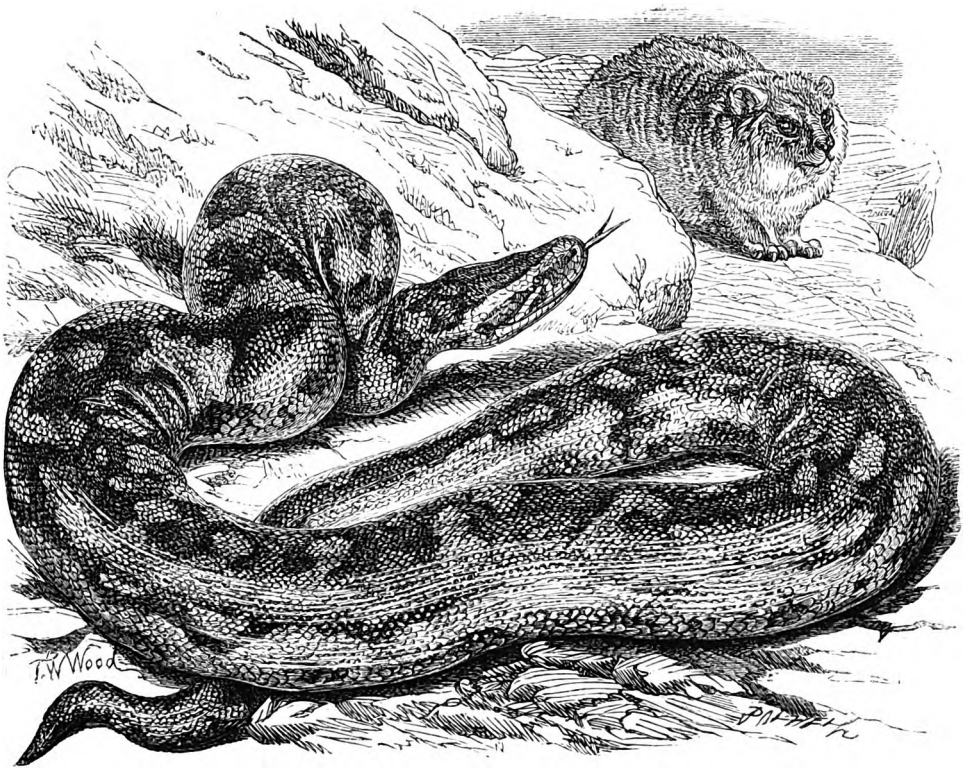
VIPER, OR ADDER.—*Pelias Berus.*

THE common VIPER, or ADDER, is very well known in many parts of England, but in some places is very plentiful, while in others it is never seen from one year's end to another.

Many persons mistake the common Grass Snake for the Viper, and dread it accordingly. They may however always distinguish the poisonous reptile from the harmless one, by the chain of dark spots that runs along the spine, and forms an unfailing guide to its identification. Fortunately for ourselves, it is the only venomous reptile inhabiting England, the variously-coloured specimens being nothing more than varieties of the same species.

Like most reptiles, whether poisonous or not, the Viper is a very timid creature, always preferring to glide away from a foe rather than to attack, and only biting when driven to do so.

The food of the Viper is much the same as that of the common Snake, and consists of mice, birds, frogs, and similar creatures. It is however less partial to frogs than the common Snake, and seems to prefer the smaller mammalia to any other prey. The young of the Viper enter the world in a living state, having been hatched just before they are born. The fat of the Viper was once in high estimation as a drug, and the older apothecaries were accustomed to purchase these reptiles in considerable numbers. Even now this substance is in some repute in many agricultural districts, being employed as a remedy for cuts, sprains or bruises, and especially as a means of alleviating the painful symptoms of a Viper's bite.



NATAL ROCK SNAKE.—*Hortúlia Natalensis.*

The handsome Rock Snake of Southern Africa has no poisonous teeth, but kills its prey by coiling the body round its victim, and crushing it in the terrible folds.

As may be imagined from its name, this serpent is mostly found among rocks, and inhabits the crevices and recesses that are always seen in stony ground. Sometimes this snake reaches a very great size, some specimens having been known to measure twenty-five feet in length. This creature, in common with several other large serpents of the same family, was known to watch over its eggs and to guard them from enemies by coiling the body round them. Many persons refused to believe the tale, but its truth was proved through the actions of the beautiful Rock Snake in the Zoological Gardens, of which the present illustration is a portrait.

The engraving represents the snake as it appears while aiming a stroke at a hyrax that is coming quietly round the corner, not having seen the terrible enemy that is awaiting it. The colour of this snake is olive, with yellow bands and spots, edged with black.

RINGED, OR GRASS SNAKE.—*Tropidonótus natrix.*

THE RINGED SNAKE is perfectly harmless, having no venomous fangs, and all its teeth being of so small a size that even if the creature were to snap at the hand, the skin would not be injured. Harmless though the serpent be, it will occasionally assume so defiant an air, and put on so threatening an aspect, that it would terrify those who were not well acquainted with its habits. I have kept numbers of these Snakes, and have often known them, when irritated, to draw back their heads and strike at the hand in true viper fashion.

The food of the Ringed Snake consists mostly of insects and reptiles; frogs being the favourite prey. I have known Snakes to eat the common newt, and in such cases the victim was invariably swallowed head first, whereas the frog is eaten in just the opposite direction. Usually, the frog when pursued by the Serpent, seems to lose all its energy, and instead of jumping away, as it would do if chased by a human being, crawls slowly like a toad, dragging itself painfully along as if paralysed. The Snake on coming up with its prey, stretches out its neck and quietly grasps one hind-foot of the frog, which thenceforward delivers itself up to its destroyer.

The young of the Ringed Snake are hatched from eggs, which are laid in strings in some warm spot and left to be hatched by the heat of the weather or other natural means. Dunghills are favourite localities for these eggs, as the heat evolved from the decaying vegetable matter is most useful in aiding their development.

The eggs are soft as if made of parchment, and whitish. During the winter the Snake retires to some sheltered spot, where it remains uutil the warm days of spring. The colour of the Ringed Snake is greyish-green above and blue-black below, often mottled with deep black.

BOIGUACU.——ANACONDO.

We now come to the Boiguacu or true Boa Constrictor.

This magnificent reptile is a native of Southern and Tropical America, and is one of those Serpents that were formerly worshipped with divine honours. It attains a very large size, often exceeding twenty feet in length, and being said to reach thirty feet in some cases. It is worthy of mention, that before swallowing their prey, the Boas do not cover it with saliva, as has been asserted. Indeed, the very narrow and slender forked tongue of the Serpent is about the worst possible implement for such a purpose. A very large amount of this substance is certainly secreted by the reptile while in the act of swallowing, and is of great use in lubricating the prey, so as to aid it in its passage down the throat and into the body, but it is only poured upon the victim during the act of swallowing, and is not prepared and applied beforehand.

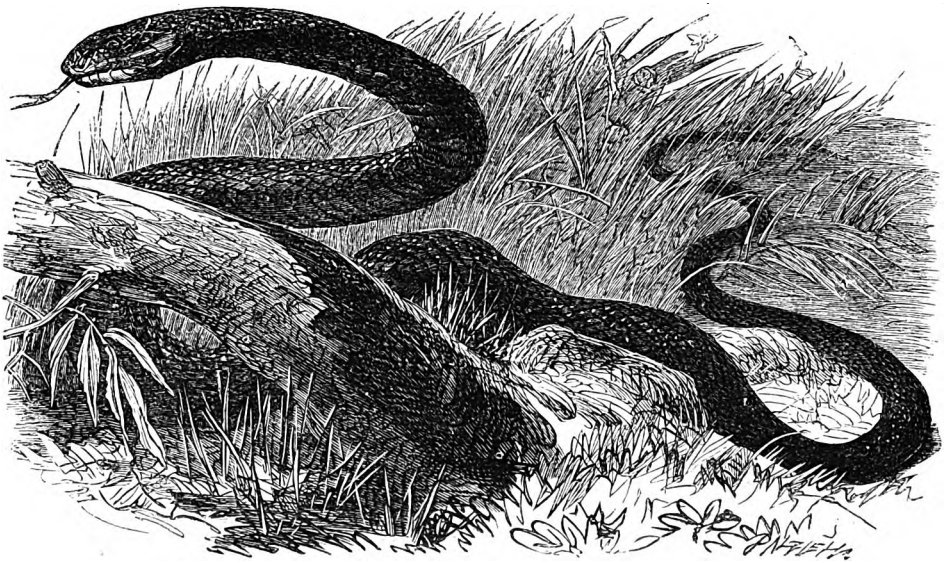
The dilating powers of the Boa are wonderful. The skin stretches to a degree which seems absolutely impossible, and the comparison between the diameter of the prey and that of the mouth through which it has to pass, and the throat down which it has to glide, is almost ludicrous. To such an extent is the body dilatable, that the shape of the animal swallowed can often be traced through the skin, and the very fur is visible through the translucent eyes, as the dead victim passes through the jaws and down the throat.

The colour of the Boa Constrictor is rich brown, and along its back runs a broad chain of large blackish spots, and of pale white spots scooped at each end. These dark and pale spots are arranged alternately and form a really pretty pattern, and should the colours be faded, as is the case when the skin has been renewed, the species may be recognized by the arrangement of the scales round the eyes, which are set in a circle, are thirty in number, and are separated from the scales of the lips by two rows of smaller scales.

An equally celebrated Snake, the Anacondo, is also shown in the illustration.

This gigantic serpent is a native of Tropical America, where it is known under several names, La Culebra de Agua, or Water Serpent, and El Traga Venado, or Deer-Swallower, being the most familiar. Within the body is a large amount of fat from which can be obtained a very considerable quantity of oil.

As is the case with all the serpents of this group, the Anaconda kills its prey by crushing it to death in the huge folds of its body, and the popular idea of its poisonous breath is entirely wrong. It is not nearly so dangerous a reptile as is often imagined, and is seldom known to injure mankind. It feeds on fish and the animals which come to the water-side for the purpose of drinking, and kills them by catching them suddenly in its teeth, and then flinging its mighty coils over them. Its colour is brown, with two rows of large round black spots along the back, and a row of yellow rings on the side, edged with deep black.

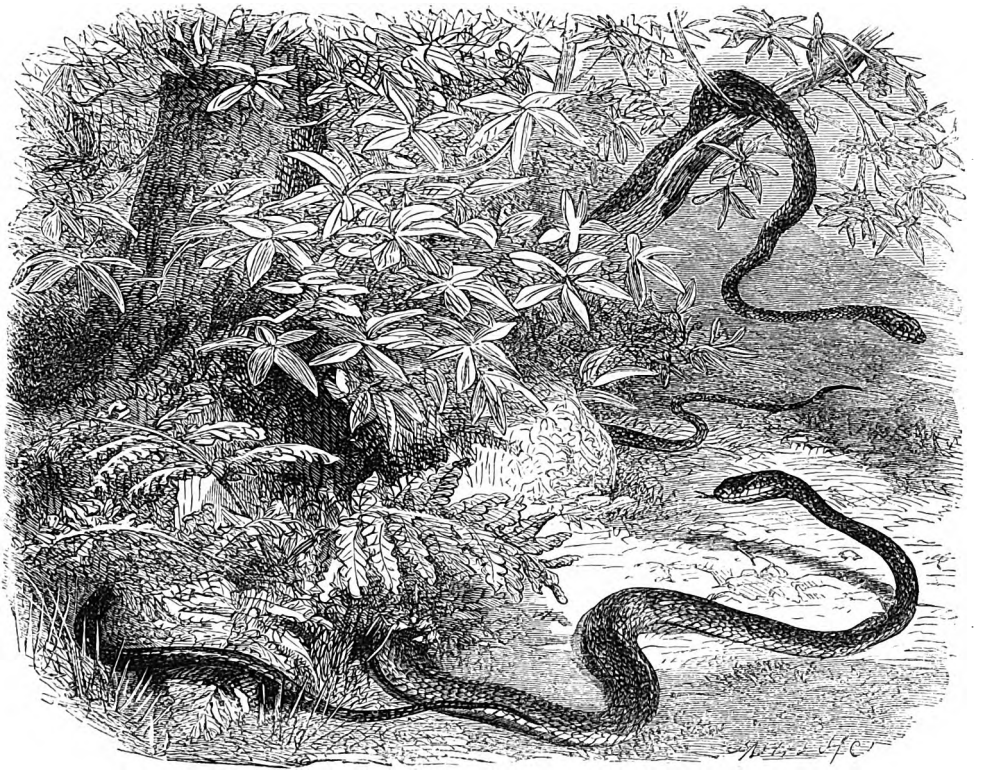


BLACK SNAKE.—*Coryphodon constrictor.*

The Black Snake of America is perhaps the best known of the numerous Serpents, which, happening to be black or dark-brown, have been called by the same title.

This Snake is common in Northern America, where it is sometimes known under the name of Racer, on account of its great speed. It is a perfectly harmless, but irascible reptile, especially during the breeding season. It has a curious habit of rustling its tail among the herbage in such a manner as to resemble the whirr of the dreaded Rattlesnake. It is fond of climbing trees in search of young birds, eggs, and similar dainties.

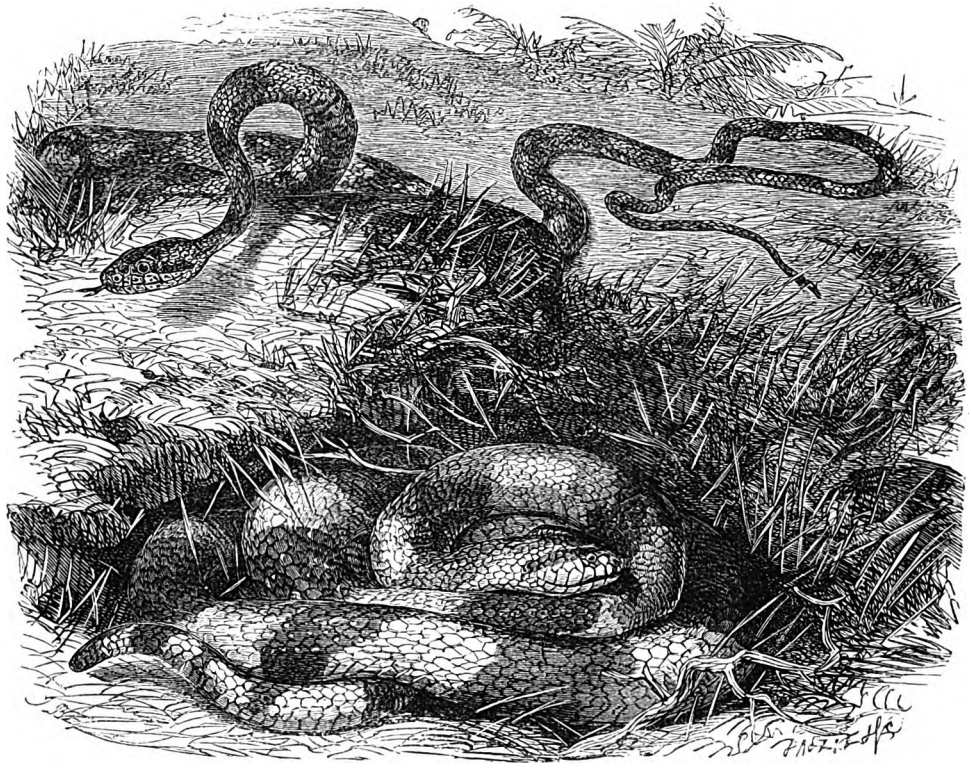
The haunts of the Black Snake are usually to be found along the edges of streams and ponds or lakes, and the reptile is mostly to be seen in shady spots, well sheltered by brushwood. It is a most useful reptile, being very fond of rats, and able from its great agility to climb over walls or buildings in search of its prey, and to insinuate its black length into their holes. It also feeds much on birds, especially when they are young. It often happens that the locality of the Black Snake is indicated by the proceedings of the little birds, which collect above their hated enemy, scold with loud harsh tones, and often manage to drive the reptile fairly away. The colour of this Snake is bluish-black above, whitish upon the throat, and slate-coloured below. It is generally about five or six feet in length.



COACH-WHIP SNAKE.—*Herpetodryas flagelliformis.* (Lower figure)
GREEN SNAKE.—*Cyclophis æstivus.* (Upper figure).

These two beautiful serpents are natives of America, and derive their names from their form and colour. The Coach-Whip Snake is strangely long and slender; its length being five or six feet, and its width scarcely that of a man's finger. Its shape, too, is very much like that of a leather whip-lash, for it is small at the head and neck, swells out in the middle, and tapers again towards the tail, where it ends in a mere point. The scales are large, and so arranged that they look very like the plaited thongs of the whip.

The Green Snake is a most lovely little reptile, so beautiful indeed that in its own country it is often tamed, and carried about as a pet, twined round the throat as a necklace, or rolled round the wrist as a bracelet. Its colour is grass green above and silvery white below, and its eye is very large, full, and sparkling yellow like a topaz. It is about one yard in length, and yet in the thickest part of its body does not measure above the third of an inch in diameter. It is very active and graceful in its movements, playing about the branches with such wonderful speed that it cannot be caught without much difficulty.



DIPSAS.—*Eudipsas cynodon.* BANDED BUNGARUS.—*Búngarus fasciátus.*

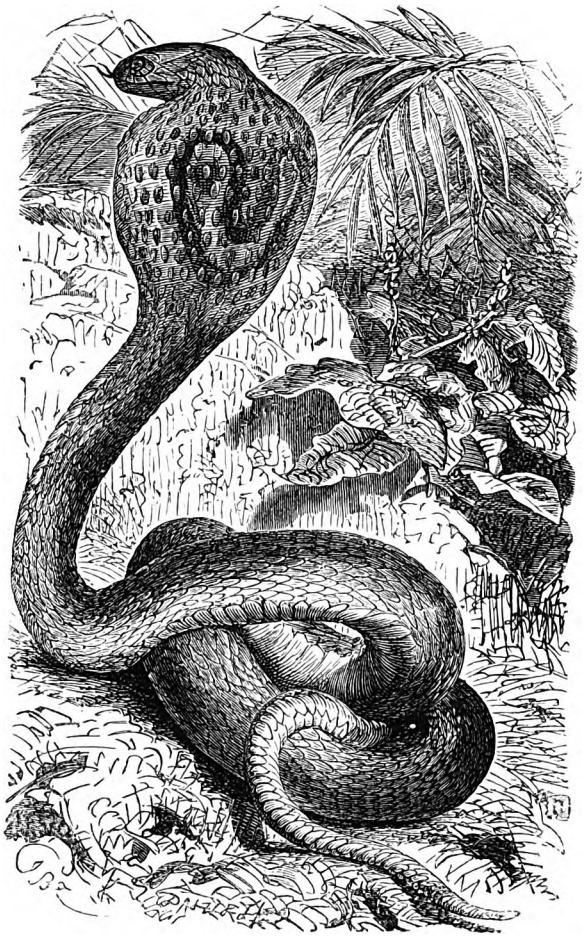
The Dipsas is one of the creatures that had a very bad reputation among the ancients, who fancied that it was not only very poisonous, but that its venom was so powerful that it even imparted its deadly properties to the water in which it lay. They thought that it was always thirsty, and that in consequence it always lived in the coolest springs, and rendered them unfit to be drank. The name Dipsas, is of Greek origin, and derived from a word which signifies thirst. Moreover, they had an idea that when the Dipsas bit a human being he was immediately affected by the same terrible thirst, and either killed himself by continually drinking water like Vathek, or if he could not obtain a sufficient supply of water he died from thirst. The Dipsas is a native of many parts of Asia. Its colour is grey, banded with brown.

The lower figure represents the Banded Bungarus, this odd title being derived from the native word for this snake, which they call Bungarum-Pamma. Neither of these serpents are so slender as the tree snakes just described. The colour of the Bungarus is generally of a greyish hue, banded with rings of jetty black.

We now come to some of the most deadly of the Serpent tribe, the first of which is the well-known Cobra di Capello, or Hooded Cobra of India.

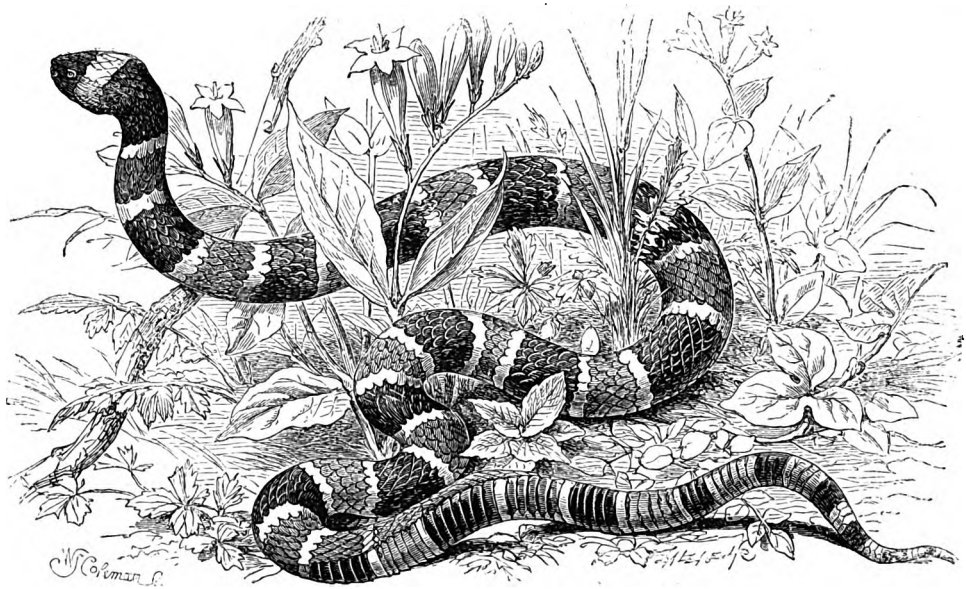
This celebrated Serpent has long been famous, not only for the deadly power of its venom, but for the singular performances in which it takes part. The Cobra inhabits many parts of Asia, and in almost every place where it is found, certain daring men take upon themselves the profession of Serpent-charmers, and handle these fearful reptiles with impunity.

There are several species of Cobra, all of which may be known by the curious manner in which the neck is expanded in the manner shown in the illustration, and forms the peculiar appendage called the "hood." This hood is formed partly by an expansion of the skin and partly by the manner in which the upper set of ribs are formed, so as to enable the reptile to spread or close the hood at pleasure.



COBRA DI CAPELLO.
Naja tripúdians.

The bite of the Cobra is very deadly in most cases, and is sure to kill the sufferer within an hour or two. The natives of India and Ceylon have a curious method of curing the bite by means of a small shining substance called a snake stone; it looks very like a flattened bean. This is applied to the wound, where it clings fast for a few minutes and then falls off, the venom seeming to be sucked from the wound into the snake stone. It is said that these objects are prepared from the antlers of the stag, and I have made one that exactly resembled the specimens that were brought from Ceylon by Sir J. Emerson Tennent. In my Illustrated Natural History, vol. iii. may be seen several valuable accounts of cures wrought by a well-known Asiatic plant called the *Aristolochia Indica.* The colour of this snake is very variable; its length is between a yard and four feet.



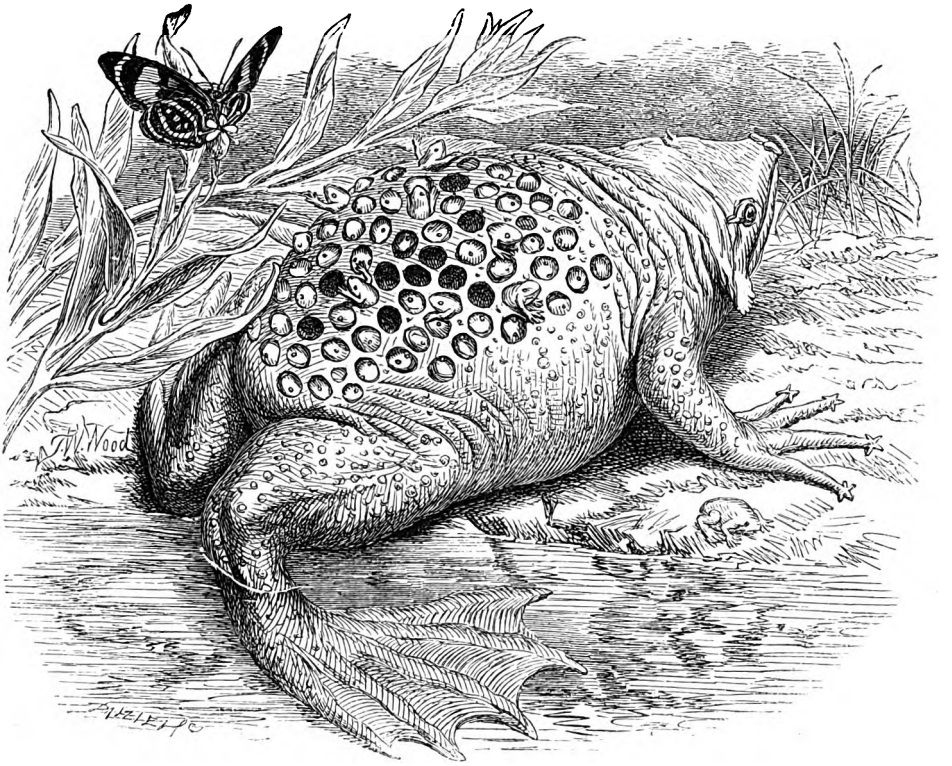
BEAD SNAKE.—*Elaps fúlvius.*

One of the brightest and loveliest of Serpents is the Bead Snake of North America.

This beautiful little reptile inhabits the cultivated grounds, especially frequenting the sweet potato plantations, and burrowing in the earth, close to the roots of the plants, so that it is often dug up by the negroes while getting in the harvest. It possesses poison-fangs, but is apparently never known to use them, permitting itself to be handled in the roughest manner, without attempting to bite the hand that holds it.

The colours of this snake are bright, pure, and arranged so as to contrast boldly with each other. The muzzle and part of the head are black, the remainder golden yellow, and the front of the neck jetty black. A narrow band of golden yellow with undulating edges comes next the black, and is followed by a broad band of the lightest carmine. From this point the whole of the body and tail are covered with narrow rings of golden yellow, alternating with broad bands of carmine and jetty black. The extreme tip of the tail is yellow. The Bead Snake never attains any great size, seldom exceeding two feet in length.

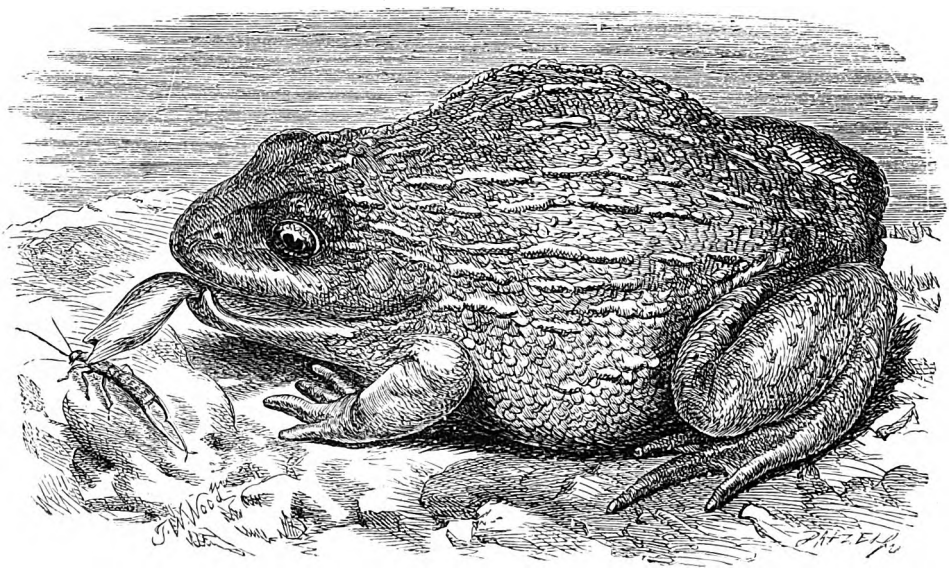
It is very remarkable that the terrible Labarri Snake of South America (*Elaps lemniscátus*) should be closely allied to and belong to the same genus as the Bead Snake of the Northern States.



SURINAM TOAD.—*Pipa Americána.*

We now come to a rather large group of reptiles in which are placed the Frogs, Toads, and Newts. They are not arranged with the other reptiles, because in their youth they pass through a series of changes, and even breathe with gills like the fish instead of by lungs, as with the perfect frog or toad. In the frogs and toads the young are called tadpoles or pollywogs, and are very common in every river, stream, or pond throughout the kingdom. In this stage of life they have great round heads and long flat tails, by means of which they drive themselves through the water with a kind of waggling movement. As they approach their change into the perfect state, the legs show themselves, the tail disappears, and the little creature becomes a true frog.

The Surinam Toad is a very odd-looking creature, and not at all pretty. The young of this toad are hatched upon the back of the mother, where the eggs are placed, and on which they are kept by a kind of gelatine that surrounds them. Each egg is received into a little cell that forms on purpose, and when the young toad is hatched the cell fills up again. The size of the cell is about that of the common horse bean. The snout of this toad is very curious, being long and something like that of the pig.



AFRICAN BULL FROG.—*Tomopterna adspersa.*

This fine species is spread over the whole of Southern Africa, but is found most plentifully towards the eastern coast, where it always frequents springs, pools, or the fresh water. It requires much moisture, and when a more than usually dry season has parched the ground and rendered the hot soil uncomfortable for the delicate skin of the creature's feet, these frogs are said to assemble in the pools in great numbers, and just before the water has quite dried up, to burrow deeply into the soft mud and there lie until the next rains bring the welcome moisture.

Fifty of these large frogs have been seen gathered together in one little pool, far from any other water.

Dr. Livingstone mentions this fine species in his well-known work on Southern Africa. He remarks that its flesh is very excellent food, and that the children were very fond it, and observes that even in the dry desert where he could not obtain any water for the cattle, these great frogs were croaking merrily, having instinctively known that rain was about to fall. The natives told him that the Matlamétlo, as they call this frog, was accustomed to bury itself in a hole at the foot of the bank, and that a large spider always spun its web over the mouth of the hole. As soon as the rain falls it pours into their holes, and out comes the frog quite happy, and croaking at the top of its very loud voice.

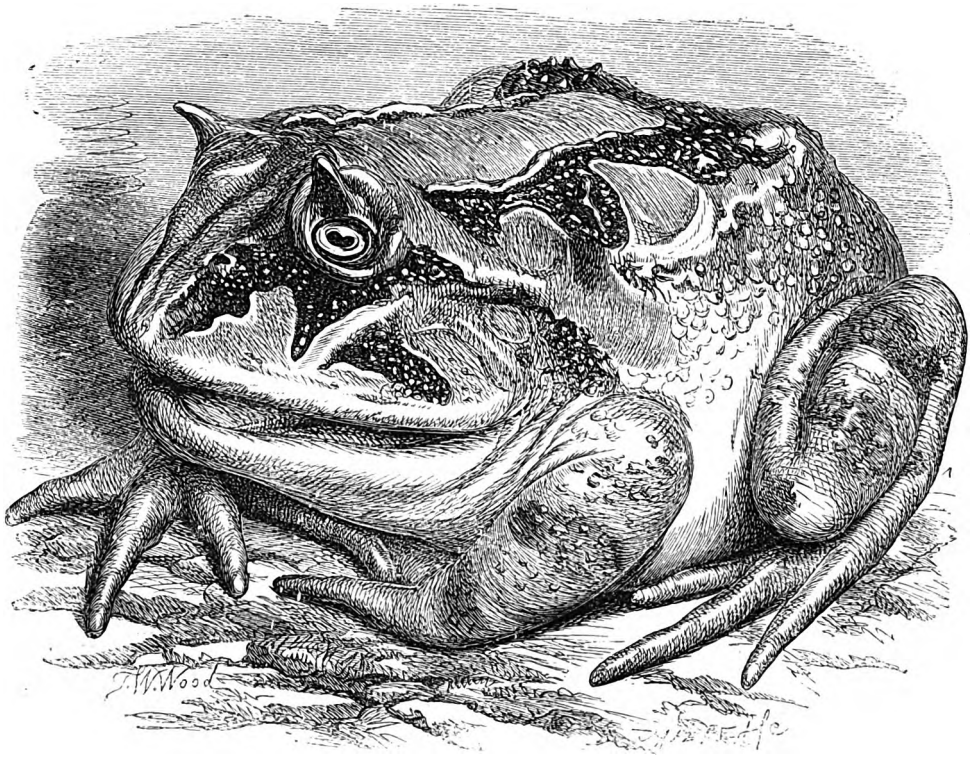
The colour of this frog is greenish brown above, mottled with reddish brown, and streaked and spotted with yellow. The eyes are beautiful chestnut, covered with little golden dots. It measures about six inches in length.

COMMON FROG.—*Rana temporária.*

The general form and appearance of the Common Frog are too well known to need much description. It is found plentifully in all parts of England, wandering to considerable distances from water, and sometimes getting into pits, cellars, and similar localities, where it lives for years without ever seeing water. The food of the adult frog is wholly of an animal character, and consists of slugs, possibly worms, and insects of nearly every kind, the wire-worm being a favourite article of diet. A little colony of frogs is most useful in a garden.

Stories of so-called "showers of frogs" are often seen in the papers, and as a general rule are little to be credited, the solution of the supposed phenomenon being merely that a shower of rain has induced the creatures to come from their retreats. There are, however, instances where credible spectators have seen them fall, and in such cases the little creatures were probably sucked up by a water-spout, or even by a brisk whirlwind, together with the water in which they were sporting, carried away for some distance, and at last dropped on the ground, as is sometimes the case with sticks, stones, and leaves, picked up by a passing whirlwind.

The colour of the frog is greenish brown, but it has the faculty of changing its hues with great rapidity. In general it will be found that if the frog has been living in a dark spot, such as the hole of a bank, it is dark brown, but if it has resided in the sunshine, its colour is bright yellow. During the winter the frog buries itself deeply in the ground, and there remains until the next year. It is but poorly supplied with teeth, having none at all in the lower jaw, and only some very small ones in the upper jaw and palate.

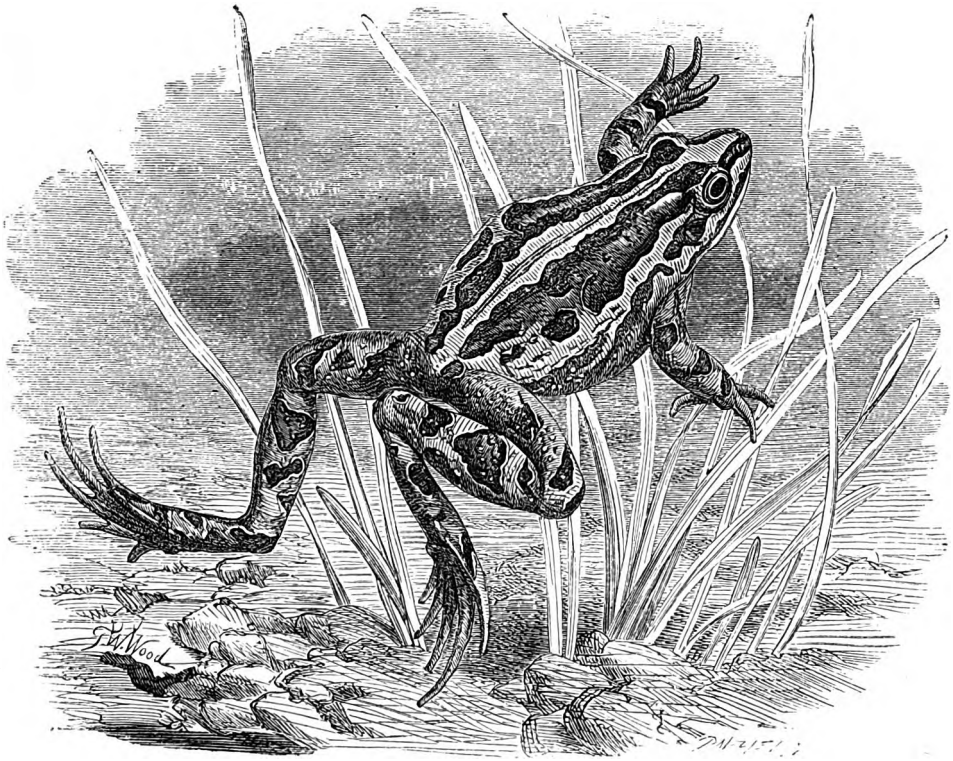


HORNED FROG.—*Cerátophrys cornúta.*

The great Horned Frog derives its name from the strange manner in which the upper eyelids project from the head, and form a kind of shield or shade over the eyes. There are several species of Horned Frogs, but in none are the projections so horn-like. There is, moreover, a horny shield upon part of the back.

The toes of this great frog are very large and powerful, but are not webbed, except just at their bases. The opening of the mouth is enormous, and the creature can use it to good purpose, being in the habit of feeding not only on insects, slugs, and other similar creatures, but of devouring reptiles of its own order. In the stomach of one of these creatures was found the body of a full-grown land frog, a small creature, but yet very large to be swallowed by a frog of any kind.

The body of the Horned Frog is very large, thick, and round, and well corresponds with the character of the head. All the Horned Frogs are natives of South America.

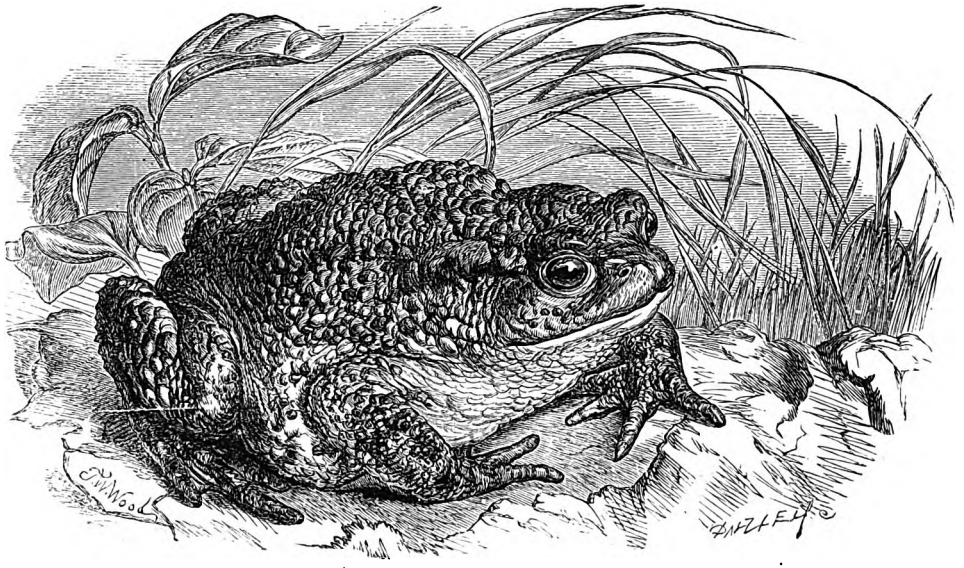


PAINTED FROG.—*Discoglossus pictus.*

The pretty Painted Frog is a European species, being found in Greece, Sicily, and Sardinia. It has a rather wide range of locality, as it is not uncommon in Northern Africa, along the banks of the Nile, and is tolerably plentiful along the shores of the Mediterranean.

It is fond of water, but seems careless whether it be salt or fresh. The common edible Frog possesses similar habits, and the two species are often seen in company. The food of the Painted Frog consists of insects, spiders, slugs, and snails, both terrestrial and aquatic. There is a difference in the web of the toes of the sexes, those of the female being scarcely webbed at all, while in the male the membrane extends to half their length.

The colour and general aspect of the skin are extremely variable. The ground colour is usually yellowish green or olive, decorated with spots, and having several white longitudinal streaks. In some specimens the skin is smooth, while in others it is covered with tubercles, and the spots are seldom alike in two individuals.

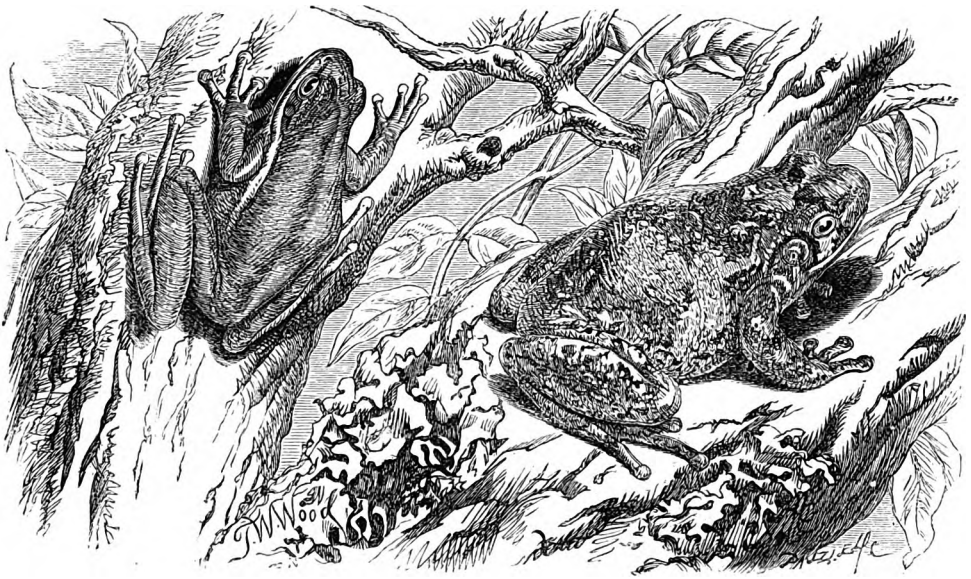


TOAD.—*Bufo vulgáris.*

THE common TOAD is one of the creatures which are greatly feared without the least reason, and killed by those who ought to be only too glad to preserve them.

Most persons fancy that the Toad is a poisonous reptile, and though they may have read in books that it is quite harmless, they will not dare to pick it up with a bare hand. There is certainly an acrid, if not a venomous secretion, which is produced in certain glands, and is found in greatest quantities in two large glands that are very visible just behind the eyes. But this fluid requires some pressure before it can be squeezed out, and though it may deter dogs and cats from eating the Toad, it will do no harm to a human being.

The Toad feeds upon almost every insect, slug, worm, caterpillar, or grub, catching them with its tongue in a wonderful manner. It cannot be induced to eat a dead insect, even though it be just killed, but if it should move even a leg, the Toad seizes and swallows it. Not even the active and watchful flies can escape the Toad, for as soon as the fly settles, the Toad crawls to the spot, darts out its tongue like a streak of pink lightning, and flings the prey into its mouth. I have kept some Toads for a long while, and have seen them eat even worms and hairy caterpillars. They soon become tolerably tame, and one of them was so bold, that as soon as I raised the glass lid of the fern-case in which it lived, it used to scramble out of its hole, hoping that I had some food for it.



GREEN TREE FROG.—*Hyla arbórea.*

CHANGEABLE TREE TOAD.—*Hyla versícolor.*

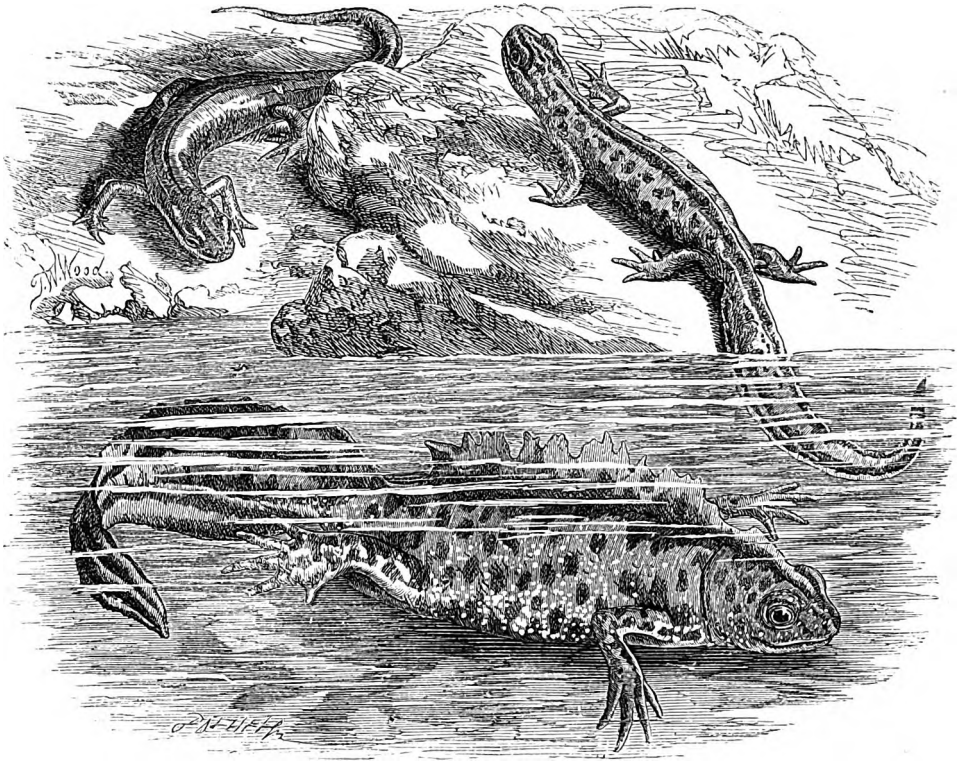
The Green Tree Frog is one of the creatures that are able to ascend a perpendicular surface by means of the sucker-like pods at the ends of the toes. It is found in many parts of Europe, and, since the fern-cases have been so generally introduced, has been brought to England in great numbers.

This pretty creature is mostly found upon trees, clinging either to their branches or leaves, and being generally in the habit of attaching itself to the under side of the leaves, which it resembles so strongly in colour, that it is almost invisible even when its situation is pointed out.

The food of the Tree Frog consists almost entirely of insects, worms, and similar creatures, which are captured as they pass near the leaf whereto their green foe is adhering. Like the Toad, the Tree Frog swallows its skin after the change. The common Tree Frog is wonderfully tenacious of life, suffering the severest wounds without seeming to be much distressed.

The Changeable Tree Toad is a native of many parts of America.

It derives its name from its wonderful power of changing its colour, which enables it to render itself so like the branch on which it is sitting that, even a practised eye can hardly discover it. This is a very noisy creature, and just before rain always utters its odd liquid notes with great rapidity. It is mostly found on palm-trees.



CRESTED NEWT.—*Triton cristátus.*

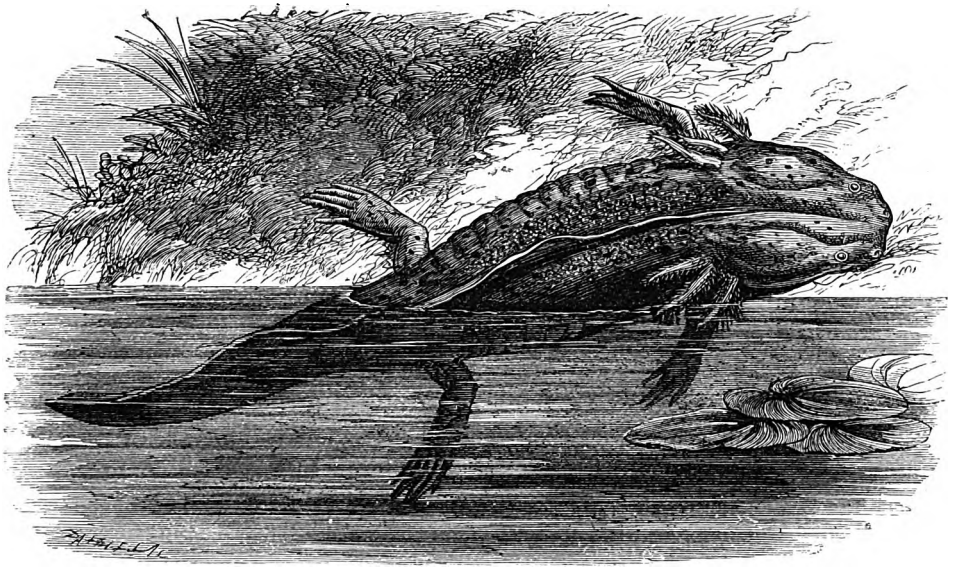
SMOOTH NEWT.—*Lophínus punctátus.*

The Crested Newt derives its popular name from the membranous crest which appears on the back and upper edge of the tail during the breeding season, and which adds so much to the beauty of the full-grown male.

This creature is found plentifully in ponds and ditches during the warm months of the year, and may be captured without difficulty. It is tolerably hardy in confinement, being easily reared even from a very tender age, so that its habits can be carefully noted.

The Newt feeds on worms and other aquatic creatures, and sometimes attacks even the young of its own kind. I have often seen a very little Newt chased by a very large one, but never saw it succeed in catching its prey.

The Smooth Newt is so called because its body is quite smooth. It is often found at some distance from water, and I have seen it crossing a hot and dusty road at a tolerable speed, though in a very awkward manner. Newts are quite harmless, though many persons are afraid of them.



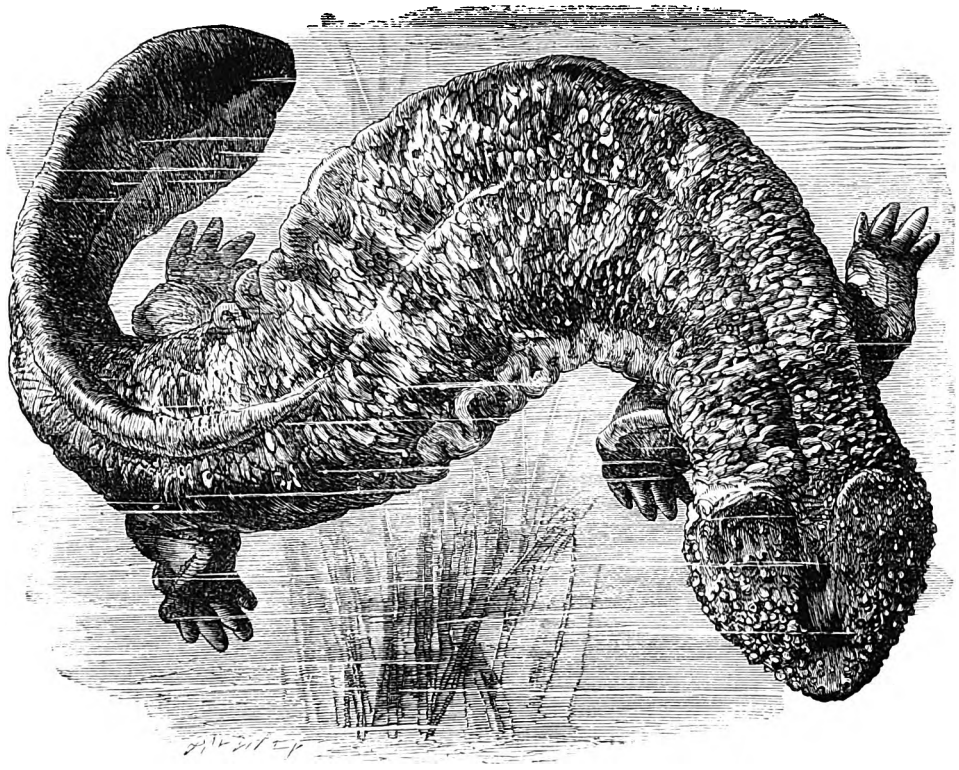
AXOLOTL.—*Axclóteles guttátus.*

The very odd-looking creature which is called by the name of Axolotl, is a native of Mexico, and is caught chiefly in the lakes that surround the capital. It is also found in the cold water of the mountain lakes which exist at a very great height above the sea.

In its own land the Axolotl is tolerably plentiful, and its flesh is held in high esteem. Great numbers of these remarkable reptiles are caught for the table, and regularly sent to market. This strange creature is a puzzle to the naturalists. No one knows what to make of it; whether it is a true species, or whether it is the tadpole of some great eft or newt, is not at present known.

On referring to the illustration, the reader will see that the branched gills are to be seen projecting on either side of the head, just at its junction with the neck, and looking like a row of fringed ears. There are several reptiles which always retain these external gills throughout their life, but in the Axolotl there is a certain flap of skin near the gills which is one of the characters of a tadpole, and strengthens the idea that this creature is nothing more than a great tadpole, seven, eight, or ten inches in length.

The perfect creature need not be larger than its tadpole, for there are several species of these reptiles where the creature is even larger in the tadpole than in the perfect state. Moreover, it has been proved that by depriving a common tadpole of certain conditions favourable to its proper development, it continues to grow in size, but never changes into a frog. The colour of the Axolotl is dark greyish brown, covered with black spots.

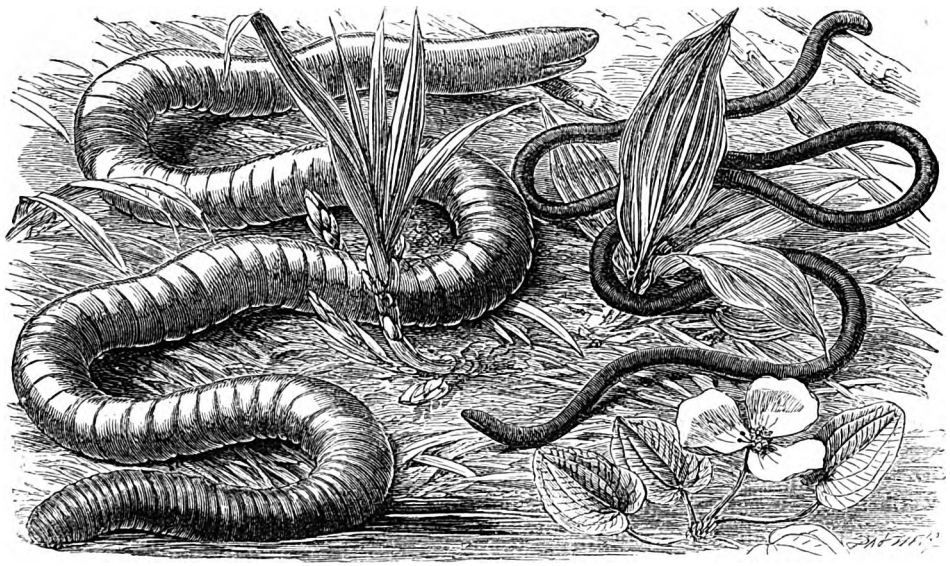


GIGANTIC SALAMANDER.—*Siebóldia máxima.*

This huge eft is a native of Japan. Dr. Von Siebold brought the first living specimen to Europe, and placed it in a tank at Leyden, where it was living when the last accounts were heard, having thus passed a period of many years in captivity. Its length is about a yard.

A fine specimen is now living in the Zoological Gardens, and has attracted much notice, in spite of its ugliness and almost total want of observable habits. It is very sluggish and retiring, hating the light, and always squeezing itself into the darkest corner of its tank, where it so closely resembles in colour the rock-work near which it shelters itself, that many persons look at the tank without even discovering its presence.

The head of this creature is large, flattened, and very toad-like in general aspect, except that it is not furnished with the beautiful eyes which redeem the otherwise repulsive expression of the toad. The head is about four inches wide at the broadest part, and covered with warty excrescences. The eyes are extremely small, placed on the forepart of the head, and without the least approach to expression. The whole upper part of the bodv is covered with excrescences.



WHITE-BELLIED CÆCILIA.—*Cæcília tentaculáta.*
SLENDER CÆCILIA.—*Cæcília grácilis.*

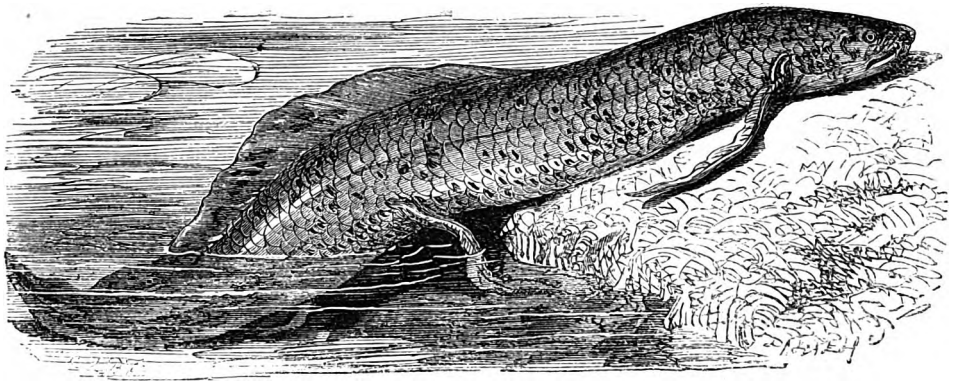
THE worm-like creatures represented in the engraving are two examples of the false snakes, all of which creatures have no limbs, scarcely any tail, and a smooth wrinkled skin, in which are a great number of very small scales.

The left-hand figure represents the WHITE-BELLIED CÆCILIA. The name Cæcilia is derived from a Latin word signifying blindness, and is given to the creature because the eyes are always minute, and in some species are hidden under the skin. This species inhabits Southern America, and burrows deeply under the ground, after the fashion of the earthworm. Its body is rather thick and cylindrical, and is surrounded by about one hundred and fifty incomplete rings. The muzzle is rounded, and so is the tail. There are teeth in the jaws and on the palate, all of which are short, strong, and conical; the tongue has a curiously velvety feel to the touch. Below each nostril there is a small pit.

Its colour is blackish, marbled with white along the under surface.

The right-hand figure represents the SLENDER CÆCILIA, so called on account of its slight form. In this species the body is smooth throughout the greater part of its length, but towards the tail the skin is gathered into fifteen circular folds pressed closely together.

The muzzle is rather broad and rounded. The body is extremely elongated, being about two feet in length, and not thicker than an ordinary goosequill. Its colour is almost wholly black.



LEPIDOSIREN.—*Protópterus annectens.*

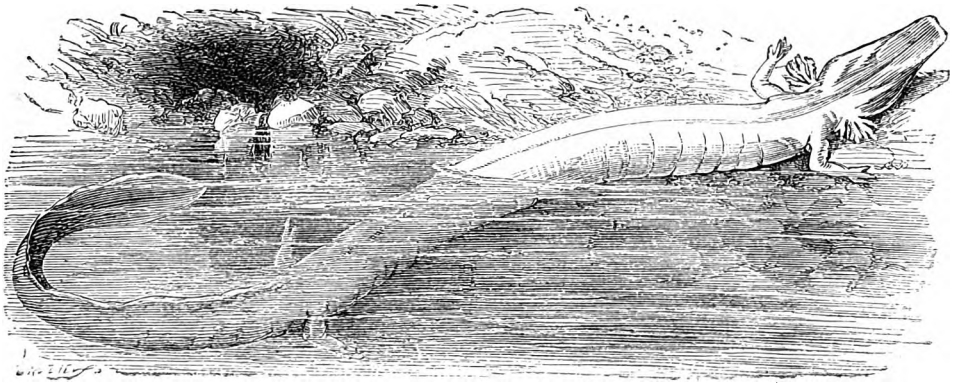
The Lepidosiren, or Mud Fish, is now placed among the reptiles, though many naturalists believe that it ought to be ranked with the fishes. Between these great classes it evidently forms a connecting link, having many characters of the fish, and nearly as many of the reptiles. There are three known species of this group, of which the Lepidosiren is perhaps the best known.

The habits of this creature are very remarkable. Living in localities where the sun attains a heat so terrific during a long period of the year that the waters are dried and even their muddy beds baked into a hard and stony flooring, these animals would be soon extirpated unless they had some means of securing themselves against this periodical infliction, and obtaining throughout the year some proportion of that moisture for lack of which they would soon die.

When the hot season has fairly commenced, and the waters have begun to lessen in volume, the Lepidosiren wriggles its way deeply into the mud, its eyes being so constructed that the wet soil cannot injure them, and the external nostrils being merely two shallow blind sacs.

After it has curled itself up and resigned itself to its condition, a large amount of slimy substance is secreted from the body, which has the effect of making the walls of its cell very smooth, and probably aids in binding the muddy particles together. When the rains fall, the moisture penetrates rapidly through the fissures of the earth, reaches the cell of the Lepidosiren, dissolves its walls, and restores the inhabitant to life and energy.

The Lepidosiren is a fierce and voracious creature, feeding on fish, reptiles, and meat. A splendid specimen, which was kept for some time in the Crystal Palace, killed all the gold fish by biting great mouthfuls out of them, and was then fed with frogs, which it ate in a very deliberate manner. The jaws of this creature are remarkably strong, and are furnished with sharp edges that can cut like shears. The bones of the Lepidosiren are of a rather bright green colour.



PROTEUS.—*Proteus anguínus.*

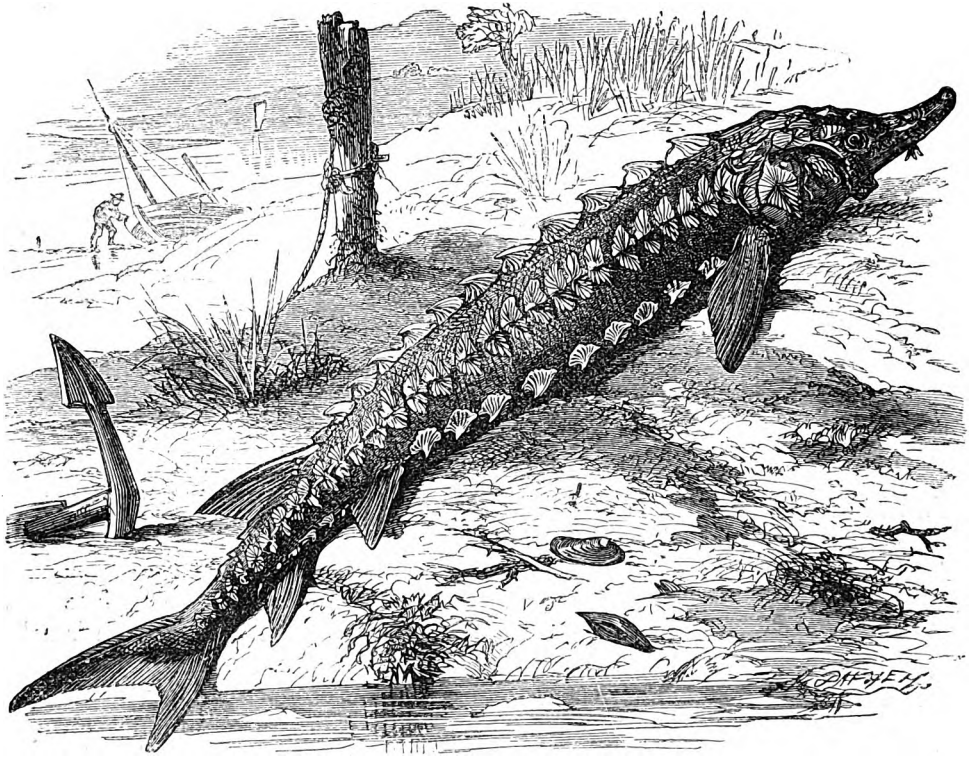
The Proteus belongs to a curious group of reptiles, which retain their gills throughout their entire life, and have a long smooth body, without any scales.

At Adelsberg, in the duchy of Carniola, is a most wonderful cavern, called the Grotto of the Maddalena, extending many hundred feet below the surface of the earth, and consequently buried in the deepest darkness. In this cavern is a little lake, roofed with stalactites, surrounded with masses of rock, and floored with a bed of soft mud, upon which the Proteus may be seen crawling uneasily, as if endeavouring to avoid the unwelcome light. These creatures are not always to be found in the lake, though after heavy rains they are tolerably abundant, and the road by which they gain admission is at present a mystery.

Many of these animals have been brought in a living state to this country, and have survived for a considerable time when their owners have taken pains to accommodate their condition as nearly as possible to that of their native waters.

One of these lived for five years, and passed four years in the same water, except a little that was added in order to supply the loss by evaporation. The glass globe in which it resided was covered with green baize so as to exclude the light, and some curious experiments were made upon the gills and the circulation of the blood. The globules of the blood are extremely large in the Proteus, and can even be distinguished by a common pocket magnifier. During the whole five years of its existence the Proteus had nothing to eat, and in the opinion of Dr. Beale must have died from slow starvation.

The colour of the Proteus is a pale flesh hue, washed with grey, and its length is about a foot.

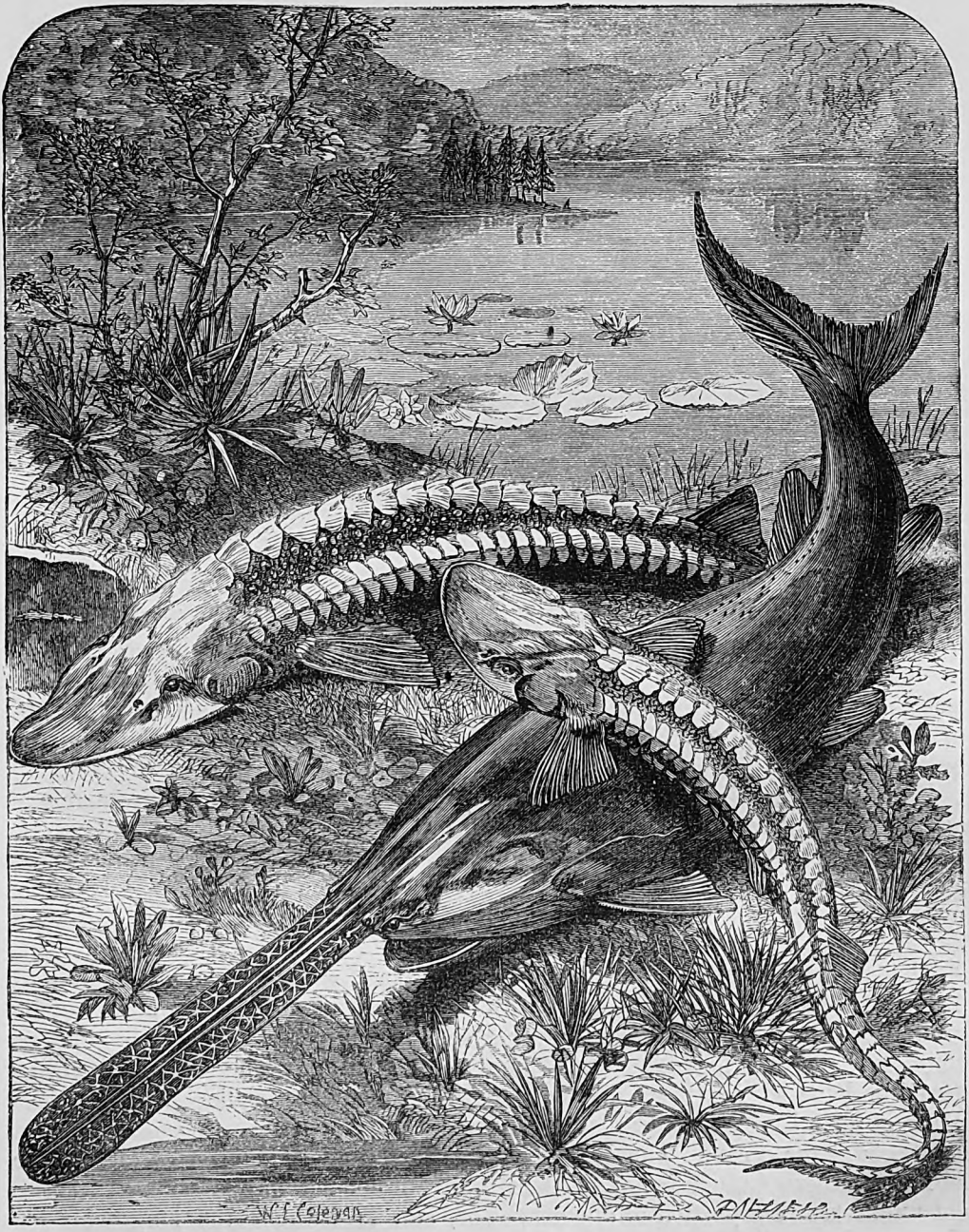


STURGEON.—*Acipenser áttilus.*

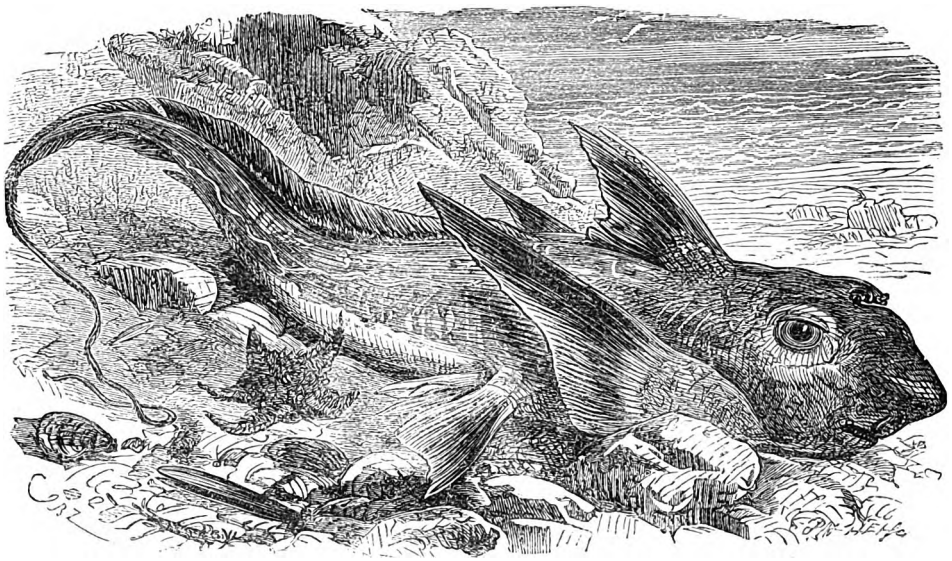
We now come to the Fishes, creatures which live entirely in the water and breathe with gills.

The Sturgeon is a very large fish, that inhabits several parts of Europe, and occasionally finds its way even into the rivers of England. In all the true Sturgeons the body is covered with plates or shields of bony substance, very hard and strong and arranged in regular order. The flesh of the Sturgeon is eatable, and furnishes two very valuable substances, namely caviare and isinglass. The caviare is made from the roe. Isinglass is made from the air-bladder, which is well washed, hung up in the air so as to stiffen, and then peeled. It is next sliced into very narrow strips, and is ready for sale.

The mouth of the Sturgeon is very curious, being a short tube set under the head and without teeth. Between the mouth and the tip of the snout are several fleshy appendages like fingers. A fine Sturgeon weighs several hundred pounds.



SHOVEL-FISH.—*Scaphiorhynchus cataphractes.*
SPOON-BILL STURGEON.—*Polyodon spátula.*



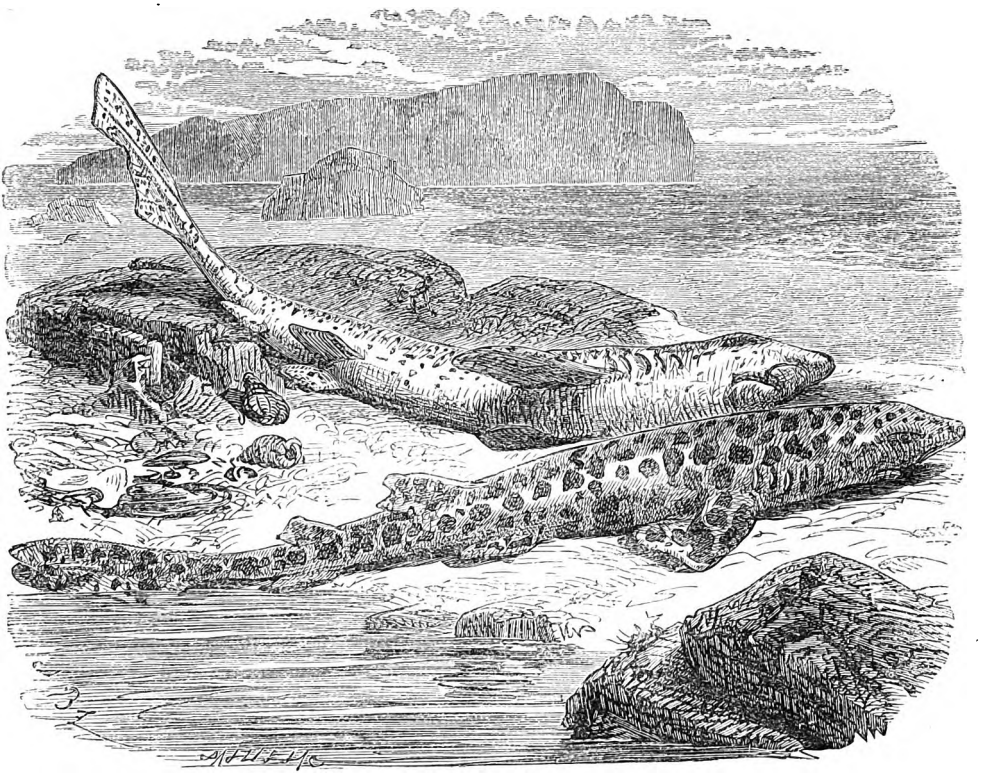
NORTHERN CHIMÆRA.—*Chimæra monstrósa.*

SEVERAL very strange-looking fish are called Chimæra, on account of the oddity of their appearance, which is thought to have some resemblance to the creature that was called Chimæra by the ancients. Two of these fishes are known by the name of the NORTHERN and SOUTHERN CHIMÆRA, because they inhabit different hemispheres.

The Northern Chimæra is also known by the title of Rabbit Fish, probably on account of its general aspect, and King of the Herrings, because it follows the shoals of those fishes during their wonderful migrations, and makes great havoc among their numbers. The appendage to the top of the head is also looked upon by the Norwegians in the light of a kingly crown, and has contributed towards its royal title. It is known in some localities under the name of Sea Cat.

This species is mostly found in the Northern seas, and is, when living, a most beautiful creature, its body glowing with golden brown variegations upon a white ground. The title of Gold-and-Silver Fish is sometimes given to the Northern Chimæra in consequence of this gorgeous colouring. The pupil of the eye is green, and the iris is white. It feeds mostly upon the smaller fish, but finds much of its subsistence among the various molluscs, crustaceans, and other inhabitants of the ocean. The flesh is not considered good, being hard and coarse.

The Southern Chimæra has its nose oddly prolonged into a hook-like shape, not unlike the iron portion of a garden hoe, and is without the long whip-like filament of the tail



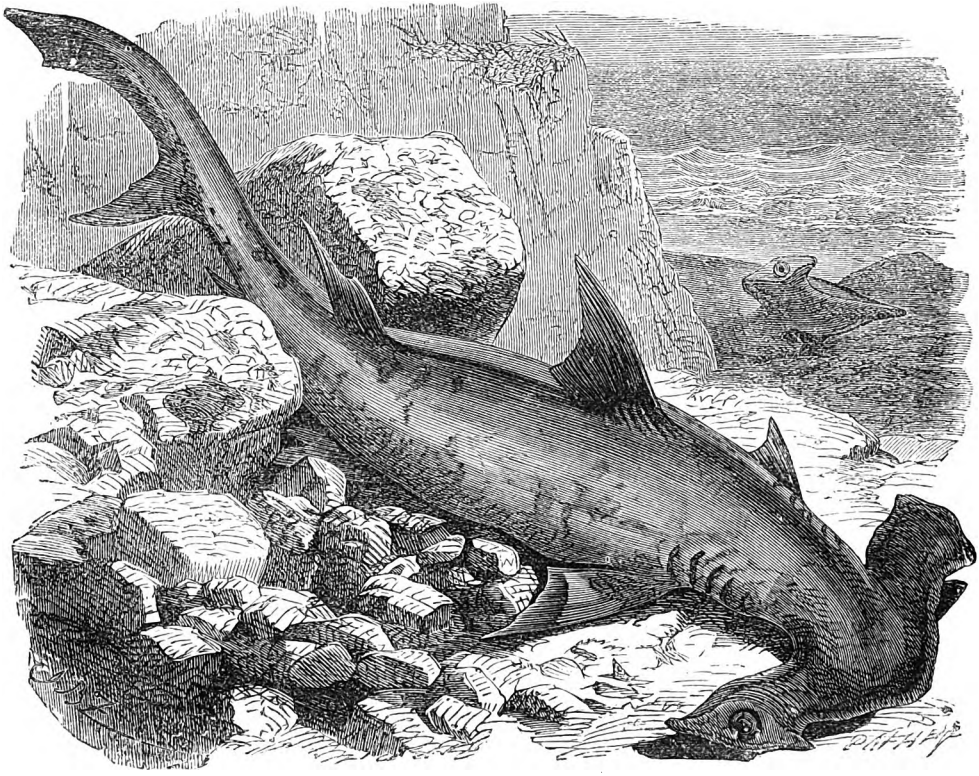
LITTLE DOG-FISH.—*Scýllium canículum.*
ROCK DOG-FISH.—*Scýllium cátulus.*

We have now come to the large family of the Sharks, in which are included some of the largest and most terrible fishes that swim the seas.

One of the commonest British species is the Little Dog-fish, called by several other names, as is usual with a familiar species that is found in many localities. Among such names are Small Spotted Dog-fish, Lesser Spotted Shark, Morgay, and Robin Huss.

This fish is plentiful on our coasts, especially in the southern extremity of England. It generally remains near the bottom of the water, and is a voracious creature, feeding upon crustaceans and small fish. It often follows the shoals of migrating fish, and on account of that custom is called the Dog Fish.

The skin of this and other similar species is rough and file-like, and is employed for many purposes. The eggs of this species are very curious in form and structure. Their form is oblong with curved sides, and at each angle there is a long tendril-like appendage, having a strong curl, and in form not unlike the tendrils of the vine.

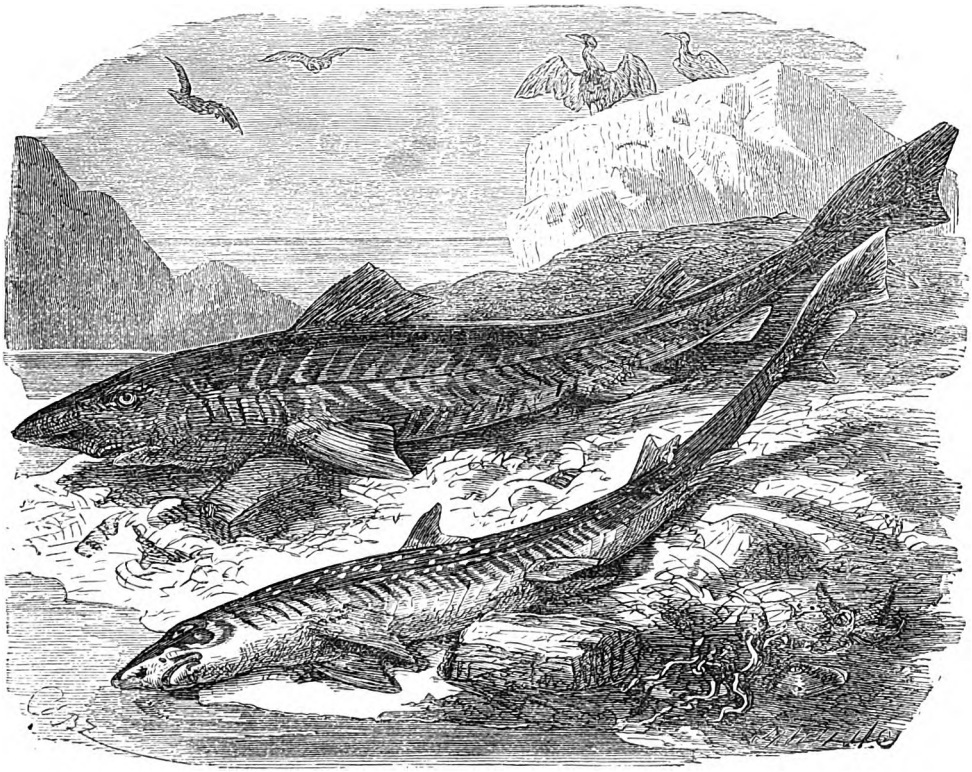


HAMMER-HEADED SHARK.—*Sphýrnias zygæna.*

In the Hammer-Headed Shark is seen one of those strange formations for which no apparent reason can be assigned.

As may be seen by reference to the illustration, the head is greatly expanded upon the sides until it resembles a hammer, the handle being represented by the body of the fish. At each end of the hammer the eyes are set, and if a string be drawn from eye to eye under the head, it will exactly cut the corners of the mouth. In the background of the engraving and towards the right hand is shown another specimen, lying in such a position as to show the remarkable outline of the head and the position and shape of the mouth.

The Hammer-Headed Shark sometimes attains to a great size, specimens having been found which measured eleven or twelve feet in length. The flesh is not good. Its colour is greyish-brown above, fading into white below.



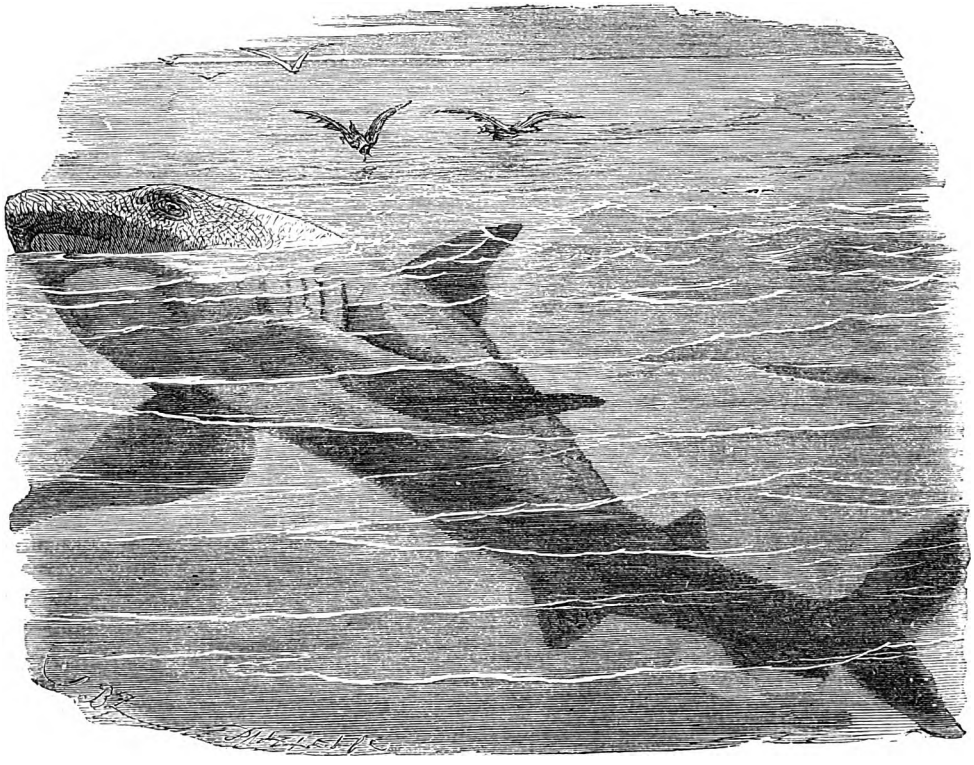
TOPE.—*Gáleus canis.*

SMOOTH HOUND.—*Mustélus vulgáris.*

The destructive and voracious fish which is known by the names of Tope, Penny Dog, or Miller's Dog, according to the coast near which it is found, is another British representative of the great Shark family.

The Tope is commoner towards the southern than the northern coasts, but wherever it is found, it is an intolerable nuisance, being sadly injurious to the fishing interest. Like the last-mentioned species, it produces living young, the number of a single family being about thirty. The upper surface of the Tope is slaty-grey, becoming lighter towards the abdomen, which is nearly white.

The prettily marked and curiously toothed Smooth Hound is also known under the titles of Skate-toothed Shark and Ray-toothed Dog, the two latter titles being given it on account of its curious and beautifully formed teeth, which, like the teeth of the Rays, resemble in form the cylinders of a crushing mill, and are used for a similar purpose.



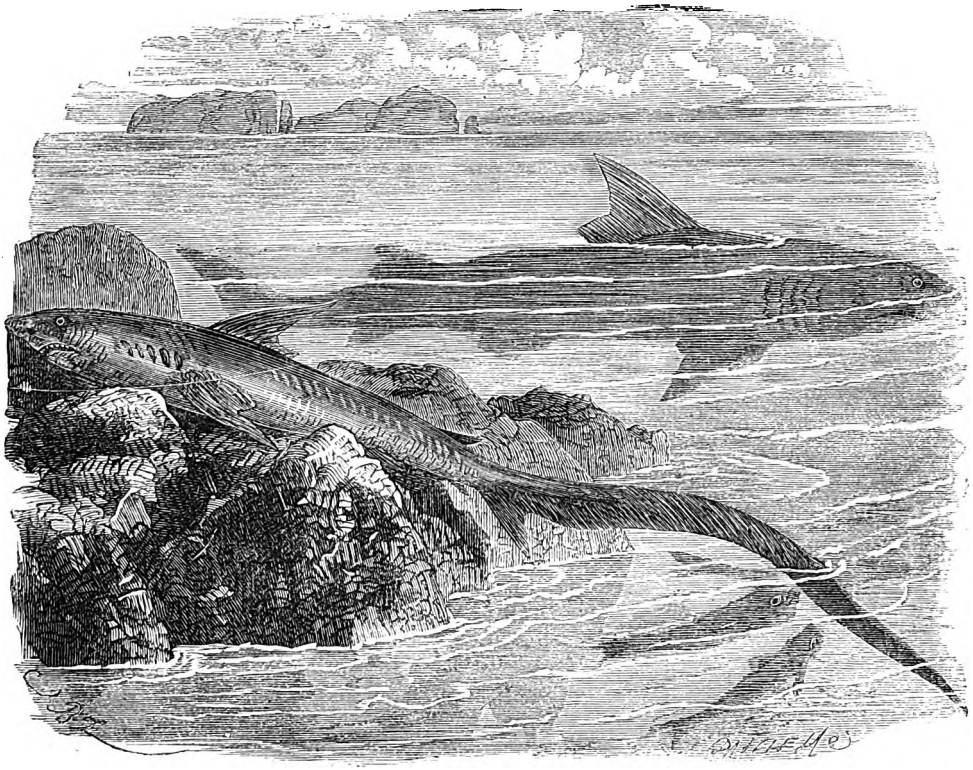
WHITE SHARK, OR LAMIA.—*Carchárodon Rondelétii.*

The dreadful White Shark, the finny pirate of the ocean, is happily almost a stranger to our shores, though a stray specimen may now and then visit the British Islands.

This is one of the largest species that range the ocean, and in some seas are so numerous that they are the terror of sailors and natives. One individual, whose jaws are still preserved, was said to have measured thirty-seven feet in length.

Many portions of this fish are used in commerce. The sailors are fond of cleaning and preparing the skull, which, when brought to England, is sure of a ready sale. There is a large amount of oil in the Shark, which is thought rather valuable.

The fins are very rich in gelatine. The flesh is eaten by the natives of many Pacific islands; and in some places the liver is looked upon as a royal luxury.



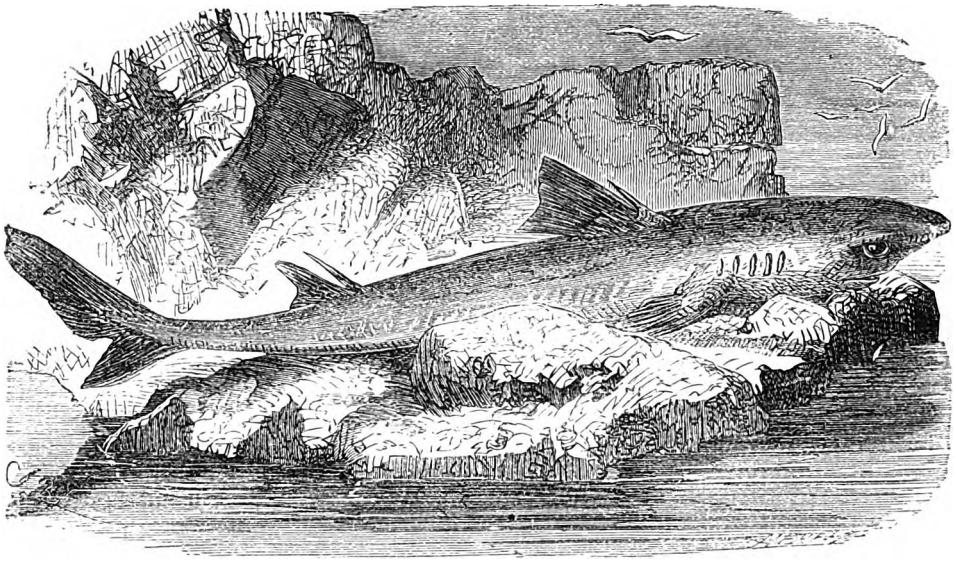
THRESHER, OR FOX SHARK.—*Alópias vulpes.*

BASKING SHARK.—*Cetorhínus máximus.*

The Thresher Shark derives its name from the manner in which it uses the enormously long upper lobe of its tail, which is as long as the whole of the body. This Shark is in the habit of attacking the whale, leaping into the air, and striking such blows with its tail that the strokes sound like the reports of musketry. The Thresher sometimes visits our shores, and has been known to throw the inhabitants of bathing towns into great consternation by its appearance. No one, however, need fear a Thresher, for that fish feeds only on herrings and such fish, and would not damage a human being.

The Basking Shark is a magnificent fish, often attaining to a length of thirty-five or thirty-six feet. It does not appear, however, to be dangerous in proportion to its dimensions, the only food found in its stomach being the remains of crustaceans and probably of echini.

The Basking Shark is not very uncommon on our shores. It seems to be of a rather dull character, allowing itself to be approached quite closely by a boat, without giving any signs of alarm until the bow of the boat actually touches its person.



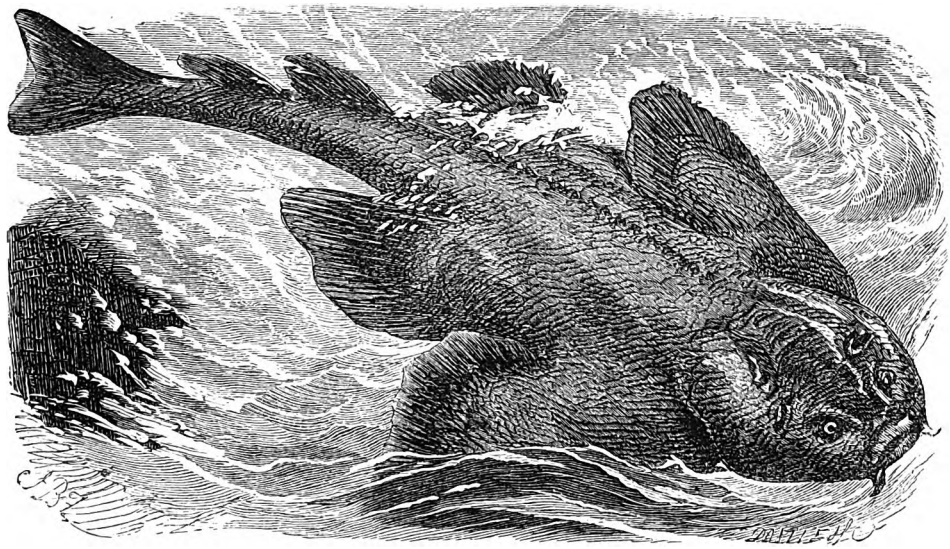
PICKED DOG-FISH.—*Acánthias vulgáris.*

The Picked Dog-fish derives its name from the powerful and sharply-pointed weapons with which it is armed. The reader must note that the word Picked is a dissyllable, and must be pronounced Pick-ed. On some shores it is called the Bone Dog, and on others it goes by the name of Hoe.

By reference to the illustration, the reader will see that just in front of each dorsal fin is placed a strong and sharp spine or pike. These weapons can be used with the most wonderful certainty, the fish being able to direct the stroke as surely as a fencer directs the point of his foil. Moreover, it can bend the body like a bow, and even if the fingers be laid on its head, it can pierce them with a stroke from its spring bayonet.

The fishermen hate this fish, because it is so voracious, and commits such havoc among the shoals of herrings, eats away the fish that have been caught and are hanging on the hook, and in its eagerness bites away the hook as well as the fish. Even the very young fish are in the habit of following the herrings, and making believe to eat them, though their very small size would render such an action impossible.

Sometimes these fish assemble in large masses, and then the fishermen avenge themselves of their injuries by shooting their nets around them, and capturing them by boats'-loads at a time. Their flesh is tolerably good; a useful oil is obtained plentifully from the liver, while the refuse portions are most valuable as manure, and are strewed in unfragrant richness over the fields, warning the nostrils at a considerable distance that the next year's crop is likely to be successful.

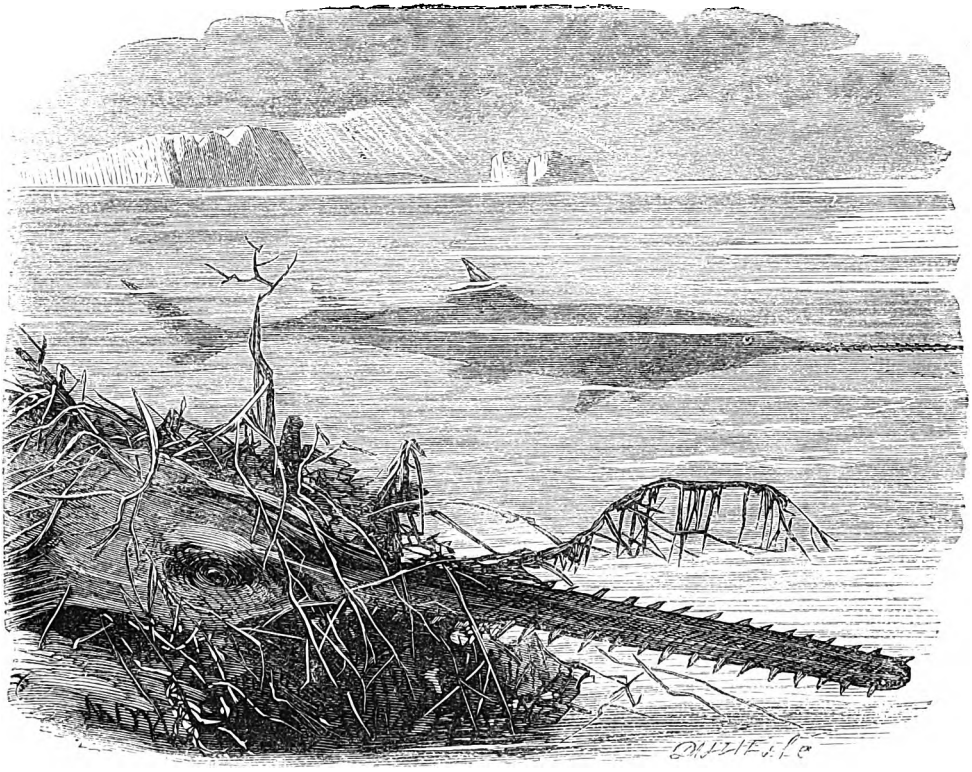


ANGEL FISH.—*Squatína vulgáris.*

The dark-skinned, wide-mouthed, leather-finned and thorn-backed fish which is shown in the illustration, is popularly known throughout many parts of England, France, and Italy by the name of the Angel Fish.

This is as hideous a fish as is to be found in the waters, and from all accounts is as unprepossessing to the inhabitants of the sea as to those of the land, being very voracious, and attaining a size that causes it to be a most formidable foe to the many fishes on which it feeds. It is also known by the name of Monk-fish, in allusion to the rounded head, which was thought to bear some resemblance to the shaven crown of a monk; and in some places is called the Shark Ray because it seems to be one of the connecting links between the sharks and the rays, and has many of the characteristics of both. On some parts of the British coasts it is known as the Kingston.

It is most common upon the southern shores, and has there been taken of considerable size, attaining a weight of one hundred pounds. Unfortunately the flesh is now thought to be too coarse for the table, though it was formerly in some estimation, so that the creature is useless to the fisherman, who can only avenge himself for his losses by killing the destructive creature, but cannot repay himself by eating or selling it. The skin being rough, is of some small use in the arts, being dried and employed, like that of the dog fishes, for polishing joiner's work. A kind of inferior shagreen is in some places made from this skin. It is a large fish, sometimes reaching a length of seven or eight feet, and on account of the solidity of its body weighing very heavily.



SAW FISH.—*Pristis antiquórum.*

The well-known Saw Fish is among the many strange and oddly-shaped inhabitants of the sea. This fish is found in many parts of the world, ranging through nearly all the warmer seas, and even passing to the colder regions near the pole. The lower figure in the illustration shows the head and saw on a large scale, and the upper figure represents the entire fish.

The snout of this fish is greatly prolonged, and flattened like a sword-blade. On either edge it bears a row of tooth-like projections, firmly embedded in the bone, few, short, and wide apart at the base of the beak, but becoming larger and set closer together towards the point. The form of the sockets into which the teeth are received, and their rather enlarged termination, are indicated on the surface of the saw-blade. The tip of the saw is covered with hard scales. The number of teeth is not the same in every individual. In a specimen in my possession there are twenty-eight on each side of the saw.

The colour of the Saw Fish is dark grey above, nearly black in some individuals; the sides are ashen, and the abdomen white. It often attains a great size, measuring fifteen or eighteen feet in length, including the saw.

EYED TORPEDO.—*Torpédo oculáta.*

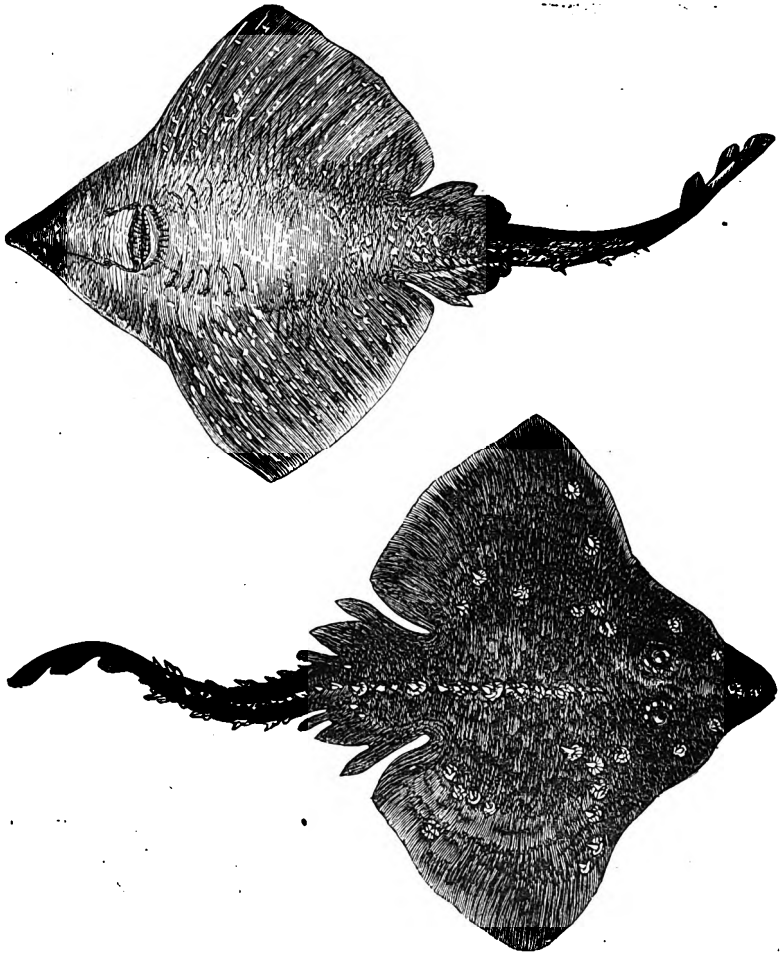
THE wonderful TORPEDO, so well known for its electrical powers, belongs to the family of the Rays.

To the eye, the Torpedo seems a simple and harmless fish, not handsome, but not capable of inflicting an injury. But any one who touches it will quickly alter his opinion, for he will be struck with a violent electric shock, which for a time will numb both his arms and chest, and violently affect every limb through which the shock passes. This power is the result of a regular series of galvanic batteries within the body, which are arranged like a vast number of voltaic piles and serve the same purpose.

Sailors are fond of playing off practical jokes upon landsmen by throwing a Torpedo among a heap of other fishes, and asking the victim to hand them into the boat. Even while drawing in their nets fishermen have received the shock of an enclosed Torpedo, which has sent the stroke along the wet lines. Of course it could not do so where the line was dry, and consequently a non-conductor of electricity.

Many experiments have been made with the Torpedo in order to ascertain the nature of the electricity, and it has been found that by means of this animal electricity nearly all the same phenomena take place which are generally obtained through metallic batteries.

The Torpedo inhabits the Mediterranean and many warm seas, and has once or twice been taken off our own coasts. It sometimes attains a weight of sixty pounds, and reaches four feet in length.



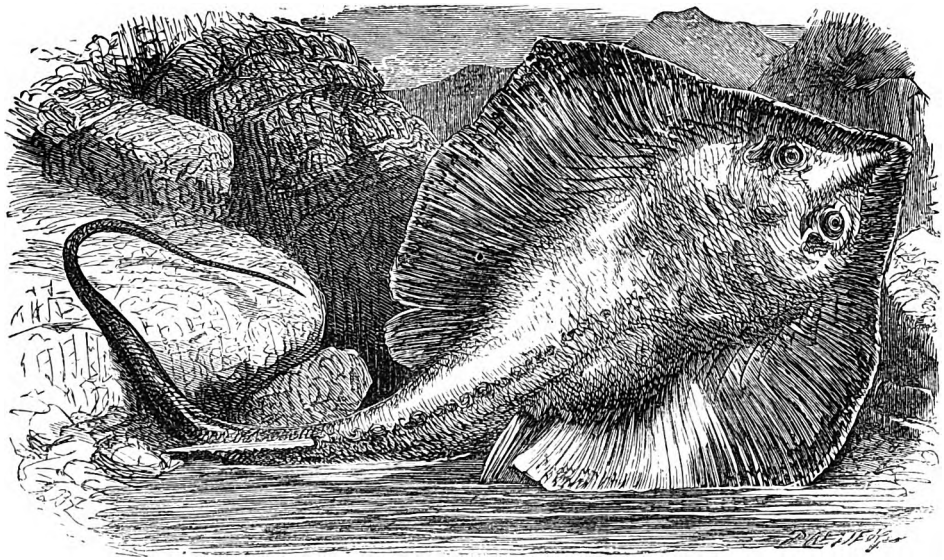
THORNBACK SKATE.—*Raia clavâta.* COMMON SKATE.—*Raia batis.*

The Rays are well represented in England by several large and curious species. One of the commonest examples is the Thornback Skate or Ray, so called from the large number of thorny projections which are scattered over its back, and especially along the spine. This species is represented by the upper figure in the illustration.

The Thornback is taken on the shores of England, Scotland, and Ireland.

The Common Skate, sometimes called the Tinker, is so well known that only a very short description is needed.

This fish is found on all our coasts in great plenty, and sometimes attains to a really large size. It is a very voracious creature.



STING RAY.—*Trygon pastinaca.*

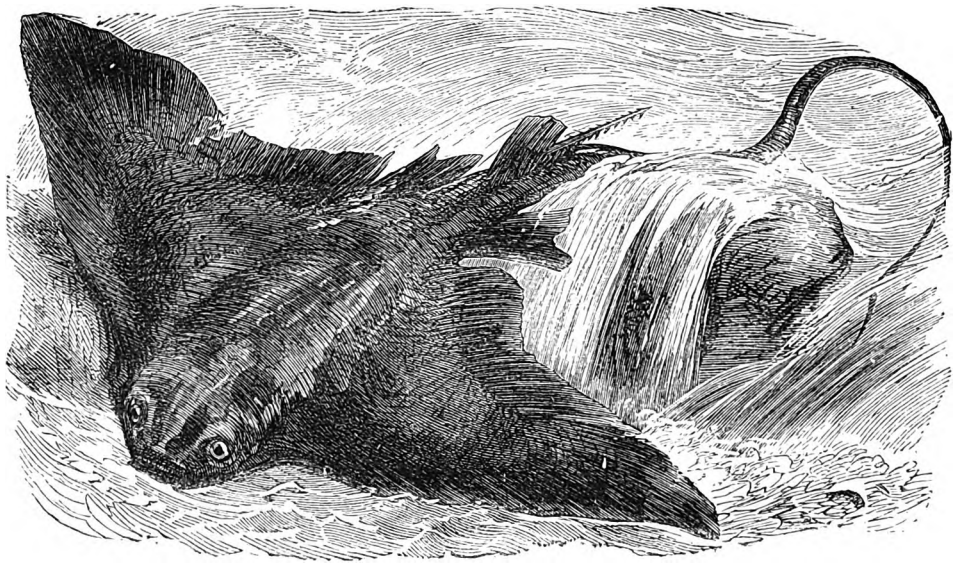
TERRIBLE as is the armed tail of the Thornback Skate, and severe as are the wounds that can be inflicted by it, the STING RAY is furnished with a weapon even more to be dreaded, and capable of inflicting a still more serious injury.

The tail itself of this species is long, flexible, whip-like and smooth, so that it could only inflict a sharp and stinging blow, which, however painful, would do no more damage than the cut of a horsewhip. As, however, may be seen in the illustration, the tail is armed with a projecting bony spine, very sharp at the point, and furnished along both edges with sharp cutting teeth. When attacked or irritated, the Sting Ray suddenly strikes its whip-like tail around the offender in lasso fashion; and, holding him tightly against the barbed spine, wields the latter with such strength and rapidity that it lacerates the flesh to a frightful and dangerous extent, in some cases even causing the death of the victim.

Along the coast, where the offensive powers of this fish are familiarly known, an opinion prevails that the bony spine is supplied with poison. This notion, however, is a popular error, founded on the aggravated inflammation that sometimes follows the wounds caused by it. There is no poison whatever in this bone, and any such symptoms are due to the unsound constitution of the sufferer.

The spine of this fish has not only furnished the savage inhabitants of the Pacific islands with the original idea of their many-barbed spears, but is actually taken from the animal and affixed to the shaft of a lance.

It is found that in the Sting Ray a second spine exists below the first, to supply the place of the first in case it should be broken off or dragged out.



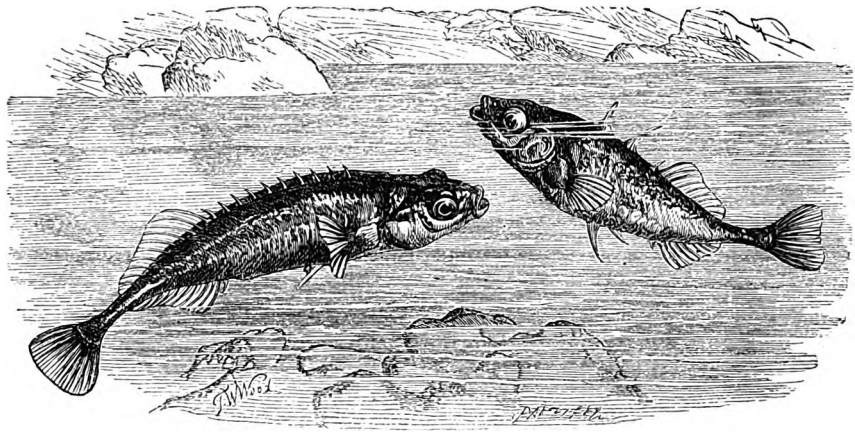
EAGLE RAY.—*Mylióbatis áquila.*

On the accompanying illustration is shown one of the largest Rays found on the British coasts. Many of the Rays attain a great size, but the Eagle Ray will sometimes weigh as much as eight hundred pounds. It is called the Eagle Ray on account of the very wide spread of the "wings," as the side-flaps and fins are commonly called.

As may be seen from the illustration, the tail is armed with a powerful doubly-barbed spine, and the whip-like tail runs to a great length. In allusion to the very long tail and its lash-like form, this fish is sometimes called the Whip Ray. The flesh of this huge Ray cannot be eaten, because it is very hard, of a rank flavour, and altogether unfit for human consumption. The creature, however, is not without its uses, even to mankind, as a large quantity of valuable oil is obtained from its liver.

Several other very large Rays roam the seas, being more plentiful and attaining a greater size in the warmer than in the cooler climates. One of the largest of these fishes is the Horned Ray, so called because the head is furnished with two horn-like projections in front.

This enormous creature is found in the Mediterranean and the warmer seas in general. The flesh is not eaten, except by the very poor, but the oil from the liver is valuable. M. Le Vaillant captured one which measured twenty-eight feet in width, twenty feet in length, weighed a full ton, and had a mouth large enough to swallow a man. This gigantic Ray feeds almost wholly on fishes and molluscs.



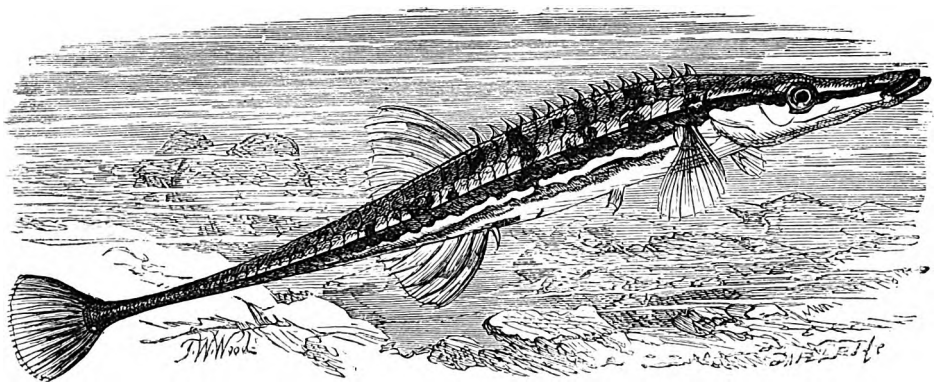
TEN-SPINED STICKLEBACK.—*Gasterósteus pungítius.*

THREE-SPINED STICKLEBACK.—*Gasterósteus aculeátus.*

In this engraving we have examples of two very common fishes, which are to be found in every stream throughout the kingdom. Their habits are so very similar that in describing one fish, the other is also described, and therefore we need only mention the Three-Spined Stickleback. On account of the sharp thorns with which its body is armed, it goes by the name of Prickle-fish and Sharpfin. Boys sometimes call it the Tittlebat.

Any one can catch a Stickleback without rod, float, or even hook. All that is needful is to repair to the nearest streamlet, armed with a yard or two of thread and a walking-stick. Thin twine will answer very well instead of the thread, and even the stick is not absolutely needed. Having proceeded thus equipped to the bank of the stream, a worm may be picked out of the ground, tied by the middle to the thread, and thrown quite at random into the water.

The Sticklebacks will not be in the least frightened by the splash, but rather rejoice in it as calling their attention to food. In a moment the worm will be the centre of a contending mass of little fishes, rolling over and over, struggling to the utmost of their power, and entirely hiding the worm from sight. Now let the angler quickly lift the bait out of the water, swing it on shore, and he will almost certainly find that he has captured two Sticklebacks, one hanging to each end of the worm, and retaining its hold so perseveringly that it can hardly be induced to relinquish its gripe. This process may be repeated at pleasure, and as the Sticklebacks never seem to learn wisdom, a large store may soon be accumulated. This is a good way of stocking an aquarium, as the strongest and liveliest fish are sure to be caught first.



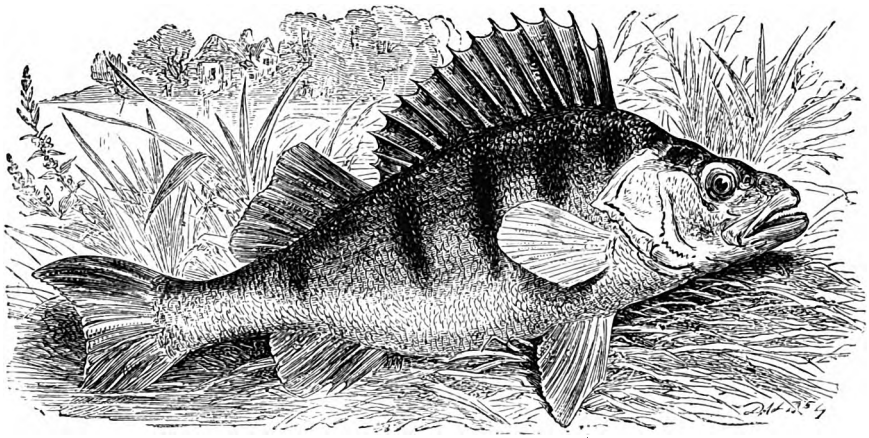
FIFTEEN-SPINED STICKLEBACK.—*Gasterosteus spinachia.*

The Fifteen-Spined Stickleback lives only in the sea, and is to be found on most of our coasts. It is very long in the body, and the head is drawn out something like that of a pike. On account of its length, and the sharp, prickly spines which are set along its body, it is sometimes called the Sea Adder. In some places it is known by the name of Bismore.

As is the case with all the Sticklebacks, this fish changes its colour frequently. When it is in a quite healthy state and not frightened, it is of a rich olive-green above, and silvery white below, with a golden band along the sides, as if it had been covered with burnished gold. But when it is unwell, or alarmed, all the bright colours vanish, and the creature changes to sober grey, brown and white. It is a very voracious fish, eating great quantities of molluscs, worms, the spawn of other fishes, and little crustacea; and is useful to the naturalist, because when caught, killed, and dissected, it is sure to have within its stomach a number of marine animals, which cannot easily be taken in any other way. One of these fishes has even been known to kill and swallow an eel, three inches in length.

All the Sticklebacks are of domestic habits, and not only stay at home, but build their houses, The nest of the Stickleback is a very curious affair, and is put together something like the nest of a bird. That of the Three-Spined Stickleback is made of little bits of hay and sticks, and the fish always manages so as to procure them of the same colour as the ground on which the nest is placed. It is about as large as a walnut, and has a cavity in which are placed the round eggs. These eggs are about the size of poppy seeds, and of a bright yellow colour. The Fifteen-Spined Stickleback has been known to weave a nest out of the loose strands of an old rope that was hanging with its end in the water.

The Stickleback is very careful of its nest, always remaining close at hand, and will attack fiercely any creature that approaches its home.



PERCH.—*Perca fluviátilis.*

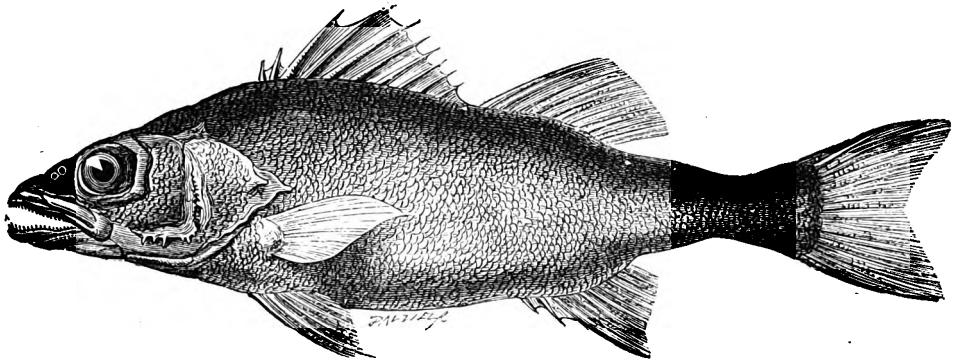
THE COMMON PERCH is well known as one of our handsomest river-fish, and, on account of its boldness and the voracious manner in which it takes the bait, and the active strength with which it struggles against its captor, is a great favourite with many anglers.

The Perch is a truly voracious fish, feeding upon all kinds of aquatic worms, insects, and fishes. The smaller fish, such as minnows, young roach, dace, and gudgeons, are terribly persecuted by the Perch. Although generally inhabiting mid or deep water, it will sometimes come to the surface to snap up a casual fly, and on several occasions has been captured by anglers when fishing with a fly for trout.

The Perch can live out of the water for a considerable time, because the gill-cover is so formed that the gills can be rendered moist for many hours. In consequence of this property, the Perch can be carried from one place to another without suffering inconvenience, provided that it is put into a basket with some wet grass. In some countries it is carried to market in this manner, and kept alive during the day, and if not sold, is brought back in the evening and returned to its native pond.

It is not often found in the middle of the stream or pond, but likes to live in a hole under the bank, where it can lie quietly, and watch for its prey. Sometimes a large party of Perch are seen in one hole, and a good angler will manage to catch the greater part of them without alarming their companions. If, however, one Perch should be pricked with the hook and escape, it will give notice to its companions, and they will all dart away.

The Perch is not a large fish, seldom weighing more than three pounds. Its colour is greenish-brown above, and silvery-white below, with a series of brown bands over the sides.



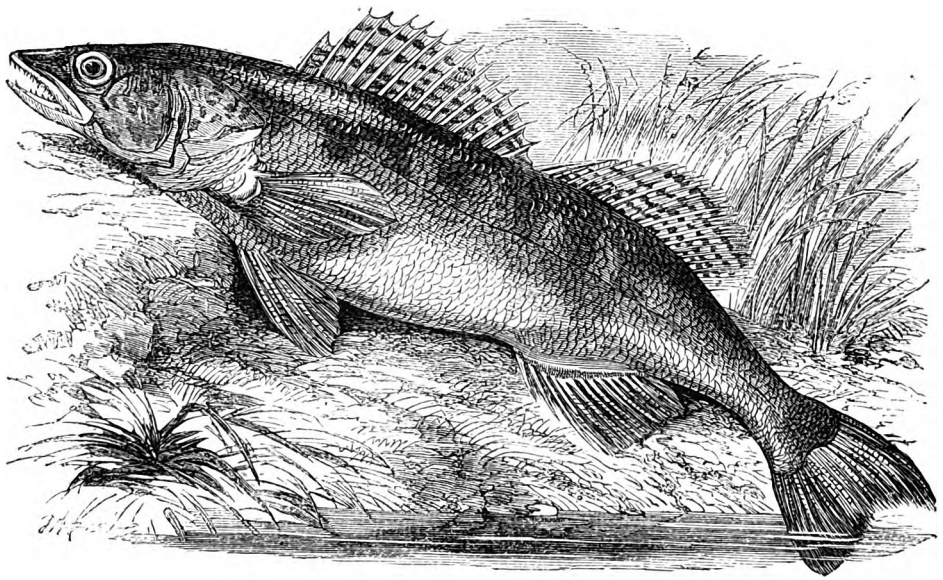
BASSE.—*Labrax lupus.*

THIS splendid fish is commonly known by the name of the BASSE. On account of the shining blue colour of the back, and the pure silvery-white of the abdomen, which are just the colour of the common dace of our rivers, it is called the Sea Dace. And, as the sharp prickles of the upper fin are something like those of the Perch, it also goes by the name of Sea Perch.

Like the perch, it is a very voracious fish, and not content with feeding on the crustacea, molluscs, and the multitudes of smaller fish which swim the sea, the Basse requires luxuries, and will even get among the rocks for the sake of eating them. One of its favourite morsels is the great shore woodlouse (*Lígia oceánica*) which is so plentiful upon the rocks, but hides itself so cleverly during the day, that no one would suspect its presence. Thousands of these creatures run nimbly about the rocks in the evening, and the Basse is so fond of them, that even during a storm, it has been seen hovering about the rocky shore, picking up the wood-lice as they were washed off the stones by the waves and the wind.

It is a bold-biting fish; and is in great repute among anglers. But although it is easily hooked, it is not easily secured, as the lips are tender, so as to allow the hook to be pulled out, and its strength and activity are very great. It is a most cunning fish, and tries every imaginable plan to get away. At first it generally tries to break the line by darting away at its full speed, and leaping out of the water as soon as it feels the pull upon its mouth. When it finds this plan useless, it will swim back under the boat, so as to get a good pull against the line as it hitches against the boat, or to saw it asunder upon the keel.

Its upper fins are furnished with hard and sharp spines, and the edges of its gill-covers are supplied with many projections that are sharply pointed like lancets, and cut like razors. It can use these weapons with much skill, and as soon as it is taken up, it plunges and wriggles with such violence, that it often inflicts very painful wounds upon the hands.

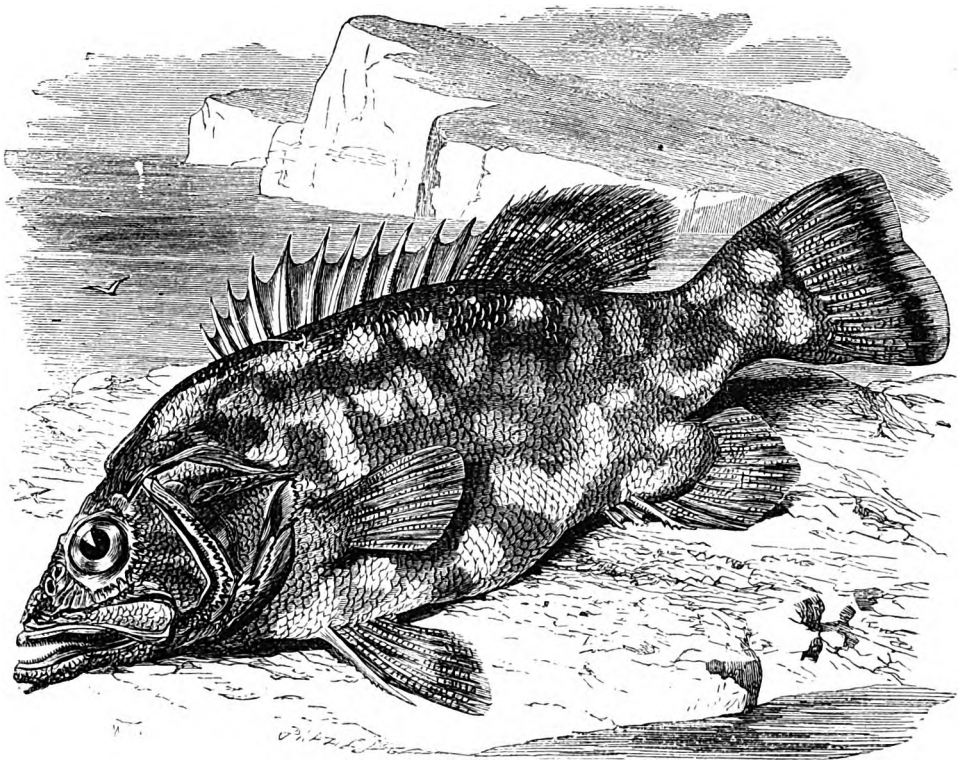


GIANT PERCH.—*Lucioperca Sandra.*

The Giant Perch derives its name from the very large size to which it attains, and its resemblance to the Perch, both in colour, in the dark bands that cross their sides, and the sharply pointed upper fin.

As its body is very long in proportion to its width, and somewhat resembles that of the Pike, it is sometimes called by the name of Pike-Perch. The word *Lucioperca* refers to this resemblance, being composed of two Latin words, the former signifying a Pike and the latter a Perch. The teeth are rather large and powerful, and are well fitted for catching and retaining the slippery prey on which this fish is accustomed to feed. It is a voracious creature, as indeed are all the members of the family, chasing and devouring various fishes which inhabit the same waters.

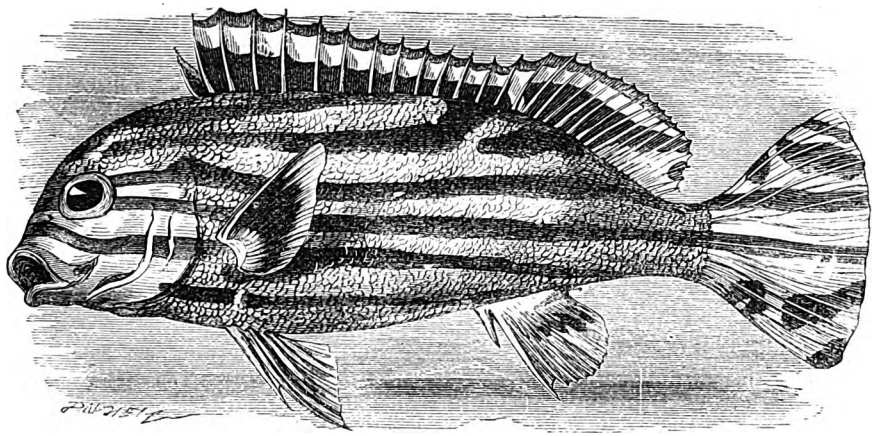
The Giant Perch is a native of Europe, and is mostly found in the rivers and lakes of Germany and Eastern Europe. It grows to a great size, a fine specimen sometimes reaching the length of three or even four feet, and being stout in proportion. Like the common English Perch, this fish is greenish olive on the upper part of the body, and pure white below. The back fins are partly furnished with prickles, and covered with spots. The edges of the gill-covers are lengthened into points, but are not so sharp and cutting as those of the Basse.



STONE BASSE.—*Polyprion cérnium.*

The Stone Basse is an inhabitant of the British seas. It is otherwise known as Couch's Polyprion, in honour of the eminent naturalist who first made it known as a British species, and as Jew Fish and Wreck Fish—the last title being given to it on account of its habit of frequenting drifting timbers, apparently for the purpose of feeding upon the various marine creatures that swarm about such places. In Madeira it is called Cherne, when full-grown, and Chernotte when young.

Its voracity is astonishing, for it has been known to dash so violently towards the barnacles as to be left high and dry on the wreck to which they were adhering, and so was obliged to wait until a large wave washed it again into the sea. It does not appear to eat the barnacles, for when the stomachs of these fish were opened, they were found to contain nothing but the remains of little fishes. The colour of the Stone Basse is dark purplish brown above and silvery white below. It is armed with many thorny points, and cannot be handled with impunity.



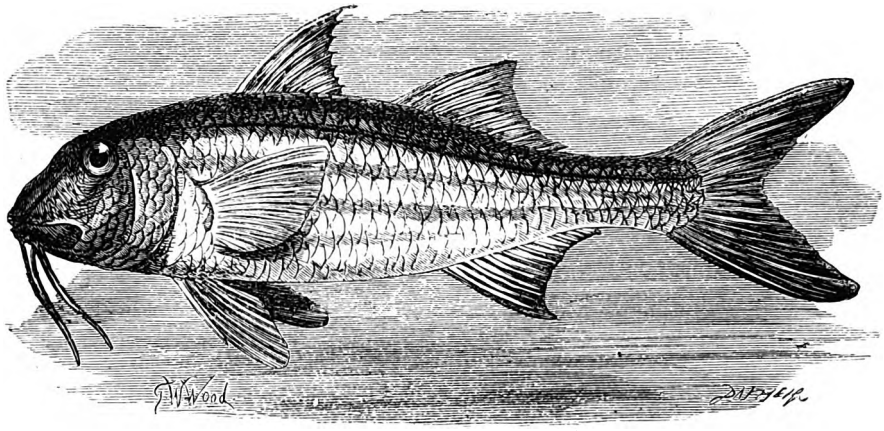
CUVIER'S BODIAN.—*Diagramma lineátum.*

THE beautiful fish which is called CUVIER'S BODIAN is one of the wonderfully coloured species which are found in the hotter parts of the world, and which glow with all the splendid hues of the humming bird or the parrot. Indeed, these creatures are often called by the name of Parrot fishes, on account of their beautiful colours, though the name is very loosely applied to fish that have no real connection with each other, except that they live in the same waters and are beautifully coloured.

The tints which decorate the finny inhabitants of these waters are brilliant beyond all power of description, and the most glowing colours of the artist, though painted on a ground of burnished gold, fail to convey more than a dim idea of the wondrous effects produced by the living creatures. Even the patterns in which these colours are arranged are as unexpected as they are effective, and the art student would gain no slight knowledge of that most difficult science of colour, were he to visit the tropical seas, and study the fishes as they swim calmly in the crystalline water, amid the forests of waving seaweeds or branching corals.

The harmony of the tints is not less remarkable than their brilliancy, for the brightest and most glowing colours are flung boldly together in great profusion.

The Cuvier's Bodian is a species spread over the greater part of the Indian seas, and caught, though it appears but rarely, on the coasts of Ceylon, being most frequently captured upon the southern shores and upon rocky ground. The Cingalese name is Deweeboraloowah. In colour it is a remarkably handsome fish. It is yellowish brown on the back, changing gradually to reddish grey on the sides, and fading to simple grey on the abdomen. The head, tail, and fins are bright golden yellow, and the bars and patches of darker colour are deep chocolate-brown. Its average length is from eighteen to twenty inches.



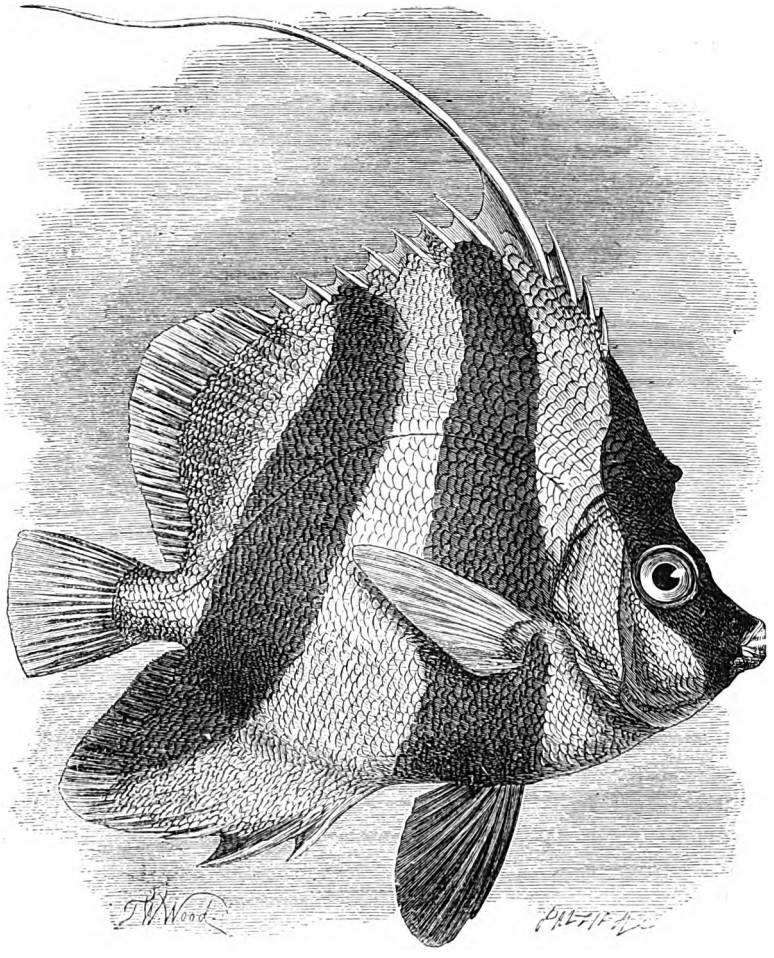
SURMULLET.—*Mullus Surmúletus.*

The Surmullet, sometimes called the Striped Red Mullett, is a good example of the family to which it belongs. There are other fish which are popularly called Mullets, but which really have nothing to do with the family.

Every one has heard of the Surmullet, and most persons are acquainted with it as it lies on a dish, neatly surrounded by paper walls, and floating in a rich sauce. The ancients were well acquainted with the excellent flavour of this fish, and used to give prices which were truly absurd. A sum equal to fifty pounds of our money has been given for a Surmullet that weighed between six and seven pounds. The liver is thought to be the best part of the fish.

Fishermen catch the Surmullet either with the mackerel-net or by trawling, and it is found that the fish approaches the shore during the warm months and retires into deep water in the winter. It swims in shoals of various sizes, and is very uncertain in its habits, sometimes being caught in great numbers, and at others being so scarce as to fetch a very high price in the market.

The beautiful pink colour of this fish is almost entirely owing to the effects of violence, and not to the scales. In fact, the fewer are the scales the brighter is the rosy hue, for when the scales are rubbed off, as is very easily done, a kind of bruise ensues, and becomes of a rich scarlet. From the lower part of the jaw hang two long fleshy filaments. They are very sensitive, and are believed to act as feelers, so as to enable the fish to distinguish objects by the touch. They are filled with nerves, and composed of long muscular fibres.



LONG-SPINED CHÆTODON.—*Heniochus monoceros.*

The Long-Spined Chætodon is sometimes called the Charioteer, because the enormously long spine of the back fin is thought to bear some resemblance to the long whip used by those who drive horses.

The Charioteer is only found in the hotter seas, and a very fine specimen, now in the British Museum, was caught off the Mauritius. The fins are covered with little scales. The body of this fish is extremely deep, and several of the fins are large and armed with powerful spines. Three broad black bands are drawn across the whole body. The middle band is rather narrow at the top, but rapidly widens as it descends, until it attains double the width with which it began.

WANDERING CHÆTODON.—BEAKED CHÆTODON.

THE two strange-looking fish represented in the illustration, are members of a very curious family. All these fish have very little mouths, with the finest imaginable teeth, scarcely thicker than hairs, very deep bodies, and their fins partly covered with scales. They are all natives of the hotter parts of the earth.

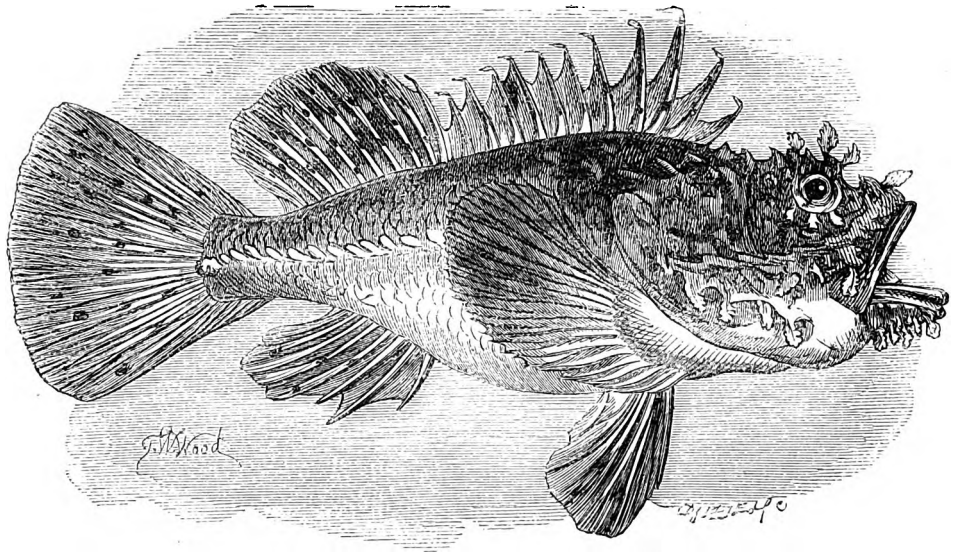
The upper figure represents the BEAKED CHÆTODON, which is represented in the act of taking aim at an insect which has settled on a plant that overhangs the water.

The curiously elongated muzzle is employed by this fish in a rather unexpected manner, being used as a gun or bow, a drop of water taking the place of the arrow or bullet. Perhaps the closest analogy is with the celebrated "sumpitan," or blow-gun, of the Macoushi Indians, a tube through which an arrow is driven by the force of the breath. The Beaked Chætodon feeds largely on flies and other insects, but is not forced to depend, as is the case with nearly every other fish, on the accidental fall of its prey into the water. If it sees a fly or other insect resting on a twig or grass-blade that overhangs the water, the Chætodon approaches very quietly, the greater part of its body submerged, and its nose just showing itself above the surface, the point directed towards the victim. Suddenly, it shoots a drop of water at the fly with such accuracy of aim, that the unsuspecting insect is knocked off its perch, and is snapped up by the fish as soon as it touches the surface of the water.

This habit it continues even in captivity, and is in consequence in great estimation as a household pet by the Japanese. They keep the fish in a large bowl of water, and amuse themselves by holding towards it a fly upon the end of a slender rod, and seeing the finny hunter strike its prey into the water. Another fish, called from its wonderful powers of shooting, the Archer Fish, possesses the same faculty.

The Beaked Chætodon inhabits the Indian and Polynesian seas, and has been taken off the west coast of Australia, where it is usually found in or near the mouths of rivers. Over the head and body of this species are drawn five brownish cross-bands edged with darker brown and white, and in the middle of the soft back fin there is a rather large circular black spot edged with white.

THE lower figure represents the WANDERING CHÆTODON, which is chiefly remarkable for the curious manner in which its body is marked. The ground colour of this fish is golden-yellow, and the narrow lines that are so oddly arranged, are of a purplish-brown. The band that passes over the head, and includes the eye in its passage, is jetty black, and the streaks upon its tail and the lower fin are of the same hue. The spines of the back fin are short but sharp, and those of the lower fin are tolerably powerful. This fish rarely exceeds one foot in length.



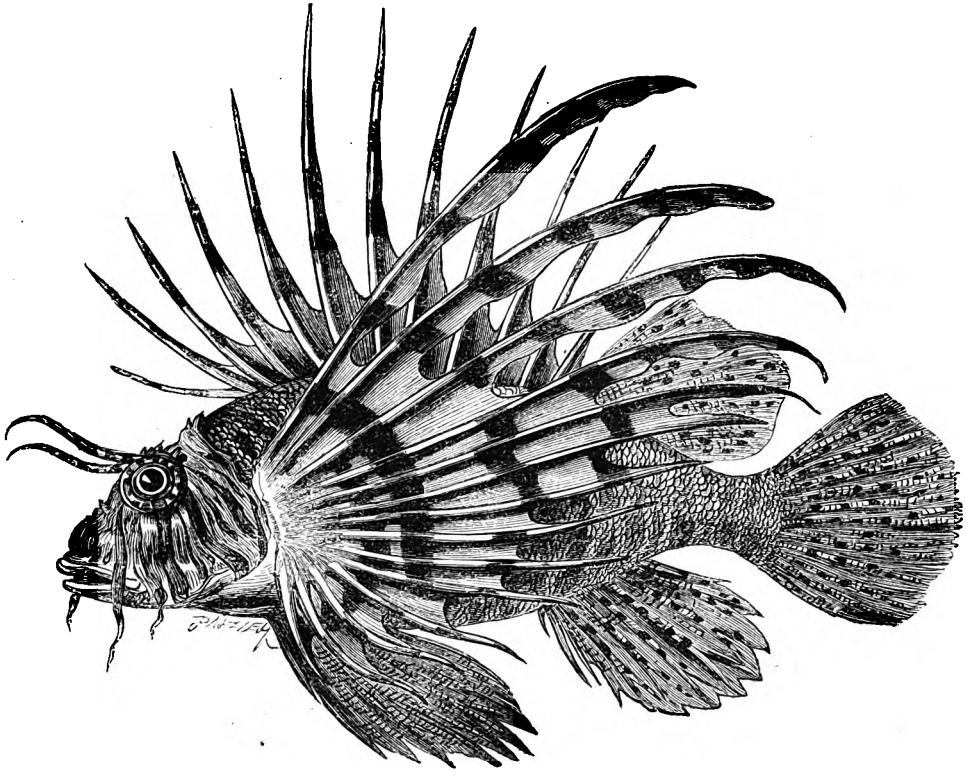
RED SCORPION FISH.—*Scorpæna scrofa.*

On account of its fiery colour and ungainly aspect, the Red Scorpion Fish has long been supposed to possess qualities as dangerous as its appearance is repulsive, and has been termed the Sea Scorpion from the supposed venom of its spines and frowardness of its temper. It is however a harmless fish enough, not capable of inflicting such severe injuries as several species that have already been described. When captured, it certainly plunges and struggles violently in its endeavours to escape, and if handled incautiously it will probably inflict some painful injuries with its bony spears. This result, however, is attributable to the carelessness of the captor and to the natural desire for liberty.

The general colour of this species is red, marbled with brown upon the body and fins. There is a rather conspicuous blotch of blackish brown on the dorsal fin between the sixth and ninth dorsal spines. It is not at all a large fish, the average length of a full-grown individual being about eighteen inches, which in a few very fine specimens is extended to two feet.

This family is rich in fishes of odd, and sometimes repulsive shapes. There is, for example, the Fi-fi, perhaps the very ugliest of the finny race. It hardly looks like a fish; its skin hangs in loose warty masses as if diseased, and is covered with a slimy substance that adheres to the fingers like bird-lime. It is armed with many slender but sharp spines, and is popularly supposed to be venomous.

The Sea Locust is another of these odd shapes, and is remarkable for being the only flying fish that inhabits the Red Sea. It has several sharp spines that project from the head, and can inflict a painful wound.



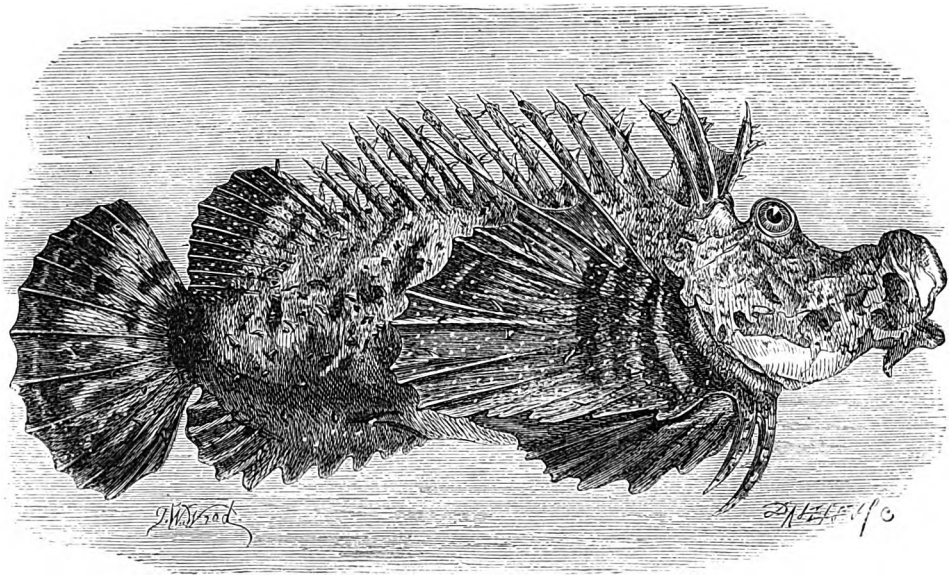
RED FIRE FISH.—*Pléröis vólitans.*

THE extraordinary creature depicted in the engraving, which is known to British residents by the name of RED FIRE-FISH, and to the natives of Ceylon by the title of GINI-MAHA, inhabits the greater part of the tropical seas, from Eastern Africa, through the Indian seas, to Australia.

This fish is remarkable for the singular development of the dorsal and pectoral fins, the latter being of such vast proportionate size that they were formerly supposed to act like the corresponding organs in the flying fish, and to raise the creature out of the water into the air. Such, however, is not the case, for the rays which carry the connecting membrane are not supported by such a strength of bone as in the true flying fishes, and are far too weak to serve that purpose.

The Red Fire Fish is common off the Ceylonese coast, and is said to be rather valuable as an article of food.

The colour of this fish is rosy brown, barred with darker brown or black. The length of the fish is about seven or eight inches.



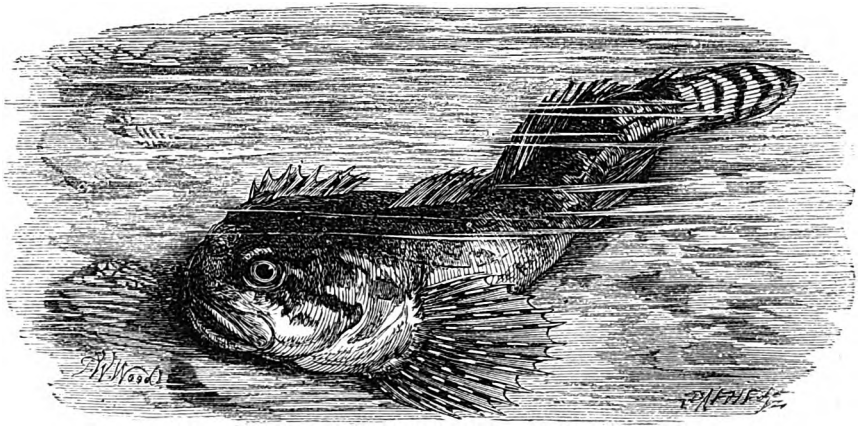
FILAMENTOUS GURNARD.—*Pelor filamentósum.*

In the fish which is called the Filamentous Gurnard, we have another instance of the strange forms into which the fishes of this family are often modified.

In this fish, the head appears as if it had been crushed out of all shape and never recovered from the injury, while its head, body, and even its fins, are hung about with scraps of skin and membrane that look as if they had been partly torn away by violence, and then suffered to heal while still suspended upon the fish. The object for this remarkable structure of the skin is very obscure. These flaps and tatters cannot be used as feelers like the "beard" of the red banded mullet, described on page 88, and yet it is difficult to imagine what other purpose they could possibly serve. In this species, the back-fins are rather long, and their spines are of very great size, and except near their bases are not connected by any membrane, but stand out boldly like an array of hostile spears levelled at an approaching enemy.

This species is found near the Mauritius, and seems to feed upon certain crustacæa and molluscs. The little creatures fall victims even at a rather advanced age, for the bony remnants of cuttle-fish have been found in the interior. The colour of the Filamentous Gurnard is greyish-brown spotted with white.

There is another species of this genus which is coloured in a bold and pleasing manner. This is the Spotted Pelor (*Pelor maculátum*), which derives its name from the manner in which the black hue of the skin is variegated with white.



BULL-HEAD.—*Cottus góbio.*

We now come to a very familiar and not very prepossessing fish; the well-known Bull-head, or Miller's Thumb, sometimes called by the name of Tommy Logge.

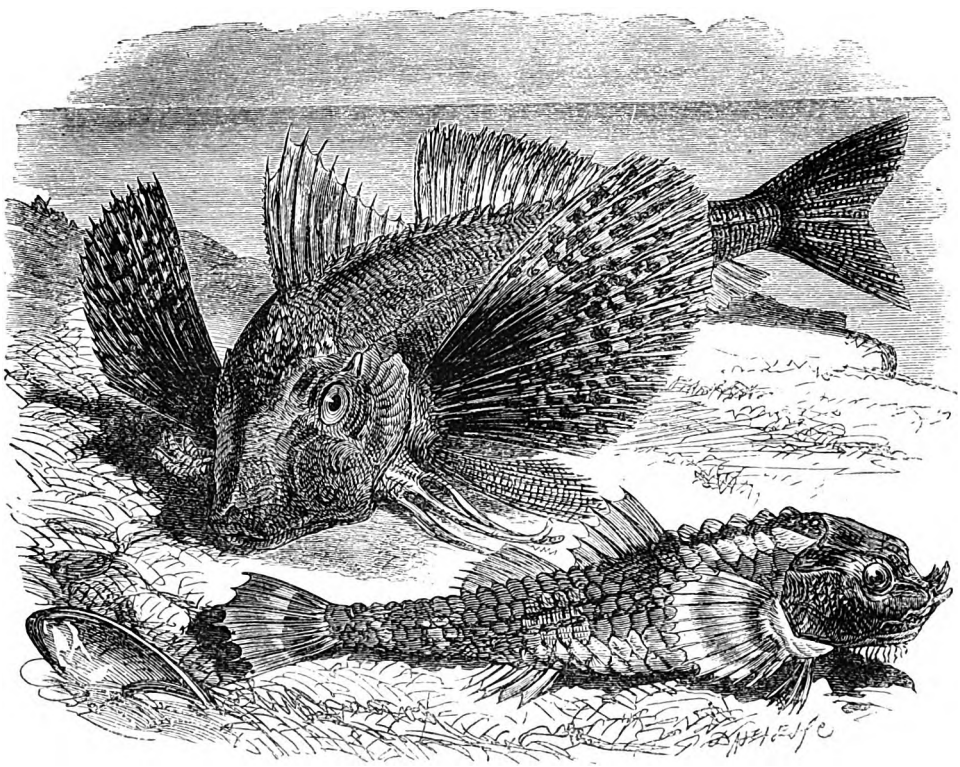
This large-headed and odd-looking fish is very common in our brooks and streams, where it is generally found under loose stones, and affords great sport to the juvenile fisherman. In my younger days, the chase of the Bull-head was rather an exciting one, and was carried out without hook or line, or indeed any aid but the hands. The fish has a habit of hiding itself under loose stones, and on account of its flat, though wide head, is enabled to push itself into crevices which are apparently much too small to contain it.

By practice, the stones which seemed most likely to shelter a Bull-head were soon noted, and an experienced eye was not very long in detecting the presence of the fish. The Bull-head has an inveterate habit of wriggling its tail, thus creating a current of water which betrays its whereabouts. The mode of catching the fish was, to wade very quietly to the stone, put both hands into the water, raise the stone smartly with the left hand, and seize the fish with the right, just as it was going to escape.

The Bull-head is a voracious little fish, feeding on various water insects, worms, larvæ, and the young fry of other fish. It is a representative of a rather large genus, comprising about twenty-six or twenty-seven known species, which are spread over all the northern and temperate parts of the world.

The mouth of this little fish is very wide, and contains numerous minute teeth.

The name of Miller's Thumb is derived from the peculiarly wide and flattened head, which bears some resemblance to the object whence its name is taken.



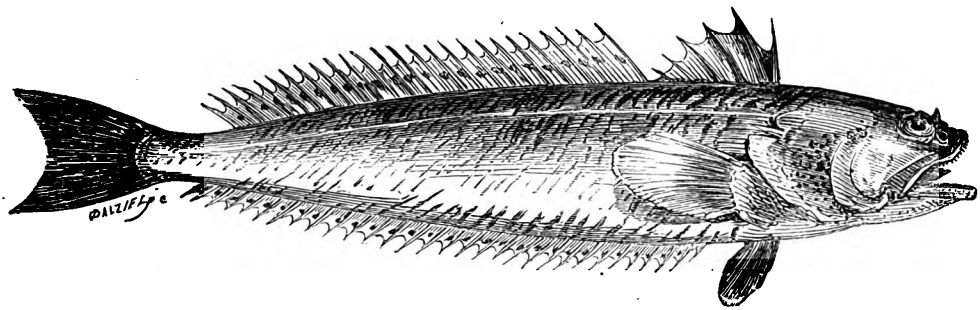
SAPPHIRINE GURNARD.—*Trígla hirundo.* LYRIE.—*Agónus cataphractus.*

MANY of the Gurnards are beautiful fish, being coloured with the most brilliant hues, though their shapes are seldom pleasing to the eye. The upper figure represents the SAPPHARINE GURNARD, which derives its name from the deep blue colour of the under side of the pectoral fins. It is one of the British fishes, and is tolerably common on our coasts. The pectoral fins of the Sapphirine Gurnard are of very great size, when the dimensions of the fish itself is considered, and they form most beautiful objects, being of a bold but elegant shape, of a deep sapphirine blue on the under side, and the other side closely spotted. When full-grown, this species sometimes attains the length of two feet.

The LYRIE, or Armed Bull-head, is found on our coasts, and is known by a great variety of names, such as Pogge, Sea Poacher, and Noble.

It is a curious-looking fish, with its bony armour-plates and shielded head. Its flesh is firm and good. It feeds mostly on aquatic animals.

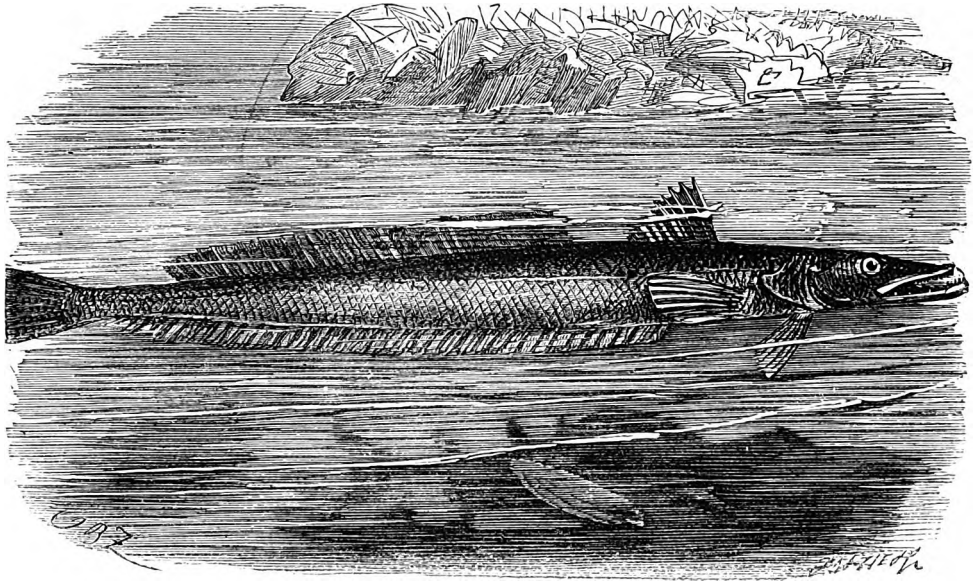
The general colour of the Lyrie is brown above, crossed with several broad bands of dark brown, and it is white beneath, with a trifling tinge of brown.



GREAT WEAVER FISH.—*Trachínus draco.*

THE GREAT WEAVER, or WEEVER FISH, is one of the most unpleasant members of theBritish fishes, on account of the severe wounds which it can inflict. The name Weaver has nothing to do with weaving or with a loom, but is merely the popular way of pronouncing its French name, *La Vive*, which is given to it on account of the ease with which it bears absence from the water. The fishermen sometimes call it the Sting-Bull, because they think that it would even hurt a bull in spite of his tough hide, and they sometimes name it the Sea Cat, because its spines are sharp like the claws of a cat. The wounds which are inflicted by the sharp spine of the gill cover or the dorsal fin are said to resemble the sting of a hornet, the evil effects extending from the hand up the arm, and even reaching the shoulder. On the first infliction of the injury, it gives little more pain than the prick of a pin or needle, but in a short time, a dull hot pain creeps up the arm, and increases in intensity for several hours. Fishermen, taught by experience, are very cautious in handling this dangerous fish, and before they place it in their basket, they cut off the whole of the first dorsal fin and the hinder part of the gill cover. In France, this precaution is rendered compulsory by law.

The same remedies as those employed for the bite of the viper, such as persevering friction with hot oil, are said to be the best means of relieving the pain caused by this small but formidable fish. One of these Weavers has been known to strike three men successively, and to injure them all in the same manner.



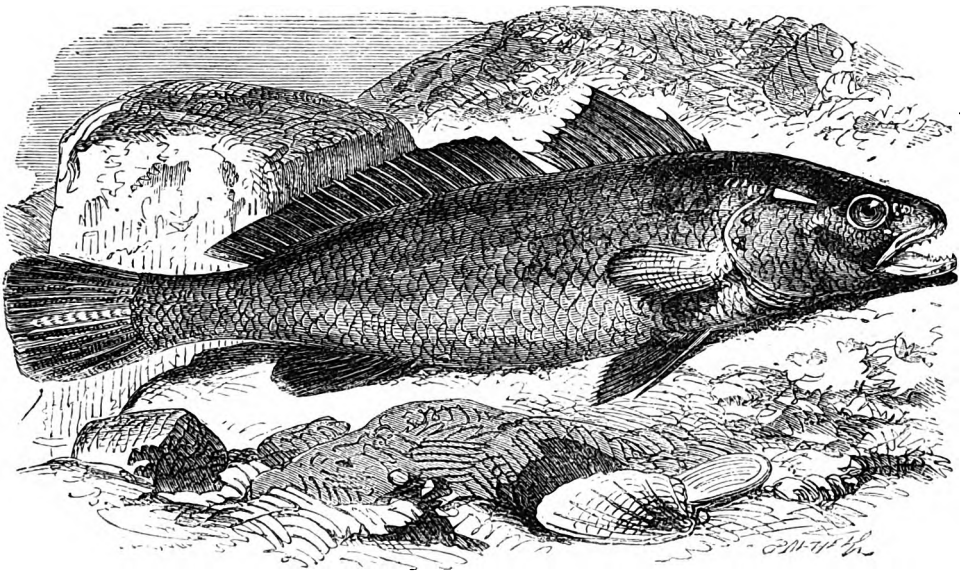
BRAZILIAN PERCOPHIS.—*Pércophis Braziliánus.*

The Brazilian Percophis is remarkable for the extreme length of the body, the long and powerful teeth, and the sharp spines of the back fin.

The scales with which its body is covered are beautifully regular, and are arranged so as to produce the effect of a chequered pattern, as if a number of crossing lines had been drawn over the body of the fish.

Like those of the Common Perch, the scales are furnished at their hinder edge with a series of little projections something like the teeth of a very small comb. All the scales so formed are bright and shining in colour, have a pearly lustre, and are often used for making brooches and other ornaments, besides being employed for the embroidery of dresses. A well executed pattern upon black velvet, or other dark back-ground, has a very fine and elegant effect.

The name *Percophis* is composed of two Greek words, the former signifying a perch and the latter a snake; and is given to this fish because its body is long like that of a snake, and the fins are like those of a perch. The teeth are large and sharp, and the under jaw projects much beyond the upper.

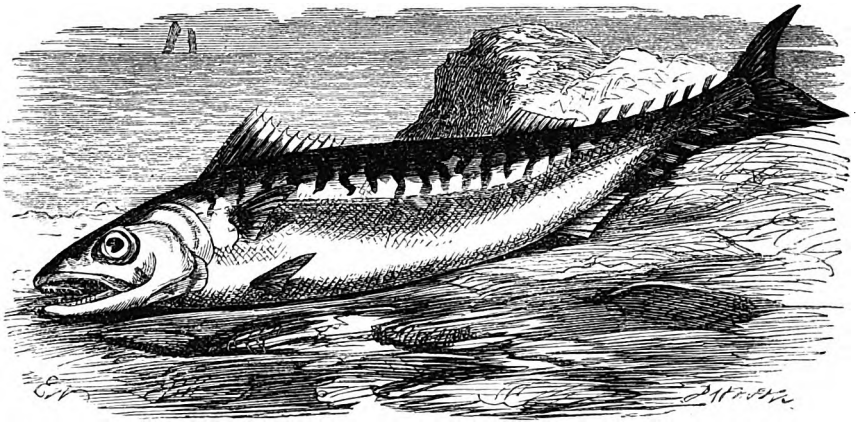


MAIGRE.—*Sciæna áquila.*

THE MAIGRE is one of those few fishes that are able to produce sounds, and when many of them are in company, the noise which they make can be heard from a depth of one hundred and twenty feet. The fishermen are in the habit of listening for these sounds, and are directed by them to the best spots for shooting their nets. The sound is something like a mixture between a cat's purr and a pig's grunt. The flesh of the Maigre is remarkably good, and like that of the Cod fish, is thought to be best about the head and shoulders.

It is a rather large fish, seldom measuring less than a yard in length, and often attaining nearly double those dimensions, and is in consequence extremely valuable to the fishermen. Although at one time it might be captured with tolerable frequency on the coast of France, and now and then on the British shores, it is now very scarce, having shifted its localities, and being found most plentifully on the southern shores of the Mediterranean. There it seems to be hatched and to remain until it attains nearly adult age, when it crosses to the northern side of that sea, and is there found to be of considerable dimensions.

On account of its size and active habits, the Maigre struggles most powerfully when entangled in the nets, and a fine lively specimen, when lifted into a boat, will flounce about with such activity, and wield its tail with such active force, that it will knock down a human being with a blow. Warned by previous experience, the fishermen take care to quiet their prey by a stroke on the head as soon as it is fairly lifted over the side of the boat.



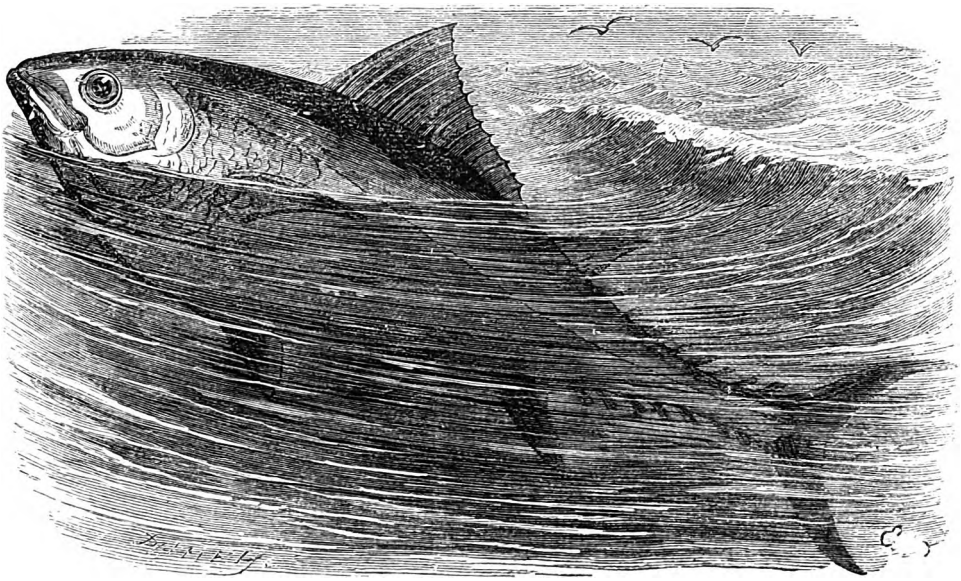
MACKAREL.—*Scomber scomber.*

THE MACKAREL is well known for the exceeding beauty of its colours and the peculiar flavour of its flesh. This is one of the species that migrate in vast shoals at certain times of the year, directing their course towards the shores, and as a general rule frequenting the same or neighbouring localities from year to year.

The flesh of the Mackarel is very excellent, and it possesses a rather powerful and unique flavour that has caused fennel to be looked upon as a necessary corrective in the sauce with which the fish is served. Unfortunately, it must be eaten while quite fresh, as it becomes unfit for consumption in a very short time after being taken out of the water.

This fish is taken both by nets and lines, the nets being of two kinds, one called the drift-net, and the other the seine. The drift-net is, as its name implies, allowed to be drifted out by the tide, and is suspended along a cord called the drift-rope. The whole length of one of these nets when shot is sometimes a mile and a half, these enormous dimensions being attained by attaching a number of nets together at the ends. Each of these nets is one hundred and twenty feet long and twenty feet deep, and along the upper edge are fastened a series of cork floats.

Fishing for Mackarel with the line is also a profitable mode of taking these fish, although they cannot be taken in such multitudes as with the net. The Mackarel is a very voracious fish, and will bite at almost any glittering substance drawn quickly through the water, a strip of scarlet cloth being a very favourite bait. A tapering slice of flesh cut from the side of a Mackarel is found to be the most successful of any bait, and the method of angling is simply to pass the hook through the thicker end of the strip—technically called a "lask"—and to throw it overboard a boat in full sail, so that it is towed along without trouble.



TUNNY.—*Thynnus Thynnus.*

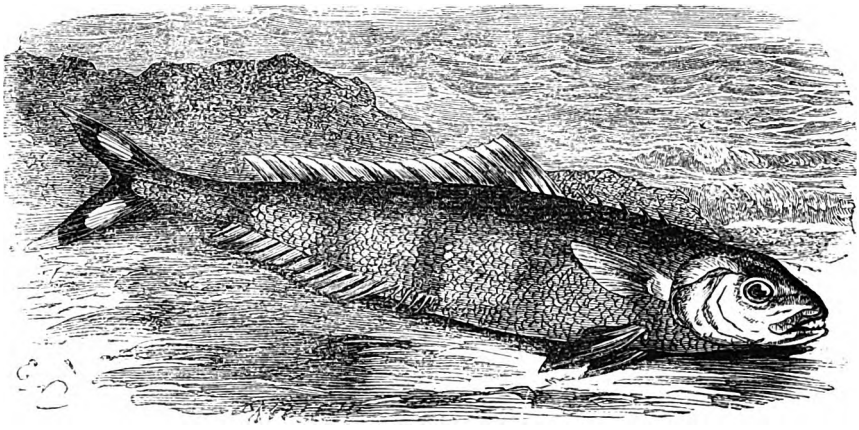
The magnificent fish called the Tunny does not visit our coasts in sufficient numbers to be of any importance; but on the shores of the Mediterranean, where it is found in very great abundance, it forms one of the chief sources of wealth of the sea-side population.

In May and June, the Tunnies move in vast shoals along the shores, seeking for suitable spots wherein to deposit their spawn. As soon as they are seen on the move, notice is given by a sentinel, who is constantly watching from some lofty eminence, and the whole population is at once astir, preparing nets for the capture, and salt and tubs for the curing of the expected fish. There are two modes of catching the Tunny, one by the seine-net and the other by the "madrague."

The principle of the madrague is precisely the same as that of the "corral," by which wild elephants are entrapped in Ceylon.

A vast enclosure of united nets, nearly a mile in length, and divided into several chambers, is so arranged that as the Tunnies pass along the coast, they are intercepted by a barrier, and on endeavouring to retreat, are forced to enter one of the chambers. When a number of Tunnies have fairly entered the net they are driven from one chamber to another, until they are forced into the last and smallest, called the chamber of death.

The food of the Tunnies consists mostly of smaller fish, such as herrings and pilchards, and the cuttle-fish also form some portion of its diet.



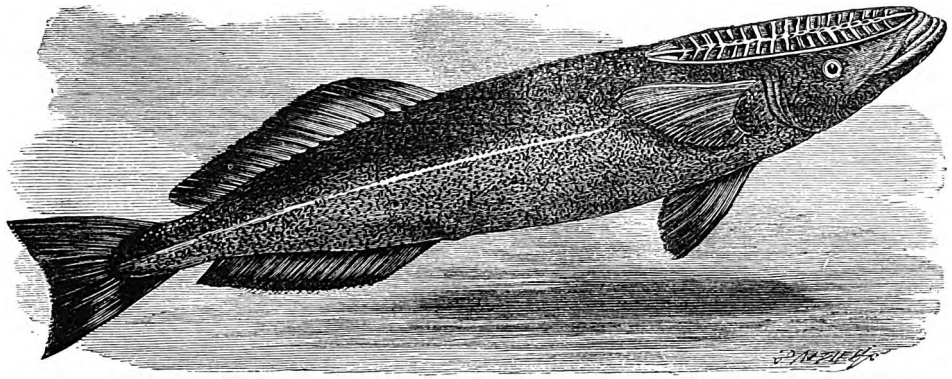
PILOT FISH.—*Naúcrates ductor.*

The pretty little Pilot Fish is so called because it is thought by sailors to guide the shark to its prey, like a pilot guiding a ship into harbour.

At all events it has a habit of accompanying the shark wherever it goes, but many persons think that instead of providing food for the shark, it only follows that voracious fish for the purpose of obtaining the scraps of food that are torn off as the shark is feeding. Sometimes a shark will be accompanied by four or five Pilot fishes, while some sharks have not a single companion of this species.

The Pilot Fish seems to be in the habit of following any moving object, not much caring whether it be a shark or not, and in one case, when the shark had been caught. one of the Pilot fishes transferred its affections to the boat, and followed it closely wherever it went.

The colour of the Pilot Fish is greyish blue with a mark of silver, dark on the back and becoming paler towards the abdomen. Five bands of dark blue pass completely round the body, and there are two faint blue bands, one on the head and the other on the tail. The pectoral fins are clouded with blue and white. The ventral fins are nearly black. The usual length of the Pilot Fish is about one foot



SUCKING FISH.—*Echenéis rémora.*

Every one has heard of the Sucking Fish, and there are few who are not acquainted with the wild and fabulous tales narrated of its powers.

This little fish was reported to adhere to the bottoms of ships, and to arrest their progress as suddenly and firmly as if they had struck upon a rock. The winds might blow, the sails might fill, and the masts creak, but the unseen fish below could hold the vessel by its single force, and confine her to the same spot as if at anchor. Both scientific names refer to this so-called property, *Echenéis* signifying "shipholder," and *rémora* meaning "delay."

That the Sucking Fish is able to adhere strongly to smooth surfaces is a well-known fact, the process being accomplished by means of the curious shield or disc upon the upper surface of the head and shoulders. This disc is composed of a number of flat bony laminæ, arranged parallel to each other in a manner resembling the common wooden window-blind, and capable of being raised or depressed at will.

It is rather a voracious fish, and takes the hook eagerly if baited with a piece of raw flesh. When hooked, however, it is by no means secured, for as soon as it feels the prick of the sharp point and the pull of the line, it darts to the side of the vessel, dives deeply, and affixes itself so strongly to the bottom that the hook may be torn out of the mouth before the fish will relax its hold. It is therefore necessary to draw the Sucking Fish smartly out of the water as soon as it is fairly hooked and in this manner great numbers can be caught

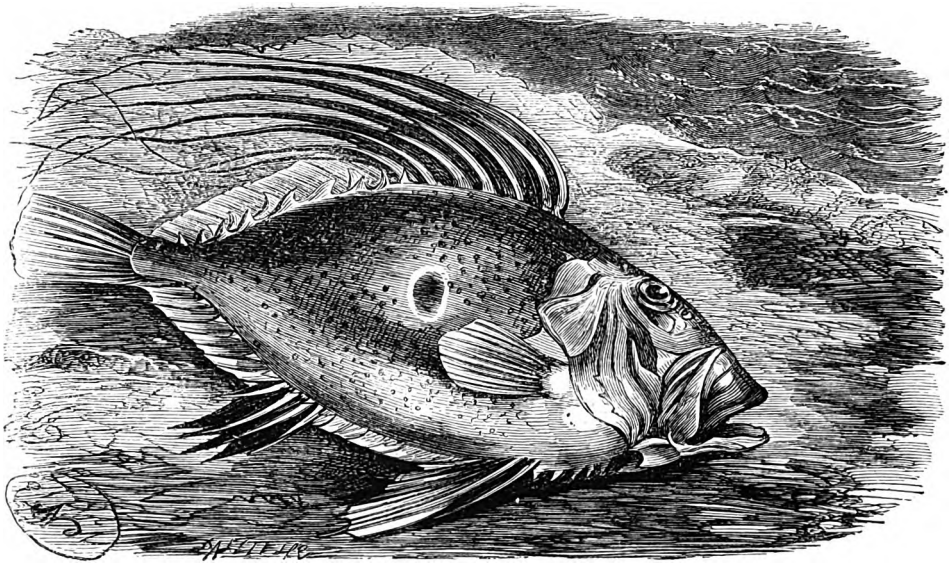
THE CORYPHENE.

Most persons have heard of the beautiful colours that are sometimes said to appear on the dying dolphin, and may possibly have been told that the story is false and that the dolphin has no colours except black, grey and a little white. In this instance both statements are right, for although the real dolphin does not display any change of colour, the Coryphene, which is wrongly called the dolphin by sailors, has that curious power. When the Coryphene is dying, its body glows with all kinds of colours, and during its life it is a most lovely creature, its sides glittering as if they were covered with polished gold and silver, and every movement causing a fresh change of colour.

It is a very active fish, feeding greatly upon the flying fish, and chasing the pretty prey with exceeding skill and energy. A Coryphene will come upon a shoal of flying fishes and immediately give chase. The frightened creatures leap at once into the air in their endeavours to escape, but the eye of their pursuer is too good to be thus deceived, and it continues to press onwards. The flying fish cannot remain in the air more than a few moments, because the jaws and gills must be kept moist, and it accordingly alights in the sea after its short flight. Again it springs into the air, but this time, being tired, it takes a shorter flight, and after a while is sure to be snapped up as it falls wearied into the water.

Sometimes the Coryphene follows ships, keeping pace with them for the sake of the scraps that are thrown overboard. The sailors often catch this voracious fish, and employ two methods, namely the hook and the harpoon. The hook is simply baited with a piece of shining tin cut rudely into the shape of a flying fish and dangled in the air. The Coryphene is sure to leap at the glittering bait, and is at once caught. The harpoon is something like a garden fork with a barb at each point and a rather long handle loaded with lead to make it heavier. This article is called the "grains." An experienced seaman takes the grains, to which a long rope is fastened, goes out on the bowsprit, and waits until a Coryphene passes below him. He then drops the grains upon the fish, the barbed points strikes deeply into its back, the loaded handle turns over and holds the fish with its back downwards, in an attitude where it is nearly powerless, and by means of the rope, the grains and fish are dragged on board.

The Coryphene is to be found in the warmer seas where the flying fish live, but it feeds on many other finny beings. It is not the only fish that displays beautiful colours in the act of dying, for the common Red Mullet possesses the same habit, and in former days was brought to table while still living in order to delight the company with its lovelv hues.

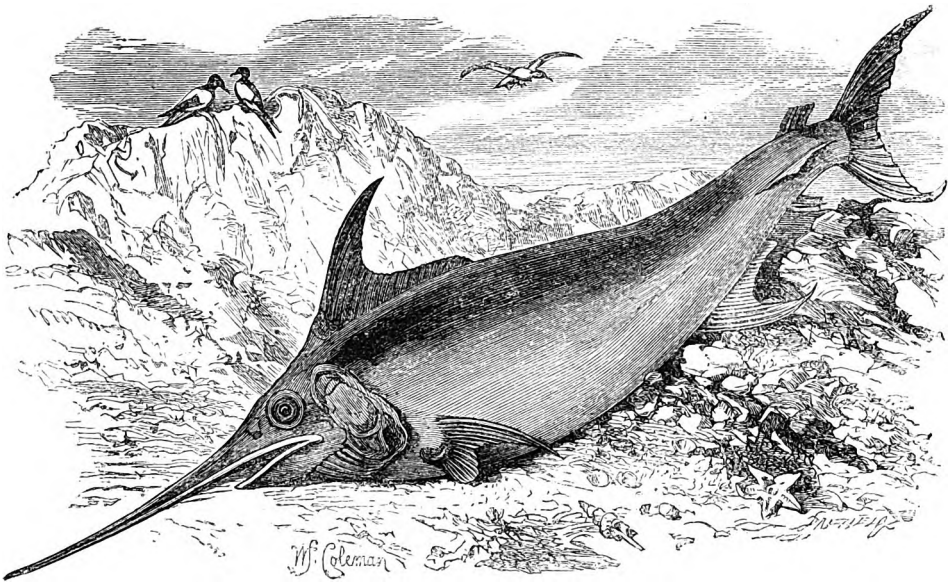


JOHN DORY.—*Zeus faber.*

JUST as the name of Weaver Fish is corrupted from the French *La Vive*, so the well-known JOHN DORY is formed by mispronouncing its French name *Jaune Dorée, i. e.* the Golden Yellow Fish, this name being given to it on account of its colour.

It is rather a handsome though a very odd-looking fish, and is remarkable for the very long spines of the back fin, the great size of the head, and the curious black spot on the sides. This spot is thought by many persons to be a memorial of the miraculous payment of the tribute money, which was found in the mouth of a John Dory, and that the two black spots are the marks of the apostle's finger and thumb.

It is a very voracious creature, feeding upon various marine animals and fishes of inferior size to itself. It will even catch and devour a cuttle-fish of great size in spite of the strength and agility of the prey, and is fond of following the shoals of pilchards for the purpose of feeding upon the young and weakly. In consequence of this habit, it is frequently captured in the same nets which are employed to take the pilchards. The flesh of the Dory is remarkably excellent, and as it is rather improved by the lapse of twenty-four hours after the fish has been taken from the sea, it is peculiarly valuable to those who live far inland, and cannot hope for the more delicate fishes which must be eaten as soon as caught.



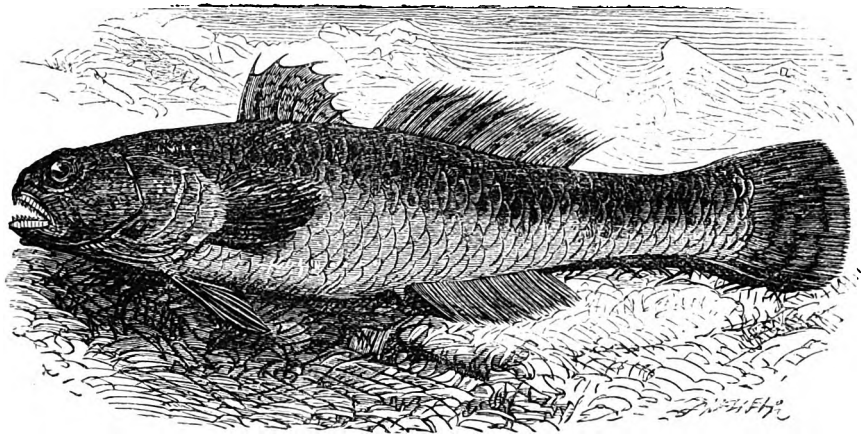
SWORD FISH.—*Xiphias gládius.*

The well-known Sword-fish derives its popular name from the curious development of the snout, which projects forward, and is greatly prolonged, into a shape somewhat resembling a sword-blade. The "sword" is formed by the extension of certain bones belonging to the upper part of the head.

This fine fish is found in the Mediterranean Sea, and also in the Atlantic Ocean, and in the former locality is often very plentiful. The Sicilian fishermen are accustomed to pursue the Sword-fish in boats, and mostly employ the harpoon in its capture. The weapon is not very heavy, and by a strong and practised hand can be hurled to some distance.

The use of the "sword" is not clearly ascertained, In all probability, the fish employs this curious weapon in gaining its subsistence, but the precise mode of so doing is not known. It is an ascertained fact that the Sword-fish will sometimes attack whales, and stab them deeply with its sharp beak; and it is also known that this fish has several times driven its beak so deeply into a ship that the weapon has been broken off by the shock. In such cases, the blow is so severe that the sailors have fancied that their vessel has struck upon a rock. Several museums possess examples of pierced planks and beams, but it is possible that the fish may have struck them by accident. The Sword-fish generally go in pairs.

The food of this creature is rather varied, consisting of cuttle-fish, especially the squid, and of small fishes.



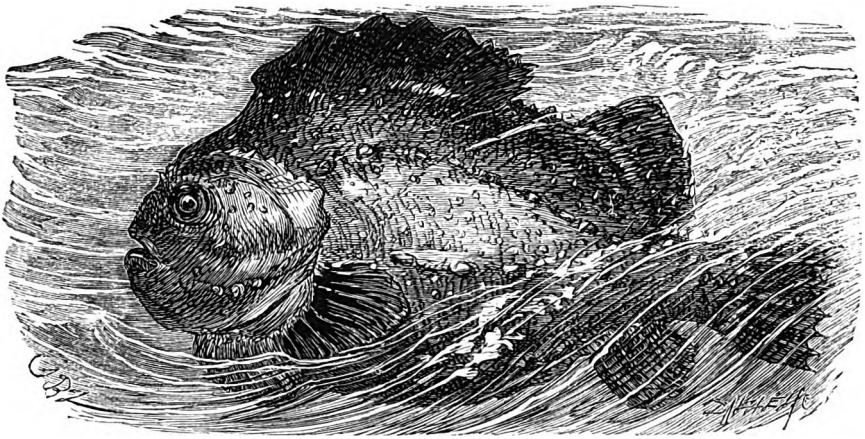
BLACK GOBY.—*Gobius niger.*

The family of the Gobies is very large, and several of its members are natives of the English seas. The true Gobies mostly remain near the rocks, and are therefore called Rock-fish. They are chiefly remarkable for the formation of the first pair of lower fins, which are set nearly together, and so arranged that they can be made into a sucking disc, by means of which the fish can adhere to the rocks at pleasure. The action of this disc is something like that of the plate in the head of the Sucking-fish.

The Black Goby prefers the rocky to the sandy coasts, and may be found in the pools left by the retreating tide. Some naturalists deny that the disc is used for adhesion, but I have caught and kept many Gobies, and have frequently seen them sticking to the sides of the vessel in which they were confined. The adhesion was achieved with astonishing rapidity, and the little fish contrived to hold itself with wonderful tenacity. The surface of the Black Goby is very slippery, owing to the abundant mucous secretion which is poured from the appropriate glands, but after it has been in spirits for some time, the edges of the scales begin to project through the mucus, and are exceedingly rough to the touch.

Several species of Goby inhabit the British shores, such as the Polewig, or Spotted Goby (*Gobius minútus*), a rather pretty little fish, transparent golden grey, with a multitude of tiny black dots upon the back, and generally marked with some darkish blotches upon the sides.

In some places along the sea-coast, the Gobies are known by the popular appellation of Bull-routs, and are rather feared on account of the sharp bite which their strong jaws and pointed teeth can inflict upon the bare hand.



LUMP-FISH.—*Cyclópterus lumpus.*

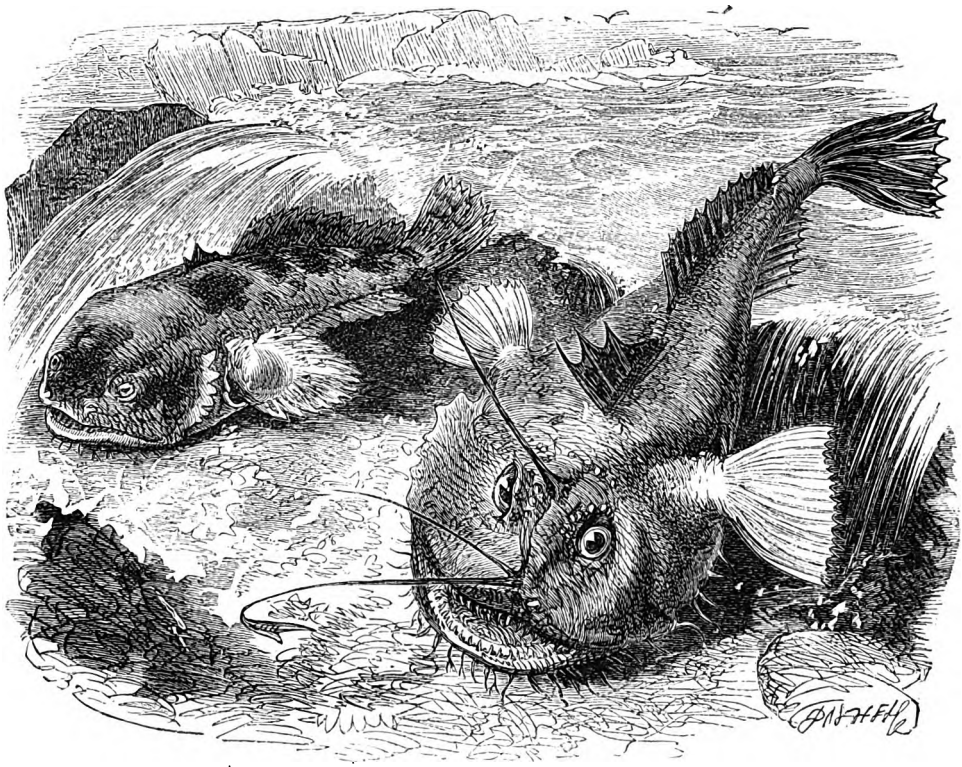
THE LUMP-SUCKER is otherwise called the LUMP-FISH, SEA-OWL, and COCK-PAIDLE, the latter name being given to it on account of the elevated ridge along the back, which is covered with a notched and tuberculated skin not unlike the comb of the cock.

The sucker or disc of this fish is capable of very powerful adhesion, retaining its hold with such tenacity, that on one occasion, when a Lump-fish was placed in a pail containing several gallons of water, it immediately affixed itself to the bottom, and held so firmly, that when grasped by the tail and lifted, it raised the vessel in which it was placed, notwithstanding the combined weight of the water and pail.

The Lump-fish is said to make a kind of home, and to hover about the spot where the eggs are placed, for the purpose of guarding them from foes. When thus engaged it is a brave and combative creature, permitting no other fish to pass within a certain distance of its charge, and, in cases of necessity, biting fiercely with its short but sharp teeth. It is said that after the young have attained some little size, they attach themselves to their careful parent, who conveys the young family into deep water.

It is tolerably plentiful on the northern coasts of this country, and is frequently seen in the Scotch markets, where it holds a place only second to the turbot. The male is thought superior to the female, but is not so large. In the breeding season, the abdomen of the male fish assumes a bright red hue. It is a voracious creature, feeding mostly upon small fishes, molluscs, and crustaceans.

When it is freshly taken from the sea, the colours of the fish are truly magnificent, and even when suspended in the shops of the London fishmonger, its brilliant hues never fail to excite the wonder and admiration of the spectators.

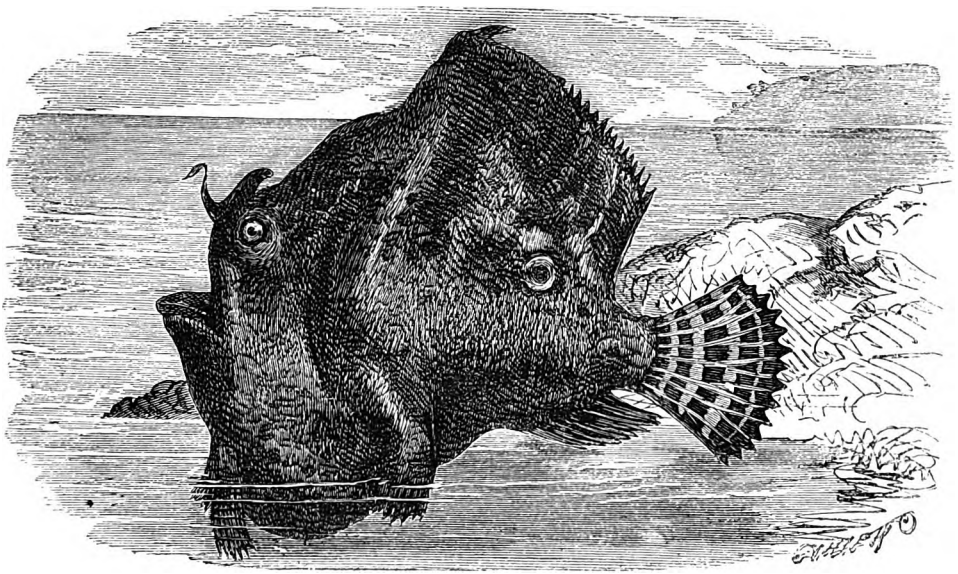


TOAD FISH.—*Bátrachus grúnniens.* FISHING FROG.—*Lóphius piscatórius.*

THE strange-looking fish that is seen on the right hand of this illustration is the FISHING FROG, or ANGLER FISH, so called because it has a method of regularly angling for its prey just as a human fisherman uses a rod and line.

On the head of this fish are several very long spines, the first of which is larger than the others, and has a little skinny flap at its tip. This flap forms the bait, and the spine is the natural rod of the Angler Fish, and they are employed as follows :—Being a feeder upon other fish, and too sluggish in its movements to catch the brisk and active little creatures on which it lives, it is obliged to have recourse to a crafty expedient. It buries itself almost entirely in the mud, choosing some place where little fish are in the habit of assembling, and permits the loose skin flap to dangle at the end of the spine. The fishes think that it is a worm, or something good to eat, come up to examine it, and are immediately snapped up in the huge mouth of the Angler.

The TOAD FISH surprises its prey in a somewhat similar manner, but has no angling apparatus. It is a native of India.



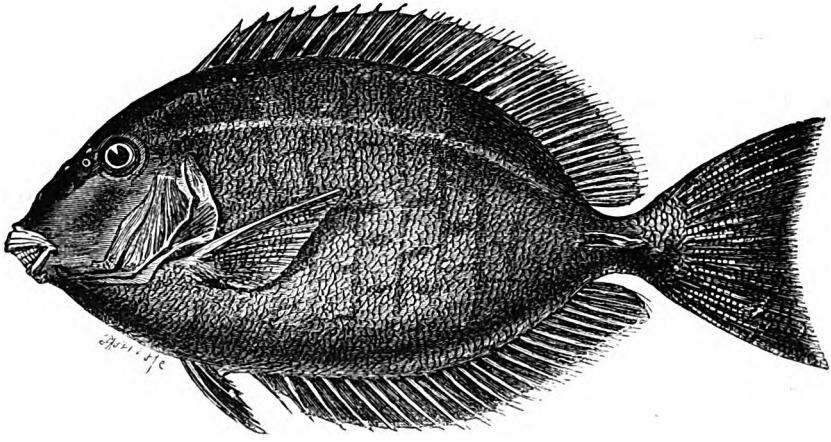
WALKING FISH.—*Antennárius híspidus.*

The Walking Fish is of so strange a shape that many persons on seeing a correct drawing of it would think that the artist had drawn an entirely imaginary creature.

In this fish, the bones which support the wide fins, and which are analagous to the wrist-bones of the human hand, are very much lengthened, and have the fin at their tips, so that the whole member assumes the form of the fore-limbs in quadrupeds. Not only does it take their shape, but it performs their duties, enabling the fish to crawl over land in a manner quite as elegant as is seen in many reptiles, though its progress is slow and awkward.

The depth of the body is very great, and it will be seen that the snout is furnished with a small spine and appendage something like the fishing rod of the Angler Fish just described.

There are many species belonging to the same genus, and in all of them the forms and colour are very variable. The present species is a native of the Indian seas. Its colour is yellow, spotted and streaked with brown.

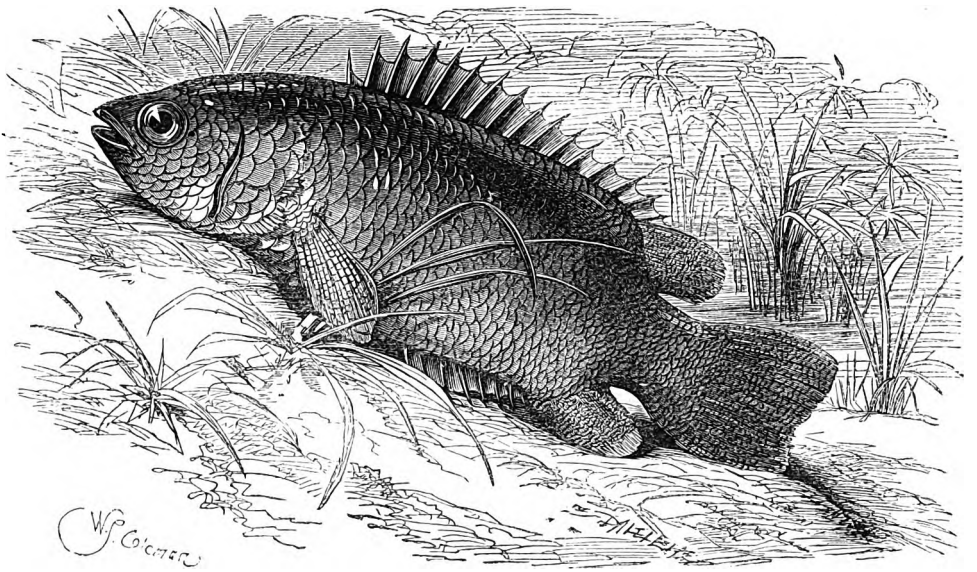


SEA SURGEON.—*Acanthúrus chirurgus.*

At a hasty glance the Sea Surgeon appears to be a very ordinary fish, with nothing about it that is particularly worthy of attention. But on looking carefully at its form, a sharply-pointed and keen-edged spine will be found on each side of the tail.

This spine will cut like a lancet, and has therefore earned for it the title of Sea Surgeon. When not required for use, this horny lancet lies in a long groove, which may be seen in the illustration, but when the fish desires to employ these weapons, it lifts them out of their sheath, and sticks forcibly while they are projecting. There are many species belonging to the family of which this fish is an example, all of them having one or more cutting spines on their tail. The name *Acanthúrus* is derived from two Greek words, the former signifying a thorn and the latter a tail.

The colour of the Sea Surgeon is usually brownish, with some darker streaks drawn over the body. It is found off the coasts of Africa, and in the tropical seas of America. It sometimes attains a length of eighteen or nineteen inches.



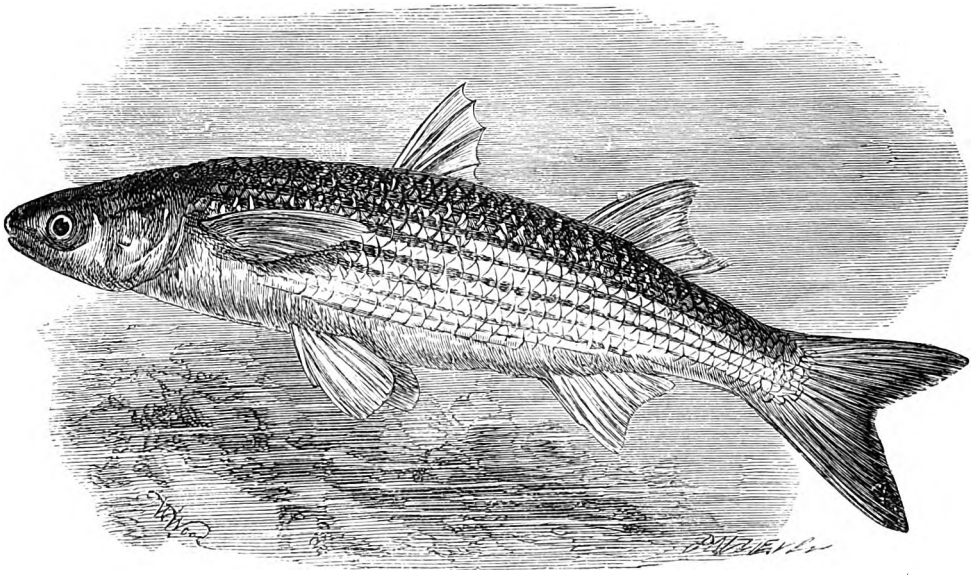
CLIMBING PERCH.—*Anabas scandens.*

THE extraordinary fish, called, from its habits, the CLIMBING PERCH, is a native of Asia, and is remarkable for its apparent disregard of certain natural laws.

This singular creature has long been celebrated for its powers of leaving the failing streams, ascending the banks, and proceeding over dry land towards some spot where its unerring instinct warns it that water is yet to be found. There are several fish which are known to have this power; the common eel of England, for example, which has frequently been observed crossing the fields in its passage from one stream to another.

It is known of the Climbing Perch that the fishermen of the Ganges, who subsist largely on these fishes, are accustomed to put them into an earthen jar or chatty as soon as caught; and although no water is supplied to them, they exist very well without it, and live this strange life for five or six days.

On opening the head of this fish, the curious structure which enables it to perform such marvellous feats is clearly seen. Some writers say that this fish is capable of climbing up the rough stems of palm-trees, in search of the water that lodges between the bases of the dead leaves and the stem, but this account is now held unworthy of belief. In the Tamoule language it is called Paneiri, or Tree-climber.

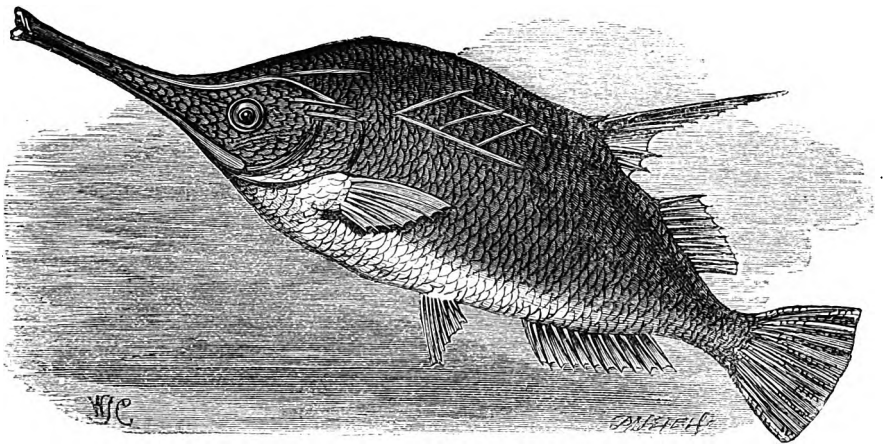


GREY MULLET.—*Mugil cápito.*

The Grey Mullet deserves notice as being one of the most daring and ingenious of the finny race, and is, in fact, a very fox for artfulness. The idea of restraint is most hateful to it, and its instincts of freedom are so strong that it endeavours to recover its liberty in the most extraordinary ways.

If, for example, it has been enclosed in a net, it will at once dart to the side and try to leap over the head-rope into the open sea. Moreover, if one fish succeeds in the attempt, the remainder immediately follow their leader, like a flock of sheep jumping over a hurdle. If the net is raised so high that the leap is impossible, the fish tries to creep under it; and, if that mode of escape be cut off, it examines every mesh, in hopes of finding some defective spot through which it may push itself. Mr. Couch mentions that he has seen a Grey Mullet, after trying all other modes of escape, deliberately retire to the greatest possible distance from the wall of the net, and then dash furiously at the meshes, as if to break through them.

It likes a frequent change from salt to fresh water, and often proceeds up rivers to some little distance, returning, however, with the tide. It has even been taken from the sea and placed in a fresh-water pond, where it has grown well, and obtained a great weight in proportion to its length. While feeding, it may be seen rooting in the mud in a very swine-like fashion; and can mostly be captured by using a bait composed of boiled meat or vegetables.



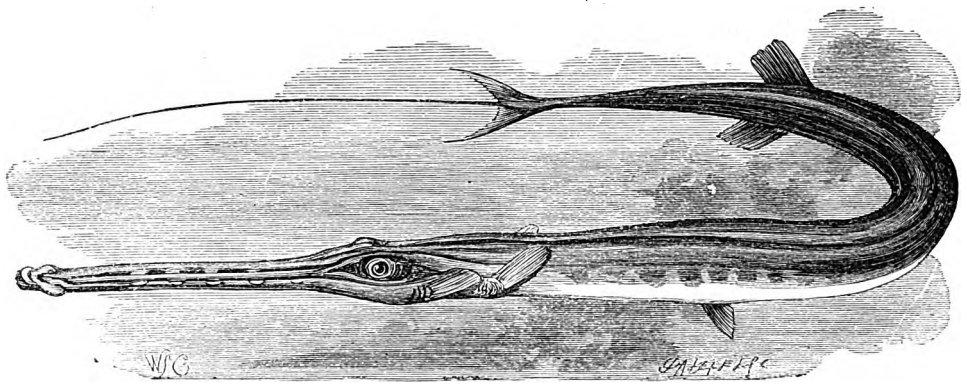
BELLOWS FISH.—*Centriscus scolopax.*

In the fishes of which we shall present two curious examples to our readers, the bones of the head are lengthened in a very surprising manner, causing the odd little mouth at their tips.

How the fish contrives to procure a sufficient amount of food wherewith to support the body is not exactly known. It is believed, however, that the snout is so narrow and so long in order to enable the fish to push it into little crevices, and either to pick off the minute creatures which love to hide in such places, or to suck them through its long tube-like head.

The Bellows Fish derives its name from its resemblance to that useful article of furniture, the body representing the case of the bellows, and the snout doing duty for the nozzle. It is also called the Sea Snipe, because its long bill is thought to resemble the beak of a snipe. Some persons call it the Trumpet Fish.

The long spine of the back fin is movable, and is armed with a row of saw-like teeth, that render it a very formidable weapon. It is a handsome fish, being bright red on the back, and white or golden yellow below. It is a native of the Mediterranean.

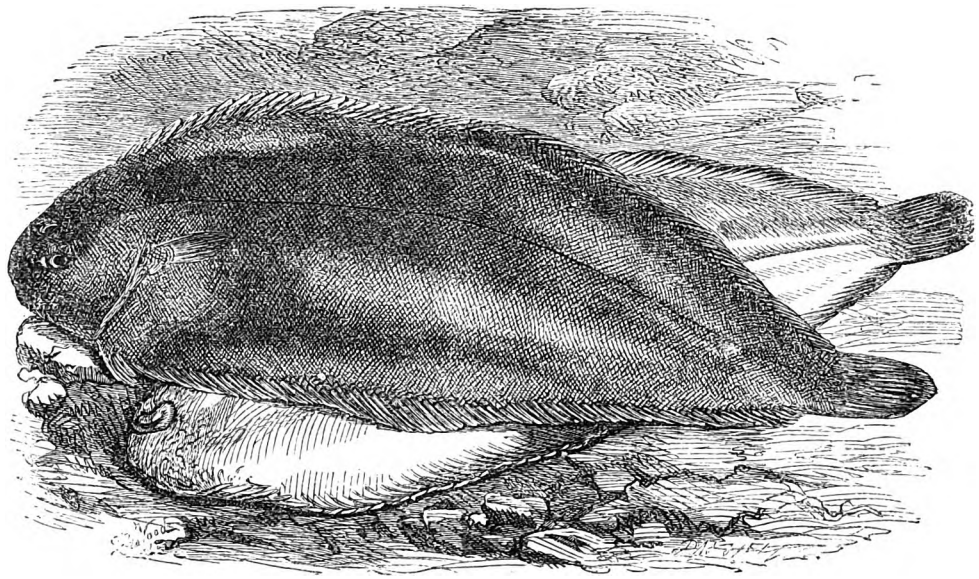


TOBACCO-PIPE FISH.—*Fistularia tabaccária.*

The Tobacco-pipe Fish derives its name from the great length of its body and the formation of its snout, which is even longer in proportion than that of the Bellows-fish.

In this very remarkable fish the body is without scales, and the back fin has none of the sharp and toothed spines which render the same fin so dangerous a weapon in the Bellows-fish. The tail-fin is deeply forked, and from its centre proceeds a very long whip-like filament, about the same length as the head. This filament is formed from the two central spines of the tail-fin, and in some specimens they are found to be separate, though still retaining their great length.

The usual colour of the Tobacco-pipe Fish is greenish olive, with a number of blue stripes and spots upon the back. Sometimes the back is reddish-brown This fish is found in the tropical portions of the Atlantic.



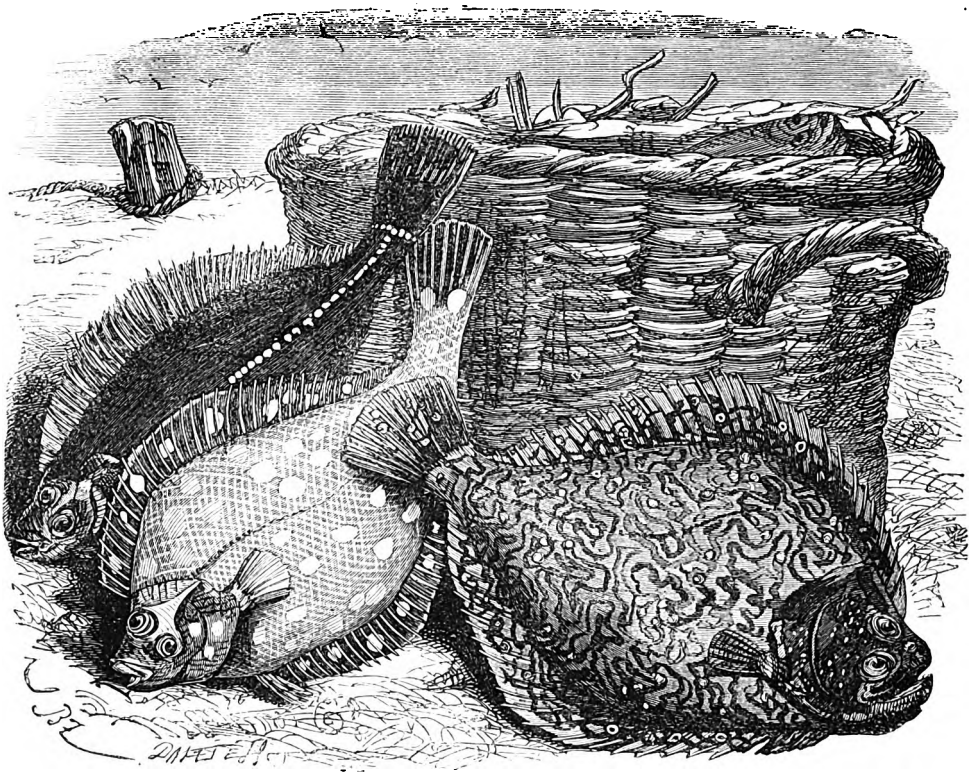
SOLE.—*Sólea vulgáris.*

The Common Sole is one of the most familiar of our British flat fishes, and is found on all our coasts, those of the southern shores being the most plentiful, and attaining the largest dimensions.

The Sole can be taken by the line, but the fishermen always use the trawl-net, a kind of huge dredge with a mouth that often exceeds thirty feet in width. As these nets are drawn along the bed of the sea, the great beam which edges the mouth scrapes the mud and sand, and alarms the fish to such an extent that they dash wildly about, and mostly dart into the net, whence they never escape. Vast numbers of Soles are taken by this method of fishing.

The Sole is in condition throughout the greater part of the year, the only time when it is not worth eating being from the end of February to the last week in March, when the fishes are full of roe, and the flesh is rather soft and watery. It is a hardy fish, and can soon be acclimatized to live in fresh water; and it is said that under such circumstances the fish can be readily fattened, and becomes nearly twice as thick as when bred in the sea. Sometimes the Soles venture into the mouths of rivers, passing about four or five miles into the fresh water, and depositing their multitudinous eggs in such localities.

The colour of the Sole is almost always brown on the right side and white on the left; but examples of reversed Soles are not uncommon, where the left side is brown and the other is white. The scales are small, and give a rough, rasp-like sensation to the hand.

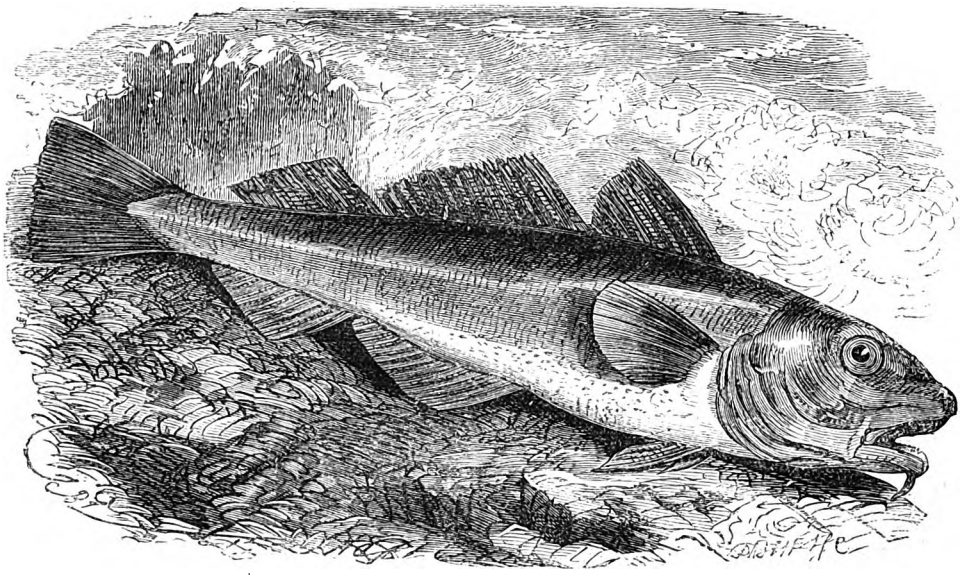


TURBOT.—*Pleuronectes maximus.*
PLAICE.—*Pleuronectes platessa.*
FLOUNDER.—*Pleuronectes flesus.*

The well-known Turbot, so celebrated for the delicacy of its flesh, inhabits many of the European coasts, and is found in tolerable abundance off our own shores. Like all flat fishes it mostly haunts the sandy bed of the sea, but will sometimes swim boldly to the surface of the water. It is a restless and wandering fish, generally moving in small companies.

Two modes of catching the Turbot are employed by fishermen, namely, the trawl-net and the long line. It is gifted by nature with a delicate appetite, and voracious as it is, it refuses to touch any bait that is not quite fresh, and is said to reject it if any other fish has even bitten it. Certain small fishes are in great repute, especially those which glitter with a silvery lustre.

The Flounder, Mayock-Fleuk, or Butt, is quite as common as the Plaice, and is found in salt, brackish, or fresh water; sometimes living in the sea, sometimes inhabiting the mouths of rivers, and sometimes passing up the stream for many miles. This fish has often been transferred to ponds, where it fattens rapidly.

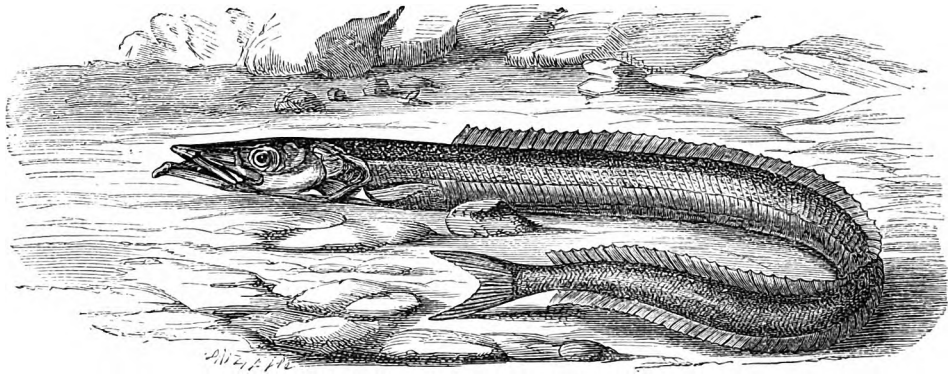


COD.—*Gadus mórrhua.*

The well-known Cod Fish is found in many seas, especially those towards the north.

The Cod Fish is always taken with the hook and line, vast numbers of short lines, called "snoods," being arranged along one central line, and allowed to remain in the sea for six hours. Many hundred Cod Fish are thus taken by skilful fishermen. The flesh of the Cod Fish takes salt very well, and can be preserved for a wonderfully long period of time. It is thus very useful to the sea-side population, who can lay up for themselves a store of food that will last during the winter. Sometimes the fishermen send away their capture while fresh, but a very great proportion is preserved and dried on the rock, in which state it is called "klip-fish," or "rock-fish." The liver of the Cod Fish affords a valuable oil, which is now in great favour for the purpose of affording strength to persons afflicted with dolicate lungs, or who show symptoms of decline.

The roe of the Cod is useful for bait, the sardine in particular being very partial to that substance. Much of the roe is stupidly wasted by the fisherman, who carelessly flings into the sea a commodity of which he can sell any amount, and for which he can obtain ten or eleven shillings per hundredweight. In Norway, the dried heads of the Cod are used as fodder for cows, and, strange to say, they are very fond of this food.



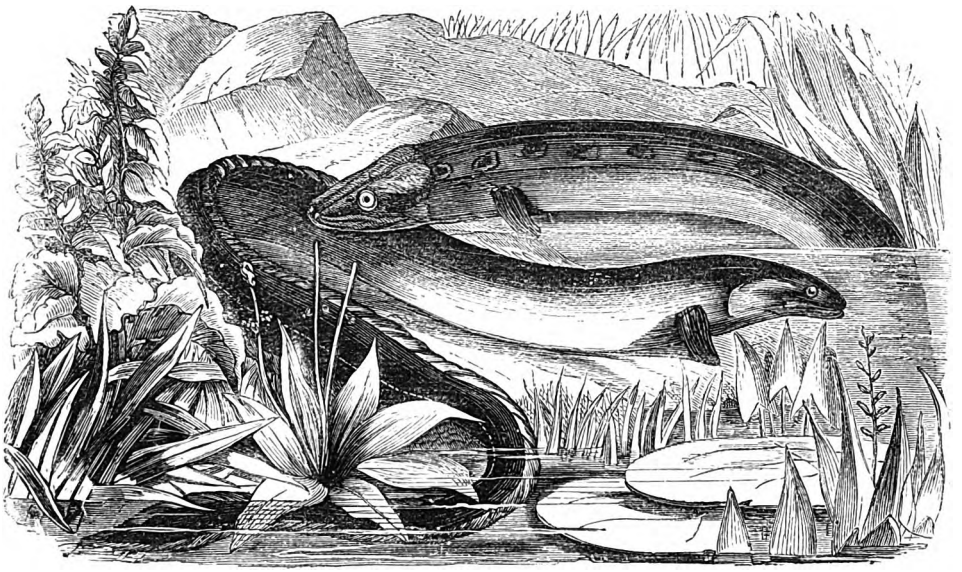
SAND LAUNCE.—*Ammodýtes láncea.*

The Sand Launce is a very common fish on many of the British coasts, and usually found wherever the shore is of a sandy character. The name Ammodytes signifies sand-diver, and is given to this fish in consequence of its habit of burying itself in the wet sand, where it remains hidden and secure from marine foes.

The rapidity with which it achieves this feat is really remarkable. As the waves of the ebbing tide recede, the fish pushes its projecting under-jaw well into the sand, scoops backward and forward like a pig grubbing in soft soil, gives a wriggle of the glistening body and a twirl of the slender tail, and vanishes as if by magic. Caring not for water, and finding a sufficiency of moisture in the wet sand, the fish remains uninjured in its retreat, where it lies safe from the many aquatic foes who chase it in the sea, and from whom the shore-sand affords the only refuge.

The Sand Launce is extremely valuable for bait, especially for such fastidious fish as the turbot, and is abundantly taken by the fishermen, who persecute the glittering little creatures, and by means of a many-toothed rake drag them from their sandy refuge. In some places the Sand Launce is taken in small-meshed nets that are dragged through the sand just at the water's edge, and in many localities the children of the fishermen are sent regularly to the shore for the purpose of hooking the Sand Launce out of their retreats by means of certain instruments of iron, curved sicklewise.

The colour of the Sand Launce is glittering silvery white, and its length, when adult, is six or seven inches. On account of its active movements it is in some places popularly known by the name of the Wriggle.



SHARP-NOSED EEL.—*Anguilla acutirostris.*

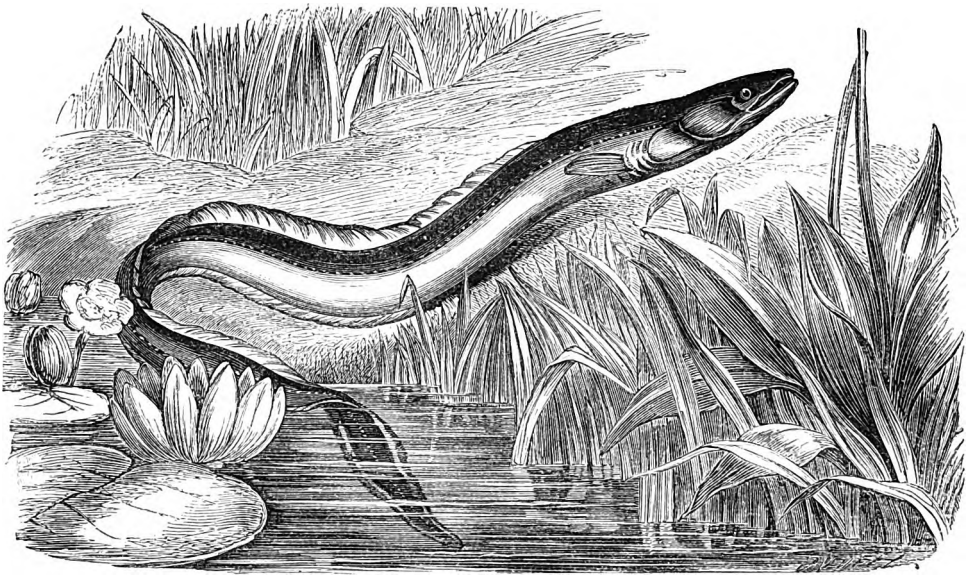
BROAD-NOSED EEL.—*Anguilla latirostris.*

THE two Eels represented in the engraving are examples of some very common and useful British fish.

The SHARP-NOSED EEL derives its name from the shape of its head, and by that structure may be distinguished from the second species. In their habits the Eels are so similar that the present species will be taken as an example of the whole genus.

Eels are found in almost all warm and temperate countries, and grow to a very large size in tropical regions. They are, however, impatient of cold, and in the extreme northern or southern parts of the world are not to be found. In many of the Pacific islands these fish are held in great estimation, being preserved in ponds and fed by hand, and in New Zealand they afford one of the staple articles of consumption. In some parts of the world, however, and even in many portions of Great Britain, a strong prejudice exists against Eels, probably on account of their resemblance to snakes, and even a hungry man will not eat one of these wholesome and nutritious fish.

Eels are captured in various modes. "Bobbing," or "clodding" as it is sometimes called, is a very common and successful mode, consisting in making a bunch of earthworms strung on worsted, and lowering it near the place where the Eels are known to be found.



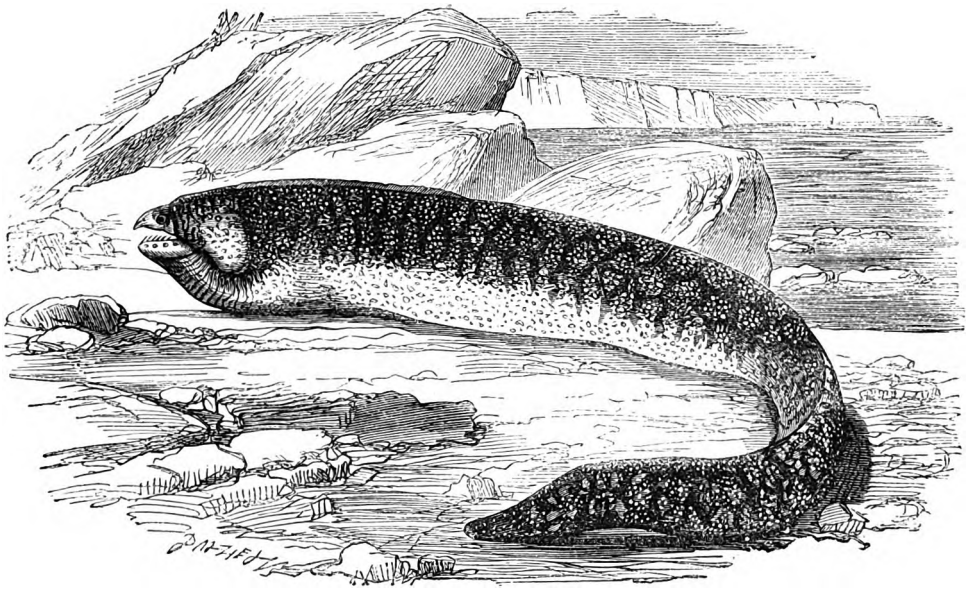
CONGER.—*Conger vulgáris.*

The great Conger Eel is only to be found in the sea, and generally prefers the rocky portions of our coast.

The flesh of this Eel is very good, and though some persons have a prejudice against it, they often eat it without knowing the fact. It is extremely valuable in making soup, as it gives a peculiar richness which cannot be obtained by any other method.

Congers are chiefly caught with the line, and it is found that, voracious as they are, they are fully as fastidious as the turbot, and will not touch a bait that is in the least tainted. Small fish, such as young dabs and plaice, are among the favourite baits, but the sand-launce affords the most irresistible of lures, its bright glittering surface tempting the voracious fish to its own destruction. The arms of cuttle-fish cut into lengths is another bait used for taking the Conger. The line is generally a long one, furnished with "snoods" at regular intervals, as has already been related of the cod-fish. For Conger fisheries the snoods are about nine feet in length, and the principal line rather more than four hundred feet.

When the Congers are being hauled into the boat, they plunge about with the most desperate efforts to escape; and should their sharp teeth seize the fishermen, the result is far from agreeable. The men, therefore, always kill the large Congers, by a blow on the underside of the body, where they are far more vulnerable than on the head. The sailors will sometimes kill the Conger by squirting the juice of their "quids" into its mouth.

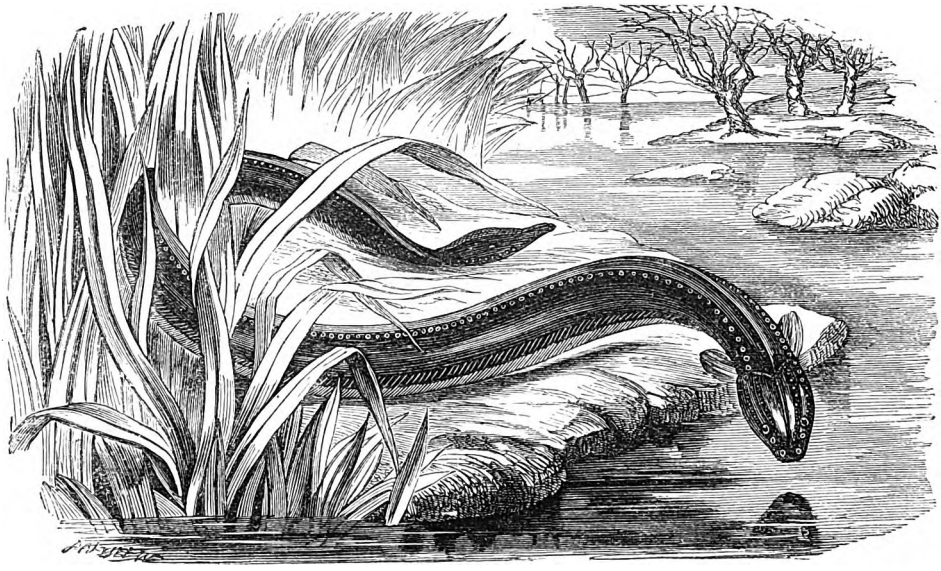


MURÆNA.—*Muræna Helena.*

The beautiful Muræna, sometimes erroneously called the Lamprey, is now and then seen on our shores, though very rarely. Its usual habitation is the Mediterranean, where it is tolerably plentiful.

The flesh of the Muræna is very good, and in the ancient days these fishes were highly esteemed, and bred expressly for market. Some of the greatest nobles of Rome had their own private fish-ponds, where the Murænæ were kept, and fattened by abundant supplies of food. No trouble was too great for the rearing of these fish, and more than one owner of these watery preserves was supposed to have fattened his Murænæ by throwing the bodies of slaves into the pond; thus punishing the slave for offending his master, and affording the fishes an abundant feast. The flesh of the Muræna is peculiarly white, and of a very delicate flavour.

This fish can live either in salt or fresh water, but prefers the former. Its colour is golden yellow in front, changing to purple on the tail, and the body is banded, ringed, and spotted with gold, purple and brown. Sometimes the Muræna attains a considerable size, having been known to exceed four feet in length.

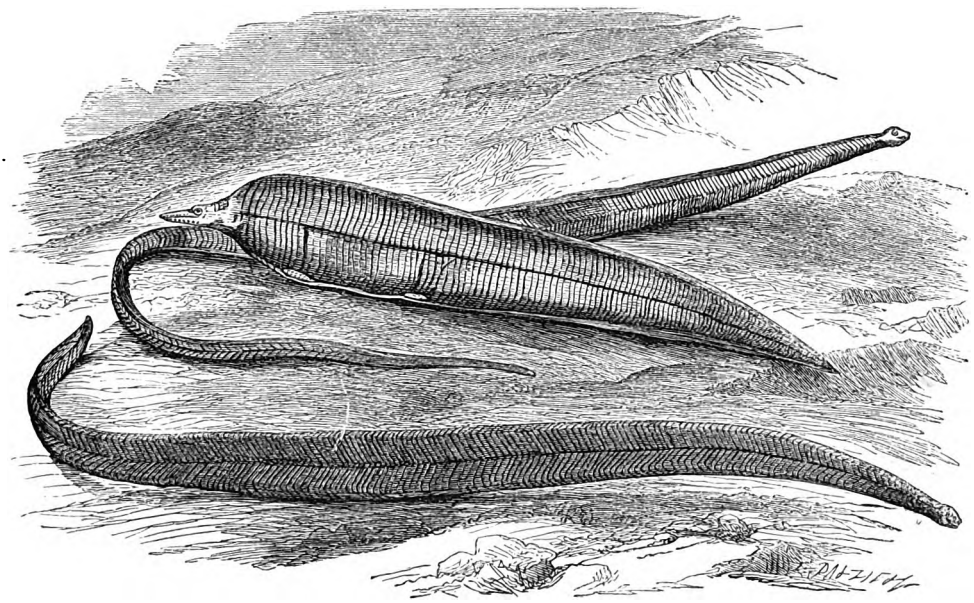


ELECTRIC EEL.—*Gymnótus eléctricus.*

The Electric Eel is so called because, like the Torpedo, which has already been described, it has the power of delivering electric shocks at will. It is a native of Southern America, and is found in the rivers of that country. When full grown, it attains a length of five or six feet.

In the native country of these fishes they are captured by an ingenious but somewhat cruel process. A herd of wild horses are driven to the spot and urged into the water. The alarmed Gymnoti, finding their domains thus invaded, call forth all the terrors of their invisible artillery to repel the intruders, and discharge their pent-up lightnings with fearful rapidity and force. Gliding under the bellies of the frightened horses, they press themselves against their bodies, so as to waste none of the electrical fluid, and by shock after shock generally succeed in drowning several of the poor quadrupeds. They have then spent all their powers, and can be taken without danger.

Several of these wonderful fish have been brought to England in a living state; and many of my readers may remember the fine Gymnotus that lived in the Polytechnic Institution. Numbers of experimenters were accustomed daily to test its powers; and the fatal, or at all events the numbing, power of the stroke was evident when the creature was supplied with the fish on which it fed, and which it used to strike motionless without touching them.



HAIR-TAILED GLASS EEL.—*Ilúrus trichiúrus.*

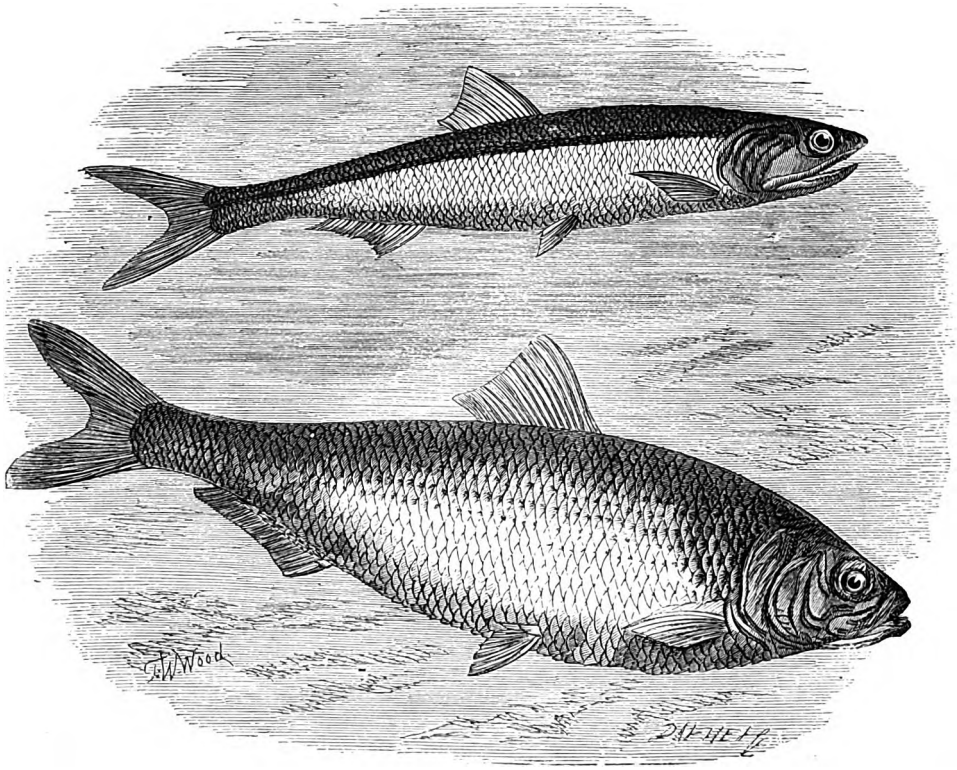
PIG-NOSED GLASS EEL.—*Hyoprórus Messinensis.*

ROUND-HEADED GLASS EEL.—*Leptocéphalus tænia.*

THE odd little fishes which we have represented belong to a curious group, in which the head is very tiny in proportion to the size of the body, and the whole of the body is so thin and transparent that an object can be dimly seen through its structure. Even the bones are so delicate that the brain can be seen through the substance of the skull. When swimming in a vessel of water, their bodies harmonize so exactly with the liquid that they can hardly be distinguished as they coil their little forms around the vessel.

In consequence of their peculiar structure, they are properly called GLASS EELS. The uppermost figure represents the HAIR-TAILED GLASS EEL, so called because the tail tapers to a hair-like point. The body of this fish is so very flat that it is hardly thicker than the paper on which this account is written. Its length is rather more than a foot.

The other two species derive their names from the shape of their heads.



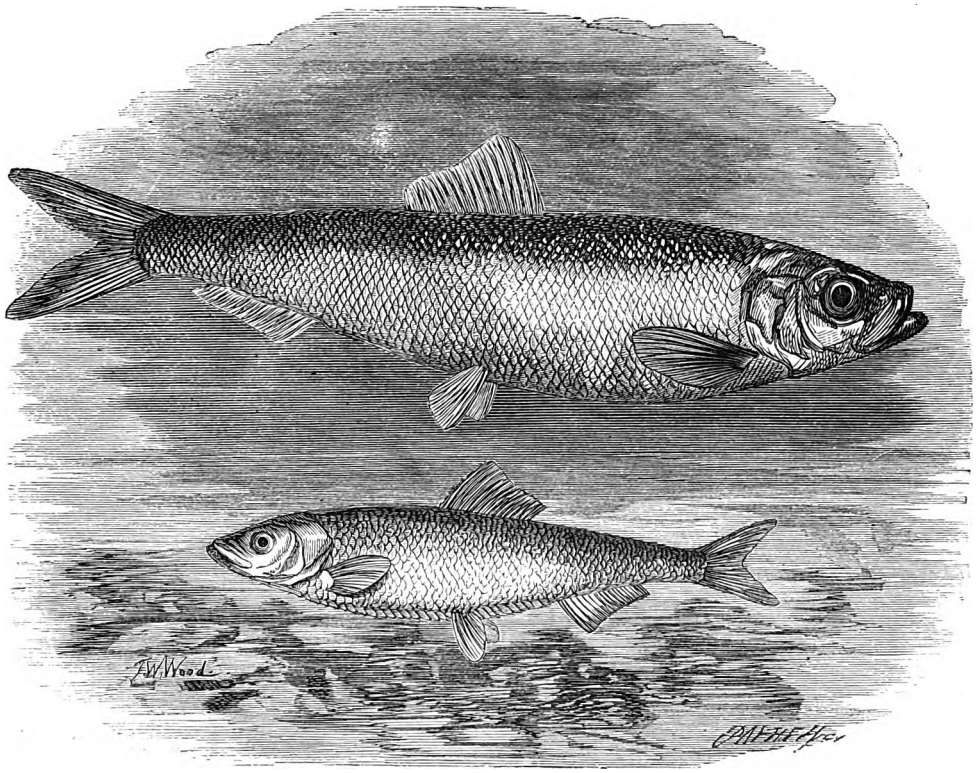
ANCHOVY.—*Engraulis encrasicholus.* SHAD.—*Alósa vulgáris.*

The well-known Anchovy is properly a native of the Mediterranean sea, though it often occurs on our coasts, and has once or twice been captured in our rivers.

This little fish has long been famous for the powerful flavour of its flesh.

The Common or Allice Shad is extremely plentiful on some of our coasts, but appears to be a rather local fish, and while it abounds in some places, is wholly absent from others.

The Shad is fond of ascending rivers, especially if the water be clear; and while the Thames was still unstirred by the paddles of steamboats, and unpolluted by the sewers, this fish would ascend the river for a considerable distance, and has been taken in good condition near Hampton Court. Some persons think that the flavour of the fish improves in proportion to its proximity to the river source. Except in size, the Shad bears a very close resemblance to a herring, and in some places is called the King of the Herrings.



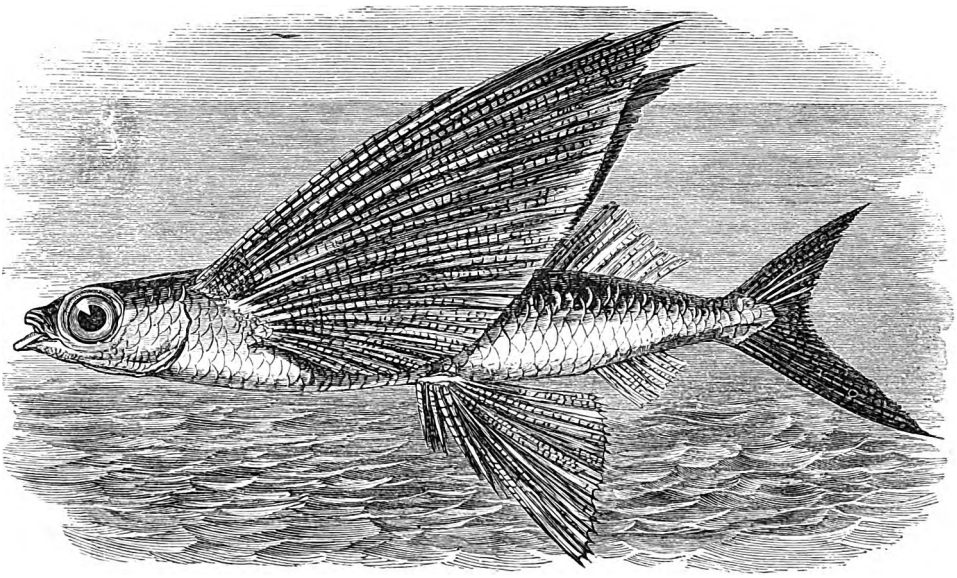
HERRING.—*Clúpea harengus.* SPRAT.—*Clúpea sprattus.*

The Herring is undoubtedly the most valuable of our British fishes, and the one which could least be spared. It is at once the luxury of the rich and the nourishment of the poor, capable of preservation throughout a long period, easily packed, quickly and simply dressed, and equally good whether eaten fresh or salted, smoked or potted.

During the greater part of the year, the Herring lives in deep water, where its habits are entirely unknown. About July or August, the Herring is urged, by instinct, to approach the shores for the purpose of depositing its spawn in the shallow waters, where the warm rays of the sun may pour their influence upon the tiny eggs.

The Herrings, when they once begin to move, arise in vast shoals, and direct their course towards some part of the shore. Each shoal is so closely compacted, and its limits so well defined, that while one net will be filled almost to bursting with Herrings, another net, only a yard or two distant, will be left as empty as when it was shot.

The Sprat is also taken in vast quantities, and largely sold in the streets.

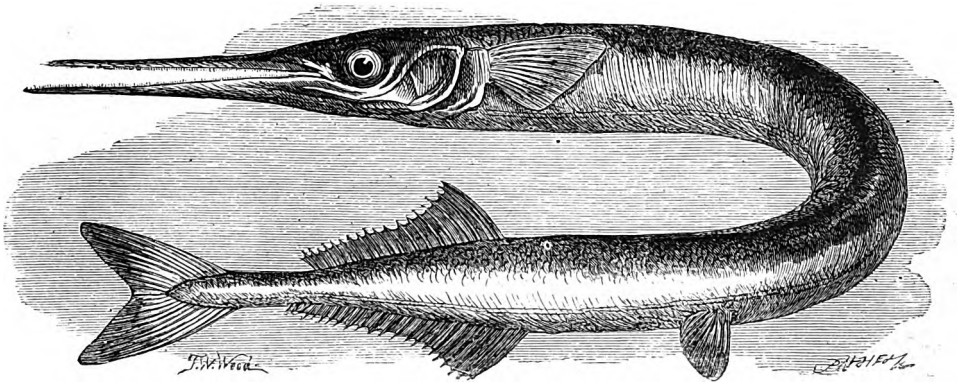


FLYING FISH.—*Exocætus volitans.*

The wonderful Flying Fish has long been celebrated for its power of passing through the air.

The so-called flight of this fish is achieved by means of the side fins, which are of enormous size, and when held out from the body present a wide and flat surface to the air. The fish cannot flap these fins, neither is it able to direct its course, except in a very slight degree, but it is carried through the air much after the manner of the flying dragon mentioned on page 34. When the fish desires to take the air, it darts very rapidly through the water, and the moment it leaves the surface it spreads its fins, and is carried along by the force of its rush.

It can rise to a considerable height, and has often been known to leap upon the deck of a ship. This fish has indeed been observed to pass fairly over the bulwarks, and to fall into the sea on the other side of the hull. The Flying Fish has a host of enemies, for the albacore, coryphene, and other voracious fish chase it in the waters, and the albatros pounces down upon it while it is passing through the air. It is itself a voracious fish, and feeds almost entirely on the smaller members of the finny race.

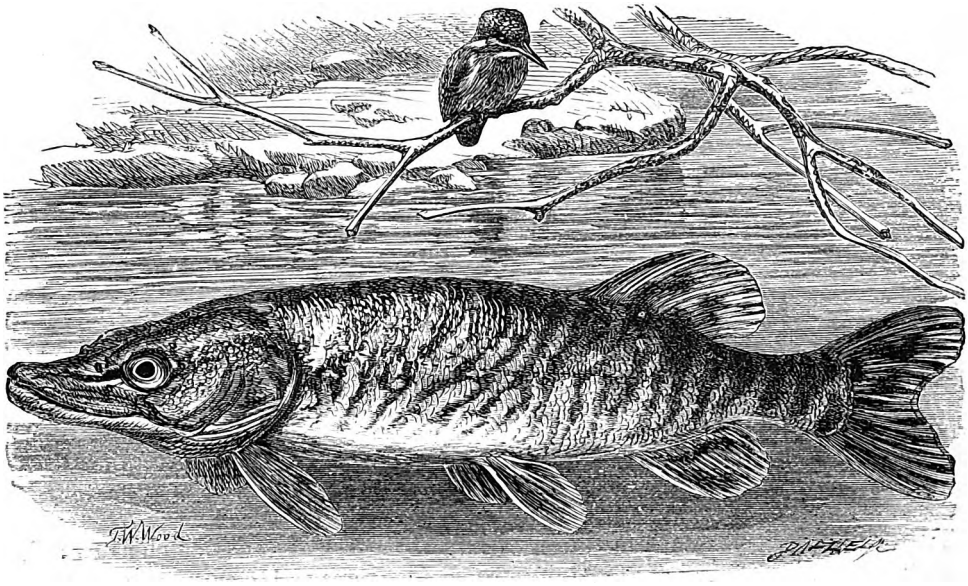


GAR-FISH.—*Belóne vulgáris.*

THE odd-looking GAR-FISH is known by a vast variety of names, such as SEA PIKE, MACKAREL GUIDE, SEA-NEEDLE, LONG-NOSE, GORE-BILL, HORN-FISH, and GREEN-BONE, the last-mentioned title being given to it because, when it is boiled, its bones are of a bright green hue. The name of Mackarel Guide is owing to the fact that its spawning season exactly precedes that of the mackarel, and the other names explain themselves.

This is one of the marine fish, and is sometimes taken and sent to market, generally causing some little excitement as its long pointed head and brightly coloured body lie shining on the dealer's table. It is not however extensively captured, on account of a senseless prejudice which exists in many parts against the fish, the green hue of the spine being its probable cause. Despite of prejudice, the fish is an excellent one, and when properly dressed is not unlike eel, but is not so rich.

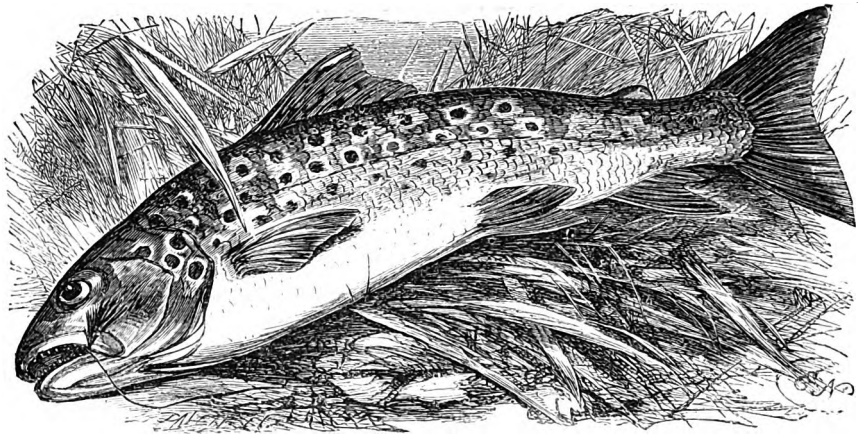
It is a voracious and bold-biting fish, taking almost any animal substance used as bait, and seizing it so strongly that it hooks itself without any trouble to the angler. To those who fish for their living, and not merely for sport, the Gar-fish behaves in a very agreeable manner; for instead of plunging about when it feels the hook, and by its struggles frightening all other fishes away, it gives one strong pull when it finds itself checked, and then resigns the contest, hanging quietly until released by the fisherman. The colour of the Gar-fish is dark bluish-green above, and silvery white below. Its length is about two feet.



PIKE.—*Esox lúcius.*

When full-grown, the Pike is one of the largest, and certainly is the fiercest and most voracious of all our fresh water fish. It feeds upon fish of every kind, and can eat a wonderful number in a very short time. If placed in a pond where other fish have been kept, the Pike is sure to kill them all in a week or two, unless there should be among them some very large fish which even the Pike dares not attack. When young the Pike is called the Jack. The Pike is the king of the waters, and kills every other fish that happens to come near its residence, none seeming able to escape except the perch, whose array of sharp spines daunts even the voracious Pike from attempting its capture. As if to show that the Pike really desires to eat the perch, and is only withheld from doing so by a wholesome dread of its weapons, there is no better bait for a Pike than a young perch from which the dorsal fin has been removed. It will even feed upon its own kind, and a young Pike, or Jack as it is then called, of three or four inches in length, has little chance of life if it should come across one of its larger kindred.

After hatching, the growth of the young Jack is extremely rapid, and according to Bloch, it will attain a length of ten inches in the first year of its life. If well fed, the growth of this fish continues at a tolerably uniform rate of about four pounds per year.



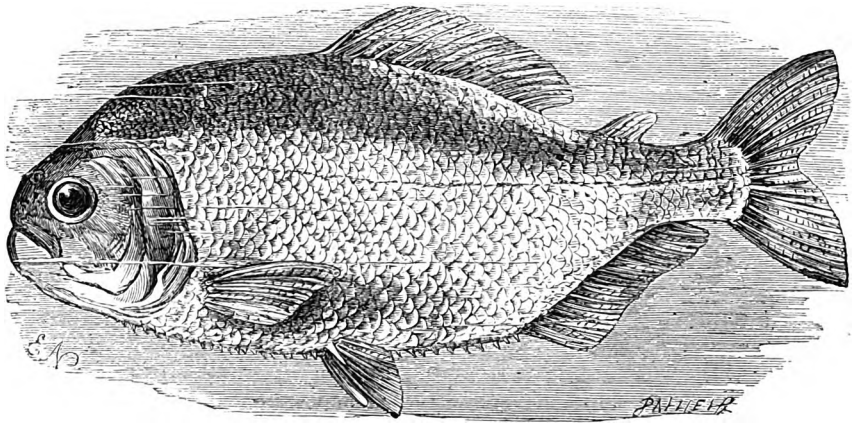
TROUT.—*Salmo fário.*

THE TROUT is one of the handsomest of our river fish, and is a great favourite with anglers, because it is strong, active, and cunning, affords excellent sport, and is very good to eat.

There are many ways of catching the Trout, but the best method is by the artificial fly, a compound of feathers, hair, wool, and other substances, tied on a hook, and thrown on the water, so as to resemble a real fly in its movements. The Trout is a voracious fish, eating not only insects in all their stages, worms, and similar objects, but being very fond of other fish, and devouring them nearly as fast as does the pike. Minnows, dace, and gudgeon are the favourite food of the Trout, and a large specimen has been known to eat more than a hundred minnows at a meal.

Like all the fish that feed on their own kind, the Trout likes to live in some retired spot, either in the banks, or under some large stone in the stream, and where it can lie hidden, and look out for prey. It is a curious fact, that whenever a good Trout hole has been found, a Trout is sure to inhabit it, so that if an angler catches a fine fish on Monday, he may go to the same spot on Tuesday, and find the vacant place filled with another fish.

The colour of the Trout is golden brown above, with a number of reddish-brown spots, and the sides are covered with many spots of carmine. The lower part of the sides is yellow, and below it is silvery white.

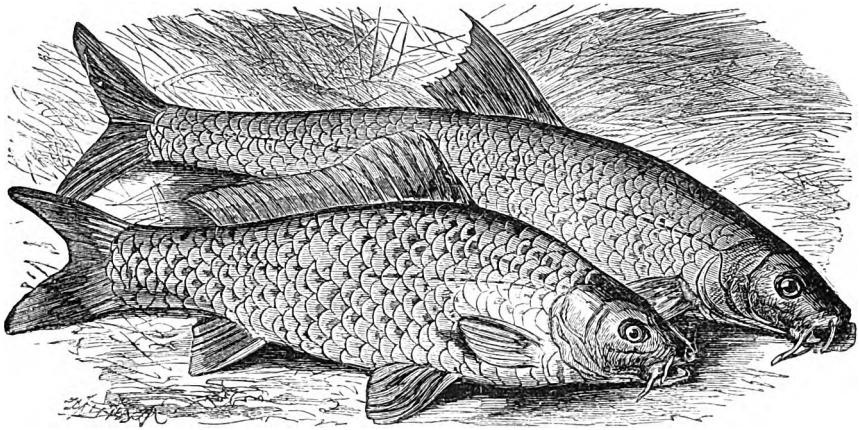


PIRAYA.—*Serrasalmus Piraya.*

The Piraya, or Pirai, although not a very large fish, is as much dreaded as many creatures of greater size.

This fish is very plentiful in the rivers of Guiana and Brazil, where it swims in large troops, and is, according to many accounts, a very unpleasant neighbour. It is a most voracious being, with teeth nearly as sharply edged as those of the shark, and a boldness little short of that fish's well-known audacity. It is said, according to Spix, that if even so large an animal as an ox happens to get into one of their shoals, it is immediately assailed, and bitten so severely that it may succumb under its injuries before it can cross a stream thirty or forty feet in width. According to some authors, one of the South American tribes are in the habit of placing their dead in the streams, leaving them to the attacks of the Piraya, which in a single night will clear away the whole of the soft parts, and leave a clean skeleton. Even living human beings seem to be liable to severe bites while bathing.

Be these stories literally true, or only exaggerations, the jaws and teeth of the Piraya are perfectly capable of inflicting such injuries as have been briefly described. The teeth are nearly flat, triangular, and with edges sharp as those of lancets, and are employed by the Macoushi Indians to sharpen the points of those fearful wourali-poisoned arrows so well known to fame since they were brought by Mr. Waterton from Guiana. A part of the jaw containing five or six teeth is carefully cleansed, a hole is bored through the jaw-bone, and a string is passed through the hole and fastened to the edge of the quiver. The arrows are readily sharpened by placing the points between any two teeth and drawing them rapidly through the edges. There are now before me several of these arrows, kindly given me by Mr. Waterton, and which have been sharpened by this process.



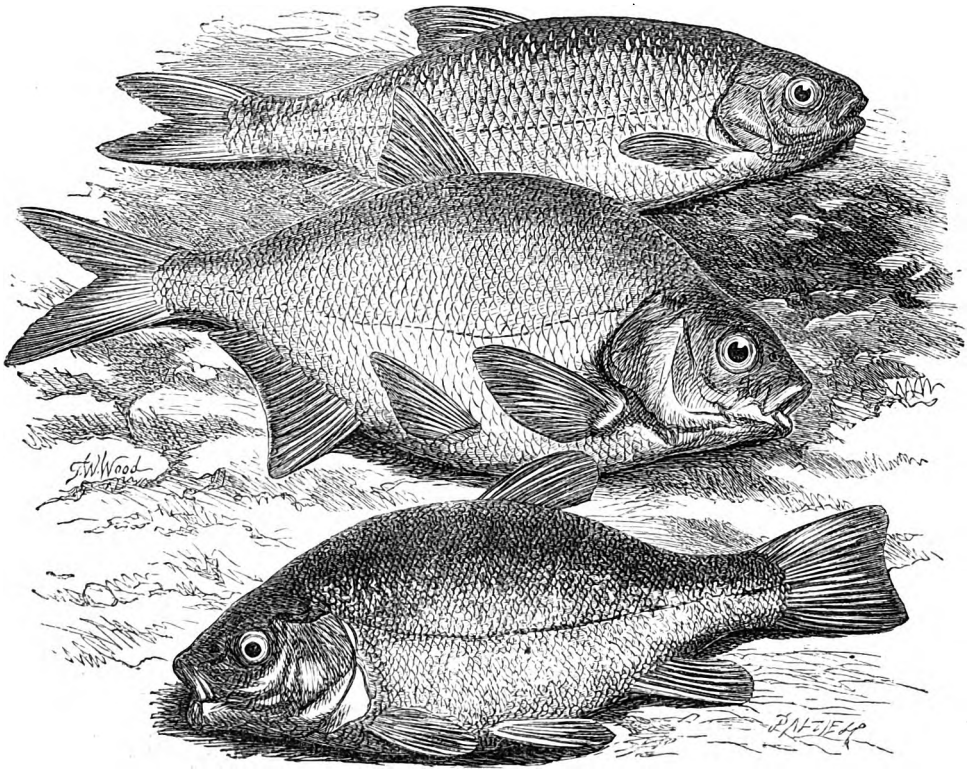
CARP.—*Cyprínus cárpio.* BARBEL.—*Cyprínus barbus.*

THOUGH not so brightly spotted as the trout, nor so desperately active when hooked, and very inferior in flesh, the CARP is yet in much favour with anglers on account of its extreme cunning, which has earned for the fish the name of Fox of the waters.

The Carp is found both in rivers and lakes, and in some places, among which the royal palaces of France may be mentioned, will often grow to an enormous size, and become absurdly tame, crowding to the bank on the least encouragement, and poking their great snouts out of the water in anxious expectation of the food. It is most curious to watch these great creatures swimming lazily along, and to see how completely they have lost their dread of man.

The colour of the Carp is a beautiful golden brown above, and white beneath, and its scales are very large and shining. It is very changeful in its appetite, sometimes taking a common bait as boldly as a perch, and sometimes refusing to touch any bait whatever. And even if a net is used, the Carp will often escape by jumping over the top, or suddenly diving into the mud and letting the net sweep over it.

The BARBEL derives its name from the Latin word "*barba,*" or beard, on account of the long beard-like projections that hang from the jaws. It is not a very active fish, and likes to grub into the muddy banks for the purpose of finding food. Sometimes it reaches a great size, weighing as much as six or seven pounds. Its colour is greenish-brown above, greenish-yellow on the sides, and white below



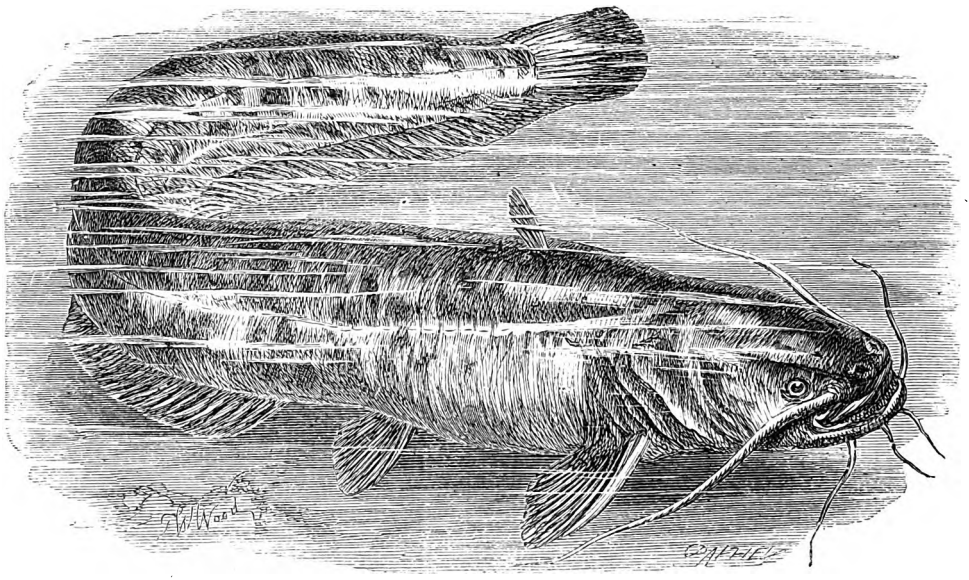
ROACH.—*Leuciscus rútila.* BREAM.—*Abramis brama.*

TENCH.—*Tinca vulgáris.*

The Roach is a very pretty fish, elegantly made, coloured in a pleasing manner with greyish-green above with a blue gloss, white below, and several of the fins are bright red. Anglers are very fond of this fish, as it is a delicately biting creature, and cannot be taken without much skill. Indeed, Roach fishing is quite a separate branch of angling. It is not a large fish, very seldom weighing more than two pounds.

The Bream is mostly found in rather large lakes or in slowly running rivers, the lakes of Cumberland being favourite resorts of this fish. The flesh of the Bream is not held in any great estimation, being poorly flavoured and very full of bones.

The Tench is hardly so common as the other two species, preferring the slowest and muddiest rivers, and thriving well in ponds and lakes or even clay pits.



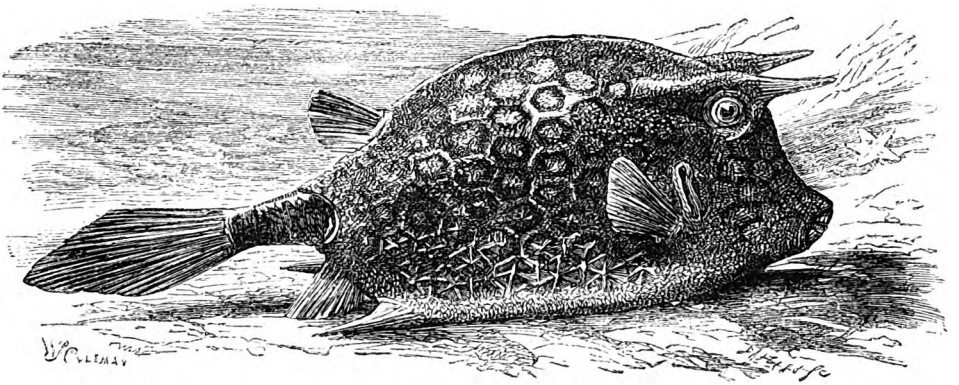
SLY SILURUS.—*Silúrus glanis.*

THE SLY SILURUS, sometimes called the Sheat Fish, is found in several parts of the world, and is tolerably common in some European rivers.

As may be seen by the engraving, it is a curious-looking fish, and easily known by the six beards, the two that are situated on the upper lip being of very great length.

The precise object of these beards is not quite clear, though some persons believe them to be used as decoys, like the fin rays of the fishing frog, and to be employed in enticing unwary fish within reach of the mouth. Dr. Günther has kindly informed me, that he has often seen these fishes at liberty in their native streams, and that they are capable of directing the points of the tentacles towards any object that they seem anxious to examine. It is therefore probable that these curious appendages are employed as organs of touch. It is one of the mud-loving fishes, and has a custom of hiding itself in holes, or nearly burying itself in the soft bed of the river.

The flesh of the Silurus is not held in very high estimation, although its flavour is good, for it is so fat and gelatinous that it is difficult of digestion, and not to be eaten by persons of small assimilative powers. A kind of coarse isinglass, or very fine glue, is made from the swimming-bladder of this fish. The eggs of the Silurus are not very numerous in proportion to the size of the adult fish, and are of a greenish colour. They are much eaten by various fish.



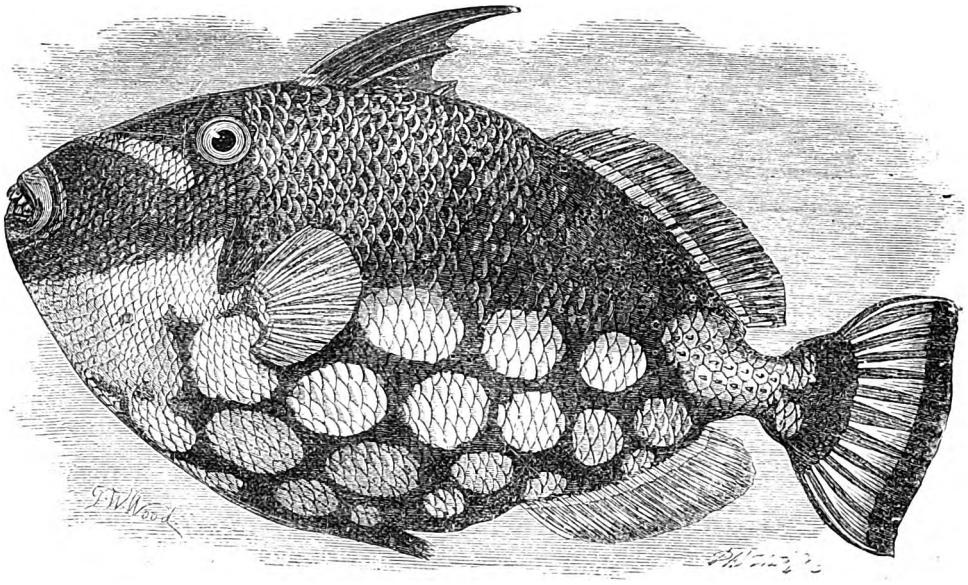
HORNED TRUNK-FISH.—*Ostración cornútus.*

In the next few fishes we shall see some examples of a curious formation of the mouth, the two jaws being fixed as if the mouth were simply a hole bored into the solid bone.

The Horned Trunk-fish is a good example of a group of fishes whose bodies are guarded with a complete coat of mail, formed of six-sided plates or scales.

This cuirass, as it may well be termed, is pierced with several holes of different sizes, through which the mouth, the tail, and the fins are enabled to protrude. Indeed, the whole structure of this fish bears some resemblance to that of the tortoise, and the cuirass of the fish is evidently intended to answer the same purpose as the shell of that reptile. As the creature is, as it were, boxed up in this bony armour, it is sometimes called the Coffer Fish.

There are several species of Trunk fishes, but none of them are good for food: partly because the flesh is so very scanty, and partly because it is not well flavoured. In some places it is even thought to be poisonous, but apparently without reason. The liver, however, is large, and affords a quantity of good oil. The Trunk-fishes inhabit the tropical seas, and the present species may be known by the horn-like projections over the eyes



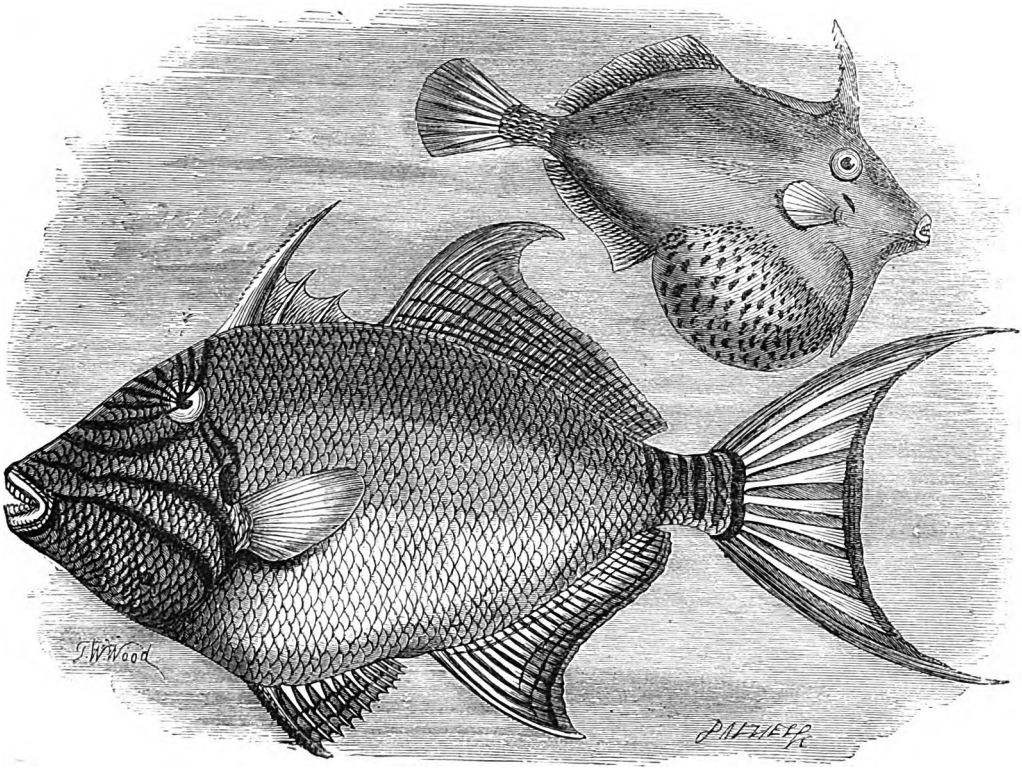
TRIGGER-FISH.—*Balistes conspicillum.*

As the trunk-fish derives its name from the box-like formation of its scales, so the TRIGGER-FISH receives its rather odd title from the structure of the back fin.

It will be seen that the first ray of that fin is very thick and strong, and when elevated, it is fixed so firmly that it cannot be pressed down by any force, but may be broken rather than bent. But, if the second ray be pressed downwards, both rays at once fall, just like the hammer of a gun when the trigger is pulled.

Sailors, who are often prejudiced against any object which is strange and odd-looking, fancy that the Trigger-fish is poisonous and unwholesome. They are however entirely wrong, for the flesh is not only eatable, but very sweet and good, and there is plenty of it. The only fault is, that it is rather coarse.

The skin of this fish is very strong and tough, and has gained for it the name of Leather Jacket. The Trigger-fish lives in the Japanese seas. Its colour is black, and the bold spots on the sides are either white or yellow.

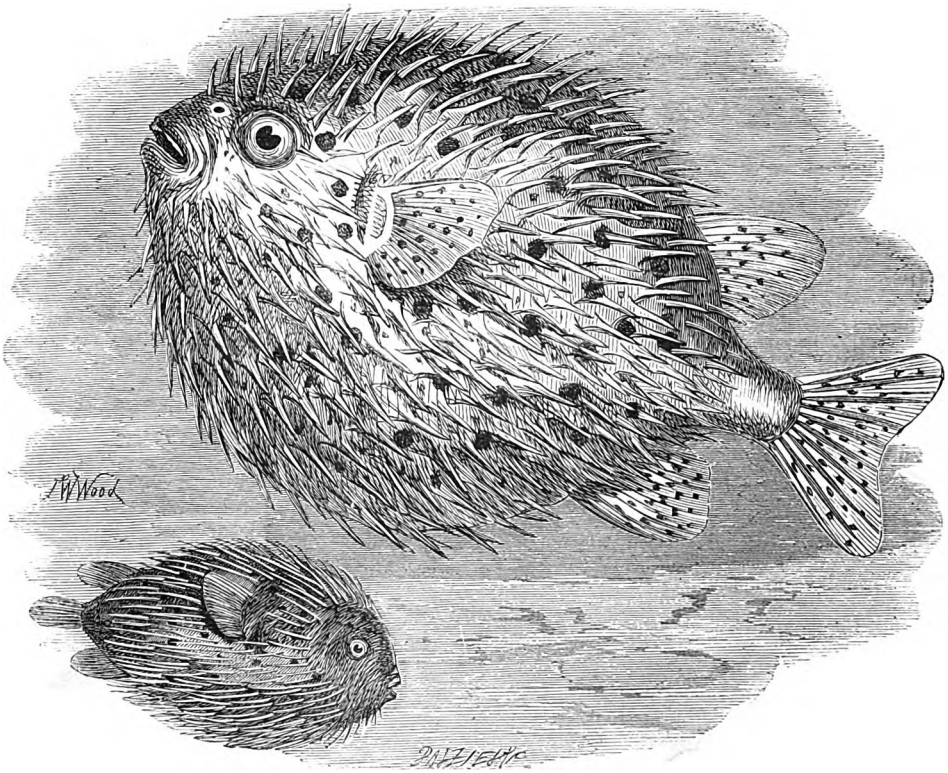


UNARMED TRIGGER-FISH.—*Balistes vétula.*

BRISTLY TRIGGER-FISH.—*Balistes Tomentósus.*

On this engraving are given two other examples of these remarkable fishes.

The Bristly Trigger-fish is notable from the quantity of bristle-like appendages to the tail, and the general appearance of the Unarmed Trigger-fish can best be understood by reference to the illustration. All the fishes of this genus (which have been divided by some authors into several other genera) are inhabitants of the tropical seas, where they haunt the rocky coasts, and make the ocean bright with their beautiful colours. Their food is not certainly known, but as nothing but crushed seaweed has been found in their stomachs, it is supposed that they are vegetable feeders.

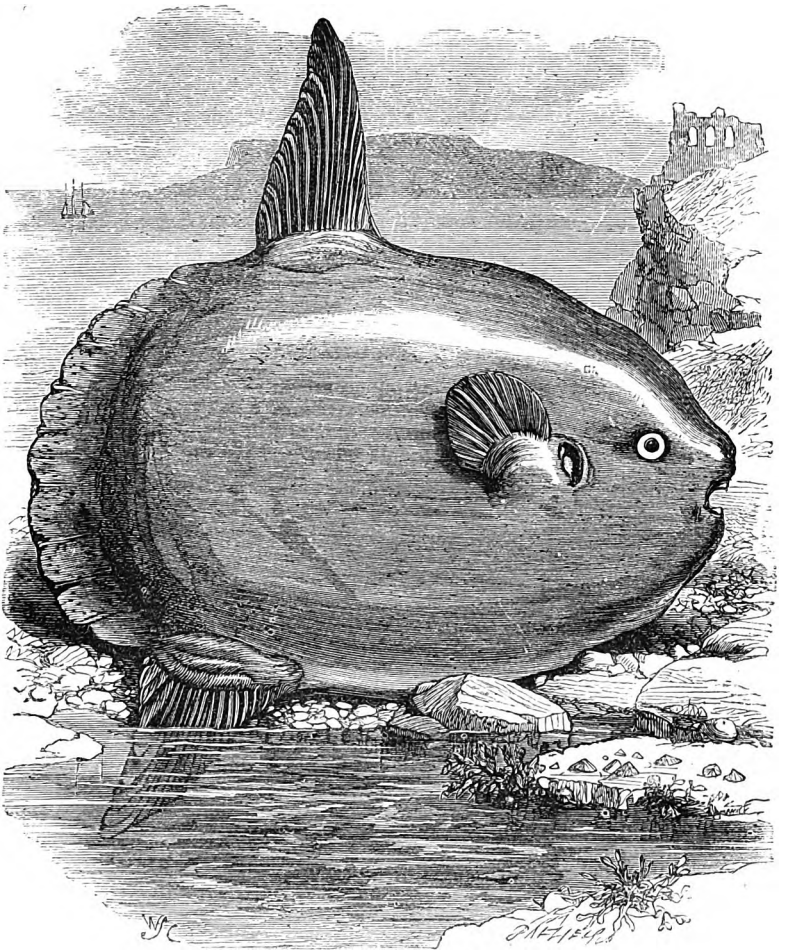


URCHIN-FISH.—*Diodon hystrix*. HAIRY URCHIN-FISH.—*Diodon pilosus*.

The Urchin-fish or Sea-Hedgehog, is a good example of the genus Diodon, or Two-toothed fishes; so called because their jaws are not divided, and only exhibit one piece of bony substance above and another below, looking as if the creature only possessed two large teeth.

This curious fish is remarkable for the tremendous array of spiny points which it bears on its skin, and for the power of inflating its body into a globular form, and thus causing the spines to project in every direction, like the quills of an irritated porcupine or a hedgehog that has coiled itself into a ball. From this custom of inflating its prickly body it is sometimes termed the Prickly Globe-fish. When full-grown, this fish will sometimes exceed a foot in length.

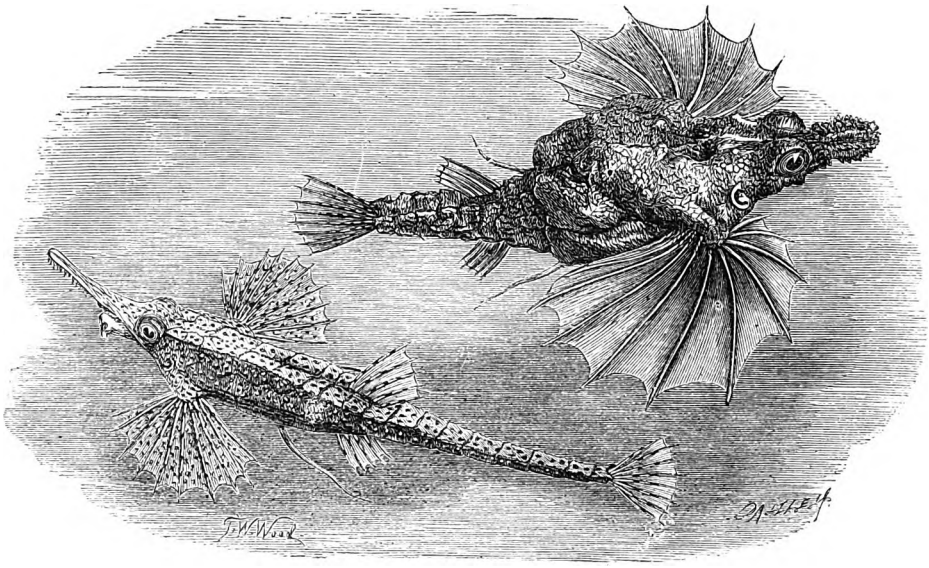
The lower figure represents the Hairy Urchin-fish, so called because its spines are thin and delicate like hairs. These fishes are only found in the warmer seas.



SUN-FISH.—*Orthrágoriscus mola.*

Our last example of these creatures is the Sun-fish, so called from its large, round body, which looks as if it were the head and shoulders of some very large fish that had been severed like Baron Munchausen's horse.

The flesh of the Sun-fish is white and well-flavoured, and is in much request among sailors, who always luxuriate in fresh meat after the monotony of salted provisions. In flavour and aspect it somewhat resembles that of the skate. Its liver is rather large, and yields a considerable amount of oil, which is prized by the sailors, as an infallible remedy.



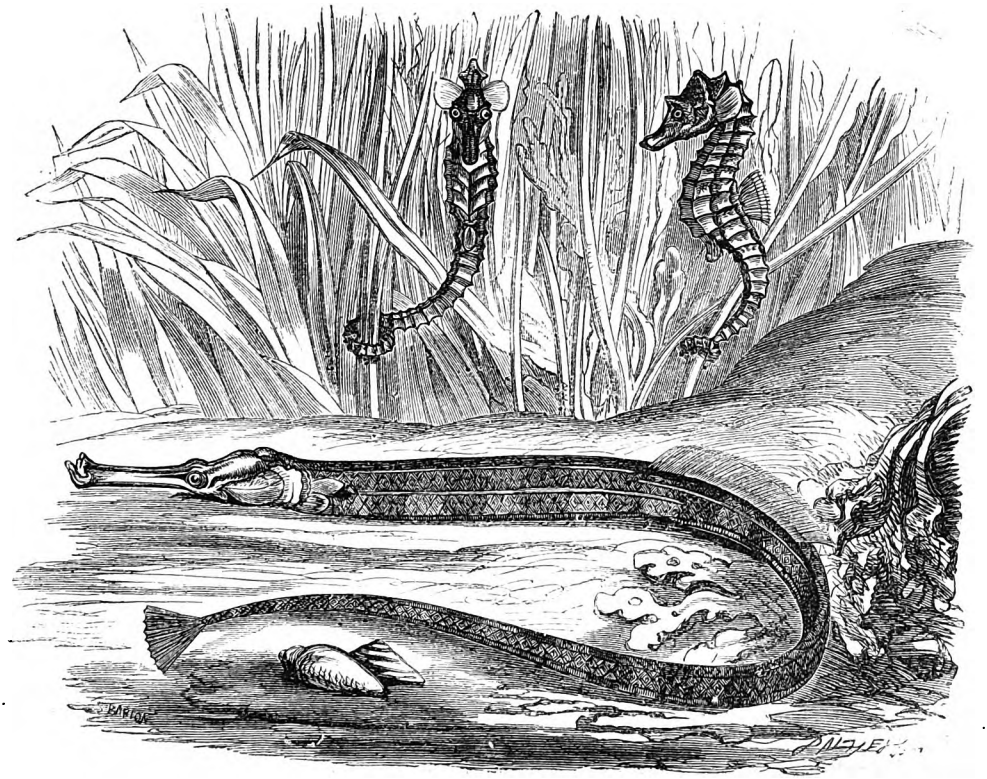
PEGASUS.—*Pégasus natans.* SEA DRAGON.—*Pégasus draco.*

In the curious group of fishes that are shown in this engraving, and that on the next page, the whole form is of most singular shape, and the habits are as remarkable as the form. Although most of the egg-laying reptiles and fishes are known to abandon their eggs, and leave them to be hatched simply by the warm sunbeams, there are some cases where the female either takes charge of her eggs from the beginning, or at least keeps a watch over the place where she has deposited them. In these fishes, however, the parental affection is shown in a very odd way, for, although they are carefully guarded by their parent, and even carried about until they are hatched, it is the father and not the mother who performs this duty.

The reader may remember the description of the Surinam toad, and the curious receptacles which are formed for the eggs. These fish also possess an appendage for the same purpose, but it belongs to the male and not to the female, and exists throughout the whole of life.

In the Sea Dragon, the breast is very wide, and the side-fins are extremely large and wide, something like those of the flying gurnard. The mouth is set under the snout like that of the sturgeon.

The Pegasus has large side-fins and breast, but not so large as in the preceding fish. It is found on the coast of Java.



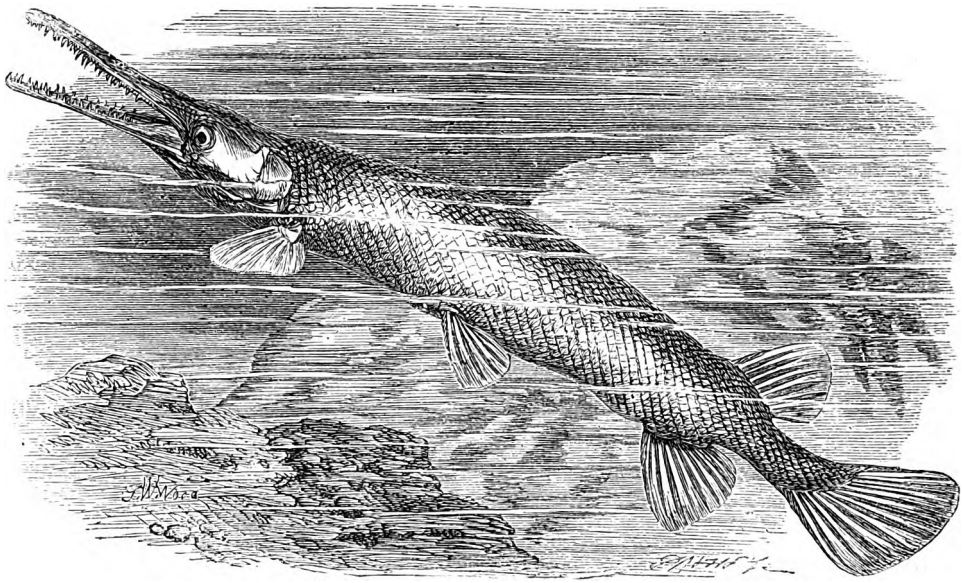
SEA HORSE.—*Hippocampus brevirostris.*

GREAT PIPE, OR BILL-FISH.—*Syngnathus acus.*

The SEA HORSE is common in many European seas, and is sometimes captured on the British coasts. In all these fishes there is only one fin, set far back, and capable of being moved in a marvellous fashion, that reminds the observer of a screw-propeller, and evidently answers a similar purpose. The two specimens represented in the engraving are shown in the attitude which the creatures are fond of assuming.

In the foreground of the illustration is shown the GREAT PIPE-FISH, also called the Bull-fish and Needle-fish, one of the commonest species of its genus.

This creature is found along our shores, and can mostly be captured at low water among the seaweed that has been left in the rock-pools.

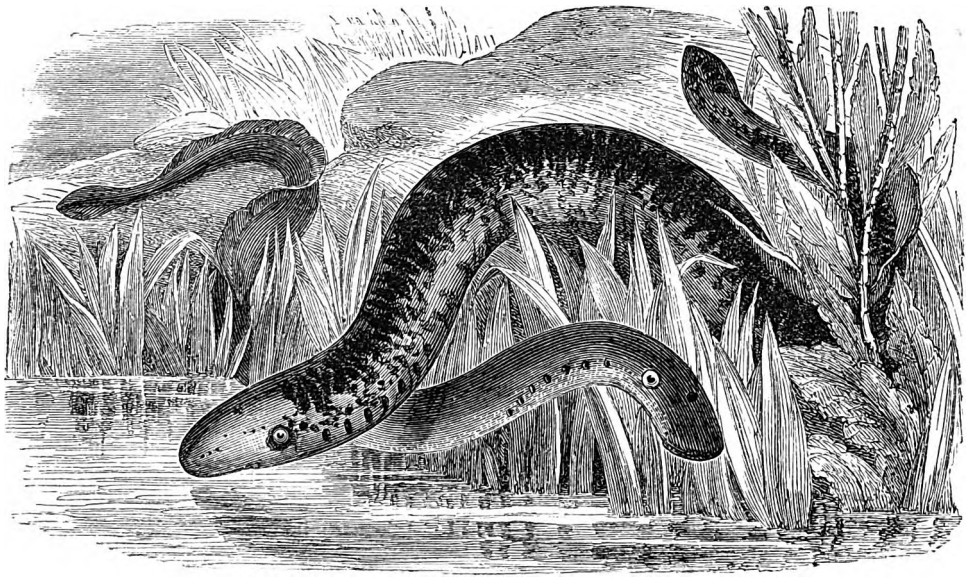


BONY PIKE.—*Lepidosteus osseus.*

The fish that is known by the name of the Bony Pike is so called because its long head with the powerful jaws and sharp teeth is something like that of a pike, while the whole surface is covered with a hard, bony shield, nearly as solid and quite as strong as that of the Trunk-fish.

Still, the fish has no connection with the pike, and belongs to a different group altogether. The scales of this creature are wonderfully hard, and glazed on the surface like porcelain, and are set in a rather peculiar manner; not overlapping each other like those of most fishes, but with their edges applied closely together like the tiles of an encaustic pavement. They are beautifully regular, so that the fish seems to be marked with a vast number of crossing lines, drawn obliquely over the body.

The Bony Pike inhabits the lakes of America, and when full-grown is a really large fish, sometimes measuring seven feet in length. The body is, however, very thin in proportion to its length. Its flesh is said to be eatable, and the fish is sometimes captured for the purposes of the table. It varies greatly in colour and general appearance.



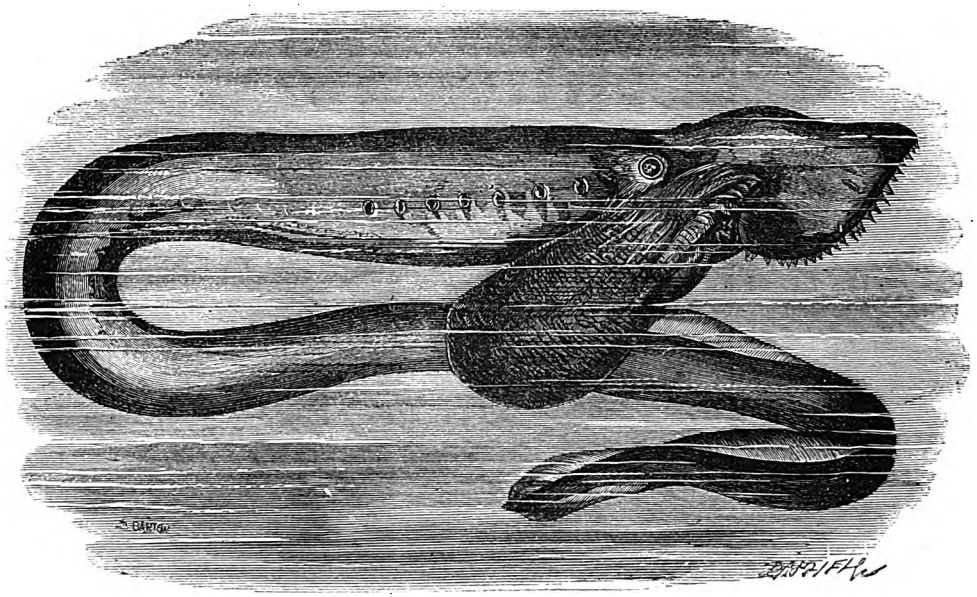
LAMPREY.—*Petromýzon marínus.* LAMPERN.—*Lampetra fluviátilis.*

THE two fishes which are given in this engraving are remarkable for the shape of their mouths and their curious habits.

They have a very eel-like look, but do not act like eels. Their mouths are made on the same principle as that of the leech, and are able by the mere effort of suction, to hold any smooth substance with great force. This power is used for two purposes, the one being the catching and devouring prey, and the other the removal of stones so as to form a nest wherein the eggs may be laid.

The LAMPREY is one of the marine fishes that spends much time in the rivers, and which, like the salmon, enters rivers for the purpose of laying its eggs. The flesh of the Lamprey is very excellent, especially when made into pies. This fish attains a length of eighteen or twenty inches.

The LAMPERN is a much smaller species, which has many of the same habits. In some rivers it is exceedingly plentiful, and at the proper season may be caught by thousands within the space of a few yards. Although the country people have a great prejudice against the Lampern, and believe its flesh to be poisonous, it is nearly as good as the lamprey, and is in fact as excellent a fish as can be caught. The Lampern is about as thick as a man's little finger, and is about a foot or fifteen inches in length.

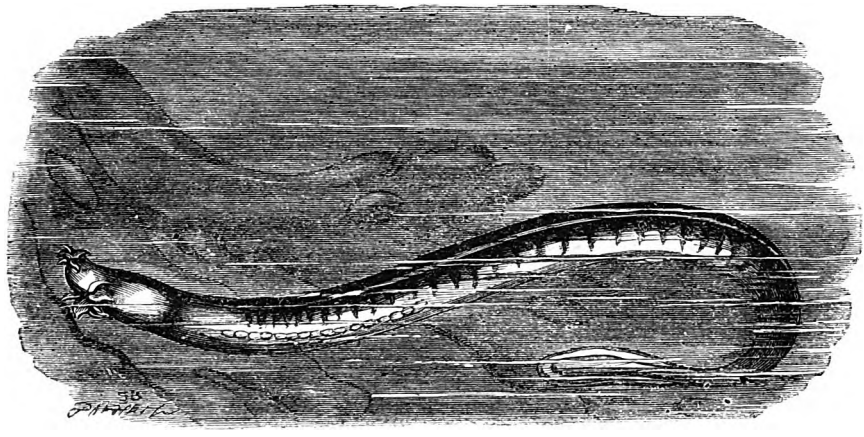


POUCHED LAMPREY.—*Geótria Australis.*

In the wonderful, but not handsome Pouched Lamprey, we have an example of the manner in which certain creatures are adapted to the peculiar position in which they are placed.

It has already been mentioned that in some fishes, which are intended to bear absence from water, a certain change of structure takes place, which retains a considerable amount of moisture upon the gills, and enables the fish to breathe though on dry land. In the Pouched Lamprey we have another instance of a structure intended to serve a definite purpose. This fish is a native of Southern Australia. In this country the rivers are very uncertain in their volume of water, sometimes being boiling torrents after heavy rains, while in a very dry season they are without water, and are little more than dry channels. In order to enable the fish to exist during the time when the water is wanting, it is furnished with a large pouch under the throat, which enables it to put aside a comparatively large amount of liquid and to keep its gills moist.

The mouth is armed with an array of sharply-pointed teeth, and even the tongue is furnished with two formidable fangs, so that it is capable of inflicting a tolerably severe injury upon a foe.



HAG-FISH, OR MYXINE.—*Myxine glutinosa.*

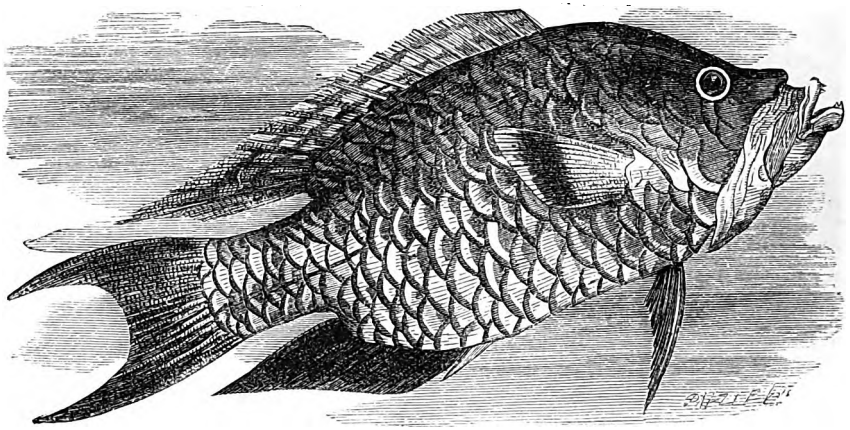
The Myxine, sometimes called the Glutinous Hag-fish, is found upon our own coasts, and is a very curious though not conspicuous creature.

It looks wonderfully like a worm, and for many years was classed among the worms by various writers on Natural History. There is really reason for such a mistake, as the Myxine has no bones, but only a narrow strip of gristly substance which takes the place of the vertebræ. Its mouth is surrounded with eight delicate beards, and there is a single powerful tooth in the palate, strong, sharp and hooked, by which the Myxine evidently holds to its prey.

The Myxine is seldom taken when at large in the sea, but is captured while engaged in devouring the bodies of other fish, to which it is a fearful enemy in spite of its innocent appearance. It has a custom of getting inside the cod and similar fishes, and entirely consuming the interior, leaving only the skin and the skeleton remaining. The fishermen have good reason to detest the Myxine, for it takes advantage of the helpless state in which the cod-fish hangs on the hook, makes its way into the interior, and if the fish should happen to be caught at the beginning of a tide, will leave but little flesh on the bones. The cod thus hollowed are technically called "robbed" fish. Six Myxines have been found within the body of a single haddock.

The name of Glutinous Hag-fish is derived from the enormous amount of mucous secretion which the Myxine has the power of pouring, from a double row of apertures, set along the whole of the under surface, from the head to the tail.

Its colour is dark-brown above and yellowish below, and its length is about a foot or fifteen inches.



SLY EPIBULUS.—*Epíbulus insidiátor.*

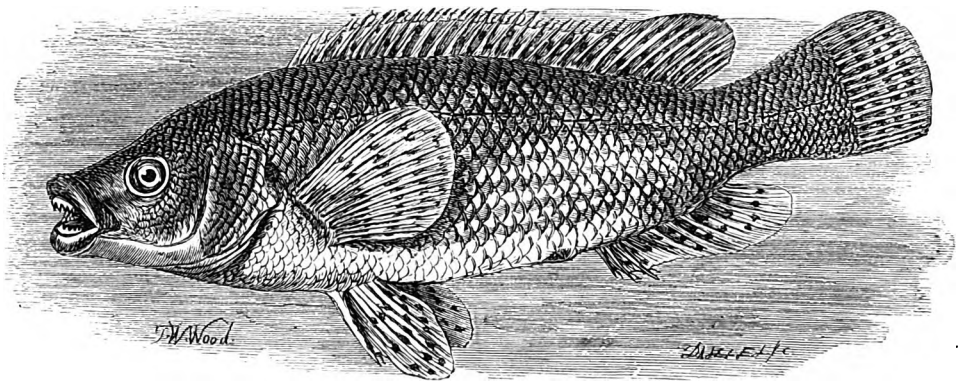
The curious fish which is represented in the accompanying illustration, has derived its popular and scientific titles from the crafty manner in which it obtains its food.

In this fish, the mouth and jaws exhibit a very remarkable structure, which enables the creature to protrude its mouth with great rapidity, and to such a degree, that when pushed forward to its greatest extent, it is even longer than the head. Aided by this apparatus, the Sly Epibulus captures its prey as follows:

It feeds mostly upon small fishes, and instead of alarming them by charging among their ranks, and so giving itself a tedious and possibly an unsuccessful chase, it quietly withdraws itself to some sheltered spot, and waits, still and motionless as the watchful kingfisher, and no less dangerous to the smaller members of the finny tribe. No sooner does an unwary fish pass near the cunning enemy, deceived by its apparent harmlessness, than the movable mouth is quickly darted forward, and the victim caught before it is even aware of its danger.

Those readers who are fond of insects and their habits, will at once see the close resemblance between this method of catching prey and that which is adopted by the larva of the dragon-fly, with its long folding mask and active nippers at the extremity. In this fish, the mouth is made to project, not only by the soft parts of the mouth, but by the manner in which two long bones of the head are made to slide in grooves, and can be thrown forward or drawn back at the will of the fish.

This species is found in the seas about Java, Sumatra, and the Moluccas.



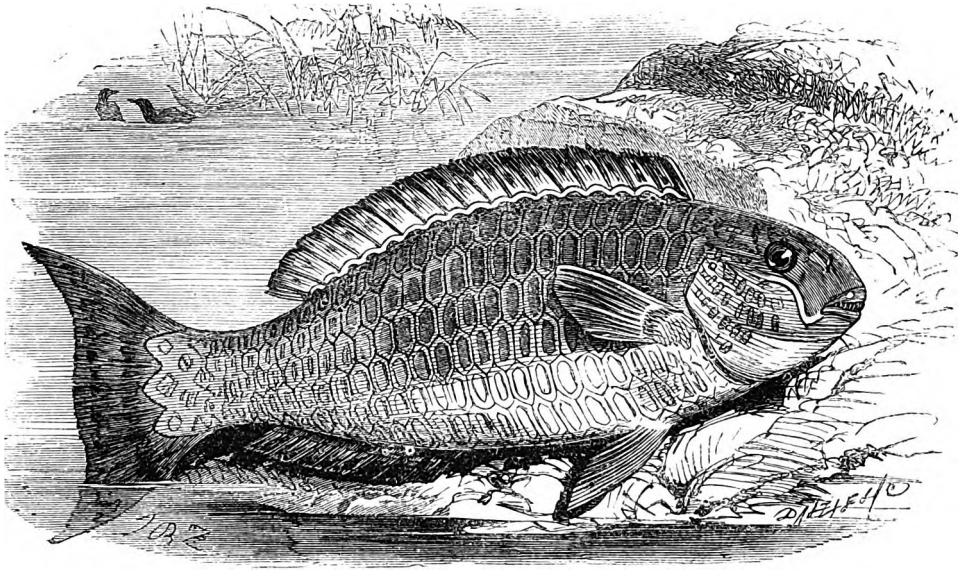
BALLAN WRASSE.—*Labrus bergylta.*

THOSE fishes which are called by the name of Wrasse, are tolerably common upon our coasts, and many of them are remarkable for the brilliancy of their colouring, which is nearly as beautiful as the magnificent hues which distinguish so many of the tropical fish. The BALLAN WRASSE is sometimes called the ANCIENT WRASSE, or the OLD WIFE, and is one of the species that are chiefly found near rocky shores.

It is not in any great estimation as an article of food, the flesh being too soft, and not possessing any particularly good flavour. It generally frequents the deep rocky gullies, where the water is tolerably tranquil, except when the waves are beaten into foam by a storm. Here it may be seen swimming about in the clear element, concealing itself among masses of seaweed, and ever and anon darting forth to secure some tempting morsel, such as a passing crab or prawn.

It is thought by the fishermen that the old and larger specimens are selfish creatures, and keep the smaller fish away from their feeding grounds. They find that when they first begin to lower their bait, they catch none but large specimens for a day or two, and that afterwards the smaller fish are caught. They think that the old fish pay the penalty of their selfishness with their lives, and that the younger individuals take advantage of the death of their tyrants, and so fall victims to the same fate.

The colour of this fish is mostly red, with spots of bluish-green; the fins are green spotted with red, and below it is orange.

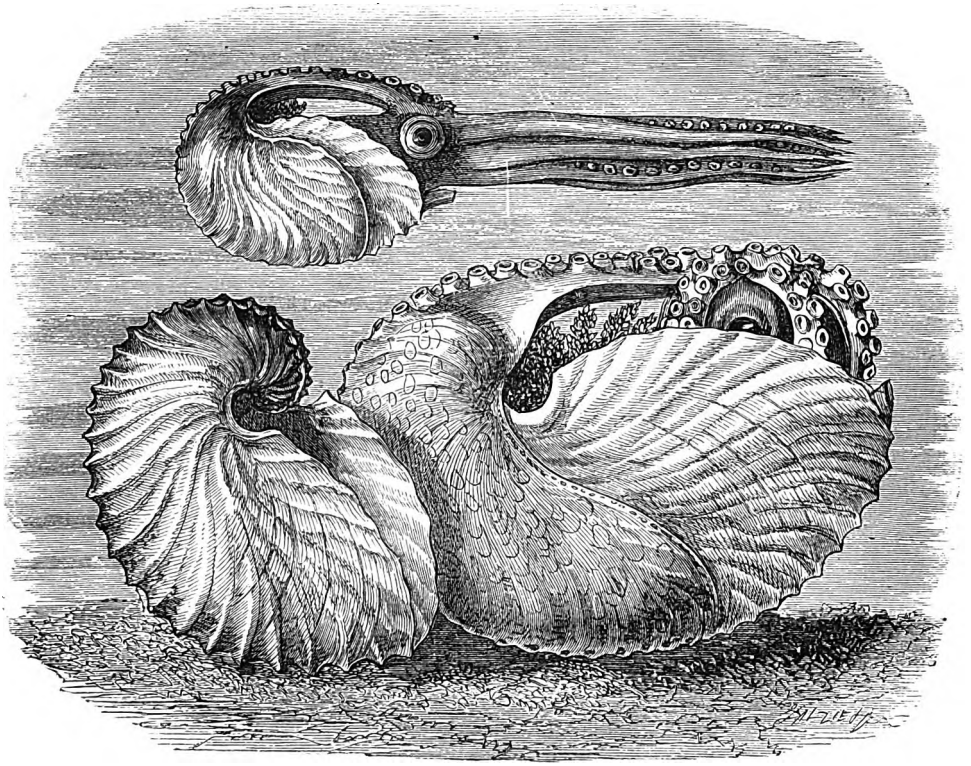


TESSELATED PARROT FISH.—*Scarus harid.*

In mere outward form the Tesselated Parrot Fish presents nothing very remarkable, but the beautiful colours with which it is adorned, and the strange manner in which they are painted, as it were, on the body, make this a very striking creature. It is found off the coast of Ceylon, and the natives call it by a name that may be translated Pumpkin Fish, because there is a certain gourd or pumpkin which is marked in a similar manner.

The colours of the Tesselated Parrot Fish are almost entirely azure and golden yellow, the ground colour being blue, and the pattern yellow. The head, which is rather oddly shaped, is bright yellow streaked and spotted with blue. The peculiar pattern which is drawn upon the body is most extraordinary, being a series of regular six-sided fissures, much like the cells of the honey-comb.

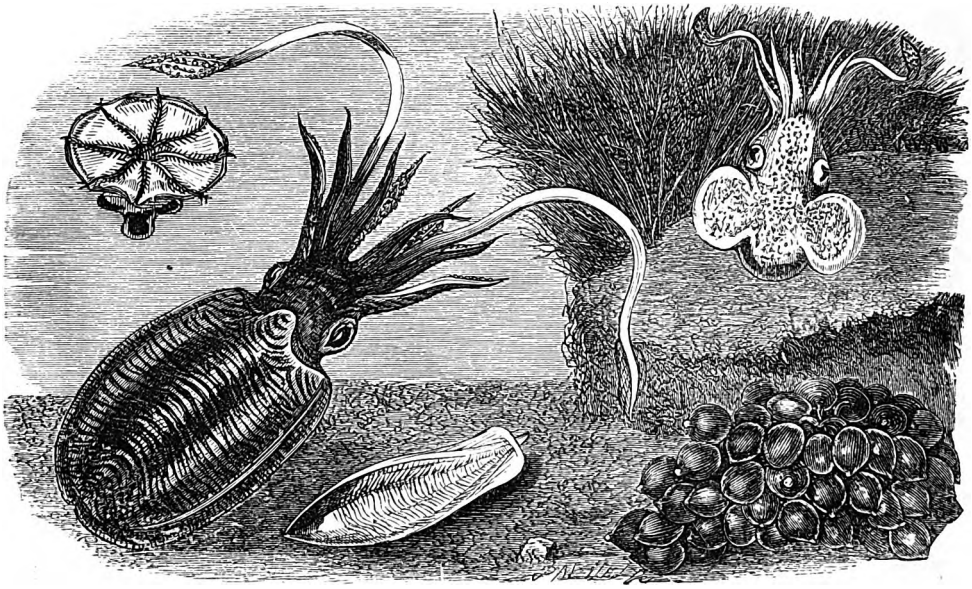
It may be mentioned that a vast number of Parrot Fishes are known, all coloured in the most brilliant fashion, and having received their popular names partly from the rich hues with which they are adorned, and partly on account of the shape of the head. Their teeth are wonderfully strong, set like the stones of a mosaic picture, and curved in a manner that leaves some resemblance to the beak of a parrot. These teeth are used for crushing the hard corallines on which the fish feeds, and as they are worn away by hard usage, their place is supplied by others, which are continually growing, and move towards the front in regular succession, as those in front are worn away.



ARGONAUT, OR PAPER NAUTILUS.—*Argonauta Argo.*

We are now about to see some examples of the Molluscs, of which the snails, slugs, sea shells, oysters, mussels, &c., are familiar examples.

The three figures in the engraving represent the Paper Nautilus, or Argonaut, which was until very lately thought to possess a pair of sails, and to be able to pass over the sea like a man in a little sailing boat. The uppermost figure shows the attitude assumed by the Argonaut when it shoots through the water. The large figure on the right-hand shows the same creature as it appears when coiled up in its shell, the eyes just peeping over the edge, so as to watch everything around. The arms are covered with suckers, which enable the creature to attach itself strongly to any smooth substance. The smaller figure on the left-hand exhibits the fragile shell as it appears when empty. The name of Paper Nautilus has been given to the creature on account of the delicacy of the shell, which crumbles to fragments if carelessly grasped. During life, however, the shell is as elastic as horn.



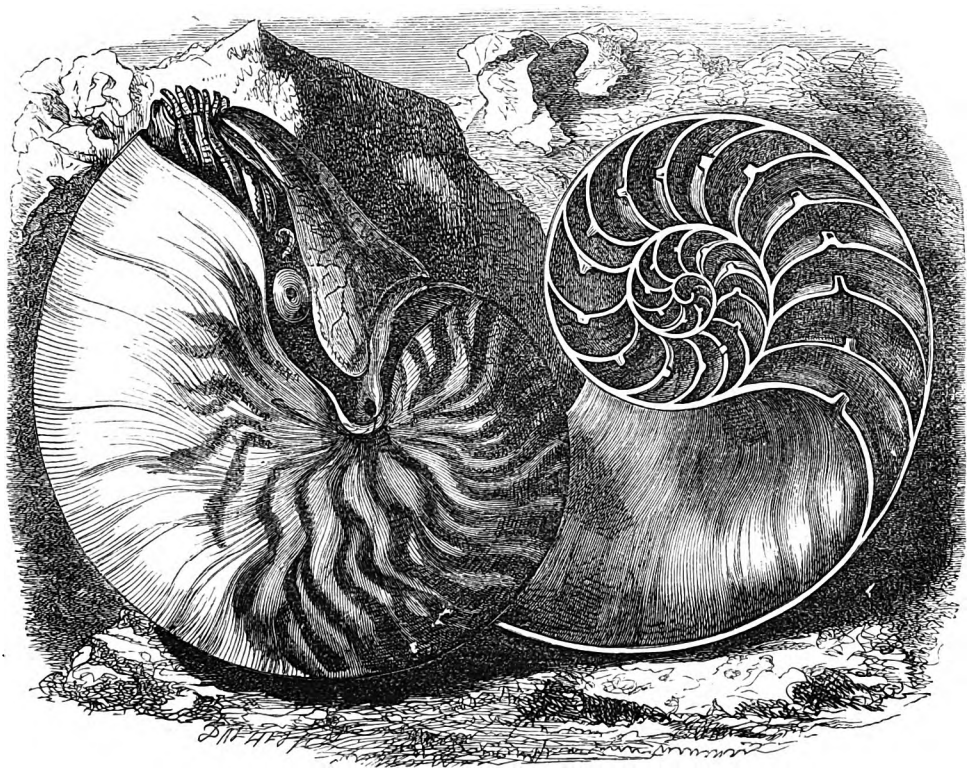
WEBBED SEPIA.—*Cirrhoteuthis Múlleri.*
LITTLE SQUID, OR SEPIOLA.—*Sepíola Atlántica.*
COMMON SEPIA.—*Sépia Officinális.*

HERE we have examples of some molluscs well known by the name of Cuttle Fishes. These are all active and voracious beings, chasing and securing living prey, and tearing it to pieces with their sharp beak, that looks very like the bill of a parrot, and is little less powerful.

The little WEBBED SEPIA is found off the coasts of Greenland, and is remarkable for the web by which its arms are connected. The larger figure on the left-hand represents the common CUTTLE FISH of our own shores, which is so well known as furnishing the "cuttle-bone," in much use for tooth-powder. One of these objects is seen just below the figure. All these beings possess a small internal bag containing a black liquid. When the creature is alarmed, it ejects this black dye into the water, and, under cover of the dark cloud, shoots off to seek some place of safety.

On the right-hand lower corner of the illustration may be seen a large bunch of grape-like objects. These are the eggs of the Cuttle Fish, and are often found in great quantities upon the shore. It is easy to hatch the eggs, and the habits of the young are very interesting.

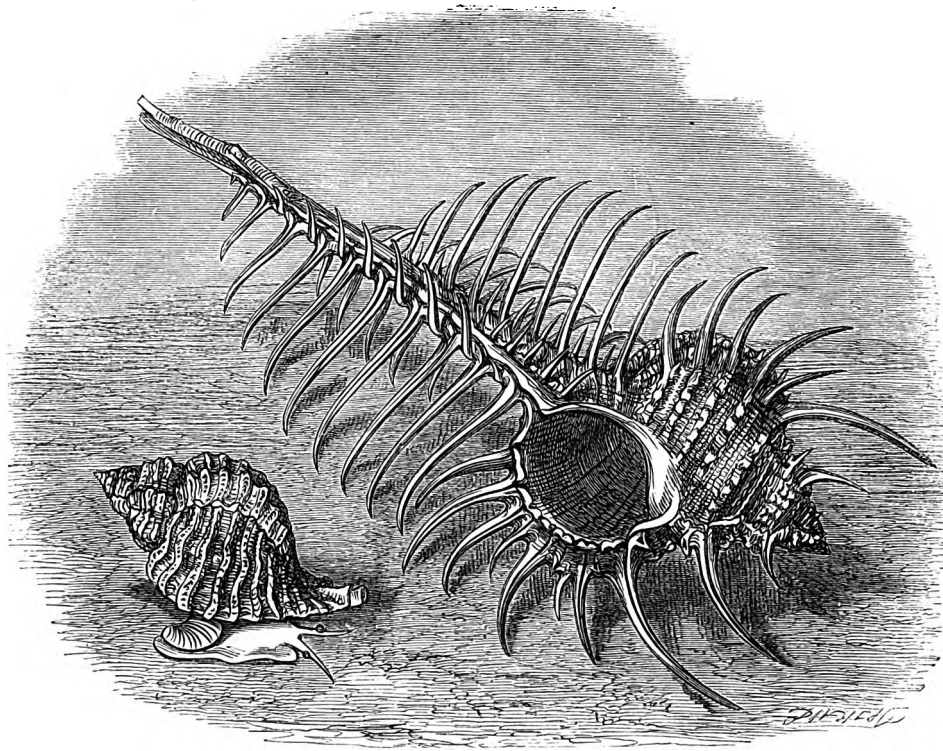
The little figure on the right-hand represents the SEPIOLA.



CHAMBERED NAUTILUS.—*Naútilus Pompílius.*

In this illustration are shown two examples of the Pearly Nautilus, one to exhibit the appearance presented by the creature while coiled in its home, and the other to show the wonderful structure of the shell, the many chambers with which it is divided, and the little tubes which connect the compartments with each other.

While at rest, the Pearly Nautilus exhibits none of the beautiful colours which ornament its shell, the flat and wide membrane, called the mantle, being wrapped over the shell, completely hiding it from view. While in this state, it is said to resemble a dead tortoiseshell cat. This species lives in the deep water, and the perfect animal is very rarely found, seldom ascending to the surface unless driven by a storm. The animal only occupies the foremost cell or chamber, and is not very closely connected with its home, being apparently able to turn round. The material of the shell is firm and strong, so that it will bear rough handling without suffering any detriment. Its colour is white, marked with streaks of warm chestnut.

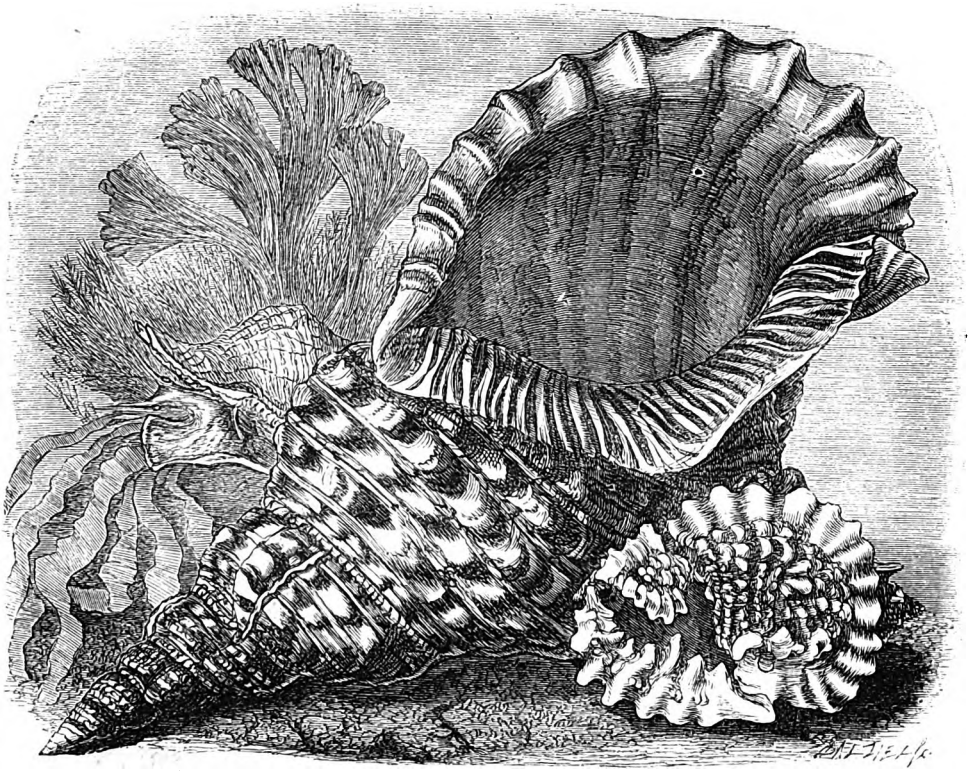


BRITISH WOODCOCK-SHELL.—*Murex erináceus.*
THORNY WOODCOCK.—*Murex tenuispínis.*

The two creatures that are represented in this engraving are called Woodcock Shells, because their shells project in a form that is fancifully thought to esemble the beak of the Woodcock. The family in which these molluscs are placed is an extremely large one, and all the species belonging to this family are not only carnivorous, but rapacious, preying on other molluscs, and destroying them with the terrible armature called the tooth-ribbon, and which, when examined with the microscope, proves to be a set of adamantine teeth, sharp-edged, and pointed as those of the shark, and cutting their way through the hard shells of their victims as the well-known cordon saw passes through thick blocks of hard wood.

The larger of the two specimens represents the shell which is popularly known under the name of Thorny Woodcock, or of Venus' Comb, on account of the comb-like projections that cover the shell.

The smaller figure is the common Woodcock Shell of our own seas. It is seldom more than an inch and a half in length, and its colour is pale yellowish-brown.



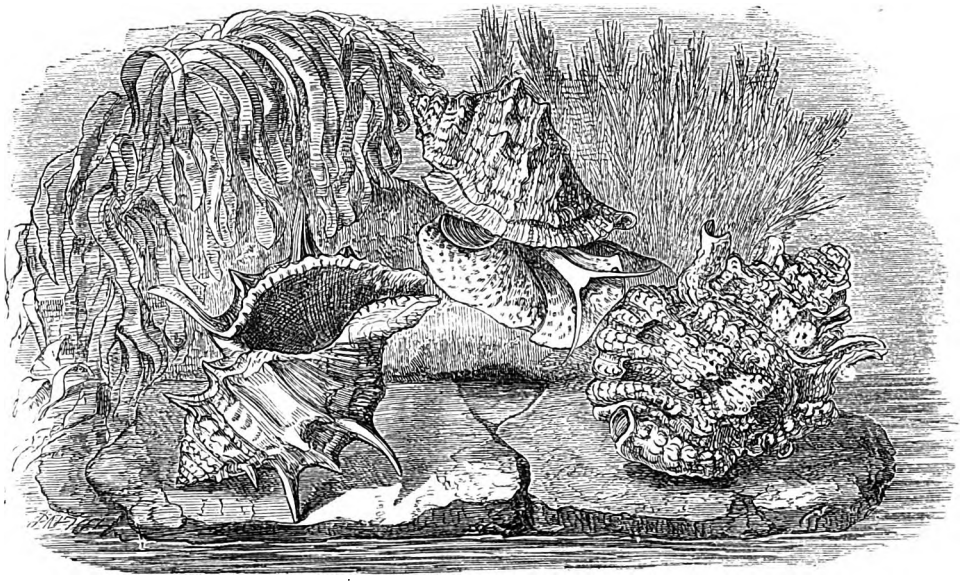
TWISTED TRITON.—*Triton distortus.* SEA TRUMPET.—*Triton variegatus.*
WRINKLED TRITON.—*Triton anus.*

ALL these shells are called TRITONS, because the marine demigods that were formerly known by that name were often represented as blowing trumpets made from these shells.

The large central figure bears the name of the CONCH, or SEA TRUMPET, and is still employed for that very purpose.

The Sea Trumpet sometimes attains to a large size, a foot or more in length; and, when it has attained its full dimensions, is employed among the South Sea Islanders and Australians as a trumpet. In order to fit the shell for this purpose, a round hole is bored in the side, at about one-fourth the length from the tip, and the required sound is elicited by laying the shell to the lips, and blowing across the hole as a performer blows the flute. The note—if the noise produced can be called by that name—is hollow and disagreeable; but as it is loud and unlike any other sound, it answers the purpose of those who employ it.

The other Tritons need no description.



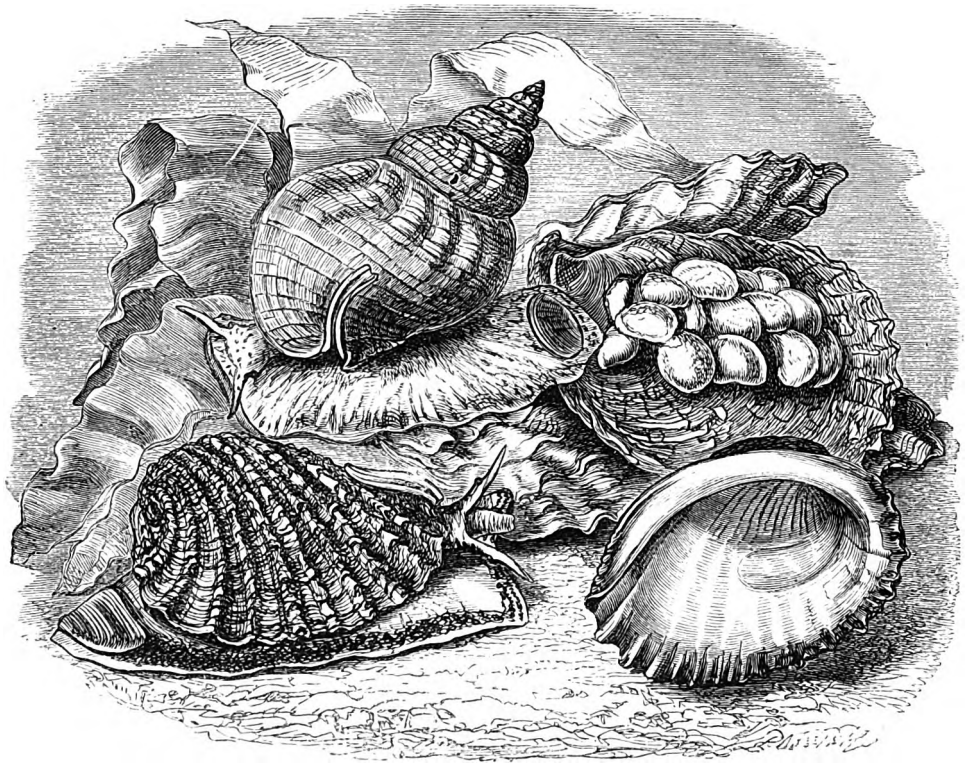
SPINED FROG-SHELL.—*Ranella spinósa.* FROG-SHELL.—*Ranella Rana.*
BULL FROG-SHELL.—*Ranella bufónia.*

The three figures in this illustration represent three species of Frog Shells, so called because when placed in certain positions, one or two of them have a very faint resemblance to the general outlines of a frog.

All these shells are inhabitants of the warmer seas, and about fifty species are known. None of them are of any great size, their ordinary length being about two inches. They seem to prefer the shallow water, and are mostly found sticking on the rocks after the tide has fallen. Sometimes, however, they descend rather lower, and can be caught at a depth of more than a hundred feet.

None of the Frog Shells are painted with brilliant colours, the chief tint being brown of various shades, yellow and white, the last being generally the ground colour. These hues are, however, disposed in very harmonious and pleasing patterns, presenting rather bold contrasts with each other, and always variable, even the same species.

The commonest of the Frog Shells is shown together with its inhabitant for the purpose of exhibiting the very flat and broad foot on which it crawls, the long antennæ, and the position of the round black eye.



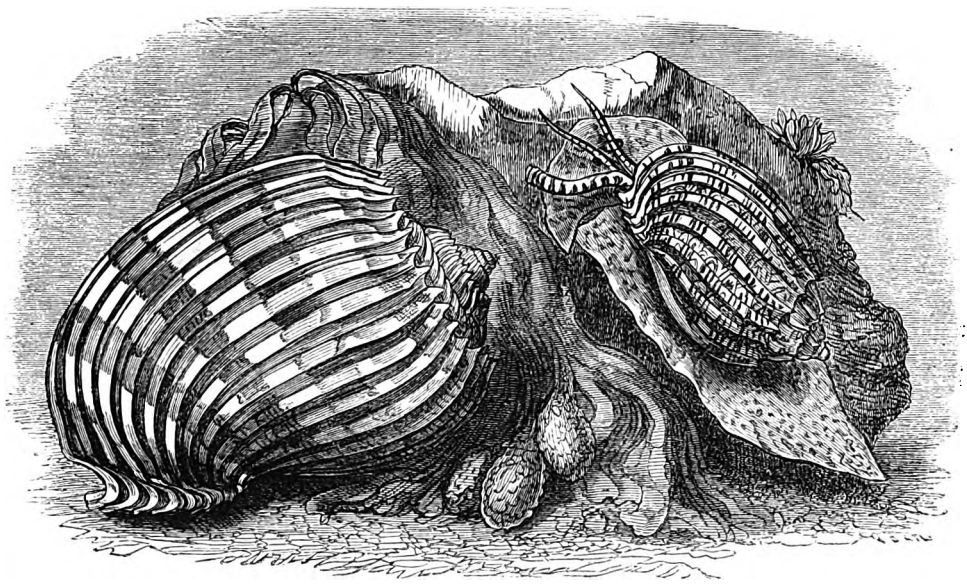
WHELK.—*Buccínum undátum.* CONCHOLEPAS.—*Concholépas Peruviána.*

The Whelk is one of the commonest and best known British shells.

Vast quantities of Whelks are taken annually for the markets, and are consumed almost wholly by the poorer classes, who consider them in the light of a delicacy, They are, however, decidedly tough and stringy in texture, and, like the periwinkle, which is also largely eaten, are not particularly digestible. The mode of taking these molluscs is very simple: Large wicker-baskets are baited with the refuse portions of fish, and lowered to the bottom of the sea by ropes. The ever-hungry Whelks instinctively discover the feast, crowd into the basket by thousands, and are taken by merely raising the laden basket to the surface, and emptying it into a tub. Sometimes the Whelk is captured by the dredge, but the baited basket is the quickest and surest method.

A patch of the Whelk's eggs is seen on an oyster-shell on the right of the engraving.

The two lower figures represent a curious shell, very thick and solid, and remarkably wide and shallow in proportion to its depth. This shell is found in Peru.



LITTLE HARP-SHELL.—*Harpá minor.*

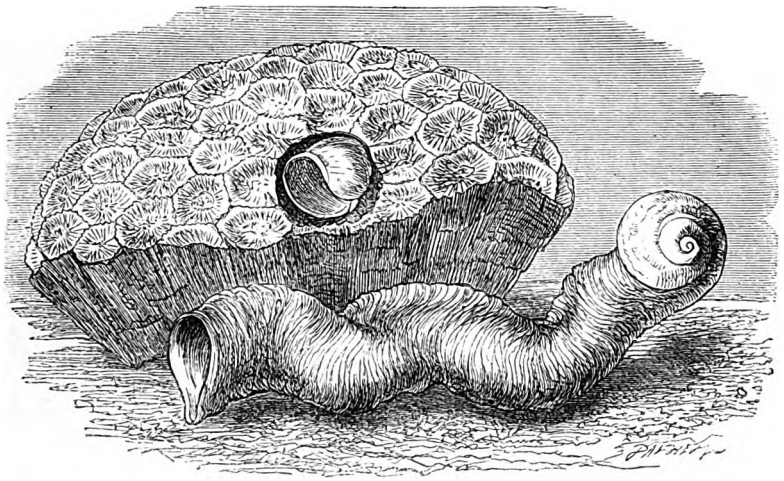
IMPERIAL HARP-SHELL.—*Harpa imperiális.*

The beautiful Harp Shells are only found in the hottest parts of the world and are mostly taken on the shores of the Mauritius, the Philippine Islands, and off Ceylon. They love deep water, and frequent those parts of the sea where the bed is muddy.

They are called Harp Shells because the rows of ridges which are drawn over the shell are thought to bear a remote resemblance to the strings of a harp. Formerly these shells were very rare and expensive, a fine specimen costing from forty to fifty pounds. Now, however, when so many ships carry our commerce to distant countries, and steam-power has enabled us to be totally independent of wind, the Harp Shells are far more plentiful; and a specimen that would formerly be thought cheap at forty guineas, may now be purchased for less than two pounds.

The foot of the Harp Shell is very peculiar, being broad, flat and leaf-like, and, as the reader may see, has a slit which separates it into two portions. It is said that when the animal is in a great hurry to draw itself into the shell, it is apt to catch the slit against the sharp edge of the shell, and to cut off a large portion of its own foot.

The colours of the Harp Shells are very similar, being white, buff, chocolate, and dark-brown, arranged in various and always pleasing patterns.



MAGILUS.—*Mágilus antíquus.*

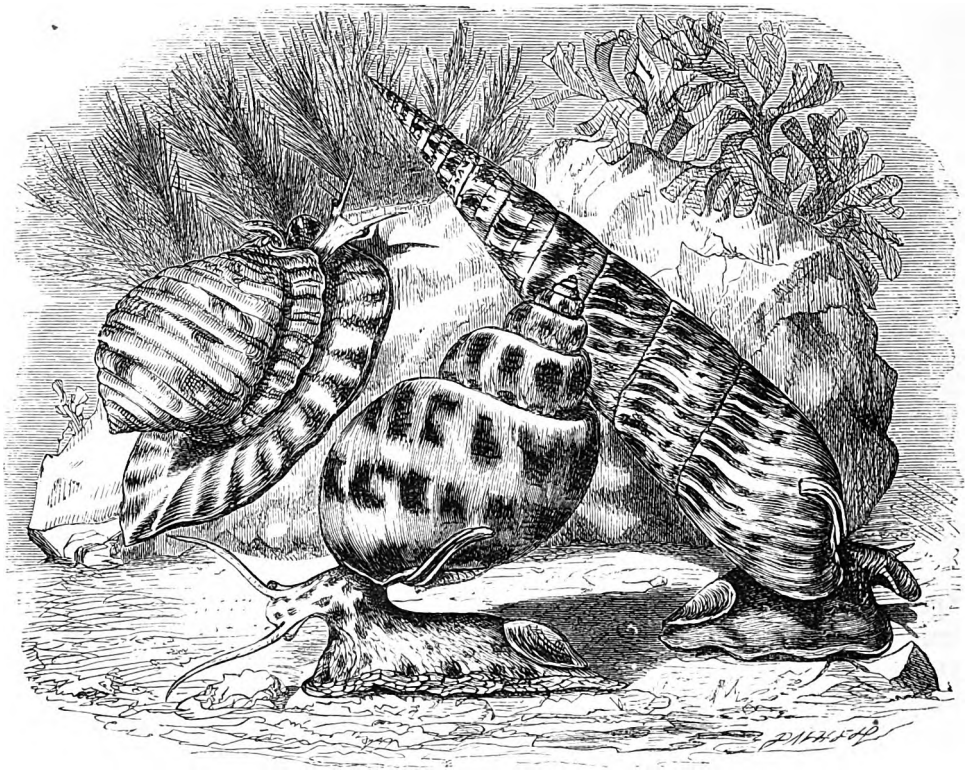
One of the strangest, though not the most beautiful, of shells is the Magilus, a native of the Red Sea and the Mauritius.

On reference to the illustration, the reader will see two figures, one representing a group of madrepores, in which a small and delicate shell is lying, and the other a long, crumpled, and partly spiral tube, with a shell at one end and an opening at the other. Strange as the assertion may seem, these two figures represent the same animal in two stages of its growth.

For the purpose, apparently, of carrying out some mysterious object, the Magilus resides wholly in the masses of madrepore, and in its early youth is a thin and delicate shell without anything remarkable about it. As it advances in age it enlarges in size, as is the case with most creatures; but its growth is confined to one direction, and instead of enlarging in diameter, it merely increases in length.

The most curious point, however, in the Magilus is, that as fast as it adds a new shell in front, it fills up the cavity behind with a solid concretion of shelly matter, very hard, and of an almost crystalline structure, so as to leave about the same amount of space as in the original shell. The animal is always to be found in the very front of the shelly tube, and closes the aperture with a strong door that effectually shields it against all foes.

The colour of the Magilus is whitish. Only one species is known

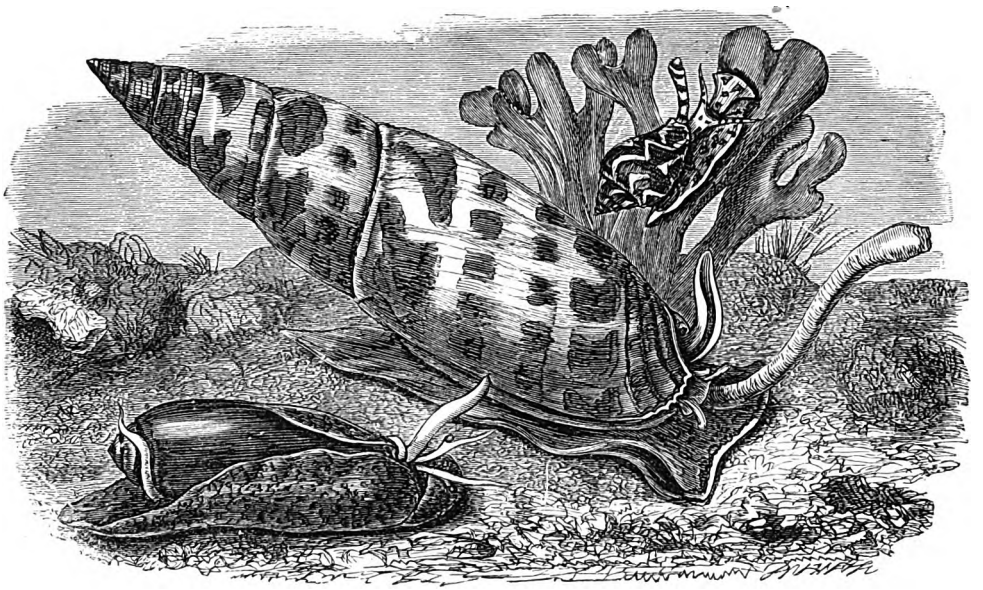


APPLE TUN-SHELL.—*Dólium pomum.*
SPOTTED NEEDLE-SHELL.—*Térebra maculáta.*
SPOTTED IVORY-SHELL.—*Eburna areoláta.*

THE Needle Shells are so called on account of their great length and the sharp point with which they are terminated. More than a hundred species of Needle shells are known, all inhabiting the hot seas. The colours of this shell are cream-white with bands of brown and pure white.

The Ivory Shells derive their name from the peculiar smooth and polished surface, which looks much like ivory. They are all found in the warm parts of the earth. The colour of this species is pure white spotted with rich reddish-brown.

The Tun-Shells are thought to be formed something like barrels, and derive their popular name from that fancied resemblance. The Apple Tun-Shell is beautifully coloured, the outside being white with spots of saffron. The inside is richly coloured with orange-yellow. Like the other two shells it is only found in the warm seas.



BLACK OLIVE.—*Olíva Mauritána.*

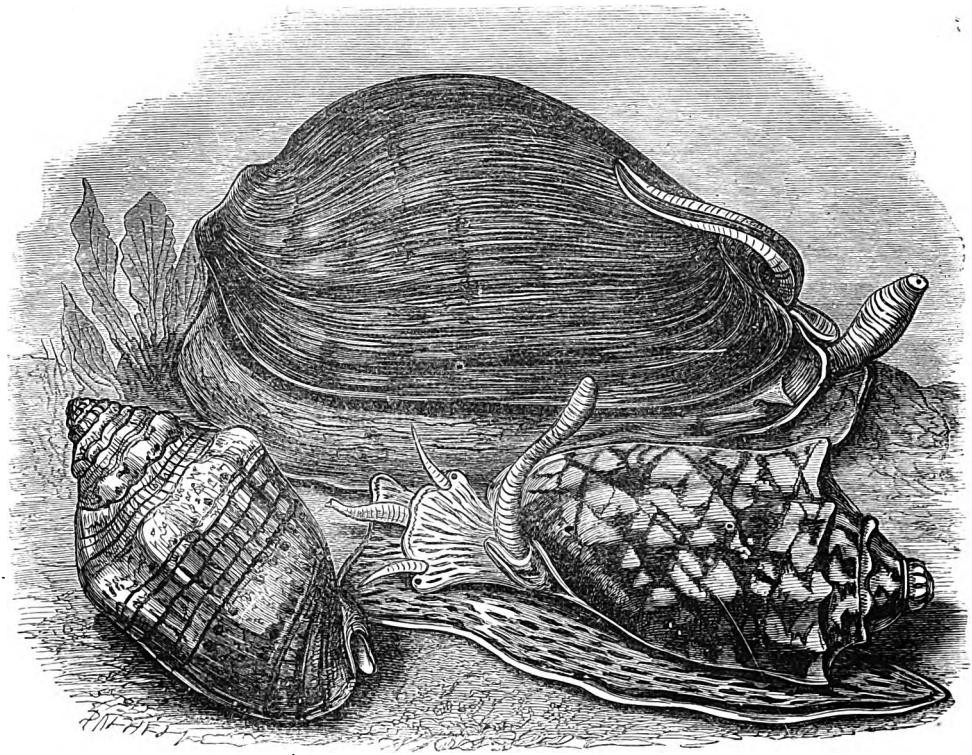
LIGHTNING DOVE-SHELL.—*Columbella fúlgurans.*

BISHOP'S MITRE.—*Mitra episcopális.*

The Black Olive really does resemble the fruit whose name it bears. The Olives are very active creatures, gliding about with tolerable speed, burying themselves in the sand when the tide leaves the shores on which they are creeping; and if laid upon their backs, they can easily resume their original position by the use of the spreading foot. In spite of their elegant and harmless aspect, the Olives are ravenous and hungry creatures, and can readily be captured by the simple process of tying a piece of meat to a line, lowering it towards the spot where the Olives are creeping, and hauling it up at intervals, carrying with it the various molluscs that have attached themselves to the bait, and do not think of loosening their hold until too late.

The shell of the Black Olive is beautifully polished and of a deep rich black, through which a slight tint of brown can be observed in certain lights. The inside is porcelain-white, and the average length is not quite two inches.

The Bishop's Mitre is one of the tropical shells, and is beautifully marked with rich bay or reddish spots upon a pure white ground.



NEPTUNE'S BOAT.—*Cymba Neptúni.*

MUSICAL VOLUTE.—*Volúta música.*

BAT VOLUTE.—*Volúta vespertílio.*

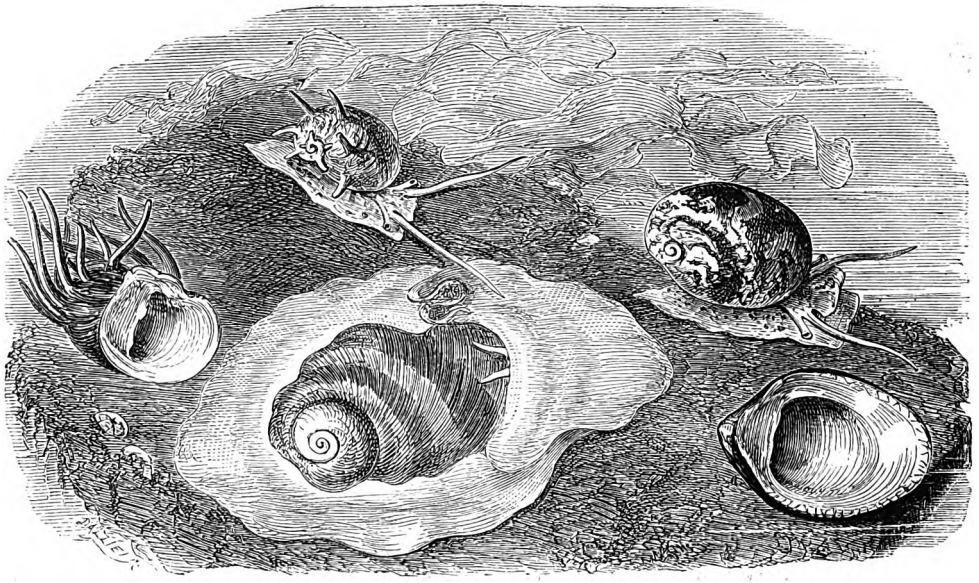
In this engraving, the large shell which occupies the centre, represents the Neptune's Boat.

This is a pretty, though not a brightly coloured shell. Its colour is uniform pale drab on the outside, and on the inside it is beautiful pinky white.

Most of these shells are found in Western Africa.

The Musical Volute is so called, because the markings on its surface bear some resemblance to the clefs and notes of printed music. The colour of the shell is grey brown and the marks are black.

The shell on the right hand is the Bat Volute, a very pretty species.



CROWN NERITINA.—*Neritína coróna.* SMOOTH NERITA.—*Nérita políta.*

SPINED NERITINA.—*Neritína spínosa.* NATICA.—*Nática Chemnitzii.*

NATICELLA.—*Naticella porcelána.*

The large figure in the centre represents the Natica shell. All the Naticæ, of which about ninety species are known, are found upon the sandy beds of the sea, and sometimes are taken at a depth of nearly six hundred feet from the surface. They are very predaceous in their habits, feeding principally on little bivalves, which they can assault with their short but strongly armed tongue-ribbon. The eggs of these creatures are very remarkable.

The colours of the Naticæ are marvellously permanent, and even in the fossil state they are preserved and retain some degree of their original brilliancy. The species which is here represented is yellowish, and marked with grey bands.

All these creatures are called Sea Snails, and are very pretty in their colouring. The Smooth Nerita is white, marked with zigzag streaks of pale buff, and in the interior it is rich canary yellow. The Spined Nerita, so remarkable for the long and rather curved spines that project from the shell, is deep greenish-black on the outside, and blackish-grey within. The Crown Neritina is grey, streaked with very dark brown.

COWRIES.

POACHED EGG.—*'Ovulum ovum.* ENGLISH COWRY.—*Cypræa Europea.*
WEAVER'S SHUTTLE.—*'Ovulum volva.*
MARGINELLA.—*Marginella diádocha.*
PANTHER COWRY.—*Cypræa pantherína.*
WARTY EGG.—*'Ovulum verrucósum.*
DEEP-TOOTHED COWRY.—*Cypræa caúrica.*

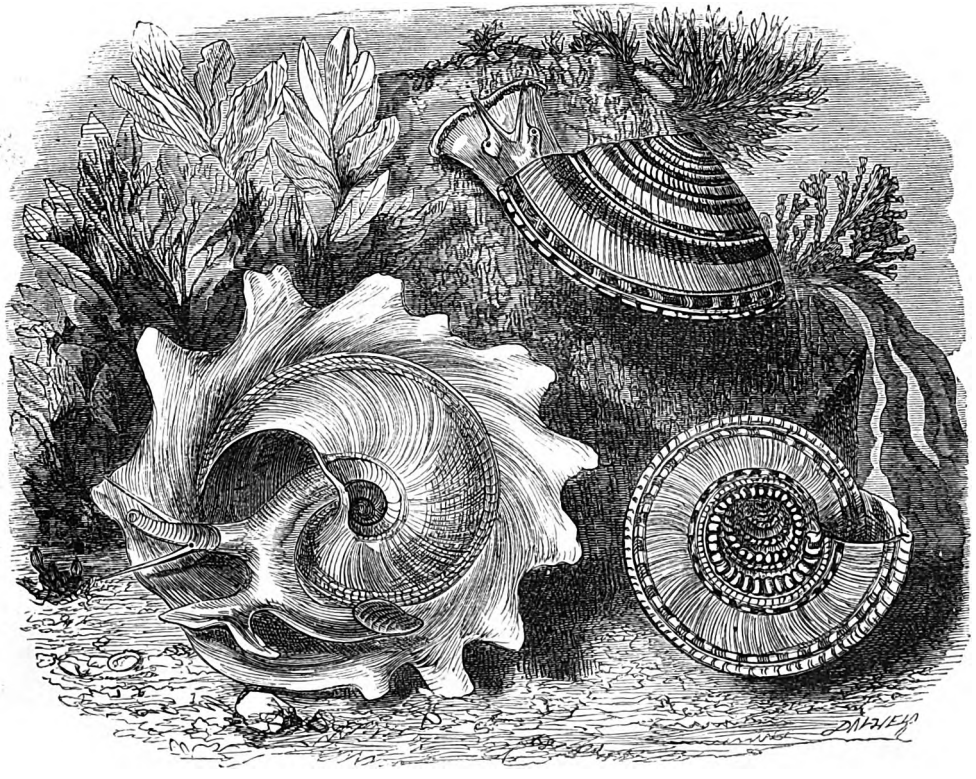
We have several examples of the Cowries, and their allies. They are all pretty shells, and some are even beautiful, owing to the rich colouring with which they are adorned. The little English Cowry is very well known on our shores, being very plentiful on the sandy coasts.

In the left-hand bottom corner of the engraving may be seen the beautiful Panther Cowry, represented as it appears while living, its mantle covered with the curious appendages which look very like the tentacles of the sea anemones.

This species derives its name from the rich mottling of the surface, A larger species is called the Tiger Cowry. One of these shells is largely used by the natives of the Sandwich Islands as sinkers for their nets, and a singularly ingenious bait is made from the same shell for the capture of the cuttle fish.

A number of Cowries are cut into fragments and so fitted together as to form on oval ball of considerable size, with a smooth and mottled surface. Something by way of a tail or balance is fastened to one end of the ball, and the fishing-line tied to the other. The bait is now complete, and is quietly lowered near the spot where the cuttle is known to live, and drawn slowly along the ground. The ever-watchful cuttle is immediately attracted by this novel object, and thinking it to be some hitherto unknown delicacy, darts at it, and arrests its progress by attaching one of its arms to the smooth surface. The fisherman then gives a slight jerk to his line, and the deluded cuttle fancying that its prey is trying to escape, makes fast another arm. By repeated jerks the cuttle is induced to cling with all its force to the bait, when the fisherman rapidly hauls up the line, and flings the sprawling mollusc on the shore before it is aware of its danger.

The Poached Egg, and Weaver Shuttle derive their names from their resemblance to these objects. Their colour is white, with a yellowish tinge. One of these shells called the Money Cowry, is used in many parts of Africa instead of coin. Vast multitudes of these shells are gathered from the Pacific and Eastern seas and sent to Africa. Sixty tons weight of Money Cowries have been sent in one year from a single port.

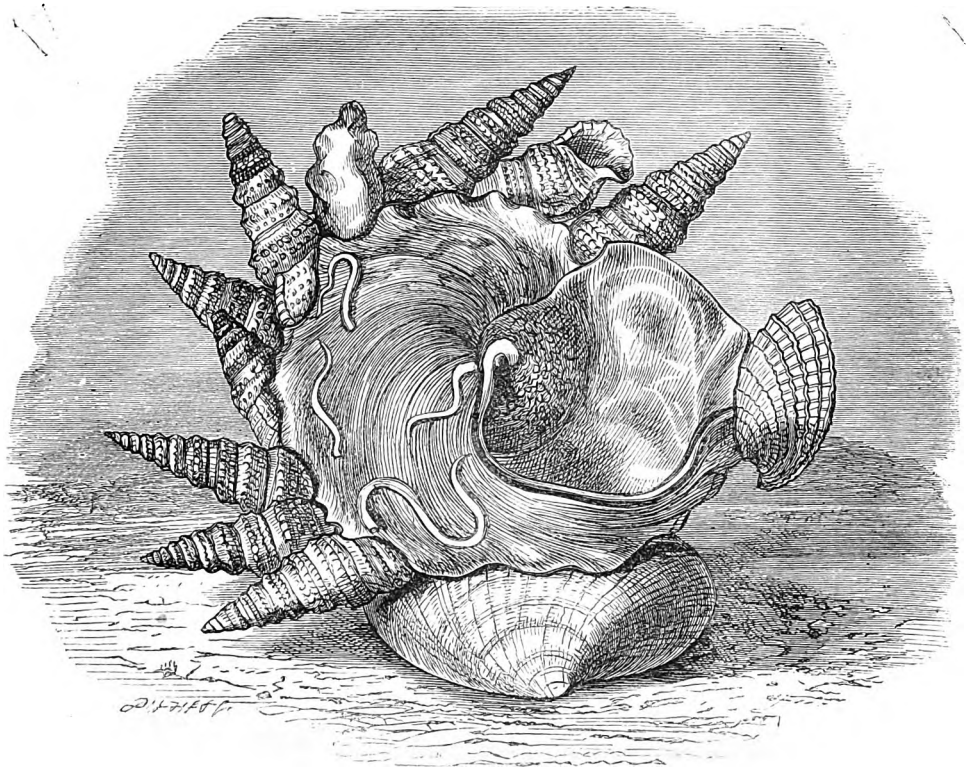


INDIAN PHORUS.—*Phorus Indicus.*

STAIRCASE OR PERSPECTIVE TROCHUS.—*Solárium perspectívum.*

Both these shells are remarkable. The Indian Phorus is sometimes called the Mineralogist, or Conchologist, because it is in the habit of collecting bits of minerals or shells, and fastening them to its own habitation. In one example, the creature had stuck a whole row of little mussel shells round the rim, all fastened with the hollow upwards. Several pieces of stone were also upon the shell. The reason for this curious habit is not known.

The two figures on the right hand represent the Staircase Trochus, so called because the shell is wound round a spiral centre, and when examined from the base, looks very like a winding staircase. It is a pretty shell, being mottled with brown, ochre and white.

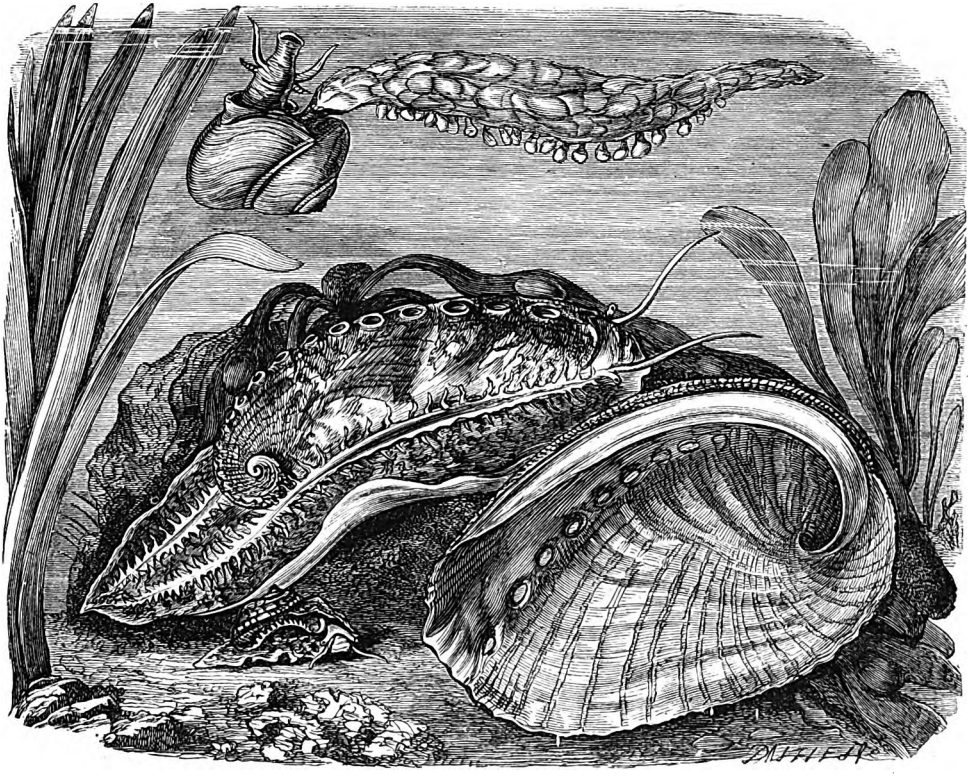


SHELL COLLECTING PHORUS.—*Phorus conchylóphorus.*

We have here a magnificent example of the Shell Collecting Phorus, another species of the Phorus.

The specimen from which this drawing was taken, has contrived to cover itself with a wonderful array of other shells. The greater number are the Club Shell, which project like so many horns, a Venus shell is adhering to the mouth, and a Lucina fastened to the base. Owing probably to the mass of heavy substances which the creature places on its shell, its movements are very clumsy, and when crawling about, it staggers and stumbles as if overburdened with the heavy shell that rocks and rolls as the creature moves along.

The name Phorus is Greek, and signifies a carrier.

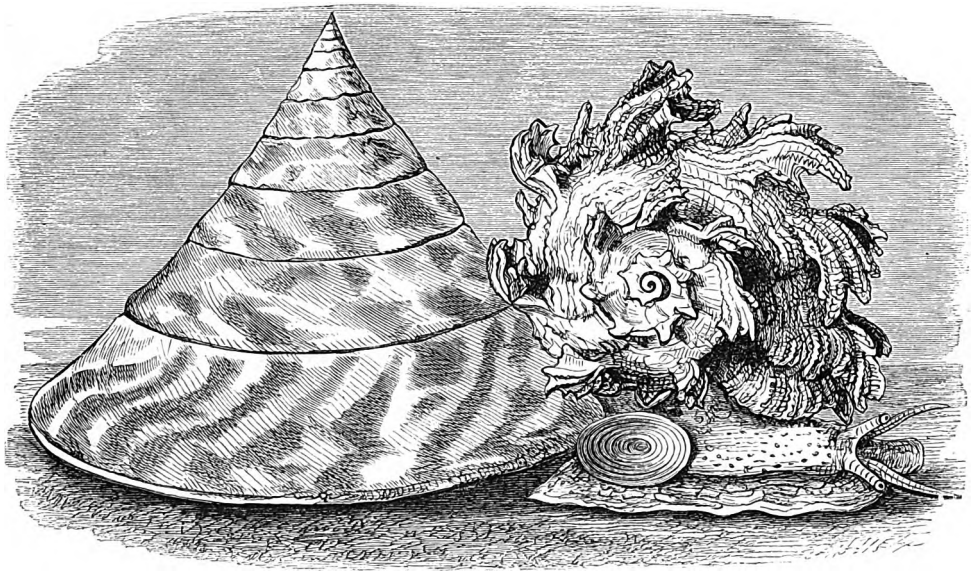


VIOLET SNAIL.—*Janthina communis.* EAR SHELL.—*Stomatia rubra.*
ASS'S EAR.—*Haliotis asininus.*
GUERNSEY SEA EAR.—*Haliotis tuberculatus.*

The uppermost figure represents the Violet Snail as it appears while floating on the surface of the sea, supported by the curious raft with its supply of air cells.

The Violet Snail inhabits several seas, and is most common in the Atlantic Ocean, though it is also found in the Mediterranean; and a few specimens are occasionally driven upon our shores.

The Ear Shells are so called from their shape. They are most beautiful in their colouring, being of a rich pearly lustre, gleaming with every shade of blue, red, gold, green, purple and all intermediate tints. When first taken, they are rough and stone-like on the outside, but after they have been polished on a wheel, are most lovely. The small or injured specimens are cut up and made into buttons and other ornaments.

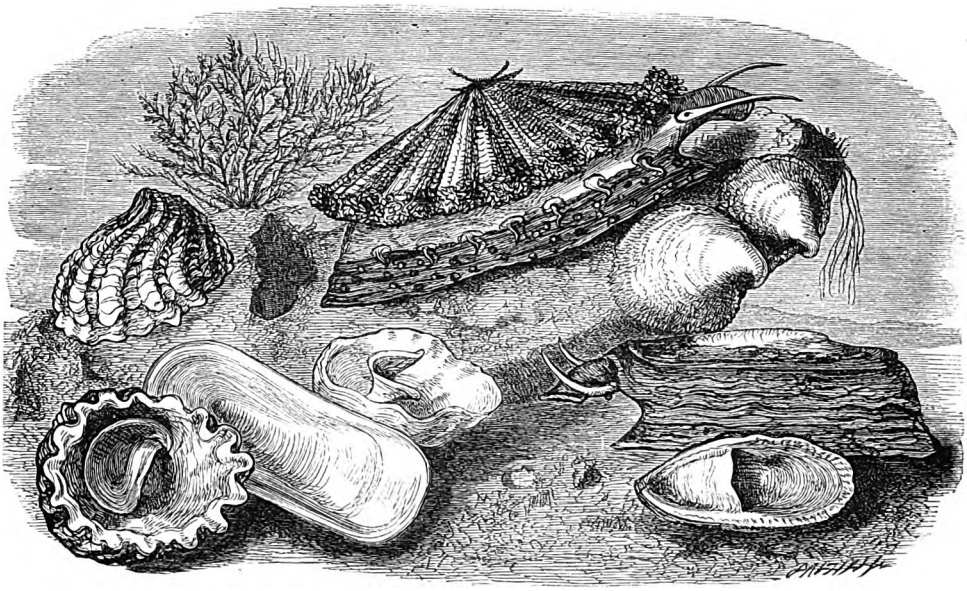


NILOTIC TOP.—*Trochus Nilólicus.*

DOLPHIN SHELL.—*Delphinula laciniáta.*

The Top Shells are so called from their peculiar shape, which is something like that of a boy's whip-top. Indeed, a tolerably large specimen can be set on its point, and spun like the toy from which it derives its name. When polished, all the Top shells are very beautiful, being of a pearly lustre with varying tints, mostly of red and green. The colour of the Nilotic Top is white, with many scarlet streaks. Some of the smaller Top shells are much used for ornaments, being polished and then strung together like pearls. They are made into necklaces, bracelets or head-dresses, and are sometimes thought very fashionable, especially when linked together with gold chain-work, in various patterns.

The odd looking shell on the right hand is called the Dolphin, though it does not bear the least resemblance to that creature. All the Dolphin shells, of which about twenty species are known, inhabit the tropics, and hotter seas, and prefer the shallow water, so that at low tide, many specimens may be picked off the rocks by hand. On the outside, the colour of this shell is very deep purple, inclining to black, and inside it is of a beautiful pearly whiteness. When viewed from the base, the centre is seen to be hollow, something like that of the Staircase shell already described.



KEYHOLE LIMPET.—*Fissurella máxima.*

CUP-AND-SAUCER LIMPET—*Calyptræa rudis.* (Empty shell below.)

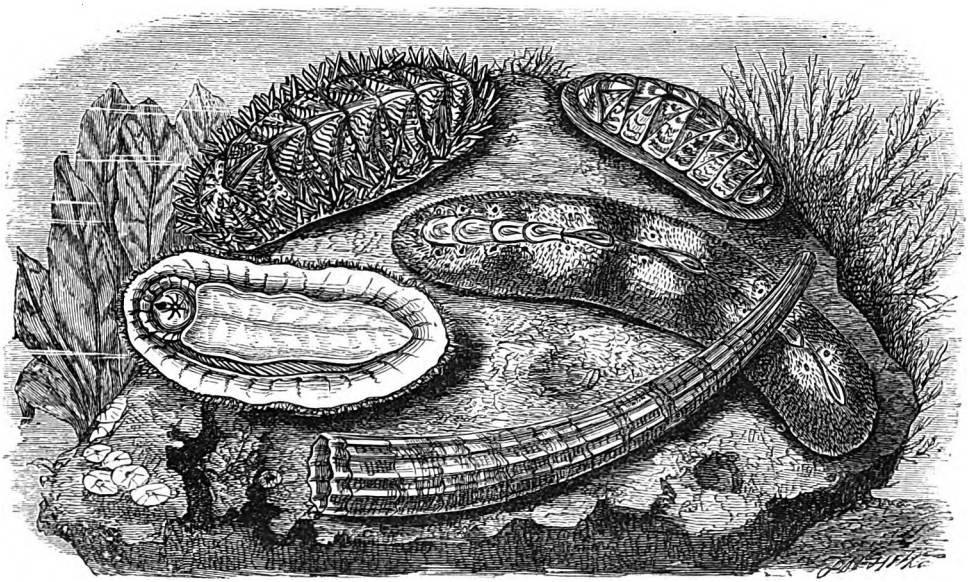
HUNGARIAN BONNET LIMPET.—*Pileopsis Ungáricus.* LADY'S-BONNET.—*Calyptræa equestris.*

DUCK-BILL LIMPET.—*Parmóphorus austrális.* (Empty shell on the left.)

ALL the LIMPETS are remarkable for their power of adhering strongly to the rocks on which they reside. They do so by pressing their large foot firmly against the rock, and then forcibly raising the centre. This action exhausts the air, so that the creature sticks as firmly to the rock as a boy's sucker to the stone on which it has been pressed.

Most if not all of the Limpets are edible, and can be eaten either cooked or in a fresh state as they come off the rocks. Shipwrecked mariners have frequently saved themselves from perishing with hunger by gathering the Limpets from the rocks on which the vessel was cast away.

The KEYHOLE LIMPET is so called on account of the aperture at the top of the shell, which serves as a passage through which is expelled the water that has passed over the gills. This aperture is found in all the species of the genus Fissurella, but varies greatly in form and comparative dimensions, being, in some cases, a mere rounded hole in the shell, while in others, it is long and shaped just like a keyhole. When the animal is young, the aperture is very small. The CUP-AND-SAUCER and DUCK-BILL LIMPETS are so called from their peculiar shapes.

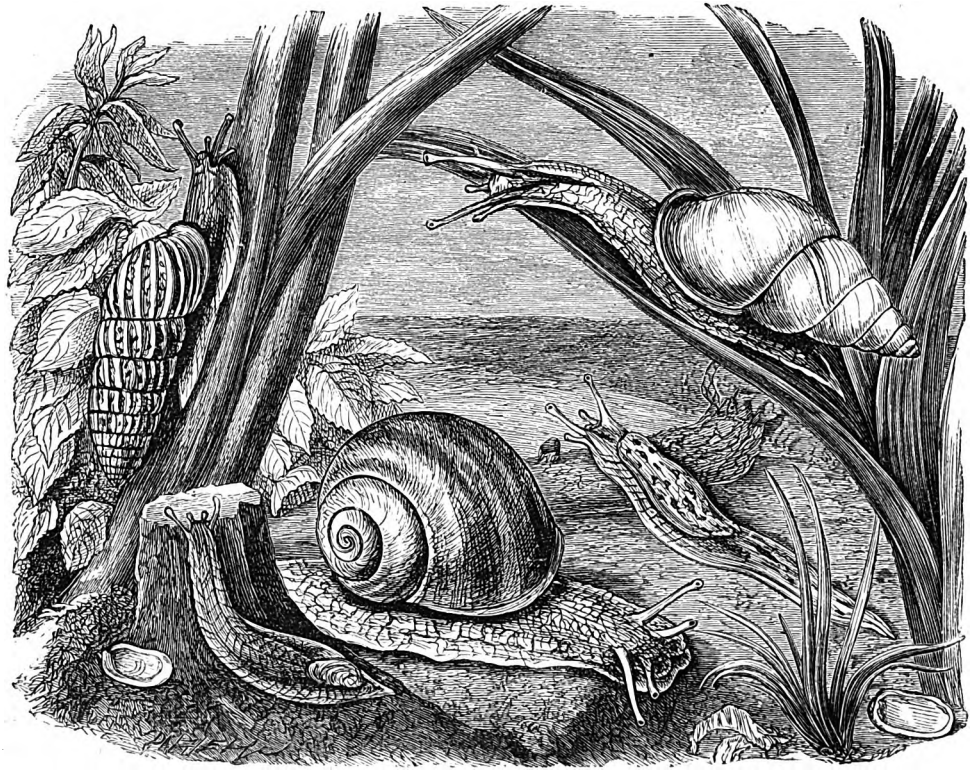


PRICKLY CHITON.—*Chiton aculeátus.* MARBLED CHITON.—*Chiton marmóreus.*
SHORT-SPINED CHITON.—*Chiton brevispinósus.* BANDED CHITON.—*Chitonellus fasciátus.*
ELEPHANT'S TUSK.—*Dentálium arcuátum.*

We now come to the curious family of molluscs called appropriately Chitonidæ, or Mail-shells, because their shells are jointed like pieces of plate armour. When separated from each other, the plates bear a strong resemblance to the joint of a steel gauntlet, and overlap each other in a similar fashion, a thick and strong mantle taking the place of the leather. There are eight of these plates, and all of them have a somewhat saddle-like shape. A similar arrangement may be observed in the lower abdominal plates of many beetles. Each of these plates is fixed to the mantle by certain rounded processes from their front edge, and when the plates are examined separately the processes will be plainly seen, white and pearly as the interior of the shell.

The Chitons are able to roll themselves up in a partial kind of manner, and present a curious resemblance to the well-known armadillo or pill woodlouse. In all these creatures the shell is extremely beautiful, on account of the minutely graceful markings with which it is decorated, and which, in most cases, require the aid of a magnifying glass to exhibit their true beauties.

The Elephant's Tusk Shell is so called on account of its resemblance to the object whose name it bears. It is hollow throughout, and has an opening at each end. This shell is in fact nothing but a Keyhole Limpet, very narrow in the mouth, and with the whole of the shell much lengthened.

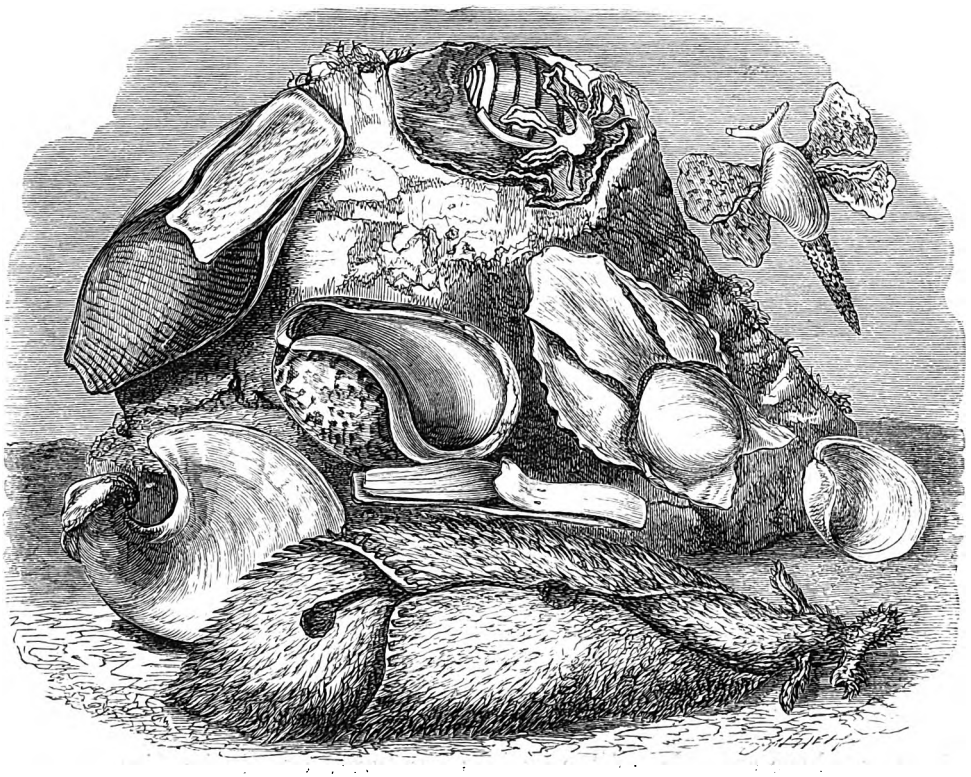


CHRYSALIS-SHELL.— *Pupa uva.*
TESTACELLA.—*Testacella haliotoïdes.*
(Empty shell on left.)
EDIBLE SNAIL.—*Helix pomátia.*
LEMON BULIMUS.—*Bulimus citrinus.*
GREAT GREY SLUG.—*Limax antiquórum.*
(Empty shell beneath.)

THE EDIBLE SNAIL is scarce in England, but may still be found in several places, where it seems to have survived since the time of the Romans. This snail was once bred largely for the table, and many grew as large as a man's fist.

Even the common Snail is thought a delicacy by those who are sufficiently strong-minded to eat it. I once knew an old woman, who used daily to search the hedges for snails, for the purpose of converting her milk into cream. This cheap luxury was obtained by crushing the snails in a piece of linen, and squeezing their juice into the milk.

The CHRYSALIS-SHELL is mostly found on and under the bark of trees. The GREY SLUG is too well known to need description, but the little TESTACELLA SLUG is remarkable for feeding on earth worms, which it pursues into their holes



BUBBLE-SHELL.—*Aplustrum.*

WOODY BUBBLE-SHELL.—*Bulla lignária.*

BUBBLE-SHELL.—*Bulla ampulla.*

CYLICHNA.—*Cylichna cylindrácea.*

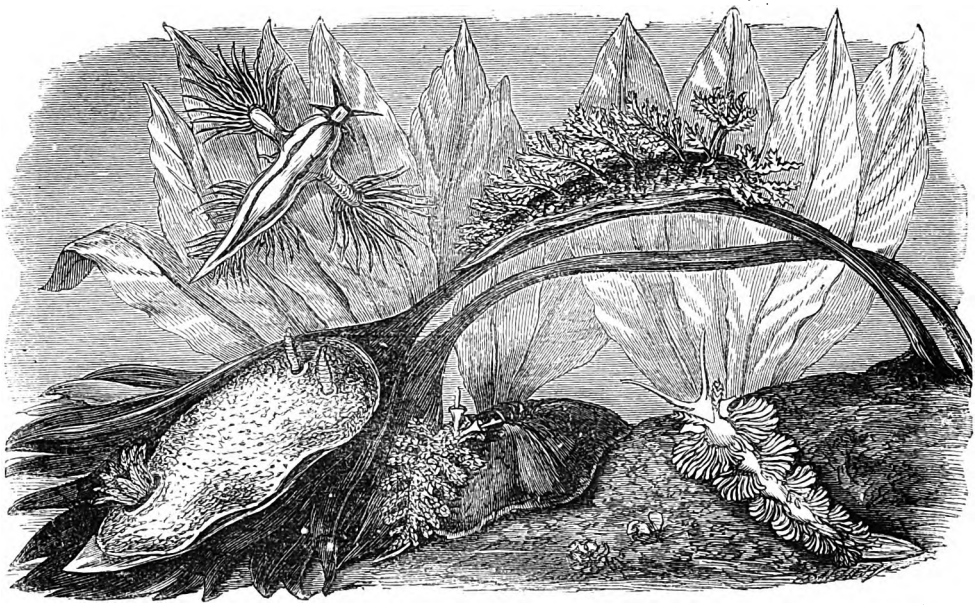
LOBIGER.—*Lóbiger Philippii.*

BOATMAN-SHELL.—*Philine aperta.* (Empty shell below.)

HATCHET-SHELL.—*Dolabella Rumphii.*

THE BUBBLE SHELLS are so called from their form, which is round and bubble shaped. The shell is very thin and globular: all the Bubble shells are found in the warmer and tropical seas. The HATCHET-SHELL derives its name from the peculiar form of the shell, which is flat and formed in a shape somewhat resembling the head of a hatchet. As may be seen by the engraving, the shell is entirely concealed, being hidden under the lobes that cover the whole body.

The strange looking LOBIGER has four flattened lobes projecting from the sides, and looking much like the four wings of a butterfly. These lobes can be used as fins. The Lobiger is found in the Mediterranean. The other shells need no especial description.



GLAUCUS.—*Glaucus Pacíficus.* DENDRONOTUS.—*Dendronótus arborescens.*

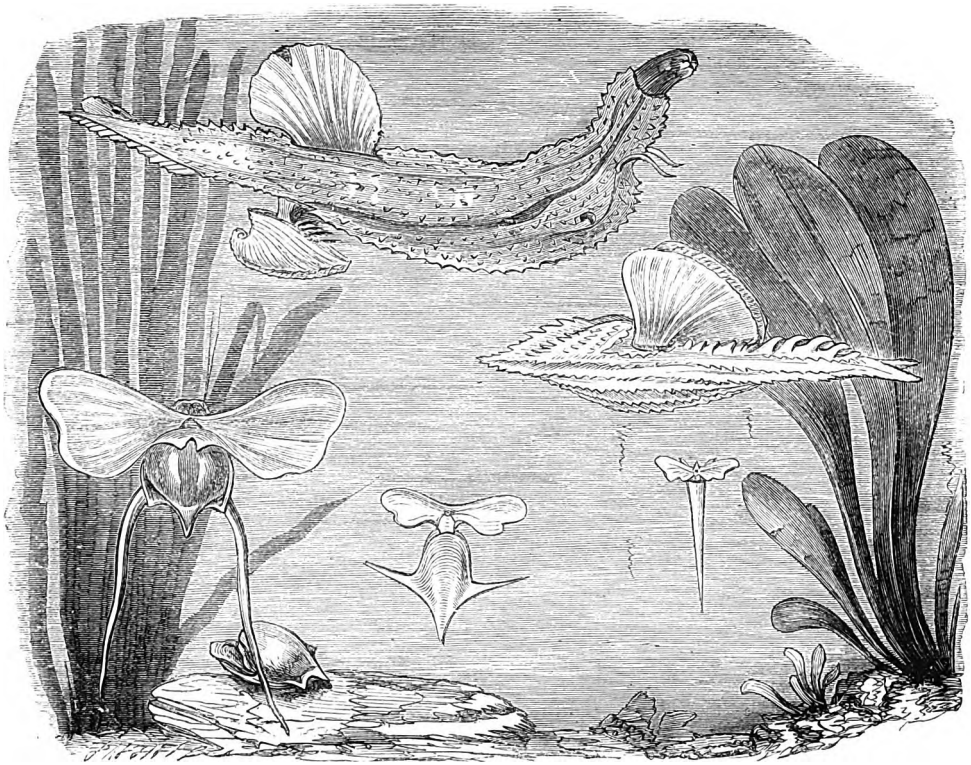
DORIS.—*Doris Johnstoni.* DOTO.—*Doto coronáta.* EOLIS.—*Eolis coronáta.*

HERE we have examples of the curious creatures, called the NAKED GILLED MOLLUSCS, because their gills project from the body.

The slug-like animal on the left hand of the engraving, is the common DORIS of our own shores. All the members of the family to which this creature belongs may be known by the plume-like gills set in a circle on the middle of the back, like the feathery coronet with which the Blackfoot Indian adorns the head of his horse, and the two tentacles placed more towards the front. In the skin are imbedded a vast number of little spiculæ.

All the nudibranchs are carnivorous, and feed chiefly on zoophytes. The sea-anemones are favourite prey of these voracious creatures, and many an enthusiastic naturalist has gained a knowledge of their habits at the expense of his special favourites.

The GLAUCUS is sometimes called the Sea Lizard, and is remarkable for the manner in which the gills are supported on long arms or footstalks. It is found plentifully in the Atlantic, especially during a calm. It is dark blue above, and pearly white below.



CARINARIA.—*Carinária Mediterránea.*

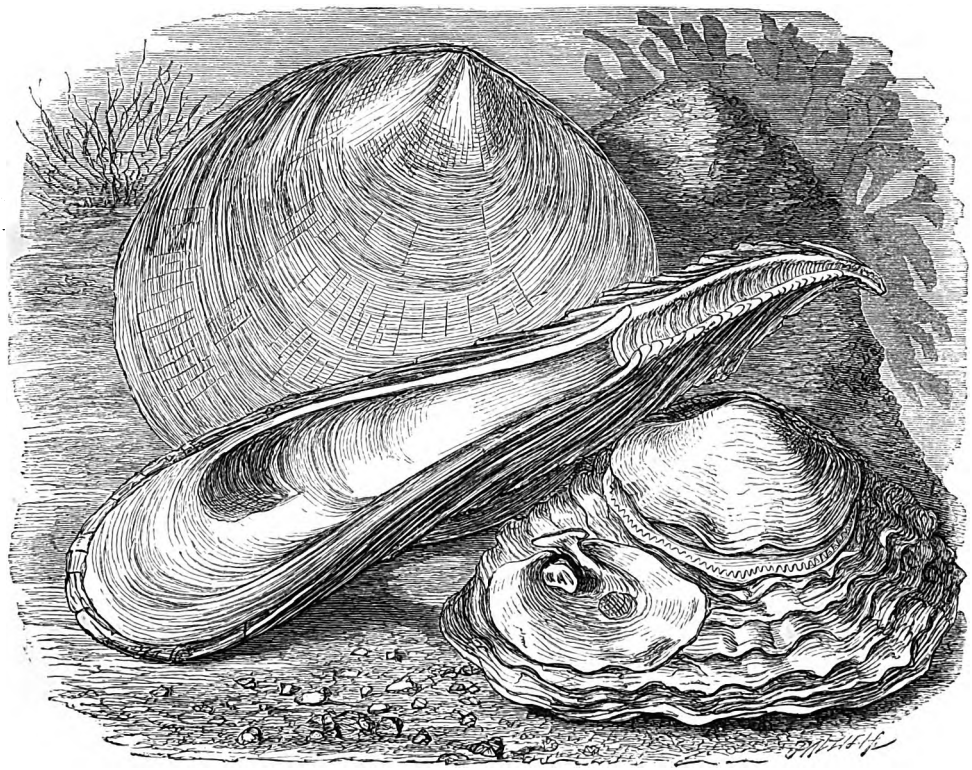
HYALEA.—*Hyaléa tridentáta.* (Empty shell below.) CYMBULIA.—*Cymbúlia Perónii.*

CLEODORA.—*Cleodóra pyramidáta.* SPIKE-SHELL.—*Cresëis aciculáta.*

THESE curious creatures belong to two orders, one of which has the breathing and digestive organs gathered into a mass on the hinder part of the back.

The first family of these creatures is represented by the CARINARIA, which may be seen swimming at the upper part of the engraving.

The second order is the wing-footed molluscs, here represented by one or two examples. The HYALEA is remarkable for the two long appendages which pass through the shell, and trail from behind. The CLEODORA is a curious looking creature; at night it gives out a blueish light, tolerably strong and which shines even through the transparent shell. The beautiful CYMBULIA has a shell exactly resembling a little glass slipper, and the long, pointed SPIKE SHELL is remarkable for the shape of its habitation, which is however seldom found entire, the point being very brittle.

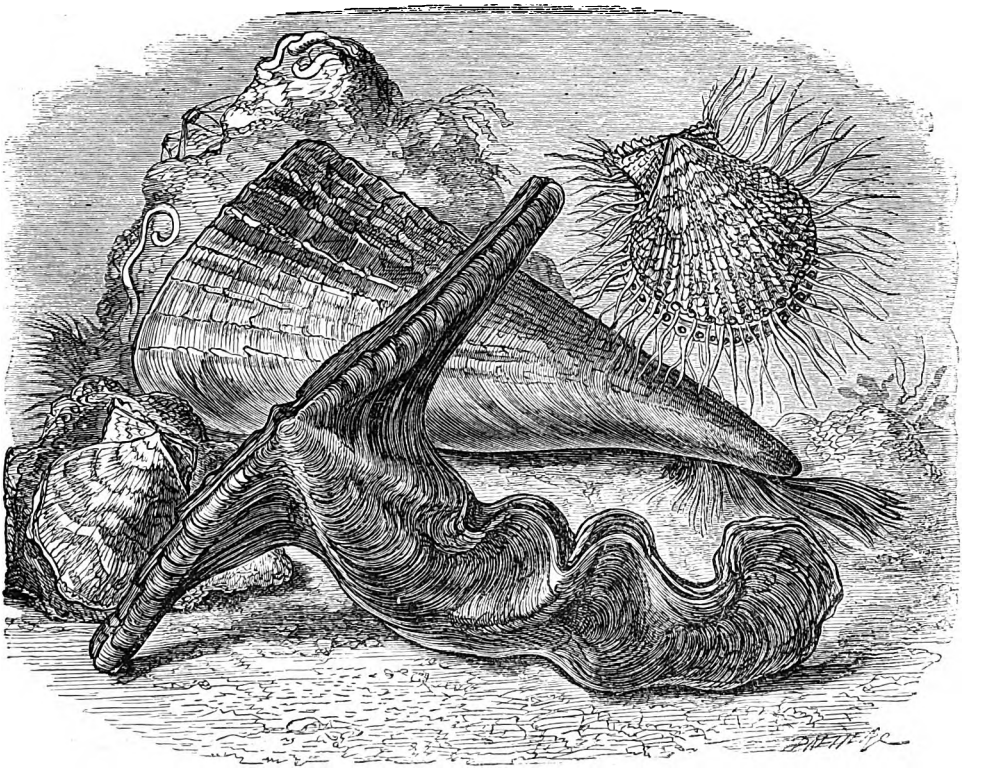


LONG-HINGED OYSTER.—*Ostrea Canadensis.*
CHINESE WINDOW.—*Placúna placenta.*
SADDLE SHELL.—*Anómia ephíppium.*

We now come to the Bivalve Shells, where the shell is double, the two portions being united by a hinge. The oyster, mussel and scallop are familiar examples of these creatures.

The central shell is the Chinese Window, so called because its large circular and thin shell is often polished in China, and used instead of glass in the windows. Little pearls are found in this shell, but not used for ornament. The Long hinged Oyster is here given in order to show the peculiarity from which it derives its name.

The lowest figure represents the Saddle Shell, remarkable for the way in which the shell is attached to other substances. Two specimens may be seen in the illustration placed on an oyster. The contrivance by which it is attached is most remarkable. It inhabits the British seas.

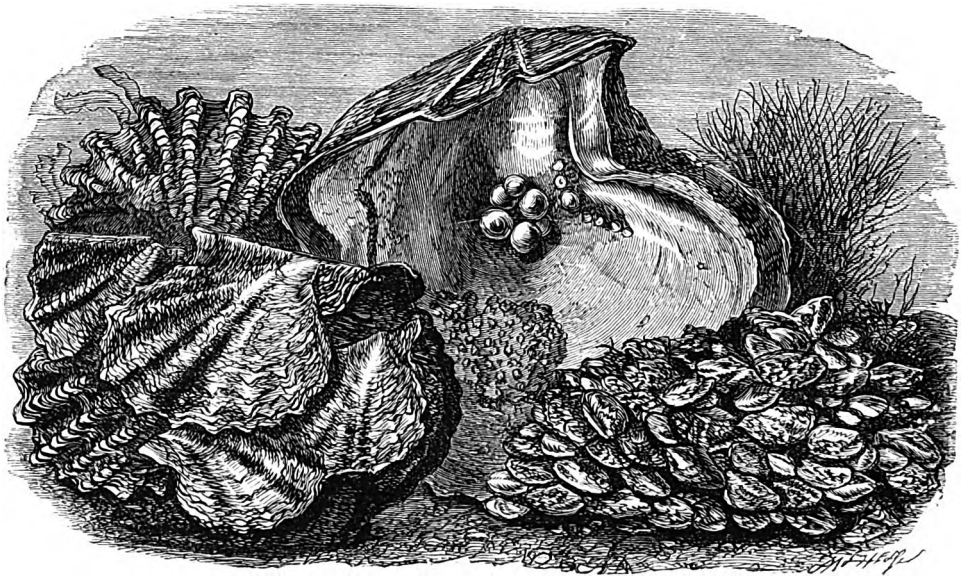


HINNITES.—*Hinnites pusio.* PINNA.—*Pinna pectináta.*
VARIEGATED SCALLOP.—*Pecten várius.*
HAMMER-SHELL.—*Málleus vulgáris.*

The Pinna is remarkable for the very strong mass of silken cords with which it moves itself to the rocks among which it lives. In some countries the Pinna reaches an enormous size, measuring no less than two feet in length. The silk of this creature, called the "byssus," has been cut off, dressed, and woven into gloves. A pair of these gloves may be seen in the British Museum.

The Hammer-Shell is notable for the very strange shape which it assumes, reminding the observer of the Hammer-head Shark, already described on page 70.

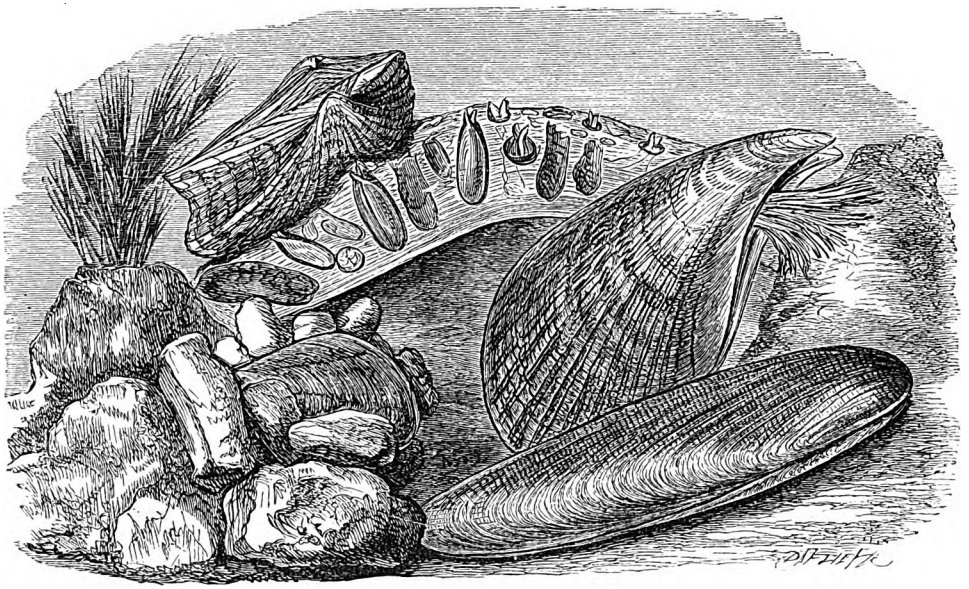
On the right hand is given the Variegated Scallop, in order to show the method in which it drives itself through the water, by flapping the valves together, the row of bead-like eyes round the rim, and the long floating tendrils that stream behind it. On the left hand is seen a little shell called the Hinnites. When it is young it swims about freely, but as it gets older it settles down, and always moulds its shell to the shape of the object on which it rests. I have seen the shells looking like sections of hollow cylinders.



PEARL OYSTER.—*Meleagrina margaritifera.*

The well-known Pearl Oyster is one of the most valuable of the shell-bearing molluscs, furnishing the greater part of the pearls which are set by jewellers and worn by ladies. The specimens represented in the engraving were brought from Ceylon; but these creatures are also found in other parts of the world, such as Madagascar, Swan River, Panama, &c. Not only the pearls themselves are valuable, but the shells are of great importance in the commercial world, furnishing the best "mother-of-pearl."

The Oysters are now obtained by means of men who are trained to the business, and who can remain under water for a considerable time without being drowned. Each diver takes with him a net bag for the purpose of holding the Oysters, puts his foot into a stirrup, to which hangs a stone weighing about thirty pounds, and after taking a long breath is swiftly carried to the bottom. He then flings himself on his face, fills his bag as fast as he can, and is then drawn to the surface. These men will remain under water for a minute and a half, or even longer. In the engraving are seen examples of the Pearl Oyster of different sizes, and also of the manner in which the pearls adhere to the shell. There is some danger in the pearl fishery on account of the sharks, which frequent such places, and might snap off a leg or arm of one of the divers.



NOAH'S ARK.—*Arca Noæ.*

MAGELLANIC MUSSEL.—*Mytilus Magellánicus.*

FORK-TAILED DATE-SHELL.—*Lithódomus caudígera.*

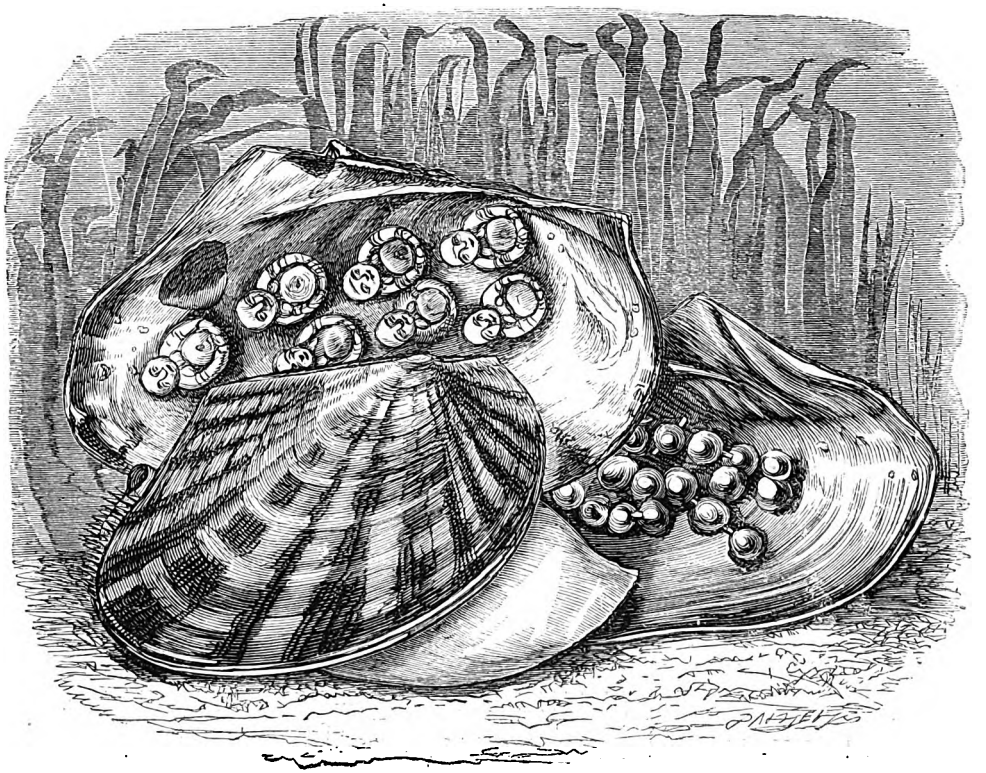
EDIBLE MUSSEL.—*Mytilus edúlis.*

FINGER DATE-SHELL.—*Lithódomus dáctylus.*

In this engraving we have illustrations of various Mussels. The Noah's Ark Mussel is so called on account of its shape, which bears some resemblance to the toy so commonly known as the Noah's Ark.

The Date-shell derives its name from its general shape, which is something like that of the date. The Date-shells are burrowers, and some species can bore holes into very hard substances. The Forked Date-shell works its way into the hard and solid shell of the Gigantic Limpet, which is sometimes six inches in diameter, and more than half an inch thick. How it bores into such hard materials is not precisely known. The colour of this shell is pale yellowish-drab.

The Finger Date-shell burrows into hard rocks. The shell is very elegant, the colour being rich ruddy brown, and the surface of the shell covered with myriads of tiny ridges, which have a remarkably pretty effect.



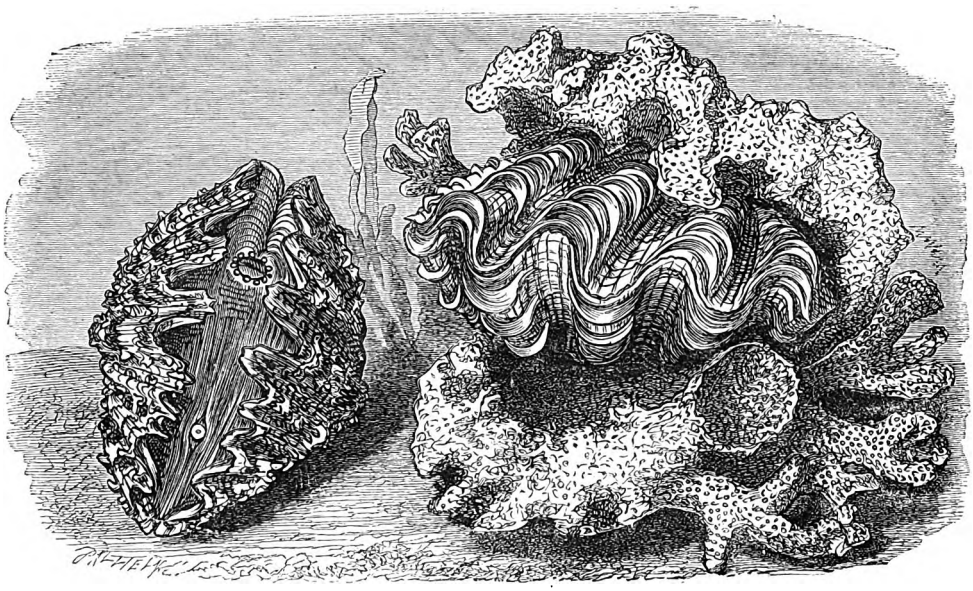
CHINESE PEARL-MUSSEL.—*Dipsas plicatus.*

BRITISH PEARL-MUSSEL.—*Unio Margaritíferus.*

In the two species represented in the above illustration, we have examples of pearl-bearing molluscs inhabiting the fresh waters.

The British Pearl-mussel was once a valuable inhabitant of our rivers, on account of its contents. It is now, however, seldom sought except for bait, and in the latter capacity is more useful than in the former, as it is estimated that not more than one per cent. contains any pearls, and not more than one per cent. of the pearls is of any commercial value. Now and then, however, a really fine pearl is found; and one that was obtained from the Conway now holds a place in the Crown of England.

The Chinese Pearl-mussel is often forced to produce artificial pearls of every shape and size, by putting beads or other substances into the shell while the animal is living. In the present instances, a number of little copper josses have been inserted, and are shown as they appear when covered with pearly substances.



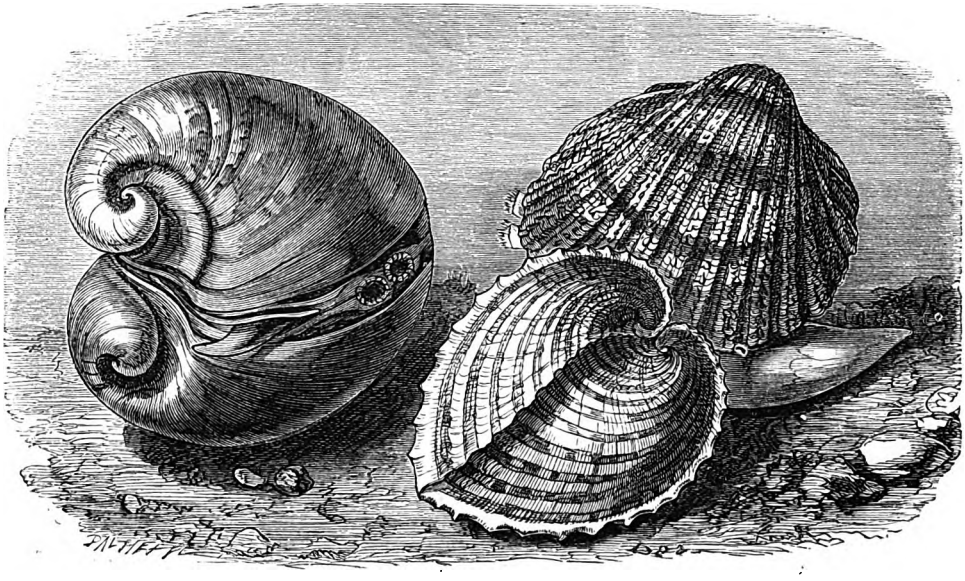
SPOTTED BEAR'S-PAW CLAM.—*Hippopus maculata.*

YELLOW CLAM.—*Tridacna crócea.*

In this engraving are seen two of the Clam Shells, some of which attain such an enormous size. One of these creatures will weigh more than five hundred pounds, the animal alone weighing twenty pounds. It is good to eat, and furnishes a meal for quite a large party. These shells are often used as ornaments in gardens. The inhabitants of the locality where this huge shell is found, eat it uncooked.

In former days, when this species was very rare, a magnificent specimen was presented to the church of St. Sulpice, in Paris, where it may now be seen, the valves being set up as *bénitiers* for containing the holy water. This shell dates from the time of Francis I. It is evident that the byssus by which so enormous a shell is moored to the rocks must be of great size and strength, and indeed is so strong as to require an axe for its severance. The muscles, too, by which the animal contracts its shell are enormously powerful; and it has been remarked by Mr. Darwin that if a man were to put his hand into one of these shells he would not be able to withdraw it as long as the animal lived.

The Bear's-paw Clam has been given in order to show part of the animal as it appears while opening its shell. The mouth is seen above, and part of the foot below.



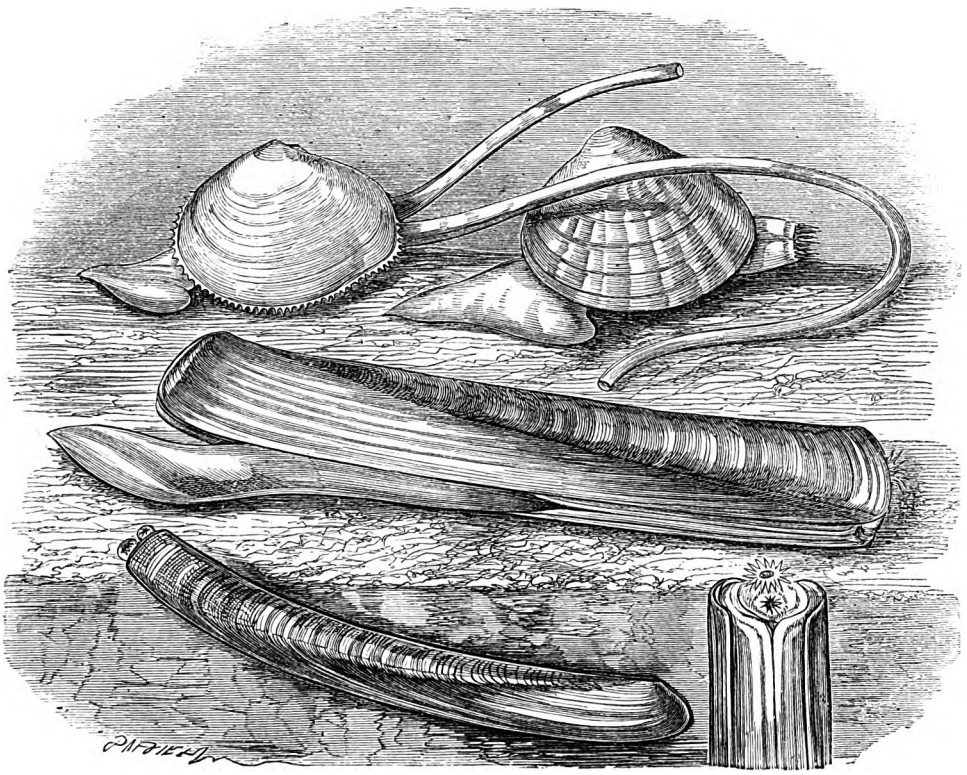
TUBERCULATED COCKLE.—*Cárdium tuberculatum.*

HEART-COCKLE.—*Cárdium cardissa.*

SPIRAL HEART-COCKLE.—*Isocardia cór.*

The family of the Cockles is well represented by the common Cockle (*Cárdium edúle*) of our British shores. Generally, the Cockle is a marine animal; but it sometimes prefers brackish water to the salt waves of the ocean, and a small variety is found in the Thames nearly as high as Greenwich, when the water is sensibly flavoured with salt at each high tide. Another species, the Prickly Cockle (*Cardium aculeátum*), is found on the southern coast, and regularly brought to market.

The Cockle is gathered in great numbers for the purpose of being eaten, although, as the greater number are consumed in the open air, they can hardly be said to be procured for the table. According to Mr. Maxwell, "a crowd of the more youthful description of the peasantry are collected every spring tide to gather Cockles on the sands by daylight when the tide overruns. The quantities of these shell-fish thus procured would almost exceed belief, and I have frequently seen more than would load a donkey collected in one tide by the children of a single cabin. They form a valuable and wholesome addition to the limited variety that the Irish peasant boasts at his humble board; and afford children, too young for other tasks, a safe and useful employment."



SCROBICULARIA.—*Scrobiculária piperíta.*

COMMON TROUGH-SHELL.—*Mactra stultórum.*

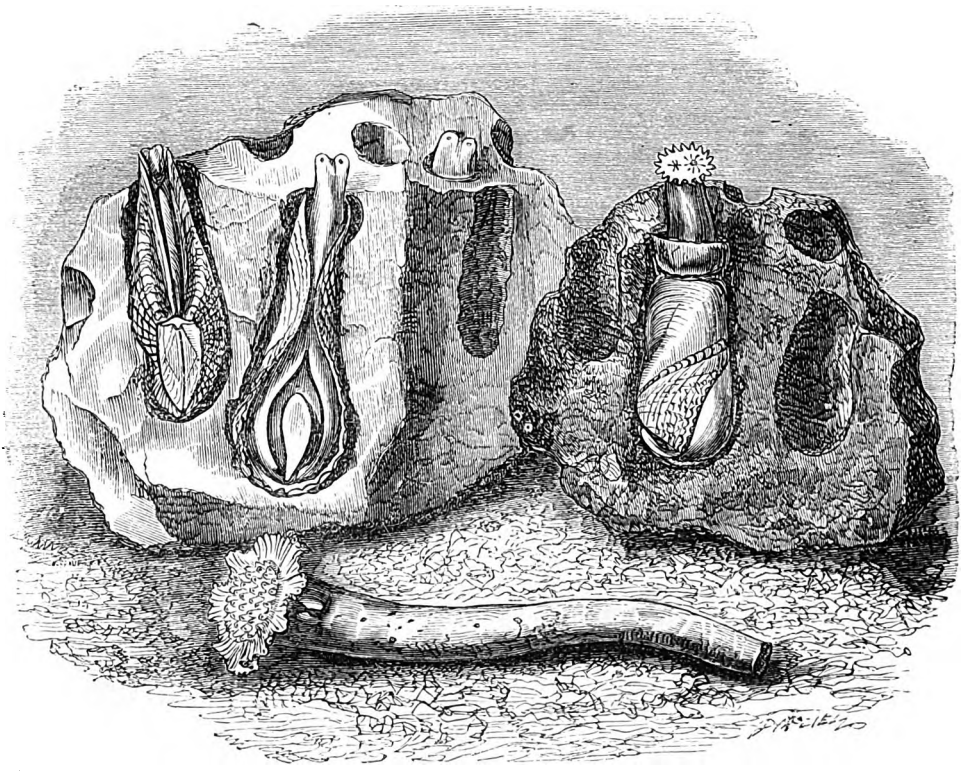
SWORD-BLADE RAZOR-SHELL.—*Solen ensis.*

COMMON RAZOR-SHELL.—*Solen vagina.*

The enormously long tubes which project from the uppermost of these shells are intended to enable the creature to bury itself deeply into the mud, and yet to breathe through the tubes, being, in fact, just like a diver with his two air tubes.

The Razor-shell is so called because it has some resemblance to a closed razor. It is also a burrowing shell, and is very common on our shores. It is useful for bait, and is caught in large numbers by the fishermen, who push an iron rod into its burrow and hook it out.

If a perfect specimen should be wanted for the cabinet or dissection, it may be easily obtained by dropping some salt into its hole. The Razor Shell resents the insult, comes at once to the entrance, and may then be taken. The hole is easily found, as the creature has a habit of squirting water out of it when it retreats.



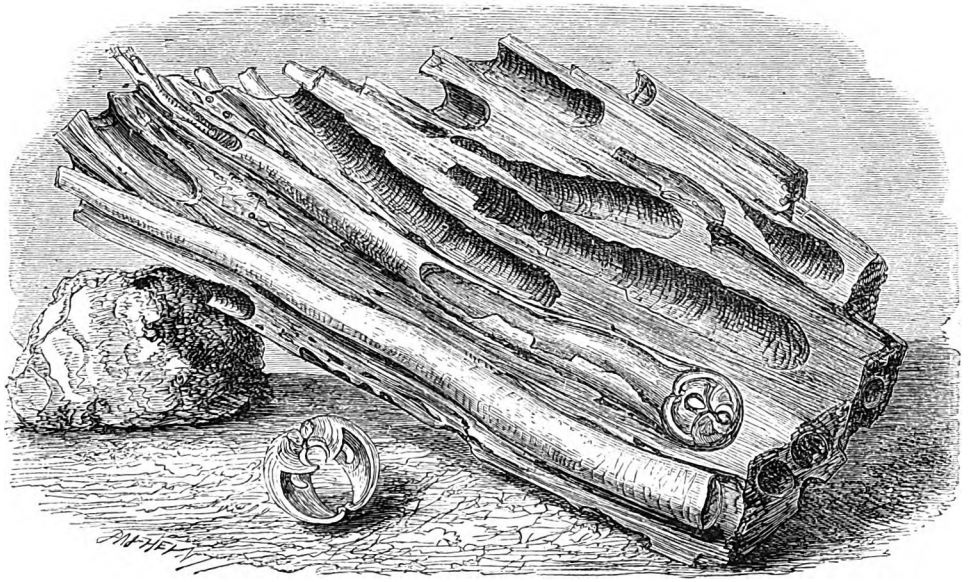
PIDDOCK.—*Pholas dáctylus.* PAPER PHOLAS.—*Pholas papyrácea.*
WATERING-POT SHELL.—*Aspergillum pulchellum.*

THE upper figures are examples of some very curious and common shells, popularly called PIDDOCKS, and found in profusion along the sea-coast.

The common Piddock may be found in vast numbers in every sea-covered chalk rock, into which it has the gift of penetrating so as to protect itself from almost every foe. The specimens are represented so as to give different views of the same shell.

Every one is familiar with the beautiful white shell of the Piddock, crossed by a series of elegantly curved projections, something like the teeth of a file. According to some writers, it is by means of these projections that the creature is able to burrow into the rock; and the possibility of such a feat has been proved by the simplest possible means, namely, by taking the Piddock into the hand and boring a similar hole with it.

The lower figure represents the WATERING-POT SHELL, so called because at one end it has a perforated disc like the rose of a watering-pot.

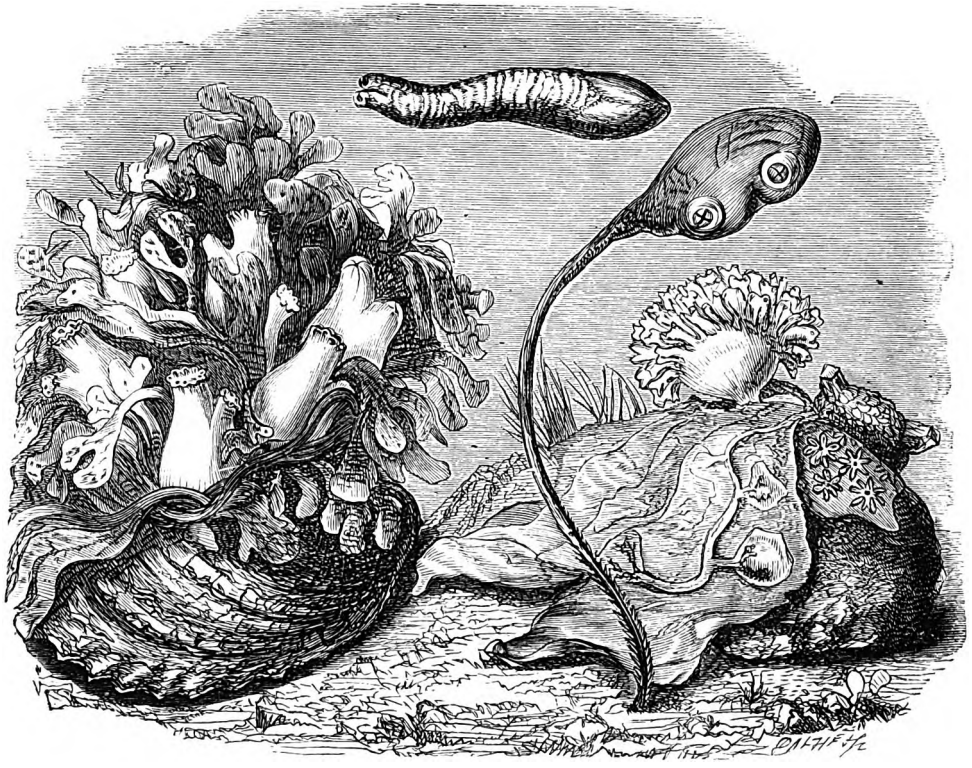


SHIP-WORM.—*Terédo Navális.*

The Ship-worm, as this mollusc is appropriately called, from its depredations on the bottoms of ships and all submerged wooden structures, is found in most seas, and on our own coasts works fearful damage by eating into piles, planks, or even loose wood that lies tossing about in the ocean.

I have now before me a portion of the pier at Yarmouth, which is so honey-combed by this terrible creature that it can be crushed between the hands as if it were paper, and in many places the wood is not thicker than ordinary foolscap. This piece was broken off by a steamer which accidentally ran against it; and so completely is it tunnelled, that although it measures seven inches in length and about eleven in circumference, its weight is under four ounces, a considerable portion of even that weight being due to the shelly tubes of the destroyers.

I have also a block of oak, picked up off Broadstairs, where the Ship-worm has been nearly, though not quite so destructive as in the former instance. A large iron bolt passes through the midst of the block, and the rust of the projecting head has spread itself for some distance around the nail. This space is quite untouched by the Ship-worm, whereas all the rest of the wood is drilled through and through. In the lower part of the engraving is seen the apparatus by which this destruction is worked.

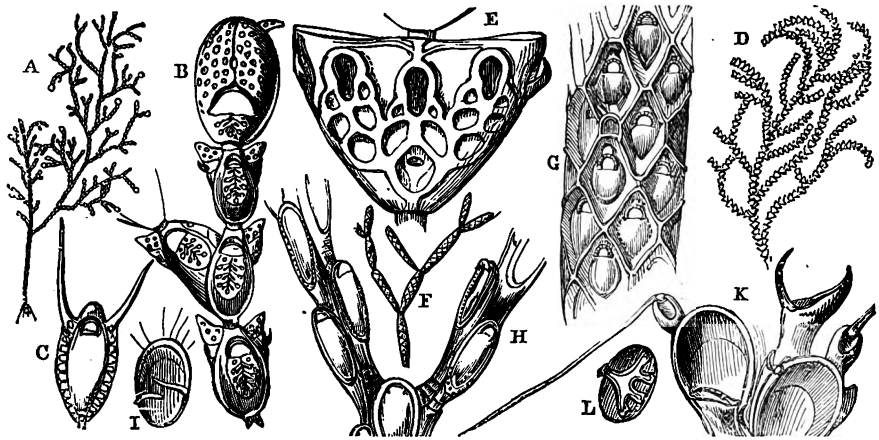


PELONÆA.—*Pelonæa corrugata.*
SEA-SQUIRT.—*Ascidium hyalinum.* BOLTENIA.—*Boltènia reniformis.*
SYNTETHYS.—*Syntethys Hebridicus.*
CYNTHIA.—*Cynthia morus.*
BOTRYLLUS.—*Botryllus polycyclus.*
CLAVELLINA.—*Clavellina lepidiformis.*

THE strange-looking objects that are represented in the accompanying illustration have long perplexed naturalists, and even now, although they have been the subject of careful examination by accomplished zoologists, many parts of their economy are puzzling in the extreme. The order to which they belong is called by the name of *Tunicata*, because the animals possess no shell, but are covered with an elastic tunic.

Some of them are separate and independent, while others are gathered together in societies, and merged into one compound mass. Examples of both these kinds are seen in the illustration.

A few of these creatures are eaten, among which is the CYNTHIA. This being is tolerably common, and is found in masses on rocks, piles, and other such materials.



POLYZOA.

A. *Catenicella lorica.* B. *Catenicella hastáta.*+ C. *Catenicella cornúta.*+ D. *Calpídium ornátum.* E. *Calpídium ornátum.*+ F. *Salicornária farciminoides.* G. *Salicornária farciminoides.*+ H. *Cellulária Peachii.*+ I. *Menipea Fuguensis.*+ (Mouth of a cell.) K. *Scrupocellária feroz.*+ L. *Canda reptans.*+ (Mouth of cell.)
The sign + signifies that the object is magnified.

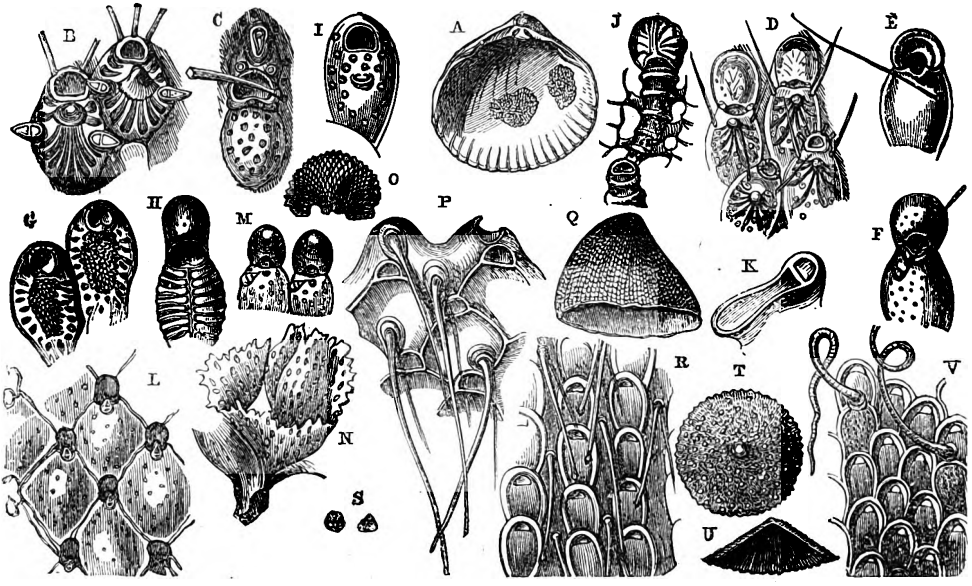
THE next three engravings will furnish examples of a wonderful class of beings, which are very plentiful and of which very little is really known. They are called by the name of POLYZOA, a word which signifies "many animals," because they consist of a vast number of individuals based on a common stock, something like the flowers of a daisy or dandelion.

For many years these creatures were thought to belong to the vegetable kingdom, and were classed with the corallines and other sea weeds, while afterwards, when their animal nature was proved, they were placed with the zoophytes, to which they have a sort of resemblance. Yet, the two classes are widely apart, and these animals and the zoophytes are really as far asunder as the monkey and the butterfly.

These creatures increase with wonderful rapidity, and whether they belong to the sea or the fresh waters, they spread over every substance to which they may cling, or form masses of extraordinary size, when the minute diversions of the individuals are taken into consideration. It may here be mentioned, that in all the marine species the arms or tentacles are set in a kind of funnel shape, while in the fresh-water species, they are more or less of a horseshoe shape.

Many of these creatures possess a singular appendage, which is called the Bird's Head Process, and which is a jointed structure that really does look very like the head of a bird, the resemblance being increased by the continual opening and shutting of the part which represents the beak. A large "bird's head" with the beak open is seen at fig. K.

Most of the figures are much magnified.



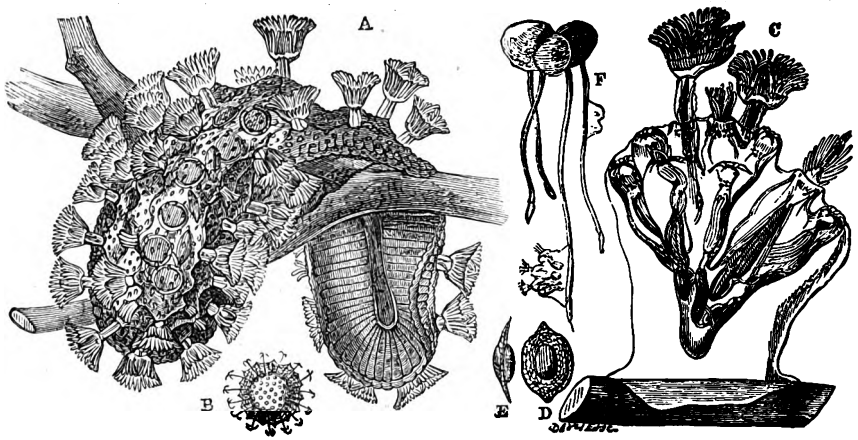
POLYZOA.

A. *Leprália.* (On a shell.) B. *Leprália aláta.*+ C. *Leprália monóceros.*+ D. *Leprália Gattyæ.*+
E. *Leprália Hydnmánii.*+ F. *Leprália personáta.*+ G. *Leprália variolósa.*+ H. *Leprália nítida.*+
I. *Leprália Malúsii.*+ J. *Leprália discréta.*+ K. *Cellépora fusca.*+ L. *'Eschara foliácea.*+
M. *'Eschara flabellária.*+ N. *Retépora Beaniána.* O. *Cupulária Lowei.* P. *Cupulária Lowei.*+
Q. *Lunulites cápulus.* R. *Lunulites cápulus.*+ S. *Lunulites cancellátus.* T. *Sélenária maculáta.*
U. *Selenária maculata.* (Section.) V. *Selenária maculáta.* (Section.+)

The sign + signifies that the object is magnified.

These creatures are also inhabitants of the sea, many of them being very common. Every one is familiar with the Sea Mats, as they are called. These are flat, leaf-like objects, which look like seaweeds, but can be distinguished by a peculiar, lemon-like smell, and by the rough and file-like surface. Some of these animals, for animals they are, stand boldly by themselves; but others are spread in patches over the stems and leaves of the dark seaweeds. The peculiar rough surface is produced by the multitude of cells of which this compound creature is formed, and the shapes assumed by these cells can be understood by reference to the illustration.

On some of the cells may be seen long spikes, very slender, and of varying lengths. These are called Vibracula, because they keep up a continual vibration, sweeping backwards and forwards as if moved by clock-work. It is thought that these organs are intended for the purpose of driving away the minute young of other marine animals, which like to settle themselves on any convenient substance, or of keeping off the spores of many seaweeds that are diffused through the water, and continually seeking a resting-place.



POLYZOA.

A. *Cristatella mucédo.* × B. *Cristatella mucédo.* (Statoblast. ×) C. *Lóphopus crystallínus.* ×

D. & E. *Lóphopus crystallínus.* (Statoblast. ×) F. *Lóphopus crystallínus.* (On rootlets of Duckweed.)

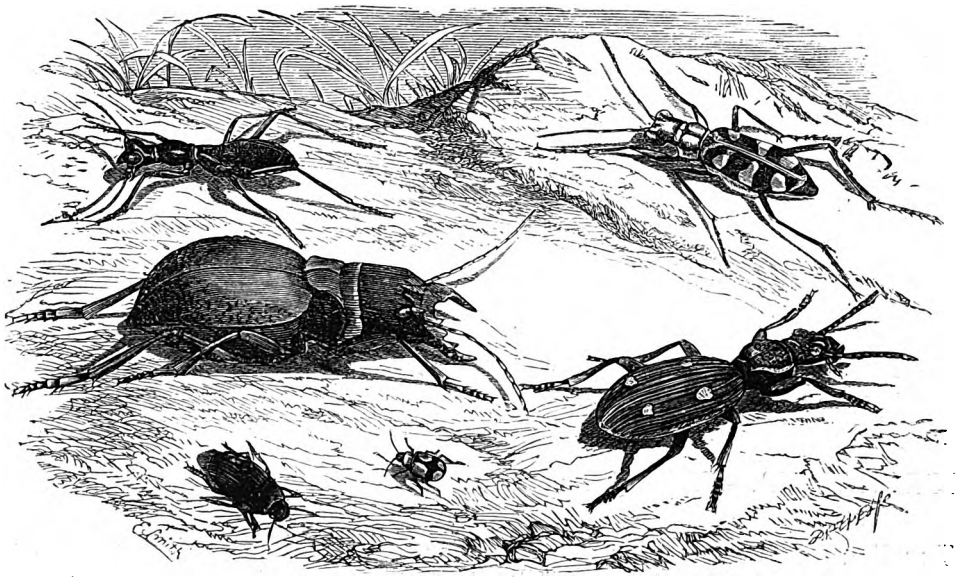
The sign × signifies that the object is magnified.

Some of the fresh-water Polyzoa are given in this illustration.

The large crawling creature on the left hand is perhaps the most curious of all these creatures, because, although made up of numerous individuals, the whole mass has the power of moving about at will, and crawls from one place to another according to pleasure. The real size is about half that of the drawing. This strange being is very unlike the rest of its kindred, for it hates the darkness, and seems to revel in light, moving towards the spots where the sunbeams are hottest.

The odd-looking round body, which is armed with a double row of hooks, is called the Statoblast, and is one of the forms assumed by these wonderful beings while passing through their various stages of existence.

At fig. F is seen a little of the common Duckweed, so common in ponds, to whose little rootlets are attached some specimens of the Plumed Polyzoa, a species which will always be remarkable from the fact that it was the first discovered of all the class. A much magnified specimen is seen at C, and its statoblast at D and E, in two views. I may mention that the future young is enclosed in the statoblast, and that when the tiny creature is intended to enter the world, the two sides of its prison fly open, and it is able to make its escape.



Tricóndyla Wallácei. *Cicindéla octonotáta.*

Mantícora latipennis. *Anthia sulcáta.*

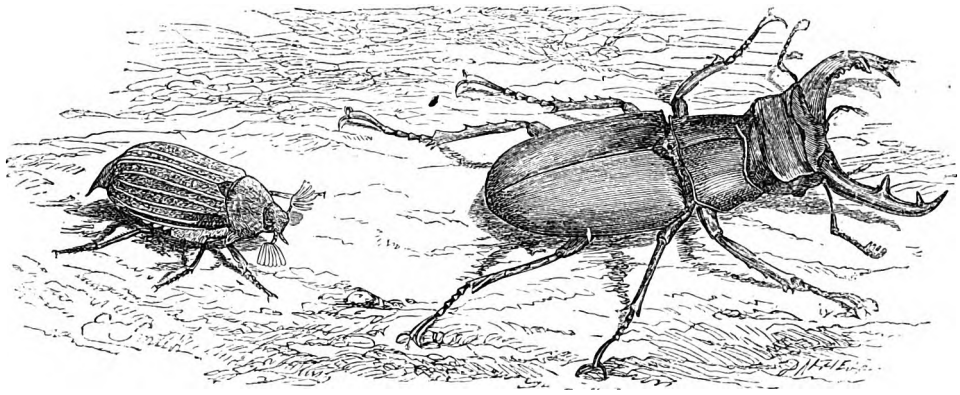
Harpalus cáspicus. *Lébia crux-mínor.*

We now come to the Insects, creatures which are always divided into three parts, namely the head, chest and abdomen, and that always have six legs. They walk by means of tubes, which pass through every part of the body, even to the tips of the toes.

The Beetles are the first in order. On the right hand and in the upper corner is seen one of the Tiger Beetles, a most beautiful and active group. They are very voracious; they fly well, run fast, and can catch and kill almost any other insect to which they may take a fancy.

The Manticora is allied to the Tiger Beetles, and fully deserves the same title, being equally voracious, powerful and active.

The common English Tiger Beetle has a very pleasant scent, something like the perfume of the verbena leaf. All these beetles are brilliantly coloured, and the Tiger Beetle is, when seen under the microscope, one of the most gorgeous creatures imaginable, being all green, ruby and gold, as if set with precious stones.

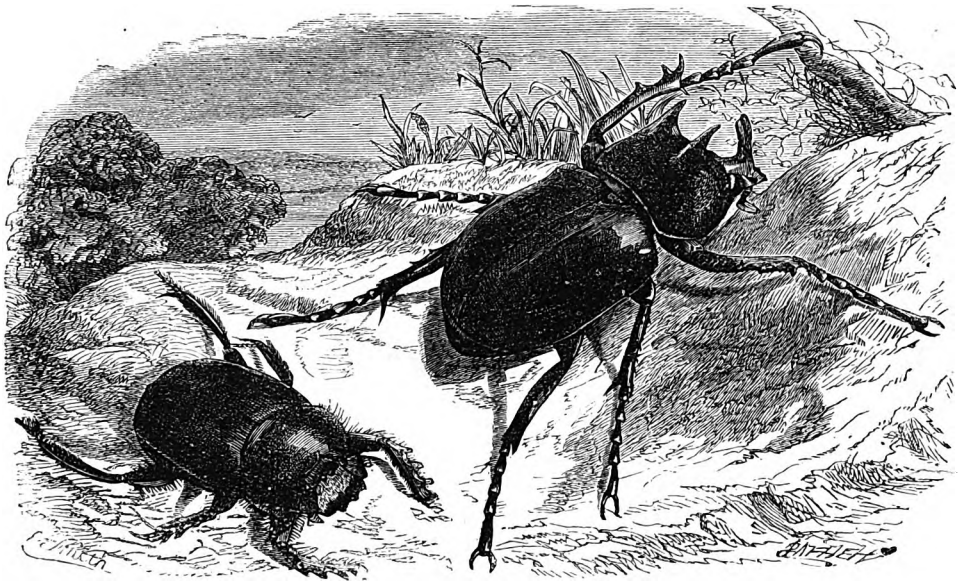


COCKCHAFFER.—*Melolontha vulgáris.* STAG BEETLE.—*Lucánus cervus.*

THE COMMON COCKCHAFFER is too familiar to need any description of its personal appearance, but the history of its life is not so widely known as its aspect. The mother beetle commences operations by depositing the eggs in the ground, where in good time the young are hatched. The grubs are unsightly-looking objects, having the end of the body so curved that the creatures cannot crawl in the ordinary fashion, but are obliged to lie on their sides. They are furnished with two terribly sharp jaws like curved shears, and immediately set to work at their destructive labours.

They feed mostly upon the roots of grasses and other plants, and when in great numbers have been known to ruin an entire harvest. Several birds, among which the rooks, crows, and blackbirds are our best allies, are very fond of these grubs, which are little more than soft lumps of fat enclosed in a thin but tough skin, and by the aid of their delicate senses are enabled to detect the larva as it carries on its insidious task below the ground. For three years it continues in its larval state, and after a brief sojourn in the pupal condition changes its skin for the last time, and emerges from the ground a perfect Cockchaffer.

The STAG BEETLE is the largest of our British Coleoptera, and when it has attained its full dimensions is an extremely powerful and rather formidable insect, its enormous mandibles being able to inflict a very painful bite, not only on account of the powerful muscles by which they are moved, but in consequence of the antler-like projections with which their tips are armed. These horn-like jaws only belong to the male, those of the female being simply sharp and curved mandibles, in no way conspicuous.



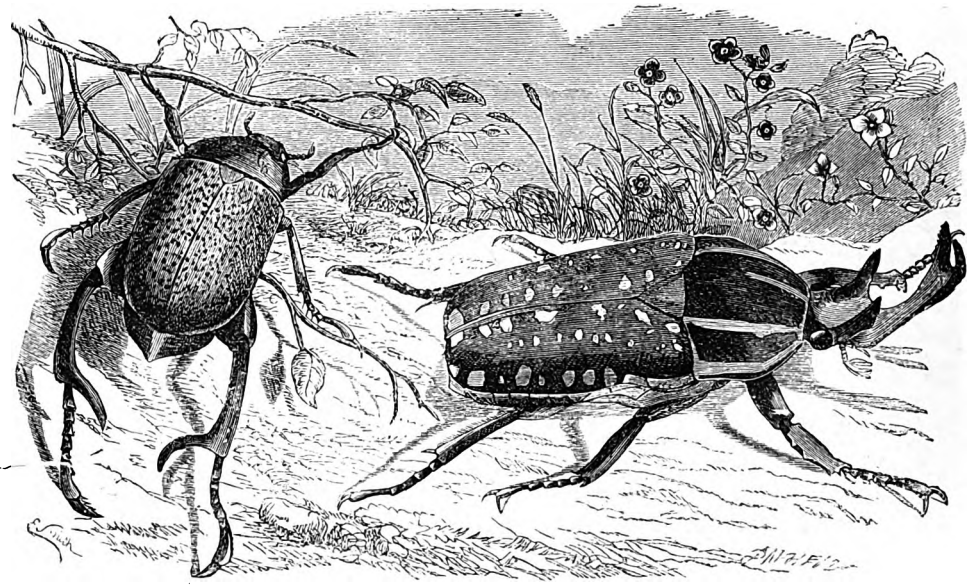
SACRED EGYPTIAN SCARABÆUS.—*Scarabæus sacer.*

ATLAS BEETLE.—*Chalcosóma atlas.*

The small figure on the left hand of this illustration represents the celebrated Sacred Scarabæus of Egypt. This insect was greatly esteemed by the Egyptians, and thought to be a living representation of the Deity.

It is remarkable for its wonderful skill in clearing away any particles of cow-dung or similar substances. It takes a quantity of this material, lays an egg in its midst, moulds it into a rude ball, and then, seizing it between its hinder feet, trundles it away to some convenient spot, where it digs a deep hole. It then pushes the ball into the hole, covers it up with earth, and goes off for another. In this way, the noxious substances are removed from the surface of the earth, and the ground is rendered more fertile by the constant labours of this most useful insect.

The right-hand figure in the illustration represents a very fine species, the Atlas Beetle, a native of the Philippines and part of India. The form of this insect can be seen from the drawing, and its colours are as follows :—The male is of a brilliant metallic olive green, brightly polished and shining; but the female is of a much duller hue, having the chest and the base of the wing cases rough, and the green of a blackish cast. The length of the male is about three inches.



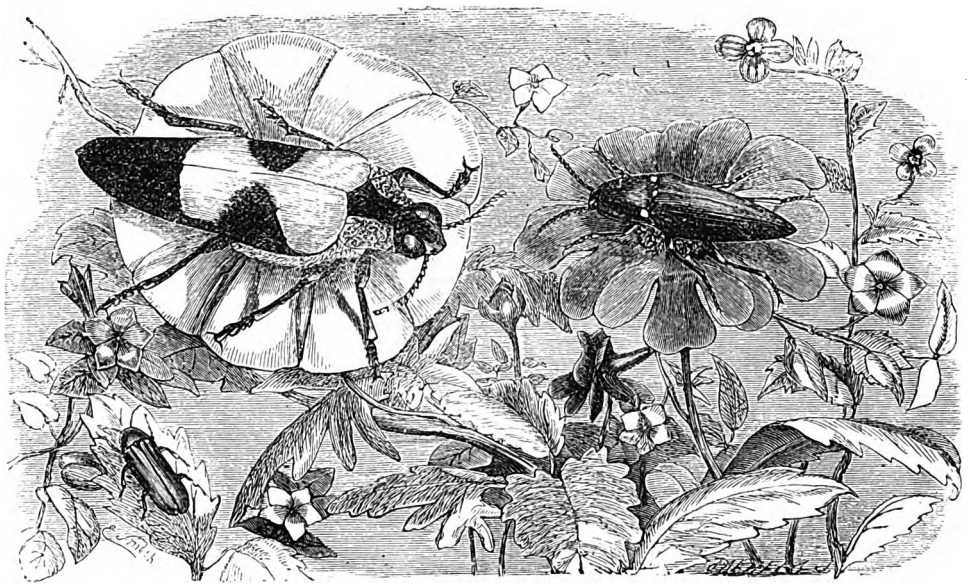
CHRYSOPHORA.—*Chrysóphora chrysochlora.*

POLYPHEMUS BEETLE.—*Chelorhina Polyphémus.*

The Polyphemus Beetle is an example of the family termed Dynastidæ, or powerful beetles, on account of their enormous size and strength. They are the giants among insects; for although many others exceed them in length or width, these creatures are so stoutly made, that any other insect becomes dwarfed when placed by their side.

In this family, the males are remarkable for the strange and often grotesque horny processes which are developed from the head and thorax, the females being destitute of these ornaments. Most of the Dynastidæ inhabit tropical regions, only a very few species being found in Europe. They are generally night fliers, ascending to considerable elevations, and during the day they hide themselves in holes in the earth, in hollow trees, or similar situations. Their food seems to be nearly, if not wholly of a vegetable nature.

The beautiful Chrysophora belongs to a different family, and is a most lovely beetle, glittering with various tints, but being especially remarkable for the rich golden yellow with which it is adorned, and which seems to have been burnished by the hand of the gilder. This creature has been chosen in order to show the enormous size of the hinder legs. All the beetles belonging to this family live in the hot parts of the world, and all are decorated with the most brilliant hues.

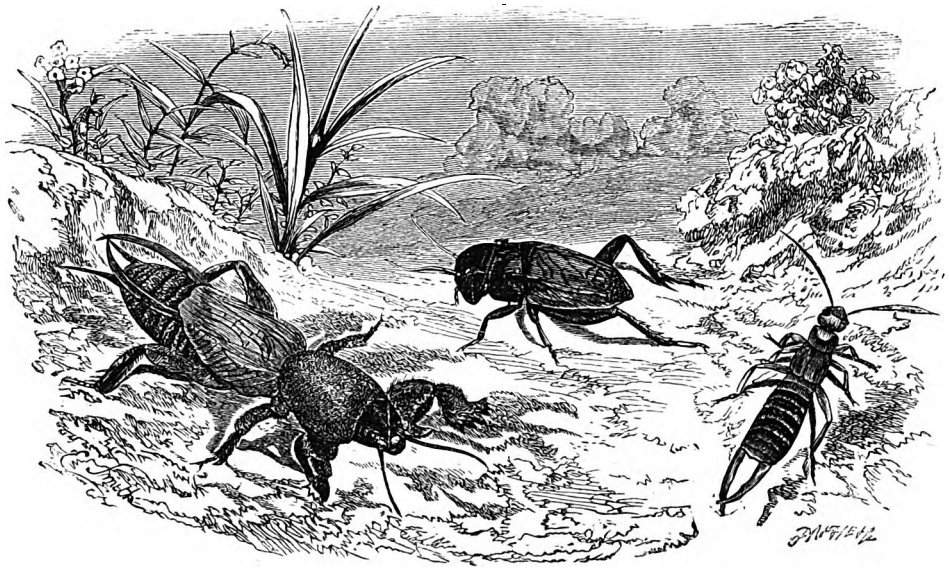


CHRYSOCHROA.—*Chrysochróa Bugnetii.* CUCUJO.—*Pyróphorus luminósus.* GLOWWORM.—*Lampýris noctilúca.* (Male.)

The Chrysochroa belongs to a most splendid family of beetles, whose shining bodies positively flash with the most brilliant hues conceivable. Many of them are of large size, and a collection of this single family is one of the truly magnificent sights which the insect race affords. The light parts of this beetle are pinky-cream colour, the dark parts are deep shining blue, and the spotted patch on each side of the chest is fiery copper.

The Cucujo is one of the celebrated Fire-flies, and is a native of Brazil. The two white spots are the places where the light appears, and when the beetle spreads its wings, two more spots are seen. A tropical forest presents a wonderful sight in the night, for thousands of these beautiful creatures flit past each other, and appear and vanish as if by magic. When seen closely, the whole of the body seems to be on fire.

The little beetle on the left-hand of the illustration is the male of the well-known Glow-worm of England, our only representative of the large and splendid Fire-flies of hotter countries. The female is more luminous than her mate, and spreads a radiance around of nearly two inches in diameter. The male is not quite deprived of all light, as is sometimes thought to be the case, but has two little shining points, not larger than the heads of minikin pins. In the Glow-worm the light proceeds from the end of the tail, but in the Cucujo it appears in the fore part of the body, and in some insects it flames from the head.



FIELD CRICKET.—*Gryllus campestris.*

MOLE CRICKET.—*Gryllotalpa vulgaris.*

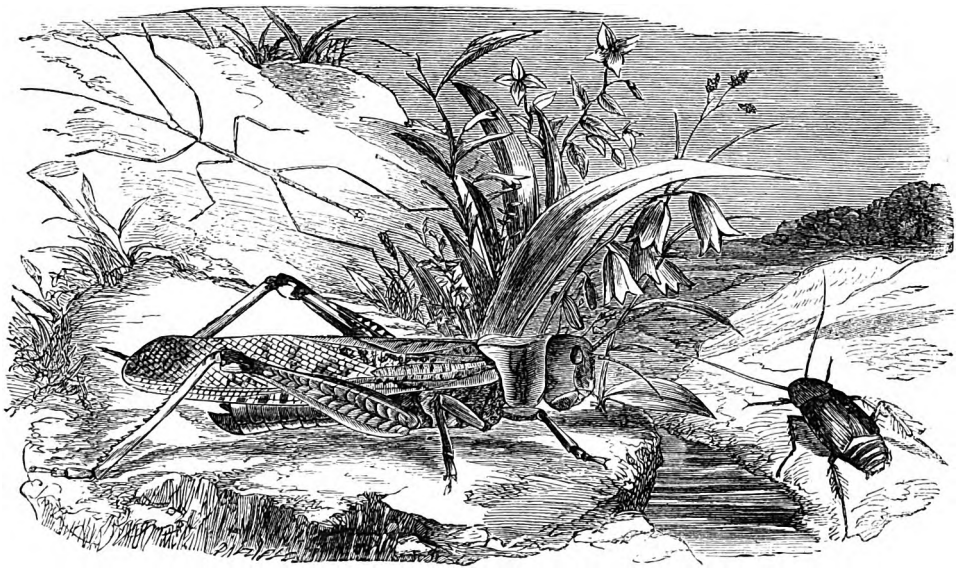
GIANT EARWIG.—*Forficula* (or *Labidúra*) *gigantea.*

MANY people are afraid of EARWIGS, because they fancy that these insects will crawl into their ears and drive them mad. This, however, is quite impossible. from the construction of the ear; and the creature derives its name from the resemblance which its wings bear to the human ear. Its proper name is EARWING, Earwigs feed on vegetables, and often do great damage to pinks, dahlias, and other flowers, eating off the edges of the petals.

The FIELD-CRICKET is a noisy creature, inhabiting the sides of hedges and old walls. It lives in burrows.

On the same illustration, and occupying the left hand, is one of the oddest-looking of the British insects, the MOLE CRICKET, so called on account of its burrowing habits and altogether mole-like aspect. Its wings are large and handsome; and when folded, their hardened outer edges project along the back like two curved spines.

It makes a curious rough churring sound, and at Oxford it is commonly called the Croaker. It is not very common, and is generally found on sandy heaths.



WALKING-STICK INSECT.—*Bactéria trophinus.*

COCKROACH.—*Blatta oriéntális.*

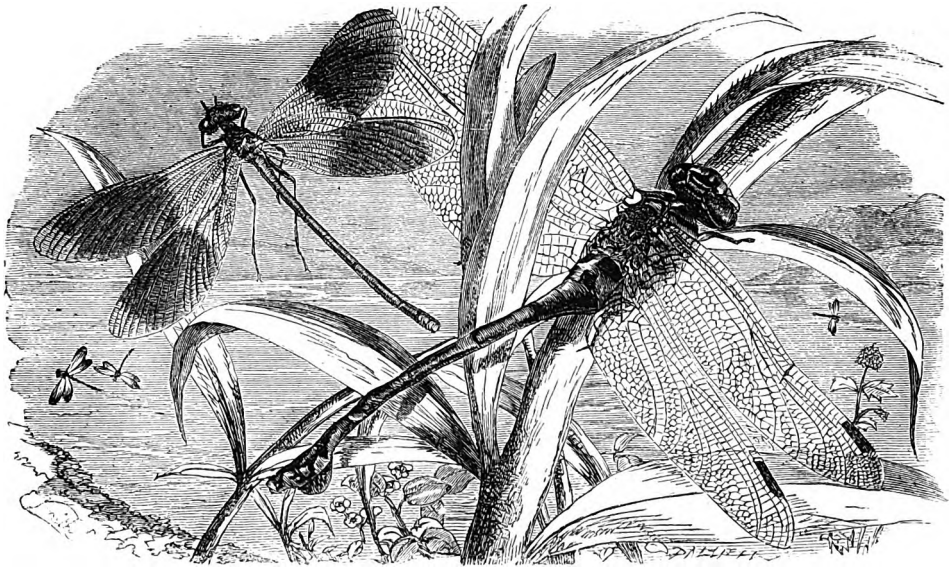
MIGRATORY LOCUST.—*Locusta migratória.*

The common Cockroach, so plentiful in our kitchens, is supposed to have been brought originally from India. Its colour is a dirty red.

The Walking-stick Insect belongs to a strange family, in which all its members are remarkable for their resemblance to dried sticks, twigs, &c. They are all natives of tropical countries.

The Migratory Locust has long been celebrated for its vast numbers, and its custom of passing over the country in enormous legions. They fly in thick clouds, which darken the sun on their passage, and their armies may be seen stretching as far as the eye can reach. They eat up everything green where they settle. In a few minutes from the time when they alight, every leaf has gone from the trees and every blade of grass from the earth. They are so voracious, and their teeth are so powerful, that they can even devour the green twigs on which the leaves have grown, and when they take their leave, the country looks as if it had been swept by fire.

Fortunately, the Locusts are very good to eat, being very like the shrimp or prawn, and are caught by sacksful, dried, and preserved for food. They live in the warmer parts of the earth, but now and then a Locust is found in England.



DEMOISELLE.—*Calépteryx splendens.*

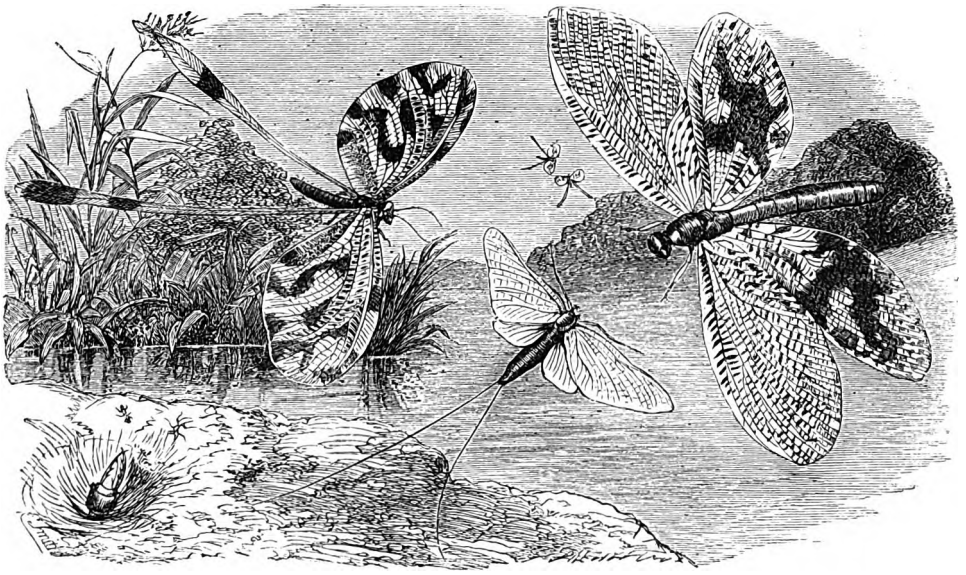
GREAT DRAGON-FLY.—*Ictínus pugnax.*

HERE we have two examples of the beautiful DRAGON FLIES.

These insects derive their name from their great activity, and their fierce and angry dispositions. They prey upon other insects, which they chase and catch in the air, and eat, without even stopping to rest. They will catch and eat almost any insect, and I have even seen them fly after a butterfly, catch it, pull off its wings and devour it, while still looking after fresh prey. They never seem to have enough to eat, and if they are caught, and held in the hand, they will eat as many insects, spiders, grubs, or other creatures, as are given them.

During their early stages they live in the water, and are quite as fierce and hungry there as in the air when they get their wings. They are mostly to be seen dashing about near streams; and some, such as the DEMOISELLE, never seem to go far from their native stream, but content themselves with flitting along the rushes and water-plants that grow along the banks. Many of them are most beautifully coloured, but the rich tints of blue, green, scarlet, and gold, fade soon after death, and change into an uniform dull, blackish-brown.

In their early state they catch their prey by means of a curious instrument which is darted from the mouth. This is called the mask, because it is folded over the mouth when the creature is at rest.



Nemóptera Coa. ANT-LION.—*Myrméleon translátus.*

MAY-FLY.—*Ephémera vulgáta.*

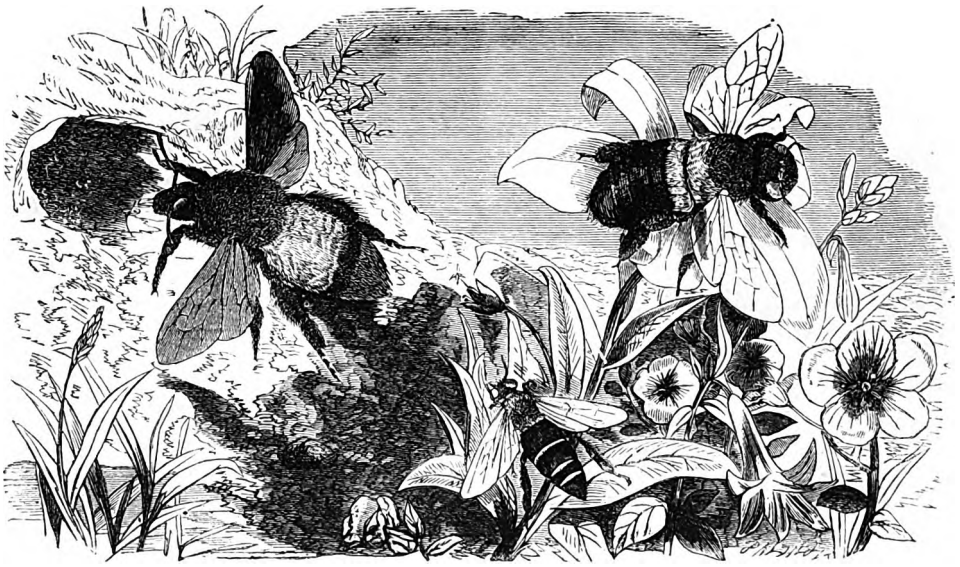
The Ant-lion is so called, because, while still a grub, or larva, it feeds mostly on ants, which it catches in a very remarkable manner.

It goes to some place where there is plenty of loose, fine sand, and digs a pit, at the bottom of which it sits, all hidden except the head and jaws. As soon as any ants or crawling insects come to the edge of this pit, the sand gives way, and the ants tumble into the jaws of the creature that is waiting quietly at the bottom. At the left-hand lower corner of the engraving is shown one of these pitfalls, with the jaws and head of the Ant-lion. If the ant should try to scramble up the sides of the pit, the Ant-lion flings sand over it, and so makes it come tumbling down again.

The head and jaws are the tools that are employed by this industrious workman, and it throws out the sand with its head, just as a workman throws earth with his spade.

The beautiful insect, with the long and narrow hind wings, is another kind of Ant-lion.

The smaller figure in the middle represents the common May-fly. Although this insect only lives for a very short time in the winged state, it has existed at least two years in the water, while passing through its stages of larva and pupa.



Bombus oriéntalis. *Apis fasciátus.* *Xylócopa Caffra.*

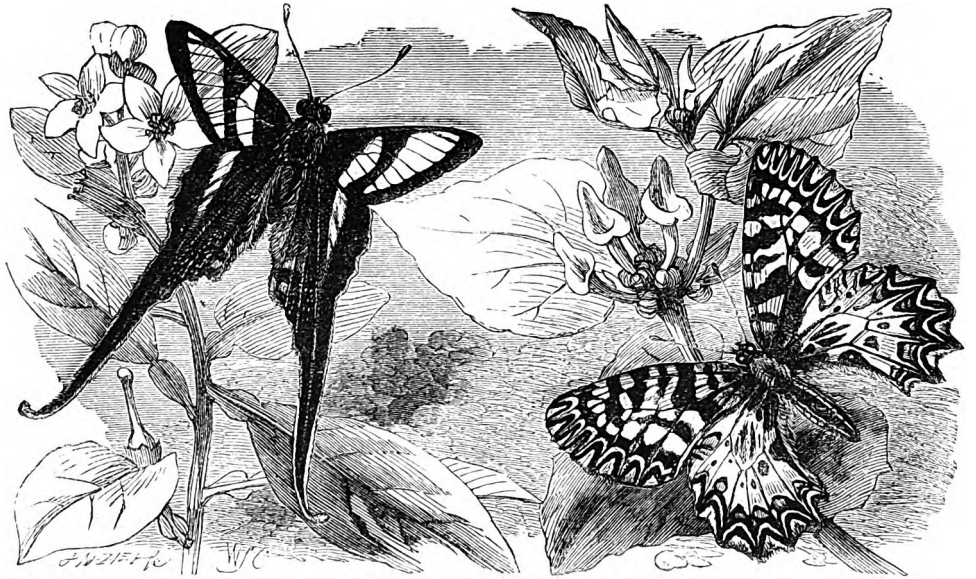
We now take a few examples of the Bee tribes.

The right-hand insect in the engraving is the Carpenter Bee of Southern Africa, one of those curious insects which construct a series of cells in wood. After completing their burrow, which is open at each end, they close the bottom with a flooring of sawdust, formed of the morsels bitten off during the operation of burrowing, lay an egg upon this floor, insert a quantity of "bee-bread," made of the pollen of flowers and their juices, and then cover the whole with a layer of the same substance that was used for the floor. Upon this is laid another egg, another supply of bee-bread is inserted, and a fresh layer of sawdust glued down. Each layer is therefore the floor of one cell and the ceiling of another.

At the left hand of the engraving is shown one of the numerous Humble Bees, a group of insects readily recognized by their thick hairy bodies and general shape. Their nests are placed underground, often in banks, and contain a variable number of cells, which are loosely connected together, and are of an oval shape.

The middle figure represents the Banded Bee.

This species is closely allied to the common Hive Bee of England, and, like that insect, is used in producing wax and honey. The owners of the hives are in the habit of hiring boats, made for the express purpose, and sending them to be gradually taken down the Nile. In this way the bees obtain abundance of food, leaving each spot when they have nearly exhausted its sweet treasures.



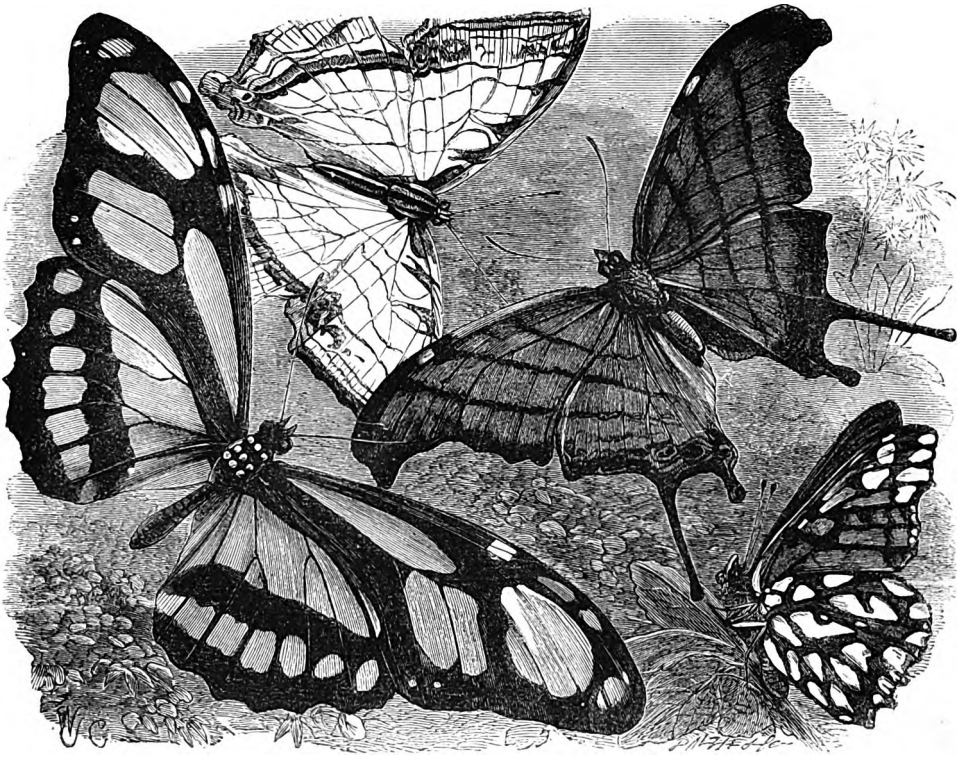
LEPTOCIRCUS.—*Leptocircus Cúrius.* THAIS.—*Thaïs Hypsipýle.*

Next come those beautiful insects, called Butterflies and Moths.

On this engraving we have examples of two very handsome butterflies, both of them being found in the warm and hot parts of the world. The specimen on the left, with the very long hinder wings, is called the Leptocircus, and is a native of Siam and Java. It is shown of its natural size, and is not a large insect, though its colours are very pretty, and elegantly arranged.

The general colour of this butterfly is brown, with the exception of a moderately broad greenish band along the centre of the wings. In the female the band is nearly colourless, and the light patch on the upper wings is transparent. The under parts are nearly of the same colour, except that the outer edges of the tails are fringed with a narrow line of glittering white, like burnished silver.

The other butterfly is the Thais, whose wings are edged with a series of bold festooned marks. The inner edges of the hinder wings are deeply scooped, as if to permit free motion of the abdomen. The colour of this species may be described as follows:—On the upper surface, the first pair of wings are yellow, marked with black, and the lower pair are also yellow, but have a row of crimson spots just within the black festoons. On the under surface, the upper wings are paler, and are marked with four red spots along their edge; the under wings have also red spots, but the festoons are deeper and sharper than on the upper surface.



THYODAMAS.—*Cyrestis Thyódamas.* THETIS.—*Marpésia Thetis.*
DIDO.—*Cethósia Dido.* *Agraulis monéta.*

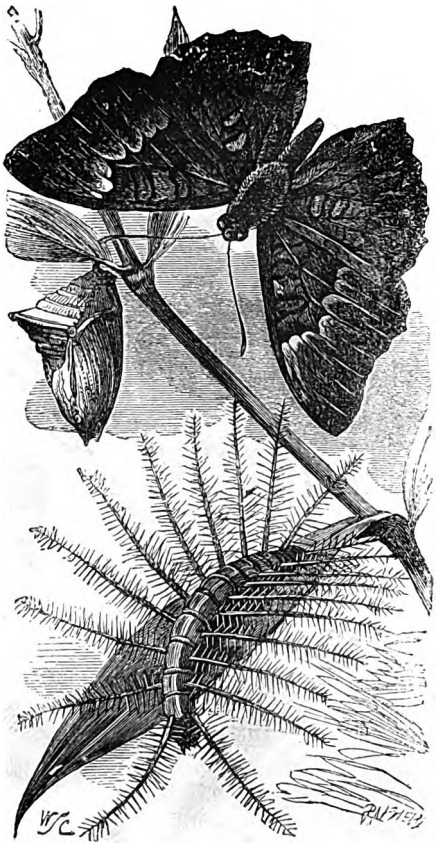
On this engraving we have a group of elegantly marked butterflies, all coming from the warmer parts of the world.

The large insect on the left hand is the Dido, a common, but a very beautiful butterfly, that lives in Brazil and Guiana. The colour of the upper wings is dark, blackish-brown, with numerous markings of pearly green. Below, it is chocolate, and the green marks are of the same size, but paler than in the upper surface.

The uppermost figure represents the Thyodamas. Having a ground colour of greyish-white, the whole surface is scribbled over with lines and streaks of brown. The colour of the Thetis is by no means brilliant, but has a decided and pleasing effect. The upper surface is ruddy chestnut, over which are drawn several narrow stripes. From the lower margin of each under wing start two projections or tails.

The last figure represents the *Agraulis monéta*, an insect that closely resembles the well-known *Adippe Fritillary* of our own island, save that the colour is deeper, and the metallic spots of the under surface larger and brighter.

POLLUX.—*Nymphalis Pollux.*

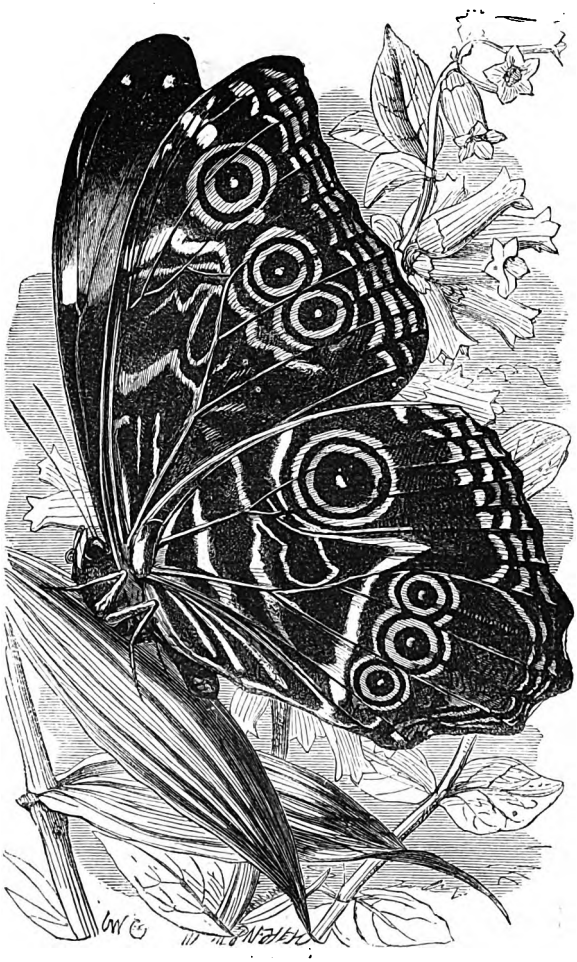


ACONTHEA.—*Adólias acónthea.*

The handsome Pollux butterfly is a native of Ashantee and Guinea.

It is a swift and active creature, its wings are large and fine, and its muscles powerful. On the upper surface, the wings are rich brown with a black wash; and below, they are of a paler brown, diversified with a broad white belt, and many mottlings.

The left-hand figure is the Aconthea, or Thorn Butterfly, which is not so remarkable for itself as for the strange shape of its caterpillar. As may be seen by reference to the illustration, the body is covered with long spines projecting at right angles, and in their turn fringed with bristling hairs. It is mostly found on a species of Bryonia, and is a native of Java. The pupa or chrysalis is of a curious shape, reminding the observer of an ancient helmet with the visor down.



NEOPTOLEMUS.—*Morpho neoptólemus.*

The magnificent insect called the Neoptolemus belongs to the genus *Morpho*, in which are contained some of the most resplendent beings to be found in the world, all being beautiful, and some endowed with a gorgeousness of colouring that is almost inconceivable.

In the present species the upper wings are of the richest azure, glittering like burnished metal, and iridescent as the opal, but with far greater intensity of hue. In some lights the colours are sombre enough, being only pale grey and darkish brown; but when the light falls favourably upon the wings, their colours are truly magnificent. Around the edges of the wings is a broad belt of black, very deep towards the tips, and narrowing towards the angle.

The under side is soft brown, decorated with many irregular stripes of yellowish-grey, and besprinkled with a number of eye-like spots arranged in a tolerably regular row, three on each of the upper wings, and of nearly equal size, and four on each of the lower wings; one being very large and separate from the rest, and the remaining three small and close together. In the centre of each eye there is a little white spot, round which is a broad ring of black, then a narrower ring of buff, then a line of black, and lastly a grey line.

LIME HAWK-MOTH.—*Smerinthus Tiliæ.*
DEATH'S-HEAD MOTH.—*Acherontia Atropos.* (And larva.)

THE LIME HAWK-MOTH is common in many parts of England, and derives its name from the fact that the caterpillar is fond of feeding on the lime-tree. The engraving shows the curious attitude in which it is accustomed to hang on the tree to which it clings. Its colour is mostly leaf-brown and green, with some black spots and streaks.

The large insect is the celebrated DEATH'S-HEAD MOTH, which is so called from the wonderful likeness of a human skull and the shoulder bones that appears upon the back of its thorax. This splendid moth is tolerably common, but as it hides itself all day, and only comes out at night, it is not very often seen. Ignorant people are very much afraid of this moth, and think that it portends all kinds of evil. It is, however, perfectly harmless, and does no hurt to any one, except that it is said to enter bee-hives, and eat the honey.

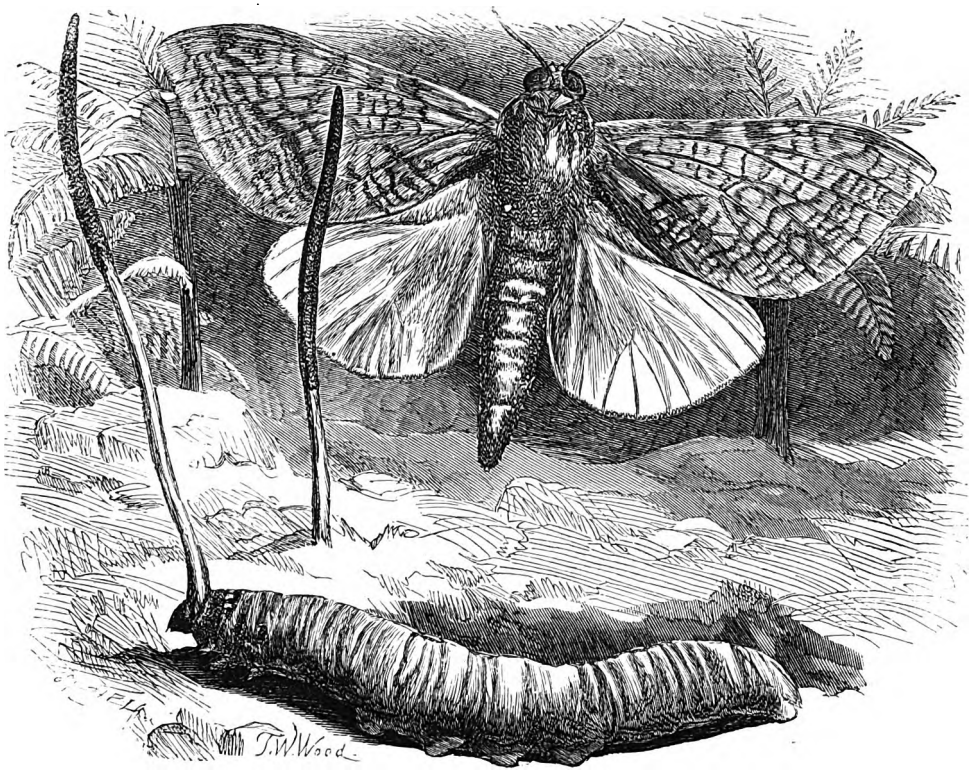
This moth reaches a very great size, the extended wings sometimes measuring nearly six inches. The caterpillar feeds upon the potato and jessamine.

UNICORN HAWK-MOTH.—*Sphinx convólvuli.*

The Unicorn Hawk-moth is sometimes known by the name of the Convolvulus-moth.

This splendid insect is scarce throughout England, but seems to be found sparingly in most parts of the country, especially towards the south. As is the case with many of the nocturnal moths, its eyes shine brightly at night, and on account of their great size are very conspicuous in this respect. The popular name of this moth has been given to it because the caterpillar is known to feed on the common field convolvulus or bindweed. The caterpillar is mostly green, spotted and splashed with black and brown, and having a row of oblique stripes on each side. Generally the stripes are yellow, and edged with black, but they are sometimes wholly of the bolder colour, while the entire caterpillar sometimes assumes a brownish hue. Upon the end of the tail there is a sharp curved horn, quite harmless. The colour of the wings is mostly wood-brown, chequered with ash, grey, and white, and the abdomen is ringed with broad bands of rose-colour and narrow stripes of black, while down its centre runs a broad streak of grey.

We have several other fine British insects belonging to this genus, such as the Privet Hawk-moth (*Sphinx Ligustri*), and the Pine Hawk-moth (*Sphinx Pinastri*).

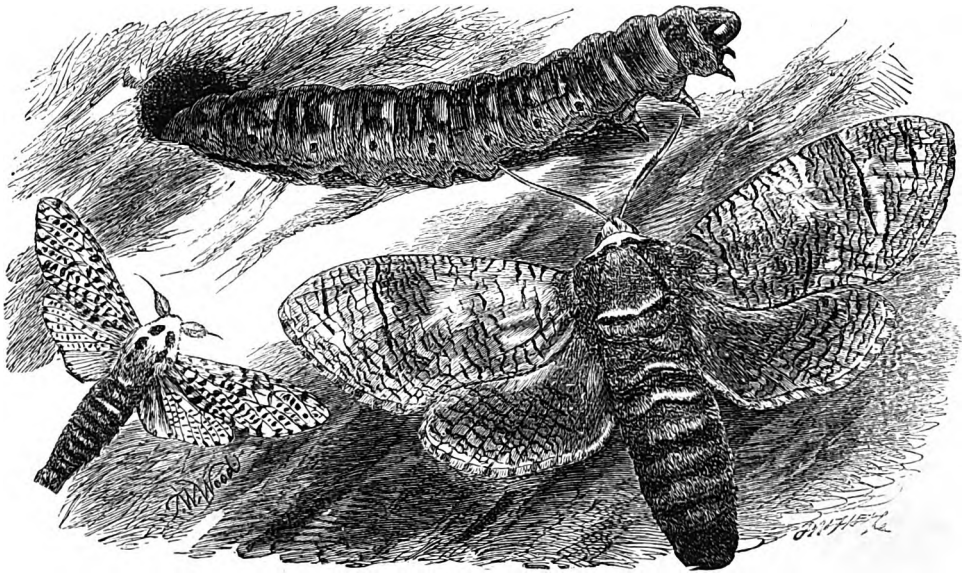


NEW ZEALAND SWIFT.—*Hepialus virescens.*

The Swift Moths are so called from their great speed.

They are mostly seen towards the evening, and are fond of flitting along hedge-rows, darting in a nearly straight line with wonderful celerity, and looking in the dusky light as if they were dark streaks suddenly drawn through the air. There are many kinds of Swift Moths in England, and all of them are of sober colours.

The New Zealand Swift is a truly curious insect, not so much for its form or colours, but for the strange mischance which often befals the larva, a vegetable taking the place of the ichneumon fly, and nourishing itself on the substance of the being which gives it support. A kind of fungus affixes itself to the larva, and becomes developed on its strange bed, taking up gradually the fatty parts and tissues of the caterpillar, until at last the creature dies under the new growth, and is converted almost wholly into vegetable matter.



GOAT-MOTH.—*Cossus ligniperda.* (And larva.)

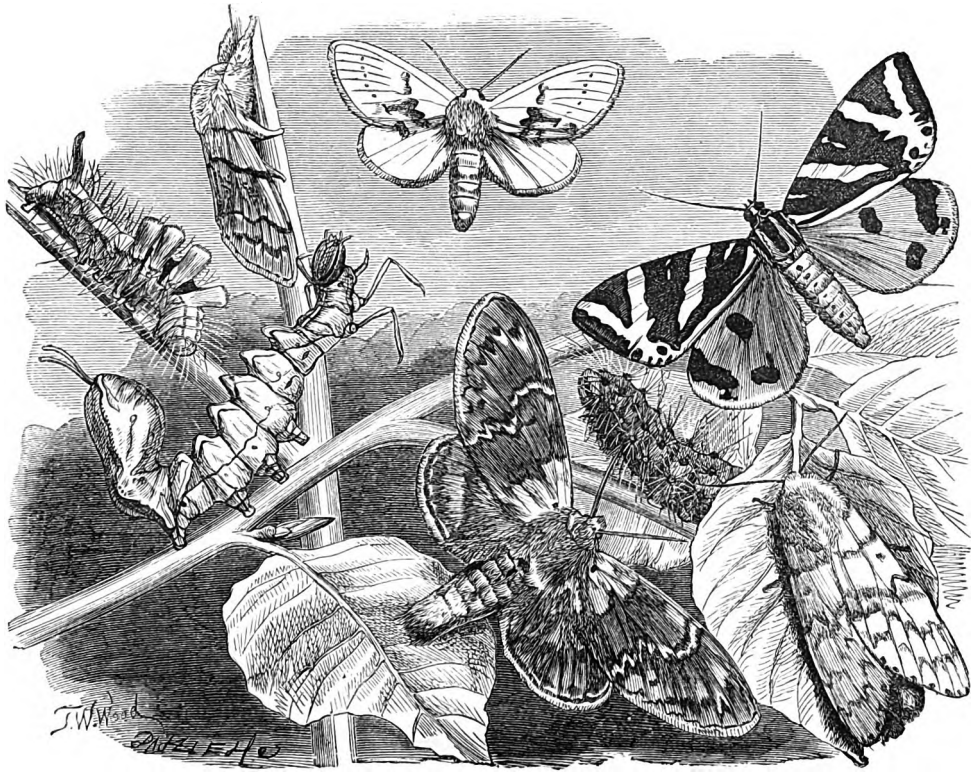
WOOD LEOPARD.—*Zeúzera æsculi.*

THE GOAT-MOTH is so called because its caterpillar gives out a very unpleasant odour, which is thought to bear some resemblance to the horrid smell of an old he-goat.

The caterpillar is a green, smooth, shining, reddish-brown creature, with a patch of chestnut on each wing. It is extremely destructive, burrowing into the solid wood of trees, and living there for three years, driving its tunnels in every direction. When at last it has reached its full age, it is as large as a man's finger, and makes a hole of corresponding dimensions.

The moth is very soft and furry in its look, and its colours are mostly grey, and brown, and dull yellow.

The last figure in the illustration represents the WOOD LEOPARD-MOTH, a very prettily marked insect, though without the least brilliancy of colour. The caterpillar of this insect feeds upon the interior of many trees, seeming to prefer the wood of the apple, pear, and other fruit trees. It is a naked, fleshy-looking larva, of a light yellow colour, and having a double row of black spots upon each segment. Like the Goat-moth, it prepares a cocoon-like cell when it is about to take the pupal form, but the lining is of stronger materials, cemented firmly together with a glutinous substance secreted by the insect. The moth is seldom seen until July, and is tolerably plentiful in some places, appearing to be decidedly local and rather uncertain in its visits.



Notodonta bícolor. *Hypercompa Hera.*

PALE TUSSOCK-MOTH.—*Dasychíra pudibunda.* (And larva).

GIPSY-MOTH.—*Hypogymna dispar.* (And larva).

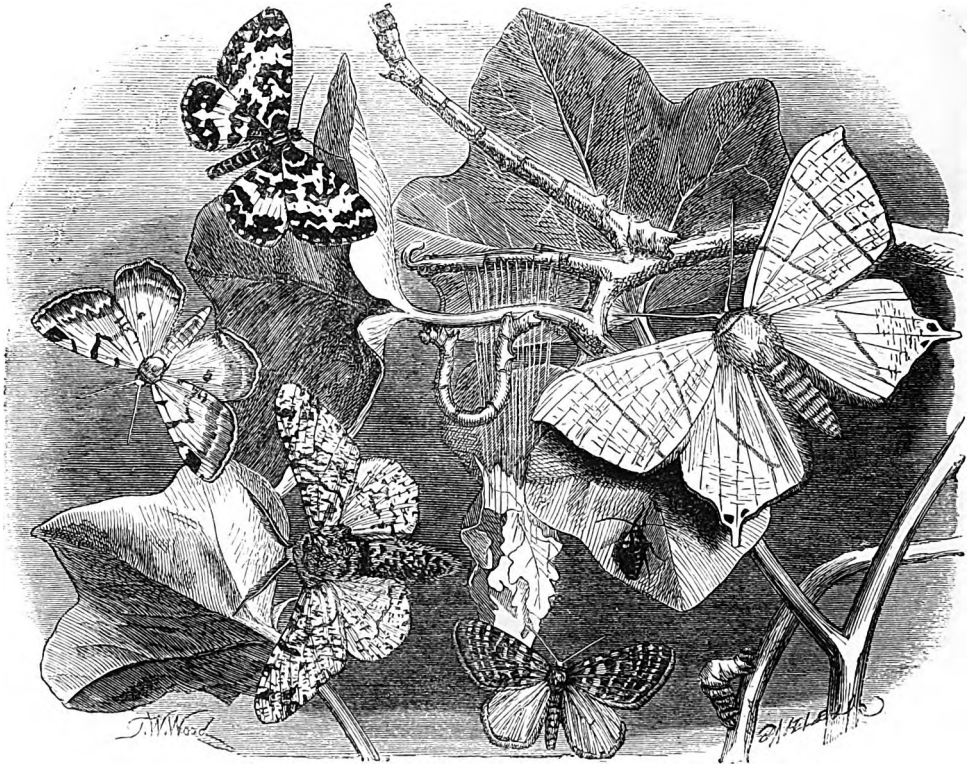
LOBSTER-MOTH.—*Stauropus fagi.* (And larva).

THE LOBSTER-MOTH is thought to bear some resemblance to a lobster, and is the central lower figure. Its strange caterpillar is sitting on the lower branch.

Just above this caterpillar is the PALE TUSSOCK-MOTH seen clinging to a branch. The caterpillar is shown at its left hand, crawling up another twig, and is remarkable for the tufts of long hairs with which its body is covered. This caterpillar is a very pretty one, and as it crawls along, the black velvety intervals between the tufts have a bold and pleasing effect. This caterpillar is popularly called the Hop-dog.

The GIPSY-MOTH and its caterpillar are shown at the right-hand lower corner of the engraving. On the Continent this moth is very abundant.

The other two moths belong to the same family.



ARGENT AND SABLE MOTH.—*Melanippe hastáta.*

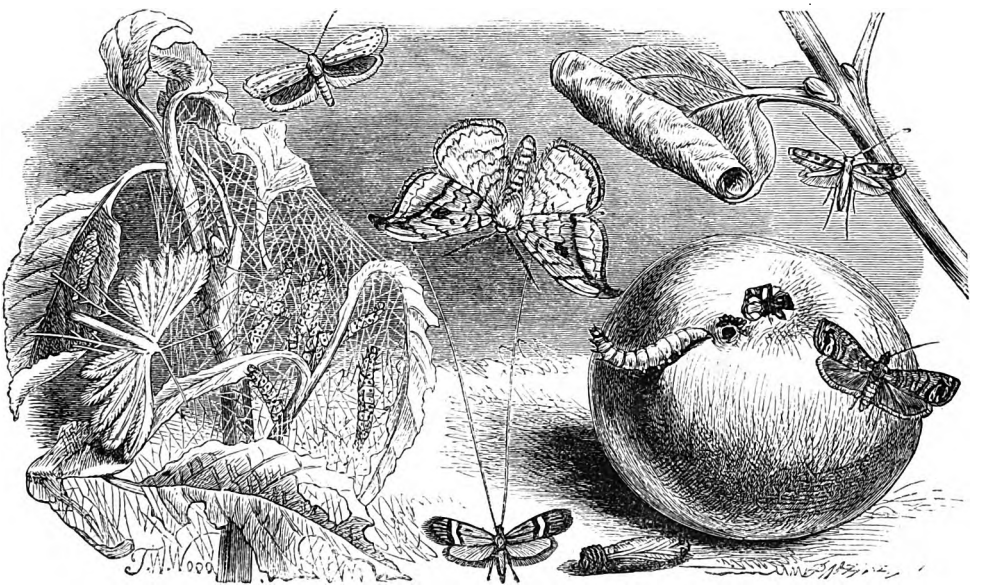
V-MOTH.—*Halía Vauária.* SWALLOW-TAIL MOTH.—*Ourápteryx sambucária.* (With two specimens of larva).

PEPPERED MOTH.—*Biston betulária.* WINTER-MOTH.—*Cheimatóbia brumáta.* (With larva and wingless female).

We have here several well-known examples of the Geometrical Moths, so called on account of the peculiar manner in which these caterpillars walk.

Instead of crawling simply along, they take hold of some substance with their hinder feet, stretch their body at its full length, and seize an object with their fore-feet. Two specimens of the caterpillar of the Swallow-tailed Moth are shown in the engraving, one to exhibit the looping mode of walking, and the other to show the attitude when at rest. The moth itself is on the right hand.

The little wingless creature on the ivy leaf is the female Winter-moth, and the male is shown just below. All the moths on this illustration are found in England.



LITTLE ERMINE MOTH.—*Yponomeuta padellus.* (With caterpillars in web.)

LILAC-LEAF ROLLER.—*Gracillária syringella.* (With a rolled leaf.)

PEBBLE HOOK-TIP.—*Platypteryx falcatária.*

WHITE PLUME.—*Pteróphorus pentadáctylus.*

APPLE MOTH.—*Tortrix pomóna.*

LONG-HORN.—*Adela De Geerella.* (With pupa).

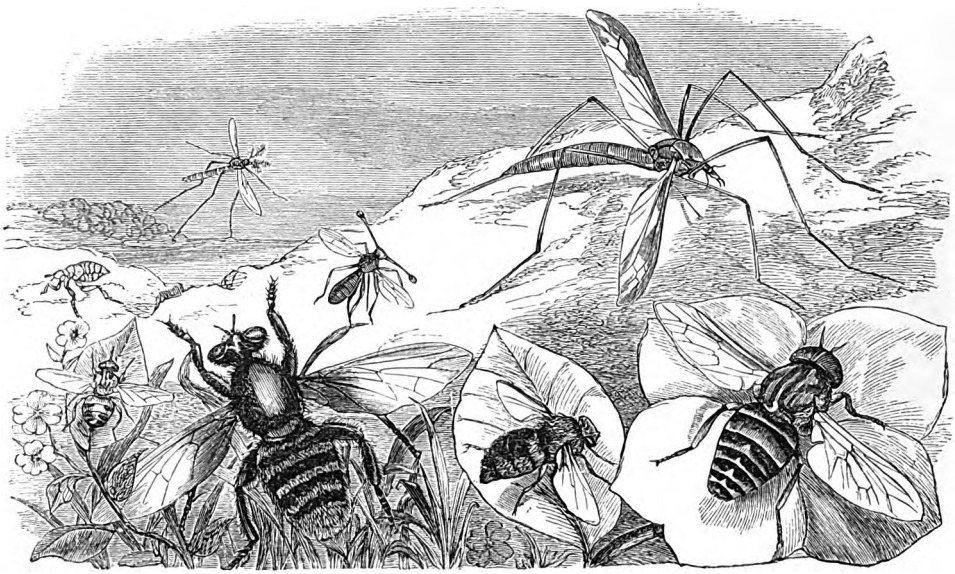
On this engraving are shown some very pretty, but terribly destructive little moths, the caterpillars of which bore into fruit, roll up and devour leaves, and sometimes exists in such numbers as to destroy whole crops of fruit, or turn a green forest into a mass of yellow and withering foliage.

The pretty Little Ermine-moth belongs to the same family, and derives its name from its delicate white colour and black spots.

The Codling-moth is one of the commonest of these tiresome insects, living in the middle of the fruit from which it takes its name, and giving rise to the condition which is termed "maggoty."

The White-plume Moth is a lovely little creature, with soft downy wings, separated into narrow feathered rays, and purely white as a snow-flake. It comes out in the evening, and flits about among the underwood, seldom making flights to more than a yard in length.

The Long-horn Moth is mostly found upon the oak, and is a lovely little creature.



COMMON GNAT.—*Culex pipiens.* GREAT CRANE-FLY.—*Tipula gigantea.*
FLEA.—*Pulex irritans.* STALK-EYED FLY.—*Diopsis thoracicus.*
TSETSE.—*Glossina morsitans.* BANDED HORNET-FLY.—*Asilius fasciatus.*
GAD-FLY.—*Tabanus bovinus.* BOT-FLY.—*Œstrus equi.*

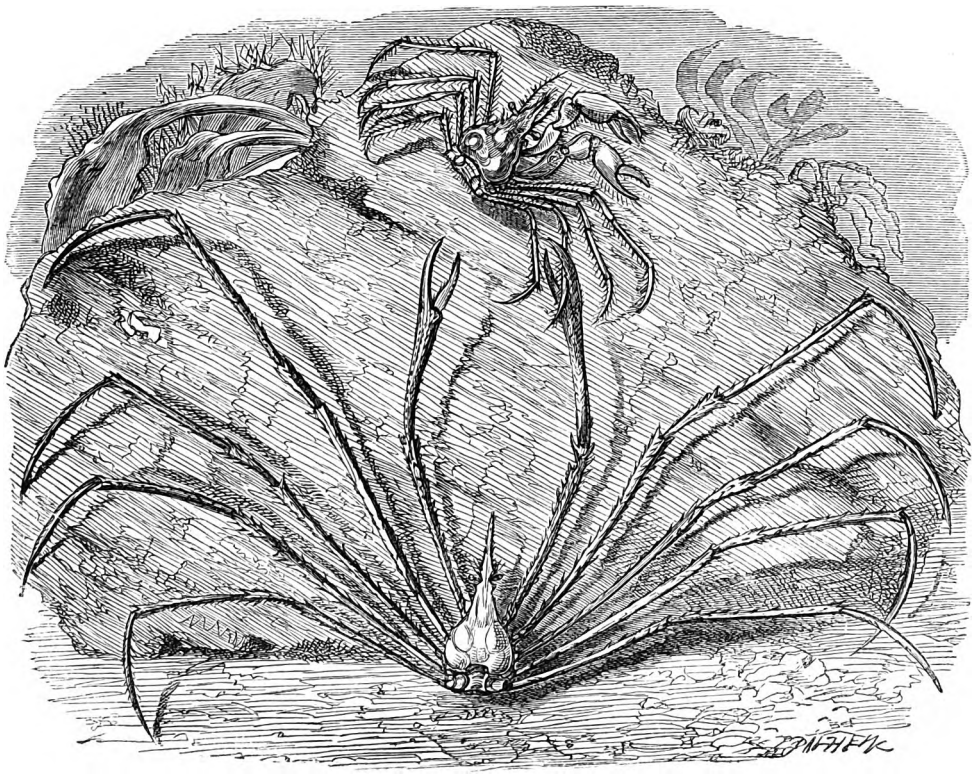
On this engraving we have some examples of the Two-winged Flies.

The Great Crane Fly, or, Daddy Long-legs, is seen at the upper part of this engraving.

Two of our cattle pests, the Gad-fly and the Bot-fly, are seen below.

The former insect is also known by the names of Breeze-fly and Cleg. The females of this fly can inflict a painful wound, and while spending some little time in the New Forest, I suffered much from the attacks of these bloodthirsty insects. The Bot-fly lays its eggs on the horse's hide. The animal licks the part and swallows the eggs, which are hatched in its stomach, and produce a vast number of grubs, which adhere to the membranes. I have often seen the inside of the stomach so covered with these grubs that they quite conceal the substance to which they cling.

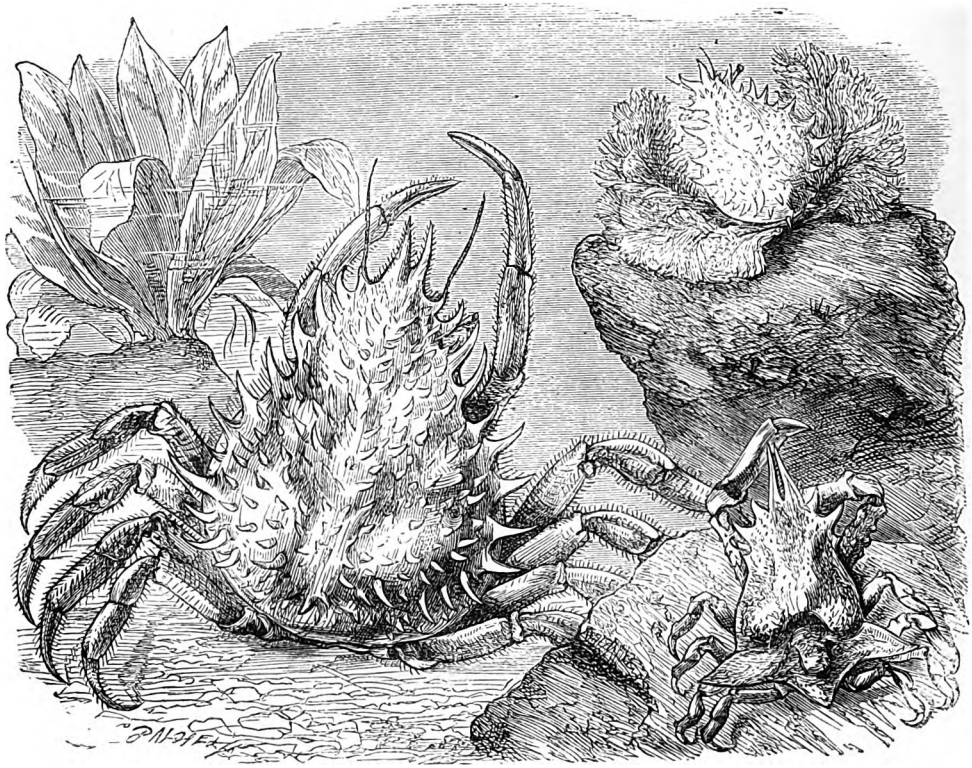
The Hornet-flies chase and catch other insects, and are very voracious. The Stalk-eyed Fly is remarkable from the long footstalks in which its eyes are set. The Common Gnat and the Flea are too well known to need description. The last-mentioned insect belongs to a separate order.



Stenorhynchus Phalángium. *Leptopodiá sagittáta.*

We now come to the Crabs, Lobsters, &c., known by the name of Crustaceans. In the Leptopodia, which is seen in the lower part of the engraving, they are of such inordinate length, as to remind the observer of the round-bodied, long-legged harvest spider, which scuttles over the ground so rapidly when disturbed. On account of this great length of limb and small size of body, these crabs are often called Sea Spiders. The eyes of the Leptopodia are rather large, and not retractile. It may here be mentioned that the eyes of Crustacea bear some resemblance to those of insects, being compound organs, with a large number of facets, some square and some hexagonal. The eyes of the common shore crab or the shrimp afford excellent examples of this structure.

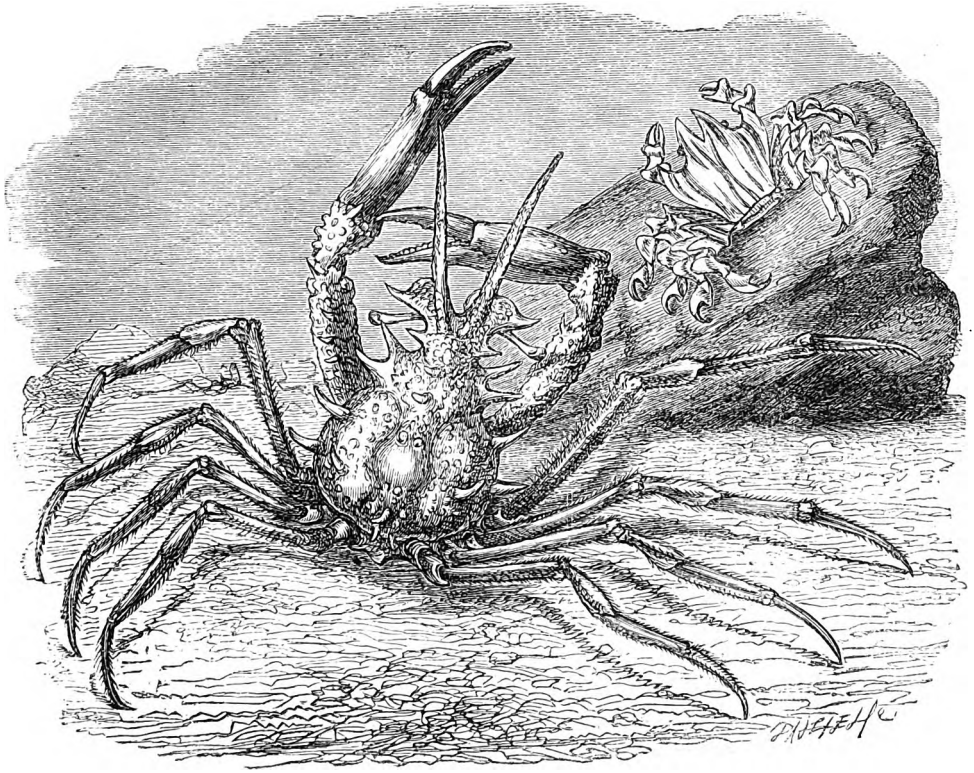
The upper figure in the illustration represents one of the British Crabs. In the Stenorhynchus, the projecting beak is proportionately shorter than in the preceding genus, is cleft at the tips, and very sharp. The fore-limbs, which are furnished with large claws, are stout and strong.



COMMON THORNBACK-CRAB. (Female.)
COMMON THORNBACK-CRAB.—*Maia Squinádo.*
THREE-SPINED SPIDER-CRAB.—*Perícera trispinósa.*

THE curious THORNBACK-CRAB, or SQUINADO, or SPIDER-CRAB, is very common on our coasts, and is a most useful creature, devouring the many kinds of refuse matter which are continually flung into the sea. The Squinado sets to work boldly; with one claw holds tightly to the banquet, and with the other tears off morsels and deftly feeds himself therewith, putting them into his comical mouth with the regularity of clockwork. As if to aid in eating the tiny morsels that are too small for the crab's jaws, it is usually accompanied by a host of zoophytes, which make their home upon its back, and eat the minutest atoms that float away as the crab tears its food to pieces. The smaller specimen sitting on the rock, is given as an example of this curious companionship.

The THREE-SPINED SPIDER-CRAB derives its name from its shape. It comes from the West Indies.



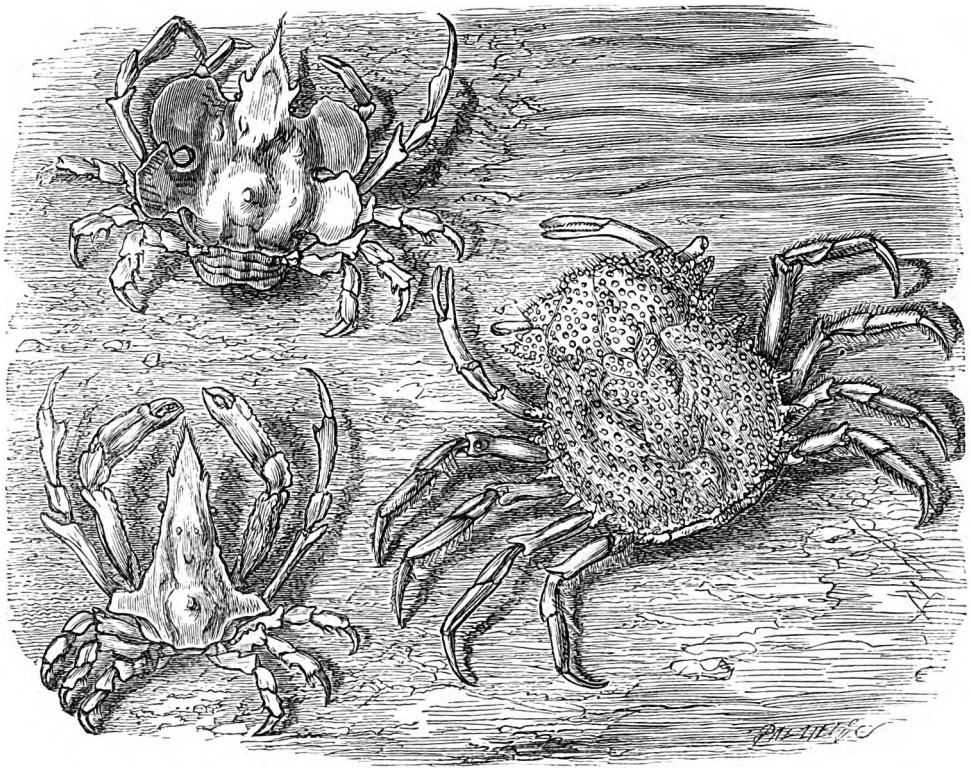
THORN-CLAW CRAB.—*Acánthonyx zébrida.*

RAM'S-HORN CRAB.—*Criocarcinus superciliósus.*

The larger specimen on this illustration is the Ram's-Horn Crab.

The body is thorny, though not so wholly beset with spikes as in the spider-crab, and the eyes are placed on moderately long footstalks. The term "*superciliósus*" refers to a Latin word signifying an eyebrow, and is given to this crab on account of the overhanging plates under which the eyes are hidden when the footstalks are laid close to the head, as is the custom of the creature when alarmed. The present species is found in the New Hebrides.

On the right hand, and in the upper corner, may be seen a curious-looking little crab, notable for the hooked extremities of the limbs. The name of Acanthonyx, or Thorn-clawed, is given to the genus on account of this structure. At first sight, the Acanthonyx hardly seems to belong to the same family as the preceding species, the shape of the body being apparently the reverse to that which is usually seen in these crabs.



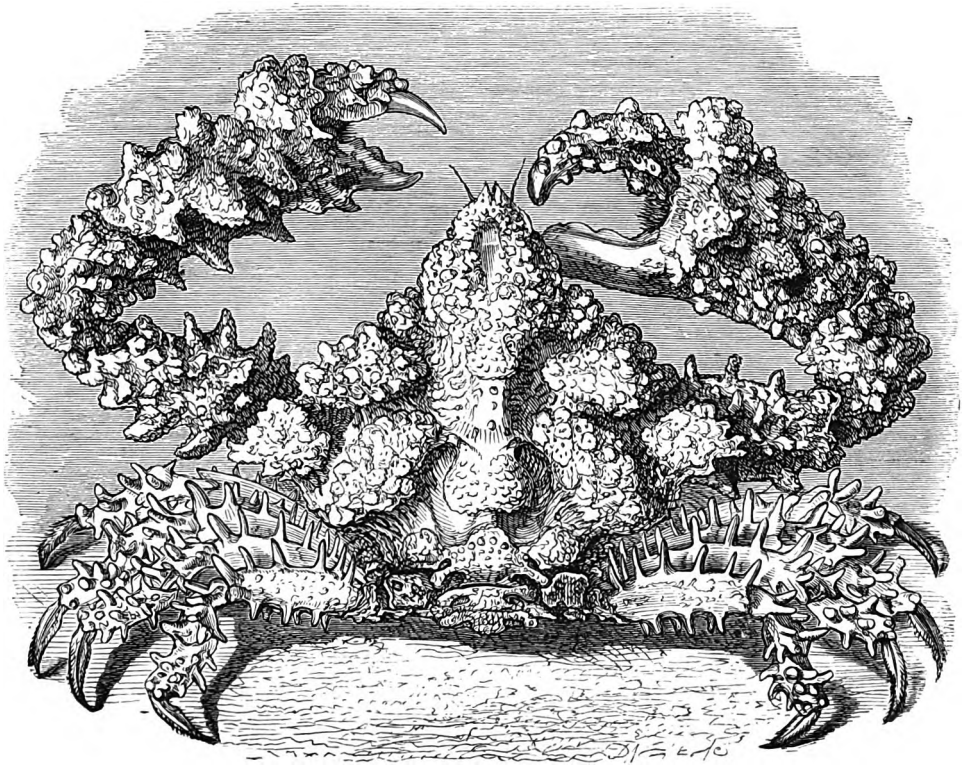
HERALD-CRAB.—*Huénia heráldica.* MICIPPA.—*Micippa philyra.*

LONG-SNOUTED CRAB.—*Huenia elongáta.*

The three crabs in this illustration belong to the same family as the spider crab. The Micippa comes from the Philippine Islands. It has very small claw-legs, very feeble claws, and the body is always large in proportion to the limbs, and covered with knobs or spines of various lengths.

On the left hand of the engraving are seen two crabs very dissimilar in external appearance, and yet belonging to the same genus. The upper figure represents the Heraldic Crab, so called because the shape of its carapace presents a fanciful resemblance to the shield and mantle employed by heraldic painters in depicting coat armour.

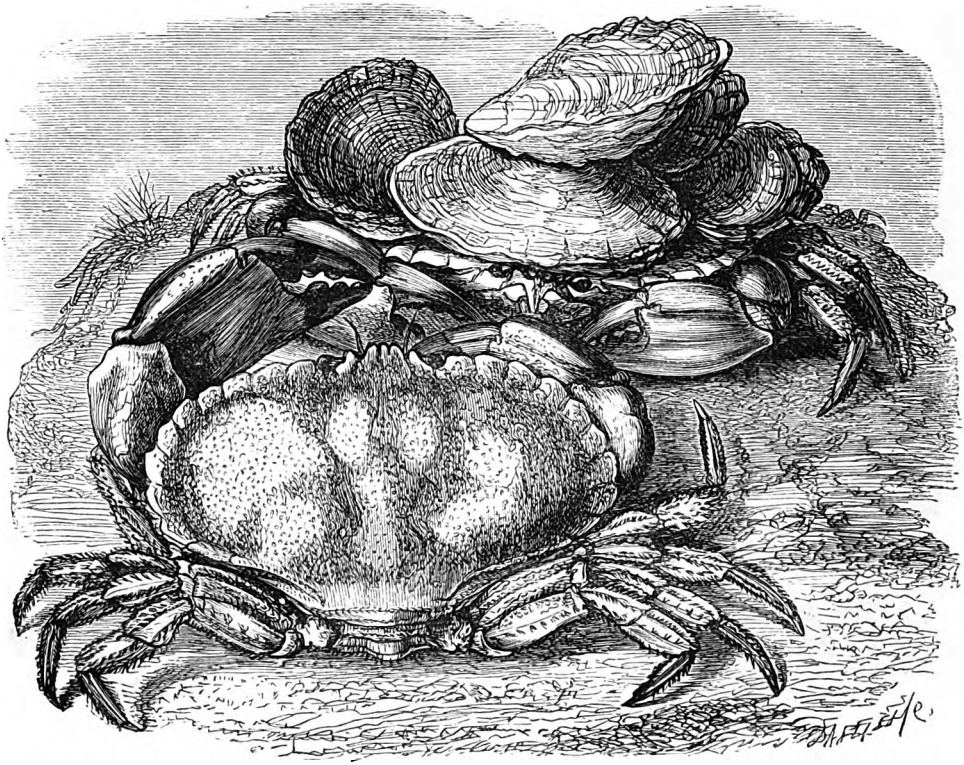
The lower figure represents the Long-snouted Crab, a creature in which the carapace, instead of being wide, flattened, and formed with ring-like projections at the side, is drawn out to a wonderful length, and possesses two projections towards the base. Both these crabs are natives of Japan.



SPINOSE PARTHENOPE.—*Parthénope horrida.*

In the Spinose Parthenope, the carapace approaches to a five-sided figure, rather wider than its length, moulded into a series of the oddest imaginable protuberances, and covered with knobs, tubercles, and spines. The beak is sharp, short, pointed, and has a strong tooth just between the antennæ. The claw-legs are very large, armed with powerful forceps at their extremities, and covered thickly with a multitude of knobs, spikes, and protuberances. The hinder limbs are comparatively small, but yet are strongly made, and armed with a whole array of thorny spines, so that, what with the claws and what with the spines, the creature is a truly formidable being, and one that may not be grasped with impunity by a careless hand.

This species inhabits some of the hotter parts of the world, and the individual from which the sketch was taken was procured from the Mauritius. It may here be mentioned that the illustrations of the crustacea have been taken from actual specimens, and that the originals may in almost every instance be found in the British Museum.

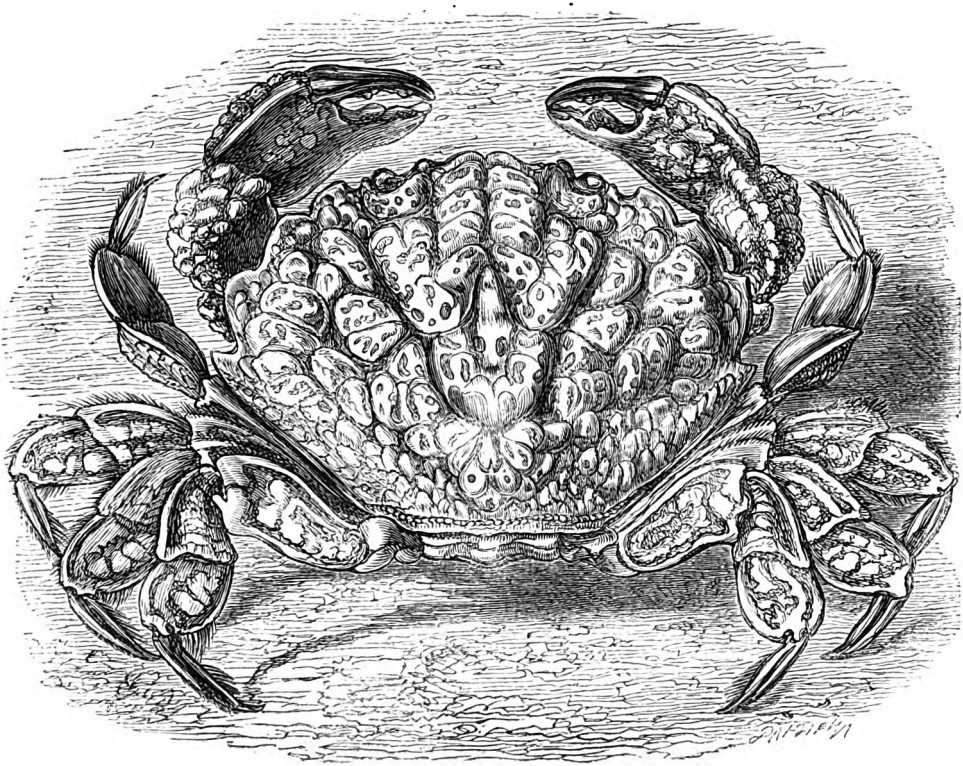


EDIBLE CRAB.—*Cancer pagúrus.*

THESE two figures represent the common EDIBLE CRAB, or PUNGER CRAB, so common on our shores. The upper figure shows a specimen whose back was covered with oysters that had fastened themselves to its shell. The original may be seen in the British Museum.

Crabs are caught for market in large round baskets with a hole at the top. Some fresh meat is put into the baskets, which are called "creels," "crab-pots," or "cruives," and the crabs enter in search of food. When they have fairly passed into the creel, they find themselves imprisoned, because the opening is funnel-shaped, and so made that, although it will allow the crab to enter, it will prevent the creature from getting out again. The crab is a very dainty creature, and if the bait should be in the least tainted, will not touch it.

These crabs love the shore, and generally inhabit the rocky parts of our coasts, well below low-water mark. The best fishing-grounds are exceedingly valuable, and it is curious how crabs will resort to some favourite locality, fresh comers supplying the place of those which are taken.

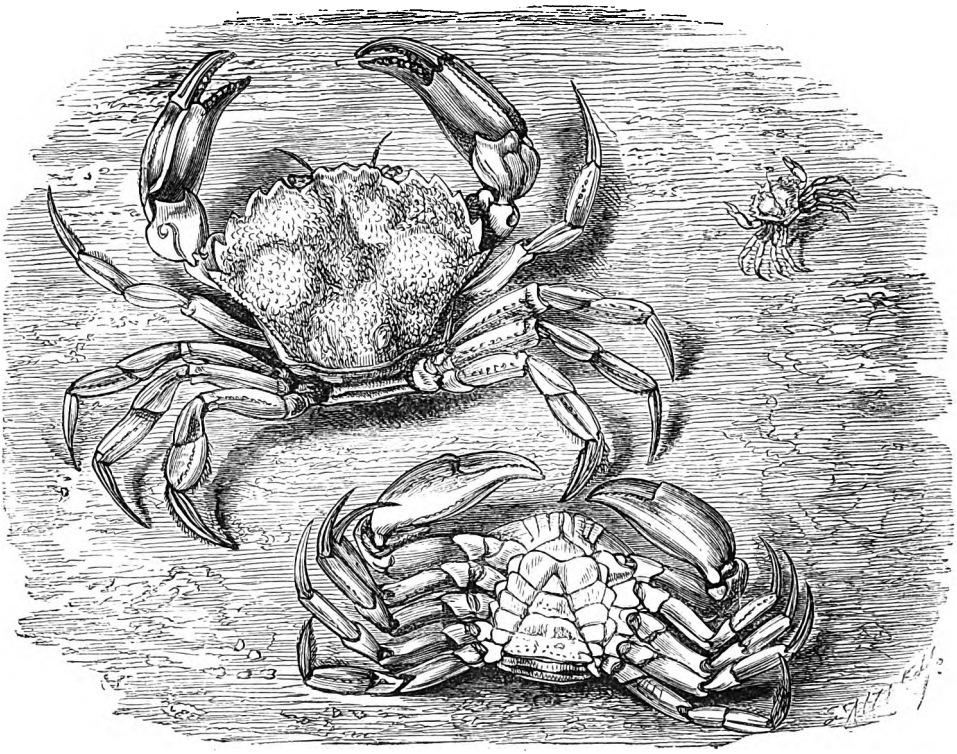


BRASSY CRAB.—*Zózymus Æneus.*

THERE seems to be scarcely any limit to the strange shapes which are assumed by the Crabs, and the wonderful diversity of their colours and markings. Unfortunately, none of the more beautiful colours retain their hue after death, and many creatures which are radiant with scarlet, azure, green and gold during their life-time, change in a few hours after death to dusky brown, black, and grey.

The BRASSY CRAB belongs to the same family as the Edible Crab, but differs from it in one or two peculiarities. It derives its name from the shining yellow of its armour.

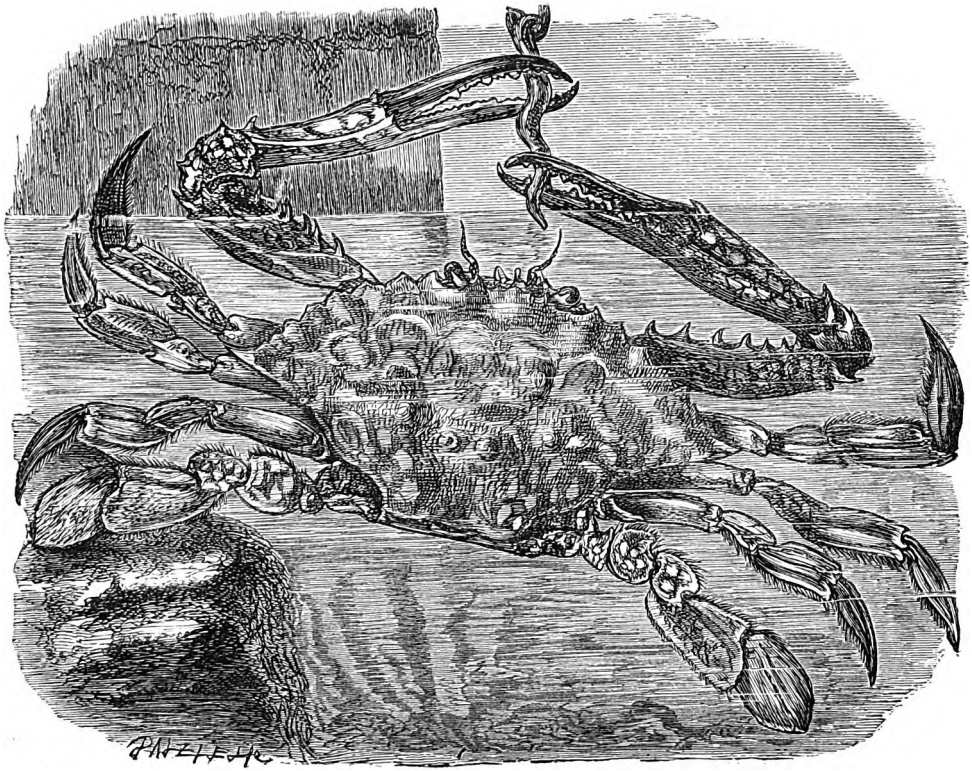
The general shape of the Brassy Crab can be seen by reference to the engraving, as well as the curious protuberances into which the carapace is moulded, and which cover the claws and legs. The sketch is taken of the natural size of an ordinary specimen, and the original was captured off the Mauritius.



GREEN CRAB.—*Cárcinus mænas.*

THE GREEN, or SHORE-CRAB, is familiar to every one who has passed even an hour on the coast between the time of high and low water. Although one of the commonest of our native crustaceans, it is at the same time one of the most interesting, and, owing to its diurnal habits, its fearless nature, and its love for the shallow waters, it is very easily observed. I have spent many a pleasant hour in watching the habits of this little creature, and could hardly have imagined the activity, the piercing sight, and the cleverness with which this crab is endowed.

It is a fierce and even voracious animal, chasing and fairly running down living prey, and actually leaping upon its victim with a spring like that of the hunting spider. I have seen the Green Crabs run after and catch even the active sand-hoppers, calculating with nice precision the spot on which they alighted, and pouncing on them before they could get themselves into position for a second leap. If the prey should be of tolerable size, the crab does not leap at it, but darts out one of its claws with a stroke so sharp and quick, that the eye can scarcely follow it, and as true of aim as the serpent's dart, draws back the victim, seizes it immediately with the other claw, and begins to pull it to pieces before it can recover from the shock.

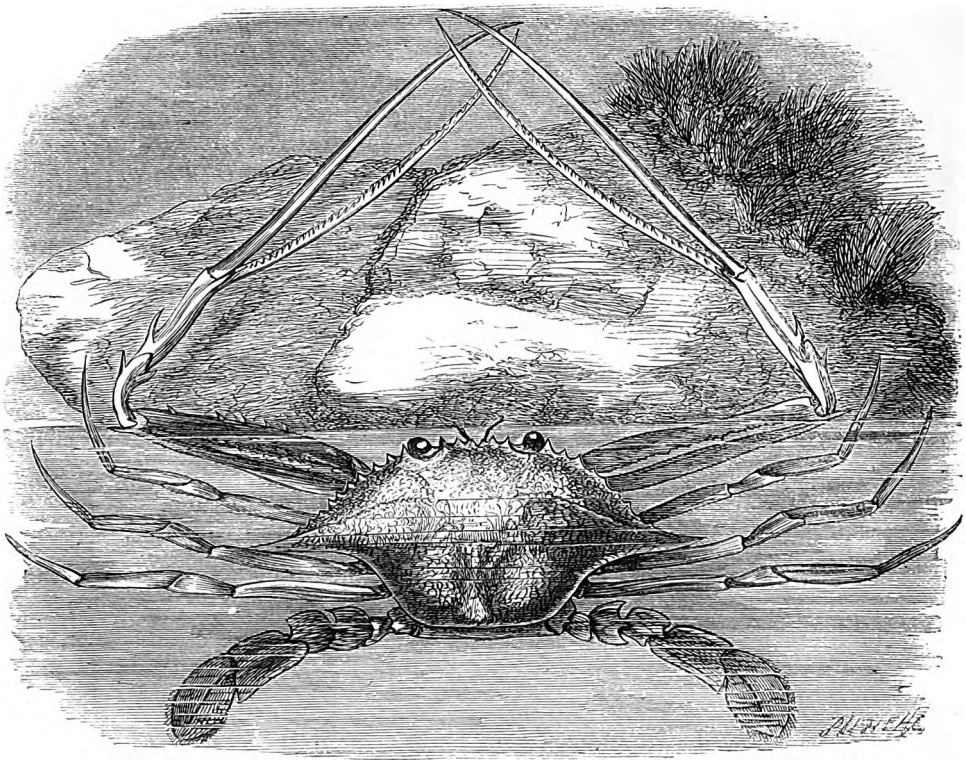


OCEANIC SWIMMING CRAB.—*Neptúnus pelágicus.*

The Oceanic Swimming Crab is a really remarkable creature, being one of the very best swimmers among the crustaceans.

If the reader will look at the last pair of legs, he will see that their tips are very wide and flat. These limbs are used as oars or paddles by which the creature urges its swift course through the sea. Not even the fishes themselves are better swimmers than this crab, which boldly launches itself into the deep seas, and darts through the water with a course as swift and direct as the swallow's flight.

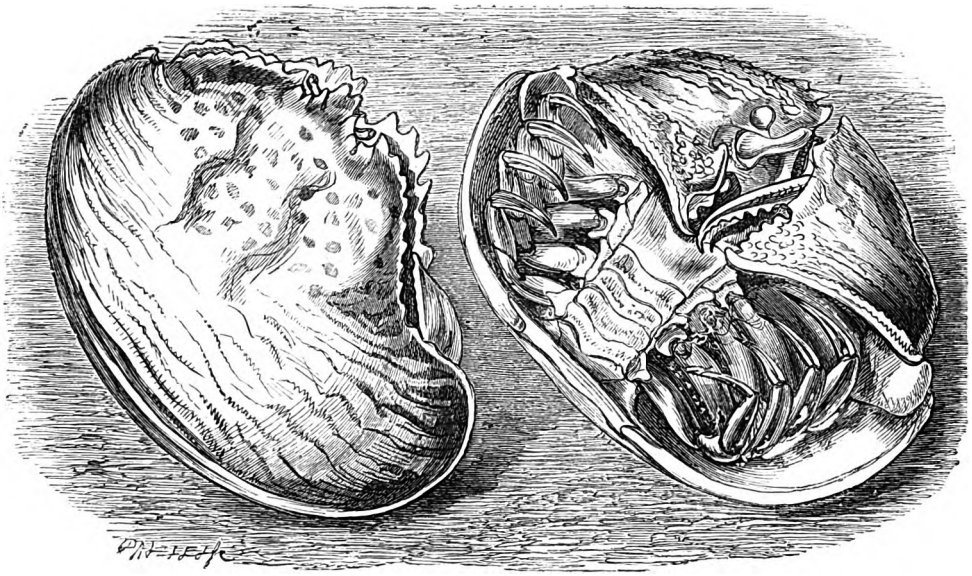
It is a rapacious and always hungry creature, feeding upon various inhabitants of the ocean, and chasing them through the sea just as the dragon-fly pursues its prey through the air. It seems to need little rest, and indeed seldom requires any other support than that which is afforded by the floating sea-weeds. This crab is only found in the warmer parts of the earth, and is not seen in England.



FORCEPS SWIMMING CRAB.—*Lupa forceps.*

THOUGH not possessed of the power with which some crabs are armed, the FORCEPS-CRAB is yet as terrible an enemy to the inhabitants of the sea, for it can dart out these long claws with a quick rapidity that almost eludes the eye, and grasps its prey with unerring aim.

No one who has not watched the crabs in their full vigour and while enjoying their freedom, can form any conception of the many uses to which the claws are put, and the wonderful address with which they are used. Their bony armour, with its powerful joints, appears to preclude all delicacy of touch or range of distinction, and yet the claws are to the crab what the proboscis is to the elephant. With these members the crab can pick up the smallest object with perfect precision, can tear in pieces the toughest animal substances, or crack the shell of other crustaceans as a parrot cracks a nut in its beak. It can direct them to almost every part of its body, can snap with them like the quick sharp bite of a wolf, or can strike with their edges as a boxer strikes with his fists.

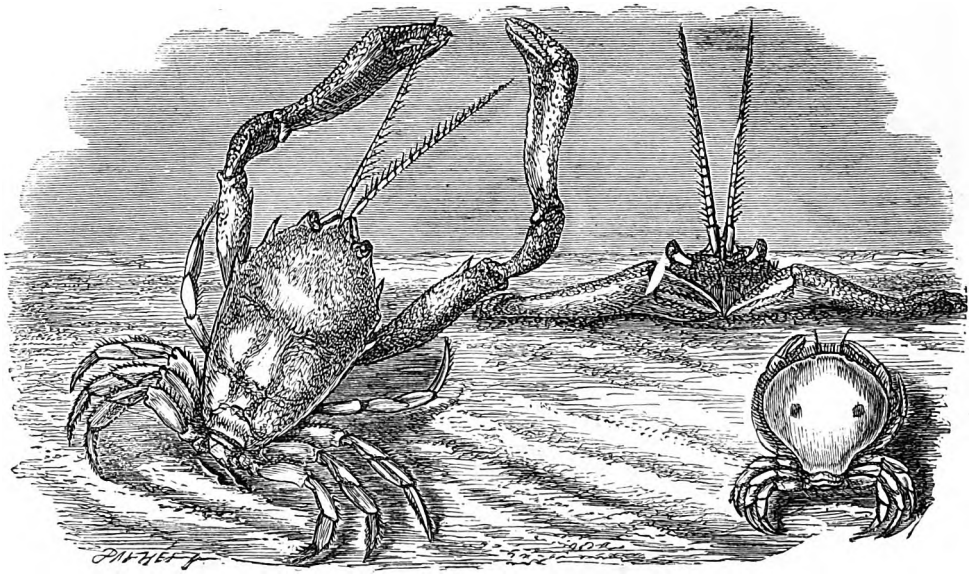


TORTOISE CRAB.—*Cámara Calappa.*

The Tortoise-crab is so called on account of the large and rounded shell, and the short limbs, all of which can be tucked under the shell, just as a tortoise conceals its head and legs. Indeed, it is able to hide its legs even better than many of the tortoise tribe, and, with the exception of the box tortoise, can rival any of them in this capacity.

The claw-feet are large, and the claws themselves are so flat and so strangely shaped that they fit closely to the shell without interfering with its general outline. The upper edge of the claws is deeply toothed, and when the joints are closed, it forms a crest, something like a cock's comb. When its limbs are folded closely, the creature hardly looks like a crab, and much more resembles a loose stone, with its surface worn smooth by the action of the sea.

This species is found in the Mauritius. The French call it the Bashful Crab, because it hides all its limbs under the shell, as if it were ashamed to show them.

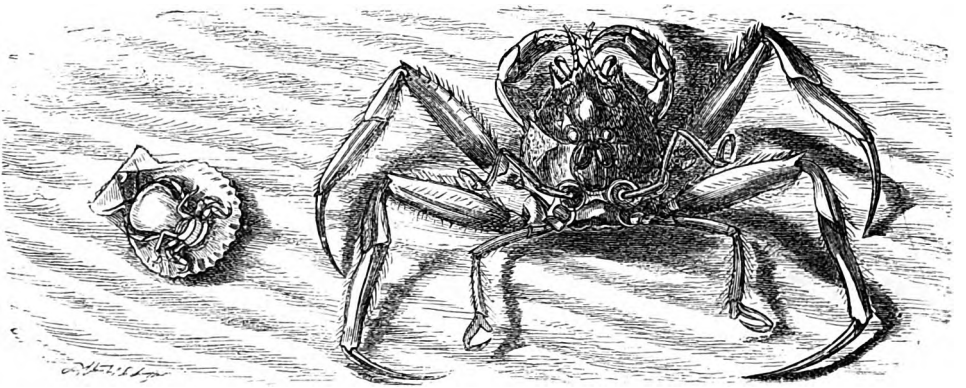


MASK-CRAB.—*Corystes Cassivelaunus.* POLISHED CRAB.—*Thia polita.*

THE MASK-CRAB derives its name from the curious aspect of its body, which is so moulded, that, on its upper surface, it presents a faint resemblance to a human face. Two figures of this crab are given, the one to show the mask, and the other to exhibit the strange attitude in which it sits, nearly buried in the sand, expecting its prey. The whole body is much beneath the surface, and only the antennæ, snout and claws are left at liberty.

The smaller figure on the right hand is the POLISHED CRAB, so called from the smooth, shining surface of the carapace.

Although this is one of the British species, it is not very commonly found, probably on account of its habit of burying itself rather deeply in the sand, so that the eye cannot perceive it, and the dredge passes over its sunken body without sweeping it into the net. It is rather a pretty little crab, though unfortunately its beauty is only skin-deep, and perishes after death. When living and in good health, the carapace is of a soft rose colour, and has a very pleasing appearance; but when the shell is emptied of its contents, or even after the death of the inhabitant, the pink hue rapidly fades into the dull greys so prevalent among dead crustaceans. In the Mediterranean the Polished Crab is very plentiful.



SCALLOP CRAB.—*Caphýra pectenícola.*

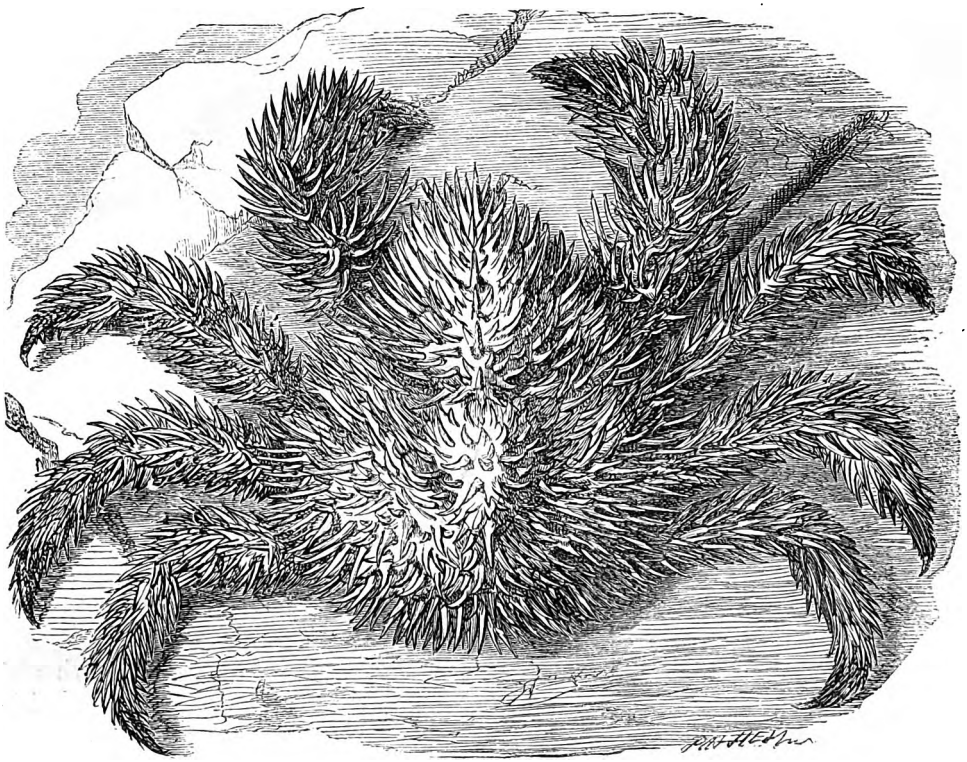
WOOLLY CRAB.—*Dorippe lanáta.*

We now come to another family, of which the Woolly Crab is an excellent type.

This creature derives its name from the coating of thick, short hair with which its body is covered. All the species of this genus possess several peculiarities; at each side of the shell, and just at the base of the claw-legs, is an aperture that looks as if it had been cut for a button-hole, and partly closed with a membrane. These apertures are, in fact, the openings through which the water passes for the purpose of supplying the gills with the needful moisture, and allowing it to escape when it has performed that office.

The limbs are very remarkable, both as to their shape and their disposition; they are unequal in size, and the two last pairs are elevated on the back in a very curious fashion. At their tips is a large hooked nail, which is jointed to the limb, and can be folded back so as to take a firmer grasp. The Woolly Crab seldom approaches the shore, but prefers the deeper waters, and is only to be caught by a dredge with a very long line. On account of its locality, very little is known of its habits, though much is conjectured. It is mostly found in the Mediterranean.

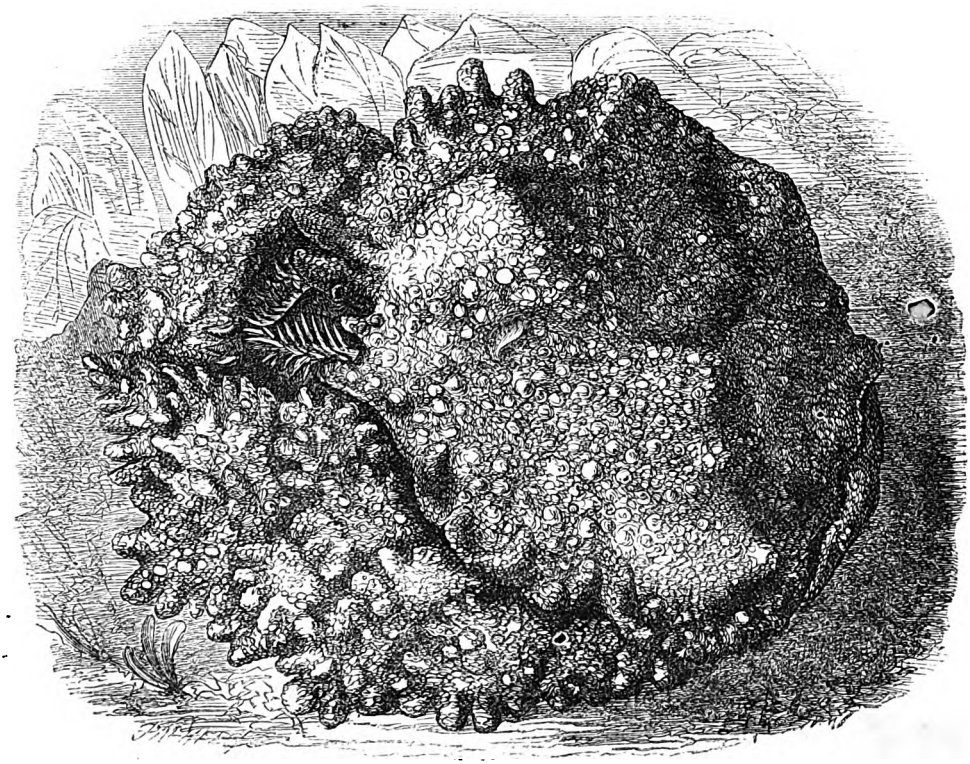
On the left-hand of the illustration may be seen a small scallop shell, with a very little crab lying inside it. This is the Scallop Crab, so called on account of its habits. The general shape of this crab is not at all unlike that of the pea-crab, which has already been described.



PORCUPINE CRAB.—*Lithodes Hystrix.*

THE strange-looking creature which is represented in this illustration derives its name from the extraordinary number of thorny points with which it is armed, and which bristle from the whole of its body and limbs like the quills of the porcupine. It is a native of Japan, and is very slow and cautious in its movements, crawling over the ground with a sluggish and dull action of its limbs.

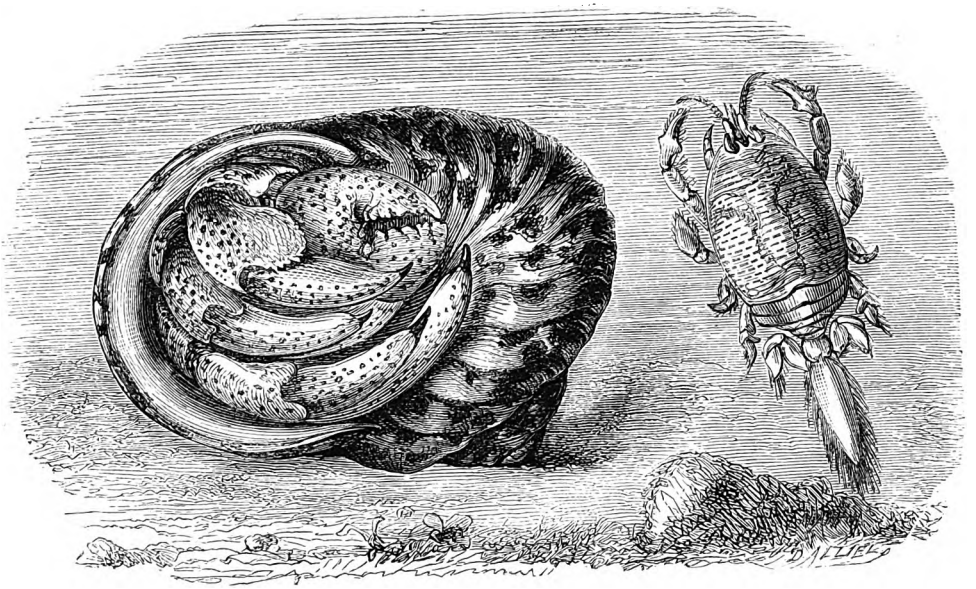
Another species of this genus, fabulously called the NORTHERN STONE CRAB, is common on the English coasts. It is also covered with stout and sharp spines, but, nevertheless, is eaten by many fish. When first taken from the water, it is of a bright scarlet colour, and may be known by its long beak with two teeth on the end.



NODULED CRAB.—*Echidnócerus cibárius.*

THE NODULED CRAB, instead of being covered with thorny points as in the stone-crabs, has its entire carapace, limbs, and claws so studded with tubercles, that it can scarcely be recognized as a living creature, and looks more like a rough stone encrusted with marine growths. The carapace is rather triangular in form, but its sides are so scooped into hollows and projections, its surface so moulded into elevations and depressions, and its shell covered with knobs of various shapes and sizes, that its true proportions are not easily distinguished.

The specimen which is shown in the illustration is given for the purpose of exhibiting the remarkable aspect assumed by this crab while at rest, the limbs being tucked away under the body, and the large arms thrown forward so as to protect the eyes and front, and to be ready for seizing prey. The Noduled Crab is found in the Columbia river.



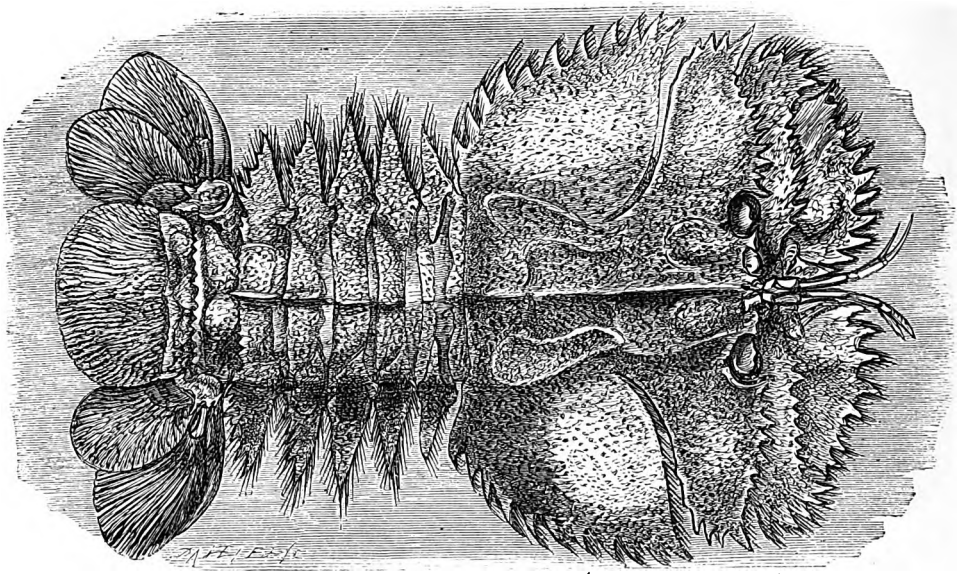
DIOGENES HERMIT CRAB.—*Cenobíta Diogenes.*

OAR-FOOT CRAB.—*Rémipes testudinárius.*

We have in these two engravings some examples of the curious Hermit Crabs. These creatures are remarkable for having very soft tails without horny armour, and are therefore obliged to shelter themselves by thrusting their tails into the deserted shells of various molluscs. The common Hermit Crab of our own shores employs for this purpose the shells of the whelk, the purpura, the top, the periwinkle, and similar molluscs, changing from a smaller to a larger shell in proportion to its growth.

The great Hermit Crab, on the last page, 228, is a native of the Mediterranean, and, when full-grown, inhabits the shell of the Triton. They are very quarrelsome creatures, and the reader will notice that one of them has pulled the other out of its shell, and flung it upon a shelf of rock. The Diogenes Hermit Crab is a native of the West Indies, and is remarkable for its power of clambering into trees.

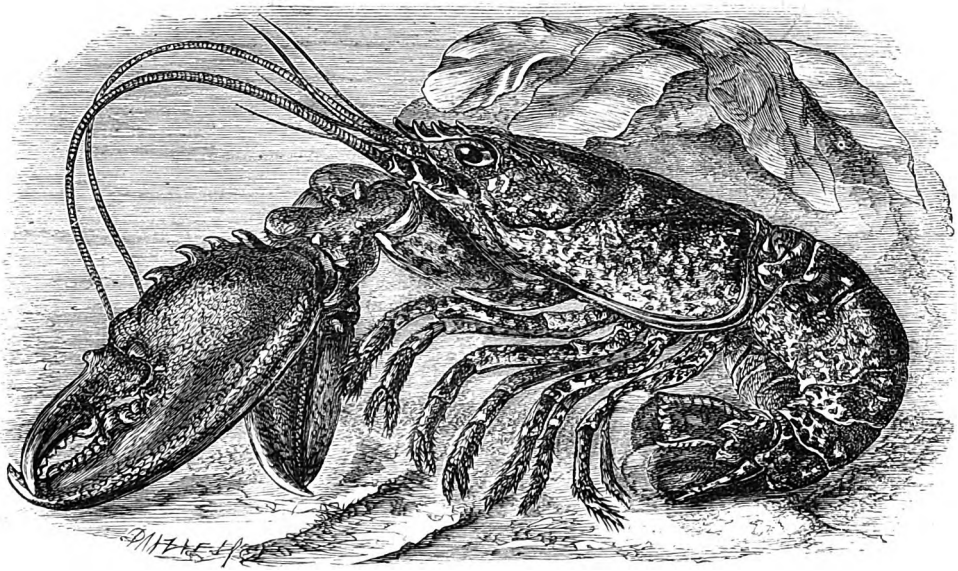
The Oar-Foot Crab is found in New Holland, and is worthy of notice on account of the manner in which the end of the tail is flattened into a paddle.



SPOTTED IBACUS.—*Ibacus ciliátus.*

Next in order to the Hermit Crabs, comes a group of crustaceans called Plated Lobsters, because their bodies are covered with wide and strong plates like those of ancient armour. Several of these beings inhabit the English coasts, among which we may notice the common Plated Lobster, so beautifully coloured with red and blue. It is a dull, sluggish animal, only being able to crawl backwards, and seldom curling the tail to rise above the bed of the sea in which it crawls. By flapping its tail, however, it is able to dart along rapidly, and can then escape from many of its enemies.

The Spotted Ibacus is found in Japan, and is a very pretty creature, its colour being red, covered profusely with blue spots. It attains to a tolerable size, and is eaten by the natives. This species may be known by the enormous width of the shield that covers the head, which is so extremely broad that it completely hides the legs when it is seen from above.



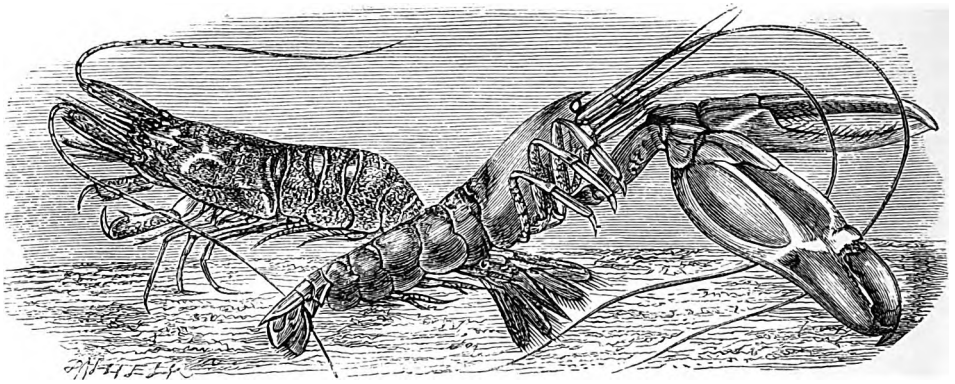
LOBSTER.—*Homarus vulgáris.*

THE COMMON LOBSTER is too well known to need any description.

This useful creature is plentiful on many of our coasts, though a very large proportion of the lobsters sold in our markets are brought from Norway. They are caught mostly in certain traps made of basket-work, and having an entrance so constructed that when the lobster has once pushed its way through the opening, it cannot possibly return. These traps are baited with any kind of meat or butcher's offal, and in good spots will produce a valuable cargo of lobsters.

In former days, the fishermen were accustomed to drive a peg into the joint of the lobster's claw, to prevent it from biting them. This, however, was not only a most cruel process, but also was very injurious to the lobster, causing it to pine away, lose weight, and at last become unfit for sale. Now, the fishermen are forbidden to use pegs, and tie up the claws with string.

When the lobster is alive and well, its colour is nearly black, in some cases having a deep green tinge. But when boiled, or put into spirits of wine, the colour changes to red.



COMMON SHRIMP.—*Crangon vulgáris.*

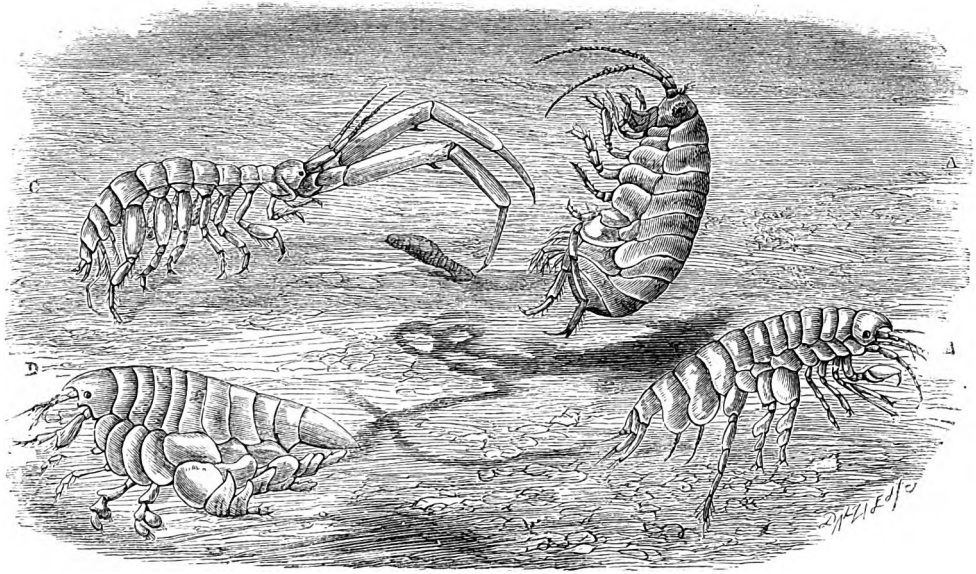
SHORT-BEAKED RED SHRIMP.—*Alphéus brevirostrátus.*

The Shrimp, which is so familiar on our tables, and which, until the marine aquaria became so common, was equally unknown in its living state, inhabits our shores, where it is produced in countless myriads.

In every little pool that is left by the retiring tide, the Shrimps may be seen in profusion, betraying their presence by their quick darting movements as they dash about in the water and ever and anon settle upon some spot, flinging up a cloud of sand as they scuffle below its surface, their backs being just level with the surrounding sand. In consequence of this manœuvre, the fishermen call them "sand-raisers." The small Prawns are often confounded with the Shrimps, and popularly called by the same title. They can, however, be easily distinguished from each other, the beak of the prawn being long, and deeply saw-edged, while that of the Shrimp is quite short.

While living, the Shrimp wears tints so exactly like those of the sand, that when it is lying motionless, it harmonizes exactly with the tawny bed of the sea, and cannot be discerned except by a practised eye. When boiled, it does not change to so bright a red as is usually the case with eatable crustacea, but assumes a duller and more opaque hue. The Short-Beaked Red Shrimp is a native of Japan, and derives its name from the peculiar shape of the beak or snout, which is, on the whole, very smooth, very short, and looks as if it had been cut off with a knife. It has very large claws, and one of them is always much longer and more powerful than the other.

Two species of this genus are found on the British coasts—one of them, called the Scarlet Shrimp, being a very handsome creature, of a deep scarlet, except the claws, which are yellow.



A. SAND-HOPPER.—*Talítrus saltátor.*

B. KROYER'S SAND-SCREW.—*Króyera arenária.*

C. PERNYS.—*Corophium longicorne.*

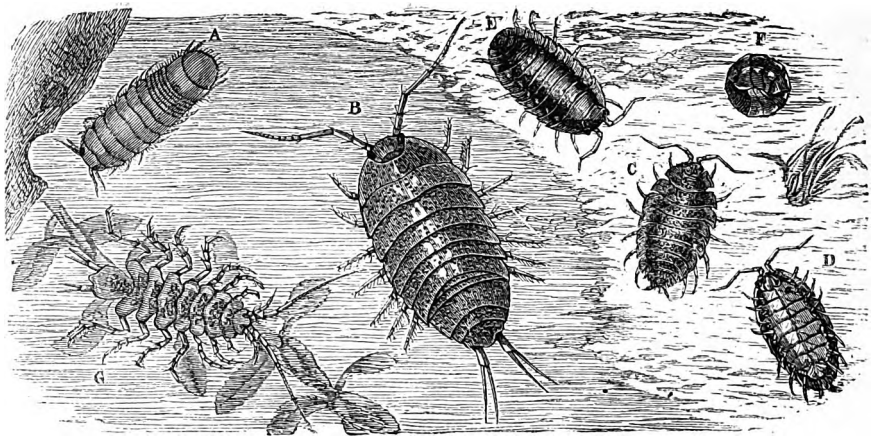
D. SAND-SCREW.—*Sulcátor arenárius.*

ALL the preceding crustaceans have their eyes placed on footstalks, but those that are here figured have their eyes set directly on the surface of the shell.

All these little creatures are found on our own shores. The SAND-HOPPER or SAND-SKIPPER is well known to everyone who has walked on a sandy shore, especially as the tide is coming up. Thousands of Sand-hoppers then appear, leaping into the air, and skipping about with wonderful agility.

The SAND-SCREWS are so called because they do not hop about, but when they are taken out of the water and laid on the sand, they merely wriggle along with a screw-like movement, lying on their sides and kicking with their oddly-shaped legs. They make curious grooves in the sand as they go along, one of which is shown in the illustration.

The LONG-HORNED COROPHIUM is so called from the enormous size of its antennæ or horns, which look like legs, and are used as such. This creature feeds upon the sea worms that frequent the shores, and is very voracious indeed, even the great lug worm being sometimes attacked by thirty or forty of these creatures, and eaten in spite of its struggles. During the winter it lives in the mud, into which it burrows deeply.



GREAT SEA-SLATER.—*Lígia oceánica.*

GRIBBLE.—*Limnoria térebrans.*

WATER HOG-LOUSE.—*Asellus aquáticus.*

ARMADILLO WOODLOUSE.—*Armadillo vulgáris.*

WOODLOUSE.—*Porcellio scaber.*

The creatures that are seen in this illustration are very numerous, and many of them are familiar to us under the title of Woodlice or Slaters.

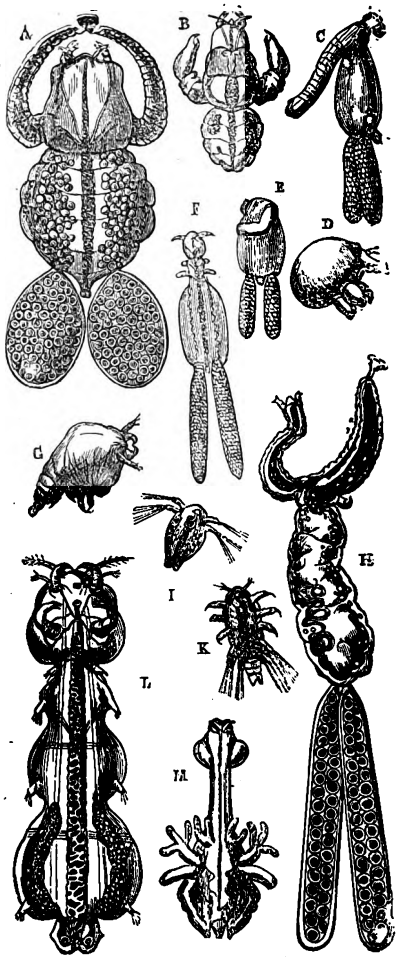
Fig. A is the Gribble, a marine species, terribly destructive in timber, boring shallow tunnels through it, and making it as thin and weak as a honeycomb. Fig. B is the Great Sea-slater, a creature that is very common on the sea-shore, and mostly hides under stones, so that in spite of its numbers it is not often seen unless the stones are turned over. Figs. C and D represent the common Woodlouse, so plentiful in our gardens, and so fond of eating any pieces of timber that may be within its reach. At Figs. E and F are shown the common Armadillo Woodlouse, so called from its power of rolling itself into a ball-like form, resembling that of the armadillo. One figure shows the appearance of the creature when rolled up, and the other when walking. Fig. G represents a rather curious being called the Water Hog-louse, which is found, not in salt, but in fresh water.

All these curious beings are found upon fishes.

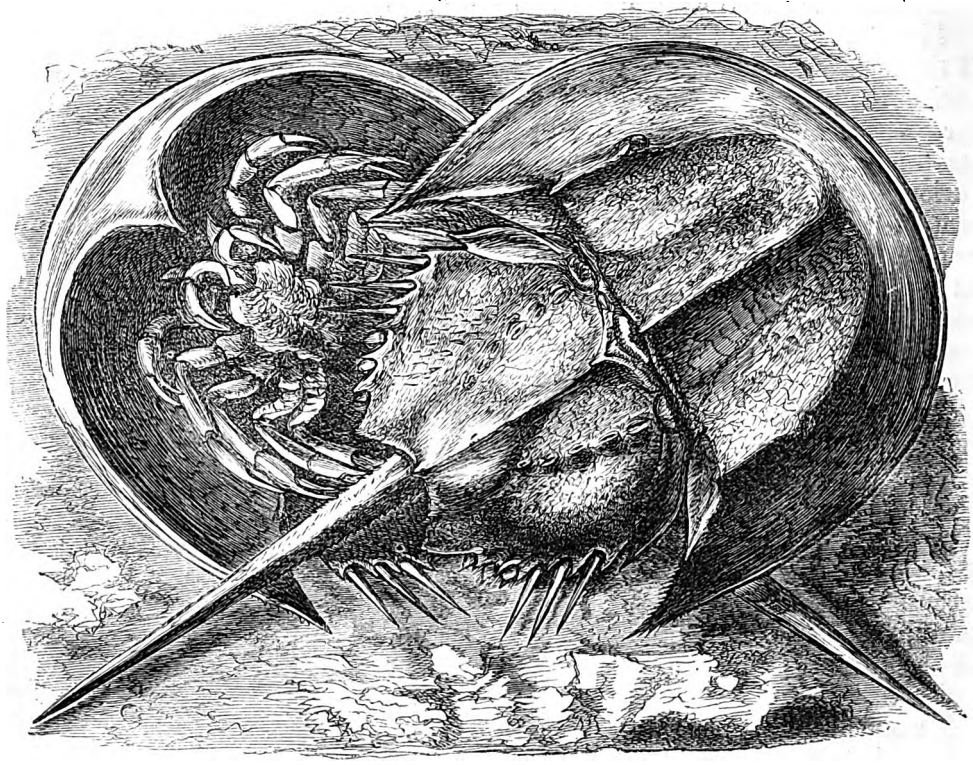
Fig. A represents the Perch-sucker, and Fig. B the male of the same species. The reader will notice the strange formation of the female, and the great dissimilarity between herself and her small mate. Fig. C exhibits an example of a curious genus termed Anchorella, in which the arm-like appendages are very short, and united from the base, so as to look like a single organ. At Fig. C is seen the female. In this species the body is white, and the short arms end in a rounded knob. This creature is rather more than half an inch in length. At Fig. D is shown the male of the same species, which would hardly be recognized as having any connection with the long-bodied creature that has just been described. The length of the male is about the forty-eighth of an inch in length. At Fig. E is another species of the same genus, *Anchorella rugósa*, so called because the body is notched at the side. This creature is about the seventh of an inch in length. All these creatures infest the cod, haddock, and similar fishes.

A wonderful example of a parasitic crustacean in several stages of development is seen at Figs. H, I, K. This is the *Tracheliastes*, with its long egg-bags and strangely-developed upper extremity. At Fig. I is seen the same creature when very young, and at Fig. K it is again shown, though of larger size.

In the next tribe of Entomostraca the head is kept buried in the tissues of the animal to which the parasites cling, and is there held firmly by some horn-like processes that spring from the back part of the head. They are, in fact, living spears, the barbed heads being sunk into their prey. Two curious forms are shown at Figs. L and M. The former represents the female of *Lamprogléna pulchella*, and is given in order to show the under surface of the body and the small pairs of feet. Fig. M represents the *Lerneéntoma asellina*. This is also a female.



A. *Acthéres percárum.* (Female.)
B. *Acthéres percárum.* (Male.)
C. *Anchorella uncináta.* (Female.)
D. *Anchorella uncináta.* (Male.)
E. *Anchorella rugósa.* (Female.)
F. *Lernéntoma cornúta.* (Female.)
G. *Lernéntoma cornuta.* (Male.)
H. *Tracheliastes polycolpus.* (Female.)
I, K. *Tracheliastes polycolpus.* (Young.)
L. *Lamprogléna pulchella.* (Female.)
M. *Lernéntoma asellína.* (Female.)



LONG-TAILED MOLUCCA CRAB.—*Límulus longispínus.*

The Long-tailed Molucca Crab, or King Crab, is remarkable for the very broad shields of its body, and the long and sharp spine which projects from the shell. These creatures, of which several species are known, can easily be recognized by their general shape. Though perfectly harmless, the King Crabs can be made very offensive, for the natives of Molucca are accustomed to use the long sharp tail spine as the head for an arrow or lance, and thus make a most formidable weapon. Many of these crustacea attain the length of two feet, so that the spike is nearly a foot in length, and is capable of inflicting a deadly wound.

The edges of the hinder portion of the shield are deeply toothed, and the space between each tooth is occupied by a rather long and sharply-pointed spine, which is not fixed, but is movable on its basis. The feet are mostly furnished with tolerably strong claws.

The Molucca Crabs often leave the sea and crawl upon the sand, where they may be taken without much difficulty. They cannot endure the heat of the sun's rays, and are accustomed to burv themselves in the sand.

BARNACLES.

In the illustration upon the preceding page we have several examples of the remarkable crustaceans that are popularly known by the name of Barnacles.

All these creatures pass the greater portion of their life in a state of repose, being tightly fixed to some object and entirely unable to move from the spot. But during the first period of their existence, they are able to swim freely through the water in whatever direction they like, and their forms are so utterly unlike those of the maturer individuals, that they would not be recognized except by those who were acquainted with their history. The different objects on which the Barnacles rest will be mentioned while describing the different species.

In the upper left-hand corner is seen a group of the Goose Mussel or Duck Barnacle, so called because the earlier voyagers thought that the Barnacle Goose was hatched from this crustacean, the fringed legs being the feathers, and the shells the wings. This species is found mostly on timber, and has a very curious effect, as its long snake-like footstalks twine about in the water and the beautiful fringed feet are continually thrown out like a net for the purpose of catching prey. This species is also found on ships, boats, whales, turtles, and even upon the water snakes.

The Eared Barnacle, which is seen in the centre, derives its name from the curious projections on each side, that stand out like the ears of a donkey. The Bell Barnacle and Parrot's Beak Barnacle derive their name from their shape, and are both used for the table. The latter species sometimes attains an enormous size, being four or six inches high, and three or four inches in diameter. It is found in South America.

The common Acorn Barnacle is very plentiful on our own coasts, and covers the rocks, the stone-work of the harbours, the sunken piles of piers, and, indeed, almost everything that rests in the sea.

The Coral Barnacle lives in masses of coral, and the Coronet Barnacle takes up its residence in the skin of whales that inhabit the Northern seas. The Burrowing Barnacle makes use of the same localities, except that it prefers the whales of the Southern seas, into which it burrows for some inches.

SPIDERS.

We have here several examples of the Spiders, the artist having selected some of the strangest species of that strange race.

The spiders are spread all over the world, and are well known for their destructive and voracious habits. They all feed upon other creatures, and have various methods of catching their prey.

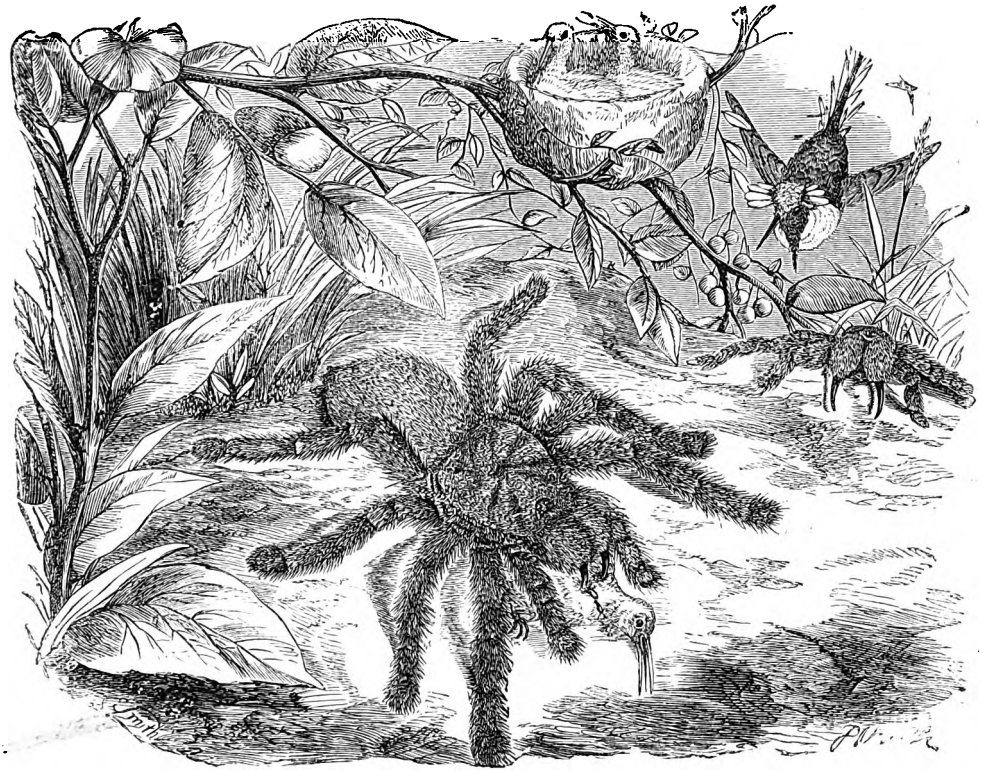
Some spiders spin and weave most elaborate and beautiful webs, in which the flying insects are caught; others lay regular snares on the ground, and as soon as an unfortunate insect catches its leg in one of their lines, they rush at it, tie it down with their silken threads, and so eat it leisurely. Others spin no webs for this purpose, but catch their prey by fair chase, running after them like the Wolf Spiders, or crawling up and suddenly jumping on them like the Hunting Spiders, the very Chetahs of this race.

In this illustration we have examples of several kinds of spiders.

Four of these specimens are remarkable for the long horns that project from their bodies, or the extraordinary shapes which they assume. All these creatures inhabit the hottest parts of the earth, and are not only to be admired for their strange forms, but for their magnificent colouring. In England the spiders are mostly sober in their colouring, but these creatures are like living gems flashing in the sunbeams. Their bodies glitter as if made of burnished gold or silver; and the fiery crimson of the ruby, the tender blue of the sapphire, or the beaming green of the emerald find their equals in the bodies of those spiders.

The large spider on the right-hand is the well-known Trap-door Spider, so celebrated for its silk-lined tunnel, and the hinged trap-door which closes the entrance In this case the spider is represented as opening the door previous to entering. The door is made of earth, bound together with silk, and is so admirably constructed, that it can hardly be distinguished from the surrounding surface of the ground.

The spider in the left-hand corner is remarkable for its extraordinary speed, and the manner in which it can run either backward or forward with equal agility. It grows to a large size, and as it runs over the floor, might easily be mistaken for a mouse.

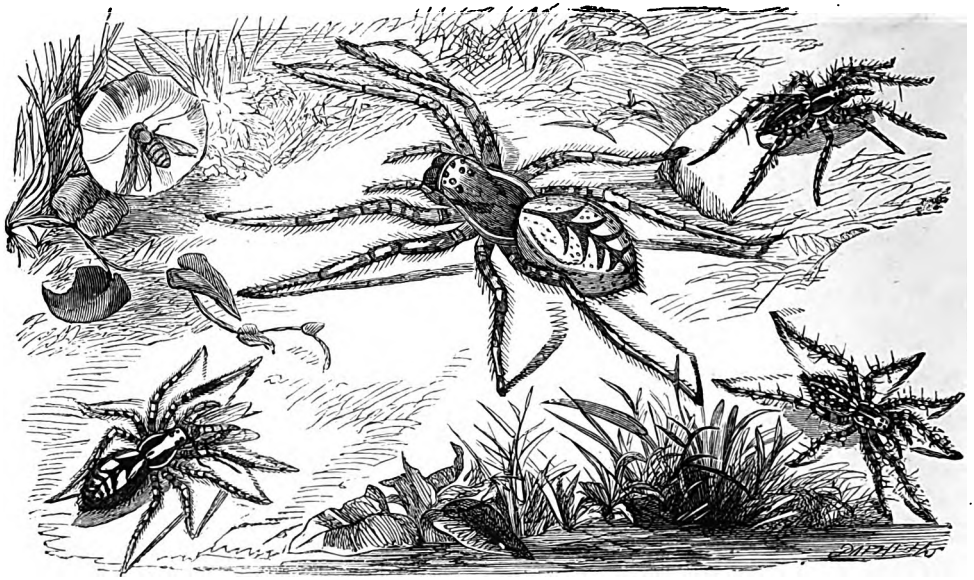


CRAB-SPIDER, OR MATOUTOU.—*Mygale Cancérides.*

THE GREAT CRAB-SPIDER, OR MATOUTOU, is one of the most formidable of its race, growing to an enormous size, possessed of terrible weapons, and being as fierce and vicious as it is large and powerful. This spider belongs to a family of which we have a British representative, and which may always be known by the position of the fangs, which are bent downwards instead of working sidewise. The reader may observe that the two sharp fangs of the spider are buried in the neck of the bird, and their general shape is well shown in the second spider that is coming up to contest the prey.

It is now known that these huge spiders are in the habit of destroying the young of several small birds, and even the tree bipeds so common in Martinique. It is very quarrelsome, and will fight one of its own kind in the most desperate manner, being pierced repeatedly by the fangs of the adversary, and still continuing its attacks.

This spider lives in holes in the ground, where it resides all day, and sallies out at night to search for prey.



WOLF-SPIDERS.

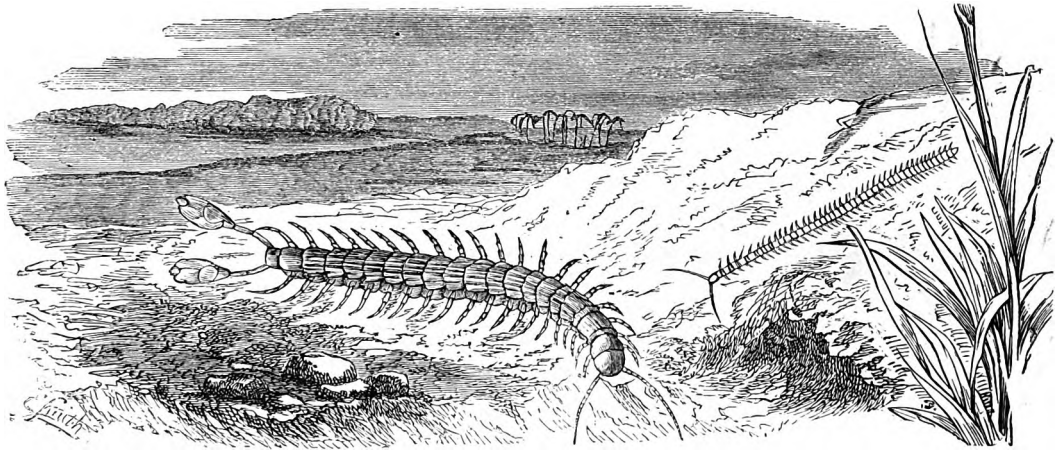
Lycósa andrenívora. *Lycósa tarántula.* *Lycósa saccáta.* (Female.)
Lycósa sacácta. (Male.)

On this illustration we have examples of some of the Wolf-Spiders, so-called because they chase their prey and catch it, just as a wolf pursues his victims.

The great spider in the middle is the celebrated Tarantula, so well known on account of the strange symptoms which were once thought to follow its bite. According to the earlier writers, when a man was bitten by the Tarantula he first fell into a state of dull melancholy, from which he could only be aroused by music. He would then jump about, dance and shriek, but as soon as the music ceased he would fall back into his former condition. If the musician could keep up the tune so long that the patient fell to the ground from sheer exhaustion, the cure was then complete, and when the patient recovered from his swoon he was quite well again.

The two figures on the right-hand of the engraving represent the common little Wolf-spider, so plentiful in our fields and woods, and which is seen in the month of June running about with a little globular mass of white silk, in which are enclosed the eggs. The spider is greatly attached to this little egg-ball, and if it be taken away from her will hunt over the ground in the most perplexed and anxious manner.

The left-hand figure represents another English species of Wolf-spider, which is in the habit of killing the solitary bees and similar insects as they settle on the ground or upon the lower leaves and flowers of plants.



RATTLESNAKE CENTIPEDE. LUMINOUS CENTIPEDE.

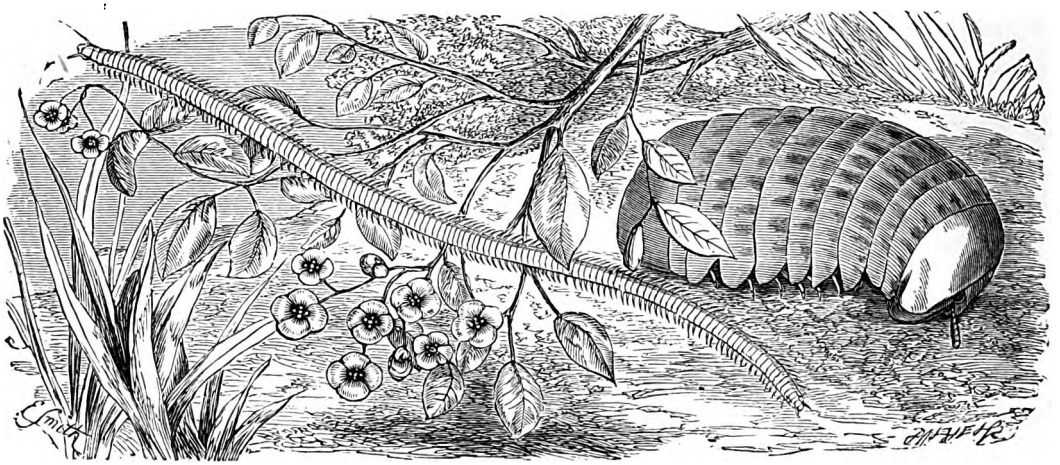
Eucórybas crótalus. *Arthronómalus longicornis.*

We now come to a group of animals that are called Myriapoda, or Myriad-footed, on account of the many legs with which they are furnished. The well-known centipedes and millipedes belong to this group.

Some of the centipedes that live in the tropical parts of the world are most formidable beings, the second pair of feet being made into hooked fangs which are toothed, and when they bite any object, serve to inject into the wound a little drop of terribly virulent poison. Some of these enormous centipedes measure a full foot in length, and their bite is quite as dangerous as that of the viper.

The lower figure in this illustration represents a rather remarkable species of centipede which is found in the South of Africa. It is not large, but it is notable on account of a slight rattling or clattering noise that it makes when it walks. This sound is occasioned by the curious formation of the legs, the upper joints of which are wide and flattened into a row of horny plates which strike against each other.

The smaller species represents another centipede, not less curious than the former. This is the Luminous or Electric Centipede, which is found in England. It is very plentiful in some places, and is of a yellow colour when seen by day, but at night throws out a strong blue light very like that of the glow-worm. Both these creatures are shown of their natural size.



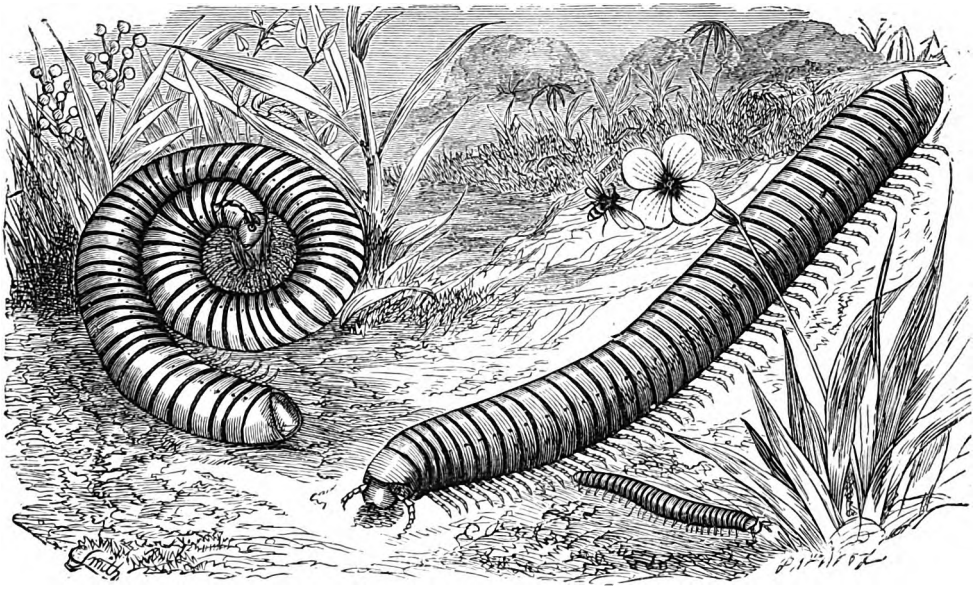
Gonybrégmatus Cumingii. *Zephrónia impressus.*

The two very dissimilar creatures which are shown on this engraving are yet members of the same group of animals.

The long, many-ringed, narrow-bodied species which extends nearly across the illustration, is remarkable for the enormous number of legs which it possesses and the length of its body in comparison to its width. The creature has no less than three hundred and twenty-two legs. The long and rather harsh name which is given to this species is derived from the Greek, and signifies "angle-headed."

The large, short-bodied, thickly-built species on the right-hand is one of the Millipedes which have the power of rolling themselves into a ball, like the hedgehog or the well-known pill-woodlouse. This is a native of Borneo, and has been hitherto unknown to science.

It is of rather sober hues, but tolerably well-looking, on account of the polished surface of the body and the warm reddish-brown of its colour. It is shown of its natural size. On almost every ring of the body there is a row of rather deep impressions.



Spirostreptes annulátipes. *Spirostreptes cinctátus.*

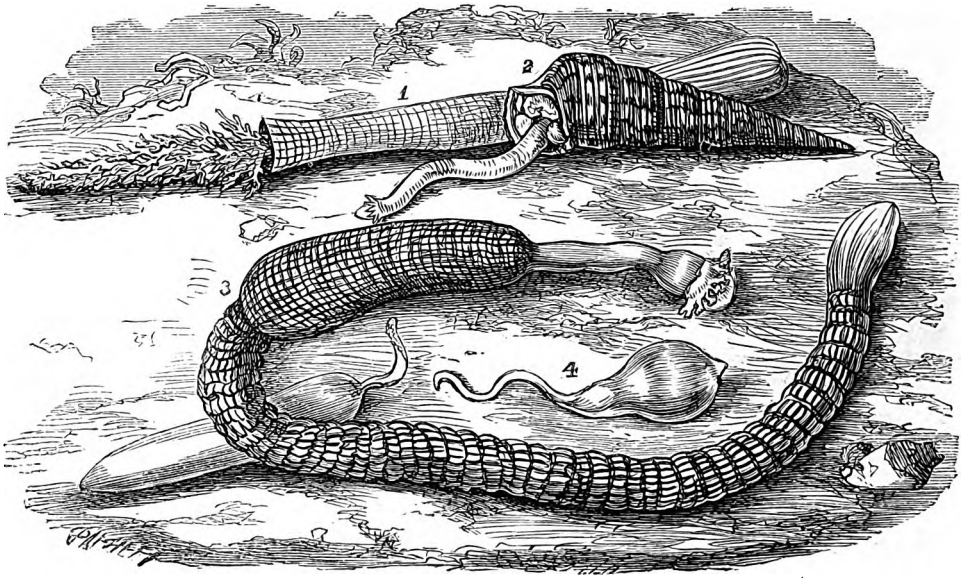
Julus terrestris.

Except in size, the three species shown in this illustration do not differ materially from each other, being all members of the same family.

The little species in the right-hand lower corner is the common Millipede, so plentiful in our gardens and outhouses. Like the generality of the Myriapods, it has a great dislike to light, and hides cautiously under the bark of fallen trees, in the crevices of rocks, under stones and in similar localities. It has a great number of tiny little legs, and, as it moves along, they have a curious appearance as if waves were rippling over them.

Both the larger specimens are natives of the hotter parts of the world. That on the right-hand is called *cinctátus*, or banded, on account of the dark bands which surround the body. It is a very large species, sometimes reaching a length of nine inches. Its colour is either reddish-brown or yellowish, and its body is covered with a series of drab bands.

The coiled species on the left-hand is of rather deeper colour, being red banded with black. Both these creatures are natives of India. The row of little dots along each side represents the openings of some glands, which force out a liquid of very unpleasant odour.



SHELL-BEARING SIPHUNCULUS.—*Siphúnculus Bernhardus.*

ROUGH SYRINX.—*Syrinx nudus.*

TAILED PRIAPULUS.—*Priápulus caudátus.*

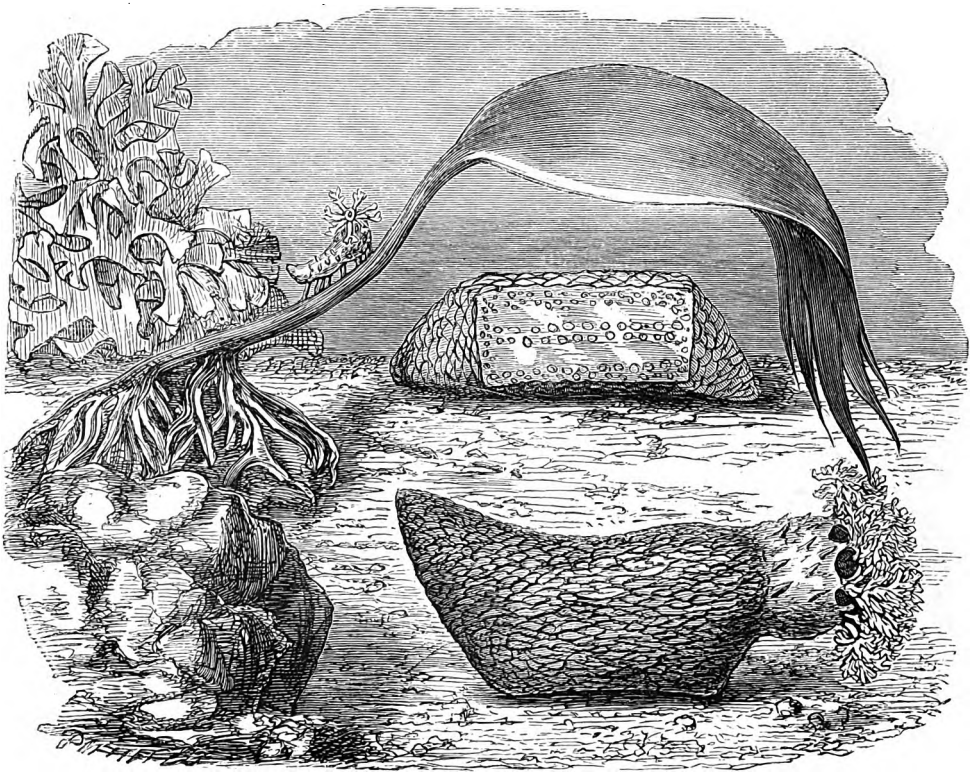
GAERTNER'S SPOON-WORM.—*Thalassema Neptúni.*

THE three next illustrations represent the great class of animals which are called Radiata, because their arms radiate, as it were, from a centre. They also belong to the order called by the other long name, *Echinodermata*, or "hedgehog-skinned," because their skins are covered with spines and points of more or less size.

The ROUGH SYRINX, or TUBE-WORM, is one of the deep sea species, and is sometimes taken in fishing-nets. It attains a length of eight or ten inches. The SHELL-BEARING SIPHUNCULUS is notable for its imitation of the custom adopted by the Hermit Crab, making its home in some shell. It is very ingenious in suiting the mansion to its own dimensions, and stops up the entrance with pieces of stone and sand when it is too large. In this case the creature has chosen a shell of the Turritella.

In the middle of the illustration are seen two figures of the same species, called GAERTNER'S SPOON-WORM. This curious being is able to change its form in a most wonderful manner. It is called Spoon-worm, because its mouth is furnished with a spoon-shaped appendage.

The TAILED PRIAPULUS is so called on account of the tail-like appendage, which is composed of a number of threads, and is supposed to act as an organ of respiration.



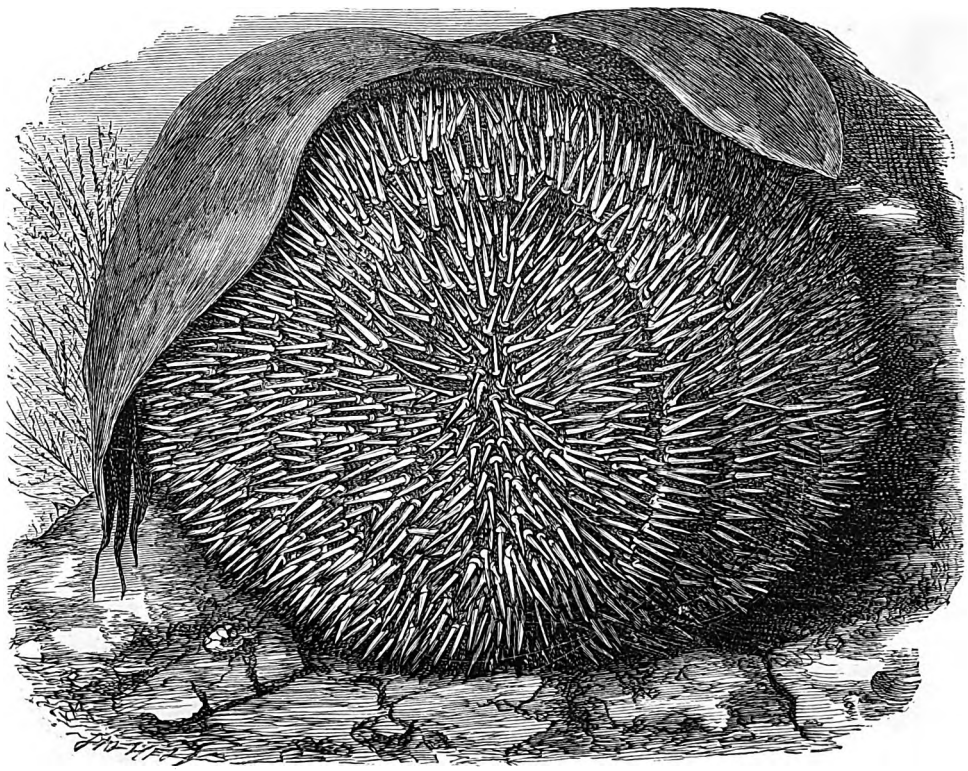
SNAIL SEA CUCUMBER.

Psolus Phántapus. *Psolínus brevis.*

THE SNAIL SEA CUCUMBER derives its name from the resemblance which it bears both to a snail and a cucumber.

Many of the Sea Cucumbers are eaten by the Chinese, Japanese, and other nations, under the name of TREPANG. In the British Museum is a case containing a great number of species of Trepang, with their prices attached. They look most uninviting articles, but some of them are so valuable as to fetch nearly their weight in silver.

The very odd little creature which is seen crawling up the stem of a sea-weed also belongs to the same order, and is remarkable for the five rows of long suckers, by means of which the animal is enabled to walk. It is represented of its natural size.



SEA URCHIN.—*Echinus sphære.*

ALMOST every one has seen the SEA URCHINS, or SEA EGGS, either in museums, shop windows, or thrown on the sands by the waves.

These remarkable beings belong to the same order as the well-known star-fishes, and indeed, if a Sea Urchin be deprived of its spines, or if it be broken and examined from the inside, it will be seen to resemble the star-fish, with the points gathered together, and the intervals between the arms filled up.

The innumerable spines with which the body is covered are movable, being set upon a regular ball-and-socket joint, so that they can be moved in any direction, and allow the creature to pass over any object that it may wish to cross.

The feet, if they may so be called, are curious sucker-like tubes, which are projected from a series of little apertures, and which extend further than the spines. I have seen a Sea Urchin climb up a perpendicular glass plate by means of these feet.

The mouth is situated below, and is furnished with a tremendous set of teeth and jaws, which might be almost taken as models for metal-cutting machinery.