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THE
NATURAL HISTORY
OF
F I S H E S
AND
SERPENTS,
INCLUDING
SEA-TURTLES, CRUSTACEOUS,
and SHELL FISHES,
WITH THEIR
MEDICINAL USES.

BY

R. BROOKES, M.D.

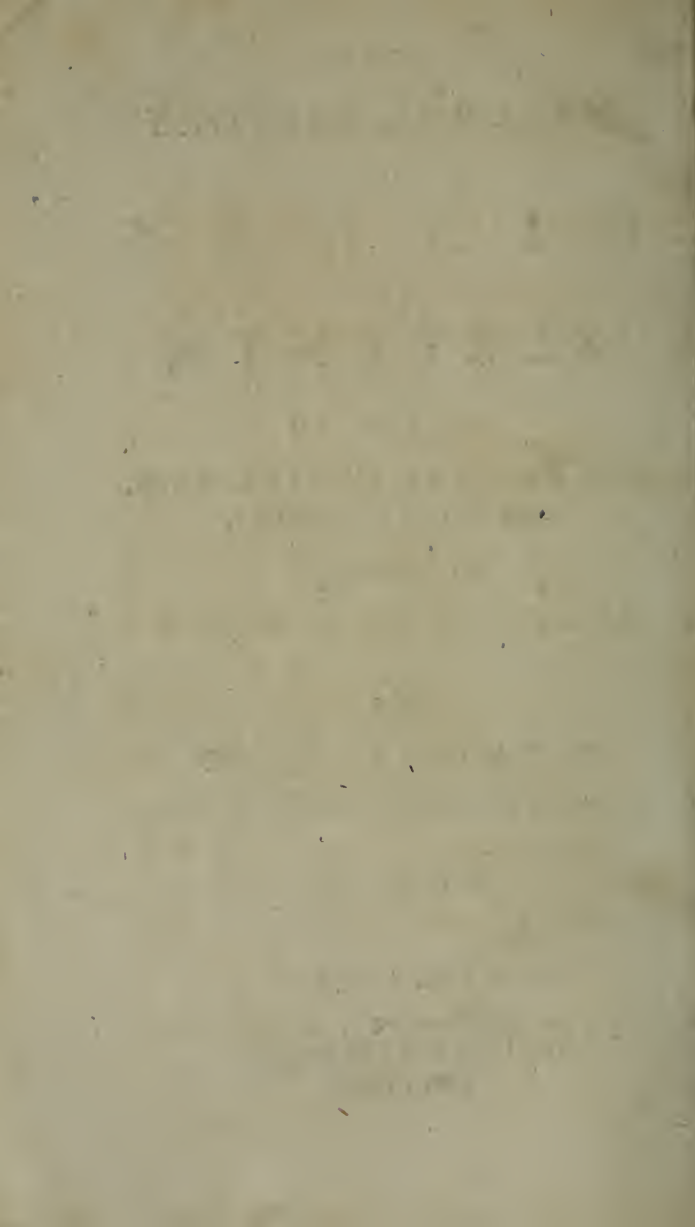
Author of the *General Practise of Physic.*

V O L. III.

L O N D O N,

Printed for J. NEWBERRY, at the Bible and
Sun, in St. Paul's Church-Yard.

MDCCLXIII.



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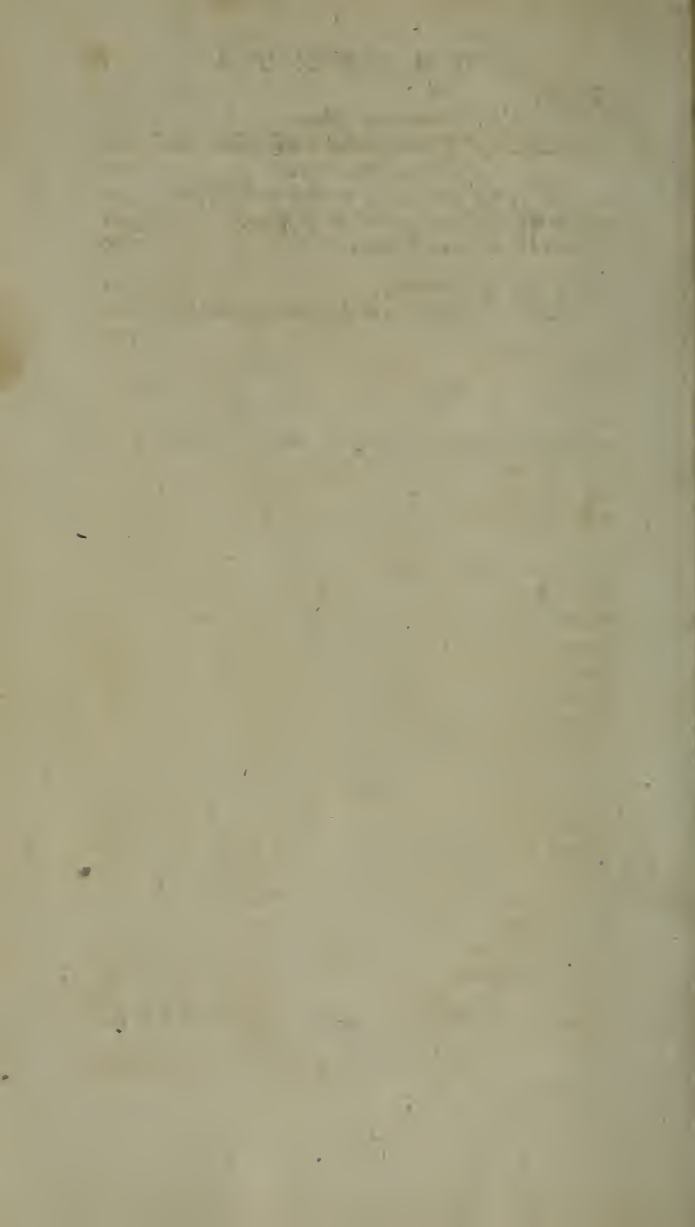


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INTRODUCTION

TO THE

HISTORY of FISHES.

THE productions of Nature, as they become less perfect, grow more numerous. When we consider what numberless sorts have hitherto escaped human curiosity, what a variety of fishes are already known, and the amazing fecundity of which they are possessed, we are almost induced to wonder how the ocean finds room for its inhabitants. A single fish is capable of producing eight or ten millions of its kind in a season; but Nature has happily obviated this hurtful encrease, by making the subsistence of one species depend on the destruction of another. The same enmities that subsist among land animals prevail with equal fury in the waters, and with this aggravation, that by land the rapacious kinds seldom devour each other, but in the ocean it seems an universal warfare of each against each. The large devour the small even of their own species, and these, in their turn, become the tyrants of such as they are able to destroy.

Fishes in general may be divided into those that breathe thro' lungs, and have red blood circulating thro' their veins; and those that respire thro' the gills, and whose circulating juices are limpid and colourless. The first sort, which comprehends all of the cetaceous or whale kind, are possessed of a greater degree of heat than the element they inhabit, are frequently obliged to come to the surface of the water to respire fresh air, and, tho' they are properly inhabitants of the

the

xii INTRODUCTION TO THE

the ocean yet are capable of being suffocated in it. They use coition, bring forth their young alive, nourish them with their milk, and resemble quadrupedes as to their internal conformation. The latter sort, on the contrary, are as cold as the element in which they live, they breathe only in the water, they produce by spawn which is impregnated by the male, and are for the most part covered with scales; between these there is yet an intermediate kind, which is called the cartilaginous. These breathe through the gills like the latter, and bring forth their young alive like the former. Instead of bones, their muscles are supported only by cartilages, or gristles, and from this conformation they continue to grow larger as they grow older; for, different from every other animal, their bones never acquire such a certain degree of hardness as to hinder their future growth.

The number of the cetaceous and cartilaginous kind, however, is but small when compared to the other kind already described, in which are to be found a greater quantity of small bones, which serve to strengthen and support the muscles. The bones of a single carp, for instance, amount to four thousand three hundred and eighty six. These are the kinds generally to be found in fresh water; these have been most frequently subject to human inspection, and from them our descriptions are most usually taken.

The shape of most fish is much alike, sharp at either end, and swelling in the middle, by which they are thus able to traverse the fluid they inhabit with greater ease. That peculiar shape which nature has granted most fishes we endeavour to imitate in such vessels as are designed to sail with the greatest swiftness; however, the progress of a machine moved forward in the water by human contrivance is nothing to the rapidity of an animal destined to reside there. The shark overtakes a ship in full sail with ease, plays round it, and abandons it at pleasure. The tail of all fish is extremely flexible, and furnished with muscles that take up near a third part of the whole body. In this lies their greatest strength, and by bending it to the

the right or left they repel the water behind, and advance with the desired swiftness. The motion of this is in some measure assisted by the fins, but their chief use is to poise the body, and at will to stop its motion. This is proved by experience; for when the fins are cut off, the fish reels to and fro, no longer able to keep its natural posture. These therefore only keep the fish steady; when it would turn to the right it moves the fins on the left side, when to the left it plays those on the right; the tail, however, is the grand instrument of progressive motion.

As all animals that live upon earth, or in the air, are furnished with a proper covering to keep off external injury, so all that live in the water are covered with a slimy glutinous matter, that, like a sheath, defends their bodies from the immediate contact of the surrounding fluid. Beneath this is generally found a coat consisting of strong scales, and under that, before we come to the muscular parts of the body, an oily substance, which supplies the requisite warmth and vigour.

When we examine a fish's scale thro' a microscope, it is found to consist of a number of concentrical circles, one within the other, in some measure resembling those which appear upon the transverse section of a tree, and, in fact, offering the same information. For, as in trees we can tell their age by the number of their circles, so in fishes we can tell their's by the number of circles in every scale, reckoning one ring for every year of the animal's existence. Mr. *Buffon*, by this method, found a carp, whose scales he examined, to be not less than an hundred years old, a thing almost incredible, had we not several accounts in other authors, which tend to confirm its veracity.

That fish are extremely long lived, appears from the nature of the element in which they breathe; in this they are not subject to those sudden changes, which terrestrial animals hourly experience; their's is an uniform existence, their movements without effort, and their life without labour; so that all their dangers

dangers and inconveniences arise not from the infirmities of nature, but each other's rapacity.

But tho' they are formed entirely for living in the water, yet still they are unable to subsist without air. If a pond, in which they are usually kept, be covered over with ice, a part of it must be broken to let in fresh air, otherwise the fish would die. All water containing a certain quantity of air, fish have an admirable contrivance in their gills, of separating that from their native element. The air thus inspired, probably assists in circulating their fluids, as with other animals; but there is one advantage which it manifestly grants them, namely, that of sinking or rising in the water, as pleasure or necessity incites; when they are inclined to rise, they dilate an air bladder, with which nature has furnished them, and thus encreasing their bulk, without adding to their weight, they become lighter than the surrounding fluid. On the contrary, when this air-bladder is contracted, their body contracts in proportion, and they sink. That this is the true use of the air bladder, and that it is not, as some have supposed, only a reservoir of air, for the fish to breathe from while it continues under water, has been shewn by experiments; thus we see that fish breathe our atmosphere: but, what will appear still more extraordinary, they have been kept alive and fattened, after having been taken out of the water. Carps, when hung up in a cool cellar, in a small net, and covered with wet moss, their heads however being at liberty, may be fed and fattened with white bread steeped in milk; an experiment easily tried, and which has often been practised with success in *Holland*, as well as at home.

The eyes of fish are generally flat, which seems most suitable to the element in which they live. Their vision, however, is probably very indistinct, at least it appears so from the experiments I have been able to make upon their eyes, by fixing them in the apparatus of a camera obscura. They seem, likewise, to have but an obscure perception of sounds, and
probably

probably they receive this sensation, by the tremors of the element, in which they live, operating rather upon their whole system, than by any mechanism adapted for that purpose. Their senses, therefore, seem no way exquisite, and their pleasures are almost entirely confined to the satisfaction they find in appeasing their hunger. It is this appetite alone, which impells them to encounter every danger; their rapacity seems insatiable; even when taken out of the water, and expiring, they greedily swallow the very bait by which they were allured to their destruction.

As they are thus extremely voracious, Nature seems to have supplied them with proper means for satisfying their appetite to the utmost extent of indulgence. They are all furnished with teeth, or some other contrivance which answers the same purpose. The maw is in general placed next the mouth, and tho' possessed of no sensible heat, yet is endued with a surprizing faculty of digestion. Those of the voracious kind swallow not only others like themselves, but even prawns, crabs, and lobsters, shells and all, without experiencing any manner of inconvenience. This amazing faculty in their cold maw, serves evidently to prove, that heat is not the cause of digestion in the stomach of man, or other animals; the cause of that is perhaps inextricable, the operations of Nature are past finding out, and doubts, instead of knowledge, rise upon every enquiry.

As fishes are thus formed for seizing and devouring each other, and as they are pressed by unceasing hunger, we may easily imagine, that they lead a life of continued hostility, of violence, and evasion. It is natural to suppose that the smaller fry stand no chance in this unequal combat; their usual method of escaping, therefore, is by swimming into those shallows, where the great ones are afraid or unable to pursue. Here they become invaders in turn, and live upon the spawn of larger fishes, which they find floating upon the surface of the water. The muscle,
the

the oyster, and the scallop, lie in ambush at the bottom, with their shells open, and whatever animal inadvertently approaches into contact, they at once close their shells, and it becomes an easy prey. The flat fish, in general, watch on the mud, till the females of other kinds deposit their spawn in holes at the bottom, and upon their retiring, come forth to feast upon the spoil.

Nor is their pursuit, like that of terrestrial animals, confined to a single region, or to one effort; shoals of one species follow those of another, through vast tracts of the ocean; from the vicinity of the Pole even down to the Equator. Thus the cod, from the banks of *Newfoundland*, pursues the whiting, which flies before it even to the southern shores of *Spain*. Such a pursuit as this may probably be the cause of the annual return of herrings and pilchards to our own coasts, where they come in an abundance that to some may appear incredible; nothing being more common on the coasts of *Cornwall*, than to take five or six thousand hogsheds of pilchards at one single inclosure. This return of fish to the *British* Coasts, is, however, of no very long continuance, for about an hundred and fifty years ago, the herring shoals were found along the northern coasts of *Germany*; but those they have since forsaken, and in those places where the *Germans* once caught them in immense quantities, there are at present, without any visible reason, none to be found.

Thus we find another analogy between these and terrestrial animals. As in birds, so some sorts of these may be called fish of passage, and others indigenous. The herring first has its station towards the north of *Scotland*, from whence they make their way regularly every year, and at length arrive in the *British* Channel. Their voyage is performed with the utmost regularity. The time of their departure is fixed from the month of *June* to *August*, and they assemble always together, before they set out. There are never any stragglers from the general body, for when they have past any place, there
are

are none left remaining. It would be vain to assign the cause of these migrations. Whether it proceeds from the fear of pursuers, or from a desire of propagating their kind in greater security; whether they find pleasure in the change, or whether this long voyage is undertaken in quest of food, is a subject that might supply much conjecture, and little satisfaction. Certain it is, their numbers are astonishing; they satisfy, in their passage, the rapacity of all the voracious kinds, and when they arrive at their appointed stations, they there fall to the share of man, and make the food of the poor, for a certain season, throughout all *Europe*.

But this consumption, how great soever, only serves to counterbalance their surprizing fecundity, which would, otherwise, overstock the element assigned them for their support. The number of eggs contained in the roe of a single cod, and computed by *Leuwenhoek*, amounted to nine millions three hundred and forty four thousand; which, if permitted in every individual to come to maturity, would rather obstruct than replenish nature. But two wise purposes are answered by this amazing encrease; it preserves the species whatever may happen, and serves to furnish the surviving fish with a sustenance, adapted to their conformation.

They seem all, except the cetaceous kind, entirely divested of those parental pleasures and sollicitudes which so strongly mark the characters and conduct of the more perfect terrestrial animals. They do not use coition; for tho' the male sometimes seems to join bellies with the female, yet as he is unfurnished with the instruments of generation, his only end by such an action is to emit his impregnating fluid upon the eggs, which at that time fall from her. His attachment seems rather to the eggs, than the female; he pursues them often, as they float down along the stream, and carefully impregnates them one after the other. Sometimes the females dig holes in the bottoms of rivers and ponds, and there deposit their spawn,

spawn, which are impregnated by the male as before.

All fish have a peculiar season to deposit their spawn. They in general chuse the hottest months in summer, and prefer such waters as are somewhat tepid by the rays of the sun. They then leave the deepest parts of the ocean, which are always most cold, approach the coasts, or swim up the rivers of fresh water, which are warm by being shallow. When they have deposited their burthens, they then return to their old stations, and leave their spawn, when come to maturity, to shift for themselves. These at first escape by their minuteness and agility. They rise and sink much sooner than grown fish, and can swim in much shallower water. But with all these advantages, scarce one in a thousand survives the various dangers that surround it; the very male and female, that have given it life, are equally dangerous and formidable with the rest, for every fish is the declared enemy of all it is able to devour.

Some kinds of fishes are found to contain the parts of both sexes in one individual; thus there have been discovered hermaphrodite carps, breams, and roaches; but there is a kind of fish, not yet taken notice of, which, whether male or female, has the parts of generation double. These are the crustaceous kinds, such as lobsters and crabs, which differ from testaceous, or shell-fish, in this, that the crust, or coat, with which they are covered, may be bent inwards, or otherwise bruised, without breaking. Thus do these animals seem different from all other; for as we have our muscles supported by bones on the inside, these, on the contrary, have theirs without. As they are not designed for swimming, however, they have no air bladders, as other fish, but creep along the bottom, and devour whatever they seize, not excepting each other. They regularly once a year, and about the beginning of *May*, cast their old shell, and Nature supplies them with a new one. Some days before this necessary change, the animal ceases to take its
usual

usual food. Just before casting its shell it rubs its legs against each other, and uses other violent motions of the body. It then swells itself in an unusual manner, and by this the shell begins to divide at its junctures, between the body and the tail. After this, by the same operation, it disengages itself of every part, one after the other, each part of the joints bursting longitudinally till the animal is quite at liberty. This operation, however, is so violent and painful, that many of them die under it; those which survive are feeble, and their naked muscles soft to the touch, being covered with a thin membrane, but in less than two days this membrane hardens in a surprizing manner, and a new shell, as impenetrable as the former, supplies the place of that laid aside.

Such is the life of these animals in their own element; but with respect to the use they are of to man, their flesh serves him for aliment, their fat for oil, their skins for different purposes; of their sounds we make isinglass, and the stony concretions which are found in their bodies, were once thought to conduce to his health in medicine. Of fresh water fish, those that have been fed in swift and rapid rivers are reckoned most wholesome; those which feed in ponds, or muddy stagnated lakes, are generally worst, as their flesh contracts a flavour from the place where they are bred. Luxury, however, has gone vast lengths in improving the flavour and fat of fish, by castration, but it would ill become one, who lays claims to humanity, to instruct gluttony in this vile art of torturing animals: The philosopher should ever stop, when his labours begin to open new avenues to sensuality.

Those who have attempted accuracy in classing the productions of Nature, have only embarrassed their works by their endeavours to arrange them methodically. To what order of beings the serpent, for instance, may be referred, whether to the fishes, the lizard, or the insects, is not yet settled among
Natura-

Naturalists. The subject of their arrangement, however, is of no great importance, it being sufficient for all the purposes of utility and information, if they are accurately described. Like fishes, they may be divided into the viviparous and oviparous; of the former are all of the viper kinds, of the latter those of the common snake. The former, in our own country, contain a poison lodged under each fang in the upper jaw; the latter are no way venomous. With us they grow to no great length; but in the warm latitudes of *America* they are sometimes seen from twelve to twenty four feet long.

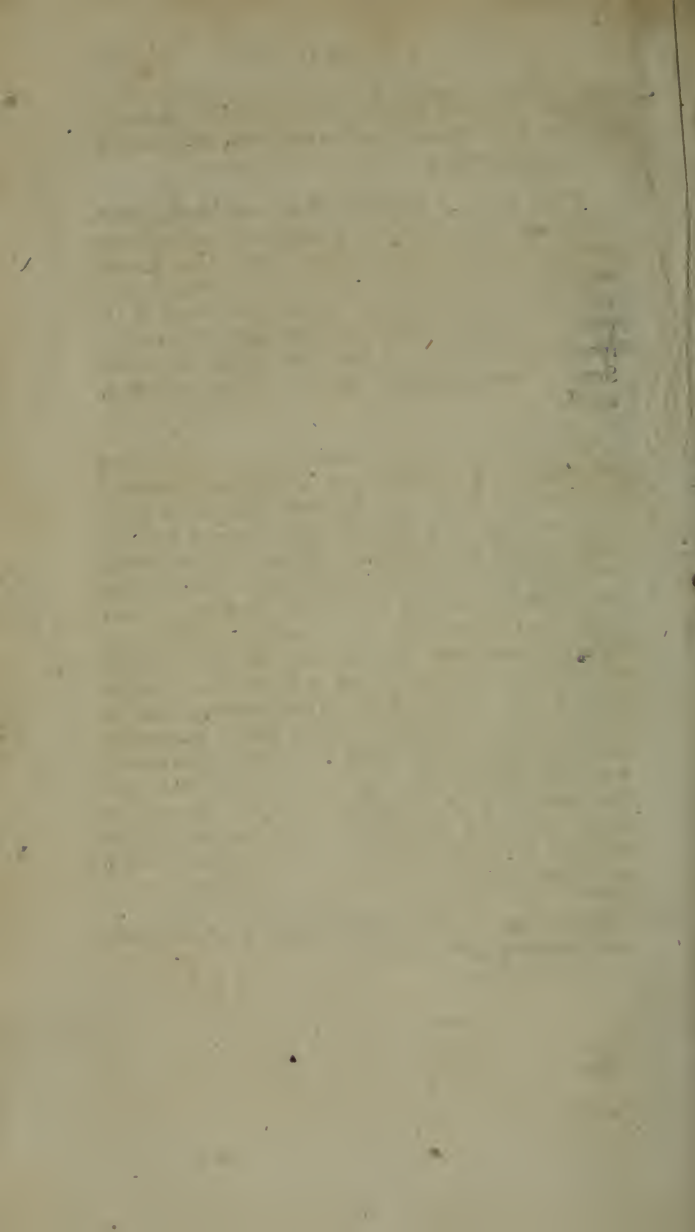
It would be vain to attempt assigning the uses of most of these noxious and formidable reptiles. Tho' the flesh of the viper has been converted to salutary purposes in medicine, yet in the countries where they abound, man is found to suffer more from their noxious qualities, than he is benefited by their medicinal virtues. Providence, however, in some measure seems to secure him from the dangers of those which are most fatal: The rattle snake, for instance, whose bite is mortal, warns him of its vicinity, by sounding its rattles: The most formidable avoid his approach, and seldom attack him without former provocation. In some countries the serpent kind are even rendered useful, and, like cats, employed for the purposes of destroying domestic vermin. Whether Providence intended that all things should be for man's use, is a question we cannot resolve, as we are ignorant of the designs of Providence. It is sufficient for us to know, that by granting us such superior powers to all other animals, it has, in fact, rendered such of them as we think proper to employ, entirely subservient to all the purposes of our pleasures, or necessities.

The two following articles being, by mistake, omitted in their proper place, the READER will excuse our inserting them here.

THE INDIAN SNAKE is long and black, small, and spotted with black and white on the back; the scales of the back are variegated with white, brown, and black. It raises its head, which is very elegant, towards the birds it preys on, as represented in the plate. Its whole belly to the extremity of the tail is spotted with black. It has been called the Flying Serpent, because it darts on its prey as swift as an arrow.

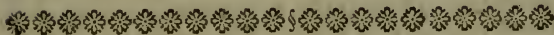
The green and large spotted LIZARD is a native of *America*. Its whole body is elegantly spotted; its thin small scales, of a sea green colour, are regularly marked, with blackish spots, round and oblong, mixed with whitish eyes elegantly disposed. It is thus spotted from the head to the extremity of the tail, on its thighs and feet. The tail is very large, and often bent in a remarkable manner. It is encircled with ringlets, and all over spotted with black, terminating in a small sharp point. This is the male Lizard. The female is like it in size, shape, and spots, except that it has not on the upper part of the body the whitish eyes mixed with the black spots; its belly is different, being marked with round black spots. Its tail is larger than the male; it is long, encircled with ringlets, and is marked with oblong spots placed cross-ways on it.

ERRATUM. In the Index, for — of *Æsculapius*, read Snake of *Æsculapius*.





T H E
N A T U R A L H I S T O R Y
O F
F I S H E S.



C H A P. I.

Of Fishes in general.

FISHES in general may be divided into those that have lungs and those that have gills, though they both serve for respiration; of the first sort are the cetaceous kind, by some hyperbolically called Sea Monsters; for they do not all deserve that name. Those that respire through gills may be subdivided into the cartilaginous, which are also viviparous; and those that produce spawn. These last are distinguished by the name of spinous; that is, they are provided with small sharp bones, to support and strengthen their muscles; whereas the cartilaginous, such as the Scate and Thornback, have only a sort of gristles, which are so soft they are eaten by some. The spinous sort generate without coition; instead of which the females dig holes in the bottoms of rivers, ponds, and other watery places, wherein they deposit their spawn; upon which the male immediately after emits his impregnating fluid, in order to render the spawn prolific. However, this division is not strictly true; for there are some spinous or bony fish which are

viviparous, or bring forth their young alive; among which some think the Eel may be placed, though this is uncertain; for after all the inquiry which has been made, it has not yet been discovered in what manner they generate.

There are some fish which produce large eggs after the manner of birds, with the yolk and white, that are hatched in their bodies before they are excluded; and this is proper to the cartilaginous kind. Others are oviparous, or bring forth a great quantity of spawn; which being a kind of little eggs, are hatched by the natural warmth of the water. The increase of these is almost incredible, for *Lewenhook* has computed that there are no less than 9344000 eggs in a single Cod. Hence it ceases to be a wonder that every species is preserved, notwithstanding they are continually preying upon, and devouring each other. The flat fish in particular conceal themselves in the mud, which they resemble in colour, till the spawning of other fish is over, and then they seize upon the eggs and feed upon them. If it was not for this practice, and the devouring of the fry, the ocean itself would not be large enough to contain the prodigious number of fish that would otherwise come to maturity.

The shape of most fish is much alike; for they taper a little at the head, and by that means are able to traverse the fluid they inhabit with greater ease. The tail is extremely flexible, and in this lies their greatest strength; by bending to the right and left, they repel the water behind it, and advance their head forward with all the rest of the body. Most people imagine the fins are the principal instrument of swimming, but this is a mistake; for they are chiefly used to poise the body and keep it steady, as also to stop it when it is in motion. This has been found to be true by experience; for when the belly-fins have been cut off, the fish has reeled to and fro, and was unable to keep itself in its usual posture. When a fish would turn to the left, it moves the fins on the right side; and when to the right, it plays those on the left; but the tail is the grand instrument of progressive motion.

The

The bodies of most fish are furnished with horny scales, which are strong, or otherwise, in proportion to the dangers they are exposed to. These scales are generally besmeared with a slimy liquor without; and under them there lies all over the body an oily substance, which supplies the fish with warmth and vigour. They are enabled to rise or sink in the water, by means of an air-bladder that is included in their bodies; when this is contracted they sink to the bottom, but when it is dilated they rise to the top. That this is the true use of the bladder, appears from an experiment made upon a carp; for one of these fish being put into an air-pump, and the air pumped out of the vessel, the bladder expanded itself to such a degree that the carp swelled in an extraordinary manner, till the bladder burst within its body. This fish did not die, and therefore was thrown into the water; but it could never rise after this, but crawled along the bottom like a serpent. It is supposed that the air which fills the bladder is received through the gills, and so enables the fish to rise; and that when the fish sinks it is ejected out the same way: however, this amounts to no more than a very probable supposition. Nevertheless it is certain, that the air contained in water, or received into it, is necessary to keep fish alive; for which reason store-ponds, when frozen over or covered with ice, must always have some part kept open, otherwise the fish would die.

Most fish are furnished with teeth or somewhat analogous thereto; but they are not designed for eating or chewing, but to retain their prey. These teeth are placed in different manners, according to the different manner of their feeding; for in some they are in the jaws, palate, and tongue; but in others in the throat: and these last are called leather-mouthed fish. The eyes of fish are generally flat, which is most suitable to the element in which they live; for a goggle-eye would in some measure hinder their motion in so dense a medium. Besides, by brushing through it their eyes would be apt to wear and prejudice the sight. However, to make amends for this, the chrySTALLINE humour is always spherical or exactly round, as may be seen very plainly after they

are boiled; for then this humour always grows hard, and is in the shape of a pea.

All fish have a line from the upper corner of the gills to the middle of the tail on each side. In sea-fish it inclines more towards the back; but in those of rivers and ponds towards the belly. Most fish are provided with a tongue; but some, as the carp, have none at all: however, in its stead they have a fleshy palate, which is generally accounted a delicious morsel. It is hard to determine what use fish make of their tongues; for it does not serve to form their voice, because they are mute; nor does it assist them in chewing, because they swallow every thing whole; nor yet is it likely to be the organ of taste, because it is gristly in all fish except those of the cetaceous kind, or if it serves them for that purpose, it must be in a very obscure manner.

Some fish have no throat, for the maw, or stomach, is placed next their mouths; but those whose bodies are long and slender, particularly the Eel kind, have a throat though they have no lungs. The stomach of fish has no sensible heat, and yet it has a wonderful faculty of digestion; since those of the voracious kind swallow not only great numbers of other fish, but even *Prawns*, *Crabs*, and *Lobsters*, which it readily digests or dissolves. The hearts of those fish that respire through the gills have only one ventricle and auricle; but the latter is very large in proportion to the heart.

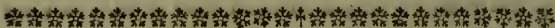
The flesh of fish is either used for medicinal purposes or for aliment; but much more for the latter than the former. In this respect they are generally divided into two sorts, those of fresh water, and those of the sea; those of fresh water belong either to lakes, ponds, or rivers; of which those of ponds are generally the worst; because the water is muddy, more or less, which must affect what they live upon, and consequently render their flesh not so proper for our use. Those of swift and rapid rivers are very wholesome, though there are some very good also; as those that creep but slowly along, particularly carps, that are greatly valued for being fat and well tasted.

Sea fishes are generally allowed to be the best of all; and among these, those are of the greatest value that are met with in places abounding with rocks. Next to these are such as frequent the bottom of the sea; but those that delight to inhabit near the shore are in less esteem than the former; because the water is not so pure. There are some sea-fish that enter rivers, and it is observable when they have been there for some time, their flesh becomes more agreeable to the taste. However, it is pretended by some, that they are more hard of digestion, though oftentimes more fat.

Young flesh and old fish is a common proverb which does not always hold true; for some of these grow more tough and hard than those of a middle age: however, it must be allowed that the older they are, they are more large, and have generally fewer bones, which renders them more valuable to some; but those that have a delicate taste like them best when they are younger. An old fish may be known by the hardness and largeness of the scales. It is hard to say which are best, the males or the females; because some are fond of hard roes and others of soft: however, this is certain, that the flesh of the male is generally fatter and better tasted than that of the female.

Fishes are eaten either fried roasted, or boiled; but those that are fried are hardest of digestion, because the butter, oil, or fat that are used receive bad qualities from the action of the fire. Those that are roasted or broiled are certainly most agreeable to the stomach, because they are always easy of digestion, and their taste is more agreeable on account of the consumption of the moisture wherewith their flesh abounds. However, it must be acknowledged that there are many physicians who recommend boiled or stewed fish to valetudinarians, provided they are not seasoned too much. Some kinds of fishes are salted in order to preserve them; after which some of them are dried with smoke, and others in the sun before they are salted; but all these preparations render them hard of digestion, especially to those that are of tender constitutions; for some are so robust that scarcely any thing comes amiss to them, and more particularly if they lead a laborious life.

In general the flesh of fishes yields little nourishment and soon corrupts; it abounds in a gross sort of oil and water, and hath but few volatile particles, which renders it less fit to be converted into the substance of our bodies; for it is beyond all doubt, that all sorts of animals which abound most in active and volatile principles, are most proper for the aliment of mankind; such is generally the flesh of quadrupedes and birds that we are accustomed to feed upon; whereas that of fish, for the contrary reasons, is less proper for nourishment, though it generally digests and passes off the stomach very soon; for they being cold and moist, must needs produce juices of the same kind, and consequently are less proper to strengthen the body. But for the same reason the flesh will agree best with those of hot bilious constitutions, and that abound in blood: besides, fish is the most proper aliment in some kind of diseases upon the self same account; that is, because stronger nourishment would be then very prejudicial.



CHAP. II.

Of Fishes of the cetaceous kind.

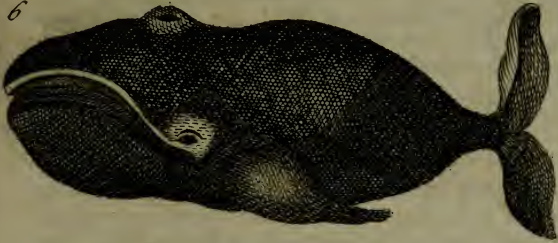
THIS sort of fish are endowed with lungs, with which they breath, use coition, bring forth their young alive, nourish them with their milk, and resemble quadrupedes in their inward parts.

The COMMON TOOTHLESS WHALE without fins on its back is the greatest of all sea monsters; for *John Faber* saw one thrown on shore in *Italy* that was ninety-one *Roman* palms long, and fifty thick. The *Roman* palm is a little above half a foot. The same author avers, there was another at *Corfica* an hundred feet long; but *Frederick Martens* says the largest Whale caught at *Spitzbergen*, is no more than sixty feet long, or at least seldom exceeds that length. The cleft of the mouth is eighteen feet long, which is near one third the length of the fish.

This

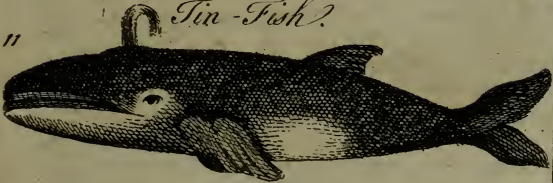
Whale?

6



Tin-Fish?

11



Porpoise?

24



Dolphin of the Antients.

26





This Whale is without teeth; but instead thereof there are long black, and somewhat broad, horny flakes, all jagged like hairs. It differs from the Fin-fish in the fins; for the Fin-fish has a great fin on its back, whereas the Whale, properly so called, has none in that place; but there are two fins behind the eyes, of a bigness proportionable to the body, covered with a thick black skin delicately marbled with white streaks, which some fancy to form houses, trees, and the like. In the tail of one that was marbled very delicately, there was the number 122 figured very evenly and exact, as if painted. This marbling on the Whale is like veins in a piece of wood, and gives this animal great beauty. When these fins are cut up, there is underneath the thick skin, bones that look like a man's hand, when it is open and the fingers expanded. Between these there are stiff sinews, which when cut out and thrown against the ground will rebound and fly up. These fins serve to steer the Whale, like a boat rowed with two oars.

The tail does not stand upright, as in some other fish, but lies horizontal, and is from three, to three and a half, and four fathoms broad. The head is one third of the fish, and on both lips there are short hairs before. These lips are quite plain, and bend a little like an S; and they terminate underneath the eyes before the two fins: above the uppermost bended lip there are streaks of a darkish brown, and as crooked as the lip itself. The lips are smooth, black, and round, like a quarter of a circle; and when they are drawn together they lock into each other.

On the inside of the uppermost lip is the whalebone, which is of a brown, blackish, and yellow colour, with streaks of several other colours. In some Whales these are blue, or of a light blue; and these are supposed to belong to young Whales. Just before, on the under lip, is a cavity or hole, which exactly fits the upper, that slides into it as a knife into a sheath. The sailors imagine that he draws the water through this hole, that he spouts it out again out of the top of the head. Within the mouth there are hairs thereon, like those of a horse; and it hangs down on both sides all about the

3 THE NATURAL HISTORY

tongue. The whalebone in some Whales is bended like a scymeter, and in others like a half moon.

The smallest whalebone is in the fore part of the mouth, and behind, towards the throat; but that in the middle is the largest and longest; it being sometimes of the length of two or three men. On one side, all of a row, there are two hundred and fifty pieces of whalebone, and as many on the other, which make five hundred in all. However, there are more than these, because the sailors do not think it worth while to cut the very small pieces out, or, at least, cannot well come at them. These pieces lie one above another, and towards the lips are bent as above.

Whalebone is broad at the top, where it sticks fast to the upper lip, and is every where over-run with hard, white sinews towards the root; so that a man may thrust in his hand between any two pieces. These white sinews look like boiled Sea-cats, or Black-fish, and have a very pleasant smell: however, when they are putrified, they smell like rotten teeth. The Whalebone underneath is narrow and pointed, and all overgrown with hair, that it may not hurt that which is young, as some suppose. On the outside of the whalebone there is a cavity, like a gutter, to carry off water, where it lies one above another, as the shields of Lobsters or the pan-tiles of a house, to prevent its hurting the under lip.

To cut the whalebone out is a peculiar trade, and there are a great many iron tools belonging to it. The lower part of the mouth of the Whale is commonly white, and the tongue lies among these whalebones, being very close tied with the under chap: it is very large and white, with black spots on the edges, and consists of a spongy fat, which cannot easily be cut. If it was not for this they would get six or seven barrels of train-oil out of it. Upon the head is a hovel, or bump, placed before the eyes and fins; and on the top of it, on each side, there is a spout-hole placed over against each other, which are bended like the holes cut in the upper parts of a violin. From these holes he blows the water very fiercely; insomuch that it roars like a hollow wind, and may be heard three miles. It is observable that

that when a Whale is wounded, he blows out the water most fiercely, infomuch that it sounds like the roaring of the sea in a great storm. The head of the Whale is not round at the top, but somewhat flat, and slopes downwards, like the tiling of a house, to the under lip. The under lip is broader than any part of the body, and most in the middle; for before and behind it is somewhat narrower, like the shape of the head. In short, the whole fish is shaped like a shoemaker's last, if you look at it from beneath.

Behind the bump, and between that and the fins, the eyes are placed, which are not much bigger than those of an ox; and they have eye-lids and hair like those of a man. The chrystalline humour of the eye is not much bigger than a pea, and is clear, white, and transparent in most; but in some it is yellowish. The eyes are placed very low, and almost at the end of the upper lip.

A Whale does not hear while he is spouting the water; for which reason it is easiest to strike him at that time. The belly and back are quite red, only the middle of the belly is white; though in some it is as black as a coal. They make a beautiful appearance when the sun shines upon them; and the waves of the sea that run over them glitter like silver. Some are marbled on the back and tail, and where they have been wounded a white scar always remains. Some Whales have been seen entirely white, and it is not uncommon for them to be half white. Those that are black are not all of the same colour; for some are as black as velvet, others as charcoal, and others again are of the colour of a Tench. The skin is as slippery as that of an Eel, and yet a man may stand upon it, because it is so soft that that and the flesh yield to his weight. The outer skin or cuticle is as thin as parchment, and may be easily pulled off; but the real skin is an inch thick. The penis is a strong sinew, and is from six to eight feet long; part of which appears outwardly, like the hilt of a knife in a sheath. At the sides of the pudendum in females there are two breasts, with nipples like those of a cow. The breasts of some are quite white, and of others speckled with white and blue spots like lap-

wings eggs. It is generally found that they have but two young ones at a time; for never more than that number have been met with within them.

The real bones of a Whale are hard, like those of great four-footed beasts, but as porous as a sponge, and filled with marrow. Two great and strong bones sustain the under-lip, lying against each other in the shape of a half-moon. Some of these are twenty feet long, and as white as if they had been calcined. The flesh is coarse and hard, and looks like that of a bull; but it is mixed with a great number of sinews. Some of it looks green and blue, like salted beef, especially at the meeting of the muscles. When the sailors feed upon any of it they cut large pieces off the tail, where it is best, and boil it like other meat. Some seem to like it pretty well, especially the *French*, who dine upon it almost every day; nor will they reject that which has lain till it is black. The fat lies over the lean, that is, between the flesh and the skin, and is about six inches thick on the back and belly; and upon a fin it is sometimes a foot thick. The fat on the under lip is above two feet thick; but it is not so much upon any other part of the Whale: however, it is much thicker in some than in others. In the year 1658, the skeleton of a Whale was publickly shewn at *Paris*, the skull of which was between sixteen and seventeen feet long, and weighed 4600 pounds. The jaws were ten feet wide and fourteen feet long, weighing each 1100 pounds. The weight of the fins was 600 pounds, and the joints of the back, from the head to the tail, were forty-five feet long; the first joint weighing fifty pounds, and the rest proportionably less, as they were nearer the tail. The *Dutch* for three hundred years had the Whale-fishery almost to themselves; and it is still one of the principal branches of their trade. Each vessel of three hundred tons has six shallops, and each shallop has allowed a harponier with five sailors to row it. The instrument with which they strike the fish is a harpoon or javelin, five or six feet long, pointed with steel like the barb of an arrow, of a triangular shape. The harponier standing at one end of the sloop, when at a proper distance from the Whale, darts the harpoon with all his force
against

against the Whale's back, where, if it fastens, he lets go a string tied thereto, at the end of which is a dry gourd, that by its swimming on the water shows whereabouts the Whale is; for as soon as he is struck he plunges to the bottom: however, great care is taken that the line may be long enough; but if that in one shallop should prove too short they fix it to another from the nearest shallop, and another after that, if there should be occasion. The cord runs out so swiftly that it often takes fire if it is not kept wetting with a swab. When the Whale rises again for breath they attack him again and again, till he begins to grow weak by loss of blood; and then they plunge their javelins into various parts of his body, by which means they soon dispatch him.

The FIN-FISH is as long as a Whale, but is three times less in bulk. It is known by the fin on the back near the tail, and by its spouting up the water more violently and higher than the Whale. The bunch on the head is divided according to its length; that is, at the blowing hole through which it forces up the water. The back is more strait than that of a Whale, and the lips are of a brownish colour, appearing like a twilted rope. The Whalebone hangs from the upper lip, as it does in the Whale; but it does not hang out of the mouth at the sides, as in that animal. The inside of the mouth, between the whalebones is all over hairy, and is of a blue colour, that is when the bone begins to grow; for the other is brown with yellow streaks, which are thought to be the oldest. The colour of this fish is like that of a Tench; and the shape of the body is long and slender; neither is he so fat as the Whale, for which reason he is generally neglected; besides it is much more dangerous to kill one of these than a Whale, because his motion is quicker, and he beats more with his tail; so that the people dare not come near him with their boats. The tail is flat like that of the Whale, and he seldom appears till the Whales are gone.

The BUTS-KOPF, that is, the FLOUNDERS-HEAD, is best known in *England* by the name of GRAMPUS. In the snout, fins and tail it resembles a

Dolphin, but the body is four or five times as thick, especially about the belly: it is nearly as big as other fish of the cetaceous kind, except the Whale; being eighteen feet long and above ten thick. The snout is flattish and turns upwards, and the lower lip is so thick that it falls from the upper as this fish lies along. The mouth is armed with forty teeth, of which the foremost are blunt and slender, but the hinder are sharp and thick.

This fish, as described by *Martens*, has a blunt head on the fore part, from which the snout proceeds, and which is of an equal thickness from the root to the tip; and by this it may be distinguished from a Dolphin. The fins and tail are more like that of a Whale than of a Dolphin; and it spouts out water, but not with such force as a Whale. The eyes are exceeding small for the bulk of the body, which is brown above and white beneath. They come near ships that are sailing along without any dread, and keep them company a long while; but in general they always swim against the wind.

There is another kind of this fish which may properly be called a BUTTS-KOPF; for the fore part of the head is blunt, but the fin on the back is three times as high as the former, and the colour darker; but the bigness is much the same.

The SPERMA-CETI-WHALE, or POT-WALFISH, so called by the *Dutch*, was thrown upon the western coast of *Holland* by a tempest in 1598. The length was near fifty-three feet, and the teeth in the lower jaw were placed in a double row, and there were sockets in the upper, which received the teeth when the mouth was shut. The teeth were as thick as a man's thumb. Those that have given us this account have forgot to take notice whether there were any fins on the back or not. There was another thrown upon the same shore in 1601, that was sixty feet long, and the circumference of the body was thirty-six feet.

The WHITE FISH of *Martens* is of the size of a Butts-kopf and the shape of a Whale. It has no fin on its back, in which it agrees with the common Whale. Likewise the tail is like that of a Whale, with a high bump

Bump on the head, in which there is a hole through which it spouts up water. The colour is of a yellowish white; and there is a great deal of fat in proportion to the bulk.

The SEA UNICORN, called by the *Hamburgers* NARWAL, is often met with near *Iceland*, *Greenland*, and other countries that lie very far North. It is a kind of Whale, and is from sixteen to twenty feet in length, and has a large horn growing at the end of the snout. It is of a spiral shape, and may be seen of different weights and sizes in the cabinets of the curious; some of which are at least three ells in length. These were formerly thought to be the horns of a land animal called a Unicorn; but now the learned are convinced, that no such creature is any where to be found.

It is very uncertain, whether these sort of fish are every where of the same shape, and the horns of an equal length; for we are informed they are seen in very distant seas. That described by *Tulpius* was very bulky, and eighteen feet in length, with a head like that of a Carp. The mouth was under the horn, which proceeded from the bones of the upper jaw, much in the same place where that of the Saw-fish is fixed; but not exactly in the middle of the jaw, but a little inclining towards the right. The skin was dusky, and under it there was a great deal of fat, from which the merchants extracted the oil, that had a very bad smell. The spine of the back consisted of very strong joints, and ended in a forked tail, to which there was fixed on each side a very strong fin. The horn was strait, hard, white, with deep channels from the broad base to the sharp point. It was so smooth, that a good judge would have taken it to be ivory of a snow-white colour, and exquisitely polished by art. It was nine feet in length, of which seven and a half appeared out of the skull. That part within the skull was more rough, and did not shine so much as the other.

Martens never saw one himself; but he was informed, that it has no fin on its back; which is agreeable to the figure given of it by *Tulpius*. It has a spout-hole in its neck, and swims swiftly in the water, holding up its horn out of it; and there are great shoals of them together.

together. The undermost fins on the tail are like those on a Whale. The skin of some is of a dappled grey, like a horse, and beneath on the belly it is white. On account of their swimming so swiftly, they are very seldom caught, tho' often seen. That seen by *Wormius* had a horn three ells long; and Mr. *Ray* has seen them nine or ten feet in length.

Dumantel affirms, that he saw one near the island of *St. Domingo*, in 1644, which was eighteen feet long, and as thick as a hog's head. The body was covered with scales as large as a crown-piece; and there were six large fins of a vermilion colour, four of which were placed on the belly, and the other two looked like ears:

The scales on the belly were yellow, the tail forked, the head like that of a horse, and covered with a hard brown skin. The horn was nine feet and a half long, and at the root it was sixteen inches in circumference. It was so hard, that a good file would scarcely touch it. It had two great gills like other fish, and the eyes were of the size of a hen's egg, with pupils of a sky-blue enamelled with yellow, and surrounded with a vermilion circle, which was succeeded by one very bright and shining like chrystal. The teeth in the fore part of the mouth were sharp, and the tongue was covered with a rough red skin. The flesh was larded with fat, and when it was boiled, it was flaky like cod. Above 300 people dined upon it, and thought it very fine eating. From this description it appears, that this fish cannot be the Narwal of the North seas.

The horn, or rather the tooth, is the only part used in medicine, and contains a great deal of oil, spirit, and volatile salt. It is in great vogue among the *Germans*, as an alexipharmac against poisons, contagious diseases, and the epilepsy of children. The dose in powder is from six grains to half a dram. It promotes sweat, and is likewise an absorbent; for which reason they make use of it in loosenesses and spitting of blood. In short, it has the same virtues as hartshorn; and therefore as this is much cheaper, it may very well be substituted in its room.

After what has been said, it will not be amiss to be a little more particular with regard to Whales. Though they

they bear the shape of fish, yet their internal structure in general resembles that of land-animals; for the blood of Whales is hot, and they have lungs wherewith to breathe, for which reason they cannot continue a long while under water. They couple like land animals, and they bring forth their young alive, suckling them with their teats. The fins of other fish are composed of spines united to each other by thin membranes; but those of the Whales consist of articulated bones in the shape of the hands and fingers of a man, and they are covered with muscles and a great deal of tendinous flesh. They have also a thick skin, like that which covers the rest of the body. Fins of the common sort would be too weak to guide such enormous masses, to resist the weight of their bodies in diving, and to avoid a fall.

All Whales have a large thick tail placed horizontally, to assist them in swimming, and to direct their course; and their flesh resembles that of land-animals, being covered every where with thick, porous, tendinous fat, called blubber, which serves to preserve their blood in a due warmth, and to render these animals more light, which would otherwise be too heavy to move and swim in the water. Every Whale has a thick large gut, which reaches a great way in the body; whose length however is undetermined, because the fishermen seldom open these fish, or trouble their heads about their entrails: however, it is known to have very thick coats, and is so wide it will easily contain a man. Perhaps this, by containing a great deal of air, may enable the Whale to become more light or heavy at pleasure, that it may sink down into the water, or rise to the top.

There are several sorts of Whales; which may be divided into those that have pipes or tubes, and those that have nostrils. Of those that breathe thro' two pipes, the *Greenland* Whale is one; and the *Fin-fish* another: but others have but one, as the *Cachalot*. Whales with nostrils are very uncommon; however, that there are such we are informed by *Faber*, and *Sir Robert Sibbald* in his natural history.

But the most natural division of these fish is into Whales with a smooth back, and Whales with a rough
back,

back. The true *Greenland* Whales and the North Caper are of the first class; and the Fin-fish and Sword-fish of the second.

The *Greenland* Whale has a smooth back, and is furnished with barbs; but of this we have already treated at large. The North Caper is another kind of Whale, that takes its name from the most northern promontory of *Norway*, because this fish is always found there in great plenty. It is exactly like the *Greenland* Whale, except in the head, and in having a smaller and flatter body. It yields but twenty or thirty tons of blubber, and the barbs are very small. It is also more active than the true Whale, and consequently more dangerous. The skin is whiter, and the jaw is not so long. The Fin-fish has been already described; however, there is another kind of Whale, by some called *Gubart*, or *Gibbartas*; but what it is, is not easy to say, tho' many times mentioned by authors. In the Philosophical Transactions there is mention made of Cubs, or young Whales, taken near the island of *Bermudas*, whose backs are sharp like the roof of a house, and the sides are surrounded with high bumps. The back is black, and the belly white. They are very active; and have prodigious strength, and send forth terrible cries when they are wounded. They have no teeth, and are longer than the *Greenland* Whale, but are not so thick; nor have they so much blubber, and what they have is not good. One of these was taken above an hundred feet in length. This by *Anderfon* is taken to be a sort of Fin-fish.

In the year 1723, there was a fish taken, that had a head not so thick as the common Whale, but much longer, and more pointed. The body was smaller and flatter behind, and it had two holes thro' which it blew the air, and made a sort of a whistling noise. It was about sixty feet long. The skin was loose from the body, and of a bluish black. The skin on its back was two feet high, and was neither crooked nor pointed; for which reason it was taken to be of the class of the Fin-fish. When it was wounded, it made a terrible noise, like that of a hog which the butchers are killing. It had no teeth, but barbs or fins in the mouth, that were not above two feet long, but were large in the

lower part, and of a triangular form. It yielded but fourteen tons of transparent grease or rather water, which being placed on the fire evaporated quite away.

The BUNCH or HUMP FISH, so called by the inhabitants of *New England*, has a hump on its back, instead of a fin, in the shape of a pale so termed by heralds, a foot in height, and of the thickness of a man's head. The fins on the sides are eighteen feet long; and they are very white, and placed almost in the middle of the body. The blubber is like that of a Fin-fish; but the Whale-bone, or fins, are not so good, though better than that of the former.

The STRAG-WHALE, called by some the *Knobbed-fish*, is found on the coast of *New England*, and has on the back half a dozen knobs or bumps instead of a fin. It is not very unlike the true whale with regard to its shape and quantity of blubber. The barbs, or Whale-bone is white, but does not cleave very well.

Fish of the Whale kind that have teeth, are the *Sea Unicorn* already taken notice of. A captain of *Hamburg* took one in 1684, that had two of these horns, or teeth, for so they are called by some. In 1739, in *February*, a *Sea Unicorn* was brought to *Hamburg* in a boat which had entered the river *Elbe* by the tide, where he died on the sands at low water. This fish was more thick than long, and had a truncated head like a portmanteau. The horn or tooth proceeded from the left side, and it had two small fins with a very broad tail placed horizontally. The skin was as white as snow, and variegated with a vast number of black spots; but the belly was all over white and shining, and as soft as velvet. It was ten feet and a half in length from the tip of the snout to the end of the tail, and the horn was five feet four inches long; each fin was nine inches long, and about twice as broad as a man's hand. The tail was three feet broad, and two inches and a half thick. The tooth or horn was wreathed, and proceeded from the upper jaw towards the left side. The right side of the muzzle was shut, and intirely covered with a skin, under which there was no cavity in the bone of the head. The snout was very low, and the under lip thin and short, with a very small mouth, for it did not open
above

above the breadth of a man's hand. The edges of the snout were a little hard and rough, but there was no sign of teeth; and the tongue nearly filled the mouth. On the top of the head there was a hole, or double pipe, furnished with a valve which it could open or shut at pleasure. The animal breathed through this, and could spout out water. The eyes were placed very low in the head, and did not rise above the snout; their opening was very small, and they were furnished with a sort of eye-lids. This animal was a male, but the penis did not appear out of the body. As for the fish with two horns, they are very uncommon: however, there is one at *Amsterdam*, and another at *Hamburg*, which are kept as rarities. They proceed in a right line from the head, and are but two inches asunder at the root; but at the end they are thirteen inches distant.

The *Sperma-ceti* WHALE has a pipe or tube in the fore part of the head, through which it spouts the water. It is sixty feet long, and yields at least thirty six tons of blubber. Over the snout the fat is two feet thick, but on the top of the head it is only three inches, and it lies directly upon the thick membrane that covers the brain. This is divided into twenty eight cells, and that part of it called the sperma-ceti is white and transparent, but, when taken out, coagulates into small portions like flakes of snow. All the blubber of this fish is granulated with the same substance, and in several parts there are cavities quite full of it. Towards the bottom of the back there are three bunches; the first of which is eighteen inches high; the second, six; and the third, three. When it plunges it always turns on the right side, and sinks down in that attitude. The head is half the size of the fish, and is in shape like the butt end of a musket. In the upper jaw there are three or four teeth on each side; besides which, there are holes, to receive those of the lower jaw, which is well furnished therewith; but the greatest are before, and the least behind. When one of these teeth is drawn out, the shape is like a large cucumber.

A captain of a ship, that has carefully examined the brain, affirms, that on the upper part of the head, the fat is of the thickness of a man's hand, and that below
it

it there is a thick nervous membrane, which serves instead of a skull. Under this there is another of the same texture near four inches thick, which extends from the snout to the back part of the head, which divides it on the top into two parts. The first chamber is between these two membranes, and contains that part of the brain which is most valuable, and out of which the best sperma-ceti is prepared. The partitions of the cells in this chamber are formed of a substance that appears like thick crape, and the captain filled seven cags with a valuable oil contained therein. It is at first clear and white, but, being poured into water, coagulates like curds; and yet when the water is taken away, it becomes as fluid as before. Under this chamber there is another placed over the palate of the mouth, and, according to the size of the fish, is from four to seven feet and a half high. It is full of the same sort of fluid, and is distributed like honey into small cells, whose partitions resemble the film or skin on the inside of an egg-shell. In proportion as the brain is taken away from this chamber, it fills again, by means of a large pipe or vein, from all parts of the body. With this he filled eleven cags. The vein, or large vessel, is as thick as a man's thigh, and runs along the spine of the back as far as the tail, where it is not above an inch thick. Hence it appears, that the vessel improperly called a vein contains the spinal marrow of this fish, which is well known to be much of the same substance with the brain itself; and consequently cannot proceed from all parts of the body. The tongue is small in proportion to the fish; but the mouth is so large, that an ox may enter therein with ease; and the stomach, when opened, has been found full of half-digested fish, at least seven feet long. The fishers of *Hamburg* have got from one Sperma-ceti Whale above forty tons of blubber. The flesh, which is very hard, consists of large fibres intermixed with a great number of nerves, and very thick stiff tendons; insomuch that there are few places where the harpoon can enter.

The *Sperma ceti* Whale of *New-England* is somewhat different from the former; for the teeth are larger, and placed like the teeth of a mill-wheel, and as thick as a
man's

man's arm. They are of a grey colour, and have a bunch or hump on the back; and one of forty feet long will yield twelve tons of the oil out of which sperma ceti is made. The oil which is made of their blubber is clearer and whiter than that of any other sort of Whale. When they are hurt, they throw themselves on their back, and endeavour to defend themselves with their mouths. This is the Whale that yields the amber-grease, and is taken notice of in the Philosophical Transactions. It consists of round lumps from three to twelve inches in diameter, which weigh from one pound and a half to twenty pounds. Though they are loose, they are inclosed in an oval vessel three or four feet long, and two broad, much of the shape of an ox's bladder; only their extremities are a little more pointed. This bag terminates in two pipes; whereof one grows smaller by degrees till it reaches the penis, and runs through it; the other proceeds to the kidneys, where it terminates in an orifice at the other end of the bag. This is suspended directly over the testicles, which are above a foot long, and are placed, according to the length, from the root of the penis to four or five inches below the navel, and three or four above the vent. It is near full of a dark orange fluid not quite so thick as oil, but smells like it, and is much stronger than the pieces of amber-grease that swim therein. They are very hard while the fish is alive, and there is often found at the opening of the bag round fragments of the same matter and consistence. There are never above four balls in a bag. It is said, that these balls of amber-grease are never found in these Whales till they are full grown, and only in the males. The small black fragments, that resemble the bills of birds, and pieces of broken shells, have caused several naturalists to entertain several odd opinions concerning the origin of amber-grease. Mr. *Dudley* affirms, as may be seen in the Philosophical Transactions, that they are bills of certain small birds of which Whales are very fond.

In 1720, a *Sperma-ceti* Whale was thrown, by a furious tempest and a high tide, into the river *Elbe*, where it died, and was dragged by the peasants as far as *Wischawen*, a village a league below *Stade*. It was sixty
five

five feet long, and about thirty five broad, with an enormous head in proportion to the bulk of the fish. They cut this fish up to get the blubber, and in opening the head, the brain or sperma-ceti run out in large quantities.

There is another Whale of this kind having teeth only in the lower jaw, and a fin on the back. One of these was taken by the fishers of *Bremen* in the latitude of seventy seven degrees and a half. It was seventy feet long; and some are said to be met with that are at least ninety. The colour was blackish on the back, and whitish under the belly; and the head was of an enormous size, and of a terrible aspect. It was in shape like the butt end of a musket, and was nearly half as big as the whole fish. On the fore part of the head it had only a single tube to spout out water. The mouth was not so large as that of the Whale, but the throat was wider; for being wounded, it threw up a fish twelve feet in length. It had fifty two large sharp teeth in the lower jaw, placed at equal distances like those of a saw, and each of them weighed two pounds. In the upper jaw there were holes or cavities, in which the teeth entered as into a sheath. The eyes were shining and yellowish, like those of other Whales; the tongue was pointed, and of the colour of fire, but small in proportion to the fish. On the side of the head there were two fins, each of which was a foot and a half long, with toes consisting of seven joints; whereas other Whales have but five. On the top of the back there was a high bump, and near the tail another resembling the fin.

In *December* 1723, there were seventeen other Whales of this kind thrown upon the sand-bank in the territory of *Hamburg*, part of which were males, and the others females. They were from forty to seventy feet long, and they were all lying on one side. The head above the eyes resembled a baker's oven, and the lower jaw was a little shorter than the upper. The breadth of each was about a foot, and they terminated in a point. That below had forty two teeth, two inches thick and an inch long, with a crooked point like those of wolves; and in the upper there were holes to receive them very exactly. They were of a brown colour, and the skin was

was half an inch thick ; but the blubber was from eight to twelve feet deep, and, while fresh, it was so white it could not be distinguished from lard. From some heads they obtained four or five tons of raw sperma-ceti. The teeth, when taken out of the head, were near eight inches long, and seven in circumference near the gums.

Another Whale of this kind was thrown on the shore in the district of *Eiderstadd*, which had a tooth at the end of the snout, and twenty five on each side, that is, fifty one in all ; they were as crooked as a sickle. This fish was forty eight feet long, twelve high, and thirty six in circumference. At the bottom of the back, towards the tail, there was a bump four feet long, and a foot and a half high. The fin was four feet long, and a foot and a half broad. The breadth of the tail was twelve inches, and the point out of which it spouted the water, was a foot and a half long.

In 1752, there was a Whale thrown on shore in the harbour of *Sebra* in *Spain*, and was called by the inhabitants the Molar Fish. It was sixty feet long, twenty feet six inches high, and fifty two feet six inches in circumference. The lower jaw was fourteen feet nine inches long. From the upper lip to the top of the head was eleven feet seven inches, and the pipe, which served for a water-spout, was a foot and six inches. The breadth of the hole of the throat was four feet six inches, and the height six feet six inches. The weight was about eighteen hundred quintals, and the entrails filled six boats, of sixty quintals burden each. The skin of the back was of a dark blue, and of the belly, white. The inhabitants could not draw it on shore ; and therefore cut it in pieces where it lay, and they were employed three days in cutting it to pieces. The oil streamed from it on all sides ; and after they had cloven the head, a clear oil spouted from it in a stream of the thickness of a man's arm, and about five feet high, which lasted for half an hour without intermission. They got off the lower jaw of this Whale, which required twelve men to drag it into the boat ; and it was sent to *Paris*.

In the years 1707 and 1709, there were two Whales cast on shore at the *Cape of Good Hope*. They were both of a dark brown colour, and their jaws were eighteen feet

feet long, and about thirteen broad. They had no teeth; but the jaws were covered with a skin as hard as iron. Their eyes were no bigger than those of a horse with regard to their outward appearance, but when taken from the head, were as large as a man's head. Under the orbit there was a large cavity, from which they spouted plenty of water to a considerable height. There were very large fins under the head, and the tail terminated in the shape of a half-moon, and was very broad. The tongue of each weighed six hundred pounds; but the throat was so narrow, that a man could hardly thrust in his hand. One of these Whales was fifty feet long, and twelve high, and the other forty five feet long, twelve broad, and eighteen high.

The substance called sperma-ceti contains a great deal of oil, and is prepared in the following manner at *Bayonne*, and *St. Jean de Luz*. They take the brain, and melt it over a gentle fire, and afterwards pour it into moulds in the shape of sugar-loaves. When it is cold, and the oil is run out, they take and melt it again several times till it becomes very pure and white, and then they cut it into thin slices in the same manner as we see it when brought to us. That is best that is white, clear, transparent, and that is not adulterated with virgin-wax; and this may be known as well by the smell of the wax, as the slices being thinner and finer than usual. It ought to be kept in glass vessels close stopt, because the air makes it grow yellow and rancid.

Sperma-ceti is balsamic, and an excellent medicine in diseases of the breast, and to blunt the sharpness of the humours. It is very efficacious in old coughs proceeding from defluxions, and in all internal ulcers. It is also excellent when the intestines have been deprived of their mucus by the acrimony of bilious humours, as in loosenesses, and the bloody flux. It is also good against pissing of blood; it softens and relaxes the fibres, and often contributes to the expulsion of gravel by enlarging the passages. It is also of use to resolve coagulated blood, when occasioned by external injuries; as also to ease pains after child-bearing. The dose is from twelve grains to a scruple, when given alone, or mixed with the yolk of an egg; but in other mixtures it is given

from half a dram to a dram. Externally it is emollient and vulnerary, and is of great use in the small-pox, if the pustules are anointed with it when they begin to grow hard: but then it must be mixed with oil of sweet almonds; by this means it will prevent in some measure the deep scars they generally leave behind them. It is also good in plasters, to dissolve the tumours of the breasts proceeding from the coagulation of the milk. Some use it as a cosmetic, to soften the skin, and to render the complexion clear.

The PORPUS, or PORPESSE, is a fish frequently seen in the North seas, and particularly about *England*. It is so called from PORCUS-PISCIS, or the HOG-FISH, from the great quantity of fat that covers the whole body much in the same manner as in a hog. It is about six feet long, and is frequently seen leaping in and out of the water, making an uncouth kind of a noise like snorting. The shape is long and round, but towards the tail it is small, tapering like a cone, and at the very root of the tail it is flat. The snout is long and sharp, and well furnished with strong muscles, to enable it to dig up small fish out of the sand. The skin is thin, smooth, and destitute of scales; and the back is of a very dark blue inclining to black. About the middle of the sides it begins to grow whitish, and the black spots and streaks wherewith it is beautifully painted, at the meeting of the colours, gradually changes into a perfect white.

It has no gills, nor holes where the gills should be; but on the top of the head there is a wide pipe, which opens like a half-moon, and inwardly is divided by a bony substance, as it were into two nostrils. These afterwards unite in one, and open with a single hole into the mouth near the gullet. The end of this aperture is provided with a strong sphincter, whereby it may be opened or shut at pleasure. The upper part of the nostrils are covered with a strong skin, in the manner of an epiglottis, to hinder the water from entering therein contrary to the inclination of this fish.

The eyes are small in proportion to the bulk of the body, at least as to outward appearance; for when the eye-lids are cut off, they seem to be larger. The mouth is not wide, but is furnished with forty eight teeth regularly

larly placed and disposed, there being spaces left between the teeth of the lower jaw to receive those of the upper, and on the contrary. They are all sharp, and seem to be a little loose in their sockets; and the tongue is flat, smooth, and connected throughout its length to the bottom of the mouth; for which reason it cannot be removed out of its place. There are only three fins besides the tail; one of which is seated on the back, and two near the parts where the gills are seen in other fish. The tail is placed horizontally, like that of a Whale, which is supposed to be necessary to enable this fish to rise often and take breath.

The belly, as well as all other parts of the body, is covered with fat, which has a tendency to preserve the equilibrium between the fish and the water; for otherwise it would be difficult for this fish to rise therein. The fat is likewise a great defence against the cold, as it tends to preserve the natural heat, serving for the same purpose as warm cloaths does to men in the severe weather of the winter. The flesh is red, and looks very much like pork.

This fish has a pretty large caul, which does not lye close upon the intestines, but hangs loose, and is placed between the stomach and the guts. It has three stomachs, or at least there are three bags, which may be so called, though they join together. When one of these was dissected, it was found full of Sand-eels; and in that of another were bones of fish, Shell-fish, and Prawns, mixed with a little sand. The guts of a young Porpus, that was no more than three feet and a half in length, measured no less than forty-eight feet. There is no distinction into great and small, nor so much as a blind gut, nor any appendage whatever. The pancreas, or sweetbread is large, and adheres closely to the third, or lowermost stomach; the liver has neither lobes, nor gall bladder. The spleen is small, but composed of several distinct lobes; and the kidneys are broad, flat and oblong, adhering to the back. Likewise the urinary bladder is small, but the penis is long, and lies concealed in a sort of a sheath, the chink of which only appears outwardly. The testicles are placed at the bottom of the abdomen, are of an oval shape, and their interna' sub-

stance is like that of quadrupedes, as are the rest of the preparing vessels. The femital vessels open into the urinary passage, with several ducts a little above the bladder. The diaphragm, or midriff is entirely muscular, without any tendinous membrane in the middle. The heart is like that of quadrupedes, only the auricles are larger in proportion, and it is placed in an ample pericardium. The lungs are likewise like those of four-footed animals, except that they are bigger, and not so spongy. The brain in like manner resembles that of Quadrupedes, but is not quite so flabby; however there are no olfactory nerves, nor maxillary processes.

There are thirteen ribs, six short and seven long; and the breast-bone is short, but the shoulder bones are broad and flat. This fish is seldom caught but by chance, or when they run on shore in pursuit of their prey, because the flesh is not desirable to feed upon, and there is nothing but the fat to tempt fishermen to take them. However in some parts of the *East-Indies* they make it their business to catch as many as they can, though they are only used to make oil of their fat. These fish can swim but a little way at a time before they come up to breath, and then they make such a noise with their blowing that they may be heard at a great distance in calm weather.

The DOLPHIN, of the ancients, properly so called, is of the Cetaceous kind, and is covered with a smooth hard skin. It has an oblong roundish body, with a long round snout, which is turned a little upwards. The cleft of the mouth is long, and shuts very close; and the teeth are small and sharp. The tongue is large and fleshy, and their eyes are also large; but they are outwardly so much covered with the skin, that nothing but the pupil appears. They are placed near the corners of the mouth, and almost in the same line. There is a double tube, or pipe on the top of the snout, through which it spouts out water. It is placed just before the brain, and communicates with the wind pipe; and there is a very strong fin on each side, not far from the mouth, and another on the back, which is partly bony, and partly gristly. The tail is made up of two fins.

The

The skin is thick and firm, but soft on account of the fat that lies underneath; and on the back it is black, but on the belly white. The flesh is blackish, and resembles that of a hog, and the inner parts are not unlike those of the Porpus; but it differs from that fish in having a long snout somewhat like a goose, and being more slender and fleshy, though not so fat; likewise a Porpus is less, but has a broader back, and a blunt snout. The Dolphin is said to go with young ten months, seldom producing above one at a time, and that in the midst of summer. They live to a considerable age, some say twenty-five or thirty years; and they sleep with the snout out of the water. When they seem to play on the top of the water, many affirm it is a sign of an approaching tempest. There are various stories in ancient authors of the love of the Dolphin to mankind, but they are now looked upon to be nothing but fables. They swim exceeding swift, and pass at a stated season out of the *Mediterranean* sea, through the *Dardenells*, into the black sea. They are sometimes seen in shoals, and there is always a male and female at least together. They will live three days out of water, during which they are said to make such a mournful noise as to affect those greatly who are not used to hear them.

There are several other fish, of the Cetaceous kind, which have only been seen by chance, and for that reason have not been fully described. There was one, for instance, that came into the *Firth of Forth* near *Edinburgh*, and was thrown on shore. The head was so large, that when the tail was cut off, it was equal in length to the remaining part, and was thicker than the body. The lower jaw was more prominent, by two feet and a half, than the upper, and the upper was five feet long. The eyes were no larger than those of a Had-dock; and, a little above the middle of the snout, there was a spout-hole, which was double, and covered over with a sort of a stopper. It had forty two teeth, all in the shape of a sickle, but thicker in the middle than elsewhere. They terminated upwards like a cone, and had very sharp points. It had a long spine, or prickle on the back, instead of a fin.

In *November*, 1690, there was another cast on shore, that, from the snout to the end of the tail, was forty-six feet in length, and on the back, near the tail, there was a protuberance like a horn, which the fishermen called a prickle. The nostrils were placed in the upper jaw pretty high in the snout, being, from its extremity, six feet eight inches distant. They were eight or nine inches long, and divided from each other by a gristle. The eyes appeared outwardly to be of the size of those of an ox. Another was cast upon an island of the *Orcades* in 1687, which had an upright fin on the middle of the back, resembling the mizen mast of a ship, for which reason the sailors gave it that name.

In 1692, another Whale was thrown ashore in the above-mentioned frith, which was seventy-eight feet in length, and of a proportionable thickness. The lower jaw was much larger every way than the upper, and of a semicircular shape. It had no spout-hole, but towards the forehead there was a double large hole of a pyramidal shape; the base of which was towards the forehead, but towards the mouth it became narrow, and was divided by a gristle. It had three fins in all, but we are not told where they were placed, at least Mr. *Ray* says nothing about them.

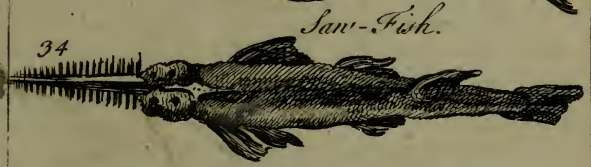
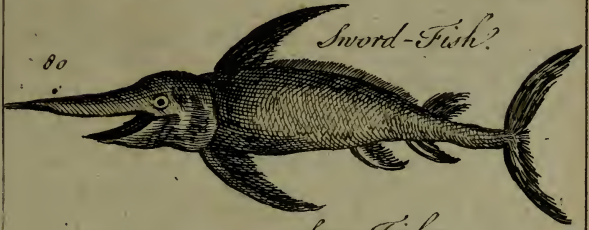


C H A P. III.

Of Fishes of the cartilaginous kind.

THE WHITE SHARK is the largest of this kind, for some of them weigh one thousand pounds, and are sixteen feet in length. Some pretend that they have seen those of four thousand pounds weight, and particularly one that had an entire man in its belly. By way of confirmation, *Rondeletius* informs us, that he saw one that had such a prodigious mouth and throat that it might with ease swallow a man. This some take to be the fish that swallowed up *Jonas*, when he continued three days and three nights in its belly.

The



The head is large, and somewhat depressed; the snout oblong, and the eyes large. The mouth is enormously wide, and the teeth very numerous and terrible, there being five or six rows of them, which are extremely hard and sharp, and of a triangular figure. Some say there are seventy-two in each jaw, which make one hundred forty-four in the whole. However, others think that the number of teeth is uncertain, and that they vary according to the age of the fish; those that are oldest having the greatest number of teeth.

The fins are larger, in proportion, than in other fish, and the tail is forked, but the upper part is considerably longer than the lower. There is one fin on the back, another near the tail, two on the belly, between which the vent is placed, and there are also two near the gills and mouth. The skin is rough, the eyes large and round, and furnished with variety of muscles, that enable this fish to turn them to what side he pleases; but, instead of optick nerves, there is only a hard gristly substance. The mouth is not placed, as in other fish, at the end of the snout, but under the eyes at some distance from it; which obliges him to turn on his back when he takes his prey.

It has a most monstrous stomach, and an extremely wide throat, as was before observed. The liver is very fat, and divided into two large lobes. The flesh is white, and has no great rankness in its taste; for which reason it is frequently eaten by some of our sailors, especially when they can come at nothing better. The *Buccaneers* lived much upon it; and they first boiled it, then squeezed out the juice, and after stewed it with vinegar and pepper.

Sharks often follow ships for a long while together, at which time the sailors catch them by striking a barbed instrument, called a fozgig, into their bodies, and so draw them up into the ship. As soon as he is laid upon the deck, he begins to flounce in a terrible manner with his tail; and therefore they cut it off with an ax as fast as they can. They sometimes bait a large iron hook, made fast to a thick rope, with a piece of salt beef, which he will swallow very greedily, and then they drag him on board.

This fish is not only to be found in the *Mediterranean*, but in most parts of the ocean; and it is not seldom that they will lay hold of a man's leg or thigh when they have an opportunity, and either drag him into the water or bite the limb off.

The BLUE SHARK is as bold and mischievous a fish as any that swims, and has a back of a lively blue colour, but its belly is of a silver white. The skin is not rough, as in a Dog-fish, and others of the same kind; but the snout is long, sharp, flat, and indented with many small holes above and below. The length is from six to eight feet, to which the thickness is proportionable. The mouth is very large, and placed as in the former, with teeth sharp, and notched like a saw; but there are not so many as in the White Shark. The holes of the gills are five on each side, and the tail is divided into two parts; the uppermost of which being much longer than the lower.

The stomach of this Shark is so large, that a whole Tunny-fish has been found therein. The upper part of the guts are small, the lower thick, and the liver is large, and divided into two lobes, being of a bluish red colour. The spleen is of a singular shape, for it is divided into a vast number of small lobes, which resemble a cluster of eggs or spawn. This is probably the same fish which the sailors call the Ground Shark, from its coming into shallow places near the sea-shore, where they sometimes lay hold of an arm or leg of those that are bathing in the sea-water. Some tell us, that they will snap at the feet of those that are walking by the sea-side, which is not very improbable. It is to be found in various parts of the ocean, and often appears near the sea-coasts of *Cornwall*.

The SHARK, called MALTHA by *Rondeletius*, and SORRAT by the inhabitants of *Narbonne*, has a short snout, and the mouth is placed but a little below the snout. The teeth appear much the same as in the White Shark, which they resemble both in the inner and outer parts, only there is no white skin over the white of the eyes.

The CUCURI of *Brazil*, is called CASSAON, by some, and is a kin to the White Shark, though it is only two feet
and

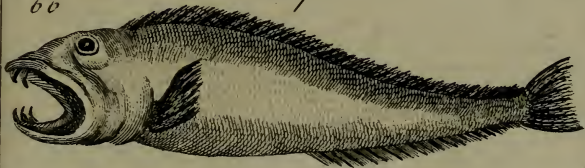
31

Sea-Fox.



66

Sea-Wolf.



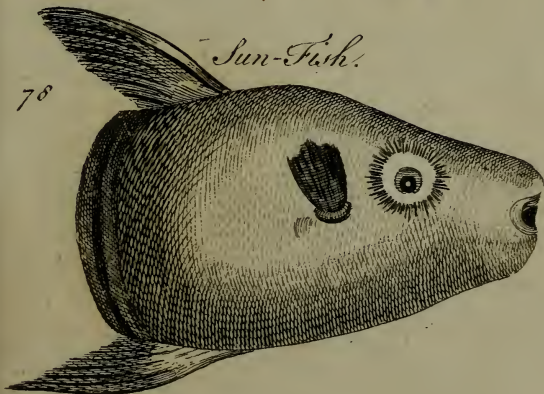
90

Tunny-Fish



70

Sun-Fish.





and a half in length. The head terminates like the conick section, called an Hyperbola. The place of the mouth, the number of the fins, and the shape, are like those of a White Shark; likewise, the skin is of the same colour, that is ash-coloured above, and white below; but it has only a single row of teeth.

The *TOPE*, so called in *Cornwall*, differs from the smooth Dog-fish in the size, for it is much longer; and in the teeth, for that has none, and this has a great number; likewise in the eyes, which have lesser pupils in proportion to the bulk of the body. The snout, so far as it runs beyond the nostrils, is transparent. It has been taken frequently near *Penzance* in *Cornwall*.

The *SEA FOX*, or *SEA-APE*, is so called on account of the length of its tail, and from the strong smell of the flesh, which is like that of a fox. It is sometimes so large, as to weigh above a hundred pounds; and has a round thick body, a small mouth, not much below the snout, which is sharp armed with sharp teeth. This fish has some resemblance to a Shark in most things, except the body and tail; for the body of that is thicker and shorter, and the tail much longer than in any of this kind. The skin of the belly is white, and that of the back of an ash-colour. The tail is crooked, and has some resemblance to a sword, being as long as the rest of his body, and at the root there is a fin. It is usually met with in the *Mediterranean* sea.

Rondeletius informs us, that he once saw a Sea-fox opened, which had several young ones in its belly. The fishermen, not being used to such a sight, foolishly imagined they had been swallowed as a prey.

The *BALANCE-FISH* sometimes is as large as some of the Cetaceous kind. It differs from all others in the monstrous shape of the head, which resembles a smith's large hammer, at each end of which the eyes are placed; but the forehead, or fore part swells out into a sort of semicircle, only it terminates in an edge. The mouth is underneath, is very large, and armed with exceeding strong, broad, sharp teeth, notched at the sides like a saw, and of which there are three or four rows. The tongue is broad, and like that of a man; and the body is round and long, without scales, and covered

with a skin like leather. The spines on the back are continued to the upper part of the tail, where there are fins on each side. The lesser horn of the tail, if it may be so called, is very short. In other things it resembles a Shark, and is a native of the *Mediterranean* sea; but it may be easily distinguished, from all others of this kind, by the shape of its head. There is another fish a-kin to this, called by the *Dutch* CRUY SHAYE. It is like a Shark in all things except the head, which is of a triangular shape, or rather like a heart; the mouth is narrow, and armed with a double row of sharp teeth.

The PICKED DOG, OR HOUND FISH, has a roundish oblong body, which is covered with a rough skin, that is generally known among us by the name of fish-skin, and is used by joiners, and other artificers for polishing wood and other things. The back is of a brownish ash-colour, and the belly is white, and smoother than in other parts. The eyes are in the shape of a boat, and covered with a double membrane. The mouth is placed just under the eyes, and is armed with a double row of small teeth. The two back fins have strong, sharp spines, or prickles standing before them, of which that nearest the head is thicker and longer, and that nearest the tail shorter and less. It has never a fin on the lower part of the body between the vent and tail; by which it may be distinguished from all fish of this kind. The BROWN DOG FISH differs from the former in the dusky colour of its back; and it is likewise more dark and rough on the belly than on the back. The snout is blunt, and the nostrils large, placed near the extremity of the snout. The former brings forth its young alive, which are produced from eggs hatched within the body of this fish. It is never very large, for it is seldom above twenty pounds in weight. The stomach is large, and several Cuttle-fish have been found in it at once. It is frequently taken in the *British* ocean, and in the *Indis* sea.

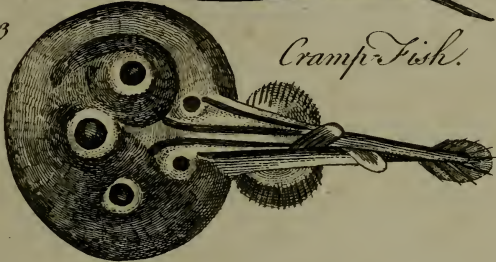
The CENTRINA is of the Dog kind, and is called by the *Italians* PESCE PORCO, from its likeness to a Porcupine. The body, from the head to the vent, is of a triangular shape, of which the belly, being broad and flat, makes one of the sides; and the parts on each side,
that

215



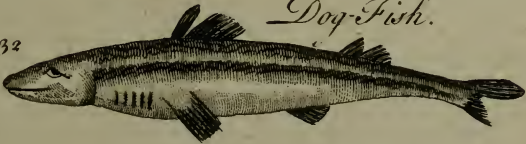
Moon-Fish?

43



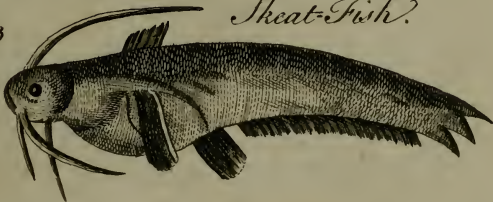
Cramp-Fish.

32



Dog-Fish.

113



Skate-Fish?

that join to the back, make the two other sides, but the back itself terminates in an acute angle: The colour is of a dark brown, the head is small and flat, and the mouth small, and placed on the under side of the head. In the upper jaw there are three rows of teeth, but in the lower there is only one. There is no fin below the vent, in which it agrees with the Picked-dog-fish, but the back fin before, for there are two, has a spine, or prickle that inclines towards the head, and seems to run through the fin itself at the root. The spine, or prickle belonging to the hinder fin, seems to run through it transversely, and turns towards the tail; by which mark it may be known from all other fish of this kind.

They are taken of different sizes; but the liver of one was so large, that it weighed six pounds. This is of a whitish colour, and is divided into two lobes; and the stomach is small, but the spleen double. Near the eyes are two holes in the shape of a half-moon, which probably are the organs of hearing. This fish is taken in the *Mediterranean sea*, and is sometimes brought to the fish markets at *Rome*; but the flesh is tough, and so full of hard fibres, that it will neither separate from the skin, nor yield readily to the edge of a knife. It is but seldom caught, and more seldom eaten; for the poorest people will not touch it, unless when other fish are exceeding scarce. Some say it is of a poisonous nature.

The SMOOTH DOG-FISH differs from the *Top* in its size, which is much less; in its teeth, for this has none, and in its eyes, which are more open; but, instead of teeth, the bones of each jaw are as rough as a file. The skin is smooth, whereas in all others of this kind it is rough, and by that mark may be readily distinguished from the Picked dog-fish.

The GREATER CAT-FISH, called in *Cornwall* the *BOUNCE*, differs from Dog-fishes in having a broader back, and a shorter and blunter snout, reaching but a little beyond the mouth. It is all over speckled with reddish black spots; but the skin is much rougher. It is often met with in the *British sea*.

The LESSER ROUGH HOUND, or *MORGAY*, differs from the former in being much less, in having a

body of a more long and slender shape, and in being of a fainter colour, with a reddish cast; and there are a great number of small specks or spots, partly brown, partly whitish, sprinkled all over it without any regular order

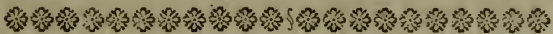
The GREATEST CAT-FISH differs from the Bounce, in being of an ash-colour, in having larger and fewer spots, with a longer and thicker snout, and the nostrils are at a greater distance from the mouth. The fins at the vent are not joined together as in that, but are distinctly separated; likewise, the fin beneath the vent is nearer to it than in the Bounce.

The PICKED DOG-FISH of *Clusius*, is very anomalous, so that it may be doubted whether it belongs to this kind or not. The colour is of a brownish ash, the snout is broad, and the skin smooth, without any scales. The eyes are clouded by a skin or membrane, which rises upward from the lower part; and the mouth is placed beneath the head. There are two holes near the vent; and it agrees with this kind, in being cartilaginous. It differs from it in having only four teeth in its mouth, two in the lower jaw, and two in the upper; and in having a single spine or prickle, not on the back, but almost on the neck, six inches long, which is broad and hollow in the lower part. It has only a single gill on each side, and the gill fins are longer than in Dog-fish. The fin on the back is extremely long, and reaches almost to the end of the tail, that is, to that part where it begins to be very slender; from thence the tail is seven inches long, and seems to resemble that of a mouse. It is taken in the North-sea by those who are concerned in the herring fishery.

The SAW-FISH has its name from a saw, which the bone of its nose is, by some, thought to resemble; but they are more like the teeth of a comb, placed at some distance from each other. They are from twenty to thirty in number, placed on each side the bone; and are in some five feet in length when the body of the fish is ten feet. On the back it is of an ash-colour, and the belly is white; and there are no teeth in the mouth, which is transversely cleft like that of the Balance-fish; but the lips are as rough as a file. There are two fins on the

the back, and that next the head is like the *Buts-kopfs*; and that towards the tail is hollowed like a fickle. On the belly there are four fins, two on each side; and those next the head are broadest and longest; those next the tail are placed directly under the uppermost fin on the back; and the tail is like a piece of board which dyers make use of to open, or stretch the stockings, and is widened behind and before; but it is not divided into two parts. The shape somewhat resembles a man's naked arm, and the nostrils are oblong. The eyes stand high out of the head, and the mouth is directly underneath the eyes. *Marten* observes, that some grow to be twenty feet long.

The Saw-fish are great enemies to the Whale and Fin-fish, for many of them will gather about one, and never leave him till he is killed. They are fond of nothing but his tongue, for they leave all the rest behind. When seamen and sailors happen to see this sight, they never offer to intermeddle, but let them alone till the Whale is conquered, for, should they do otherwise, their long-boats would fright the Saw-fish away, and then the Whale would make his escape. *Frazier* happened to see a battle of this kind, between a Whale and the Sword-fish, on the coast of *Chili* in *South America*; from whence it appears, that they inhabit different parts of the ocean; however, they are in greatest plenty in the North-seas; perhaps because there are the greatest number of Whales.



C H A P. III.

Of cartilaginous Flat-fish.

THE SEA EAGLE has a head almost like that of a toad, and the eyes are large, round, and prominent. The sides are expanded like wings, and the tail is long and slender, being sometimes above two ells in length. It is armed with a long sharp weapon; and the body, in bigness, exceeds a Fire flaire; and the weapon is not less dangerous than that of the Fire-flaire,

being greatly dreaded by fishermen. The mouth is full of teeth, and the skin is soft and smooth; the upper part being livid, and the under white. They are generally taken small; but some of them have been found to weigh 300 pounds. It may be distinguished from other cartilaginous fish by the length of its tail, and by its large weapon or spine, which is sometimes single, and sometimes double, but always venemous. It is an inhabitant of the *Mediterranean* sea, and is often brought to *Rome* and *Naples*. The flesh is soft and moist, with a rank nauseous smell, and therefore is seldom or never eaten.

The FIRE-FLAIRE differs from other cartilaginous fish of this kind in having a remarkable weapon-spine on its tail, of the length of a man's middle finger, which is stiff, exceeding sharp, and ferrated; and the teeth bend backwards. The tail is remarkably long, and the head flat and depressed, like the body. The eyes are in the upper part of the head, and the mouth in the lower. There are two apertures, or holes, behind the eyes; that is, on each side one; and the eyes themselves are large, with an iris of a deep yellow, and a blackish pupil. The mouth is large, and placed transversly, and the snout is long and sharp at the end. The apertures on the gills are five on each side, beginning a little below the mouth, and ending on the breast. The sides are terminated, throughout their whole length, by a broad fin. The tail is remarkably long, and of a round shape, having no fin thereon; the back is roundish, and the belly flat. The spine is venomous, which the fishermen take a great deal of care to avoid.

There is another FIRE-FLAIRE, called at *Naples* ALTA VELA, which is smooth, and has a head like the former, but less in proportion. The colour is the same, but the shape is different; for it is blunter at the extreme parts, and the tail is not above half the length of the body; but there is a sharp spine, nearer the beginning of the tail than the end, and sometimes two, bending back to the tail, and ferrated. It does not grow so large as the former, and its flesh is in some request.

The WHIP-RAY has a large broad body, almost of a triangular shape; and on each side there is a broad fleshy

fleshy triangular skin. The head is of the size of that of a middling hog; but it is thick compressed, and has a sort of pit in the middle. The mouth is without teeth; but, in the room thereof, there are a great many small bones: the eyes are small, and the upper part of the body is of an iron-grey, almost blue, with white spots throughout; the lower part is white. The skin is smooth; and behind the tail there are two hooks, like fishing-hooks, placed one upon another, and near three inches long. This is a *Brazilian* fish; by the inhabitants called NARINARI, and is described by *Marcgrave*.

Dampier informs us, that there are two sorts of Whip-rays, one of which has a longer and smaller tail than the Sting-ray or Rasp-ray, and has a knob at the end shaped like a harpoon. It is about three feet and a half broad; but the other sort is three or four yards square, with long tails, which the sailors call sea-devils. *Nieukoff* tells us, that it has its name from its ugly shape, and that the eyes are on the upper part of the head; but the mouth is in a concavity below the head. The tail is like that of a Roach, and on each side there are two teats pointed towards the end. Perhaps these are the two excrescencies which serve for a penis in other fish of this kind. The skin on the head is full of brown spots, and some are near eight feet long.

The ROUGH-FLAIRE of *Belonius* is all over prickles, especially about the tail, which is as long as that of a Fine-flaire, and has several hooks placed in circles round about it.

The STING-RAY, called by the *Brazilians* AIREBE, is a kind of Flaire, sometimes above three feet in length, and is as broad as it is long. The tail is round, four feet in length, and about the middle there are two bony spines, that are thick and dentated behind, which serve for weapons. The mouth is little, without teeth; and the skin, on the upper part, is of an iron-colour; but, on the middle of the back, there are remarkable black tubercles or warts. The lower part of the body is entirely white and flat, as in the rest of this kind. Sir *Hans Sloan* takes notice of a fish of this kind, which is almost round, somewhat like a Torpedo or Numb-

Numb-fish, with tubercles on the back, and about four inches broad. The tail, he says, is only three inches long, and has a fin on the upper part, and near to it a spine or prickle about an inch long. Mr. *Ray* is in doubt whether this is not the same fish as the former.

The SKATE, or FLAIRE, is remarkably large, and will sometimes weigh above one hundred pounds; but, what is still more extraordinary, there was one sold, by a fishmonger, at *Cambridge* to *St. John's* college, which weighed two hundred pounds, and dined a hundred and twenty people. The length was forty-two inches, and the breadth thirty-one. The colour on the upper part is ash, thickly speckled with black spots; and the belly is white, which is likewise interspersed with small black spots. It has but few prickles, there being one row of them upon the tail; and the males are distinguished from the females by having several rows of crooked prickles on both sides the broad part of the fins.

The liver is of a dirty yellow, marbled with lines of a dark colour, and it is divided into three lobes; the gall bladder being placed in that towards the right. The spleen is large, reddish, and adheres to the stomach; and the pancreas, or sweet-bread, is placed at the angle, where the gut bends downwards. The guts are large, though they have but one fold; and the female has a capacious uterus, with very large cornua and ovaria. The male has feminal vessels on each side the belly, turgid with sperm, and at their extremities there are oblong glandulous bodies, supposed to be the testicles.

The great artery, soon after it leaves the heart, is divided into two branches, and then into three others, which pass to the three lowermost gills, from whence other vessels bring the blood back; for, as in quadrupedes, the blood passes through the lungs, so in fishes it all passes through the gills. Hence the reason is plain why the lively red colour of the gills is the certain sign of the freshness of any fish, for as soon as the blood has the least degree of putrefaction, the brightness of the colour vanishes.

Steno, in the anatomy of a skate, has discovered the spots on this fish to be a sort of glands, which secrete the slime that renders their bodies so slippery; for which reason

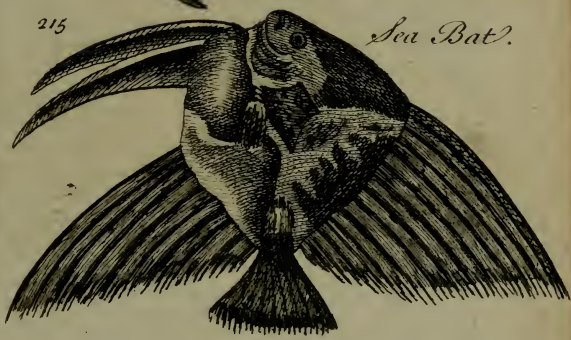
Butterfly-Fish.

117



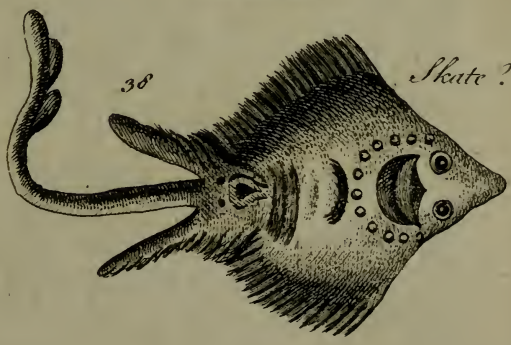
215

Sea Bat.



300

Skate ?



son he supposes the spots in other fish may serve for the same purpose. All fish of this kind are more rank, when first taken, than when they have been kept for two or three days. The winter is the proper season to feed upon them; for then the smell is not so strong, and the taste is more agreeable.

The THORN-BACK differs from the former in being less, and in being armed with a greater number of prickles, from whence it has its name; for there is one single row runs down the back, but on the tail there are three. The shape, except the tail, is nearly square, and yet a transverse line, drawn from corner to corner, is longer than another drawn from the head to the root of the tail; so that in some sense the fish is broader than it is long. One of these, being measured, was found to be sixteen inches and a half broad, and only twelve long, the tail excepted.

This fish has no scales, but is covered with a sort of slime, which renders it very slippery. The upper part is of a dusky colour, speckled with round white spots; and the under part is entirely white. The row of prickles, or thorns, on the back, are about thirty in number, and on each side the tail, besides that in the middle, there are two rows of prickles; but the lower part of the tail is smooth. The eyes are placed on the upper side of the head, being very prominent, and having no bone, or any thing else to defend them; only, on the inner side, there are small prickles. The pupils have round, jagged, covers underneath the horny coat, which are let down from the upper part of the eye; and near the eyes there are two holes, which some think serve for hearing, if it be true that any fish hear at all; for this is a matter still in dispute.

When a Thorn-back is laid with the belly uppermost, the nostrils appear in sight, being contiguous to the mouth, which is void of teeth; but the jaw-bones are as rough as a file. The gill's, as in other fish of this kind, are five holes, placed in a semicircular form; and on the belly there are two semicircles, one of which encompasses the breast, and the other the lower belly, which is divided from the upper by a bone where these circles touch. A little above the tail, there are two car-

tilaginous processes, the back part of which is divided, as it were, into teeth; to these two fins are joined, which reach to the tail. They rise from a gristle a little above the vent, which answers to the bone of the pubes in quadrupedes. There are two appendages joined to these in the male fish, which are supposed to serve instead of a penis. The orifice of the stomach opens immediately into the mouth; and the inner surface of the stomach is covered with a coat, or crust, which seems to be of a glandulous substance. This covering is extended over all the inside of the gut, but does not seem so thick as in the stomach. The liver is of a pale yellow, and is divided into three lobes, which look like so many tongues. The spleen is of a deep red colour, and placed under the middle lobe of the liver, between the two orifices of the stomach. The sweet-bread is seated at the bending of the gut, near the pylorus, and is furnished with a duct, as in land animals. The shape of the heart resembles that of the body, and the blood-vessels are ramified much in the same manner as those of a Skate. The prickles of the Thornback are not always disposed in the same manner, for in some they are more numerous, and others have had thorns on the belly. For this reason *Rondelctius* has given figures of above a dozen Thornbacks, which scarcely differ in any thing else, but the different dispositions of the prickles. The flesh is much like that of a Skate, but not quite so pleasant, and more hard of digestion; however, the liver is accounted by some a great delicacy. Both the Skate and the Thornback are very common in all parts of *England*.

The SHARP-SNOUIED RAY is of a more slender make than that of a Flaire, and is brown on the back, and white on the belly. Some of them weigh upwards of ten pounds, and have teeth in the mouth. The snout is slender, and pretty long, terminating in a sharp point like the end of a spear, by which it is easily distinguished from other fish of this kind. There are spines, or thorns on each side the tail. This sometimes is brought to the markets at *Rome*; and *Dr. Dale* has seen them at *Braintree* in *Essex*; but these were of the lesser kind; for there are two which differ in nothing but the size.

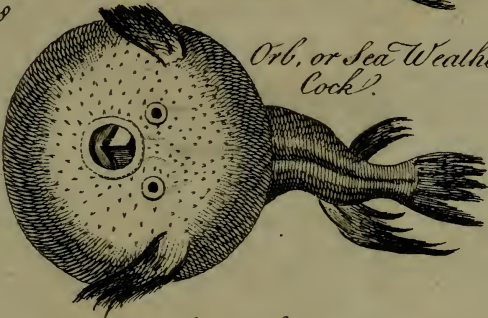
The

Indian Spotted Fish.



68

*Orb. or Sea Weather
Cock?*



40

Sharp-snouted Ray.



134

Grey Gurnard?



The CLUB-RAY, of *Rondeletius*, differs from the former in having a more pointed snout, though it has not that sharp prickle like the end of a spear. The colour on the upper part is ash, and there are eight long spines or thorns on each side, placed on the skin, which are wanting in all other sorts of Rays.

The WHITE-HORSE is a Ray that is pretty broad in proportion to its length, and is also thick. The back is gibbous, or roundish; but the belly is more flat. The snout is oblong, and sharp at the point; and the eyes are prominent, but not very large, with an aperture behind each. The mouth is transverse and large, and furnished with a number of sharp teeth. The holes of the gills run down from the mouth, along the breast, on each side, being five in each. The upper part is of a hoary yellow, speckled with small round black spots, without any order, and there are a great number of prickles thereon. The tail has a double row of greater pickles, which are pretty thick set. The lower part of the body is white, without any mixture, and the tail is long and slender.

The MONK, or ANGEL-FISH, is of a middle nature, between a Shark and a Skate, and grows to a large size, often weighing above one hundred and sixty pounds, and to the size of a man. The colour, on the back and sides, is of a dusky ash, and the belly is white. The mouth is broad, and placed at the end of the head, in which it differs from other flat cartilaginous fish. The head is roundish at the extremity, and there are three rows of teeth in each jaw; each row consisting of eighteen, so that there are an hundred and eight teeth in all; however, the number is not exactly the same in all fish of this kind. The tongue is broad, and sharp at the end; and the nostrils are wide, being placed on the upper-lip, and filled with a sort of slime. The eyes are of a middle size, placed not far from the mouth, and do not look directly upwards, but sideways. Instead of gills it has five holes like the Thornback. The two fins, that are placed near the head, look very much like wings; for which reason it is called the Angel-fish, because Angels are painted with wings. On the extremities of these fins, near the corners, there are short, sharp,
and

and crooked prickles. The lowermost fins, which are placed near the vent, have also the like. Below the vent there are two fins on the back, and the tail is forked. The liver is divided into three lobes; to the middlemost of which the gall-bladder adheres; and the gut is large, and joined to the mesentery. The flesh is so rank, and of so disagreeable a taste, that it is neglected even by the poorest people; but the skin is in great request for making cases for instruments, and the like. This fish is to be met with in all parts of the ocean, and is frequently taken on the coast of *Cornwall*.

Ruyseb also gives the name of an Angel to an *East-Indian* fish, which has nothing very singular, except a hook with two beards, that hangs out of his mouth. It has prickles on the back, which is all the description that he gives of it.

The ROUGH-RAY, of *Rondeletius*, differs from other fish of this kind in having small prickles on the sides, but none on the trunk of the body. On the tail there are three rows of long stiff prickles, which reach to the end; and the snout is pretty sharp.

The VERY-ROUGH RAY, of *Rondeletius*, differs from the former in having all parts overpread with very sharp prickles, on the belly as well as the back, inasmuch that this fish cannot be lifted up without taking it by the fins of the tail. It has no teeth, whereas the former has a mouth full of teeth.

The SMOOTH-EYED RAY, of *Rondeletius*, called by the *Venetians* BARACOL, has two spots on the back that are purple in the middle, and black on the edges, though *Rondeletius* affirms, that they are blue in the middle, and are encompassed with two circles, the inner black, and the outer yellow. It may be distinguished from other cartilaginous fish in having no thorns or prickles, except on the tail, where there are three rows.

The ROUGH-EYED RAY, of *Rondeletius*, differs from the former in the prickles, which are on both sides in the wings near the spots. There are also prickles on both sides the head; others on the back, and others on the tail, which are larger, stronger, and more thick set. The flesh is hard, and yields bad nourishment.

The STELLATED RAY, of *Rondeletius*, may be distinguished from other Rays by the prickles on its back, which begin at the head, and end at the first tail-fin; and these are the only ones it has on the body. The upper part of the body is beautifully painted with stars, from whence it derives its name. The tail is short, and more slender than in others of this kind; and the head is more like that of a Flaire than of a Ray, for it is thicker and broader. The flesh is better than that of others of this kind, because this fish always keeps in clearer water.

The ROUGH-STELLATED RAY, of *Rondeletius*, is so called from the great number of stars that it has on the sides, and beginning of the tail; and from the great number of prickles, with which it is covered. They are greatest on the line in the middle of the back, and on the tail; but elsewhere they are least. Instead of teeth the jaw-bones are hard and rough. *Rondeletius* thinks there are two kinds of this fish; one with stars, entirely white, and fewer in number, and another with stars that have a black speck in the middle, which are surrounded with a white circle; and the prickles are more numerous.

The MONK RAY seems to be of a middle nature between a Monk-fish and a Ray, but more like a Monk-fish; from which it differs in being of a longer make in proportion to the bulk of the body, and in having a sharp snout, which extends beyond the mouth, as in the Sharp-snouted Ray. For this reason the mouth is under the snout, as in Dog-fish, and not at the end, as in the Monk-fish. Likewise, the lower part is flatter and broader than in the Monk-fish. The skin is rough and dusky in the upper part; and, instead of teeth, there are roughish tubercles as in Rays. It is common at *Naples*, and seldom grows to above four feet in length; the weight being about twelve pounds.

The CRAMP-FISH is of a round or circular shape, except the tail, which is long and slender. It is of no extraordinary bulk, seldom growing to upwards the weight of sixteen pounds. The colour is of a dirty yellow, like that of sand or gravel; and the eyes are small, being almost covered with skin; behind which there are two

two holes, shaped like half-moons, which some take to be the organs of hearing. On the upper part of the body there are five remarkable black spots, placed like the angles of a pentagon. The head of this fish is broad, and joined to the body, for which reason it seems to have no head at all. The extremities of the body terminate in fins; and, a little above the vent, there are two fins, which have two appendages that serve for a penis, as in the rest of this kind. Below those in the middle of the back or tail, for it is hard to say which term is most proper, there are two more, the one a little below the other. The upper corner of the tail is a little longer than the other, somewhat in the manner of a Shark, and other fish of that kind.

The mouth of a Cramp-fish is like that of a Skate, and is furnished with small sharp teeth; the nostrils are placed near the mouth, and, instead of gills, there are five holes as in Thornbacks. There are no prickles in any part of the body, it being smooth and soft to the touch; but there are a great many small holes, especially about the head, through which a slimy liquor is secreted, that renders the body slippery, and defends it from the sharpness of the salt water.

The most remarkable quality of this fish is to stupify, or benumb the hand of the person that touches it, to such a degree that it seems to be affected with the cramp; from whence it derives the name of the Cramp-fish. The famous *Redi* ordered one to be caught, that he might make a trial of the numbing quality. He had no sooner touched this fish, but he found a tingling in his hand, arm, and shoulder, attended with a trembling, and so acute a pain in his elbow, that he was obliged to take his hand away. The same troublesome symptoms were renewed as often as he repeated the trial; however, they grew weaker and weaker till this creature died, which was in about three hours time. After it was dead this quality was quite lost, and it might be handled as safely as other fish.

Borelli imagines the stupefactive quality does not proceed from any poisonous steam, because, if it be touched

touched when entirely at rest, it produces no effect at all; besides, if the fingers compress the extremities of the sides ever so strongly, the hand receives no damage at all; but if the hand is laid upon the fleshy part over the back-bone, the violent vibrations of the fish will stupify it, and affect it with a sort of a cramp. He likewise observed a very remarkable difference in the manner of touching this fish; for, if his fingers were quite extended, and he touched the fish lightly with them, he received no damage; but if they were bent, and the knuckles laid upon it, especially the joint of the thumb, then the strong vibrations produced a cramp. From hence he concluded, that the tendons, and nervous ligaments of the joints, being exquisitely sensible, were very much affected with the violent and repeated strokes of the fish, which produced a cramp in the same manner as a blow upon the elbow. However, Mr. *Reaumur* affirms, he could never procure any such trembling, or vibration of the fish that *Borelli* speaks of; and he is confident, the numbness proceeds from the velocity of one single stroke, which is equal to that of a musket-ball. Accordingly, a person, who feels this pain, imagines his fingers are affected with a violent stroke. As a proof of this he informs us that, before the fish gives this stroke, he draws up his back quite round, which was before depressed and flat.

The liver is divided into two lobes, placed on each side, and joined together by nothing but a small string. The stomach is large as well as the gut; which last proceeds directly to the vent. The flesh of this fish is seldom or never eaten, as being very unwholesome, for it is moist, soft, fungous, and of an ill taste.

The AMERICAN CRAMP-FISH is one foot nine inches long, and nine inches broad, having fins on each side like a Ray. The head ends in the shape of a cone; and the mouth is on the under part, and void of teeth. The fore part of the body, to the length of eight inches, is in the shape of a heart; but the remaining part is roundish, and only

ly a little depressed. The number and place of the fins agree with other cartilaginous fish of this kind; it is covered with a soft skin of the colour of glue on the upper part, variegated with dusky and whitish blue spots. The fore part underneath is white, and the hinder of a flesh colour, mixed with white. If it be touched in the middle it causes the joints to tremble.

Dampier takes notice of two sorts of Rays, besides the Whip-ray, which are found in the bay of *Campeachy*, called the STING RAY and the RASP-RAY. They are much of the same shape; but the former has three or four strong sharp prickles, near two inches long, at the root of the tail, that are said to be venomous; but the rest of the skin is smooth. The Rasp ray has a rough knotty skin, of which they make a sort of rasps. The skins of the largest are so rough, that the *Spaniards*, in some places, use them for grating their casavy or manioc, of which bread is made in the *West-Indies*. The smaller skins are employed in making covers for Surgeons instrument-cases, and the like.



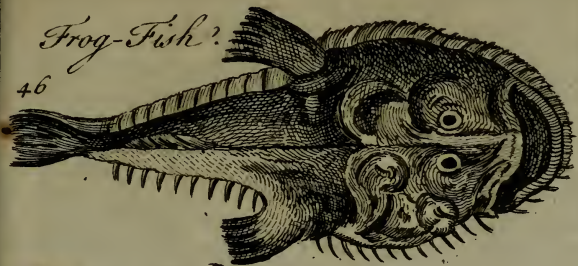
CHAP IV.

Of animalous Fish a-kin to the Cartilaginous.

THE FROG-FISH, or TOAD-FISH, by some called the SEA DEVIL, seems to be of a middle nature, between the Cartilaginous and the Bony; but it more probably belongs to these, because it generates in the same manner. The head is rather bigger than the rest of the body, and is of a round or circular shape. The mouth is exceeding large, and inclines a little to the upper part of the head, like that of the Star-gazer. On the head, not far from the corner of the upper jaw, there are two long strings, which this fish is said to make use of as anglers do fishing lines. Both the jaws are armed with long sharp teeth; and there are also teeth
in

Frog-Fish?

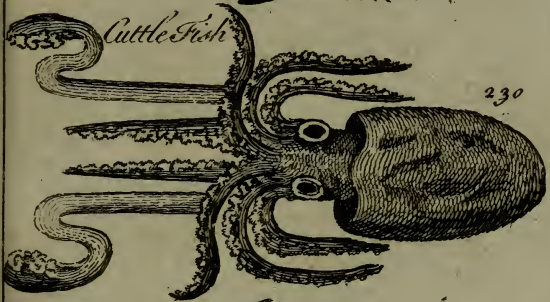
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Cuttle Fish

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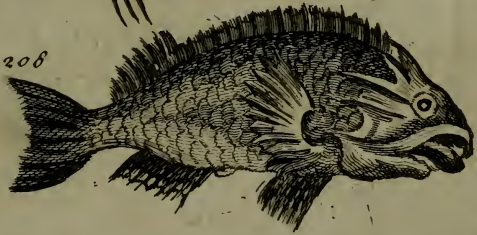
135

Red-Gurnard.



Father-Lasher.

208



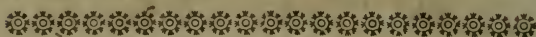


in the palate, and at the root of the tongue, which is large and broad. The back is flat, and of a grey colour, with somewhat of a reddish and greenish cast. On the middle of the back, there are three bristles or frings, that seem to be in the room of a fin; and round the circumference of the body, there are several strings hanging in the manner of fins. On the lower part of the body, under the throat, two fins are placed, which resemble the feet of a mole; by the assistance of which they creep at the bottom of the sea. The flesh of this fish is white when boiled, and has the taste of that of a Frog.

The AMERICAN TOAD-FISH is very small, being but four inches long, from the tip of the snout to the end of the tail. The mouth is large, and armed with exceeding sharp teeth; and the eyes are so small, that they are no bigger than a grain of millet. Between the eyes, and the middle of the forehead, there is a horn which stands upright, only it bends a little backwards; and before it there is a slender thread, about half an inch long, hanging forwards, which it can draw back, and hide within a pit on the top of the head. In the middle of the body, on each side, there is an arm with one joint, which terminates in a fin, armed with prickles, which run through the length of it, and are like eight sharp nails: it has no scales, but is covered on the belly with a soft skin; but on the other parts it is rough. The colour is of a dark red, waved with black spots. It can blow up its stomach like a bladder, and then appears like a Sea-orb.

The WATER-BAT, or SEA-UNICORN, called by the *Brasilians* GUACUCUIA, is eight inches long, and five broad. The hinder part of the body is round, and towards the tail there is a fin like a cone, which terminates in a point. The head can hardly be distinguished from the body; and between the eyes there is a horn, which is very hard, and near two inches long. The mouth is without teeth; and, on the middle of each side there is an arm, which terminates in a fin, as in the former. The skin is not covered with scales, and it is brown above,
marked

marked with several hard tubercles or warts; and on each side there are eleven black spots, of the size and shape of a lentil, placed two and two together. The lower part of the body is of a light red; and, perhaps, this fish might be properly placed among the Sea-orbs.



C H A P. V.

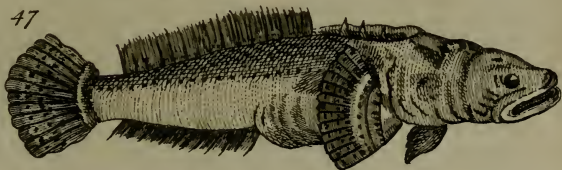
Of oviparous Fish, which are generally bony, and have Spines in the Flesh.

THE TURBOT, so called in the southern part of *England*, but in the northern a *BRETT* is the largest of all this kind, the *Holibut* excepted, though it seldom exceeds a yard in length, nor two feet and a half in breadth. It has no scales, but a rough granulated skin, full of exceeding small prickles, placed without order, on the upper part of the body, where the colour is ash, and diversified with a great number of black spots; some of which are large, and others small. The lower part is white. At the roots of the fins, about the circumference, there are no prickles; and this fish approaches nearer the shape of a *Rhombus* than any other of this kind.

The mouth of a *Turbot* is proportionably wider than that of the *Plaice*, and it has a greater number of teeth, both in the jaws and on the palate. The nostrils are not placed in the same line with the back-fin, but below it; and the eyes stand on the left side, or, to speak more intelligibly, on the right side of the mouth. There is likewise a greater distance between them, and they are farther from the back than in others of the same kind. The liver is pale, the spleen red, and the gut has but one fold. The stomach is very large, the kidneys long, and the urinary bladder pretty capacious. It is taken very frequently in the *British* and *German* ocean; and the flesh is white, firm, delicate, and wholesome, being
much

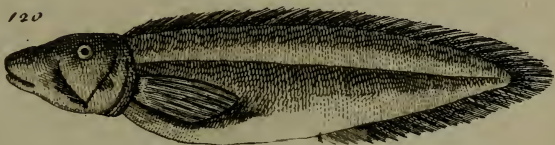
Indian Toad-Fish?

47



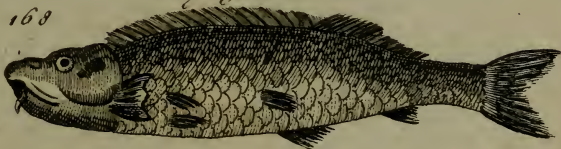
Sea-Snail.

120



Isinglass-Fish?

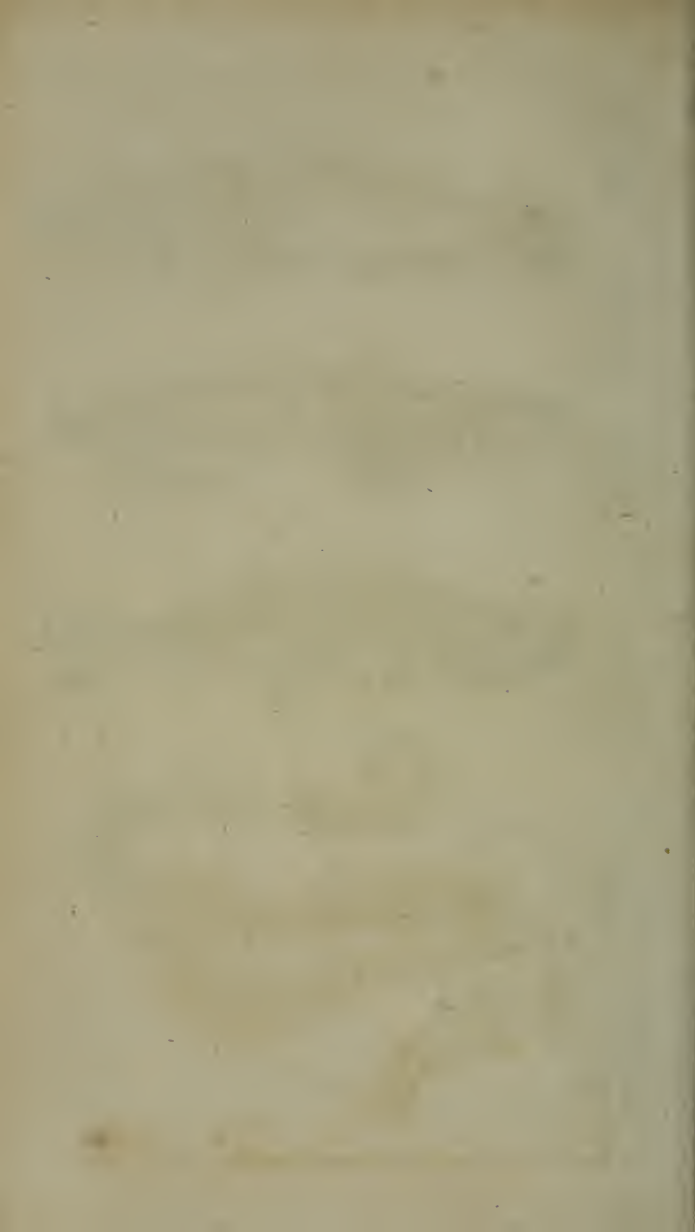
168



Sea-Horse.

72





much preferable to that of any other flat fish. It is a fish of prey, and lives upon others, particularly small Crabs, for which reason it lies near the mouths of creeks and great rivers.

The KITT, so called in *Cornwall*, is a sort of Flat-fish, with prominent eyes that are placed close together to the right of the mouth.

The fin begins near the mouth, and reaches to the tail. The flesh is good, and well tasted, eating no less than that of a Turbot, which fish it resembles. The body is speckled all over very thick with black spots; but there are some of a brighter colour between the spots.

The CORNISH FLOUNDER, or WHIFF, is a fish with a hard rough skin, which is of a dirty ash-colour. The flesh is bad, and in no manner of esteem.

The PEARL, so called by the *Londoners*, but by the inhabitants of *Cornwall*, LUG-ALEAF. It differs from others of this kind in having a scaly body, and from a Plaice in the rough lines or prickles which surround the roots of the fins; in having the eyes on the right side, to the left of the mouth; and the back-fin, on this side the eyes, arising near the mouth, and running almost to the tail. Besides, at the beginning of the fin, which is placed behind the vent, there is no prickle; and the distance of the eyes is greater than in a Plaice. The body is of an ash colour, and the tail is round; but in most other things it resembles a Turbot.

The PLAICE is on the upper part of a dirty olive-colour, or brown, and speckled with round red spots; of which there are some also on the fins. There is no roughness at the roots of the fins, and the scales, if any, are exceeding small, and lie in round cavities. The eyes are on the right side, to the left of the mouth; and, at the upper edge of the coverings of the gills, there are seven bony tubercles or warts; the fifth, from the eyes, being highest and largest. There is one row of teeth in both jaws, and a cluster of teeth on the palate. One of the nostrils is seated on the upper side near the eyes; and the other on the lower side under the eyes; likewise the tail is long, and roundish at the end.

The liver is long, undivided, and red; the gall-bladder large, and the spleen blackish. There are three kidneys, which are joined to a large urinary bladder by a long duct. It is a very common fish, and the flesh is soft, sweet, pleasant, and wholesome; but not so good as that of a Soal. Some of these fish have grown to the length of a foot, and to the breadth of seven inches.

The DAB is a little thicker than a Plaice, but much of the same size. They have pretty large scales, which are rough on the edges, in which it differs from a Plaice, as well as in not having any tubercles near the head, nor red spots. But the situation of the eyes is like that of a Plaice, and the colour, on the upper part, is of a dirty olive, with a reddish cast; and there are some spots of a dusky yellow. The mouth is of a middle size, and there is one row of teeth on both jaws. This fish is very common on the sea coasts of *England*; and the flesh is firmer, and is preferred by some to that of a Plaice.

The FLOUNDER of *Jamaica* is about six inches long, and four and a half broad. It is white on the lower part or belly, and the back is covered with minute brown scales, and there are six or seven transverse black lines thereon. There is a fin that almost surrounds the whole body, and a crooked line that runs along the sides from the head to the tail. The stomach is not very thick, and the small guts have several turnings backwards and forwards.

FLOUNDER, FLUKE, or BUT, is in shape much like a Plaice, only the body is a little longer; and when full grown it is thicker. The olive-colour is more dirty, and sometimes brown with dusky spots; for they are not red as in a Plaice; however, they have sometimes been observed to be yellowish, as well on the body as the surrounding fins. In the upper part of the surrounding fins there is a row of prickles, which bend backwards; and the eyes are on the right side, to the left of the mouth. The scales are exceeding small, and stick so close to the skin that it does not appear to be rough. The lateral line is

composed of small prickles, from whence arises the roughness that may be felt along it, from the head to the tail. The mouth is small, the tongue narrow, and there is a row of teeth in both jaws.

The FLOUNDER is both a sea and a river fish; but the latter is not so black, and is more soft than the former; which difference seems to arise from the difference of the food in these places. They are in season all the year, except in *June* and *July*, which is the time of their spawning, and then they are sick and flabby, and infested with worms that breed in their backs. The flesh is soft, white, and nourishing, but is always best when it is most firm. When in the river it delights to lie on sandy or gravelly bottoms, especially at the declivity of a deep hole near the bank.

The THORNY BUT, of *Rondeletius*, is of a greenish ash-colour on the upper part, but on the belly white. It has no scales; but the skin on the back is marked with lines, divided almost in the same manner as the skins of serpents. The eyes are placed to the right of the mouth; and this fish sometimes grows to a great bulk.

The SMOOTH BUT, of *Rondeletius*, is like the Thorny-but in shape and in other respects, both within and without, except the prickles, which it is entirely destitute of; besides which it is broader and not so thick, and the flesh is softer and sweeter than that of a Plaice.

The RHOMBOIDÉS is like a Plaice, but differs from it in being covered with small scales, and in having the eyes at a great distance from each other. The body is small and short, not exceeding the palm of a man's hand.

C H A P. VI.

Of Flat-fish, with longer Bodies.

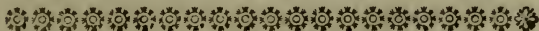
THE HOLIBUT, or HALIBUT, called in the north of *England* a TURBOT, is the largest of all flat-fish in these parts of the world, for it greatly exceeds a Turbot, and is of a longer make. One of these fish being measured was found to be a yard long, and about half a yard broad; but there are many of a much larger size. The colour of the upper part of the body is of a dusky green or blackish, and the scales are small. There is no roughness thereon, nor are there any prickles at the roots of the fins. The eyes are placed on the right-side, or to the left of the mouth. The fins are at a greater distance from the head than in other Flat-fish. It has a double row of teeth in the upper and lower jaw, which are a little crooked at the ends, and very sharp. The tongue is very stiff, and at the bottom there are two places full of a great number of small sharp teeth; there are likewise very sharp prickles on the gills. It is an inhabitant of the *German* and *British* ocean, as also of the *Irish* sea. The flesh is very good, but not so delicate as that of a Turbot.

The SOLE is a longish flat-fish, in shape like the sole of a shoe, from whence it has its name. It is sometimes to be met with a foot in length, and sometimes a little longer. The upper part is of a dark ash-colour, and the lower white; and it is covered with rough scales. The lateral line passes directly from the head to the tail, through the middle of both sides. The corners of the mouth are rough, with a sort of small bristles or hairs; and the body is surrounded with short fins, which on the upper edge begin near the eyes, and are continued to the tail. The eyes are placed on the left side of the head, and are small, round, and covered with a loose skin. The pupils are small, and of a shining green; and the tail is round. The flesh is more firm and solid than that of a Plaice; and for sweetness of taste, and the plenty
of

of nourishment it affords, far exceeds it ; for which reason it is called in some countries the Sea-partridge.

The LINGUATULA, so called at *Rome*, and by *Belonius* POLA, is of the shape of a Sole, from which however it differs in many respects ; for it is less by half than a full grown Sole, and is shorter in proportion to its bulk ; the colour is lighter and whiter, and the scales are much greater. The vent is placed on the lower part of the body, and not on the edge ; and the eyes are on the right-side, or to the left of the mouth.

The LINGUADO, so called by the *Portuguese*, and by the *Brazilians* ARAMACA, is in shape like a common Sole, and differs from it in having the gill-fins terminating in slender hairs ; and perhaps in colour, for *Marcgrave* says it is of a stone colour.



C H A P. VII.

Of Fish of the Eel kind, that want the belly-fins.

THE MURCENA, is by the writers of *English* dictionaries called a LAMPREY, but very improperly ; however, we have no *English* name for it. The body is broader and flatter than that of an Eel, with a longer sharp and flat snout. The colour is a mixture of blackish yellow and gold colour ; and the mouth opens exceeding wide. At the end of the snout there are two short hollow appendages ; and above the eyes there are another pair, that are thicker but shorter. Some think these excrescences serve for hearing and smelling. The eyes are seated in the upper jaw, in the space between the end of the snout and the corners of the mouth. There is a fin aîsés not far from the head, in the middle of the back, and is continued to the tail.

LAMPREYS, in general, have a round or oval mouth, with a hole or pipe on the top of the snout, as in the Cetaceous kind. There are seven holes on each side, which serve instead of gills, where there are no fins nor

yet on the belly; by which they are distinguished from all other fish of this kind; that is the long and slippery.

The Lamprey, of the middle kind, is by the *Germans* and *Dutch* called a BRICK, and is not above a foot in length, being marked with transverse blackish lines.

The Lamprey, or LAMPERN, or pride of the *Isis*, so called by *Dr. Plott*, is brown or livid on the back; and the belly is of a silver colour. It is about five or six inches in length, with a round mouth, furnished with six or seven teeth. When the mouth adheres to a rock or stone it is entirely shut; and then the hole abovementioned serves to take in water, which is discharged again by the holes of the gills, by some called the seven holes that are placed on each side near the head. The eyes are of a palish yellow, and covered with a cuticle; and the belly rises and falls much in the same manner as in animals that breathe.

The liver is undivided, and the capsule of the heart is almost bony, which is probably designed by nature as a guard or security for it; because this fish has no bones, no not so much as a back bone. The flesh is soft and glutinous, for which reason it is generally potted before it is eaten; and even then it is more pleasant to the palate than healthful to the body. The time of spawning is in April. There are two fins on the back, the hinder of which joins to the tail, and to the fin behind the vent. There are great numbers of these fish in the river *Mersey*, that runs between *Cheshire* and *Lancashire*; there are also some in the *Isis*, a river near *Oxford*.

The LAMPREY of *Switzerland* is very common in that country, and has a large mouth armed with very sharp slender teeth. The gills on each side are covered with small folded ears, which are fibrous and glewy; and there are four fins on the breast; of which two are in the middle, and the other pair on the sides; but these are longer and broader than the first. From the vent to the extremity of the tail there runs another fin with black edges, and another on the back near the tail; both which are full of furrows. The colour of the body is of a greenish yellow, marked here and there with black spots. The belly is white, and the surface of the body is covered with slime instead of scales. Through the skin

may be perceived the interstices of above thirty muscles ; and under the scarf-skin, from the tail to the eyes and nostrils, on each side, there runs a large lymphatic vessel, which has as many valves as there are interstices between the muscles, from which many branches proceed upwards and downwards. This has its origin in the head, and is full of a clear fluid, which serves to lubricate the body. Near the vent there is a blood vessel, which runs along the surface of the belly as far as the four fins on the breast, and from thence proceeds transversely from one fin to the other. This vein throws off branches to each interstice of the muscles, but it does not seem to have any valves, nor any communication with the lymphatick vessels. At the bottom of the belly there are two holes, the larger of which penetrates into the belly and gut, and the other into the bladder, which is joined to the last gut, and is full of water. The tongue is short and fleshy, and the holes of the nostrils are very visible ; the length of the intestines, with the stomach and gullet, is half a yard. This differs greatly from the Lamprey-eel, and why it is called a Lamprey does not appear from the description.

The LAMPREY-EEL is much larger than the former, some of them being three yards long. The body about the gills is near fourteen inches in circumference ; and the skin is of a blackish colour, marked with pale angular spots. The mouth is round, with which it adheres to a piece of wood, or a stone, as if it was sucking it, and cannot be parted from it without difficulty. The skin is tough, and yet they do not take it off to dress it. It has a hole in the head like the Lampern, and there are seven holes on each side of the head, under which the gills are concealed. On the top of the head there is a white spot, and the edge of the mouth is jagged ; the teeth are placed within the mouth, and those that stand farthest backwards are largest. It has no bones but a gristle down the back full of marrow, which should be taken out before it is dressed. In short they resemble a Lampern in all things.

They are inhabitants of the sea, but come into the rivers to spawn, where they are found in great plenty, and they may be discovered by the froth which rises from

them. They are most in season in *March*, when they first enter the rivers, and are full of spawn. In *April* they make holes in a gravelly bottom, where they deposit their spawn; and if they meet with a stone of two pound weight, they will remove it, and throw it out.

The **BLIND LAMPREY** is round and slender, and not much bigger than our large Worms, usually called Dew-worms and *May* worms. It has no scales, and its body is divided into small rings, by transverse lines, in the manner of Worms. The rings are about eighty-four in number, and the mouth is round and always open; but it has neither teeth nor tongue. There is a hole on the head, and seven holes on each side, instead of gills as in the former. There is a **YELLOW LAMPREY**, which differs only in colour, but not in kind from the river Lamprey.

The **SEA SERPENT** is about five feet in length, and has a body exactly round, slender, and of an equal thickness, except near the tail, where it grows sensibly less. The upper part of the body is of a dusky yellow, like the dark side of parchment or vellum; but the lower part is of a brightish blue. The snout is long, slender, and sharp; and the mouth opens enormously wide. Near the end of the lower jaw there are four or five large teeth bending inwards, but the rest are so small as hardly to be perceived. The upper jaw has likewise four large ones, and the rest are as small as in the lower. The eyes are little, of a gold colour, and specked with brown, and are covered with a thick transparent skin. It has only one pair of fins, which are placed at the gills; but there is a fin on the back, which rises a little below the gill-fins, and reaches within an inch of the tail, but is not flat, as in an Eel, but round. The belly-fin, or that which is seated on the lower part of the body, begins at the vent, and ends about an inch on this side the tail. The holes of the gills are at some distance from the head as in Eels. The flesh is very well tasted and delicate, but is full of very small bones, and therefore cannot be eaten without some trouble. It is taken very frequently in the *Mediterranean* Sea.

The **FLAT-TAILED SEA SERPENT** is not so large by above a third part as the former. The tail is not round,

round, but flat as in an Eel, and has fins thereon, as on the same fish. The MYRUS, of *Ronleletius*, is like the former, but not the same; and the edges of the back and vent fins are black as in the Conger-eel, which mark likewise belongs to the two former.

The SPOTTED SEA SERPENT is above three feet in length, though not three inches thick. It is wholly round, and marked on the sides with a double row of spots of a yellow blackish colour.

The LIVID SEA SERPENT is three feet and seven inches long, and an inch and a half in breadth where it is broadest. The head is long, and ends in a point; and the jaws are prominent, and are both armed with many terrible sharp teeth. The lower jaw is longer than the upper, and ends in a callous substance. The tongue is long, and shaped like the head of an arrow; the eyes are round, and an inch in diameter; and there are two fins at the gills, and one on the back, which runs its whole length; there is another from the vent to the tail, which is forked at the end. The whole body is sleek, destitute of scales, and of a livid colour; and the flesh is full of bones. The stomach, when opened, was found full of small fish, and the guts had only one or two folds. The blind-gut was very long, and was extended to the vent. The diaphragm, or midriff was membranous, and the liver large, having a gall-bladder, with a bile that looked like water. This fish was taken near the Tropick of *Cancer*.

The VIPER-MOUTH FISH is said to grow to a vast size, but that which was caught was only eighteen inches long. The mouth is excessive wide, and both the jaws are armed with long destructive teeth, particularly two in each jaw, which are so long as not to be admitted within the mouth. Most of these long teeth have an angular bending towards their ends in a very singular manner. It is without scales, and marked all over with six cornered divisions. In general it is of a very odd structure, and makes a most formidable appearance. It was taken in the harbour of *Gibraltar*, and is now in Sir *Hans Sloan's* Musæum.

The AFRICAN SEA SERPENT, called by *Scba* the *African* Conger, is on the upper part of the body of a

yellowish red, and the sides are curiously painted with red and brown spots, which at a distance look like coats of arms. Below these spots, on the sides of the belly, is a double row of round spots of a lighter red, and the belly is of a bright brown. On the back and tail there are fins like those of Eels, but the head is like that of a Serpent.

The *AFRICAN MURÆNA* has two small fins on each side the head like those of Eels, and the upper part of the body is covered with small thin squarish scales, ash-coloured and red, and shaded with large streaks of a bay brown, which run across the back near the belly, and which are whitish, soft, and void of scales. Its long head terminates in a pointed snout, and is speckled with black; the eyes are lively, the tongue forked, and the tail above and below furnished with prickles. It is neither properly an Eel nor a Serpent, it being amphibious, for it sometimes is met with on the land, but is more commonly in the sea.

The *EAST INDIAN MURÆNA* has a great resemblance to the common Muræna, and is the largest of these sort of fish. The snout is long, flat, and terminating in a blunt point, which makes it look like the bill of a bird. The eyes are placed a little backward, and on each side the jaw there are fins finely spotted; but there are no more. The whole body is of a yellowish ash-colour, and speckled with green and poppy colours, some of which are round, and distributed in the form of flames; and there are two whitish streaks, which run from the head to the end of the tail, which is slender and pointed. The belly and fins are yellowish, variegated with short streaks and black spots.

The *BRASIL MURÆNA* has a dusky brown skin with large greenish spots. They look like so many *Arabick* characters, spotted with black in the middle of the body; and on the back, and under the belly, there are two fins which advance to the tail and render it broader. The female has spots of a paler green.

The *AMERICAN MURÆNA* is a sort of Serpent without eyes, and its skin is smooth, void of scales,

and of a yellowish ash-colour, in which it differs from land Serpents, which are always scaly. The whole body, from the mouth to the tail, is circled with rings of reddish and brown colours placed at equal distances; and the back is marked with a fine bright black streak, which extends from the extremity of the nose to the end of the tail. At the end of the nose there is a tubercle or wart, and the nostrils are small; the tongue is long and forked.

The *AMERICAN SEA SERPENT*, or *MURÆNA*, has a skin void of scales of a dark green grass colour, marked with spots of a brownish sorrel colour in the manner of a Tyger; and the belly is of the same colour, only it is lighter, and the spots are not so deep. The head is a little bunched, the eyes are large and sparkling, and the tongue forked. It has neither teeth nor nostrils, but on the nose there are two sharp tubercles, and the tail terminates in a point.

The *SEA SERPENT*, of *Surinam*, is very like a *Muræna*, and the back is of a bay brown colour, circled with bright ash coloured rings irregularly placed. The belly is reddish, and marked with circular spots, that are irregularly dispersed between the rings. The head is smooth and flat, the eyes brilliant, the tongue forked, and on the nose there are four whitish brown spots, but it has no nostrils nor teeth though it feeds upon water frogs.

The *EEL* has a small head, in proportion to its bulk, a little flattened before, but more round behind, with a long body a little flattened on the sides, and principally from the vent to the tail. It is slippery, and seems to be without scales, because they are not to be perceived unless the skin is dried; the lower jaw is longer than the upper, and there are four holes, namely two before, that is one on each side the end of the snout, and two backward, just before the eyes, which are the nostrils. The eyes are placed on each side the head, and are round, small, and covered with a thick skin that is a little transparent; the Iris is reddish, and the Pupil blackish, small, and round. There are small holes on both the jaws, which are

about sixteen in number on the lower, and many more on the upper. The membrane of the gills is sustained on each side by six small bones, or crooked slender spines, which do not appear outwardly on account of the thickness of the skin. There are several rows of small teeth in the lower jaw, as well as in the upper; and there is a dentated bone on the fore part of the palate, which is longitudinally placed, and contiguous to the teeth of the jaws; there are also two small oblong dentated bones, seated upwards, towards the throat, and as many downwards towards the gills, which are more oblong, and less dentated. The tongue is smooth, but immovable, and is supported in the middle by a hard bone. The gills have never an opening, either upwards or downwards, but only on the fore part near the fins on the breast. It is only a small hole, about a quarter of an inch in length, placed perpendicularly. The lateral line is strait, and somewhat nearer the back on the fore part, but it divides the body equally in two, from the anus to the tail, and has a row of points at the bottom of the line. The back, the sides, and the fins are of a blackish grey colour; but in some sorts of Eels, greenish especially, when they are fat, and the belly is of a whitish yellow. The vent is nearer the head than the tail, and there are three fins in all, namely two on the breast near the gills, which are small and blackish, and composed of eighteen or nineteen spines, of which those on the edges are small, and those in the middle long and branched at the point. The back-fin is single, and begins at a distance from the head, running almost round the body in length, and extending from the tail to the vent. It consists of many spines forked at the end, and about a quarter of an inch long. The tail, or the extremity of the back-fin, is neither round nor square at the top, but rather a little pointed. There are four gills on each side, furnished on the convex part with vessels that appear like blood vessels. The heart is four square, or rather a little conical, with a white aorta, a reddish pale liver, divided into two lobes, of which the left is the largest

est, and a great gall-bladder separated some distance from the liver. The gullet is long, and the stomach, which is placed under the liver, is longish and reflected upwards, but crooked downwards, and made so by a long thick appendage that reaches to the vent. The gut, which runs directly downwards from the liver to the vent, has no appendage; and the spleen is triangular, and lies under the stomach. The air-bladder is single, and connected with the spine of the back; the kidneys are large, and are extended along the spine of the back, but the thickest part is towards the vent, and they seem to be lodged as in a basin. The vertebræ, or bones of the back are one hundred in number, flatted on the sides, and small towards the tail.

With regard to the generation of Eels, authors are divided in their opinions; for *Aristotle* assures us, that he could find no difference of sexes, nor yet any parts of generation, for which reason they have been thought by many to proceed from the putrefactions of mud on the sides of ponds and rivers. *Pliny* talks much in the same manner, and affirms that, though there are neither male nor female, they will rub themselves against rocks and stones, and by that means detach particles or scales from their bodies that quicken by degrees, and afterwards become small Eels. Some maintain that they couple, and that at the same instant they shed a kind of viscosity, which, being retained in the mud, gives birth to a great number of the same animals.

Rondeletius informs us, that he has seen Eels spawn together, and he thinks they cannot want the parts of generation since at the lower part of the body there is a vulva in the female, and semen in the male; but then these parts are so covered with fat, as well as the spawn, that they do not appear. *Redi*, a *Florentine*, assures us, that all the Eels in the river *Arno* descend every year in *August* into the sea to produce their young, and return regularly every year from *February* to *April*.

Boecler, and other Moderns think, that they proceed from eggs; for though they are brought forth alive,

alive, and upon that account may be said to be viviparous, yet it does not follow from thence that they may not be produced from eggs in their bodies. Others again are as confident that all Eels produce spawn; but, as we have no certain account of this matter, we must leave this dispute undetermined.

An Eel contains a great deal of oil, thick phlegm, and volatile salt, and those are best that are taken in the clearest water. The flesh is tender, soft, and nourishing, because it is full of oily balsamic particles; but then it is hard of digestion, and is bad for those that have weak stomachs; however, they are better when they are salted, because the salt corrects the phlegm, and in some measure imbibes it. Eels are generally eaten boiled, but they are better broiled or roasted on account of their clamminess; they ought likewise to be well seasoned, and two or three glasses of wine should be drank after to help digestion. But, let them be dressed which way they will, they are never very agreeable to weak stomachs, and they are apt to cause obstructions; but they will do no harm to those of strong robust constitutions, provided they are not eaten to excess. Some greatly recommend the powder of the liver, and gall mixed together, in hard labours; and the dose is a scruple or two in a glass of wine. Others advise the powder of an Eel-skin against a suppression of urine, and there are instances of its success when every thing else has failed. A Lady in particular, that had had this disorder for three days, and took some of this powder in a glass of wine, and in six hours time she made a prodigious quantity of urine, mixed with gravel and sand. Some physicians pretend, that the fat of an Eel put into the ear, with a bit of cotton, will cure deafness; others use it to take away the spots of the small pox, to cure the piles, and to make the hair grow.

The EEL of *Senegal* is very fat, and of an extraordinary thickness, in which it chiefly differs from other Eels. The negroes dry the flesh in the sun or in the smoke, for which reason the greatest part are spoiled; but those that are rich enough to purchase

chafe salt, dry them in the smoke after they are salted, and drive a considerable trade with them among the inhabitants of the inland countries.

Seba gives the name of SEA-EEL to two sorts of Sea-serpents; the first of which was sent from *America*. This has a snout as hard as horn, which terminates in a point like the bill of a bird; and there are two fins for swimming under the lower jaw. The head is covered with broad scales, and the upper part of the body is of a yellow colour, variegated with yellow, oval, and red spots; the fins are of a red colour like those of Perches, and the scales of the belly are of a yellowish ash colour, but they are laid on in a very irregular manner. Some place this fish in the class of Conger-eels, though it seems to be more like a Serpent.

The second kind only differs from the former in its ornaments; for, instead of spots, it has five stripes of a sea-green colour, which seem to be the work of some artist, and they are extended over the reddish scales on the back; the fins are red like coral, and the eyes, placed on the fore part of the muzzle, are small; likewise the scales on the belly are disposed in an irregular order.

Some authors divide Eels into four kinds; namely the Silver-eel, the greenish or greg, the red-finned, and the blackish Eel. This last has a broader, flatter, and larger head than the rest, and is counted the worst; but whether these distinctions are essential, or accidental will admit of a doubt. The Greg is thicker and shorter than the rest, and is of a darker colour. In the river *Severn* there are a sort of diminutive Eels, which at *Gloucester* and *Tewkesbury* are called Elvers, which are not thicker than a small needle, and which some take to be the spawn of Conger-eels. The fishermen take large quantities of them, which they make into cakes, that when fried eat very prettily. The method of the generation of Eels, as hinted at above, is unknown, though many gentlemen have made particular enquiries relating to that affair, but never could get any satisfaction. Eels delight to lurk and hide themselves in the mud, and yet they
are

are averſe to muddy water, becauſe, as ſome pretend, they are liable to be ſuffocated by it. At a time of a flood they are often caught at mill-dams, and the like places in nets. They commonly ſculk in the day time among weeds, under ſtones or the roots of trees, or near bridges or mills. *Gaſper Schwenckſie'd*, in a book that treats of the fiſh of *Sileſia*, aſſerts that the fiſhermen of that country take notice of ſome-what very ſtrange, and which he likewiſe has ſeen with his own eyes; namely, that a Bleak not only produces fiſh of its own kind, but alſo Eels; for, in the month of *April* there are animalcula, which ſtick to the gills of a Bleak like ſmall worms, or white threads rolled up into a ball, that, when they begin to move, drop off into the water, and ſoon become pretty large, aſſuming the ſhape of Eel-, but the truth of this ſtory muſt depend on the credit of the author.

The CONGER, or SEA-EEL is ſomewhat like the common Eel, that is with regard to ſhape, but differs in ſize, for ſome Congers are ſeveral yards long, and as thick as a man's thigh; likewiſe, the colour on the back is lighter, being more of an aſh, and the belly is whiter. The eyes are larger in proportion, and the iris is of a ſilver colour; and on the ſides there is a ſtrait, white, broadiſh line that ſeems to be compoſed of a double row of points, that reaches from the head to the tail. The fin placed on the body has its upper edge blackiſh throughout its whole length; add to this, that the end of the ſnout, or upper chap, is furniſhed with two ſhort horns or tubes, from which a liquor may be ſqueezed out. Some pretend the fleſh is as ſweet and good as that of an Eel; but this is not true, for the taſte is not ſo good by far, and it is much more hard of digeſtion.

The greateſt ſpotted *Indian* CONGER, called a KOMMER-EEL by the *Dutch*, grows to the length of a man, and is proportionably thick. The body and fins are ſpeckled with duſky ſpots.

The HORN FISH, or CAT FISH is common on the coaſts of *Peru* in *America*, near *Arica*. It has no ſcales,

scales, and has a fine skin with white flesh ; on each side of the head there are barbs not unlike the whiskers of a Cat. There is also many of them near *St. Vincent*, one of the *Cape de Verd* islands, and it is called by the *French* Machoran. The *Dutch* name it the Little-bearded-man on account of the five long excrescences on the jaws. There are two fins below the eyes, one of which runs the whole length of the back, and the other that of the belly ; they are armed with a long pointed horn, with which, if any one is pricked, it causes the part to swell with extream pain. There are many of these fish near the *Leeward Islands*, where the flesh is dangerous eating, because they often feed upon manchineel apples ; but on the coast of *Africa* it is very wholesome and well tasted.

The SAND-EEL, or LAUNCE is a fish in the shape of an Eel, being round and long, but it seldom exceeds the length of a foot. It is pretty much like a Gar-fish in shape and colour, being blue on the back, and of a silver colour on the belly and sides. It has no scales, and has a sharp snout, a wide mouth, void of teeth, and the lower jaw is longer than the upper. On the back there is a long fin, which, however, does not reach to the tail ; and there is a pair of fins at the gills, but there are none on the belly. They generally lye half a foot deep in the sand, and when the tide is out the fishermen of *Cornwall*, and the *Isle of Man*, search for them with hooks made for that purpose. The flesh is very sweet and good, and it is an excellent bait for other fish. There is another sort of Sand-eel, which differs from the former in having two fins on its back, whereas that has only one. However, this has only one pair of fins that are placed at the gills, and there are none on the belly as in the former.

The SEA-CRICKET is a fish of the Cod or Whiting kind, and is supposed to be the same that *Pliny* calls *Ophidium*, is in shape like a Conger, though shorter in proportion, for it is only nine inches long ; besides it is flatter on each side, and of a lighter colour. It has four barbs or strings under its chin, two of which proceed from one root, and two from another. The tail fins are black on the edge as in the Conger, and there are small
scales

scales that are of an unusual shape and situation, for they are narrow, longish, and do not lye upon each other as in other fish, but are distinct, and placed in no manner of order. There is another fish of this kind mentioned by *Rondeletius* without barbs, and it has a fin upon the back that reaches to the tail, which is so prickly on the edges that, when this fish is alive, it cannot safely be handled. There are black spots or spaces on the back, which end at the fin.

The CEPOLE of the *Italians* has a very long and slender tail, and is of a carnation-colour, with a bluish cast. The flesh and back bones are transparent, inso-much that the joints may be easily numbered. It has no scales, and not far from the head, on the middle of each side, there are silver spots placed in a right line. The back-fin begins an inch below the head, and reaches to the tail, where it joins the belly fin; but the greatest peculiarity of this fish is its having the belly-fin three times as high as that on the back, and it begins at the snout, being so near that it scarcely has room for the orifice of the excrements, which is placed almost close to the corner of the lower jaw.

The SEA WOLF has a smooth body, being without scales and very slippery. It is somewhat in the shape of an Eel, and is of a brownish grey, and the sides are adorned with blackish transverse shades. The head is large, and flat above the eyes, and the cheeks seem to be swelled and puffed out. It is a most voracious fish, and will bite hard with its terrible teeth. There are many of these that are large and strong, as well before as those that are called Grinders. Dr. *Lister* saw one of these fish at *Scarborough* in *Yorkshire*, that was taken in the adjacent sea, which had all its teeth either broken or worn away, for there was not one whole among them. Dr. *Merrit* affirms, that hard stones, called toad-stones, and esteemed as jewels, are nothing else but the grinders of this fish. The fin on the back, which runs from the head to the tail, has very soft rays, and there is another opposite to it, that runs from the vent to the tail. At the gills there are two roundish and large fins. It is taken in the sea near *Yorkshire* and *Northumberland*, and is sometimes seen about a yard in length.

The

The LUMPEN, so called in *Flanders*, has a roundish body, but not so round as an Eel, and towards the tail it is slender. The colour is of a greenish yellow, with black transverse spaces near the back, and the extremity of the tail is a little reddish. It is speckled with dusky spots all over the body, and instead of pointed lateral lines there is a furrow that runs from the head to the tail down the middle of the sides. The mouth is large and round when it is open, and there is only one row of teeth in each jaw. The circle that surrounds the pupil is yellowish, and it has no barbs, but under the throat there are a sort of wattles, for fins they can hardly be called; however, when they are narrowly examined, they seem to be parted in the middle by two rays.

The CARAPO, so called in *Brazil*, has a body about a foot in length, and not two inches in breadth, being in the shape of a knife, for the back is thick and blunt, the belly sharp, and the tail ends in a point. It has only one pair of fins, but on the lower part of the body there is a thin narrow fin that runs throughout the length to the very end, but there is not one besides in any part of the body. Under the lateral lines there are thick set black spots of the size of mustard seeds. There is another of the same name that is not above half the breadth, and there are no spots.

Ruyfch affirms, that this fish has no tail, and that the head terminates in a point; the lower lip is longer than the upper, and the mouth is small, with small teeth in the lower jaw, but none in the upper. The eyes are small and black, but scarce so big as a poppy seed. The gills are narrow, and near them, on each side, there is a small long fin. The colour is brown, mixed with a little red, but it is darker on the head and back. On each side of the gills a line begins, which runs the length of the body, that resembles the blade of a knife; the flesh is accounted exceeding good eating. Some of these fish are taken in the river of *St. Francis*, but they are much larger, and pointed at the end like a shoemaker's awl.

The SIMAKIL INGLESE, so called by the inhabitants of *Aleppo*, at the first sight has the appearance of an Eel, and it likewise eats very much like one. The head is long and small, and the extremity of the upper jaw

runs

runs out like the bill of a bird ; on each side of which, a little distance from the extrem points, there are two tubuli or processes. There are two fins at the gills as in the common Eel ; and, from the hinder part of the head all along the ridge of the back, there are small prickles placed at little distances like the teeth of a saw. These terminate at the beginning of a membranaceous fin rising about four inches from the tail, and is continued along the lower part of the belly to the vent, at which place there are two or three prickles. The colour of the head and back is blackish, variegated with dark yellow spots ; and the lower belly is white, changing gradually into a yellowish cast. The fin of the lower belly near the vent is yellow, but the other half is spotted with black. The length of this fish is eleven inches.



C H A P. VIII.

Of Fish that want the Belly-fin.

THE ORB, or SEA WEATHER-COCK, by some called the SEA PORCUPINE, has a roundish globous body, from whence it has its name ; it can blow up its body much like a bladder, and is beset with long thorns or prickles, especially on the sides, where the bases of the prickles are divided into two other short ones, and end under the skin. It differs from our Sea porcupine in having the eye-brows placed higher, and in having the head more round ; likewise, it is all over spotted, which ours is not. There is another Sea-porcupine, with a narrow, roundish, and prickly head ; and the prickles are very long on the head and shoulders, according to the observation of Dr. Lister.

The PRICKLY ORB, or SEA-PORCUPINE of *South America*, has a mouth like that of a Frog, and is above seven inches long. The head is broad, and speckled with black spots, especially near the gill fins. The prickles of this fish are of a flattish shape like flags, where-

Yellow-Gurnard?

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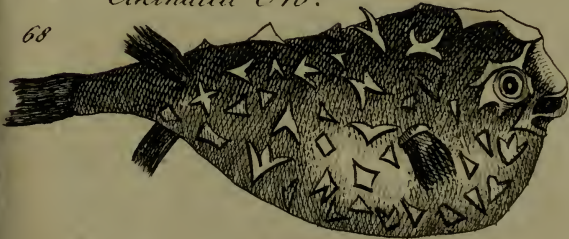
149

Dorce.



68

Eckinated Orb.





whereas those in the former are round ; there are also broad dusky stripes that run along the back.

The PRICKLY-ORB, called by some ATINGA, is scarce as big as a Goose-egg, and is very like the former, only it has a rounder head, and not so erect, and without high eye-brows or streaks ; likewise, this has prickles on the belly, whereas the former has none. However there are broad spots near the fins, and about the tail.

The PRICKLY NET-WORK ORB is one of the larger sort, but the prickles are very short, or at least lye flatter, and their roots, which are triangular, swell so much, and are so entangled among each other, that they seem to be covered with net-work.

The FROG-MOUTHED ORB is sixteen inches long, and twenty in circumference. The whole body is of a dusky colour, speckled with white spots ; and the back-fin runs from the neck almost to the end of the back. The mouth is broad, and shaped like that of a Frog ; and on each side there are two rows of red thorns, not unlike the roots of mushrooms, that run from the top of the head to the tail. The OBLONG ORB, with the head of a Tortoise, is smooth and speckled with ash coloured and dusky spots. It is not much unlike the former.

The first ORB of *Rondeletius* has a round body, being in the shape of a globe, except the tail. The skin is very hard, and is rough with small prickles, placed all over. The ROUGH SPOTTED ORB is covered all over very thick with small prickles.

The HAIR-HEADED ORB is like the figure of the first Orb of *Rondeletius*, only the tail is a little longer, and the body is not so rough with prickles, except on the belly only, for the back and tail are smooth.

The SHIELD ORB of *Rondeletius* has a longer head than the first kind, and the mouth opens wider. From the head to the tail there are bones of the shape of an egg, between which the prickles are placed. It is called the Shield orb because the mouth is in the form of a shield, and serves for a sternum in that part which in land animals is called the breast. *Rondeletius* says it has many small teeth, but we rather give credit to Dr. Lister, who says it has only two teeth.

The

The SMOOTH ORB, called the BLOWER at the *Cape of Good Hope*, has the faculty of blowing itself up like other Orbs, and then its shape is as round as a ball, except the tail. The skin, which is very smooth, has few or no scales thereon, and the back is of a dusky yellow, and has a kind of a lustre. The belly is white, and the mouth small, but armed with four large teeth. This fish is never eaten because there is a great deal of danger in it, of which the *Dutch* are very careful to inform foreigners. However, a certain sailor, not believing what they said, had a mind to make a trial, and was so hardy as to eat one of them; but the experiment cost him dear, for he fell sick immediately after, and died in a few days time.

The SEA HEDGE-HOG is covered all over with thick thorns or prickles, and has a head less prominent than the former, but the body is rounder and bigger. It swims very slowly, and consequently would be an easy prey for other fish if it was not so well armed with prickles.

De Pointy observes, that these sort of fish are very common in the *West Indian* sea, and they are called by many the armed fish. Some of them are as thick as a football, and are almost round, having but a little bit of a tail. It has no head, for the eyes and tail are fixed to the belly. Instead of teeth it has two hard small stones an inch broad, which it makes use of to crush Sea-crabs to pieces, as well as small Shell-fish, on which it lives. It is all over armed with thick prickles about as long as the tags of laces, and as sharp as needles, which it can raise upright, or lay down at pleasure. This fish is taken by throwing a line into the water, at the end of which is a hook covered with a piece of a Sea crab; when it is swallowed, and the fish wants to get away, finding itself stopped by the line, all the prickles are bristled up; inso-much that, when he is drawn on shore, it is impossible to lay hold of any part of the body; for this reason they drag it some distance from the water, where it will die in a short time. Sometimes this fish is thicker than a bushel, and yet there is no more flesh fit for eating than is found on a small Mackrel. In the middle of the belly there is a sort of a bladder or bag filled with wind, of which

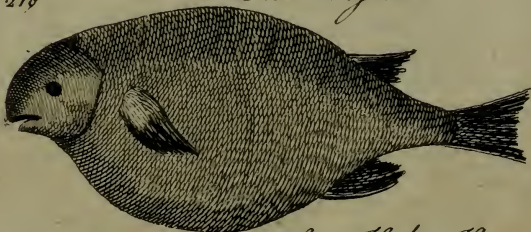
Soldier Fish?

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Sea-Pidgeon?



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Sea-Hedge-Hog.



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Sucking-Fish?



which they make exceeding good ifinglass or fish-glew. The other sorts of Sea hedge-hogs differ little from this, except in the situation and size of their prickles, for they are shorter in some and slenderer in others, and in some again they form a sort of large stars.

The SEA PIGEON has its name from its head, which is thought to be like that of a Pigeon, and its breast is also like that of a Cropper. It has no scales, but there are spots on the skin of various figures. It is seldom caught, and it has a disagreeable taste.

The OSTRACION is in the shape of a Pentagon, and sometimes grows to a foot in length. The head is covered with a hard shell, from whence it has its name, for Ostracion signifies a shell. On the back there are four small tubercles or warts placed, four-square. Another Ostracion, of *Aldrovandus*, is of a quadrangular form, and is hump-backed. A third is called the SNOUDED OSTRACION, and it wants the abovementioned tubercles, but the snout is very long, and almost in the shape of a sword. There is another called the HORNED OSTRACION, as also one without horns. Dr. Lister says this is a large triangular fish, and that, though it has no horns on the head, it has one on the belly near the tail. It is covered with radiated scales in the shape of hexagons, and has a double or broad border on the edges. The former he calls the greatest triangular Horned-fish with radiated hexagon scales, whose centre or middle part is prominent.

The TRIANGULAR HORNED-FISH, that has a long spine or prickle in the middle of the tail which is covered with skin. It is of a middle size, and is beautifully marked with pretty broad waved spots of a dusky colour on the back and jaws. In many other triangular fish, that have horns on their heads, there are no scales on the top of the tail, but sometimes there is a single scale either on the upper or lower part, and sometimes one on both.

The MIDDLE-SIZED TRIANGULAR FISH has a horn on the belly near the tail, and is marked all over with very thick reddish spots of the same size. The scales of this are of the shape of hexagons, with small tubercles, and placed in no regular order. The small Triangular-

gular-fish, with a horn on its belly, is also covered with hexagon scales a little rough in the middle, but their outward sides consist only of the like number of simple lines; that is six.

The TRIANGULAR-FISH, entirely *without horns*, has hexagon scales rough in the middle, and is adorned with small tubercles placed in rows. Likewise the belly of this kind is broader than that of the rest; that is, it has a very large base in proportion to its bulk.

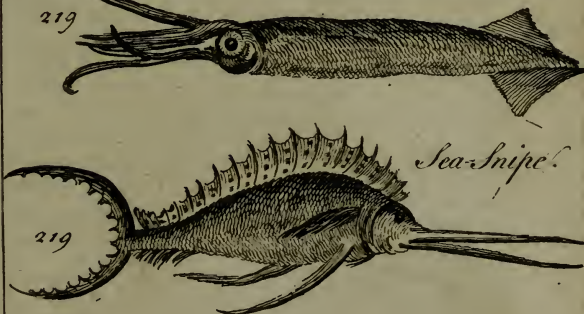
The greatest QUADRANGULAR FISH has a flat back, whereas the former hath it raised into an arch, and there are four tubercles on the back not far from the head. This seems to be like the first Ostracion of *Aldrovandus*. The GREATER QUADRANGULAR SNOUTED FISH has its head marked with reddish thick set spots; but, though the body is less than the former, the fins are quite as large.

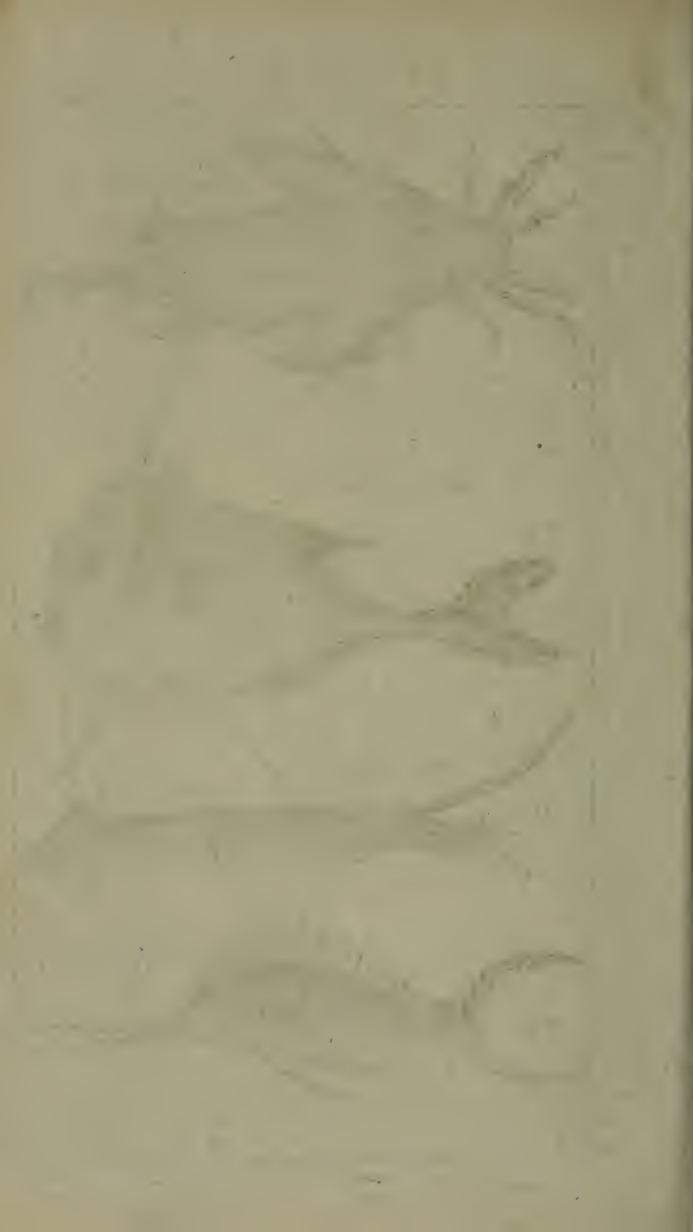
The MIDDLE SIZED QUADRANGULAR SPOTTED-FISH has a few pretty large spots on the sides, and those on the middle are bordered with red, and their centres are of a whitish blue. On the belly there are the like spots, but they are small, and more numerous; that is two or three on each hexagon scale.

The HORNED FISH, of *Bontius*, called ICAN SETANG, is different from all others of this kind.

The OSTRACION of the Nile, of *Felonius*, that is brought from the *Mediterranean* sea, is thought by Dr. *Lister* to be a quite different fish from any of this kind imported from the *East Indies*; however, Mr. *Ray* imagines, that the difference of seas is no argument to prove it, because the same sort of fish may be common in both seas, and he has seen fish, that have been brought from the *East Indies* and the *Mediterranean*, in which he could discern no difference.

The SEA HORSE, best known by the Latin name of HIPPOCAMPUS, never exceeds nine inches in length; and, in the head, snout, and mane, is somewhat like a horse. It is about the thickness of a man's thumb, and the body is full of clefts and furrows. The snout is a sort of a tube, with a hole at the bottom, to which there is a cover that he can open and shut at pleasure. The upper part of the body is like a Heptaedron,





dron, or a figure consisting of seven sides, but below the vent it resembles a Tetraedron, or figure consisting of four sides. The eyes are small and prominent, and between them are two high tubercles. The tail ends in a point, and is generally very much bent or contorted. Behind the eyes, where the gills are placed in other fish, there are two fins which look like ears, and above them are two holes, but there are no gills neither outwardly nor inwardly. The whole body seems to be composed of cartilaginous rings, and on the intermediate membranes of which several small prickles are placed. The colour is of a dark green, but towards the tail inclining to black. The belly is marked with spots of a whitish blue, and the stomach is proportionably large, but the heart is small, and the liver and spawn red. It is taken in the *Mediterranean*, and also in the western ocean.

The SEA HORSE WITH A MANE is four times as large as that without, and in the middle of the belly there is a small fin or blackish membrane. From the top of the head and neck there are bristles or long hairs, which hang down like a mane. The smooth Sea-horse without prickles, has but few furrows. The small smooth Sea-horse, with a great number of furrows, has thirty-five on the tail. It is found in the straits of *Sunda* in the *East Indies*. In the prickled Sea horse there are thirty furrows from the back fin downwards; and in the greater smooth Sea-horse there are twenty-five, and in another thirty-five. Likewise, in the greater smooth Sea-horse, there are a great number of blackish specks or spots, whereas all the rest are entirely without.

The SEA NEEDLE, or the second kind of ACUS, of *Rondeletius*, is the TYPHLE of the ancients, according to *Belonius*. Mr. Ray saw several of these at *Venice*, but they were all less than those described by *Rondeletius*. The body had six angles, like a hexagon, to the end of the back fin, but from thence to the tail it is four square. The crust, wherewith it was covered from the head to the vent, was distinguished into eighteen scales, but beyond that there were thirty-four or thirty-five. The snout and mouth were like that of a Sea-horse, and the tail ended in a fin. The fish described by *Rondeletius*

was a cubit in length, and near an inch thick, agreeing in all things with the former, except the size.

The Sea-needle, of *Aristotle*, has a long and angular body, and instead of scales it is covered with a hard crust or shell divided into several parts. From the head to the vent there are seven angles, but from thence, to the end of the back fin, there are five; and below, to the extremity of the tail, the shape is square. It has a long snout somewhat like a tube.

The WORM LIKE SEA NEEDLE, called by the *Cornish* boys the SEA ADDER, has a round body entirely without scales, and the colour is a dirty greenish yellow, ending in a sharp point, not in a fin. The snout is like that of the former, but shorter; and it has four gills on each side, which, instead of an aperture, has a small hole. The body is marked with angular lines much like that of an earth worm; and the size is that of a goose quill. It is about five inches in length, and has only one fin, which is seated at the back. It is frequently met with in the sea that washes the coast of *Cornwall*.

The SEA UNICORN, called PIRAACA by the *Brazilians*, has a body that is compressed on the sides, and from the mouth to the root of the tail it is near three inches long, and two broad. The mouth is like that of a hog, and before, on the lower jaw, there are two broad teeth like Sea-orbs. Above the eyes, on the back, there is a small horn which bends backwards, that is round, and not an inch long, being no thicker than a common thread; but it has a double row of teeth which turn downwards. It seems to be supported by a thin sort of a membrane, which is connected transversely to the back. However, it cannot lay the horn down backwards, as *Clusius* thought. The number of fins, and their situation are like those of Orbs; but the skin is rough to the touch, and of a dusky yellow colour. However there is a little gold colour about it on the fins and skin of the back, as is commonly seen in Orbs. *Marcgrave* takes it to be a kind of an Orb, since it can blow up its body like a bladder.

The SEA GOAT, called CAPRISCUS by *Rondeletius*, has a compressed head, with the eyes placed in
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the upper part. The mouth is small, and in each jaw there are eight teeth, not serrated but joined together like those of mankind. There are four gills that have not a bony but a skinny cover. Almost in the middle of the back there are three very strong and large prickles joined together by a membrane; of which that before is three times as big as the two others. This fish can raise them, or lay them down when he pleases in a bony furrow made for that purpose; which particular seems peculiar to this fish; however, he is not able to raise them one after another, for they are all erected or laid down together. They are made so artfully, that the great one cannot be made to fall by any impulse; but if the two hinder are depressed, which may be done easily, that before will fall down also. And, what is still more strange, if the prickle behind is not quite depressed, that before will be in the same degree; and yet cannot be laid lower, unless you repeat the depression of the first. It is covered with a scaly skin, whose scales are not like those of a fish, but rather of a Serpent, for besides their being placed in such an order, that the lines between them intersecting each other make a sort of chequer work, they also stick so extremely fast to the skin that they cannot be separated from it; insomuch, that by that means the hide is so hard and rough that it cannot be cut without great difficulty, but it may be polished like wood or ivory. The colour of this fish is of a dusky green, speckled with blue; but the blackish fins of the back and belly are marked with blue and red spots. The shape is broad, very flat, and almost roundish; but it seldom exceeds two pounds in weight.

The GUAPERUA is a long fish, with a tail almost square, and not forked, and the top of the head is broad. It differs from the former in having its teeth sharpened in a peculiar manner, in having but two horns on its back, of which the first, in a dried fish, had a double row of pretty large teeth as rough as a saw. There is no horn on the belly, and the fins are near three inches distant from the tail; but the tail fin is much the longest. The top of the head is not so flat; and the length of this fish is near sixteen inches, and it is almost five broad.

The broad GUAPERUA, with a forked tail, and the back fin spotted, is near sixteen inches long, and eight broad, with the head flat on the top. The fins of the breast and belly are two inches from the tail, and the back fin is marked with a great number of spots; and from part of it there arises a horn near four inches in length. The horns of the tail fin rise as it were suddenly, and are about an inch long. The scales are square and small in this fish in comparison of those in the former. The horn of this is greatest; and there are not only on the forehead, but on the sides, especially in the middle, a great number of small tubercles or rough teeth. The description of this fish agrees pretty well with that of *Marcgrave*.

The greatest GUAPERUA is a broad fish, and the end of the tail and the back fin terminate in long small horns; there are also two broad red streaks, which run transversely over the body to the jaws.

The broad GUAPERUA, with a streaked tail, is about eleven inches in length, and five in breadth. The teeth are like those of men, and the head is depressed, though raised on the top. The tail is forked, and there are small horns thereon. The scales are square and rough in the middle, and there are eight lines on each side three inches long. The horn on the back is furnished with exceeding small teeth, and are rough before in the manner of a saw.

The PORCUPINE GUAPERUA is a small fish, being about six inches long, and three and a half broad, and the teeth are not very sharp. In the upper jaw on both sides, by the two first teeth, there are other very small teeth that are afterwards succeeded by broader. The scales are square and very small; and three inches from the tail, on the middle of the sides, there are five thickish horny round prickles, about an inch long, mottled with black and white like the quills of a Porcupine, and they are placed pretty close together; likewise, near the tail there is a remarkable roughness. The tail fin is square, and is of a blackish colour.

The BELLOWS or TRUMPET FISH is a small fish, near four inches long, and about an inch and a half broad. It is covered with rough scales, and has a long snout,

snout, for it is almost equal to one third of the length of the whole body. It has a small aperture at the end, which has a covering connected to the lower part, and must be raised upwards in order to shut it, and when it is opened this is let down. The eyes are large, and their iris is white; and on the back there rises a very strong spine of a great length, to which there corresponds a furrow on the back part. On the edges there are a row of teeth which turn upwards, and the spine can be erected, or laid down at pleasure, but not directly upright, for it always inclines towards the tail. It is very common at *Rome*, and is to be met with in the fish-markets with other small fish.

The LAMPUGA, so called at *Rome*, has a broad, thin, square body, not unlike a Turbot, and yet it swims upright. Those seen at *Rome* were about nine inches long, and weighed a pound and a half. The back is of a light blue, but the lower part of the sides and belly are of a silver colour. On the back, and above the pointed lines, there are beautiful yellow spots and stripes, but below the lines there are the like spots of a gold colour. The tail is very forked, and the snout blunt. The mouth is exceeding small, and armed with a single row of very little teeth. The whole body, like a Turbot, is surrounded with a back and belly fin, and on the sides of those that were purchased at *Venice* there are two lines that run from the gills to the tail; the lower of which is strait, and the upper bended like a bow. This by the *Venetians* is called Lisetta, and it seems by these marks to be a different fish from the Lampuga. However, there are several fish so called by the inhabitants of *Rome*, but not so large nor so beautifully coloured as this. With regard to the intestines, this fish seems to be different from all hitherto described, for it has two stomachs; and that before is fleshy, and full of long rough thickset apophyses, like the skin of a Hedge-hog, placed on the inside; but that behind is large, membranaceous, and is extended beyond the vent. At the pylorus there are several appendages, which terminate in small twigs, and are interwoven with a sort of parenchyma. The long gut has various turnings and windings, and within-it there is a purple liquor which tinges

all the excrements with the same colour; and the sides of the vent are coloured with a bright purple.

The PAMPUS, of Sir *Hans Sloan*, is the least of its kind, being only six inches long, and four and a half broad in the middle part. It is roundish at the beginning, and from thence to the tail it grows gradually more slender. The tongue is round, fleshy, and spotted; and the jaws are armed with small sharp teeth. The eyes are large, with an ample iris of a silver colour. There are four fins; one beginning on the middle of the back, and ending at the tail; the second, opposite to this, runs from the vent to the tail; and at the gills there are two long ones, but there are none on the belly. The tail is forked, and two inches and a half in length; and there is an arched line running along the upper part of the side, which is strait in the middle. It is covered all over with small white scales. The belly is round, the bones sharp, and beset with teeth like wool-cards. The gut makes several turnings.

The RIBBAND FISH is pretty strait along the belly. The back is roundish, and forms an edge along its ridge. It is six inches in length, and two in breadth where broadest, for near the tail it is little more than a quarter of an inch broad. It is much compressed sideways, brown on the back, and of a lightish colour on the belly. It has a fin on each side the head, and a pair of fins beneath them, between the head and the belly. There is also a single fin on the lower part of the belly near the vent. There is a long sharp fin rising from the highest part of the back, and behind that a narrow fin which runs the whole length of the ridge of the back towards the tail. The fins and tail are of a dusky colour, and there is a reddish circle round the eye, and a black spot between the nostrils. There is also a broad black list running round the head and passing through the eyes, besides two other black or dusky lists bordered with white; the first passing a little obliquely below the head, and the other from the long fin on the back quite through the tail, which makes this fish appear as if it were bound with ribbands. It is a *West Indian* fish, and was caught near the *Caribbee Islands*. This fish is not properly clas-

sed,

fed, but, it being of a singular kind, it might as well be placed here as elsewhere.

The SUN FISH has a broad short body, which is covered behind with a circular fin that serves instead of a tail; insomuch, that it seems to be only the head of a fish, or rather one half, with the tail part cut off, which sufficiently distinguishes it from all other fish, though in all its parts it has somewhat different from every other kind. Its common length is about two feet, and yet it is found to weigh upwards of one hundred pounds. It has no scales, but is covered with a hard rough thick skin. The back is blackish, and the belly of a silver colour; but both belly and back terminate in a sharp ridge. The mouth is very small for the bigness of the fish, and when opened is roundish. The jaws are hard, rough, and sharp, and seem to be armed with several rows of sharp teeth. There are four holes in the head besides the nostrils, which last are placed between the eyes and the mouth. The eyes are small, and of a dusky yellow near the pupil, but the other part is of a dusky yellow. Near the circular fin, which surrounds the tail, there is a broad stripe, which makes it appear to be bound as with a fillet. There are two large fins near the back part, and two small ones at some distance behind the eyes, but in the same line with the eyes.

The liver and gall bladder are large, but the spleen is small, soft, and blackish. The urinary passage does not terminate in the vent, but has a tube, proper to itself, beneath it. The guts resemble those of quadrupedes. The flesh is exceeding soft, and the bone soft and gristly; the skin adheres so close to the flesh that it cannot easily be separated from it. It is called the Sun-fish from the roundness of its body, or perhaps because it shines in the night. However, this quality does not belong to this fish alone. It is taken both in the *Mediterranean* sea and in the ocean; sometimes likewise it is caught near *Penzance* in *Cornwall*.

Redi informs us, that one of these fish was given him by the great duke of *Tuscany* in the depth of winter, and it weighed an hundred pounds. The skin was rough and unequal like that of a Sea-hog, and it had four fins covered with a rough skin like that on the body. The

two smallest were placed on the sides of the holes of the gills, and one of the largest was placed nearly in the middle of the back, and the other under the belly near the vent. At the extremity of the hinder part of the body, which is as thick as the belly, there was no fin, nor any appearance of a tail. The holes of the gills were two in number, that is one on each side; but under each of these holes there were four very large gills accompanied with another, which was much smaller. The mouth was extremely small in proportion to the body. Before the upper jaw there was a sharp bone in the form of a semicircle, which answered to another in the lower jaw of the same kind. These two bones were instead of teeth; and at the entrance of the throat there were long, sharp, crooked, and very hard prickles. The stomach was no larger than the guts, which had very thick coats, and was sixteen yards in length. They consisted of several folds, and were contained in a bag or sheath.

The SWORD FISH may be easily known from any other by its snout, being in the shape of a sword; inso-much, that it has got the same name in all languages; that is of the same signification. With regard to its bulk, it might have been placed among the Cetaceous fish, for it is fifteen feet in length, and two hundred pounds in weight. The body is long and round, and the head thick, but it grows gradually smaller towards the tail. The skin is very thin and smooth, or at least not rough. The upper jaw terminates in a very long snout like a two-edged sword; and the lower is exceeding sharp at the end, making a very acute angle. The snout is one third of the whole length of the fish, and there is only one fin on the tail, which runs almost the whole length of the back. The tail is forked, and almost in the shape of a half moon, and it has only one pair of fins at the gills, in which it also agrees with Cetaceous fish. There are two fins on the lower part of the body near the vent, and the stomach is long, almost in the shape of a cone. Near the pylorus there are monstrous masses of vessels, intermixed with flesh, much in the manner of lungs, there being two of them. The gut is below these appendages, and turns backwards and forwards in a very agree-

agreeable manner; but there is a long swimming bladder.

Nieuboff, describing the Sword-fish, says it has a very odd head like that of an Owl, with a very wide mouth. The skin is hard, the back grey, the belly white, and without scales. On each side of the sword, which is above five feet long, there are twenty seven teeth; the whole length, including the sword, is generally twenty-five feet; and the body is so thick that two men can scarce grasp it. Near the eyes are two nostrils, through which, as he says, they draw the water in and out. This should have been called the Saw-fish.

The Sword-fish is still taken between *Italy* and *Sicily*, as it was formerly. Their custom is to place watchmen on the high cliffs that hang over the sea, whose business is to observe the motions of these fish. As soon as they perceive any they give notice to the boats below, and, by signs before agreed upon, they direct them what course to take. As soon as they draw near them a fisherman, who is used to the sport, climbs up a small mast placed in the boat for that purpose, to observe the fish he designs to strike, at the same time directing the rowers which way to steer. When they have almost overtaken one, the fisherman immediately comes down, and strikes a spear or harpoon into his body, the handle of which, being loose in the socket, parts from it, while the iron part, which is made fast to a long cord, remains in the body, then the fish is suffered to flounce about till he is tired, and grows faint with loss of blood. After this they either hoist him into the boat, or if he is very large tow him on shore. The flesh is whiter than that of a Tunny, and preferred to Sturgeon by the people of *Messina*, who are very fond of it.

C H A P. IX.

Of spinous, or bony Fish that have soft flexible skins on their backs.

THE COD-FISH, or KEELING, is about three feet long and upwards, and has different names from the different places, as well as from the different manner of curing it. Hence it is called *Green-fish*, *Ice-land-fish*, *Aberdeen-fish*, *North sea-cod*, *Stock-fish*, *Poor-John*, and *Barrelled-cod*. Those that are small and young of this kind are called *Codlings*.

It is a thick round fish, with a large head, and a prominent belly. It is brown on the back, white underneath, and interspersed with yellow spots. The scales are small sticking close to the skin, and the eyes are large, and covered with a loose transparent membrane. There is a barb on the lower jaw, about an inch in length; and the tongue is broad, round, soft, and smooth. There are several rows of teeth in the jaws, one of which is longer than the rest, and there are likewise teeth in the palate and in the throat. The stomach is large, is often found full of large fish, particularly Herrings; and the liver is large, and divided into three lobes, having a large gall bladder. The swimming bladder is thick, strong, and connected to the back, and it is commonly known by the name of the **SOUND**.

The flesh is exceeding good, and in high esteem, and they are greatly in request when salted during the Lent-season. Fresh Cod for immediate use is caught in the seas all round *Great Britain*; however, there are particular times for fishing in particular places; that is they are to be found in greater plenty in some places, at some times of the year, than in others. Thus, from *Easter* to *Whit-suntide*, the best season at *Alanby*, *Workington*, and *Whitehaven*, on the coasts of *Lancashire* and *Cumberland*; on the west part of *Ireland*, from the beginning of *April* to the beginning of *June*; to the north and north east of *Ireland*, from *Christmas* to *Michaelmas*;

and to the north east of *England*, from *Easter* to *Midsummer*.

But the chief support of the Cod-fishery at present are the banks of *Newfoundland*, which are a sort of mountains covered with the sea, and where the water is much more shallow than in other places. One of these is called the GREAT-BANK, and it well deserves that name, for it is four hundred and fifty miles in length, and an hundred in breadth. It is about seventy-five miles from the island called *Newfoundland* in *America*; and the best, largest, and fattest Cod are those taken on the south-side of the bank, for those on the north-side are much smaller. The best season for catching them on this bank is from the beginning of *February* to the end of *April* and the beginning of *May*, for at this time the fish, which had withdrawn during the winter into deep water, return back and grow very fat. Those that are taken from *March* to *July* will keep pretty well, but those that are caught in *July*, *August*, and *September*, will soon be good for nothing without a great deal of care. However, this fishing is sometimes over in a month or six weeks, and sometimes it continues six months.

When Lent begins to draw near, though the fishermen have caught but half their cargo, yet they will hasten homewards because the markets are best at that time; however, some will make a second voyage before others have got a sufficient cargo for the first. Each fisherman can take but one at a time, and yet those who are expert at this business will catch from three hundred and fifty to four hundred in a day. They are all taken with a hook and line, baited with the entrails of other Cod-fish, except the first. This is a very fatiguing employment, both on account of the heaviness of the fish, and the coldness of the weather; for though the GREAT-BANK lies between forty and forty-eight degrees of latitude, which might be supposed to be a warm climate, yet the weather in the season of fishing is generally very severe.

They salt the Cod-fish on board the ships in the following manner; they cut off the head, open the belly, and take out the guts, and then the salter lays them side by side, head to tail, at the bottom of the vessel, for about a fathom or two square; when one layer is completed he

covers it with salt, and then lays on another, which he covers as before. Thus he disposes of all the fish that is caught in one day, for care is taken not to mix those of different days together. After the Cod has lain thus three or four days, they are removed into another part of the vessel and salted afresh. After this they are suffered to lye till the vessel has procured its full cargo, or till they think proper to depart for their designed port. Sometimes they are put into barrels and packed up, and this is generally known by the name of Barrel-cod, which is accounted the best.

They do not always salt the Cod-fish, for they dry some on shore; and this they fish for along the coast of *Placentia* in *Newfoundland*, from *Cape Race* to the bay of *Experts*; within which limits there are several commodious harbours and places to dry the fish in. There are fishing vessels of all sizes, but those are most proper that have large holds, because the fish have not a weight proportionable to the room they take up. Those that intend to dry their fish in the sun always take them in the summer season, that being the only time proper for that purpose. The *European* vessels, which carry on this trade, set out in *March* or *April*, though there are others that defer their voyage till *June* or *July*. But then their design is only to purchase the fish that has been already caught and cured by the inhabitants of the *English* colonies of *Newfoundland* and the neighbouring parts; in exchange for which they carry them meal, brandy, rum, linen, and other commodities, that they stand in need of. The fish that are chosen for drying are of a smaller sort, which are more fit for their purpose because they sooner take salt.

When the fishing vessels are arrived at any particular port, he who gets in first is entitled to the quality and privilege of admiral, and has the choice of his station, as well as of the wood which they make use of. As soon as they are got into a harbour they unrig all their vessels, leaving nothing but the shrouds to sustain the masts. In the mean while the mates go on shore to provide tents, which are covered with branches of fir, and the sails are laid over them. They also make a scaffold fifty or sixty feet long, and twenty broad. While these

these things are preparing the rest of the crew are busied in fishing, and as fast as they catch any they open them, and salt them on moveable benches; but the main salting is performed on the scaffold. When the fish has taken salt they then wash them, and lay them in heaps on the galleries of the scaffold. This done, they afterwards range them on hurdles, only a fish thick, head to tail, with the back uppermost. While they lye in this manner they take care to turn and shift them four times during every twenty-four hours. When they begin to dry they lay them in heaps, ten or twelve together, to retain their warmth, and continue to enlarge the heap every day till it is double its first bulk. At length they make one heap out of two, and continue to turn them every day as before; but when they are quite dry they lay them in huge piles as large as hay-stacks.

They not only salt the body of the fish, but their tripes and tongues, which are afterwards barrell'd up, as also the roes; which last are of service to throw into the sea, in order to draw other fish together, particularly PILCHARDS. They also get an oil from this fish, which is used for dressing leather, and all the other purposes of train oil. On the coast of *Buchan* in *Scotland*, the fishermen catch a small kind of Cod, which is greatly in esteem; after they have salted it, they dry it in the sun on the rocks, and sometimes in the chimnies.

The WHITING POLLACK is larger than a common WHITING, but it is pretty much of the same shape, only it is broader, and less thick. The back is of a dirty green colour, and it differs from a Cod-fish in being less; in being proportionably broader and less thick, in having a lesser head, in wanting a barb, and in having the lower pair of fins much less.

The sides beneath the lateral lines are variously streaked with a dusky yellow, and the body is scaly, but the scales are very small. The mouth is large, the teeth little, and the tongue is sharp at the point. The eyes are of a silver colour and large, and the lower jaw is a little more prominent than the upper. The liver is pale, and divided into three lobes; and the spleen is of a triangular oblong shape, and of a blackish colour. He feeds upon fish, particularly Sand-eels. He is frequently tak-

en near *Penzance* and *St. Ives* in *Cornwall*; but it is sometimes caught by what they call rock-fishing; that is by standing upon the rocks while they angle. Those that fish out of a boat or smack must have a line sixty yards long, with three or four hooks, one above another, and baited with different baits. The best time for sea-fishing is in warm weather, either early in the morning or after sun-set, provided the tide has been ebbing near half an hour. The flesh of this fish is well tasted, nourishing, and flaky like that of a Cod.

The northern people have always been accustomed to dry their fish, because it is their principal nourishment; and when a Cod is so dried it is called Stock-fish, because it must always be beaten before it is used. The first of this kind were brought from *Norway*, where they still prepare great numbers. They are brought in prodigious large barrels to *Drontheim* and *Bergen*, which are the two staples for this merchandize, and from thence they are transported into different parts of *Europe*.

The flesh, though used almost every where as an aliment, is of little use in medicine, though the teeth are said to be absorbent when reduced to powder, and good against loosenesses and spitting of blood; the dose is from ten grains to half a dram. The stones that are found in the head have the same virtues and uses.

The COAL FISH, called in *Cornwall* the RAWLING POLLACK, is very much like the former, only it is a little longer, and more slender. The lateral lines are not bent at the beginning like a bow as in the former; besides which they are white and broad, by which mark they distinguish it from the Whiting-pollack. Likewise it is not variegated with yellowish streaks like that, and the colour is blacker, more lively and shining; from whence it is called the Coal-fish. The fins are tinged with a blackish blue colour, and the scales are less. The lower jaw is longer than that of a Cod, from which it differs also in wanting a barb, and in having a more forked tail. The flesh is not so good as that of a Cod, but it is better than a Haddock. They are taken on the coasts of *Northumberland* and *Yorkshire*, as well as on those of *Cornwall*.

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The BIB, or BLINDS, so called by the inhabitants of *Corn-wall*, has a barb under its chin, in which it agrees with the Cod; but it differs from it in its size, for it seldom exceeds a foot in length; likewise, the shape of the body is shorter and broader, and the colour lighter. The size of the scales are also twice as large as those of a Cod, and adhere closely to the skin. The Cod has likewise a spine or thorn at the tail fin, which this wants.

The DORSCH, so called by the *Germans*, but PAMUCHLEN by the *Prussians*, is a variegated streaked fish of the Cod kind; but the skin is more smooth and slippery than in those of that sort. It is above a foot in length, and the head is less than that of a Haddock. The mouth terminates in a point, and the back is blackish or dusky as well as the sides, and the upper part of the coverings of the gills. Sometimes it is of an ash colour, with black spots or spaces, especially in winter. It has a small fleshy wattle under the skin; and, excepting this, it is in other things very like the Whiting-pollack.

The YELLOWISH POLLACK is pretty much like a Whiting-pollack, only the fins are less, and those which are under the chin are yellowish as well as the rest, but the back and sides are of a dark yellow, and full of saffron coloured spots. The line that runs along the gills to the tail is yellowish, and about the belly it is a little more bent than in the Whiting-pollack.

The HADDOCK is of a middle size between a Whiting and a Cod, and the colour is blackish on the back, with small scales. There is a black line runs from the upper corner of the gills to the tail; and on the middle, on both sides, not far from the gills, there is a large black spot, which distinguishes it from all others. This, by some superstitious christians, was said to be made by the finger and thumb of *St. Peter*, that he might distinguish this fish from all others, as being very much to his liking; the like monkish tale is likewise related of another fish called the Piper. The eyes are large, and there is a barb hangs down from the lower jaw about an inch long, and the tail is forked. In other things it resembles a Cod. Some account this a coarse fish, and affirm it is apt to cause fevers, which may be true when it is taken in seas
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that are shallow and muddy as about *Friesland*; but when it is caught where the water is deep and clear it is very wholesome, though the flesh eats much drier than that of either the Cod or Whiting.

The WHITING differs from all other fish of this kind in being the least, except the MOLLO of the *Venetians*, in having the upper jaw longer than the lower, and in the teeth, which appear out of the mouth when it is shut. Likewise, the belly fins in this kind are placed more forward than in the rest, and it wants a barb, in which it agrees with the Rawling-pollack and the Bib. The fin near the vent has several rays, and the flesh is very tender and delicate. It is called a Whiting because the colour of the back is much lighter or more white than in any other of this kind. It is a slender fish for its size, especially towards the tail, for about the head the make is considerably larger. The fins below the vent are speckled with black, and the scales are small. The eyes are large, and covered with a transparent loose skin; and the liver is white, having its left lobe very long, for it reaches to the bottom of the inside of the belly. The stomach is large, and there are often bones in it as is supposed of other small fish. The spleen is triangular, and lies under the stomach; and there are two long ovaries in the female full of yellow eggs or spawn. The air bladder is long, clammy, single, and connected to the spine of the back with a pneumatic duct that rises on the upper part, and proceeds to be inserted in the gullet; the heart is quadrangular with very obtuse angles, and has a very large auricle, and a great aorta. The flesh is sweet, tender, and universally esteemed in all parts of the world, where it is caught, for its wholesomeness.

The catching of Whittings in a boat or smack is diverting enough, because they bite very freely, and require no very nice tackle to take them. The places where they lye may be readily known from the sea-gulls that always hover over them; and they may certainly be met with if they seem to dip into the water every now and then.

There are two small oblong stones in the head of a Whiting that are said to be good in fits of the gravel,
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proper to stop loosenesses, and to absorb acids in the stomach. The dose is from twelve grains to half a dram.

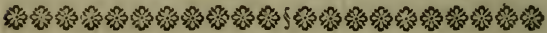
The WHITING POUT is a remarkable broad fish in proportion to its length, by which it may be readily distinguished from all other fish of this kind. The extremity of the tail and fins are blackish, and at the roots of the gill fins, on each side, there are large black spots. It is about eleven inches in length, and three and a half in breadth, and the first back fin, which is that of a triangular shape, is produced into a longish horn. The scales are small, and every where of a silver colour, as in the Whiting; but the mouth is much narrower than the rest of its kind. The young fish of this sort are called WHITING MOPS by the *Londoners*, and are generally very common in the month of *October*.

The LEAST WHITING, called MOLLO by the *Venetians*, and by the inhabitants of *Marseilles* CAPELAN, is the least of all fish of this kind, being not above six inches in length. It has a barb hanging from its lower jaw as in a Cod, and there are nine specks on each side of the gills and jaws. Some say that it is entirely smooth, and without scales; but others affirm, that there are scales which are exceeding small. The back is of a light brown, and the belly of a dirty white. It is very common at *Venice* and *Marseilles*, where no other of this kind are to be seen.

The HAKE is above a cubit in length, and is of the shape of a river Pike, for which reason some call it the Sea-pike. The back is of a light colour, and the belly of a dirty white, with small scales. The head is broad and flat, and the mouth large like that of a Pike, being full of sharp teeth. The tongue is smooth, the eyes large and of a gold colour, being covered with as transparent a membrane as in some of the Cod kind. The tail is not forked, but terminates in a right line. The liver is large, white, and undivided; and the stomach is long. The gut has only one fold, and the heart is contained in a strong bag or pericardium. The ribs are remarkably broad, sharp, and gristly. It feeds upon other fish, and the flesh is soft and tender. It is caught in great plenty about *Penzance* in *Cornwall*, and is to be met with almost every where in the *British* and *German* oceans.

oceans. The proper time of catching Hake at *Fiscard*, and other places between *Wales* and *Ireland*, is from Whitsuntide to *St. James's* tide.

The LING, so called by the *English* on account of its length, is for shape and colour much like a Hake, only it is longer, and the scales are less closely adhering to the skin. The head is flat and depressed as in a Hake, from which it differs in being bigger and longer in proportion to its bulk. The tail is round, not forked, and there are a multitude of rays on the back fin. The rays of the second pair of fins are long, though less than the fins themselves. The lower jaw of a Hake is a little longer than the upper, but in this the upper is longest. The Hake has no barb, but this has, besides many appendages, perhaps forty, and that has none. Likewise, the flesh is much better, and more wholesome than that of a Hake, and is preferred to all other salt fish. It is frequently taken near *Penzance* in *Cornwall*, and may be caught among the islands of *Scotland* all the year. To the north-east it may be met with from *Easter* to *Midsummer*, and to the north-east of *Ireland* from *Christmas* to *Michaelmas*.



C H A P. X.

Of Fish of the Tunny kind.

THE TUNNY FISH, or *SPANISH MACKREL*, sometimes grows to so great a bulk that it might be placed among the Cetaceous kind, for some have weighed above one hundred pounds. They are seven feet long, and have a round body, which grows gradually more slender from the middle to the tail, insomuch that at length it is exceeding slender. The back is black, which, however, in different lights appears blue or green; but the belly and sides are of a silver colour. There are some small fins on the top of the back and under the belly near the tail, by which this fish may be distinguished from all others of this kind. The tail is broad,

broad, and in the shape of a half-moon, and the snout is pointed. It is covered with large smooth scales, which are joined close to each other. In short it resembles in all things a common Mackrel, except its bulk, and therefore needs no farther description. These fish always swim in shoals, and they may be readily known by the great noise they make when they pass along, for they agitate the sea with great violence. They are extremely afraid of thunder; at that time they are easily taken with nets, which are made for that purpose in the *Mediterranean*.

The TUNNY is a fish of passage, for it rambles from one part of the sea to another at a considerable distance. In the months of *September* and *October* they leave the ocean, and pass through the straits of *Gibraltar* into the *Mediterranean* sea towards the *Levant*. They are often taken on the coasts of *Cornwall* with their stomachs full of Pilchards. Most authors seem to think that the place of spawning is the *Black sea*, and that they cross the *Mediterranean* for that purpose.

The time of fishing for Tunnies begins in *September*, and they are caught by a sort of wears made of small canes, which the *French* call *madragnes*; some of which are said to be a mile in compass. They are divided into several partitions; and the fish having entered the large ones are drove from thence into the smaller, for they are like sheep, if one leads the way all the rest will follow. The inmost partition of all is of a closer contexture than the rest, and is floored as it were with a net. When they take out the fish they draw it so near the shore that the bottom may be within five feet of the surface of the water, and then the fishermen leap into it as into a fish-pond, laying hold of the fish by the small part of their tails, and throw them into boats, where they immediately die.

When they are brought to land they hang them up in the air, and then cut off their heads, taking out their entrails, and cutting their bodies into pieces, they broil them on large gridirons, and fry them with oil olive. This done they season them with salt, pepper, cloves, and a few bay leaves, and then put them into barrels with fresh oil olive and a little vinegar. In this condition they

they are transported into different parts of *Europe* by the name of SEA-TUNNY. The flesh of this fish is not very delicate, but is very useful, for when it is cooked in the forgoing manner, and cured with good oil, it is as firm and white as veal, and eats pretty much like it. Some are very fond of it at all times, thinking it to be a fish of a very good taste, very wholesome, and yielding good nourishment.

The TUNNY, of *Aristotle*, differs from the former in being waved with transverse stripes, running obliquely on the sides; it is also less than a middling Tunny, though it has a longer body in proportion to its bulk; and there are filaments on the abovementioned stripes, whereas a Tunny has nothing of that kind. The snout is pointed, and the eyes small, and of the colour of gold; the belly is large, and of a silver colour; the back is of a shining blue, and the tail is slender and made like a half-moon. There are two lines of a blackish colour, which run obliquely from the back to the belly, and are at some distance from each other. There are no scales round the gills, and the teeth are very sharp and bent inwards. This fish is very fond of fresh water, swims in shoals like the former, and the flesh is fat and good.

The SARDA, of *Rondeletius*, is very like the next preceding, but it differs from it in having scales on the parts between the fins and the covering of the gills; the teeth are also larger and more crooked, and the flesh is not so tender.

The TUNNY, called LISSA or GLISSA by the inhabitants of the *Isle of Candy*, is two cubits in length, and has a body as thick as that of a man. It differs from the greater and common Tunny in being of a rounder make, and in having gills like that of the Sarda. Instead of teeth it has wrinkled and rough jaws, and the tail is not in the shape of a half-moon but rather forked.

The MACKREL is generally a foot, and sometimes a foot and a half in length. The body is long, round, thick, and fleshy, but towards the tail very slender and small. It is not entirely without scales, for it has some that are thin and small. Underneath the lines, that divide the sides in the middle, it is of a bright silver colour,

lour, but above them of a bluish green. On the back, towards the sides, proceeds several dark streaks, which by diversifying the colour contribute greatly to the beauty of the fish. The tail is so very much forked that it seems almost to be parted into two distinct fins; but the jaws are of an equal length, and furnished with small teeth. The eyes are large, the tongue sharp, and the nostrils small and round. It may be distinguished from the Tunny by the smallness of its size, and by the blackish lines on the sides, some of which are strait, and others crooked. The heart is of a triangular shape. The spleen blackish, and the liver red and undivided, but it has no swimming bladder. It is a fish of prey, for there are often small fish found in its belly.

Mackrel swim in large shoals in divers parts of the ocean, but particularly on the coasts of *England* and *France*. They enter the *English* channel in *April*, taking their course through the straits of *Dover*; insomuch, that in *June* they advance as far as *Cornwall*, *Suffex*, *Normandy*, and *Picardy*. They are taken either with an angle rod, or with nets; and when they are angled for it must be out of a boat, smack, or ship that lies at anchor. They will snap at any thing, insomuch that they will take a bit of scarlet cloth. In the west of *England* they fish for them with nets near the shore in the following manner: One man fixes a pole into the sand near the sea, to which he makes fast one end of a long net; another takes the other end of the net in his boat, and rows round in a circuit as far as the length of the net will permit, and then back towards the shore. When his boat is a-ground he steps into the water, and taking the cord of the net with him drags the net towards the shore. Afterwards, upon a signal given, both the men draw the net out of the sea; and by this method often catch three or four hundred fish; then they are either sent away in boats to the proper market, or are carried by land on horses that wait for that purpose. Mackrel are often taken in such vast plenty in that part of *England* that it is hardly credible, but then this renders them so cheap that they are not worth carrying away.

The flesh of a Mackrel is very good when fresh, especially if they are dressed when just taken out of the water.

water. There is such a difference between them then and after they are brought to *London* that it is not to be conceived by those that have not tried. However, they are not to be despised when they are well cured by pickling and put up in barrels. There are two ways of pickling them; the first is by opening and gutting them, and filling their bellies with salt, cramming it in as fast as possible with a stick; this done they range them in rows at the bottom of the vessel, strewing salt between the layers. The other way is to put them immediately into tubs of brine made of fresh water and salt, letting them steep long enough to imbibe salt sufficient to preserve them from corrupting. After this they put them into barrels, taking care to press them down close.

The LESSER MACKREL, of *Belonius*, differs in nothing from the former but in being less, and it is principally made use of when pickled. It is called COGNOL at *Marseilles*. The MACKREL of *Rondeletius* differs from the common sort in being bigger and thicker, and covered with small thin scales. The oblique lines or streaks are shorter, speckled with black, and the skull is transparent.

The ALBICORE, called by *Nieuboff* the CORETT, is six or seven feet in length, with yellowish eyes, and a forked yellowish grey tail. The bottom of the belly is blue, inclining to green, and near the tail there are several short fins on the under part. They are very bright, and shine like silver when they are caught at sea with hooks, which they often are by the sailors to their very great refreshment, the flesh being very good and well tasted. *Sir Hans Sloan* says it agrees in all respects with the Mackrel, only the thickness of the body in proportion to the length is much greater. They are very common between the tropicks, but they wander farther to the north when the sun is in the northern signs.

The BONETTOE is about three feet in length, and two in circumference. It is often seen in company with the Albicore, and has a sharp head, a small mouth, large gills, full silver eyes, and a tail like a half-moon. It has no scales, except on the middle of the sides, where there is a line of a gold colour, which runs from the head to the tail. On this line there is placed a double row

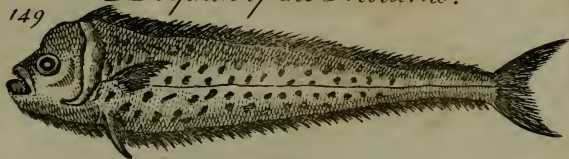
Bonettoe.

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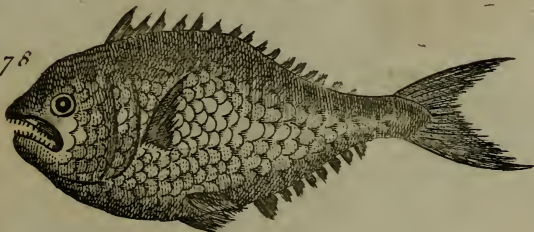
Dolphin of the Moderns.

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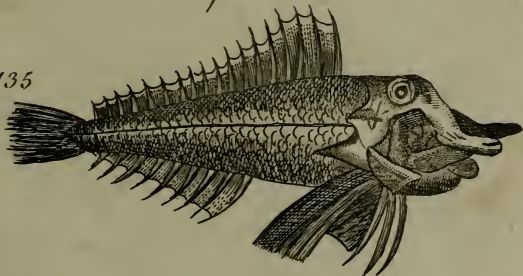
Sea-Bream?

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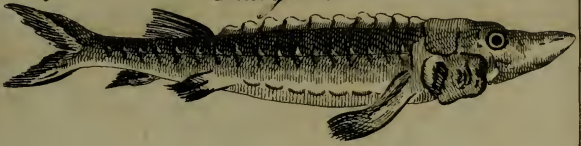
Piper.

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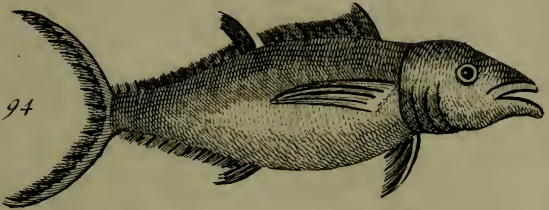
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Sturgeon?



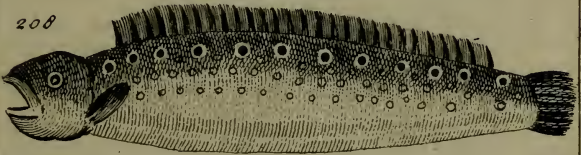
Albicore?

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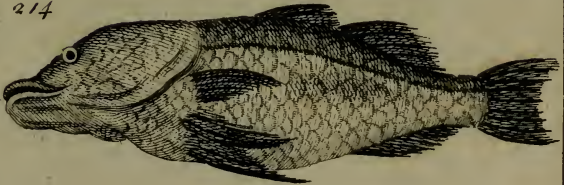
Butter-Fish?

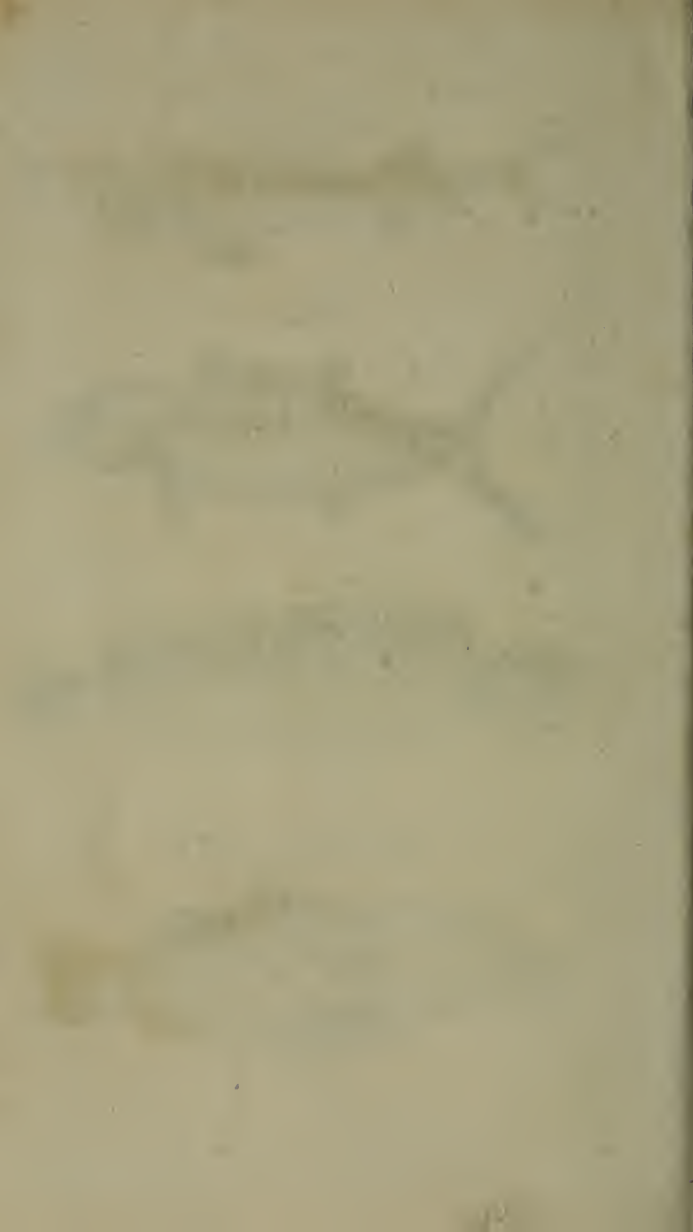
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Bald-Pate Fish.

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of scales, which are smooth two thirds of the length, but it begins to be rough when it reaches the tail. It is greenish on the back and sides, but shines on the belly like silver. It has seven fins, two on the back, two at the gills, a pair on the belly just below the gills, and one in the middle of the belly opposite to the largest on the back. From the last on the back proceeds a small narrow one, which reaches to the tail; and another that extends from the last on the belly to the tail in like manner. There is no great difference in shape, nor in the number of fins between this and the Albicore, but the flesh of this is much more delicate, which influences the sailors to be very diligent in catching them when they sail between the tropicks. Some have erroneously thought that the Bonettoe and Albicore are the same fish; but I can contradict this from my own experience, having often examined and eaten of them both.

Francis Leguat, in giving an account of his voyages, says the Bonettoe is three or four feet long, and is very thick and fleshy; and that on the back there is a shell, which is so narrow that it is scarce perceivable, which is of the colour of slate, and in some places a little greenish. The belly is grey, or of a greyish pearl colour, and grows brown as it approaches the back. There are four yellowish rays or stripes that rise on the side of the head, and run along the body, almost parallel to each other, uniting at the tail. The eye is large and lively, having the pupil as black as jet, and surrounded with a silver coloured circle. The rest of the description is much like the former; only he observes, that near the tail, on the back, there are six small square fins about an inch in height, and over-against them, under the belly, there are seven. However, most that have described this fish take these last to be only two continued fins.

He afterwards acquaints us, that while he was writing this account, one of his friends, who was a great admirer of the wonderful works of nature, had drawn a sort of Bonettoe that was caught on the coast of *England* near *Rye*. It does not differ greatly from this just described; however, it will not be improper to give that gentleman's account in his own words.

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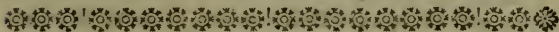
The fish, says he, which is called a Bonettoe in the *Indian seas*, is well known on the coasts of *France*, and particularly between the rivers *Loire* and *Garonne*, where it is called a GERMON. It seldom enters into the channel contrary to the custom of the Mackrel. This Bonettoe of our seas is certainly a fish akin to those that are commonly seen between the tropicks, and is three feet in length, with a body proportionably more thick than the common Bonettoe, for he is one third as broad as he is long. At first sight one would think the mouth of this fish was not wide, but he can open it a great deal wider than any one would judge from outward appearance. The teeth above and below are small, short, and weak, but the tongue is large, blackish, and hard to the very root. The eye is a full inch in diameter, and the pupil looks like very white transparent chrystal, the iris that surrounds it being more glittering than polished gold.

The colour of this fish is the same as the former, though it has no scales on its back or belly, for the skin there is quite smooth; but on the sides, between the tail and the fins near the gills, there is a stripe covered with scales two inches in breadth, though they are so fine and small that they can hardly be perceived. At the narrowest part of the tail, on each side, there is a knot or small hairy tuft, which is an inch and a half long. However the former has six small fins on the back near the tail and seven below and this has nine above and eight below.

The COORZA, of *Piso*, is like a Bonettoe with regard to the outward form, and many other particularities; but the size is different, for this is eighteen palms in length. The shape of the head, body, and tail is like those of small Tunnies, and the scales are large, and of a blackish blue, and so close together that they seem quite smooth, without any inequalities at all. The snout is sharp, the belly thick, the tail slender, and the end like a half-moon. The back is of a shining blue, and the belly of a silver colour. He takes no notice of the back and belly fins; but the figure shews they are like others of this kind. The flesh is sweet, and very
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nourishing, but more dry and hard than that of the former.

The KING'S FISH of *Piso*, called by the *Brasilians*, GUARAPUCU, and by the *Portuguese*, CAVALLO, is seven feet in length, and the thickness of a man's body, and every where equal, except towards the back part, where it grows gradually more small. The snout is pointed, and the teeth sharp, round, and regularly placed. The eyes are large, with an iris of a silver colour; and the fins and tail are like others of this kind. There are also small fins on the top of the back and under the belly, between the hinder back fin, and the fin near the vent, and at the tail. It is covered with a skin of a silver colour, which on the belly has a blueish cast, but on the back is of a deeper blue. On each side there is a crooked line which reaches to the tail, and is covered with exceeding fine scales.



CHAP. XI.

Of Fish of the Trout kind.

THE GUINIAD, so called in *Wales*, is bred in *Pemle-meer* in *Merionethshire*, and Mr. *Ray* takes it to be the same fish with the FERRA of *Rondeletius*, that is found in the lake *Leman*. The shape is not much unlike that of a Salmon, and the usual length is about twelve or thirteen inches. The back is of a dusky colour, and the belly is white. The top of the head is of light blue, speckled with darker spots, and the ends of all the fins are of a dark blue. The mouth is much like that of a Herring, the upper jaw being somewhat more prominent than the lower; and it has no teeth either in the jaws or throat. The belly does not terminate sharp like a wedge, but is about three quarters of an inch broad; and the scales are of a middle size. The eyes are large, but have no pellicle or skin to cover them as many other fish have. The lateral lines run directly from the corner of the gills to the tail, which is forked at the end.

The brain is divided into seven lobes ; but the liver has none, and the gall is yellow. The skull is not very transparent, and the borders of the eye on each side seem to be wrinkled. The air bladder runs the whole length of the back as in Trouts, and the spleen is long and soft, like clotted blood. *Pemble-meer* is by the *Welch* called *Llin-tegid*, and lies near *Bala*, a bailiff-town, and the chief of that mountainous tract. The *Guiniad* generally lies at the bottom of the lake, among the weeds termed water gladiol, which is peculiar to these mountains. It is called *Guiniad* from the whiteness of its body ; this word signifying much the same as *Whiting* in *English*. It is very observable, that though the river *Dee* runs through this lake, yet this fish is never found in its stream ; and on the contrary, though *Salmons* are caught in the river, they never enter the lake ; so strictly do these animals keep to the haunts designed for them by nature. They are in season in summer time ; and though the flesh is white, it tastes like that of a *Trout* ; but it is in much higher esteem, because it is a greater rarity.

The *SHELLY*, so called by the inhabitants of *Cumberland*, is the *LAVARETO* of other authors ; and it is found in the lake termed *Hulse-water*, not far from *Pereth*, a town in *Cumberland*. It is not a very large fish, for it rarely exceeds two pounds in weight ; and for its size, it is longer than a *Trout*, and of the shape of a *Herring*. The scales are larger than in a *Trout*, and the sides and belly are of a silver colour. There is a line runs from the corners of the gills directly to the middle of the tail.

The noble *ALBULA* of *Schonewald*, is not much unlike the *Guiniad* ; and the little *Albula* of *Gesner*, has a head of a blueish green, shining like a precious stone ; and besides, it is less than the former.

The blew *ALBULA* of *Gesner*, called *BEZOLA* by *Rondeletius*, is not so white as a *Schelly*, being a little blewish, and has a sharper snout, a less head, and a broader and a more prominent belly like a *herring* ; but the flesh is softer and not so good. *Gesner* says, it is of a middle size, and that the extremity of the tail is of a blackish blue colour, especially about the middle and
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the fork. The fins are likewise of the same colour as well as the head; but the belly is as white as snow, and the back greenish. It has no teeth, but the tongue is a little rough; the smell of this fish is more agreeable than others of this kind.

The least ALBULA of *Gesner*, is extremely like the little Albula, though less, and the head is not so green. When this fish is placed upright, and beheld downwards from the back, the sides will appear to have a purplish cast. The fins are white, and when the mouth is open, the end of the upper jaw bends downward. The mouth is longish and without teeth; and they swim in very large shoals, for which reason many of them are taken. Mr. *Ray* is of opinion, that there are not so many Albula's as are taken notice of by authors, though he thinks *Gesner*, who has mentioned them, to be a skilful, diligent, curious, faithful, and true writer; however, he observes this author is most to be depended upon, when he describes those in the waters near which he lived. Mr. *Ray* has himself seen the ALBELE of *Zurich*, the LAVARETO of *Savoy*, the FERRA of *Geneva*, the GUINIAD of *Wales*, and the WEISS-FISH of *Constantine*; and he thinks the principal difference between these fish, is in the size; of the which the Ferra and the Albele excel the rest; besides the outward shape of the body, is thicker, broader, and shorter in these, than in a Salmon; whereas, in the Lavareto, and Schelly, they are longer in proportion, as well as more slender and narrower, somewhat like a Herring: but the least Albula of *Gesner*, named the Weiss-fish in *S-wisserland*, differs sufficiently from the rest in its smallness, if other marks had been wanting.

The HAUTIN or OUTIN, so named in *Flanders*, is easily distinguished from the rest of this kind, from the shape of its snout or upper jaw which stands out beyond the lower, and grows sharp at the end like the figure of a cone. In shape, it is like a Trout, and is commonly brought over from *Holland* with fish of the cod kind, for which reason, perhaps, *Rondeletius* and others, are mistaken in the number of the fins, which they say is three, whereas in reality it has but two.

The CURMATA of *Prasl*, taken notice of by *Marcgrave*, is very like the Ferra of the lake *Leman* in *Switzerland*, and perhaps may be the same fish.

The GRAY-LING, termed in some places the UMBER, is the river *Umber* of *Belonius* and *Ronseletius*. It has a longer and flatter body than that of a Trout, and in size seldom exceeds eighteen inches. In weight it is about half a pound, but in some places they are three times as heavy. Its back is of a dusky green inclining to blue, and the sides are grey, from whence it has its name of Gray-ling, though they seem to glitter with spangles of gold; and they are marked with black spots irregularly placed. From the head to the tail, in the places where the scales meet, there seems to be drawn dusky parallel lines, from whence it derives the name of Umber. The lateral, common to all fish, are nearer the back than the belly, and the top of the back fin is painted with red, but the lower part is of a blueish purple; the fins of the belly are likewise of the same colour, that is, of a blueish purple spotted with black. It has a little head with protuberant eyes, whose iris is of a silver colour, speckled with a dusky yellow. The mouth is of a middle size, and the upper jaw is longer than the lower; but it has no teeth, but the lips are rough like a file, the tongue smooth, and the gills quadruple.

This fish delights in rivers that runs through mountainous places, and are to be met with in the swiftest and clearest parts of those streams, particularly in the rivers *Hodder*, *Dove*, *Trent*, *Derwen*, *Wye*, and *Lug*. The flesh may be eaten all the year; but their chief season is *December*, at which time the head, gills, and list that runs down the back are black. It is firm, white, cleaves like that of a Salmon, and is accounted very good and wholesome. The time of spawning is in *May*; and it is a brisk sprightly fish when in the water, swimming as swift as an arrow out of a bow.

The SALMON has different names according to its different ages; for those that are taken in the river *Ribble* in *Yorkshire*, are in the first year called Smelts, in the second Sprods, in the third Morts, in the fourth Fork-tails, in the fifth Half-fish, and in the sixth, at which time they are thought to have attained their proper growth, they are judged worthy of the name of Salmon.

mons. The size of this fish is much the same in most parts of *Europe*; and when they are largest they weigh near forty pounds.

The Salmon is a very beautiful fish, and is every where in great esteem; the body is longish, covered with small thin scales, and the head is small with a sharp snout, and the tail is forked. The colour on the back is blueish, on the other parts white, generally intermixed with blackish or reddish spots, placed in a very agreeable manner. The female may be distinguished from the male, by having a longer and more hooked snout, in having scales that are not quite so bright, and its body is speckled over with dark brown spots. Likewise the belly is flatter; the flesh is more dry, and not so red; nor yet is the taste so agreeable.

The excrescence which grows out of the lower jaw of the male, and is a bony gristle like the beak of a Hawk, is not a sign of his being sickly, as *Walton* and others have thought; but as a defence provided by nature against such fish as would devour their spawn. It grows to the length of about two inches, and falls off when he returns to the sea. He is likewise more spotted in fresh water than in the sea. The teeth are small in proportion to its body; and the gills are quadruple, with a broad cover full of red spots, of the same colour as on the sides; for towards the back, they are more dusky. The flesh is not so red at first, as when it is boiled or salted; and it is tender, fleshy, flaky, and luscious, for which reason it satisfies the sooner, and is harder of digestion, though it is generally preferred to that of other fish. About the time of spawning it grows more insipid, and loses a great deal of its lively colour. Some begin to be out of season soon after the summer solstice, and others much later; which may be known by their falling away, their losing their beautiful spots, and by their colour; insomuch, that when they are quite out of season, they look like fish of a different kind.

The SALMON-FRY, called in some countries a Salmon-Smelt, is by most thought to be the offspring of a sickly Salmon, which has been forcibly detained from visiting the salt water; but however that be, it is agreeable enough to the eye, though its taste is very ordinary and insipid. The Salmon

chuses the rivers for its abode about six months in the year, entering the fresh water about *February* or *March*, in some countries, where they continue to the autumnal season, at which time they cast their spawn, and soon after return to the sea. However, it is said, that the Salmon of the river *Ex* in *Devonshire*, and of the *Wye* and *Ussk* in *Monmouthshire*, are in season during the other six months, and that they never frequent the *Wye* and *Ussk* the same year; for when they are found in the one, there are none in the other. In general, the salt water contributes most to their growth, and the fresh renders them fat.

When the time of spawning comes, the female makes a hole in a gravelly bottom, like a kind of nest of her own dimensions; which done, she discharges her spawn and retires. Then the male, or milt, advances and covers the spawn with its belly, emitting at the same time a whitish fluid like milk. After this the female returns, and they both endeavour to cover their brood with gravel, in which they work with their noses like hogs. Then they return to the deeps to recover their strength, which they do in about twenty days time.

There is nothing more remarkable relating to this fish than its agility in leaping over obstacles that oppose its passage to and from the sea; for they are frequently seen to throw themselves up cataracts and precipices many yards high. They sometimes make several essays before they can gain their end; and at that time there are sometimes baskets set to catch them, into which they leap. There is a remarkable cataract in the river *Tivy* in *Pembrokeshire*, where people often stand gazing to observe the strength and sleight which they use to get out of the sea into the river. This is well known in those parts by the name of the *Salmon-leap*. In the river *Wear*, near the city of *Durham*, there is another, which is accounted the highest in *England*. Likewise, at old *Aberdeen* in *Scotland*, there is one where Salmon have been caught in such great plenty, that they have carried on a great trade in that fish. The Salmon when he returns from the sea, is always said to enter the same river in which he was spawned. This is evident from the experiments made by fishermen, and others, who have caught them
when

when very small, and have run a bit of tape through the tail fin; for by this mark, they have been certain they have retaken the same fish, in the same river, after his return from the sea.

The chief rivers in *England*, frequented by this excellent fish, are the *Thames*, *Sewern*, *Trent*, *Medway*, *Dee*, *Ex*, *Urk*, *Wye*, *Lon*, *Tyne*, *Warkington*, *Wever*, *Loane*, and others. However, the *London* markets are chiefly supplied from the North, where they are not only more plentiful, but are in season sooner than those in the southern rivers.

The chief Salmon fisheries in *Europe*, are along the coasts of *England*, *Scotland*, and *Ireland*; where the fishing usually begins about the first of *January*, and ends in the latter end of *September*. It is performed with nets near the mouths of the rivers, and along the sea coasts thereabouts; when these fish are seen to crowd thither from all parts in quest of fresh water. They also fish for them higher up in the rivers, sometimes with locks or wares, made for that purpose, with iron gates. These gates are so contrived, that the fish in passing up the river can open them with their heads; but they are no sooner entered, than the gates clap to and prevent their return. Thus the Salmon are enclosed as in a reservoir, where it is easy to take them. In some places they fish for Salmon in the night time, where they light up torches or kindled straw, which invites this fish to draw near; and then they may be either struck with a spear, or taken with a net. In some parts of *Scotland*, it is said, they shoot Salmon when they espy them in the shallows, with fire arms. When they are caught, they are either salted and dried, or pickled, and put into casks, by which means they are transported to distant markets.

The gall of Salmon is only used in medicine, and that to take away spots of the eyes, and to cure a noise in the ears, by putting a little therein with a bit of cotton.

The SAMLET, so called in *Herefordshire*, is named a BRANDLIN, and FINGERIN in *Yorkshire*. It is very like a Trout, and yet differs from it in being much less, for it is but seven inches long, and an inch and

a half broad. It is also a little broader in proportion than a Trout, and has fewer spots that are not so lively, and the black spots are less. Besides it is whiter, and has a more forked tail; the sides are not so yellow under the spots, and the lateral lines in a Trout are greater, and more red than in this fish. Add to this, that there are transverse spaces near the lines, of a blueish colour, which the Trout has not. It is taken in the river *Wye* in *Herefordshire*, and elsewhere. Some pretend that this kind of fish are all males, which cannot possibly be true, if they are distinct species. However, they may be found in those places, and those only frequented by Salmon, and they may be caught at all times of the year.

The GRAY, is probably the same fish which in *Scotland* they call the GREY-LORD; it differs in size but little from a Salmon, but the shape is very unlike, for they are considerably broader and thicker, and the tail is not forked. The body is every where speckled with ash-coloured or grey spots, from whence it derives its name. The flesh is preferable to that of Salmon, and bears almost double the price. It is a very strong and nimble fish, making its way from the sea into the rivers with extreme swiftness, surmounting almost all obstacles with the greatest ease. This fish is seldom taken, and therefore is known but to few; and it does not come into the rivers before *August*, which is the time of spawning.

The SALMON-TROUT, the BULL-TROUT, or SCURF, differs from a Salmon, in having a tail not so forked at the end; from a Gray, in its head, which is shorter and thicker; and from both, in being less, for it seldom exceeds twenty inches in length. The flesh is not red as in a Salmon, and it has a much stronger, and more disagreeable smell than that of a Gray. The LAKE-TROUT of *Gosner* and *Aldrovandus*, differs from a Salmon-Trout in being bigger; for that of the lake *Leman*, weighs near forty pounds, and that in some other lakes, from fifty to an hundred. Likewise the head and back are of a beautiful greenish-blue colour, and the back fin is variegated with numerous

rous black spots. Besides the tail is forked, and the flesh is red and well tasted.

The UMBLA of *Rondeletius*, is two cubits in length, and sometimes longer. The tail is forked, and the pointed lines on the sides are crooked upwards, contrary to those of other fish. The sides beneath this line and the belly, are yellowish; but above they are spotted with spots that are neither black, nor red, but white. The head is blueish, the skull transparent, and the belly ruddy. There are teeth in both jaws, that is there is a double row in each. The teeth on the tongue are six in number, and under the eyes there are three or four small holes.

Another UMBLA of *Rondeletius*, grows to an enormous bulk, and somewhat resembles a Salmon and a Salmon-Trout. The end of the lower jaw is crooked, and there is a cavity in the upper jaw to receive it as in Salmons. The jaws are marked with many lines, and the back is of a blueish black colour; but the belly is of the colour of gold.

The BARRACADA, is about fifteen inches long and three broad, in the middle where it is broadest. The lower jaw is a quarter of an inch longer than the upper; and the eyes are two inches distant from the end of the snout, being nearly of the same length as the cleft of the mouth. The lower jaw is furnished with very small teeth, and the upper is armed with a double row, of which the outer are the shortest. The fore part is narrow as far as the gills, gradually increasing to those parts from whence this fish is almost of an equal thickness to the vent, where it begins to grow less to the beginning of the tail. The colour is dusky on the back, as far as the lateral line, which runs from the head through the middle of the sides to the tail; but it is white on the belly. It is sprinkled with black specks, and covered with small thin scales. There are two fins on the back about an inch long as well as broad; and the same number at the gills. On the belly there are likewise two, and one behind the vent. The fins are soft, the tail broad and forked. The stomach is two or three inches long, of the shape of a bag, and the liver

whitish. The name of this fish is probably *Spanish*, and it has no *English* name in Sir *Hans Sloane's* catalogue.

The MUD-FISH, is a-kin to a Trout, and is about seven inches long, and one thick, near the head, where it is thickest; and from thence to the tail it becomes gradually smaller. There are seven fins placed as usual, and it is covered all over with minute scales, which are partly white, partly yellowish, and partly black, only on the belly they are all white. The under jaw is longer than the upper, and they are both armed with several rows of small sharp teeth. It is found in the lakes and rivers in the *West-Indies*, and is accounted very good eating.

The SALVELIN, so called by the *Germans*, has a blackish back, and the sides are speckled with yellowish spots. The belly, and belly fins, are yellowish, but more pale in some places than others. There is a strait line runs from the gills to the tail, and the scales are small. On the upper jaw, from the nostrils on both sides, there is a row of points which run above the eyes to the corners of the gills, and then they turn back, meeting on the back part of the head. The upper jaw is longer than the lower; and when the mouth is shut, the outermost row of teeth appear out of it. This fish is very common about *Lintz* in *Austria*.

The TROUT, is of a longish make, and resembles a Salmon more than any other fish. The head is short and roundish; the snout blunt; the body thick; and the tail broad. The mouth is wide, and there are teeth not only in the jaws, but on the palate and tongue. The eyes are large, with a reddish circle round the pupil; but the rest of the iris is of a silver colour. The scales are small, and the skin readily falls into wrinkles, and separates from the flesh. In the larger Trouts, the back is of a dusky hue, and full of black spots, which in some are mixed with red. The sides are painted with spots of a purple or vermillion dye; but on the belly they have a yellowish cast. There are two fins on the back, and that next the head is full of black spots, and the edge of that near the tail is of a vermillion colour. On the belly there are two pair, which are always either red or yellow.

Trouts generally delight in cool and small streams which descend from hills and rocky mountains; and they seem to take a pleasure in swimming against the course of the water, striving to gain, as it were, the spring head of brooks and rivulets, let their descent be never so rapid. Several authors informs us, they are found in small rivers among the *Alps*, which are so cold, that no other fish can bear them company. The time of spawning is in *November* or *December*, when they dig holes in stony or gravelly places, and deposite their spawn therein. They are not in the highest season when fullest of spawn; for they are fattest, and have the most delicious taste in *July* and *August*. However, they begin to be in season in *March*, and are sooner so in some rivers than in others; particularly in the *Wandle*, they are more forward than in any other about *London*, and there is near a month difference between that and *Hertford* river. In the winter time Trouts are sick, lean, and unwholesome, breeding a kind of worm with a large head, which is not unlike a clove in shape. Then this fish seems to have a head of a larger size than ordinary, and those beautiful spots disappear, and the lively colour of the belly becomes dusky and disagreeable. But towards the latter end of *March*, when the sun with its genial warmth and influence begins to invigorate the earth, he then makes a shew of some spirit, and rousing as it were from a sort of lethargy. forsakes the deep still waters for the more rapid streams, where he rubs off his in-bred sores against the gravelly bottoms, and soon after recovers his former strength and vigour. The flesh is a little drier, and not quite so tender as that of a Salmon; however, it is esteemed the most agreeable of all fish that make their constant abode in fresh water.

The **FORDICH-TROUT**, is of a different species from the Common-Trout; for it is almost as large as a Salmon, and continues nine months in the sea. Besides it is seldom or never caught with an angle, being supposed not to feed at all in fresh water; at least, when their maws have been opened, there has been nothing found therein. However, they return to the river so very constant and punctual, that the fishermen know almost to a day when to expect them. Perhaps this fish,

though called a Trout, is the same as the Gray-Lord abovementioned.

The RIVER-TROUT, termed HUCH by the *Germans*, differs from the common Trout in its size, which is larger, being near twenty-six inches long; in the shape of the body, which is more long and slender; in having black spots, not red, and in having no teeth on the palate.

The RED CHAR, is taken in the lake called *Winandermeer* in *Westmoreland*, and by the *Welch* is named TORGOCH. It has a more long and slender body than a Trout, and the back is of an olive-green colour, speckled with whitish spots. The belly is generally red, tho' it is sometimes white, especially in the spawners. The scales are exceeding small, and the lateral lines strait. The mouth is wide, the jaws pretty equal, only the lower is a little sharper and more protuberant than the upper. The lower part of the fins are of a vermilion dye, and the gills are quadruple. There are teeth both in the jaws and on the tongue; but in the upper jaw there is a double row. The swimming bladder is like that of a Trout, and the liver is not divided into lobes, but it has a large gall-bladder. The spleen is small and blackish; the heart irregular, and the eggs of the spawn are large and round. The flesh is more soft and tender than that of a Trout, and it is but very little tinged with red when boiled. It is in very high esteem, perhaps, because it is exceeding scarce; and in *Wales*, it is accounted the chief dish at the tables of people of fashion.

The only place in *England* where this fish is taken, is *Wirander-meer*; but in *Wales*, it is caught in five different lakes. In *Merionethshire*, they are smaller than in other places, and are taken in *October*; but in one of the lakes of *Carnarvonshire*, they are caught in *November*; in another, in *December*; and in a third, in *January*; so that the fishing ends in one, when the other begins; they swim together in shoals, and though they appear on the surface of the water in summer time, yet they will not suffer themselves to be taken either with an angle or nets. The only season for catching this fish, is when they resort to the shallow parts of the lakes

lakes to deposite their spawn. At this time they set trammel nets baited, and so leave them for whole days and nights, after which they are generally sure to find some therein.

Some have been in doubt whether the *English* Red Char, and the *Welch* Torgoch, are the same kind of fish; but Mr. Ray thinks there is no room to make a doubt of it, since the *Welch* name signifies a red belly, which is the peculiar mark of the Red Char. The GILT CHAR is indeed of a quite different species, and is not so big by one half. The belly is of a silver colour, the flesh red, and the back spotted with black; whereas the belly of the former is red, the flesh white, and the spots on the back are red likewise. Those of *Winander-meer*, are only taken in the winter time, like those in *Wales*; for in the summer they will get over the tops of the nets and make their escape. Dr. Leigh affirms, that the Char is found in *Coninston meer* in *Lancashire*, which from what he says of the size, must be the Red Char.

The GILT CHAR, is the same as the White Char of *Winander-meer* in the county of *Westmoreland*; and is like a Trout, only it is much broader, and has a more prominent belly. The scales are very small, and the colour on the back is lighter than that of a Trout, though variegated with black spots. The belly and sides are of a silver colour; the snout is blueish, and the skull transparent. It has teeth in the palate, and two rows of them on the tongue, and the swimming bladder is extended the whole length of the back. The flesh is red, and is in high esteem among the *Italians*. It never exceeds twelve inches in length.

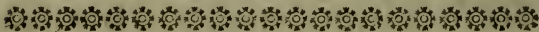
The TARANTOLA, so called by the inhabitants of *Rome*, is a round oblong fish, more slender near the head, and grows sensibly thicker to the first back fin, from whence it gradually decreases to the tail. It is a foot in length, and broader than a man's thumb. The belly is whitish; the back of a blackish-green, speckled with green, blue, red, and black spots on the back, head, and sides. The top of the head is flat, and there is a small pit between the eyes; the mouth is extremely wide, and the snout terminates in an acute angle. There is one row of long sharp teeth in both jaws; and the hinder fin on the back, placed not far from the tail, is little

little and destitute of rays, being nothing else but an appendage of fat or flesh, as is common to the Trout kind. This is a singular sort of fish, for there is no sea fish like it.

The SMELT is so called, from having the smell of a violet, though some say it is like a cucumber. It is six inches long, and near an inch broad. It is the least of these kind of fish, and the shape of the body is more long and slender. The scales fall off with the slightest touch; and the skull is so transparent, that all the lobes of the brain may be plainly and distinctly seen. The back is of a dusky colour, but the belly and sides shine like silver. Those that examine them attentively, will find small black spots on the head and back, and the lower jaw a little more prominent than the upper; but they are both well furnished with teeth, and there are some on the tongue.

The flesh is soft and tender, and of a delicate taste; for which reason it is in high esteem. It is a fish of passage, and visits the *Thames*; and other great rivers twice a year, that is in *March* and *August*. In the first of these months, they generally advance up as high as *Mortlack*; but in the latter, they make a stand about *Blackwall*.

The RIVER SMELT, of the river *Sein* in *France*, is very like a Bleak, and only differs from it in the roots of the fins, which are red, and in having the lateral line bended as it were like a bow. It is near five inches long, and a little broader than a man's thumb. It has a particular smell, and is thicker and shorter than a Sea Smelt.



C H A P. XII.

Of slippery Fish of the Eel kind.

THE SEA LOACH, so called in *Cheshire*, is termed the WHISTLE FISH in *Cornwall*. It is nine inches in length, and the head is flat and depressed. It has a mouth like an Eel, furnished with several teeth, and on the upper jaw there are only two barbs,
one

one on each side, and another at the lower corner. The eyes are not far from the end of the snout, and their iris is of a silver colour. The scales are exceeding small, and the head, back, and sides, are variegated with large blackish-red spots. In a dent or pit almost in the middle of the back, instead of a fin, there is a low membrane or skin edged with extremely small hairs; by which it may be known from all other fish of this kind; for with regard to the spots, it greatly varies, they being white in some, and others have none at all. The colour of the back is of a dusky yellow, but the sides are lighter, and the belly almost white. The gills on each side are quadruple.

The Sea Loach begins to have spawn like other fish, about the vernal equinox; but the eggs are white and very small like nit. About *Whitsuntide* they begin to look a little reddish, and are of the size of a grain of mustard seed. Likewise, about that time they grow softer, for at first they are hard. After this they begin to assume an oblong figure, and two blackish specks appear, which are the rudiments of the eyes and head. Soon after, the belly may be seen, and then the tail, about the thickness of a very fine thread.

When the eggs encrease, the belly of this fish is not only distended with their bulk, but with a slimy liquor full of slender fibres, by which means the tender bodies of the young fry not only lie soft in a regular order, but are kept from crowding and hurting each other. When the young ones are cut out of the belly, they bend their bodies like Eels, moving their mouths and gills, and live several hours. They are naturally excluded about the latter end of *December*. The males may be distinguished from the females, by being less, and of a brighter yellow. The flesh is hard, and not very agreeable, being chiefly eaten by the poorer sort of people.

The EEL POUT, has a smooth soft slippery body like an Eel, and has either no scales, or those that are exceeding small. The head is broad and depressed, and the jaws are as rough, with very small teeth, as a file. The tail is flat and roundish, and on the lower jaw there grows a barb about half an inch long; and between the nostrils and the snout, there is a pair of short barbs.

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The colour is of a blackish green which is easily wiped off, and then there appears a mixture of yellow, white and black. The place in *England* where this fish is chiefly found, is the river *Severn*, and they spawn in *December*, being so fruitful, that one roe contains no less than 128000 eggs. Their usual length is about fourteen or fifteen inches, though they sometimes grow to twenty. The flesh is good and sweet, and in great esteem.

The *LOTA* of *Rondeletius*, differs from the former, in having its tail like the end of a sword; in being covered with small scales, and in having no barbs on the upper jaw.

The *LAKE LOACH* is greater than that of the river, and the colour is variegated with black and yellow. *Gesner* makes three kinds of these fish, the greater of which is near two feet in length, and there is a round soft caruncle, which is hollow within, and there are four fins on the back. Another, which he calls the *GREATER LUTEOLA*, has three fins, and the third has only two. *Belonius* has only two kinds, namely the greater, which is variegated with different colours, and the less, which he terms a *BARBOT*, that is only of one colour, differing from the former in nothing else. Mr. *Ray* says, he knows but two kinds, which have both only two fins on the back, and therefore supposes that *Gesner* is some how or other mistaken. However, he leaves this affair to the farther determination of the curious.

The *VIVIPAROUS LOACH* of *Schoneveldt*, called by the *Germans* *ÆLQUAPPE* and *ÆLPUTE*, is a fish a foot in length, or somewhat longer. The skin is smooth; the colour of the head and back of a dusky yellow with black streaks, which towards the sides are more yellow; and the belly is of a dusky white. The head is less in this than in others of the same kind, and of the shape of that of an Eel. The back-fin begins at the neck, is of the same colour with the back, and runs to within half an inch of the tail. In the middle of the belly there is a yellowish fin which terminates in a sharp point, and is a little redish. There are no teeth, but the jaws are rough.

The *FOSSILE LOCH* of *Gesner*, is termed by the *Germans* *PEISSKAR*, or *BEISSKAR*. It is a palm in length,

length, and sometimes much longer, and the back is of an ash colour, with many specks or spots running cross it, partly black, and partly blue. At the mouth there are fleshy particles, which are expanded by this fish when it swims; and the belly is yellow, speckled with small white, red, and black spots. On each side there is a black and white line, and there are two fins on the middle of the belly, and a short one at the back. They pass out of rivers into marshy places, hiding themselves deep in the earth; or being left in meadows after a flood, while water remains in chinks and holes of the earth, and then subsiding, these fish continue in them, where they grow, and cannot get out if they would.

The CLARIAS of the *Nile*, so called by *Bellonius*, is a foot in length, and as thick as a man's arm. The head is great and fleshy, and the eyes are large, being an inch and a half distant from each other, and the iris is white. The back is dusky, and the belly is of a dirty white; and there are two barbs which are six inches long and soft. There are two rows of teeth in the upper jaw, but the lower is only rough. The tail is broad and forked, on which there are two horny round appendages a palm in length, which are found in no other fish. At the gill-fins there is a singular serrated thorn or prickle; and on the back, there is only one long fleshy fin, armed only with one prickle. The swimming bladder is full of holes like a honey comb, which makes the body seem to be spongy.

The SHEAT FISH, grows to the length of eight cubits and upwards, weighing one hundred and fifty pounds of eighteen ounces each. In the river *Vistula*, which runs into the *Baltick*, they are sometimes caught of the length of sixteen feet, and twenty seven inches in breadth. It is of the colour of an Eel, only the belly and sides are variegated with white and black spaces, or large spots. The body is slippery, being covered with slime, and is without scales. The head is very broad and flat, and the mouth exceeding wide. The body, to the vent, is thick and roundish, but the lower part of the belly is flat; from the vent to the tail it grows broader and flatter in proportion to the size of the fish. In the upper jaw, before the eyes, there are two very long and
hard

hard barbs, which this fish thrusts out as it were to make some discovery. There hangs four barbs from the lower lip, which are slender and more short. There are no teeth properly so called; but the lips both above and below, as well as the palate, are as rough as a file, which might pass for small teeth. There is only one fin on the back, which is very small, and consists of three rerves. From the vent to the tail there runs a very long fin, which joins to each gill-fin, and there is a hard thorn or prickle with which it drives away troublesome fish. It is found in several rivers in *Germany*, as well as lakes, and keeps chiefly at the bottom. It is a very voracious fish, and does a great deal of mischief wherever it comes. The flesh is said to be wholesome food, and they dress it in the same manner as an Eel.

The *CALLORHYNCHUS*, is a fish without scales, and that has cartilaginous fins. It is of a silver colour on the back, and of a shining gold colour on the sides; the lower lip is long and broad, and covers the upper when the mouth is shut. The teeth are only smooth tubercles placed in each jaw; and the nostrils are seated on the lower part of the head, having only a single hole each. The eyes are placed on the sides of the head, and are covered with a single coat; the iris is of a silver colour, and the eye-lid perpendicularly oval. The belly is large and flat, and the vent nearer the tail than the head, being seated between the belly fins. There are seven fins, namely, two on the back, as many on the breast and belly, and the tail makes the seventh. The length of this fish, from the top of the snout to the end of the tail, is nine inches and two thirds. The description of this fish, was taken from one in the collection of *Seba*.

The *BLACK FISH*, so called by the *English* at *Aleppo* in *Syria*, is thought by *Dr. Russel* to be like the Sheat-Fish in shape, though it is not above twenty inches in length, nor twenty ounces in weight. However, they are of different sizes, and the head and back are black. The lateral line runs directly from the head to the tail, through the middle of the side; below which, to the belly, the colour generally changes to a dark purple, and the under part of the head is of the same colour. The head is flat, and near five inches in length; and the body round, till within a few inches of the tail, where it becomes

becomes flat. The mouth is not so large in proportion as the Shat-fish, and it has no tongue. The make of the mouth and palate agree exactly with the description of that fish; and from the edge of the nostril on each side, arises a small cirrus; and from the corners of the mouth two more that are stronger and twice as long. At the lower lip there are four more, the two outermost of which are the longest. The eyes are placed near the corners of the mouth, near the lower edge of the upper jaw. There are four gills on each side, and they are all armed with a double row of sharp points, like the teeth of a comb. There are two fins near the gills, consisting of seven rays; and to the fore part, a pretty strong prickly bone is connected. About an inch above the vent, there are two smaller fins, and another long one that extends from the vent to the tail. There is likewise another of the same kind, that runs from the neck all along the back; but neither of these join to the tail, which is round at the tip. It is found in the river *Orontes*; and the markets of *Aleppo*, are supplied with it in great plenty, from *November*, to the beginning of *March*. The flesh is red like beef, and has a rank taste; though for want of better, it is much eaten by the common people; however it is not very wholesome. The *Turkish* name is **SILoor**.

The **MISGURN**, or **FISGURN**, so called at *Norimberg* and *Ratisbon* in *Germany*, is of the shape of a Lamprey, and is broader and flatter than an Eel, but it is much of the same breadth from the head to the tail. The mouth is like that of a Lamprey, surrounded with barbs, there being six on the upper jaw, and four on the lower. It differs from a Lamprey, in having fins on the belly and at the gills, which a Lamprey wants; and they have gills and not lobes.

This fish when taken in the hand, turns and winds like an Eel, and its body is covered all over with a yellowish-red slime; the head is higher than broad, and but little narrower than the middle of the body; the upper jaw is longer than the lower, and the mouth is round and very small, being without teeth. The nostrils are placed between the eyes and the end of the jaws; and the eyes are small, and placed on the side of the head;

head; they are covered with the same skin that covers the head, which is a sort of a veil. Under the eyes there is a forked prickle, of which the outward point is shortest; the gills are double on each side, with an oblong covering, which opens on the sides only; near the fins of the breast, the membrane of the gills contains three small bones or spines, distinct from each other, the first of which is the largest. The skin on the back between the fin and the tail, rises into a sort of a bump. The colour of the back and head, is of a blueish green, marked with greenish-red spots; the upper part of the sides is marked with a yellowish red line speckled with black, and another line of the same colour as that on the back, runs along the middle of the body of this fish. Under the first line on the sides that reaches from the head to the tail, there is another that is yellow, besides another that is very narrow, and of a blueish green, speckled with yellow; the belly is red, inclinable to yellow. This fish has seven fins, two on the back, a pair on the breast, another at the vent, and one on the tail, which are all of a reddish-brown colour, speckled with black. When this fish is touched, it gathers itself into a round form, and makes a sort of a whistling noise, from whence the *Germans* call it *PFRIFFER*, or *Wwistler*. It is found in ponds, pools, and marshes, when the sun has almost dried up the water, which happens in *August*. Several affirm that this fish has been found in the earth, when it has been turned up with shovels and the like; upon which account it is named by some the **Fossil Fish**.

The **RED TAPE FISH**, termed at *Genoa*, where it is common, *CAVAGIRO*, and *FRAGGIA*. It has a long slender body, which is more flat on the sides than an Eel, and grows gradually more slender from the head to the tail, which is very small and sharp at the end. It is all over of a palish red, except the belly, which is white. It has no scales, or at least exceeding small ones; and the mouth is large, turning upwards. There are only one row of slender sharp teeth, and near each side of the upper jaw there is a black spot. The eyes are large, with a silver coloured iris; and the back fin runs along from the head to the tail; and opposite
to

to it there is another from the vent to the tail. These in the larger fish, are of a beautiful yellow on the lower part; and the upper edge is of a reddish purple. The outward rays of the tail are purple, and those in the middle yellow.

The TAPE FISH of *Rondeletius*, differs from the former in being bigger, and in having five purple distinct round spots on the lower part of the body, at some distance from each other; and in being of a silver colour.

The SUCKING FISH, is remarkable for its sucker on the top of the head, by which it fixes itself to other fish, and to the bottoms of ships. It is about eighteen inches long, near four thick, of a roundish make, and slender towards the tail. The mouth is triangular, and the lower jaw is longer than the upper. From the upper part of the head towards the back, for the length of six inches, there is a grissly substance of an oval form, like the head or mouth of a Shell Snail, but harder, and it has the appearance of a palate of a quadrupede, being deeply furrowed, and consequently has small ridges wherewith it fastens to any thing at pleasure. The eyes are small with a yellow iris, and instead of teeth, there are many small eminences. It is of an ash colour, and from the middle of the body, as well above as below, to the tail, there is a narrow fin, and there are two pair of fins near the head.

This fish usually attends upon ships for the sake of any filth that falls out of them; and in fine weather it will play about them; but when it blows hard, and consequently sails very swift, it will stick to the bottom of it, from whence the beating of the waves cannot remove it. They are sometimes found sticking to a Shark when that fish has been caught and laid upon the deck. The Sucking Fish is supposed to be the REMORA of the ancients, and was thought to have a power of stopping ships under sail; but this notion has been long since found to be ridiculous. The flesh is thought by the sailors to be good eating.

The BUTTERFLY FISH, is about seven or eight inches in length, and has a thick head, but towards the tail it is slender. The colour is of a light blue or ash,
with

with olive or dirty green stripes. The eyes are pretty large, and placed near each other on the top of the head; and above each eye, some of these fish have a small fin. The fore teeth are long and round, near each other, and regularly placed. The back fin is very high at the beginning, and near the top of the fifth ray, there is a very beautiful spot like an eye, surrounded with a white ring ending at the eighth ray; by which mark this fish may be readily distinguished from all others. This fin is all over variegated with dirty green, or olive and blue brown and white spots, placed in no regular order. The belly is a little prominent, and there are no scales. This fish is often exposed to sale at *Venice*, among other small ones in the winter time.

The GATTORUGINE, so called at *Venice*, is slippery, without scales, and compressed on the sides; but it is of the same size and shape as the former. The body is variegated with spaces, or half stripes of a dark olive and ruddy colour, between which there runs a line of pale blue. The lower half of this fish, beneath the lateral lines, there are the like spaces, but lighter, and and placed in a contrary order. The back fins and that behind the vent, have rays connected together with a membrane, above which there are white prickles. Above the eyes there are two barbs; and from the eyes to the mouth, there is a great declivity.

The GREEN SPOTTED GATTORUNGINE, differs from the former only in colour, which is of a light green like a Frog, and speckled with black spots placed in no regular order. It has no barbs over the eyes, or so small, they can hardly be perceived.

The SEA LARK, called in *Cornwall* the MULGRANOCK, or BULCARD, is a small smooth slippery fish, and which is very lively, for it will live several hours out of the water. It is of a dirty greenish olive colour, and some have transverse light blue lines on the back, back fin and sides; but the colour differs in several of these fish. The covers of the gills seem to be swelled; and the tail when expanded is of a circular figure. On the back part of the head there is a small depression, which makes it look as if it had a neck. The top of the head rises almost to an edge, and the eyes are small and white,

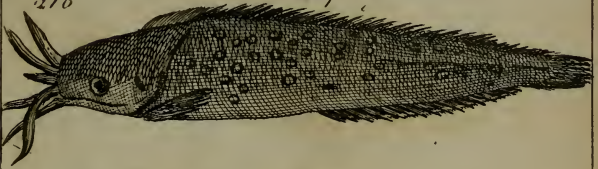
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Sea-Lark.



216

Indian Lamprey.

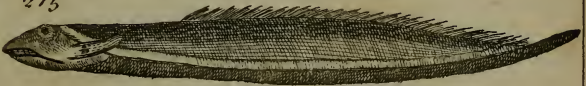


219



Indian Sea-Eel.

215



97

King Fish.





white, with a reddish cast. The mouth is not large, but is armed with long smooth fore teeth, placed like those of a comb. The tongue is round, soft, and fleshy; The liver is pale; the spleen red, and the air bladder adheres to the back. It lurks in the holes and cavities of rocks, and often bites the fishermen's hands, but without any bad consequence. The CRESTED SEA LARK, differs from the former in nothing but having a crest on its head.

The PUNARU, so called by the *Brafilians*, is four inches in length, and has an oblong body with a thick head, blunt on the fore part. The mouth is little, and there are only two small teeth in the lower jaw, which are oblong, and as sharp as needles. The eyes are placed upwards on the forehead, and the iris is of a gold colour; over them are two sharp barbs, and the gills are large. There is a fin begins behind the head, and runs along the back to the tail, which is full of prickles.

There is likewise another fin that runs from the vent to the tail. It is covered with a brown skin, and the fins are of the same colour. There is another fish of the same name, and of the same shape; but the jaws seem to be composed of small teeth. On the top of the head there is a broad fin which runs to the root of the tail, which is covered with soft spines, that do not stand upright. The colour is like that of the former, only it is variegated with dark purple crooked lines.

The ADONIS of *Rondeletius*, is six inches in length, and of a round shape. It is of a gold colour, which has a greenish cast in some parts, and a reddish in others. From the gills to the tail, there runs an uninterrupted white line, which is all the description we have of this fish. It is supposed to sleep out of the water, and *Rondeletius* affirms he has seen it snorting among stones; but perhaps it has been thrown there by the waves or tide, and could not get back again; for it is scarcely credible, that a fish should sleep out of its own element.

The PHOLIS of *Rondeletius*, is a little bigger than a Sea Lark, and has a dusky back, a pale belly, and a smooth skin without scales; but it is spotted and slippery, being covered with slime. The flesh is soft and clammy.

clammy. From these few marks, it is hard to say whether this fish is a distinct species or not.

The SEA SNAIL of *Rondeletius*, has a head like a Rabbit, and a small mouth without teeth, but the jaws are rough. There is a broad stripe runs from the head to the tail, and the body is covered with small scales. It has a fin on the back, which runs from the neck to the tail, and has soft rays; the tail is forked. It is so fat, that it turns all into oil, so that it seems nothing but a lump of fat. This description is too general for so singular a fish.

The *English* SEA SNAIL, so called by the inhabitants of *Durham* and *Yorkshire*, is a small fish, being only five inches long. The colour is brown when it is just caught, but after ten or twelve hours, turns lighter. The head is thick and round, and the mouth without teeth; but the jaws are a little rough. The apertures of the gills are small holes that will scarce admit a pea; and under the throat, there is a round spot like the impression of a seal of a light blueish colour. There are also twelve brown spots placed in a circle; below which, at half an inch distance from the vent and behind it, a fin begins, that runs to the tail, and unites to it, as does likewise the fin on the back, from the shoulders where it takes its rise; insomuch, that the hinder part of the fish is in the shape of an Eel. The whole fish, that is, the head as well as the body, is soft and unctuous, and readily dissolves into an oily liquor, whence it has got the name of a Snail. It is taken in the mouths of rivers, four or five miles distant from the sea.

The SEA TENCH of *Aldrovandus*, is a kin to the Lamprey, and is about a foot long, seldom bigger. It is in shape like an Eel, only it is broader, and the colour is gray, like that of a Tench; but above the head it is tintured with purple. The mouth is wide, the lips thick, and there are very small teeth in the jaws. Under the chin there is a single barb, and the eyes are large and prominent, and have each a white iris. The fore back fin is triangular, having one of the points at the top. It is but small, and the upper edges are black, being radiated with ten nerves. The hinder back fin is very long, and reaches almost to the tail; and there is
another

another answers to this on the belly behind the vent. The fins under the throat may be rather said to be barbs, though they are very long, and each is composed of two threads which join at the bottom, and are divided at the top. It is pretty common in *Venice, Rome,* and other parts of *Italy*.

The LAKE BULL-HEAD, is less than that of the river, being seldom above an inch in length, and the colour is more whitish. It has several sharp prickles about the gills, though they are so fine they are hardly visible, unless carefully examined. The pupil of the eye is partly green, and shines like a precious stone, especially in the sun.



C H A P. XIII.

Of Fish that have two back fins, and whose belly fins unite in one.

THE BULL-HEAD of the *Venetians*, called the GREATEST SEA BULL-HEAD by *Rondeletius*, differs from that before mentioned, in seldom growing to the same size; in being of a lighter and paler colour; in having the upper part of the fore back fin of a yellowish red colour; in having a dent, or pit in the back, which is neither very long nor deep; likewise, the head is somewhat shorter, and the cheeks more tumid, besides the membrane of the belly fin connecting the outward rays, and not so high, whence the shape almost resembles that of a funnel. Add to this, that it frequents stony places, and that it delights in marshes.

The BULL-HEAD of *Salviani*, called *Jozo* at *Rome*, is perhaps the WHITE BULL-HEAD of *Rondeletius*. It differs from the two former in being less than each, in having larger and rougher scales, in being of a paler colour inclining to blue, in having the rays of the fore back-fin rising higher above the membrane that connects them, insomuch that they look like bristles. The pointed line, which in this kind runs

through the middle of the sides, consists of white lines and not of points, and the pupils of the eyes are encircled with a silver colour; besides, the tops of the fins, and all the belly-fins are blueish.

The PIGNOLETTI, or MARSICONE of the *Venetians*, is like the last Bull-head, except one, and perhaps may differ in nothing but age; for the fins are the same in number, situation and shape. The body is round, transparent, and the back is broadish, being of a white colour sprinkled with a few black spots. The fins on the back, and the tail, are variegated with transverse brown lines, as in the river Bull-head, and the eyes are placed in some sense on the top of the head.

The COMMON BULL-HEAD, or MILLERS-THUMB, is about four or five inches in length, with a large broad depressed head of a roundish shape. The gill fins are round and beautifully notched on the circumference. At the beginning of the cover of the gills, on each side, there is a crooked prickle. The mouth is large, and full of small teeth; and the back is yellow, with three or four black stripes; and the body is without scales. It is found in brooks and gravelly rivers, where they lie hid like Loaches under stones, and such like places. The flesh of this fish is sweet, but there is so little of it, that few think it worth while to catch them.

The SEA GUDGEON or ROCK FISH is a slippery soft fish, covered with small rough scales, and the shape of the body is long and roundish, being about six inches in length. The colour is variegated with a mixture of white, yellow, brown, and other colours, interspersed with black spots. There are likewise transverse streaks of an olive colour, which make these fish appear agreeable enough. The head is large, the cheeks tumid, and the mouth is armed with a double row of rough teeth. The belly fins unite into one, which is proper to this kind, insomuch that it may be taken for a double fin in the middle of the breast; this enables them to stick close to the rocks, from whence they have obtained the name of the Rock Fish. The eyes are small, yellow, and pretty near each other,
looking

looking upwards. The liver is pale and undivided, and the stomach wide and long, reaching to the vent. The spleen is small, the gall bladder round, and the air bladder slender, transparent, and not separated into lobes. This fish is caught on the coast of *Cornwall*, and is common in the fish-markets of *Venice*, being taken near the shore, or in ponds made by the sea water. The flesh is fat and tender, and is in very great esteem.

The LUMP or SEA OWL, called in *Scotland* the COCK-PADDLE, is a thick ugly fish, having a broad flat belly and a sharp back. The colour is partly blackish, and partly of a light red, and though it wants scales, yet the skin is rough with sharp tubercles, of a black colour in all parts. On each side there are three rows of spines or prickles, which are crooked; and on the top of the back, there is another row of the same. The belly or throat fins, are connected on each side by their extremities, and form one circular fin like a funnel, by which they are enabled to fasten themselves to the bottom of the sea and to rocks under the water; and this so firmly, that no force can hardly oblige them to remove. The mouth is like that of a Sun fish, but larger, being three inches broad from corner to corner. The lips are fat and thick, and the jaws full of teeth. The nostrils are tubes or pipes which rise above the skin, and the liver is large and undivided. The stomach and kidneys are likewise large; but it has neither gall bladder nor air bladder. This fish is often seen in the *London* markets, but it is in no great esteem.

The POGGE, so called in the north of *England*, is of the length of two palms, and has a triangular depressed head, which is not smooth but angular, and about two inches broad. Both sides have tubercles upon them, which give this fish a very rugged aspect. The fore part is furnished with a great many slender barbs, and the hinder is armed with prickles. The snout is flat, and furnished with four thorns or prickles, of which the two foremost are in the shape of a half moon. The mouth is small, semicircular, and at the corners, and under the chin, there are several barbs. The trunk of the body near the head is of the figure of an oc-

tagon, or eight cornered, and near the tail it is like a hexagon, or six cornered. It is covered all over with bony scales, in the middle of each of which there is a hooked tubercle, which makes this fish seem full of angles; but the body near the tail, becomes very slender. The belly is flat and white, in the middle of which the vent is placed, and the back is brown spotted with black. It hath no teeth, but the lips are as rough as a file. This fish is frequently taken in *Yorksire*, and the bishoprick of *Durham*; and the flesh is accounted exceeding good eating when the head is taken off, and the body stripped of its armour.

The *Brasilian* POGGÉ, is much like the former, and is six inches in length, with a head one inch and three quarters broad. On the back part of the head there are three angles, one on each side, and the other in the middle. The forehead is almost flat, and the upper jaw oval; the orbits of the eyes are round, and there are no teeth in the mouth, but the lips are rough. The lower jaw and the belly are flat. The back, sides, and tail are covered with scales of the same colour, that are rough, and run in parallel lines, being almost four square. The breast and belly have nothing but a soft thin skin. The gill fins have a thick strong prickle, or thorn above half an inch long, which is flattish and crooked like a sickle.

The ARMOUR FISH is somewhat less than a foot in length, and is four inches in breadth. A small part of the belly is cartilaginous, except which this fish is covered with a hard thick bone, but in a different manner; for the head and fore-part are covered with bony plates, extending from the back to the belly, and advancing over each other. It is armed with three strong pointed bones thick set, or rather ferrated with teeth, one of which is placed near the back, and one near each gill. These bones are six inches long, and so fixed in sockets, that the fish can point them in any direction to defend itself. However, it has no teeth, which is fully compensated by his weapons and armour.

The TAMOATA, so called by the *Brasilians*, but by the *Portuguese* SOLDIDO, is a river fish three inches and a half in length, from the back part of the head to the
begin-

beginning of the tail. The head is about an inch long and a little more broad, almost like that of a Frog. The mouth is not large, nor hath it any teeth, but on each side of it there hangs a barb an inch in length. The eyes are very small, and have an iris of a gold colour; and all the upper part of the head is covered with a hard shell like a helmet; and the whole body clothed as it were with armour, consisting of oblong scaly pieces, which are minutely serrated round about, and are placed in a quadruple row. There are scales on the middle of each side, on the back and lower part of the belly, which, as it were, grow together. The colour is every where of an iron grey, but more particularly on the head.



C H A P. XIV.

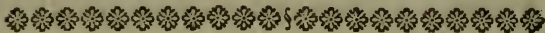
Of small Fishes that have two fins on the back with soft flexible rays.

THE SMALL DRAGON FISH of *Aldrovandus*, is nine inches in length, and taken in the sea. *Ray* says, he has never seen any of this kind above six inches long. It has an oblong roundish body, or rather depressed, and almost square, and the colour on the back is of a yellowish green, but on the belly white. The sides are speckled with small spots of a blueish silver colour; and this fish may be known from all other small fish by the spots just mentioned, by the round holes of the gills, by three pointed prickles at the extrem corners of the gills, by the rays of the fore back fin rising higher than the membrane that connects them, and by the jaws being furnished with exceeding small teeth. It is a common fish at *Venice* and *Rome*.

The **ANGUELLA**, so called at *Venice*, is a small oblong slender transparent fish, except where the back bone and the intestines lye. The tail is forked, and the back is beset with black specks. The eyes are

depressed, and large in proportion to the bigness of the fish. The mouth is so formed, that the lower jaw stands out farther than the upper, and makes, as it were, a cover for the mouth. The sides are of a silver colour. This fish is very common at *Venice*.

The *ATHERINA* of *Rondeletius*, is a fish that delights to be near the sea shore, and is also found in salt water ponds. It is nine inches in length, and of the thickness of a man's little finger, with a thick back, and a belly a little flat. The mouth is without teeth, the eyes large, the belly of a silver colour, and the back brown. About the head it is of a reddish yellow, and the space between the eyes looks as if it had somewhat engraven upon it. It is frequently taken in a lake near *Marjeilles*.



C H A P. XV.

Of Brazilian fish with two fins on the back.

THE *AMORE PIXUMA*, is of the size and shape, nearly like a *Tamoata*, and has a broad head, and a wide mouth with teeth. The body is oblong, the colour on the back is of a dark iron, and the belly, which is prominent, is white. The skin is soft, and the tail is roundish at the circumference.

The *AMORE GUACU*, is about six inches in length, with an oblong body and a thickish head. The gills are large, and the mouth is furnished with small teeth. The eyes are small, and have a gold coloured circle round the pupil. The tail is of an oblong square form, and terminates in a semicircle. The scales are large for the size of the fish, which is of an iron colour, with a whitish belly.

The *AMORE TINGA* is of the same shape with the former, but less, and the scales are whitish every where, except some brown spots.

The *TAREIRA D'ALTO*, so called by *Marcgrave*, has a round body ten inches long and five thick; but
it

it grows gradually less towards the tail. The head is like that of a snake, and over the eyes, which have a yellow iris, there are two tubercles. The mouth is wide, yellow within, and sharp at the end of the jaws; as also furnished with very sharp teeth. All the fins are as thin as poppy leaves, being supported by soft spines. The scales are in the shape of a half moon, and so neatly put together, that the fish is smooth to the touch. The belly is white, and the sides and back are streaked with yellow and green lines, running according to the length; but the edges of the scales are brown. There are three brown fins on the back, but the rest are yellow, and the tail is streaked with brown.

The **PIRACOABA** is a foot in length, and has a wide sharp mouth without teeth, likewise the upper jaw is longer than the lower; and the upper part of the mouth is prominent with a round cartilaginous cone. The eyes are large, and have an iris of a gold colour. On each fin behind the gills, there is a white barb, consisting of six thickish hairs almost three inches long. The scales are of a middle size, and of a silver colour; but towards the top of the head and back, they are a little hoary. All the fins are of a light ash colour, except those behind the gills, which are blackish.

The **PIABUCU** is a small fish about six inches long, and an inch and a half broad. The belly is a little prominent, and the iris of the eyes of a silver colour, but on the upper part, there is a little mixture of red. The tail is forked, the scales of a silver colour, and there is a broad white line runs along the sides, above which the back is of an olive colour mixed with a shining green; the fins are white.

C H A P. XVI.

Of barbed, and prickly Brasilian Fish.

THE *first Kind* has an oblong body of about a foot in length, and the beginning of the back is a little raised. The head is of the shape of a cone, and covered with a hard shell to the beginning of the rising of the back. The barb consists of six threads, of which the four lower are an inch and a half long, and the two upper as long as the fish itself. Before each gill fin, there is a strong toothed bony prickle, as well as before the forward back fin, and is of the same length as that; and the tail is forked. It has no scales, but is covered with a skin that shines like silver. All the fins are of a silver colour, as well as the barb on the head; and through each side to the tail there runs a line of a silver colour. The eyes are large, and the mouth small without teeth. The flesh of this fish is eaten.

The *second kind* has an oblong body, and is two feet and above in length. The head is compressed and flat; and the mouth is blunt and obtuse. The head is covered with a shell like the former, which has small points thereon, and the eyes are small, and near four inches distant from each other. The barb consists of six threads, whereof the outer are four inches long, but the rest are shorter. It has thorns or prickles like the former, and the tail is divided into two horns. All the upper part of the body and sides, as far as the belly, are white, with a mixture of yellow and gold colour. All the fins and the tail are grey; but the belly is white. This likewise has no scales.

The *third kind* is of the same size and shape as the former; but the barb consists only of four threads, two of which are eight inches long, and pretty broad, being in the shape of a tongue, the other two are very short. Near the back fin there is another of the shape of a tongue nine inches long, as also behind the gill fins. In other things it is like the former.

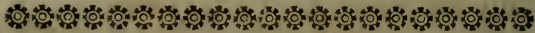
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The *fourth kind* has an oblong body likewise, ten inches in length, and the head is broad and flat, with a mouth that is void of teeth. The barb consists of six threads, of which the four lowermost are one, and the upper two inches in length. The eyes are small, of a blueish colour, and placed four inches from the mouth. The top of the back is covered with a hard shell, and on each side behind the gills, there is a narrow shell that covers the sides. The forward back fin has a boney thick serrated spine or thorn, two inches and a half broad, and the tail is forked. The head, beginning of the back and sides, that are covered with shells, are of the colour of umber; but the other parts are lighter, though variegated with dusky spots of a middle size. From the broader end of the shell to the tail on each side, there is a row of short sharp teeth, with their points turned backward, that runs in a strait line.

The *fifth kind* is like the former, and spotted with large round spots; but it is without teeth on the sides; and of the six threads of the barb, two are longer than in the former.

The NHAMDIA, so called by the *Brazilians*, but by the *Portuguese* BAGRE DE RIO, has a body twelve or fourteen inches long, and the head is compressed as in the former, with a parabolick mouth furnished with small teeth. The eyes are small, and a little protuberant, with a gold coloured iris mixed with umber. The barb consists of six threads, two above, and as many below the mouth; the former of which are five inches long, and behind each, there is an oblong dent or pit, in which the beginning of the barb lies, when it is turned backward, as it almost always is. Each of the lower, is an inch and a half long, and not so thick as the upper. The forward back fin is square and large, being supported with many spines. It has no scales, but the head is covered with a hard shell, and the upper part of the mouth is of the colour of umber; but the back and sides are of an ash colour, with a small mixture of blue. The forward back fin near its rise, is of the same colour, but the remaining part is black, and the spines are of an ash colour; the backward fin is of the same colour, as well as the back and sides, and the rest

of the fins, the barb and the tail are black; but the lateral lines are red. This fish is taken in rivers, and is very well tasted.



C H A P. XVII.

Of spinous Fish with two Fins on the Back, the foremost of which is radiated with Spines.

THE BASS, by many authors called LUPUS, that that is the WOLF FISH, on account of its greediness. It is two cubits in length, and weighs about fifteen pounds, being not much unlike a Trout in shape, only it has a thicker head. The colour on the back is of a blackish blue, but on the belly like silver. When young, the back is variegated with black spots, which vanish when the fish grows old. The scales are of a middle size, but thick, and adhere very close to the skin. The mouth is wide, as well as the apertures of the gills, and there are rough teeth in the jaws. There are thorns or prickles about the head, and the eyes are large, with an iris of a silver colour. The forward back fin is radiated with no more than nine spines, and in the palate, there is a triangular bone, besides two more in the throat. The tongue is broad, slender, and rough, there being a rough bone in the middle. The flesh is extremely well tasted, and exceeding wholesome. It is an inhabitant of the sea, for it was never known to enter the mouths of our rivers in *England*.

The SEA PIKE is of the shape of the RIVER PIKE; but in proportion to the magnitude of the body, it is longer and rounder, and more like a Gar-Fish. It is covered with small scales, and has an oblong conical snout, the lower jaw being longer than the upper, and ending in a sharp point; whence, when the mouth is shut, the snout appears like a cone; and the cleft of the mouth like a line on the surface of a parabolick form. The inside of the mouth is yellow, and the jaws and tongue are furnished with teeth. The eyes are large, having each

Old Wife?

200



Scad?

139



Mullet?

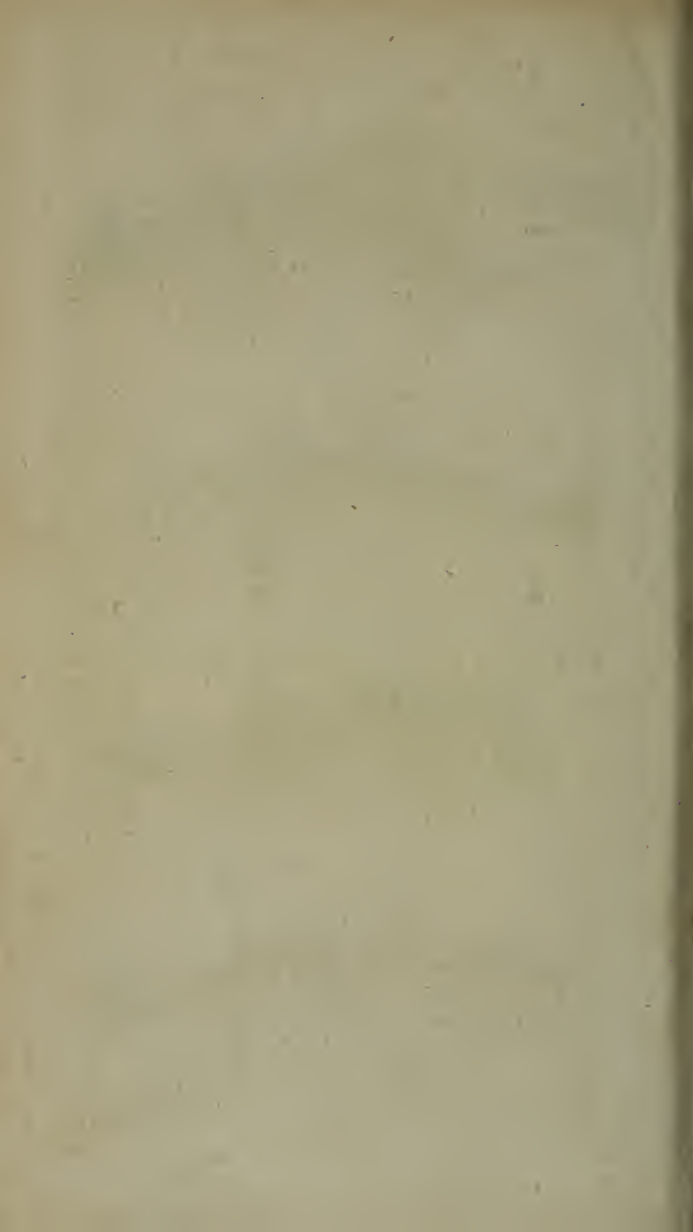
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Umbrana?

143





each a silver coloured iris, but a little clouded. The stomach is narrow and long, and the gut runs from the stomach directly to the vent. The tail is forked. This fish is an inhabitant of the *Mediterranean* sea, and has never been seen in the ocean. The full size is uncertain, though Mr. Ray saw one at *Leghorn* sixteen inches long.

The MULLET is much like a DACE in shape, with a sharp snout, a flat head, and large scales, not only on the body, but on the covers of the gills, as well as all over the head, as far as the nostrils. The back is of a blueish brown, and the belly white. The lateral lines are variegated alternately with black and white running according to the length. The eyes have no other skin except their own coats, and the forward back fin is radiated with five long spines. The mouth is without teeth, but the tongue is a little rough, and there are two rough bones on each side the palate; besides a bone at the corner of the mouth beset with prickles. The stomach is small, hard, round and muscular, like the gizzards of birds that feed upon grain. The guts are very long, with several folds; the spleen is large, and the gall yellow.

This fish, when it is at its full growth, is about half a yard long, and it visits the rivers on the south of *England*, in the beginning of the summer, with every tide, and returns back when the water ebbs. The river *Axe* in *Devonshire*, and the *Arundle* in *Suffex*, are noted for this fish. The *Italians* pickle their spawn in the following manner. They take out the roes, and cover them with salt for four or five hours; after which they press them between two boards for twenty-four hours, and then they wash them, and set them in the sun to dry in the day time, for fourteen days. This they call BOTARGO, and they pretend it creates an appetite, provokes thirst, and gives the wine a good relish.

Rondeletius mentions four kinds of Mulletts, one of which has a lesser and sharper head than the former, and the lines from the gills to the tail are shorter. Likewise the flesh is softer, looser, less white, and not so fat as the true Mullet. The second sort is reddish about the head, lips, and covers of the gills. The third has a

lesser head with prominent eyes; and there are blackish lines that run from the head to the tail. Besides, the lips are thick and prominent. The fourth he calls the **BLACK MULLET**, which is in shape like the **COMMON MULLET**, but it is all over black, and has black lines running from the head to the tail. There are also seven or eight prickles on the back, distinct from each other, and behind them is a small fin. This he says is an uncommon fish.

The *American MULLET* is of the size and shape of a middling Trout, with eyes of an oval form, and scales of a silver colour; between the rows of which, there are grey lines. On the top of the back there is a fin larger than all the rest, and the tail is forked. All the fins are whitish.

The *CUREMA* of the *Brasilians*, is called **TAINHA** by the *Portuguese*. It is a kind of a large Mullet, and grows to be two feet in length; but in other things it is very like a Mullet, only the upper lip has been observed to be moveable, and the lower of a blunt triangular shape, being shorter than the upper. The eyes are large, having each a silver iris; and in *Jamaica*, it is to be met with in rivers, lakes, and ponds of sweet water, even far from the sea; for this reason, after heavy rains, when the rivers and brooks overflow, they are carried down by the force of the stream into lower grounds in great plenty; and when the floods are gone, they are taken in the splashes of the water that remain. The *PARATT* of *Marcgrave* is entirely like the former except in size, and in having a circle of gold colour round the eyes; the flesh likewise is drier.

The *GUACARI*, so called by the *Brasilians*, is of a roundish or pyramidal shape, grows to the length of a foot or longer, being eight inches thick. The lower part of the head is flat, the sides of it are oval, and the mouth little and round, being placed in the flat part under the head. Instead of teeth on each side, there are processes that look as if they were composed of horse hairs. The eyes are small, round, and of an ash colour spotted with brown; and near each there is a hole half an inch distant, and placed before them. Below, before each gill, there is a body in the shape of
a long

a long square, almost half an inch long, which this fish can thrust out and draw in at pleasure. All the fins except that behind the vent, are supported by bony sharp stiff spines, which are thicker and harder before. The tail is divided into two horns, the spines of which are also very strong. The whole head is covered with a hard rough shell, and all the body with triangular scales that are large towards the head, placed in a regular order, and rough to the touch; for in the middle of each there is a prominence, which makes the covering have an appearance of a coat of mail. There is likewise, on each side, a four square armour consisting of a quadruple row of tubercles. The colour of the whole body is of a light saffron, except on the belly, where it is deeper; and throughout there are round dusky specks of the size of mustard seed, except on the fin near the tail which is black, only the forward spine is of a saffron colour and spotted.



C H A P. XVIII.

Of Fish of the Gurnard kind.

THESE fish are called in *Latin* CUCULI, that is CUCKOWS, from a sort of a cry or grunting which they are said to have; on which account, that is, from their grunting like a Hog, they are called by the *Englsh*, GURNARDS. They have two or three barbs or tufts under their gill fins, which some call fingers. Some of this kind make a shriller sort of a noise, whence they are called Pipers; and they have two very large membranous fins at the gills, with which some of them may be said to fly; as also large bony square heads; but their body grows sensibly more slender from the head to the tail.

The BEARDLESS GURNARD of *Rondeletius*, called by him MULLUS IMBERBIS, is undoubtedly a kind of a Gurnard, and is not much different from the CUCULUS of *Aldrovandus*, or our Red Gurnard;

for

for there are ferrated thorns or prickles on the back fin, and lines that run from the back to the belly.

The ROUGH GURNARD of *Rondeletius*, called by him MULLUS ASPER, has a short round body of the size of a man's finger, and is of a deep purple colour. The head, gills, and fins, are like the former; but it has small ferrated scales obliquely placed; and from the head to the tail, there runs a line covered with scales. The fins that are near the gills, are of two colours; for on the outer part they are white, but on the inward, they are of a blackish green.

The SEA RAVEN of *Rondeletius* is by some called a CABOT, from the bigness of its head; for Cabot seems to be a corruption of Caput, that is the head. The bones that cover the gills, appear as it were engraved, and terminate in thorns or prickles. The colour on the back is black; on the sides reddish; on the belly white; and the gill fins on the inside, are of a blackish green, but whitish on the outer, with red spots. The fins are of a size between those of the flying fish and the Sea Swallow.

The GREY GURNARD has a back of a dirty green, sometimes variegated with black spaces, and there are always specks or spots of a yellowish or white colour. The pointed line is higher and more rough than in others of this kind; and the head is very large, covered with bony plates that have prickles thereon. The snout terminates in two horns, and the mouth is large; and the jaws, palate, and tongue, are armed with very small rough teeth. The eyes are large, and their iris is of a silver colour. The body grows sensibly smaller from the head to the tail, and the gill fins are less in this kind than in the Tub-fish and Gurnard. There is a furrow in the middle of the back, armed on both sides with a row of bony thorns, from which the fins arise. The teeth of the spines are less in this, than in others of the same kind; and it is common in the *British* seas. The flesh is firm and of a good flavour.

The SEA SWALLOW, called in *Cornwall* the TUB FISH, has a large bony angular head armed with prickles; and from the head to the tail, it becomes sensibly more slender. The back is of a dirty green; the
sides

fides of a light reddish colour ; and there is a cavity between the eyes. The upper jaw is notched in the middle, but not divided into horns, and the scales are small. The teeth are much like the former, but the gill fins are exceeding large, strengthened with a membrane, and extended with branched rays beautifully coloured, the upper edge being of a shining blue. In some fish of this kind, towards the bottom, there are seven or eight rays spotted with black, in a space of whitish green, which make a very beautiful appearance. Under these fins, there are three tufts or fingers on each side. It is caught in the sea near *Cornwall*.

The RED GURNARD, or ROCHET, is like the former, only it differs in the size ; for it never grows so large, being very seldom above a foot in length ; the head is less, and the space between the eyes are more narrow ; the body and fins are more red, and the gill fins are shorter and less, not of a blue, but rather of a purple colour on the edges. Likewise, the covers of the gills are engraved with streaks or rays, proceeding as it were from a center ; on these, there are also three thorns or prickles, two on the lower part on each side, and one on the upper.

The PIPER, so called in *Cornwall*, is of the same colour as the former, only the head is lighter, tending to yellowish. The snout is divided into two broad horns, fenced with prickles about the edges, from which it may easily be distinguished from the Tub Fish, and in which it principally differs from it. The spines on the back are larger and longer than in other fish of this kind ; and the nostrils stand out, being two small round tubes, as in the bird called the Cuckow. It is common in the *British* ocean ; and from the noise that it makes, it is called a Piper.

The PIPER of *Rondeletius* is a fish in the shape of an octagon, or eight square, covered over with long scales. The eight corners are made by eight rows of spines like the teeth of a saw, or rather six ; for in reality there are no more. This mistake arises from the upper and lower rows, which seem to be double to those that do not examine them nicely. The shape of the body resembles that of other fish of this kind ; and the size of
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the head and eyes are the same. The snout ends in two pretty long horns, on which are two perpendicular spines. This fish may be distinguished from all others of this kind, by the horns of the snout; the bony scales; the rows of prickles, and by having only two tufts or fingers on each side.

The FLYING FISH has a body, which in shape and colour, resembles pretty nearly those of a Herring; but the eyes are larger in proportion. It has two pair of fins like wings, the greater of which are placed a little behind the gills; and the lesser, about the region of the vent. They are thin, and variegated with dark dusky spots, on a light ash coloured ground. Near the tail it has a narrow fin on the back, and another on its under side, of an ash colour. The tail is of the same colour and forked; but the lower part of the fork is much the longest.

Different authors have given different accounts of this fish, which renders it highly probable, that there are several kinds of them; though those that I have seen, are exactly like that described above. Mr. *Ray* mentions one that had its head covered with a strong bony crust, or rough skull, variegated with a blueish yellow, and a dark purple. This crust terminates in two very long and strong spines, that lye on the back, beyond each fin. The colour of the back is blackish, and the wings are nothing but fins placed behind the gills, which reach as far as the tail, and they are double on both sides. The wings before, are preceded with a small fin of six rays; and the upper part of the wings are of a dirty olive colour; but on the edges, they are beautifully painted with round blue spots; and on the middle of the back part with large brown and blueish-white spots. Near the root, there are oblong blue spaces between the rays. By the help of these wings they arise out of the water, and fly a considerable way, to avoid the pursuit of the Dolphins and other fish that would devour them. They are never taken by fishing for them, but they will often fly into the ships that sail between the tropicks. *Nieu-boff* says, that the flying fish is blueish on the back, but inclining to brown towards the tail; that they have large eyes, large yellowish fins, and in shape resembles.

Smelts. The flesh has a very agreeable flavour, and is very wholesome. *Ray* affirms, that he has seen them frequently in the fish markets at *Rome*, as well as in the islands of *Sicily* and *Malta*, where they were brought to be sold.

The BEARDED GURNARD of *Rondeletius*, called TRIGLIA by the *Italians* and *Sicilians*, is six inches in length, and the head is compressed on the sides, and the back is not sharp but flat. From the top of the head, where it is thickest, the body grows sensibly less to the tail; and it is covered with large scales that are easily taken off, being of a dirty yellowish colour; but when this fish is scaled, the sides are red, for which reason it is called *Rouget* by the *French*. The eyes are placed on the top of the head, and their iris is of a silver colour, sometimes inclinable to purple. The barbs under the chin are very long, and are lodged in a cavity under the lower jaw, between the covers of the gills. It has no teeth, but the jaws are as rough as a file. The flesh of this fish is hard, brittle, well flavoured, and nourishing; for which reason it was in high esteem among the ancients.

The GREATER GURNARD is fourteen inches long, and the back fins are beautifully painted with yellow and red. The scales are thick, and stick close to the skin; and on the sides, there are three or four parallel golden coloured lines, that run according to the length. It is taken near *Penfance* in *Cornwall*.

The KING OF THE GURNARDS, perhaps are so called from the size; and yet those that *Mr. Ray* saw at *Valette* in the isle of *Malta*, were small, being scarcely a palm in length. It is without barbs, and has a large belly, in which it differs from a Gurnard. However, the scales are large, and the body is reddish all over. The eyes are also large, and the jaws are as rough as a file. It agrees with the Gurnard in the number and situation of its fins. It is frequently caught in the sea, about the isle of *Malta*.

The *Harwich* GURNARD, with a very long back fin, has a head larger than the whole body, which is convex above, and marked with several blue spots. The body, from the head to the tail, grows gradually less,
and

and has six corners or sides; the upper jaw is longer than the lower, and the mouth is large, and furnished with teeth. The two right lines that run from the head to the breast fin, may be called lateral lines. The skin is smooth, without scales, and of a blue colour, as well as all the fins, except the second back fin, which is whiter. It has eight fins, two on the back, two on the breast, and as many on the belly; one at the vent and the tail, which makes the eighth. The back fin near the head, is composed of three flexible soft spines, the first of which is as long as the body, that is, from the head to the beginning of the tail; the second, is three quarters of the same length; and the third one-half. The second fin on the back, is not so long as the third spine of the former, and is composed of ten simple spines, the three last of which are the longest. The membrane that covers them is white, marked with four double blue lines. Those on the breast are white spotted, and consists of twenty-nine spines that are forked at the end, of which those next the belly are smallest, and those in the middle longest. The fins on the belly are blue, and very near those on the breast, and armed with five very strong spines, of which that in the middle is divided into others that are less. The fin at the vent is blue, and consists of ten spines, much shorter than the second fin on the back; but the two last spines next the tail, are much the longest. The tail fin is round, and consists of ten spines forked at the end. It is called by Dr. *Tyson*, the smooth Gurnard of a blueish yellow, having the cover of the gills on the top of the head. It is eleven inches long, of which the tail is two; and the girth of the head is four inches and a half; likewise, the first spine of the back fin next the head, is six inches long.

The WEEVER, called by some authors the SEA DRAGON, is a long fish with flat sides, a crooked belly, and a strait back. The lines on the sides are partly yellow, and partly dusky, running obliquely from the back to the belly. The scales are thin and small, and the head moderately compressed. The eyes are placed on the top of the snout, and nearer together than in other scaly fish. The forward back fin has six venomous rays; for which reason, the fishermen, when they
have

have caught one, immediately cut it off. The fin behind this, and almost close to it, reaches very near the tail. It sometimes grows to a cubit in length, and lurks in the sand, in the same manner as the sand Eel.

There is another kind of this fish, called the OTTER PIKE, by the inhabitants of the *North of England*; but we are not told in what it differs from the former, except in its being less.

Another kind of the SEA DRAGON, which is common at *Rome*, and other parts of *Italy*, is beautifully coloured with large black spots, placed in a line on the middle of each side; but it has no yellow oblique lines thereon, and it is larger than the former.

The NIQUI, so called by the *Brazilians*, has a thick head, a large mouth, but no teeth; the tongue is thick, and the lower jaw longer than the upper. The foremost half of the body is pretty broad, and the hinder narrow and round. It is about six inches long, and an inch and a half broad, with small prominent eyes standing out like those of Crabs. Before the rise of the back fin, there are two strong thorns or prickles; and above, behind those of the gills, there is one that is very sharp. It is covered with a skin, which is coloured with a mixture of black, amber, and grey, every where speckled with black. It lurks in the sands near the shore, and wounds those that walk upon it.

The SCAD, so called by the inhabitants of *Cornwall*, and by the *Londoners*, A HORSE MACKREL, is like a Common Mackrel in colour, shape, and taste; but it is less, and the body is not so thick and round, nor spotted like it. In the middle of the body, there is a line that runs from the head to the tail, covered with bony plates; but it is not strait, for in the middle it is turned downwards; and at the bending, there are small prickles that grow on the plates. Towards the tail they grow larger and more prominent, being toothed like a saw. It is caught in the sea near *Cornwall*, and elsewhere.

The GUERA TEBERA of *Marcgrave*, is about eight inches long, with a blunt head, and the iris of the eyes of a gold colour. The mouth is furnished with small teeth, and the tail is forked. There is a line runs from

from the gills to the middle of this fish, and then turns downwards, and extends as far as the tail. The backward half of this line is armed with small hooks, and on each side it is covered with triangular small scales. The colour of the back and sides, to the above lines, is blueish, but the other part is whitish, with a shining yellow cast. The fins on the belly are white; but the rest, with the tail, are of a gold colour.

This is supposed to be the same fish which some call the Mackrel of *Surinam*, which was described by *Gronovius* on the spot, in the following manner. The height of the head and body, is greater than the breadth; and its sides are flattish, but very broad near the two fins, placed before those of the vent; from hence it diminishes gradually to the tail, which is exceeding slender; the back is convex, and the belly pointed; the mouth is very large, and the jaws are equal when shut; but when open, the lower seems the longest. The teeth are very small, sharp, and placed at a distance from each other, there being only a single row on each jaw; the palate, throat, and tongue, are smooth. The nostrils appear like two holes on each side, and the eyes are small seated on each side of the head with a red iris. The opening of the gills is round and very large, and there are four gills on each side, whose membranes have seven spines. The scales are small, and stick close to the skin; and there is a line on each side, which begins at the opening of the gills, is crooked near the eyes, runs along the fin of the breast, turns up to the middle of the body, and runs in a right line to the tail. The place where it bends almost to a semicircle is smooth, but the place where it is strait, is covered with bony plates radiated on each side; at first they are very small, but they increase as they approach the tail, and are more elevated. This fish has eight fins, together with the tail. The first is on the back, is composed of seven spines, which are rough and sharp. Whereof the first is longest, being a quarter of an inch; but the last is not above one-twelfth of an inch. The second back fin, which is near this, has nine soft flexible spines joined together by five membranes, of which the first is near half an inch long, and the rest decrease like the former. The remaining

maining part of the back, as far as the tail, is furnished with ten very fine soft fins, which are slightly branched at the point; but they seem to make but one; the fin on the breast is placed near the covering of the gills, and consists of fifteen soft spines, of which the longest is little more than half an inch. The belly fins are placed on its sides, and are hid in a long furrow, they being very small, and near each other. Next to these fins in the same furrow, there are strong bony prickles that are exceeding short. The vent-fin reaches to the tail, and is composed of fourteen hard spines, of which the first is a quarter of an inch long, and the last not half so much. The tail is forked, and composed of twenty spines, of which the last is above half an inch long, and the innermost scarce the twelfth of an inch. The upper part of the head, the back, the sides above the lateral line, are of a greenish blue, and the belly is of a shining white. This fish is but little above three inches long, and one broad.

The GLAUCUS of *A'drovandus*, called at Rome and Leghorn LECCIA, grows to a great bulk, and is of the shape of a Salmon. The body is long, thick, and square towards the tail, and the back is of a dark blue, with a little purple tincture; but the sides are more purplish, and it is covered with small scales. The mouth, for the size of the fish, is moderately large and rough, with small teeth, as also the tongue and palate. The eyes are of a middle size, having each a white iris; and the forward back fin has five or six prickles turning towards the tail, in which it differs from the Glaucus of *Rondeletius*.

The first GLAUCUS of *Rondeletius* is a broad thin fish, and of a dark silver colour on the back; but on the sides and belly it is more light, with three or four dusky spots on each side. The eyes are small, having each a silver coloured iris; and the mouth is blue on the inside, with exceeding small teeth in the jaws. Instead of a back fin, there are a row of seven stiff thorns which are very sharp, and short; the first of which bends forwards, and the rest backwards. However, they are connected by a membrane which adheres to that before, throughout its whole length; but it only touches the
bottom

bottom of the next following. The tail is long, and is divided into two long horns, which are black at the point. This fish is often met with at *Rome* and *Leghorn*, and probably in other parts of *Italy*.

The second GLAUCUS of *Rondeletius*, differs from the former in being less, and in having seven thorns on the back, that look towards the tail. There is a crooked line which falls from the upper part of the gills to the middle of the body, and then runs directly to the tail; but in the former, a strait line passes directly from the gills to the tail, and the hinder fins, as well above as below, are marked with a black spot, which this wants; likewise, the former has a broader body than this.

The third GLAUCUS of *Rondeletius*, differs from the second, in having sharp teeth, and the line that runs from the gills, more crooked and winding. The back is of a blackish blue colour, as far as the above line; but below it, it is exceeding white. In other things it is like the former.

The CEIXUPEIRA, so called by the *Brasilians*, sometimes grows to the length of nine or ten feet, and to the thickness of a man's body. The body is oblong, and the head and shape are like that of a Shark. The head is depressed and broad, and the mouth is void of teeth, but there are very sharp prominences. The eyes are not large, and have a white iris; and the tail is divided into two horns. In the space between the hind part of the head and back fin, there are eight bony triangular thorns, which it can hide in the flesh, and raise them up at pleasure. The head is boney and smooth, and the whole body is covered with small scales, which are so very little, that the body seems to be quite smooth. The colour is all over black, except the body, which is as white as chalk. The belly fins are also white, with blackish edges. It is a sea fish, and greatly esteemed by the *Brasilians*.

The UMBRA of *Rondeletius*, is called CORVO by the *Venetians*, is a cetaceous fish that often weighs sixty pounds, and is about four cubits long; but those that Mr. Ray saw at *Rome* and *Venice*, were no bigger than a Carp. The shape is more compressed, and broader and

slenderer than a Carp, in proportion to its bulk. The back is sharp on the ridge, and rises from the head. There are lead coloured lines, and others of a pale yellow, which run alternately from the top of the back to the bottom of the belly, in an oblique manner, being undulated, and make a very beautiful appearance. The scales are of a middle size, and the covers of the gills, as well as the head to the mouth, are scaly. The head is of a moderate size, and the eyes are not large, but the mouth is small, and the upper jaw is longer than the lower. The teeth in the jaws and the bottom of the mouth, are exceeding slender; and from the corner of the lower jaw, there hangs a small short barb. The tail is flat, and terminated almost in a right line. It is a very common fish in *Italy*.

The UMBRA of *Aldrovandus*, is of the colour of a Tench, and nearly of the shape of a Perch. The scales are of a middle size, and the mouth is not very large; but there are teeth in the jaws. The tail, when it is expanded, is roundish at the end, and the eyes are of a middle size, with a brown iris. The belly fins, and those behind the vent, are as black as ink; but in other things it agrees with the former Umbra.

The UMBRINO, so called at *Rome*, differs from the Umbra of *Rondeletius* in colour, for it is variegated with darkish brown lines, and some of a greenish blue colour, undulated, and running alternately over the pointed lines, proceeding from the middle towards the head. Beneath the pointed lines, the oblique lines are not so plain. It wants a barb, and the spines at the vent, which are in both the former, are greater and stronger. *Salvianus* adds, that this is much less, for he never saw it above a foot in length; and the flesh is neither so sweet nor tender. The nostrils near the eyes are pretty open, and there are small holes near the end of the snout. This fish is often seen in the fish markets at *Rome*.

The COROCORO of *Marcgrave* is a foot in length, with a crooked back, and a blunt head and snout. The mouth is furnished with small teeth, which are not very sharp, and the belly fins before, are supported by a firm and sharp spine, and that behind, near the vent, with two. The scales are pretty large, and this fish is all
over

over of a silver colour, except the back fins and tail' which have a mixture of umber. On each side there are stripes near an inch in breadth, which run downward, and are of a light umber colour; but the belly, and the belly fins are white.

The GUATUCUPA of *Marcgrave*, called CORVINA by the *Portuguese*, has an oblong body, two feet in length, with a back a little crooked, and a sharp snout, having the lower jaw a little longer than the upper. The teeth are very small, the gills large, and the eyes are of the bigness of a *Dutch Stiver*, with an iris of a silver colour. This fish is covered all over with small round scales of a shining silver colour, with which a little gold colour is mixed on the back. The fins and tail, as well as the belly, are whitish. The forward fin on the back is high, triangular, and supported with hardish spines. This fish, at *Jamaica*, is called the DRUMMER.

The GREY GRUNT has a broad crooked back, and is six or seven inches long, and four broad. The mouth is not large, but it is furnished with very small teeth, and the eyes are big, having a white iris. The back fin runs the whole length of the back, and the middle part is supported with spines; but the rays of the hinder part are soft, and there is no furrow to hide them in, as there is for the fore part. All the fins, as well as the tail, are of a shining gold colour, and the body is covered with scales of a shining silver colour, mixed with that of gold. On each side there are seven large stripes that run according to the length, as far as the tail, of a shining brown; but in some they are of a gold colour. It is taken in the ocean near the island of *Jamaica*.

The STAR GAZER, called at *Rome* and *Venice* LUCERNE and PEſCE-PRETE, as also BOCCA IN CAPO, that is, the mouth and the head. It is commonly about nine inches in length, and sometimes twelve, with a large, almost square head, that is bony and rough. The body is roundish, and all the upper part is of an ash colour, with a white belly. The scales are small, and the lateral lines behind the fin approach each other, and then descend to the middle fin of the tail.

The

The face is flat, looking upwards, whence this fish has its name; and the eyes are near each other, being protuberant and small, with golden circles. The mouth is pretty large, and the chin beneath it, is almost like that of a man. The jaws are armed with teeth, as well as the palate; and the lower lip is fringed with barbs. The whole face, especially the covers of the gills, are very rough, with a sort of warts or tubercles, some of which are prickly. This fish is frequently taken in the *Mediterranean* sea; but the flesh is indifferent.

The PEARCH is generally, when full grown, about twelve or fourteen inches long; and sometimes, though but seldom, they attain to fifteen, which is an extraordinary size. This fish is hog-backed like a Bream, having a broadish body of a dusky yellowish colour, with five or six spaces like girdles, proceeding from the back towards the belly. The scales are small, thick, and rough, drying much sooner than those of any other river fish. The iris of the eye, is of a yellow or gold colour, and the mouth is wide, and the jaws very rough, with small teeth. The belly fins, and the forked tail are of a fine red, sometimes with a mixture of white; some parts of the principal back fin are spotted with black; and often the whole fin next the tail is yellow. The lateral lines are nearer the back in this, than in any other fish; for they run parallel to the back, till they reach the farthest part of the second back fin, and then they run through the middle of the tail. The covers of the gills end in an acute angle, and the uppermost thereof terminates in a prickle.

The liver is oblong and undivided, with a gall bladder full of yellow bile, and the spleen is blackish. There are two small bones in the brain, and instead of a swimming bladder, there is a transverse membrane which runs all the length of the back. The Pearch spawns but once a year, and that is in the middle of *February*. The most natural places for this fish are rivers, and yet they will live and thrive pretty well when shut up in a pond. In the day time it does not seem to be fond of any particular haunt, because it is almost continually roving about in quest of food, it being a very voracious fish. However, they are most likely to be found under

the hollow of a bank, near bridges, stumps of trees, or in a gentle stream of a middling depth. The most likely baits to catch it are worms, minnows, and small frogs. The flesh of this fish is firm, of an agreeable taste, of easy digestion, and very wholesome; for which reason it is called by some, the WATER PARTRIDGE. A Perch swims very swiftly, as well as the Pike; and it is armed with certain spines or prickles, with which it defends itself against much larger fish. When a Pike comes near, it raises them up, and prevents an attack; however, a Pike will swallow small Perches, because they are then too soft to do him any harm; and some anglers observe, that it is the best bait they can make use of to catch him. The only parts used in medicine, are the bones that are found in the head of a Perch, near the origin of the spine of the back. They have the same virtue as other absorbent powders, and the dose is from twelve grains to two scruples. Some use them as dentrifices to clean the teeth.

The PEARCH-PIKE of *Schoneveld*, grows to the length of an ell; but they seldom weigh more than ten pounds. The shape is longer than that of a Pearch, and the tail is more slender in proportion. The scales are very thick set, and have rough edges; the back and sides are of a gold colour like that of a Pearch, or rather of a dusky dirty yellow, with obscure stripes, placed in no regular order. The lower part of the belly, and the belly fins, are a little reddish, but not so much as in a Pearch. The upper jaw is a little longer than the lower, and they are both rough, with small teeth. Near the first pair of fins, there is a little bone which terminates in three prickles; as likewise at the root of the gill fins, the covers unite into one strong spine or prickle. This fish is common in the river *Danube*, and the flesh is exceeding white.

The ASPER or ROUGH FISH of *Rondeletius*, called at *Ratibon* the STREAVER. The shape of the body is longer and more slender, especially about the tail, than the Pearch-Pike; and from the hinder part of the head, to the middle of the back, there is a furrow, and likewise eight or nine transverse blackish stripes like those of a Pearch. The back is scaly, but the breast

breast is naked, and it is very like a Pearch-Pike, except in the size. This is a very small fish, is taken in the river *Danube*, and is common at *Ratisbon*.

The AMBOINA PEARCH, is so called, because it is chiefly found in the rivers of *Amboina*. It is about a span in length, and somewhat like the Common Pearch both in shape and taste. Its colour is inclining to brown with blue streaks under the head; and the fins below the mouth, are also blue; but those on the sides are green and speckled. The figure that *Nieuboff* has given of it, shews several stripes on the sides, very like those of a Pearch; and the tail is long and forked, or rather divided into two horns.

The DOREE, which is as much as to say, the GILT FISH, has a broad compressed body, not unlike that of a Flounder; but it swims erect, and not on one side as that fish does. The head is very large and compressed, and the mouth is monstrously wide. The colour on the sides is olive, and on the middle of each side there is a large round black spot, by which it may be known from other fish of this kind. The forward back fin is furnished with ten prickly rays, and as many that are soft underneath, which leave the prickles, and by themselves run to a considerable height. There are short rows of prickles in some places, that is at the roots of the back fins, as well as those at the vent. In general, it is a very singular fish, and is about eighteen inches long, and seven or eight broad. The flesh is tender, and easy of digestion, being so delicate, that some prefer it to a Turbot.

This fish was formerly hung up in churches, on account of the remarkable spots that appear on the sides, which are said to be the marks of *St. Christopher's* fingers, who caught this fish as he was carrying *Jesus Christ* over a ford. Others pretend that this is that sort of fish, out of whose mouth *St. Peter* took the money wherewith to pay tribute; and that the spots are elegant representations of the coin, being left as a memorial of the miracle. This fish is taken in the ocean, as well as in the *Mediterranean* sea, and is often exposed to sale at *Pensance* in *Cornwall*.

The ABUCATUAIA, so called by the *Brazilians*, but by the *Portuguese*, PEIXE-GALLO. This fish has some resemblance to a Doree, and is of the size, shape, and thickness of a Flounder; but the mouth is not large, and without teeth. The iris of the eye is of a silver colour, and there are two long threads which hang from the lower part of the body, and a single one on the back, near the back fin. It is without scales, and is all over of a silver colour, except the threads, which are black.

The SEA BOAR of *Rondeletius* and other authors, called STRIVALE at *Genoa*, and RIONDO at *Rome*. It is in shape like a Doree, but very much less, and the colour is reddish, with scales fringed about the edges, so that it seems rough to the touch. The snout is sharp, turning a little upwards, and it has no teeth. The eyes are large, with a white iris, and it generally keeps at the bottom of the sea, especially in stormy weather.

The HOLOCENTRUS, may properly be placed among the fish that have prickly fins, and it is so called, because all the external parts, as the head, fins, scales, and tail, are furnished with prickles; for the word signifies all over prickles. It is, from the end of the gills to the beginning of the tail, three inches and three quarters, and the perpendicular height is more than the breadth; the head is a little hollow between the eyes; and the body is large in proportion, and of a silver colour, with a little mixture of gold, especially when it is full grown. There are small teeth, or rather tubercles on the palate, in the jaws, and at the bottom of the mouth. The opening of the gills is large, as well as the scales, which are very hard and shining, dentated on the back part, and lying like tiles, one upon another. The back is convex, and a little sharp, but the belly is pretty broad; and there are seven fins, one on the back, two on the breast, one at the vent, and the forked tail makes the seventh. Upon this, both above and below, there are five short, sharp prickles.

C H A P. XIX.

Of Fish without Thorns, with one Fin on the Back.

THE DORADO, is a sea fish, which has a sort of a crest on the head, joining to a large fin, that runs to the tail; there is likewise another that is shorter, and runs only from the vent to the tail. The belly fins reach almost to the vent, which is placed in the middle of the body, and the mouth is of a middle size, having small sharp teeth in the jaws, palate, and tongue. The eyes are large, the scales exceeding small, and the colour of a blueish green. The thickness of this fish grows gradually less from the head, and the flesh is fat, sweet, and hard, like that of a Tunny.

The DOLPHIN, of the moderns, called by most authors DORADO, is not of a very agreeable shape, for the snout is flat and roundish, and the body grows very taper from the head to the tail; but its beauty consists chiefly in its colours, which are very fine. The back is all over enamelled with spots of a blueish green, which shine like jewels set in a dark ground. The tail and fins are of a gold colour; and nothing can be more brilliant than this fish, when seen in the sea, or when it is not quite dead. It is about six or seven feet in length, and near the thickness of a Salmon. There is a remarkable fin, which runs from the head, along the back, to the root of the tail, which in the middle, is seven or eight inches broad, and consists of a membrane that feels like leather, and the spines thereof are soft. There is another opposite to this, that runs from the vent to the tail, and is not an inch broad. The tail is about a foot and half long, and is divided into two large horns. The scales are very small, and can scarce be felt when touched. Some authors say, particularly *Tertie*, that the skin on the back is of a greenish gold colour, sprinkled with small azure stars, and small scales of the colour of gold; that the belly is grey, enriched with the same small golden scales, that cause it to look like cloth of gold. The snout is green, with a shining gloss of a gold colour; and the eyes are placed on the sides of the head,

which are large and handsome, with circles of a shining gold colour. The flesh is dry, but of an excellent taste; at least the sailors think so, who often catch this fish between the tropicks. It is a very swift swimmer, and will very often accompany a snip for a long while together. It is said, as has been before observed, to be a great enemy to the flying fish, being almost always in pursuit of them.

The RAZOR FISH, called at *Rome*, PESCE PET-TINE, has a very large head, but compressed, as well as the whole body, and there is scarce any thing that can be called a snout; for the line which terminates the fore part of the head, runs almost perpendicularly from the top of the head to the mouth, which is small, and armed with little sharp teeth, except four, which are placed forward, that are longer. The eyes are small, placed on the top of the head; and at the beginning of the back there is a fin erected, which is not very broad, tho' it runs from thence to the tail. There is another opposite to it, on the lower part of the belly, that reaches from the vent almost to the tail. The tail is broad, and covered with large scales; and the head and covers of the gills are marked with several blue lines. The belly and tail fins are of a yellowish, and greenish colour, as it were chequered in a very pretty manner. The back fin is red, sprinkled with a few blue spots; and the rest of the body is of a yellowish red. It is seldom above a palm in length, and is scarce at *Rome*, though it is common in the isles of *Rhodes* and *Malta*. The flesh is tender, yields good nourishment, and is easy of digestion.

The POMPILUS of *Rondeletius*, is a sea fish without scales, and from the gills to the tail there runs a crooked line, from which there proceeds to the belly many spotted, and crooked transverse lines. Above the lateral line, the back is mottled and spotted. The mouth is of a middle size, and the teeth are small in proportion to the bulk of the body; the tail terminates in a fin, which is not divided, and the part above and between the eyes, is of a yellowish or gold colour.

The lesser SEA UNICORN, is a foot and a half in length, and is hog-backed like a Pearch, with a compressed body, and the belly is arched. The mouth is
narrow,

narrow, and there are teeth in both jaws, of the thickness of a middling needle, and an eighth of an inch long. The eyes that are seated near the top of the head, are an inch in diameter, and from the vertex there proceeds a round conical smooth horn, turning a little downwards. It is about two inches in circumference at the base, and three long. It seems to be supported by no bone, neither is it inserted into the mouth, as in the Cetaceous Unicorn; but seems to be a production of the skin itself, which is hardened into a horny substance. The back fin reaches from the head to the tail, and is an inch and a half high; the belly fin behind the vent, answers to this, and in like manner reaches to the tail.

The RHAQUUNDA of the *Brasilians*, has a body near ten inches long, and two broad, being almost of the same breadth from one end to the other. The head and mouth are made almost like that of a Pike; and though it wants teeth, the jaws are almost as rough as a file. The iris of the eyes is brown, and from the beginning of the back, there runs a fin almost to the root of the tail, which is three inches long, and nearly one broad, except towards the end, where it is a little broader. The tail is covered with a hard black shell, and the scales are of a middle size. The colour of the back and sides, is a dark gray, with a silver gloss, and on each side there is a row of round black scales, of the size of a pea; and between these, there are many blue specks. All the fins, and the tail, are of a gold colour; but those on the back are spotted with blue. The lateral lines are black, and on each side the tail there is a line of a gold colour.

The PARU of the *Brasilians*, is a broad, roundish, but not thick fish, being about twelve inches long, and seven broad. The back fin, and that which runs from the vent, are about two inches broad, and reach to the tail, and each of them have a prominence at the end, somewhat like a rope; that on the back being five inches long, and that on the belly three. The head is small, with a high narrow mouth, and exceeding small white teeth. The iris of the eyes is yellow. The whole body is covered with middle sized scales, half of which are black, and the other half yellowish, in such a man-

ner, that the body seems to be marked with yellow half moons. Behind the gills, on both sides, there are yellow spots, and the tail is two inches and a half long, and as many broad.

The ACARAUNA of the *Brasilians*, is of the size of the PARU, but not so broad, and is covered with blackish scales. The tail is forked, and on the length of the whole back, as also on the bottom of the belly, there runs a sharp fin, which towards the hinder part, is about an inch broad. The mouth is small, narrow, and furnished with exceeding small teeth; and on each side near the tail, there is a sharp spine or prickle, almost an inch long, which he can conceal in his sides, or thrust out so as to hurt other fish.

The SQUARE ACARAUNA, called by sailors, the OLD WIFE, differs in many things from the former; for the fore-part of the body is of a straw colour, and the latter brown; besides, the scales run parallel to each other, and on both sides the upper jaw, there are four spines or prickles; and on the lower two spikes, which are stiff, sharp, and an inch in length, like a Cock's spurs, turning obliquely downward. There is a back-fin which runs from the head to the tail, and another on the belly, which proceeds from the vent to the same place, being parallel to each other, the fish being of a squarish shape.

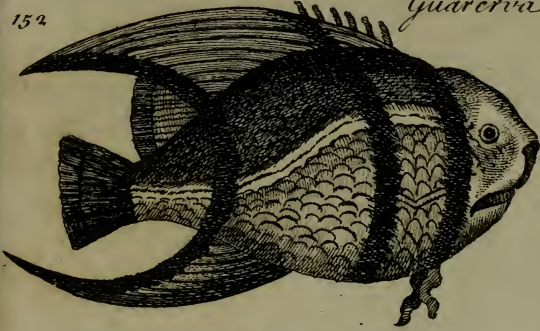
The SMALL BLACK ACARAUNA, beautifully painted with yellow belts. It differs little from the former, except in the belts, which are of an iron-grey colour, and are somewhat differently placed; besides in these, there are no visible scales.

The GUARERUA of the *Brasilians*, has a broad compressed body four inches long and three broad, with a little mouth, and very small teeth. On the upper part of the body, and on the belly, there is a long broad fin, which both end in a point like a bodskin. The tail is square, the scales black, with a gloss like silk, and yellow edges. All the fins are black, and about the mouth there is a broad line of an iron colour, and another placed perpendicularly over it. The body is surrounded with three stripes, whereof two run through the broad and hinder part of the fins; likewise, the tail is cut by such another stripe.

The

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Guarerva?



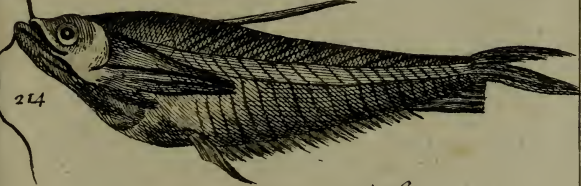
219

Pit-Fish?



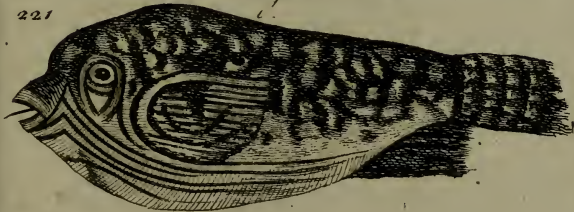
East-Indian Fish.

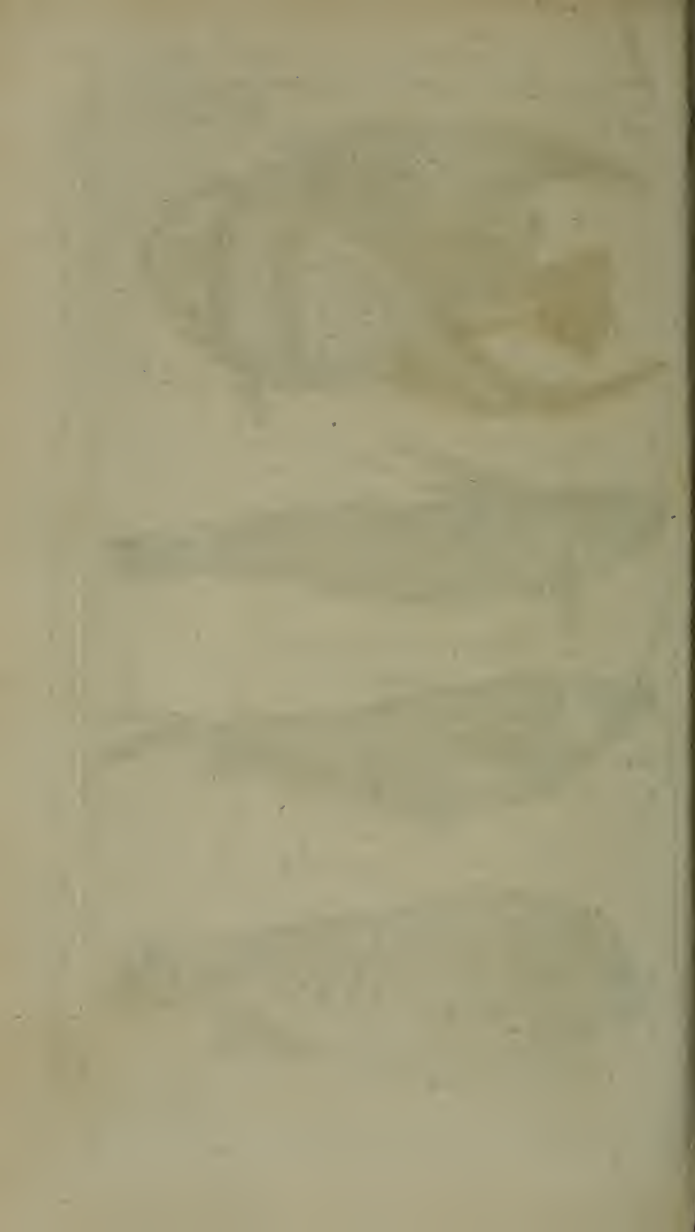
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Pyed-Fish?

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The HERRING, is a well known fish, nine inches, or a foot long. That which distinguishes this fish from all others, is a scaly line that runs along the belly from the head to the tail; and the colour on the belly and sides, is of a shining silver; besides the scales are large, and come regularly off. It has no spots, and the belly is sharp like a wedge, with red eyes. The tail is forked, and the swimming bladder is of a silver colour. The nostrils of this fish are very apparent, and have two apertures, of which the foremost cannot be seen with the naked eye; it is a little nearer the snout than the eyes. The lateral bone that covers and closes all the lower parts, is slightly dentated on the edges; there is a long space, with teeth in the middle of the fore part of the palate; or rather two rows of small teeth seated in a right line, according to the length of that part of the palate nearest the end of the snout. The lower jaw is a little longer than the upper, and there are very small teeth at the extremity of the lower jaw; but those at the extremity of the upper jaw are so slender they can hardly be seen. The tongue is sharpish, free, and disengaged below, of a blackish colour, and armed with small teeth turned backwards. There is generally a red or violet spot at the extremity of the covers of the gills, the remaining parts of which are of a silver colour, and consist, below, of three or four bony plates, and eight spines a little crooked, and joined together by a membrane. The scales are large in proportion to the body. The heart is quadrangular, with obtuse angles; the liver is red, small, angular, and has a gall-bladder lying under it. There are sixteen or seventeen oblong appendages lying below, and on one side the gut. The spleen is small, oblong, and seated near the beginning of the gut. The kidney is of the colour of clotted blood, and adheres to the spine of the back length-ways. There are thirty-five ribs on each side, and fifty-six vertebræ running the whole length of the back. The spleen is red, the gall-bladder large, and the gut runs directly from the stomach to the vent.

A Herring dies immediately after it is taken out of the water, whence the proverb arises, *As dead as a Herring*; the flesh is every where in great esteem, being fat,

soft, and delicate, especially if it is drest as soon as caught; for then it is incomparably better than on the next day. There are vast quantities of these fish taken, salted, smoak-dried, and consumed all over *Europe*. They make a progress every year from the seas near the *North* of *Scotland*, into the *Brittish* channel, coming in pursuit of worms and small fish, which at that time abound there. There is also plenty near *Norway* and *Denmark*, from whence they proceed annually, as far as the coast of *Normandy*.

The Herring fishery is begun both by the *English* and *Dutch*, towards the latter end of *June*; and the *Dutch* alone, employ no less than one thousand ships therein, called *Busses*, from forty-five, to sixty ton each. The best time for catching Herrings on the coast of *Norfolk* and *Suffolk*, is from the latter end of *September*, to the latter end of *October*; and the nets they make use of, are about twenty-five yards long, and five deep. They sometimes fasten so many of these nets together, as will take in a mile in compass. They judge where the Herrings lye, by the hovering and motion of the sea birds, which continually pursue them, in expectation of prey. The fishermen row very gently along, letting the nets fall into the sea, and taking their course as near as they can against the tide; that so, when they draw their nets, they may have the assistance of the tide. As soon as any boat has got its load it makes to the shore, and delivers its load to those that wash and gut them.

Herrings are distinguished into six different sorts; as the fat Herring, which is the largest and thickest of all, and will keep two or three months. The Meat Herring, which is likewise large, but not so thick nor so fat as the former; the Night Herring, which is of a middling size; the Pluck, which has received some damage from the nets; the shotten Herring, which has lost its row; and the Copshen, which by some accident or other has lost its head.

All these sort of Herrings are put into a tub with salt or brine, where they lye for twenty-four hours, and are then taken out and put into wicker baskets and washed. After this, they are spitted on sharp wooden spits and hung up in a chimney, built for that purpose, at such
distances,

distances, that the smoke may have free access to them all. These places will hold ten or twelve thousand at a time; and they kindle billets on the floor in order to dry them. This done, they shut the doors, having before stopped up all the air holes. This they repeat every quarter of an hour, insomuch that a single last of Herrings requires five-hundred billets to dry them. A last is ten barrells, and each barrell contains about one thousand Herrings. When they are smoke-dried in this manner, they are called red Herrings. Salt Herrings, and pickled Herrings, are cured after a different manner; the last of which, where formerly best done by the *Dutch*; but now the *English* are become their rivals in that trade. Herrings always swim in shoals, delighting to be near the shore. They spawn but once a year, that is about the beginning of *November*, a little before which, like most other fish, they are in highest season.

There are likewise Herrings on the coast of *North America*, but they are not so plenty as in *Europe*; and they never go farther south than the rivers of *Carolina*. There are none near *Spain*, *Portugal*, in the *Mediterranean*, nor on the coast of *Africa*. As for the medicinal uses of Herrings, it is said, that the ashe of one, taken to the quantity of a dram in a glass of white wine, is good for the gravel. Sometimes salt Herrings are applied to the soles of the feet of patients in a fever, to divert the humours from the head. *Andry* affirms, that if you open a salt Herring, and apply it to a gouty part, it will ease the pain; and farther adds, that he has succeeded in this several times. The brine of Herrings is given by some in glisters for the dropsey and hyp-gout.

The PILCHARD is very like a Herring, but differs from it in some particulars; it is a third part less, and for the size, has a broader body. The belly is not so sharp, and near the upper corner of the gills there is a black spot. There are no teeth neither in the jaws, on the tongue, nor the palate. The flesh is firmer, and is by some preferred to that of a Herring, but without reason. If you take a Pilchard by the back-fin, it will hang even, which a Herring will not do.

The Pilchard is a fish of passage, and swims in shoals in the same manner as Herrings. The chief fisheries

for them are along the coast of *Dalmatia*, to the south of the island of *Iffea*, on the coasts of *Bretagne*, from *Belle isle* as far as *Brest*, and along the coasts of *Cornwall* and *Devonshire*. The season for fishing, is from *June* to *September*, and sometimes they are caught on the coasts of *Cornwall* at *Christmas*. On the coast of *Devonshire* and *Cornwall*, they set men to watch on the tops of mountains and cliffs, whom they call *Huers*, who know when a shoal of Pilchards are coming by the blackness or purple colour of the water in the day time, and in the night by its shining. When the *Huers* perceive, by these marks, where the fish are, they direct the boats, and vessels, by the usual signs, how to manage their nets, which they call *Saines*; and in these they often take an hundred thousand Pilchards at a draught. This fishery yields great profit to the people of those counties.

The *SPRAT*, Mr. *Ray* takes to be nothing else but a young Herring or Pilchard; because this fish exactly resembles either the one or the other in every particular except the size; and he likewise thinks they have much the same taste. He is more inclined to this opinion, because they are taken in the winter solstice, sometime after Herrings have spawned, that is, after they have had time enough to grow to that bigness. Besides, an old *Cornish* fisherman whom he consulted, affirmed there were two sorts of Sprats in the *Cornish* sea, one of which were young Herrings, and the other young Pilchards, which might be easily distinguished from each other. Now as Pilchards are seldom to be met with unless near the shores of *Cornwall* and *Devonshire*, the reason is plain, why there is but one kind of Sprats caught on the coasts of other parts of *England*.

The *SARDINE*, so called at *Rome*, and *SARDELLA* by the *Venetians*, differs nothing at all from our Pilchards but in the size, they being a little larger in the ocean, than in the *Mediterranean* sea. Likewise the *SARDANE* of the *Italians*, is nothing else but our Herring, though they grow larger in the ocean than in the *Mediterranean*.

The *SHAD*, called by some, the *MOTHER* of *HERRINGS*, differs from a Herring, in being broader

and not so thick, but more compressed on the sides, in being larger, for it grows to the length of a cubit, and is four inches in breadth, weighing four pounds. It has a black round spot on both sides, near the gills, and six or seven less, placed in a right line towards the tail, in which it agrees with the Pilchard. Likewise it enters the mouths of rivers, which Herrings do not. It passes into the river *Severn* in the months of *March* and *April*, at which time they are fat and full of spawn; but in *May*, they return back to the sea, very lean and prodigiously altered; in some rivers, as the *Thames*, they stay till *June* or *July*; and the flesh would be pretty good, if it was not so full of bones. The eyes and mouth are large, and the upper jaw only is furnished with teeth. The tongue is small, sharp, and blackish, and the stomach resembles that of a Herring, and has a communication with the air bladder. There is such a difference between the *Thames* Shad, and that of the *Severn*, that they do not seem to me to be the same fish; for the *Severn* Shad eats much the best, and is not so full of bones. It is of little use in medicine, only there is a stony bone in the head, which is aperient, and good for the stone and gravel; and by its alkaline qualities, absorbs acids in the stomach and intestines. The dose is from half a scruple to a dram.

The SARDELLA of *Lago di Guardo*, is by most authors made to be a distinct sort of a fish; but we are informed by *Willoughby*, that the number, situation, and rays of the fins, as well as the gills, cleft of the mouth, lateral spots, shape of the stomach and bladder, and even all other parts, as well within as without, the size only excepted, agree with the Shad. However, the fishermen say, that the very same fish has different names at different ages; for which reason, Mr. *Ray* is of opinion, this is the same sort of fish as the Shad, and that they ascend into the lakes by the river *Po*, where they spawn, and then return back into the sea.

The lesser *Indian* HERRING is broader and shorter, though of the same colour with the common Herring. The tail is forked, and the head is of an uncommon shape, with a large snout and eyes. They swim in large shoals together with the Herrings, principally on the coast

coast of *Malabar*. The taste is not disagreeable, though not like that of a Herring; and they are made use of by the natives of *Malabar*, to manure their rice fields. These fish will take salt like other Herrings, which is an unusual property in these parts; and by this method, they are carried all over the *East-Indies*.

The ANCHOVY, is about a palm in length, and proportionally thick; and they are only taken in the *Mediterranean* sea. There is a sort near *Chester*, that are longer and thicker than a man's thumb, which however are different from those of the *Mediterranean*. They have a rounder body than the Herring, and are not so compressed; they are also transparent, except where the spine of the back prevents. They are destitute of scales, and their colour is nearly like that of a Sprat. They have a sharp snout, and the upper jaw is longer than the lower; but the mouth is monstrously wide in proportion to the size of the fish; likewise, the apertures of the gills are very large, as well as the eyes. *Schoneveld* affirms an Anchovy has small scales which will easily fall off; which is confirmed by the scales that are seen upon them when they are brought over pickled. It has this peculiar property, that it will dissolve almost in any liquor, when it is set over the fire.

They most commonly fish for Anchovies in the nights of *May*, *June*, and *July*; for in these three months they leave the ocean, and pass up the *Mediterranean* towards the *Levant*.

The GOLDEN-ANCHOVY, is an *East-Indian* fish, and is so called on account of its shining golden colour. It has a very large long mouth, armed with sharp teeth, and if the body had been more slender, it might have been placed among the Eels.

The BLICK of *Schoneveld*, is a small fish not unlike a BREAM in colour and fins. It is not above the length of a man's finger, and its shape is like that of an emaciated Herring. The fins are the same in number, and placed in the same manner as those of a Bream; but *Ray* is of opinion, that they differ in nothing from our Sprats.

The MARENA of *Schoneveld*, is like a Herring almost in all parts; only the aperture of the gills is larger,

larger, the back blackish, and the sides of a silver colour; besides the scales are easily taken off; but it is a little less, being only two palms in length at most; and it is fuller of flesh, which is more hard and short; likewise the belly is soft, and not rough, like that of a Her-
ring.

The ARGENTINA, so called at *Rome*, has an oblong round body void of scales, and is like a Pike. Above the lateral lines, it is of a greenish ash colour, but beneath them of a silver colour, as if leaf silver had been laid thereon, especially over the covers of the gills. The snout is oblong, the mouth of a moderate size; but there are no teeth in the jaws, and yet there are six or eight crooked ones near the end of the tongue. The eyes are large, having a silver coloured iris, and the brain may be seen through the skull. There is a fin on the back, about the middle of its length, supported by ten rays. The tail is forked, but the principal mark by which it may be known from all other fish, is the air bladder, which is conical at both ends, and outwardly looks as if it was covered with polished shining leaf silver. This is made use of to counterfeit pearls, and by this means they are made like the right sort. It is often brought to the fish-markets at *Rome*.

The VUBARANA of the *Brasilians*, is somewhat in the shape of a Trout, having an oblong body, a little square, and in the form of a cylinder. It is about twelve inches in length, and twelve thick, with a sharpish head, but not large, and a mouth without teeth. The pupil is surrounded with a double circle, the first of which is of a gold, and the second of a silver colour. The fins are like those of the rest of this kind, and the tail is forked. The scales run regularly in rows according to the length of the body, and are so evenly placed, that this fish is soft to the touch. The back is of a blueish silver colour, and the belly is white. The gills are so smooth, that they have the appearance of silver plates.

The CAMARI PUGUAGU of the *Brasilians*, has a strait back, but the belly is a little prominent, and the head is acuminated. The mouth is exceeding wide, and without teeth; and the upper jaw is shorter than

the

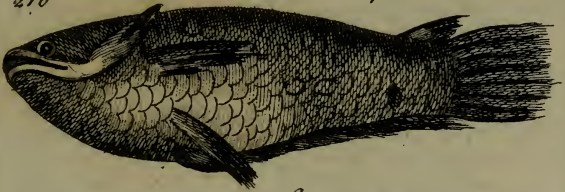
the lower, infomuch that when the mouth is shut, it seems to stand upwards. The eyes are large, having a silver iris; and the length is eleven or twelve feet, and the thicknes is equal to a man's body. The back fin is high, broad, and of a triangular shape, with an appendage turning towards the back part; it is three times as long as the fin, and as thick as a pretty large rope. Opposite to this, on the belly, behind the vent, there is a broad scaly triangular fin, which, with its appendage, reaches to the root of the tail. It is covered with large round scales placed one upon another, infomuch that they are quadruple or quintuple, and of a silver colour, which gives the fish an appearance of being covered with silver, except on the back, where it is blue, with a silver gloss.

The GAR-FISH or HORN-FISH, is a long slender roundish fish, and yet a little broad at the bottom. The back is greenish, and there are several marks by which it may be distinguished from all other fish. The snout is very long, sharp, slender, and each jaw is armed with extremely sharp teeth; there is a single stripe that runs from the mouth to the vent, and there is no sign outwardly of the stomach and intestines; but this mark is not proper to this fish, because it belongs to the Lamprey; the spine of the back when it is boiled becomes green, and the upper jaw is moveable as in the Crocodile. The belly and sides are of a silver colour, and the back of a blueish green. The tail is forked, and the gut runs directly from the stomach to the vent. The liver is not divided into lobes, and the gall is of a blueish black. The lateral lines that run along the sides are scaly, but the rest of the body is smooth. It does not grow to any large size, for six of those that are usually taken, will not weigh a pound; and yet there have been some caught that have weighed two or three pounds each.

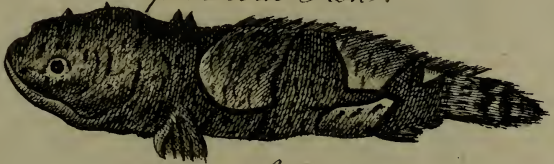
The flesh is hard and dry, yet it yields good nourishment; they are common almost every where, and are usually brought to market in *May*. In *Cornwall*, the fishermen catch two sorts, one of which they call Gerrocks, and the other Skippers.

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East Indian Porpoise?



Great Cock-Fish?



216

Indian Eel-Pout?



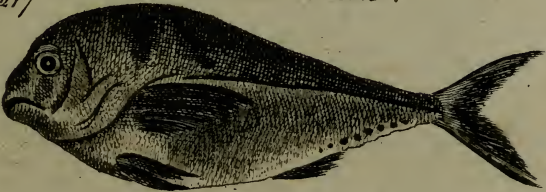
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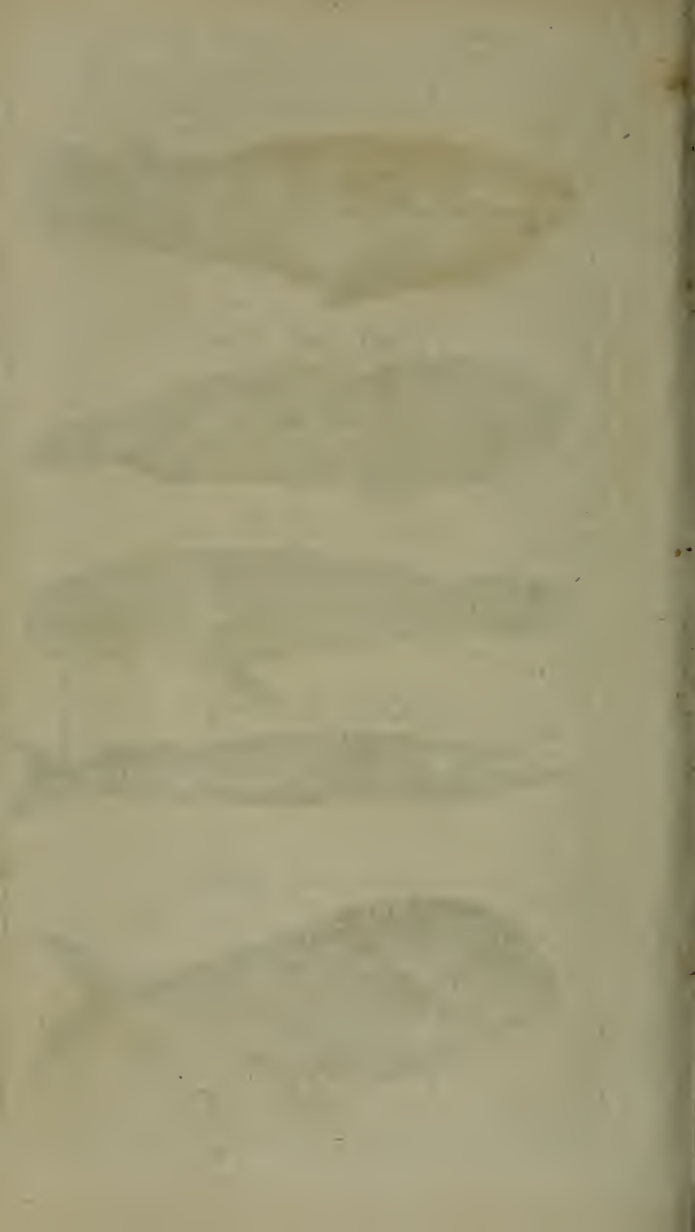
Elephants Nose Fish.



217

Cruck-back Fish.





The GREATEST SCALY GAR-FISH of Dr. *Lister*, is two feet six inches long, and three broad; but sometimes there have been some found much bigger. The lower jaw, which is a little shorter than the upper, is six inches long, which renders the cleft of the mouth great, and the nostrils are placed at the point of the upper jaw. On the edges of each jaw there is a row of slender longish teeth, besides another that is less. The fins agree with those of the former, but the tail is obliquely joined to the body, for the scales on the upper side reach beyond it. The scales are large, strong, stick fast to the body, and are somewhat square; but they are placed in an elegant order, running nearly in spiral lines from the back, obliquely to the belly.

The ELEPHANT'S TRUNK FISH, a kind of *Indian* Gar-fish, is of the size of a large Smelt, and has a roundish body elegantly spotted, with a broad streak of a greenish colour running down the middle of the sides. The under jaw is very long, and terminates in a point almost as sharp as a needle. The taste is much like that of a Smelt.

The GAR-FISH of *Belonius*, differs from the first sort in being more slender, and is never above twelve inches in length. It is covered with thin scales, has a slender tongue, and has that blunt sort of teeth called grinders in the mouth, seven above, and seven below, and towards the tail there are fins that hang downwards. It is caught in the island now called *Lissa*, formerly *Phana*.

The SEA-LIZARD of *Rondeletius*, grows to a foot in length, and is shorter and thicker than a Gar-Fish in proportion to its size, and it has a sharper snout, as well as shorter, and turns a little upwards. Instead of teeth, the jaws are serrated; but in other things it resembles the common Gar Fish. The hinder part of the body, from the vent to the tail, and the tail itself, is of the size of that of a Mackrel, and it is also like it in the fins. The flesh is fatter than that of a Gar-Fish, and tastes like that of a Mackrel. Mr. *Ray* thinks, that it ought to be placed rather among the Mackrel kind than the Gar-Fish.

The TOBACCO-PIPE FISH, is three or four feet long, and has a body like an Eel. The snout is sharp at the end, and the mouth is without teeth. The upper jaw is shorter than the lower, and both are a little pointed. The lower jaw is scarce two inches long, and consequently the cleft of the mouth must be exceeding small; the upper jaw is bony or horny, and elegantly streaked. The head is one third part as long as the whole body, that is, a fish three feet in length, has a head a foot long. The thickness of it behind the eyes is five inches, and then it gradually decreases till it comes to three at the mouth. The eyes are of the size of a hazel nut, and almost of the same shape, with a silver iris, mixed with a little red on the fore and hinder parts. Behind the vent there are two fins, and as many on the top of the back, which answer to those below, which is peculiar to this fish. The skin is as slippery as that of an Eel, and the whole back and sides are of a liver colour. There is a double row of blueish spots on the head, and another on each side. The belly is whitish.

The PIRAYA, and PIRANHA of the *Brasilians*, is a foot in length, and six inches broad. It is hog-backed, and the head is blunt like that of a DORADO; and the mouth cannot be shut close, for it has teeth that cover the lips, which are white, triangular, and exceeding sharp, being fourteen in number in each jaw, and placed in a single row; insomuch, that with one bite it can separate the flesh from any part of a man, in the same manner as if it had been cut with a razor. The eyes are small, and of the colour of chrystal; and a fin begins from the vent, which is armed before with a strong spine; but the other parts are soft, and covered all over with scales reaching to the root of the tail. The tail is divided into two horns, and the colour of the upper part of the body to the lateral lines, is of a light ash colour, mixed with a little blue; but the edge of every scale shines with flame, and blueish colours. The lower part is of a dark yellow, as well as the fins. It delights in the muddy bottom of a river.

The PIRAYA of the second kind, is shaped like the former, except in its having a scaly fin on the middle of the

the back, between the back-fin and the tail. It also differs in colour; for where that is of a blueish ash-colour, this is of a gold or reddish colour mixed with ash; and where that is yellow, this is of the colour of saffron; but the back fins and the tail, are of a light ash-colour, mixed with a little blue.

The *PIRAYA* of the third kind, has a head not so blunt as the former; but the mouth is a little prominent. and of a conical shape. The belly and sides are of a silver colour; and the back and head of a silver colour mixed with a little shining blue; but the fins are of a silver colour mixed with grey. It is less than either of the former, but it bites like them.

The *MATURAQUE* of the *Brafilians*, has an oblong body being almost six inches in length, and an inch and a half broad, with a broadish head covered with a large shell. The lower jaw is a little longer than the upper, and in it are six small sharp teeth. The iris of the eyes is of a gold colour within, and brown on the outside. The tail terminates almost in a right line, and the scales are large and placed in a regular order. The upper part of the head, back, sides, and all the fins are black. The belly is of a hoary white; and this fish is to be met with only in ponds and lakes, for it never enters the rivers, and yet is well tasted.

The *RIVER TAREIRA*, has an oblong body, a strait back, and a belly a little prominent. The lower jaw is a little longer than the upper, and the teeth are exceeding sharp. The head is a little like that of a Pike, and the eyes are pretty large and prominent. It is fifteen or sixteen inches long, and has a large strait almost square back-fin. a little above three inches long and two broad, being placed on the middle of the back. The scales are pretty large, and are dusky on the back; but on the sides there is a mixture of silver colour. The head is covered with a hard dusky shell; but the belly is entirely white. All the fins are dusky, undulated transversely with black, as well as the tail. This fish is taken only in rivers, and the flesh is fit to be eaten.

The *PIKE* or *PICKEREL*, has a roundish oblong body with a flat head, and square back. The snout is very prominent, almost like the bill of a duck; but the
lower

lower jaw is somewhat longer than the upper. The mouth is very wide, and the tail forked. The body is covered with small thick scales, which are moistened on the edges with a kind of slime that has a greenish cast; and the younger the fish is, the greener he appears. The back and sides, when turned towards the light, appear to have somewhat of a golden hue. The sides are spotted with yellow, and the belly is white; but on the tail there are dusky spots and reddish lines, especially towards the corners. The teeth on the lower jaw are crooked, and there are none in the upper; but on the palate there is a triple row. The tongue is broad, black, a little forked, and rough with teeth; and the eyes are of a gold colour, seeming to be a little sunk into the head. The head and gills are spotted with a variety of small holes.

The liver is of a pale flesh colour, and the gall bladder is joined to its upper part, emptying itself into the gut by a long tube. The gall itself is of a blackish colour, as well as the spleen, which is almost of a triangular shape. The heart is of the same figure, and the gut is covered with fat, being folded back three times. The stomach is large, and wrinkled on the inside. This is a very voracious fish, and often grows to a very large size. There were two caught in a ditch near *Wallingford* in *Berkshire*, one of which, being the Milter, weighed fifty-one pounds; and the other, which was the Spawner, fifty-seven. This ditch runs into the river *Thames*, and they came in to cast their spawn. A Pike will swallow other fish almost as big as themselves, not excepting those of their own kind. The usual time of spawning is in *March*, and sometimes sooner, if the spring be forward. They are prodigious breeders, for in one row there were 148000 eggs. They grow very fast at first, for in one year they become of the length of sixteen inches in the brook where they were spawned. They are in season all the year, except in spawning time, and about six weeks after it. The flesh is white, firm, dry, and sweet; but when they weigh above twelve pounds, they contract a sort of rankness.

Some have employed the fat, the gall, the lower jaw, and the small bones that are found in the head of
this

this fish in medicine. The lower jaw is absorbent and detergent; many pretend it is a specific in the pleurisy and quinsy; but they are seldom used at present for these purposes, unless among the *Germans*. The dose is from twelve grains to half a dram. The fat of a Pike is recommended by some to annoint the feet of children with, to appease coughs, and to procure sleep; but it has been seldom or never brought into practice with us as yet; the gall, which is said to cure intermitting fevers, taken at the beginning of the fit; the dose is seven or eight drops. It is more likely to take away spots in the eyes; but then it must be mixed with water, because it is too sharp alone. Some would have it put into the ears with a bit of cotton, to cure ringing therein. The small bones in the head of a Pike, are recommended by some to hasten child-birth, to purify the blood, to promote urine, to cleanse the kidneys, and to cure the epilepsy. The dose is from one scruple to two; but there are few who depend upon them in these cases.

The CASSE-BURGOT, is a fish of the lake of *Louisiana* in *America*, which is about a foot, or a foot and a half long, is good to eat, and has two stones in its head. It has a roundish body, and a very thick head, not unlike that of a Pike. The body becomes gradually less to the end of the tail; and the flesh is white, being much of the same taste as a Turbot. The number of the fins are not mentioned.

The STURGEON is a long fish, with a pentagonous or five cornered body, so formed by five rows of horny scales, on each of which there is a spine or thorn that is very strong and crooked. The upper row of scales which runs along the middle of the back are larger, and rise higher than the rest, and their number is not exactly the same in all, there being eleven in some, and in others twelve, or thirteen. This row reaches to the back-fin, and there ends. The lateral rows begin at the head, and end at the tail, consisting of thirty, or thirty-one scales. The lower rows, which bound or terminate the flat part of the belly, begin at the fore-most fins, and end at the second pair, containing each eleven, twelve, or thirteen scales. Besides these five rows, there

there are only two scales in the middle of the belly below the vent. The head is of a moderate size and rough, with very small prickles, as has the rest of the body, between the rows of the scales. The eyes are very small, in proportion to the bulk, and of a silver colour; the snout is long, broad, and slender, ending in a point. In the middle of the lower part of the snout, which is extended beyond the mouth, there are four barbs placed in a right line which crosses the snout transversely. The mouth is small, void of teeth, and placed over against the eyes; and it has a kind of small tube or pipe, which it can draw in or thrust out at pleasure. There are no jaws, for which reason it is plain that it gets its nourishment by sucking. The tail is forked, but in such a manner, that the upper part stands out much farther than the lower. The colour of this fish is of a dusky olive, or dark-grey on the back; but the belly is of a silver colour, and the middle part of the scales is white.

The stomach at first tends directly downwards, and then turns upwards again, making a sort of a bow, after which it proceeds downwards. The liver is pale, and the gall-bladder has a passage into the gut. The air-bladder is undivided, hanging loose from the back, and has an evident communication with the stomach. The spleen is long, and of the colour of blood; and the gut has but one fold. In the stomach of two that were dissected, they found several insects like Hoglice.

They are brought daily to the markets of *Rome* and *Venice*, from whence it is plain that they abound in the *Mediterranean* sea. Yet they are but small, as they always are when they keep constantly in the salt water; but when they enter rivers, and continue there, they grow to a monstrous size, some of them having been found to be eighteen feet in length; and they sometimes will weigh upwards of two hundred and sixty pounds. The flesh is very common here in *England*, but then it is brought from distant places in pickle; however, they sometimes come up the *Thames*, and other rivers, though but seldom.

It was formerly in great esteem among the *Romans*, and some pretend, that those caught in rivers are best; while others affirm, that those taken in the sea are much finer eating, provided it be at a good distance from the shore. The flesh is every where in great esteem, and it is certainly very nourishing; but it is so strong, that some would have Sturgeon, with regard to fish, the same as a hog among quadrupedes. It is not very proper for tender constitutions, because it is not easy of digestion; but it suits those that are strong and robust. The male is better than the female, except she is full of spawn, and then she is generally preferred on that account, as well as for the goodness of the flesh at that time. The fat always lies heavy on the stomach, and it loosens the belly, because it relaxes the fibres of the intestines. There is a tender thick gristle that runs from the head to the tail, which some look upon as good eating after it is dried in the sun.

The spawn of this fish serves to make caviar, which is a considerable merchandize among the *Turks*, *Greeks*, and *Venitians*. It is also in high esteem among the *Russians*, and is sometimes brought to *England*. The manner of making it is this; they take the spawn and free it from the small fibres that connect it together, and then wash it with vinegar, and afterwards spread it on a table to dry. Then they put it into a vessel with salt, breaking the spawn with their hands, and not with a pestle; this done, they put it into a canvass bag, letting the liquor drain from it. Last of all they put it into a tub with a hole in the bottom, that if there be any moisture still remaining, it may run out. Then they press it down, and cover it close for use. There are vast quantities of these fish caught in the river *Volga*, and other rivers that fall into the *Caspian* sea. The common way of killing them is with a harpoon; but in some places they are taken with nets.

The parts of this fish used in medicine, are the bones and the caviar; that brought from *Hamburg*, is not much unlike green soap, with regard to the colour and substance. There are likewise large quantities brought from *Russia*, *Moscow*, and other places. The *Italians* settled in *Russia*, carry on a great trade with it through-

out that empire ; because there are vast numbers of this fish taken in the mouth of the *Volga*, and other rivers that fall into the *Caspian* sea. They consume a great deal of caviar in *Italy* ; and it begins to be in request in *France*. The bones of a Sturgeon are said to be aperient, and good against the rheumatism, hyp-gout, and gravel ; the dose of the powder is a dram. The caviar is nourishing, and according to some, is good against barrenness.

The ADELLA and ADANO, so called by the *Italians*, is thought to be a fish peculiar to the river *Po* in *Italy*. It sometimes increases to the weight of one thousand pounds, and is taken with a monstrous large hook fastened to the end of a chain ; and they are obliged to draw it out of the water with a yoke of oxen. It differs from a Sturgeon, in being a river fish, and in its bulk, which as was just observed, increases sometimes to the weight of one thousand pounds. When it arrives at a certain size, it loses its barbs as it had before, like those of a Sturgeon. The flesh of a Sturgeon is firm and of a pleasant taste ; but that of this fish is soft, and not so agreeable. The mouth is like that of a Sturgeon but much larger, and divided a little obliquely ; besides, it is not so pointed as in a Sturgeon ; add to this, that the colour of the back is whitish, and looks woolly.

The ISING-GLASS FISH, is of the cetaceous kind, and is cartilaginous, without bones, spines, or scales. The head is thick and broad, with a large mouth, and from the upper jaw there hangs four fleshy wattles. The eyes are small for the size of the fish ; and the flesh is very sweet, but clammy. The shape is oblong and roundish, and it has no snout, and is covered with a yellow, hard, slippery, smooth skin. There are two small holes before the corner of the eyes, and the two fins on the back, are placed erect near the tail. The gills have a thorny cover, in the same manner as a Sturgeon ; but the tail is more forked, and there is also a little above the thorny covering of the gills, and on the sides of them, a sort of a hole.

The HUSO, so called by the *Germans*, has a very long snout, and under it there are from four to eight barbs.

barbs. There is only one fin on the back, not far from the tail; but on the belly there are two. The shape is not much unlike that of a Pike, and the belly is yellow, like that of a Carp; but the back is blackish. The body is without scales, and has no bones but cartilages. The flesh is sweet and very agreeable to the palate, being white when raw, but red when boiled. It sometimes weighs four hundred pounds; though some authors pretend that they have seen them so large, that they could hardly be drawn in a cart with three or four horses; their length, when full grown, is twenty-four feet. It is usually met with in the seas about *Muscovy*, and in the river *Danube*. They make that sort of Ising glass, of the guts, stomach, tail, fins, and skin of this, and the former fish, which is used by wine-merchants to fine or force their wine. It has also medicinal virtues, when boiled to a jelly.

The colour of Ising-glass is of a whitish yellow, and is brought chiefly by the *Dutch* out of *Russia*, and some use it in ulcers of the throat, lungs, and bloody-flux, as well as against spitting of blood; but now its chief use is external in plasters. Some artists use it to give a gloss to ribbons, to whiten gauzes, to counterfeit pearls, and for many other purposes. When it has been mixed with sugar, and made into a kind of transparent yellow glue, they melt it in their mouths for the glueing together of paper; upon this account, it is sometimes called mouth-glue.



C H A P. XX.

Of Leather-mouthed River Fish.

THE mouths of these sort of fish are without teeth; but they have some in the throat, or in the bottom of the mouth, near the stomach. The swimming-bladder of this kind, is divided into two parts.

The CARP sometimes grows to the length of a yard and a half, being of a proportionable thickness; but

they are not so large in *England*, though there was one caught in the river *Thames*, near *Hampton court*, that weighed near thirteen pounds. The colour of this fish, especially when full grown, is yellowish, and the scales are large. The head is short like that of a Tench, and the mouth is of a middle size, with flat, fleshy, yellow lips. It has no teeth in the mouth, but there is a triangular bone in the palate; and two other bones in the throat, which serve for the same purpose. On the upper lip, near the corner of the mouth, there are two yellow barbs, which some call mustachoes, from the situation. The fins are large, the tail broad, a little forked at the end, and of a reddish-black colour. The lateral line is strait, and passes through the middle of each side. It has no tongue, but instead thereof, there is a fleshy palate, which taken out of the mouth, looks like a tongue, and which some account a delicious morsel.

The guts pass through the very substance of the liver, and are joined thereto, insomuch that they seem to make but one mass; and not only the gall-bladder, and spleen, but the stomach itself is confounded amongst the rest. The air-bladder is double, and connected to the back. They spawn several times in a year, but principally in *May* and *August*, in which months they are lean and tasteless, and consequently out of season. *Willoughby* informs us, that the largest Carps weigh about twenty pounds. There were no Carps in the ponds or rivers of *England*, till they were brought over by *Leonard Mascall* about one hundred and eighty years ago; as he himself informs us in his treatise of Fishing. This fish lives longest out of water of any other whatever; insomuch, that in *Holland*, they hang them up in a cellar in a net filled with white moss, with only their heads out, and feed them with white bread soaked in milk, for many days. The flesh of the river Carp, is better than that of Ponds; and some are highly pleased with it; while others dislike it for its being soft and insipid.

Perhaps it will not be amiss to give the reader a more exact description of this fish, as we find it in the Royal Academy of Sciences for the year 1733. All fish, says the author of the memoir, are covered with a skin or scales, as well in the sea and rivers, as in ponds and lakes.

lakes. The Carp is perhaps a fish that has the largest scales in proportion to its bulk. Some of these are brown, and others yellow and white; the brown colour prevails in the largest scales; the middle are of a yellow and gold colour; but the white are small and silvered. The common size of Carps is from sixteen to eighteen inches in length; of which there are nine, or ten, between the head and the beginning of the tail. In general, the bigger Carps are, the browner are the scales; though *Rondeletius* affirms, that young Carps have browner scales than the old, in which there is a yellowish cast. The largest scales are in the middle of the sides, with regard to its length, and the nearer they are to the head the broader. The scales of a middle size lye towards the tail, and the least are under the belly. The largest scales are two-thirds of an inch in length, and half an inch broad; but sometimes they are as broad as long, and they are one sixth of an inch thick; in general, the smallest are longest in proportion. While they remain on the body, not above a third of them appear; and this part is often yellow, or a little brownish. This colour seems to be in the very substance of the scale; for it cannot be deprived of it by scraping, unless some part is taken off, except where it is brownest. In the inside of this, there are lines in the form of rays, which proceed from the circumference, and run towards a point, as a center. The under part, opposite to this, is of a silver colour, which is owing to a very fine membrane that may be readily taken off; after which, the scales will be white in that part.

All the scales are connected together by the membrane that covers them; but this does not hinder them from playing a little; for otherwise, the Carp could not bend to either side, as it always does in its motions. These membranes are strongly connected to a tendinous membrane, which surrounds the whole body of the Carp, for they are nothing but a continuation of the same.

If the outside of a Carp is carefully observed, a brown line may be seen on each side, that reaches from the head to the tail. This appears to be brown, because the membrane that connects the lower part of the scales,

is very brown in the middle. Though I once observed it to be red. In the substance of the scales where this line is seen, there is a canal above a sixth of an inch long, and a forty-eighth of an inch in diameter. A very small pin may be introduced thereinto; but it enters easiest at the internal and lower part of the scale. This canal runs from the upper to the lower part of the scale, and obliquely from without, inwards; it is continued from one scale to another successively, from the head to the tail; for between each scale there is a small membranous canal, by which means it is continued.

A Carp may be divided into four parts, namely, the head, the breast, the lower belly, and the tail. The head reaches from the tip of the snout to the extremity of the covers of the gills, over against which the breast is seated; for there is no neck between the head and the trunk of a Carp. The breast is separated from the lower belly by the diaphragm, and only contains the heart and part of the kidneys. The lower belly contains the entrails; and the tail begins at the vent, and is entirely musculous.

The lower belly, is the cavity of the body that reaches from the diaphragm to the vent; and all anatomists know in what manner it is formed in men, and in quadrupeds; but there are few that have examined it in a carp. This fish has the cavity of the lower belly formed by the vertebræ of the back, and the muscles are quite different from those of men, and quadrupeds; besides which, there are spines in the form of ribs. There are eighteen on each side, and they proceed from each vertebra, from the diaphragm to the vent, where they terminate in the lower belly in a point. The inside of the lower belly is covered with a peritonæum, as in other animals.

The vent does not only consist of an aperture, by which the excrements are discharged from the guts; but it contains two others, one of which gives passage to the spawn of the females, and the semen of the males; and the other is a duct for the urine of the bladder. The first is at the extremity of the rectum, and is the largest of the three; the second is the extremity of the two capsulæ that contains the eggs, and which re-unite into a single canal,

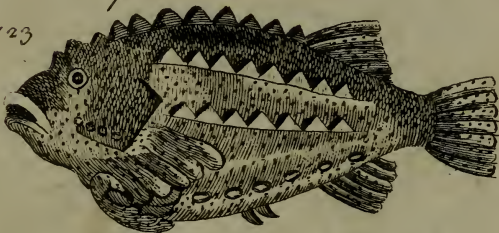
Flying-Fish?

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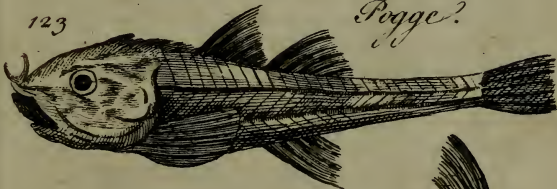
Lump?

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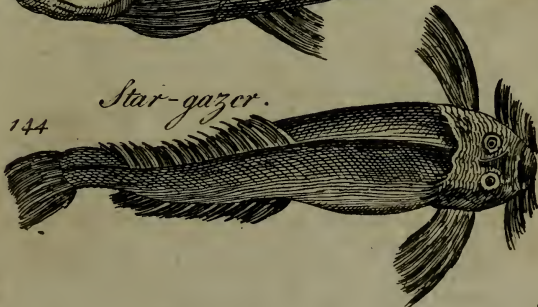
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Pogge?



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Star-gazer.



canal, whose extremity is but a twelfth part of an inch broad, or thereabouts, according to the size of the Carp; but it will stretch very much; it is narrower in the males, and is the extremity of the two membranes that comprehend the milt. The third is the mouth of the bladder, and is not much above the twentieth part of an inch in breadth. All these apertures are not round, but lye flat one upon another, only the third is more roundish; they are separated from each other by membranes, not above the forty-eighth part of an inch thick. The outward aperture is in some sense triangular in milers, but not so much in spawners, and is about a third of an inch in diameter.

The stomach begins at the bottom of the gorge, and passes through the center of the diaphragm; it is in the shape of a gut, is six inches and upwards in length, and extends long-ways in the abdomen. It is one third of an inch in diameter and upwards, next the diaphragm; but it grows gradually a little less towards the vent, where it is folded to form the first gut. The stomach is surrounded on all sides by the guts and liver, and appears out of the bundle, about an inch, or an inch and a half from the place where it folds to form the first gut. There is neither pylorus nor valve in this fold, as there is in Pikes and other fish. There is so little difference between the stomach and the gut at this fold, which is two inches from the vent, that it might be taken for a fold of the stomach itself. There are a great many longitudinal wrinkles on the inside, which is the reason it is called the stomach; besides, there is no other part that can perform its office. It receives the biliary duct, a sixth part of an inch from the diaphragm; and it forms a sort of a nipple on the inside of the stomach, where its orifice may be seen. The first gut turns back towards the diaphragm, and is three inches and a half in length, and a quarter of an inch in diameter. The second gut is formed by the fold of the first, and is about a quarter of an inch long, and a fifth in diameter; it runs downwards. The third gut bends upwards, and is a sixth of an inch in diameter; as well as four or five inches in length, if the curve is taken in, that it forms on the right side towards the diaphragm, where it produces

duces a kind of a ring, with a portion of the fourth gut that encloses part of the liver. The fourth gut is one-sixth of an inch in diameter, and four and a half in length. if half of the ring is taken in; it descends towards the vent. The fifth gut is four inches in length, and a sixth of an inch in diameter; and it runs upwards towards the diaphragm; and at an inch and a half from it, it bends backward to form the following gut. The sixth is the longest of all, it being six inches long, and sometimes more, and about the sixth of an inch in diameter; it terminates at the vent, and is partly surrounded by the guts and the liver. In milters, this gut is most of it lodged in a channel of the milt. There is no mesentary, for the guts are connected together by the parts of the liver that are lodged and connected within the spaces that are between the circumvolutions.

The liver is divided into several parts, which are a sort of thin appendages; which are connected to the guts filling up the spaces between them, as was just observed; and some of them pass above the gut to fill up other spaces. All these parts of the liver and guts, form a bundle which is likewise connected to the roes in both sexes, though very slightly. The liver is as long as the bundle of the guts; and likewise as broad near the diaphragm, where it has its rise. After this, the liver grows narrower and narrower by degrees, and at last terminates in a sort of a point; from which the rectum is continued to the vent, and is about an inch and a half long. The liver consists of a red muscous flesh; but is paler in the milters; and indeed there is some other differences in different subjects. It covers about one-half of the air bladder, to which it is slightly connected, and is very broad in that place. It is covered on its sides by the roes, and is connected thereto by very fine membranes, as well as to the peritonæum.

The gall-bladder is contained in the middle of the principal part of the liver, and lyes along the upper part of the stomach, and there is a part of the liver, a twelfth part of an inch thick, between this bladder and the stomach. It is connected in this place by many blood and biliary vessels, which terminate in the cystic duct; this is connected thereto, a sixth part of an inch from
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The gall bladder, and may be called the hepatic duct. It is about a twenty-fourth part of an inch in diameter, and sometimes there are two. The biliary duct, and the cystic duct, form a single canal of the same diameter, which is above a sixth part of an inch in length; but it is sometimes bigger every way. It is inserted in the upper part of the stomach, a sixth part of an inch below the diaphragm, a little obliquely. It will not admit a very fine probe through its aperture; but the bladder being squeezed, the bile will readily come out. In a large Carp, this bladder is an inch and a quarter long, and above half an inch in diameter. The bile therein, is green and fluid; though in some, it has been found as hard as butter.

The spleen is connected to the beginning of the stomach, half an inch from the diaphragm; and it is seated between the bundle of the guts, and to the left of the air-bladder; it is three or four inches long. The principal part lyes between the upper part of the stomach and the liver; and it is about half an inch broad though it is only the sixth of an inch thick; it is of a deep red, like clotted blood.

The roes in the spawners lye on each side the lower belly, and reach from the diaphragm to the vent. On each side they lye over the bundle of guts and the liver, and extend between this and the air-bladder, which they cover on both sides, from the middle part of the large air-bladder to the vent. They are covered with a very fine transparent membrane, which forms a capsula that contains the eggs, to which it is a little connected. It parts readily from the eggs or spawn when it is blown up, and it swells greatly. The two capsulæ unite in a single duct, which terminates at the back part of the vent. This capsula adheres to the peritonæum, and to the bundle of the liver and guts, though very slightly. The eggs are almost round, and are from a twenty-fourth, to an eighteenth part of an inch in diameter; but this last is very uncommon; however, they are connected to each other. The two roes when well formed, weigh about eight ounces and two drams, which make 3960 grains; each grain is equal to seventy-two eggs; which being multiplied together, make 285120 eggs,

or thereabouts. These rows belonged to a Carp eighteen inches long, comprehending the head and the tail.

It appears from several observations, that the larger Carps are, the more eggs they contain; however, it would be no wonder if there should be a mistake of several hundreds. *Leeuwenhoek* affirms, a Carp has only 211629 eggs; and that Cod-fish have four times as many; but in another place he tells us, that this last has 9344000; and that the eggs of a fish of a year old, are as numerous as those of one of twenty-five. They are all more or less yellowish, but they become white in boiling; and yet, after they are cold, they are yellow again, and sometimes of an orange colour.

The milt belongs to the male, and consists of two white irregular bodies; these are the testicles, and they are almost as long as the cavity of the lower belly; the right side is sometimes a little longer than the left, because it begins somewhat nearer the diaphragm. Its sides cover the bundle of the guts, the air-bladder, and the urinary bladder; they terminate at the vent, between the rectum and the bladder, and are surrounded with a very fine membrane. When the milt is cut cross ways, and pressed with the fingers, a white thick matter proceeds therefrom. Each of these bodies consist of two parts; the first and most considerable of which, takes its origin near the diaphragm, and is the body of the testicle, and has a smooth surface. The second part consists of the seminal vessels that lye near the vent. In each of these there is an interstice according to the length, where there is a kind of a duct which contains a white fluid, which is the semen. This canal runs to the second part of the milt; and may be called the seminal vesicle, because it seems to be formed of small vesicles distinct from each other.

There is a vesicle in most fish, full of air, which is called the air or swimming bladder; because the fish, by the help of this, can rise to the top of the water, and sink down again at pleasure; according as this is more or less filled with air. It is seated between the kidneys and the spawn or milt; and it reaches from the diaphragm to the urinary bladder; it is slightly connected

ned by fibres and vessels, to all the parts that touch it; but it is connected very strongly at the base to a small bone, which may be called the mitral bone, on account of its shape. The bladder is composed of two parts; the first of which is largest, and is nearest the diaphragm; it is about three inches long, and an inch and a half in diameter, at the place where it is thickest; and its shape is a sort of an oval. The second part, which is smaller than the former, but a quarter of an inch longer, is only an inch in diameter where it is thickest. Each of these vesicles or parts, have two membranes, an external, and an internal, that are both double, and have fibres in different directions. They communicate with each other by a small duct.

The kidneys of scaly fish, are of such a particular substance and structure, that *Rondeletius* would not allow they had any. In a Carp they are soft, and of a reddish brown, and in some sense resemble clotted blood; they take up the greatest part of the breast, and from thence extend throughout the whole length of the lower belly to the bladder. That part of the kidneys within the breast is of a considerable thickness, and almost entirely covers the diaphragm, as well as surrounds the greatest part of the heart. The two parts of which it consists, re-unite in this place; and over the mitral bone, they grow less all of a sudden; passing through a hole a quarter of an inch long, and an eighth of an inch broad; this hole is formed by the union of the mitral bone with the third vertebra of the spine, and enters into the lower belly, where it grows larger by degrees, and forms in the middle of this cavity, two very irregular bodies; that is, one on each side, which are the principal part of the kidneys; they are lodged between the two parts of the air-bladders, and fill up the space between them; upon which account they are of a triangular shape; after this, the kidneys are contracted by degrees, and slide between the two ureters, which they accompany to the bladder. The urine passes from the substance of the kidneys into the ureters, by excretory vessels.

The urinary bladder is a roundish capsula, which being swelled, resembles a small gourd turned

side down, whose mouth is narrow ; it is not quite an inch in length, nor yet a third of an inch in diameter ; it seems to be composed of a very fine single membrane. This bladder has no urethra ; for its mouth is near that of the rectum, and at the hinder part of the vent in the spawners ; but in the milters it is not discovered at all on the outside ; because it enters the common duct of the seminal vessels. This description is somewhat long, but must needs give great satisfaction to those that are curious in these matters.

The PRICKLY CARP of *Rondeletius*, is like a common Carp in all things, if the prickles are taken off. The lateral lines are crooked, and marked with points, and the colour of the back is of a blueish green, but on the belly it is red. The body is covered with large scales, from the middle of each of which, there arises a sharp prickle in the shape of a hob-nail, which are half an inch in length, and placed in no regular order. These prickles drop off once a year, that is, in the months of *April* and *May*. This fish is only found in two lakes of *Milan* in *Italy*, as the inhabitants there affirm.

The SEA BREAM, has a forked tail, and is a flattish fish, not unlike a Roach. The flesh is firm and solid, and the body is covered with scales. It is twenty inches long, ten broad, and the tail is very slender. The back is black, but the sides are of a lighter colour, which on the belly becomes like that of silver. The lower jaw has two rows of teeth, but the upper has but one, and those are very small. The eyes are large and are like those of quadrupedes ; the covers of the gills are very ample, like those of Salmons. There is only one fin in the middle of the back, which is continued throughout its whole length ; and opposite to it, at the bottom of the belly, there is another that runs from the vent almost to the tail. They are not very common in *England* ; but one of them was brought by the tide near the mouth of the river *Tees* in *Northumberland*, and when the water fell, it was left on the shore. This fish is improperly classed.

The BREAM, is a broad flattish fish, with a small squarish head and a sharp snout. The top of the head

is pretty broad and flat, and the back rises like that of a Hog. The back is of a blackish-blue colour, but the belly and sides are white. The scales are large, and the mouth, for the size of the fish, very small. The mouth is without teeth, but there is a triangular bone in the palate, which is soft and fleshy like that of a carp. The iris of the eye is of a silver colour, and the pupil is small.

The liver is long and lies between the stomach and the gut, having a gall bladder almost hid within it. The spleen is angular, and the air-bladder is divided into two lobes. The Bream breeds both in rivers and ponds, but they delight chiefly in the latter, for which reason they are never found in swift rapid streams; but only in such parts of the river which most resemble standing water, and have muddy bottoms. They love to keep company with each other, for which reason, one hundred of them are sometimes seen in a shoal. In some places they have been found to grow to the length of three feet, and here in *England*, they have weighed ten or twelve pounds, but this is not very common. The flesh is in no great esteem; however, it may be rendered agreeable enough with good cookery. *Rondeletius* affirms, he has met with Breams two cubits in length.

In *Poland*, there is a fish called KLORZEZ, which is a sort of a Bream, of a blue violet colour, except the fins and the tail, which are white. *Gesner* says there are three kinds of Breams in the river *Elbe*, the first of which has scales like a Carp, and is not above eight inches long. It is found not only in this river, but in ponds and lakes. The second sort is more long and thick, but the scales are like the former, and the flesh is very well tasted. The third is pretty much like the first, but it is a larger and more beautiful fish, being of a colour more inclining to silver. They are only found in the *Elbe*, and spawn like the common Bream, in *January* and *June*.

A ship of Captain *Jobson* being at *Cassan*, a sailor caught a fish which he took for a Bream; but as soon as he touched it, he cried out and said, he had lost the use of his hand. His companions laughed at him, and im-

mediately one of them trod upon it with his naked foot, upon which the whole leg became motionless. Then they called the cook and desired him to take the fish and dress it; he took it in both hands, but let it fall directly, and declared in a mournful tone, that he was seized with the palsy. However, a Negro who was acquainted with this fish, told them that after it was dead, this benumbing quality would cease. Hence it appears that this fish has the same property as the TORPEDO.

The RED EYE, is a kin to the Bream, and the shape of the body is much like one, only it is a little thicker. It is hog-backed, and all the fins are of a reddish colour, and the whole body is tinged with red, especially the iris of the eyes. There is a saffron coloured spot on the tongue, and the scales are larger than those of a Roach. It may be distinguished from a Roach by the redness of the eyes, by the saffron coloured spot under the tongue, by the back-fin having more rays, and the gut more folds. When full grown, they are about ten inches long, and they spawn in May, among the roots of trees.

The SHORT CARP of *Schoneveld*, is nine inches in length, and has a compressed body with a hog back, being like a Bream, but a little thicker; and the colour is yellowish inclining to gold. There are lines run through all the rows of scales, and the belly is yellow. The mouth is round and little, and the eyes are small, lying more deeply in the head than in most other fish. It differs from a Bream in being shorter, in the colour, and in the back fins, for those behind the vent, have rays on both sides, with a rough sort of hooks as in a Carp. The BALLERUS of *Rondeletius*, differs in nothing from this, but in the red colour of the fins and tail.

The CARASSE of *Gesner*, is a small sort of a fish, being seldom above eight inches long; but they are broad and thin, and somewhat of a golden colour, with a mixture of brown on the back. It is twice as long as it is broad, and the head is small. The back-fin and the tail are brown, but the rest are of a reddish brown. They are found chiefly in ponds and other standing waters, which they are more fond of than gravelly

gravelly streams. There is another sort of this fish which are a little longer and thicker than the former, and seem to be of a middle nature between a Caraffe and a Carp, for which reason they are called the *CARP-CARASSE*. These and the former, are found in the greatest plenty in and near the river *Elb* in *Germany*. The flesh is yellowish and clammy.

The *FENCH* weighs with us about five or six pounds when full grown; but in other countries they have been found to weigh twenty. It is a short, thick, roundish fish, and is about three times as long as broad. The snout is short and blunt, and the tail broad, but not forked. The back is of a dark colour, the sides green, mixed with a shining yellow, and the colours of the gills of a beautiful yellow. The tail as well as the fins of the belly, and back are blackish, and the scales are small, thin, and covered with a sort of slime which renders it very slippery. The skin is thick, and there is a barb at each corner of the mouth as in a Carp; but it does not appear unless laid hold of with the fingers. The eyes are small, round, and a little prominent; and their iris is red. There are two nostrils that look like small ears; and the palate is fleshy like that of a Carp. The teeth are in the throat. The swimming-bladder is divided into two lobes.

A Tench according to *Artemi*, has a small head and snout in proportion to the size of the body; for this is broad, thick, and short: The opening of the mouth will admit one's little finger, and the jaws are without teeth; but in the throat there are five on each side. The covers of the gills consist of four plates and three crooked spines; the lateral line is crooked, and nearer the belly than the back. There are small ducts or holes on the head over the Eyes; that is, one row on each side, that form a sort of a line; and under the eyes there are two other lines or rows of holes, one of which is seated near the covers of the gills, and the other beneath the lower jaw. The eyes are small, seated on the sides of the head, and the iris is red. The openings of the covers of the gills are not so large as in other fish of this kind; there are four gills on each side, each of which is furnished with a double row of knots made
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in the shape of a comb; and which are equal on each side to the three inner gills; but in the last of the inner knots they are almost equal to each other, and the external are longer than the internal on the upper part, though much shorter at the lower; these are all soft. The back which is thick, rises a little above the head, and the belly is broad and flat throughout. The scales are oblong and small in comparison of other fish of the same kind; they adhere close to the skin, and are black upon the back, and blackish on the sides, with a little mixture of a golden or greenish yellow colour, but it is whitish under the belly. There is a sort of a slime all over this fish that renders it as slippery as an Eel. All the fins as well as the tail. are black or blackish, and sometimes of a dark grey colour. The fins on the breast are blackish, almost round, and consist of seventeen rays, of which the sixteenth is longest, and the first is single and strong; but all the rest are branched at the end, and the last is small. The belly fins are also black and roundish at the edge, and they consist of eleven rays, of which the first is small, the second robust and thick; but all the rest are branched at the ends. There is a single black fin on the back consisting of twelve rays, of which the first is very short, and the second is somewhat longer, and reaches to the middle of the rest. The third is single as well as the two first; but the rest are branched at the ends. The fin at the vent is black, and consists of eleven rays, of which the two first are small; but the third is pretty long and single like the two former; and all the rest are branched at the ends. The tail is blackish, somewhat square, and consists of nineteen rays that are hard to count, except the last. The liver is long, lies along the side of the stomach and gut, and is divided into several lobes. The stomach is thick and long, and the gut has a single fold at the diaphragm from whence it runs directly to the vent. The spleen is oblong, and of a dark or blackish red, and is seated on the left side. The air-bladder is large and as small as a thread in the middle; but the duct which is inserted in the beginning of the lower part is very plain; the peritonæum is whitish or of a silver colour; the whole length of the fish from
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whence this description was taken was nine inches and a quarter.

The Tench delights in standing waters and ponds; and they are sometimes met with in the still parts of rivers, particularly in the *Stower* in *Dorsetshire*, and the *Tiber* in *Italy*. The time of spawning is the beginning of *July*, and they are in season from the beginning of *September* to the end of *May*. The flesh of this fish was formerly thought unwholesome by physicians; but perhaps without much reason; indeed it is a little clammy like that of an Eel, and may probably want a little spice in the dressing; but in general it is as much in esteem as most other fish.

In the head of the Tench there are two small stones that have an absorbent, detergent, and diuretic quality. The dose is from twelve grains to two scruples; and the powder is used to absorb acids in the stomach and intestines, to stop loosenesses, and to promote urine. Some apply Tenches to the feet in fevers to cause a revulsion from the brain. Some pretend that if a living Tench is applied outwardly to the region of the liver, and suffered to continue there till it dies, it will cure the jaundice; and the fish itself will become yellow on the side that lay next the skin; but this seems to be a fable.

The RUDD or FINSCALE is broader than a Roach or even than a Carp, and thicker than a Bream. The colour is of a dusky yellow, and the scales are of the same size as those of a Carp. The eyes are reddish; but the belly fins, and those near the vent, are of a more deep red. The covers of the gills are generally marked with blood-coloured spots, and the holes of the nostrils are double on each side. The teeth and palate are like those of a Carp, and the back fin is placed in the middle of the length of the back, having ten rays, of which the third is longest, and the first shorter by one half than the second; but it is not hooked as in the Carp, from which it may be distinguished by this mark only. The fin at the gills on both sides has nineteen rays, of which the first is larger than in other fish of this kind, and there are two on the belly; but that pair over-against the back fin has nine on each side.

side. The gill-fins are whiter than the rest, and that on the back is darker. The vent is placed about a third part of the length from the tail, to which there joins a fin containing nineteen Rays, and the tail is forked. The pointed lines on the sides are bent in two places; and this fish is generally from twelve to sixteen inches long. It is common in the river *Rhine* in *Germany*, and it is found in the lakes of *Holderness* in *Yorkshire*; as also in the lakes not far from *Lincoln*, besides the river *Cherwell* in *Oxfordshire*.

The flesh of this fish is in great esteem and is always in season, except in the time of spawning which is in *April*, and then it is not very good. They swim in shoals, casting their spawn among the weeds that grow in the waters; and the largest weigh about two pounds.

The VROW FISH, so called at *Ratisbon* in *Germany*, has a little longer body than the Rudd, and the back is of a brown colour, but the belly is yellowish. The belly and the vent fins are a little reddish, and the rest are brown. The scales are large and of a silver colour, and the iris of the Eyes are marked in the lower part with a blood coloured spot. The gut has three folds, by which it may readily be distinguished from the Rudd.

The NOSE FISH or BROAD SNOUT, is a foot in length, and of the colour and shape of a Dace. The belly and sides are of a silver colour, but the fins on the lower part of the body, and the part below near the tail are sometimes a little reddish. There is a blackish spot on the hinder part of the head, which last is small; and the belly is flat and broad, with ample scales. The lateral lines are nearer to the belly than the back, and the snout which is flat and blunt, is a little more prominent than the mouth, by which it may be distinguished from all other fish of this kind, and from whence it has the name of Nose Fish. The mouth is small without teeth, and the skull is transparent. The iris of the eyes is between a silver and gold colour, and there are very small caruncles on the gills that are pectinated. The back fins, with regard to their situation and rays, are like those of a Bream. The air-bladder is divided

into

into two lobes; and the flesh is white, soft, and insipid; as also full of bones.

The CHUB or CHEVIN, has a longer body than a Carp, and a large blackish head. The back is of a dark green, and the belly and sides of a silver colour; however those that are fat and full grown have them of a gold colour, sprinkled with small black specks. The temples are yellowish, and the scales as in a Carp, large and angular. The mouth is not large, is without teeth, and the upper jaw is a little longer than the lower. The palate is soft and furnished with a triangular bone; and the nostrils are large, open, and have each a double hole, one of which is every now and then covered with a valve. The eyes are of a middle size with an iris, which is a mixture of gold and silver colours. The tail is forked, and all the fins are of a blackish blue, though in some there is a tincture of red. The belly is broadish, and the lateral lines run parallel to the bottom of the belly.

The stomach is long, and the gut has only one fold; and the liver and swimming-bladder, are both divided into two lobes. It is bred in rivers, and delights to lie in holes, and under the stumps of trees, in a clayey or sandy bottom. Some of these have been met with that have weighed eight or nine pounds. They spawn in *April* in sandy and gravelly places, and in the very midst of the stream. They are most in season in the spring, when they are full of spawn. The flesh is white, soft, and insipid, and consequently is not much esteemed.

The BLUE CHUB of *Gesner* is of a broad compressed shape; and the head also is broad, and flat from the mouth to the hinder part; but from thence the back begins to rise; that is, this fish is hog-backed. The mouth is much wider than that of the common Chub, and turns a little upwards. The Tail is forked, and the back is of a brownish blue; but the sides are of a silver colour, and the belly is yellowish. The belly-fins are a little reddish, and the skull of a paleish brown, and transparent. The gills are composed of a double row of prickles, of which the former are more hard and bony than in other fishes, and they terminate in tubercles. There are no teeth in the jaws; but in the
bottom

bottom of the mouth near the orifice of the stomach there are toothed bones as in the rest of this kind. It differs chiefly from the common Chub in the mouth and head.

The GREEDY RIVER CHUB of *Gesner*, is a white fish, or rather of a shining silver colour; only the back is dark and a little bluish. The scales are pretty broad, thin, and transparent; and the fish is long, thick, and fleshy: but the flesh is full of bones. There are no teeth in the mouth, but in the throat there are some that are longish, being seven in number on each side. The largest weigh about six or seven pounds.

The CHUB OF PASSAGE is known at *Naples* by the name of ZERBA as well as in *Poland*. It is a long fish of a silver colour, and covered with small scales; but the back is brown, and the fins near the gills, as well as those below them, are shining, and mixed with a little blue. On each side of the body there is a line to the tail, which is marked with small brown specks; the head is pretty thick, the eyes large, white, and handsome, with large nostrils. The fore part of the mouth is soft and void of teeth, or any other hardness; but near the throat there are six long teeth. The largest of these fish are caught in the *Tuscan sea*, and weigh about two pounds. Every year this fish leaves the ocean and enters the river *Elbe* about *Whitsuntide* when it casts its spawn. This is the time they are most in season, because the females are full of spawn. It feeds on all kinds of small fish, especially those without prickles, as well as flies and other insects, which it catches in or on the surface of the water. It is one of the best fish in the *Elbe*, whether boiled or broiled.

The POND CHUB is in the shape of a Bleak, but is a little longer, has a sharper snout, larger eyes, and a higher back and reddish fins. The scales are larger than in a Bleak; and the head and back are of a greenish colour. The flesh is hard, insipid, and in no manner of esteem. This seems to be a sort of a BULL-HEAD.

The BARBEL is about a cubit in length, and the back is of an olive colour, but a little palish, and the belly is that of silver. The back and sides are sprinkled with

with black spots, and the shape of the body is long and roundish, but the back is sharp, and arched. The scales are of a middle size, and the lateral lines run through the middle of the sides. The belly is so flat that when this fish lies with its mouth downward it touches the earth; which circumstance is perhaps common to all fish that keep at the bottom of the water. The snout is a little sharp, and the mouth is not large, being without teeth, as the rest of this kind. The upper jaw is longer than the lower, and there are four barbs, of which two are at the corners of the mouth, and the other two are higher near the end of the snout. The tail is forked, the eyes small, looking downwards, and their iris is either of a silver or gold colour, spotted with brown. In the summer time their bellies are red.

The weight of this fish is commonly about seven or eight pounds, and yet there was one caught at *Stains* that weighed twenty-three pounds. The flesh is soft and flabby, and in no great esteem; and the spawn is unwholesome, purging both upwards and downwards. The Milter is much better than the Spawner, and they are both in season in *September*.

The DACE of *Rondeletius*, called by the *French* a *Gardon*, differs from a Chub in having a smaller head, a broader body, a blue back, a green neck, and yellowish eyes; it is a brisk lively fish. *Belonius* affirms, this fish is more hog-backed, and has a body more compressed than a Chub, with a blacker back, that has a gold-coloured gloss, and reddish fins; that the scales are larger, and that the make of the head is more like a Dace than a Chub. Hence it is plain that *Belonius* mistook a Roach for this fish; and yet *Gesner* makes a distinction between them.

The DACE or DARE, is like a Chub, though it is less, and a little whiter; the head also is less and not so flat; and the tail is more forked. Besides, the body is more slender and compressed, and the scales are less. The colour is generally white, and there are a sort of strait streaks between the scales. The iris of the eyes is not so yellow; nor are the tail, and back fins so black, though they are sometimes sprinkled with black spots. The teeth are not placed in the jaws but in the throat,

throat, as in other fish of this kind. The *French* give it the name of *Dard*, which signifies a dart, from whence the *English* *Dare* is derived. It is a very brisk and lively fish, and seems to dart along the water it swims so swiftly. The *Dare* spawns in *February* and *March*, and is fit to eat about two months after; but they are in the highest season in *September*. The flesh is sweet, soft, and yields good nourishment; but is in no great esteem. They delight in gravelly and sandy bottoms, and in the deepest part of the river under the shade of trees.

The **ROACH** is less than a *Bream*, and about one third as broad as long. The back is of a dusky colour, and sometimes bluish; but the belly is pale. The iris of the eyes as well as tail and fins are red. The lateral lines run parallel to the belly, and the tail is forked. About the gills it is of a gold colour, and the mouth is round but void of teeth, it being a leather-mouthed fish. It will breed in ponds as well as rivers; and though the pond *Roach* is largest, that of the rivers is the best. They spawn about the middle of *May*, and recover their strength in about a month's time.

The **BLEAK**, or **BLEY**, is a very small fish, seldom being above six inches long. The body is broadish; the head little, the scales thin and of a silver colour, easily coming off. The back is of a bluish brown or greenish, and the eyes are large, marked on the lower side with a blood coloured spot. The skull is transparent, and the inside of the mouth is like that of a *Carp*. They spawn in *March*, and are most in season in the Autumn. The flesh is sweet, nourishing, and pleasant, and it would be in high esteem if the fish was larger. *Charleton* says, there are two sorts of *English* *Bleaks*, one of which has the back of a chesnut-colour, and the other blue.

Ruyfch speaks of four sorts of *Bleaks* that are met with at *Amboyna*, which are not of the colour of the *European*. The first is of a reddish colour, marbled with black spots. The second is blue, but darker on the back and brighter on the sides; the blue of the third is variegated with yellow spots, and the fourth is of a yellow colour with silvery spots, besides a broad streak
of

of several colours, which begins at the eyes and runs round the head.

The scales of the common Bleak are used to imitate pearls in the following manner. They take off the scales, put them into a basin with a little water, and then rub them against the bottom in the manner of grinding colours. This done they pour off the silver-coloured water into a glass, leaving the scales at the bottom; and then they repeat the operation till nothing comes off; putting the water into other glasses. Then they let it settle for ten or twelve hours, when the silvery matter will sink to the bottom, pouring off the water by inclination. That which is left behind is of a consistence of oil, and of the colour of pearls. Then they mix it with ising-glass or fish-glew, and with this they varnish any sort of substance of the size of beads, particularly wax, alabaster, and glass, and then they will have the exact appearance of pearls. But as these are not proof against moisture, they have a method of lining the inside of glass beads therewith, blowing a little of the liquor into the inside with a small pipe. Then they shake it about till it fixes itself all over the internal surface. It has a small bluish cast, which causes these beads the more to resemble pearls. After they have done this they throw them into a basket and shake them together so long that they become quite dry; and then to render them more solid they fill them with wax. This is the method of making the true *French* necklaces, and there are great numbers employed in *Paris* for this purpose.

The GUDGEON is five or six inches long, with a round body, small scales, a brown back, and a whitish belly. It is sprinkled with about nine or ten pretty large blackish spots which are placed in a right line, directly running from the head to the tail on each side. There are also others that are small on the back, tail, and fins, and at each corner of the mouth there is a barb or thread. They are to be met with in rivers almost every where; but they grow to a larger size in some than others, for in that near *Uxbridge* there were four taken that weighed a pound. The flesh is in high esteem, and some think it not much inferior to a Smelt.

They delight in sandy gravelly bottoms, gentle streams, and small rivers. In summer-time they resort to the shallows, but in the winter to the deepest places.

The LESSER GUDGEON, called by the *Germans* a WAPPER, is less than a common Gudgeon, and is not so much spotted; besides the colour is whiter and the hinder part is smaller, by which it may be known from common Gudgeons, for in that part it is not so broad by one half. The back likewise is paler, the snout longer and more sharp, and the eyes less.

The LOACH or GROUNDLING, is like a Gudgeon in shape and colour; but it is much less and shorter, seldom weighing above four ounces. The body is soft and slippery, and the tail broad but not forked; and there are few or no scales. The head, back, fins, and tail are sprinkled with blackish spots, and sometimes with a dirty yellow. On the upper jaw there are three pair of barbs, one at the corners of the mouth, and two near the end of the snout. The eyes are small and have their iris yellow. The flesh is tender and delicate, and is by many swallowed alive, being thought good for a Consumption. They spawn in the beginning of *April* among the weeds; however they are never out of season. They are generally found in small, swift, clear brooks, and lie under stones, pieces of wood, and the like.

The BEARDED LOACH differs from the former, in having a broader body and head, which last is more so than the rest of the body. Besides they have only two pair of barbs, and there are two hooked prickles on each side between the eyes and the mouth. There is another kind of Bearded Loach that has six barbs on the upper jaw and four on the lower. The River Loach of *Rondeletius*, is about the length of a man's finger, and has a pretty prominent snout. The body is roundish and fleshy, the colour being yellowish, spotted with black. The flesh is moist and clammy.

The HORNED TAPE FISH of *Schoneveld* is a palm in length, and the body is flat and transparent, being almost of the same breadth from the head to the tail; however it is eight times longer than it is broad. The back and head are blackish, and there is a strait dun stripe

stripe which runs from the gills directly to the tail, under which there are sixteen distinct black spots, and from thence the belly is of a dull whitish colour. The mouth is small, and the upper jaw is longer than the lower, which shuts into it as into a box. The eyes are little, and under the forepart of each there is a white prickle with two sharp points; but the foremost is shortest.

The SCALY PINK has a thick blackish head in proportion to its size, and the iris of the eyes is of a saffron-colour, which is also seen at the beginning of all the fins. At the joint of the gill-fins there is a sort of a caruncle, which in some is of a saffron-colour, and in others red. The scales are whitish, and there is a brown line runs obliquely from the head to the tail. At the beginning of the tail there is a black spot, and others that are less at the beginning of the fins on each side. It is found only in running waters.

The PINK or MINNOW, is a great deal less than a Gudgeon, having a roundish body only three inches long with scales that are hardly visible, and there are no barbs. On each side there is a gold-coloured line which runs from the head to the tail; and below that it is mottled with scarlet in some, in others white, and in others again with a shining blue. Lastly, in some there are three lines two being of a gold colour, and that in the middle blue. It is to be met with in stony and sandy brooks where the stream is swift.

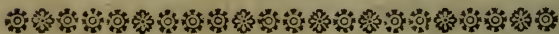
The BOUVIR, so called in *France*, is a native of the river *Seine*, and is near four inches long and an inch and a half broad. It is of a silver-colour, and has large scales, but in other things it resembles the diminutive fish. The mouth is without teeth, and the tail is forked. It generally hides itself in the mud, and is always dirty when it is caught.

The PIQUINGA of the *Brazilians*, is a little above two inches long, and is shaped like the Parabucu, from which it does not greatly differ. It has a little mouth, which however it can open very wide, and the Eyes are pretty large with a silver iris. The tail is forked, and the fins as well in number as shape, resemble others of this kind. It is of a shining silver-colour on the
head,

head, and the scales on the body are white, only the back is of a shining olive. On each there is a strait broad silver-coloured shining line, that runs from the head to the tail.

The GUARAGUARU of *Martgrave*, is never above an inch and a half long, and has an oblong slender body, like the least Pink. The head is compressed, and there is one fin placed on the hinder half of the back; but there is none behind the vent. The tail is roundish at the end, and the upper part of the head and forward part of the back are of a brown colour, with small scales of that of Umber. The lower part of the head and belly are of a shining gold colour, and the fins are yellow. On each side near the tail there is a black spot; and it is caught in the Lakes, and Ponds of *South America*.

The PIABA of the *Brasilians*, is of the size of our Pink, being sometimes above three inches long. It is a scaly fish, and the iris of the eyes is of a gold colour. It is variegated with gold, silver, green, and indigo, on the back, sides, and belly; and behind each fin there is a round black spot of the colour of indigo; and immediately behind this there is another of the same colour in the shape of a half moon.



C H A P. XXI.

Of bony or spinous Fish, with one fin on the back, whose forward rays are stiff and thorny, and the hinder soft and flexible.

THE CUGUPU GUACU of the *Brasilians*, is called MEROS by the *Portuguese*. It is a very large fish, being sometimes six feet in length, four and eight in circumference, and half a yard high. The head and mouth are large; which last when opened is without teeth, and the eyes are of a middle size with a yellow iris. The tail-fin is almost square, and the scales are small. The whole head, back, and sides, are of an

Dung-Fish.

193



Sea-Bat.

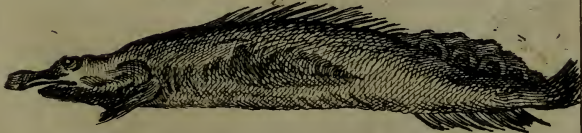


35

Sea Eagle.



Five-Eyes.





an ash-colour mixed with umber; but towards the back it is a little deeper. The belly is whitish, and all the fins with the tail are of a light brown. The whole head, back and sides, are sprinkled very fine with small black specks; but the belly and the rest of the fins have none.

The *PIRATIAPUA* of *Marcgrave*, is of a great bulk, and the under jaw is a little longer than the upper. All the teeth in the lower jaw are sharp, but in the upper only in the middle, which are longer, and like the middlemost in the lower. The mouth when opened is like a round hole; and the Eyes are not large in proportion to the size of the body. The shape is oblong, and the back is a little crooked towards the head. The backward part of the body becomes a little squarish; and it is covered with such small scales, that they seem soft to the touch. It is all over of a golden liver colour, which however is darker on the back and the top of the head; but besides this colour there are ash-coloured lines running all over the body like a net. The fins are all of the same colour as the body, and the flesh is thought to be very good when young; but when it weighs two hundred pounds or upwards it is of little value.

The *STONE BREAM* of *Nieuboff*, is a large fish, being sometimes four feet in length. It is shaped like a River Bream, though much bigger, and the eyes are large. The snout is of a light reddish colour, as well as the backward fins and the tail. It is a sea-fish, and the flesh when it is cutting contracts itself, whence by some it is called the *Cramper*. The flesh is firm and pretty well tasted; however for want of a more compleat description, it is hard to say whether this fish is rightly classed or not.

The *DUNG FISH* is so called, because it delights to be near privies where it seeks for food, and where it is generally taken. For this reason some will not meddle with it though it is well-tasted either fried or broiled. It is a broad, flat fish, hardly a span in length, and about the same breadth, with a blueish belly, and a body variegated with dusky spots. According to the

figure, the forward rays of the back fin are spiny, and the backward soft.

The SCARUS of *Rondeletius*, is of two kinds, the ONIAS and VARIUS. The Onias has large thin scales, and is of blackish blue colour, with a white belly. The shape of the body is roundish, with a black spot on the tail. The teeth are broad, like the fore-teeth in Men, and in the jaws there are bony tubercles. The tail is broad not divided into horns, and the eyes are large, and the eye-brows of the colour of indigo. Mr. Ray saw a fish at *Venice* which the fishermen called ORADA VECCHIA, that is, the Golden Old Wife, which agrees in description with this of *Rondeletius*. The Varius seems to be a kind of Old Wife, having a tail of the colour of indigo, and the rest of the body partly green and partly of a bluish black. The scales are sprinkled with dusky marks, and the mouth is of a middle size, with broad teeth, which are thick in the upper jaw, but in the lower, few and sharp. From the back almost to the tail there are sharp prickles, connected together with a membrane, and placed at equal distances; on the tops of each of which there is a small membrane hangs like a flag. On the middle of the belly there are two purple marks, and the vent is of the same colour.

The SCARUS of *Belonius*, is probably the same as that of the ancients, and has a body of a reddish livid colour like a Gurnard, but not so florid. The scales are broad and transparent, and the fins blunt. It has appendages on both sides the tail, which are placed transversely, and have not been remarked in any other fish. The teeth are blunt, and like the fore-teeth in Men; and there is only one fin on the back full of small prickles. The body of this Scarus is no bigger than what may be grasped by the thumb and fore finger, and it is seldom above a span in length.

The SCARUS of the isle of *Candia* is thirteen inches long, with a forked tail, and the head and sides behind the gills are of a dusky green colour, but the other parts are of a greenish yellow. Each jaw is divided into two bones much in the same manner as in some fish.

of the Orb kind; and in the upper jaw there are five sharp teeth; but the teeth of the lower jaw are dentated not unlike a saw. The scales are large for the size of the fish, and one row divides the middle of the sides like embossed foliaceous carved work.

The SPARO of the *Venetians*, is broader in proportion to the size than the Orada, and the end of the tail is rounder than in that fish; besides, it differs from it in not having a black spot on the tail, and in being of a more pale and yellowish green colour. It also wants the blackish purple spots at the gills, and the fore teeth are broad. It is likewise less than the Orada. It is caught in the *Adriatick* gulph, and other parts of the sea near it.

The SARGO, so called by the *Italians*, has a sharper snout than either the Orada or the Sparo, and it is a little turned upwards. The fore-teeth are like those of the Sparo; but it differs from both in not having tubercles in the jaws, and in the back, and sides being striped with brown, as in a Perch. It is shorter and broader in proportion to the size than an Orada, and it is rounder on the circumference, besides it wants the golden-coloured half moon between the eyes, which is proper to an Orada. This fish is often to be met with at *Genoa* and *Rome*.

The CANTHARUS of *Rondeletius*, is much of the same shape as the two former; but it differs from them and the rest of their kind, in being of a darker and blacker colour, in having much less scales. In wanting the black ring near the tail, and in having round sharp teeth as in the Orada. Besides there are no bony tubercles in the jaws; but in their stead there are certain roughnesses. However, it differs principally from the former, in having yellow lines running almost parallel from the head to the tail. In the strait gut there are alway purple excrements. This fish is not uncommon at *Genoa* and *Rome*.

The ACCHIATA, so called at *Rome*, differs from the former in having the body of an oblong shape, and a forked tail. The length is about a palm or a palm and a half, and the weight near a pound. It is caught in the seas near *Leghorn*, *Rome*, and *Naples*.

The GILT HEAD or GILT POLL, is a broad fish compressed on the sides not much unlike a Bream. It seldom grows to be above two spans in length, nor weighs more than eight pounds. The scales are of a middle size, and the back is blackish; and at the upper corner of the cover of the Gills there is generally a black spot, and below them not seldom another that is purple. Between the eyes there is an arched stripe somewhat like a half moon of a gold colour, from whence it takes its name. The convex part turns towards the snout, and the horns towards the eyes. The teeth in each jaw are oblong and roundish, and the back is sharp and furrowed, the tail is forked, and the flesh is greatly esteemed for its fine taste and wholesomeness. It is often seen in the fish markets of *Genoa*, *Venice*, and *Rome*; and is sometimes taken near the coasts of *England*.

The SEA BREEM is bigger than an Orada, though it is like it in shape, and weighs something more. The flesh is very good and agreeable to the palate, and is thought to be easy of digestion, and very wholesome. It is about twenty-six inches in length and ten in breadth, though it is very small towards the tail, whose fin is long and forked. The back is black, the sides are of a lighter colour, and the belly is white. The lower jaw has two rows of teeth; but the upper only one. The eyes are large, and for colour and shape resemble those of Quadrupedes. The covers of the gills are like those of a Salmon, and the back fin runs along the whole length of the back.

The PARGIE differs from the *European* Sea Bream in little else besides the shape of the forepart of the body, which is almost circular, and of a greyish colour with streaked yellow lines, that reach from the head to the tail.

The STONE BASS is taken in all the rivers of *Jamaica*, as well as in the sea. It is all over of a silver colour, and though they are very common, they are accounted delicate eating. Our fishermen call the Sea Wolf a Bass; but the figure of it shews that it neither agrees with that nor a Sea Bream.

The ALBORA, so called by the *Venetians*, differs from the Orada, in being less, it being all over of a light red colour; in having a sharp snout, with very large eyes, whose iris is of a silver colour, tintured a little with red. The covers of the gills, as in all other fish of this kind, are scaly.

The DENTALE, so named by the *Italians*, is not much unlike a Sea Bream, though it is thicker and longer, in proportion to the size. The head is depressed, the snout oblong, and the back sharp, being of a dirty green, or yellowish colour, and sometimes purplish, in those that are large, sprinkled with bright blue and black spots, as well as on the sides. There is a row of teeth in each jaw, of which four are more conspicuous than the rest, and are like dog-teeth; from whence this fish has its name, for *dens* signifies a tooth. The eyes are large, with a golden iris, and is a common fish at *Venice* and *Rome*. They commonly weigh three or four pounds, though some have been seen that weigh ten.

The HEPATUS of *Rondeletius* and *Gesner*, is like a Sea Bream, but the eyes are larger in proportion to the body. The colour is dark, or of a blueish black, with a black spot on the tail. However, this fish wants more characteristicks to determine its species.

The ORPHEUS of the ancients, is a sea fish that is usually found near the sea shore, and is somewhat like a Sea Bream. It is of a reddish purple colour, with large eyes, serrated teeth, and a small vent which can hardly be seen, unless the belly be compressed.

The ORPHEUS of *Belonius*, so called by the modern *Greeks*, is rather flat than round, and broader than long. The mouth is little, the teeth are broad, and the lips fleshy. The scales are rough, adhering closely to the body, and all the fins are of divers colours. The tail is small and crooked, and the side and belly fins are blunt. The back is blackish, and the belly inclining to white, but the head is pretty much of a red colour; *Rondeletius* affirms, that this fish weighs near twenty pounds.

The GUAIBI COARA, so called by the *Brosilians*, and BURACO DE UELHA by the *Portuguese*, has a

broadish body with a high back and an arched head. It is twelve or fourteen inches long, and four broad, and in each jaw there is a row of very small teeth. The lower part of the mouth, as well as the tongue, is of a blood colour; and the eyes are large, with a golden coloured iris mixed with brown. The fins are like the rest of this kind, but the tail is divided into two horns. The scales are of a middle size, and of a silver colour, with edges of that of oker; but the back part of the head and back are more blueish. It is taken in the sea among the rocks, and is a well tasted fish.

The SEA BARBEL is of a silver colour, but whitest on the back, and the body is oblong, with ten transverse blackish lines on each side. The tail is forked, the head longish, and the iris of the eyes is of a gold colour. The lips are thick, prominent, and rough, it having no teeth, except in the bottom of the mouth, where there are grinders. The barbs are joined by a thin membrane to the lower jaw, and the scales stick closely to the skin. The flesh is well tasted.

The MORMYRAS of *Rondeletius*, is in shape like the Dentale, being narrower than the Orada, and longer than the Mænas, with a sharp arched back, and a long sharp snout. The back and sides are of a blueish green, and the transverse parallel stripes are blackish, being eleven or twelve in number, and are placed through the whole length of the back and sides. The mouth is large, the lips thick, and there are teeth at the corner of the jaws, which are sharp and small; but on the inside of the mouth there are only bony tubercles. The eyes are of a middle size, with a gold coloured iris shaded with brown. The tail is forked; and this fish never exceeds a foot in length. It is taken in the *Med. terranean sea*, near the coast of *Italy*.

The SALPA is longer and thicker, for its bigness, than the Orada; but its back is not so crooked. It is about a foot in length, and weighs about a pound, and there are ten or eleven golden lines which run from the head towards the tail, rendering the sides very beautiful. The mouth is exceeding small, and contains only one row of teeth in the upper jaw, which have double points. The eyes are of a middle size, with a golden

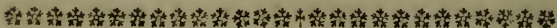
golden iris, and the scales are large. The tail is forked, and the guts are like those of quadrupedes, being exceeding long, and connected to a mesentery. The stomach of one, when opened, was found full of sea wreck, whence it appears that this fish feeds upon weeds. Though this fish is beautiful to look at, the flesh is not very good; therefore it is only eaten by the common people. It is frequent in the *Mediterranean* sea.

The BOGA, so called by the *Italians*, is about a span in length, and of a slender roundish make. The scales are pretty large, and the back of a yellowish olive colour. The lateral lines are dark and broad, and beneath them, on each side, there are four golden parallel lines, with a mixture of silver colour, that run from the head to the tail. The eyes are large, for which reason it is called by some BOOPS, that is OX-EYE, and they have a silver coloured iris. The mouth is of a middle size, furnished with small teeth; and the guts are long, connected to a mesentery. It is common in the sea near the coast of *Ialy*. There is another kind of Ox-eye, with a sharper snout than the former, and the back of a blueish red colour; as also a reddish tail. The iris of the eyes is of a greenish red, and the body is broader and shorter than the former. There is an uncommon sort of Ox-eye, a palm in length, and without scales. The mouth is little, and the eyes very large in proportion to the body. On the lower part of the body there is a fin that runs to the tail, which last is broad and thick.

The MÆNAS, is in shape like a Pearch, but broader and more compressed, and six inches in length. The colour is of a light green or yellowish, and there are darkish transverse spaces, and blueish lines that run according to the length of the body, with a large black spot on each side. The tail is a little forked, and the eyes are less than those of the Ox-eye, with a silver coloured iris. The mouth appears small when shut, but when open it is very wide; for the upper lip expands itself like a tube, which is contracted again when the mouth is shut; for the upper part has a sort of a prop, which is received into a kind of sheath made in

the upper jaw, which mark is peculiar to this fish. It is caught in the *Mediterranean sea*.

The SMARIS, is like a Mænas, but less, being only of the size of a man's finger; and the body is rounder, more slender and long, in proportion to its bigness, than that of the Mænas. It is nearly of the shape of an Ox-eye, but is of a darker colour, and it wants the transverse rings, though it has the black spot on each side, about the center of gravity. The gill fins, and the end of the tail, are of a light red; this last is forked.



C H A P. XXII.

Of Fish of the Wrasse, or Old-Wife kind.

THE COMMON WRASSE OR OLD-WIFE, is nearly of the shape of a river tench, and nine inches in length, but it has larger scales. The colour is mottled with red, yellowish, and brown lines placed alternately, and running from the head to the tail, being five or six in number. The snout is oblong and turns upwards; and the lips are thick, fleshy, standing out beyond the jaws; but the mouth is small. The teeth in the jaws are serrated, but not very sharp; and the fins are mottled with red, blue, and yellow. The tail when expanded is roundish, and it is called in *Latin* TURDUS, which signifies a THRUSH, because it resembles one in its spots and colours; and indeed there is no sort of fish we know of, which has so great a variety. It is to be met with in the *British* and *Irish* seas, and is more delightful to the eye, than pleasant to the taste.

The LESSER GREEN WRASSE, is green over all the body, as well above as below; but some of them have blueish spots about the belly, and the body is more broad and thick than that of others of this kind. The fins are a little spotted, and has a purple tubercle near the vent. The Black Wrasse, is so called from its black or dun colour, inclining to blue. The Leprous Wrasse
of

of *Belonius*, does not differ from the former, except in the variety of colours.

The PAINTED WRASSE, is of a middle size, between the longer and broader fish of this kind, and weighs about three pounds. The variegated Wrasse is like the former, and the greater Green Wrasse has an oblong body, which is in shape not unlike a Pike. The lower part of the body is of a lighter colour, and sprinkled with yellowish and ash-coloured spots. The oblong brown spotted Wrasse, differs little from the former, except in the colours. *Rondeletius* makes twelve kind of Wrases, which differ from each other very little, except in the colours, and therefore need not be particularly mentioned.

The ALPHESTES of *Rondeletius*, is a sea fish with a purple back, and the other parts yellow. The body is not so broad as that of the Orada, and it is much of the shape of a Mænas, though the body is larger and thicker, and sometimes a foot in length. The mouth is of a middle size, and from the neck to the tail there are prickles connected together by a thin membrane. It seems to be a kind of Wrasse, for it is like them in every thing except the prickles.

The CINÆDUS of *Belonius*, is all over yellow, except in some places, where there is a mixture of a ruddy colour. The scales are placed as it were in circles, being notched on the edges, and are extremely rough. There is a double row of strong oblong and sharp teeth in the jaws.

The JULIUS of *Rondeletius*, is a palm in length, and nearly an inch thick. It is like a small Wrasse, but is longer and rounder, in proportion to its size. The scales are small, sticking close to the skin; but for the beauty and variety of its colours, it excels a Wrasse. The upper part of the body from the snout to the tail is blackish, and the sides are divided by a blue line that runs from the head to the tail, and parallel to this, is another of a gold colour, but the lower part of the belly is of a blueish white. The mouth is of a middle size, having one row of teeth, and the lips are like those of a Wrasse. It is common in the sea near *Genoa*.

The ANTHIAS of *Rondeletius*, is of the colour of a Sea Bream, that is reddish. The fin that runs from the head to the tail, is almost red, and the first prickle of it is tall and strong. The belly fins are much longer and more slender than those on the gills, and they are all, as well as the tail, of a reddish colour. The head is roundish, and the snout prominent. Another Anthias of the same author, is of a purplish colour inclining to indigo, and has a long body with a thick tail, and serrated sharp teeth. The eyes are pretty round, and of a purple and reddish colour. The vent is large, and there is a reddish green gut appears out of it.

The JURUCAPEBA of the *Brasilians*, is a kin to the Wrasse, and is seven or eight inches long, and two or three broad, where broadest. The mouth is wide, and nearly of a triangular shape, furnished with exceeding small teeth. The iris of the eye is red, and the fins, with regard to the number, shape, situation, and rays, agree with the rest of this kind. It is a scaly fish, and the scales are so united together, that it appears to be quite smooth. The general colour is of a fine red, but the belly is spotted with red and white. The sides have spots of different colours, particularly red and black, some of which are large, others small. All the fins are red, spotted with black.

The CARAUNA of the *Brasilians*, agrees in shape, size, and situation of the fins, with the former; but it has a mouth in the shape of a half moon, with very sharp small teeth. The gills are large, and armed on the back parts with prickles. The eyes are near the top of the head, placed close by each other, and have a red iris. The scales are in the shape of half moons of a reddish colour and sprinkled with black specks, except on the belly.

The PIRA PIXANGA of the *Brasilians*, called GATVISH by the *Dutch*, is eleven inches long, and has a mouth an inch and a half wide, furnished with exceeding sharp small teeth. The eyes are large and prominent, with a circle of a black, gold, and blood colour. The gills are large, and furnished with a prickle, and the belly-fins have only one spine. The tail is not divided, but roundish at the end; and the
body

body is covered with small scales that are smooth to the touch. It is all over of a yellowish white, sprinkled with blood coloured round spots of the size of hemp-feed; but they are larger on the belly. The shape is nearly like that of an Orada.

The SACCHET of the *Venetians*, is a small fish of the shape of a Pearch, and like it in colour, as well as in the transverse rings. The fins are like those of the *Mænas*, and the mouth is wide, the snout sharp, and the lower jaw longer than the upper; but they both are furnished with very small teeth. The iris of the eyes is of a silver colour, and the tail is forked, variegated with transverse golden lines. The scales are small, and the back-fin behind the spiny rays, are marked with a black spot, which is the peculiar characteristick of this fish.

The CHANNADELLA of *Belonius*, when it is taken alive, vibrates a certain spine or thorn, with which it strikes the hands of those that touch it. The lips are large, and the fore teeth are sharp like those of a dog; but those behind are blunt. The body is variegated with green, ash colour and red; and sometimes with a chestnut colour. It is covered with scales, and the extremity of the gills are notched and bony. The back fin is red.

The CHARMA, is a sea fish, with a body in shape like that of a Sea-Wolf, as is also the cleft of the mouth. The lower jaw is longer than the upper, which makes the mouth seem to be always open. The teeth are sharp, the eyes small, and the back is of a blackish red. The lines that run from the head to the tail are reddish, and the tail is sprinkled with red spots, as well as the fin behind the vent, that runs to the tail.

The SEA PEARCH, is a foot in length, and of the shape of a River Pearch, nor is the colour much different; besides, the back and sides are marked with six or seven transverse stripes. The whole head, and the fore part of the belly, are elegantly painted with blue and red stripes, and the back-fins, as well as that behind the vent, are sprinkled with spots, partly yellow, and partly of a saffron colour. The tail, belly, and gill-fins, are variegated with yellow specks, or red-lines.

But the colours in these fish differ with regard to age, sex, and the places which they frequent. The snout is more sharp than that of a river Perch, and the mouth is exceeding large, in proportion to the bulk of the fish, being always open. The eyes are large, with a yellow, and sometimes red iris, and the aperture of the gills is very wide. At the corner of the outward plate of the cover of the gills, there are two great broad spines. The scales are of a middle size, the belly a little prominent, and the flesh delicate. It is very common at *Venice* and *Marseilles*,

The PIRATIPIA of the *Brasilians*, is a-kin to the Wrasse, and has an oblong and a pretty thick body. It sometimes grows so large, as to weigh five pounds, and the lower jaw is longer than the upper. The mouth is red on the inside, and the eyes are prominent, with a red iris. Before each eye there is a hole, which perhaps is the nostrils; and the fins are like the rest of this kind. The tail is almost square, the scales small, and the back, lower belly, and all the fins, are of the colour of vermillion; but the sides are of a brownish grey. It is spotted all over with greyish brown spots, which are large in some places, and in others small.

The PIRAUMBU of the *Brasilians*, is called CHAY-QUARONA by the *Portuguese*, and is a-kin to the Wrasse. It is of the shape and size of the Carp, and from the mouth to the beginning of the tail, it is ten inches long; and the breadth is a little above four. It has the mouth of a Carp, and the eyes are large, with a golden circle mixed with white. The fins on the back are said to be two; but they are so near each other, that there is more properly but one. The belly-fins, and that behind the vent, are each defended with a strong spine or prickle, as in most of the rest of this kind. The scales are large as in a Carp, and of a shining silver colour, mixed with a little of that of gold. The fins are all of a light ash colour.

The ACARA-AYA, is three feet in length, and is of the shape of a Carp. The teeth are sharp and small, but there are two more long and thick on the upper jaw. The eyes are large, with a blood-red circle without, and silver-coloured within. The fins are as

in the former, and the tail is broad, and almost divided into two horns. The scales are middle sized, and of a silver colour, shaded with another of the colour of blood. The belly is entirely white; but all the fins are of a blood colour, except the belly-fins, which are white; but their extremities are of the former colour.

The CHROMIS of *Rondeletius*, is called MONACHELLA by the *Sicilians*, and CASTAGNOLE, by the *Tuscans* and *Genoese*. It is a small fish about four inches long, and pretty thick, in proportion to its length. The colour is brown, with lines that are lighter, running according to the length of the body. The scales are large, the head small, the snout short, and the mouth little, with very small teeth in the jaws. The eyes are of a middle size, with an iris of a gold and silver colour. The fins are like those in the rest of this kind, and the tail is forked. The pointed lines in this fish, do not run beyond the back-fin.

The SEA SCORPION weighs about a pound, and has a thick body in proportion to its length. The head is very large and full of prickles; but the body is small towards the tail, and the belly tumid. It is hog-backed, and the shape in general is like that of a Pearch. The colour is of a dirty yellow, spotted with black, and the scales are small like those of Serpents. The covers of the gill-fins are also full of prickles, which the fishermen suppose to be venemous, and therefore cut them off. The space between the eyes is concave; and the eyes are large and prominent, placed near each other; and over each there is a small fin. The mouth is very wide, and the jaws are rough, with small teeth. The fin on the back is low in the middle, infomuch that it seems to be a double fin, and the tail is roundish.

The GREATER SEA SCORPION of *Rondeletius*, is like the former, but differs from it in being three or four times as big, in being red all over, and variegated with black spots. It has several barbs, especially about the lower jaw, and there is some on the upper, that are wanting in the former. The colour of the liver is deeper, being almost of that of saffron, and the covers of the gills are armed with prickles at the corners. They are very common in the *Mediterranean sea*.

The

The *Virginian* SEA SCORPION, is about a foot long, and is more long and slender than the first of these already mentioned. There are short thorns or prickles on the head, and before and behind the eyes, as well as on the other parts of the head; but at each gill they are very long and small. The forward back-fin, is larger than that behind, and is seated but a little way from it. The hinder is very high at the beginning, and grows less by degrees. All the fins are undulated with transverse black spots, and the tail-fin is large and roundish.

The JAQUARACA of the *Brazilians*, is the size of a middling perch, and has a sharp mouth without teeth. The eyes are large, with a silver iris spotted with blood colour, and there is a long fin on the back. The tail is forked, and on the side of each gill there are two prickles, with which, and with the thorny rays of the fins, it strikes and wounds those that catch it. The scales are small and elegantly disposed, but are very little serrated on the edges. The body is all over of a silver colour, except the belly, which is white; and the upper part of the head, which is of a carnation, being armed with a prickly shell. The fins are of a light carnation colour; and it agrees in most things with the Sea Scorpion, except the colour.

The ACARAPEBA of the *Brazilians*, has a broad body covered with large scales, and is all over of a shining silver colour, being twelve inches in length, and five in breadth. The mouth is ample, acuminated, and may be extended and contracted at pleasure; but it is without teeth. The eyes are large, with a silver iris, and the fins are as in the rest of this kind, being of a white shining colour; but the tail is forked.

The PIRA JURUMENBECA of the *Brazilians*, commonly called BOCCA MOLLE, that is soft mouth. It is a sea fish, but hides itself in the mud, and is nine or ten inches long, and two and a half broad. The mouth stands high, which it can render very large, and of a round form, with large eyes, having a circle of a mixture of brown and silver colour. The fins are placed as in the rest of this kind; but the back fin is soft. The tail is of the shape of a Pentagon, the base of which is next the body. The scales all over the body are of a
middle

middle size, and of a shining silver colour, and the back spines are of a green and gold colour.

The CURURUCA of the *Brazilians*, is a river fish, a foot and a half in length, with an oblong body, a pretty large mouth, and middle sized eye. The fins are as in the rest of this kind, and the tail is almost square. The scales are of a silver colour, with a little mixture of gold and brownish, especially on the back and sides. The back-fins, and those on the sides, as well as the tail, are of an ash colour; but those on the middle of of the belly are yellowish and brownish.

The SCHROLLN, so called at *Ratisbon* in *Germany*, is like a *Pearch* in the number, situation, and shape of the fins, and in their rays, as well spinous as soft. The covers of the gills are armed with prickles, and the shape of the body is like that of a *Pearch*. The fins are variegated points and spots, and it is so like in all things to the gilt *Pearch*, that it may be suspected to be the same fish.

The SCHRAITFER, so called at *Ratisbon*, it being very common at that place. It is taken out of the *Danube*, and agrees with a *Ruff*, in having spines on the edge of the upper plate of the covers of the gills, and in having only one fin on the back, with rays, partly spinous, and partly soft, and spotted membranes between them. It differs from it in being of a longer and rounder make, and a back that does not rise so much; likewise the snout is longer, and in the prickles, which in that, are only fourteen in the back fin, but in this are eighteen. There are also two blackish lines running on the length of the sides, of which the upper begins above the pointed line, and then crosses it; besides, the colour between the lines is whiter, and the tail more forked.

The RUFF, is of the shape of a *Pearch*, but is less, and wants the transverse blackish stripes. The scales are of a middle size, and are a little fringed on the edges, which render this fish very rough, from whence it has its *English* name. The back is of a dirty yellowish green colour, and the lower part of the sides of a palish yellow; about the covers of the gills, it is of a shining gold colour, whence it is called by some the

GILT, or GILDED PEARCH. The back, and upper part of the sides, are sprinkled with blackish specks and spots. It is a river fish.

The GUNNEL, so called in *Cornwall*, and by some the BUTTER-FISH, is sometimes about six inches long, but scarce an inch broad. The body is slender and compressed, and the colour is mottled with dark, red, green, and white, with transverse stripes alternately placed. At the root of the back-fin, which runs from the head to the tail, all whose rays are spinous, it is beautifully spotted with round spots on both sides, which are black, and surrounded with a whitish ring, being ten or twelve in number, and placed at equal distances through the whole length of the back, from the head to the tail, which mark is peculiar to this fish. There is one strait continued stripe runs from the head to the vent, and there is no external mark or sign of the stomach or guts.

The FATHER-LASHER, so called by the boys of *Cornwall*, and by the *Dutch* POTSHEFT, is six or nine inches long, and of the shape of a Bull-head. The head is pretty large, and covered with prickles; but the body is small, and the belly is broad and flat. On the back, above the lateral lines, there are roughish broad transverse spaces of a blackish colour, and three or four in number; but the intermediate spaces are more pale. The covers of the gills are connected below, that they appear like a mantle thrown over his head and shoulders. These are membranaceous, and when this fish is taken out of the water, it swells them so much, that they seem to be blown up like a bladder. There are two fins on the back, the more forward of which, has eight or nine rays; which, when the fish is grown up, are a little stiff, as well as spinous. The circumference of the tail when it is expanded, is somewhat roundish. The nostrils are small, the mouth large, and armed with several rows of sharp teeth, and the tongue is broad, large, and smooth. The eyes are covered with a loose transparent skin, and the pupils are small, and encompassed with a red circle. It will live a long while out of the water, and it feeds upon shrimps, the young fry of fish, and sea insects.

The STICKLEBACK or SHARPLING, is the least of all fish we know. It has only one fin on the back, with three distinct prickles placed before it. On the belly there are two others that are larger, stronger, and joined to a very hard bone; for in the room of belly fins, there are two bony triangular plates. It can raise the prickles up, or depress them towards the tail, as it pleases, and the mouth is furnished with very small teeth. The upper jaw is a little longer than the lower, and about the vent it is spotted with black. These fish are generally full of spawn, and they are to be found in every river, lake, brook, pond, and ditch.

The lesser STICKLEBACK of *Rondeletius*, differs from the former, in having ten or eleven prickles on the back, which do not stand upright, but incline, one to the right hand, the other to the left alternately. The body is also longer, and it has no plates on the sides, as the other has. This is also an inhabitant of brooks and other small streams.

The SEA STICKLEBACK, has a square body about an inch thick, and nine inches long; towards the tail, it is also square and very slender. The skin is smooth, and blackish on the back, but the belly is of a whitish yellow. The head is not unlike that of a Pike, only it is longer. It hath two gill-fins, and another of a triangular shape on the back, from which there runs a strait row of fifteen prickles a little inclined, but distinct, and not connected together by a membrane. In the middle of the belly there are two prickles. and one at the vent. A triangular fin terminates the tail.

C H A P. XXIII.

Of American Fish with a single Fin on the Back, whose Rays are all spinous.

THE ACARAPUCA of the *Brasilians*, is a river fish half a yard in length, and four or five inches broad. The snout is sharp at the end, and the mouth is without teeth. The eyes are large, with an iris mixed with white and brown. Every part shines with small scales of a silver colour, only on the back there is a little mixture of gold. On each side there are six oblong blueish red spots, which are not very conspicuous, and the back-fins, as well as the tail, are of a light blue, and so are the side fins. There are two at the bottom of the belly, which, with those near the vent, are a little yellowish.

The GUATACUPA JUBA of the *Brasilians*, grows to the length of two feet, and has a back a little crooked. The snout is triangular, and sharp at the end, and the teeth are exceeding small, with large eyes, which have a red iris. The fins are as in the former, only they are white as well as the belly. The scales are pretty large, of a silver colour, and there are stripes of a silver colour with a reddish cast, which run along the body from the head to the tail. The head is of a yellowish silver colour mixed with red.

The ACARA of the *Brasilians*, is a palm in length, and has a body not unlike a Pearch. The mouth is narrow, and the jaws as rough as a file. The eyes are not large, but have a golden circle, and the fins are as in the former. The tail is oblong, and the scales are pretty large, of a silver colour, but on the head, back, and sides, they are mixed with umber. In the middle of each side there is a large black spot, as also near the root of the tail. This is a river fish, and keeps constantly in fresh water.

The ACRAPITAMBA of the *Brasilian*, has an oblong body like a Barbel, and grows to the length of two feet

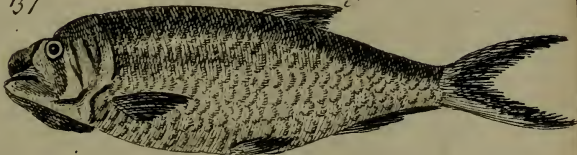
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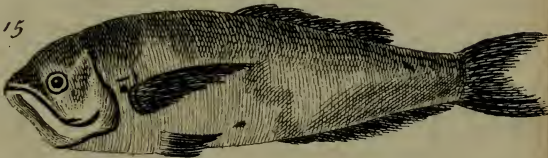
Indian Herring.

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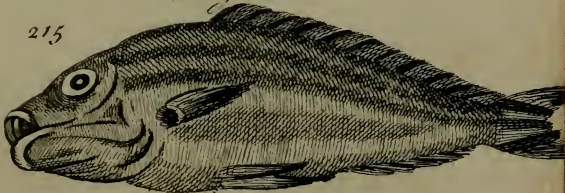
Indian White-Fish?

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Grunter.

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feet and better. The mouth is small, furnished with teeth, and the eyes are large, with a red iris. The tail is five inches long, and forked; and the scales are like those of a Carp, but of a blue purple colour. The lateral lines are of a gold colour, and an inch and half broad, running from the eyes to the tail. Above these lines there are golden specks, and under them fine yellow lines running according to the length of the fish. The back-fin and the tail, are as it were gilded, and those on the belly and sides, are of a whitish yellow. Their fins shine greatly in the night.

The URIBACO of the *Brafilians*, has a crooked back, a protuberant belly, and is fifteen or sixteen inches long, and five or six broad. The teeth are small and sharp, the gills large, the eyes great, with a silver coloured iris mixed with a little red. The fins are like the rest of this kind, only those on the sides and belly are whitish, or of a silver colour. The back-fin and the tail, which is divided into two horns, have more of red than of a silver colour. The scales are large, and are all of a silver colour, with a little reddish cast. The lateral lines are red, above which there is a large black spot on each side of the backward part of the body.

The SEA DEVIL, is four feet long, and broad in proportion. It has a bunch on its back, covered with thorns or prickles, like those of a hedge-hog; and the skin is hard, unequal, rough, and of a black colour, rising into several small bunches, between which there are two small black eyes. The mouth is extremely wide, and armed with several very sharp teeth, two of which are crooked, like those of a wild boar. It has four fins and a broad tail forked at the end; but that which gave it the name of the Sea Devil, are two black sharp horns over the eyes, which bend towards the back. It is a very frightful fish, and its flesh is a deadly poison.

There is another fish called the SEA DEVIL, about a foot long, and as much broad; but they can blow themselves up in such a manner, as to appear as round as a ball. The mouth is wide, armed with sharp teeth, and instead of a tongue, there is a very hard bone. The eyes sparkle greatly, and yet are so small, that the pupil

pupil can hardly be discerned ; between them there is a small horn bending backwards. There is also a large thread hanging from its mouth, and the tail is like the end of an oar. There are two bunches, one on the back that is upright, and another under the belly ; as also two fins, which answer to each other, on each side of the belly, and which terminate in small paws eight inches long, and armed with short claws. The skin is rough, and dark red under the belly, spotted with black. The flesh is not good to eat.

There is likewise another SEA DEVIL on the gold coast of *Guiney*, which has four eyes, is twenty-five feet in length, and about eighteen broad. On each side there is an angular substance as hard as horn, and very sharp, which renders this fish very dangerous ; the tail is as long as a whip, and has also a dangerous point. The back is covered with small lumps, two inches high, and sharp at the ends ; the head is large, but there is no appearance of any neck, and the mouth is furnished with flat cutting teeth. Two of the eyes are near the throat, which are round and large ; and the other two are placed above them, but very small. On each side the throat there are three horns of an equal length, the middle-most of which is three feet long, and an inch and a half in diameter ; but they are flexible, and can do little harm. The flesh is tough, and not fit to be eaten.

The PIRA ACANGATARA, that is the fish with a hard head, is of the size of a middling *Pearch*, being seven or eight inches long, with a mouth of a moderate size, with eyes that have an iris of a dark gold colour mixed with red. The fins are as in the *Uribaco*, and the tail is forked. The scales are of a silver colour, with a flame coloured cast, and on the belly they are of a silver colour inclining to a sea green. The back-fin shines like silver, and is marked with brown spots. The side fins are white, those on the belly blueish, and the tail-fin is blueish at the end.

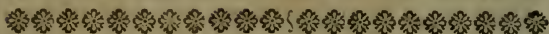
The PIRA NEMA of the *Brazilians*, is of the size of a middling *Carp*, being ten or eleven inches long, and three broad. The mouth is wide, roundish, and without teeth, but the jaws are rough. The eyes are large,
with

with a white iris, only the upper part is red. The gills are very large, and the fins are placed as in the rest of this kind, but the back-fin reaches from the hinder part of the head to the tail, and has twenty-two spines. The whole fish is of a silver colour, with a cast of that of gum lack; but in the body it is lighter, being almost white.

The RED PUDIANO or BODIANO, is of the size of a middling Peach, and two inches in breadth. The head is small, the snout sharp, and the mouth armed with little sharp teeth. The eyes are a little prominent, with a double circle, the outermost of which is white, and the inner yellow. The fins are the same with regard to the number, shape, situation, as in the former; and the body is covered with fine scales, so closely united, that they are smooth to the touch. The colour of the whole body is yellow mixed with gold, only the top of the head, and the whole back, to the middle of the sides, is of a fine purple colour mixed with that of black. The edges of the great fin on the belly, near the tail, is also purple, as well as those that lye near it. The rest of the fins, and the tail, as well as the hinder part of the back-fin, are of a yellow or gold colour.

The GREEN PUDIANO, has an oblong body, and from the extremity of the snout to the beginning of the tail, it is ten inches long and three broad, with a sharp snout; at the end of the upper jaw, there are two sharp long teeth, and then a row of small ones. In the under jaw, there are four of the same kind, and behind them a row of lesser white teeth. The eyes are small, with a circle about the pupil, which is of a gold colour within, and whitish on the outside. The back-fin is of a gold colour, with blue undulated streaks according to the length, and the lateral fins are whitish, with a blue line about the circumference. The belly-fins are of the same colour, and that at the vent of a reddish brown, with blue streaks. The tail is reddish, streaked with a sea green colour, and the scales are broad and yellow, inclining to gold, with a most beautiful blue on the edges. The upper part of the head is of a gold colour,
with

with a large sea-green spot surrounded with azure, and variegated with blue, yellow, greenish, and whitish streaks.



C H A P. XXIV.

Of East-India Fish not fully described.

THE SEA HOG, is about fifteen or sixteen inches long, and seven broad. It has a very thick skin, and such close hard scales, that scarce any instrument will pierce them; but when boiled, the scales come off with ease, and then the skin is very soft. The flesh is white, resembling the breast of a chicken, and the mouth small in proportion to the size, but is armed with two rows of white shining teeth. On the back, which is brown, there is a sharp fin, which this fish can erect at pleasure, and such another opposite to it on the belly. The other fins are not so strong, nor of a pale blue. The belly is of a shining silver white, but the sides are mixed with yellow, which gradually turns to an ash colour on the back. It has large brown shining eyes, and when boiled, is very well tasted.

The **STONE BREAM** is four feet long, and in shape like our common Breams, with large eyes, a big red mouth, and the fins, and the extremity of the tail, are of the same colour. They are taken at sea with a hook, and the flesh is excellent, dressed any way.

The **BALD PATE**, is so called, from having no scales on the head and neck, though the rest of the body is covered with them. It is of a greyish colour, and the mouth which is very wide, is spotted with red: The eyes are large, yellow, and prominent, and it is taken in the rivers as well as the sea. The flesh is exceeding good.

The **YELLOW TAIL**, is of the shape and size of a Bream, with very sharp prominent teeth on the fore part of the mouth. The back is inclining to yellow, and the tail is of a bright yellow; but the belly is blue, inclining to brown towards the fore part. It has red
fins,

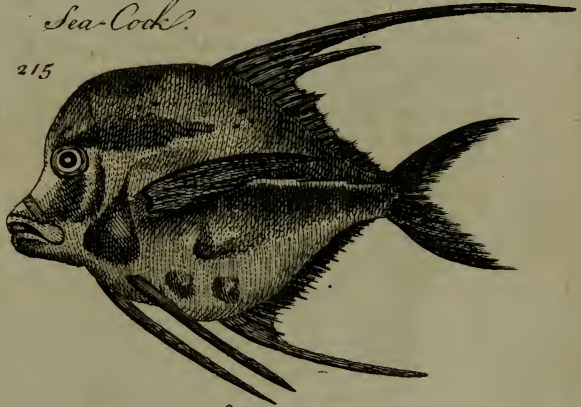
Yellow-Tail?

214



Sea-Cook?

215



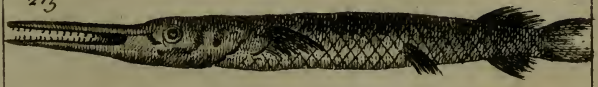
Ravens-Beak Fish?

215



Indian Pine Fish?

215





fins, and is caught in the sea near the rocks, and is in high esteem.

The KAELT FISH, is somewhat like a Pike, with a mouth full of sharp teeth, and the eyes are large and bright. The belly and tail are of a purple colour, and the back brown. It is about a foot and a half in length, and has a thick plump body. It swims very swiftly, and is well tasted, though the flesh is somewhat hard.

The RAVEN FISH, has a mouth like a bill under the head, and is about a span long, with a red back and tail, but the belly is inclining to yellow, and has two yellow streaks on each side. It is a very firm fish, and wholesome. It is taken in salt waters.

The KING'S FISH, is so called, because it is in the highest esteem in the *East-Indies*. It is five feet in length, with a long forked tail; and the back and sides are full of brown spots, but the belly is white. It can open its mouth extremely wide, and is a very foul feeder.

The SEA EEL, or WATER SERPENT, is about three feet long, and of a brown colour, variegated with black spots, like the skin of a Serpent. The fore part of the body is slender; but it is as thick again towards the tail, and has a long head and mouth, with sharp teeth, which are exceeding small. It delights in rocky places, and is valued as a dainty; however, those that catch it, are generally seized with a trembling, but it does not continue long.

The SEA COCK, is more like a sea monster than a fish, and is about two feet long, with a broad thick body, a great part whereof belongs to the head. On the back there are two long fins, but one is longer than the other, and below, there are three more that are very long and slender. The tail is forked and of a brown colour, but the belly is yellow. The skin glitters like silver, and the fins are red. It is caught in the salt water.

The WHITE FISH has a thick short head, and a brown back, with a blue belly, inclining to yellow. The flesh is pretty well tasted.

The GRUNTING FISH, is so called from the noise it makes when taken. It is very plump, and about a span

span in length, with a head not unlike a Ruff. There are three lines which run on each side, two brown, and one yellow. The flesh is very well tasted.

The HOG FISH, is not above a span in length, and the colour of the scales is inclining to a blackish green; the fins and tail are of the same colour, but the eyes are yellow. It is a fresh water fish, very plump, fat, and well tasted.

The *East-Indian* GURNARD, is almost round, with a skin full of knobs, and spots, and of a brownish colour streaked with black. The head is very thick, short, and full of knobs, with a large mouth and red eyes. The tail is also very round and short, and on each side of the body is a red fin. The flesh is pretty well tasted.

The SEA LOUSE is an odd sort of a fish, covered with a shell, about a foot in length. It has the appearance of a round lump, with a very long tail, and small legs or fins on each side. Its colour is gray, inclining to green, and it is caught near *Batavia*, and is very seldom eaten, unless by the *Javanese* and *Chinese*.

The LAMPREY, or rather EEL POUT, is about a foot long, with a smooth skin, slippery like an Eel, though not shaped like one. It is brown on the back, and there are yellow spots on the belly; and the fins under the belly are purple. The head is made like that of a Snail, having feelers thereon. The fins are venomous, though the flesh is agreeable to the taste. It is caught in ponds and lakes.

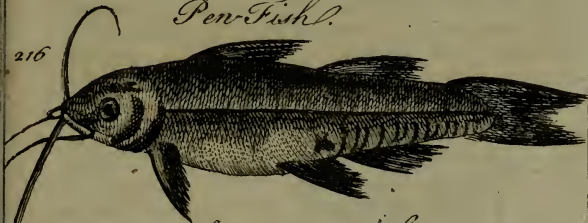
The CABOS, is a kind of an Eel Pout, but larger than the former, being about two feet in length, and very fat. The skin is also very smooth, without scales, and of a brownish colour. The snout is pale, spotted with black, and the head is thick and short, with the eyes in the forehead. The flesh is very well tasted.

The PEN FISH, is also a kind of an Eel Pout, with a smooth skin, without scales, and is about a foot in length. The back is brown, the belly of a pale blue, and the fins are also brown; but they are very sharp and venomous. The flesh is well tasted, but unwholesome when eaten too freely. It inhabits lakes and ponds.

The

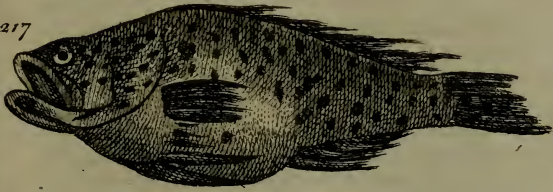
Pen-Fish.

216



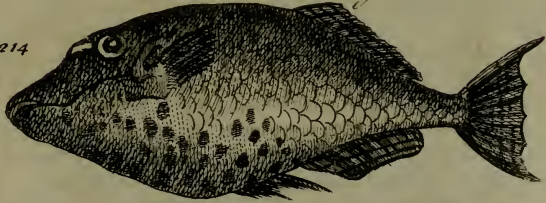
Jacob-Evertsen Fish.

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East-Indian Sea-Hog.

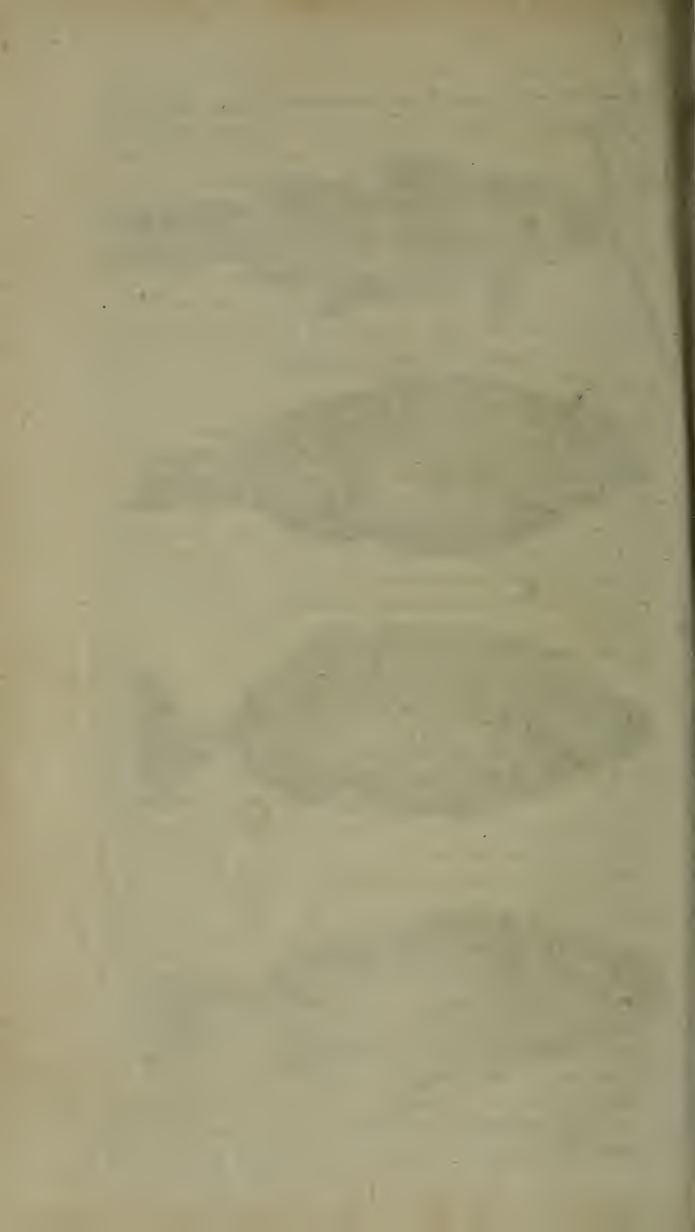
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Stone Bream.

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The JACOB EVERTSEN FISH, is about ten feet long, and sometimes weighs above four hundred pounds. It is blue on the belly, brown upwards, and is full of dark red spots near the head and tail. It has a large white mouth, with a short brown tail, and many fins turning up towards the tail.

The CROOK BACK FISH, is so named from its shape, and it has a smooth skin without scales, with a white belly, yellow fins and tail. It sometimes grows to above four feet in length, and the flesh is in great request all over the *East-Indies*, on account of its agreeable taste.

The HORN FISH, is so called from the horn it has on the top of its head, or beginning of the back. It is about a span in length, or somewhat more, with a large head, and little mouth, one half of this fish being nothing but head. The skin is very bright, the back blueish, the belly white, and the fins and tail yellow; the body of this fish seems to change its colour according to the different lights in which it is placed.

The KNESSEN, is a sort of bastard Carp, about a span in length, and pretty broad, with thick scales. It is a fresh water fish, very well tasted.

The KLIP FISH, has a smooth skin without scales, and is flat and broad, being about the size of a Plaice: it is brown on the back, spotted with white; but the belly is entirely white, and the sides are variegated with streaks of several colours. The mouth and eyes are like those of a Bream, but the back-fins have prickly rays like those of a Pearch, and the tail is sharp; it is seldom above a span in length, and the flesh is exceeding good, it being firm, flaky, and of an agreeable taste as well as wholesome.

The UNICORN FISH takes its name from the horn on the top of its head, and there are two more underneath, which are very brittle and venemous, in-somuch, that if any part remain in the wound, it will scarce admit of a cure.

The FLAT FISH, is about a foot long, with a smooth skin without scales, and a white mouth. The body shines all over like silver, and on the back there is a small fin, with one on each side. Under the belly

there is a single fin, which is in the room of a tail. It is a fresh water fish, and is very well tasted, but is full of small bones, for which reason it is of no great value. The RED FISH is a kind of a Bream, and the back, sides, and fins, are of a dark red colour, but the belly is blue, and two of the fins are yellow. It has a very thick body, and a sharp snout, with a large mouth and yellow eyes. Some of these fish are four feet in length.

The BITTER FISH, is of the shape and size of a Carp, with large scales and red fins; and there are two black rings round the tail. It is very well tasted, but as it is very full of small bones, it is not much regarded.

The PARROT FISH, is so called from its mouth, which is hooked like the bill of a Parrot. It is a foot in length, and sometimes more, and the colour is greenish, variegated near the head with yellow. The fins are blue as well as the eyes, which are very sprightly and large, having a yellow iris. The scales are very large, and there are two rows of strong teeth in the mouth, with which it breaks open Muscles and Oysters. The flesh is very firm and well tasted.

The SHORT NOSED FISH, is in shape not unlike a Haddock, having a round body. It is yellow on the belly as well as the fins, and the mouth is just under the nose, which is very short. The flesh is said to be well tasted.

The BONE FISH, is of the size and shape of a Carp, but flatter, and the head is different. It has large scales and a forked tail. The flesh is very good, but is full of small bones, from whence it takes its name.

The SAND SMELT, is for size and colour like a small Whiting, though the belly is a little yellowish. It is a sea fish, and very well tasted.

The POCK FISH, is generally above a foot in length and the skin is smooth without scales; however, it is very bright, and changes its colour according to the different lights in which it is placed, sometimes seeming blue, then green or purple. It is a long fish but not broad, and somewhat resembles a large Smelt, having a forked tail, and a mouth furnished with teeth. It is very well tasted, but being full of bones is not much regarded.

The

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Indian Sea-Cat?



Sea-Urchin?

234



Soldier Crab.

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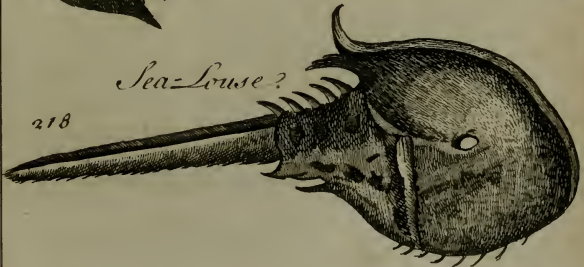
Molucca Crab?

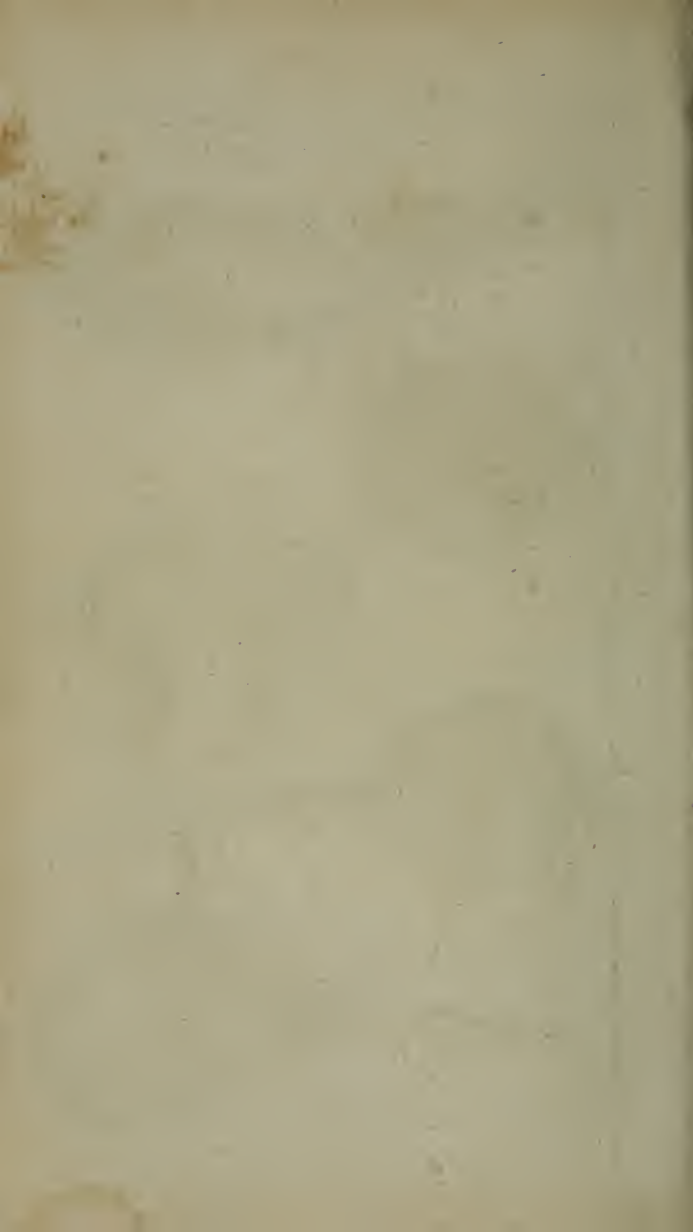
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Sea-Louse?

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The CHINESE FISH is round, and about a span in length, with a head like an Eel, small eyes and a long tail. It is green on the back, and white on the belly. It is a fresh-water fish, and those caught in rivers are good; but those taken out of ponds are unwholesome.

The PIT FISH is no bigger than a large Smelt, and has a round body without scales, and full of green and yellow spots. They are remarkable for their being able to thrust their eyes out of the head, and to draw them in again. The fins on the back are sharp pointed, and though they delight in muddy places, the flesh is very well tasted. It is a very nimble fish, and will leap a great way.

The EAST INDIAN MULLET is a very fine fish, which they dry in the sun and transport to distant places. It is of a white colour chequered with blue and purple, and swims very swiftly. It is so nimble that it will not only leap over a net, but even a fisherman's boat. They are very well tasted when in season; but there are times when they are pestered with worms, and then they are good for nothing.

The SEA SNIPE is so called from its mouth, which resembles the bill of a Snipe. Some are five feet long, with a head like that of a hog, and large bright eyes. There is a large sharp fin on the back, which reaches from the head to the tail, and is very broad and full of spots.

The SEA KORETTE is six or seven feet in length, with large yellowish eyes, and a forked yellowish grey tail. The fins are yellow, and under the belly which is blue inclining to green, and under the tail there are several fins. They are very bright, and shine like silver when they are caught at sea with hooks. The flesh is very well tasted and not unwholesome, for which reason it is often a very great refreshment to ships that sail in those seas.

The SEA CATT is an odd shaped fish, whose eyes are exceeding large in proportion to the body. The back is of a purple colour, and the belly is blue spotted with purple. The tail, in proportion to the body, is very broad, besides which there are no fins, except on

The fore-part of the head, where there are seven, which point directly forwards like the feelers of Shrimps. It is thought to be very good, especially when dried in the sun.

Another SEA CAT is of a very strange shape, the back part being an oval lump on which the head seems to hang. It has long large eyes, a smooth skin inclining to blue, only the belly is brown. The entrails of this fish contain a glutinous matter, which serves the *Chinese* to make ink of. They dry the flesh in the sun, and then it is of great request among the *Indians*, though it does not digest very easily.

The LEAPING FISH is so called, because they are always leaping and playing on the surface of the water. It is about the size of a Herring, and is without fins on the back. The head is full of knots, and the body is of a greyish colour, spotted with black; but towards the belly the spots are lighter. It is a sea-fish, and well tasted, especially when broiled.

The PAMPUS is about a foot in length and a span broad, being not unlike a Plaice; but the skin is smooth. The eyes are placed on both sides, and the mouth directly in the middle. It is well tasted, especially after it is dried.

The EAST INDIAN WHITING is about the size of our Whiting, and has a round prominent belly, a strait back, and a turned up mouth. The tail is forked, and it has only one large fin on the back, with several small ones between the belly and the tail. It is full of streaks all over the body, and there are two wattles or barbs under the mouth. The flesh is very well tasted.

The FIVE FINGERED FISH takes its name from five black spots on each side, resembling the prints of fingers. It is about a foot and a half long, with a small head, a large mouth, and brown pointed fins towards the tail. The colour is of a shining blue mixed with purple; but there are no scales on the body. It is pretty well tasted, and is very common in the *East Indian* seas.

The ROUND FISH has some resemblance to a Whiting, only it has a small head and tail, and a prominent

minent belly, with fins on the lower part of it like those of an Eel. The flesh is very well tasted.

The FORK TAIL FISH has a long round body, with a very long forked tail, from whence it takes its name. Its head resembles that of a Herring, with a long barb or bristle on the top of it, and two more below the mouth like those of Shrimps but larger, which they keep close to the body when they are swimming. The size is like that of a Mackrel, but the taste is not extraordinary.

The PYED FISH is so called from its colour, its tail and fins being brown, spotted with pale blue spots. It is about a foot in length, pretty thick, and without scales. The Eyes which are yellow, are surrounded with a blue circle, and under the throat there hangs a crop. It has a little mouth, and on each side there is a yellow fin. It is in great esteem among the native *Indians*, being well tasted; but in some part of the belly there is a venemous matter which must be taken out when gutted.

The FOUR FINGERED FISH of *Margrave*, is so called from having four large black spots on each side, which are of a violet colour in the circumference. It is about seven inches long, and has a small mouth with large eyes. The two back fins are of a middle size; but those on the belly are large and broad, each of which are marked with five silver-coloured spots. The colour on the back is blackish, and between the spots on the sides of a sea-green, but the rest of the body is of a silver colour. The skin is smooth and without scales.



C H A P. XXV.

Of the West Indian Fish, described by Du Tertre.

THE BECUNE, or SEA PIKE, is very like a river Pike, only it is much larger, for sometimes it is met with above eight feet in length. It is a very greedy fish, and most dangerous in the water, because

it can bite more easily than a shark, and will not be driven away by any noise that can be made. The flesh has the same taste as a fresh-water Pike; but there is often great danger in eating it, for unless the teeth are white and the liver sweet it is venemous. The reason may be from its feeding on manchineel apples which fall from the trees into the sea.

The TASSART is another sort of Sea Pike, which is commonly taken among the islands near the rocks where the tide is strongest, and the sea most in motion. Some of them are five or six feet in length, and it is a very greedy fish; for it will very readily take a bait on a large hook which is fastened to a line, and drawn along by a vessel, though it should sail as swiftly as an arrow out of a bow. But there should be an iron chain near the hook, for he will readily snap a rope in two with his teeth. Some of them have been taken with three hooks in their bellies almost as thick as a man's finger. The flesh is white, and as good as that of a river Carp, only it is harder and not so easily digested.

The CARANGUE is a white flat fish, and yet the eyes are placed on each side the head. It is from two to three feet in length, eighteen inches broad and six thick. The back fins are very unequal, and those on the gills are pointed, and very near the head. The tail is forked. There is so many of these fish in the sea near the *Caribbee* islands that hundreds of them may be seen every morning leaping out of the water in pursuit of small fish, even close to the land. They enter the rivers in the night, where they are commonly caught, and then one man is not sufficient to draw them out; for they are so strong that they make nothing of breaking a line as thick as one's finger. The flesh is exceeding good, even preferable to that of a Trout.

The CAPTAIN, is a fish that is red all over, and has one fin on its back which is very long when it is erected, and armed with large spines or prickles; the gill fins are of the same make, and they fight other fish therewith. It is pretty much like a Carp, being covered with scales like that fish; but it is much more long and thick, some being above three feet long and ten inches in diameter. They swim in shoals, and it is com-
mon

mon to take ten or a dozen of them at a time in a net. There are some six feet long, and thick in proportion, being covered all over with spots twice as big as those of a Carp. The flesh of this fish is white, well tasted, and very nourishing.

With regard to flat Fish some of them are exceeding large and very uncommon; for one of these near the island of *St. Christopher's*, came within a musket shot of the shore, and two boats with about twenty men each were sent out after it. They struck it with three harpons at once, which were so far from killing it, that it dragged the boats a great way into the open sea; insomuch that they despaired of taking it. However it was tired at length and grew weak with the loss of blood, and then they brought it on shore. It was twelve feet in length from head to tail, and ten in breadth from one fin to the other. The flesh was so hard and tough that it was not fit to eat; however they took out the liver, which required twelve men to drag it along.

There is another particular sort of Fish with a snout like a hog, and a tail three, and sometimes four feet long, which grows smaller by degrees. It is all over black, and has the appearance of a switch made of whalebone, the gentlemen use it instead of a whip; but at the top of the tail there are two prickles like hooks, which are so venomous, that a person hurt therewith is sure to die unless proper medicines are applied in time. However, it carries an antidote along with it, for if a bit of the flesh be laid upon the wound it is a certain cure. This fish seems to be akin to the Sea Eagle.

The SEA NEEDLE of the *West Indies* has a square body above a foot in length, and of a bluish colour. It is a little greenish on the back, and of a silver colour under the belly. The head is almost triangular, and at the two upper corners of it there are yellow eyes, and a snout near ten inches long, which is hard, slender, and as sharp as a needle. The mouth is armed with small hooked teeth, and the lower jaw is longer than the upper. The fin that runs from the head to the tail is green, and shines like glass; and there are two fins near the head, besides two others under the belly, the

tail is forked like that of a mackrel, and is white and well tasted.

The ORFIE is a fish somewhat like the former; but it darts itself out of the water very swiftly to the length of thirty paces, and if a man should stand in its way at that time it would certainly make a passage through his body. The flesh is as good as that of the former, provided it has not fed upon manchincel apples; which may be known by the dirtiness of the teeth, that are larger than those of the former, and if these are not very white there is danger in eating it.

The BALAOU is about the length of a Sardin, and its lower jaw consists of a strong cartilage about the length of a man's finger, which is slender and as sharp as a needle at the end. The flesh of this fish is delicate and well tasted.

The SEA PARROT is in shape much like a Carp, and all the scales on the back are of a brownish green; but those below it as far as the belly, are of a light green. It has no teeth, but in their room there are two exceeding hard bones. The fins and tail are beautifully variegated, with blue, yellow, and red; insomuch that when they are expanded they look as beautiful as a Parrot or Parroquet, from whence it has its name, and not from its snout, like that taken notice of before. The flesh is good, well tasted, and nourishing.

The MURÆNA is a sort of a Sea Serpent, but shaped like an Eel, though not so round. They are seldom seen above two feet in length and four inches in breadth. The head is round, and the mouth wide, armed with two rows of strong teeth as sharp as needles. The skin of the female is brown, and variegated with spots like flowers of a gold colour; but the male has only a row of gilt spots that run from the head to the tail. But the greatest particularity of this fish is, that the great fin that runs from the head to the tail has rays that bend forward instead of backward. It has a prodigious strength in its tail, for when it is fished for it often clings or sticks to a rock, and then you may pull the head off, before it will let go its hold, which has fallen out several times. Unless this fish be old the flesh

is a soft and as clammy as melted glue, and when it is come to maturity, it is so full of bones that few will give themselves the trouble to pick them out, though then the flesh is white and well tasted.

The PILOT FISH is about the size and shape of a Mackrel, with a long smooth head, and a snout which advances four inches beyond the mouth. It has two small fins near the head, and one that runs along the back from the head to the tail, besides another under the belly of the same length. The head is very small, and the body is covered with a skin that has spots in the form of a lozenge. The *French* call it a Pilot Fish, because as they say, when it meets with a ship it always follows it till it reaches the harbour; it likewise keeps company with sharks.

That described by Sir *Hans Sloon* is almost of a square shape, if the fins are included, being five inches long and four broad in the middle. The mouth is small, with several rows of little teeth, and the eyes large with a white iris. There are two fins on the back, and that nearest the head is oblong at the beginning, and the succeeding rays are somewhat spiny. That beyond it is very large, and answers to another of the same kind on the belly. The tail is almost square, and the whole body is covered with ash coloured scales, except three or four transverse stripes. The lateral lines are crooked. Hence it appears, that this is a different fish from the former.

Captain *Cook* says, that a Pilot Fish appears in the water much like a Mackrel, and seems to be painted with blue and white stripes like a barber's pole. He also informs us, there is another sort, which when out of the water is of a deep blue, only the belly is of a lighter colour than the back and sides; and the scales are smooth like those of a Tench; but the back is speckled like the skin of a Seal. It is eight inches long from head to tail, and three inches broad. The flesh is accounted very good.

C H A P. XXVI.

Of the African Fish near the Cape of Good Hope.

THE ELFT is a sea fish taken in the table bay, and in some things resembles a Shad. It is three quarters of a yard in length or somewhat more, and has scales like those of a Herring, only they are of a yellowish colour. The back is whitish, the belly white, spotted with black, and at the bottom of it there runs a black stripe or list from the head to the tail. This fish is full of bones, and the flesh is so hard that it is seldom eaten for its own sake, but that of the sauce generally made for it.

The SILVER FISH is of the shape and size of a Carp of a pound weight, and the taste is not much different. It is of whitish colour, and adorned with silver shining stripes, that run transversly from the back to the sides. They seem to be covered with leaf silver, as well as the tail, and the mouth is furnished with small sharp teeth. This fish keeps generally in the sea, though it sometimes enters the mouth of rivers, at which time great numbers of them are taken.

The BENNET is a sea fish, and is often taken with a hook by the sailors. It is nearly as long and as thick as a man's arm, and weighs six or eight pounds. It is a very beautiful fish, having large scales of a deep purple colour streaked with gold. The eyes are red, the mouth little and without teeth; and near the gills there are two fins of a gold colour. The tail is red, and looks like a pair of scissars when open. The scales are transparent, for when they are taken off, the skin is of a shining purple. The flesh is red, and divided into flakes by a sort of membrane. It preserves this colour when it is boiled, but it is not so lively. The flesh is a little dry and hard, and yet it is well tasted and easy of digestion.

The HOTTENTOT FISH are so called, because the *Dutch* first bought these fish of the *Hottentots*. They are of two or three sorts, one of which has its back and sides of a blackish colour, and the head of a dark purple.

purple. Another sort is of a deep blue, and seems to be spotted. The first sort is somewhat more round, more broad, and more short than the second. It weighs about a pound, and is seven or eight inches long. They may be called Sea Breams, from their likeness to that fish. They feed upon sea weeds, and any fish that is thrown into the sea. They are but seldom caught with a net, unless driven by a tempest near the shore. The *Hottentots* take them with an angle, whistling and making as much noise as they can at the same time; for they imagine this makes them bite sooner. These fish are very wholesome and well tasted, and when the fishermen cannot dispose of them while fresh, they salt and dry them in the sun, and keep them to sell to the masters of ships.

The JACOB EVERTSEN FISH already mentioned, is called the SEA BREAM by the *Dutch*. There are two sorts of them, the first of which is covered with red scales spotted with blue, except the middle of the body, which is of a gold colour, and on the belly it is of a pale red. The eyes are large and red, with silver-coloured circles about them; but the mouth is small, and furnished with slender teeth. It appears to be under the throat, and its flesh is excellent and very wholesome. The second sort differs from the former in being larger, in having a smaller mouth, and under the throat it is of a deep red. All these fish keep in the sea, but the two last are seldom met with in deep water. This fish has its name from *Jacob Evertsen*, who lived at the *Cape*, and had a large red nose, with a skin so pitted with the small pox, that when he was shaved some of the hair always remained in the pits. At this time his face had a great resemblance to the Red Bream, as well on account of its colour as the spots which remained. This man sailed once to the island of *St. Maurice* to take these fish; and the ship's company being on shore and in a pleasant humour, bestowed upon them the captain's name, which they have kept ever since, not only at the *Cape of Good Hope*, but in the *East Indies*.

The CABELJAU, so called by the *Dutch*, is of several kinds, but they only salt one of them which is

not spotted like that of the same name in the *East Indies*. It is of an ash colour, and covered with large scales, and there is a black list runs from the head to the tail. It is two or three feet long, and has very hard fins. This fish if eaten while fresh, is extremely good and delicate; but after it is salted it becomes hard of digestion. However it is very nourishing, and very good for the slaves, as well as such as work hard.

The PLAICE, so called, because it is like one, it being a flat fish near an inch thick. On each side the mouth there is a large round spot, which shines like chrysal. The snout is pointed and almost transparent; but the lower jaw is covered with a rough skin. There are also shining spots on several parts of the body, and the tail is very thin. These fish cast a great deal of spawn, and when the eggs come to perfection they are covered with a cubical shell of a chesnut colour. There are about three hundred of these in one roe. The flesh is very hard, and not very easy of digestion, nor is it well tasted. It has no spines or bones, it being a cartilaginous fish. The *Hottentots* take great numbers of them, and sell them to the *Europeans* at the *Cape* for such trifles as they stand in need of.

The STONE BREAM or ROCK BREAM, is taken at the mouths of rivers, where they come with the tide in large shoals. They are much like a Carp in shape, but the flesh is much firmer, and not so bony. It is from a foot and a half to three feet long, and weighs from two to eight pounds. They are of different colours, though they are all brown on the back; but some have stripes of the same colour on the sides, which renders them the more beautiful, because the other scales are large and white in those parts. The flesh is very good either fresh or salted.

The STOMPNEUSEN, that is the flat nose, is so called, because the fore-part of the head is flat, the scales are large and of a purple colour, and they have great eyes, with round sharp teeth. They are not very plentiful, though the flesh is very delicate, and perhaps the more in esteem, because it is scarce.

The ZEE-TONG is little different from a Sole, if not the same fish. Some of these that are so called have
small

small scales, and others have none at all. The eyes, if the expression may be allowed, are upon the back, which is blackish as well as the fins; but those under the belly are white, the belly itself being of the same colour.

The NAMELESS FISH was taken near the coast of *Africa*, in the latitude of ten degrees. None of the sailors had ever seen any of these sort of fish before, and yet they did not think proper to bestow a name upon it contrary, to custom. It was eight feet in length, and the head and tail were a foot and a half in diameter, or four feet and a half in circumference. It was without scales, but had a thick rough skin, like shagreen. It was taken by a large hook fastened to an iron chain that was designed to catch Sharks. It was drawn up to the side of the ship, where it was kept till it was dead; for it seemed so strong, that they durst not draw it upon the deck for fear of the mischief it might do. It had a very large mouth armed with twelve great teeth, six in the upper jaw and six in the lower. They were near two inches long, and sharp at the points. The snout advanced six inches beyond the lower jaw, and the parts about it were covered with a rough skin like that on the rest of the body, and of a greyish colour. The lips were of a bright red, and the eyes were large, red, and sparkled like fire. A Shark came near it while it was upon the hook; but it received such a blow with this fish's tail, that it did not care to make a second onset. But that which appeared most extraordinary in this fish, were five large incisions or clefts, which were very deep, and which this fish would open and shut at pleasure. They were in the place where the gills are seated in other fish. On the side of these there was an extream thick fleshy fin, with another of the same sort upon the back; but under the belly there were two. The tail was forked, thick, broad, strong, and covered with the same sort of skin. As for the flesh nothing can be said of it, for none of the sailors would venture to touch it.

C H A P. XXVII.

Of bloodless soft Fish.

THE POLYPUS, or MANY FOOTED FISH is large, and resembles a Cuttle Fish, having a belly of the same shape. The gullet is long, and at the end of it there is a crop or stomach connected to the belly, with only one gut that has never a fold. The head when it is alive is very hard, and seems to be inflated. It has eight long thick paws or feet which serve for swimming, walking, and bringing any thing to its mouth when it wants to eat. These paws are at some distance from each other, but they are joined together by a thick membrane; and the four on the middle are the largest. The other four may be called barbs, and the eyes are placed on the top of two of these paws, and between them is the mouth furnished with teeth. It carries on its back a long body made like a tube or pipe, which it makes use of like a rudder when swimming; upon which account it turns it to the right or left according to the place to which it wants to go. The flesh is not covered with any apparent skin, and it is spongy, hard, and not easy of digestion. This fish is found in the *Adriatick* sea, and feeds upon Shell-fish, as well as upon human bodies when it meets with any. It will likewise eat fruits, herbs, and is fond of oil. Like the Cuttle Fish, it has near the stomach a bladder full of black or rather reddish brown liquor, which it sheds when it wants to be concealed. The eggs are like those of a Cuttle Fish, only they are white. Some give the name of Feclers to what others call Feet.

The CUTTLE FISH is of an oblong shape, being about six inches in length, and three and a half in thickness. The body is somewhat oval; but broadest near the head, and grows smaller towards the extremity, where it is obtusely pointed. Its back is covered with a shell as large as a man's hand, and about an inch thick in the middle, but it is more slender on the sides. It is hard above, but very spongy and brittle below,
being

being very white, and tastes a little saltish. The Gold-fish make use of it for many purposes. Under its throat there is a vessel or bladder full of liquor blacker than ink, which it sheds in the water when it wants to be concealed, or would escape from the fishermen. There are two sorts of legs or feelers joined to the head, which serves this fish for swimming and bringing any thing to its mouth. The two shortest are in the middle, and are serrated on the inside. Next to them are two long ones, one on each side, and the six remaining are generally turned backwards, being of a pyramidal figure. It lives upon small fish, and is met with near the shores of the ocean, as well as of the *Mediterranean* sea. The flesh is good to eat, and is often met with at the tables of the inhabitants of *Bordeaux*, *Lyons*, and *Nants*, in *France*, besides many other places. The eggs are as large as small grapes, and are connected together like bunches of that fruit. They are of a deep violet colour, or blackish, and each egg is covered with a membrane, and supported by a ligament as long as the breadth of a finger. When they are opened, there may be seen without a microscope, the eyes, body, and bone, which already begins to be hard; as also the vessels in which the black liquor is contained. These eggs are often met with on the sea shore, and have neither much smell nor taste.

The CALAMARY, or the SLEEVE FISH, is akin to a Cuttle Fish, and has an oblong cartilaginous body covered with two skins, in which it differs from the Cuttle Fish, and in having softer flesh; however, it has ten legs or feelers, four of which, in the middle, are pyramidal, and have rough bony tubercles on the inside of each, which make them appear as if they were serrated. On each side of these there is another, which is very long and thick at the extremities, which seem to have tubercles like shells thereon, as the two following pair have through their whole length, that is on the inside, and are also of a pyramidal shape. On the belly there are two receptacles or canals full of very black liquor, which might serve for ink. It lives on the fry of fish and small Crabs; and it is generally found at the bottom of the sea near *Greece*. Some have a very great esteem for
the

the flesh of this fish, and others think it very ordinary. All these have a fin on each side the body.

The SEA HARE, is of a reddish black colour when alive, but when dead, it is of a lightish brown. Some fancy it to be of the shape of a Land Hare, and *Rondeletius* describes three kinds of them, the first of which is deadly, and seems to be covered with a naked shell, especially on the back part of the body. It has a bone on the back as in a Cuttle Fish, which towards the tail is a little wreathed. On each side of the belly, there are fins, as in the said fish; and there are two fleshy horns not unlike ears; but in reality they are feelers. One part of the head is like that of a Ballance Fish, and in the other, there is a hole, through which it thrusts a fleshy substance at pleasure. In the middle of these there is a chink or cleft instead of a mouth; and it resembles the Calamary, not only in the ink vessels, but in the internal parts. However, the liver, spleen, &c. are placed on the contrary side to those of land animals, and seem to be nothing but a confused Mass. It has a very nauseous fishy smell.

The second SEA HARE, is bigger than the former, though it is like it in other things, except in having two broad fleshy appendages, in the middle of which there is a chink; and the feelers are shorter and sharper. There is no bone on the back, but on each side of the back part there are fins, which are larger than those of a Cuttle Fish. The *third kind* has its mouth underneath the head, and next to it is the belly in the shape of an egg, as in Cuttle Fish, but the extremity is jagged. Under the mouth there is a thin fleshy membrane, with fringe on the edges, of a black colour. The whole body is glossy, and the smell is so nauseous, that it makes people sick that come near it. *Belonius* affirms, that the whole body does not exceed the size of a Goose egg. But as these fish seldom comes under an accurate examination, the less can be said of them with any certainty.

C H A P. XXVII.

Of Crustaceous Fish.

TH E S E are of a middle kind, between the soft and shell-fish; for they being covered with a thin shell, they in some sort agree with the testaceous kind; and as the inside is fleshy, they in that respect agree with those just described. The stomach lies immediately next to the mouth, and from the belly a gut proceeds, which is small in proportion to the body, and runs directly to the vent. There are two teeth in the mouth; but as they are not sufficient, for the comminution of the food, there are three in the stomach, one on each side, and the third below. Between the two teeth, there is a fleshy substance in the shape of a tongue; and the eyes are placed over the mouth, which are hard in all of this kind; but they may be turned to any side this animal pleases. Though the head is small, it is defended by appendages and feelers; and in general, they have eight feet or claws each. The right great claw is generally larger than the left; but whether it is always so, may be doubted. There is one circumstance peculiar to these animals, or at least as far as we know hitherto, namely, that if by any chance they loose one or more of their claws, not excepting the largest, they will grow again.

The **LOBSTER** is so well known, that it stands in little need of a description. The shell is black before it is boiled, but afterwards it is red. It has eight claws, or legs, of which, the two foremost are by much the largest. They always feed at the bottom of the water, and seize on their prey with their large claws; and when nothing better offers, they search the beds of mud and gravel for the worms that lye therein. They are taken in pots, as the fishermen call them, that are made of wicker work; and in these they put in the bait, and throw them to the bottom of the sea, in six to ten fathom water. The Lobsters creep into these for the sake of the bait; but are not able to get out again. The
flesh

flesh is well known to be a great restorative, and good for consumptive people.

The stones taken out of Lobsters, falsely and improperly called Crab's eyes, are found in the bodies of fish of this kind; and they produce two every year, that is one on each side the lower part of the stomach, and nearest the head. These stones take their origin between the two membranes of that organ. The flat or concave side touches the internal membrane, which is thin and transparent, though strong, and of a horny substance, but the convex side is always outward. It is covered with the fleshy soft membranes of the stomach, and the fibres leave marks on the substance of the stone. It grows by little and little, and in plates, between these two external membranes; the internal, which is horny, serves only to preserve its shape; for which reason the stones are always convex on that side. The first shell, or plate, on which all others are afterwards laid, is placed near the center, and the edges of the several layers, which are successively formed after this, may be seen distinctly at the edges. In seeking for these stones, you must endeavour to find little round circular opaque spots, that are whiter than the rest of the stomach; for these spots are the places where you may expect to find these stones.

It has been thought that Lobsters were deprived of these stones when they lost their shells in the spring season every year. About the time that the lobster is going to quit the shell, the stones pierce the internal and horny coat of the stomach, and the three teeth of this organ break the stones, and in a short time the fluids therein dissolve them, for which reason they are not to be found at that time; which makes many believe that they are then voided. However, if this affair be examined more narrowly, these stones may be found there half consumed. It is not very certain what use these stones are of to the Lobsters, though some suppose that they supply them with fluids that have a petrifying quality, and proper to help to form a new shell. It is in the very large rivers near *Astrachan*, that those Lobsters are produced which have the largest stones, where they are sold for
about

about three-pence a pound; and from whence large quantities are transported to other countries.

The SEA LOCUST or PRAWN, is a sort of Lobster, and has two large horns or feelers placed before the eyes. They are rough and prickly near the roots, where they are very thick, and from thence they grow smooth and more slender till they terminate in a point. They can move them on which side they please, and the eyes are horny, standing out of the head, and are moveable every way; and they are defended with exceeding sharp prickles. On the sides of the mouth there are small appendages like little feet, and the back is very rough, with prickles; but on the forehead there is a very large one. On each side there are five claws, the foremost of which are very small in comparison with those of a Lobster. The tail is smooth, being without prickles, and they consist of five shells, which terminate in fins on each side, which enables them to swim from place to place; and in this tail the whole strength of the Prawn consists. The two fore teeth are very large, and between the mouth and the stomach, there is a small one; as also several in the stomach itself. They receive the water through the mouth, which they transmit to the gills, that are more numerous in this fish than in any other of this kind. There is a tube runs from the breast as far as the vent, which in the females serves for a uterus. It lies in a furrow of the flesh, and runs along the upper part of the tail. The back is of a blueish black; and the upper fore teeth are three times larger than the lower; but they are both sharp pointed. They are found in the *Mediterranean* sea, particularly near *Genoa*. In the *East-Indian* seas, they are said to grow to the length of four cubits; but this seems to be incredible. In the winter they frequent the rocky places near the shores; but in the summer they go back to the deeps. They feed upon the fry of fishes, and they spawn about *August*. The flesh is very good, and they are best when the spawn is within the body at the time of the full moon. In *Italy* they are said to be in season from *October* to *April*. Prawns are very common in the *British* fish markets.

The ELEPHANT LOBSTER, is shaped pretty much like a common Lobster, only the fore claws are longer, and the nippers are more thin and broad, and open wider than in any of this kind. There are three small claws next the large ones, which are long and prickly; and there are two more, that is, one on each side, which are very small and smooth, having neither prickles nor hairs. There are two very long feelers that are exceeding small, besides other short ones, on the forehead, among which there is a short one in the middle, which is not ferrated. These last serve as a defence for the eyes, which are horny and prominent. The whole body is undulated, like watered tabby, and the shells of the tail as in other Lobsters, end in five fins variegated with lines. *Sca'iger* saw one of these that had a fore claw as large as a child's arm. The flesh is accounted a delicacy in *Italy*.

The small SEA LOBSTER of *Rondeletius*, has a red shell while it is alive, variegated with transverse blue lines. The head and breast are rounder than those of Cray-fish, and on the head there is a broadish large horn, in proportion to the body. It is ferrated on each side, and placed between the eyes, which it can draw in and thrust out at pleasure. There are four horns placed before the eyes, which are shorter than in the former, and placed near each other. The two long ones, called feelers, are very flexible, and full of joints, as in the rest of this kind. The large claw on each side is den-
tated within the nippers, as in Lobsters, and they consist of four joints. The tail consists of several shells, and terminate in fins, and under the tail there are membranes designed to retain the spawn till it is large enough to fall off.

The LOBSTER of *Rondeletius*, is generally red, spotted with blue, red, and white; but when it is boiled it becomes all over red. It has two long horns or feelers placed before the eyes, and two others that are smaller. In the middle of the fore-head, there is another broad flat small horn with teeth on each side like a saw. It has four legs on each side, besides the pinchers, and there are two others that are smaller and hairy, with the ends made like the beaks of birds, the
upper

upper part is moveable, and ferrated on the inside, as well as the lower. One pair of pinchers is always larger than the other, and two of the feet on each side, which are nearest the pinchers, are cloven at the ends. The tail is covered with five plates, and its end is broad, and furnished with fins proper to swim with; the eyes are small and short, and the mouth cloven long-ways. There is likewise another sea Cray-fish, out of whose head a pretty large and broad horn proceeds, which is cut on each side like a saw, and is seated between the eyes, which it can thrust out or draw in at pleasure. There are four other horns or feelers before the eyes, that is, two short, and two long. Likewise, on each side there is a great claw or pincher, with joints that are dentated on the inside; but the feet, which are eight, are not forked. The body is covered with shelly plates, and the tail is made use of for swimming. It is of a red colour traversed with blue streaks, and is not very common.

The RIVER CRAY FISH, differs little or nothing from some Lobsters, only it is less, and always black before it is boiled. The body is round, and the head is terminated by a pretty broad horn, which is short and pointed, under which the eyes are placed. On the fore part of the head there are four feelers or horns, that is two long and two short, and the ends terminate in hairs. The pinchers are forked, rough, dentated, consisting of five joints, and there are four feet on each side, the two first of which, next the pinchers, are cloven at the end, and the next two are furnished with a spur. The upper part of the body is covered with five shelly plates, and on the tail there are five fins. They are to be found in almost every brook, river, and rivulet in *England*, though in some places more than others. Their places of abode are in holes on the sides of banks, under the surface of the water, where those employed in taking them, put in their hands and draw them out. Some are so expert in taking them, that they will catch several dozens in an afternoon.

There are a sort of Cray-fish in the *East-Indies*, that have prickles on the back dentated like a saw; some of
them

them are so large as to weigh six pounds, notwithstanding which they are very delicate eating.

The SHRIMP, has a tail somewhat like the Lobster kind, but it has no nippers; but they have more claws. In some places they are blackish in the spring, but afterwards become white. Some have sharp horns fixed at the top of the head, among which the eyes are placed; and the gut runs through the tail, as in the former. They live in salt water lakes, and in rocky places on the sea shore. In the *East-Indian* seas, they are of a larger size, and keep at the bottom. The broad Shrimp, called the SEA BEAR by some, is of the size of a common shrimp, but broader and flatter; and in the forehead there are two bones, on each side one, serrated on the circumference. To these a sort of fins are connected, between which there are horns or feelers, articulated at the beginning, and divided in two about the middle. It has two claws with prickles, which stand up like nails, but these claws have no nippers, and yet they take their food with them, and hold it to their mouths. There are four other claws on each side, and the eyes are a little prominent. The forehead is square, and larger in proportion than in any crustaceous fish. There are many tumours on the back, on which are tubercles, whose upper parts are as red as a carbuncle. From these they receive the name of a Sea Bear, that is, from their being rough. They frequent the muddy bottoms of the sea; for which reason, when they are caught, they are usually very dirty. They are common at *Naples, Rome*, and in many parts of *Africa*.

The CARANGO, is a sort of a Shrimp, about a palm in length, and is covered with a thin smooth white shell, which has often a reddish cast, and when boiled, is entirely red, though it is transparent. There is a serrated horn on the forehead, which turns up and is smooth in the middle. The eyes are horney, and under them are two cavities like those of Snails. There are four other horns, of which two that are properly the feelers, are long, flexible, and slender. There are five claws on each side, of which three terminate in a sort of a spur. The back part of the body is thick and long in proportion

tion to the rest, consisting of seven shells, and terminating in four fins, and on the middle of it there is a prickle broader than in the GIBBOUS SHRIMP. That which *Gesner* saw, was partly red, partly whitish, and yellowish on the sides. The flesh is the best of any of this kind, it being tender, sweet, and nourishing. They are said to be most in season in *February, March, April,* and *May*.

The GIBBOUS SHRIMP, is so called from the crookedness of its body, and is more slender than the former, but more especially at the end of the tail. It has six very slender feelers in the forehead, and at the end of the tail there are four fins, of which, that in the middle is hard, serrated, pyramidal, and terminates in a point. They are very common on the shores of some parts of *France*, and the flesh is accounted very good.

The COMMON SHRIMP, is the smallest of this kind, and is truly and properly the Shrimp. It is called *Squilla* in *Latin*, as well as all the rest, for which reason they have been placed under this general name, though perhaps not very properly; since a shrimp with us is generally supposed to be a very diminutive sort of an animal. Some of these are so small, that a thousand will scarce weigh a pound, but this kind is not known in *England*, though it is common at *Venice*, and in *Gascony*, where they devour them without taking off the shells. The shape of our Shrimp is like that of the gibbous kind, from which it differs very little, except in size. It is common on the sea shore, and in the mouths of large rivers, as well as at a considerable distance from the sea. The flesh is very sweet, and is commonly used as sauce for other fish, though sometimes they are eaten alone.

There are Shrimps in the *East-Indies*, that grow to be near a span in length, and have shells like ours. They are of a fallow colour, with a red forked tail. Several feelers proceed out of the head, two of which are more remarkable than the rest, being long and slender. The flesh is very well tasted, and five or six is sufficient for a meal. There are also river Shrimps in these parts of the same size as our common Shrimps; but they are of a blue colour, with a small head and a thick body, with

two long feelers as fine as a thread. The shell is not so hard as the former, neither are they so well tasted.

The SEA CRAB is of different kinds, and therefore it is no wonder the description should differ in different authors. They have generally a roundish body, and the back is a little arched, and the tail turns up under the body, lying in a cavity made for that purpose. They are of different sizes, for some will weigh a great many pounds, but those that are most common, are equal to about twelve ounces. The male is distinguished from the female by having a broader tail, in the same manner as Lobsters. But as a Crab is generally well known, it does not need any farther description. Some prefer the flesh of a Crab, especially when full of spawn, to that of a Lobster; whereas, most think the latter ought to have the preference. Many Physicians have thought them very good for consumptive people; and indeed they are very nourishing, as well as Lobsters, and most kinds of shell fish.

The CRAB, called by some authors MAGA, has so heavy a body, that it can hardly move along when taken out of the water, and when it is alive, it is of a livid or greenish colour, sprinkled with red spots. The legs or claws are long and slender, having four joints, and there are four on each side, besides the great claws, or nippers. The shanks are very rough, and the female has a broadish cover, under which there are two holes with a membrane to close them, which are placed near the roots of the hinder claws. There are two bony teeth in the mouth, and on the palate there is a caruncle instead of a tongue. Near the mouth there is a large cavity, which may be either called the second mouth, or the stomach, for there are four teeth therein, like those called dog-teeth, and one grinder where the throat begins. There is only one manifest gut, which is round, and runs along directly to the tail; but there are two bladders in the belly, on each side one, which are large, strong, and membranous, and the passage from them outwardly, is through the abovementioned holes that lye under the cover of the tail. There are six gills on each side, under the head, which may be distinguished from the tegument itself, by a certain membrane.

*Indian
Land-Crab.*

254



250

*Indian
Sea-Crab.*



*East Indian
Prawn.*

239





The CRAB, named the HIPPOCARCINUS, from its size, is covered all over the back with spinous prickles, which are bigger on the sides than elsewhere. Over the eyes, which are prominent, two sharp horns are placed, and there are two horns, or feelers, which are villous, and serve to defend the mouth, which is placed below them. There are five claws on each side, including the great ones, and they have all the same number of joints. The great claws are of the size of a child's arm, and the nippers are of a dusky colour; from these there proceed a sort of shaggy hairs, almost like pencils.

There is another sort, which is not unlike the former on the back; but the tail is of an oval shape, and the end terminates in a narrow shield-like appendage, having five corners or angles. Near the mouth there are many villous feelers, and under the belly there is a cavity proper for retaining the spawn. There is still another of this kind, which has six large spines or thorns on each of their sides, and two large ones on the fore part of the head. They are two palms in length, and the claws, feelers, and upper part of the body are rough, with tubercles. A fourth, is of the same shape, but there are more spines or thorns on each side, and on the back; besides, the claws and feelers are rough and hairy; likewise, the upper part is spotted with various colours, particularly with red. A fifth kind has thorns on the fore part of the head and sides, as well as the under part of the head, and the whole is of a dusky colour. The last has a woolly roughness on the shell, and the colour is a mixture of ash and brown. They are found in the seas near *Greece*; and the males are thought to be most in season in the autumn and winter, particularly at the full moon. Some say they continue good till *April*, and then the female begins to be good, and continues so till *September*.

The ROCK CRAB is very broad and long; for in the ocean it grows to be a foot in length; some of these in *England*, have weighed ten pounds. It is covered with a strong shell, and there are nine crooked horns round the circumference of the back, and the colour is of a greenish black. There are four claws on each side,

which are rough and hairy, and there are three joints in each; they are terminated with sharp oblong nails that are not cloven. Besides these, there are two fore claws which have nippers like the rest; but they have only two joints, and are black at the tips. On each side there are six gills placed under the shell at the roots of the claws. The mouth is very extraordinary, there being many appendages and skins, whose use can hardly be determined. On the inside there are white muscles, which they can move outwardly.

The HERACLEOTIC CRAB of *Belonius*, which he met with in the sea of *Marmora*, has a very hard shell, and there are four claws on each side, besides the two great ones that have two joints and very strong rough nippers. Some call this Crab the SEA COCK, because the great claws are turned somewhat like a Cock's comb. The back is rough, with tubercles, and is of a reddish colour. There is another of this kind, so thick beset with hairs, that the shell looks like the coat of a Bear. It differs from the former, chiefly in the small claws, which are longer, and have nippers at the end, that close exactly when they are shut. The colour is red, and the feelers near the eyes are at a greater distance, some of these are met with in the gulph of *Venice*; but they are much larger in the Ocean. *Rondeletius* saw one of these that was half a yard in length.

The HORSEMAN CRAB, is so called from the swiftness of its running, though it is not much larger than a chesnut, and is of a whitish colour sprinkled with red specks. It is shaped like the Rock Crab, and, held up to the sun, is almost transparent, except in that part where the intestines lye. The eyes are extremely small, and yet it has an exceeding sharp sight. The legs are beset with a sort of hair, and there are five on each side. The two foremost of which have nippers. This perhaps is the same that *Rondeletius* calls the BROAD FOOTED CRAB, which he says, is not much bigger than a walnut. There is another smaller than this, with a smooth shell that is whitish on the upper part, and is sometimes thrown by the waves on the sea shore. This is like that which at *Rome* is called GRANCETTI, and is spotted on the back like a snake. They live as well

on the land as in the water, for in the hottest days of the summer, they come out of the sea and bask in the sun ; but in the night they return thither again. *Belonius* affirms he has seen them run so fast, that he could not overtake them ; and that they rather seemed to fly than run.

The **YELLOW UNDULATED CRAB**, is so named from its colour and lines, which on the lower part are crooked and waved like watered tabby. It has four long hairy claws or legs, besides two large ones. The feelers on the fore part of the head are pretty long, and on the forehead there are two appendages, with others on the sides.

The **MARbled OR VARIEGATED CRAB**, has a smooth polished shell sprinkled with green, blue, white, black, and ash-coloured spots, insomuch that it looks almost like marble ; but the spots soon vanish when it is dead, and the shell becomes all over yellow. There are tubercles thereon that shine like jewels, and the fore claws or nippers, are shorter and thicker than in other kinds. It has two horns on the forehead, and behind the eyes the shell is serrated. They live in the holes of the rocks, to which they adhere so fast with their feet, that they can hardly be forced from them. The shell is harder than that of other Crabs.

The **HEART CRAB**, is so called from being in the shape of a heart, and has two horns on the forehead. The great claws have short nippers, and besides these, they have four other legs or claws on each side. It is sometimes caught in nets with other fish, and is frequently seen in the bellies of Cod-fish.

The **SPIDER CRAB**, has its name from the length of its claws, and is of three kinds. The first is variegated with brown and ash-colour, and the shell where the head is placed is sharp, with eyes very near each other, and two sharp horns. The second sort has a rounder body, and is called by some, the **CRUSTACEOUS SPIDER CRAB**. The third is rounder than this, and is variegated with brown and ash colours. The claws are thicker than those of the former sorts. There are other kinds that have very short claws, and slender at the same

time ; the snell being covered over with a sort of down. But of these we have no particular description.

The RIVER CRABS are very common in *Greece*, and in the islands of *Candia* and *Sicily*. *Belonius* saw some of these on mount *Athos*, whose numbers were so great, that he could have caught a thousand in a minutes time. They are flesh eaters, and are greatly addicted to fight each other ; for when *Rondeletius* sent two hundred of them to *Rome*, and they were put into the water again to be refreshed, they fought with each other so smartly, that no less than fifty were quite mutilated. At length they were all killed. These are very common in the fish markets at *Rome*, and they are good at all times, but more especially in the summer. These seem to be the same sort as those that are met with in salt ditches near the sea ; only they are never seen out of the water. They are very common at *London*, where several of them are sold for a penny.

The SQUARE CRAB of the *Caribbee-Islands*, is not above two inches long or broad. It has two nippers, which are very short and brittle, as well as the shell and every other part of its body. They are met with among the rocks by the sea side, where great numbers of their old shells are seen, which they cast every year ; and they are so entire, that any one would think the bodies of the Crabs were still within them. The only difference is, that when they are living they are grey ; but when the shells are deserted, they are beautifully variegated with red and white. They have two small prominent eyes, which look like transparent grains of barley, and they shine like crystal. They are said to be very careful in watching the opening of oysters, muscles, and other shell fish ; for then they throw themselves into the shells to devour the fish. The flesh is reported to be a great antidote against all sorts of poisons ; for one of them being bruised and soaked in wine, brings up every thing of a poisonous nature in the stomach. There is another sort that have a shell which conceals all their feet, and the tail is as sharp as a dagger at the end. The shell is not larger than a crown piece ; but the tail is as long as a man's little finger. Under this shell there are five small feet, which are all nippers, with which they

they pinch those that catch them ; however, they can do no great harm. When any one is pricked with their sharp tails, it produces the same pain as the sting of a Scorpion ; but it is soon remedied by bruising a Crab, and laying on the wound.

The VIOLET CRAB of the *Caribbee-Islands*, is a land animal, and is in shape like two hands cut through the middle and joined together ; for each side looks like four fingers, and the two nippers resemble thumbs. All the rest of the body is covered with a shell as large as a man's hand, and bunched in the middle ; on the fore part of which, there are two long eyes of the size of a grain of barley, as transparent as crystal, and as hard as horn. A little below these is the mouth covered with a sort of barbs, under which there are two broad sharp teeth as white as snow. They are not placed as in other animals, above and below, but on each side, not much unlike the blades of a pair of scissors. With these teeth they can easily cut leaves, fruits, and rotten wood, which is their common food.

The shell is full of a thick fat fibrous liquor, with which the inhabitants make sauces. In the middle of this there is a bitter substance, which the inhabitants call the gall ; which, however, is nothing else than the stomach that is composed of a thin skin or membrane, and is twice as thick as a man's thumb, having the same shape as the shell. Under the body there is a sort of breast plate, composed of several pieces set together like those of a corslet, and under it there are five or six barbs on each side. There is a sort of tube about the size of the barrel of a quill, which proceeds from the stomach, and passing along the middle of the breast plate, terminates at the end. This animal has no blood, but instead of it, when it is wounded, a clear water comes out, which congeals to a jelly.

These are all of a violet colour in general ; but there are others variegated with blue, white, and violet. However the circumstance most worthy of admiration, is their descending from the mountains in *April* or *May*, when the rains first begin to fall ; for then they fall out from the hollow trees and rotten stumps under the rocks, and from a vast number of holes which they

make in the earth. Then the ground is covered over with them, infomuch, that you cannot set your foot thereon without treading upon them. They seem to be afraid that the rain should not last long enough, for they get down to the river sides and marshy places as fast as they can, that they may secure a retreat if the weather should become fair; and that they may shelter themselves from the heat of the sun beams, which they do not at all like.

They descend in as much order as an army does, that is under the command of a general; and they are commonly divided into three bands or companies; of which the first consists of the males, which are more strong, large, and robust, than the females, and consequently are most proper to overcome obstacles and clear the way for the rest. These are like the avant-guard of an army, and are often obliged to halt for want of rain, and seek a new lodging till the weather changes. The main body of the army is composed of females, which never leave the mountains till the rain is set in for some time; and then they fall into the fields, being formed as it were into battalions, near three miles in length, and forty or fifty paces in breadth, but so close, that they almost cover the ground.

Three or four days after, the rear-guard follows, which consists of males and females, in the same number and order as the former. But they do not all take the same rout; for some follow the course of the rivers and canals made by the floods, and some march a-cross the woods, but not in such great numbers as the former. They proceed very slowly in the night time, and in the day, when it rains; but when the sun shines, they get to the sides of woods to avoid the heat, waiting till the cool of the evening. When they are terrified, they march back in a confused and disorderly manner, holding up their nippers, with which they pinch so hard, that they tear off a piece of the skin. They clatter these nippers from time to time, by striking them together, as it were, to threaten those that come to disturb them.

If it happens, in their descent, that the rain ceases, and the weather becomes fine, which is not seldom, they all make a halt, and take up their lodging
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where they can, some under the roots, and others within hollow trees; but those that have no such opportunity, make holes in the earth. However, the inhabitants that lye in wait for them, are glad of this opportunity, and make them pay dearly for their lodging; for they all make themselves merry at their expence. However, they throw the bodies away, only keeping the small spawn, which lies as thick as a man's thumb on each side the stomach; and this is greatly esteemed by the *French*, being very nourishing and well tasted. There are some years in which there is so little rain, that they are three months in getting down to the sea side; whereas, in the times of heavy rains, they are no longer than eight or ten days. When they have gained the sea, they go into the water and cast their spawn. All the Crabs in these islands, as well great as small, males and females, make a progress once a year down to the sea, where, when they are arrived, they let the waves run over them two or three times, that beat upon the shore, and then withdraw to seek a lodging. In the mean time the spawn grows larger, proceeds out of the body, and sticks to the barbs under the breast plate lately mentioned. There is a bunch of them as big as a hen's egg, which are like the rows of herrings. At this time they are neglected by the inhabitants, because they have lost their fine taste. Some days after they go to the sea again, where they shake off their eggs, and about two-thirds of them are immediately devoured by the fish, which the native *Caribbees* call *Tytira*, that are then so numerous, that the sea near the shore is quite black with them. This is an excellent season for fishing, for then, with one draught of the net, they catch as many fish as twenty men can draw out. The eggs of the Crabs that escape, are hatched under the sand, and soon after millions at a time of these little Crabs are seen travelling towards the mountains.

When the spawning time is over, these animals become so feeble and lean, that they can hardly creep along; and the flesh at that time changes its colour; for which reason most of them stay in the flat parts till they recover, making holes in the earth, which they stop the mouths of with soil and leaves, that no air may

enter therein. There they throw off their old shells, which they leave, as it were, quite whole, and it is hard to say how they can get out, especially when it is considered what a great number of joints there are. Then the Crabs are quite naked, and almost without motion for six days together; but then they are fat, fleshy, and in very good order, being covered with nothing but a very fine skin, which in process of time hardens into a shell. They have then, under their stomachs four hard large white stones, which gradually decrease in proportion, as the shell hardens; and when they come to perfection, they entirely vanish. It is pretended these stones are good for the gravel; but however that be, they always cause vomiting.

The WHITE CRAB of the *Caribbee Islands*, is also a land Crab, and has nearly the same property as the former, but with this difference, that they are so much bigger, that one of the white ones is worth three of the Violet, however, of these there are two sorts, namely, those that live constantly on the sides of lakes, ponds, and muddy places, and those that advance farther on the land, which are the least. The former are always half in and half out of the water, and have nippers as broad as a man's four fingers, and two feet in length, being almost shaped like a mitre. They are very fleshy, but are so subject to feed on Manchineel apples, that they are unwholesome; besides which, they always smell of mud. The other sort frequents the woods a little distant from the lakes and marshy places. They are less than the former, and the nippers are more short; but the flesh is more firm, and very well tasted.

The FLAME COLOUR CRABS, of the *Caribbee-Islands*, have a black spot on their backs, which greatly tets off the red colour. The inhabitants of *Guadaloupe*, will not touch them, because they believe that the flesh causes the bloody flux; but at *Martinico* they will, for want of others; however, it is scarcely worth while, since in six hours time, a man can hardly get so many of them as are sufficient for a single meal. But the worst of it is, that all these land Crabs are apt to feed upon Manchineel apples; for which reason, the inhabitants are very careful in examining the teeth and stomachs, and the
inside

inside of the body, which is then as black as charcoal. The flesh indeed will turn black with feeding on the apples of *Genipa*, but then it may be easily known, for their stomachs are then firm, and they are fat, having their shells quite full of meat; whereas, the contrary happens in the former case. All these Crabs have one property, which is very wonderful, that is, when their nippers are laid hold of, they can part them very easily, in order to make their escape; besides, if one of their nippers or claws is wounded, they immediately part with it, and so get rid of the limb and wound together. However, in a years time there are other claws that grow in the room of the former.

The MARICOANI, is a small Crab of *Brazil*, which frequents the shore when the tide is out; but at other times it keeps itself hid in a hole. The body is almost square, and the length is equal to that of a man's finger, as well as the breadth; the eyes are near each other, and of the thickness of a large pin, which it can thrust out or draw in at pleasure. The mouth is larger in proportion than that of other Crabs, and there are eight legs covered with thin brownish hair; the right pincher, or great leg, is very large, it being above three fingers breadth long, and so thick, that this animal can hide himself behind it; the left pincher is small, and even less than the legs. The colour is reddish, and the right pincher is of a dark red. This Crab is accounted good eating.

The SOLDIER CRAB, is about three or four inches long, and half the body is like the Sea Grass-hopper, but it is covered with a harder skin or shell. Four of the feet are like those of a Crab, with two nippers, of which one is no larger than the other feet; but the other is thicker than a man's thumb, with which it can pinch very strongly, and it serves to stop up the mouth of the shell wherein it lodges. The rest of the body is like a little pudding, covered with a rough thick skin, and is of the size of a man's finger, though not above half as long. At the end of this, there is a short tail, composed of three small nails or shells, like the tail of a Sea Grass-hopper. Half the body is filled with a stomach like that of a Crab, but red, and exposed to the

fire or sun will melt, and dissolve into oil. This is a sort of balsam which is excellent for green wounds.

They descend every year to the sea side to change their shells, for the back part of the body is quite naked. As soon as they are hatched they every one go in search of a shell proportionable to their bulk, thrusting their back parts therein, and then they march along as cloathed in armour, from whence they have the name of Soldiers. They go up to the tops of mountains, and take their lodgings in hollow trees, where they live upon leaves, rotten wood, and fruits; but as they sometimes feed upon manchineel apples they are very dangerous eating. The next year when the shells begin to grow too little, they travel down to the sea side again in search of others that fit them better. When they are there, they stop to examine the shells that they meet with, and when they have found one they think will do they immediately quit their old one, and get into it as if they were afraid the air should do them harm, or as if they were ashamed of appearing naked. Sometimes it happens that two make choice of the same shell, and then a battle ensues, for they will fight and bite each other till one of them yields and resigns the shell to the conqueror. When he has got possession he takes three or four turns upon the shore, and if he likes it he keeps it, otherwise he betakes himself to his old one again, and then chooses another. This they do often five or six times, till they get one to their liking. Within these shells there is about half a spoonful of clear water, which is looked upon as a sovereign remedy against pimples or other breakings out, especially those that are caused by the water that drops from the leaves of the manchineel trees. When they are taken they seem to be very angry, and have a cry like *gre, gre, gre*, endeavouring to lay hold of the person's hand, which when they do, they will sooner suffer themselves to be killed than to let go their hold.

The SEA CRAB of the *Est Indies* is about a span in breadth, and is of a most curious colour, the shell being speckled with yellow spots; besides which there are three of a purple colour inclosed with white rings. The claws are yellowish next the body, afterwards
white

white, and at the extremities, of a deep purple. The eyes have somewhat of the appearance of small tacks, and stand an inch without the head.

The BLUE CRAB of *Nieubuff* is a foot and a half long, and is of a purple colour, spotted with white. The claws are also purple near the body, but the other parts are blue. The eyes are like the former, and stand a finger's length out of the head. The flesh is good and well tasted.

The GREEN CRAB with red claws, is of the same size as the Blue Crab; but may be easily distinguished from them by their colour, which is inclining to green, with red claws. The flesh is a great delicacy, being the best of any sort in the *East Indies*. Some of these Crabs last mentioned are of a prodigious bigness, and they are said to eat best when the Moon is growing towards the full.

The GUAIA APARA is a *South American* Crab, and is beautifully variegated. One end of the body is terminated with a circle, and the other by a right line. It is three inches broad and two and a half long, though some of them grow to a larger size. The fore part of the shell is of a dark brown, variegated with whitish spots; and the hinder is of a whitish yellow, adorned with brown streaks that run according to the length. It has eight feet or claws which are roundish, with four joints, and are of a whitish yellow colour. Besides these, there are two great claws or nippers, each two inches and a half long, and half an inch broad. The nippers themselves are but small, for which reason it cannot lay hold of any thing so firmly as other Crabs. The upper part of these claws is armed and dentated like a Cock's comb, insomuch that when it is alive and holds these claws close to the body they appear like two cocks combs placed near each other. The nippers are somewhat like the bill of a Cock, which with the whole leg or claw represents the fore-part of the head of that animal, together with its comb. These are also of a whitish yellow, variegated with brown spots. As it swims in the water it blows it up like the bubbling of a spring,

Another GUAIA has a roundish body, and is about the size of a walnut, with its green coat on, with eight claws or legs like other crabs. The two great claws or legs are each two inches and a half long, but very slender, and at the extrem part of the body there are three blunt thorns, and the eyes are very small. The colour in general is white, only on the back there are beautiful rows of brown spots which are largest near the head and less on the sides. The great claws are variegated with spots of a purple reddish colour; but the other claws and belly are entirely white.

There is still another GUAIA, as the *Brasilians* call it, that is very seldom taken, which is three inches broad, and as much in length, or a little less. The shell is of an oval form, and on the circumference there are many little horns. The eyes are very small, and on each side there are four claws or feet, with as many joints; which are a little hairy, and there are black nails at the ends in the shape of horns. The most forward of the legs are three inches in length, and the rest grow gradually shorter. The fore-legs with their nippers are three inches in length, and as thick as a man's finger, the nippers themselves being half an inch long and pretty thick. They are dentated on the outside, and the teeth are like those of a man, and they fit so exactly to each other that they represent a dentated bill when shut. The colour of the whole Crab when living, is like that of a large live coal, but in the middle of the body it is deeper, and the other parts lighter. The extremities of the nippers are coloured with a mixture of red and brown, and when this Crab is boiled it retains the same colour.

The GUAIA MIRI is a very small river Crab, which never exceeds the size of a plumb, and the shell is of an oval form, only the fore-part terminates in several angles or corners. The eyes are small and short, and of the great legs or claws the right is a little less than the left. The other claws or legs are eight in number with four joints each, and are beset with short hairs. The colour of the shell is of an iron grey, but the legs are of a darkish purple, and the hairs are pale.

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The CARARA UNA is a small Crab of a square figure, and a little flattish, and it is but half an inch in breadth. The eyes are black and prominent, and look as if they were cut into angles. The fore legs or claws are short, with roundish thick nippers; there are eight other claws, which are not thick but flat. The shell and legs are of a liver colour, but the nippers are brown like the juice of black cherries. The legs are beset with very fine hairs, and are of the same colour with them.

The CUNURU is of the same colour and shape as the UCA UNA, and is supposed to be the female of that species. However it is less, and the fore legs or claws are small, and the left is a little larger than the right. There are but few hairs, though the Uca is covered all over with them.

The CIECIE ETE of the *Brafilians*, called by the *Portuguese* CRANGVINSINGHO DES MANGES, is of a square shape, and does not exceed a large hazel-nut in size. The eyes are prominent; but it can draw them in at pleasure. It has eight legs or claws, besides the fore-legs, and that to the left is the greatest. The nippers are thin, long, smooth, and without teeth. The shell is of a liver colour, but the rest of the body with the legs, of a pale dirty yellow. This Crab is eaten by the *Portuguese*, and the natives cure a distemper with it which they call *Mia*.

The CIRI APOA, so called by the *Brafilians*, is a Sea Crab covered with an oval shell, which is toothed in the middle of the forward edge, and on each side it terminates in an acute angle. The fore-legs or claws are of a middle size, and are dentated or toothed likewise. It has also six other claws, besides two flat fins with four joints which are hairy, and which it makes use of in swimming. The Eyes are placed at a great distance from each other, which are small and shaped like cylinders, and on each side there is a barb like a hair. The shell is of a brownish colour inclining to black, and on it there is a spot of a different brown in the shape of a heart. The fore claws or legs are dusky, with nippers of a bluish white. The other claws on the extream part of the fins which is broad are blue,
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and the other part green mixed with white. They generally creep at the bottom of salt water, coming sometimes on shore at the ebbing of the tide; but this is seldom. They are well tasted, and are taken when the tide is going out.

The UCA UNA is a pond Crab, that has a body of an oval shape, and the shell is convex on the upper side. It is of the size of a Walnut with its coat, and has eight claws with four joints, of which those before are longer than those behind. The eyes are pretty near each other, and he can thrust them out and draw them in at pleasure; their colour is yellowish, and the pupil is of the colour of glass. The right fore-leg or claw is the greatest, and has many sharp tubercles on the inside; but the left is small. The colour of the upper part of the shell is olive, with a mixture of yellow at the extremities. All the legs are of a chestnut colour, as well as the upper part of the nippers, and all their lower parts are covered with thick longish hairs of a dark chestnut colour. The flesh is good eating.

The GUANHUMI is a land Crab with a roundish body, but a little compressed, and of the size of an orange. It has eight legs or claws five inches long, with four joints, and the lower parts are covered with long hairs. The mouth is large, and it is hairy on its sides for about an inch, as well as the rest of the body. Of the great legs or claws, the right is big and the left small, the right being eight inches long and two broad; but the left is scarce so long by three parts. The eyes are thrust out like two small pills, and are drawn in at pleasure. About the mouth there are two feelers, if they may be so called, for they are short, and can be drawn in at the will of this animal. It runs very swiftly sideways, and there are a great number of them in the marshes and woods. The flesh is accounted good eating.

The ARAIU PINIMA is a land Crab of a square shape, but the body is not large, and the shell is variegated with brown, blue, and red spots differently intermixed. The eyes are prominent, black, and stand a great way out of the head, and it has eight feet with four joints which are flattish, of a reddish colour, and
variegated

variegated with purple, black, and white spots. The two fore legs or claws are not large in proportion to the body, and they are smooth and red, only at the ends they are of a yellowish white; the belly also is yellowish, and the lower parts of the claws are hairy.

The MARACOANI is a small crab, and comes upon the shore when the tide is out, being not to be seen at any other time. The body is almost square, being an inch long and as much broad, only the fore-part is a little broader. The eyes are placed near each other, and are half an inch in length, though as small as a large needle, which it can thrust out and draw in at pleasure. It has a larger mouth than other small crabs, and eight claws with four joints. The right fore-leg or claw is the greatest, being above three inches in length, and pretty thick, and it can conceal itself behind it. The nippers are broad but not thick, and resemble a pair of Taylor's sheers. There are tubercles instead of teeth, and on the surface of the lower part there are some likewise. The left leg or claw is very small, and has nippers like those of a Scorpion. The lower part of the claws have a few brown hairs, and the colour of the shell is tawney as well as the legs and the lesser nippers, as also the lower part of the body; but at the extremity it is a little reddish. The right leg is of a reddish dun colour. The flesh is pretty good food.

The POTIQUIUIYA of the *Brazilians*, is a Sea Prawn, and the length of the body from the fore-part of the head to the tail is seven inches. and the tail six. The breadth of the shell on the back is seven inches, and of the belly two and a half. The tail consists of seven shells or plates, with as many joints placed over against each other, and on the lower part of each side there are four fins an inch and a half long, and one broad; likewise the lateral extremities of each plate end in a sharp horn. There are ten claws, that is five on each side, with five joints, and the first pair are six inches long, the next nine, the third a foot, the fourth seven inches, and the fifth five. They have each a crooked sharp nail beset with many yellow hairs, in the manner of hair-pencils. The fore-leg is an inch thick.

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but the rest are smaller. The shell is covered with various sorts of tubercles like horns, with sharp points. The eyes are prominent, and of the shape of a cylinder; having behind them two strait horns bending forwards, and an inch in length. Before the eyes, and over the mouth, there are four feelers, two of which are as thick as a man's thumb at their rise, where there are four joints; and they are a foot and a half long, being beset with prickles on all sides. Between these there are two less with four joints, but they are smooth, being without prickles; and about half way from the head they are divided in two, being all together ten inches long.

The TAMARU GUACU of the *Brazilians*, called CAMARON DE SALGADO by the *Portuguese*, is a kind of Prawn nine inches long, or a little more. The length of the head is two inches, to which part it grows narrower by degrees. The body has as it were seven joints somewhat like the tail of a Lobster, and on the hinder part of the body on each side, there are two hairy processes. The whole body is strait, whitish, and shining like polished horn; but at the joints it is of a blackish purple, and there are three feet on each side, namely, at the third, fourth, and fifth joint, reckoning from the neck. They are slender, and about two inches long. The head is of a triangular shape, and of the size of an Olive, covered with a whitish shining shell about two inches long. Behind the head on each side, there is a leg or claw seven inches long with four joints, and it is crooked at the end like a sickle, and furnished with nine very sharp teeth. With these claws it strikes those that come near it, and the wound which it makes will not easily heal. The eyes are oblong, and prominent, and there is a barb, or beard consisting of eight hairs. Near the eyes there are two prominences turned backwards, which are an inch in length and smooth, but hairy at the extremities. Below the head there are eight excrescences that are two inches long, terminated with tubercles. Towards the hinder part of the body below there are many broad sort of fins, which no doubt serve for swimming,
and

and they lie in folds on the belly like leaves. The flesh is not eaten.

The PARANCARE is a sort of a Crab or rather Lobster that lives in a borrowed shell and is three inches long; but the flesh is not eatable. The two fore-legs have nippers, and there are four others three inches long, and behind these four more that are short. The tail is an inch and a half long, and the eyes are long and prominent. There are two barbs consisting of tufts of hair. The body is covered with a skin of a dark chestnut colour; and the tail is of the same colour streaked with black according to its length. The lower part of the body is bluish, as are the eyes and barb; and over every part there are hairs of the colour of oker. The shell that it lives in is about four inches long and turbinated, being of a palish yellow colour. There are some less than these, which perhaps are young ones, being no bigger than a small plumb. They are found on the shore near the river *Paraiba*. These seem to be akin to the Soldier Crab above described.

The GUARICURU of the *Brafilians*, is four inches long, having six claws with three joints each, and a nail at the extremity. The forward pair seems to have a sort of calves, being thicker than the rest, and seem to serve for the same purpose as the nippers in other Crabs. They are a little above two inches long, and the last pair a little more than one; but they are all prickly. There are six barbs, two of which are three inches long and turn backwards; two others are an inch, and the remaining two half an inch. Under the mouth there are two thickish excrescences, and four smaller, with which it holds its meat. The eyes are like others of this kind. The colour is all over brown, and the flesh is eaten when boiled.

C H A P. XXVIII.

Of the Tortoise or Land and Sea-Turtle.

THIS animal is by some authors placed among Quadrupedes; but it may without any great impropriety be inserted here; especially as all systems of this kind are arbitrary.

The TORTOISE or TURTLE is of various kinds, and are distinguished into the Land and Sea Tortoises. That dissected by the academists at *Paris* was of the former sort, and was brought from the coast of *Coromandel* in the *East Indies*. It was four feet and a half in length from the extremity of the mouth to the extremity of the tail, and fourteen inches thick. The shell was three feet long and two broad. Some of the ancient writers, particularly *Pliny*, pretend to have seen Tortoise-shells fifteen cubits in length; and that one of them was sufficient to cover a hut which was large enough to lodge several persons. However, this was a Land Tortoise, and those mentioned by the *Roman* authors were Sea Tortoises, where animals generally grow much larger than those of the same kind which live on land. However it may be a doubt, whether *Pliny* was not mistaken in the measure of the shells mentioned by him; because there have been none so large ever seen since. The shell, and every part of this creature was of the same colour, namely, of a very dark grey. The upper part was composed of several pieces of a different figure; though most of them were pentagonal, or had five corners. All these pieces were connected to a bone, which like a skull inclosed the entrails of the animal. It had one opening before to let out the head, shoulders, and fore-legs, and another behind to let out the hinder legs and thighs. This bone to which the scales or plates were fastened, was a line and a half thick in the thinnest place; and in some places near an inch and a half.

One part of this bone lies upon the back, and the other under the belly, which unite on the sides, and
are

are tied or connected together by strong ligaments, which however allow the liberty of motion. What we commonly call the shell will loosen from the bone after it has been kept some time; but when they are to be taken off immediately, the bone is to be laid upon the fire and then the shell will readily separate from it.

At the great opening before there was a raised border at the top, to allow sufficient liberty for the neck and head to raise themselves upward. This bending of the neck is of great use to the Tortoise; for by this means they can turn themselves again when laid upon their back. A certain Tortoise being laid upon his back and not being able to make use of his paws to turn himself, because they can only bend forwards towards the belly; he endeavoured to help himself with his neck and head, which he turned sometimes on one side, and sometimes on the other, by pushing against the ground, and so rocked himself as in a cradle, till at length he was able to rowl quite on one side, and so get upon his legs.

The three great pieces of shells lie forwards upon the back; and in the middle of each there was a round stud about a quarter of an inch in height, and an inch and half broad. The parts which are not under the shell are all covered with a loose skin with a grain like *Spanish* leather, and full of wrinkles. There is no skin under the shell to cover the parts which are enclosed therein; but it was connected to the edge of each of the two apertures or openings. The skin on the head is much thinner than that on the other parts. It was seven inches in length and five in breadth; and had some resemblance to the head of a Serpent.

The lower jaw was near as thick as the upper, and there were no apertures for the ears. The nostrils at the end of the mouth were only two little round holes, which made a very uncouth appearance. The eyes were small and frightful, and had no upper eye-lid, they being shut only by means of the lower, which may be lifted up to the eye-brow. Towards the extremity of the jaw bones near the lips, the skin was as hard as a
horn,

horn, and the lips themselves were jagged like a saw, and on the inside there were two rows of teeth.

On each of the fore-paws there were five toes, or rather nails; for the toes could not be distinguished but by the nails, the paws themselves terminating in a round mass, from which the nails grew out. The fore-legs were nine inches in length, from the top of the shoulder to the end of the nails, and the hinder legs eleven from the knee to the same parts. The nails were an inch and a half long, and rounded away both above and below, being as it were cut in an oval figure, or perhaps worn away with use. Their colour was black and white in different places, and without any regularity.

The tail was large, being six inches in diameter at the beginning, and fourteen inches in length, terminating at the point like the horn of an Ox. The tail happened to be bent at the time of this animal's death, and could never be made strait by any artifice or force whatever. The same inflexibility was found in the muscles of the jaws, which could not be opened but by cutting these muscles asunder.

The academists give us an instance of the head of a small Tortoise which for half an hour after it was cut off would clack with its jaws, and make a noise like that of castanets. They suppose from the stiffness of the tail that the Tortoise must have vast strength in that part; and that he may use it as an offensive weapon. *Aristotle* has taken notice of the vast strength of the jaws of this animal; and he affirms they will cut in two whatever they lay hold of, even not excepting the hardest flint.

After they had sawed in two the bone on each side that makes a sort of a skull, in which the entrails are inclosed, as has already been taken notice of; they then cut away the membrane which adheres to this bone underneath, and which forms the belly. Then the internal parts presented themselves to view; which were the stomach, the liver, and bladder, which last was so large that it covered all the guts, and other parts in the lower belly. The gut next the stomach had plaits or folds within like the stomach itself, somewhat like

like a net in figure. The rest of the guts were composed of very thick membranes, and the small guts were an inch in diameter, and nine feet long. There was no blind gut, though some authors have affirmed that 'Tortoises have two like those in birds. The rectum or strait gut at the distance of nine inches from the anus, had a contraction which appeared like the anus of a hen, and there were three round appendages of different sizes, which seemed to be formed by the internal membrane of the rectum, and which were covered with fleshy fibres running according to the length of the appendages. The remainder of the rectum from this contraction to the anus, served as a case for the penis, in the same manner as may be seen in Beavers, and several other animals.

The liver was of a solid substance, of a pale colour, and very large, and seemed to be double; for it was separated into two parts joined together only by an isthmus of an inch broad, and by membranes which served to convey the vessels from the left part to the right. They had each a vena cava, which proceeded from the convexity towards the midriff, and each had an hepatick branch which proceeded from the hollow part. The left part of the liver was divided into four lobes, and the right into three. The least of these three lobes covered the gall-bladder to which it was fixed, and which was an inch and half long and half an inch broad, being of the figure of a human bladder; the cystic duct was a continuation of the neck of the gall bladder, and was seven inches long, and as thick as a small quill.

The spleen lay between the gutts called the duodenum and colon, and was of the shape of a kidney. The pancreas or sweet-bread embraced the duodenum very closely, and was connected to the spleen which partly covered it. It was of the figure of a triangular prism, and its canal opened into the duodenum. The kidneys were four inches in length, three in breadth, and of the same shape. The testicles were hid under the kidneys, and they were two inches and a half long and near an inch broad. The bladder was of an extraordinary size as before observed, and contained above
twelve

twelve pints of clear urine. It was in shape like a gut, and its neck was not at the end but in the middle. It was two feet long, and lay across the belly from one side to the other. The neck of the bladder was an inch long and as much broad, and was fixed to the middle of the rectum, into which the urine was discharged. The penis was nine inches in length, and half a one in breadth, and consisted of two round ligaments of a spongy substance, which were covered with a thin membrane.

The heart was placed in the upper part of the breast, and was included in a very thick pericardium or bag, which was connected below to the membrane which covered the liver. It had not the usual figure of a heart, for its largest dimensions were from one side to the other; it being three inches this way, and only an inch and a half from the basis to the point, the two auricles or deaf ears which proceeded from the basis, were very loose. The right was two inches and a half long, and an inch and a half broad; but the left was much less. They each opened into a ventricle, and there was an orifice in each which allowed passage for the blood from the auricle into the ventricle. There were likewise three valves, made contrary to the usual manner, that hindered the blood from returning out of the heart into the auricles. Besides these two there was another on the fore part inclining a little towards the right. These three ventricles communicated with each other by several orifices; their substance not being solid and continuous as in the hearts of other animals. Besides these narrow orifices, there were others more large, by which the two posterior ventricles communicated with each other as well as with that before; for there were three in all.

The aspera arteria which was composed of intire rings at the entrance of the breast divided into two branches, each of six inches in length. At their passage into the lungs these branches lost their cartilages, and became membranous canals, which were very large and unequal; being an inch and a half in diameter in some places, and half an inch only in others. The membrane which formed these canals was transparent and thin; but

but solid and strengthened by ligaments connected together in the manner of a net, composed of several meshes. Each of these meshes was the mouth and entrance of a small pouch which opened into a second, and sometimes into a third. The branches of the vein and artery of the lungs run along these ligaments, and accompanied them through all the divisions, distributing the blood equally throughout the whole extent of the lungs.

The whole mass of blood does not pass through the lungs; and to be sure of this the academists made a ligament upon the trunk of the pulmonary artery, which did not affect the motion of the heart in any sense; but the circulation of the blood continued the same in every respect. Hence it appears that the true use of the lungs in a Tortoise and other animals of the same kind is very obscure; and that what may be said about it can be only guess-work. However the academists imagined that they assist the Tortoise in keeping on the surface of the water or sinking to the bottom, just as he pleases; and that they serve in the room of swimming-bladders that belong to fish. To confirm which, they observed that when a Tortoise was put into the water a great many bubbles proceeded from the nostrils, because probably there was too much air in the lungs to keep this animal in a just equilibrium. They likewise imagined that when a Tortoise is at the bottom of the water, he relaxes the muscles which compress the lungs, and then the air by virtue of its spring expands itself, and brings the body to such a bigness as to enable it to swim upon the Water. We have been the longer upon this article, in order to shew in as distinct a manner as possible how amphibious animals live in the water, and are able to continue under it so long; which must evidently proceed from there being no interruption in the circulation of the blood, when it is not permitted to pass through the lungs; that is, that part of it which we may suppose commonly has its course that way; and therefore we shall now proceed to take some notice of the other parts.

The globe of the eye was an inch in diameter, and the nictating membrane had the same muscles as in birds.

birds. The watery humour was so thick it would hardly run, and the cornea was very thin. The chrystalline humour was but a line in diameter, and was of a flattish shape. It had no black membrane at the bottom, such as is to be seen in the eyes of birds. The tongue was of a pyramidal shape, and was an inch in length, and one third of an inch broad; but it was but a line in thickness. About one half of it was fleshy, and the coat that covered it was full of a vast number of papillæ.

The ears have no outward orifices; but under a skin which lies over a depression, on the side of the temples there was a round hole like the orbit of the eye, which was closed by a kind of cartilaginous plait, that was very moveable, and was connected all round the hole to the parts below by a very thin membrane. On the side of this behind the head, there was a cartilaginous pipe which passed into the palate, where there was a long orifice. Under the cartilaginous pipe there was a large cavity twice as long as broad, which was pierced on the side to give passage to a little slender bony style placed obliquely to support the plait at one end; and at the other it stopped up a hole by which the second cavity opened into a third that received the auditory nerve, the part of the style which stopped up the orifice of this third cavity grew large at the end like a trumpet, and had a very delicate membrane which connected it to the circumference of the hole.

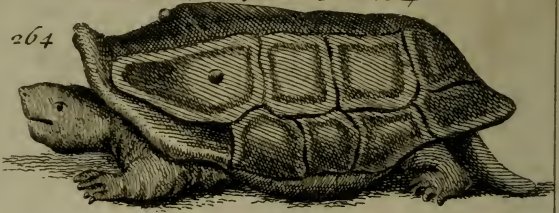
Those that have given a description, of the *Caribbee Islands* have affirmed, that this animal is deaf; but there is little reason to think so, after examination of the organs just described. It is very probable that the writers who are authors of this assertion, were never very exact in their inquiry; but only judged *Tortoises* were deaf, because they had no external orifices on the sides of their heads.

The COMMON LAND TORTOISE is full of yellow and black spots on the back and the upper part of the shell is very convex, and the lower is flat. It has a little head much like that of a Serpent, which he can put out or hide within his shell just as he pleases, or as occasion requires. He has no upper eye-lid; nor has he

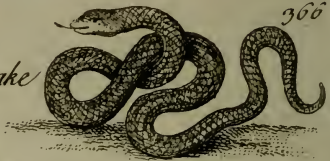


Tortoise, or Land-Turtle

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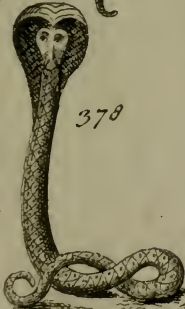


Indian Snake



366

Snake of Esculapius



378

Hooded Serpent



368

The Rattle Snake



Green & large Spotted Lizard

he any ear or orifice instead of one like the former. In the winter time he hides himself in the earth, and there continues without any food. He is a very long lived animal.

The TORTOISE, called by the *Brazilians* JABOTI, and by the *Portuguese* CAGADO DE TERRA, has a black shell on which many hexagonal figures seem to be engraved. His muzzle is like that of the former kind, and the head and legs are brown, with spots of the colour of umber. The liver is highly commended for fine eating.

The FRESH WATER TORTOISE delights in ponds and muddy waters, and particularly the ditches about walled towns and castles. However he is seldom to be met with in *Europe* except in a small lake in the Canton of *Zurich* in *Switzerland*; but near *Constantine* to the South of *Algiers* in *Africa*, they are in great plenty. They are very disagreeable to look at, and the women in those parts call them Devils, supposing they are the occasion of various diseases. He is called by some the WATER TORTOISE to distinguish him from that that lives entirely on land. They are pretty much alike, only that belonging to the water has a longer tail. The colour of the shell is black, and seems to consist of several small ones joined together. He can put out his head, feet, and tail when he pleases, or hide them under the shell. The lungs, kidneys, bladder, and other internal parts are like those of the Tortoise above described. They live a long while without food, and even after their heads are cut off.

The COMMON SEA TORTOISE differs from the LAND TORTOISE chiefly in size which is larger; but the shell is not so beautiful, and it is of a softer consistence. The feet are like the fins of fish, because they are used for swimming. They grow to a very great bulk, for some of them near *Brazil* and the *Caribbee Islands* are sufficient to dine eighty or a hundred men. Mr. *Herbert* has seen them in the *East Indian* sea so large that fourteen men might sit on one of their backs.

The sailors take notice of four kinds of Tortoises, which they call the TRUNK TURTLE, the LOGGER-

HEAD, the HAWKS-BILL, and the GREEN TURTLE. The TRUNK TURTLE is commonly larger than the rest, and their backs are higher and rounder. The flesh of this sort is rank and not very wholesome. The LOGGER-HEAD is so called, from the largeness of his head, which is much bigger in proportion than that of the other kinds. The flesh of this is likewise very rank, and not eaten but in case of necessity.

The HAWKS-BILL TURTLE is the least of the four, and has a long and small mouth, somewhat resembling the bill of a Hawk. This is the Turtle that produces the shell so much admired in *Europe* for making combs, snuff-boxes, and the like. They generally carry about three pounds; but the largest of all six pounds. The shell consists of thirteen leaves or plates, of which eight are flat and five hollow. They are raised and taken off by the means of fire, which is made under it after the flesh is taken out. As soon as the heat affects the leaves, they are easily raised with the point of a knife. The flesh is but indifferent food, and yet it is much sweeter and better than that of the Logger-head. However it sometimes purges upwards and downwards; especially between the *Sambaloes* and *Porto Belio*.

The GREEN TURTLE is so called, because the shell is greener than that of any other. It is very clear and better clouded than that of the Hawks-bill, but it is so exceeding thin, that it is only used in inlaying. These Turtles are generally larger than the Hawks-bill, and sometimes weigh three hundred pounds. Their heads are round and small, and their back flatter than that of the Hawks-bill.

The TURTLE in general is a dull, heavy, stupid animal, their brain being no bigger than a small bean, though the head is as large as that of a calf. That described by the academists at *Paris*, was an inch and one third in length, and three quarters of an inch in breadth; but then it must be noted, that the Tortoise was of a very large size; however they have a very good eye and a very quick sight. The flesh is so like beef, that it would hardly be distinguished from it, if it
was

was not for the colour of the fat, which is of a yellowish green.

They feed upon mofs, grafs, and sea-weeds, unless in the time of breeding when they forsake their common haunts, and are supposed to eat nothing; both the male and female are fat at the beginning of this season, but before they return the male becomes so lean that he is not fit to eat, while the female continues in good plight, and the flesh continues good to the very last. They couple in the water, and are said to be nine days in performing this work. They begin in *March*, and continue till *May*.

The coupling time is one of the principal seasons for catching them; for they are very easily discovered when they are in the action. As soon as they are perceived, two or three people draw near them in a canoe, and either slip a noose round their necks or on one of their feet. If they have no line they lay hold of them by the neck where they have no shell with their hands only, and by this means they catch them both together. But sometimes the female escapes, being more shy than the male.

Another way of taking them at this time is with a spear, which being thrown at the back of the Turtle pierces the shell and bone, and sticks as fast therein as if it was solid oak. They struggle hard to get loose; but all in vain, for they take care that the line which is fastened to the spear be strong enough to hold him.

The time of taking Turtle upon land is from the first moon in *April* till that in *August*, it being the season in which these creatures lay their eggs. The number of them is prodigious, for they will lay several hundred in one season. The night before she intends to lay she comes and takes a view of the place, and after taking a turn about she goes to sea again; but never fails to return the night following.

Towards the setting of the sun they are seen drawing near the land, and seem to look earnestly about them as if they were afraid to be discovered. When they perceive any person on shore they seek for another place; but if otherwise they land when it is dark. After they have looked carefully about them, they

begin to work and dig in the sand with their fore feet, till they have made a round hole of a foot broad and a foot and a half deep, a little above where the water reaches when highest. This done they lay eighty or ninety eggs or upwards at a time, each as big as a hen's egg, and as round as a ball. She continues laying about the space of an hour, during which time if a cart was to be driven over her, she would not stir. The eggs are covered with a tough white skin like wetted parchment. When she has done laying, she covers the hole so dextrously that it is no easy matter to find the place; this done, she returns to the sea. At the end of fifteen days she lays eggs again in the same manner, and at the end of another fifteen she does the same again, laying three times in all.

In about twenty-five days after laying, the eggs are hatched by the heat of the sun; and then the little Turtles being as big as young Quails, run directly to the sea, without any guide to lead them or shew them the way. When there are any caught before they get into the sea, they are generally fried whole, and are said to be delicious eating.

The men that watch for the Turtles, as soon as they have an opportunity turn them on their backs, which is not performed without some difficulty; for they are very heavy, and struggle hard. After this he hauls them above high-water mark and leaves them till morning; for when they are once on their backs they are not able to stir from the place. The Turtle as was said before, feeds upon grass and weeds, and this she does on the land as well as in the water. Near several of the *American* islands there are a sort of green meadows at the bottom of the sea, where it is not many fathom deep. For this reason, when the weather is fine and the water smooth, they may be seen creeping upon this green carpet. After they have fed sufficiently, they take their progress into the mouths of fresh water rivers, and after some time return to their former station. When they have done feeding they generally float with their heads above water, unless they are alarmed by the approach of hunters or birds of prey; in which case they suddenly plunge to the bottom. A Turtle of an
ordinary

ordinary size and of the best sort, will yield at least two hundred pounds of flesh, which the sailors often salt for their sea provision. Their eggs will keep for a considerable time. The shell may be fashioned in what manner the workman pleases, by softening it in warm water, and then putting it into a mould; for then by the assistance of a strong iron press it will take any impression, and may afterwards be adorned and embellished at pleasure.

The *French* authors, and after them Mr. *Ray*, make mention of three sorts of Tortoises, which though already mentioned, it would seem a neglect not to take some notice of them; and the rather, because perhaps we may find some particulars taken notice of by them which have been before omitted.

The JURUCUA of *Brazil*, is called by the *Portuguese* TARTARUGA, and by the *French* TORTUE FRANCHE. *Pere Tertre* speaking of Tortoises in general asserts as above, that they are stupid, heavy, sluggish animals, and that they have no more brain than a small bean. He adds to this, that they are deaf, which however is erroneous; because they have the proper organs of hearing though not outwardly. He owns however, that they have a very quick sight, and that they grow to a prodigious size, being sometimes five feet in length and four in breadth. He adds, that their flesh looks like beef, and cannot be distinguished from it but by the colour of the fat. Some of the Tortue Franche will dine thirty men; and the fat will yield a large quantity of oil as yellow as gold, which the *French* make use of instead of Butter. This is the same as the Green Turtle.

The TORTUE KAOUANNE differs from the former, in having a much larger head in proportion to the body; and this is the same as the Logger-head Turtle. He is more mischievous than the rest, and defends himself with his mouth and paws, when they are going to turn him on his back. He is the largest of them all; but his flesh is in no great esteem, because it is black, and not very well tasted. Likewise the fat is disagreeable, and the *French* affirm, that it spoils all the fauces

into which it is put; and therefore they never use it when they can get any better.

The *TORTUE CARET* is the least of the three; but is not so good as the *Tortue Franche*; but is much better than the *Kaouanne*. The oil of this Tortoise is greatly esteemed by the *French*, as being excellent for weakneses of the nerves, the sciatica, and for all cold fluxions; but that for which he is in highest esteem, is his shell, which consists of thirteen pieces or plates; eight of which are flat, and five a little convex. The finest shells are thick, clear, and transparent; and the colour is a mixture of that of antimony, jasper, tawney and white. This is the same that was mentioned above by the name of the Hawks bill Turtles.

Mr. *Ray* has another Tortoise, called the *SCALY TURTLE*, which he thinks is of the water kind. The shell is above a foot long, ten inches broad, and three and a half high in the lower part. However he takes it to be the same as the *Caret* above-mentioned.

The *LAND TEREBIN* or *TORTOISE*, is generally round mouthed, and not hawks billed, as some Turtles are. They are eaten by the Savages, and are pretty good meat except the very large ones of all. They are utter enemies to the *Ratt'e-snake*, for when the *Terebin* meets him he catches hold a little below the neck, and draws his head under his shell, which makes the snake beat his tail, and twist about with all the strength and violence imaginable to get away; but the *Terebin* soon dispatches him and there leaves him.

The *LAND TEREBIN*, or *TORTOISE* taken notice of by Mr. *Larson*, is little more than four inches long when the head is under the shell, and it has no tail but only the rudiments of one at the extremity whereof the vent is placed. The head is covered with a hard shell of a dark brown colour on the top, and yellow on the sides and throat, with small black or dusky spots. The nostrils are near together at the end of the beak; and the eyes are yellowish. The neck is covered with a loose skin of a dark purplish flesh-colour, which partly covers the head when it is not fully extended. The hinder legs and parts about the vent are covered with skin of the same dull flesh-colour

as the neck, and the fore legs and feet with yellow hard scales, having five toes on each foot before, and four on each behind, which are armed with pretty strong claws of a dusky colour. The shell above is roundish, and divided into separate scales, each being engraven with rings round its extremities, that lessen inwards towards the center. The shell above is of a dusky brown colour with yellowish spots of various figures, but underneath it is flattish and yellow with black clouds and spots. There are some of other sizes. They feed upon Snails, Tadpoles, young Frogs, Mushrooms, and the slime of the Earth and Ponds.

They have also another sort in *Carolina*, called WATER TEREBSINS; but these are very small, and contain no more meat than is on a Pullet; but then they are very delicate eating, especially in *May* and *June*. Their eggs are very good; but so many enemies lie in wait to devour them, that there is not one in a hundred comes to perfection. They are hatched by the sun and sand, and when they come out they are about the bigness of a Chestnut, and get their own living.

The LESSER LAND TURTLE of the *East Indies*, mentioned by Mr. *Ray*, is covered with a shell not so much as four inches in length, and near the same in breadth. It consists of three orders of chequer-work, and a border which surrounds them all. They are tinged with various colours, such as black, white, purple, greenish and yellow. The lower shell is all whitish, and divided by denticulated lines. It has the head and beak in the shape of that of a Parrot; on the top of which there is a prominence of a red colour mixed with yellow. The neck is small, and the fore-feet and legs are beset with scales of a horny substance. The feet are flat, and have four toes; but the hinder legs are longer and smaller, and covered with nothing but the common skin; however the feet are scaly, and like those before armed with four claws. The tail is slender and ends in a point, and is only half an inch in length. There are some of this kind larger, and some less.

The *African* LAND TORTOISE, is of the same size with the former, and the iris of the eye is of a

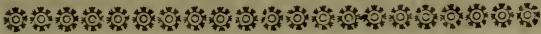
reddish hazel colour. The lips are hard like the bill of a bird, and the head is covered with scales of a yellowish colour; but the neck, hinder-legs, and tail, are covered with a flexible skin, of a dirty flesh colour, the fore-legs have yellow scales on the outsides, and the shell is round, rising pretty much on the upper side and flat underneath. It is divided into many compartments or separate scales, which have furrows all round them, lessening one within another to the center. The shell is yellowish, and clouded and spotted with large irregular dusky spots. The vent is in the tail, and it has five claws on each foot before, and four on each behind. When they apprehend danger they draw the head, legs, and tail into the shell, so that they cannot easily be hurt.

The LESSER CHEQUERED TORTOISE is near seven inches in length, five in breadth, of a black colour, with rhomboidal streaks. The shell consists of three orders of prominences, besides the border. From the middle of these proceed several stellated lines, which run to the edge. The lower shell consists of eight distinct plates, joined together as it were by so many sutures, of which two are twice as large as the rest. They are all diversified with a black and yellowish colour.

Some authors recount other kinds of Tortoises, but they all may be referred to the above sorts; as for instance, there is or was a great chequered Tortoise-shell in the Musæum of the Royal Society. It was brought from the island of *Madagascar*, and is of an oval shape. It is very concave, and is a foot in length, eight inches in breadth, and almost six deep. There is another chequered shell brought from *Surinam*, and likewise another from *Virginia*. *Condomine* of the royal academy at *Paris* observes, that the Tortoises of the river *Amazons*, are much sought after at *Cayenne*, as being more delicious than others. There is such plenty of them of several sizes and kinds, that he thinks they alone with their eggs, would be sufficient to maintain all the people on the banks of that river. There are also Land Tortoises, called *JUBURTIS* in the *Brazilian* language, which they prefer at *Para* to any of the rest.

He

He farther observes, that they may be all kept out of the water for several months together, without any sensible nourishment.



C H A P. XXIX.

Of turbinated Shell Fish.

SHELL fish are commonly divided into the turbinated, the bivalved and the univalved. The turbinated are somewhat in the shape of a top, and are surrounded with spiral furrows much like a screw, being wide at the mouth, and terminate by little and little in a point. However, they are greatly different in their shape and size, as well as in their texture, some being harder, and others softer; but within they are all nearly alike with regard to their surface, which is exceeding smooth.

The NAUTILUS, or SAILOR, according to *Aristotle*, is of two kinds, one of which has a shell like a Pectuncle, being hollowed in the same manner. It generally keeps near the sea shore, on which it is often thrown by the waves, where it comes out of the shell and is taken, or perishes on the ground. This is a small sort, but the other keeps in its shell like a snail, or at least seldom comes out of it; but sometimes thrusts out a sort of arms. This is spoken of by *Pliny*, where he says, this is one of the principal wonders of nature, because it can swim on the surface of the sea like a boat. This is often seen near the *Cape of Good Hope*, and it is certainly a very pleasant sight to behold how they manage themselves in the water. They delight to be on the surface when the water is calm, and their shells serve instead of boats. Then they raise up their heads and spread out a kind of sail, provided by nature, sailing along in a very agreeable manner. While they are thus employed, if any thing appears that affrights them, they take down the sail, hide themselves within the shell, and disappear.

The shell seems to consist of two parts, the keel, and the sides, whereas in reality it is but one. It is generally so large, that it may be just grasped with both hands, though it is but an inch broad. They are not thicker than a skin of vellum, and are streaked according to the length; but the sides are crenated or jagged, but the divisions are roundish. The hole by which the Nautilus gains its food, and shews itself out of the shell, is large. The shell is brittle, of a shining milk colour, very smooth, being in all things like a round vessel or ship. When it rises out of the sea, it comes up with the shell upside down, that the ascent may be more easy, and that the boat may empty itself of water; but when it is on the surface, then it sets the shell to rights. Between the arms of this fish, the abovementioned membrane or sail, is placed as it were like the webbed toes of a bird, but much more thin, being not much thicker than a spider's web; but it is strong, and holds the wind as this fish sails along. There are several threads on each side, which it makes use of instead of rudders, and yet, when any thing comes near it, this fish will immediately dive under water.

The PEARL SHELLLED NAUTILUS, is so called, from having a shell exceeding bright on the inside, in-somuch that it may vie with the finest pearls. *Belonius* calls it a PORCELLAIN, because the *French* artificers use it for the making of several sorts of ornaments.

Some authors affirm, that the shell of the Nautilus is sometimes met with twelve inches in length; and when entire, what is called the lip, stands very high, and the opening of the mouth is large, and of an oval oblong figure. From this part there runs a kind of a tail, which turns within the hinder part of the opening of the mouth, continuing in a spiral form for several circumvolutions, but within the body of the shell, and therefore is not visible till it is cut open. The outside of the shell is of a brownish colour, variegated with one that is paler. The opening of the mouth does not go deep into the shell, but in its hinder part there is a hole, which is the first opening of the Siphuncle of the inner part. From this place, the inner cavity of the shell is divided into a multitude of cells, generally not above one-third of an
inch

inch deep ; the divisions are made by transverse plates of the same pearly shell that lines the mouth and the pipe or siphuncle, the mouth of which is visible in the base of the first aperture of the shell, and is continued regularly through them all to the very extremity. These cells are forty in number, and they grow gradually smaller from the first to the innermost.

It is found in the *Archipelago*, as well as in the ocean, and is sometimes seen in the clay pits and stone quarries in many parts of *England*.

The **LITTLE THICK NAUTILUS**, is of a roundish form, and rarely exceeds an inch and a half in diameter. The surface of the whole shell is smooth, and the opening of the mouth is large, and nearly circular, but partly filled up behind by the turn of the spiral part of the shell into it. The colour of the outside is of a pale tawny brown, with lines or streaks of a darker colour, The inside is bright and shining like the former, and the mouth opens to a much greater depth in proportion to the size. At the bottom there is an aperture which runs through a multitude of shells, into which the inner cavity is divided. It is a native of the *Gulph of Persia*, and the *East-Indian* seas.

The **THIN EARED NAUTILUS**, has a very beautiful shell, which grows to ten inches in length, and is exceeding thin. The opening of the mouth is very large and of an oval shape, but truncated at the hinder part, where the spiral turn enters into it. The edge of the mouth is undulated, and at the hinder extremity there are two appendages called ears, one on each side the turn of the shell. The whole shell is as white as snow, and its outer surface is beautifully marked with undulated ridges with circular lines, and a great many tubercles. The back is hollowed all the way, and from its center there arises a denticulated ridge. This species is common in the *East-Indian*, and some parts of the *American* seas.

The **PAPER NAUTILUS**, so called from the thinness of its shell, it being no thicker than strong paper or parchment. It is often met with twelve inches long, and is compressed on the sides. The opening of the mouth is very long and narrow, and there are no ears ;

but the corners of the hinder part of the mouth, between which the spiral turn of the shell enters the cavity, are high and sharp. All the outer surface is beautifully variegated with undulated lines and hollow spaces between them. On the back there is a furrow runs all along it, and the ridges on each side it are sharp and ferrated.

The THIN NAUTILUS WITHOUT EARS, is smaller than the former kind, for it is but five inches long, and three or four deep. The opening of the mouth is very long and narrow, and it is without ears. The colour is of a yellowish white, and the shell is very thin and delicate. All the surface is undulated, and the back is both furrowed and undulated, having the two ridges on each side of it pretty broad and denticulated. Some authors make several other kinds, but they differ so little from the former, that it is not worth while to allow them a particular description.

The PURPURA, is of the size of an egg, and sometimes bigger, and there are several sorts of them. The YELLOW LONG SNOUTED PURPURA, with long crooked spines, is about four inches in length, and sometimes more, and the shape is nearly of an oval. The snout is almost twice as long as the rest of the shell, and both this and the body are armed with four rows of long spines or thorns, some of which are an inch in length, but slender, and pointed at the ends, but most of them are somewhat crooked. The mouth is nearly round, only its opening is continued to the form of a cleft up the snout. The natural colour of the shell is a tawny yellow, mixed with brown; but when it has lain long upon the shore, it becomes white as most other shells do. It may be seen in the cabinets of the curious. Some call it a Woodcock shell, from the length of its snout or bill.

The VARIEGATED LONG SNOUTED PURPURA, is four or five inches long, and the body of the shell is short, and nearly of an oval shape. The snout is slender, and about five or six inches in length; the mouth is round, but not very large, and the lip which surrounds it is of a reddish colour. The snout joins to the end of this, and there is a cleft that runs all along it from that part. The external surface of the shell is covered with large tubercles irregularly placed. The colour

colour is of a dusky yellow, variegated with brown and gray.

The SHORT SNOUTED PURPURA, is about two inches long, and its diameter with the spines and thorns, is an inch and a half. The shape is nearly oval, and the snout is short, or rather little or none. The surface of the shell is beset with six rows, or oblong protuberances, some of which are a third of an inch in height, and jagged at the top. These are generally black, at least in part, though the body of the shell is white. This shell is frequently found on the shores of the *Caribbee-Islands*, and is consequently white when brought from thence.

The SHORT SNOUTED PURPURA with three rows of spines, is about three inches long, including the spines, and as much in diameter. The body is large at the head, gradually decreasing till it becomes almost of the shape of a cone, and it has about six volutions. All the surface of the shell is deeply furrowed transversely, and adorned with three rows of spinous protuberances, some of which are half an inch in length, and a quarter of an inch broad; but the broadest part is at the extremities, where they are hollow below. The colour of the whole shell is of a dirty white.

The PURPURA, with a longish snout and short prickly spines, is about half an inch in length, and an inch in diameter, and the shape of the body is roundish. The shell has about five volutions or turns, and the snout is slender, and about two thirds of the length of the body. The whole surface of the shell is beset with many short spines of a conical figure, and some of them are hooked. There are ten rows of these, which are continued to the snout, and the shell is of a whitish colour, but the tips of the spines are for the most part black.

The BRISTLY PURPURA with a longish beak, is about two inches long, and an inch and a quarter in diameter. The mouth is small and roundish, and the shell has four or five volutions or turns. The snout is as long as one-third of the body, and of a conick shape, a little crooked and blunt at the end. The surface of the shell is covered with high raised ribs, running longitudinally

dinally at small distances. There are also furrows that run round the shell; and cross the former. The shell is quite covered with a sort of spines that look like bristles, whose ends are cut off; and the colour is variegated with dusky grayish and white, and the lining of the mouth is white.

The PURPURA of *Senegal*, has a shell that is from four to eight inches long, and half as broad. It is made in the form of a club, with a short round head; it is composed of eight or nine swelling turns, very distinct from each other, and there are six or seven large ribs running from the right to the left, and obliquely with regard to its length. These ribs are traversed, as well as all the shell, by a great number of threads, and on the first turn, there are fourteen teeth disposed in two rows, which turn towards the middle. These teeth all together in a shell of four inches, are half an inch long, and in those of eight, they are two inches; they are all marked with a deep furrow on the convex part. The summit is twice as broad as long, and twice as short as the mouth. This is of a cylindrick form, and at its beginning is three times longer than broad. There are generally placed thereon, fifteen or eighteen horizontal prickles, but not so large, by much, as the teeth on the turns. The left lip is remarkable for the shape of the shining plate that covers it, for it is slender, undulated in the middle, and twice as long as broad. The shell is either white, yellow, or fallow coloured without, and rose coloured within.

The COFAR, is a sort of Purpura found at *Senegal*, and is one of the largest kind, with a very thick shell of a somewhat oval shape, only it terminates at each end in a point, and is eight inches long, but not so broad by one third. It consists of nine or ten spiral turns, which are roundish and distinct from each other; there are also from seven to nine large ribs placed according to the length. On the two first turns, these ribs are furnished with points, eight on the first, and two on the next; the rest are adorned with a large stud, and the ribs are traversed with a great number of small threads finely shagreened, that cover likewise the whole surface of the shell, turning in the same manner as the spires.

The

The mouth is of a middle size, and almost round, only it is somewhat narrower at the extremities. The left lip has a swelling at its upper extremity, and where it rises, there is a round deep navel; the right lip is thick and sharp, slightly undulated at the edges, and marked within with a great number of furrows. It is of a deep brown colour inclining to black.

The GITON, a sort of *Purpura* of *Senegal*, is not an inch long, and not so broad by one half; but it is sharp at the end. It has eight turns, with flattish sides, which form a sort of lattice with small threads that cut each other at-right angles. The summit or clavicle, is longer than broad, and the upper channel of the opening of the mouth, is three times shorter than the mouth itself. The left lip is smooth, without teeth, and covered with a shining plate. The colour is white or fallow, without any mixture.

There are many other distinctions of the *Purpura*, but these are sufficient to give the reader all the knowledge that is necessary relating to these shells. This shell fish is said to live fifty days out of water; and yet, if it happens to be thrown where the fresh water falls into the sea, it dies immediately.

The BUCCINUM or TRUMPET-SHELL, is so called from the imaginary likeness of this shell to a trumpet or horn. It consists of one single piece, and has a large belly, and a wide mouth.

The TRUMPET SHELL of the island of *Goree*, is seldom much above half an inch long, and its breadth is less by one-half. It has but eight turns, which are a little swelled, very narrow, and rough, with tubercles on the outside. There are five or six on the first turn, two on the second, and one on the rest. The summit is of an equal length with the first turn, and the length of the mouth or opening, is not quite three times as much as the breadth. The right lip is thin and without teeth; that is generally speaking, for in some it is thick and has four large roundish teeth. The ground colour is of a deep purple, and in some, the first turn is surrounded with two obscure whitish lines.

The CERITHEUM of *Adanson*, is a Trumpet-shell of *Senegal*, and is seldom above two inches long, and

half as much broad. It has but twelve turns, which swell in the middle, and it is adorned with a row of studs on one side, parallel to its length; the rest of the surface is surrounded with ten or twelve threads a little raised. The opening or mouth is pretty wide, and its lower channel is hollowed like a semi-cylinder, and is partly covered by a pretty thick rib raised on the base of the left lip; the upper channel is narrow, and more deep by one half than broad. The colour is white, without mixture in the young, but slightly spotted with brown in the old.

The SLENDER BUCCINUM, with a longish snout, is four or five inches in length, and its diameter in the thickest part is not more than an inch; for which reason it is by some called the Spindle-shell. The thickest part is nearly in the middle, and the mouth has a snout for its lip, which is continued to the same length one way, as the clavicle the other. This shell has ten spiral turnings, and five of the lowermost have a sort of ridge in the middle, formed of a row of short blunt tubercles. The snout is radiated in a spiral manner, and the general colour is white, but the tubercles are yellowish, as are also the lines between their several rows.

The SMOOTH SLENDER BUCCINUM with a cloven snout, is by some called the MITRE-SHELL, and is about three inches long, and about three quarters of an inch in diameter. It has about five volutions, the lowermost of which is as long as all the rest together. The principal colour is white, which is variegated with clouds and spots of a dusky red. It has no spines, and the mouth is long and narrow, and at the upper extremity of it there is a cleft. It is found in *America* as well as the *East-Indies*.

The SMOOTH SLENDER BUCCINUM, with an oblong snout, and a denticulated outer lip, is five or six inches in length, and its diameter where greatest, is about an inch. The snout is equal to about half the length of the tail, and the shell consists of twelve spiral volutions, the lowermost of which is largest, and has somewhat of a belly. It opens at the front into an oblong mouth, and the fore lip has about five large denticulations. The joining of the two lips is continued into
a long

a long and slender snout, pointed at the end. The whole surface of the shell is smooth, and the colour white.

The LONGEST BUCCINUM, radiated transversely, is said to be a very scarce shell, and is about four inches in length, and nearly two in diameter. It consists of seven spiral turns, which are separated as it were from each other, and are flatted on the sides. The colour is yellow, transversely radiated with prominent roundish streaks. The opening of the mouth is oblong and large, and the extremity of the snout is blunt. This shell is brought from the *East-Indies*.

The SHORT BUCCINUM, with tubercles and a large mouth, is about two inches long, and nearly as much broad. The mouth is oblong and very large, and the outer lip broad. The extremity of the mouth is a little cloven, and the tail is short and thick. The shell consists of about six turns, and is of a brownish colour, and a little variegated with red and white. It is beset with a great number of short blunt tubercles, placed in several rows.

The SMOOTH SHORT BELLIED BUCCINUM, is remarkable for having the turns of the shell running a contrary way to most of the rest of this kind. It is about an inch and three quarters long, and near an inch in diameter in the thickest part. It consists of six turns, the lowest of which is much the largest, and as it were inflated. The mouth is small, and of an oblong oval form. The surface of the shell is smooth, and the colour yellow. It is brought to us from *Barbadoes*.

The SHORT SMOOTH BUCCINUM, with an extended lip, is an inch and half in length, and above an inch in diameter where broadest. It has about four spiral turns, and the lowermost is thick and blunt at the top. The mouth is large and longish, and the lip is pretty much extended. The surface of the shell is smooth, and of a pale brownish colour, with many yellow rings. It is chiefly met with in the *East Indies*.

The SLENDER LATTICED BUCCINUM, is about two inches and a half long, and an inch in diameter where broadest. It has seven turns, and the four lowermost are very small, the last terminating in a sharp point. The mouth is oblong, moderately large, and of a reddish

dish colour, and the lip is narrow and cloven a little at the top. The surface of the shell is adorned with pretty high longitudinal ridges, which cross the turns and stand pretty near each other. Besides, there are many broad lines that run according to the turns of the shell, and crossing the ridges, divide the whole surface into small squares. It is found on the shores of the *American* islands.

The **BELLIED BUCCINUM** with a narrow dentated mouth, is an inch and half long, and about an inch and quarter in diameter. It has about nine turns, though the lowermost of itself makes the principal part of the shell, the rest being comprehended in the space of one third of an inch. The lowest volution or turn, is nearly oval, and the mouth is small, oblong and narrow, with a lip at each end, extended a little beyond the opening, and forms a ridge. The mouth is dentated on both sides, and the colour is of a pale brown, variegated with a deeper brown, and a faintish white. It is brought from the *East-Indies* and other places.

The **THICK BUCCINUM** with a large mouth, is four or five inches long, and two and a half in diameter where thickest. It has five spiral turns, and is terminated in a small blunt point. The lowermost turn of which the body of the shell chiefly consists, is bellied and large, and the mouth is large and oblong, with thin lips. The colour is of a fine white, variegated with red, yellow, and brown, in a beautiful manner. The surface is as smooth as if it was polished. It is brought from the *West-Indies*.

The **SMOOTH OBLONG BUCCINUM** with a narrow mouth, called by some the **MIDAS EAR-SHELL**, is three or four inches long, and two and a half in diameter; it is of an oblong shape, and has some resemblance to the ear of an Ass, such as Midas is reported to have had. It consists of six turns, the lowermost of which takes up almost the whole shell, and is nearly of an oval shape. The mouth is almost extended through its whole length, and is very narrow, being only a cleft somewhat broader at the bottom than elsewhere. The mouth is rounded, and has a sort of a fold near the bottom.

tôm. The surface is quite smooth, and the colour is of a pale brown. It is brought from *America*.

The SHORT BUCCINUM with a hollow snout, is about two inches and a half long, and two inches in diameter. Excepting the snout, it is much thicker than long, and consists of six spotted spiral turns, with a blunt end. The mouth is wide and nearly oval, and the extremity of the shell is continued into a considerable long, slender, hollow snout. The lip is thick and wrinkled, as well as the whole surface of the shell, which is full of low oblong protuberances that are the higher risings of the ridges between the wrinkles.

The TRUMPET-SHELL of *Senegal*, is small, thick, and of an oval form, blunt at the upper part, and pointed at the top. It is but half an inch long, and much less broad. It is composed of ten turns or spires which are all smooth, polished, and flatted, except the first; but they are not very distinct from each other. The mouth or opening is oval, except in the lower part, where it forms a narrow channel, with a slight furrow roundish above, and twice as long as broad. The upper extremity forms a short channel, and is cut on the back of the shell by a furrow, which is somewhat more deep than broad. The right lip is blunt and very thick, though without a border, and somewhat wide, being adorned inwardly with eight small roundish teeth. The left lip is rounded, and crooked in the middle, like the portion of a circle; and it is covered with a small shining plate without any swelling, and as it were, wrinkled on the outside towards the upper extremity. The surface of the shell is covered with a reddish membranous skin, so thin and transparent, that the colours may plainly be perceived through it. The ground is either white, fallow coloured, or brown, without any mixture in some; but is generally brown, and marked with round white specks in the shape of lozenges. The animal that inhabits this shell, has a small cylindrick head slightly furrowed at the extremity; and the feelers are almost cylindrick, being blunt at the top, and longer by one-half than the head. The eyes are two small prominent points placed at the root of the feelers, and the mouth appears like a little round hole placed under the head,
about

about the middle of its length, from which is almost continually darted out a cylindrick trunk, almost as long as the feelers, which seems to be divided at the ends like two lips. The mantle consists of a very slender membrane, which extends from the external surface of the shell, and is folded like a cylindrick pipe, which proceeds from a length equal to the fifth part of the shell, and lies a little on the left side. The body is of a pale white, with oval reddish specks when beheld above; but underneath it is of a dirty white, without any spots. The feelers are red in the middle, and of a dirty white at the extremities.

There are many other sorts of Buccinums taken notice of by authors, but these are sufficient to satisfy the curiosity of most readers; and perhaps most of the other distinctions are in a great measure owing to fancy; though it is allowed there may be a greater variety with regard to the colours, and perhaps in the shapes.

The HEDGE-HOG MUREX, is three inches and a half long, and about two and a half broad where thickest. The body of the shell is nearly of a conick shape, and of a whitish colour, wrinkled on the surface with circular furrows. It is also surrounded with several rows of long, erect, strong, and sharp spines or prickles, from whence it has its name. The clavicle has also protuberances of the same kind on its several turns, but they are shorter and more blunt. The spines are all black, as well as some other parts of the shell, which give it a very singular appearance. It is brought from *Africa* and the *East-Indies*.

The HEDGE-HOG SHELL with a smooth clavicle, is two inches and a half long, and near two in diameter where broadest. The shell is of a brownish white, variegated with a deeper colour, which seems to be a mixture of brown olive and purple. There are three rows of spines at some distance from each other, connected by a ridge and the clavicle has about five turns. The spines are white, which add greatly to the beauty of the shell. It is found on the shores of *Africa*, near the *Mediterranean sea*.

The MUREX with hollow spines, and a naked wrinkled body, is about two inches and a half long, and an inch and half in diameter. The clavicle consists of
about

about nine distinct turns, the two lowermost of which are beset with a row of imperfect spines, and the body of the shell is wide, having a number of deep longitudinal furrows thereon. Towards the end next the clavicle, there are two rows of spines near each other, which are short, conical, and hollow. After these the body of the shell is naked till within half an inch of the other extremity, where there is another row of those spines. It is brought from the *East-Indies*, and is not very common.

The LEFT HANDED MUREX with a depressed clavicle, is near three inches long, and about an inch and a half in diameter at the head, from whence it grows gradually smaller to the end, which is pointed. The mouth is so large, that it reaches the whole length of the head, and the clavicle has about six turns. The colour is of a whitish brown with a reddish cast. But this shell is distinguished from all others of the kind, in being turned the contrary way to the rest. It is brought from the *South Seas*, and is consequently very rare.

The SPIDER SHELL or WRINKLED MUREX with an extended lip, is about three inches long, and nearly as much in diameter. The colour is chiefly of a pale yellowish brown, and the clavicle is long, with about six turns, which are broad and elegant. There are roundish ridges all over the body at different distances, and they are continued through the lip, which is greatly extended, forming what fanciful people call Spiders-feet, from whence this shell has its name. The mouth is very large, and the extremity of the shell small and turned up. It is brought from the *West-Indies*.

The SCORPION SHELL or TUBERCULATED MUREX with five teeth on the lip, is five inches long, and above three in diameter. The colour is yellowish, with a mixture of one more dusky; and the mouth is very long and wide, with a lip, when in perfection, variegated with red, violet colour, and white. The clavicle is short, and all the surface of the shell is covered with tubercles. The whole edge of the lip is notched in a very irregular manner, and there are five oblong protuberances resembling those at the two ends of the mouth. It is brought from the *East-Indies*, and some parts of *America*.

The

The **SIX LEGGED SPIDER SHELL**, or the **MUREX** with an extended lip and six long small horns, is three inches in length, and two and a half in diameter. The clavicle has about six turns, which are not very distinct, and the general colour is a tawny brown variegated with darker clouds, and a little flesh colour and white. There are a few blunt low tubercles on different parts of the surface; and on the back there is six long protuberances like so many horns, and those next the head are longest; but near the opposite extremity more sharp pointed and somewhat crooked. It is found in the *Mediterranean sea*, and is pretty scarce.

The **RIBBED MUREX** with a tuberculated clavicle, is above four inches in length, and two in diameter at the head, from whence the shell grows gradually smaller to the end, where it is a little cloven by the continuation of the mouth. The clavicle is long, having about eight turns, and the lower ones have each a row of tubercles, that on the first and second form a sort of a crown. The surface of the body of the shell is raised into longitudinal ribs, and the colour is of a yellowish brown, variegated with lines of a darker colour, like the veins of some sort of wood. It is an uncommon shell, and is brought from *South America*.

The **RIBBED MUSICK SHELL** with streaked rings, is about two inches long, and near an inch and three quarters in diameter. The body of the shell is short, and there are several broad low ribs at some distance from each other. The clavicle is long, and consists of seven or eight turns. The colour of the shell is of a whitish brown, and is surrounded with three or four rings, consisting of four or five slender black lines, with reddish and blackish spots between them, which give them the appearance of the lines in musick books. It is brought from the *East-Indies*.

The **MUREX** with a single large rib on the back, is not above an inch and half in length, and an inch in diameter. The body of the shell is nearly of an oval shape, and the opening of the mouth is long and wide, with a lip bordered with a thick edge. The clavicle is short, consisting of about five turns, one of which bellies out. On the middle of the back there runs a thick large rib,
rounded

rounded at the top, and very like the thick edge of the lip. The rest of the surface is smooth, and of a horn colour variegated with brown. It is brought from the *East-Indies* but is not very common.

The TUBERCULATED MUREX with a bidentated lip, is only an inch and half in length, and as much in diameter. The clavicle is long, consisting of five turns, though it is hard to determine where the lowermost ends. The colour is of a dusky brown with paler variegations, and the inside of the mouth is of a whitish red. The surface of the body is surrounded with rows of small round tubercles; and four or five of these rows are paler than the rest of the shell. The mouth is very wide, with a lip greatly extended, and armed with two points, the one at the extremity, and the other about the middle, whence it is said to be bidentated.

The MUREX beset with large thick tubercles, seldom obtains the length of an inch and quarter, and the diameter is pretty much the same. The clavicle is short, and consists of a considerable number of turns. The tubercles are large with blunt points, and are disposed in four or five rows. The surface of the shell is variegated with a blueish violet colour, a deep purple and brown. It is brought from the *East-Indies*. There are various other kinds of these shell fish, but these are sufficient to lead to a knowledge of the rest.

The GOLD MOUTHED COCHLEA or SNAIL, is about two inches high, and an inch and a half in diameter. It is thickest about the middle, and is somewhat small near the mouth; but it gradually tapers the other way to a point. The surface of the shell is deeply furrowed with spiral lines, which are somewhat irregular, and have a great number of tubercles thereon, disposed into five rows. They are pretty large and blunt at the end, and the surface is variegated with a deep and pale brown; but the extremities of the tubercles are pale. The colour is not the same in all, but the mouth is always of a fine bright gold colour within. It is round and edged on the circumference with a narrow lip. It is common in *America*, and is found in some parts of *Europe*.

The HEDGE-HOG SNAIL, is about an inch high, and two inches in diameter near the mouth. The clavicle is a little flatted for two or three turns, and then the shell lengthens, and grows broader till near the mouth, where it again becomes a little smaller. The mouth itself is nearly round, and edged with a narrow lip. There are prominences on the shell which are high, and follow the spiral turn; being a third part of an inch in length, and pointed at the ends; and there are others which consist of three or four placed together, and are dentated at their extremities. The predominant colour is yellowish, and the tubercles are of a fine rose colour, sometimes a little tinged with violet. The inside of the shell is white like the mother of pearl. They are brought from the *East-Indies*, and sometimes from *America*.

The BELTED SNAIL, is two inches and a half high, and about as much in diameter. It consists of four very distinct spiral turns, of which that next the mouth is the largest by much. The mouth is very large, and somewhat oval, and the whole surface of the shell has deep furrows, which follow exactly the spiral turn of the shell. The prominences between these are like so many broad belts, roundish at the top. The colour without, is brown mixed with grey, and the inside is of a blueish white. It is common on the coasts of the *American* islands.

The SMOOTH RIBBAND SNAIL, is one of the tallest and longest in proportion to its breadth of all this kind, it being two inches long, and a little more than an inch in diameter. It consists of five spiral turns, and terminates in a very sharp point. The surface of the shell is smooth, and the colour dusky, but paler in some places than others. It is variegated with several beautiful stripes like ribbands, following the spiral turn of the shell, which are of a fine reddish brown, with a little mixture of white in some places. It is found on the shores of many parts of *Italy*.

The WHITE AMMON'S HORN SNAIL, differs greatly from the two former, and consists of five spiral turns, though it is quite flat, that which should be the point, being sunk lower than any other part of the shell.

The

The diameter is about two inches, and the thickness no more than half an inch. The mouth is round, and there the shell is largest, for it tapers from thence to the point in the center. The surface is smooth, and the colour white.

The WARTY SNAIL, is seldom above three quarters of an inch long, and half an inch in diameter. It consists of four spiral turns, and its top is bluntly pointed. All the outer surface of the shell is marked with spiral lines, and there are others that cross them, forming a sort of chequer work, in the centers of many of which there are warty tubercles. The upper part of the shell is of a pale brown, and the tubercles whitish; but on the lower part it is tinged with grey, and the protuberances are large, blunt, and of the same colour. The mouth is nearly round, and both that and the whole inner surface is of a fine pearly white.

The SMOOTH BROWN SNAIL with a great mouth, is about an inch high, and as much in diameter. The surface of the shell is smooth and even, and the colour is of a pleasant brown, which becomes paler towards the edges, where it is almost white. The mouth is large and of a semicircular shape. The fore part being a true segment of a circle, and the hinder a straight line. This part has a small lip, and a hole like a navel behind it. The inner surface of the shell is whitish, and it is brought from the *East-Indies*.

The THREE RIBBED SNAIL, is an inch and a half in diameter, and the body is large, with a small spiral depressed clavicle. The whole surface of the shell is smooth, only where there are three narrow stripes which rise above the surface, and run along the whole body, dividing it into so many spaces. The prevailing colour is a reddish brown, which is paler in some parts, and the mouth is larger and semicircular. It is brought from *South America*, and sometimes from the *East-Indies*.

The ROUNDISH SMOOTH SNAIL with a wide mouth, is of the small kind and of a round shape. The body is large in proportion to its size, and is nearly equal in diameter to its depth. The clavicle is small, and has a depressed spiral turn at the end. The mouth

is very large, and somewhat broader than deep, being semicircular on the forepart. The under part is formed into a kind of a lip, with a hole like a navel behind it. The surface of the shell is smooth and of a greyish white, variegated with two irregular rings formed by clouded spots which are rough on the edges. The inside is of a pearly white. It is brought from the *East-Indies*.

The **TOOTHED SNAIL** or **NERITE**, is about an inch in length, and three quarters of an inch in diameter. The body is large, and the clavicle small, with a depressed spiral turn; the colour is grey, variegated with iron grey or blackish colour. The mouth is large and semicircular, and the hinder lip is furnished about the center with two longish blunt teeth, which are sometimes reddish; for which reason it is called the **BLOODY TOOTHED NERITE**.

The **BANDED SNAIL** with four teeth, is nearly round, and about an inch in diameter. The clavicle is very small and depressed, and the outer surface of the shell is formed into raised broad bands running parallel to each other, and separated by narrow furrows. The colour is whitish grey variegated with black, but the inside of the shell is of a pearl colour. The fore lip is broad, thick, and prominent, and that behind is very broad, having each two teeth, which are sometimes white and sometimes red, as if they were bloody.

The **PRICKLY SNAIL**, is about three quarters of an inch long, and near half an inch in diameter. The shell consists of four turns, and there are upright blunt ridges with small hollow spaces between them. Round the larger turns, there are two rows of long slender thorns or prickles, and the outside of the shell is variegated with a deep reddish brown, and a whitish pale colour.

The **CLOUDED SNAIL**, is about an inch and a half long, and an inch in diameter, consisting of five spiral turns, and the extremity of the clavicle is small and blunt. The outside of the shell is smooth, and the colour of a pale brown, variegated with small clouded spots of very dark brown. The mouth is large, and the inside of the shell of a silver colour. There are
other

other sorts of snails with semicircular mouths ; but what has been said, perhaps may be sufficient to give an idea of them in general. There is another sort of snails with a flatted mouth, partly filled up with the turn of the shell, of which some account shall be given.

The CONICAL TUBERCULATED SNAIL, or ROUGH TROCHUS, is sometimes three inches long, and two broad at the base. The mouth is moderately large, and the shell has six spiral turns, and blunt at the end ; it is beset with tubercles that are large, blunt, and broad at the base, being disposed into five or six rows, and the rest of the surface is undulated. The colour is of a fine grey, variegated with another that is blackish. It is brought from the *East-Indies*.

The SMOOTH CONICAL SNAIL or TROCHUS, is sometimes three inches long and two broad. It consists of seven distinct spiral turns, and becomes smaller gradually from the base to the end, which is blunt. The mouth is moderately large, and of a white silver colour within. The shell is pretty smooth on the outside, and of a whitish colour, but variegated with irregular rays of red and brown. It is brought from the *East-Indies* and other places.

The UNDULATED SNAIL or TROCHUS, is an inch and a half in diameter at the base, and two inches long, and the shell consists of about seven spiral turns, the two lowermost of which are large and flattish, and the others very small. It terminates in an oblong blunt point, and the colour of the whole is white, except the inside, which is of a pearl colour. There are a great number of transverse ridges on all parts of the shell, that are considerably raised above the rest of the surface, and are irregularly round at the top.

The PRICKLY SNAIL or TROCHUS, is about two inches long, and an inch and quarter at the base. The shell consists of about ten spiral turns, but four of the upper ones are not very distinct. Round the edges of three or four of the larger, there are regular rows of sharp pretty strong prickles ; and the surface of the lower part is somewhat irregularly raised into a few transverse ridges, with many fine lines running generally in pairs, according to the turns of the shell. The outside is of a

chestnut brown, but the prickles are paler, and the lines darker than the rest. It is brought from the *East-Indies*, and particularly from *China*.

The FRENCH HORN SNAIL, has a flat depressed shape, and the extremity of the clavicle is sunk within the rest of the surface. It is about two inches broad, and half an inch thick, and its mouth is the segment of a circle almost filled up with the succeeding turns of the shell, of which there are four or five. The colour is yellowish, and it is common in the *East-Indies*.

The SERRATED SNAIL or SPUR SHELL, is about two inches broad at the base, and but little above an inch long. The shell consists of six spiral turns, each of which is adorned with a serrated sharp ridge, and the denticulations rise into a sort of thorns broad at the bottoms, and pointed at the ends. It may be placed so as to resemble a spur with large rowels, and the clavicle is depressed at the top. The mouth of the shell is pretty large, and the colour is sometimes of a fine pale yellow, and sometimes entirely white; but the inner surface is always of a pearl colour. It is brought from the *East-Indies*.

The CONICAL SNAIL with tuberculous undulations, is about an inch and a half thick, and as much long. The shell consists of about six spiral turns, terminated at the top by a small roundish button. The surface is covered with undulated transverse lines, whose central points are raised into blunt tubercles. The colour is of a greenish grey, but the more prominent parts, and the top of the clavicle, are more pale, and sometimes white. It is brought from the *East* and *West-Indies*.

C H A P. XXX.

Of Turbinated Shells.

TH E S E shells are of the simple kind, consisting of one piece, and of a long slender make, always terminating in a very long fine point. The mouth is narrowest towards the base, and has a sort of an ear. They are of different shapes, and in general they are called Screw-shells.

The THICK TURBO or SCREW-SHELL with an oval mouth, is sometimes seven inches in length, and two in diameter where thickest. The shell consists of about fourteen turns, ten of which are pretty distinct; but four near the extremity are a little confused. The turn next the mouth is the largest, from which they gradually diminished to the end, which is pointed. They are all round on the surface, which is smooth and white, but beautifully variegated with yellow rays and broad bands, consisting of a mixture of blue and brown lines; but interrupted by irregular spiral lines of the same colours. The mouth is large and wide, and the lip thin and not dentated. It is found in *America*, as well as *Europe*.

The NEEDLE-SHELL or SLENDER SCREW-SHELL with roundish spires and a small round mouth, is five or six inches long, and the diameter where thickest, is not much above half an inch. It becomes gradually smaller from the mouth to the other end, where it terminates in a point. It consists of fifteen spiral turns, which are all roundish or bellied, rising very high in the middle. The furrows between them are deep and narrow, and the mouth small and roundish. It has only a notch where the ear is placed in the other, and the whole surface is perfectly smooth. The colour is white, variegated with yellow.

The SLENDER TURBO or SCREW-SHELL with bellied spires, and an oval mouth, is about two inches long, and a third of an inch in diameter where thickest. The shell consists of about fourteen turns, and that next the mouth is much the largest; the mouth itself is moderate

rately large and oval, and bordered with a thin lip. It is common on the shores of the *American* islands.

The TURBO or SCREW-SHELL, with bellied spires and elevated ribs, is an inch and a half in length, and the largest turn a little more than the third of an inch in diameter. The turns grow gradually smaller to the point, and they are seven in number, beautifully ribbed, and each of them have several strait very high ribs running down at small distances. The colour is white, and the mouth round and pretty large, with a thick lip. It is common on the shores of *Barbadoes*.

The CONICAL TURBO or SCREW-SHELL, with plain streaked and numerous spires. It is by some called the TELESCOPE-SHELL, and the shape is a regular cone four inches long, and an inch and a quarter in diameter near the mouth, from whence it grows gradually smaller, terminating in a very fine point. The turns near the mouth are broad, and they become gradually narrow, but are very numerous, and at length indistinct. The turns are all flat and streaked spirally, and the colour is brown, but deepest at the thickest part, and almost white at the point. The mouth is flat and not large, and the lip runs each way to some distance beyond it like a ridge. It is found in most parts of the world.

The SLENDER TURBO or SCREW-SHELL with spiral lines on the turns, is four or five inches long, and scarce half an inch thick where thickest. It becomes gradually smaller to the end, where it terminates in a point. The turns are all round it, and the furrows between them are pretty deep, and beautifully streaked all the way with deep furrows following the turn of the shell. The mouth is small, and of an irregular oval, with a thin lip. The colour of the shell is yellow, unless it has lain long on the shore, and it is found on the shores of the *American* islands, as well as in the *East-Indies*.

The TURBO or SCREW-SHELL with distant and prominent spines, is about five inches long, and the diameter of the spire next the head, is about three quarters of an inch, from whence it becomes gradually less till it terminates in a point. There are about seventeen turns
that

that are very high, and extremely narrow, with very deep furrows between them. The mouth is round, but not very regular, and the lip has a little ear; the colour is whitish, with a tincture of yellow and red, and it is brought from the *East* and *West-Indies*.

The TURBO or SCREWSHELL with narrow flatted, and flatted spires, is about four inches long, and the diameter where largest half an inch, from whence it tapers to a fine point. The shell consists of about fourteen turns, which are very indistinct towards the point. They are all flatted and undulated in a very agreeable manner, and along the edge of each spire, there is a sort of blunt small protuberances or studs of a paler colour than the rest of the shell, which is of a dusky brown. The mouth is large but irregular, and projects from the rest of the shell. It is brought from the *East-Indies*.

The WARTY TURBO or SCREW-SHELL with a broad depressed mouth, called by some the CATERPILLAR-SHELL, is about two inches and a half long, and near three quarters of an inch in diameter next the mouth. It consists of about twelve turns, which terminate in a point, and several of these are irregularly beset with blunt warty protuberances. The mouth is as it were connected to the shell by a sort of a neck, and is broad and depressed, having the lower lip a little turned back, and an ear at each extremity. The shell in general is pale variegated with a darker colour; but the protuberances are blueish. It is brought from *China*.

The TURBO or SCREW-SHELL with a long wide mouth, is three inches long, and of the thickness of a man's little finger. It becomes gradually smaller from the mouth to the end, and consists only of three turns, of which the first takes up almost the whole shell. The mouth is near two inches long, and narrow at the lower part, but wide near the extremity, with a winged lip. The colour is brownish, variegated with a deeper brown, and a reddish tawney. The surface is smooth, only there are a few tubercles on the second turn. It is brought from the *East-Indies*.

The RIBBAND TURBO or SCREW-SHELL with a small mouth, is about two inches and a half long,

and a little more than the third of an inch in diameter near the mouth, from whence it gradually tapers till it terminates in a point. The shell consists of about ten turns that are somewhat rounded, and the lines which divide them are very small. The mouth is nearly oval, but a little irregular, and small in proportion to the size of the shell. All round the turns there are several broad rings or belts that follow the course of the shell. In some more, in others less, and they are of a darker colour than the rest of the shell. It is found on the shores of the *American* islands.

The WREATHED TURBO or SCREW-SHELL with a narrow oblique mouth, is two inches long, and a third of an inch in diameter at the base. The shell consists of fourteen turns that are flattish, and somewhat hollowed inward towards the base. The outward edge is more prominent, and is armed all the way with a row of strong large prickles that are a little blunt at the extremities. The mouth is connected to the shell by a sort of an neck, and is oblong, oblique, and narrow. It is found on the shores of *Italy*.

The OBLONG MOUTHED TURBO or SCREW-FISH with spires jagged at the edges, is about two inches long, and the third of an inch thick at the base. The mouth is small and oblong, but widest in the middle, and has a broad lip. The shell consists of about fifteen turns; the first of which is a little bellied; but the rest are flat and jagged at the edges. The colour is of a faint brown, a little variegated with tawney, and reddish, and regular rows of little black dots. The jagged edges are of a paler colour than the other parts. It is found in *America*, and some parts of *Europe*.

The THICK EARED TURBO, or SCREW-SHELL with turns deeply jagged at the edges, is three inches long, and an inch in diameter where thickest. The shell consists of about eleven turns, that are all flat, except the first, and are deeply jagged at the edges. The colour is a whitish pale, variegated with irregular spots of a darker hue, and the extremities of the spires are paler. The mouth is oblong and narrow, and remarkably eared.

The SCREW-SHELL of *Senegal*, is like a cone rounded at the base, and grows gradually smaller to the top,

top, where it terminates in a very fine point. The largest are not much above an inch long, and a quarter of an inch in diameter; it is composed of thirteen flat spires or turns without any swelling, insomuch that they are only distinguishable by a shallow furrow which separates them from each other. These turns are all crossed by a great number of very slight furrows, according to the length of the shell. The mouth, or opening, is nearly like that of the Miran; but above twice as short at the summit. The upper furrow is somewhat deep; and left lip has but a slight fold. The ground colour is a dirty white; but on the upper middle of each turn, it is of the colour of agate.

There are other Screw-shells mentioned by authors, but these may be sufficient for our purpose.



C H A P. XXXIII.

Of wreathed Shells.

THE VOLUTA or WREATHED SHELLS are of one piece, and of a figure nearly conical, but short, the clavicle being commonly depressed, and the mouth long, perpendicular, and narrow.

The JAMAR, is a Voluta of *Senegal*, which is very thick, and nearly of a conical shape. It is about six inches long, and two in diameter, and consists of twelve spiral turns. The first makes of itself the chief bulk of the shell, and turns off at a right angle towards the lower part, to form almost an horizontal plain slightly hollowed in the middle. The remaining eleven are also flattish, and nearly horizontal. The clavicle terminates in a very fine point, and the summit, which is, as it were, the base of the cone that forms the upper part of the shell, is but the eighth part of an inch. The mouth or opening, is a long strait cleft, larger by one half in the upper part than in the lower, whose length is terminated by the first turn, insomuch that it is seven times longer than the clavicle. The right lip is acute and

very sharp at the edges ; the left is swelled roundish and very simple. A membranous skin of a reddish colour surrounds the whole surface of the shell, and when this is taken off, it appears of a fine polish, and finely variegated with different colours. The ground is white, red, yellow, or brown, and marbled with spots without any regularity, and sometimes encircled with pointed streaks. This shell is highly valued by the curious, who have given it different names, according to the varieties.

The ADMIRAL SHELL or VOLUTA with a broad yellow band, and a pointed line thereon, is an uncommon and very beautiful shell, bearing a great price. It is about two inches long, and near an inch in diameter towards the head, from whence, to the extremity of the mouth, it gradually decreases in size, so as to form a sort of a cone, with an obtuse point. The clavicle also diminishes in diameter, and terminates in a blunt point. The ground colour of the shell is of a beautiful yellow, but so variegated, that it does not take up above one third of the surface. There is a circle or ring of this colour at the head, of about the breadth of a straw, and below it there are three broad belts or rings finely variegated. The lowest of the three are broader than the others, and separated by five yellow lines. Under the belts, the fine yellow appears again in the form of a broad belt ; and in the center there is a narrow pointed line of the same colour, with the other variegations, which is the characteristic of this shell. From the verge of this to the extremity of the shell, the yellow gold colour prevails again ; but the clavicle is very beautifully variegated with the same colours as before ; but what these are, our author does not mention. It is brought from the *East-Indies*.

The VICE-ADMIRAL SHELL, is nearly as beautiful as the former, and is somewhat more than two inches in length, and about an inch in diameter at the head. The clavicle is a little longer than that of the Admiral, and has about ten turns, and the ground is of a bright gold colour, with the same variegations as the former, only they have a greater mixture of white. There is a line of gold colour at the head, of the breadth
of

of a straw, below which there is a circular line of the variegations, much of the same breadth. Under this there is a narrower line of yellow, and under that a very broad belt of the variegations. Below this there is another of yellow, as in the Admiral, but without the pointed line. Next to this there is another broad belt of the variegations, and then comes the point of the shell, which is yellow. The clavicle is beautifully clouded with variegations. This is brought from the *East-Indies*, and likewise bears a great price.

The FALSE ADMIRAL SHELL, is by some taken for the Admiral Shell, but it is not near so valuable. It is about an inch and half in length, and half an inch in diameter at the head. The body is conical, though it does not taper very much; and the clavicle is not quite so long in proportion as the two former. The ground colour is of a dusky white, variegated with several faint colours, and there are two broad belts of a beautiful yellow that run round it, the one being near the point, and the other a little higher than the middle. The surface is smooth, and the mouth narrow. It is brought from the *East-Indies*, but principally from *China*.

The TIGER SHELL, is about two inches and a half long, and an inch and quarter in diameter. Its mouth is very long and narrow, and its clavicle has about four turns. The ground of the shell is of a dusky red, and it is sprinkled all over with irregular spots, or spaces a little whitish. Some of these are oblong, and others angular and indented. It is a scarce shell, and is brought only from the *East-Indies*.

The YELLOW TIGER SHELL with smaller white spots, is about two inches and a half long, above an inch and half thick at the head, from whence it gradually diminishes to the opening of the mouth. The clavicle consists of about six turns, and terminates in a fine point. The ground colour of the shell is yellow, and beautifully variegated with white irregular spots of the size of a pea. It is brought from the *East-Indies*.

The WHITE VOLUTA, variegated with a cloudy reddish colour, is about two inches long, and above an inch in the diameter at the head. The clavicle is pretty large and blunt at the end, and has only four or five

turns, and these not very distinct. The colour in general is of a faintish white, variegated with dusky red spots that are very large and of irregular figures disposed without any order.

The CROWN IMPERIAL SHELL, is three inches long, and near an inch and half in diameter at the top. The clavicle is so depressed, that in a front view of the shell it is not to be seen. The head is surrounded with a very beautiful row of tubercles pointed at the ends, and the ground colour is pale, with two broad beautiful belts running round it, the one near the head, and the other towards the other extremity, They are of a fine yellow, prettily variegated with black and white. It is brought from the *East Indies*, though few of them are very perfect.

The HEBREW LETTER SHELL, is smaller than the rest of this kind, for it is rarely above an inch and quarter in length, and three quarters of an inch in diameter at the top. The body is in the shape of a cone, and the clavicle pretty long, with about five turns, but it is blunt at the extremity. The ground colour is of a pearly white, variegated with large irregular black marks disposed in about four rows on the body, and there is a single row on each turn of the clavicle. Some have fancied they resemble *Hebrew Letters*. It is brought both from the *East* and *West Indies*.

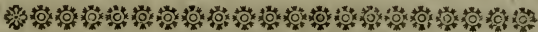
The WHITISH VOLUTA, variegated with brown and purplish blue spots, is more than four inches long, and two in diameter at the head, from whence the body tapers very gradually, and is large and blunt at the end. The clavicle consists of seven or eight turns, and is blunt at the extremity; the ground of the shell is white, variegated with spots of different sizes running in circles round it, and are from twenty to thirty in number on the shell, some of which are brown, and others of a purplish blue. It is brought from the coast of *Guinea*.

The HALF CROWNED VOLUTA, with an undulated surface, is more like the Crown Imperial than any other shell of this kind. It is about two inches and a half in length, and near an inch and three quarters

ters at the head. The edge of this is deeply indented so as to form a kind of crown. The clavicle consists of but a few turns, and is blunt at the point. All the surface of the shell is undulated with many longitudinal furrows a straw's breadth distant from each other. The colour is white and the variegations of a faint brown. It is brought from the coast of *Africa*.

The *SLENDER VOLUTA*, with a long clavicle, is about two inches long, and near three quarters of an inch in diameter at the head, from whence the body forms a sort of cone tapering very regularly to a point. The clavicle is long, very slender, and consists of ten or twelve turns terminating in a sharp point. There are three white broad belts variegated with purple spots and lines; and between these there are three others that are broad and of a beautiful orange colour.

The *BUTTERFLY SHELL*, is three inches long, and about an inch and three quarters in diameter near the head. The body is in the shape of a pretty regular cone tapering very gradually, and ending in a blunt point. The clavicle has five or six turns, and is pointed at the extremity. The general colour is yellow, finely variegated with fine brown spots placed in regular round rows. There are three very beautiful belts round the body, and one narrower near the head, consisting of large spots of a deeper and paler brown with some white. They resemble the spots in the form of eyes on the wings of some Butterflies.



C H A P. XXXII.

Of Limpets.

A *LIMPET* is a simple shell of a conical or gibbous shape, with a very wide opening at the bottom. This shell-fish always fixes itself very firmly to some solid body, which serves as it were in the room of another shell. The top of the Limpet in some is acute, in others blunt. In some depressed, and in others

others perforated, and in others again turned down or crooked.

The STREAKED LIMPET, is an inch broad at the mouth, and three quarters of an inch high; but the base is not exactly round, and the top is sharp or pointed. The colour of the outside is of a dusky brown, with an olive coloured cast, and it has about ten ridges placed nearly at equal distances, being rough all over. These streaks are most conspicuous towards the mouth, for they become fainter as they approach to the top where they disappear, the sharp point being smooth. The inside of the shell is variegated with yellow, brown, and whitish colour, and disposed in irregular circles. The appearance is not unlike the flower called Auricula; it adheres very firmly to the rocks in many parts of the *East Indies*.

The STARRY LIMPET with seven ribs that form as many prickles at the rim. It is of an oval shape, being about an inch one way, and two thirds of an inch the other but not raised very high, it being scarcely half an inch that way. It is pointed at the top, but not exactly in the center of the shell; and on the outer surface there are seven very high ribs placed at a considerable, and nearly equal distance from each other. They run distinctly to the very point of the top and to the edge, where they terminate in a point beyond it, forming so many prickly rays, with furrows between them in the form of segments of circles. The colour is whitish on the outside, variegated with black clouds and spots, especially about the ribs. It is found adhering to the rocks in the *East Indies*.

The OVAL SMOOTH LIMPET, with a depressed top, is two inches and a half one way, and two inches the other. Its height from the center of the base to the top, which is somewhat depressed is an inch and a quarter, and the rim is even, and the whole surface smooth. The colour is of a dusky white, finely variegated with black clouds. It is found sticking to the rocks on the shores of the southern parts of *Europe*.

The BEAKED LIMPET, with a round mouth, and a smooth even edge, is about an inch in diameter and nearly as much high. The outer surface of the shell

has

has no ridges, but there are irregular roughnesses thereon. It is bellied half the way up, where it begins to form a snout that is somewhat pointed and bends down. The inside of the shell is chambered, and the divisions are terminated by a sort of points. It is brought from some of the *American* islands.

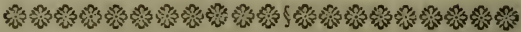
The CHAMBERED LIMPET, with a short snout, is of an oblong or irregular oval shape at the base, being an inch and a quarter long at the mouth, but not half an inch broad. The edge is somewhat undulated, and about half the opening at one end is covered by a thin crust or shell connected to the end and along the sides, but irregularly notched at the edge. The height of the shell is about half an inch, and the snout is short, seeming only to be a kind of a button. It is not placed at the center of the shell, but near the edge at the end, which some call the head. All the outer surface is rough and warty, and the inner smooth, but very beautifully coloured. It is found on the *European* shores.

The GREAT OBLONG LIMPET, is near three inches long at the base, and an inch and a half in diameter at the largest end. The edge is smooth and even, and the height is about an inch; the surface is almost smooth, only there are several longitudinal rays, and some transverse or circular. Its colour is of a dusky brown, and the shell is more thick and strong than that of many others. Its top is not much raised, and there is an aperture or hole therein of an oblong shape, which seems to be formed of two round ones joined together. The colour on the outside is of a dusky grey, and the inside is whitish. It is met with in the *East Indies*, and southern parts of *Europe*.

The LIMPET of the isle of *Goree* has a conical shell with an oval base, is about an inch long, and somewhat less in diameter; but not so much by one third in height. It has an oval hole at the summit, which is nearly one fifth part of its length. It is almost always covered with a marly crust which is whitish, and underneath there are fifty shallow furrows which divide at the top, and run to the edges of the shell, being all slightly dentated. The colour is of a whitish green within, but without it is sometimes white, grey, or red.

There

There are many other sorts of Limpets ; but what has been said is sufficient to distinguish them from all other sort of shells.



C H A P. XXXIII.

Of the Shells called the Sea Ears.

THE HALIOTIS or EAR SHELL, is a simple shell of a depressed shape with a large mouth, being somewhat of a spiral form at the top, with several perforations on the side of the disk. Some have supposed it to be of the shape of an ear from whence it has its name ; but *Lister* has placed it among the Turbinated Shells, on account of the spiral turn at the top.

The GREAT EAR SHELL, with an even edge and seven holes, is five inches long, and nearly three broad ; but it is no more than three quarters of an inch high. The shape is of an irregular oval, and the end where the spiral turn is placed is the largest. The back or hinder edge is thick, and so turned as to form a sort of lip. The fore edge is thin, simple, and even, and the upper surface is brown, rough, and uneven, with a kind of undulated line. The part towards the head is thickest, and the spiral turn short and depressed. Along the back part of the shell near the thicker edge, there are a row of holes of a roundish shape, of which seven are open, and there are the marks of others that do not penetrate quite through the shell. The inside of the shell is of a beautiful pearl colour, which seems to be variegated with several bright colours when placed in different directions of the light. There are also a kind of warty protuberances which look like pearls. It is met with in many parts of the world, but chiefly in the *East Indies*.

The LONG EAR SHELL, with an undulated head and eight holes, is three inches long, and an inch and quarter broad where broadest, but it is not half an inch high. The head is large, and the spiral turn very beautiful

beautiful and fair. The back of the shell forms an even lip, and the fore-edge is thin and undulated. The outside is smooth, only it is a little undulated from the spiral turn, and is of a greenish colour, variegated with a brownish red. The inside of the shell is of a pearl colour, finely variegated with others. There is a long row of holes on the back edge of the shell, eight of which are always open. It is found sticking on the rocks of the *Malabar coast* in the *East Indies*.

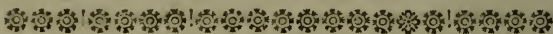
The STREAKED or WRINKLED EAR SHELL with six holes, is three inches and a half long, and two in diameter near the head, but it is not above three quarters of an inch high. The outside of the shell is of a dusky brown, and on it there are many slight irregular undulated ridges which begin near the spiral end, though they almost disappear before they reach it. The back is thick, and forms a kind of lip, and the fore-edges is thin and a little undulated; but the hinder extremity is generally more so. There is a long row of holes, near the thicker edge of the shell; but of these six only are open. The inside is of a pearly blue. and there have been sometimes a sort of loose pearls found therein.

The STOMATIA or MOUTH SHELL differs from the former sort in being without holes. The OVAL MOUTH SHELL is about an inch and half long, and near an inch broad where largest; but its height is not quite half an inch. This shell is very thin, with a thin and even edge, and the head is the smaller extremity, with a short spiral turn running into the cavity of the mouth. The opposite end is large, and hollow like a spoon, and the colour is a pale tawny-brown, and the inside is of a pale brown. The mouth is very large, from whence it derives its name.

The GIBBOUS STOMATIA or MOUTH SHELL with many fine streaks, is about two inches long, and an inch and a half in diameter. The upper surface is of a dusky chocolate colour, and is more gibbous than in the former kind. The edge is pretty thick all round and of a whitish colour; but the inside is of a pale brown. Both these kinds are found in the *American islands*.

The

The STOMATIA or MOUTH SHELL, with a crooked edge, is four inches long and three broad where largest; but it is not above an inch high. The upper surface is of a deep chocolate colour variegated with white. There are many blunt undulated ridges which are almost white at the tops, and of a deep purplish brown on the sides, as also on the spaces between them. The inside is of a pale brown with a reddish cast, and the spiral turn of the head is small. The edge of this shell is crooked or sinuous from the depressions that run between the ridges. It is found on the coast of *Malabar* in the *East Indies*.



C H A P. XXXIV.

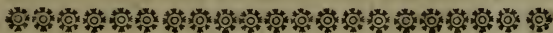
Of Dentalia, or Tooth Shells.

THE STREAKED, and RINGED TOOTH SHELL, of a shape approaching to a cylinder, is two inches long, and of the thickness of a Swan's quill. This shell looks as if it was broken off from some other, and is of a greyish white colour generally variegated with green, and sometimes tinged with red. It has about ten deep longitudinal furrows, running all the way down its surface, and the ridges between them are rounded. There are generally three circles or rings, passing round it at unequal distances, somewhat interrupting the longitudinal furrows. This shell is thin and is easily broken. It is common on the shores of *Italy*.

The DOG TOOTH SHELL is about an inch in length, and of the thickness of a Goose quill. The shape is conical, and largest at the mouth, from whence it gradually tapers to a point, which is sharp and without any opening. The surface is smooth and polished, and the colour is white like that of China ware. It has sometimes a purplish cast, and sometimes that of a bright red or brown. It is common in most parts of the world.

The CONICAL CROOKED STREAKED and RINGED TOOTH SHELL, is four inches long, and of the thickness of a child's finger. It is largest at the mouth, and from thence gradually tapers to a sharp point. It is a little crooked, and the surface is furrowed with eight deep longitudinal lines placed in pairs with a vacant space between them. The ridges are rounded, and there are two broad annular marks surrounding the shell towards the base, and another much narrower towards the point. The colour is of a dusky grey, and the surface is not polished. It is found on the shores of *Ita'y* and other places.

The GREAT SEA PIPE, open at each end, is six or seven inches long and three quarter of an inch in diameter near the mouth, which has a kind of irregular lip an inch and a half broad; and the shell grows gradually smaller at the other end, where it is of the thickness of a Goose-quill. The whole surface is of a dusky brown, and there are about twelve annular ridges upon it, but they are not much raised above the surface. It is common in the *German* ocean, where the waves throw it on the shores; but it is seldom whole, being thin, brittle, and easily broken.



C H A P. XXXV.

Of Cylindric Shells.

THE BROCADE SHELL, is large and beautiful, being three inches and a half in length, and near two and a quarter in diameter. The circumference is much the same throughout the whole shell, only it is a little smaller at each extremity. The head is denticulated, or crowned as some call it, and the clavicle has four or five turns terminating in a point. The colour is as white as silver, and is beautifully variegated with a bright brown in fine irregular lines, clouds, and spaces. It is finely polished, and the whole has the appearance of brocade. It is brought from *Africa* and *America*.

The

The TULIP CYLINDER SHELL is about three inches long and two in diameter, but the shape is not so regular as that of the former; but it is largest a little below the head, from whence it grows gradually smaller to the other end. The clavicle has ten or twelve turns, and terminates in a blunt point. The colour is white, variegated with clouds and spots of blue and brown. It is very scarce, and is brought from the *East Indies*; but seldom in perfection.

The PORPHYRY SHELL is about two inches and a half long, and an inch and quarter in diameter. The shape is nearly like that of a cylinder, with a short blunt clavicle. The colour is of a pale white, with a reddish cast, and it is clouded with a deeper red approaching to purple, which takes up much the greater surface. This colour appears in most places in irregular longitudinal and dentated lines. It is brought from *South America*.

The SLENDER WHITISH CYLINDER SHELL, variegated with brown, is three inches and a half long, and near an inch and quarter in diameter. It is shaped nearly like a cylinder, only it is somewhat smaller towards the point than elsewhere. The clavicle has four or five turns, and the body of the shell is cloven at the other extremity, by the continuation of the mouth. The colour is white, with a broad belt near each end, variegated in such a manner that some have imagined there are letters thereon. It is brought from the *East Indies*, and *South America*.

The SLENDER CYLINDER SHELL, variegated with brown and white, is three inches long, and about an inch and quarter in diameter. Its shape is nearly like that of a cylinder, only it is a very little smaller at both ends than in the middle. The clavicle is blunt, though it has four or five turns, and the whole shell is variegated with a bright white, and a pale tawny brown. They are disposed in denticulated lines, and the surface appears to be finely polished, it being very bright. It is brought from *South America*.

C H A P. XXXVI.

Of Dolia or Pipe Shells.

PIPE SHELLS are so called, from being imagined by some to be like the pipes or casks made to hold wine. However their shapes differ so much that it may be doubted whether this appellation is proper or not.

The OVAL PIPE SHELL with spiral ribs, is about two inches and a half long, and nearly as much in diameter in the largest part. The clavicle is longish, and pointed at the end, but it is continued in such a manner from the body of the shell that it is hard to say where it begins. The other extremity is formed like a short snout or bill, which turns a little up. This shell has a large belly, which is greatest near the head, and all its surface is covered with many ribs of the breadth of a straw, separated by furrows of the same breadth. The ribs are yellowish, and the spaces between them of a whitish yellow, only they are sprinkled irregularly with a deeper yellow, that is, both the ribs and furrows. It is brought from the *East Indies* and *America*.

The PARTRIDGE SHELL, is about two inches and a half long, and near two in diameter. It is a thin shell with a pretty long clavicle that has four turns, the lowermost of which is separated from the body of the shell by a furrow. The other end terminates without a bill or beak, and the mouth is large and reddish within. The external surface is perfectly smooth and of a brown colour, variegated with a deeper brown and grey, somewhat resembling the plumage of a Partridge, whence it has its name. It is brought from the *East Indies* and the *American* islands.

The HARP SHELL, is about two inches and a half long, and a little more than an inch and a half in diameter; the body however is bellied in such a manner as to render it like others of this kind. The clavicle has five turns, and that next to the body of the shell is large, but the others are small and pointed at the top.

All

All the surface of the body of the shell is furnished with large ribs that stand at such distances as make the spaces between them equal to twice or thrice their own diameters. The colour is of a deep brown, variegated with a paler sort and white in a very beautiful manner. It is brought both from the *East* and *West Indies*.

The **ÆTHIOPIAN CROWN SHELL** is about three inches long and two in diameter. The shape is oblong, and somewhat oval, being smaller at each end than in the middle. The mouth is long and wide, and cleaves the extremity of the shell a little way. The clavicle is short and blunt at the end, and has four turns; that next the body, as well as the upper edge of the body are deeply dentated, or as some say crowned, and the teeth are formed into regular even conical points. The surface is pretty smooth, only there are impressions of longitudinal lines; and the colour is of a pale brownish yellow. It is brought from *Africa* and the *East Indies*.

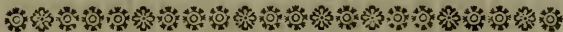
The **LARGE MOUTHED OVAL SMOOTH PIPE SHELL** is about an inch and half long, and an inch in diameter at the bigger end, from whence it becomes gradually smaller at the other, which however is very blunt, and a little cloven by the extremity of the mouth. The mouth itself runs the whole length of the shell, and is extremely wide. The lip is thin, and the small pillar has two or three foldings or indentings near its lower extremity. The clavicle is greatly depressed, and all the surface of the shell is white and finely variegated with clouded spots of yellow. It is brought from *America*.

The **THIN GONDOLA SHELL** is about an inch and a half in diameter each way, its figure being nearly round; but the two extremities of the mouth are extended beyond the line of the other parts of the shell, giving it the appearance of two ears. The colour is of a pale dirty grey on the outside, and of a dull white within. It is brought from the *Mediterranean*.

The **MULBERRY SHELL** is about an inch in length, and three quarters of an inch in diameter in the largest part, that is nearer the middle than the end. The clavicle is pretty long having three or four turns, and the opposite extremity is a little cloven by the mouth.

mouth. The surface of the body is beautifully adorned with longish and pretty large tubercles disposed in spiral rows, which are usually six or seven in number. The ground is pale, but the tubercles are commonly black, and have a very fine effect. It is brought from the *Mediterranean*.

The PEARLED SNAIL SHELL is about two inches long, and an inch and a quarter in diameter where largest. The body of the shell is of a roundish shape, and the clavicle is pretty long with about four turns. The mouth is long, and terminated at the lower end of the shell by a short, thick, and pretty crooked beak. The body of the shell is finely adorned with many studs somewhat resembling pearls. They are regularly disposed in five spiral rows, besides another on the turn of the clavicle next the body. The mouth is large and dentated, and the colour of the shell is yellow, only the tubercles are somewhat paler than the other parts. It is brought from the *East and West Indies*.



C H A P. XXXVII.

Of Porcelain Shells.

THE PORCELAIN is a simple shell, consisting of one piece, and gibbous on the back; the mouth is long, narrow, and dentated on each side.

The WHITE PORCELAIN SHELL, yellow within and beaked at each end, is of an oblong shape and very gibbous. The length, including the beaks, is about three inches, and its diameter in the middle nearly two. It is white on the outside and yellow within; and the mouth is large, having a sort of a snout or beak at each end. It is brought from *Africa* and the *East Indies*.

The ARGUS SHELL is about three inches long, two in diameter and somewhat less in height, though it is gibbous like the former. The mouth is wide and the lips are continued at each extremity in the form of
a broad,

a broad, short beak each way. The general colour is yellowish, only there are three brown bands of a considerable breadth running over it, and the whole surface is adorned with a multitude of round spots like Eyes, from whence it has its name. It is brought from *Africa* and the *East Indies*.

The MAP SHELL is about two inches and a half long and nearly as much in diameter, with a gibbous back. At the head there is a short clavicle placed a little above the extremity of the mouth, consisting of about four imperfect turns. The other end of the shell is blunt and the general colour brown, only there are irregular undulated lines of white thereon, which with spots and clouded marks of the same colour, give it the appearance of a map. The mouth is dentated, and near it the shell is paler than elsewhere. It is brought from *Africa* and the *East Indies*.

The PORCELAIN SHELL of *Senegal*, is about an inch and a quarter in length, and not an inch broad; but the length is three times the breadth. The right lip is a little sharp and slender, and the left lip is smooth and without teeth; the four or five folds on the upper part are pretty near each other, and form a pretty high fring. The bottom is white or grey, sometimes without mixture, and sometimes marked with a yellow streak or two, mottled with brown. The inside is generally brown as well as the left lip, only sometimes it is inclinable to a violet colour.

The GIROL is a Porcelain shell of *Senegal*, and is found in the sands at the mouth of the river. It is of a cylindric shape and very thick, round at the top, and sharp at the lower extremity which *Adanson* calls the summit. It is near an inch long but not half so broad, the seven spiral turns are flattish and very close to each other; however they are parted with a deep furrow. The mouth is three times as long as the summit, and the right lip is sharp though thick. The left lip is roundish, and at the top there are five low plates whose edges form as many folds or small prominent sides a little distant from each other, and under it there are from eight to sixteen pretty long narrow teeth. The colour

colour varies; for it is sometimes white, yellow, blackish yellow, greenish yellow, and green.

The **BLUISH BANDED PORCELLAIN SHELL**, with a clavicle at one end and a beak at the other, is about two inches long and nearly an inch and a half in diameter. It is very gibbous and rounded at the back, and at the head there is a small conical clavicle with about four turns, of which the two lower ones are imperfect, and terminate in a sharp point. At the other end there is a very short broad beak or snout, and the general colour is bluish, only there are two or three greyish brown bands. It is brought from *Africa* and *America*.

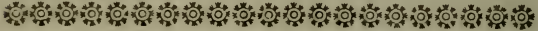
The **OVAL PORCELLAIN SHELL** with a long beak at each end, is about three quarters of an inch in length, and half an inch in diameter, with a remarkable gibbous back. At each end there is a snout or beak two thirds as long as the body and of the thickness of a large straw. The colour is white, and its surface smooth and shining. It is brought from *Africa* and the *East Indies*.

The **WHITE PORCELLAIN SHELL** variegated with brown, and beaked at each end, is three quarters of an inch long, and about half an inch in diameter. The beak at the head is short and broad, being a continuation of the mouth surrounded with a lip; but that at the other end is more long, slender, and truncated. The colour is a fine white variegated with bright brown, and disposed in crooked and irregular angular lines. It is brought from the *American* islands.

The **SMALL POX PORCELLAIN**, is not above three quarters of an inch long and half an inch in diameter. The body is of an oval figure, and very gibbous. It has a beak at each end, that at the head being the longest, and they are both cloven at the extremity; all the surface is covered with beautiful round studs of a fine white colour not unlike pearls. It is brought from *Africa*.

The **BEEBLE PORCELLAIN SHELL**, is about an inch long and two thirds of an inch in diameter. The back is gibbous and the mouth wide, being continued in a beaked form at each end. The beak at the head is longish and truncated, but at the other extremity

very short and turned up. The colour is white only on the back, there is a large irregular brown spot which some fancy to be like a Beetle. It is brought from the coast of *Guinea*. There are many other shells of this kind as well as of the rest; but what has been said is sufficient to give a general knowledge of them.



C H A P. XXXVIII.

Of Bivalved Shells.

OF these there are six kinds, namely, OYSTERS, BASTARD COCKLES, MUSCLES, HEART SHELLS, among which COMMON COCKLES are included, SCOLLOPS, and RAZOR SHELLS.

OYSTERS have two valves or shells, one of which is hollowed on the inside, and gibbous without, and the other is more flat; but they both consist of several plates, and the outside of each shell is generally rough; but the gibbous more than the other. They usually cast their spawn or spat in *May*, which at first appears like a drop of candle-grease, and sticks to any hard substance it falls upon. It is covered with a shell in two or three days time, and in three years they are large enough to be brought to the market. These Oysters they term NATIVES, and they are incapable of moving from the places where they first fall, for which reason the Dredgers make use of nets, which are fastened to a strong broad iron hook with a sharp edge, which they drag along the bottom of the sea, and so force the Oysters into the nets. When they are thus taken they are carried to different places, where they are laid in beds or rills of salt water in order to fat them. When the spawn happens to stick to the rocks they generally grow to a very large size, and are called Rock OYSTERS. Between the Tropicks there are millions of them seen sticking at the roots of a sort of trees they call Mangroves at low water.

The Red and White-ribbed and foliated OYSTER, is in shape like the common Oyster, and is about three inches in diameter. The lower valve or shell is deep, and the upper nearly flat; it is all the way on both shells furrowed deeply long-ways with round but irregular ridges between the furrows. Every sixth is furnished with a row of very elegant leafy prominences, which are flat, curled, and jagged at the edges. They are from half an inch to three quarters high, and are on both shells, but they are plainest on the upper. The general colour is that of a rose with a mixture of purple variegated with white, but the prominences are chiefly white. It is a native of the *East Indies*.

The ONION-PEEL OYSTER has very thin delicate shells, and grows to be near two inches in diameter. The shells are sometimes nearly flat, and sometimes one is pretty much hollowed, and sometimes again both. The surface is smooth and glossy, and the colour whitish, with a green or reddish cast on the outside; but it is of a fine pearly white within, with a small tincture of the former colours. It is frequently undulated in an irregular manner on the surface, and has a large roundish opening near the hinge or joint. It is a native of the *East Indies*, but some say it is found in *Europe*.

The TREE OYSTER, is about two inches long, and an inch and a half in diameter at the larger end. The hinge is placed at the smaller extremity, and from thence it gradually becomes larger to the opposite end, where it is crooked or sinuous at the edge. All the surface is deeply furrowed long ways, and is somewhat rough though not so much as the common Oyster. The colour is brown, with a small mixture of red on the outside, but within it is of a pearly white. It is commonly seen sticking to the roots of trees in the mouths of large rivers, and particularly Mangroves that delight to grow on their banks. This Oyster is common in the hot climates of *Asia*, *Africa*, and *America*, that is, where the Mangroves abound.

The HAMMER OYSTER has one of the most extraordinary shells in the world, it being in shape like a Hammer, or rather like a Pick-ax with a very short handle

handle and a long head. The body of the shell which is taken for the handle, is about four inches long and three quarters of an inch broad; but the head is five or six inches long, and except where it joins to the body, is little more than half an inch broad. It is of an irregular form, uneven at the edges, and terminates in a narrow blunt point at each end. The hinge or joint is at the lower end of the body; and the shells open all the way from each end to this part, and yet they shut very close. The edges of the body and head have often great irregularities and protuberances on the surfaces, being deeply furrowed in all directions. The colour is of a deep brown, with a tincture of violet purple on the outside; but within it is of a pearly white with a faint purplish cast. It is found in the *East Indies*, but as it is very scarce it sells for a great price, six guineas having been given for one that was imperfect.

The great PRICKLY OYSTER is nearly of an oval form, being four inches long and three broad at the larger extremity, but at the smaller where the joint is, it is about an inch and a half. Both shells are gibbous on one side and hollow on the other, but the under one most. The surface of each is furrowed long-ways, but somewhat irregularly, and is covered with a vast number of spines or prickles which are strong, sharp-pointed, and from a tenth of an inch to half an inch long. Some of these are strait, others crooked, and the colour on the outside of the shell is of a dirty red, but on the inside white and pearly. It is found on the coasts of *Africa*.

The CONICAL OYSTER, with undulated spines at the rim, is two inches long and an inch and quarter broad at the larger extremity, from whence it gradually becomes smaller to the other where the hinge or joint is placed. The body of the shell is rough and undulated, and there is a few short spines or prickles at the edges. There are three or four rows of them near the rim of the larger extremity, which are sharp pointed and not strait, but undulated or bent backwards and forwards, making a thick sort of fringe. Those of the upper and lower shell meeting and hiding the place where the shells shut together. The body of the shell is of a
dirty

dirty white, but the prickles are of an elegant purplish red, making a fine appearance. It is common on the shores of *South America*.

The WHITISH FOLIATED and IMBRICATED OYSTER is of an oval shape, and three inches and a half long. The hinge or joint at the smallest end is two inches and a half broad, and the shell is very crooked or sinuous at the edge; the surface is covered with transverse leafy protuberances of an undulated form. They are flat, uneven, and notched at the edges, and there are usually six or seven rounds of them placed nearly at equal distances one above another. The general colour is white, which is a little variegated with a bright rose colour. It is a native both of the *East* and *West Indies*.

The HEDGE HOG OYSTER is about an inch long and the same broad and deep. The shells are both gibbous, and so shaped, that the upper one being smaller than the under they never shut close. The whole shell is furrowed long-ways, and very thick set with short crooked prickles, the points of which turn towards the joint. The colour is white, and it is a native of the *East Indies*.

The BAJET, so called by *Adanson*, is a sort of an Oyster of *Senegal*, which fixes itself to the rocks by its lower shell. It is of a flattish shape, and almost round; being about three inches broad, and not much longer. There is fifteen large triangular furrows furnished with a sort of prickles which are often branched at the ends; they arise at the pointed top, and from thence are spread over the circumference like so many rays. There is little difference between the upper shell and the lower, only the former has no furrows on the inside near the top. On each there are fifteen triangular teeth, which answer alternately to the furrows. The shell is of a rose colour without and white within; but bordered with a very deep purple.

The GASAR is another Oyster of *Senegal*, and is as good as the best of those in the northern parts. It is most common in the river *Gamb a*, and is generally three inches long, and almost as much broad; though there are some of six inches or upwards. It is very thin and of

flattish square shape; but blunt at the upper extremity, which decreases to a roundish point towards the hinge. The shape is so irregular, that there is scarce any two exactly alike. The outer surface is rough, which is owing to the scales of which it is formed, that lie over each other; but the inside is shining and of a fine polish. The upper shell is thin and flat; but always unequal and undulated as well as the lower shell, which is ever hollow and not very deep. Near the hinge or joint there is a sort of a heel formed by the edges which fold inward and make a cavity. On the flat surface of this fold there is a small cavity in which the ligament is placed that serves to shut and open the shells. There are no teeth in the joint, and the outside of the shells is sometimes grey and sometimes of a violet colour bordered with white; but the inside is always violet colour bordered with white, or white bordered with violet.

The GARIN of *Senegal* is another kind of an Oyster which fixes itself to stones and rocks especially in places opposite to the current of the sea, particularly near the island of *Goree*. The shell is flattish and of a triangular shape; but no more than an inch and a half long, and is always pointed at the summit. It is thicker than the Gajar, and towards the extremity there are five or six triangular furrows which make alternately so many teeth wherewith it is bordered. The colour is of a deep red inclining to brown on the outside, and within it is of a dirty green.

The COCKS COMB OYSTER is four inches broad, and its depth from the joint to the edge of the mouth nearly three. The surface is furnished with three or more very prominent sharp ridges, divided by very deep angular furrows, which extend to the rim beyond the rest of the shell, and form a toothed-edge like that of a Cock's-comb. The colour is a deep brown with a tincture of violet; but within it is of a pearly white, though the surface is pretty rough with tranverse furrows. The shells shut and close very exactly. It is found on the shores of the *Mediterranean* sea.

The PEARL OYSTER has a large strong whitish shell wrinkled and rough without, but not streaked,
and

and within smooth and of a silver colour. These shells are commonly called the Mother of Pearl, on account of their breeding Pearls. However the shells are of different sizes, some being four times as large as those of our Rock Oysters. There are a great number of Pearl Fisheries in *Asia* and *America*. One of the most famous is in the *Persian* gulph near the isle of *Babren*, and another between the coast of *Madura* and the isle of *Ceylon*. Besides these there are five in the gulph of *Mexico* near the *American* coast. There have Pearls also been found in some rivers, particularly in *Scotland* and *Bavaria*, but they are not near so valuable as those in other parts.

Pearls are not all of the same colour, for some are white, others yellowish, and others again of a lead colour; and some affirm they have been found as black as jet particularly in *America*. However the Oriental Pearls are the best, and among these the largest most perfectly round and shining in the *East-Indies*; they fish for Pearls, or rather the Oysters that contain them, in boats twenty eight feet long, and of these there are sometimes three or four hundred at a time with each seven or eight stones which serve instead of anchors. There are from five to eight divers belonging to each, who dive one after the other. They are quite naked, and have each a net hanging down from the neck and gloves on their hands wherewith they pick the Oysters from the rocks. Each of these has also a stone a foot in length and weighing fifty pounds, to make him dive the swifter. This stone has a hole at the top, by which it is fastened to a rope, and when they are going to dive they place one foot in a kind of stirrop, laying hold of the rope with their left hand, and the other end is fastened to the boat. They stop their noses with their right hands to hold in their breaths, and so they go to the bottom, where they are no sooner come but they give a signal, by pulling the rope for those that are in the boat to draw up the stone. This done, they go to work filling their nets as fast as they can, and then they pull the rope again, when those in the boat draw up the nets first, and immediately after the divers.

They dive to the depth of fifteen fathoms, but not deeper.

These boats near the isle of *Ceylon* generally go every morning by break of day with the land winds, and return in the afternoon with the sea winds. The owners of the boats hire both the divers and the rest of the boat's crew, as we do our labourers at so much a day. All the Oysters are brought on shore, where they are laid in a great heap till the Pearl fishery is over, which continues all *November* and *December*. Every Oyster does not contain a Pearl, though there are some that have from five to eight. The natives stew and eat the flesh of these Oysters, but they are not near so good as the *English*, they being more hard and somewhat rank. There are several other sorts of Oysters, but these are most remarkable.

The BASTARD COCKLE is a two valved shell, each of which are convex or gibbous and of an equal bigness; but that which distinguishes it from other shells is the opening that remains when the valves are shut. The general *Latin* name is CHAMA.

The CHAMA of *Senegal* is about an inch broad, and not quite so long, and each shell or valve is marked with about twenty-six deep square furrows, sometimes quite smooth, and sometimes a little wrinkled, according to the length of the shell. The hinge has but one tooth on the right shell, and two on the left. Each valve is hallowed inwardly about the edges with about twenty-five channels, terminated with as many deep notches, which answer to the ridges on the outer surface. These channels reach about a third of an inch within the shell. The inside is white on the edges, and a little reddish towards the middle; but outwardly the ground is of a reddish brown, and is sometimes mixed with white lines. It is found on the sand at the mouth of the river *Senegal* in *May*.

The ARABIAN SHELL is three inches in diameter where largest, and two and a half from the joint to the opposite rim. The head where the joint is placed is not in the center of the top, but near one side, and the whole surface of the shell is perfectly smooth and even, having a fine natural polish. The colour is a
pale

pale brown, variegated with lines and streaks of black, which are narrow, angular, and run cross each other in an irregular manner; insomuch that they have some resemblance to the *Arabick* letters, whence this shell has its name. It is common on the coasts of some parts of *Europe*.

The GIBBOUS BASTARD COCKLE with many transverse furrows, is about two inches and a half in diameter, and an inch thick. It is entirely of a beautiful yellow colour, and the whole surface is full of deep furrows with small sharp ridges between them. It is found in some parts of *Europe* as well as the *American* islands.

The VENUS SHELL, or CONCHA VENERIS, is about an inch and a half in length, and as much in diameter towards the larger end. The valves are both convex, and are deeply streaked long-ways. The joint is placed at the extremity, where the shell is rounded and prominent; the end that should have gone the other way seems to be cut off, and the opening is covered with a very elegant lip, proceeding from each side. It is wrinkled, and of a beautiful reddish colour, with some white among it. The lips do not join perfectly in the middle, but leave a long aperture, and at the farther edge of each there are a row of long, slender, beautiful spines. It is brought from the *American* islands, and is seldom perfect; but when entire it is of a great value.

The TRUNCATED BASTARD COCKLE with deep furrows, and a serrated edge, is about an inch in diameter each way. The head is rounded and small and truncated at one extremity. All the surface is furrowed with deep lines, and a few broad ridges between them; the truncated end has two whitish wrinkled lips which leave a small long opening between them; and the edges of the shells are dentated or serrated on the rim. The general colour is a dull white, beautifully variegated with a glossy brown. It is brought both from the *East* and *West Indies*.

The TRUNCATED BASTARD COCKLE with a smooth edge, is an inch and a half in diameter each way; and the head where the joint is placed is small

and blunt. The whole surface is smooth having a fine polish, and the colour is white. The truncated end is large, and the lips which are very much wrinkled, have but a small opening. The colour is brownish with a tincture of violet. It is brought from the *East-Indies*.

The ORIENTAL CONCHA VENERIS is not so beautiful as the former of that name. It is two inches and a half in diameter each way, and the head near the joint is small and rounded. The truncated part has two lips which meet near the top, and leave only a small opening under the hinge, except lower down where it gapes again. The surface of the shell has eight or ten obscure bands, and the lips are smooth at the edge. It is common on the shores of the *East Indies*.

The smooth variegated and truncated BASTARD COCKLE, is more than two inches and a half in diameter one way and two from the joint to the opposite edge. Both the valves or shells are considerably gibbous, and at the truncated end the lips leave only a small round opening under the joint. The surface seems to be finely polished, and the ground colour is white, but variegated with elegant streaks and large spots of a violet purple. It is brought from *America*.

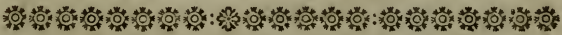
The smooth variegated and roundish BASTARD COCKLE, is near two inches in diameter, and the shells are both convex. The head is large, blunt, and roundish, and the shells shut tolerably close, except a small roundish opening near the head on one side. The colour is yellow variegated with red spots, and every part is smooth, having a fine polish. It is chiefly brought from the *East Indies*.

The roundish wrinkled BASTARD COCKLE, is an inch and a half long, and an inch and quarter in diameter. The head is raised and longish, terminating in a blunt point, and both the shells are considerably gibbous, with many deep transverse furrows, and the ridges between them are a little rough. It is all over of a brownish yellow colour, and is in no great esteem. They are found in different places.

The roundish BASTARD COCKLE with deep furrows, is only three quarters of an inch in diameter one way,

way, and somewhat less from the joint to the opposite rim. The colour is white, variegated with blood-red spots, and there are deep broad furrows with ribs between them; as also some transverse lines that are much fainter. It is found on the shores of the *Mediterranean* sea, as well as in *Ireland*.

The roundish streaked BASTARD COCKLE with smooth lips, is not unlike the truncated kind, only the truncated part is more round, and the part opposite to it is shorter. The shells are convex or gibbous, the whole being almost as deep as it is broad. The colour is a dusky white, and the surface except the lips is streaked transversely with small close elegant lines. The lips are almost smooth, though sometimes there are a few longish wrinkles. It is brought from the *American* islands, but is not very common.



C H A P. XXXIX.

Of Muscles.

THES E are composed of two valves or shells, of a longish shape that shut all the way, and they are both convex. They are not liable to be carried along by the motion of the water like many other shell-fish; for they are capable of forming several strings of the thickness of hairs about three inches long, and sometimes to the number of two hundred and fifty. With these they lay hold of any thing that is near them. This mechanism is very evident in the *Pinna Marina*, with regard to the fineness and number of the threads. They are as fine as silk, and made use of for the same purposes at *Palermo* in *Sicily*; for there they make various kinds of stuffs and other curiosities of these threads. The instrument that the Muscle employs in producing these threads is what we commonly call the tongue, in the midst of which there is a narrow channel, which serves as a sort of a mold for their first formation. Our sea and river Muscles are too well known to need any description.

The CAROLINA MUSCLE is four or five inches long, and an inch and a half broad. The side where the joint and head are placed is pretty blunt, but that opposite to it is more pointed; but it should be observed this joint is placed at one end of the Muscle. The shells shut very close and are deep, their middle being raised into an irregular angular gibbosity. The colour is yellow with a small tincture of purple in some places; but the inside is of a pearl colour with a purple cast near the edges. It is brought from *Carolina*, as well as *South America*.

The Muscle called ADER is a very curious shell, of a fine sky blue colour with yellow rays one over another towards the bottom. It is very small, being never above a quarter of an inch in length and three-twelfths broad. It is pointed at the top, and has slight folds near the hinge, where there is a small cavity. Each valve has about fifty deep furrows which run longways from the top to the opposite extremity, and the edges are all round with small teeth, the same in number as the furrows. When the skin is taken off, it appears to be of a shining violet colour. The shell on the inside is generally white, though sometimes of a dark violet.

The ANPAN has a bivalved shell, and is one of the largest that is met with at *Senegal*; for it is seven inches long, and four inches and three quarters broad. It is so flat, that the breadth is twice as much as the thickness. It is in the shape of a gammon, having the back almost strait, and the upper extremity very broad and round; but the belly is a little concave towards the top, which diminishes insensibly to a point, forming a kind of a handle. The shell is very thin and as brittle as glass, but appears like horn, it being of the same colour and as transparent. It is polished and shines on the inside, but without towards the extremity there are a great number of crooked very small cylindric pipes of the same nature as the shell, and above one third of an inch long, rising to an angle of forty-five degrees. These pipes owe their original to the wrinkles of the animal, which is like others of this kind, only its mantle has about thirty large furrows

rows instead of threads. The ligament that joins the two valves reaches from the top to three quarters of the length towards the upper extremity; but the joint or hinge has no tooth. The Negroes fish for this Muscle about the capes of *Bernard* and *Daker*, where they meet with large quantities at the depth of three fathoms. The flesh is exceeding good, especially when it is boiled and dressed; and is in great esteem with the *Europeans*.

The COATED MUSCLE is two inches long, and not an inch from the joint or head to the opposite joint or rim; but the joint is placed much nearer one end than the other, where the shell is raised into a roundish protuberance. The surface is rough and of a dusky brown, and covered with a thick horny coat furnished with a great number of short hairs. It is common in the *Mediterranean* sea.

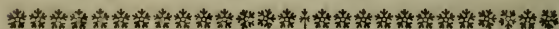
The NARROW-BANDED and VARIEGATED MUSCLE, is three inches long and one broad, and both the valves or shells are so convex that it is as thick as it is broad. The largest part is near the middle, from whence it becomes gradually smaller to each end. At the head or upper extremity where the joint is placed it is terminated by a small blunt button; but at the opposite end it is more obtuse. The lower part is marked with bands or broad lines that are sunk lower than the rest of the shell; from the middle to the top the surface is more smooth, and the colour is a yellowish red, variegated with deep purple chiefly near the sides. It is brought from the *South Seas*, and is very uncommon.

The PURPLE MAGELLANIC MUSCLE, is four inches long, and two and a half near one extremity, from whence it grows gradually smaller to the head where the joint is placed which is narrow, and a little pointed. Both the shells are gibbous, and the colour is a deep fine violet purple variegated with white and brown. It is brought from *South America*, but is not common.

The PINNA MARINA is the largest of this kind, some of them being two feet long, and near one broad. Neither of the shells are very deep, and it is small and
narrow

narrow at the head, from whence it grows gradually larger for two thirds of the length but from thence to the extremity though it still grows larger, it becomes of a roundish shape terminating in an oval. The colour on the outside is of an olive brown, but within it is partly of a pearl colour, and partly reddish. The outward surface is rough in several places with a kind of scales, and there are furrows that run from near the top to the bottom. It is brought from the *East-Indies*, as well as the *Mediterranean* sea, and is the same that produces the silk above-mentioned.

The PRICKLY PINNA is six or seven inches long, and three broad at the base, from whence it becomes gradually smaller to the opposite end. It is not so round at the end as the last sort, though it bellies out a little. The colour is of a pale olive on the outside and of a pearly white within. The outward surface has deep furrows running long-ways at some distance from each other, and the raised parts between them are consequently broad. It is furnished with a sort of scales many of which terminate in prickly points.



C H A P. XL.

Of the Heart-Shells, and Cockles.

THES E consist of two valves or shells which are equal and gibbous; but they have no ears or appendages near the head. As for the common Cockle it is so generally known, it needs no description.

The thin white HEART-SHELL with ten ribs, has roundish and very deep valves, being three inches in length from the joint to the opposite rim, and about as much broad. The head next the hinge is prominent and blunt, and is nearly of the same shape as a heart on cards. There are ten ridges or ribs that run along each shell from the head to the rim which are very high and of a triangular shape, being edged at the top, and continued with denticulations beyond the rim of the shell. It is of a fine white colour, and appears transparent

rent when held up to the light. They are brought from the *East Indies*, as well as *South America*.

The deeply furrowed and spinous HEART-SHELL, is three inches and a half long, and much the same broad. The shells are so hollow, that the thickness when closed is not much less than its length; and the head is rounded and large with beaks that meet in such a manner over the joint, as to give it the appearance of a heart. The colour is of a greyish white, and there are furrows on its surface that run long-ways at some distance from each other. The ridges between them are rounded; but the back of the shell is sometimes smooth, and towards the end, and at the edges there are long, sharp, strong prickles; some of which are straight, and others crooked. It is brought from the *American* islands.

The deeply furrowed HEART-SHELL, is two inches long and an inch and three quarters from the head to the opposite rim. The head is formed of two beaks, one to each shell, and these are rounded and turned inwards, but they do not touch each other. A little below the shell is flat, in which the joint is placed that keeps them from touching. The notches of the joint are as fine as those of a file, and both the valves are of the same size, being very thick and heavy, appearing to be of the consistence of white marble. They are deeply furrowed long ways, and the furrows grow wider the farther they are from the head. The ridges between them are low and rounded, and have often tubercles thereon.

The yellow-ribbed, and imbricated HEART-SHELL, is four inches long and three and a quarter broad from the joint to the opposite rib. The valves are equal and so gibbous, that they make a large cavity, and the surface of each is raised into five very large ribs rounded at the top, and at a considerable distance from each other. They run from the joint to the opposite rim of the shell, and the surface is covered with transverse plates that run from edge to edge over the ribs and the furrows between them. These plates are thin, sharp, and raised at the rims above the surface of the shells, being placed over each other like guttered tiles. The rim of the

the

the shell is undulated and indented, and the beaks join at the top in the form of a heart. The colour on the outside is of a fine yellow, and within of a pearly white. It is brought from the *East Indies*, and sometimes from *Africa*.

The truncated-ribbed, and somewhat spinous HEART-SHELL, is two inches and a half long, and near as much broad from the joint to the opposite rim. The edges are rounded, and the shells of the same size and very gibbous. One side of the head has a blunt extremity and the other is truncated, or seems to be cut off, being filled up by two perpendicular lips. The surface of the shell is adorned with ten large round ribs with narrow furrows between them; and on some of the ribs, especially towards the rim, there are a few short, blunt, thorny protuberances. The general colour is of a greyish white, variegated with a fine red. It is brought from the *East-Indies*, but is not common.

The roundish prickly HEART-SHELL, with a dentated edge, is about two inches long and as much broad; as also as much thick when closed. It is almost in the shape of a common Cockle, with beaks at the top that turn over the joints, meeting so as to form the shape of a heart. The surface is deeply furrowed, and the ridges are continued down to the edge, where they make a sort of teeth. They are furnished with a sort of pyramidal scales sharp at the ends; and the colour is white, variegated with red and yellow spots.

The furrowed HEART-SHELL with distant beaks, is about an inch and quarter in length and as much broad. The shells are equal and large towards the beak, being considerably raised up and hollowed; but at the top they form two beaks which are longer, more slender, and crooked than common. They are at some distance from each other when the shell is closed, and the surface of the shell is deeply furrowed long-ways. The ridges are not much raised, and the colour is of a dusky white. It is brought from *America*.

The HEART-COCKLE, is about an inch and quarter long, and an inch broad; it is a tender delicate shell and of considerable value, having the valves extremely raised on the back, and not round as the rest of this kind

kind, for they have a sharp ridge, which is furrounded with a narrow margin different from the rest of the shell. The valves are pointed at the bottom, and have each a twisted beak at the top; infomuch that when they are closed they more resemble a heart than any of the former; there are furrows on all the surface, but the ribs between them are not much raised. The colour is of a pretty bright white on the outside, but purer within. It is brought from the *American* islands and the *East Indies*.

The VENUS HEART-SHELL, is nearly of as spinous a shape as the former, and exceeds it in variety of colouring. It is an inch and a half long, and an inch and a quarter broad from the ridge of the back of one of the shells to that of the other. The shape is like that of a heart painted upon cards, being pointed at the bottom. The top is formed by the two beaks that go a little over each other, and the edges of the two shells are toothed where they join. It is thin and light, with furrows and roundish ridges rising between them. Each way there runs a margin round the back of the shells from the extream turn of the beaks to the points. The general colour is white, beautifully variegated with lines and spots of a deep and bright purple, and sometimes with a few fainter clouds of yellow. It comes from the *East-Indies*, and the *American* islands.

The SENEGAL COCKLE is about an inch long and two inches broad, and sometimes rounded at the extremity, and sometimes truncated obliquely with a small furrow. It has about thirty-five longitudinal furrows, which sometimes seem to be divided in two in the middle, and crossed by a great number of extreamly fine threads. The valves are adorned inwardly on the edges with the same number of furrows, beyond which there are the marks of a great number of very fine furrows which reach to the top. The hinge or joint is composed of near sixty teeth on each valve; and the skin that covers the shell is brown, thick, and downy. It is generally white as well within as without, and is very scarce on the sands at the mouth of the river *Senegal*.

The HEART-SHELL of *Senegal*, is one of the thickest of this kind that is known, and it is as heavy, as hard, and will take as high a polish as marble. The largest of this kind is three inches and a half long, as much broad, and nearly as much deep; it is above half an inch thick. The external surface has twelve longitudinal furrows, seven of which are large, smooth and roundish. Each shell is marked inwardly with eleven very broad furrows, which run all round the edges in a band of about two thirds of an inch broad. The edge which forms the hinge advances considerably within each shell, and makes a kind of heel, under which a large cavity remains. On each side the impressions of the Muscles appear, which are very large and almost square. The upper shell is bigger than the lower. The summits are nearly conical, very long, and have one single spiral turn. The hinge is strait, and one half as broad as the shell; it consists of a row of fourteen teeth running parallelly on the edge of each shell. These teeth fall exactly within each other, and render the shell extremely strong and solid; the colour is brown, sometimes mixed with green; but when the skin is taken off the shell itself looks like polished marble. The negroes are very fond of this shell, and take great numbers of them in the sands at the mouth of the river *Senegal*.



C H A P. XLI.

Of Scollop Shells.

THESE shells have two valves that shut close all round, and are usually pretty flat with ears, for so the two processes are called that proceed from the head of the shell near the joint.

The ribbed and variegated SCOLLOP with large equal ears, is about two inches and a half in length, and two inches and a quarter in breadth. The shells are pretty flat and rounded, and sinuous on the edge, from whence they become smaller to the head, and terminate

terminate in an oblong point. On each side there is an ear which joins to the edge of the head, and runs down a third of an inch farther on the shell; they unite at the top where they rise a little above the level of the head, and the surface of the shells is adorned with ribs; there are twelve on each, and are broad and rounded at the top, having furrows between them about half their own breadth. The ears are also furrowed and ribbed, and the general colour is white, finely variegated with large spots of brown. It is very common in *England*.

The red ribbed and furrowed SCOLLOP with unequal ears, is four inches long and about as much broad, and is of a roundish shape. It is deeply and regularly sinuous on the edges, and but little raised on the back. The colour is of a deep red with a mixture of purplish brown, and large and regular ribs on the surface, which are broad, depressed, and furrowed, and have several undulated tubercles thereon, and some that are more regular. The ears are large, but one of them is considerably bigger than the other. It is brought from the *Mediterranean*.

The PRICKLY SCOLLOP with unequal ears, is of an oblong or oval shape and flat. It is two inches and a quarter long, and about the middle near an inch and three quarters broad; from whence it continues to form a rounded and slightly sinuous rim one way, and at the other it grows smaller till it forms a blunt point. On one side of this there appears a large fine ear; but the other seems to be broken off, at least in part; for it is never no more than one fourth so long as the other. The surface of the shell is adorned with about twenty-seven fine slender ribs, with inconsiderable furrows between them. Each of these ribs is lightly streaked and beset with many sharp thorns, from the verge to two thirds the length of the shell. The general colour is a fine red; but the thorns, and part of the ribs are white. It is not uncommon on the coasts of the *Mediterranean* sea.

The DUCAL MANTLE SHELL is three inches long, and nearly as much broad with a regular sinuous edge. The head is furnished with two large beautiful ears nearly of the same size, and the surface is adorned with about thirteen ribs that are broad and somewhat elevated

elevated in the middle. The general colour is a deep fine red, and the edges are orange; but the surface is every where variegated with yellow and white. The head is somewhat paler than the other parts, and the ears are beautifully variegated. It is met with on the *European* shores, but is not very common.

The *IRISH SCOLLOP*, is about two inches long, and almost as much broad, having on its surface about fifteen ribs that are broad, depressed, and nearly at equal distances from each other. The shells are very little raised, but the ears are moderately large, and one is a little bigger than the other. The general colour is reddish, which changes gradually from the deepest purple to the palest flesh-colour, but in some it is every where the same, and in others it is beautifully variegated with irregular spots of white. It is very common on the *Irish* coasts.

The little yellow elegantly furrowed *SCOLLOP*, is about an inch long and as much broad, being pointed on the top or head, where there are two large ears nearly of an equal size. The rim on the opposite extremity is rounded, and there are about six ribs on the surface that are very broad, depressed, and at small distances from each other. The furrows between them are streaked in an elegant manner, and the colour of the whole is of a brownish yellow, and sometimes, though but seldom, variegated with a fainter yellow or white. It is brought from the *Mediterranean*, and is a curious shell.

The small eared thin *SCOLLOP* with transverse furrows, is about two inches and a half long, and as much broad, being nearly round. The edges are even, and the head is furnished with two small very regular equal ears. The valves or shells are very little raised, and there is no appearance of ribs. It is extremely thin, light, and brittle, and of a pale brown colour. The whole surface is furrowed transversely, and the furrows begin near the head, where they are not very distinct, and continue in large circles to the bottom of the shell.

C H A P. XLII.

Of the Finger Shell Fish.

THE thick red FINGER SHELL is about three inches long, and of the thickness of a man's finger. The surface is smooth except towards one end, where there are a few crooked lines or rather furrows; the shell is pretty thick for one of this kind; but at the end where the laminæ or plates are entire, it is thicker than the other. It is open at both the extremities, and the colour is of a fine pale red, variegated from the strongest damask rose colour to the faintest carnation. It is brought from the *East Indies*.

The crooked FINGER SHELL, variegated with brown and blue, is six inches long and three quarters of an inch broad. It is of an equal thickness from one end to the other, and is bent in the manner of a bow. The surface is smooth and glossy; but there are the extremities of many broken or imperfect plates seen thereon, so that it is never quite uniform. It is variegated with brown and violet blue; but the inside is of a pearly white.

The slender, strait, brown and white FINGER SHELL, is three inches long and near a third of an inch in diameter. It is perfectly strait and open at both ends; but the surface is somewhat irregular as in the former, though very glossy. The general colour is of an olive brown, variegated with white in some places, but the inner surface is of a pearly white. It is brought from the *East Indies*.

The violet purple FINGER SHELL is four inches long, and near half an inch in diameter, being quite open at both ends. The shell is no thicker than strong paper, and is very brittle. The surface is irregular from the broken plates that appear thereon; and the colour is of a fine bluish purple, and nearly like that of a violet but somewhat redder. It is brought from the gulph of *Persia*, and the *East Indies*.

C H A P. XLIII.

Of the Acorn Shell Fish.

THESSE sort of shells are of a longish shape, nearly approaching that of an acorn, and are composed of several valves from six to twelve in number; but they are not moveable like those of the bivalved kind, for they are fixed to each other by an intermediate substance.

The great furrowed ACORN SHELL with a large mouth, is the biggest of this kind, it being about an inch and half in height, and above an inch in diameter where largest. It is broad at the base, and firmly fixed to a solid substance, and it is nearly of the same diameter at the top as at the base, where it is wide open. The mouth is not exactly round, nor the edges even; it is composed of twelve valves that touch each other at the base, but recede from each other at the top. These valves are furrowed lengthways, and are of a brownish red; but the intermediate substance is of a lighter colour and irregularly undulated in a transverse direction. The inner surface is whitish with a mixture of carnation and blue. The animal contained in this shell is of a triangular shape at the head, and there are four pieces that belong to it which serve to close up the opening. It is found sticking to the rocks of the *East* and *West-Indies*.

The bell-fashioned ACORN SHELL with a large mouth, is usually found in great clusters, and they are fixed to each other at the tops, which makes the surface of the whole appear like net-work, but there are large cavities underneath between their bodies. The shell is narrowest at the base, where it is fixed to a solid body, and from thence becomes gradually wider to the top, where it is broad, open, and bent a little down at the edge, so as to appear somewhat like the shape of a bell. It is composed of eight firm, hard portions of a conical shape, connected by a firm shelly substance. The colour is of a brownish grey, and the intermediate
matter

matter of a deeper brown. They are brought from the *American* islands.

The LOW ACORN SHELL with a large mouth, is three quarters of an inch high, and above half an inch in diameter. They are found in large clusters, and are so closely connected that the inner surface is more visible than the outer. This is of a pale whitish grey with a mixture of brown, and a small tincture of red. Each shell is composed of six parts united together by a shelly substance. These are thick furrowed and of a pale red, with a mixture of grey and brown. The shelly substance that unites them is of a paler red, and the largest part of the shell is near the base. The shape of this shell is somewhat like a drinking cup; whence by some it is called the Cup Shell. It sticks to the rocks and hard sea plants on the *American* shores.

The narrow-mouthed oval and greyish red ACORN SHELL, is usually found in clusters of twenty or more together. They do not all stand upright, but are very close at the base. A single shell is about half an inch long, and about a third of an inch in diameter, but somewhat narrower at the base than elsewhere. The edges at the top are drawn inward, and yet leave a small opening or mouth. It consists of twelve portions connected by a shelly substance; though they are so close that it is very little. These valves are deeply furrowed, and the colour is of a dusky grey with a considerable mixture of reddish. It is brought from the *East-Indies* and *America*.

The narrow mouthed slender ACORN SHELL, is three quarters of an inch high, and one third of an inch in diameter where largest, which is a little lower than the middle. The base is somewhat smaller, and the top much more so, for the edge is so contracted as to render the mouth small. It consists of eight portions connected by a thinner substance, and they appear like so many ribs, that are of a roundish shape, rising considerably in the middle. The colour is of a brownish grey; but the intermediate matter is of a pale grey. It is common in the *East Indies* and on the coast of *Africa*.

The purple narrow mouthed and slender ACORN SHELL is three quarters of an inch high, and a little more than a third of an inch in diameter. It is largest at the base, from whence it grows gradually smaller to the top. Each shell is composed of six ribs which touch each other at the base, and are connected by a thin shelly matter. The ribs are flatted with deep but not regular furrows that run long-ways. The intermediate substance is undulated tranversely, and the edge is so contracted as to make a narrow mouth. It is all over of a bright purple colour, though the ribs are deeper and more bluish, and the intermediate furrows more red.

The greyish-white furrowed slender ACORN SHELL is seldom more than a third of an inch long, and is two thirds less in its diameter. It is broadest at the base, and narrowest at the top, where there is a small mouth. The colour is of a greyish white, and the shell exceeding thin. It is composed of six portions, which are broadest at the base and smallest at the top. The furrows run long-ways, and are most distinct near the top. The intermediate matter is transversely and irregularly undulated. It is common on the *English* shores.

The slender ACORN SHELL with a narrow mouth, is about half an inch in height, and hardly a quarter in diameter where largest, which is towards the middle, from whence it grows gradually smaller. The colour is of a dusky brownish yellow on the ribs, and of a paler yellow between them. They are twelve in number, and are very narrow and roundish, standing at very small distances from each other. It is brought from the *East Indies*, sticking at the bottom of the ships that come from thence.

C H A P. XLIV.

Of Thumb-footed Shell-Fish, and those that have five Valves.

THE BLUISH-GREY THUMB-FOOT, with a pedicle longer than the body, is a third of an inch in diameter at the top, and near a quarter at the base. It is tolerably firm and fleshy, and is covered with a tough thick skin, granulated on the surface with irregular transverse furrows. Above this is the shelly covering, which is about half an inch long and of a pyramidal figure; the diameter at the base is equal to the top of the pedicle or foot, and it terminates in a pretty sharp point. The shell is composed of an uncertain number of portions of which the middle ones are the largest, and the rest surround them at their bases. They are all of a pyramidal figure and shut very closely, unless when the animal throws out its arms. The pedicle is of a brownish colour, and the shelly part of a mixture of bluish-grey and white. It is found in several parts, and the flesh when boiled becomes red. It is looked upon as wholesome eating, and has nearly the taste of Cray-fish.

The REDDISH THUMB FOOT, is about two inches in length, and the pedicle or foot is more than an inch and a half; but the shelly part is only the third of an inch. The pedicle is about a quarter of an inch in diameter and of the same thickness all the way up; its surface is deeply wrinkled, and its colour is of a pale whitish red. The substance is fleshy, but less firm than that of the former kind, and at the top of this stands the shelly part, which is of a pyramidal figure, and consists of an uncertain number of portions that shut very close, and are of a whitish red. It is found on the coasts of the north of *England*.

The WHITE THUMB-FOOT is three quarters of an inch in length where largest, which is at the head of the foot, and is about half an inch in diameter. The body is of a pyramidal form, and somewhat longer than the pedicle. It is composed of a great number

of longish pyramidal portions of a whitish colour, and the pedicle is white. It is found on the northern coasts of *England*.

The THUMB FOOT with a very long pedicle, has a foot four inches long and three quarters of an inch in diameter. It resembles a piece of a gut filled with a reddish liquor, and is nearly of the same diameter all the way, being fixed at one end to some solid body, and at the other terminated by a shelly part. This is about three quarters of an inch long, and becomes gradually smaller at the top. They are in great plenty on the coasts of *Lancashire*.

The PURPLE THUMB-FOOT is like the former, only it has a larger body and a shorter pedicle. The shelly part is an inch long, and half an inch in diameter at the base. It consists of an irregular number of thin pyramidal portions of various sizes, and of a purplish colour variegated with white. It is like a piece of a gut filled with a reddish liquor. It is found on the shores of *Lancashire*.

The BARNACLE SHELL is of the five valved kind, and was formerly supposed to produce a goose; but now that fable is sufficiently exploded. It is about an inch long, and three quarters of an inch in diameter; and consists of five broad angular valves or portions which form an oblong body, and shut pretty close on all parts, except when the fish thrusts out its arms. The shelly part is of a pale red or flesh colour, variegated with white; and it adheres to a neck of an inch long, and about a fifth of an inch in diameter, by which means it fixes itself to wood, stones, and sea plants. The neck is of a brownish colour, and is firm, tough, and fleshy.

The whitish FIVE VALVED SHELL FISH, with a thick granulated neck, is about an inch and a half long, including the neck or foot, and the shell consists of five broad angular shells. It is of a longish shape somewhat flattened, and obliquely truncated at the end. The shells are of a whitish colour, with a little mixture of blue, and the neck is very thick and short. It is of a brownish colour and fleshy substance, and on the surface it is granulated like shagreen. It is found in the
northern

northern seas commonly sticking to the branches of the larger sea plants.

The violet coloured five valved SHELL-FISH, has a body three quarters of an inch long, and half an inch in diameter, and the shape is longish, though obliquely truncated at the upper extremity where it is smallest. The shell consists of five irregular angular flat portions, and is of a fine deep violet blue, variegated with a pale greenish blue, and some white. The neck is fleshy, two inches long, and not much thicker than a whipcord. It is met with on the shores of *Yorkshire* and elsewhere.



C H A P. XLV.

Of the Pholades, or File Shell Fish.

THE PHOLAS, is a shell-fish whose shell is made up of five pieces, but so as to have the appearance of a Muscle. Two of these are large, and exactly resemble the bivalved kind; besides which, there are three other portions or valves that are very small, and serve to close up an opening left by the irregular meeting of the two principal shells. They inhabit holes made in rocks and other solid bodies, and sometimes they are met with at the bottoms of ships.

The longish white chequered and rough PHOLAS is about two inches long, and an inch and quarter in diameter at the largest part, which is nearer the head than the other end. It has five portions as observed above, the largest of which appear like those of common bivalved shell-fish, and besides these there are two on the back that are very broadish and short, and another single one which is long and narrow lying under the joint. The colour is whitish, with a small mixture of a faint yellow or brown, and the surface of the two large shells has furrows both ways, which give it a chequered appearance. The surface is as rough as a file, and this animal lies so close in the holes of stones

that it has no way of getting out. The opening being no bigger than the diameter of a Goose-quill, but it thrusts out a sort of proboscis or trunk. It is common on the sea coasts of most parts of *Europe*. How these creatures make these holes, or how they get in is not certainly known.

The WHITE PHOLAS, or FILE SHELL FISH, with short oval and pretty large valves, has a shell not large enough to inclose the body. It is of a whitish colour, somewhat hollow and streaked long-ways. The surface is rough, and the texture tender and delicate; the two smaller valves are placed at the back of the others in a contrary direction, and the fifth is long, slender, and convex, covering the whole joint. It is found on the coasts of *Kent* and *Suffex*.

The reddish rough PHOLAS, with deep furrows, is four inches long and two in diameter. The two principal shells are oblong, largish near the middle and deeply hollowed; they are very thin and tender, and of a pale bright red colour, generally variegated with white. They have deep furrows on the surface which run long-ways, and there are ridges between them which render the surface rough. The three other valves are very small, and placed at the back of the former. It is found near the *American* coasts.

The *West Indian* FILE SHELL FISH is the largest of this kind, being seven inches long and two in diameter. The two large shells are very tender and brittle, hollow within, and of a beautiful white. There are deep furrows on the outside which cross each other as in a file. Three other valves are as in the three former kinds. It is brought from *America*, but is very seldom met with.

C H A P. XLVI.

Of fresh Water Shell-Fish.

THE OVAL LIMPET with a crooked snout, has not so fine a shell as that of the Sea Limpet. It is very thin, oval, and depressed, except in the middle, where it rises into a beak. It is two thirds of the diameter of the shell. It is no bigger than a man's finger nail, and is found sticking to stones in the brooks of *Northamptonshire*.

The roundish TARGET LIMPET, is smaller than the former; and instead of a beak has a sort of a button at the top. It is very thin and delicate, and has a pretty smooth surface, which is of an olive brown colour. It is found in some of the rivers of *Leicestershire*.

The OVAL LIMPET, with a hole at the top, is a quarter of an inch in diameter, and an eighth in height. The shell is very thin, rounded at both ends, and of a dusky brown colour. The hole is small and oblong, and seems to be formed of two round holes broken into each other. This is common near *London*.

The SPIRAL SNAIL SHELL, with a clavicle a little elevated, and a round mouth, is three quarters of an inch in diameter, and the shell is firm, solid, and smooth at the surface. It consists of about four turns, and the clavicle at the center is raised above the rest of the surface. The colour is a greyish white, and the large turn has a streak of black running along it, but looses itself before it reaches the next turn. It is found in the lakes of the north of *England*.

St. *Cuthburt's* HORN SHELL, is of the spiral flatted kind, and about half an inch in diameter. It is firm and solid, and of a fine glossy brown, with a tincture of olive colour. It consists of two or three turns, and the clavicle is depressed in the center; the mouth is partly filled up with the next turn of the shell, and the lip is narrow, but thicker and of a paler colour than the rest of the shell. It is common every where in *England*.

The taller SNAIL SHELL with a long clavicle, is one of the most beautiful of this kind, being about an inch high, and three quarters of an inch in diameter. The mouth is half round, and partly filled up by the succeeding turn of the shell. It is surrounded with a thin rim, of a palish yellow colour, and the clavicle has four turns, terminating in a point. The colour is of a dusky yellow, variegated with olive brown. It is sometimes met with in deep rapid rivers.

The LAMBIS is a kind of large Snail of the *Caribbee* islands, whose body seems to be nothing but a sort of a pudding, and whose shell terminates in a point at one extremity, and is open at the other, it having a large round mouth, from whence proceeds a long thick membrane like a tongue, with which the animal takes its nourishment, and drags itself along at the bottom of the Water. When the Snail is opened there appears neither heart nor liver, nor lungs, but only a sort of a gut full of grass in small bits, as also moss and sand. The flesh is white and firm, and the larger the animal, it is the longer in boiling, and harder of digestion. Those that eat these Snails, cut them down long ways to take out the gut. They make lime of the shells, which when worked into mortar is as hard as marble. In each shell there is about half a glass of water, more or less, according to the size, which as they pretend is good for inflammations of the eyes. Some of the shells are fifteen inches long, with a mouth of the same dimensions; and they weigh from ten to twelve pounds. This renders the animal very slow in its motion, but does not hinder it from coming from the bottom of the water to the sides of the shore. The surface of the shell is sprinkled with a great number of blunt tubercles, from three quarters of an inch to an inch in height, and almost as much in diameter at their base. The spaces between the tubercles is rough and stony, and often covered with moss. One of the edges of the mouth rises quite upright, and renders the head of the animal visible, unless it shrinks within the fold of the shell. Nothing can be more beautiful, better polished or shining, than the enamel with which the shell is lined. It is of the colour of the finest carnation that can be imagined, and if the outside was as fine, it
would

would be a most beautiful shell. This description is taken from *Labat*, and shews he has little skill in descriptions of this kind, as well as in the species to which it belongs.

The variegated oval SNAIL SHELL with a blunt clavicle, is about three quarters of an inch high, and near half an inch in diameter. The body is large but pointed at the extremity of the mouth. The clavicle has three turns, and the top is blunt. The colour is of a greyish white, variegated with belts of a deep brown. It is found in large rivers.

The large-mouthed brown SNAIL SHELL, with a sharp clavicle, is about half an inch high, and the same in diameter. The body is oval, and the clavicle long and pointed at the top. The shell is of a dusky brown, and the mouth is remarkably large, and edged with a thin rim or lip. It is common in brooks.

The grey fresh-water NERITE, is about a third of an inch long, and near as much in diameter. The body is almost oval, and the clavicle is depressed, and near the small extremity; the mouth is narrow, with a little lip on each side, and the colour is of a pale grey, variegated with a blackish iron-grey in little irregular spots. The surface has slight furrows, and it is found in the large rivers of the north of *England*.

The chequered fresh-water NERITE, or SNAIL SHELL, is about half an inch in length, and nearly as much in diameter, being almost of an oval shape. The clavicle has but two turns, and the mouth is narrow, with a lip on each side. The surface has furrows lengthways, and others transverse. The colour is almost white, variegated with blackish clouds or spots. It is met with in the Trout streams about *Uxbridge*, and other places.

The red fresh-water NERITE, or SNAIL SHELL, is about half an inch long, and above a third in diameter. The colour is of a pale red, but a little dusky, and the shell is more firm and thick than most others of this kind. The surface is pretty smooth, the mouth narrow, and the lips of a pale red. The clavicle is short, and has two turns near one edge at the smaller

end of the shell. It is plenty in the rivers of *Nor-thamptonshire*.

The **NERITE** of the island of *Goree* is found in great plenty sticking to the rocks, and the shell is an inch broad, about half as long, very thick, and somewhat in the form of an egg. It has three turns, of which the first is large and roundish, but the others very small, and form a round and very blunt summit, twice as broad as long. The outward surface is covered with a film, on which there are twenty six slight furrows that run round the first turn. The mouth is in the shape of a half moon, and two thirds of its circumference is encompassed with the right lip, which is very sharp and thick, and under its edge on the inside there are fifteen or sixteen long teeth set close together, of which the lowermost two are thick and round, looking like two buttons. The left lip is formed by the flattening of the second turn, which is covered with a large shining plate. It has two small teeth, and the middle of its length is of a deep black on the outside and white within.

The great conical **SNAIL SHELL** with a depressed mouth, is about a third of an inch high, and its diameter is near as much at the base, where it terminates in a blunt little button. The colour is of a pale grey, and the substance is very thin and tender. The mouth is partly filled up with the succeeding turn of the shell. It is found in several large rivers of *England*.

The ribbed and **CONICAL SNAIL SHELL** with a depressed mouth, is half an inch high, and one third in diameter at the base. It consists of five turns, and has a rising in the form of a rib in the middle of the first, which follows the whole turn of the shell, but becomes fainter as it approaches near the top. The colour is of a faint grey, variegated with clouds and lines of black.

The **BROWN CONICAL SNAIL SHELL** is only a quarter of an inch high, and its diameter at the base is the sixth of an inch. The colour is of a pale brown with a faintish cast of yellow; it consists of four turns that are rounded and smooth at the surface. The top is blunt,
or

or terminated with a sort of button, and the substance is extremely brittle. It is common in ditches.

The long mouthed SCREW SHELL is about three quarters of an inch long, and one third in diameter at the base. It consists of about thirteen turns, and has a longish narrow mouth, edged with a furrowed lip. The surface is smooth and the turns flat, only the upper edge of each is deeply denticulated. The colour is grey, inclining to that of a pearl, but not always pure.

The SCREW FISH with fluted turns, is an inch high, and a third of an inch in diameter at the base. The mouth is irregularly oblong, and the substance is very thin, and brittle, being of a dull whitish colour. It has about seven turns, and on the edge there is a row of protuberances like studs that run all along. It is not very common.

The WHITISH SCREW FISH with smooth tumid turns, is an inch and a half long, and of the thickness of a Swan's-quill at the base. The mouth is roundish, and the top blunt; the shell consists of about fourteen turns, which are bellied and very distinct. It is brittle, and of a whitish colour.

The SLENDER SCREW FISH with flattish turns, is an inch and a half long with a longish narrow mouth, and the top finely pointed. It consists of ten or twelve turns, which seem only to be surrounded with a spiral line. It is very thin and brittle, and the colour is of a pale brown, sometimes whitish.

The thin BROWN TRUMPET SHELL with a narrow mouth, has a very thin shell an inch and a quarter long, and half an inch in diameter. The mouth is very large and oval, and the body is oblong and bellied. The clavicle has about four turns, and the colour is brown with a greenish tincture.

The slender large mouthed RED TRUMPET SHELL, is an inch long, and about a third of an inch in diameter. The body is oval, and the clavicle has four turns, terminated with a little button. It is of a thin, brittle structure, and smooth on the surface; and the colour is reddish mixed with white.

The forehead TRUMPET SHELL with a large oval mouth, is about three quarters of an inch long and a third broad. The body is the chief part of the shell, for the clavicle is small, and has only three turns, terminating in a sharp point. It is very brittle, not very smooth on the surface, and of a pale brown.

The narrow TRUMPET SHELL with a long clavicle, and a long narrow mouth, is about half an inch long, but not a third in diameter. The body is small and rounded, and the clavicle long, consisting of six turns. The surface of the shell is smooth, and the colour of a pale brown with a tincture of olive. It is found in small swift rivers.

The short-bellied TRUMPET SHELL, with a small round mouth, is half an inch long and as much in diameter. The body of the shell is not so distinct from the clavicle as in the rest of this kind, and the whole shell seems to have been crushed together. The mouth is round and connected to the shell by a sort of a neck. The clavicle has only three short distinct turns which terminate obtusely. The substance is thin and brittle, and the colour of a pale brown.

The narrow TRUMPET SHELL with turns denotated on the edges, is an inch and half long, and half an inch in diameter. The colour is of reddish brown, and the mouth large and longish, with a very great clavicle, which consists of five broad, flat, distinct turns. The top is blunt.

The oval-mouthed TRUMPET SHELL, with turns running the contrary way, is an inch and a half long, and nearly as much in diameter. The shell is so extremely thin, that it breaks in the handling it. The colour is of a pale brown with a tincture of yellow. The clavicle has only three small distinct turns, and is pointed at the top.

The brown PIPE SHELL with a very large mouth, is about three quarters of an inch long, and half an inch in diameter. The body of the shell is bellied, and the clavicle very short, consisting only of four indistinct turns, but it is pointed at the end. The mouth is large, and the lip extended a great way; the surface is smooth
and

and extremely thin; and the colour is of a dusky brown.

The oval PIPE SHELL with a long narrow mouth, is an inch long and two thirds of an inch in diameter. It is extremely thin, and of a dusky brown; the body is nearly oval, and the clavicle is very short; but the mouth is large.

The yellow BROWN PIPE SHELL with an oval mouth, is half an inch long and as much in diameter. The substance is extremely thin and tender, and the colour of a pale yellow; the mouth is large and oval, but the clavicle very small.

The white oval PIPE SHELL with a large mouth, is about three quarters of an inch long, and half an inch in diameter. The shell is indented towards the edge of the mouth, and the clavicle is very small, though pointed at the end; the colour is of a beautiful white.

The large mouthed *Ammon's* HORN SHELL is of a roundish, depressed figure, being in diameter about an inch, and towards the mouth a quarter of an inch thick. It consists of about four turns, which grow gradually smaller and form a little button at the center. The mouth is large in proportion, and surrounded with a little raised lip. The surface is undulated transversely, and the colour is of a pale grey.

The brown smooth *Ammon's* HORN SHELL, with a depressed mouth, is about three quarters of an inch in diameter, and the thickest part is of the thickness of a small Goose-quill; it consists of about four turns, and the shell is thin and easily crushed. The colour is of a glossy brown, only there are obscure lines somewhat darker.

The smooth little yellowish *Ammon's* HORN SHELL, is about the third of an inch in diameter, and not thicker than a Crow-quill; it consists of about three turns, terminating in a little button. The surface of the shell is smooth, and the colour of a bright brown with a yellowish cast.

The pale ribbed *Ammon's* HORN SHELL is about half an inch in diameter, but its largest end is no thicker than a Crow-quill; it is of a very pale colour,

and consists of three or four turns transversely ribbed all the way.

The white smooth depressed BASTARD COCKLE, is three quarters of an inch broad, and the same in length from the joint to the opposite edge. The shells are not very much bellied, and are very thin. The surface is perfectly smooth, and the colour of a dusky white.

The gibbous whitish variegated COCKLE, is about half an inch broad, and rarely as much from the joint to the opposite verge. The shells are considerably deep, and slightly streaked with obscure circular lines. The colour is of a dusky white, variegated with olive spots.

The reddish round streaked COCKLE, is about an inch and a half in diameter, and as much from the joint to the opposite edge. They are lightly streaked with a pale brownish red colour on the outside, and are of a fine pearl colour within.

The bluish oval BASTARD COCKLE, is about half an inch long from the joint to the opposite edge, which is broad and rounded; but at the top it runs up smaller terminating bluntly. It is finely streaked longways, and the colour is of a pale bluish grey.

The extremely thin greenish MUSCLE is near an inch from corner to corner, and three quarters of an inch from the joint to the opposite edge, the surface is lightly streaked, and the colour is of a pale fine green.

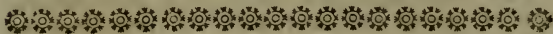
The whitish variegated streaked MUSCLE, is an inch long and half an inch broad. The colour is whitish variegated with brown; and the shells are both pretty hollow.

The narrow brown angular MUSCLE, is near an inch long, but not half an inch broad, and the shells are both very deep. The substance is pretty thick and strong, and the colour is of a pale brown, with a tincture of olive.

The bluish rounded HEART SHELL when viewed side-ways, looks like a heart painted on cards, and is about an inch long, and as much broad; as also but very little less in thickness. The surface is elegantly,
but

but not deeply furrowed, and the colour is of a dusky blue.

The reddish streaked HEART SHELL, is about half an inch long, and nearly as much broad; both the shells are very deep, and are of a pretty firm, solid substance, and lightly streaked; but the intermediate surface is smooth and polished, and the colour is white, with a tincture of red.



C H A P. XLVII.

Of the Sea Nettles.

THE SEA NETTLE is of two kinds, one of which comprehends those that always remain fixed in one place like sea plants, and the other contains those that change their place. This division is according to *Aristotle*, but *Reaumur* affirms, that there are none of these Nettles, not even those that are found in the holes of stones, that are not capable of some progressive motion though it is very slow. He also thinks, that the name of Nettle is not proper to many of them, since those on some parts of the coasts of *France* have not that stinging property that many pretend they have. *Pliny*, as well as *Aristotle*, takes the former kind of them to be of a middle nature, between plants and animals; though *Aristotle* imagines, that they have no vent for their excrements, and *Pliny* says, that they have a narrow tube for that purpose. But *Reaumur*, who has carefully observed them, affirms, that what they void is nothing at all but clear water quite different from the nature of an excrement. However, he thinks they are real animals, because they have organized bodies, and give signs of feeling when they are touched; besides which, they lay hold of fish, and shell-fish, which they eat, and have also a progressive motion. These Nettles assume so many different shapes, that it is not possible to describe them under any determinate figure; but in general their outward form approaches nearest to a truncated cone, having its base fixed to

some stone to which it is found always adhering. Some are greenish, others whitish, and others again of a rose-colour; likewise there are others of all the degrees of brown. In some of these Nettles these colours appear every where on the surface, and in others they are mixed with streaks or spots. Sometimes again these spots are distributed regularly, and at other times irregularly, but always in a very agreeable manner,

The wandering SEA NETTLES have nothing common except the name, with the preceding, and they have different appellations in different places, as also according to their sizes. These may be more properly called Sea Jellies, according to *Reaumur*, which is very proper to the substance of which they are formed; for in reality their flesh, if it may be so called, has always the colour and the consistence of a jelly. When they are thrown upon the sea coast they appear to be quite motionless, which perhaps may be owing to the shocks they have received against stones or the sand, which may be sufficient to deprive them of life; for it is certain they are a sort of animals.

The first Sea Nettle is so called by the ancients, on account of its stinging quality, which produces an effect much the same as the common Nettle. The second is called by *Rondeletius* the ash-coloured Nettle, and it has no flesh, for it resembles a head of hair. This is found in the clefts of rocks, which it never leaves. The third is red, and is like the first kind, but has more hair, and is more thick and broad. This is sometimes fixed to the rocks, and sometimes wanders here and there. The fourth adheres to the heads of Oysters, but principally to the *Purpura*. The upper part is more hard and thick than that of other sorts, and all round it there are short hairs; but from within there proceed long strings of a purple colour.

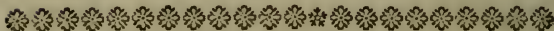
The fifth kind, which is of the wandering sort, is called by the *Genoese* CAPELLO DI MARE, that is, the SEA HAT; for one part of this Nettle is a spongy hollow round mass, and pierced in the middle. Round about it there is a little red cord, which gives it the appearance of a hat, or rather of a bonnet. The other part resembles the feet of cuttle fish, of which there

there are eight that are large and square at the beginning, and terminate in a point. The body is so shining and so transparent that it dazzles the eyes. They melt like ice when they are handled for some time, and they sting the hands, which causes a painful itching. *Linnaeus* takes notice of a Sea Nettle, much like this, for when the sun shines, it appears like a bright star in the sea, and he calls it a Medusa, as he does all of this kind, of which he has four, namely, the Sea Nettle, the Sea Lungs, the hairy Sea Nettle, and the Sea Nettle that shines like a star. The sixth Sea Nettle has but four feet or branches, which are long, and on the upper part there are oval figures which are disposed in the form of stars.






THE
NATURAL HISTORY
OF
SERPENTS.



C H A P. XLVIII.

Of Serpents.

 VIPER differs from other Serpents, not only in moving more slowly, and in never bounding or leaping; but in bringing its young to perfection before they are excluded; whereas the females of other Serpents lay eggs, which are either hatched by the heat of the sun, or in the place of their retreat. Some have thought that a Viper is an emblem of malice and cruelty; but without reason, for they never do any mischief, unless they are exasperated, and then they become furious, and bite very hard. However, it must be allowed, that it attacks and kills the animals designed for its nourishment, namely, Cantharides, Scorpions, Frogs, Mice, Moles, Lizards, and the like, which it swallows whole, after they have been killed with its large teeth.

Vipers will live several months without nourishment; nor will they eat after they are taken; for though they are very fond of Lizards, yet when they have been thrown into a tub in which were several Vipers, they were never touched. The flesh of a Viper is viscous and hard, and does not digest very easily. The skin is scaly,
and

and its colour on the upper part of the body is yellow, with a reddish cast in the males; which is whitish in the females. In the middle of the back, there is a blackish line dentated on each side, or rather a chain of blackish spots, which runs along from the head to the end of the tail. A little below is another row of blackish spots, and on the lower part of the sides there is a line consisting of little white spots, and then another of black, which are larger, and at last a third, which are whitish. The belly is covered with long transverse black scales; which are less on the other parts. Besides, the colour is not the same in all; at least, the ground is different; for it is sometimes whitish, sometimes red, grey, or yellow; and at other times tawney. This is always spotted with black, or at least with a dark colour, and some think they have the appearance of different characters placed in rows one above another, especially on the top, and on the sides of the body. Upon the head there are two rows of spots which resemble horns, which rise between the eyes, and run along the sides on the top of the head. Opposite the middle of these horns, there is a spot the size of a lentil, which is the beginning of those that run along the spine of the back.

They are generally about two feet in length, and about the thickness of the thumb of a large man. The head is flat, and has a border at the extremities of the upper part, in which it differs from snakes. It is about an inch long, and at the top, two thirds of an inch broad, which diminishing by little and little, is one-third of an inch about the eyes, and half as much at the end of the muzzle. The neck, at the beginning, is about as thick as a man's little finger; and the tail of the females is always more thick and long than that of the males, and they terminate in a point in both.

Vipers cast their skins generally twice a year; and the new one seems always more beautiful, and the colours more bright than that which they have quitted. Soon after this another skin begins to be formed, so that it may be said, that they always have a double skin. When a Viper is cut into several parts after the skin is taken off and the bowels out of the belly, they will all

live

live for several hours, and the head is always ready to bite; nor will this be less dangerous now than at another time. Vipers do not make holes in the earth like other Serpents; for they generally hide themselves under stones, or the ruins of old houses. However, in fine weather they delight to lye among bushes, and in tufts of grass.

Vipers have generally two large teeth without the upper jaw, surrounded about two thirds of their height with a pretty thick vesicle full of a transparent yellowish liquor, and pretty fluid. In this vesicle, and in the middle of the liquor under the large and principal tooth, there are several teeth ill placed, some longer than others, and all crooked. There have been sometimes six or seven on the same side, under the same tooth, and in the middle of the same vesicle. These large teeth are about one-sixth of an inch long, and are hooked, white, hollow, and transparent throughout, even to their very point, which is extremely sharp. These teeth generally lye close to the upper jaw, and their points do not appear till the moment the Viper is going to bite. There are likewise other crooked teeth in both jaws, which are hollow and transparent, but very small. Their number is uncertain, they being seldom found the same in any two Vipers; which perhaps may be owing to their being so liable to be broken off.

There is a great difference between the teeth and jaws of Vipers, and those of Snakes; for these last have four upper jaws, and two lower. Two of the former lye near the edge of the lip, and serve, as it were, to defend the other jaws, which have the same situation as in Vipers. Some Snakes have near an hundred teeth, which are all fine, crooked, hollow, white, and transparent, as in Vipers.

The tongue of a Viper is composed of two long fleshy round bodies, which terminate in sharp points, and are very pliable. It is about an inch and a half long, and its root is connected very strongly to the neck by two tendinous bodies, near a quarter of an inch in length. The tongues of some Vipers have three or four points; and though they are often darted out, they do no harm, except terrifying those that behold them; for they

they serve principally to catch the small animals that the Viper live upon.

The lungs are made in the form of a net, but have no lobes, and they are of a bright lively red colour, and pretty transparent. They lye on the right side, as well as the heart and liver. The heart lies four or five inches before the lungs, and is of the size of a horse bean. It has two ventricles, and two apertures. The liver is fleshy, and of a reddish brown colour, seated half an inch below the heart, and in large Vipers is five or six inches long; and half an inch broad. It is composed of two large lobes, and that which is to the right, descends full an inch lower than the left. The gall bladder is of the size of a small bean, and the bile is very green, exceeding bitter and sharp. The pancreas, called by some authors the spleen, is seated a little under the gall bladder, and to the right of the Viper, being of the size of a large pea. The stomach seems to make one body with the gullet, only it is much more thick, and consists of two strong coats, one within the other. The guts lye in the middle of the body under the spine of the back, and next to the bottom of the stomach; and on their sides are the testicles with their vessels, and the two bodies of the matrix belonging to the females. The kidneys are placed below these, and are composed of several glandulous bodies ranged one after another. They are generally two inches and a half long, and near a quarter of an inch broad. All the entrails are covered with white soft fat, which being melted, turns into oil. They are all wrapped up in a very strong coat, connected to the extremities of the ribs.

The VIPER of *Ceylon*, has small eyes seated over the nostrils, and it seems to have four, because over the jaw on each side, there are two whitish spots that resemble eyes. The nose is covered with pretty large scales, and the scales on the back are of a rhomboidal form, adorned with an undulated black and red streak. The belly is of a bright yellow, spotted with a reddish colour, and furnished with scales of a whitish colour.

The *Javan* VIPER, is covered with scales of a sea-green colour, and surrounded with stripes of a dark tawney, that run transversely round the body from the head

head to the tail. The head is defended by large reddish scales, only over the eyes there are two white transverse stripes. About the neck there is a red circle, and the scales on the belly are of a bright yellow, but bordered on the sides with a black line like a silken thread. There is a Snake which authors give the same *Latin* name to, which has an hundred and sixty-four scaly streaks round the lower part of the body, and an hundred and fifty scales on the tail. It is called by *Linnaeus* AHOETULLA.

There is another Serpent called likewise AHÆTULLA, that is met with at *Surinam*. It is of a blue colour with a golden gloss, and there are scaly streaks on each side the hinder part of the body; but the belly is white. The head is small, and there is a black line on it near the eyes; the tail is as slender as a thread. Some say this is likewise common in the *East-Indies*.

The MARASSUS, is an *Arabian* Viper with reddish scales on the upper part of the body, shaded with large dark brown spots which reach to the sides. These spots on the back, are mixed with streaks of a sorrel colour, which run cross-ways. The head is covered with large uniform scales, and the mouth is edged with a beautiful border; the scales on the belly are of a yellowish blue, speckled with red.

The AMMODYTES of *Ceylon*, is a very large and dangerous Serpent, with a mouth full of sharp teeth. The eyes are large and sparkling, and the forehead is covered with small round scales, some of which are yellow, others red, and speckled with black. On each side of the eyes there are black stripes that reach to the neck; but the body, above and below, is of a whitish ash colour; and on the back, there are angular spots variegated with white and brown. The scales that cover the upper part of the body, are placed like net-work, with large meshes, and the tail is spotted with brown, ending in a bony point.

The AMMODYTES of *Surinam*, is a Serpent which the *Negroes* have in high esteem, and they think themselves very happy if they come into their huts; but their colours are so many and beautiful, that they surpass all description.

The AMMODYTES, or SAND SERPENT, so called, because it hides itself in the sand, and is said to be very like a Viper. It is a cubit in length, of a sandy colour, and the head is broader than that of a Viper, as well as the jaws. On the upper part of the nose or muzzle, there is an eminence like a wart, which has given occasion to some to call it the Horned Serpent. It is to be met with in *Africa, Illyria, Italy*, and other parts of the world.

The BAYAPNA, is an *African* Serpent, with a longish white head spotted with chestnut colour, and the neck is adorned with a narrow collar. The eyes are large, seated near the mouth, and the upper part of the body is covered with squarish scales as white as snow, from the head to the tail, which last is long and slender. The neck is small, marked with oblong spots of a bright bay, which are more large on the back. Near the tail the spots are smaller, and the belly is of a yellowish ash colour speckled with red on each side throughout its length. It lives upon birds and frogs.

The GERENDA, so called by *Seba*, is a Serpent of the *East-Indies*, to which they pay divine honours. It generally lies folded up, and has a skin finely spotted; it is covered with very thin rhomboidal scales of a yellowish ash colour, and encircled with bands of a smoky red, which look as if they were embroidered, or rather like ribbands. The head is oblong, and like that of a hound, and of a very pale ash colour; it is covered with small scales, that become larger upon the nose, and from thence to the neck, there runs a deep red streak, made like the links of a chain. Another streak, much of the same sort, proceeds from the eyes to the jaws; the edges of the lips are turned outwards and folded. The teeth are small and slender; the eyes lively and sparkling, and the nostrils large; the transverse scales on the belly are of a yellowish ash colour, and the small scales of a bright ash colour, spotted in the middle with a deep red. This Serpent is had in great veneration in *Japan* and *Calicut*; and the inhabitants of *Malabar* are greatly afraid of it.

The *African* GERENDA, is of a prodigious bulk, and is worshipped by the inhabitants on the coast of
Mosambique.

Mofambique. The ſkin is not ſo finely ſpotted as the former; but it is variegated all over the body with very fine white aſh-coloured and black ſpots. The head is ſomewhat like that of a dog, as well as the noſe, which is finely ſpotted, and ſmall round ſcales cover the top of the head. The mouth when open ſeems to be furrowed, and the tongue, which is cloven in two, is red, the tail terminates in a point.

The JAUCAACANGA, ſo called by the *Braſilians*, is named Tedagoſo by the *Portugueſe*. The *Dutch* that live in thoſe parts, call it the Hunting Serpent, becauſe it winds along with incredible ſwiftness, inſomuch that it is very difficult to get out of its way. The natives do all they can to render theſe Serpents tame, for they receive them into their houſes, where they free them from all vermin. The head is oblong, the mouth ſmall, and the noſe is like that of a hound; the eyes are large and very fine, as well as the ſcales on the noſe; but thoſe on the forehead are ſmall, thin, and round. The reſt are pretty large in proportion, as white as ſnow, ſhaded with a pale red, and variegated with gold colour. The teeth are crooked, the tongue cloven and of a pale red, and the tail is of a deeper colour than the body. Under the belly they are aſh coloured with red edges.

The HÆMORRHOIS, which is the name of the bleeding piles, is ſo called, becauſe thoſe that are bit by it have hemorrhages or fluxes of blood from all parts of the body. It is but ſmall, being only a foot long, and it has a very bright and ſhining ſkin. The eyes are red and ſhine like fire, and the back is full of black and white ſpot. The neck is ſmall, the tail very ſlender, and it has ſmall horns above the eyes.

The *Indian* HÆMORRHOIS called HAUCYATLI, is like a Rattle-Snake, in all things, except the Rattles. It is larger than the former, but the venom has the ſame effect. The firſt is to be met with in *Egypt*, and in ſeveral other parts of *Africa*.

The KOKOB, is of the ſame kind, and is three feet long. It is of a brown colour, with blue and red ſpots. It is an *American* Serpent, and has been ſeen at *Yucatan*.

The SEPS, is a Serpent about three feet long, and thick in proportion. The head is large, the muzzle pointed,

pointed, and the skin is generally of an ash colour, but sometimes reddish, and marbled with white spots. It has four crooked teeth, and a short tail. It is to be found in the mountains of *Syria*, and several other places. The bite is very venemous, and causes the part which is hurt to corrupt in a very short time, and is generally fatal. However, it must be observed, that authors differ greatly in the description of this Serpent, and that Mr. *Ray* takes it to be the Lizard mentioned under this name.

The ACOALT, is a water Serpent found in the *East-Indies*, has very small teeth, and its bite is not dangerous. It is pretty long, and variegated with broad black streaks; but the back and the under part of the belly are blue; the upper part of the head is black, the lower yellow, and the sides blue.

The ARGUS, is a *Guiney* Serpent, which is very uncommon, and it is so called, because it is covered with spots from the head to the tail, that resemble eyes. On the back there is a double row of them, which are the largest, and the ground colour of the scales is of a bright chestnut colour, only on the back between the eyes it is of a dark brown.

The PRINCE of SERPENTS, so called by *Seba*, is a native of *Japan*, and has not its equal for beauty. The scales which cover the back are reddish, and finely shaded and marbled with large spots of irregular figures, with other small black spots. The head is oblong, and the fore part is covered with large beautiful scales. The jaws are bordered with yellow, and the forehead is marked with a black marbled streak, which reaches to the end of the neck; the eyes are handsome, lively, and brilliant. It is a very harmless animal.

The ASP, is a Serpent very often mentioned by ancient historians, but they have given us no accurate description of it. Some say it is of the size of a common Snake, only the back is broader, and their necks swell greatly when they are angry. But as to their teeth growing exceeding long and standing out of their mouths like Boars, which some assert, seems to be fabulous. However, it may be true, that two of the longest are hollow, and that they are those which contain the
venom.

venom. They are generally covered with thin pellicle^s which slide down when the Serpent bites. The skin is^s said to be covered with scales, which are redder than those of any other Serpents; but others affirm they are of very different colours. Some say they are two cubits long, others four, others again five; and *Peter Kolben* affirms he has seen them several ells long; so that in short, there is nothing certain to be said about it. They are undoubtedly bred in *Africa*, and it was by the bite of one of these Serpents that *Cleopatra* is said to have ended her days.

However *Seba* gives the name of Asp or Aspice to several Serpents, the first of which is said to be found in *Egypt*, and is spotted with black. The skin is of a reddish ash-colour marked with black spots, whereas those on the back nearly resemble eyes. The head is of a dark brown, surrounded with a white collar; and the scales of the belly are white, adorned with a reddish border. He has also an *American Asp*, which nearly resembles this in every respect.

The *Java ASP*, is of a sea green with a sharp mouth and a long head covered with scales on the fore parts. The other scales are also of a sea green colour with white edges, except under the belly, where they are of a light green, and separated from the rest by two white streaks which run like furrows along the sides.

The *Surinam ASP*, is of a bright green colour sprinkled with blackish spots; but the belly is of an ash coloured red, and the head is of a deep green; the eyes are lively, and the tail is terminated with sharp points.

The ASPIC COBRA of *Brazil* is very large, and has a white head streaked with black. The forehead is large, angular, and defended by great whitish scales. This Serpent is of divers colours, for it is brown the fourth part of its length; then the brown is mixed with white specks as far as the tail, which is entirely black. The beginning of the body is covered with oblong scales in the form of a chain; after which they become rhomboidal. The eyes are large and sparkling. The teeth called the grinders, are very sharp; but the incisors do not appear to the naked eye. It feeds upon Lizards and birds, and is found principally in the province of

Honduras, from whence it has been brought into *Holland*.

The GIBOYA is the largest of all the *Braſilian* Serpents, being ſometimes twenty feet long and very thick. Travellers pretend it will ſwallow a ſtag whole, but this muſt be a fable. The teeth are very ſmall in proportion to its body, and this Serpent is not at all venomous. It lies in wait for wild animals near the paths, and when it throws itſelf upon one of them, it winds about him in ſuch a manner, and with ſo much ſtrength, that it breaks all the bones; after which it mumbles the fleſh in ſuch a manner, as to render it fit for ſwallowing it whole. *Linnaeus* places it among thoſe that have ſcaly ſtreaks on the belly and tail; with a head covered with ſmall ſcales, and the tail without any appendage.

The HIPPO, an *African* Serpent, ſo called by *Seba*, is covered with ſcales of a rhomboidal form, and of a bright lead colour, appearing very beautiful to the eye; the head is variegated with red, yellow, white, and blue, very curiouſly mixed; and each ſide of the head and neck are marked with four ſpots as red as coral. Along the ſpine from the head to the tail, there runs a whitith ſtreak, which ſeems to conſiſt of a row of oval pearls, and on each ſide the belly, which is covered with yellow ſcales, there runs another white ſtreak.

The HÆMACETA is a Serpent of *Asia*, which *Seba* procured out of *Tabareſtan*, a province of *Persia*. It is covered with ſcales exactly reſembling oriental agate. On each ſide the belly there are ſpots of deep red, and the fore part of the head is covered with uniform pale red ſcales; but the hinder part of the head and neck are adorned with white ſpots like roſes; the ſcales of the belly are of the colour of apple bloſſoms, inclining a little to red in ſome places.

The SCYTALE is of a long round ſhape like a ſtaff, from whence it has its name; for *Scytale* ſignifies a club or ſtaff in the *Greek*. Some ſay this Serpent is very full of marks or ſpots on the back, which render this animal extremely beautiful. It has a very ſlow motion, and therefore cannot purſue any one to hurt him. The head and tail are ſo much alike, that it is hard to diſtinguiſh

one from the other, and *Nicander* affirms it for size and length like the handle of a spade.

The AMPHISCÆNA, or the double headed SERPENT, is remarkable for moving along with either the head or the tail foremost, as the *Greek* name imports. For this reason, many authors have affirmed, that this animal has two heads, which must needs be false, for there is no such creature in the universe. This error took its rise very probably from the thickness of the tail, which might look at a distance like another head; but if those who have affirmed it, had had a nearer view, they would soon have discovered their error. Some assert, that this Serpent is like the *Scytale*, and differs only from it in going backward and forward. It is as thick at one end as the other, and the colour of the skin is like that of the earth. It is rough and hard, and variously spotted. It is to be met with in *Lybia*, and likewise in the island of *Lemnos*.

The *American* AMPHISCÆNA is of a flesh colour, and it seems to have neither eyes nor nostrils; its mouth is a small cleft without teeth or tongue; however, it is thick, smooth, and covered with large scales of a flesh colour; the head is blunt, and as thick as a man's head, as some say; but this may be doubted; some place them among the blind Serpents.

The AMPHISCÆNA of *Ceylon*, is as black as a Raven, and is supposed to be the female of the *Ammodytes*, but for what reason it is hard to say, for it resembles the common *Amphiscæna* in the shape of the head, and the tail consists of half rings.

There is another *American* AMPHISCÆNA, marbled with white and brown, and the head is of a straw colour. The whole body consists of very narrow rings, closely united together like those of Earth-worms. The scales are thin, and consist of longish irregular squares of a chestnut colour; but more brown on the upper part, and lighter on the belly, it being there mixed with white.

The APAMEA, is a *Syrian* Serpent that seems to have two heads, and the body is smooth and shining. The head is small and of a pale yellow, only there is a streak which reaches from the eyes to the nostrils. It is

is round, thick, and flat, and covered with small scales like lozenges, of a violet purple underneath the body, and variegated with a straw colour. The tail is thick, and blunt at the end.

The *IBIJARA*, so called by the *Brazilians*, and by the *Portuguese* *COBRA DE LOS CABECAS*, is reported to have two heads, but falsely. The error arose from its stinging with the tail, as well as biting with the mouth; besides the head can hardly be distinguished from the tail, because they are both of the same shape and size. It is about as thick as a man's little finger, and a foot and two inches long. It is of a whitish colour, and glitters like glass, and is marked with beautiful rings, and lines nearly of a copper colour. The eyes are very small, and hardly visible; for they look like small holes in the skin, made with the pricking of a needle. It lives under the earth, and never appears but when turned up by digging. It lives upon Ants, and its venom is so fatal, that the *Portuguese* affirm there is no cure for it.

The *CÆCILIA*, the *BLIND WORM*, or *SLOW WORM*. Some have supposed it to be both blind and deaf; but this is a mistake, for they certainly have eyes, tho' very small. The teeth are set in the mouth like those of a Cameleon, and the skin is very thick. It is of a pale blue with blackish spots on the sides. Likewise, it is quite smooth, being without scales. One of these, that was seen by Mr. *Ray*, was of a yellowish ash colour on the back, and on the sides there were different black and white lines; but the belly was black. However Mr. *Ray* thinks, that the male and female are of different colours; or perhaps, that they may be different in the same sex. It is about a span in length, and as thick as a man's finger. It is to be met with in *England*, as well as in many other countries; and it brings forth its young ones alive like the *Viper*.

The *CENCHRUS*, *CENCHRIS*, or *MILLET*, so called from Millet seed, because it is adorned with spots of the same size. It is in length about two cubits, with a thick body, which terminates in a slender tail. The colour is of a yellowish green, especially on

the belly. It is found in *Lennos* and *Samos*, and perhaps may be met with in other parts of the world.

The ACONTIAS or DART, is so called, because it shoots itself like a dart. *Be'on* or *Bellon*, met with it in the isle of *Rhodes*, and acquaints us that it is three palms in length, and about the thickness of a man's little finger. It is of a whitish ash colour, and on the belly it is entirely white, with little spots like eyes upon the back. The neck is black, and from thence there run two white lines along the back to the tail. The spots, which are black, are no bigger than a lentil, and they are all encompassed with a white circle. Authors affirm that they get upon trees, from whence they dart themselves upon people that pass along, and that their bite is deadly. They are to be met with in *Egypt*, *Lybia*, and the islands of the *Mediterranean* sea. Late authors mention different kinds of them, the descriptions of which have been sent to *Europe* from different parts of the world.

Seba speaks of three kinds of Darts, the first of which has a pointed tail, armed with two hard flings like the forked tongues of some Serpents. They lurk in hollow trees, where they wait for their prey, and dart upon it with great swiftness. It has a long head, large eyes and jaws, a mouth well furnished with sharp teeth. The scales that cover the forehead and upper part of the body are uniform and regularly placed, and of a reddish blue, and on each there is a furrow of a white colour; but those under the belly are of a pale yellow, mottled with red spots. This Serpent was seen at *Santa-cruz* in *America*.

The DART of *Amboyna*, is called by the *Dutch* SPAITSLANG, which is as much as to say, the SYRINGE SERPENT, because it raises itself as swiftly as water, out of a syringe. It is as thick as a man's arm, six feet in length, and is covered with scales disposed in the form of lozenges, which are of reddish brown, and of a sea green on the back and sides; but those on the belly are of a bright ash colour. The skin is smooth, and the head of a middle size; but the eyes are very large and shining, with small teeth, and a long pointed tail.

The DART of *New Spain* is covered with yellow and reddish scales, placed in the form of lozenges that
are

are cut through the middle by streaks that run from the head to the end of the tail. The head is covered with yellow scales speckled with red, and all its joints are orange; but the scales on the belly are of a reddish yellow.

The DRYINUS is so called from the *Greek* word *Drus*, which signifies an oak; because this Serpent is said to borrough in the roots of oak trees. *Bellon* declares, that he never met with any Serpent so large as this, nor that makes a louder noise when it hisses; for one of them being put into a sack, it was so heavy, that a countryman could not carry it two miles without resting. He saw the skin of one of these stuffed with hay, that was as thick as a man's leg, which is all the description that he gives of it. Other authors have given such different accounts of this animal, that it is impossible to reconcile them, and consequently nothing certain can be said about it, with regard to its description.

The ELOPS or ELAPS, is a Serpent that *Bellon* tells us, is to be met with in the island of *Lemnos*, where they call it LAPHIATI; for which reason it is supposed to be the same that the ancients called ELAPHIS. It is about three feet long, of a greyish brown on the back, with three black lines running from the head to the tail, and the belly is yellow; which is all the account that authors give of it.

The GRILL of *Surinam*, is a Serpent almost a foot long, and an inch thick, being in the shape of a cylinder from the head to the tail. The skin is smooth without scales; on the back there are points a little elevated, and there are wrinkles on the sides. The head is smooth and round, and the upper jaw is long, blunt, and furnished with a thread on the side of each nostril. The holes of the nostrils are a good distance from each other, and they are as small as the points of needles, as well as the eyes, which however are very brilliant, the teeth are small, and the tail, if it may be said to have any, is blunt and wrinkled like earth worms.

The *American* BLIND SERPENT is white, mixed with flesh colour, and is covered with small scales from the head to the end of the thick tail; and they are

divided into parallelograms, by fine longitudinal streaks that cross others which are circular. The head is large and short, and the mouth is furnished with teeth. The eyes are very small, and covered with a membrane; but the nostrils are large. It feeds upon hog-lice, and other small insects.

The ANGUIS ÆSCULAPII, the Snake of Æsculapius, is a harmless kind of a Serpent. In *Italy*, it is suffered to come into the houses, and often gets into the beds where people lye; but though it is an innocent sort of a animal, yet it will bite when exasperated. It is of an oblong shape, an ell long, and of a yellowish, or rather porraceous colour, except on the back, where it is brown. Both jaws are armed with many very sharp teeth; and on the neck two small eminences appear with an empty space between them. They are very common in *Spain*, *Italy*, and other warm countries.

Seba has seven sorts of ÆSCULAPIAN SERPENTS, which are as follow:

1. The first has the whole body encircled from the head to the tail, with broad brown and black streaks, and the scales that cover the body are of an ash colour and grey mixed with white.

2. The *Brazil* SERPENT, variegated with divers colours, is defended with strong scales of a dull blue colour, mixed with black, and finely undulated. The head is curiously mottled and speckled, and the transverse scales on the belly are mostly white.

3. The ÆSCULAPIAN SERPENT of *Panama* in *America*, has a blueish violet coloured body, and the belly is of a paler blue with transverse large scales, altogether white. They are all close together, except at the bending of the back, where they are disjoined. The head is covered with long broad uniform scales, as well as under the jaws. The mouth is armed with sharp crooked teeth, and it lives upon mice and small birds. Its excrements smell like musk.

4. The ARGOLI is an *American* Serpent, and a kin to the Æsculapian kind. The scales are rhomboidal, and of a greyish black, with large bay brown spots, some of which are round, and others oblong; but the belly is almost whitish, and the tail terminates in a point.

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5. This Serpent is another Argoli with spots on; the scales are of a whitish ash colour, disposed in a beautiful manner, and more exactly than in the former kind. The tail is blunt at the end, and the head and eyes are shining.

6. The *ÆSCULAPIAN SERPENT* of *Brazil*, is near three ells in length, with the head covered with large beautiful scales, and the neck surrounded by a narrow collar. The scales on the body are white, and in the shape of lozenges, each being marked in the middle with a small black furrow. From the neck to the tail there are large red and brown spots, which are longish near the head, and shorter as they approach to the tail. The mouth is armed with very small teeth.

7. The *ÆSCULAPIAN SERPENT* of the *East-Indies*, is very large, and the upper part of the body is covered with yellow scales, shaded with dusky brown, and which shine very much. It is encircled with bay brown streaks, some of which are narrow, others broad. The scales on the sides and under the belly, are of a yellowish ash colour; the head is little, short, and prettily variegated with black and brown; the forehead is marked with two whitish spots, and the neck is surrounded with a white ring. The teeth are very small, but the body is round and fleshy, and the tail blunt.

The *BITEN* of *New Spain*, is of a thick short shape, being remarkable for its short tail, which is distinct from the body; the scales which cover the middle of the body are long and broad; but towards the head and tail they are narrow; and are whitish, and variegated with red, pale, and deep yellow, mixed here and there with black spots. In the back part of the mouth there are crooked teeth; but there are none before.

The *BITEN* of *Ceylon* is a sort of a large snake covered with great oblong scales which adhere to the skin by the root; but there are other parts as loose, and so moveable, that when it is angry they rise up like hair that stands an end. They are of a deep yellow colour where they touch each other, shaded with blackish spots; but between them there are other scales of a yellowish ash colour. The neck is marked with

oval spots, and the head is short and of an oval shape; the eyes are large, brilliant, and full of fire; and in the mouth there is only four long crooked teeth, two above and two below, that are connected to the jaws on each side by tendons; but at the bottom of the palate there are others very small and crooked. The tongue is forked.

The RATTLE SNAKE is bred in *America*, but in no part of the old world. Some of these are as thick as a man's leg, and six feet in length; however, there are many that are no larger than a common Snake; and these are most frequent. They receive their name from the rattle which is at the end of their tails, that consists of several shells, which are very thin and of a horny substance.

They are of an orange, tawney, and blackish colour on the back, and of an ash colour on the belly inclining to lead. The male may be readily distinguished from the female by a black velvet spot on the head; and besides the head is smaller and longer made. The young Snakes of a year or two old have no rattles at all; but those that are older, have several. Many have been killed that have had from eleven to thirteen joints each. They shake and make an noise with those rattles with prodigious quickness when they are disturbed, and their bite is very dangerous, but not always of the same force, it being more or less mortal in proportion to the vigour of this animal; for this reason it is always more fatal in *March* and *April*.

This Snake is a very majestick sort of a creature, and will scarce meddle with any thing unless provoked; but if any man or beast offends it, it makes directly at them. Many have affirmed, that a Rattle Snake has the power of charming Squirrels, Hares, Partridges, and the like, in such a manner as to make them run directly into their mouths; but this, upon stricter examination, appears to be a mistake.

Dr. *Tyson* had one of these Snakes sent from *Virginia*, which was four feet five inches long, and his body six inches and a half in diameter, but the neck only three. The head is flat at the top like a Viper, and the nostrils are placed at the end of the snout, between these and
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the eyes ; a little lower are two orifices, which might be mistaken for ears, but by sounding them with a probe, they were found to terminate in a bone, that had no passage through it. It was in all things like a Viper excepting the nose, and a large scale which hung like a pent-house over each eye, which seemed to serve instead of an eye-lid, and to prevent any thing from falling into the eye ; but it was not designed for covering or shutting the eyes, in which there is a nictitating membrane to wipe of the dust if any should fall therein.

The scales on the head are the least of all ; but they grow larger as they approach near the back, and so on to the thickest part of the body ; after which they diminish sensibly to the end of the tail where the rattle is placed. The colour of those on the head was like the back of a Green-finch ; but it was marked with small black spots, of which four are large and more remarkable. Those on the back were of a dark fillemot colour, or a mixture of black and dusky yellow, which was likewise spotted. These different colours were diversified like chequer work, and had an appearance somewhat like a chess board. They grew darker the nearer they approach to the tail, where they were almost black. The scales on the back rose up in sharp points like those of a Crocodile ; but they grew less the nearer they approached to the sides, where they were quite flat and equal. The belly seemed to be flat and covered with long transverse scales of an oblong square form, and of a yellow colour spotted with black. From the neck to the anus, there were one hundred sixty-eight scales ; and beyond that, there were two half scales, and nineteen whole ones of a blackish lead colour edged with yellow. After these, as far as the rattle, there were six rows of lesser scales of the same colour.

The scales on the belly were connected together by distinct muscles ; and the lower tendon of each was inserted into the upper edge of the succeeding scale ; and another tendon of the same muscle was fixed to the middle part of the preceding scale. These muscles about the middle of each scale were fleshy, and the fibres ascended obliquely from thence. The point of each scale was connected at both sides to a rib, and by that means

supplied them with great strength to perform all their motions ; for these might be likened to so many feet, which being free and open on the lower part, they might easily take hold of the earth and so force the body forward. Hence the query of *Francis Hernandez* may be answered, why these Serpents can proceed more swiftly in stony rough places, than those that are flat ; because here the steps are much more firm.

The Snake being laid on its back and opened, the tendons of the abdominal muscles were found to terminate in a line in the middle of the belly, along which a large blood vessel ran, which rose from the vena cava, and terminated in the lower part of the liver. The aspera arteria, or wind-pipe, was of a singular structure, and differed from that in other animals ; for in this, as soon as it entered the breast, it met with the lungs, and consisted of semi-angular cartilages annexed on each side to the membrane of the lungs, and so conveyed air into the lungs without the help of bronchia. These began at the throat, and descended to the length of three feet. The upper part which lies along the fore part of the body, was a foot in length, and reached to the heart. It consisted of small vesicles or cells, on which were reticular ramifications of the blood vessels. A little below this for the space of four inches, these cells began to vanish very sensibly, and at length terminated in reticular compages of connivent valves, at the end of which was a large bladder without any cells, and consisted of a transparent but strong membrane. When it was gently blown up, it was about eight inches in length. The gullet was two feet three inches in length ; but the stomach, properly so called, only five inches. It was different in substance and colour from the gullet, and was lined on the inside with several folds.

They swallow all their food whole, but do not vomit up again those parts they cannot digest, as some have affirmed. There is no need that it should be divided into small particles by the force of the stomach ; and this in reality never happens. But then, as it passes through the body, every thing proper for nourishment is extracted from it ; and yet it is hard to say, in what manner it is done. The heart lies on the right side of
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the lower part of the wind-pipe, and is covered with a membrane called the pericardium. It is about an inch and a half long, and is rather flat than round; and it has only one ventricle endowed with small fleshy valves. The auricle was bigger than the heart, for it had not two, as *Charas* affirms he had often found in a Viper. However, Dr. *Tyson* thinks that this must be a mistake, because the hearts of all Serpents are alike. The liver is seated below the heart, and was about an inch broad, being divided into two lobes of unequal length. The left was about two inches long, and the right a foot. The colour was of a reddish brown, and the gall-bladder, which was full of dark green bile, was two inches long. The kidneys lye on each side the spine of the back, but are not strongly connected thereto, and they were seven inches long. These, though they were only one body, seemed to be subdivided into lesser kidneys, near fifteen in number, and their structure was very beautiful and curious.

The very large *Mexican* SERPENT called DEPONA, has a very large head and great jaws. The mouth is armed with cutting crooked teeth, among which there are two tushes which other Serpents have not, and which are placed in the fore part of the upper jaw. All round the mouth there is a broad scaly border, and the eyes are so large that they give it a terrible aspect. The forehead is covered with large scales, on which are placed others that are smaller, curiously ranged. Those on the back are greyish, and along it runs a double chain, whose ends are joined in the manner of a buckler. Each side of the belly are marbled with vast square spots of a chefnut colour, in the middle of which is another that is round and yellow. The transverse scales of the belly are variegated with large spots of a reddish colour as well as the long slender pointed tail. They avoid the sight of a man, and consequently seldom or never do any harm.

The CENCOALT is a sort of a Viper of *New Spain*, and has an oblong head flatted before, with large nostrils; the mouth has a large dentated border, and the eyes are large and sparkling. The body is covered with speckled scales shaded with spots that are partly

red, partly yellow, and partly of a chefnut colour. The scales on the belly are of a bright afh colour variegated with yellow; the tail and neck are long and small.

There is another *American* CENCOALT, which is long and slender, with a small head and large eyes feated very near the noftrils. It is finely spotted, and the scales are of a yellowish afh colour. The whole length of the back is of a chefnut colour, and the scales underneath the belly are of a dirty yellow. This Serpent feeds on worms and ants. The female is more slender than the male, but has a rounder body; the neck is long, and no thicker than a tobacco-pipe; in other things it refembles the male. *Linnaeus* calls it the Snake that has two hundred and twenty scales on the belly, and an hundred and twenty four on the tail.

The BOIGUACU of *Marcgrave*, is called by the *Portuguese* COBRA DE VEADO, and is fupposed to be the largeft of all thefe kind of animals. They have been feen from feven to twenty four feet long, and *Marcgrave* affirms, that he has feen one fwallow a Goat whole. This feems to be the fame that *Candomine* mentions by the name of the Coral, and fays, it is remarkable for the variety and livelinefs of its colours; but more efpecially for its largenefs; for it is affirmed they are from twenty five to thirty feet long. This author carried two of the fkins to *France*, one of which was fifteen feet long, and a foot in diameter. It is thickeft in the middle of the body, and grows fhorter and finaler towards the head and tail. On the middle of the back there is a chain of small black spots running along the length of it, and on each fide there are large round black spots at fome diftance from each other, which are white in the center. Between thefe near the belly, there are two rows of leffer black spots, which run parallel to the back. It has a double row of fharp teeth in each jaw, of a white colour, and fhining like mother of pearl. The head is broad, and over the eyes it is raifed into two prominences. Near the extremity of the tail there are two claws refembling thofe of birds.

Pi/o affirms that thefe Serpents lye hid in thickets, from whence they will come out at unawares, and raifing themfelves upright on their tails, will attack both men and

and beasts. It makes a strange hissing noise, when exasperated, and will sometimes leap from trees and wind themselves round the bodies of travellers so very closely, as to kill them. However, *Condomine* makes no mention of this, but he takes notice of their biting, which he affirms is not at all dangerous; for though the teeth are so large as to inspire any one with terror that behold them, yet their bite is not attended with any other consequence than what may proceed from an ordinary wound.

Dellon affirms, that in the *East-Indies* there are Serpents of twenty feet in length, and so thick, that they are able to swallow a man. They generally haunt desert places, for though they are sometimes seen near great towns on the sea shore, or on the banks of rivers, yet it is generally after some great inundation. He never saw any but what were dead, and they appeared to him like the trunk of a large tree lying on the ground. The *Americans* pretend that one of these Serpents will swallow a Deer horns and all; and the *Indians*, that it will swallow a Buffalo whole; both which stories are very improbable. However it is pretty certain, that one of the *East-Indian* Serpents did actually swallow a child.

The CUCURUCU of *Marcgrave*, is a Serpent from nine to twelve feet long, and thicker than a Rattlesnake. Their scales are much alike, only these are yellow and marked on the back with large black spots. It is a very venomous animal and greatly to be feared, and yet the flesh is eaten by the Savages. The bite is said to have the same effect as that of a Hæmorrhoid.

The IBOBOCA of the *Brazilians*, is called COBRA DE CORAL by the *Portuguese*. It is two feet long, and almost an inch thick; and the tail towards the end is round and sharp like a bodkin. All the belly is of a shining white, and the head has white cubical scales black on the edges. Next to these is a spot of a bright red colour, the scales of which are black on the edges, as all the red spots are. To this a black spot succeeds, then a white, then a black, and again a red, and so on. The red spot is about an inch long; and two white, and three red, taken together, are an inch and a half long, but equal to each other. The edges of the white spots are always black. The bite of these Serpents

is generally fatal; however it can move along but slowly.

The BOITJAPO of *Brazil*, has the name of Cobra de Lipo among the *Portuguese*, and is seven or eight feet in length, but is scarce so thick as a man's arm. The body is round, and the tail ends in a sharp point. The colour in general is olive, except under the belly, which is yellowish, and covered with beautiful triangular scales.

The spine of the back is furnished with a row of prickles, which runs from the head to the tail. The scales on the upper part of the body are placed like the meshes of a net with a double thread, which crossing each other form a sort of lozenges. The head is defended by a buckler, consisting of large long scales, and the eyes are large, sparkling, and full of fire. The mouth is armed with many small teeth. It lives upon frogs, and is very venemous, for the venom operates like that of the Hæmorrhoids.

The BOYUNA is a Serpent of *Ceylon*, which the inhabitants are fond of meeting with, because they take it to be a sign of good luck, and more especially if they happen to come into their houses. The mantle on its back consists of a fine web of small scales, which are ash-coloured and yellow, and made like a net; they are bordered with a mixture of large bay brown spots, and on the belly there are others that are smaller, inclining to a rose colour and speckled. The head is covered with beautiful pretty large scales of a bright chestnut colour, speckled with red and brown. The scales on the belly are white, spotted with brown.

There is another Boyuna of *Ceylon*, with a white head defended with large scales, and adorned with a sort of a crown. The edges of the jaws are transversed with black streaks, and on the hind part of the head there is the print of a Tiara. The fore-part of the body is half a *Dutch* ell in length, and there are very large spots, variegated with white, chiefly on the back, though they extend here and there to the belly. The scales of the belly and the tail are surrounded with a very narrow roundish border. *Kay* acquaints us, that
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this Serpent is long and slender, and has a strong smell like a Fox.

The BOJOBİ, so called by the inhabitants of *Brazil*, is known to the *Spaniards* by the name of *Cobra Verde*, or the green Serpent. It is about an ell in length, and as thick as a man's thumb. The green colour on the body is like that of a leek, and shines very much. The mouth is large, and the tongue black; and it delights to be near buildings. It is a very harmless animal, unless any one vexes it, and then it will bite, which is always fatal.

Another BOJOBİ is a Serpent of *Ceylon*, with large lips, and is of a beautiful shape, but it has a terrible look; the lips are thick and hanging, and the teeth sharp; but they are hid in sheaths within the jaw, and have a membranous covering. The lips are edged with a border of large, pale, reddish scales made like studs, and the eyes are red and sparkling. The upper part of the body is of a shining orange colour variegated with straw-coloured spots, and adorned with belts of a reddish brown.

Seba informs us, that this Serpent is of different sizes, though seldom above that before-mentioned; the scales are large, long, and of a sea-green colour, variegated on the back with long, large transverse stripes as white as alabaster. The scales on the belly are yellow and large; the head is well made, and shaded above with bright red, but greenish underneath; the eyes are surrounded with large scales, and the flat snout is quite covered therewith; the upper lip is bordered with the like scales; and the tongue is forked and pointed, being white and reddish; whereas the tongues of most other Serpents are black.

There is another Serpent called BOJOBİ, and by some the Crowned Serpent. It has a wide, short mouth, with a black head, marked at the top with a yellowish crown. The eyes are small, and of a sparkling green; but the nostrils are large and open. This Serpent generally keeps in old hollow trees.

The BOIQUATRARA is a Serpent of the island of *St. Maurice*, which word signifies the painted Serpent. These kind of Serpents live a long while, and become

extreamly large; the upper part of the body is adorn'd with a long chain of chesnut coloured links, somewhat like a net, and on each side the belly there are round saffron-coloured spots, disposed in a beautiful order. The other scales are large, and speckled with pale yellow; the head is not large in proportion to the body; but it is finely adorned with scales, and those on the belly are of an ash-coloured yellow, and barred with rays.

The BOIQUATRARA of *Amboyna*, is so finely coloured, that it is likewise called by the natives the painted Serpent. It is beautifully variegated with blue sea green, and dark green. The scales on the belly are of a sea green, marked on the upper part with four yellow stripes, which run from the head to the tail. The head terminates like a long pointed bill; but the mouth is so large that it can swallow a common fowl whole; but it has no teeth. This Serpent makes a kind of a singing noise, by which it is said to invite birds within its reach, and then leaps upon them.

The CARACARA. is a *Brazilian* Serpent with a greyish head, the back part of which, and the neck are covered with scales of the same colour, marked with dark brown spots, that run transversly in the form of a bow, and cuts a blackish chain in the middle of that part. Where this chain terminates, the scales become of an oblong shape, and afterwards are rhomboidals. That part of the Serpent where this chain begins is a little swelled, and inclinable to a red colour. The scales on each side of the belly are of a bright ash-colour, and on each side the head there is a black streak, which terminates at the nape of the neck. The eyes are large and shining.

The JARARACA of *Piso* is a short Serpent, seldom exceeding half a cubit in length. There are prominent veins in the head, as in those of Vipers, and it hisses much in the same manner. It is marked with red and black spots; but all the other parts are of a dirt colour. The *Portuguese* have a remedy for it, called by them Herva de Cobras, and by the natives Caatia, which being applied outwardly,
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and taken inwardly, cures not only the bites of this, but of all other Serpents. *John de Leat* makes four kinds of the Jararaca, which he takes notice of and describes.

The CANINANA of *Piso*, is yellow on the belly and green on the back, and is about eight palms in length. Its bite is not accounted very fatal, and it lives upon birds and their eggs. The flesh is eaten by the *Africans* and the *Americans*, when the head and tail are cut off.

The IBIRACOA of *Brazil*, is a Serpent remarkable for being spotted with white, black, and red. Its bite is very dangerous, and induces the worst kind of symptoms.

The TARESBOYA and CACABOYA, are two amphibious Serpents that live as well on land as in the water; and upon that account are not unlike our Water-snakes. However they are not so pernicious as those of *Europe*. They are quite black, and not very large; and they will bite when angered, but the wound admits of an easy cure. There is one of this kind of a yellow colour, and six palms in length, which is more to be feared by the country people, on account of devouring the poultry, than from the danger of its bite.

The GIRAWPIAGARA, which signifies an egg-eater, is an oblong Serpent or Snake of a black colour, only it is yellowish on the breast. They are very nimble in getting up the highest trees, where they seek birds-nests, and devour their eggs.

The GAYTIEPUA is an *American* Serpent as well as the former, and has been seen in the country called *Burim*. It is of a vast size, and smells so filthily that no man can bear to come near it.

The BOM is a very large Serpent, and receives its name from the noise it makes; however it is very harmless, and was never known to hurt any one.

The BOYCUPECANGE, which word signifies a Snake spotted or marked on the back, is much thicker than the former; and these marks are supposed to be of a very virulent nature.

The JARARACUCU is about ten palms in length, whose teeth are very large; and when it is about to bite, they are thrust out of the mouth like fingers; but at other times they are hid within the cheeks. The venom is a fluid of yellow colour, and so powerful, that it will kill a man in the space of twenty-four hours. These Serpents bring forth several young ones at a time, and some of them that have been killed, have been found to have thirteen in their belly.

The JARARA COAYPITIUGA, which name signifies a Serpent, whose tail has more white in it than brown. It is as venomous as the *Spanish Viper*, and differs little from it either in shape or colour.

The JARARA EPEBA, has a red line running like a chain upon its back and under the belly; the other parts are either brown or of an ash-colour.

There are other Serpents in the *East Indies*, of which we have some account; and we shall give you the best description of them yet.

Serpens INDICUS CORONATUS, is called by the *Portuguese* COBRA DE CAPELLO, which signifies the Hooded Serpent, and it is so named, because it has an excrescence like a hood or cap at top of the head. The skin is of a gold colour, and it is generally about a yard in length, and about three quarters of an inch thick. However *Francis Leguatt* affirms, that in the island of *Maurice* near *Batavia* in the *East Indies*; they are eight feet in length, and as thick as a man's arm. It is agreed on all hands, that the poison of this Serpent is extremely dangerous, and perhaps more strong than that of any other. It is generally said, that there is a stone in its head which is an antidote against the bite of this and all other Serpents; but *Kolben* declares, he has sought for it in vain, though he has killed a great number of them on that very account. However the *Dutch* at the *Cape of Good Hope*, have a stone called *Slang steeners*, or the *Serpent-stone*, which is of great use against poisons of all kinds; but it is thought to be a composition of the *Bramins* of the *East Indies*, from whence it is brought; and many attempts have been made to prevail upon them to discover the secret, but hitherto without effect.

The *American* COBRA DE CAPELLO, so called by the *Spaniards*, seems to be a sort of a Viper, and the upper part of the body is of a dark red, and there are white streaks run across it. The belly is of a pale red, and the upper part of the tail of a scarlet colour; but the top of the head is whitish. The forehead is marked with a spot in the shape of a pair of spectacles, and the eyes are small. It lives upon spiders and insects of the like kind; but there seems to be a mistake in calling it Capello or Hooded. There is another Serpent marked with a pair of spectacles in *Peru*, with the neck of a dusky brown colour, but what is called a pair of spectacles have a greater resemblance to hooks. The head is covered with large scales, and surrounded with a bright grey collar. On the shoulder there is a dark tawny streak, and all the upper part of the body is uniformly covered with reddish scales, variegated with white and ash-colour. The transverse scales on the belly are of a bright greyish silver colour.

There is another Serpent of this kind, called likewise Cobra de Neustria, which is a sort of female Viper of *Ceylon*. The forehead is large and short, covered with large scales, in the middle of which there is a triangle, on the top of which there is a black crown. The other scales on the forehead are of a greyish ash-colour; the eyes are shining and large, and the nostrils very open. The scales on the back are of a bright ash-colour, marked with large beautiful reddish spots, and lower there are other flesh-coloured spots. The scales on the belly are of a yellowish red.

The COBRA DE CAPELLO of *Siam*, is entirely different from that of *Ceylon*, in its skin, in its mark on the forehead, and its rhomboidal scales. From the head to the end of the tail it is of a greyish ash-colour, but has a little brownish red on the back. The scales on the belly are large, and of a reddish pale inclining to an ash-colour. The mark on the forehead is not so large as that of the foregoing, and the chequered scales are without ornament. The eyes are large and shining, and the fore-teeth are so small they can hardly be seen, being covered with a loose skin; but the hinder teeth are sharp and crooked. There is another kind in the island

inland of *Ternate*, which seems to be of the same sort as this, only the colour is a little redder. Another *East Indian* Cobra de Capello, is surrounded with circular stripes, and its yellowish ash coloured body, is full of purple rings from one end to the other, some of which are large, others narrow, and yet beautifully disposed.

VIPERA INDICA TRICOLAR MAJOR, called PALAPARIGAZ by the inhabitants of *Ceylon*, is a Serpent that generally lives under the earth. The Tunupolon of *Ceylon* is spotted with marks in the shape of bows and arrows, and is called in *Latin*, *Vipera Zeylanica minor maculis fasciis holosericeis eleganter variegata*. *Malkarabæla* of *Ceylon*, is said to be spotted with white and livid flowers. The *Serpens Indicus gracilis viridis*, that is, the *Indian* slender green Serpent, lives in woods and groves.

Besides these there are the *Ceylon* Serpent, spotted with stars of a red colour; the Stinking Serpent; the *Indian* Serpent, that is an enemy to the Buffalo; this is of a dead bluish colour, with a small head in proportion to the thickness and length of the body, which is covered with beautiful large scales; and those on the upper part of the body are of three different shapes; but those on the sides and under the belly are entirely white. The *Indian* Serpent that lies hid under stones, and has whitish lines running cross its back: The *Indian* Serpent with white spots, that flies upon passengers like a dog: The *Indian* Serpent of a blackish brown with white spots, whose bite brings on a fatal sleepyness: The *Indian* Reed Serpent, whose face has a resemblance of the Reed called the *Raitan*; the *Indian* Serpent, whose neck and back are full of spots in the shape of arrows; and the *Indian* Serpent of a greyish yellow colour with a strong smell.

For want of a more particular description of these Serpents, is very hard to say, whether they resemble any described by other authors or not; however it will not be improper to mention others that have been described by travellers of undoubted credit; and first I shall begin with those mentioned by *Peter Kolben*, who went purposely to the Cape of *Good Hope* to make observations

servations that might enable him to write the natural history of that country.

The COBRA DE CAPELLO of *Brazil* has a mark on the forehead in the shape of a heart, besides four spots so formed as to resemble eyes. There are whitish rhomboidal scales about the neck. Every other part is of a bright red, except some brown and red streaks on the back that run across it: the belly is of a lighter colour.

The *American* COBRA DE CAPELLO, so called by the *Portuguese*, has a thicker neck than the rest, upon which account he is called the crowned or hooded Serpent; but very improperly: the head is covered with large ash-coloured scales, and the mouth is armed with long sharp teeth; the scales on the upper part of the body are of the colour of dead leaves, and are large, oblong, and close to each other. The hinder part of the body is very long, and the tail is terminated by a pointed bone resembling a small horn.

The COBRA DE CAPELLO of *Malabar*, has a spot on the forehead like a pair of spectacles; but that which gives this Serpent the name of Capello, is a mark on the hinder part of its neck at a small distance from the head, the nose and the frame of the spectacles are white, surrounded with a double border of a reddish colour, but at the head it is small, short and covered with very large ash-coloured scales; but the eyes are very small. The upper part of the body is of a yellowish ash-colour, and those on the belly are large, long ash-coloured and white.

The COBRA DE CAPELLO of the *East Indies*, so called by the *Portuguese*, is very large, with a monstrous broad neck, and a mark of a dark brown on the forehead, which viewed before looks like a pair of spectacles; but behind like the head of a house cat. The eyes are lively and full of fire; but the head is small, and the nose flat, though covered with very large scales of a yellowish ash-colour. The skin is white, and the large tumour on the neck is flat, and defended with oblong smooth scales. The scales on the lower part of the neck are small, and grow larger on the trunk of the body.

body. The teeth are small, and almost hid in their sockets.

The COBRA DE CAPELLO of *Ceylon* has a thick large neck, and the mark represents very distinctly two round eyes, or two spectacle glasses. The neck is covered with whitish scales; but those on the upper part of the body are of a light and deep brown alternately, and the scales on the belly are of the same colour.

The COBRA DE CAPELLO of *New Spain* has a neck no thicker than a common Serpent, and the mark on the forehead resemble a buckler. The small quadrangular scales that cover the nape of the neck to the mark, are quite white; and near this mark there are two collars, one of which is black and the other white. The eyes are of a fine blue, the body yellowish, and surrounded with brown rings.

The ASP, *Kolben* observes, is spotted with red and yellow, and his head and neck are very large. The eyes are flat and sunk in the head, and near each of them a fleshy tumor rises of the size of a hazel-nut. Whether this is the Serpent mentioned before under the name of the Asp, is very uncertain.

SERPENS OCELLATUS, or the EYED SERPENT, is so called, on account of the various white spots on its black skin. Some give it the name of the Dart, with regard to the swiftness wherewith it throws itself on its enemy when it meets with an opportunity. It may be taken with a great deal of ease, for a small blow on the back with a stick will stop its career, and then there is no difficulty in killing of it.

The TREE SERPENT is so called, because it perches commonly upon trees; it is three ells in length, and three quarters of an inch thick; and it winds itself about the branches of trees, where it continues a long while without motion. One not accustomed to these Serpents, unless he has a very piercing sight indeed, may easily mistake them for branches of trees, which they do not differ from in colour, except in the spots. When any one comes near the place where they lurk, it is usual for them to dart their heads at the person's face, by which means they often wound them. When the mischief is done, they get down from the tree as
fast

fast as they can, in order to get away; but as they are slow in their motion they may be soon overtaken and knocked on the head. They do not leap from the tree, but get down by winding along the branches. Many of these are put in spirits, and sent by the *Dutch* to *Holland* as a present to their friends.

The BLIND SERPENT is very common at the Cape of *Good Hope*, and his scales are black with brown, white and red spots. Its bite is not so dangerous as that of other Serpents, and is often found in the clefts of rocks and other places about them, where they may be killed with little trouble.

The DIPSAS is so called from the *Greek* word, which signifies thirst, because those who have the misfortune to be bit by it have always a passionate desire for drink. Some call it Prester, which signifies to burn, on account of the burning sensation that it causes. This Serpent is about three quarters of an ell long, and is very thick a little below the head, with a blackish back. It is very nimble in attacking any person; and its bite inflames the blood to such a degree, that it causes a burning thirst.

There is likewise another Serpent at the Cape of *Good Hope*, which at present has no name in that country. It is a foot and a half long, and about three quarters of an inch thick, with a whitish head and a red back, spotted with brown. There are also several other Serpents, of which *Kolben* gives only a general account; some, says he, haunt the rocks; other keep in sandy places; and another kind delights to be about the high roads. Some again lie hid among reeds and straw, and they are little and black. Some again get into the thatch of houses, where they lay their eggs, and bring up the young ones. When they are at their full growth they are not longer than a man's middle finger, nor thicker than the barrel of a Goose quill: the egg of this Serpent is about the size of a small pea.

Besides the Dipsas above-mentioned, there are others of the same kind; as the *American* Dipsas, which is blue, and all the upper part of the body is covered with small scales of an equal size, and of a very lively blue colour.

colour. The transverse scales of the belly are whitish, variegated with small black streaks.

The DIPSAS of *Surinam*, is of an orange colour variegated with red spots placed over against each other, on one half of the body, and then they begin to change near the tail, to scales of a pale red.

The *American* SERPENT, found on the banks of the river *Birbica*, is of a pale red spotted with deep brown, but the belly is whitish, speckled with black.

Another DIPSAS of *Surinam*, is of a blue colour with green shining fiery eyes, and a belly whitish underneath, but of a bright blue on the sides.

The *Amboyne* DIPSAS, is covered with spots of the shape of a lentil, and has a very beautiful skin. The scales are of a bright grey, variegated with white and black spots. The head is long, thick, and on the top shines very much. Between the eyes there are two white spots surrounded with a black border, which have the appearance of eyes. Above these there are also two other spots longer than the former, but meet together at one end; the transverse scales of the body are large, and white, with a broad black streak.

The CHAYQUARONA, is a *Brazilian* Serpent, whose male is adorned with rings from the head, which are handsome to the extremity of the tail. On each side the neck there are nine black spots which look like eyes as in some kind of Lampreys; some of the rings are red, and others of a pale yellow; and the scales of the lower belly are of a faint blue. The female is like the male, only the rings are of four colours, and there are no spots on the sides of the neck.

In *Carolina*, there is a Serpent called the ground RATTLE-SNAKE, but very improperly, for it has no rattle. It never exceeds a foot or sixteen inches in length, and it is of a darker colour than a common Rattle-Snake: Its bite is very dangerous, and it stays longer abroad than any other, before it retires to its hole.

The HORNED SNAKES are like the Rattle-Snakes for colour, but rather lighter. They hiss exactly like a Goose when any animal comes near them. They strike at their enemy with their tail, which is armed at the

the end with a horny substance like a cock's spur ; which being venemous, generally kills those that are struck with it.

The WATER SNAKES of *Carolina*, are of four sorts ; the first is of the colour of the Horn Snake, but somewhat less ; the next is a very long one of a different colour, and will swim over a river a league in breadth. They generally hang upon birch, and other trees, near the water side. Their bite is reckoned venemous. The third sort, is of the colour of an *English* Viper, and delights in places where there is salt water. The bite is accounted dangerous, but whether deadly or not, is not said. The last kind is of a black colour, and frequents ponds and ditches, which is all that authors say of it.

The SWAMP SNAKES are very near a-kin to the Water Snakes, and may properly be ranked in that number. The belly of the first is of a carnation or pink colour, and its back of a dirty brown ; they are of a large size, but not very venemous. The second sort is large, of a dirty brown colour, and continues always in the marshes. The last is mottled, and very poisonous, with prodigious wide mouths ; and they grow to the thickness of the calf of a man's leg : they frequent the sides of swamps and ponds.

The RED BELLIED LAND SNAKE, is so called, on account of the colour of their bellies, which is nearly orange. Some have been bitten by these Snakes without any bad consequence ; while others have suffered greatly on that account.

The RED BACKED SNAKES, are so called, from the colour of the back. They are long and slender, and very uncommon ; however, their bite is so fatal, that it admits no cure.

The BLACK TRUNCHEON SNAKE, lies under the roots of trees, and on the banks of rivers. When any thing disturbs them, they dart into the water like an arrow out of a bow. They are so called from their shape, for they are very thick and short. These will sometimes swallow a black land Snake, which is half as long again as themselves.

There are Snakes or Serpents of several kinds in the islands of the *West Indies*; of these, the little Grey Snakes are the most common. They are never above two feet and a half in length; nor no thicker than a man's thumb. They always fly when any one comes near them; and though the inhabitants should chance to tread upon them, they will receive no harm.

Another Snake, which they have not thought proper to distinguish by any name, is full of black and yellow spots on the back, and the belly is greyish, mixed with yellow; these are larger than the former, being sometimes five or six feet in length; and though the agreeable variety of their spotted skins is pleasant to behold, yet the fierceness of its looks will often make a traveller fly. They generally haunt mountainous dry stony barren places, and are seldom to be seen on level ground. Their skins are made use of to make belts, which are exceeding handsome.

There is another kind which is black, and more thick and long than either of the former; for some of them are seven feet long, and as thick as a man's arm. They are very bold, and instead of flying, pursue those that do them any injury, holding their heads up above a foot high, hissing at the same time, and thrusting out their forked tongue a considerable way.

In the island of *St. Domingo*, there is another sort which is never thicker than a man's arm, and yet is ten or twelve feet in length. They are great enemies to the poultry, and will kill them by winding themselves about them without biting, and then they swallow them whole. The bite is attended with inflammation and pain, but it has no bad consequences, for it will not kill.

In the *French* island called *Martinico*, there are three sorts of dangerous Serpents: one of these is grey, with a kind of velvet skin spotted with black in several places; the second is as yellow as gold, and the third red. The first sort are never above two feet in length, though they are sometimes as thick as a man's arm; and this thickness continues till within two or three inches of the tail, which from thence decreases into a point, where there is a small claw. The head is very flat, and as broad as one's hand; and in the jaws are
eight

eight teeth, generally about an inch long. They are sharp at the points as needles, and in shape like a hook. There is a hole in each of these, which reaches from the root to the very end. Some imagine there is venom in all them, which distils into the wound whenever they bite.

All the other Serpents, as well yellow as red, have a head of a triangular form, and Father *Tertre* pretends, that by this mark, all venomous Serpents may be distinguished from those that are harmless. They are armed with teeth like those just mentioned, and their make is like that of other Serpents; but they are very large, being as thick as the calf of a man's leg, and seven or eight feet long. When some of these have been opened, they have been found to contain above forty eggs, as thick as a man's thumb, and above one hundred of the size of lentils. He farther observes, that their venom is different, both as to colour and quality. It is contained in small bladders, about the size of a pea, which surrounded the teeth. The Yellow Serpents have a yellowish venom, which is more thick than that of the rest, and less dangerous. That of the Grey, is like muddy water; and that of the red, as clear as rock water, which he supposes to be more subtle and dangerous.

The Rats and Fowls often draw Serpents near the houses; for which reason the inhabitants never come near a hen-roost without looking about them, to see if they can discover any of these animals. Father *Tertre* affirms, that he has seen one of these Serpents, after killing the hen, swallow nine chickens above three weeks old. Likewise, several small animals that they feed upon, generally give notice of the approach of a Serpent, by their cries, or the noise that they make. They will hide themselves in chests, baskets, tubs, and the like; and will sometimes get among the bed-cloaths. The hunters cover their legs with large boots when they go in search of game, which may indeed prevent the bites of Serpents that lie upon the ground; but they are no defence against those that perch on the branches of trees, or lie on the tops of rocks. When they have filled their bellies, they sleep very soundly for three days together, and then you may

do always what you please with them, for it is almost impossible to wake them.

Labat in his account of some part of the *West-Indies*, informs us that they once caught a Serpent in a net, whose body was as thick as a man's arm, and about a yard long. Its head was like that of other Serpents, and the tail was broad, and forked at the end. It had a sort of a fin upon the back, which took its rise at the beginning of the neck, and lessened gradually to the end of the tail. There were also two other fins of the same kind, a little lower, which also ran from the neck to the tail, which were three inches broad at the beginning. The teeth were long and black; and as they did not know the nature of this animal, they tied him to the mast, in order to see how it would look the next day; when they found that it was entirely dissolved into a greenish stinking water, except the skin and the bones. *Labat* took it to be a sort of a Sea Viper, but he met with none that could give him any satisfaction in this point.

Labat happened to see another Sea Serpent, which was ten feet in length, and two in circumference about the middle. The skin was blueish, with large shining black and yellow spots, which seemed to be varnished over. It had a fin on the back, which reached from the neck till within six inches of the tail. The fin was seven inches high near the head, and decreased gradually. The tail was forked, and besides the above fin, there were three others on each side, which at the edges, were armed with claws like those of great Thornbacks. There was likewise another in the middle of the hollow part of the tail, which was two inches in length. The head of this Serpent was neither flat nor triangular, like those of *Martinico*; for it was seven inches long, round, and a little convex, with two large eyes level with the head, which sparkled very much when it opened its mouth, which was of an immense size, two rows of teeth were discovered near two inches long, that were strong and sharp at the points. They were not crooked like those of Vipers; but whether they were surrounded with bladders of venom or not he was afraid to examine:

it appeared so terrible even after it was dead. He intended to have had the head and the skin taken off, that he might have dried them ; but he could find none who had courage enough to do it, they were so fearful of the claws, the fins, and the tail.

The LAMANDA, or the KING OF SERPENTS, so called by *Soba*, is a native of the island of *Java*. It is so curiously coloured and spotted, that a very skilful painter that he employed, could not come up to the beauty of the original. The head is well proportioned, and the forehead is of a yellowish ash-colour, covered with rhomboidal scales, marked with a red cross made like the iron part of a halberd ; and near it are two annular spots, which surround others that are smaller. From the eyes, which are lively and sparkling, to the nape of the neck, there runs along the side of the upper jaw a bay brown variegated streak ; and the lower jaw is encircled underneath with another of the same colour. The hinder part of the head is finely spotted, and the mouth is armed with sharp crooked teeth. The upper part of the body is very superb, for it seems to be painted with coats of arms, and crowns of different shapes, so interwoven with each other, that any one would imagine they were the work of some curious painter. The scales are like lozenges of various colours, and the tail is adorned with a singular orange coloured spot. The transverse scales are of an *Isabella* colour, that is between white and yellow, and beautifully marked with blackish spots of different sizes. This Serpent is about seven feet and a half long, but the thickness is not proportionable to the length.

The MANBALLA, a Serpent of *Ceylon*, is of a chestnut colour, and the head is like that of a hound ; the upper part of the body is covered with pale yellow scales, and those on the forehead and jaws are of a deep red. The whole extent of the back, which is smooth and highly polished, is marked with oval links, which are joined together by a large spot or streak ; under this streak the links are of a triangular form, inclining to a pale red, and run uniformly on each side of the belly to the beginning of the tail. Towards the extremity of the tail, the colours become more deep, for the bright

yellow changes into a deep yellow, and the brownish red into one the colour of vermillion, with a kind of a black border. The large yellowish spots, and the upper part of the body, are marked with flesh coloured specks; the head is large, the neck slender, and the tongue long and forked. The mouth is armed with long teeth, the eyes are large and sparkling, and the scales on the belly of a yellowish ash colour marbled with blackish spots and other ornaments.

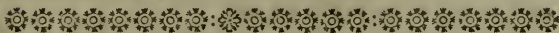
The NINTIPOLONGA, is a Serpent of *Ceylon*, which is of a fine marble colour, and has the head adorned with small flowers. The whole body is of a liver colour marbled with bright ash colour, and the spots are terminated with black edges, only they are of a fallow colour in some places, and very white in others. The forehead is covered with large bright yellow scales, disposed in the shape of small flowers; and the eyes are large, blue, and sparkling. The opening of the mouth, which is armed with sharp crooked teeth, is defended by a border of thick scales. The tongue is white, pretty long, and forked. The tail diminishes gradually in a point.

The PETZCOALT, is a *Mexican* Serpent, the upper part of whose body is yellow mixed with a little red, and covered with large scales like lozenges, which are smooth and slippery to the touch. The transverse scales of the belly are mixed with red and yellow, and the head is defended by large strong scales that rise like lumps. It is about four feet and a half in length, and thick in proportion. These sorts of Serpents hide themselves in hollow trees, where they watch for their prey.

The PIMBERAH, according to *Seba*, is a Serpent of *Ceylon*, as thick as a man, and of a proportionable length. It has a terrible aspect, on account of its two large eyes placed on the top of the head next the sides. The jaws are armed with teeth cut like a saw, and the mouth has a border in the form of a shell. The forehead is covered with grey and ash-coloured scales, adorned with large beautiful spots, and furrowed a cross with three streaks, in the shape of so many crosses. The scales on the upper part of the body are reddish, shaded with

with large magnificent spots of a dark brown, of which some are reddish, and others oblong, ranged in a fine proportion from the top of the head to the end of the tail, which is slender. This variegation is accompanied on the sides with other large triangular black spots. Underneath, towards the bottom of the belly, there is a third row of spots, which are very small, and extend near the transverse scales, which are very large, of an ash colour, and disposed in a beautiful order.

The *POLONGA*, is a Serpent of *Ceylon* according to *Seba*. The head is covered with small thin ash coloured scales inclined to yellow, and marked with reddish streaks. The eyes are small, and the edges of the mouth are bordered with a simple lip without scales. The jaws are armed with sharp teeth, and the scales on the upper part of the body are of a sillemot colour, adorned with large magnificent spots, some of which are of a purplish brown, and others of a yellowish ash colour, all which are terminated by a blackish border; those on the sides are brown and quadrangular, with a yellow ash coloured speck in the middle. Likewise, on the upper part of the body, there are black irregular specks mixed with the spots; the yellow ash coloured scales that traverse the belly underneath, are all marked with black spots. The tail is one-third part of the whole animal, which grows gradually more slender, and becomes insensibly of a more reddish colour. It is generally said to be very innocent, and is admitted into the houses of the natives.



C H A P. XLIX.

Of Vipers and Serpents from Seba, that have no particular Names.

THOUGH there have been Serpents already described from *Seba*; yet, as he has many more that are not distinguished by any particular names, we

thought it would not be improper to place them in a chapter by themselves.

The first Viper taken notice of, was sent from the island of *Madera*, and it is represented as lying in a bundle of hair. In this situation Vipers are commonly found when they are asleep, with the head stretched out and exposed to the sun beams. The head is long and flat, and the jaws are placed more backward than ordinary. The upper part of the body is of the colour of lead, and covered with rhomboidal scales spotted with yellow, so as to appear in the form of chains. The scales of the belly are of an ash colour inclining to yellow, but shaded here and there with black, like some sort of marble.

The second is an *East-India* Viper, of the island of *Java*, otherwise called the SNAKE of *Jararaca*. It is all over of a reddish brown, variegated with white, and the scales are whitish, pretty large, and intermixed with a smaller sort, of a red bay colour, and disposed on the back like a chain. The head is large and puffed up, and the eyes are so sparkling, that this Viper has a terrible look. It is generally met with, under the shoots of a tree, called the horned *Acacia*.

The third is a male *East-Indian* Viper, and has two long teeth or tusks, which are not very thick, and they are placed in the upper jaw; besides these, the mouth is furnished with others that are small, throughout the whole extent of both jaws. The body is remarkably spotted, and it is covered with brownish scales, disposed in a beautiful order, and speckled with spots, the largest of which join each other, and as it were, creep along to the end of the tail.

The fourth is a Viper of *Surinam*, which is all over scales, and every part of the skin is hid by small reddish scales.

The fifth is an *American* VIPER, beautifully spotted, and the back is variegated with a mixture of white palish red and black. The belly is of a bright ash colour, and the eyes are lively. The head is pretty large, but compressed, and the nape of the neck, is marbled with spots, which are either white or inclining to red. The fore-
head

head is covered with large greyish scales ; but the tail is not so pointed as in other Vipers.

The sixth is a male *American Viper*, sent from the island of *Eustachia*. The colour is reddish, and a chain runs throughout the length of the body, consisting of small links with four points, and marked in the middle with an oval spot. The mouth is full of small teeth as in other Vipers.

The seventh is a female *Viper*, sent from the island of *Eustachia*, and yet of a different kind from the former ; for it does not only differ in colour, and in the spots, but the head is in the shape of that of a calf, and very large on the back part. The mouth is larger, but the neck more slender, which might seem to render the swallowing difficult ; and yet it is able to swallow frogs, toads, and lizards. The upper part of the body is covered with reddish scales, and there is a chain of a bay brown colour.

The eighth is a female *Viper* of the island of *Saint Eustachia*, and the mouth and head are pretty large. The colour is yellow about the neck, and on the nape there are two black spots. The body is covered with large reddish scales ; a-cross which, on the back, there is green, that shines like satin. The belly is of a palish yellow, shaded with black spots, which are extended in the shape of little flames.

The ninth is another female *Viper*, from the island of *Eustachia*, which is not less beautiful than the former. The scales on the upper part of the body, are of a lively blue, and each of them are marked with a whitish spot ; but the belly and the scales that cross it fillemot. The head is made like that of the former, only it is covered with large blue scales.

The tenth is a female *Viper* of the isle of *Ceylon*, which has a large flattish nose, and a terrible look. Its colouring is superb, shaded with white, chestnut colour, and reddish, so curiously diversified, that one would take it for an ornament made by some skilful workman. The head is large, as well as the mouth ; and it makes a noise, like the voice of one that is singing. It has two rattles, at the end of the tail, which may be heard at some distance, and serve as a warning

persons to keep out of the way. It lies concealed among the plants and trees of open forests. This seems to be like the *American Rattle Snake*.

The eleventh is another VIPER of the isle of *Ceylon*, and is of a very beautiful kind. It is covered from the head to the extremity of the pointed tail, with small yellow and red scales, waved every where with dark brown spots. The head seems to be gilded, and is covered with very large scales, in proportion to those of the body.

The twelfth is a beautiful VIPER of *Antycira*, whose back is marked with annular spots, which runs transversely, as well as placed separately. They are of a straw colour, with bay brown edges; but on the sides of the belly, they join other black spots, or rather of a chefnut colour, variegated with yellowish rays, made like a crescent. The forehead is of an oblong shape, covered with small thin scales of a saffron colour, reddish on the edges; they are divided in the middle of the forehead, by a chefnut coloured ray, that extends to the nose; but the jaws and the neck are of a bright yellow. The other scales on the body are of a brownish ash-colour, mixed with yellow; but those on the belly are as white as snow.

The thirteenth is a VIPER from *Japan*, marked as it were with a sort of characters not unlike the Hebrew letters. The spots are of a pale yellow edged with a bright chefnut colour. They run from the hinder part of the neck to the end of the tail, especially on the upper part of the body, which is covered with reddish scales. The head is adorned with pretty small scales, somewhat variegated. Those under the belly, that run cross ways, are of a yellowish ash colour, speckled with red.

The fourteenth is the HORNED VIPER of *Sclavonia*, taken on the shore of the *Gulph of Venice*, and is a kind of *Cerastes*. This Viper is curiously spotted, and has a head like a mastiff dog. The jaws are thick and broad, and the mouth wide, with teeth that are extremely sharp. The nostrils are very open, and the forehead is but small, though it is marked with a cross that looks like jewels, in the middle of which there is a round spot.

Ancient

Ancient writers, have mistaken this cross for a horn very improperly, for it does not rise up in a bunch, but as it were ingraved on a large flat whitish scale. The upper part of the body, is full of large oblong scales of a yellowish ash colour, spotted with red, and edged with bay brown. These large spots, are variegated here and there with a mixture of chestnut coloured specks, which have a very fine effect. The scales under the belly, are of a lead colour, variegated with specks.

The fifteenth is the *Virginian* VIPER, marked with purple spots, and along the back, there is a large purple spot, with other large and small ones of the same colour. The scales of the body are of a bright ash colour, and those of the belly of a faintish yellow.

The sixteenth is a VIPER of *Paraguay*, of an extraordinary beauty. The garment is so rich, if it may be so called, that it is impossible to describe it as it ought to be. Throughout the whole length of the back, there is a remarkable mixture of great and small chestnut coloured spots, shaded with bright purple, and whitish ash colour, that are in the form of chains, placed end to end. The head is adorned with thin small scales of several colours, placed in compartments with wonderful skill. The eyes are small, and the nose is marked with a white spot. The jaws are large, and the neck slender, roundish and flat. The body is very long, the skin shining, and the transverse scales, magnificently variegated.

To these Vipers of *Seba's*, may be added the HORNED VIPER of *Hasselkluft*, called in the *Ujfal* Transactions of 1750, the SNAKE with 150 abdominal scales, 50 caudal scales, and two prickles on the top of the head, with teeth in the palate. This Viper has the head, body, jaws, eyes, and tongue, like the Viper of Egypt, which the Apothecaries formerly made use of. It has no teeth in the upper jaws; but there are two bones in the palate, that are long, parallel to each other, and furnished with ten sharp teeth somewhat crooked, and turning towards the throat. The lower jaw is furnished with three or four teeth on each side. On the top of the head, on each side, there are two prickles or thorns, somewhat like a horn, placed on the edges of

the upper orbit of the eyes. They are round pointed at the end, crooked, somewhat furrowed, hard and covered with a skin; they are also adorned at the base, with a row of small scales, and the two prickles are half the length of the orbit of the eyes. The tail below the vent is cylindrick, and grows less and less to the end, where it is armed with a prickle. The head, back, sides, and upper part of the tail, are marked with spots of the colour of shining rusty iron; as also with brown large spots, irregularly mixed with the former. The belly, the lower part of the throat, and the under part of the tail are white. The tail is two inches and a half long, and of the thickness of a goose quill; and the thickness about the middle of the body, is less than an inch. It is found, but not very commonly, in *Egypt* and *Arabia*, where they look upon it to be venomous.

The common SERPENT of *Germany*, according to *Seba*, has blueish scales on the back, spotted with black, as well as the large transverse scales of the belly. There is a large yellow ring or collar about the neck, marked with two spots that are almost black. The scales of the head are large, inclining to brown; the upper jaw is bordered with a white streak, striped with black; the teeth are small. When these sort of Serpents have cast their skin, they are clammy, shining, smooth to the touch, fat, fleshy, and the females are full of eggs. This Serpent was sent to *Seba*, from *Franckfort* on the *Maine*, from whence they transport great numbers to *Holland* every year, and which serve for various purposes.

The VOLHINIAN SERPENT, is found on the banks of the river *Hoar*, near *Lucko*, capital of *Volbinia* in *Poland*. *Seba* tells us, that it was brought from *Russia* among other rarities, and that the skin was inelible to purple. The head appeared to be as it were adorned with a diadem, painted with pale yellow, and reddish yellow colours. The forehead was defended by very thick scales of a citron colour, marked with three spots, and speckled with flesh colour. The scales of the body were small, smooth, and shining; and each was painted with bright purple, shaded with brownish purple. The scales of the belly were reddish, and sprinkled with
brown

brown specks, and the tail was very small terminating in a point.

The SERPENT of *Italy*, found among the hills of the *Paduan*, was sent to *Seba*, and had all along the sides of the belly, which are of a bright yellow, and red spots. There were others of a brownish yellow, on the transverse scales of the body; the head was small, and of a dull yellow; but the scales on the forehead were large. On the nape of the neck, there was a sort of a crown, painted with red and a yellow flame colour. The back was roundish, and quite covered with scales. There are several other Serpents found among these hills; but though they are of different colours, they resemble those of *Germany* and *Holland*, in all other particulars.

The SERPENT of *Sevil*, has a very beautiful forehead, and all the upper part of the body, is as smooth as if it had just cast its skin. It is adorned with white and black scales; but the transverse scales of the belly, are of a dull yellow. However, in general, it is a very curious Serpent.

The SERPENT of *Stramulipa*, with large cheeks. It has a large mouth, with great lips, that are thick on the edges, and of the colour of jasper. It has a frightful aspect, and the head is defended by large scales; those on the back are brownish, variegated with white, and disposed in the same manner as those of Fishes. The transverse scales on the belly are very large, and of a bright tawny colour, with a mixture of white. The tail is encircled with large rings.

The SERPENT of *Sicily*, is called by *Seba* SERENA. He had both the male and female, from the kingdom of *Sicily*, and they are variegated with brown and white spots.

The *Armenian* SERPENT, is most curiously painted with diverse colours. The scales in general are whitish marbled with brown spots, not much unlike the breast of a Partridge. The head is of a reddish colour, and the scales under the belly, are sprinkled with yellowish ash coloured spots.

The common SERPENT of *Holland*, is met with among the brambles, and in moist marshy places of that country;

country ; but *West Friesland*, is more especially fertile in Serpents of this kind. They are taken chiefly in *April*, when the sun begins to warm the earth. They first take off their skins, and then wash and dry them, sending them to *Holland*, where they are used for divers medicinal purposes. They have the same virtues, according to *Seba*, as those of *Germany* and *Italy*. Their skins are very pretty, but they are differently spotted, though in most they are of a chesnut colour, marbled with blackish spots. The scales of the belly are large, inclining to red.

The tame SERPENT of the *East Indies*, according to *Ruyfch*, is of a green colour ; and when they are brought out of the fields, they are not above the thickness of a man's thumb. They make beds for them in tubs, where they lie contented, and never come out but when they want to be fed. Then they get upon the shoulders of the master of the house, who gives them somewhat to eat, after which they return back to their nests and sleep.

The SERPENTS of *Arabia*, according to *Seba*, are of four different kinds. The first is a brown Serpent, marked with blackish spots in the shape of flames. The back is of a bay brown, streaked with black transverse spots, in shape as above. The sides of the belly are of a faint yellow ; and under the body there are transverse whitish scales. On the head there are two brown, and two other black spots, which are much the larger. The scales are rhomboidal over all the body.

The second *Arabian* Serpent, is marked with spots, that look like so many eyes. This animal is of great beauty, as well with regard to its colours as variegations. The head is blue, and towards the hinder part of the neck there are two large red spots, divided in the middle by a yellow streak. The eyes are pretty, and lively ; and the mouth is furnished with small sharp teeth. The tail ends in a point ; and the back is of a saffron colour. The sides of the belly, whose ground is a pale yellow, are beautifully spotted throughout with blackish spots. Each scale on the body is surrounded with a double border of a deep yellow colour. The transverse scales of the belly, are white, streaked with black, in the manner of a zig-zag.

The

The third *Arabian* Serpent is of a dull greenish colour, streaked transversely with brown and blackish spots, over all the body. The scales are in the shape of lozenges, and of a shining green; and the back is of a dark green, sprinkled with blackish specks. The sides are painted with a dark brown colour, and the scales of the belly are whitish half way on the body. After this, they begin to incline sometimes to a green, sometimes to a dirty white, alternately to the end of the tail, which is blunt. The upper part of the body is of a sea green, and on the nape of the neck there are two red spots. The mouth is furnished with small slender teeth.

The fourth *Arabian* Serpent, is marked with spots in the form of the links of chains; and the small chains like lozenges, are of a gold colour. They are shaded on the back and on the sides of the belly, with bay brown spots of an oval shape, and ranged in small rings in the manner of chains. The spots on the belly, are sprinkled with black specks, as well as the transverse scales. The head has nothing remarkable, but four oblong yellowish scales, with which it is covered.

The SERPENT of *Malabar*, has a robe, which consists of a tissue of white, round, circled scales, from the head to the end of the tail, and there are streaks as black as jet, which are broad on the top of the body, but become narrower as they approach the belly, and sometimes disappear before they reach it. The whitish scales that run cross-ways under the belly, are divided in the middle by a blackish line. The head is furnished with great and small scales, agreeably painted with a mixture of white and black. *Seba* informs us, that the ladies in the *East Indies*, are very fond of this Serpent, and take a delight in playing with it. There is another Serpent of *Malabar*, taken notice of in the *Republick of Letters*, which is very singular and very dangerous. It is no thicker than a man's finger, and yet is five or six feet long, and of a green colour, insomuch that it cannot be distinguished from the grass. It will fly upon passengers, and fix upon their eyes, nose, or ears; but the bite is not venomous; however, under the neck there is a poisonous bladder, which proves fatal when it touches the skin.

According

According to *Seba*, there are several kinds of Serpents in the kingdom of *Siam* in the *East Indies*. The first that he takes notice of is a male, which has a large but very fine head, and the tail is very slender. The scales are reddish and yellow upon the back, but of a brighter colour under the belly, and speckled with black. The back is curiously variegated with whitish spots of a particular shape, with a black slender border. This may be placed among the CERASTES or HORNED SERPENTS; and the female resembles in shape, colour, and spots, the male, only the head is larger. The aperture of the mouth, has a border all round that is a little curled, and is yellow and as hard as horn. There are no teeth, and the nostrils are narrow and very small. This is a harmless Serpent, and it feeds upon insects, caterpillars, spiders, and the like. But about *Grand Cairo* in *Egypt*, there are horned Serpents, the largest of which is no more than an ell and half long, and yet they feed upon birds. These are prettily painted, and the skin is covered with ash coloured and grey scales, spotted with white and black; the belly is of a yellowish ash colour, set off with black and white spots, sprinkled upon pretty large scales; the head is pretty long, the mouth without teeth, and the tail decreases insensibly to the point.

The second Serpent of *Siam*, is circled with white and black streaks alternately, and the head is very beautiful.

The third Serpent of *Siam*, has a very gentle aspect, with a head small and pretty, and the scales thin and whitish, with black streaks round about the body.

The fourth Serpent of *Siam*, is named SYBILLA by the inhabitants, and is in high esteem among them; because they firmly believe, that when they chance to meet one, it is a very good omen. The body is little, and as yellow as saffron, and it is covered with thin small shining scales. It is surrounded with red streaks, and the head is of a pale yellow; and it has a very slender tail.

The SERPENT of the county of *Kokura* in *Japan*, according to *Seba*, has a long and slender body, whose upper part, from the head to the extremity of the tail, is
speckled

speckled with a deep red colour, and there are streaks with an ash colour.

The SERPENT of *Zagara*, is very beautiful, and the top of the head is adorned with an orange coloured stripe; and on the forehead there are two other narrow streaks, crossing pretty large scales of a red poppy colour, spotted with yellow in some places. The nostrils and edges of the mouth are yellowish; the scales that cover the skin are small, in the shape of lozenges, and of a greenish yellow, sprinkled with dusky greenish specks. The whole back is embellished with spots, some of which are of a dark red, and others of a pale yellow, placed in such a manner as to resemble coats of arms. The scales on the belly are of a faint yellow.

The SERPENT of *Maderaspatan*, a town on the coast of *Malabar*, is covered with scales of a beautiful yellow colour, variegated on the back with spots of filamot. The head is adorned with large scales, set off with specks scattered all over them. The belly is regularly marked with red spots, and the middle is of a bright ash colour.

The SERPENT of *China* is as red as coral, and its small scales are of a bright red, marked with spots of a deeper colour. The head is painted with a yellowish bright red, and the colour of the scales of the belly is of an ash coloured yellow. This Serpent according to *Seba*, is not very common. In the island of *Hay-nan*, on the coast of *China*, there are Serpents of a prodigious size; but they are so fearful, that the least noise makes them fly away. It is not likely that they do any mischief by their bites, because the inhabitants walk bare-footed day and night, as well in the woods as in the fields, without the least apprehension of danger.

The SERPENTS of *Amboyna*, according to *Seba*, are of several kinds. The first is as red as coral, and the skin is whitish, spotted with a bright red; but the scales of the belly are of a fine ash colour.

The second *Amboyna* Serpent has a spotted skin, like that of the Tyger, only there is a capuchin on the head, as white as snow, and without spots. This Serpent feeds upon caterpillars, and *Seba* found in the body, an intire ovary, containing nine eggs, and
connected

connected to each other by a thread, they were placed along the spine of the back. Each of these eggs was inclosed in its proper membrane.

The third *Ambryna* Serpent, had streaks as red as coral, and would swallow Lizards, almost as big as itself. On this occasion the jaws open so wide, that one would think they were disjointed. A suffocation which might otherwise happen, is prevented by the windpipe's being seated in the fore part of the throat, so as to leave a free passage for respiration. This Serpent is adorned with sixteen streaks, each of which seems to consist of a chain of coral, joined to each other. These streaks are placed according to the length of the back; but on the sides, at a little distance from the belly, there are scales, ranged along them, as well as under the belly lengthways and a cross.

The fourth *Arboyna* Serpent, is of a pale blue, spotted here and there, with black on the upper part of the body. The scales on the belly are sprinkled with small black specks, ranged orderly by pairs.

The fifth *Ambryna* Serpent, is very beautiful, with the back as red as coral, adorned with semi-rings of the same colour, that are placed by pairs from the head to the middle of the body, and then the rings become waved or mottled. The small scales are of a sea green colour, with some that are whitish here and there; but the scales at the bottom of the belly, are all of a bright yellow.

The sixth *Amboyna* Serpent, has the scales of the back of a reddish orange colour, which are more brown towards their origin, and more pale towards the belly. It is covered underneath with transverse scales of a dusky reddish colour.

The seventh *Amboyna* Serpent, is of a yellowish ash colour, and feeds upon catterpillars. The scales on the back are rhomboidal, ash coloured and yellow; but those on the belly are whitish; and those on the forehead large, and of a saffron colour. The eyes are large and brilliant, but the teeth are very small.

The eighth Serpent of *Amboyna*, is covered with scales resembling oak bark. It is of a chefnut colour on the back and sides, spotted with a mixture of white and yellow. The scales which run a-cross under the belly, are marbled or variegated with red and white, and the head is of the same shape as that of other Serpents. They can turn and fold up their bodies, in a very uncommon manner, and particularly their tails, more than other Serpents, because the bones in the latter, are joined to each other, so close, that though they can move their tails, they are not so pliant by far, as they are in these, whose joints are extremely loose.

The ninth *Amboyna* Serpent, has the head covered with large yellow scales, edged with a bright red. Those on the body are thin, and of a yellowish red. There is a dusky reddish stripe runs along the upper part of the body, from the head to the extremity of the tail. The nape of the neck is marked with spots, that afterwards turn into broad reddish streaks, and at the end change again into round spots. The sides of the belly, are variegated with white and red specks; but the scales of the belly are entirely white.

The tenth *Amboyna* Serpent, has a crown on the top of the head, and on each side of it near the jaws, there are two small processes like wings, which are covered with hair. That which is called a crown, is nothing but a black mark resembling one. The back is of a yellowish ash colour, variegated with brown spots. The belly is of a dirty blue, mixed with yellow. These sort of Serpents, according to *Seba*, are amphibious, living equally on the land and in the water.

The FLYING SERPENTS of *Amboyna*, according to *Seba*, are of two kinds. The scales of the first, are all separated from each other, and each is painted in a particular manner, on a ground as black as a crow, and each has spots as white as snow, and as it were fringed at the edges. The scales on the belly are white.

The second Flying Serpent has blue scales on the back, mixed with white ; but those that run across under the belly, as far as the end of the tail are white ; and those that cover the upper part of the tail, towards the extremity, form a kind of chain work. This Serpent is also found in *Egypt*, *Lybia*, the island of *Lemnos*, that of *Rhodes* in *Calabria*, and in *Sicily*. These Flying Serpents, are of the kind which *Latin* authors call *Acontius*, or *Jaculum*, both which words signify a dart.

The ORIENTAL SERPENT, is as *Seba* informs us, an animal that leaps. The body is four cubits in length, though it is not above two inches and a half thick ; the scales are beautiful, in the form of lozenges, and painted of various colours ; only those on the neck are whitish mixed with red. The trunk of the body, as far as the beginning of the tail, is of a yellowish ash colour, covered with singular red scales, in some sense representing ribbands, marked in the middle with white spots, that are double near the tail. This is large, reddish, and terminates in a point. The transverse scales of the belly are of a pale yellow, and barred with streaks of a faint red. The head is proportionable to the rest of the body, and the forehead is defended with large scales of a citron colour. The neck is adorned with a collar of a beautiful red.

The little ORIENTAL SERPENT, has a tail that terminates in a point. It is red on the upper part, yellow beneath, and speckled from the head to the beginning of the tail, with black spots regularly placed. The tail terminates in a point as sharp as a needle.

The *East Indian* SERPENT, is long and black, and is a kind of a dart. It has a slender body, with white and black spots on the back ; and the scales thereon are variegated, with white, brown and black. It will thrust out its stately head towards a small bird perched above him ; for these are his food. The belly, as far as the point of the tail, is spotted with black. It is called in the *East Indies*, the FLYING SERPENT, or the Serpent that darts itself as swift as an arrow upon its prey.

The SERPENT of *Iernate*, is curiously spotted, and the spots resemble so many eyes. The scales are rhomboidal, and of a reddish colour, variegated on the back with

with large yellow spots edged with red. On each side of the belly, according to the length, between two of these large spots, there are others more small, yellow, round, placed in order, and very like eyes surrounded with a red ring, and having as it were a pupil in the middle, of a deep red colour. There is also under these spots, another row, which are of a reddish brown, and the scales of the belly are inclining to red.

There are several Serpents of the island of *Ceylon*, mentioned by *Seba* in the following order. The first Serpent of *Ceylon*, is striped with a brownish colour; the stripes extend from the head to the extremity of the tail; and the belly is white and covered with small rhomboidal scales. On each side there is a small white stripe, which is a great ornament to this small Serpent.

The second Serpent of *Ceylon*, is as red as coral, and its skin is inclinable to a pale red. It is covered with spots as red as scarlet, regularly placed, which greatly sets off the beauty of this animal. The head is adorned with somewhat larger scales, which are of a very pale red, and the tail terminates in a very slender point.

The third Serpent of *Ceylon*, is extremely beautiful, and painted in a very singular manner. There are two stripes on the top of the body, which cross each other and form a kind of net work; and in the meshes, or spaces between them, there are round whitish spots, which almost disappear towards the belly: the head is the most beautiful part, and the neck is slender. The transverse scales on the top of the body, are of a dirty white. This sort of Serpent feeds upon insects and lizards.

The fourth Serpent of *Ceylon*, delights to be among deserted buildings, and hides itself in the ruins of old walls, from whence it sallies out from time to time, to catch flies, beetles, and other insects. It is a very mild harmless animal, and does harm to no-body: the skin is traversed with spots in the form of flames.

The fifth Serpent of *Ceylon*, is very small, and has white and black streaks on the back. It is defended with pretty large scales of a violet colour, and furrowed according to the length of the body with black and white streaks: the scales of the belly are of a paler violet,

The

The sixth Serpent of *Ceylon*, is marked with beautiful sparkling spots. The back is covered with small yellowish scales, marked with white or reddish spots, so brilliant, that they seem to sparkle. The head is furnished with large yellowish scales, variegated with white, and the scales of the belly are inclinable to yellow, only they are adorned here and there with a little red.

The seventh Serpent is distinguished by long streaks. The colour is chefnut, intersected with red and white, and adorned with streaks like net work, which run along according to the length of the body : the head and nose are made like those of a dog, but prettily spotted. This Serpent, says *Seba*, makes an agreeable kind of noise, as if it intended to invite passengers to admire the beauty of its colours.

The eighth Serpent of *Ceylon*, is variegated with annular stripes, and is pretty smooth, long, slender, and of a yellowish ash colour, marked with dark brown spots on ample scales, made in the form of lozenges. The stripes are broad, and variegated, running round the body like rings : the scales on the body are inclinable to red ; and the eyes are beautiful and brilliant. The forehead is defended with large whitish scales, and the nose is crossed with a chefnut coloured stripe, likewise the hinder part of the neck is shaded with a very large spot.

The ninth Serpent of *Ceylon* is red and yellow, and encircled from the head to the end of the tail, with broad, brown, stripes : the body is long, slender, and covered with small rhomboidal scales : those under the belly are of a bright ash colour, and the head is small. The inhabitants of *Ceylon*, admit this Serpent into their houses, it being a harmless animal.

The tenth Serpent of *Ceylon*, is called by some the **CROSS**, because its body is marked with black stripes, that form, in traversing each other, a kind of crosses, between which there is a whitish skin speckled with black. It is covered with small scales, that in some sense imitate marble of two distinct colours.

The eleventh Serpent of *Ceylon*, is the most beautiful and most uncommon of all ; and it has a triple stripe, consisting of black, whitish and reddish colours. The belly

belly is of a fine white, traversed with black scales : the head is adorned with very curious scales.

The twelfth Serpent of *Ceylon*, has long reddish streaks, formed in the manner of chains, which run magnificently down the back ; and throughout the length of the belly, the scales are of a pale blue : the belly is of a yellow colour, sprinkled with red specks.

The thirteenth Serpent of *Ceylon*, feeds upon rats, and its colours are extremely beautiful.

The fourteenth Serpent of *Ceylon*, is very beautiful, and has brilliant sparkling eyes : the scales on the upper part of the body are very black, and shining ; it is variegated on the back with whitish flowers in the form of roses ; and there are other spots like crosses. Each of these last is composed of five oblong spots, which pretty well resemble a flower with four petals : there are long whitish streaks, which run according to the length of the belly, and are regularly placed. The head is barred with yellow streaks, placed cross-ways, and sprinkled with yellow specks : the transverse scales on the belly are green and yellow.

The fifteenth Serpent of *Ceylon* is small and pretty, and the skin is handsomely spotted : the back is marbled with large red and white spots, raised in the form of a buckler ; the belly and the sides are marked with spots of a deep yellow colour. Those that adorn the head are of the same colour, but formed in the manner of studs.

The sixteenth Serpent of *Ceylon*, has a forehead of a bright red colour, and the body is covered with great and small scales ; but those on the back are very thin, are of a reddish colour and variegated with white spots of different colours.

The seventeenth Serpent of *Ceylon*, is long, slender, and called by some the SQUIRREL EATER, and it excels a cat in the manner of catching them. It also lives upon lizards and frogs : the head and neck are magnificently spotted, and the eyes are large and shining. The back, from the nape of the neck, to the extremity of the tail, is marked with streaks like net work of several colours, as yellow, white, green, and poppy colour : the yellow is a gold colour, and the white appears like silver ;
likewise

likewise the green that lies next to the white, is very gay, lively, and shining : the scales on the belly are all whitish, and those on the back are oblong ; but those on the sides are rhomboidal. Serpents of this kind have been brought from *America*, but the colours are not so brilliant as those of *Ceylon*, according to *Seba*.

The eighteenth Serpent of *Ceylon*, has scales as black as ebony, sprinkled with white specks on the upper part of the body. There is a sort of bracelet of pearls about the forehead, and the back is sprinkled with white flowers, in the shape of roses regularly placed. The transverse scales are of a greenish yellow ; and *Seba* thinks this may be called the Serpent clothed in a rich mourning habit.

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