

Within the Deep eBook

Within the Deep

The following sections of this BookRags Literature Study Guide is offprint from Gale's For Students Series: Presenting Analysis, Context, and Criticism on Commonly Studied Works: Introduction, Author Biography, Plot Summary, Characters, Themes, Style, Historical Context, Critical Overview, Criticism and Critical Essays, Media Adaptations, Topics for Further Study, Compare & Contrast, What Do I Read Next?, For Further Study, and Sources.

(c)1998-2002; (c)2002 by Gale. Gale is an imprint of The Gale Group, Inc., a division of Thomson Learning, Inc. Gale and Design and Thomson Learning are trademarks used herein under license.

The following sections, if they exist, are offprint from Beacham's Encyclopedia of Popular Fiction: "Social Concerns", "Thematic Overview", "Techniques", "Literary Precedents", "Key Questions", "Related Titles", "Adaptations", "Related Web Sites". (c)1994-2005, by Walton Beacham.

The following sections, if they exist, are offprint from Beacham's Guide to Literature for Young Adults: "About the Author", "Overview", "Setting", "Literary Qualities", "Social Sensitivity", "Topics for Discussion", "Ideas for Reports and Papers". (c)1994-2005, by Walton Beacham.

All other sections in this Literature Study Guide are owned and copyrighted by BookRags, Inc.

Contents

Within the Deep eBook.....	1
Contents.....	2
Table of Contents.....	4
Page 1.....	5
Page 2.....	7
Page 3.....	9
Page 4.....	11
Page 5.....	13
Page 6.....	15
Page 7.....	17
Page 8.....	18
Page 9.....	20
Page 10.....	22
Page 11.....	24
Page 12.....	26
Page 13.....	28
Page 14.....	30
Page 15.....	31
Page 16.....	33
Page 17.....	34
Page 18.....	36
Page 19.....	38
Page 20.....	39
Page 21.....	41
Page 22.....	43

Page 23.....	45
Page 24.....	47
Page 25.....	49
Page 26.....	51

Table of Contents

Section	Page
Start of eBook	1
FISH FOR BREAKFAST	1
EXERCISES	3
LESSON II	3
EXERCISES	5
LESSON III	5
EXERCISES	8
LESSON IV	8
EXERCISES	10
LESSON V	10
EXERCISES	12
LESSON VI	12
EXERCISES	15
LESSON VII	15
EXERCISES	17
LESSON VIII	18
EXERCISES	20
LESSON IX	20
EXERCISES	22
LESSON X	22
EXERCISES	24
LESSON XI	24
EXERCISES	26

Page 1

FISH FOR BREAKFAST

Of all the fish in the wide ocean world, the Herring deserves to be called the king. He gives work to thousands of people, and food to millions. Many towns exist because of him; if he failed to visit our seas, these big towns would shrink to tiny villages.

There are several interesting kinds of Herring, but we will first look at the one we know so well, which is such good food, either fresh or as dried “kipper” or “bLOATER.”

The Herring loves to swim in a *shoal*. From the time he leaves the egg, during his babyhood, and all through his life, he explores the sea with thousands of other Herrings crowded round him. His name is from a foreign word—*heer* or *herr*, an *army*. His enemies—ourselves among them—find this habit of his a good one. It makes him such easy prey.

Here is a dense shoal of fish, moving slowly along near the surface. To catch some is quite easy. The Dolphin, or Shark, or other large fish-hunter, merely has to rush into their ranks with wide-open mouth. Hordes of Dog-fish feast on the edges of the shoal. And Gannets, Cormorants, Gulls and other sea-birds can take their fill with ease.

The Herring shoal is a banquet at which the fish-eating sea creatures feed heartily, and man comes along, to spread his nets in the path of the shoal. But what matter a few million Herrings when the sea is packed with billions more! In the North Sea, one shoal was seen which was over four miles long and two miles wide. In such a mass there would be, at the very least, twenty thousand million Herring; and this shoal was but one out of many thousand shoals. One might as well try to count the grains of sand on the shore as the Herrings in the wide ocean.

These huge shoals do not stay long in one part of the sea. They make journeys of many miles, each shoal seeming to keep to itself. Like every other creature, the Herring goes where his food is. What food does he find? He swallows the small life of the sea, tiny transparent things like baby shrimps, prawns, crabs, and so on, which swarm even in the cold water which the Herring loves.

They are good juicy food, these little mites, and very plentiful; so no wonder the Herring becomes plump. He eats greedily of this good food. For instance, a young Herring, picked up on the beach at Yarmouth, was found to contain no less than one hundred and forty-three small shrimps. Not a bad dinner for a fish the length of this page! The ocean teems with small creatures; even the huge Greenland Whale feeds on them, and the Herring seems to live on little else.

Well, the shoals of Herring begin to move from their feeding place in the deeps, and come nearer the coast. As they get to shallower water they are crowded together near the surface. Where are they going, and why?

Perhaps you can guess—they seek warmer, shallower water, in which to lay their eggs. Now is the time for the fisherman! If the Herring kept to the deep they would be quite safe—and we should have no nice plump Herrings on our breakfast tables! Yes, now is the time to spread out miles of nets in the path of this living mass of silvery fish. They are in fine condition, well fed, and ready to lay their eggs.

Page 2

They are moving slowly but surely towards the right place where those eggs should be laid. What guides them? Why do they go *this* way and not *that* in the vast ocean? We do not really know what guides them; so we say that they obey a wonderful, unfailing guide—"instinct."

Of course you have seen and tasted the "hard" roe of a Herring; but I do not suppose you have ever troubled to count all those little round eggs. Each roe contains some thirty thousand of them! What a huge number of young ones for one Herring! Still, this is not a large family, as fish families go. The Cod lays about nine million eggs!

At last the Herrings reach the breeding grounds that they sought, and the eggs are laid. The eggs of most sea-fish just drift on the surface of the ocean, at the mercy of their enemies, and washing here and there as the current sends them. The Herring's eggs sink to the bottom and, being rather sticky, adhere wherever they fall.

There they lie in masses, on the bed of the sea, and then guests of all kinds hasten to enjoy such a rare feast of eggs, laid ready for them. One of the first guests is the Haddock. He comes in his thousands, greedy for his part of the good food; but, knowing this, the fishermen also hasten to the spot, and the Haddock pays dearly for his love of Herring eggs.

Only a few out of each thousand eggs will escape their enemies, and the baby Herrings, which hatch in about a fortnight, run many dangers; thus, in the end, the huge family of Mrs. Herring is reduced to a small one. Even so, there are countless numbers of the tiny fish. They soon grow shining scales, like those of their parents, and move towards the coast.

It is a pretty sight, these little silvery Herrings playing in the shallow water. Millions of them dart about and flash in the sunshine, during the summer months, round our coasts. Sea-birds and other enemies hover round, to feast on the tiny fish. Great numbers of these baby Herrings are caught and sold as "Whitebait."

The older Herrings, having laid their eggs, leave the shallows, and make their way into deep water. They are no longer nice to eat, and the Herring harvest is over until the following season.

In our talk on flat-fish we shall notice how they are caught, near the bed of the sea, in the *trawl-net*. Now this net is of no use for the capture of Herrings. They swim in the open water, near the surface, and so another kind of trap, the *drift-net*, is used.

Hundreds of vessels sail from our fishing ports when King Herring is about. Each vessel carries a number of drift-nets. These nets are to be let down like a hanging wall, in the path of the shoal, at night. Corks or bladders are fastened to the upper edge of the nets. Of course they are all mended and made ready before the vessels reach the

fishing grounds. It is not easy to know where to shoot the nets; all the skill and knowledge of the fisherman are needed to locate the shoals, and, without this knowledge, he would come home with an empty vessel. Even as it is, he sometimes catches no more fish than would fill his hat.

Page 3

A sharp look-out is kept. An oily gleam in the sea tells the knowing fisherman that the shoal is there; or he may see a Gull swoop down and carry off a Herring. Then the nets are put out in the path of the shoal. A big fleet of fishing vessels may let down a thousand miles of nets!

The Herrings, not seeing the fine wall of net, swim into it. Now the openings in the net—the meshes—are one inch across, just wide enough for the Herring to poke his head through. Once through, he is caught. His gill-covers prevent him from drawing back again. Thousands of other Herrings are held tight, all around him, and the rest of the shoal scatters for the time being.

When the nets are hauled in, the fisherman beholds a mighty catch, a sight to repay him for all his trouble. On being taken from its watery home each Herring is dead almost at once—"as dead as a Herring."

Then comes the race to the market. Once in port, the vessels are rapidly emptied. Hundreds of thousands of shining, silvery bodies are piled on the quays—a sight worth seeing! An army of packers gets to work; and the fresh fish are soon on the rail, speeding to the great fish markets, on the way to your breakfast table.

The story of the Herring fishery is one of deep interest, and of great importance. Millions of Herrings are caught every year, forming a cheap and good food. Yet there are uncountable numbers left; and there is not the least danger that our nets can ever empty the sea of this wonderful little fish.

The Herring has several smaller relatives, all of them being excellent food for us. The Pilchard is one of them; the Sardine is merely a young Pilchard. Countless myriads of Pilchards visit the Cornish coast; strangely enough, they frequent only this corner of our seas.

Another cousin of the Herring, the Sprat, is also a fine food, and so cheap that poor people can enjoy it. Baby Herrings and baby Sprats are caught in great quantity, and sold under the name of "Whitebait." It was thought, at one time, that the Whitebait was another kind of fish; but Whitebait are really the Herring and Sprat in their baby state.

EXERCISES

1. Name several enemies of the Herring. 2. Describe the eggs of the Herring, and where they are laid. 3. What is a "drift-net," and how is it used? 4. What is a Sardine? What is a "Whitebait?"

LESSON II

THE STORY OF THE FLAT FISH

You see fish of many shapes and sizes in the fishmonger's shop; they can be divided into two kinds—round fish and flat fish. Cod, Herring, Mackerel and Salmon are round fish. The flat fish are Plaice, Turbot, Brill, Halibut, Sole, Dab and Flounder.

Most people know the taste, as well as the look, of a Plaice; but few know much about its life in the ocean. Indeed, there are secrets in the life of this fish, and many other fish too, which still puzzle us.

Page 4

Put a Salmon and a Plaice side by side, and it is plain that they live in very different ways. One is made to dart like an arrow, the other to lie flat. One is the shape of a torpedo, the other is flat like a raft. The shape and colour of the Plaice tell their own story of a life on the sandy, pebbly bed of the sea. And look at the eyes! Both are on the upper side of the head! What could be better for a fish that lies flat on the ocean floor?

The Plaice is the best known of these flat fish, so we will try to find how its life is spent in the deep sea.

Have you ever watched those little sailing-vessels which go a-shrimping? They carry a large net—a shrimp-trawl, it is called—which is drawn over the sandy home of the Shrimp. When the trawl is hauled up it may contain not only Shrimps, but the other dwellers in sandy places. Among these, sad to say, is often a mass of baby Plaice and other flat fish. Tiny little fellows they are, some hardly as large as a postage stamp. They are thrown aside, being of no use to the fisherman.

Now these babies are quite flat, darkish on the upper side, white on the other side, like the Plaice you see in the shop. They are not such new babies after all. Though such wee mites, it is more than six weeks since they left the egg; and, in that time, they have passed through wonderful changes, as you will see.

Plaice lay a great many eggs, which float about in the sea. Most are gobbled up by those sea-creatures—and they are many—who love fish-eggs for dinner. From each remaining egg a baby Plaice escapes. At first it floats upside down at the surface of the sea, and eats nothing at all. Then it rights itself, and begins to swallow the tiny creatures which swarm in sea-water.

Strange to tell, this baby Plaice is not a bit like its mother. It is not a flat fish now, but a “round” fish. It has one eye on each side of its head, and you would expect it to grow up like any other round fish.

For about a month this small, transparent youngster hardly alters. Then it grows deeper in the body, and begins to swim near the bottom of the sea. At last it lies on one side, and its life as a “round” fish is over.

A fish lying thus on its side would have one eye buried in the sand, and quite useless, would it not? But our young Plaice is changing its appearance very quickly. Its head is growing rather “lopsided.” The eye next the sand is, little by little, brought round to the upper side, until it looks up instead of down. Its mouth gets a queer one-sided look, owing to the twisting of the bones in the head.

Many people think that the dark upper part of a flat fish is the back, and the white under part is the stomach. We have seen, however, that this is not so, for *flat fish lie on one side*.

For the rest of its life the Plaice will remain flat, with two eyes looking up, and a twisted head. But its colour alters. The side on which it lies is white; the upper side becomes brown and speckled, dotted over with red marks. This is a good disguise. Its enemies cannot distinguish the Plaice from the pebbles and sand around it. They might swim over it, and yet not see the thin, flat, brownish body pressed down on the bed of the sea.

Page 5

Also, these flat fish have a wonderful way of changing colour. Put them on light sand, and they become lightish. Put them on dark sand and pebbles, and they soon match it by becoming brown and mottled. This is a most useful dodge where so many enemies abound, all swifter in the water than the slow-swimming flat fish.

If you look for flat fish in an aquarium, you will not easily see them. Now and again one will swim up, with a wavy motion of its body. On settling again, it shuffles and flaps about, works itself into the sand, hiding its edges well under, and then, hey presto! it is gone! If the flat fish are so hard to find in a tank, you may be sure it would be impossible to find them on the sea bed. They are poor swimmers, but perfect hidens.

As far as we can tell, they feed on other living creatures. The ocean floor is a huge dining table for them, where they find very mixed dinners. They eat small fish, sand-worms, shell-fish, Shrimps and young Crabs. The Plaice has strong, blunt teeth in its throat, and is well able to grind up the shells of Cockles and other molluscs, swallowing the juicy contents.

Now we have seen that the Plaice is first a floating egg, and then a tiny transparent "round" fish. It sinks to the sea bed, lies on one side, and becomes a flat fish like its parents.

These little baby flat fish, not much larger than your thumb-nail, crowd in the shallow, sandy parts of the sea near the coast. There they often end their lives in the shrimp-trawl, as we have already noticed.

After leaving this "infants' school" the Plaice, and other small flat fish, go to deeper water. There they feed and grow fat. Our fishermen know where to find them. Indeed, these special fishing grounds are so well known that flat fish are scarcer than they used to be. Some kinds are much too dear ever to be seen on the poor man's table.

There is a special net for catching flat fish, called a *trawl*. This is a large net, dragged over the bed of the sea by ropes, or steel wire, attached to the sailing vessel or steam trawler. The net is kept open under water by means of beams or boards.

When the flat fish are disturbed, they rise a foot or two from the sea floor, and are then swept into the gaping mouth of the deadly trawl. Once in, there is no escape. There they remain, pressed together, until the net is hauled up and emptied.

EXERCISES

1. Give the names of five kinds of flat fish. 2. How does the Plaice escape its enemies in the sea? 3. What is the food of the Plaice? 4. How are flat fish usually caught for the market?

LESSON III

SEALS

There are many different kinds of Seal; the family is a large one, but all have one thing in common—the fish-like body, with toes joined together by a web. Anyone who has seen the diving power of a Seal, and its wonderful way in the water, will agree that the “flippers” of the Seal are as useful as the fins of the fish.

Page 6

In fact, the flipper beats the fin, for the Seal earns his dinner by chasing and catching fish. He slips through the water with perfect ease, and seizes the darting fish in their own home. The Seal is nearly always hungry, but so wonderfully quick that his hunting is made easy for him.

It is quite another matter on land, where his best pace is a waddle and a shuffle; but his life is in the wide sea, where he can feed and sleep as easily as other mammals can on land.

Seals are easily tamed, and soon become fond of their owners. Some fishermen once caught a baby Seal, which they gave to a boy, knowing his love of animals. The strange baby soon made itself at home, and loved to lie in the warmth of the kitchen fire. It knew the voice of its young master, and would follow him like a dog.

The older it grew, the more milk and fish it needed each day. At last, this food was not to be easily obtained, and so the boy had to get rid of his pet. He rowed out to sea, taking the Seal, and let it free in the ocean to fend for itself; but the Seal would not leave him; it swam swiftly round the boat, calling pitifully. Needless to say, it was taken back again, and well cared for.

[Illustration: THE SEA-ELEPHANT]

Seals have even been trained to catch fish for their owners. Being docile by nature, and having larger brains than most animals, they can be taught. Perhaps you have seen Sea-lions performing surprising tricks, showing clearly how intelligent these fish-like creatures really are. The Sea-lions at the London "Zoo" are not specially trained. But they are clever enough to teach themselves, especially when rewarded by a few extra fish. They know well the voice of their keeper, and clap with their flippers to let him know that feeding—time is near; and in many other amusing ways they prove their intelligence.

[Illustration: SEA-LION]

You have noticed, perhaps, that these Sea-lions can shuffle along on their hind flippers, which are turned forward under the body. The real Seals, however, cannot do this. Their hind limbs, so wonderful in the water, are merely dragged behind the body on land. "Sealskin" should be called "Sea-lion-skin," to be exact; for it is the Sea-lions, not the true Seals, which men kill and rob of their lovely warm coats.

The giant of the Seal family is the Sea-elephant; a big lumbering fellow, with a most peculiar nose. Of course this gives him his name, though it is not much like the trunk of the real elephant. It is just the baggy skin of his nose, a foot long, which hangs down past his mouth.

When the Sea-elephant is angry or excited, this loose nose of his becomes filled with air, and bulges out. Our coloured picture shows you Mr. Sea-elephant, full grown; his wife and children have ordinary seal noses. Perhaps we should say wives, not wife, for he has many.

[Illustration: A COMMON SEAL]

Page 7

The Sea-elephants go to wild, lonely islands, and there make their nurseries. Year after year tens of thousands of the big Seals gather, to fight and to rear their young. The clumsy great father Sea-elephants fight terrible battles; and at this time always seem to be in a very bad temper, tearing each other with their tusk-like teeth. Their roaring can be heard far out at sea; but the lady Seals take no part in these combats.

We have no room in this lesson to look at all the other kinds of Seals, Sea-lions, Sea-bears and Walrus. As we have already noticed, the sealskin sold in shops is really the skin of a Sea-lion. Sometimes these are called *Eared Seals*, for they possess little ears, while the real Seals have only small holes in the side of the head for ears. Again, there are some Eared Seals whose fur is of no use to us, for it lacks the deep under-fur of the fur Seals.

Nature gave this coat to the Seal to protect him from the cold, but it has caused his destruction! For these animals were killed by the hundred thousand. Worse than this, they were killed in the most cruel manner. Laws have now been made to help protect the poor fur Seal from its merciless hunters. It lives in cold seas where its deep rich coat is a splendid protection. No finer fur is there for keeping out cold and wet; and the skilful furrier can make it into soft garments of great value.

The habits of these Seals are strange indeed. For nine or ten months of the year they wander freely over the open seas. They dive for their food, and sleep calmly amidst the restless heaving of the ocean. This is the happy life of the Seal, though enemies—Sharks, Killer Whales or Grampuses—sometimes snap him up as he sleeps.

Then, in the springtime, there comes a change. The Seals leave the open sea and take to the land. They go to their special breeding-places, or “rookeries,” as they are called. The big “old man” Seals arrive first, and haul themselves on shore. Each chooses a spot for himself among the rocks. He then settles down to defend it; for more and more “old man” Seals come, all eager to own the best places. The roaring and fighting go on day and night. The gentle Seal is now a savage beast, covered with wounds.

Then the soft-eyed female Seals come ashore. Now the thing is, for each big male Seal to claim as many lady Seals as he can. More fighting, roaring and tearing occur now, in which the lady Seals are banged about like footballs. The strongest “old man” drags the female Seal away in his teeth, and plumps her down in his special part of the beach. Along comes another big Seal to take her away, and the fight begins again.

Meanwhile, the younger Seals keep out of the way. Strange to say, the fighting Seals take no food at all, though they are on the beach for several weeks. A few stones is all they eat, though at other times they devour numbers of fish at every meal.

Page 8

EXERCISES

1. How could you tell the Sea-lion from the real Seal? 2. Where are the Seal “rookeries”? What happens there in the springtime? 3. Why is the Sea-elephant so named?

LESSON IV

SOME STRANGE NURSERIES

As a rule, nests or nurseries are unknown in the world of fishes. They lay their eggs and leave them; and the young ones have to fight their own battles, in a sea full of fierce and hungry enemies. Indeed, it often happens that a parent fish is eager to make a meal of its own children!

The Codfish lays about nine million eggs! You would hardly expect the female Codfish to make a nursery for such a family! She would be much worse off than the “old woman who lived in a shoe.” As a matter of fact, the eggs are laid in the open sea; and the Cod shows no interest in them, but leaves them to become food for many a roving enemy.

Those cousins of the Shark,—the Skate and the Dog-fish,—are more careful of their eggs. Have you ever found their empty eggs on the sea shore? Children call them “mermaids’ purses.” But they are more like little horny pillow-cases than purses.

When first laid, the Dog-fish’s egg has a very long string or *tendrill* at each corner. As the fish lays the egg, she winds these tendrils round and round a sea-plant; thus the egg is fixed firmly until the young one is ready to escape from within (see p. 49).

The Skate’s egg is much the same, only there is no tendrill, but a curved hook at each corner. These hooks, of course, serve as anchors to hold the egg: no doubt they catch in weeds and stones. One fish, you see, ties her eggs with strings, the other uses anchors. These large “purse eggs” are like cradles, and the baby Skates do not slip out of them until they are quite ready to look after themselves in the ocean.

There are fish in the sea which take great pains to save their eggs and babies from harm; they will even defend them at the risk of their own lives. Of course these careful parents do not have huge families, like the Cod. No; the fish that care for their young have small families, but the babies have a much better chance of living than the baby Cod. It is one of Nature’s wise laws.

Our common Stickleback—“Tiddler,” or “Red-throat,” as boys call him—builds a nest in ponds. He has a seaside cousin, the fifteen-spined Stickleback, who is also a nest-builder. This little fish is fairly common round our coasts, living in weedy pools by the

shore, where it devours any small creature unlucky enough to come near. It is about six inches long, this sea Stickleback, with a long snout, and its body is very thin near the tail.

Page 9

To build his nest, this little fish chooses a quiet corner, then gathers pieces of green and purple seaweed. He takes the pieces in his mouth, pushing them about until the shape is to his liking. Having got his nursery to the right size and shape, the little builder next fastens it together. How can he do this? What mortar can he find in the sea? It is quite simple. He uses threads, which come from his own body. He swims round the nest, again and again; and, each time, a thread is spun, binding the clump of weed into a safe, tight nest for the eggs. When the task is done there is a weed-nursery about the size of your fist. Now all is ready for the eggs to be laid by the female Stickleback. You would expect them to be kept in a hole amid the nest, would you not? Instead of that, they are tucked a few here, a few there, in the weed.

Then the father Stickleback mounts guard. Woe betide any small fish looking for a dinner of Stickleback eggs! The gallant little sentry will rush at him, with spines as stiff as fixed bayonets, ready to do battle to the death. When the young are hatched out he still keeps guard. They are not allowed out of the nursery for some time. The watchful parent forces them back if they try to wander out into the perils of the shore-pool.

[Illustration: *Photo: A.F. Dauncey. SKATE'S EGG CASE*]

Let us look at another nest-builder—the Sand Goby, or Spotted Goby, He is common enough in the pools at low tide, but not easy to find. You can look at him, yet not see him! For he takes the same colour as the rocks and sands of his home. Amid the glinting lights and shadows of his rock-pool, with a background of sand, rock, and weed, this little fish is nearly invisible. Of course it is a dodge, and a useful one, to escape the eye of the enemy!

Perhaps you will not think the Spotted Goby so clever at nest-building as the Stickleback. He likes to use a “ready-made” house, whereas the Stickleback finds his own “bricks and mortar.” In the pools of the shore there is no lack of houses to let, the empty homes of shell-fish are there in plenty. So the little Goby, when nesting time comes, hunts round for the empty shell of a Cockle lying with its hollow side to the sand.

This shell is to be used as the roof for the nursery. The Goby's next task is to make a hole beneath the shell. He sets to work and, by scooping out the sand, makes a hole about as large as a marble. To keep the sand from tumbling in, he smears the hole with slime, which soon binds hard like mortar. Now the nursery is nearly ready; but a passage-way is made, passing under the edge of the shell, and then, to make things quite safe, the whole roof is covered with sand: it then looks more like a bump in the sand than a fish-nursery.

The female Goby enters the nest, and leaves her eggs in it; and then the little father fish is left in charge. He rests on the sand, near the entrance. When the little ones appear, he seems to think he has done his duty. So away, he swims, not staying, like the father

Stickleback, to guard the youngsters. Again we see that the father, and not the mother, is the builder and nurse.

Page 10

[Illustration: CORALS OF MANY KINDS.]

That very strange creature, the Pipe-fish, has the most peculiar nursery of all. He uses no building material! No made-up nest of weed or sand for him! No, he prefers to carry his eggs in his pocket. To be more exact, there is a small pouch under his body, and there the eggs are kept until they hatch. Meanwhile, the Pipe-fish goes about his affairs in the pool as if nothing particular had happened. You will see more about this funny little fish when we come to our lesson on “The Fish of our Rock-pools.”

EXERCISES

1. What are the eggs of the Skate and the Dog-fish like? 2. How does the Sea-stickleback build his nest? 3. Where would you find the Sand Goby, the Pipe-fish, and the Sea-stickleback? 4. How does the Sand Goby build its nest?

LESSON V

THE OGRE OF THE DEEP

The ogre of the fairy-tale is bad enough, but, for evil looks, the Octopus is worse still. With his tough, brownish skin, knobbed like the toad's back, his large staring eyes, his parrot's beak, and ugly bag of a body, the Octopus is a horrid-looking creature. Add to this eight long arms twisting and writhing like snakes, and you have an idea of the most hideous inhabitant of the deep.

Then, like the ogre, the Octopus lives in a cave, and goes forth at night to claim his victims. He tears them to pieces, and returns to his dark cavern when daylight comes.

Before seeing how this ugly monster lives, eats, breathes and fights, we must know something of the way he is made. In the first place, it may surprise you to know that the Octopus's body is made on the same plan as that of the snail. The ogre of the ocean and the Garden Snail are second cousins! Their family name—*mollusc*—means *soft-bodied*.

But there are such numbers of molluscs that we split them up into different orders, just as a big school is split into classes. The Octopus belongs to an order of molluscs with a long name, which only means *head-footed*. Why is he called head-footed? The snail, as you know, has one broad foot under its body. The foot of the Octopus is divided into eight strips. These long strips are set round his head, hence the name head-footed. Because there are eight of these long feet he is named *octo-pus* or eight-feet.

The feet—or arms, or tentacles, as they are called—are joined at their base by a skin. It makes a sort of webbing. In the centre of this is a horny beak, usually of a brownish

colour. It is just like a parrot's beak, only of thinner and lighter stuff. There are two parts to it, the top one curving down over the lower one. Behind this beaked mouth is a hard, rasping tongue. On each side of the head is a big, staring eye; and behind the ugly head is the ugly body, like a bag.

Page 11

The Octopus breathes by means of gills. Water enters through a big hole under the head, passes over the gills, and out again through a *funnel*, or *siphon*. Now the Octopus can make good use of this siphon. Sometimes he is attacked, and wishes to “make himself scarce.” So he sends the water rapidly through the siphon; the force is enough to jerk him quickly backwards, his “arms” trailing behind.

The Octopus and his relations have another dodge as well. They possess a bag of inky fluid. By mixing this ink with the spurt of water from the funnel, the Octopus leaves a thick cloud behind him. The enemy is lost in this dark cloud, while the Octopus darts safely away.

[Illustration: THE OCTOPUS—A MONSTER OF THE DEEP]

Having no armour to protect him, and no shelly home like that of the snail, the Octopus is an easy prey to large fish, Seals and Whales. So this trick of shooting backwards, hidden in a cloud of ink, must be of great use. Soldiers and sailors use clouds of smoke to baffle their enemy in battle. The Octopus uses clouds of ink.

Sharks, Conger Eels, and Whales are able to fight the Octopus and eat his soft body; but small fish and Crabs keep away from the ogre if they can. This is not easy, for he hides away under rocks, watching with his great eyes for passing prey. If anything comes near enough, out flicks a long, tapering, snaky arm, and holds the victim tight.

Down the inside of each arm are nearly three hundred round suckers. Each one acts like those leather suckers with which boys sometimes play. Once fixed, it is nearly impossible to unloose them, without chopping or tearing the arm to pieces. First one and then another sucker takes hold, and the wretched victim is drawn up to the ogre’s beak, with no chance of escape.

When one sees the grasping power of even a small Octopus, it is easy to believe that a large one would be a dangerous enemy. The strongest swimmer would stand no chance: those clinging arms could hold two or three men under water.

[Illustration: WHALING.]

Luckily, the Octopus has no wish to attack people. It is not fierce. But to the Crabs it must seem an awful ogre. I once watched an Octopus on the lookout for food. It had its lair between two rocks, its twining arms showing outside, its eyes and body in the shadow. Along came a Crab, scuttling near the rocks. He spied the ogre, at once stopping and raising his claws as Crabs do, like a boxer ready to fight. The Crab having strong pincers, and a good suit of armour, I expected to see him fight for life. But no! Like poor Bunny chased by the dreaded Stoat, the Crab gave in as soon as the ogre flicked him with an arm. The suckers gripped him fast and, still holding up his claws, he was drawn into the den of his dreadful enemy.

Although armed with a beak, the Octopus seems not to use it against the Crab. He prefers to pull the poor Crab to pieces with his strong arms, and then to pick up the crab-meat with the hooked beak. When full-fed, he retires to his den; he sometimes pulls shells and stones over the entrance, and rests within until hungry.

Page 12

In this strange order of molluscs there are dwarfs and giants. One kind is never more than two inches long, others are vast monsters. The Octopus is big enough and ugly enough to make one shudder to see him, but the real ogre of the deep is the Giant Cuttle-fish, beside which the Octopus is a tiny mite.

These Giant Cuttles have ten arms, two of them being very long. The Octopus's body is round, like that of a fat spider, while the Cuttle has a long body. The Cuttle has many sharp claws on its arms, besides numbers of big, strong suckers. It holds and tears its prey at the same time. Its staring eyes are like big black lanterns on each side of the head. The head twists this way and that, so that nothing escapes the glare of those horrible eyes.

Lurking in the dark depths of the sea, these Giant Cuttles wait for large fish, Crabs, or even their own relations, to come near. Like hideous, gigantic Spiders, they are the terror of the ocean caverns. They are so large that they have few enemies to fear. Indeed, it is surprising that any animal dares to attack such a monster, but that other giant, the Sperm Whale, dives deep to the home of the Cuttles, purposely to attack and eat them.

The Sperm Whale *must* attack these big creatures in order to get enough food. He has such a huge, barn-like body to fill, that only these big Cuttles will satisfy him. Whale-hunters sometimes catch a glimpse of terrific combats between these giants of the deep. The Sperm wins the battle, for he is nearly always found to contain great pieces of the ogre's arms.

Although the Octopus and the Cuttle are related to the Snail and Whelk, they have no shell. Their bodies are naked. Neither do they grow a backbone, or skeleton; but, inside the body, the Cuttle has a plate of chalk, which you may find on the shore. Some kinds have a long strip of transparent substance, like a large feather. Fishermen use the smaller kinds of Cuttle as bait. You will find it quite easy to cut out the "beaks" and "bone" for yourself, or the fishermen will not mind saving them for you.

EXERCISES

1. What is the meaning of the words "mollusc" and "octopus"? 2. How does the Octopus capture its prey? 3. How does the Octopus escape its enemies? 4. What creatures prey on the Cuttle and Octopus?

LESSON VI

THE WHALE

Now and again Whales are washed up on our coasts, and then we can see how huge is this strange monster of the deep. It is by far the largest of all living animals. Once on the land it is quite helpless; it cannot regain its home in the waters, and slowly dies. It is shaped like a fish, and its home is in the sea, so no wonder it has often been called a fish.

If by chance the Whale is held under water, it drowns. It has no gills, like those of the fish, to take air from the water; it is a mammal, a creature that must breathe the free air just as other mammals. Nature is full of surprises. And here she surprises us with a mammal most marvellously fitted to live a fish-like life.

Page 13

The Whale dives to great depths in search of food, and stays under water for a long time. But it is forced to rise again, and breathe at the surface. To do this, it need not put its head and mouth out of water, for its nostril is at the top of the head.

As the Whale forces used-up air from its nostril—or “blow-hole,” as it is called—it mixes with water; this causes a jet or spout of water to rise some distance into the air. The blow-hole is closed by a stopper or valve, opening to let the air in or out, but closing to shut out the water.

Some of the Whale family are enormous, and some are small. A large Sperm Whale may grow to be ninety feet long, and its weight would be nearly two hundred tons! This huge creature would look like a deep barge in the water.

These Sperm Whales love to swim in herds, or schools. As many as three hundred have been seen in one school, old “bulls” and “cows,” and their young ones swimming together far out at sea. It has been noticed that they all spout, or breathe, at the same time, and then dive to great depths. The old ones seem to know that their babies cannot stay under water as long as a full-grown Whale can, and they all rise at the same time. These youngsters may be nearly thirty feet long; but they gambol like so many kittens, twisting and turning over and over, and throwing themselves into the air. Most Whales are happy creatures, enjoying their roving life in the free ocean.

You can well imagine that a Whale as big as a barge needs huge dinners. We should not be far wrong if we guessed that he would need about a ton of food every day. Where is he to get all that food? It is said that he feeds mostly on the Cuttle-fish, that giant cousin of the Octopus, who haunts the dim caverns of the deep. The Sperm is of enormous strength, and is as fierce as he is strong. Otherwise he would not dare to face the awful, clinging arms of the Cuttle, that ogre of the deep sea.

The Sperm Whale has a great, blunt head, a huge mouth, and a throat large enough to swallow a man. His clumsy-looking head contains oil, so does the deep layer of blubber with which his body is covered.

For the sake of this oil, the Sperm has always been hunted. But he is not easily overcome. He fights hard for life; and many a whaling boat has been dashed to pieces with one blow from the powerful tail of a hunted Sperm.

This great tail is set cross-wise, not upright like the tail of a fish. It is of immense power, and divided into two big “flukes,” as they are called. With strong up-and-down strokes the tail propels the monster along at a great pace. It also shoots him down to his feeding place in the depths of the sea, and up again to fill his lungs with sweet fresh air. The fins, or paddles, are used only as balancers, and to protect the young.

These Sperm Whales inhabit warm seas, but others of the Whale family haunt colder regions. The greatest of these is the Right Whale, or Greenland Whale, a monster whose bulk rivals that of the Sperm.

Page 14

Now it is very strange that this, the largest member of the whole kingdom of animals, should live on some of the smallest creatures of the sea, and that the mouth and throat of this monster should be so made that he can eat only this minute food, food like that which the tiny Herring eats.

In some parts of those cold northern seas the water is coloured in bands of red and blue. If you took up a bucketful, you would find that the colour was due to myriads of tiny creatures. Amongst these are other myriads of small animals, each of less size than a house-fly. The larger ones are there to feed on the smaller ones. And that mass of small life is the food of this mountain of fat and flesh, the Greenland Whale.

He swims through the sea with his mouth gaping open, like a great cavern, and soon thousands of the little creatures are inside. Then his tongue comes forward. It is of immense size, and it pushes out all the sea water from his mouth. But the small animals remain inside! For the water is forced through a wonderful sieve, made of fringed plates, which hangs from his upper jaw. Instead of having teeth in his mouth, as many Whales have, the Greenland Whale has this sieve of "whalebone." Of course it is a large sieve, to fill so large a mouth. Yet it is never in the way, being neatly packed away at the top of the mouth, one plate over the other, when not in use.

The mass of small animals, held back by this peculiar sieve, then slides down his throat, which is a tube about as wide as a boy's wrist! We said just now that Nature was full of surprises. Is it not surprising to find a gigantic Whale feeding in this way! Inside the great mouth the *Remora*? or Sucking Fish, is often found. This fish has an oval sucker on its head, by which it fixes itself to Whales, or even to the hull of a ship. It has fins, and can swim perfectly well, but prefers to live in this lazy way.

The Whalebone Whales lead a peaceful, happy life, though not without dangers. The bitter cold of their northern home is nothing to them, for are they not snug in a deep blanket of blubber? To obtain food, they merely swim along with open mouth. These peaceful giants do not know how to fight for their lives, like the Sperm Whales. So, when man came, hunting the Greenland Whale for oil and "whalebone," he found an easy victim.

They have other enemies, besides man. The Killer Whale is one of the fiercest, swiftest terrors of the sea. It is tiny, compared with the Greenland Whale, but much quicker and more cunning. Several Killers band together and spring to the attack at the same time, Like wild cats, they dash at the poor helpless Whale, and tear its sides with terrible curved teeth.

The Sword-fish and Thresher Shark also help to destroy this harmless giant of the deep. The Sword-fish pierces it with his pointed "beak"; the other slashes the sides of the wretched Whale with its long tail. It is said, by those who have seen such a fight, that the Thresher's tail cuts deep into the Whale's sides.

Page 15

[Illustration: THE SUCKING FISH]

In all parts of the wide sea there are Whales of one kind or another. We have looked briefly at the Sperm and Greenland Whales, and the Killer Whale. Besides these there is the Narwhal, or Sea-unicorn, with a wonderful tusk, which is really a big tooth, some six feet long. Another one, the Bottle-nose Whale, has a long, narrow “beak,” and is sometimes washed up on our shores. The Pilot Whale is also seen in herds in our seas.

Another visitor, the Rorqual, is not welcomed by the fishermen. This big fellow follows the shoals of Mackerel and Herring. He lives on them, swallowing as many at each gulp as would fill several big baskets. The fishermen can spare him the fish. But it is another matter when he swims through valuable nets, tearing through them as if they were so much cobweb.

The commonest Whale of our seas is that small one, the Common Dolphin, who is a midget some five or six feet long. You may have seen Dolphins, for they swim near the surface, and may often be noticed not far from the shore. Like the Rorquals, they follow the Herring and Mackerel shoals. Now and again they dash into the nets, and are shown in the fish-market.

EXERCISES

1. Describe how the Whale breathes. 2. What food do the Sperm and Greenland Whales eat? 3. How does the Greenland Whale eat its food? 4. Give the names of five kinds of Whale.

LESSON VII

TIGERS OF THE SEA

[Illustration: A CORAL REEF.]

The monsters of the Shark family, fortunately for us, live in warm seas, and so are not often found near the shores of Great Britain. But our seas contain smaller Sharks of various kinds, and in greater number than most people imagine.

Sharks are fierce hunters. Many a poor sailor or diver has been torn to pieces and devoured by these ravenous tigers of the deep. Some Sharks are of great size and immense power; they are by far the largest of all living fish; and no animal in the whole kingdom of animals owns such a terrible death-trap of a mouth as the Shark. It is, in some kinds of Shark, armed with seven rows of teeth with keen edges and points!

Sometimes a Shark follows a steamer in the open sea, day after day, waiting for whatever may chance his way; and it is astonishing what strange objects he will swallow. These monsters are often caught on a hook baited with a lump of meat, and are hauled to the steamer's deck. One Shark was found to contain all the rubbish that had been pitched overboard; tin cans, a bundle of old coats, a piece of rope, old bones, and so on. What a fierce hunger must have driven the Shark to swallow such a meal as that!

Before we look at some of these fierce creatures, whom everyone dislikes, we will say a word for them. Nature meant them to be *scavengers*, to clean up the sea. And this they do. Dead and decaying flesh is a danger, and the Shark, ever hungry, clears it away quickly.

Page 16

Now and again fishermen bring a big Shark to port, and hang him in the market—not for sale, but as a “show.” The Blue Shark is the one most often displayed like this. See how his mouth is set, well under the head, as in all Sharks; and notice the shape of the body. It tells of speed and strength in the water; its pointed, tapering form reminds one of the racing yacht.

[Illustration: THE WHITE RAY]

What is this fierce fellow doing so near our coast? He is often found off Cornwall—too often, thinks the fisherman. This Shark comes to seek the same prey as the fisherman—the shoals of Mackerel and Pilchard (a cousin of the Herring). Where the shoals go, the Blue Shark follows. The silly Mackerel, all crowded together, have no chance to escape their awful foe. They are nearly as helpless as a flock of sheep with a tiger in their midst.

[Illustration: THE ELECTRIC RAY]

If the Shark comes across a mass of Mackerel or Pilchards in a net, he looks on them as a fine feast. Dashing at them, he tears the net to pieces, swallowing lumps of netting with great mouthfuls of fish. Small wonder the fisherman detests this savage visitor which causes him such serious loss of time and money. He naturally looks on Sharks as useless “vermin,” to be destroyed whenever possible.

[Illustration: *Photo: A. F. Dauncey.* DOG-FISH EGG CASE]

The Fox Shark, or Thresher, is another fierce visitor to these shores. This savage hunter comes after the Herrings, Pilchards and Sprats. It is said to hunt these useful little fish in a strange way. As you know, they travel in shoals. The Thresher swims rapidly round and round them. Nearer and nearer it comes to the unlucky little fish, and they crowd together, huddling up in a helpless mass. The Thresher adds to their panic by *threshing* the water with its terrible tail. And then, as you can well imagine, it dashes at them and devours an enormous meal. Half the length of the Thresher is tail. Not long ago there was landed at one of our fishing ports a Thresher Shark of half a ton, its tail being over ten feet in length. Even the great Whale has reason to fear the fierce lashings of that long, whip-like weapon!

Our commonest Sharks are those small ones known as Dog-fish, which you can often see at any fish market. They are good to eat, though not used much as food. Though small in size, they are large in appetite and fierce in nature. Like savage dogs, they hunt in packs, waging war against the Whiting, Herring and other fish.

[Illustration: THE SHARK]

Page 17

There are several kinds of these small Sharks, known as Spur-dog, Smooth Hound, Greater-spotted and Lesser-spotted Dog-fish, and Tope. And you will hear fishermen call them by such names as “Rig,” “Robin Huss,” and “Shovel-nose.” Fisher-folk dislike Sharks, the Dog-fish among them. All those creatures, like the Cormorant, Seal, and Shark, which catch fish for breakfast, dinner and supper, are rivals of the fisherman. He often pulls up his line to find but a part of a fish on the hook—the rest was snatched by a “dog.” At times his nets are torn by these nuisances, when they attack the “catch” of fish. Or his lines come up from the deep all tangled round and round a writhing Dog-fish, which had swallowed the baited hook.

We come now to those flat Sharks, whose flesh you may have tasted. No Sharks are nice-looking, but these flat ones—the Skates or Rays—are really hideous, Many of them are of great size and strength, and armed with spines on their bodies (see p. 52, No. 3) as well as teeth in their ugly jaws. They have broad, flat bodies, with wide “wings,” and a long thin tail. The whole shape reminds you of a kite, and you would hardly know the Ray or Skate as the Shark’s first cousin.

Yet it is only a Shark with flattened body, and whose side fins are so large that they spread out like fleshy wings. The mouth is on the under part, as it is in all Sharks.

[Illustration: FISHES (No.1). 1. Blue Shark. 2. Saw Fish. 3. Starry Ray. 4. Ox Ray. 5. Plaice. 6. Trunk Fish. 7. Blue Striped Wrasse. 8. Malted Gurnard. 9. Muroena.]

These flattened Sharks must be a terror to their neighbours. We shall see, in our next lesson, what strange weapons are used in the battles of the fish. The Rays or Skates have their share of spines, stings, and poisons. One glance at their shape tells you that speed is not their strong point. If they wish to eat fast-swimming fish—and they often do—they must use cunning.

The Skate, being sandy-coloured and flat, is nearly invisible as it lies on the bed of the sea. There it lurks, waiting for the first unwary fish. A sudden spring, and its wide body smothers its unlucky victim.

Skates also flap their way slowly over the ocean floor, looking for a dinner. They can eat shell-fish, and are fitted with teeth suited to the work of crushing such hard fare. But, as we have seen, they have also the Shark’s love of eating other fish.

These Skates are the only members of the Shark family that we value as food. You can see Skates of several kinds in the fish market. They go by such names as Thorn-back Ray, Blue Skate, Spotted Ray, Starry Ray, Cuckoo Ray, Long-nosed Skate and Sting Ray.

EXERCISES

1. Of what use are Sharks? 2. How does the Thresher Shark hunt its prey? 3. Give the names of several Dogfish and Rays. 4. What is the food of the Skate, and how is it obtained?



Page 18

LESSON VIII

THE DANGERS OF THE DEEP

The “game” of hide-and-seek is played by most of the dwellers in the sea. Many of them are “hidiers” and “seekers” by turn. That is to say, they are always seeking other creatures to devour, but must also be ready to hide from their own enemies.

Eating and being eaten—that is the life of the sea. The small and weak ones must hide, and their lives depend on their skill in hiding. Perhaps we should not call it a “game,” as it is not done for fun. But, though the sea is full of danger for some creatures, you must not think that they live in fear. There is no doubt that they enjoy their lives, each in its own way.

Many are the quaint dodges and tricks of the hidiers and seekers in the sea. We can mention but a few in this lesson. Look at the Spider Crabs, and their trick of dressing up. They have hooks on their backs, which catch in the seaweed. Some of them even tear off weed with their pincers, and fix it on to these hooks, and succeed in looking like bundles of weed, and not a bit like living Crabs.

Then there are the fish which wear a coloured scaly coat. Many of them are not easily seen in the glinting water, as you know. Others are lazy; they lie on the bed of the sea, and wear a disguise which hides them from prowling foes. The Plaice and other flat-fish, as we noticed in Lesson 2, are coloured and marked like the sand and pebbles of their home; and they can even change colour to suit their background. They are wonderfully hidden, owing to this useful dodge. It is as if Mother Nature had given them the marvellous “cloak of invisibility,” of which we read in fairy-tales.

Shrimps and young Crabs wear a coat of sand-colour or weed-colour. Our soldiers, for much the same reason, wear suits of *khaki*.

Another common hide-and-seek trick is to look like nothing at all. That sounds difficult, but it is a favourite dodge in the sea. If a number of very young Herrings or Eels were placed in a glass tank of sea-water, you would have a hard task to find them. You can look at them, and yet not see them. They are transparent—you look through them as if they were water or glass. You can imagine how well hidden they are in the open sea.

It is well to be able to hide, when all around you are enemies who look on you as good food. But there is another way, and that is to wear armour. Then you can frighten your enemy, or at least prevent him from eating you. Some fish, like the Trunk Fish, (p. 52, No. 6), are covered with bony plates, jointed together like armour. Spines and prickles are a commoner defence.

The little Stickleback of our ponds wears sharp spines, and knows well how to use them. Even the terrible Pike will not swallow such a dangerous mouthful unless driven by hunger.

Sea-fish are the most hunted of all living things. From the day they leave the egg, enemies lurk on all sides to gobble them up. The weak ones are eaten, and none of them has the chance to die of old age! So we find a defence of spines and prickles worn by many sea-fish. Spines on the fins are the commonest, and no doubt help to keep away enemies; but some fish go one better than that, and wear a complete suit of spines.

Page 19

The Porcupine-fish, as his name tells us, is one of these. He is a small fish, living in warm seas. No doubt he has many enemies, eager to meet him and eat him. But, when they see this little fish puff out his sides like a balloon, and when pointed spines rise up all over the balloon, they think better of it! They leave him alone; and the Porcupine-fish goes back to his usual shape, the spines lying flat until wanted again. He is sometimes called the Sea-hedgehog or Urchin-fish, and well deserves his name.

Many of the Skates or Rays wear terrible spikes. The Starry Ray (p. 52, No. 7) is not easy to handle, dead or alive, for he has spines all over his body. The Thornback is another ugly fellow of this family, having spines on his back and a double row of them down his tail. Fishermen are careful to avoid the lash of this armed tail. The Sting Ray shows us still another weapon. At the end of its long tail it has a horrible, jagged three-inch spike. As this fish likes to bury itself in wet sand, bathers sometimes tread on it. In a flash the tail whips round! A poisonous slime covers the spike, causing great pain to the unlucky bather.

Several poisonous fish are common near our coast. You may have seen the one called the Great Weaver, also its small cousin, the Sting Fish. The Weaver is dreaded by fishermen; for the spines on its back fin, as well as the one on its gill-cover, cause poisoned wounds. They are grooved, to hold a very poisonous slime.

Some fish have the power to kill their prey, and stun their enemies, at a distance! Instead of a spiny defence, they are *armed with electricity*! The best-known sea-fish of this sort is the Electric Ray, also called the Cramp Fish or Torpedo (see p. 48). It is a clumsy fish about a yard long, and very ugly. Being too slow to catch its swift prey in fair chase, it stuns them with an electric shock, and then eats them. The electric power comes from the body of the Ray; if it wishes it can send a deadly shock through any fish which ventures near. Without chance of escape, it is at once stunned, and falls helpless.

We come now to some formidable dangers of the deep—big strong fish, so well armed that they roam the seas without fear. On page 52 you see a picture (No. 2) of the Saw-fish, one of the Shark family. It is a large fish, and carries a big saw on its head, with which it stabs sideways at its prey.

Imagine, if you can, a Shark about fifteen feet long and weighing a ton or so. Now suppose the top jaw of this monster to be drawn out into a hard, flat blade six feet in length. Then suppose there are sharp ivory teeth, one inch apart, fixed on each side the blade, and you have an idea of the Saw-fish. This strange Shark is said to be as strong as it is fierce. It kills its prey by tearing them open with side blows from its sharp, two-edged saw. Its big mouth is fitted with a great many rows of needle-like teeth.

Page 20

The Sword-fish wears a different weapon—a lance instead of a saw. He is not a Shark, but a cousin of the beautiful Mackerel. This warrior of the deep is more dreaded than the Saw-fish, and braver than any Shark. His speed in the water is marvellous; it makes him safe from attack. He carries in front of him a terrible weapon, and all sea-creatures hasten from his path as fast as they can.

You may have seen the Sword-fish in a museum. There is a fine one in the London Natural History Museum, where there is also a “sword” from one of these fish, driven eighteen inches into the solid oak of a ship. The Sword-fish never thinks twice about attacking, no matter if his enemy is ten or twenty times as large as himself. He sees a Whale, and, like a flash, hurls himself at it, stabbing his sword as deep as it will go into the Whale’s side. With a twist of his body the sword is wrenched free, only to be driven savagely in again.

EXERCISES

1. Mention three ways in which sea-creatures try to escape their enemies. 2. How do the Sting-fish and Sting Ray defend themselves? 3. What is the Saw-fish like? 4. How does the Sword-fish attack its prey?

LESSON IX

THE FISH OF OUR ROCK-POOLS

The pools left by the falling tide have many an interesting thing to show us. There are living creatures in plenty, besides the pretty weeds, shells, and other objects. Shrimps, Prawns and Crabs abound in the rock-pools and shallows, with anemones and shellfish of all kinds. In the rock-pools we shall also find the interesting little fish whose story we glance at in this lesson. Of course there are baby flat-fish, and large fish too, along the shore. But these are only visitors. The real rock-pool fish are those which live their lives there.

Some of them are tiny things, two or three inches long. With quick movements like Shrimps they dart away as you approach. They have a way of hiding under weeds and rocks, being very clever at “hide-and-seek,” and knowing all the dodges. But, by using a net, you will soon capture a few of them. Then you can put them in a small pool and examine them; or even keep them in an aquarium, giving them clean sea-water, seaweed, and the small shrimps on which they feed.

[Illustration: PIPE-FISH AND FLUTE MOUTH]

In our lesson on fish-nurseries we saw how the Sea-stickleback, Sand Goby and Pipe-fish cared for their eggs or young ones. These three fish are often to be found by the

shore. As you look into the clear and still waters of a pool you may see a Pipe-fish getting its dinner. This funny creature looks more like a pencil swimming than a fish. It may be a foot in length, but its body is no thicker than a pipe-stem!

[Illustration: FISHES (No. 2). 1. John Dory. 2. Rock Cod. 3. Sand Eel. 4. Small Pipe Fish. 5. Cuckoo-Wrasse. 6. Angler. 7. Whiting. 8. Gattorngine. 9. Sapphirnal Gurnard. 10. Three-bearded Rockling. 11. Red Gurnard. 12. Pipe Fish. 13. Bass. 14. Red Mullet. 15. Turbot.]

Page 21

It has very long jaws. They are quite useless, however, being fastened together! At their tip is an opening, though a very small one, and that is the mouth of the Pipe-fish. Of course, with such a mouth, the fish cannot bite its prey, and so has to suck in small creatures and swallow them. Its method of hunting them is strange. It stands on its head, as it were, takes in a mouthful of water, and spurts it out at the sandy bed of the sea. This stirs up the small living things, which are at once swallowed by the Pipe-fish.

We have already seen how the male Pipe-fish carries his eggs in his “pocket.” Another curious thing is his suit of armour. Instead of scales, he has hard plates all over his body. Very often you may see young Pipe-fish among Sprats and “Whitebait” in the fishmonger’s shop.

Most of the little shore-fish are either Gobies or Blennies. No doubt they have to avoid the sharp eyes of Gulls and Cormorants, for they are very anxious not to be seen. Some of these rock-pool fish do not mind being out of water for hours at a time. In every way Nature has fitted them for their life between sea and shore. They have cousins in warmer seas which love to come ashore at times. This is how a traveller describes one of these foreign Gobies:—

“Though they are fish, and breathe by gills, they have a passion for the land, and during the daytime may always be seen ashore, especially where the coast is muddy. They bask in the sun, and hunt for food, raising themselves on their fleshy fins.... When pursued, they take great springs, using their tails and fins for the purpose; and if they cannot escape into the sea, they will dive down the burrow of a land-crab, or dash into a bunch of mangrove-roots.” They are very wary, having eyes like swivels, to turn in all directions.

[Illustration: A BUTTERFLY BLENNY]

The Spotted Goby, as we have already noticed, makes a nest under a shell, and guards it until the eggs hatch. Two other Gobies are quite common in the pools of our south coast—the One-spot Goby and the Two-spot Goby. The back fin has the one spot, or two spots, from which they get their name. Though they are such mites, they have sharp teeth, as you may already know if you have caught them with your fingers!

These lively little fellows are not very easy to catch! They have a cunning way of hiding amid sand and rock, and are coloured to suit such places. One strange thing about the Gobies is their trick of anchoring themselves to a stone.

You may wonder what kind of anchor they can use. It is a simple matter, however. The fins on the stomach are pressed together to form a little disc. This acts as a strong sucker, much like that of the Sucking Fish (p. 43). If the Goby wishes to stay still in one place, it presses its sucker to a stone; then it cannot be washed away by the ever-moving water.

In the Blenny family we find big, ugly fish as well as pretty little ones of strange shapes and lovely colours. There are several kinds of small Blennies in our rock-pools. The Eyed Blenny, or Butterfly Blenny is not very common along our shores, but may be seen now and again. It is only a few inches in length, with eyes like jewels, a kind of tuft over each eye, and a pretty spot on its tall back fin.

Page 22

It will live quite well in a glass tank of sea-water; someone who kept many interesting fish says of this Blenny:—

“Our little Butterfly Blenny was not often to be seen. It was using an old whelk shell for a nursery. In this broken old shell the dainty fish was able to hide, and was so nervous that we seldom saw it. But we placed some food near the hole in the shell, and were rewarded by the sight of the Butterfly’s head, and its lovely eyes, each with a little movable tassel above it.”

[Illustration: A SMOOTH BLENNY]

Hidden under weed and stones is another small brownish fish of the shore, the Gunnell or Butter-fish. You may turn it out of its snug hiding-place, but you will have a hard task to catch it, even in a small rock-pool, and, once caught, it slips through your fingers like an eel. Its body is eel-shaped, with a narrow fin on the back, and covered with a layer of slime. It well deserves the name of Butter-fish.

The eggs of this strange little fish are rolled into a mass by the two parents. By curling their long, slimy bodies around the eggs, a closely-packed ball is the result. This precious ball of eggs is then taken care of, and guarded by the two fish. In this nursery both the father and mother fish take their share as guardians.

EXERCISES

1. Name three rock-pool fish. 2. Describe the Pipe-fish. 3. How does the Sand Goby anchor itself? 4. In what ways are these rock-pool fish so well fitted to live in such places?

LESSON X

SOME CURIOUS FISHES

Now and again that queer fish called the Sea-horse is found by our coast; a little brown fish, with bluish-white spots and lines on the sides and tail. But Sea-horses are common in warmer seas, in the banks of seaweed where they love to dwell. You would never guess that these curious creatures were fish.

The shape of the head, and the curved neck, remind you of a horse. It is also rather like the knight of the chess-board; or it may make you think of the dragon of the fable; but, really, the Sea-horse is like nothing on the earth, or in the waters. Nature has given it a special pattern of its own.

Sea-horses use their twisty tails as monkeys do, clinging to the seaweed with them. They swim along slowly, in an upright position. Every now and then they seem to be falling forward on their noses, and pull themselves up again, only to begin falling a moment after. It is fun to see them play hide-and-seek among the weed in an aquarium. Some Sea-horses are like floating scraps of torn weed; this, of course, hides them from the eyes of enemies.

[Illustration: SEA-HORSES]

They have no teeth, but a long mouth like a pipe; so you can be sure they eat only the smallest sea-creatures. To add to his odd look, the Seahorse moves his eyes in a comic fashion. One eye may roll round and look at you, while the other gazes forward.

Page 23

As if this were not strange enough, he surprises us again. Mr. Sea-horse turns himself into a living nursery. He carries the eggs about with him, in a special pouch of skin! You will remember that the Pipe-fish also carries the eggs in his pocket, as it were. So you will not be surprised to hear that these two quaint fish belong to the same family.

We will leave the funny little Sea-horse, and look at a very different fish—the Sunfish. This remarkable fish often reaches a good size; even near our coast big ones are caught now and again, and in warmer seas, where they are often killed for the sake of the oil they contain, big fellows of half a ton are quite common.

This Sunfish has a peculiar shape. It looks as if it had once been an immense fish of the usual fish shape, but someone cut off the head and shoulders, and placed a short fin where the rest of the body had been. Above and below there is a long pointed fin. The mouth is very small, and has no real teeth; so the Sunfish lives on small prey, such as the young of other fish, or small shell-fish.

Far away from land these strange Sunfish are met with, asleep near the surface, with the back fin showing above water. They roll along lazily, not unlike big cart-wheels. The top and bottom fins are for balancing and guiding the body, which is moved forward by the fin which frills the back part of this odd fish.

[Illustration: GLOBE FISH]

In the fishmonger's shop you may sometimes see that ugly monster of the deep, the Angler-fish, or Fishing-frog. Now and again he finds his way into the fishermen's nets; and is also caught on the lines, for he is so greedy that he will snap at a hooked fish. Rather than let go of his prey, he will be drawn to the surface. Then he is knocked on the head, and thrown into the boat with the other fish.

Being slow and clumsy, the Angler-fish cannot chase his prey, so gets his dinner by fraud. Nature has given him a fishing line and a bait! He has long spines on his head, so beautifully joined to the bones of the head that they can wave to and fro very easily. At the tip of the front spine there is a loose, shining strip of skin—that is the bait. Now, all anglers know how a fish is lured by a shining bait. The Angler-fish seems to know this too. He buries himself in the wet mud and sand at the bottom of the sea. Then he waves the long spine, so that the shining tip glistens as it shakes in the water, until a fish swims up to see what it is all about. A sudden snap, and that inquisitive fish is inside a huge, toad-like mouth, well furnished with rows of sharp teeth. The Angler-fish puts his catch in his pocket, and begins fishing again, for he is never satisfied. His pocket is a loose bag of skin in the throat. This bag is always examined by fishermen who capture the Angler, for it may contain a nice big Plaice or Sole, worth money in the market.

There are Angler-fishes in every ocean, and some live in the very deepest parts. In those black depths the little waving “bait” would not be seen. So it is made to shine, like a bluish spark moving to and fro over the cold black slime of the sea-bed.

Page 24

Down in those awful deeps it is for ever dark, and freezing cold, There is no day or night, summer or winter. No plants can live there. Yet in that strange, still world there are numbers of living things, though we know very little about them. There are weird Crabs, blind Lobsters, and fish terrors such as are never seen elsewhere.

In that darkness you would think that eyes would be of no use, but some of the deep-sea fish have great black owl-like eyes. Others are quite blind, or have eyes like pin-points. Some of them make their own light, glowing with rows of little lamps on their bodies, each like the lamp of the glow-worm of our country lanes. Blue, red, and green these lights are, but no one can tell you their real use, or why they are so coloured. The blind fish feel their way with long feelers, stretched out like the threads of a web.

[Illustration: THE FISHING FROG.]

As there are no plants down there, these strange fish must live mostly on one another! And here is a puzzle, for some of them have great big bodies, but small heads and tiny mouths; others have bodies like ribbons, but large heads and huge mouths, and some are such gluttons that they swallow fish twice their own size! This sounds absurd, but it is true. Their mouths gape open like trap-doors, and their stomachs are made to stretch, to hold their huge meals! There are other terrors of the deep with such big teeth that they cannot shut their mouths. No doubt the sea holds yet other weird fish which no man has seen.

EXERCISES

1. In what ways is the Sea-horse so different from most other fish? 2. In what ways are the Sea-horse and Pipe-fish alike? 3. How does the Angler-fish catch its prey? 4. Mention a few strange facts about the deep-sea fish.

LESSON XI

THE GARDEN OF THE SEA

For many centuries men were puzzled over those strange growths in the sea—Corals and Sponges. Were they to be classed as animals or as vegetables? It was by no means an easy question to answer.

Corals, with their pretty colour, and their stems and branches growing up from the sea-bed, were said to be shrubs, but they were as hard as rock, said some people, so how could they be vegetables? The reply to this was, that the Coral became hard as soon as it reached the air. Then, of course, it was found that Coral was as hard under water as above it, and the question was still unanswered.



Sponges, too, were thought to be sea-plants for many, many years; though some people even said that they must really be made of hardened sea-foam! The Sponge took its place in the vegetable kingdom, then it was moved to the animal kingdom, and back again.

This went on for long years. Then, by careful watching, it was found that the Sponge is an animal. True, it is a very lowly member of the great kingdom of animals, yet it is one, and not a plant.

Page 25

Like all other animals, the Sponge animal must eat, and its way of doing so is rather strange. If you look at any ordinary washing-sponge, you notice a great many very small openings and some larger ones amongst them. It is through the smaller holes, or pores, that the Sponge gets its supply of food. When it is alive, and in its own home, there is a current of water always passing through its and the Sponge depends on the food which the water brings. Now, if you could watch this water-current, you would see that it rushes into some of the holes, and out of others; it has a certain path to follow. It enters the small pores, or openings, of the Sponge, and goes along narrow canals, and is then led into larger ones. Finally, it rushes out again through those large openings we noticed. We may compare it with traffic coming into a city by many narrow streets, then passing into broader roads, and at last out again by big main roads.

[Illustration: CUPS AND SOLID SPONGES]

[Illustration: *Photo: A. F. Dauncey.* SEA FURZE]

How does the Sponge animal cause this current; and how is it made to follow a certain path?

The narrow canals in the Sponge are lined with lashes, or tiny hairs, so very small that you can just see them through a microscope. Now the secret of the wonderful water-current is a secret no longer. As long as the Sponge lives, these little lashes are always moving, always lashing the water along in one direction. They cause it to follow its proper course, through and through the Sponge, and out again into the sea. On its way it loses the tiny scraps of food which it contains, and carries away any waste stuff out of the Sponge.

You will have noticed that there are various kinds of Sponges in the market; some are large and flat, others small and cup-shaped; some are soft, and others rather hard. They are all somewhat horny and elastic. This "spongy" material is the skeleton of the Sponge animal, cleaned and dried for your use. Some kinds of Sponge would tear your skin if you tried to use them, for they have a hard skeleton. It is made of lime, and sometimes of flint, which the Sponge obtains from its food. Of course we use only those sponge-skeletons which are soft; but the cheaper kinds do often contain little flinty needles.

The best washing-sponges live in warm seas, attached to the rocks on the sea-bed. Divers go down and obtain them; or else they are dredged up, cleaned, dried, and sorted, and then sent to the market. Some Sponges, called Slime Sponges, have no skeleton, being merely a living mass of slime.

Coral is also the hard skeleton of a little animal, known as the Coral Polyp. The rest of the polyp's body is soft jelly, which many fish regard as good food. The Sea Anemone

—another jelly-animal—is first cousin to the Coral Polyp. And we may call the Jellyfish second cousin to these two, for it is in the same big division of the animal kingdom.

Page 26

The pretty red Coral, then, is really the hard part of a little jelly-animal. This animal is much like a Sea-anemone, with a hard skeleton of lime. Coral, as you know, looks like a solid rock; it is really made of needles of lime, fastened together into a solid mass by the little Coral Polyp.

Now, many of the Coral animals have the strange habit of budding. The buds become perfect polyps, and then they, too, begin to bud. In this way, those marvellous *coral-reefs* and *coral-islands* have been made. Branch by branch, layer by layer, the hard Coral is built up by myriads of the small, soft-bodied creatures. This kind of polyp can live only in warm, clear water. So it is not found in the cold depths of the sea, nor in the seas near our islands, but in the warm shallow waters near tropical lands it flourishes so well that it builds up most wonderful Coral walls. So strong are they that they can defy the terrific force of the waves.

[Illustration: THE PICTURE STORY OF A CORAL ISLAND.]

Some coral-reefs are of immense size and strength. One, near the coast of Australia, is nearly a thousand miles in length. These marvellous works of the polyp are of great use, for they break the force of the waves, and so make a calm shelter for vessels.

The brilliant masses of Coral make a world of colour in the clear seas of the tropics, a gay garden inhabited by fishes of gaudy hues. In dull seas we have, as a rule, dull creatures to match. And in bright, warm, sunny seas the fishes are also brightly coloured. A dull fish would show up amid such rich colours, so it is easy to know why Coral fish wear such fine clothes.

Many of them spend all their time among the Coral, their food being the living tips of the Coral “branches,” which they nip off with fine, sharp teeth. Others have teeth like millstones, fit for crushing the hard Coral, and eating the fleshy body of the polyp within.

Blue, red and yellow, striped and spotted, and of wonderful shapes, are the fish which swim in these coloured gardens of the sea. Some of them have golden bands round their bodies, and fine spines which wave in the water like shreds of weed—all to help them hide in the bright, sunlit groves of Coral.

Gorgeous Sea-anemones of all shapes and sizes add to the brightness; and even the Shrimps, Prawns, and Crabs are coloured to fit their background. Crabs are always surprising us with their queer ways and quaint “dresses”; and here, among the Coral, it is the same story. For there are Crabs whose shelly coats are covered with coloured knobs and spikes, so that the sharpest eye cannot pick them out from the Corals on which they rest.

EXERCISES

1. How does the Sponge obtain its food? 2. What is Coral? 3. How are Coral-reefs formed? 4. Why are there no Coral-reefs in our seas?