EYES AND NO EYES BOOK 6.

INSECT LIFE

ARABELLA BUCKLEY

Be sure to look for the rest of the Eyes and No Eyes series, as well as many other great books to supplement your nature study at-
www.livingbookpress.com

Eyes and No Eyes Series 1

Vol 1. Wild Life in Woods and Fields
Vol 2. By Pond and River
Vol 3. Plant Life in Field and Garden
Vol 4. Birds of the Air
Vol 5. Trees and Shrubs
Vol 6. Insect Life

Eyes and No Eyes Series 2

Vol 7. Nature's Nurseries
Vol 8. O'er Moor and Fen
Vol 9. Riverside Rambles
Vol 10. Highways and Hedgerows
Vol 11. On the Seashore
Vol 12. Within the Deep

This edition published 2021
by Living Book Press

First published in 1903.

ISBN: 978-1-922619-97-6 (softcover)
978-1-922619-98-3 (hardcover)

A catalogue record for this book is available from the National Library of Australia

Eyes and No Eyes
Vol. 6

INSECT LIFE

BY

Arabella B. Buckley
(Mrs. Fisher)

PUBLISHER'S NOTE

We at Living Book Press are extremely proud to bring you this release of Eyes and No Eyes, originally published by Cassell.

Some of the old images were not of a high enough quality to reprint so we have included some of the black and white images from the original as well as many high quality photographs to accompany the text throughout.

Because this book represents a broad overview of the nature we will find around us the images may sometimes be of similar creatures and plants that are native to other regions than the United Kingdom where the story was first set. This is to help children appreciate that many animal and plant families share similar traits and can be found in many parts of the world, some may even be in their own backyard, as well as provide an opportunity for those who can't access the great outdoors to see nature up close.

We hope these new editions bring a lot of joy to your homes, and that they will help children everywhere take a deeper look at the natural world surrounding them.

Living Book Press.
2021.

CONTENTS

ROBBER FLY ANTS AND PLANT LICE

LESSON I.

WHAT IS AN INSECT?

It is a lovely summer morning. Let us shut up our books and wander in the garden and field, in search of insects. The best way is to take a few card match-boxes with us, and drop one insect into each as we find them. Then when we get back to school, we can put them separately under tumblers,

Insects are so small that we often pass them by. But they form three-fourths of the whole animal kingdom, and they do us so much good and so much harm that we ought to know about them.

As we start I see a Cabbage Butterfly in the kitchen garden, and a beautiful Red Admiral flitting about among the flowers. We will take the Cabbage Butterfly, so that she may not lay her eggs on our cabbages.

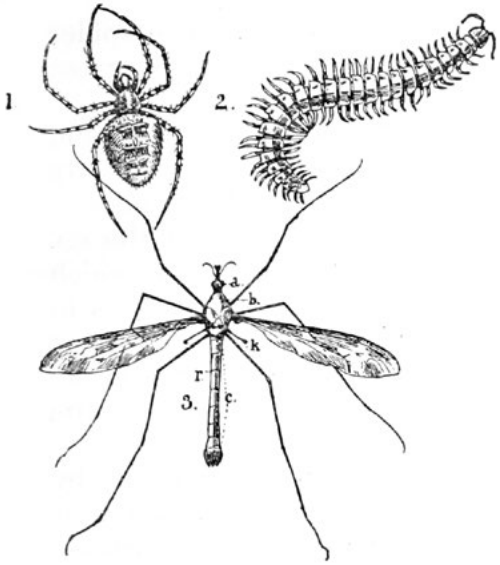
ROVE BEETLE

Next stop at this rose-tree, there are a number of tiny insects on the flower-stalks. If you look closely, you will see that each one has his beak buried in the stem, so as to suck out the juice. These are plant-lice. Each one is called an Aphis, and in the plural they are called Aphides.

We must syringe the tree with soft soap and tobacco water, or it will soon be covered with these insects, for they increase at the rate of more than a million in a month, and they suck out all the sweet sap from the plants to which they cling. On the same tree you will very likely find a Lady-bird, for she feeds on aphides.

Now look into the flower of this old Cabbage Rose, which grows in most cottage gardens. You are almost sure to find in it a lovely Rose-beetle with green shining wings shot with gold. Take it up and look at the bright wing-cases. While you are looking, it may open these cases and spread out the transparent wings underneath; but if it flies away you can easily get another.

Now, look! At your feet runs a beetle which is not half so pretty. It is the Cocktail, or Rove Beetle, often called the



1. SPIDER. 2. CENTIPEDE LONG-LEGS K. KNOB OR BALANCERS.

Devil's Coach-horse. As you pick him up he will cock up his tail and squirt out a very disagreeable fluid over your fingers, while he raises his head and snaps with his jaws. So drop him in his box quickly. The fact is, he is terribly frightened, and hopes to make you set him free.

Now we will go out into the newly-mown field, and there you will see a number of small green Grasshoppers hopping about. They have been hatched under the earth-clods, and are eating the tips of the young grass. Some will have wings, but others, which are not fully grown, will have none. Pick one up and make him too a prisoner.

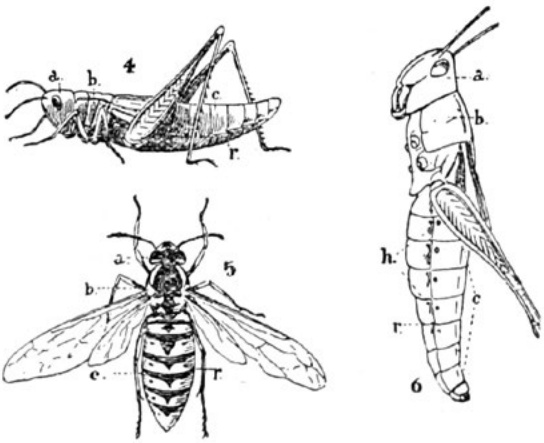
Next try to find a Wasp or a Bee. You can pick it up in your handkerchief and drop it in its box. We must go down to the river to find a May-fly or a Dragon-fly, and near there we shall easily get a Daddy-long-legs. But if there is not one to be seen, a Blue-bottle or a Gnat will do.

You will wonder that I have not asked for a Spider. You had better get one, and also a Hundred-legs or Centipede, if you can find it.

WASP NEST

When you have put these specimens under their glasses, look carefully at them. You will find a difference between the spider, the hundred-legs and all the others. The spider has eight legs and the centipede a very great many, while all the others have only six.

Now look at the Grasshopper, the Wasp, and the Daddy-long-legs. You can see very clearly that their bodies are divided into three parts—(a) the head; (b) the front body, on which the six legs and the wings grow; (c) the hind body, which has no legs on it, even when it is very long, as in the daddy-long-legs and the May-fly. You cannot see these divisions quite so well in the beetle because its wing-cases cover the join between the front and hind body.



4 & 6. GRASSHOPPERS. H. BREATHING-HOLES
5. WASP. r. Rings, a Head, b Thorax c. Abdomen.

We had better call these three divisions by their right names—(a) head; (b) front body, or thorax; (c) hind body, or abdomen. It is because insects are cut into these three parts that they have their name. It comes from the Latin "inseco" (I cut into). The Spider's head is not clearly divided from its body, and a Centipede has not three divisions. For this reason, and because they have not six legs, some naturalists separate them from the true insects. This is why I did not call them insects.

Another thing you can notice well in the little green Grasshopper: his body is divided into rings (r), from his tail up to his head; and you can see the same in the wasp and the daddy-long-legs, the aphis and the cocktail beetle. All insects have ringed bodies.

It is these rings which enable the Wasp to bend her abdomen (c) when she wants to sting and to breathe. You can see, as she stands, how it keeps moving up and down all the time. This is because she is breathing. How do you think she does it? Not through her mouth as we do, but through her sides.

If you look closely at the grasshopper you will see along the sides of his body, some little black dots (h, p. 5), one in each ring. These are breathing holes, and through them the air goes in and out. They are smaller in a wasp, but they are there, and she is pumping the air in and out of them.

Now that we have put aside the spider and the centipede, those that remain are true insects. But there is a difference between the daddy-longlegs and the rest, which you must notice. This is that *they* all have four wings and *he* has only two. This would be very strange if it were not that we can find some remains of the right number. He has two little knobs (k) behind his front wings, and with these he balances himself. So he has two wings and the stumps of two more.

There is a great deal more to be learnt about these insects. But I want you to remember now—that they have six legs; that their body is divided into three parts; that you can see the rings in their hind body or abdomen; that their legs and wings grow on the front body or thorax; and that they never breathe through their mouths. Also that while bees, butterflies, and beetles have four wings, flies have two wings and two stumps.

Find as many insects as you can, and notice their different parts.

MONARCH CATERPILLAR

LESSON II.

PARTS OF A CATERPILLAR.

In the last lesson we found the full-grown insects very easily. But it is often more difficult to know some of them when they are young. Grasshoppers, crickets, and plant-lice, when they come out of the egg, are very much the same as when they are grown up, except that they have no wings. But the daddy-long-legs begins its life as a grub underground. The lady-bird when young is a kind of caterpillar and runs over the plants eating plant-lice. And beetles are grubs with six small legs before they grow into perfect beetles with wings.

The caterpillars of Moths and Butterflies are easy to find, so we will look at one in this lesson. There is hardly any time in the summer that you cannot find a caterpillar. Those of the Orange-tipped Butterfly come out first in April. In May the Cabbage Butterfly lays her eggs, and soon the caterpillars are eating the young cabbage leaves. A little later you may find among the nettles the black caterpillars with white spots

CABBAGE MOTH CATTERPILLAR

PEACOCK BUTTERFLY CATERPILLAR

TORTISESHELL CATERPILLAR

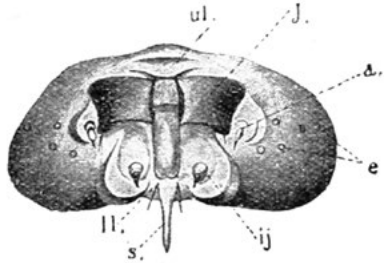
PRIVET HAWK-MOTH CATERPILLAR

which will turn in June into the Peacock Butterfly; or the dark green caterpillars of the Red Admiral. These are hidden in a bunch of leaves generally tied up with caterpillar silk.

If you do not find either of these you cannot miss the heaps of little black caterpillars striped with yellow which feed under the leaves of nettles, and turn into the small Tortoiseshell Butterfly. These caterpillars are very useful in killing nettles, so the butterfly is one you should always be glad to see. Then towards the autumn the caterpillars of the big Hawk-moths do a great deal of mischief. If you go out in the evening or early morning you may find the caterpillar of the Spurge Hawk-moth feeding on the green spurge in the hedges. It is a fine creature three inches long, with three bright lines on its back, and yellow spots on each ring.

But the most common one, which I have often found,

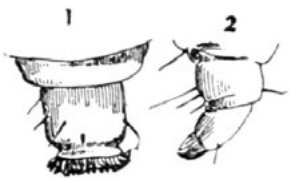
is the caterpillar of the Privet Hawk-moth, which feeds in the evening on the privet hedge or the lilac bushes. It is from three to four inches long, and is a bright apple-green, with seven sloping violet stripes on its sides, and a horn at the end of its body. Its head is green, edged with black, and the breathing holes on its sides are circled with bright orange.



CATERPILLARS HEAD.
ul. Upper Lip. j. Jaws, a Antennae. c Small Eyes. ij. Inner Jaws. ll. Lower Lip. s. Spining Tube.

It destroys the hedges terribly, for it is very hungry and wants to store up food so that it may grow into a moth. Though its body is soft, its head is hard and horny, and as its mouth has nothing to do in breathing, or making any noise, it can be used all the time for eating. It is made of a great many pieces, but the parts you can see well are the large upper lip (ul) and the two broad strong outer jaws (j) which move to and fro sideways as it gnaws the leaf. As soon as a piece is cut off the caterpillar tucks it into his inner jaws (ij), where it is chewed and swallowed. Under the jaws is the flat lower lip (ll), through which passes a little tube. Look well at this tube (s). It is the place from which comes the silk, which he uses to spin his cocoon, in which he sleeps while his butterfly body is growing.

You remember we read in Book I. that the spider spins her web out of silk which comes from six little pockets under her body. But a caterpillar or a silkworm brings its silk out of its mouth.



1. CUSHION FEET OF CATERPILLAR.
2. JOINTED LEGS.

Now look at the legs. There are three pairs, one on each ring of the thorax. They have joints in them and claws at the end. These are true legs, and they are hard and horny like the head. When the caterpillar turns into a moth these six legs will remain. But it has also some cushion feet, on the other rings of its body, which it uses to hold fast to the twigs. These are not true legs, but only fleshy cushions with a ring of hooks under them, and they will disappear with the caterpillar's body when the moth grows up. There are generally four pairs of cushion feet behind the true legs, and two pairs at the end of the body, but some caterpillars do not have so many. Do you know those called "Loopers," which bend their body into an arch or loop? You may often find them on the currant bushes, where they do a great deal of mischief. They have only six true legs and four cushion feet at the end of their body, and they walk in a curious fashion. They hold firmly to the twig by their front legs, and then draw up their cushion feet till their body makes a loop in the air. Then they let go with their front legs and lift up their head like an elephant raises his trunk, and stretch forward further up the twig.

As a caterpillar is always eating, his skin becomes so full that there comes a time when he cannot put in any more food. Then he remains quiet for a few hours, and swells out his rings. His skin splits and he creeps out, with a new soft skin ready underneath. This will stretch, and

TRANSFORMATION OF A BUTTERFLY

very soon he is eating away as merrily as ever.

He does this about five times in his caterpillar life, and then he stops eating and remains without moving for some days. His colour fades, and when he splits his skin and shuffles it off, all the parts of the butterfly or moth are to be seen underneath, soft and unfinished. Soon a kind of gum oozes out over them. This hardens and keeps the tender body safe from harm while it is growing.

CHRYSALIS

Now he is called a *chrysalis*, or sometimes a *pupa* or doll; and, indeed, he looks like a crumpled doll as you see his legs bent together and his head folded down over them under the hard gum. The pupa of a butterfly is generally broad at the top and narrow at the bottom, and it has ridges and prickles on it. But the pupas of moths are shaped more