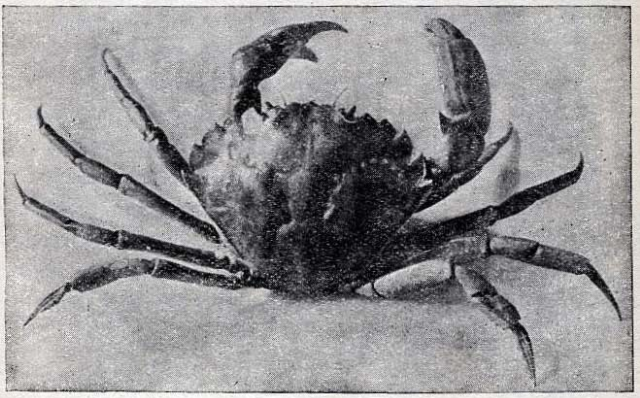
CRABS.

WHEN I was a boy at school we frequently amused ourselves by catching crabs. The scene of our operations was the Peerie Sea, where a wall had been built along the shore. Here we used to gather, armed with a piece of string and bait of some kind, and we often spent a whole long evening perched on the wall, fishing for crabs. The Peerie Sea was a receptacle for all kinds of refuse, and formed a happy hunting-ground for swarms of crabs.

When one thinks of catching crabs, one may naturally imagine an excursion to the shore during ebb-tide, and much turning over of stones and seaweed. Our method was quite different. We made the crabs come to us. Our bait was a piece of fish or anything of an animal nature, provided it was fairly tough. No hook was necessary; we simply tied the end of the string round the bait.

The baited line was let down into the water, preferably in the vicinity of a crab, and drawn slowly along the bottom. If the animal was timid, and not very hungry, he often scuttled off in a fright

Usually, however, he was both hungry and fearless, and seized the bait at once, trying to drag it in among seaweed or into a hole. Now came the exciting part of the business. Our object was to haul him up before he quitted his hold. The wall was high, and he required careful management. Sometimes when he was drawn up out of the water he would let go, and fall back with a flop into the sea again; sometimes he would hold on till he was drawn up over



Common shore crab.

the wall, and then we shook him off on the pavement behind.

Occasionally when we had no bait we would manage to land a crab with a small stone or a cinder. So long as the stone lies motionless on the bottom he pays no attention to it. As soon as it begins to move, drawn along by the string, the crab rushes at it and seizes it with his claws, and it is some time before he finds out his mistake. Not infrequently he will allow him-

self to be drawn quite out of the water, clinging to his find. It is very amusing to see the crab worrying a hard stone, then dropping it when he has discovered it is not eatable, and then seizing it again as it begins to move away from him, just like a kitten with a ball of wool. Apparently he cannot resist the idea that movement means life.

The commonest kind of crab in Orkney is the green shore-crab. He is on the whole a bold animal, but when frightened he runs away with great speed. He moves sideways, and thus meets with less resistance from the water than if he were to move directly forward. Usually, however, he does not walk fast, but creeps over the bottom in a leisurely fashion. When seizing his food he comes up to it "head on," his nipping claws held wide apart; when he is near enough, he suddenly brings them together, and begins to tear up the food in little bits and pack it into his mouth.

His eyes are placed on the tip of movable projections, so that they command a wide view. He cannot see behind him, however, or under his body, and he usually keeps his eyes fixed in the direction in which he is going. When he is resting, his eyes are ever on the watch. Every little movement on the beach near him he notices at once.

The crab has a peculiar method of feeding. His mouth is just under his head, and the opening is guarded by two flat jointed plates, one on each side of his mouth. If you pull these two plates apart—after having arranged with a friend to hold his pincers—you can see where his mouth is, and you may notice two strong things which look like teeth. These are

really his jaws; they move from side to side, and not up and down like our jaws. To see how he feeds, you must put him into a glass jar, and look up from below while he is eating a bit of fish. He tears it up with his pincers, and puts little bits into his mouth, the parts of which move from side to side as he eats.

He is not very particular as to what he eats. He is, indeed, a cannibal, and will eat the crushed leg of another crab as readily as anything else. He is one of the most useful animals on the beach, however, and has been called the scavenger of the shore. In fact, if one wishes to get the flesh cleaned off the skeleton of any large animal, there is no easier method than to lay it on the beach, well below high-water mark, and build stones around it, leaving spaces between them to admit crabs.

As we have already said, the crab is bold and fearless. He is safe in his coat of armour, and his pincers are powerful weapons of offence and defence. When fighting he rears himself up and throws his nipping legs far apart with the pincers wide open. He then looks a formidable animal; and he really is formidable, for with these legs he can protect almost any part of his body, and the strength of his grip is considerable.

Take up a dead crab and examine his biting leg. The different parts are joined by hinges. Each hinge allows of motion only in one plane, but the various planes are so adjusted that the limb can be moved in almost any direction. Only one part of his body cannot be touched by his pincers, and that is his back. If you wish to grasp a live crab with impunity, seize him across the back just where his

walking legs join the body. He may struggle as he pleases, but he cannot nip you.

It is quite a common thing to find a shore crab with one or more legs wanting, or with one large pincer and one small one. What is the reason of this? It means that at one time or other the crab has had a limb torn off in a fight, for the males are continually fighting with one another. When a limb is lost it is not a very serious matter, for a new limb soon begins to grow on again, and after a time becomes as large as the lost one.

There are times, however, when the crab is by no means pugnacious. One sometimes finds under a stone a crab which has hardly enough spirit to lift his pincers in self-defence. On touching him one finds that he is quite soft. What has happened to him? He has recently been casting his coat; for, as the animal goes on growing within his shell, he becomes too big for it, and the only thing he can do is to burst the shell and come out of it, and then wait for a bigger one to grow. When he is thus moulting, he is glad to crawl away and hide till he is able to face the world again. Many of the empty crab shells that one picks up on the beach are the old cast-off clothes of crabs still alive and vigorous. By examining one of these we can see how thorough the process of moulting is; not only are the shells of his back and his legs thrown off, but the covering of his eyes, his feelers, his mouth parts, and even the inside lining of his stomach,—for, strange to say, the wall of his stomach is lined with the same kind of shell as the outside of his body.

The crab is formed for living in water, but he

can stand long exposure to the air. If you cover him with damp garden soil or peat mould he will survive for days. The reason is that so long as his gills are kept damp he can breathe and live quite well. The lobster breathes in exactly the same way, and when lobsters are being shipped for the southern markets they are put in boxes with layers of wet seaweed to keep them alive.

Have you ever seen the beautiful set of gills which the crab has? If you find a dead crab that has been lying on the beach for some little time, you can easily remove the upper shell, leaving the soft parts of the body with the legs attached. Just above the attachment of the legs there is a series of brown feathery-looking things which seem to cover the whole side of the body. These are the gills. They lie in a special chamber, occupying about half of the whole space inside the shell. While the crab is alive, the gills are continually bathed in a current of water, which is pumped in through a small hole at the side of his mouth and drawn out at another hole near it. If the gills become dry the animal soon dies.

There is a curious pointed flap folded tightly across the crab's body underneath, which is commonly called its "purse." It used to be a schoolboy belief that the crab carries its money here. The fact simply is that the purse is kept closed for the sake of protection, as the skin underneath it is soft and might easily be injured in a fight.

You have all seen the long tail of the lobster, with its broad flaps at the end. By suddenly bending its tail underneath its body the lobster is able to propel itself backwards through the water at a great rate.

The crab and the lobster are, as you may know, closely related, and the purse of the former corresponds to the tail of the latter. The purse or tail of the crab, however, is always tucked up under the body, and is never used for swimming.

Both animals carry their eggs on this part of their body, and you may occasionally find a crab with its purse so full of eggs that it cannot be closed. These eggs have a curious history. When they are hatched, it is not a small crab that comes out, but a funny little creature not in the least like its parent. It has a rounded body and a long thin tail, and swims actively about. At this stage it is called a *zœa*.

By-and-by the creature settles down to the sea-bottom and casts its shell. Its back is now broader and its tail shorter, and it is provided with claws; but it is still quite unlike a crab, and swims freely about. It is now known as a *megalopa*. Swarms of these may be found clustered round seaweed and other floating substances, both near the shore and in deep water. As it grows it again casts its shell, but it now tucks in its tail and settles down in life as a real crab, though of course a very small one as yet: you may find scores of them on the beach not much bigger than a split pea.

Besides the green crab there are others which are common on the sea-beach. One of these is the edible crab or "partan." This crab lives in somewhat deeper water than the other, and is of a dark reddish or purplish hue on the back, while its under parts are white. It is not nearly so quick and active in its movements as the green crab, but when it does get hold of anything it has a stronger bite. In deep

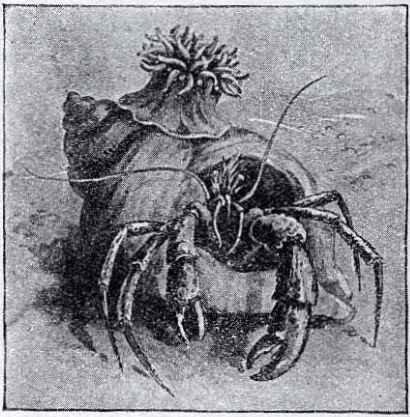
water it grows to a giant size, and it is regularly caught in creels and sold for food, as its flesh is firm and good to eat. The flesh of the green crab, on the other hand, is much softer and less abundant, and it is not used for eating. Strangely enough, all crabs turn red when boiled, whatever their colour when alive.

Another curious crab is sometimes found in weedy pools on the beach. This animal is of a spidery form, and is much more difficult to see than an ordinary crab, for he is elaborately disguised. His back and legs are grown over with hairy brown seaweed, and as he always lies among a mass of similar weed it is impossible to detect him so long as he remains at rest. When he does move, his movements are extremely slow. If you take him out of the water, he looks a most uncouth creature as he feebly sprawls about. Place him back in the bunch of seaweed from which he was taken, and he immediately adjusts himself so as to become invisible. This is his mode of escaping observation, for he is too slow and weak to be able to defend himself.

Still another odd-looking crab may be found in deep water. This animal has rather thin legs, while its back is somewhat pear-shaped, the pointed end being directed forwards. It is, however, a much more active animal than the last mentioned, and we may often see it from a boat as it climbs about on the broad blades of the tangles. It is rarely found on the beach, but the cast off shell of the animal may be found on almost any part of our shores.

One of the most interesting of our crabs is known as the hermit-crab. He belongs to the family of

soft-tailed crabs, and in shape is more like the lobster than the other crabs we have mentioned. The hinder part of his body being without armour, he is forced to seek an artificial defence, and this he finds in the empty shell of a whelk or "buckie," into the spiral coils of which he inserts his unprotected tail. These creatures are generally called hermit-crabs, because each lives in his own separate habitation, like a hermit in his cell or like Diogenes in his tub; but unlike these in their habits, they are so pugnacious that they are also known as soldier-crabs.



Hermit-crab (with anemone on shell).

Hermit-crabs may be found plentifully on the shores, of various sizes, and inhabiting any kind of shell that they find to suit their size. If we look into a shallow sand-bottomed rock-pool, we may see some of these shells moving about at a rate to which they were quite unaccustomed during the life of their builder and original occupier: we know at once that each of these shells has now as a tenant one of those interesting crabs.

By means of an apparatus at the extremity of his tail the hermit holds firmly to his temporary abode, and he flattens himself closely against the shell,

leaving exposed only the one large pincer which is specially fitted to bar the door against intruders. It is difficult to seize the creature at all; and even when a grasp of any portion can be secured, the hold of the tail is so firm that the animal runs some risk of being torn apart rather than leave his shell.

A well-known writer on Natural History, the Rev. J. G. Wood, has given an interesting account of the hermit-crab, from which we quote the following paragraphs:—

"The combative propensities of these creatures are wonderful. If two hermits of fairly equal size are placed in an aquarium, they are not content with appropriating different portions of the vessel to themselves, but must needs travel over it and fight whenever they meet. This struggle is constantly renewed, until one of them discovers his inferiority and makes way whenever the victor comes near. When they fight they do so in earnest, tumbling over each other, and flinging about their legs and claws with great energy. They are not at all particular about diet so long as it is of an animal substance, and will eat molluscs, raw meat, or even their own species. More than once when a hermit has died I have dropped the body into the water so as to bring it within view of another hermit. The little cannibal caught the descending body in one of his claws very dexterously, and holding it firmly with one claw he picked it to pieces with the other, and put each morsel into his mouth in a rapid and systematic manner that was highly amusing.

"When a hermit desires to change his habitation, he goes through a curious series of performances. A

shell lies on the ground, and the hermit seizes it with his claws and his feet and twists it about with wonderful dexterity, as if testing its weight; and after having examined every portion of its exterior, he proceeds to satisfy himself about its interior. For this purpose he pushes his fore legs as far into the shell as they will reach, and probes every spot that can be touched. If this examination satisfies him, he whisks himself into the new shell with such rapidity that he seems to have been acted upon by a spring. Such a scene as this will not be witnessed in the sea unless the hermit is forcibly deprived of his shell, but when hermits are placed in a tank or vase they seem to be rather fond of 'flitting.'"