

Nature Readers



SEA-SIDE AND WAY-SIDE

BOOK THREE

BY

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"So he wandered away and away
With Nature, that dear old nurse,
Who sang to him, night and day,
The songs of the universe."

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PREFACE.

TO THE BOYS AND GIRLS:—

IN this book we shall wander together a little farther, by the seaside and by the wayside. Sometimes we shall walk on the breezy hills; sometimes in the low, marshy places, where ferns and rushes grow.

Sometimes we shall stroll along the wayside path, where the wild-flowers and grasses are woven into a wreath.

Sometimes we shall go to the hard, white sand, where the ocean waves roll to our feet, and bring us shells and curious treasure from the sea. Again, we shall go down to the still ponds, where lilies float on the water and dragon-flies swim in the air.

Wherever we go, let us keep our eyes open and our minds awake to the lessons of Nature. Then we shall be able to learn what beauty and wisdom lie hid, even in such humble things as flies and worms. We shall find much to delight us in beetles; and be as happy as kings while we search out the secrets of airy hunters and marvellous little fishes.

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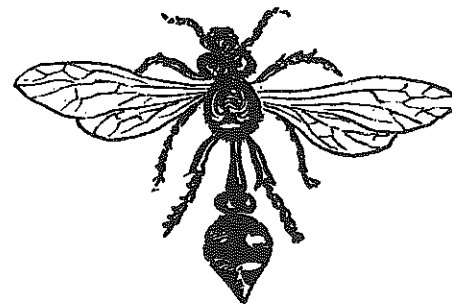
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SEASIDE AND WAYSIDE.

LESSON I.

A LOOK AT AN ANT.

You have been told that an insect is a living creature with a body made in rings, and divided into three parts. Most insects have six legs, four wings, and two feelers.



The Wasp.

There is a great Order of insects which we shall call the hook-wing family.

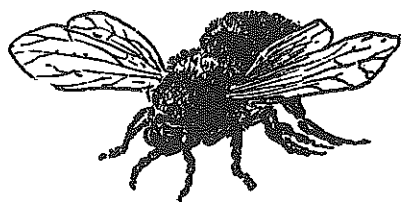
The wasp, the bee, the saw-fly, and ant belong to this family. They are the chief of all the insects. They can do many strange and curious things.

You will know insects of this great family by their wings. The front wings are larger than the

back ones. They fold back over them when at rest.

In flight the upper wings hook fast to the lower.

If you look carefully at some kinds of insects, you will soon think I have told you what is not quite true. Why will you think that? You will say to me, "The fly has two wings, and not four." "The ant has no wings at all."



The Bee.

Ah, but wait until you study about ants and flies, and see what you will think then.

The mouth of all the hook-wing insects has two jaws for cutting or for carrying things. The mouth is nearly as wide as the head.

Above the mouth are two knobs. These knobs are two big eyes, one on each side of the head. Between the two big eyes they have some little ones, on the top of the head.

You see insects are as well supplied with eyes as crabs are with legs.

The back part of the body of many insects is made fast to the middle part by a small joint, or thread. That is because these insects need to bend, or even double up, in some of their work.



The Fly.

The Hook-wing Order is divided into two great kinds.

The insects of one kind carry a little saw. The others carry a sword. The sword is a sting. The saw is to cut up leaves and wood to make nice soft nests or houses for the eggs. The sword is to fight with, or to kill things for food. Among the saw-carriers is the fine, long fly, called a saw-fly. Bees, ants, wasps, and others carry the sting.

Get one of these insects, and you will see all the parts of which I have told you. Let us first take an ant to look at.

The head of an ant seems very large for its body, and the eyes seem very large for the head. They look as if they would be heavy for the little ant to carry.

On the under part of the body which is next the head are set the six legs. These legs and the feet have joints.



The Ant.

On the upper side of this same second part of the body are set the wings. There are four wings, two large and two small ones. The upper pair are larger than the lower ones.

The third or back part of an ant's body is made of six rings. On the tip or pointed end of this hind part is the sting.

Now I hear you cry out, "O, my ant has no wings!" Well, let me tell you a secret. The wings of your ant have been cut off, or unhooked, as you shall hear by and by.

There are many families of ants. Each has its own name and its own ways. All ants are very wise in their actions. I shall tell you many strange things about them. Ants have always been called "the wise insects." Would you not like to learn about their homes, their children, and their way of life?

Before you study the ants in any book, I wish you would go out into your garden or into the fields. Find an ant-hill, and sit or lie by it for an hour or so. Take some sugar or bits of cake to feed the ants. Find out for yourselves all that you can about them. Facts that you learn in this way will be worth very much to you. Be careful and do not disturb the hill or alarm the ants.

LESSON II.

THE LIFE OF AN ANT.

IN ant-hills we find drone ants, queen ants, and worker ants. The drone ants have no sting and do no work. Their bodies are longer and more slim

than those of queens. The drone ants have wings.

The queen ants also have wings. They have stings, and their bodies are round and dark.

The workers are smaller than queens and drones. They are also darker, and have no wings and no stings. Workers are of two sizes, large and small. They are the builders, nurses, soldiers, and servants of the others.

In an ant-hill there may be many queens at one time. Often the ant-queens work. They are both mothers and queens. They will also act as soldiers. The queen ant



A House in a Hill.

is not like the queen bee, who will allow no other queen to live near her. I think mother ant a better term than queen ant.

The word "queen" may make you think that this ant rules the rest. That is not so. Ants have no leader and no ruler. Each ant seems to act as it pleases.

The chief work of the queen ant is to lay eggs. In a short time, out of each egg comes a lively, hungry, little baby ant. It is called a larva. A larva is like a small white worm.

This little being needs to be washed, fed, kept warm and dry, and taken into the air and sun. It must be cared for, very much as the baby in your home is cared for.

The workers, who act as nurses, are very kind to the young larvæ.¹ How do they wash these little things? They lick them all over, as the cat licks the kitten. They use such care that they keep them nearly as white as snow.

The nurses feed the baby ants four or five times each day. The nurses prepare the food in their crops, to make it soft and fit for the little ants.

The nurses stroke and smooth the larva baby. It seems as if they patted and petted it. When the weather is cold, they keep the larvæ in-doors.

¹ When we mean only one we say *larva*; when we mean more than one we say *larvæ*.

When it is warm and dry, they hurry to carry them up to the top of the hill. They place them there to bask in the sun. If any rain comes, or the hill is broken, the nurses run to carry the babies to a safe place.

When the larva is full grown, it spins around itself a little fine net, which wraps it all up. When people see these white bundles in the ant-hills, they call them "ant-eggs." They are not eggs. They are pupa-cases. In them the baby ants are getting ready to come out, with legs and wings, as full-grown ants.

The pupa-cases are of several sizes. The largest ones are for queens and drones. The next size holds large workers; the smallest cases hold the smallest workers.

There are often in the hills very wee ants called dwarf ants. When you study more about ants in other books, you can learn about the dwarfs.

After the ants have been in the little cases some time, they are ready to come out. The nurse ants help them to get free.

Many hundreds come out of the cases. They crowd the old home so full that they can scarcely find room to move about.

Then they see the light shine in at the little gates on the top of the hill. They feel the warmth of the sun. They crawl out.

They push upon each other. The hill is not wide and high enough for so many uncles and cousins and sisters and brothers. They act like great crowds in the streets at a big parade, each one struggles for his own place.

Young ants, like young people, wish to set up for themselves in new homes. They spread their fine wings. Off they fly! Since there is not room in the old hill they will build a new one.

They swarm as the bees do. As they rise high from the earth, they drift off on the wind. Very many of them tire out and die, or are blown into the water, and are drowned. A few live and settle on places fit for a new ant-hill.

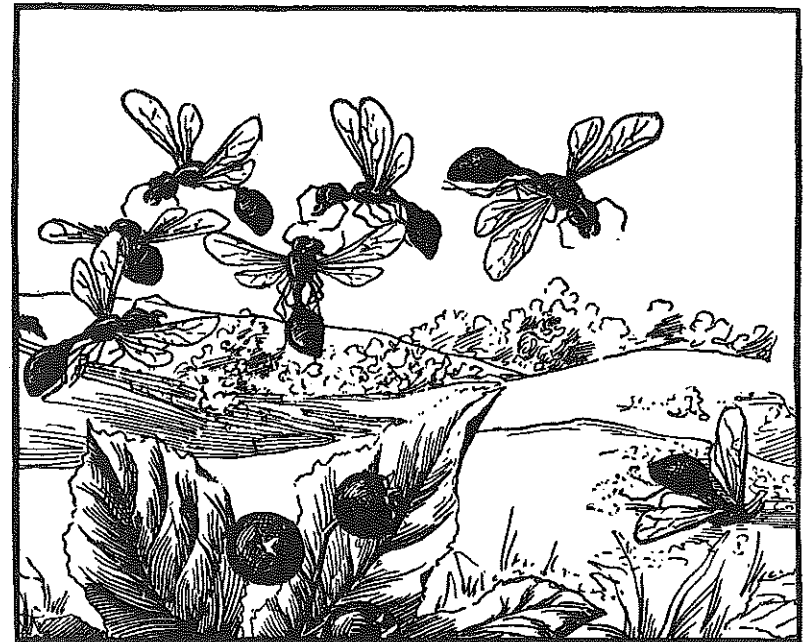
It is the mother or queen ant who chooses the new home. When she has found the right place, what do you think she does? She takes off her wings, as she does not care to fly any more.

The ant does not tear off her wings. She un-hooks them, and lets them fall away, and does not seem to miss them.

LESSON III.

THE ANT'S HOME.

ANTS live in nests, made in the earth. We call them ant-hills, from the shape of the part that is



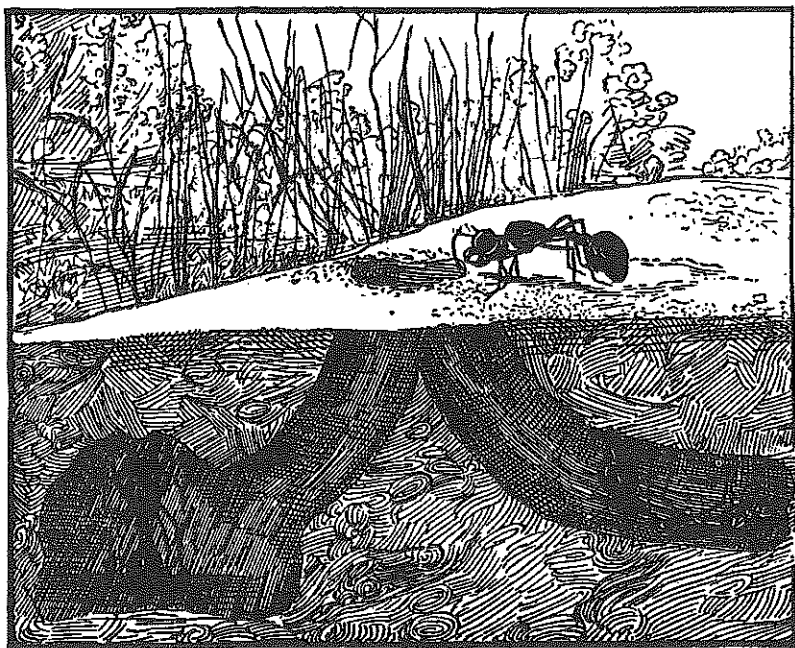
The New Home.

above ground. It is the queen ant who begins to build the ant-hill.

Like the mother wasp, the ant works on her nest until enough ants grow up to do all the work. Af-

ter that, like the queen bee, she does no work. The work ants will not allow her to go from home.

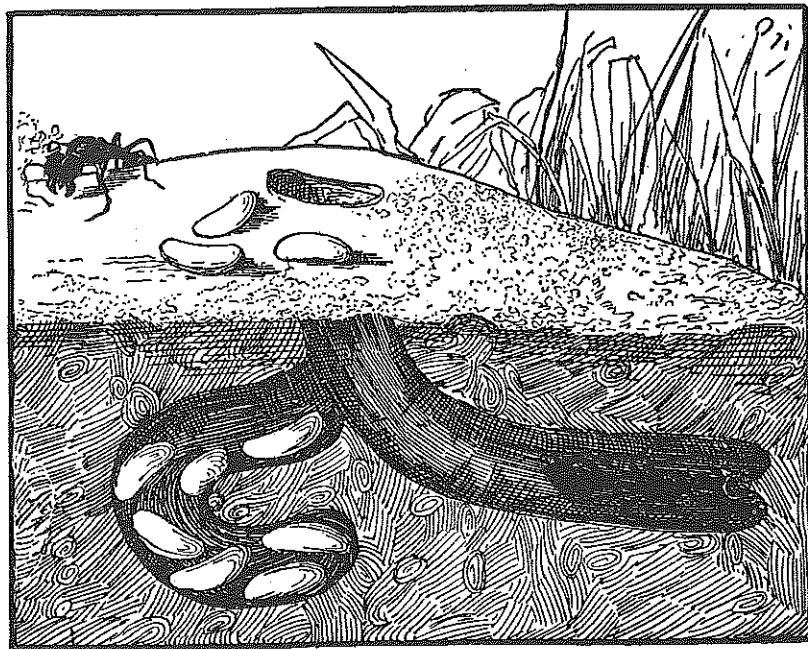
When the ant finds a place for her home, how does she take off her wings? They would be in



Sappers and Miners.

her way while she worked. She presses the edge of a wing upon the ground and so pushes it up and loosens the hook, just as you unhook a dress. Then she begins to dig. She acts at first much as your dog does when he digs after a chipmunk or a rabbit.

The ant lays her big head close to the ground. With her fore-feet she digs up the soil, and tosses it back between her hind legs. She digs as her cousin, Mrs. Wasp, digs.



Sappers and Miners.

She keeps waving her little feelers, as if to find out the kind of soil. Soon she has a hole deep enough to cover her body. It is too deep for her to throw out the dirt with her feet. Now she uses her feet, and her jaws, also, to dig with.

Where the soil is sandy, she takes it out, grain

by grain. At first, she must back out of her hole. Soon her hall-way is so wide that she can turn about after she has backed a few steps.

Ants are very kind to each other in their work. If they push or tread on each other in their haste, they never fight about it.

The ants know how to work and how to rest. After a little hard work they stop, clean their bodies, take some food, and sleep.

As the making of the hall goes on, the ants bite off with their jaws bits of dirt, and roll them up with their feet. They soon use the hind part of the body to press and push the earth into a firm ball. These balls are carried out and laid by the door. By degrees the balls form the "ant-hill."

When the hall is two or three inches long, they make a room. Then they make more halls and more rooms. The rooms are for eggs, for larvæ, for pupæ,¹ and for food.

People who have studied much about ants have had them build nests in glass jars. Thus they have been able to see how they work.

To make a room, the ants often have to stand on their hind legs, and bite the earth off, as they reach up their heads. Sometimes the ant lies on its side, to clean off or smooth the side wall. They have

¹ *Pupa* is used when we speak of one, *pupæ* when we mean more than one.

been seen at work, lying on their backs, as men do in mines.

The jaws of the ant have tiny teeth. In old work ants the teeth are often quite worn off. The feet and jaws of the ant are well made for digging. The feet have small hairs. By the aid of these the ants can run up a piece of glass, or hang on a wall, as you would say, "upside down."

An ant-hill is made of very many little halls and rooms. Some open into each other; some do not. The rooms are bedrooms, nurseries, pantries, and dining rooms. Many of the rooms are shaped like a horseshoe. Some are round.

The ants press and knead the floors and walls to make them hard and smooth. Sometimes they line them with a sticky soil, like paste, to keep the earth from falling in.

Some ants seem to make a kind of glue, or varnish, with which they line their walls.

LESSON IV.

THE ANTS AT HOME.

WE have taken a look at the ants and have seen how the hill is made. Let us now see how the ants live in their hill-home.

When we go to visit them, we shall find ants

running all about the hill and in the halls. These are the work ants. Some seem to stand on the hill to watch lest any danger may come near.

When the drone ants and the queens are young, the work ants let them go out and fly. When they go out, the drones do not often come back. They get lost or die.

The young queens come back, except those who go off to make new hills. But when the young queen settles down in life, to her work of laying eggs, the workers do not let her leave the hill any more.

How do they keep her in? If she has not taken off her pretty wings, they take them off and throw them away! If she tries to walk off, a worker picks her up in its jaws and carries her back.

The ants are kind to their queen. They feed her and pet her, and she becomes very lazy. She does not even care to lay her eggs in a nice clean place.

The idle queen drops her eggs anywhere. The kind worker ants pick them up, and take them to a soft bedroom.

When there are too many young queens in one hill, they do not have a war, as the bees do. The workers settle the trouble, by taking off the wings of some of the young queens, and turning them into

work ants. This is done before the queens begin to lay eggs.

New-born ants and queens, who do not go out into the sunshine, are of a light color. The other ants are dark.

In cold, wet weather the ants stay at home. If a rain comes up when they are out, they hurry back. Early in the day, and late in the afternoon, they all seem to be very busy. In the hot hours of the day they stay in the hill and rest.

In very hot lands the ants stir about all winter. Such ants lay up stores of food. You shall hear of them by and by. In cooler lands, during winter, the ants are asleep, or, as we say, are torpid.

The young swarms usually go out in autumn. I have seen very large swarms in the spring.

Ants like sugar and honey best of all food. They get honey from flowers, and in other ways of which I will soon tell you. Some like seeds which have a sweet taste. For this reason they eat some kinds of grass-seeds, oats, apple-seeds, and such things.

Ants take their food by licking it. Their little rough tongues wear away bits of the seed; they also suck up the oil and juice. They seem to press the food with their jaws.

It has been found out that they know how to moisten their food and make it soft. If you give