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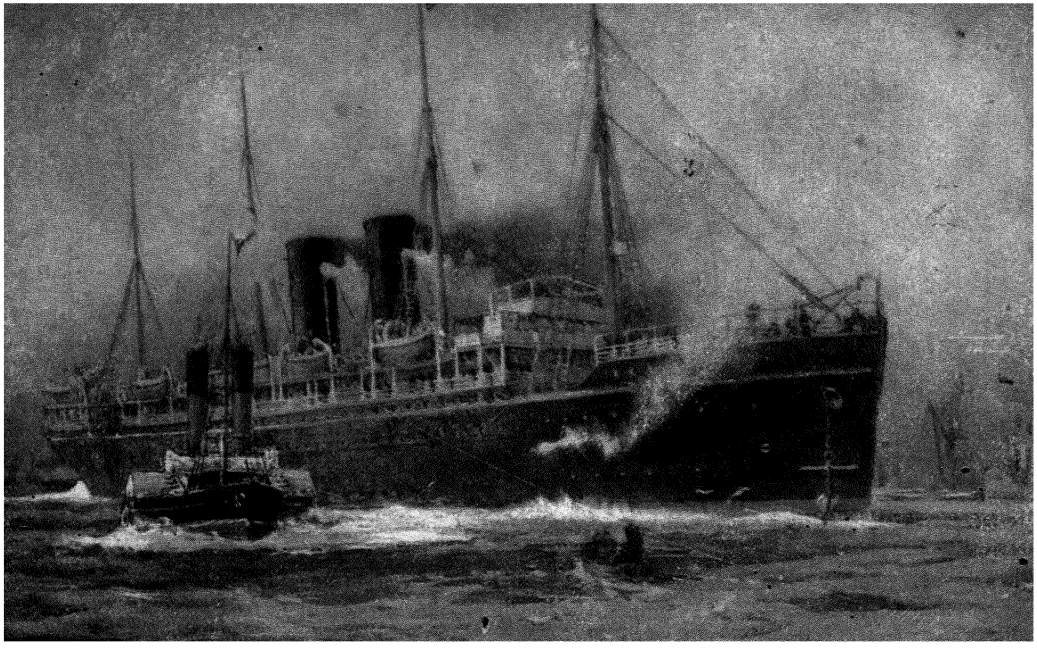


A FLOATING HOTEL. *See page 62.*

THE WORLD AND ITS PEOPLE

SEA AND LAND

THOMAS NELSON AND SONS
London, Edinburgh, Dublin, and New York

1911

CONTENTS.

SEA AND LAND.

1. OUR HOME.

1. Did you ever go to live in a new house? What a hurry you were in to see what it was like! You peeped into every room, and looked out of the windows to see the places near. You did all this because the new house was to be your *home*.

2. There is one home in which all of you have been living for a long time. When first you came to it, you were too young to run about and look at it. Now you do not care to do so, because it is not new to you.

3. We call this home the *Earth*, or the *World*. It is a very big place; no one has ever seen the whole of it. Many men have spent their lives in trying to see some new part of the world.

4. When you are a little older, you will like to read books about travels in the forests of the sunny South, or on the icy ocean of the North.

5. If you were to go to some far-off land, how strange things would look at first! The people, their clothes, and their houses, the animals and trees and flowers,—all would be strange and new to you.

6. Yet these things would all remind you of things in your own land. They would really be of the same kind as the common things at home.

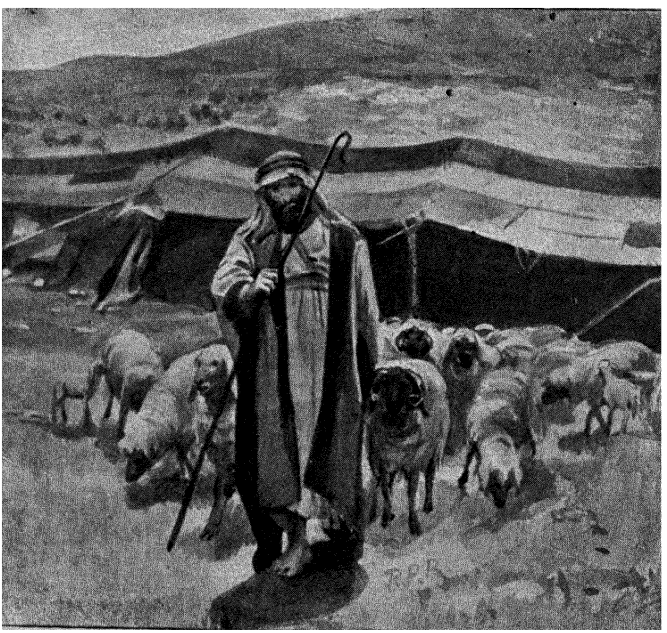
7. So the more you learn about the common things at home—the hills, the plains, and the streams; the people, the animals, and the plants—the better you will understand when you read of strange things in other lands.

8. You will never see *all* the world, but every time you open your eyes, you see *some* of it. And the part of the world which you see every day is quite as wonderful as any far-off country.

"On the icy ocean."

2. OUR HOUSES AND TOWNS.

1. The people who live on this great round earth of ours are not all alike.

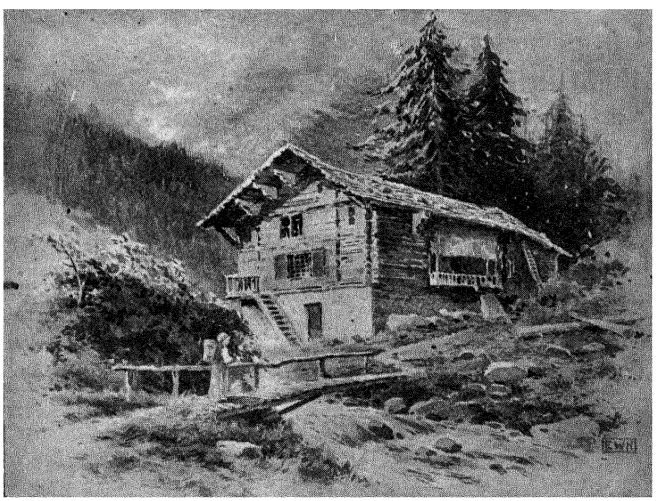


AN ARAB TENT.

Negroes are almost black in colour; some races of men are brown, and others are yellow. Those who live in this land are of a lighter colour, and are called white men.

2. The houses that people live in are also of many different kinds. Some savages live in caves instead of houses. People who move from place to place with their flocks live in tents.

3. In lands where there are forests,



A WOODEN HOUSE.

men build their houses of wood. Wooden houses were common in our own country, too, long ago, before our forests were cut down.

4. English houses are now built of brick or of stone. In hot countries,

bricks are often dried in the sun; but the bricks we use are dried or burned in a kiln, to make them hard.

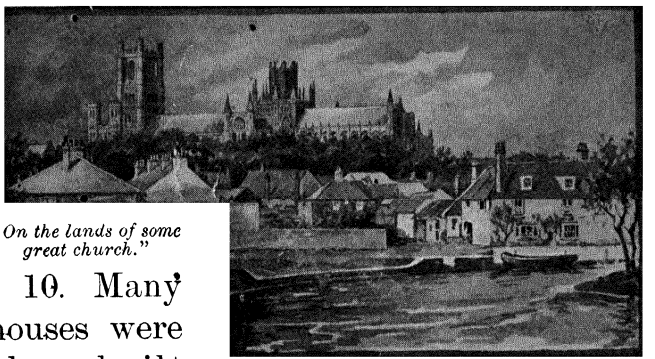
5. Stone houses are also common in our country. It takes a great deal of work to build a stone house, but it is very strong when built. Many of our stone castles and churches have stood for hundreds of years.

6. Some houses stand alone among the fields. Here the farmers live on their farms, so as to be near their daily work.

7. They must have churches, schools, and shops near at hand. So groups of houses or *villages* have been built here and there among the farms.

8. Many villages have grown so large that they are called *towns* and *cities.* There farmers sell their corn and cattle and wool, and buy things which they cannot get in villages.

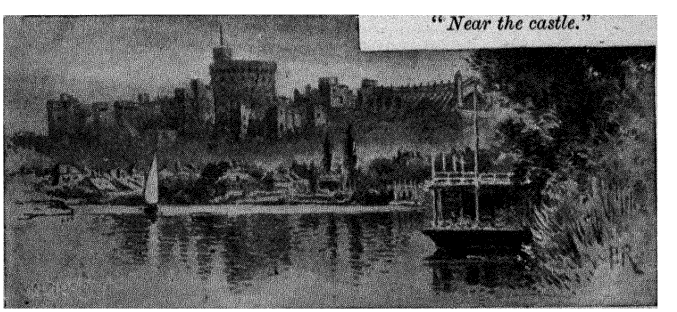
9. In the old fighting days, people often built their houses close together near the castle of a great noble, or on the lands of some great church, where they felt safe from all enemies.



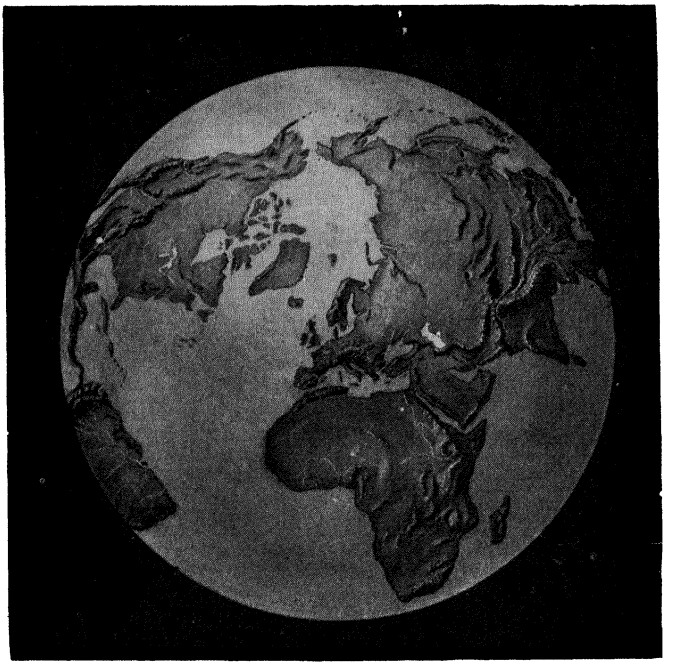
"*On the lands of some great church.*"

10. Many houses were also built near the coast, at places where ships could lie safely. It was the shipping on the Thames that made London the chief town in England.

11. Towns do not grow up by chance. There is always a reason why people live in one place rather than in another. You will learn some of these reasons as you read this book.



"*Near the castle.*"



"A great ball."

3. A GREAT BALL.

1. Most boys and girls know that the earth is round, like the moon. They have often been told so, but they have never seen for themselves that the earth is round. Whether they look at the land or at the sea, the earth always seems flat, except where there are hills.

2. Come with me to the sea-shore, and there you will see for yourselves that the earth is really round, and not flat.

3. Here we are at the seaside. We are standing on a high point of land, and looking at the sea far below, with boats and ships sailing on it.

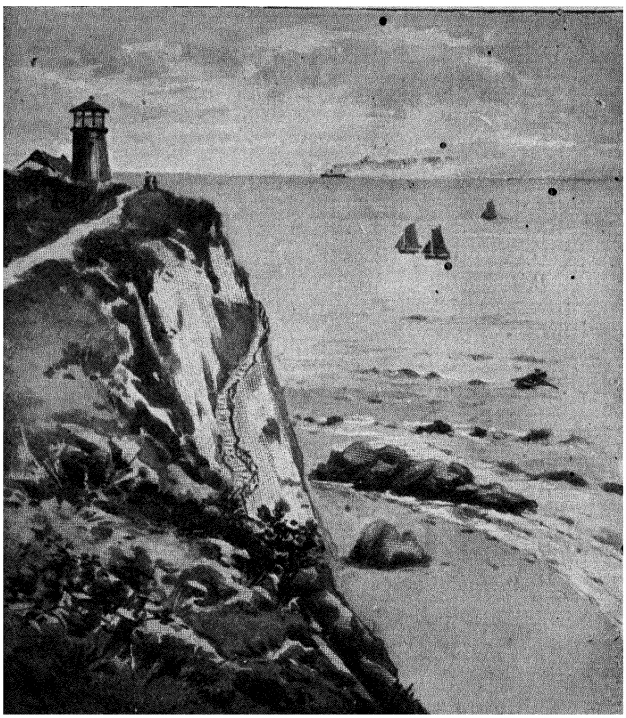
4. Far out from the land this sheet of blue water seems to stop, and the sky dips down beyond it, just as it dips down behind a hill. That place is called the *horizon.*

5. Now let us go down to the foot of the cliff. There we see less of the water than we did before. The steamer which we saw far away on the horizon is now out of sight.

6. The steamer has not gone away, and we could still see it from the top of the cliff. Why can we not see it from here?

7. If we had come down slowly, we should have found out the reason. We should have seen the sea rising up between us and the steamer, or, at least, it would have seemed to do so.

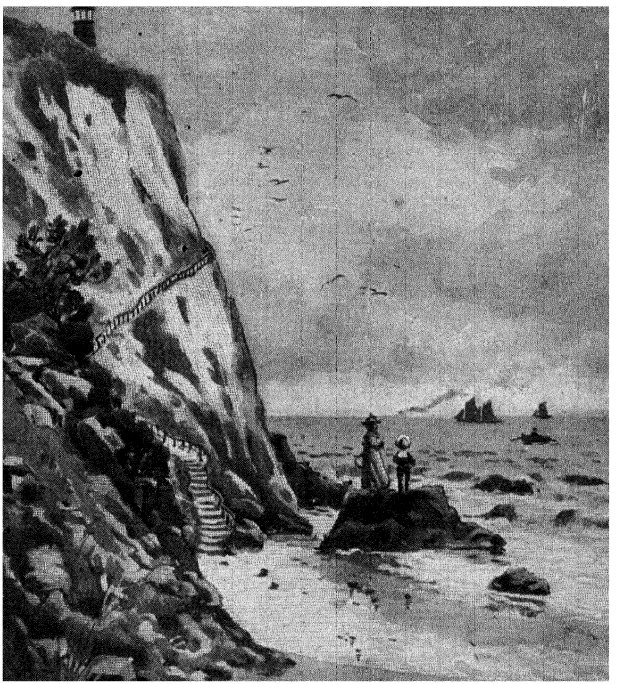
8. This tells us something about the



HORIZON AS SEEN FROM THE CLIFF.

shape of the sea, does it not? It shows that the sea is not flat, as it seems to be, but is rounded like a low hill. That is why we cannot see the water beyond the horizon.

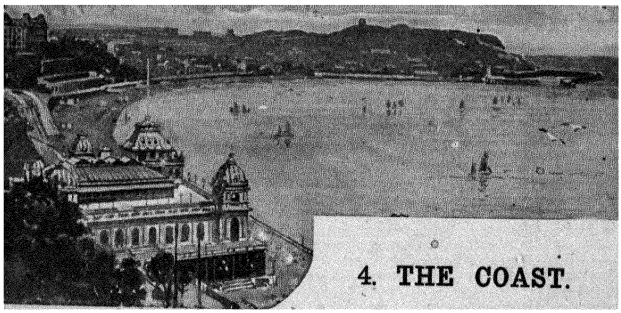
9. Thus we see for ourselves that the sea is not flat, but curved. On every



HORIZON AS SEEN FROM THE BEACH.

part of the sea this curve is found to be the same. This shows us that the earth must be a huge ball.

10. It looks flat to us, just as a big school globe would look flat to a tiny insect that could only see a very small bit of it at one time.



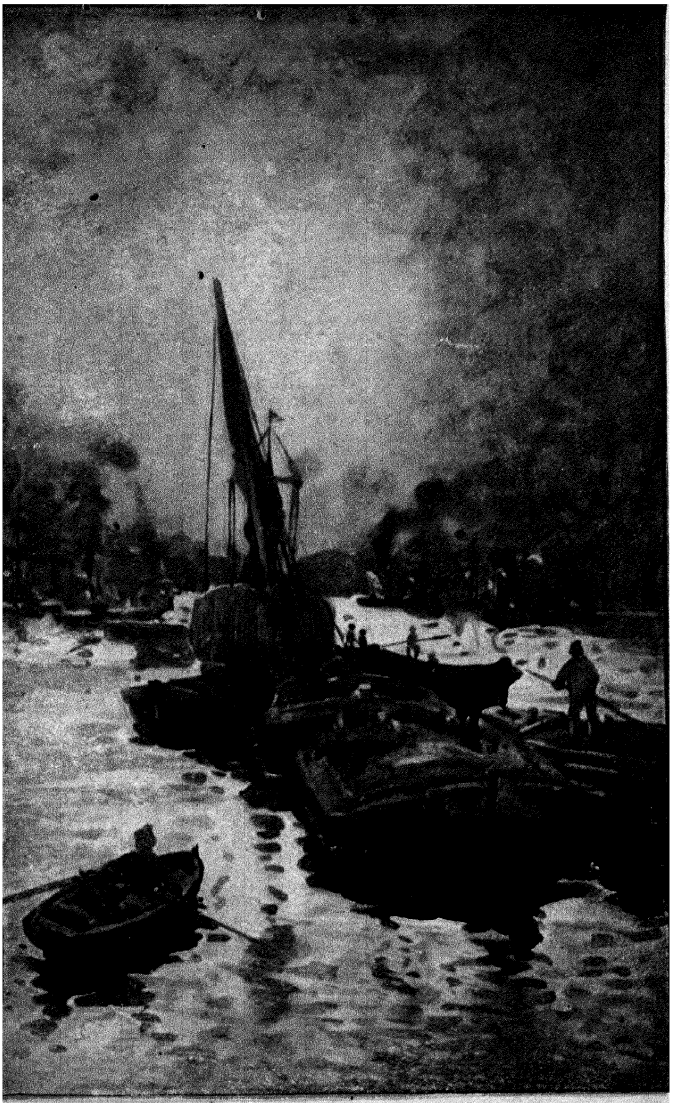
4. THE COAST.

1. Look now at that part of the sea which is just at our feet. In front of us, and far away on either side, we see the line where the water meets the land. We call this the *shore;* it is also called the *coast*, or *coast-line.*

2. The coast-line is not a straight line. We see points of land running out into the water, some of them low and flat, others bold and rocky.

3. These points are called *capes,* or *headlands.* They have other names, such as *head, point, bill,* and *ness* or *naze* (which means nose).

4. Between two capes, the sea runs up into the land in a curve. This is what we call a *bay.* A large bay with a narrow mouth is often called a *gulf.*



THE THAMES AT LONDON.

5. Some bays are very long and narrow, and run far up into the land. The beautiful *lochs* on the west coast of Scotland are really long, narrow bays. Bays of this kind on the coast of Norway are called *fiords.*

6. Many of our towns are built near bays where ships can find shelter behind some point of land. Those bays are called *harbours.*

7. The mouth of a river sometimes opens out into a bay. You can hardly tell where the river ends and the sea begins. This kind of bay is called the *mouth* or *estuary* of the river.

8. That is just the place where a town is sure to be built. Ships can bring goods there from other lands, and the river itself is a good road for carrying these goods across the country to other towns.

9. When you study the map of England, you will see that some of our largest towns are near the mouths of rivers. You already know some of them, such as London and Liverpool.

10. The best way to learn about the coast-line of England is to sail along the shore. Steamers are always passing to and fro between our coast towns, and some day you may have a sail in one of them.

11. The next best way is to study the map. On a map the sea is made of a different shade or colour from the land, and the coast is marked as a bold black line.

5. ON THE BEACH.

1. When we come quite near the sea, we find a sloping place where the land dips down under the water. This is called the *beach*. It is on the beach that you like best to play, and there are many things for you to learn about this playground.

2. A *sandy* beach is what young folks like best. See what a fine time the children in this picture are having! How busy they are, digging in the

yellow sand with their little wooden spades!

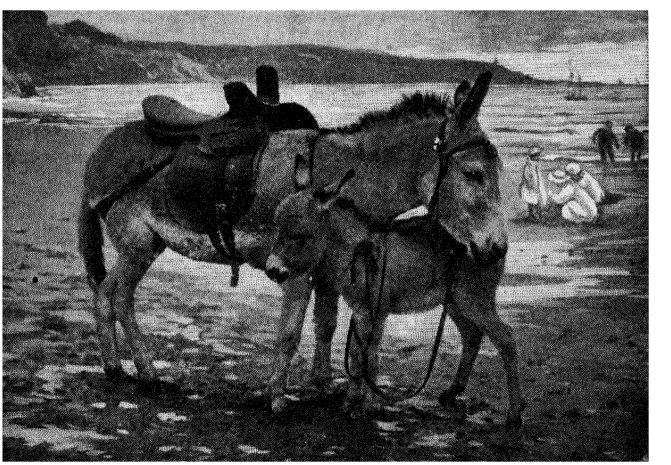
3. Some have little pails or buckets. These were once red or green, but now the paint is sadly rubbed off. The children fill their pails full of sand,

and then turn it out, as they have seen their mothers turn out a pudding from a basin.

4. Others are digging a big hole, and heaping up the sand round the edge. When the hole is big enough, they sit down in it; or they jump

into it, and scramble out again. Their clothes and their faces are as brown as the sand. They do not look very tidy, but they are having great fun.

5. The older boys and girls are digging in the sand too. They are making



a castle. They build towers and walls, and dig a ditch round them. They place a flag on the highest tower, and set toy soldiers on the walls to keep watch.

6. Then there are the donkeys. The donkey seems to belong to our sandy

beach, just as the camel belongs to the sandy deserts of other lands. Little folks would lose half the fun of a day at the seaside if they had not the donkeys to ride on.

7. When you go for a ride on a hot day, do not whip your donkey or make him run fast. You will enjoy your ride all the more if you know that your donkey is not being badly used.

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6. SAND AND PEBBLES.

1. When you fill your little pail with sand on the beach, there are thousands and thousands of tiny grains in it. Now, where does all this sand come from? It has been made by the sea itself. If you take a hammer and break down a piece of sandstone, you will soon make it into sand.

2. That is just what the sea does all through the winter. Big pieces of stone fall from the cliffs, and the waves dash them up and down the beach. As

they rub and knock against one another, they are ground down, little by little, into sand.

3. There is another kind of sand which is called *shell sand.* This is made of the shells of small sea animals, broken into very small pieces by the waves.

4. Sand is often found in bays. It is made on the wild, rocky parts of the shore, and is swept by the waves and currents of the sea into those quiet nooks and left there.

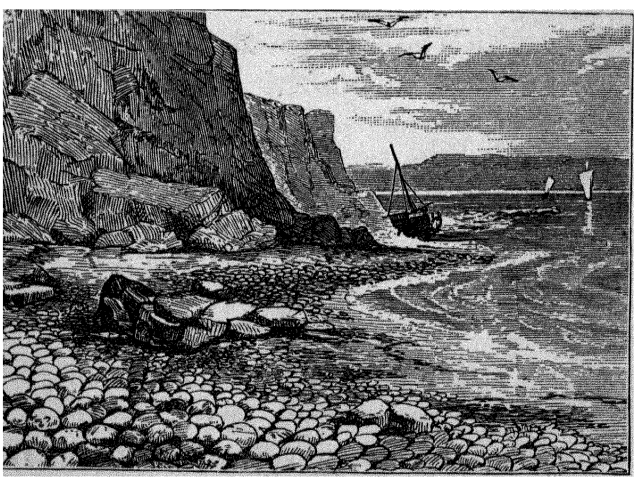
5. Some rocks are so hard that the waves do not break them down into sand, but only into little pieces like peas or beans. These little stones are called *gravel.* The waves roll them about till all their sharp corners are worn away.

6. The larger stones we find on the beach are called *pebbles.* These pebbles, too, have been rolled about till they are smooth and rounded.

7. On some wild parts of the coast the beach is covered with stones too large to be called pebbles. When the huge waves from the ocean come dashing

in, they toss those great stones about and rub them together till they too are as smooth as pebbles.

8. In some places there is no sand, or gravel, or loose stones on the shore. The beach is made of solid rock, covered with seaweed. When the tide is

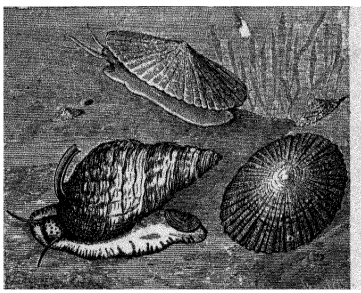


PEBBLY BEACH.

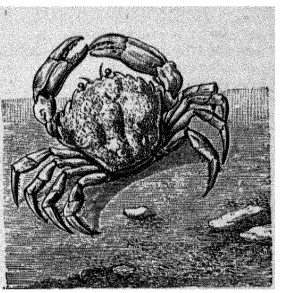
low, we find pools of sea water among these rocks, with beautiful seaweeds growing in them.

9. Shell-fish, as we call them, are there in plenty—whelks, with horns like those of a snail; and limpets, that stick fast

to the rocks. Small fishes sometimes swim in the deeper pools.

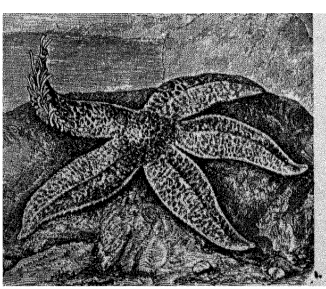


WHELK AND LIMPETS.

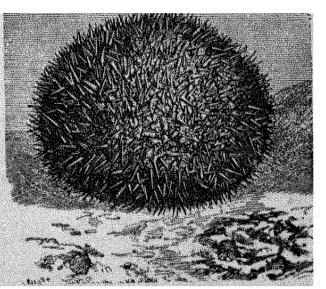


CRAB.

10. The crab is there, ready to give us a sly pinch. On the sandy floor of a pool we may see a star-fish; and on a broad, brown seaweed we may chance to spy a curious prickly ball, which we



STAR-FISH.



SEA-URCHIN.

know to be the sea-urchin. The rocky beach is full of life and of beauty.

7. CLIFFS AND CRAGS.

1. Here is a picture of a place where there is no beach. The land ends in a high wall of rock, which looks as if it had been built there to keep back the sea. This is called a *cliff* or a *crag*.

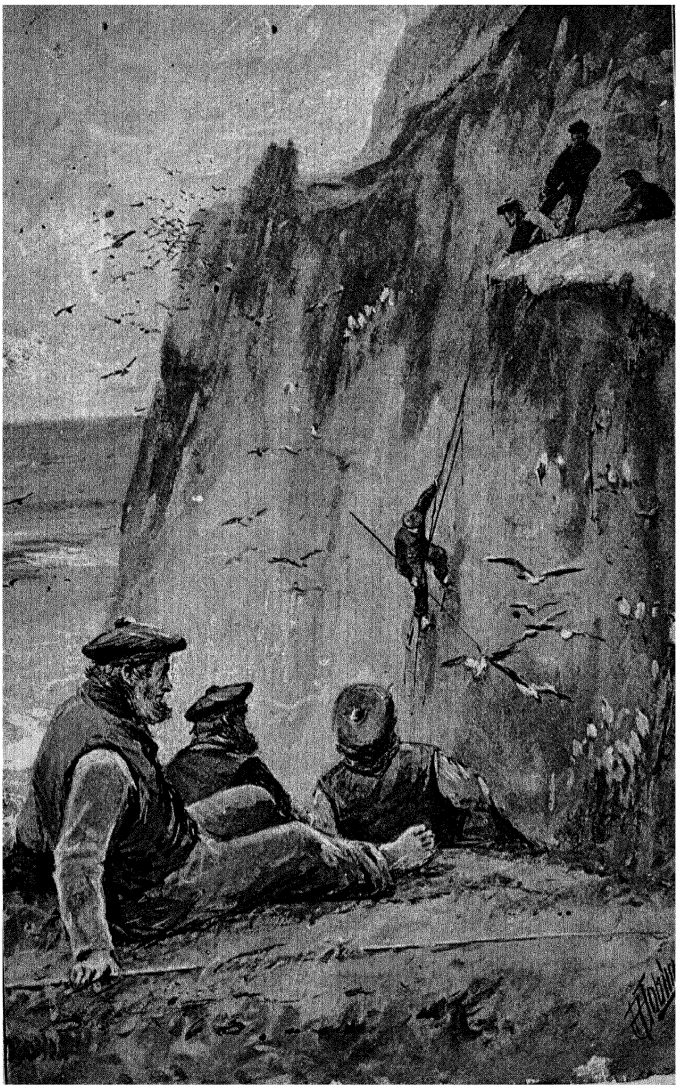
2. Some cliffs are very high—three hundred, five hundred, a thousand feet, and even more; and the water at the foot is often very deep.

3. In the face of those cliffs, flocks of sea-birds make their nests. Very rough nests they are, too—mere hollows on a ledge of the rock.

4. Some of these birds have small wings, and cannot fly well; so they make their nests on the lower ledges, near the water.

5. The sea-gulls, and other birds of stronger wing, choose the higher places. They all find plenty of food in the water below—just at the front door of their house, as we might say.

6. Even in their rock castles they are not safe. On many a lonely island the



BIRD-HUNTERS.

people make use of the eggs, the flesh, and the feathers of those sea-birds.

7. There is more danger in taking the eggs of sea-birds than in hunting the lion or the tiger, and men often lose their lives in the work.

8. The bird-hunter climbs down the cliff by the help of a rope, which is held by his friends, or is tied to a stake in the ground above.

9. If the rope slips, or if it is cut by a sharp rock, nothing can save the hunter from a fearful death in the water or on the rocks below.

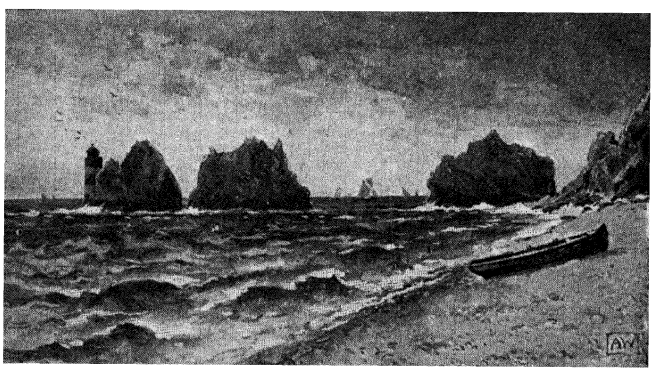
10. A man was once looking for eggs in the face of a cliff, and he came to one ledge where he found a great many. In his hurry to gather them up, he forgot to keep hold of the rope.

11. When at last he was ready to climb up again, he saw the rope swinging in front of him, but a wide ledge of rock above him kept it out of his reach.

12. He saw only one way of getting hold of the rope again, and he ran a

terrible risk in trying it. What do you think this way was?

13. He sprang off the ledge out into the air, and caught at the rope with both hands. Happily he was able to keep his hold, and so he reached the top of the cliff in safety.



THE NEEDLES.

14. Where there are soft parts in a cliff, the waves wear these away and dig out *caves* of strange and beautiful shapes.

15. Sometimes a cliff is all worn away except the hard parts, which are then left standing out in the sea. In this way curious pillars of rock are formed, such as the Needles in the Isle of Wight.

8. RALPH THE ROVER.

1. A voyage in a big ocean steamship is not only pleasant, but safe as well. Out on the open sea there is very little danger. When the ship is near land, there is sometimes danger from rocks and sand-banks.

2. We have many ways of warning sailors when their ships are near the shore, and of saving the lives of those who may be wrecked. This was not the case in olden times.

3. Have you ever heard the story of Ralph the Rover? Off the east coast of Scotland there is a rock which was once called the Inchcape Rock. Many ships were wrecked on it. At last a good abbot who lived near thought of a plan for warning ships off this rock.

4. He tied to the rock a wooden float, with a large bell hanging above it. As the float danced on the waves, the bell went *ding-dong, ding-dong,* day and night; and when the sailors heard it, they knew where the rock was.

5. One fine day Sir Ralph the Rover was sailing near this rock. Sir Ralph was a pirate, and used to rob every trading ship he could catch. He did not like this bell, for it was a friend to the sailors whom he tried to rob and murder.

6. Sir Ralph made his men row him to the rock. Then he cut away the bell from the float, and let it sink to the bottom of the sea. Never again would it ring out its friendly warning to the passing sailor.

7. The pirate sailed away, and thought no more about his cruel and stupid deed. He lived as a pirate for many years, until he had grown very rich with the spoils he had taken.

8. Then he sailed back again towards Scotland. Perhaps he meant to settle down where no one knew how he had made his money.

9. When he was near Scotland, a heavy storm came on; then the wind died away, and a thick fog hung over the sea. The waves were still high.

As the men listened, one of them thought he heard the sound of waves breaking on the shore.

10. "I wish I could hear the Inchcape bell," said another sailor; but there was no bell now for him to hear. At last the pirate ship struck on the very rock from which Sir Ralph had cut the warning bell.

11. So the ship went to pieces on the Inchcape Rock, and Sir Ralph and all his pirate crew were drowned, as they deserved to be.

12. That rock is not now called the Inchcape Rock; it has long been known as the Bell Rock. It still lies in the way of ships, but it is no longer a danger to them; it has now a much better mark than that of the abbot—a tall stone tower, which we call a light-house, has been built on it.

13. At the top of this tower is a little Crystal Palace—a room with walls of thick, clear glass set in strong metal frames. A strong light is kept burning every night in this big lantern.

9. LIGHTHOUSES.

1. Every one has heard of the Eddystone lighthouse, off the south coast of England. Two hundred years ago a wooden tower was built there, but it was blown down in a storm, and its builder was killed.

2. Another wooden tower was put up in its place. It stood for many years, but at last it was burned down. A great stone tower was then built, which stood the gales of more than a century.

3. The sea, however, began to wear away the rock on which this tower stood, so a new lighthouse has now been built on another rock near it.

4. On many a rocky point along our shores, tall lighthouses now stand like sentries on watch. If you are sailing near the coast at night, you will always have one or more of them in sight, guiding you to your harbour, or warning you off some rock.

5. But how can you tell one light-

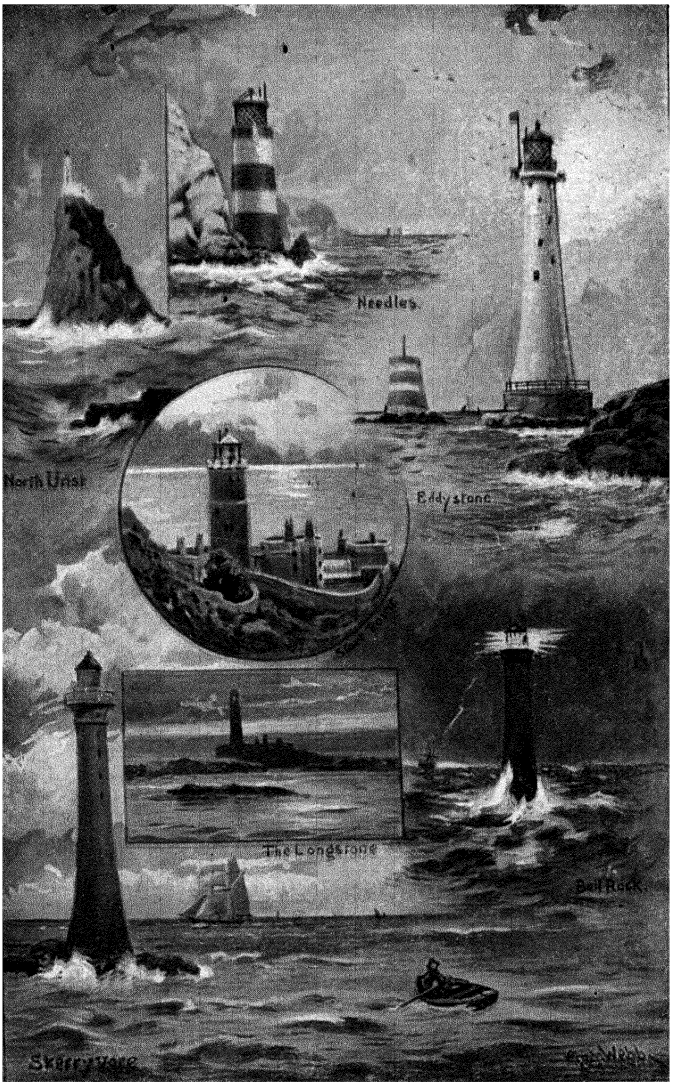
house from another, when you see nothing but the light itself? The captain of a ship finds this quite easy. If two lighthouses are near each other, they never show quite the same kind of light.

6. One lighthouse may show a steady white light. The next may have a revolving light, as it is called—that is, a light that is hid for a few seconds in every minute by a dark screen which moves round the lamp.

7. Coloured lights are also used, but they are not so bright as white ones. Red and green lights often show the way into a harbour.

8. The captain has a book or a map which tells him what kind of light is shown by each lighthouse, and thus he knows, by looking at the light, what part of the coast he is near.

9. The keepers of a lighthouse live a lonely life. There are at least two men for each lighthouse, and they take turns at watching the lamps during the long winter nights. One man must


Needles
North Unst
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The Longstone
Bell Rock
Skerryvore

be up in the lantern all the time the light is burning.

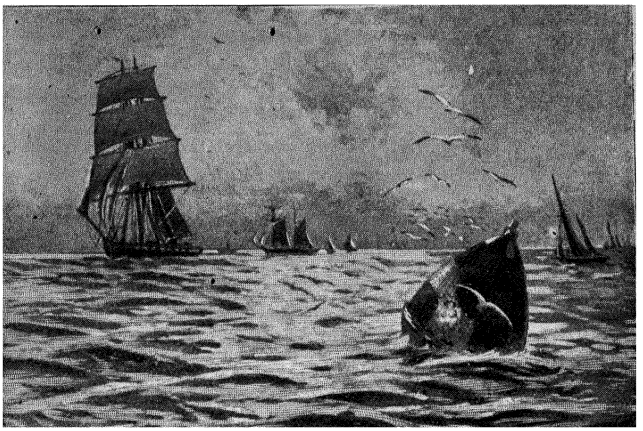
10. During the day they have a great deal of cleaning to do. The glass walls of the lantern, the glass and metal work of the lamp, and everything about the place must be kept bright and clean.

11. Sometimes the men live with their families in houses near the tower. If the lighthouse is on a rock far from land, the keepers must live in the tower itself.

12. In such lonely places there are always three men to do the work. Once a fortnight, perhaps, a steamer calls with food and other things for the keepers.

13. A fourth man goes out in the steamer, and one of the three men comes back in her to stay on shore for two weeks.

14. This man goes out again on the next trip, and another man comes ashore. Thus each man is six weeks in the lighthouse, and then two weeks at home.



BUOY MARKING A SHOAL.

10. LIGHTSHIPS AND BUOYS.

1. Many a good ship has been wrecked on the Goodwin Sands, off the coast of Kent. It is said that those sand-banks were at one time dry land; but they are now covered by the sea, except at low tide.

2. How can we mark such a place for our sailors? We cannot build a light-house on the sand, for the waves would soon wash it away, and the tower would fall.

3. Instead of lighthouses, we use *light-ships* to mark shoals and sand-banks.

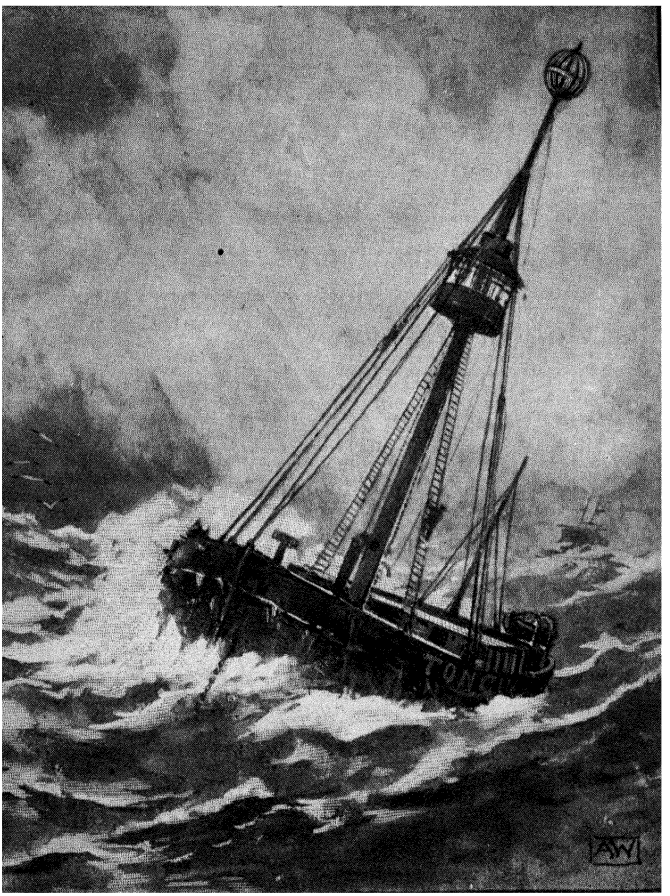
A lightship is a small ship, but a very strong one. On its mast is a big lantern, in which a bright light burns at night. The ship is anchored in the shallow water, and it thus acts as a floating lighthouse.

4. The keeper of a lighthouse has a lonely life, as you have been told, when he is shut up in his tower on some bare rock in the ocean. The keeper of a lightship has a still harder life.

5. Day and night his floating home is never still. At meal-times the dishes must be fixed to the table, or the rolling of the ship would soon send them crashing to the floor.

6. However cold or stormy the night, the keeper must be on watch to see that the light is burning brightly. Sometimes in a storm the lightship drags its anchor, and is driven ashore.

7. Shallow places are also marked by *beacons* or *buoys*. A beacon is a small iron tower or pillar built upon the shoal, and so high that the top is always above water.



LIGHTSHIP.

8. A buoy is a hollow ball or barrel which floats on the water. Some buoys are now filled with gas, and have a

light always burning, which can be seen from passing ships at night.

9. How do sailors find their way in a fog, when no lighthouse can be seen? The lighthouse keeper must then ring a large bell, or blow a fog-horn, as a warning. Some buoys, too, have a bell or a whistle, which is sounded by the heaving of the waves.

10. Ships go "dead slow" in a fog, and sound their fog-horn every minute. This helps them to keep out of one another's way. Yet with all this care, a fog is the worst kind of weather at sea, and is much more to be feared than a storm.

11. Sailors can tell when they are near the shore by *sounding* or measuring the depth of the water. They let down into the sea a rope with a weight at the end. This is also called *heaving the lead*, from the heavy lead weight at the end of the sounding-line.

12. The depth of the sea near the coast is marked on their maps or charts; so when they take soundings and then

look at the depth of water marked on the chart, they can tell how near they are to the land.

13. The captain of a big steam-ship has much need of skill and care. He has hundreds of lives in his charge. When the voyage is safely ended, and the harbour is in sight, he must feel very glad that his work is over for a time, and that he is free to enjoy the rest which he has earned so well.

11. THE LIFEBOAT.

1. Every one knows what a lifeboat is. It is a large, strong boat, which is used in a storm to save the crew of any ship that may be wrecked.

2. Some day you may see a lifeboat put out to sea, when the crew go out for practice in working their boat. It is a fine sight.

3. The boat must be large enough to hold a good many people besides the boatmen themselves. It must be

strong, too, for it has to stand the shock of great waves that would wreck many a big ship.

4. The lifeboat is very light for its size, and if it is upset by the waves, it turns "right-side-up" again at once. If it is filled by a big wave, it does not sink, as other boats would do.

5. All round the sides there are loops of rope. If a man falls out of the boat, he can hold on by the rope till his mates pull him back again.

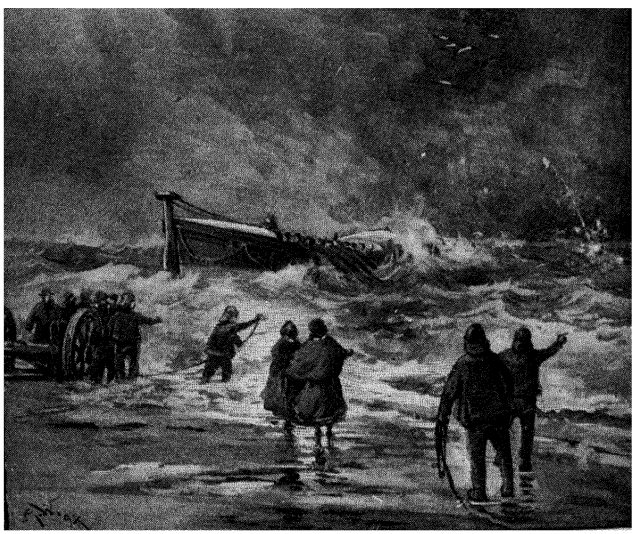
6. The oars are large and strong, and they are fastened to the boat by ropes, so that if one falls overboard it will not be lost. The sails are small, but they are very strong.

7. The lifeboat men wear broad belts or jackets, which are covered with pieces of cork. If a man falls into the water, the cork keeps him from sinking.

8. Sometimes the crew upset their boat in the harbour, to show how quickly it rights itself again. Then you see the men come up dripping, but still clinging to their seats. This is great

fun for the boys and girls who are looking on.

9. Do you ever think of the lifeboat and its gallant crew in the dark, stormy nights of winter? That is the time when they have real work to do.



LAUNCHING THE LIFEBOAT.

10. On some wild night, perhaps, the lights of a ship in distress are seen near the shore. At once these brave fellows run to the house where the lifeboat is kept.

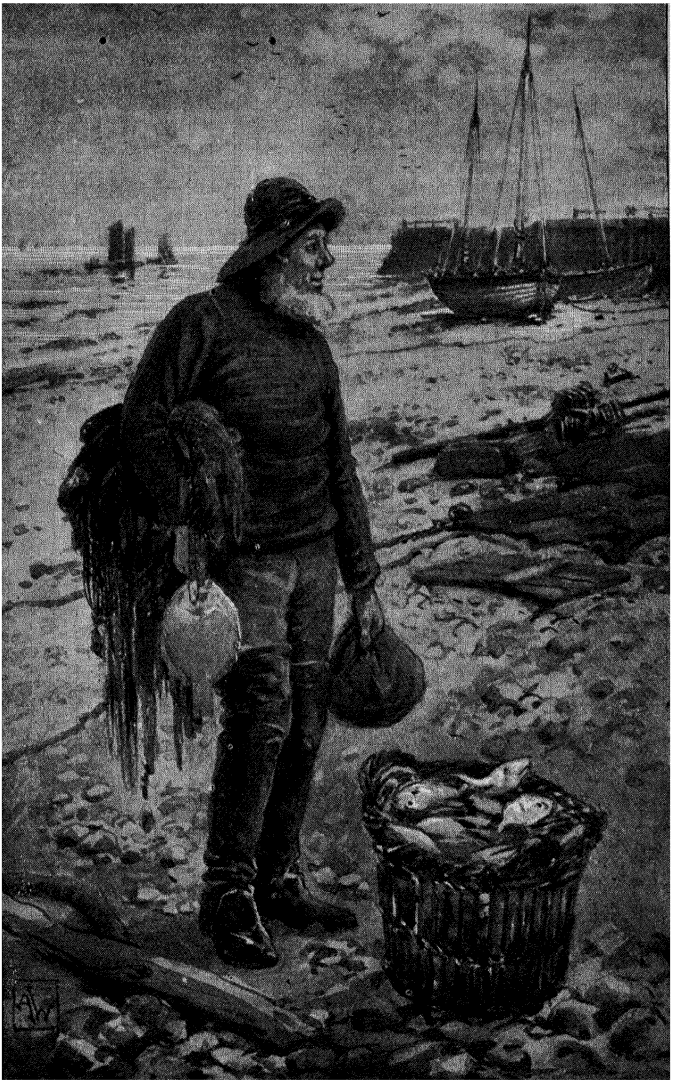
11. They put on their cork jackets, launch the boat, and fight their way through the storm, by rowing or by sailing, till they reach the ship.

12. Then they help on board their good boat those poor sailors whose ship is going to pieces, and this is no easy task in a storm. After all this, they have to fight their way back to harbour again with those whose lives they have saved.

13. Think how brave these men are, who risk their own lives for the sake of those whom they have never even seen! Should we not admire and respect them?

14. Some day you will read stories of the noble deeds done by the men of our lifeboats. You will then see that they are as true heroes as those who win fame on the field of battle.

15. A fisherman in his rough dress and heavy boots may not look to us like a hero. We do not always know a hero when we see him. It is not well to judge merely by what we see.



FISHERMAN AND LIFEBOATMAN.

12. USEFUL FIREWORKS.

1. We all like to see fireworks. We like to watch a rocket sailing away up into the sky, and bursting into a shower of stars.

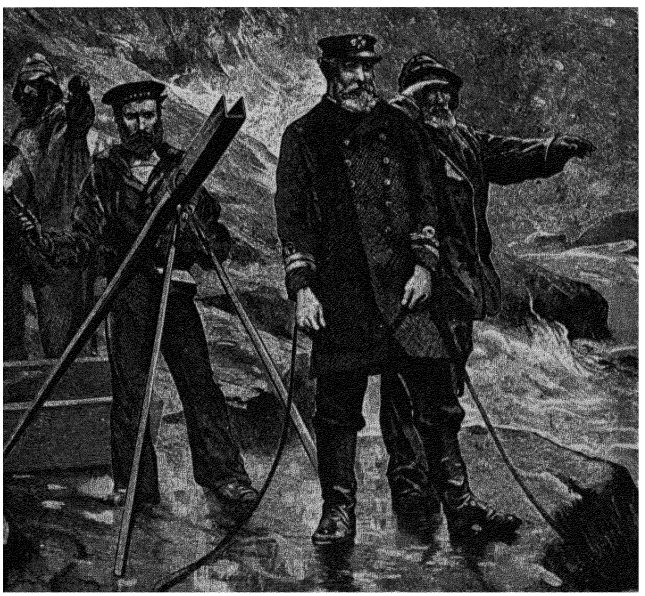
2. Some rockets are very useful. If a ship is in danger in the night time, the sailors send up rockets as a call for help, or to show the men of the lifeboat where they are needed.

3. Rockets are also used to help sailors in another way. Let us suppose that a ship is driven ashore on some rocks quite near the land.

4. The men are not able to swim to the shore. The big waves would drown a man before he could swim a dozen yards.

5. The lifeboat cannot help. The ship is lying among the rocks, and no lifeboat could get near her. The only way to save the crew is to stretch a strong rope from the land to the ship, and draw the men along that rope to the shore.

6. Watch how the rope is carried to the poor sailors. A number of men have gathered on the shore. They make a stand with three sticks, and on the



MAKING READY.

top of this, pointing towards the ship, they place a big rocket.

7. To this is fastened the end of a long, thin rope, which lies nicely coiled on the beach. Now they fire the rocket. Away it flies with a loud scream, the

rope uncoiling itself as the rocket speeds on its way.

8. The rocket was well aimed, and it passes right over the ship. As it drops into the sea beyond, the line which it carries falls into the hands of the waiting sailors.

9. They lay hold of this line, and the men on shore now tie to it a strong cable, which the sailors haul out to the ship.

10. They fasten the cable to the mast of their ship; the men on shore then haul it tight, and fix the other end to the rocks.

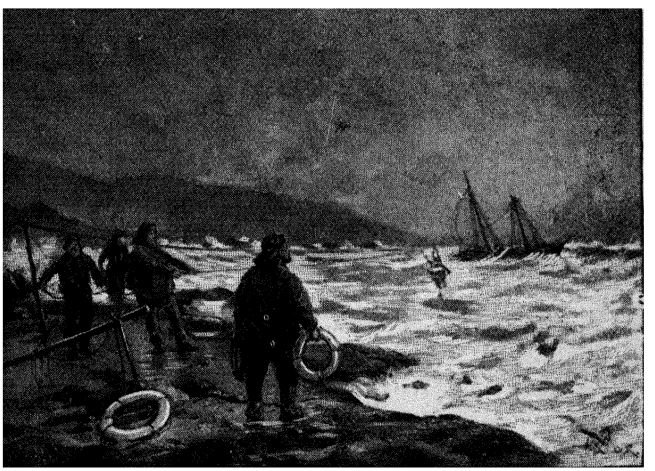
11. A lighter rope has been drawn out to the ship along with the cable. By means of this the sailors pull out a kind of basket or lifebuoy, which runs along the cable. Now you see how they are to get ashore.

12. One of the sailors steps into this basket. The men on shore pull it towards them as fast as they can, and soon the first man reaches the land.

13. He may be dragged through the

water part of the way; but the buoy keeps him up, and there is no danger of his sinking.

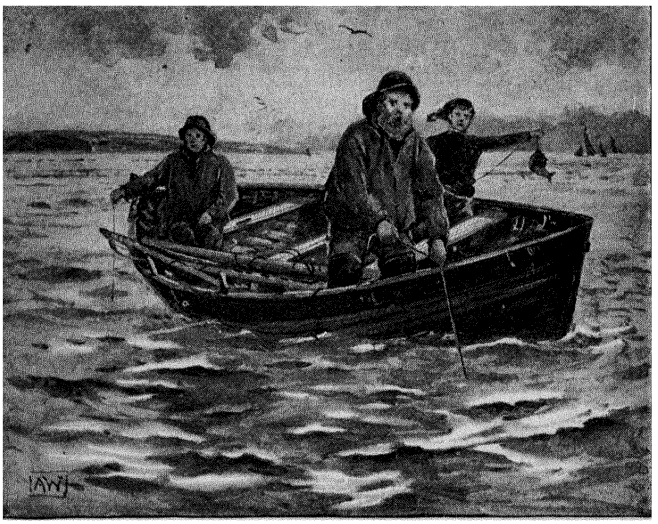
14. Backwards and forwards goes the buoy, and one by one all the men are brought safely to land. They are very



"The men on shore pull it towards them."

cold and wet, but they are now cared for by friendly hands, and soon they will be all right.

15. Their ship has by this time gone to pieces on the rocks; the rocket-men with their useful fireworks have saved many lives to-night.



13. A DAY'S FISHING.

1. All boys who have lived at the seaside are fond of going out fishing. For real sea-fishing you must go out in a real fishing-boat with real fishermen, and it may be some hours before you come back again.

2. You put on old clothes, and plenty of them, too; for it is cold out on the sea, even when it is warm on shore. As soon as you go aboard, the men set their sail.

3. The boat glides along for half an hour or so, and the village which you have left seems to sink down into the water. You know how this happens, for you have been told about the horizon and the shape of the sea.

4. Perhaps you ask the men why they do not begin fishing at once. Then you learn that fish can be caught only at certain places. These are the places where the fish find plenty of small sea-animals to eat.

5. The fishermen at last take down the sail, and either anchor the boat or let her drift, while they make ready their lines.

6. How do they know that they are in a good place? The sea seems all alike, and you would never be able to find the same place twice.

7. It is very simple when you know how it is done. Do you see that buoy which you passed as you left the harbour? Well, it is now exactly in line with the flagstaff on the shore. That is one mark.

8. Look now to your right. A church near the shore has just come in sight round that rocky point. That is the other mark. By these two marks the men know that they are at a good place for fishing, for they have often been here before.

9. Now get out a line with a strong hook at the end, and do exactly as you see the men do. Put a limpet or a mussel on the hook, and let it down into the water till the hook is just above the bottom. Then hold the line still, and wait.

10. Ah, that was a strong tug! Haul in your line as fast as you can. Steady now! Let one of the men take your line and show you how to lift the fish on board. It is a fine haddock, and you are quite proud of catching your first big fish.

11. You bait your hook again, and go on fishing. Time passes, and there are a few dozen fish in the boat. When at last you set sail for home, you are so hungry that you could eat all the

fish you have caught, if only they were cooked.

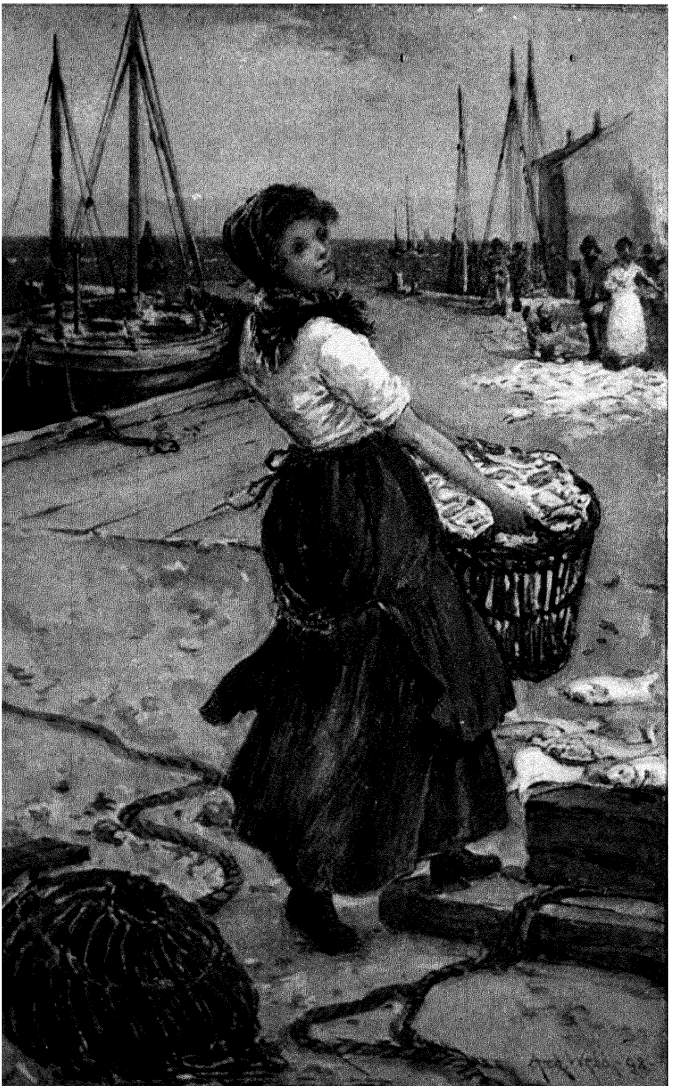
12. Fishing is not always so easy or so pleasant as this. Hundreds of men and boys are busy all the year round catching fish in one way or another, and their work is often hard and full of danger.

14. THE HARVEST OF THE SEA.

1. We are on board one of the swift steamers that ply along our shores. The sea is smooth, and we see the hazy blue line of the coast under the warm afternoon sun.

2. As we look ahead, we see on the horizon something like a row of small hairs or bristles rising out of the sea. What can it be?

3. As we draw nearer, the secret comes out. These bristles are the tall, brown sails of hundreds of fishing-boats. Soon we can see the boats; now we are passing through the midst of them.



A FISHER GIRL

4. It is the time of the herring fishing on this part of the coast. Every day four or five hundred boats leave the town which we are passing, and return next morning with their catch.

5. Herrings swim in great shoals not far from the top of the water. They pass along our shores every year at a certain time, and our fishermen catch millions of them in large nets.

6. These nets are made to hang upright in the water like huge curtains. Each boat carries a large number of nets, and when these are tied end to end, they make a long fence of net under the water.

7. In the evening, when the men have reached a place where they expect to find herrings, they pay out their nets in a long line. Then they eat their supper, and go to sleep in their little cabin.

8. The herrings run against the nets in the dark, and their heads are caught in the holes. These holes are too small to let their bodies pass through. They

cannot go backwards, and the more they struggle the more firmly are they held

9. Very early in the morning the men begin to haul in their nets. If they have chanced on a good place, thousands of fish will be found sticking in them.

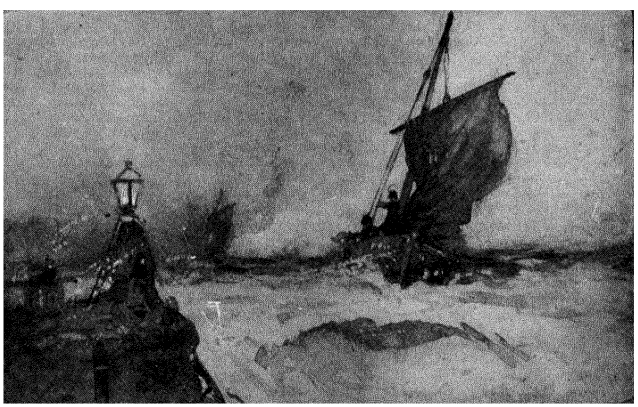
FISHING BOATS.

10. Now the nets are all in, the sails are set, and as the boats speed back to the harbour, breakfast is made ready—homely fare, but plenty of it.

11. As soon as the herrings are landed, crowds of women and girls clean

them and pack them in barrels with salt. Some are split, and smoked over a wood fire; others are made into "red herrings."

12. There are many other ways of fishing. Larger vessels, many of them steamers, catch fish with a trawl net—



RUNNING FOR HOME.

a large net bag which is drawn along the bottom of the sea.

13. Far out at sea, cod and other big fish are caught with hooks and lines. All along our coast men are busy, in one way or another, reaping the great harvest of the sea.

15. THE SHIP AND ITS STORY.

1. Who was the first sailor? Perhaps it was some man who fell into a river, and climbed up on a passing log, and so drifted down stream till he came to a shallow place.

2. Perhaps it was some idle boy who paddled across a pool on a floating log. The first boat was no doubt a big log or the trunk of a tree.

3. By-and-by men learned to shape a log into a boat. They had no steel axes or saws. They hollowed out the log by making a fire on it and then chopping out the black charred wood with their stone axes.

4. Canoes made in this way were used in our own land long ago. Some of them have been dug out of the mud of our rivers, where they had been lying for hundreds of years.

5. The people of our country also learned to *build* light boats. They made a frame of willow twigs like a big basket, and covered it with skin.

Small boats of this kind may still be seen in Ireland.

6. When men found out how to make tools of iron, they were able to cut up trees into boards and planks, and to build larger boats and ships.

7. At first oars or paddles were always used; but by-and-by sails and masts saved the trouble of rowing when the wind was fair.

8. As men learned to build larger ships, they were able to make longer voyages. Then as the sailors grew more skilful, they built still larger ships.

9. About a hundred years ago a new plan was tried. Steam-engines were made to turn paddle-wheels at the side of the ship, or a screw at its stern.

10. Those steamships, as they were called, could move through the water without the help of the wind. They crossed the ocean much faster than sailing ships could do.

11. Then came another great change

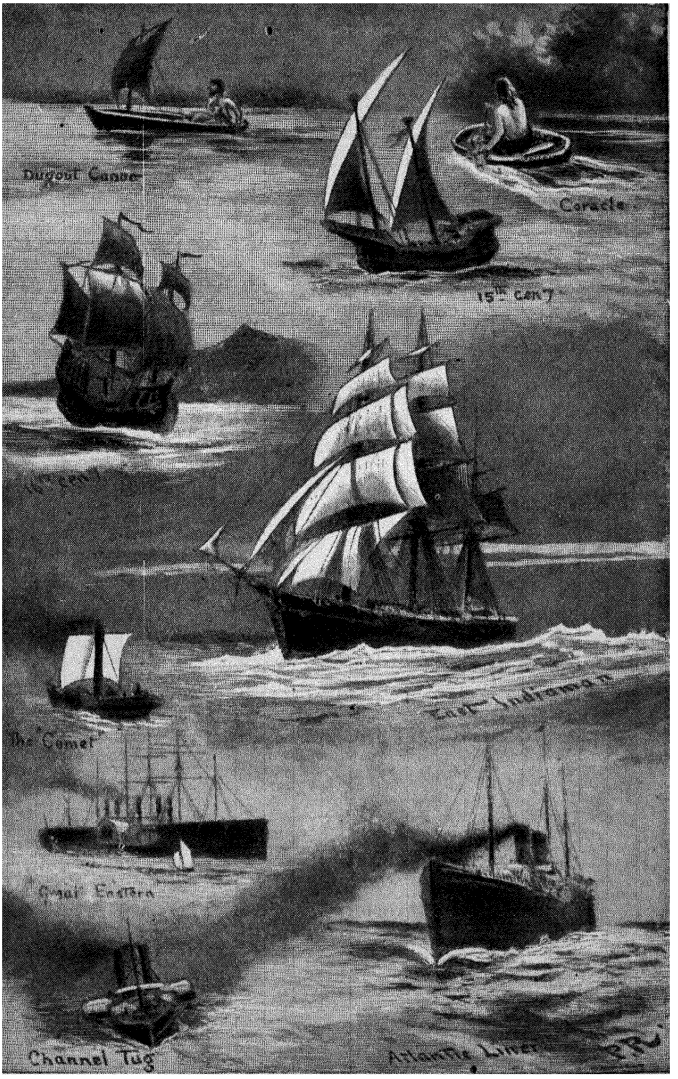
in building ships. Men began to make them of iron and steel instead of wood.

12. Perhaps you think an iron ship would not float so well as a wooden one. You can easily find out for yourself whether or not iron will float.

13. Take a tin jug or cup, which is really made of thin iron coated with tin. Put a little sand or water into the cup to steady it, and place it in a basin of water. You will find that it floats quite well, if you do not upset it or fill it with water.

14. Such is the story of how the ship has grown up. From the log canoe and the wicker boat it is a long way to the huge steel steamships which now cross the ocean.

15. The sailors of long ago could not have dreamed of the size or the speed of those splendid ships. Travel by sea in the olden days was full of hardships; now we may sail round the world in a floating hotel or a floating palace.



GROWTH OF THE SHIP.

16. SEAS AND OCEANS.

1. In the lessons you have been reading, the words *ocean* and *sea* are both used. We sometimes use the word *sea* to mean all the water on the surface of the earth, as when we speak of "sea and land."

2. The word *sea* is also used to mean

a large sheet of water shut in by parts of the land. The North Sea and the Irish Sea, near our own country, are seas of this kind.

3. These two seas are parts of a much larger stretch of water, which we call the Atlantic *Ocean.* This ocean lies between us and America.

4. There are other great stretches of water which are also called oceans. The largest of all is the Pacific Ocean, which covers one-third of the whole world.

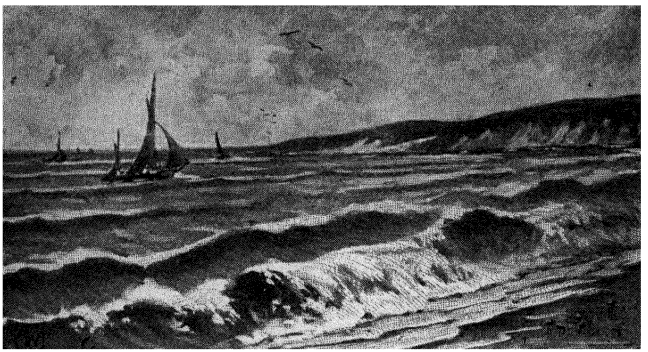
5. All the oceans and their seas are joined together, and ships can pass from one sea into another, and thus sail all round the world.

6. All the land of the world is really made up of islands—a few very large ones, and a great number of smaller ones. It is only the smaller pieces of land, however, that we call *islands;* we call the great masses *continents.*

7. The oceans are much larger than the continents of the world. Only about one-fourth of the earth's surface is dry

THE BRITISH ISLES AND THE NORTH SEA.

12. Some parts of the ocean are very deep. In several places the depth of the water has been found to be four or five miles. When you see on a map figures to show the depth of the sea, these figures usually give the number of *fathoms*. A fathom is six feet.



17. WAVES.

1. Every boy and girl has seen waves — big waves or little ones — rolling in on the sand, or splashing over the rocks. You like to take off your shoes and stockings, and run up and down the beach as the waves come rolling in, do you not?

2. How the waves hurry along, just as if they were chasing one another to the shore! As each wave touches the land, it curls over in foam and spreads itself out on the beach.

3. Then the water runs back, as if to trip up the next wave, and make it roll over and over in the same way.

The waves seem bright and merry, like a troop of children at play.

4. When you look at the waves, you might think that all the water of the sea is rushing towards the shore. But if you watch something floating on the water—a piece of wood or of cork—you will see that it does not come nearer; it only bobs up and down as the waves pass it.

5. Drop a stone into a smooth pool, and you will see first one wave, and then another and another, going out in rings from the place where the stone fell. The water of the pool does not move outwards with them; it only moves up and down.

6. Have you ever watched a field of long grass or corn on a windy day? The waves chase one another across the field as the tops of the grass move up and down. You can send waves along a rope or a table-cloth by shaking one end of it up and down.

7. When big waves break in foam on the shore, they are called *breakers*. In

a storm, the crests of the waves out at sea also break in foam or spray.

8. These breaking waves are very dangerous. Small boats would soon be filled and sunk by them. Sometimes even large ships are wrecked or injured by them.

9. We often see waves and breakers on the beach when there is no wind. They roll in from some place far out at sea where a strong wind is blowing, just as the ripples spread out from the stone which you throw into a pool.

10. This kind of wave is called a *swell* or a *ground-swell.* Such waves travel very fast, and when a storm is coming on, the swell sometimes warns us before the storm reaches the shore.

11. You have read how the waves grind down rocks into sand and pebbles, and cut out caves in the cliffs. It is a grand sight to see those cliffs in a storm, and to watch the spray rising high into the air, as the waves break with a noise that is heard even above the roaring of the wind.

18. THE TIDE.

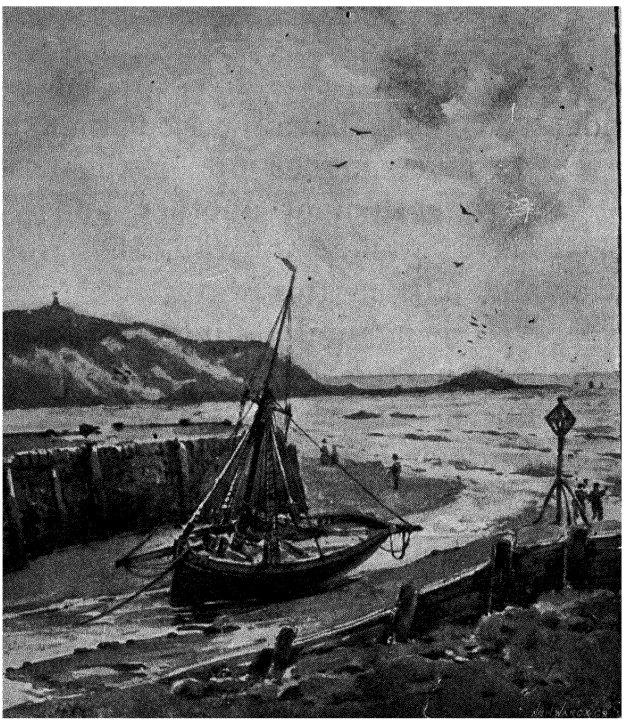
1. If you have ever lived at the sea-side, you must have noticed that the water is much higher up on the beach at one time than at another, and you may have wondered why the water rises and falls in this way.

2. The rising and falling of the sea is called the *tide.* When the water is high up on the shore, we say that it is *high tide* or *high water;* when it is far down, we call it *low tide* or *low water.*

3. When the tide is coming in or rising on the beach, we say that it is *flowing;* when it is going back, we say that it is *ebbing.*

4. Let us go out some morning about nine o'clock. Perhaps it is high water, and the tide is just beginning to ebb. It goes back very slowly, hour by hour, and at three o'clock in the afternoon it is low water.

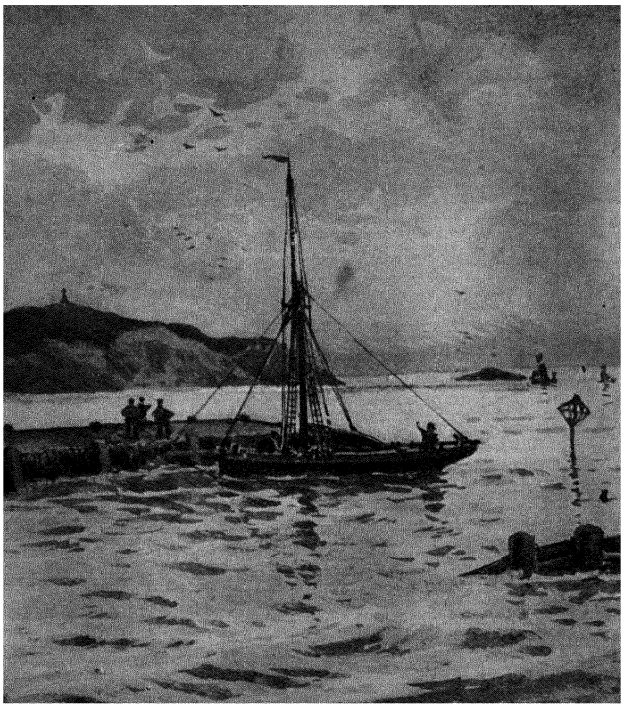
5. Then the tide turns. The water creeps slowly up the beach, and about half-past nine in the evening it is up



LOW TIDE.

where it was in the morning. The ebb and the flow each take a little more than six hours.

6. Thus the tide ebbs and flows twice a day, but the two tides take about twenty-five hours instead of twenty-four. High water and low water each



HIGH TIDE.

day are about an hour later than they were the day before.

7. But what is the tide? The tide is really a big wave which rolls slowly up on the beach, and then rolls back again, twice every day.

8. The tide-wave is so long and so

"The beach is all covered."

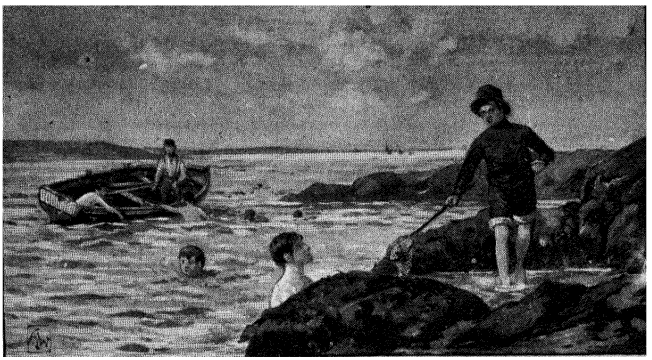
low that it does not look like a wave at all. It seems to be a rising and falling of the whole sea. It looks like this because we can see only a small part of the sea, while each tide-wave is many miles in length.

9. The tide rises much higher at some places than at others. On many parts of our shore the water is twenty feet higher when the tide is in than when it is out.

10. The rise and fall of the tide change the look of the shore very much. At high water the waves may come right up to the rocks or the cliffs; the beach is all covered. At low water we may see a wide plain of wet sand.

11. Look at the picture of "Low Tide" and then at that of "High Tide" in this lesson. The rising tide has filled the mouth of the river, and floated the fishing smack.

12. In the distance you see a rock joined to the shore by a strip of sand. The sand is covered at high water, and the rock becomes an island.



19. SALT WATER.

1. Can you swim? Every boy and every girl should be able to do so. Swimming is great fun, and it is very good for the health. It is very useful too, if you should happen to fall into the water.

2. The sea is the best place for swimming. We can float in sea-water more easily than in the water of a river or a lake.

3. How does the water of the sea differ from that of lakes and rivers? If you chance to swallow a mouthful of sea-water when bathing, you will soon find out.

4. Sea-water tastes very salt, and it is often called "salt water." It is the salt in it that makes it so easy for us to float in sea-water. The salt also makes a sea-water bath very good for the skin.

5. In many places salt is made from sea-water. The water is put into shallow vessels and heated; the water goes off in steam, and leaves the solid white salt behind.

6. Where does all this salt come from? Most of it comes from the land. There is salt mixed with the soil everywhere.

7. There is a little salt in all the plants you eat, and there is salt in your own body as well. You may taste it in the blood that comes from a cut, or in the tears that fall from your eyes.

8. Rivers carry down salt from the soil to the sea. There is very little of it in river-water; you cannot taste it, and so you call the water of the river fresh water.

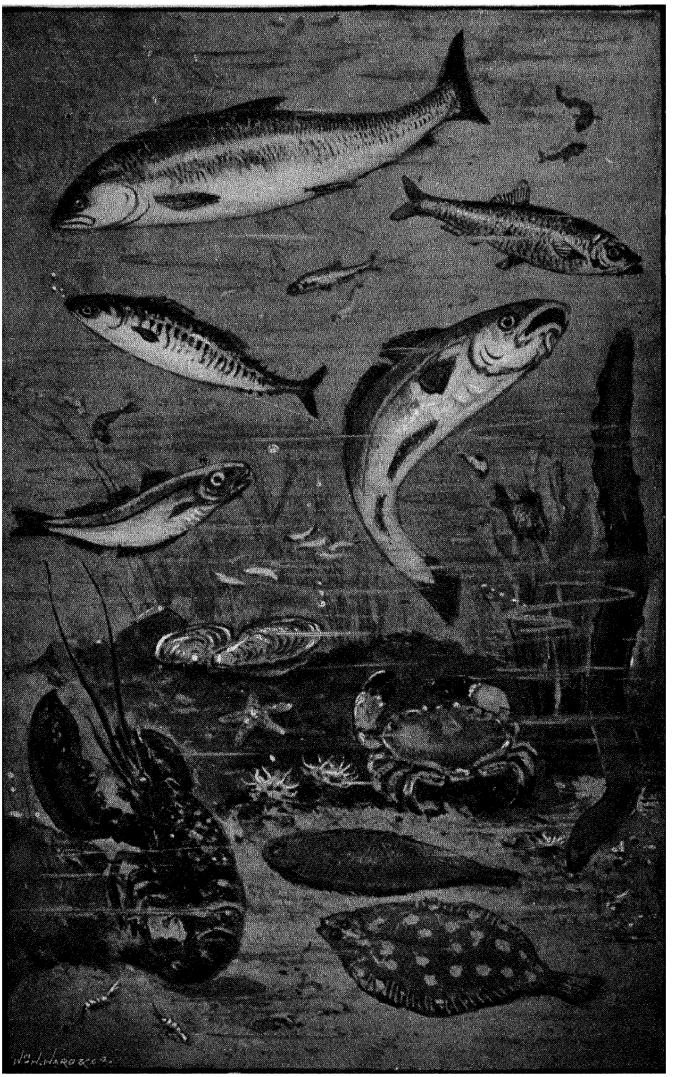
9. All the salt that is carried by the rivers to the sea remains in it, while more and more is always being brought down, and so the sea-water tastes quite salt.

10. Salt water does not freeze so quickly as fresh water. The sea-shore keeps clear of ice, even when our lakes are frozen over. Our harbours are open for ships all the year round.

11. You do not like the taste of sea-water, but there are many animals that live in it. They would die if they were put into fresh water.

12. On the rocky shores there are sea-plants or sea-weeds, some of them as beautiful as the flowers in our gardens. These plants, too, need salt water. The salt sea is full of life in many strange forms.

13. There are many other things to tell about the sea, more than would fill a larger book than this. But there is also much to learn about the dry land, so we must now leave this wonderful world of water.



" The salt sea is full of life."

20. THE DRY LAND.

1. Most people know more about the land than about the sea. They live upon the land, and they see it every day; it is the most common sight in the world.

2. The country boy looks out every day on a wide stretch of hill or of plain. He sees it in all kinds of weather. He sees how nature works, and he sees how man makes nature work for him, and give him food and clothing.

3. The town boy sees more of man's work than of nature's work. He sees busy streets and workshops and factories, but he does not see the fields and the woods and the mountains.

4. Nature is the first and greatest worker. Nature *makes* the rocks and the trees; man only cuts them into stones and planks, and carries them where he needs them to build his house.

5. How shall we begin to learn about the land? Let us compare it with the sea. The sea looks flat everywhere, but

the land is of many shapes—level plains, high hills, and deep valleys.

6. The land is not always made up of the same things. In some places there is rich, black soil, in others sand, in others stones and rock.

7. All parts of the land are not equally good for men to make their homes. Plants will not grow where the soil is very poor, or the hills very high, or the weather very cold, and on such places men cannot live.

8. On a rich soil and in a warm climate men find food and shelter without working hard. When people do not need to work hard for a living, they are sure to become lazy. The natives of many rich, warm countries are very idle and lazy.

9. In our own country we have neither great heat nor great cold. Our soil is not rich, so we must work hard to make it yield us our food.

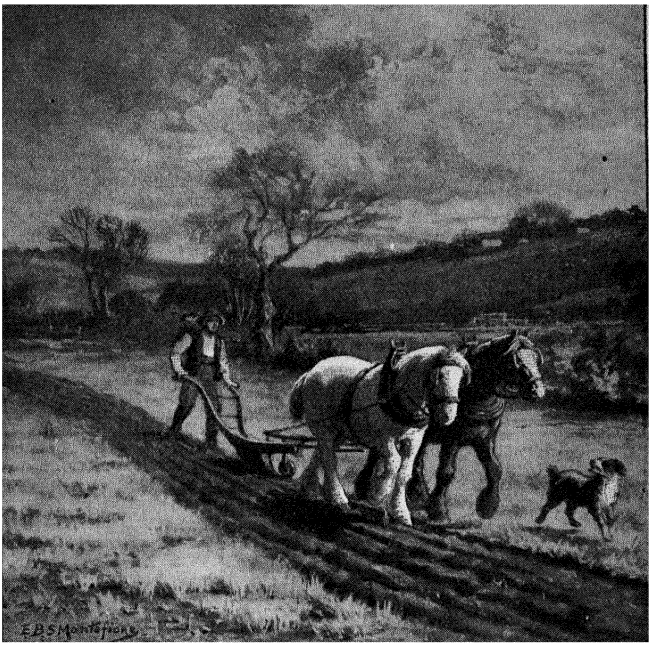
10. The winter cold has made us learn to spin and weave, and to make clothing to keep ourselves warm, and it has

IN A TROPICAL COUNTRY.

taught us the art of building warm houses.

11. In this way we have learned how to make wool and other things into clothing, and how to work in iron and steel. We use tools and machines, and make many useful things with them.

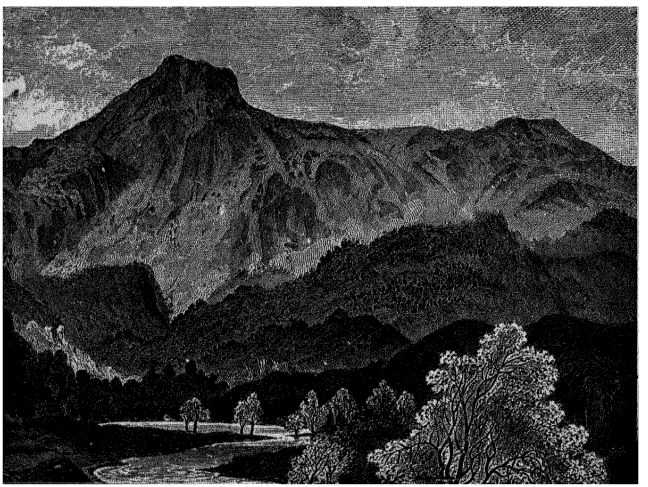
12 Now we make far more of these things than we need for ourselves, and



IN A TEMPERATE COUNTRY.

we sell them to the people of other lands. Our nation has thus become rich, just because nature has forced us to work hard for our living.

13. Work is a good thing for a nation. It is a good thing for a boy or a girl, too, if the work is not too hard. People who have never learned to work are of very little use in the world.



HILLS AND MOUNTAINS.

21. HOW THE LAND LOOKS.

1. If you live in certain parts of England, you may see around you a stretch of flat land, almost as level as the sea. This we call a *plain.*

2. In other parts of the country you may see the ground rising up in the form of *hills;* and in some places the hills are so high and so steep that we call them *mountains.*

3. Among those hills or mountains there are hollow places which divide one

hill from another: these hollows we call *valleys*. In the valleys there are often large streams of water, which we call *rivers*, or large pools of water, which we call *lakes*.

4. Mountains and hills, plains and valleys, rivers and lakes—these are the

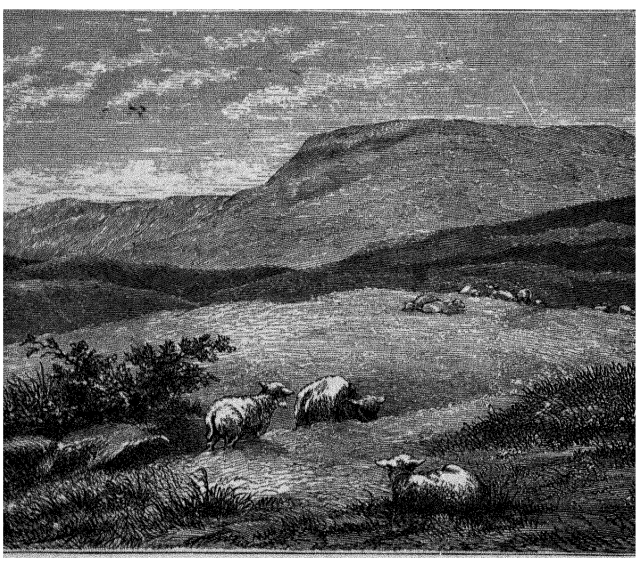
CULTIVATED LAND.

chief things that make up the *scenery* of a place. There are many different kinds of scenery in our country.

5. The plants that grow on the land are also of different kinds. In some places we see fields of corn, with hedges or fences round them. This is what we call *cultivated* land.

6. In winter the soil of those fields is bare and brown; in spring it is green with growing corn, which changes by-and-by to a rich yellow.

7. In olden times most of our land was covered with forest. The trees



PASTURE LAND.

have long since been cut down for fuel, or to make room for corn-fields, but here and there we still see patches of *woodland.*

8. Many of our hills are covered with

grass, where flocks of sheep feed all the year round. This we call *pasture-land.*

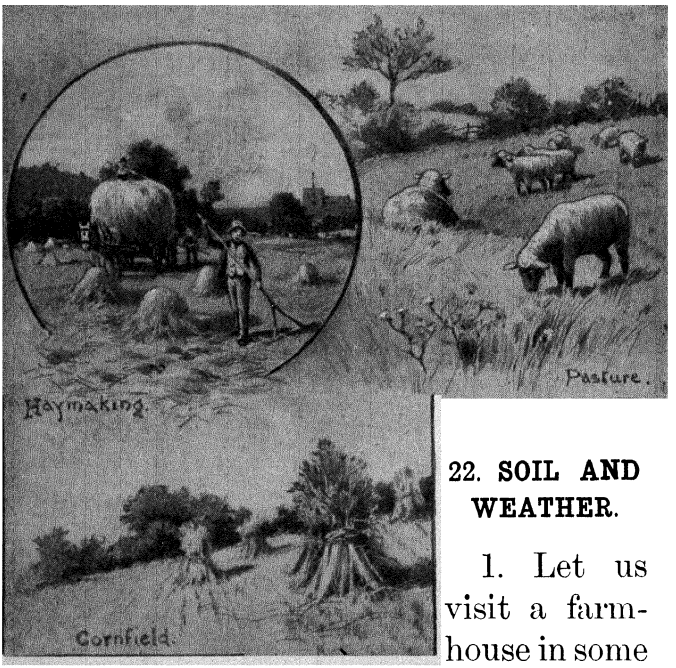
9. We now buy most of our wheat from other countries, and many of the fields where wheat once grew are now used for pasture instead.

10. Some of you may have seen the lofty hills and mountains in the north of England or in Scotland. Those hills are mostly covered with brown heath or heather. This is called *moorland.*

11. In autumn, when the heather is in bloom, it changes to a lovely purple, and the waste hillsides are then like a beautiful garden.

12. Sheep of a small, hardy kind live on those heath-clad hills or moors. One can sometimes see the cottage of a shepherd among the hills many miles from any other house. Life in such a place is almost as lonely as life in a lighthouse.

13. Where the mountains are very high or very steep, no plants grow on them at all, and we see only the bare rock—gray, red, brown, or black.



22. SOIL AND WEATHER.

1. Let us visit a farm-house in some English valley, where we may see different kinds of land such as we read of in our last lesson.

2. Here we are in the garden, among the apple-trees. The borders are bright with flowers, and there are many useful plants growing in the beds.

3. Beyond the garden there are fields of wheat and of barley. They are green

now, for it is early summer; but they will soon change to yellow, and then the golden grain will be reaped.

4. Up on the hillside there is pasture-land. Year after year grass grows there, and sheep and cattle live on it during the summer. The top of the hill is covered with heather and other coarse plants, which are of little use to the farmer.

5. Why is there so much difference between the garden, the fields, the pastures, and the hill-tops? It is because they have not the same kind of *soil*, or the same kind of *weather*.

6. The soil of the garden is soft and black; we can easily crush it into a fine powder. It is deep, too, and we can push a stick far down without coming to the harder earth below.

7. In the fields the soil is not so black, it is not so soft, and it is not so deep. Up on the pasture-land there is only a thin hard layer of soil, and in some places the grass grows out of little cracks in the bare rock.

8. The black, deep soil grows the best crops. The farmer has made it rich by putting in manure. The flowers and trees find plenty of food in this soft, rich soil, and they grow big and strong.

9. In the garden the fruit-trees are planted where the sun shines on them all day, and the high walls keep off the cold winds. Thus they have finer weather than the plants which grow in the open fields.

10. The fields, again, have warmer weather than the high pasture-ground. When winter comes, it is the hill-tops that are first covered with snow. Then the sheep are glad to come down to feed in the valleys.

11. There are some countries which are all like a garden. They have plenty of warm sunshine, and a rich black soil. There the finest fruits grow without any shelter.

12. Other countries are like the hill-tops of our land. They have long, cold winters and short summers. The soil is

IN THE PASTURE—SEEKING SHELTER.

too thin to grow corn, and the ground is covered with snow for many weeks every year.

13. Our farmers have to work hard to grow the crops which they need. They must build walls and plant hedges to shelter their gardens, and they must take care to keep the soil good in their fields.

14. Pretty gardens and waving corn-fields are made only by hard work. The earth is our home, but it is our workshop too.

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23. UNDER THE GROUND.

1. We get food and clothing from the plants that grow on the ground, and from the animals that live on these plants. There is one thing more which the ground gives us—fuel to cook our food and to warm our houses.

2. Three hundred years ago, wood was the chief fuel in our own country, as it still is in many other lands.

3. As more land was needed for growing corn, the forests were cut down, not only for fuel, but to clear the ground for crops. By-and-by there would be no more trees left.

4. Before that time came, however, people began to burn a kind of soft, black stone which they dug out of the earth.

5. This black stone was what we call coal. It was burned in houses, and it was also used instead of charcoal for working iron and other metals.

6. Then coal was used for a rude kind of steam-engine, which pumped water out of the coal-mines. Afterwards steam-engines were made to draw wagons of coal from the pits to the towns. It was in this way that our railways began.

7. Steam-engines were also used to work all kinds of machines, such as spinning and weaving machines.

8. Then steamships came into use, as you have read in another lesson, and they needed coal for their engines. So

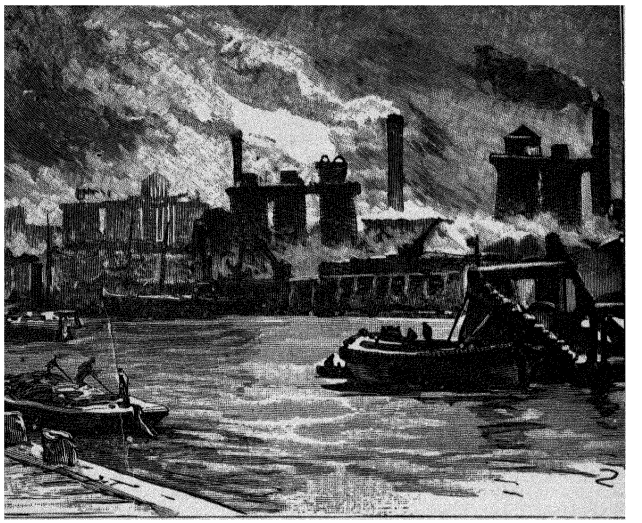
year by year more coal was needed for all these kinds of work.

9. Coal, as you perhaps know, is made of the trees which grew in thick forests long ages ago. Then the water rose above the land, or the land sank below the water, and this put an end to the forests. Sand and mud covered up the fallen trees.

10. Now the places where those old forests stood are once more above water. The sand and mud of long ago now form our soil and our rocks, and below them lie the masses of old fallen trees which we dig up and burn as coal.

11. Coal is not often found on the surface of the ground. It lies in sheets or seams between other rocks, often very deep down in the earth. It is only in some parts of our country that those seams are found. We call such places *coal-fields*.

12. A coal-field is always a busy part of the country, but it is never a pretty place. The ground is covered with lines of railway for the wagons which



IN THE BLACK COUNTRY.

carry away the coal from the pits, and the long rows of miners' houses look dull and dingy.

13. One part of England is called the Black Country, because it is dotted all over with coal-pits and iron-works. Many busy towns have grown up there.

14. Our coal is of great use to us. By means of coal we make cloth and other things in our great factories, and by means of coal we carry these things to all parts of the world.

THE FEN COUNTRY.

24. OUR PLAINS.

1: Most of the land in England is level. There are many wide plains, either quite flat or very nearly so. We shall try to learn some things about plains before we begin to study hills and mountains.

2. Quite close to England there is one very large plain which we cannot call a part of our island; that is the North Sea—not the water, but the sea-bottom.

3. The North Sea, as you have been told, is very shallow; the bottom of it is a wide plain of sand and mud.

4. One part of this plain is really a part of our country. It is not under water, but it is very little above the level of the sea. That plain is called the Fen country.

5. When a plain lies low and is very flat, the rain does not run off quickly, and the ground is always wet and soft. Such a plain is called a *marsh*, or a *swamp*, or a *fen*.

6. The farmers in the Fen country have dug great ditches to carry off the water from their land, and they are now able to grow good crops on it.

7. Sometimes when we climb up a slope we find that it does not take us to the top of a hill; we see in front of us another plain, which is much higher than the plain below.

8. Such a plain is called a *table-land*, because it is like the flat top of a table, which is on a higher level than the floor.

9. There are often small grassy plains in the bottoms of valleys, and by the sides of rivers and streams. Such plains are called *meadows*.

10. Some wet plains are covered with a deep soil made of decayed moss and other plants. The name *bog* is often given to a plain of this kind.

11. The soft brown soil is called *peat*, and people cut it into blocks and dry it for fuel. In many parts of Scotland and Ireland the people get all their fuel from the peat bogs.

25. AN OCEAN OF GRASS.

1. Let us now visit a plain of a kind which we do not see in England. In winter this plain is covered with pure white snow, and in summer with rich green grass or corn. This ocean of grass extends for hundreds of miles. Not a hill and scarcely a tree can be seen.

2. This plain lies in the west of Canada. Some of your friends may have gone to make their home there. Many English and Scottish farmers have done so, because they find there plenty of land for their farms, and a climate which is pleasant and healthy.

3. Fifty years ago there were few white men to be seen on this plain. The Red Indians roved over it, and set up their tents where they pleased. Vast flocks of bison fed there, and they supplied the Indian hunters with food and clothing.

4. The first white men who lived on these vast grassy plains, or *prairies* as they are called, went there to buy furs

from the Indians. They built little forts here and there, to keep the Indians from breaking into the stores and stealing their goods.

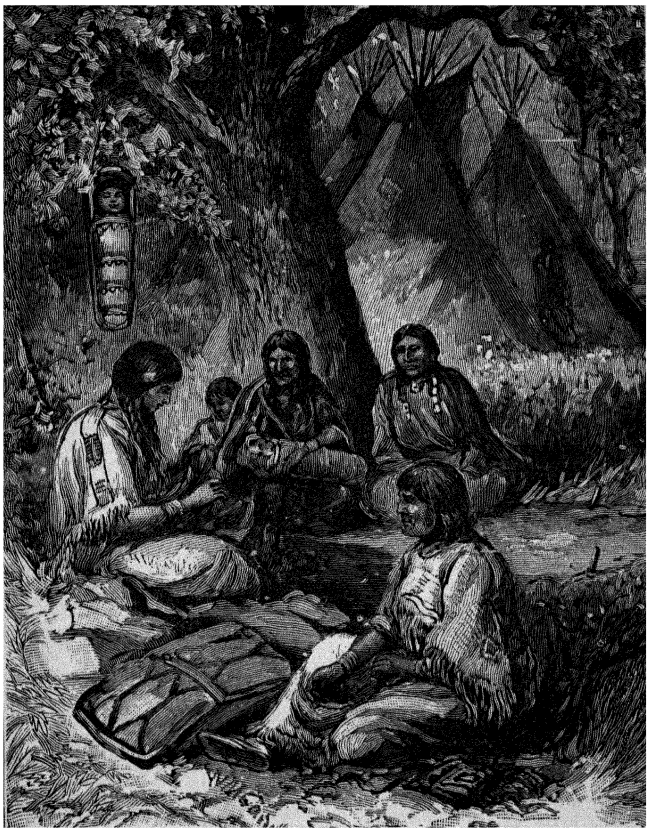
5. To these forts the hunters came, bringing furs and skins to sell. They were paid with knives, and guns, and all sorts of things which would be useful to them.

6. Ships went out every year from England with loads of these things for the forts, and brought back the furs that had been bought.

7. The men in the forts must often have been very lonely; but many of them liked the free, healthy life, and did not care to come back to England.

8. As time went on, they began to make farms near those forts; and the land was found to be good for growing wheat. Farmers settled on the land, and herds of cattle fed on the prairie. Then the Red Indians had to go farther away to find their furs.

9. This ocean of grass is now changing into an ocean of wheat. The



RED INDIAN CAMP.

colder parts of it, towards the north, are still covered with grass, and there the Indian hunter finds furs to sell to the white trader; but in the south

the farmer has taken the place of the hunter.

10. A railway now runs across this great plain, and many of the little clusters of wooden houses along its line are growing up into villages and towns. There is land for all who want it, and a soil ready to give food to every worker.

11. A harvest-field is always a busy place. We like to hear the sound of the reaping-machine cutting down the ripe grain, and to see the tall sheaves set up to dry in the sun.

12. On those plains there are harvest-fields such as we never see at home. They stretch as far as the eye can see. Instead of one reaping-machine, there may be twenty, all working together.

13. The bread you eat does not all come from cornfields such as you have seen, with their trim green hedges; much of it has been grown on those vast seas of wheat in the Far West, on the borders of the ocean of grass.

26. A FOREST PLAIN.

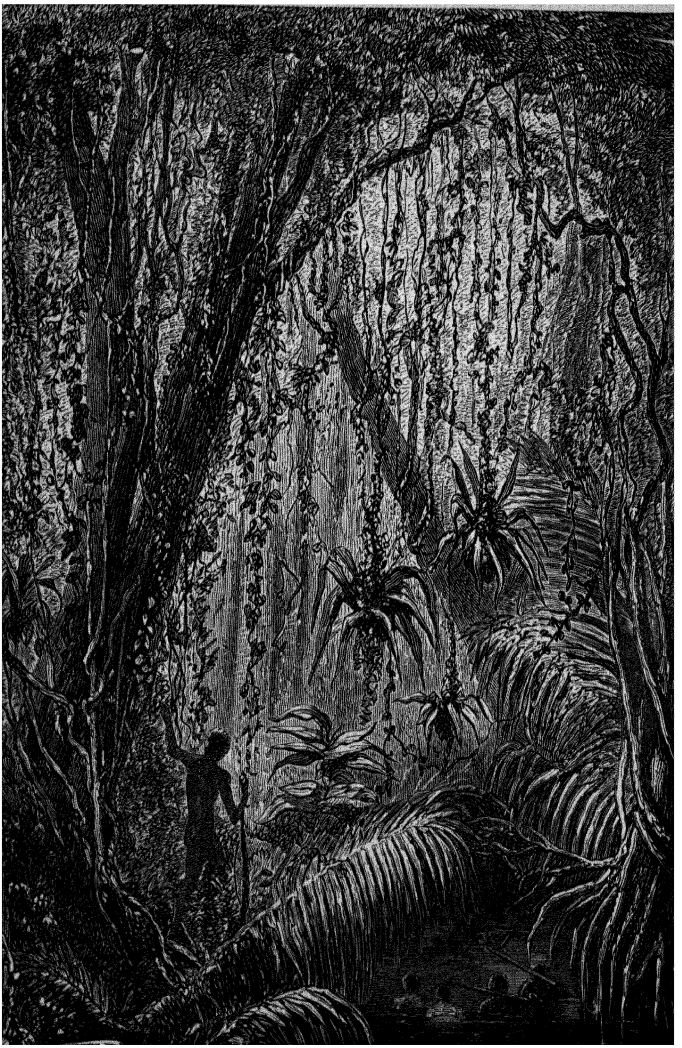
1: Let us next look at a wonderful plain in South America. There the sun is very hot all the year round, and at certain seasons the rain falls in torrents.

2. The air is hot and damp, just as it is in the glass-roofed hot-houses where we grow fine flowers and fruit in this country.

3. We should not like to live in a hot-house; we prefer the cold, dry air out of doors. The people who live in such hot, damp places are not strong or healthy.

4. This great plain is covered with a thick forest. We cannot see far on any side. There are no roads, and if we were to cut one through the forest, it would soon be closed up by the growth of new trees.

5. It is only by the help of the rivers that we can make our way across this forest plain. The biggest river in the world flows through it, and in the rainy



A TROPICAL FOREST.

season the whole plain is covered with water.

6. Even when the plain is flooded, it is only the rivers that give us a clear road. We could sail for miles over the land, but the trees block the way of our canoes.

7. This forest is a gloomy place. The trees grow so close together that we cannot see the sky through their branches. Their tops are in the full blaze of the sun, but down below there is only a dim, green twilight.

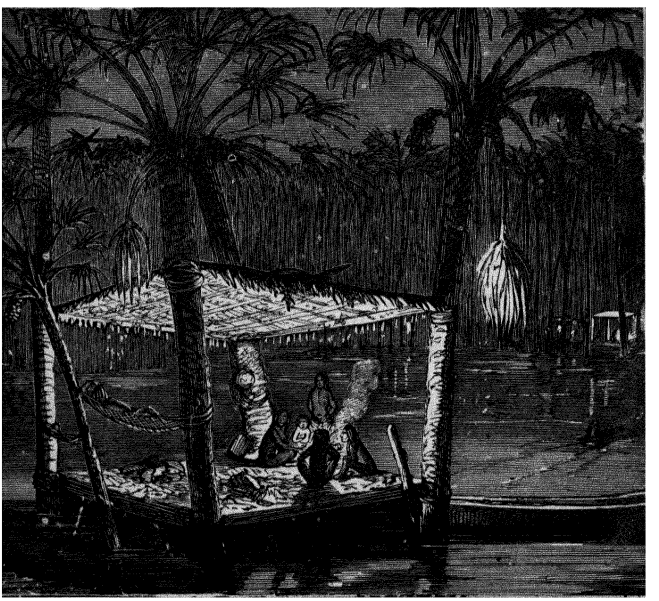
8. All plants strive to reach the light. The small plants can do so here only by climbing up the tall trees. So we find that in this forest every tree is covered with climbing plants.

9. They twine round the trees, and they twine round one another, till they form thick, twisted ropes. Some of them are covered with gay flowers, and look very pretty.

10. Even the animals here must climb if they wish to reach the sun-

shine. Monkeys swarm among the trees, and there are climbing animals in this forest that are seldom found anywhere else.

11. Few people live in this great

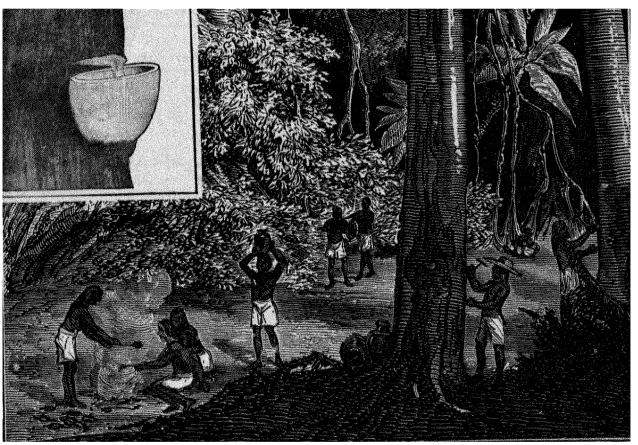


"The natives build their houses on posts."

forest. The natives build their houses on posts, so as to be above the water in the rainy season. When they travel they use boats or canoes.

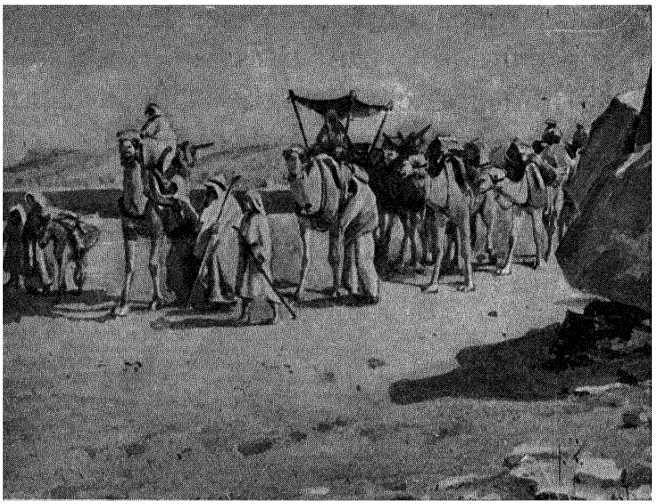
12. Sometimes they are busy gather-

ing the juice of the rubber-tree. They make cuts in the bark of the tree, and under each cut they fix a little cup, to catch the sap that runs out. They then dry this juice over a fire till it becomes hard.



"*Gathering the juice of the rubber-tree.*"

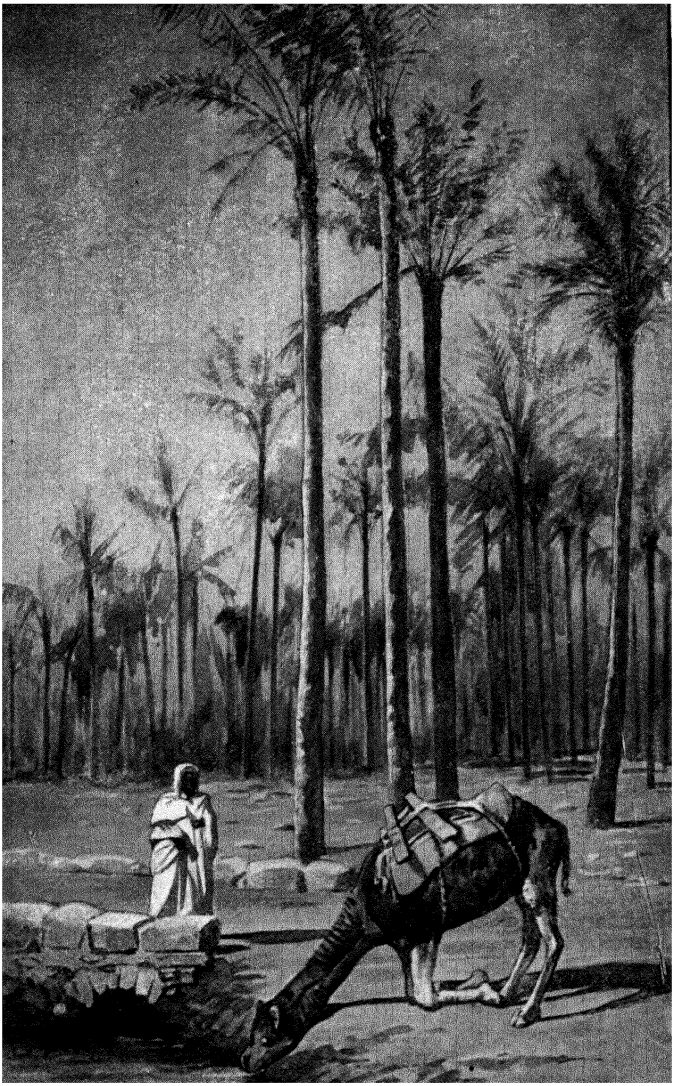
13. The rubber is sold to traders and brought to this country, where it is made into rubber goods of all kinds, such as shoes, coats, and bicycle tires. The india-rubber you use in your drawing lesson may have come from this great forest plain.



27. A SEA OF SAND.

1. The plain which we are now to visit is one of which you perhaps know something already: it is the great Sahara, in Africa. The Sahara is a *desert*—that is, a dry, barren place where no plants grow.

2. What is the cause of this? It is the want of water. If you do not water your flower-pots or window-boxes in summer, the earth becomes dry and hard, and the flowers wither and die. The pots and boxes become little deserts.



7* A FOUNTAIN IN THE DESERT.

3. Rain seldom falls in the Sahara; only once in a year, or perhaps in three or four years, is there any rain. Then for a short time the dry, rocky river-beds are filled; but the water is soon dried up by the sun, or it sinks down into the loose sand.

4. The desert may be called a sea of sand. There are ships on this sea. "The ship of the desert" is the camel, the only animal which can cross these hot, dry wastes.

5. He travels for days without water, and with only a little dry grain to eat, carrying his master or laden with heavy bales of goods.

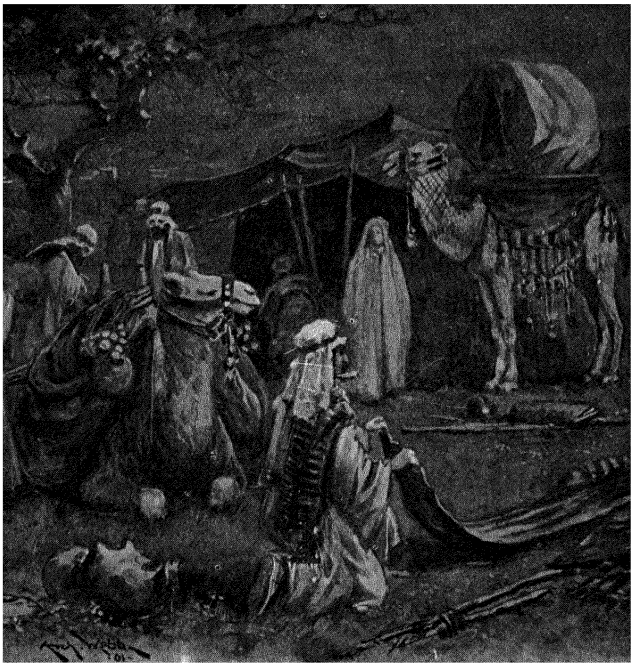
6. There are islands in this sea, too —places where a spring of water is found in the sandy plain. Such a spot is called an *oasis*.

7. The traveller makes for an oasis as the sailor makes for a harbour. Here he finds water to drink, grass for his camels, and palm trees to give shade and food.

8. Water can be found in many parts

of the desert by digging deep wells, and by this means many new oases have now been *made* in it.

9. At any large oasis, we are sure to



LOADING THE CAMELS.

find the tents of some tribe of Arabs, with flocks of camels and goats feeding beside them. Some of those Arab tribes lie in wait for small parties of travel-

lers and rob them; they are the pirates of this sandy sea.

10. This strange sea of sand has its storms also. A sandstorm is the worst danger of the desert. Clouds of fine sand drive before the hot wind.

11. When such a storm comes on, the camels lie down and close their nostrils; the men also lie down and cover their heads with their robes.

12. If the travellers escape death from the drifting sand, they may find that the hot wind has dried up the water in their skin bottles; then, if no spring be near, they may die of thirst.

28. ENGLISH HILLS AND VALLEYS.

1. If the sea were to rise five hundred feet, most of England would be under water. The higher parts alone would be left dry, and would then form separate islands. Those higher parts, which rise above the general level of the land, are called *hills* and *mountains*.

2. Sometimes a hill or a mountain stands alone, rising like a great mound in the middle of a plain. When a number of them stand side by side, they form long ridges or *ranges.*

3. In some places the hills stand in a cluster or *group.* The higher points that rise above the rest of the range or group are called *peaks.*

4. Among these mountains or hills we find *valleys,* or tracts of lower ground. Some valleys are steep and narrow; others are wide, and their sides have gentle slopes.

5. Have you ever been on the top of a high hill? The pure, fresh air is pleasant to breathe; but climbing the hill is hard work, and in some places you must use your hands as well as your feet.

6. When you reach the top, you see the country below spread out like a great map. Tiny fields, toy houses and villages, rivers and canals like silver threads, trains creeping like spiders along their lines, the blue ocean dotted

with ships—all these things you see as you never saw them before.

7. Would you rather picnic by the side of some little mountain stream, far up in a valley? There is no road up the valley, but we cannot lose our way; the stream itself will be our guide.

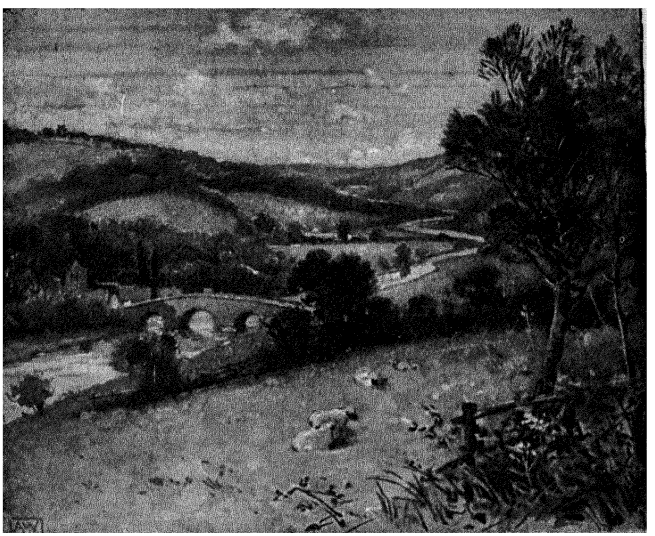
8. At first the valley is wide, and there is flat meadow land by the side of the stream. Soon the hills close in, and rise above us in grassy slopes or in rocky cliffs.

9. As we go on, the way becomes steeper and steeper. There are no trees to be seen; on the open hillside a few hardy sheep are nibbling the short grass.

10. Sometimes we are wading deep among the purple heather. The lark sings in the blue sky above us, and the stream ripples sweetly at our feet.

11. Here the stream makes a bend, and flows round a tiny, flat green meadow. This is just the right place for a picnic on a summer day.

12. Next to the seaside, we should choose a valley such as this for a long holiday. Many people spend their summer holidays among the high hills and valleys in Wales, or in the north of England, or in Scotland.



AN ENGLISH VALLEY.

13. There they are far from the noise and smoke and dust of the city. Peace and quiet seem to dwell in such places. The air is pure, and every breath brings new health and pleasure.

29. SOME COMMON ROCKS.

1. What are hills and mountains made of? They are not mere heaps of soft earth or sand; they are made of rock. In some places the rock is covered with a thin, hard soil; in other places there is no soil at all, and you can see the very rock of which the hills are made.

2. There are three kinds of rock that you may see in school every day: coal is one, chalk is another, and slate is another.

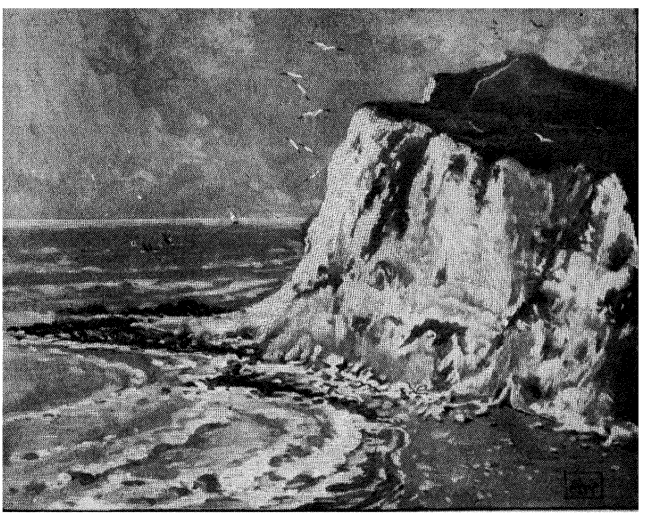
3. You have already learned how the forests of long ago were changed into coal, which is a kind of rock. It is not a very hard rock, and we never see hills made of coal.

4. Chalk is another rock which is not very hard. The hills in the south-east of England, and the white cliffs of Dover, are made of chalk.

5. Slate is also a soft rock, but it is harder than chalk or coal. Many of the high hills in Wales and the west of England are made of slate.

6. Two kinds of rock are much used for building houses—sandstone and limestone. You have seen one or both of these, and perhaps you know quarries where they are found.

7. If we break down pieces of these

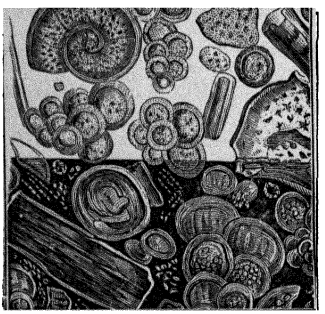


CHALK CLIFF.

rocks, we can see what they are made of. We find little pieces of plants and trees—*fossils*, as we call them—in coal, and in the stones that are dug up along with it.

8. If we brush some dust off a piece

of chalk, we find that some bits of the dust look like tiny shells. Chalk is made of shells, or broken parts of shells, and so is limestone.

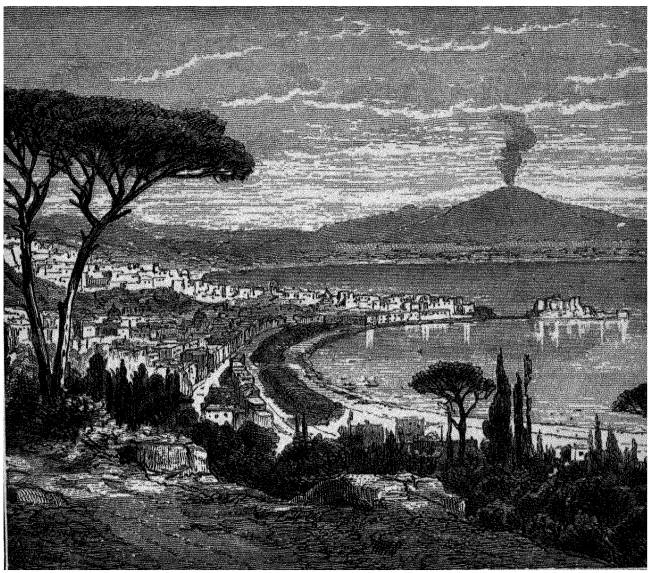


SHELLS IN CHALK.

9. Pound down a bit of slate and mix it with water: it now looks like mud. Long ago it was really mud; the rivers carried it down to the sea, and there it was slowly made into rock.

FOSSIL IN COAL.

10. We can pound sandstone into sand, just like the sand we find on the beach. The grains are all rounded, like the sand and pebbles on the sea-shore. Slate and sandstone are made up of tiny particles which were broken off other rocks long, long ago.



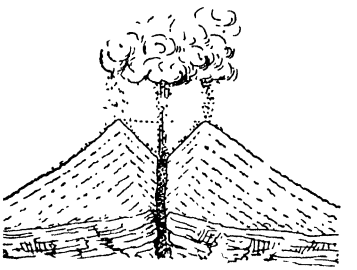
MOUNT VESUVIUS AND THE BAY OF NAPLES.

30. VOLCANOES.

1. Boys like to read about volcanoes. Some people call volcanoes "burning mountains," but that is not a good name for them. They are not all mountains, and they do not burn.

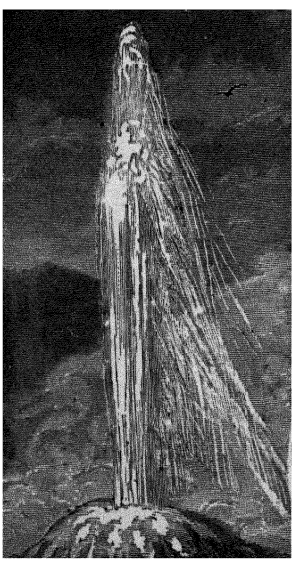
2. A volcano is usually a mountain or a hill, with a great hole like a chimney running deep down into the earth. This opening often sends out

clouds of steam, which many people call smoke, because it is dark with dust and stones. The mouth of the opening or vent is called the *crater*.



SECTION OF VOLCANO.

3. The inside of a volcano is very hot. The hardest rock is melted there as if it were in a furnace; and this melted rock often flows out of the crater and pours down the hillside. When it cools, it forms a hard, black rock called *lava*.



HOT SPRING.

4. The lava and the stones from the crater build up a mound or hill round it; and so a mountain is made by the action of the heat inside the volcano.

5. The heat inside the earth also forms hills in another way. It throws up the level ground into folds and ridges, just as you might crumple a sheet of smooth paper.

6. In many places hot water and steam come out of holes in the ground. A hot spring or *geyser*, as it is often called, is really a kind of volcano.

7. The volcano which we know best is Mount Vesuvius, in Italy. Shall we pay a visit to it together? A mountain railway has been made on it, and we can be drawn quickly up the steep slope.

8. The lower part of the hill is green with vines and olives, and dotted with houses. The soil is very rich, and the people seem to have no fear of the fiery crater above them. As we go higher up, we find only bare, black lava rock.

9. The railway ends near the top of the mountain, and we have to walk a little way to the crater. Puffs of steam and hot air rise in our faces as we go near it.

10. In some places the lava is still very hot, with only a thin, hard crust on the top; if we push a stick down into a crack, it will take fire.

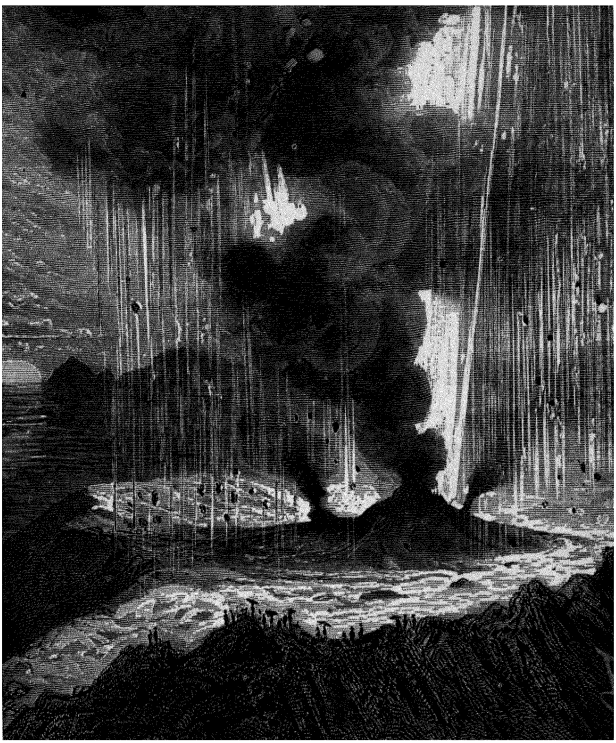
11. We must keep to the windward side of the crater, to avoid the showers of stones. At last we stand on the edge, and look down into a deep pit filled with thick clouds of steam.

12. As the wind blows these aside, we see below the dull, red glow of the hot lava. Steam and gas come up in puffs, carrying with them pieces of red-hot stone.

13. We do not care to stay here long; the rock is hot under our feet, and the air is stifling. We are glad to get back again to the cool, shady groves at the foot of the mountain.

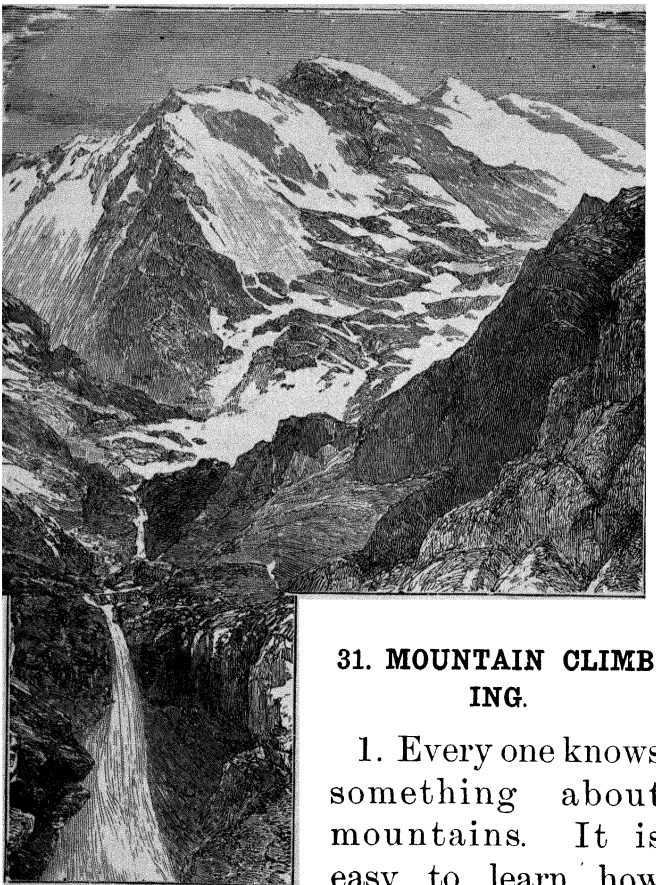
14. A volcano gives us a peep into the inside of this globe on which we live. It tells us that under the cool and solid ground the earth is very hot. That is almost the only thing we know about the inside of the earth.

15. In our own land there are hills



VESUVIUS IN ERUPTION.

which were at one time volcanoes. We can see the rock which flowed out of them in white-hot streams long ago. They are now *extinct*, as we say; their vents are closed up, and their fires seem to have gone out.



31. MOUNTAIN CLIMBING.

1. Every one knows something about mountains. It is easy to learn how many feet high the chief mountains of the world are, but it is not so easy for one who has never seen mountains to imagine what they look like.

2. Mountains are higher than hills, and they are also much harder to climb. Some are so steep that no one can reach the top. There are no trees or plants on their peaks, and it is not easy to climb up the bare rock.

3. High mountains are covered with snow and ice all the year round. The ice is sometimes full of deep cracks, which are too wide to cross. The snow is often too deep and soft for walking over.

4. Some people are very fond of climbing high mountain peaks in every part of the world. Boys like to do a risky bit of climbing when they can, and men are really very like boys in some ways.

5. The highest mountains in Europe are the Alps. The highest peak of the Alps is called Mont Blanc, or the white mountain, because of the snow which always lies on it.

6. Names of places always have a meaning. The names of two of our British mountains, Snowdon and Ben

Nevis, both have nearly the same meaning as Mont Blanc—snowy mountain.

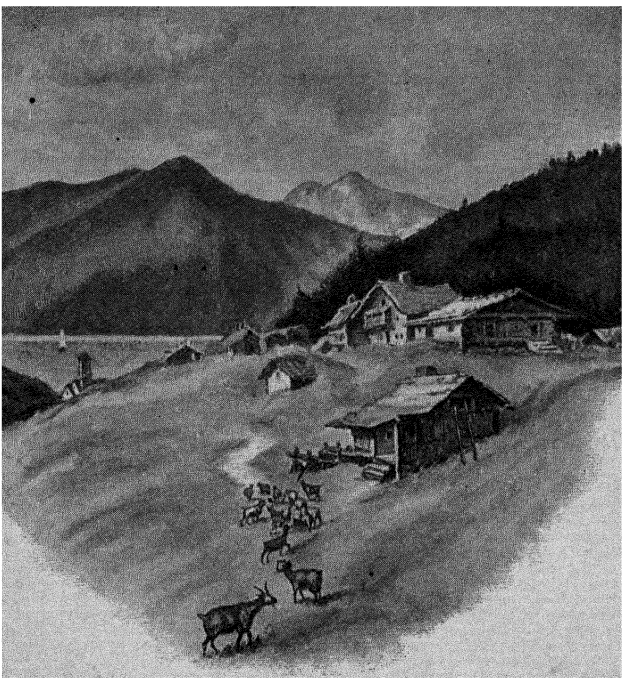
7. Mont Blanc is over fifteen thousand feet high, or about four times as high as any British mountain. Fifteen thousand feet is nearly three miles. You would not care to climb up a ladder of that length.

8. Every one who climbs this mountain must have guides who know the tracks, and porters to carry food and other things. They must have long sticks with sharp points, and axes to cut steps in steep slopes of ice.

9. They also carry strong ropes, and in steep places the whole party is tied together. They walk in single file, and if one slips, the others hold on to the rope, and save him from falling down the slope.

10. In spite of all this care, many lives have been lost in climbing Mont Blanc and other high peaks of the Alps, for there are dangers to be met that no one can guard against.

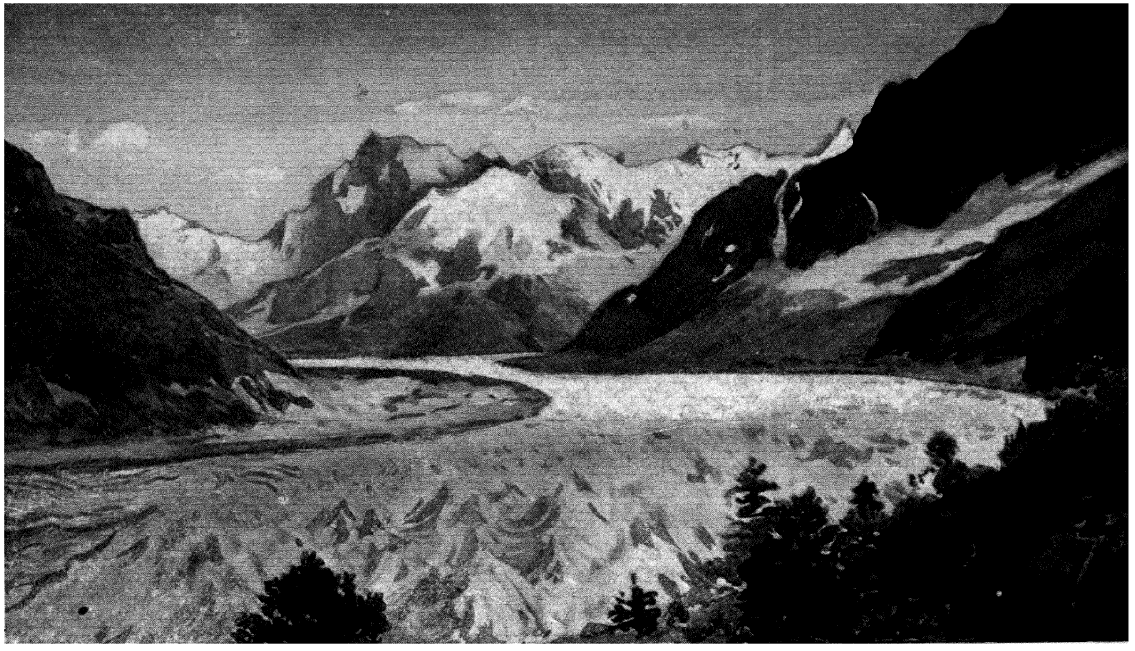
11. A snowstorm or a fog may come



A VILLAGE AMONG THE ALPS.

on suddenly, and the guides may lose their way; or a mass of loose snow may come sliding swiftly down the hillside, and sweep the whole party over the edge of some cliff.

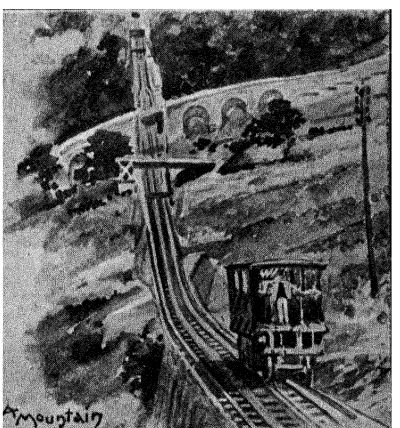
12. There are many lower peaks among the Alps which can be climbed without danger. There are even rail-



AMONG THE ALPS.

ways made up the side of some of the mountains, and one can be carried up by rail and find a good hotel at the top. This is a very easy way of climbing the Alps!

13. So many people now visit the Alps, to see the lofty snow-clad peaks and to enjoy the pure air, that these mountains have been called "the Playground of Europe."



14. There are many mountains still higher than the Alps. The highest range in the world is found in the far-off land of India.

15. Some of its peaks are nearly twice as high as Mont Blanc. They are almost thirty thousand feet high — that is, over five and a half miles.

32. A RAINY DAY.

1. A rainy day! Come out and see how busy nature is. You are afraid of getting wet, are you? Put off your damp clothes when you go home, and the wet will do you no harm.

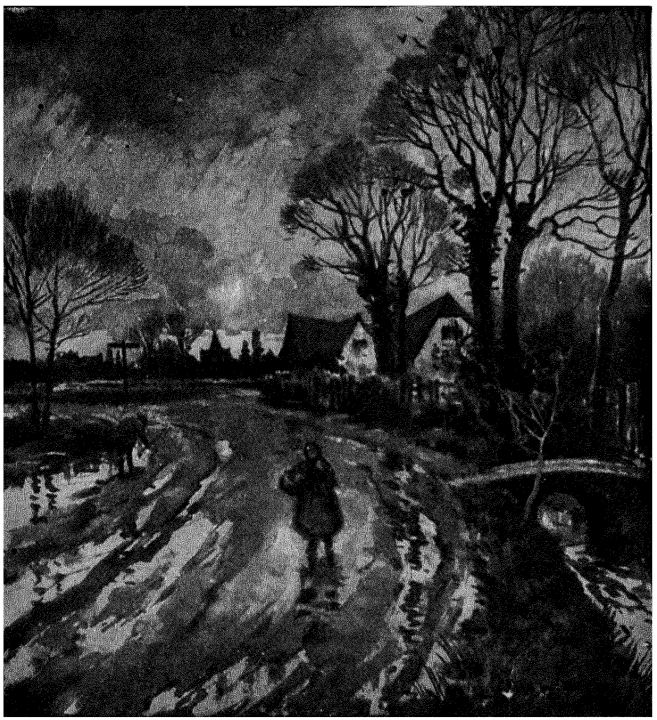
2. The big raindrops will splash in your face and bring the colour to your cheeks. On with your thickest boots; never mind an umbrella. Come, and let nature teach us a lesson.

3. Look at this little ditch by the roadside. What do you see there? A stream of water. But that is not all: it is *muddy* water.

4. Muddy water is common enough, you say. Yes, it is common—so common that we do not think of the great work it is doing.

5. Where does the mud come from? From the sides of the ditch, from the road, from the fields—from the whole of the ground on which the rain is falling.

6. What is this mud made of? It is made of particles of the soil. The



A RAINY DAY.

soil is mostly made of particles of rock. The rain helps to make the rock into soil for the farmer, and now we see that it also steals the soil away from him. Sometimes it washes away all the soil, and leaves the rock bare.

7. We now know where the mud

comes from; we must next find out where it is going. You see that it is all going down hill. The water in this ditch will carry it to some river, and the river will carry it to the sea.

8. At first the mud may sink to the bottom of the river. If the river runs slowly, the mud will sink down as it would in a glass of still water.

9. But it will not remain there always. When heavy rain comes, the river will sweep out its muddy channel. Then this mud will find a place at the bottom of the sea.

10. You know that streams and rivers are always found in *valleys*. It is running water that makes the valleys; they are scooped out slowly by the rivers and by the little streams which flow through them.

11. Look again at this ditch. When the ditch was cut, it was quite straight; but down in the bottom of it you now see the water winding in and out.

12. The sides have fallen in here and there, and the ditch is getting wider

and wider. The running water will soon make it as crooked and winding as the rivers you see on your maps.

13. A river, with the smaller streams that flow into it, digs out a broad valley where the ground is soft. The rocks and the harder parts of the ground are then left as hills.

14. Most of our hills have been made in this way—by the wearing away of the softer ground near them. Does it not seem very strange that hills should be made by running water?

33. THE WORK OF WATER.

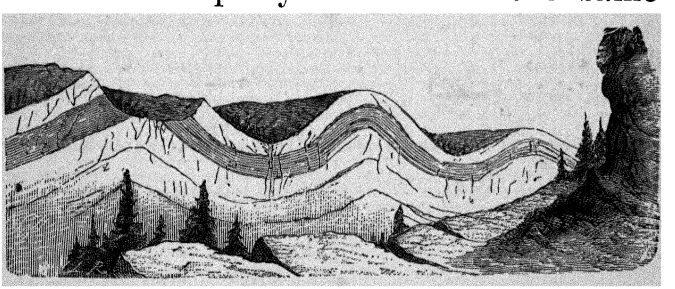
1. We have seen where the mud in our ditch comes from, and where it is going. We must now find out what becomes of it.

2. After heavy rain, the sea round a river's mouth is muddy far out from the shore. By-and-by the mud falls down to the bottom, and is spread out there in a very thin layer.

channel is sometimes cut through the bar in order to let ships pass up the river.

8. In some rivers this bar of sand and mud grows until it forms an island. Then the river has two mouths, one on each side of the island.

9. By-and-by each of these mouths is blocked up by islands in the same

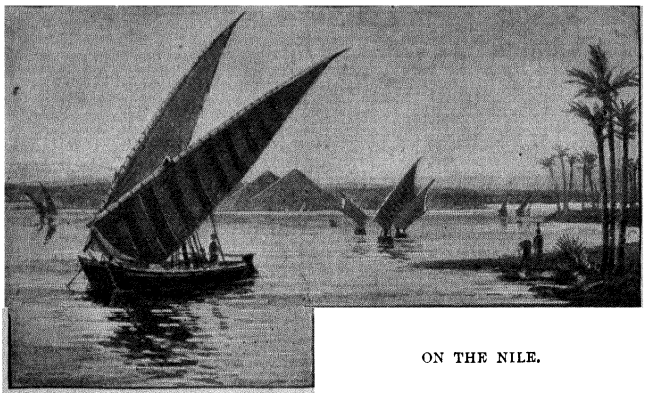


RIDGES OF ROCK.

way, and the river splits up into new branches and mouths. Thus the mud builds up a number of islands which form a tract of low, marshy ground.

10. A piece of ground made in this way is called a *delta*—a name which was first given to the low, flat ground at the mouth of the Nile.

11. We may say that the river Thames



ON THE NILE.

has a delta too, but its delta is still under water; it is made up of sandbanks and shoals, marked by the buoys and lightships of which we read in a former lesson.

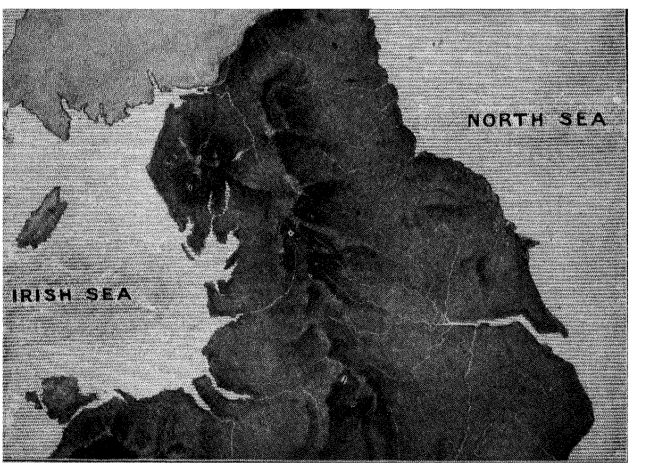
34. A RIVER.

1. Rivers, as we have seen, flow through valleys. The main river and the smaller ones that join it have each a valley of their own. All these valleys make up the *basin* of that river.

2. Look now at a map of the north of England. In the middle you see the ridge of the Pennine Hills. The

rain which falls on the one side of this ridge runs into the North Sea. That which falls on the other side finds its way to the Irish Sea.

3. We call such a ridge as this a *watershed* or *water-parting*, because it sheds or divides the water that falls



on it; part goes to one side and part to the other, just like the rain which falls on the roof of a house.

4. The place where a river begins is called its *source*. This does not mean that all its water comes from that one place. The source is only the beginning

of the *longest* stream in the basin—the *main stream,* as we call it.

5. While the main stream is still so small that you could jump across it, there are other little streams flowing into it, and each of these has a source of its own.

6. The smaller rivers which flow into the main river are called its *tributaries,* because they bring to it their *tribute,* or gift, of water.

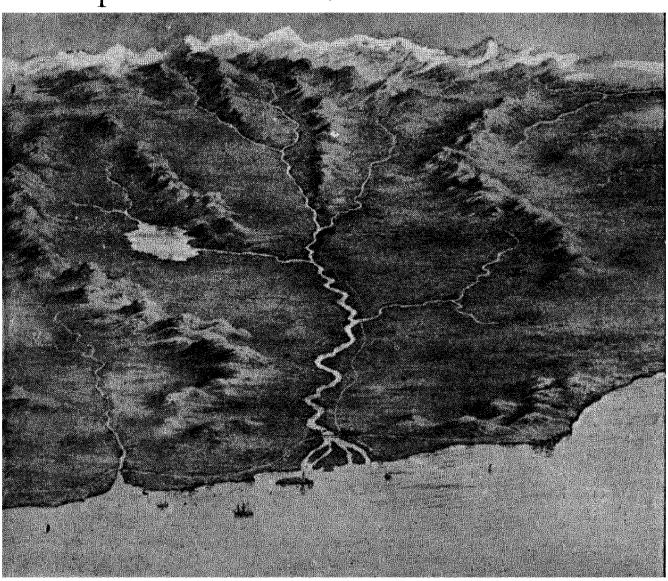
7. The land on both sides of a stream is called its *banks.* If you are walking down the river-side, the land on your right hand is called the *right bank,* and that on your left hand the *left bank.*

8. The hollow between the banks, where the water flows, is called the *bed* or *channel* of the river. The place where the river pours its water into the sea is called its *mouth.*

9. Sometimes the mouth is wide, like a bay or a firth, and we can hardly tell where the river ends and the sea begins. A river mouth of this kind is called an *estuary.*

10. Where the ground near the river mouth is level, the tide flows up the channel of the river at high water, sometimes for many miles, as it does in the Thames at London.

11. This is very useful where the channel of a river is not deep enough for big ships to float. In many of our rivers ships have to wait for high water before they can cross the bar or sail up the channel.



A RIVER BASIN

35. RIVER SOURCES.

1. Did you ever hear of the man who sat down on the bank of a river to wait till the water flowed past, so that he might walk across it dry shod? I daresay you would have thought him very foolish.

2. But if he had asked you how the water could flow past, hour after hour and day after day, without the river running dry, what would you have said? How is it that even in dry weather our rivers flow on steadily?

3. Let us try to find out by visiting the source of some stream up among the hills. Perhaps we find that the ground is very wet and marshy. It is full of water, like a sponge.

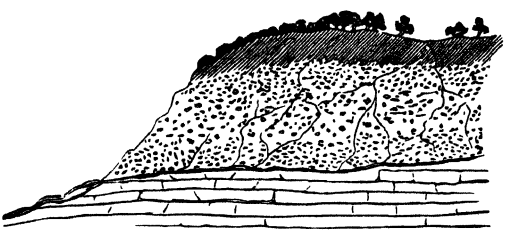
4. When rain falls on such ground, it does not run off all at once. Even in summer the ground is damp, and water trickles slowly from it into the streams.

5. As the rain-water sinks down through the soil, it sometimes comes to

a bed of rock or of clay, through which it cannot pass. What happens then? It flows along the top of this bed in little streams and pools under the ground.

6. But it does not stay under the ground. At some place on the hillside it comes bubbling out, and forms what we call a *spring*.

7. Many streams take their rise in

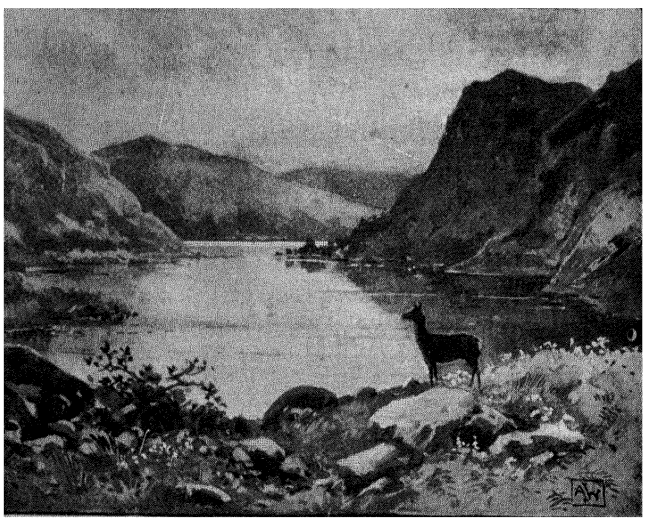


FORMATION OF SPRINGS.

springs. As the springs are fed from under the ground, they are not easily dried up by the sun, and they flow through summer and winter. Spring water is often very cold, even in the hottest weather.

8. Many rivers have their sources in *lakes*. The water of a lake comes partly from streams or from springs, and partly from the rain which falls into it.

9. In rainy weather the lake is full, and more water flows out of it in winter than in summer, but it never runs dry. The lake is a cistern which stores up water for the summer.



A LAKE.

10. Rivers, as we see, have sources of different kinds—marshes, springs, and lakes. But all their water comes from the rain. The real source of every river is in the sky. It is the clouds that give the water to all our springs, and lakes, and rivers.

36. THE CLOUDS.

1. We read in last lesson that all the water of our rivers comes from the clouds. How do the clouds get their water? Let us first find out what clouds are made of.

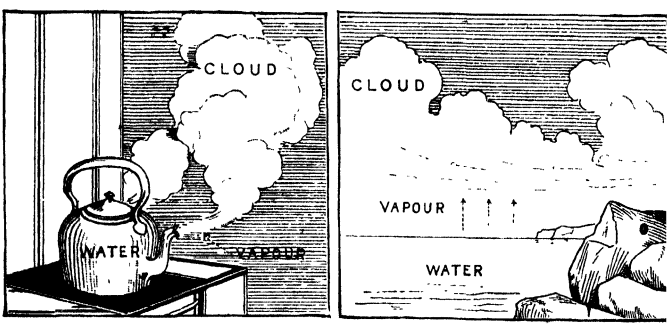
2. You can make little clouds for yourself—real clouds, just like those you see in the sky. Put a kettle with some water on the fire. After a while you see little white clouds coming from the spout of the kettle.

3. You can also see little clouds coming from your mouth on a frosty day. When a train rushes past, you see clouds coming from the engine. On washing-day at home you may see the wash-house full of clouds.

4. But that is *steam*, you say. Well, you may call it steam if you like, but it is exactly the same as the clouds which you see floating in the air. Real steam is very hot, and you cannot see it; when it cools a little, it forms those white clouds.

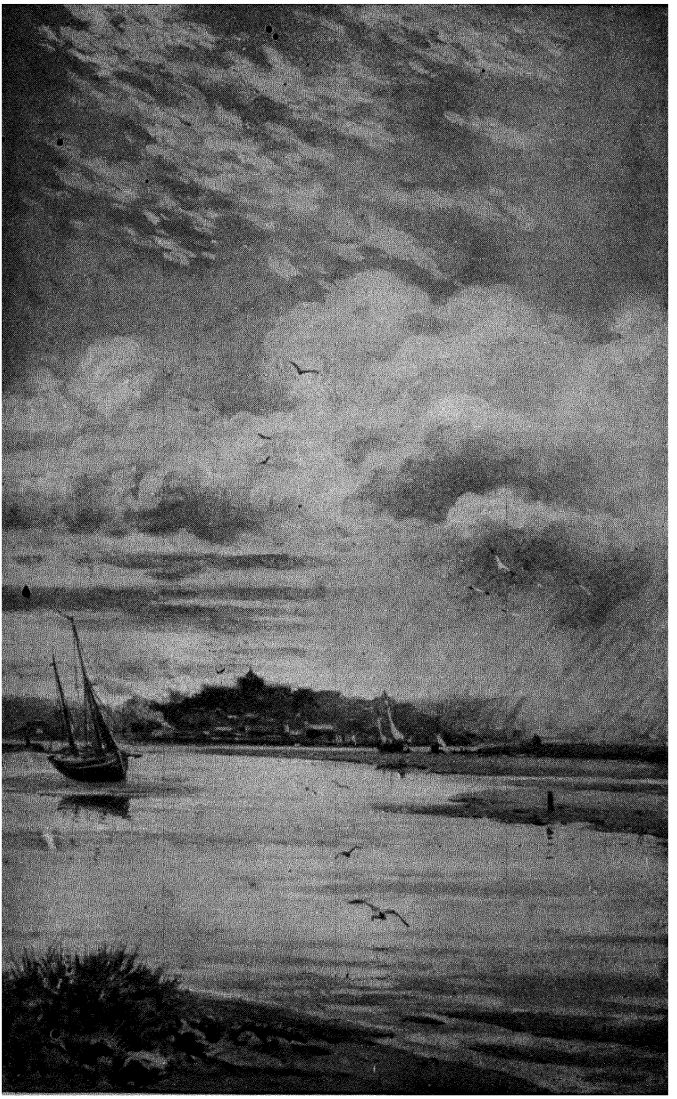
5. If you hold a cold spoon in steam for a moment, it will be covered with drops of water. The spoon cools the steam and changes it back into drops of water.

6. Now you can see how clouds are made, and what they are made of. When water is *heated*, it changes into



steam; when this steam is slightly cooled, it changes into tiny drops or particles of water—*water-dust*, as we may call it. It is this water-dust that makes the clouds.

7. These changes are always going on out of doors. When the sun is hot, the water changes into steam or vapour; when the air becomes cold, this vapour changes into clouds of water-dust.

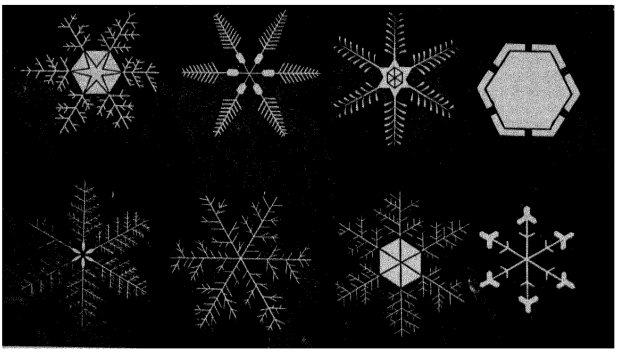


8. You can now see why your mother hangs the clothes out to dry on washing-day. The water that was in them changes into vapour, or steam; it is mixed with the warm, dry air, and you cannot see it.

9. Tons and tons of water change into vapour and rise up into the air every day, from the wet ground, from lakes and rivers, and from the broad ocean. When this vapour meets colder air, it changes into clouds.

10. When it becomes still colder, the small particles of water-dust join together, and form little drops of water. These become larger and larger, until they are so heavy that they fall quickly down through the air, and then we call them *raindrops*.

11. Sometimes the water-dust *freezes* up in the air. Each little speck turns into a beautiful six-pointed star, somewhat like those you see on next page. Then it floats downwards in white flakes of *snow*. A snowflake is made up of a large number of these stars or snow-crystals.



SNOW CRYSTALS.

37. SNOW IN SUMMER.

1. Winter is the time for snow. Boys and girls love this time; they run through the soft white snow, and they throw snowballs at one another, or they build snow-houses and snow-men.

2. We never see snow in summer in our country, but on very high mountains in other lands there is snow all the year round. Our own hills are often covered with snow long before we see it on the plains.

3. This shows that the air is colder up among the hills than it is down on the plains. If our highest mountains

were a few hundred feet higher, snow would lie on them all through the year, as it does on many peaks of the Alps.

4. Even in very hot countries the snow never melts on the high mountains. The highest mountains in the world are in the hot land of India, and they are called by a name which means "the abode of snow."

5. When vapour or water-dust is cooled, and falls as rain, we know that it forms rivers. What happens when this water-dust falls as snow? Year after year more snow falls; what becomes of it all?

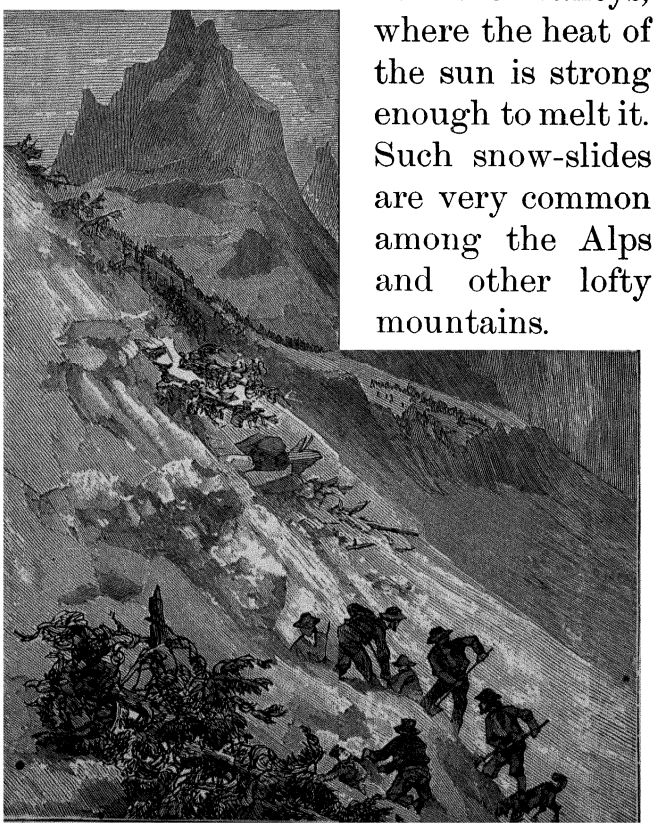
6. Have you ever noticed the roofs of houses after a fall of snow? The snow does not always lie there till it melts; it often slides off the roofs and falls down in heaps on the ground.

7. When snow is lying on a steep hillside, it sometimes slides down in the same way. A sudden puff of wind may be enough to start it.

8. Then the whole snow-field rushes down into the valley below, carrying

with it everything in its path—trees, rocks, and houses—and often causing the death of many people.

9. These snow-slides carry down some of the winter snow into the valleys, where the heat of the sun is strong enough to melt it. Such snow-slides are very common among the Alps and other lofty mountains.



AFTER A SNOW-SLIDE.

38. RIVERS OF ICE.

1. The snow which we read of in last lesson does not all come down from the mountains in snow-slides; most of it comes down in the form of rivers of ice. Does it not seem strange to speak of ice flowing, or making a river?

2. If you press a snowball for a time, it turns very hard and clear: it changes into ice. You should never throw a snowball of this kind at any one.

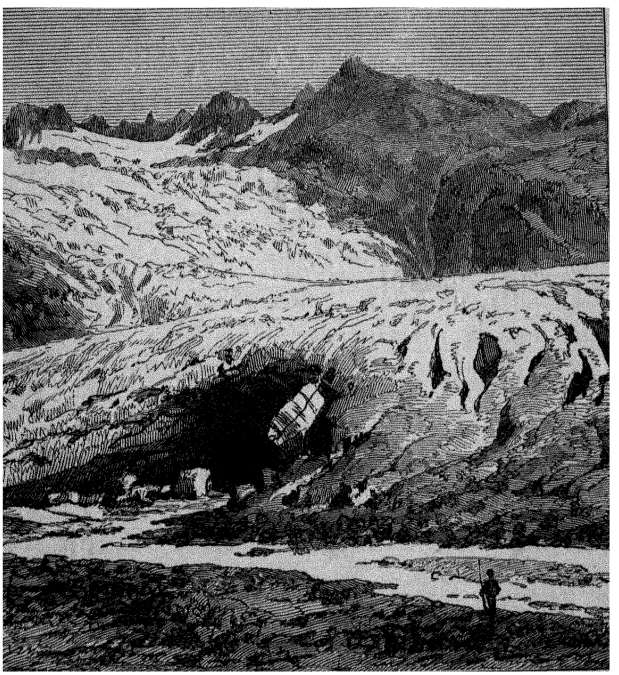
3. Look at the tracks made by heavy carts on a country road in winter. You will see that the wheels have pressed down the snow so hard as to make it clear and slippery. It has been turned into ice.

4. The same thing happens to the masses of snow on lofty mountains. The great weight of this snow presses the lower parts of it into ice, and forces it slowly down the mountain and along the valley below.

5. This mass of ice is called a *glacier*; it is really an ice-river. We cannot see it

move; yet it does move, though sometimes only a few inches in a day.

6. Some ice-rivers come far down into



RIVER SOURCE IN A GLACIER.

the valleys. But at last the sun's heat is strong enough to melt the ice, and then the river of ice changes into a river of water.

7. In very cold countries the sun is never strong enough to melt the glaciers. They move down the valleys until they reach the sea.

8. Then they are pushed over the cliffs or out into deep water, and huge pieces of ice break off and float away out to sea. These pieces are called *icebergs*, which means ice-mountains.

SUMMARIES OF THE LESSONS.

1. OUR HOME.

The Earth, or the World, is our *home*, and therefore we should try to know as much as we can about it. Men have travelled to far-off lands, and written books to tell about the wonders of those places. We will understand these books only when we know about the things in our own land.

2. OUR HOUSES AND TOWNS.

The people of the world are of different kinds—black, brown, yellow, and white. They live in houses of different kinds—caves and tents, and houses of wood, or brick, or stone. Farmers live in houses among their fields. Small groups of houses form villages, and large villages become towns.

3. A GREAT BALL.

When we are at the sea-shore, we can see for ourselves that the Earth is round. If we stand on a high point, we see the sky dip down behind the horizon far away. When we go down towards the water, the sea nearer us rises up between us and any distant ship. This shows us that the sea is not flat, but rounded. It looks flat only because we see a very little part of it at once.

4. THE COAST.

The place where the water and the land meet is called the *shore*, or the *coast*, or the *coast-line*. This line is not straight; it runs out in points, which have various names—*cape*, *headland*, *head*, *point*, *bill*, *ness*, and *naze*. A curve of the sea into the land is called a *bay* or a *gulf*. A *loch* or a *fiord* is a long, narrow bay. A bay where ships lie is called a *harbour*. The wide mouth of a river is called an *estuary*. On maps, sea and land are shaded or coloured differently, and the coast is shown by a bold, black line.

5. ON THE BEACH.

The sloping part of the shore is called the *beach*. Children like to play on a *sandy* beach, digging and building sand castles. Donkeys are kept at seaside places for children to ride on the sands.

6. SAND AND PEBBLES.

Sand is made from stone, such as sandstone. Shells of animals are sometimes broken into *shell-sand*.

Hard stones are broken into small pieces called gravel, or larger pieces called pebbles, and each piece is rubbed smooth and round.

Some beaches are of rock. Among the rocks are pools of water, with seaweeds and sea-animals in them.

7. CLIFFS AND CRAGS.

The land sometimes faces the sea as a high wall of rock, called a *cliff* or a *crag*. Sea-birds make their nests in crags, and the people who live near make use of the eggs and the feathers of those birds.

Caves are formed in cliffs by the waves wearing away soft parts of the rock. Hard parts are sometimes left standing as pillars when the rest of the cliff is worn away.

8. RALPH THE ROVER.

Rocks and sandbanks near the shore are dangerous to ships, and we have many ways of warning sailors off such places. The story of the Bell Rock and Ralph the Rover shows that this was not always the case.

The rock where the warning bell was hung by the abbot is now marked by a tall lighthouse with a large lantern at the top.

9. LIGHTHOUSES.

The first Eddystone lighthouse was built of wood; it was blown down. The second, also of wood, was burned down. The third was built of stone, and stood for over a century. A new lighthouse has now been built near it.

Lighthouses stand on many points all round our shores. Two lighthouses near each other show lights of different kinds. Coloured lights are used to guide a ship into harbour.

There are always two keepers in a lighthouse, or three if the tower is built on a rock far out from land.

10. LIGHTSHIPS AND BUOYS.

Sandbanks are marked by *lightships*. A lightship has a lantern on its mast, and men live on board to attend to the light. Shallow places are also marked by *buoys*, or hollow floats, some of which have a light always burning.

When fog comes on, a fog-horn or a bell is used at lighthouses, and ships go slow and sound their fog-horns. Sailors can tell when land is near by *sounding* or *heaving the lead*.

11. THE LIFEBOAT.

The lifeboat is used to save lives from a shipwreck. It is large and strong, but light, and will not upset or sink. There are ropes round the side for men to hold on by, and the oars are tied to the boat with ropes. The men wear cork jackets. The lifeboatmen are very brave, and risk their lives for others in many a storm.

12. USEFUL FIREWORKS.

Rockets are used in the night-time to call the lifeboat if a ship is wrecked. A large rocket is also used to help a ship which is driven on the rocks. This rocket has a line fastened to it, and when it is fired from the shore to the wreck, the sailors seize this line and draw out a strong cable from the shore. A buoy or basket is drawn backwards and forwards along the cable by another rope, and in this way the wrecked sailors reach the shore one by one.

13. A DAY'S FISHING.

Boys like sea-fishing in a fishing-boat. Fish can only be caught at places where they find plenty of food, and these places are known to the fishermen. They find the place they wish by noticing two sets of marks on the shore. They catch fish with a line held in the hand, the hook being baited with a limpet or a mussel.

14. THE HARVEST OF THE SEA.

During the herring-fishing season hundreds of boats may be fishing at one town. They go out to the fishing-ground in the evening. Then they pay out a long line of nets which hang down like curtains. The herrings run against these nets in the dark, and stick in the holes. Early in the morning the fishermen haul in their nets and take the fish to the town to be cured.

Fish are also caught by trawling, and far out at sea large fish are caught with hooks and lines.

20. THE DRY LAND.

We know the land better than we know the sea. In the town we see most of man's work; in the country we see nature working, and man making use of nature's work.

The land is not all flat like the sea, and it is not always made of the same things. Some parts are not good for men's homes, because plants will not grow.

In our land we must work to get food and shelter, so we have learned to make clothing and many other things.

21. HOW THE LAND LOOKS.

Some parts of England are flat; these we call *plains*. In other parts the land rises into *hills* and *mountains*, and among these are *valleys*, with *rivers* and *lakes* in them. These things form our *scenery*.

The places where crops are grown are *cultivated* land. In some parts we see *woodland*. The hills are used for *pasture-land*; some hills are covered with heather, and form *moorland*. The tops of mountains are often bare rock.

22. SOIL AND WEATHER.

Gardens, fields, and hill pasture-land are very different from one another, and this difference depends on the *soil* and on the *weather*.

Garden soil is black, rich, and deep; that of the fields is not quite so good; the hill pasture-land has only a thin, hard soil.

In the garden, the walls shelter the plants from cold winds; the fields have no shelter, but are not so cold as the hill-tops.

Countries differ from one another in the same way. Some are warm, and have good soil; others are too cold for growing crops. In England, good soil and good crops are produced by hard work.

23. UNDER THE GROUND.

The ground gives us food in its plants and the animals that live on them. We also need fuel for cooking and warming. Wood was at one time the chief fuel. Then coal came into use for fuel in houses, and for working metals. It is now used for steam-engines of many kinds.

Coal is the remains of old forests. These were covered up with water, and with the mud and sand which now form our rocks. Coal is found only in certain places, which we call *coal-fields*. On many coal-fields, such as the Black Country, busy towns have grown up.

24. OUR PLAINS.

England has many plains. The bottom of the North Sea is a wide plain, which is continued into the Fen Country. A low, wet plain is called a *marsh*, a *swamp*, or a *fen*. A plain on a high level is called a *table-land*. A *meadow* is a grassy plain such as we see near a river. A wet plain covered with decayed moss is called a *bog; peat* is cut from the bogs and dried for fuel in Ireland and in Scotland.

25. AN OCEAN OF GRASS.

In Canada there is a plain which stretches for hundreds of miles like an ocean of grass. Fifty years ago Red Indians lived on it as hunters. White men went there to buy furs. Near their forts, farms began to be made.

A railway now crosses this plain, and towns are growing up along its course. Vast fields of wheat may be seen there. Much of the wheat that we use grows on these great plains or prairies.

26. A FOREST PLAIN.

In South America there is another wonderful plain. The climate is hot and damp, and the ground is covered with a thick forest. The trees grow so close together that they shut out the sunshine, and there are hosts of climbing plants which climb up the stems of the tall trees to reach the sunlight. There are also many climbing animals.

Few people live there, and the houses must be built on posts to be above the water in times of flood. The natives gather the juice of the rubber-tree.

27. A SEA OF SAND.

The Sahara is a great desert plain in Africa. The camel carries goods and people across the desert.

Where there is a spring of water, it forms an *oasis*, where grass and palm trees grow. An oasis is an island of this sandy sea; some of the Arabs who live in the oases are its pirates. Sand-storms sometimes overtake travellers in the desert.

28. ENGLISH HILLS AND VALLEYS.

If England were covered with water five hundred feet deep, the *hills* or *mountains* would stand up above water as islands.

Hills usually form *ranges* and *groups*, with higher *peaks* among them, and low *valleys* between.

When we climb to the top of a hill, we find the air pure and fresh, and we have a fine view of the country below. If we go up a valley among the hills, we find it wide at first, and then narrower and steeper.

29. SOME COMMON ROCKS.

Mountains are made of rock. We can see three kinds of rock in school—coal and chalk, which are soft rocks; and slate, which is harder. Sandstone and limestone are used for building houses. We find fossil plants and trees in coal, and shells in chalk and limestone. Slate and sandstone are formed of bits broken off older rocks.

30. VOLCANOES.

A volcano is usually a mountain or a hill which has an opening running down into the earth. From the *crater* clouds of steam with dust and stones often rise, and hot melted rock called *lava* flows out. The lava and stones build up a mountain. A vent which throws out only hot water and steam is called a hot spring or *geyser*.

Mount Vesuvius is the volcano we know best. A volcano shows us that the inside of the earth is very hot. In our own land there are extinct volcanoes.

31. MOUNTAIN-CLIMBING.

Mountains are higher and steeper than hills. Many people like to climb high mountain peaks. The highest peak in Europe is Mont Blanc. People who climb Mont Blanc must have guides and porters; they carry long sticks, ice-axes, and ropes.

Some Alpine peaks can be climbed by mountain railways. The Alps have been called "the Playground of Europe." The highest mountains in the world, in India, are twice as high as the Alps.

32. A RAINY DAY.

Nature is busy in a rainy day, and we can learn a lesson even from a ditch with muddy water in it. The mud is made up of particles of soil from the fields. The ditch carries it to the river, and the river will carry it to the sea.

The valleys in which rivers are found have been slowly dug out by running water, while the hard parts are left as hills.

33. THE WORK OF WATER.

A river spreads its mud over the sea-bottom. This mud is changed into rock, and some day it may be raised up to form dry land. The fire inside the earth, and the water on its surface, are like two giants fighting against each other. The heat raises up hills and mountains; the water grinds them down and carries them into the sea.

Sometimes a muddy river forms a *bar* across its mouth, and sometimes islands, which grow into a *delta*.

34. A RIVER.

The valleys through which a river and its cross streams flow form its *basin*. A ridge between two valleys is a *water-shed*. The place where a river begins is its *source*. On either side of a river are its *bank* —the *right* bank and the *left* bank. Between the banks is the *bed* or *channel* of the river. A wide river mouth is called an *estuary*.

35. RIVER SOURCES

Our rivers do not run dry even in dry weather. Sometimes a river rises in a *marsh*, which holds water like a sponge. Some rivers rise in a *spring*, others rise in a *lake*.

All these sources—marshes, springs, and lakes—get their water from the clouds as rain.

36. THE CLOUDS.

The clouds in the sky are just like those that come from the kettle. These are often called steam, but steam is very hot, and cannot be seen; when cooler it forms white clouds. The clouds are composed of tiny particles of water, or *water-dust*.

These particles of water-dust unite to form *rain-drops*. Sometimes they freeze into *snow-crystals*, and these unite to form *snow-flakes*.

37. SNOW IN SUMMER.

On high mountains snow lies all the year round. On our own hil it lies longer than on the plains; and in the hot land of India snow always lies on the highest mountains.

Snow falls every year there, and does not melt. Some of it slides down into the valleys and melts there.

38. RIVERS OF ICE.

Most of the snow on high mountains comes down the valleys as rivers of ice. The weight of the snow presses its lower parts into ice, and pushes it down the valleys. Such a moving mass of ice is called a *glacier*.

In cold lands the glaciers are pushed into the sea, where portions float away and form *icebergs*.

THE END.