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Early Elementary Science Collection

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The Insect Folk, by Margaret Warner Morley

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Early Elementary Science Collection Contents

The Insect Folk
Margaret Warner Morley

ILLUSTRATED BY THE AUTHOR

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The Insect Folk Contents

A WORD TO THE CHILDREN

Dear Children,

The very best way to know the insects is to go and watch them. Watch them whenever you can, and each time you will find out something new. Books will help you, but you must watch, too. Look more than you read.

If you need to catch them, put them under a tumbler, and feed them and give them a drop of water every day to drink. Slip a card under the rim of the tumbler on one side so as to let in the air. If you do not know what to feed them, or if they will not eat, let them go after a day or two.

If you wish to kill an injurious insect, do it *quickly and completely*. Remember the insects are alive, and we should not make them suffer unnecessarily.

Of course you must try to make your captives feel at home. If they live in the sand, put sand in the tumbler and tie a piece of netting over the top so they cannot escape.

If they live in the water, put them in a tumbler of water. And when you have secured your captives, watch them as much as you can.

If you do not know how to pronounce the words in this book, study the glossary at the back and it will help you.

I hope you will have a very happy time getting acquainted with your little insect neighbors.

MARGARET WARNER MORLEY.

Boston,
April 18, 1903.

Our Pretty Dragon Flies

Come, children; come with me.

Come to a pond I know of.

See how the water shines in the sun.

Over there is an old log lying on the edge of the pond.

It is covered with green moss, and a green frog is sitting on one end of it.

Let us go and sit on the other end.

Goop! he says, and—plump! he has jumped into the water.

That is too bad, frog; we did not mean to disturb you.

How pretty it is here!

See the pickerel weed growing out in the water with its arrow-shaped leaves, and its spikes of purple flowers.

See, down in the water are little fish, and very likely pollywogs are there too, and lots of queer little things.

But who is this darting over the pond?

Ah, we know you.

You are our queer little, dear little old dragon fly.

Look, children; see the dragon flies darting about like flashes of light in every direction.

They are having such a good time.

Whizz! One flashed right past Mollie's ear.

Pretty people, I wish one of you would come and sit by us a little while, so we could get a good look at you.

What is that, Ned? You have found a large one lying on the ground?

Sure enough; it is a beauty too, with a green body and silver wings.

Something seems to be wrong with it; it does not fly nor try to get away.

What a big one it is!

My! my! what eyes!

Don't crowd, Amy; let little Nell see too.

What is that you say, Richard? "It catches mosquitoes and gnats and flies and other insects while flying."

Yes, and that is why it has such big eyes. We should need big eyes ourselves if we were to spend our time chasing mosquitoes.

Two eyes you have, little dragon fly, like the rest of us, but your eyes are not like ours.

No, indeed!

Each of your big eyes is made up of a great many small eyes packed close together.

Do you know, children, that some of the largest of the dragon flies have as many as twenty thousand facets, or small eyes, in each large eye?

Think of it! Forty thousand eyes in one little dragon fly head. It *ought* to see well.

These facets are six-sided, excepting those along the edge, which are rounded on the outside. You cannot see their real shape without a microscope, they are so small. But here is a picture of some facets  as they look under the microscope.

Eyes like these, made up of many facets, we call compound eyes.

All grown-up insects have compound eyes, though not many have as large ones as the dragon fly.

Only insects that chase other insects or that need to see in the dark have very large eyes.

See what a big mouth the dragon fly has. Its jaws do not show unless it opens its lower lip, which fits over its mouth like a mask.

I should not care to have it bite my finger.

It could not hurt very much, and its bite is not poisonous, still I shall handle it carefully.

Some call the dragon fly a darning needle, and say it sews up people's ears when they lie on the grass. This is not true. It does not sew up anything. It has nothing to sew with.

Why should it want to sew up people's ears, anyway?

It does nothing unpleasant but bite fingers, and it never goes out of its way to do that.

If we let it alone, it always lets us alone.

It is our good friend because it catches mosquitoes. For this reason it is sometimes called mosquito hawk.

We should never kill a dragon fly.

Sometimes it is called a spindle, I suppose because it is long and slender like a spindle.

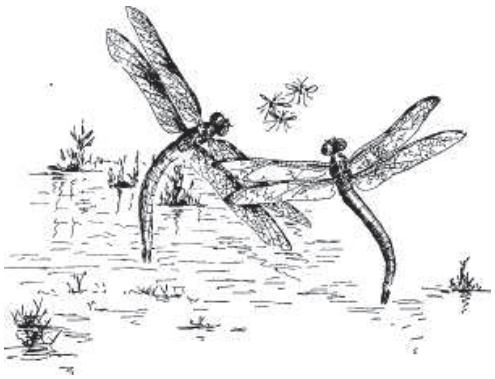
Down South the colored people believe the dragon fly brings dead snakes to life, and they call it snake doctor.

In some places it is called snake feeder.

But it has nothing to do with snakes, dead or alive.

The French have given it a pretty name, *demoiselle*, or damsel fly, and that is quite deserved, for the dragon fly is a graceful little creature, as pretty as pretty can be.

See, sticking out of the front of its head are two little feelers,  or antennæ, as we must call them.



They are very short, but it does not need long ones.

Insects smell with their feelers, you know, but our dragon flies see so well they do not need to smell very well, I suppose.

See how it can turn its head around. That is because it has a little short neck between its head and its body.

Its eyes, its mouth, and its antennæ belong to its head.

Of course our demoiselle can fly well; one need only look at those wings to know that.

To fly well is quite as necessary to one of its habits as to see well.

What would be the use of seeing an insect if it could not fly fast enough to catch it?

We all like your pretty wings, little dragon fly; they look like glass and they shine so in the sun.

How fast the wings can move! See that dragon fly skimming over the pond; its wings make a whizzing sound as it darts about.

Why does it zigzag so?

Why doesn't it fly in a straight line?

Yes, Mollie, you are right, it goes zigzagging along after insects.

It sees one it wants off at one side—whizz! around it turns after it.

Shouldn't you like to fly like that, children?

And yet we would not be willing to exchange our arms and hands for wings.

We could not whittle a stick nor write a letter if we had only wings.

In fact we could not do most of the things we now do.

I am glad I have my hands.

We are glad, too, that the dragon flies have their pretty, swift wings.

They have four wings, all nearly the same size and shape, you see, and they are all stiff and shining.

Some dragon flies, like this one we have picked up, always keep their wings spread out.

But over there, standing on the end of that stick, is another kind.

When it rests its wings are folded together.

What a pretty one it is! Do you see it?

It is small, but so pretty.

It is bright blue and shines as though it had been polished.

Sometimes birds catch these smaller dragon flies, though birds, as a rule, are not fond of any of them.

They are so hard and their wings are so stiff I should think a bird might almost as well swallow nails.

I am sure no bird could swallow one of the big ones, wings and all!

But frogs can.

A frog will try to swallow almost anything it can catch, and it watches for the dragon flies when they come to lay their eggs in the water.

Suddenly it jumps out, and away goes poor dragon fly into that great wide frog-mouth.

Now look at the legs of the dragon fly. It has six.

Every dragon fly has six legs.

They are rather short and small for so large an insect, but that is because it does not need large, strong legs.

You never saw a dragon fly dig a hole, or run, or even walk, did you?

Their legs are not arranged for walking. All six of them are directed forwards as though they were reaching out after something.

And so they are—reaching out after insects.

Dragon fly catches his prey while he is flying, and he grasps the insects with his feet.

He snatches one, and then what?

Does he sit down somewhere and eat it?

Not he, he is far too hungry for that; he continues his swift flight, and as he flies he eats.

As soon as he has finished one fly or gnat, zip! he snatches another.

He has an insatiable appetite, consuming hundreds of insects in the course of a day. Nor does he confine his attention to flies and gnats and mosquitoes and such small fry. He catches what he can. A large dragon fly will even gorge himself on one of the large-sized butterflies, and one has been seen calmly chewing away at an enormous wasp!

No, indeed, Mabel, the dragon fly does not eat the wings of the butterfly, it eats only the soft body.

Probably nothing eats a butterfly, wings and all. Birds and insects sometimes catch butterflies, and you often see the bright wings lying on the ground. The wings of insects are not worth eating, and are almost always cast aside by the creatures that eat the insects.

Besides catching insects with their legs, the dragon flies cling fast to things with them, but when they wish to move they do not walk, they fly.

Yes, indeed, Frank, you are right; their legs are jointed.

That is so they can move them easily and fold them up when they want to.

They would find it as hard to get along without joints to their legs as we should.

Wouldn't we be stiff if we had no joints!

See, the legs and wings are fastened to the middle part of the body, the *thorax*, we call it.

All insects have the legs and wings attached to the thorax.

The rest of the body is the abdomen. See how long it is.

It is the long abdomen that gives the dragon fly its name of spindle, I suppose.

The abdomen is jointed, and it can curl up.

All grown-up insects have a head, a thorax, and a jointed abdomen.

What are you looking at, Charlie?

Something moving in the bottom of the pond?

Let us get it out.

Here, we will dip it out with this cup.

What a lot of stuff!

Sticks and mud—and—what is that?

Something alive, surely.

Let us put some clean water in the cup and examine what we have found.

My! my! what a queer little thing!

What do you suppose it is?

Ah, I know now, but I do not think you could ever, ever guess, not if you tried a week.

It is a young dragon fly!

It does not look much like its shiny-winged parents.

It looks like I don't know what, with a face like—well, when you look right in front of it, like a pug dog.

Queer! Well, I should think so! What is that, Amy? Am I sure it is a dragon fly?

Yes, there is no mistake; a dragon fly one day dropped an egg in the pond, and out of it hatched—this.

It will some day become a shiny-winged dragon fly and catch mosquitoes.

We will call it larva, and we will watch it a little while.

Look and see if it has a head, a thorax, and an abdomen.

Are there antennæ on its head? And has it eyes?

If you were to look at its eyes with a microscope, you would find that they are made of six-sided facets, like the eyes of the grown-up dragon fly.

They are compound eyes, but they are not as large as the eyes of the grown-up dragon fly.

How many legs has it? What are its legs fastened to?

Yes, Nellie, thorax is right.

Its six legs are fastened to its thorax. I am glad you remembered thorax.

Has it a jointed abdomen? and has it wings?

Look! did you see that?

It opened its innocent-looking face all of a sudden, just darted it out into a long-handled spoon, with hooks at the end, and hooked up that little grub.

Now it is holding the grub on the hooks in front of its mouth and eating it as greedily as if it were half starved.

So that is why its face looks so queer.

It is its long under lip all folded up in front like a mask that makes it look like a pug dog.

When it pleases it darts out that lip, and any unlucky insect or snail may fall a prey to its greedy appetite.

It is said that the larvæ of some dragon flies even eat pollywogs and small fishes.

Ned wants to know if "larvæ" means the same as "larva."

Yes, it is the plural form of the word. When we speak of only one we say "larva"; when we speak of more than one, instead of saying "larvas," we say "larvæ."

The dragon fly larvæ are terrible gluttons, and hidden under the mask are strong jaws for chewing up their prey.

Their legs are quite large and strong, too, for they crawl about the bottom of the pond or up the stalks of the plants.

They do not move about very fast, but they do shoot out that under lip very, very, *very* fast indeed, so good-by to any little live thing in the pond that comes within reach of it.

The dragon fly larvæ do not all look alike. They are different in the different species of dragon flies, and, like the rest of us, they change as they grow older.

Yes, May, you can keep the dragon fly larvæ until they change into dragon flies.

You must supply them with fresh water and with enough to eat.

And you must put a net over the bowl or aquarium in which you keep them, otherwise as soon as they are able they will fly away.

How can they fly without wings?

Oh, but they are going to have wings. You know they are young dragon flies in spite of their strange appearance.

Be sure and feed them enough, or else they will eat each other, and that would be a pity; and be sure there are some water plants for them to hide under and crawl upon.

You can give them a little fresh fish or a tiny bit of very fresh meat, though they like best the living things they find in the bottom of the pond.

When the dragon fly larva first hatches it is very small and its legs are rather long and spidery, but it eats and eats and eats,—my, how it eats!

And it grows and grows, and one day it finds its skin too tight.

A tight skin must be rather uncomfortable.

But the larva does not care much for its skin.

It merely splits it open down the back and pulls itself out.

Perhaps you think it must be yet more uncomfortable to be without a skin.

But it is not without a skin. It is covered by a new and soft one that soon hardens, and that is larger than the old one.

It wriggles out of its old skin as though it were an old coat, and leaves it clinging to the weeds in the pond.

Sometime you may find these cast-off dragon fly overcoats.

After it has shed its skin the dragon fly continues to grow. It keeps on growing until it has outgrown its new skin.

Then what do you think it does?

Yes, Charlie, that is right, it sheds this skin too.

When it sheds its skin we say it moults.

It moults several times, and at last little short wings appear. At first it has no wings at all, you know.

Amy wonders how the larva breathes under water.

Ah, Master Ned, you are laughing too soon. You think insects do not have to breathe, but you are very much mistaken, sir.

Insects do have to breathe.

They would die if they could get no air to breathe.

Some of the dragon fly larvæ have an odd arrangement for breathing under water. They have a sort of syringe in the end of the body, and there are breathing pores or gills in the syringe.

The water goes in and out of this syringe, and the larva breathes as the fish does, by means of its gills.

Yes, May, its gills are in its syringe, which seems very odd,—you see the dragon fly larva breathes at its tail end instead of at its head end.

Mollie thinks it is an upside-down, inside-out sort of a creature anyway. But it knows what it is about.

Ned wants to know how it can get any air to breathe when it lives under water.

The truth is, there is always air mixed in with water, and it is this air the larva breathes when the water goes in and out of the syringe.

It uses the syringe for another purpose too. When it pleases it can shoot out the water with great force, and thus propel itself quite a distance.

By means of the syringe it can leap through the water faster than it can move by its slow-going legs.

Mollie wants to know if we can see the syringe.

No, it is inside the body.

But there is a kind of dragon fly that has a pair of gills outside, at the end of the abdomen, instead of the syringe inside.

The best I can do is to show you a picture of one. Some day we may find it in the pond.

Those two feather-like parts at the tail end are gills.

Yes, John, it can propel itself through the water by rowing, as it were, with these gills.

There are some species of dragon fly larvæ that swim by moving the tip of the abdomen from side to side, as a fish moves its body when it swims.

But now let us return to our funny larva that lives at the bottom of the pond. It stays down there, eating and growing and moulting, for nine or ten months or even longer; then something very wonderful happens.

It suddenly feels a great desire to get up to the top of the pond.

It climbs up a weed or a stick until it is clear out of the water.

Then its skin splits down the back for the last time, and out there pulls itself, not a larva, but a weak-looking dragon fly, with soft and flabby little wings.

Now is its hour of danger, and now is the time for such birds as like the taste of young dragon flies to help themselves.

Catbirds seem to have a special fondness for these helpless insects, and have been known to eat them before the flabby little wings had grown stiff.

If the birds do not find the newly emerged dragon fly, it remains motionless an hour or so, but it does not remain unchanged.

Its wings stretch out and harden.

Bright metallic colors begin to play over them and over its body; and all at once—off it darts, away and away, glittering in the sunshine, a swift, beautiful winged creature.

Towards the end of summer you will often see dragon flies darting about in every direction.

They seem to come in swarms and I think they usually come where there are ponds or marshes, for in such places there are many gnats and mosquitoes.

Mollie wants to know why it would not be a good plan for people who live where there are many mosquitoes to raise dragon flies?

That is a very sensible idea, Mollie, and it has been tried.

Yes, indeed; some men once collected dragon fly larvæ, and took care of them until they changed into dragon flies.

Then what do you think happened?

As soon as they got their wings, away went those dragon flies,—away and away, without stopping to catch a single mosquito for the men who had taken the trouble to raise them.

The dragon flies will not stay at home.

They fly so fast and so far there is no use raising them.

They are among the swiftest and strongest of insects.

How do the larvæ get in the ponds? Frank is asking.

I will tell you what I know about it.

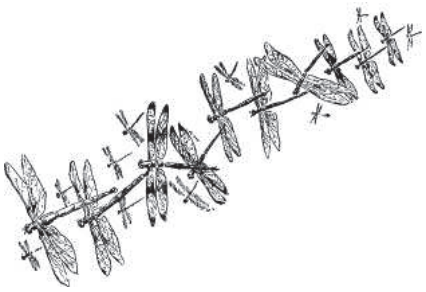
The winged dragon flies mate, and the female then drops her eggs in the water or lays them on twigs in the water, where they hatch out into larvæ.

The dragon flies have to be very careful when they go close to the water to lay their eggs.

You all know why.

Yes, it is because the frogs are on the watch to catch them.

The mother dragon fly knows the larvæ have to live in the water, and so she takes pains to put the eggs there; sometimes she even crawls down under the water on stems of plants to lay her eggs. Isn't she a wise little mother?



There are a good many species of dragon flies.

Some are large and some are small.

Some are bright and some are dull.

There are black ones and bright blue ones, or green ones with blue eyes.

Some are marked with red and yellow.

They are a very gay family.

The dragon fly family is also a very old one.

Indeed, it is one of the oldest families on earth.

Long before there were bees or butterflies or dogs or horses or human beings, there were dragon flies.

Don't you suppose that may be why the dragon fly is such a strange-looking insect?

It does not look like other insects; it is very old-fashioned, like the pine trees.

Pine trees, too, belong to a very old plant family that lived long ago, before there were oaks or maples, or other trees that shed their leaves.

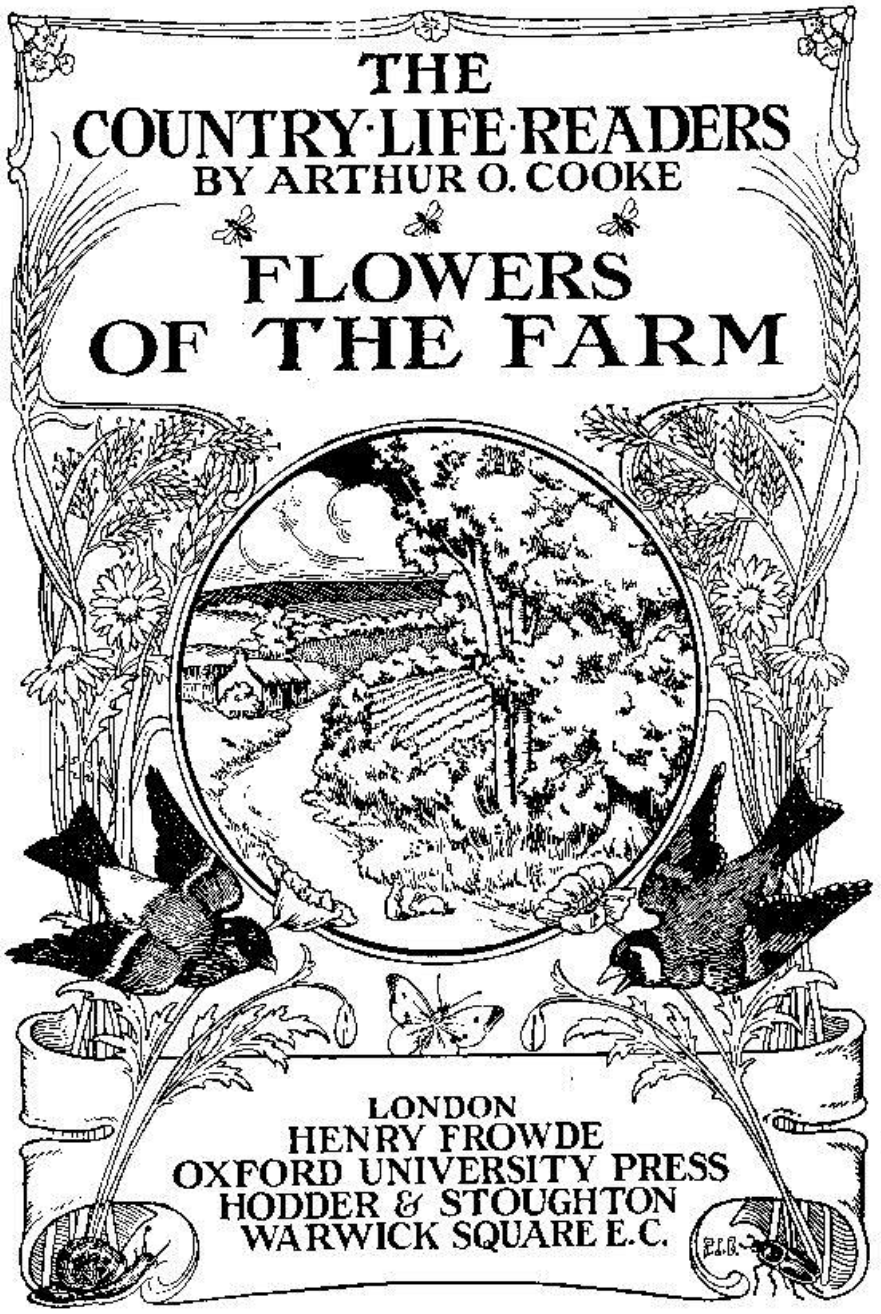
Now we must go home.

Good-by, green frog, you may come back to your log now.

Good-by, pretty dragon fly people, we shall never forget you.

Good-by, pleasant pond and moss-grown log, we hope to see you often again.

Flowers of the Farm
Arthur O. Cooke



Flowers of the Farm Contents

INTRODUCTION

I think that some of you have been with me at Willow Farm before to-day. When we were there we went into the farmer's fields in early spring, and saw the men and horses at work with ploughs and harrows. A little later on we saw some of the crops sown, such as barley and turnips. In summer we were in the hay-and corn-fields, and later still we saw the ricks being made.

To-day we are at Willow Farm again, and I want to show you some of the flowers that grow there. I do not mean those which Mrs. Hammond, the farmer's wife, grows in her garden, pretty as they are. We will look rather at the wild flowers in the fields, the hedges, and by the road-side in the lane. No one sows their seed nor takes care of them in any way; yet they grow and blossom year after year, and nearly all of them are beautiful.

Before we begin to look at them we must make sure that we quite understand just what a flower is. Even those of you who live in large towns and have perhaps never been in the country, see flowers of some sort, I feel sure; you see them in shop windows and they are also often sold in the streets. You have seen wallflowers and daffodils in the spring, roses in the summer, violets in winter, as well as other kinds. You do not need to be told that these are flowers.

What about the grass on lawns, and in such places as Battersea Park and Hyde Park in London? "Oh," you say, "that is not a flower at all--that is just grass." Yes, it is grass, but the grass has a flower as well as a rose bush or a violet-plant. It is only because the grass is kept cut short that you do not see its flower on a lawn. If grass is not cut, or eaten by animals, it grows tall in spring; then in May or June you would see the flowers on tall straight stems which stand among the blades of grass. Many of these grass flowers are very beautiful and we will look presently at some of them in one of the farmer's fields.

Perhaps some of you have gardens or grass plots at your own homes. If you see some dandelions in the lawn, or groundsel among the flowers or vegetables in the garden beds, you say, "Those weeds must be pulled up." You call the Dandelion and the Groundsel weeds, but they have flowers all the same; the Dandelion is perhaps one of the most lovely yellow flowers that we have.

They are weeds certainly in your lawn or garden beds, for they ought not to be there. Weeds are plants in the wrong place. By and by, in the farmer's fields, we shall see many pretty flowers which he calls weeds. We speak of the Nettle as a weed, and do not usually admire it; yet the Nettle has a flower, as we shall see.

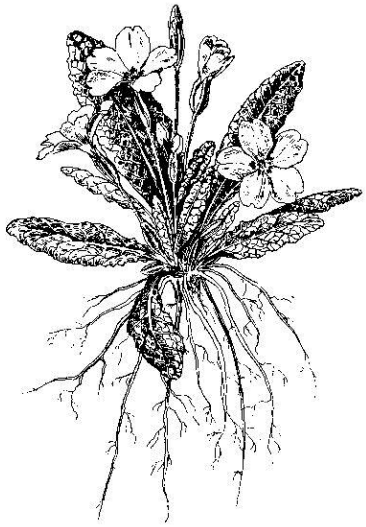
Then what do you think of a tree having a flower? That is perhaps a new idea to you. Yet if you look at a Horse-chestnut tree in June you will see at once the large spikes of beautiful white flowers with which it is covered. Apple trees have a beautiful pink, or pink and white flower, and the Almond tree bears a lovely pink flower. All other trees have flowers too, but they are often small. The flowers of the Oak and the Beech are small, but, though you may not notice them, they are on the tree each spring.

Almost all plants, including large trees, have flowers--they are flowering plants. Just a few plants have no flower; ferns have none, nor have the mosses and lichens which grow on walls and rocks and on the stems of trees. Fungi, too, such as the mushroom, have no flowers. Nearly all other plants have flowers. It is by the flower or blossom that a plant is reproduced. After the flower has faded comes the fruit and seed; the seed falls into the ground or is sown, and from it springs another plant. Without the flower there would be no seed.

You see that there are rather more flowers than you had thought. Still, while we are strolling in the fields and lanes at Willow Farm, we shall look most at what are generally called flowers; we shall look at comparatively small plants in which the flower or blossom is easily noticed because it is large, or bright-coloured, or sweet-scented. But while we are admiring a Daisy or a Dandelion in the spring, we must not forget that the great Oak-tree above it also has a flower of its own--we must remember that the Oak-tree also is a flowering plant.

IN THE COPPICE

Outside the front door of Willow Farm is a broad curving gravel drive, at the far end of which a white gate opens into the lane. On one side of this drive is a narrow strip of ground planted with flowers and shrubs, and close to the front door there is a patch of grass on which stands a large old mulberry tree.



Primrose

On the other side of the drive is a lawn. Beyond that are more flowers and then the vegetable garden; further on still is a little wood or coppice of nut bushes. On this March morning we shall find some wild flowers in this little wood.

Between the vegetable garden and the wood is a low grassy bank. It is bright to-day with yellow primroses. The Primrose always blossoms early here, for the bank is sunny and is sheltered from cold winds.

I daresay most of you have seen a Primrose before to-day. Each pale yellow blossom is made up of five petals, which are joined together forming a tube or corolla. The petals are notched or indented on the outer edge. At the centre of the blossom, where the petals meet, each petal is marked with a spot of darker yellow. Each flower grows alone on a long slender stem. At the top of the stem is a kind of green tube out of which the yellow blossom appears. The Primrose blossoms have a scent; not strong, but very sweet and pleasant.

The leaves are called "radical" or "root" leaves. They are so called because each leaf *appears* to grow direct from the root. But the leaves really grow from a short stem at the top of the root--a stem so short that it does not appear above the ground at all.

Among the bushes of the coppice itself we will notice the flowers which first catch our eye--the pretty blossoms of the Wood Anemone. The whole coppice is starred with the beautiful white flowers. We pick one and see that it has six--six what? "Six petals," you say. No, these are not petals, for the Anemone has none. They are sepals. The sepals of a plant generally enclose the blossom before it is opened, and they are usually green. In the Anemone the petals are absent; the sepals take their place and are white instead of green. Their under side is often not pure white, but is streaked with pale pink.

Several blossoms which we pick have six of these sepals. That is the usual number, but sometimes there are only five, and sometimes more than six.

The blossoms of the Anemone grow on longer and stronger stalks than those of the Primrose, and on each stalk are three leaves. These leaves grow round the stalk in a ring. Each leaf is "tri-partite"--in three parts or divisions; the edges of these divided leaves are deeply serrated. Besides the three leaves on each flower-stalk similar leaves grow from underground stems which creep along not far below the surface of the soil. Such creeping underground stems are usually called "rhizomes."

Z

Anemone

At the further side of the coppice, where a hedge separates it from the little meadow called Home Close, are Sweet Violets. We catch their fragrant scent before we see them, for the tiny flowers are half hidden among broad green leaves. Each blossom has five petals of a dark purple colour; there are white Sweet Violets too, but none are growing in our little wood to-day.

At the base of the blossom--the part where it joins the stem--one of the petals has a little spur which points back towards the stem. The blossom is therefore said to be spurred; we may presently see other plants with spurred flowers.

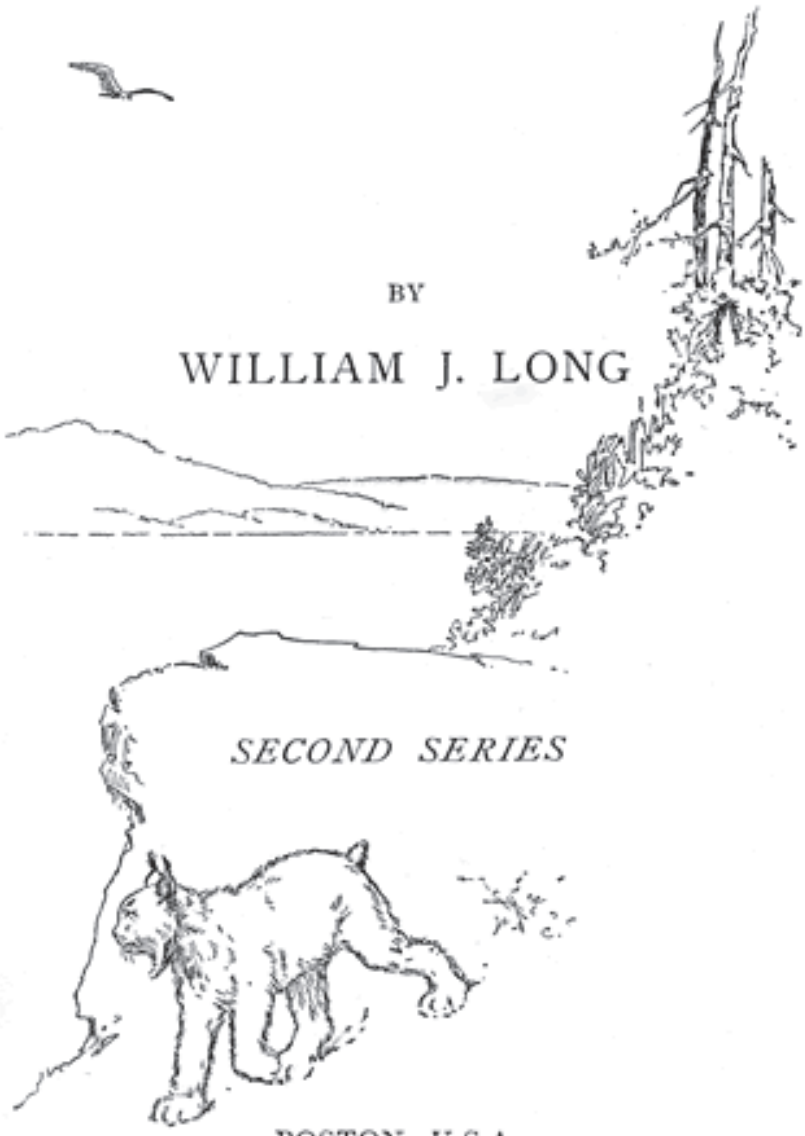
There is another violet which grows wild in England--the Dog Violet. It is larger than our Sweet Violets here, but it has no scent. While we have been examining the flowers on the ground, the nut bushes above our heads are waiting to remind us of what we said just now--that trees also have flowers. The flowers of the nut bush or hazel are easily seen, for they appear before the leaves are open. What we see to-day are often called catkins, but the name which country children give them is lambs'-tails. It is a very good name, too, for they are more like the tail of some tiny lamb than anything else.

These catkins are yellowish-white in colour, and soft and almost woolly to the touch. They hang in clusters from the hazel twigs, and in the strong March wind which blows to-day, they shake and flutter like the tails of lambs at play. Some of them leave a dusty powder on our fingers when we handle them; that is the pollen of the flower.

It is not where these yellow "catkins" are dancing on the twigs to-day that the hazel nuts will appear in autumn. The nuts will grow on twigs where there are very small red flowers--something like tiny paint-brushes. These are the female flowers; they will be fertilized by the yellow pollen of the catkins, and will produce the nuts.

Wilderness Ways
William J. Long

WILDERNESS WAYS



BY

WILLIAM J. LONG

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Wilderness Ways Contents

PREFACE

The following sketches, like the "Ways of Wood Folk", are the result of many years of personal observation in the woods and fields. They are studies of animals, pure and simple, not of animals with human motives and imaginations.

Indeed, it is hardly necessary for genuine interest to give human traits to the beasts. Any animal is interesting enough as an animal, and has character enough of his own, without borrowing anything from man—as one may easily find out by watching long enough.

Most wild creatures have but small measure of gentleness in them, and that only by instinct and at short stated seasons. Hence I have given both sides and both kinds, the shadows and lights, the savagery as well as the gentleness of the wilderness creatures.

It were pleasanter, to be sure, especially when you have been deeply touched by some exquisite bit of animal devotion, to let it go at that, and to carry with you henceforth an ideal creature.

But the whole truth is better—better for you, better for children—else personality becomes confused with mere animal individuality, and love turns to instinct, and sentiment vaporizes into sentimentality.

This mother fox or fish-hawk here, this strong mother loon or lynx that to-day brings the quick moisture to your eyes by her utter devotion to the little helpless things which great Mother Nature gave her to care for, will to-morrow, when they are grown, drive those same little ones with savage treatment into the world to face its dangers alone, and will turn away from their sufferings thereafter with astounding indifference.

It is well to remember this, and to give proper weight to the word, when we speak of the *love* of animals for their little ones.

I met a bear once—but this foolish thing is not to be imitated—with two small cubs following at her heels. The mother fled into the brush; the cubs took to a tree. After some timorous watching I climbed after the cubs, and shook them off, and put them into a bag, and carried them to my canoe, squealing and appealing to the one thing in the woods that could easily have helped them. I was ready enough to quit all claims and to take to the brush myself upon inducement. But the mother had found a blueberry patch and was stuffing herself industriously.

And I have seen other mother bears since then, and foxes and deer and ducks and sparrows, and almost all the wild creatures between, driving their own offspring savagely away. Generally the young go of their own accord as early as possible, knowing no affection but only dependence, and preferring liberty to authority; but more than once I have been touched by the sight of a little one begging piteously to be fed or just to stay, while the mother drove him away impatiently. Moreover, they all kill their weaklings, as a rule, and the burdensome members of too large a family. This is not poetry or idealization, but just plain animal nature.

As for the male animals, little can be said truthfully for their devotion. Father fox and wolf, instead of caring for their mates and their offspring, as we fondly imagine, live apart by themselves in utter selfishness. They do nothing whatever for the support or instruction of the young, and are never suffered by the mothers to come into the den, lest they destroy their own little ones. One need not go to the woods to see this; his own stable or kennel, his own dog or cat will be likely to reveal the startling brutality at the first good opportunity.

An indiscriminate love for all animals, likewise, is not the best sentiment to cultivate toward creation. Black snakes in a land of birds, sharks in the bluefish rips, rabbits in Australia, and weasels everywhere are out of place in the present economy of nature. Big owls and hawks, representing a yearly destruction of thousands of good game birds and of untold innocent songsters, may also be profitably studied with a gun sometimes instead of an opera-glass. A mink is good for nothing but his skin; a red squirrel—I hesitate to tell his true character lest I spoil too many tender but false ideals about him all at once.

The point is this, that sympathy is too true a thing to be aroused falsely, and that a wise discrimination, which recognizes good and evil in the woods, as everywhere else in the world, and which loves the one and hates the other, is vastly better for children, young and old, than the blind sentimentality aroused by ideal animals with exquisite human propensities. Therefore I wrote the story of Kagax, simply to show him as he is, and so to make you hate him.

In this one chapter, the story of Kagax the Weasel, I have gathered into a single animal the tricks and cruelties of a score of vicious little brutes that I have caught red-handed at their work. In the other chapters I have, for the most part, again searched my old notebooks and the records of wilderness camps, and put the individual animals down just as I found them.

Wm. J. Long.

Stamford, September, 1900.

MEGALEEP THE WANDERER

Megaleep is the big woodland caribou of the northern wilderness. His Milicete name means The Wandering One, but it ought to mean the Mysterious and the Changeful as well. If you hear that he is bold and fearless, that is true; and if you are told that he is shy and wary and inapproachable, that is also true. For he is never the same two days in succession. At once shy and bold, solitary and gregarious; restless as a cloud, yet clinging to his feeding grounds, spite of wolves and hunters, till he leaves them of his own free will; wild as Kakagos the raven, but inquisitive as a blue jay,—he is the most fascinating and the least known of all the deer.

One thing is quite sure, before you begin your study: he is never where his tracks are, nor anywhere near it. And if after a season's watching and following you catch one good glimpse of him, that is a good beginning.

I had always heard and read of Megaleep as an awkward, ungainly animal, but almost my first glimpse of him scattered all that to the winds and set my nerves a-tingling in a way that they still remember. It was on a great chain of barrens in the New Brunswick wilderness. I was following the trail of a herd of caribou one day, when far ahead a strange clacking sound came ringing across the snow in the crisp winter air. I ran ahead to a point of woods that cut off my view from a five-mile barren, only to catch breath in astonishment and drop to cover behind a scrub spruce. Away up the barren my caribou, a big herd of them, were coming like an express train straight towards me. At first I could make out only a great cloud of steam, a whirl of flying snow, and here and there the angry shake of wide antlers or the gleam of a black muzzle. The loud clacking of their hoofs, sweeping nearer and nearer, gave a snap, a tingle, a wild exhilaration to their rush which made one want to shout and swing his hat. Presently I could make out the individual animals through the cloud of vapor that drove down the wind before them. They were going at a splendid trot, rocking easily from side to side like pacing colts, power, grace, tirelessness in every stride. Their heads were high, their muzzles up, the antlers well back on heaving shoulders. Jets of steam burst from their nostrils at every bound; for the thermometer was twenty below zero, and the air snapping. A cloud of snow whirled out and up behind them; through it the antlers waved like bare oak boughs in the wind; the sound of their hoofs was like the clicking of mighty castanets—"Oh for a sledge and bells!" I thought; for Santa Claus never had such a team.

So they came on swiftly, magnificently, straight on to the cover behind which I crouched with nerves thrilling as at a cavalry charge,—till I sprang to my feet with a shout and swung my hat; for, as there was meat enough in camp, I had small wish to use my rifle, and no desire whatever to stand that rush at close quarters and be run down. There was a moment of wild confusion out on the barren just in front of me. The long swinging trot, that caribou never change if they can help it, was broken into an awkward jumping gallop. The front rank reared, plunged, snorted a warning, but were forced onward by the pressure behind. Then the leading bulls gave a few mighty bounds which brought them close up to me, but left a clear space for the frightened, crowding animals behind. The swiftest shot ahead to the lead; the great herd lengthened out from its compact mass; swerved easily to the left, as at a word of command; crashed through the fringe of evergreen in which I had been hiding,—out into the open again with a wild plunge and a loud cracking of hoofs, where they all settled into their wonderful trot again, and kept on steadily across the barren below.

That was the sight of a lifetime. One who saw it could never again think of caribou as ungainly animals.

Megaleep belongs to the tribe of Ishmael. Indeed, his Latin name, as well as his Indian one, signifies The Wanderer; and if you watch him a little while you will understand perfectly why he is called so. The first time I ever met him in summer, in strong contrast to the winter herd, made his name clear in a moment. It was twilight on a wilderness lake. I was sitting in my canoe by the inlet, wondering what kind of bait to use for a big trout which lived in an eddy behind a rock, and which disdained everything I offered him. The swallows were busy, skimming low, and taking the young mosquitoes as they rose from the water. One dipped to the surface near the eddy. As he came down I saw a swift gleam in the depths below. He touched the water; there was a swirl, a splash—and the swallow was gone. The trout had him.

Then a cow caribou came out of the woods onto the grassy point above me to drink. First she wandered all over the point, making it look afterwards as if a herd had passed. Then she took a sip of water by a rock, crossed to my side of the point, and took a sip there; then to the end of the point, and another sip; then back to the first place. A nibble of grass, and she waded far out from shore to sip there; then back, with a nod to a lily pad, and a sip nearer the brook. Finally she meandered a long way up the shore out of sight, and when I picked up the paddle to go, she came back again. Truly a *Wandergeist* of the woods, like the plover of the coast, who never knows what he wants, nor why he circles about so, nor where he is going next.

If you follow the herds over the barrens and through the forest in winter, you find the same wandering, unsatisfied creature. And if you are a sportsman and a keen hunter, with well established ways of trailing and stalking, you will be driven to desperation a score of times before you get acquainted with Megaleep. He travels enormous distances without any known object. His trail is everywhere; he is himself nowhere. You scour the country for a week, crossing innumerable trails, thinking the surrounding woods must be full of caribou; then a man in a lumber camp, where you are overtaken by night, tells you that he saw the herd you are after 'way down on the Renous barrens, thirty miles below. You go there, and have the same experience,—signs everywhere, old signs, new signs, but never a caribou. And, ten to one, while you are there, the caribou are sniffing your snowshoe track suspiciously back on the barrens that you have just left.

Even in feeding, when you are hot on their trail and steal forward expecting to see them every moment, it is the same exasperating story. They dig a hole through four feet of packed snow to nibble the reindeer lichen that grows everywhere on the barrens. Before it is half eaten they wander off to the next barren and dig a larger hole; then away to the woods for the gray-green hanging moss that grows on the spruces. Here is a fallen tree half covered with the rich food. Megaleep nibbles a bite or two, then wanders away and away in search of another tree like the one he has just left.

And when you find him at last, the chances are still against you. You are stealing forward cautiously when a fresh sign attracts attention. You stop to examine it a moment. Something gray, dim, misty, seems to drift like a cloud through the trees ahead. You scarcely notice it till, on your right, a stir, and another cloud, and another—The caribou, quick, a score of them! But before your rifle is up and you have found the sights, the gray things melt into the gray woods and drift away; and the stalk begins all over again.

The reason for this restlessness is not far to seek. Megaleep's ancestors followed regular migrations in spring and autumn, like the birds, on the unwooded plains beyond the Arctic Circle. Megaleep never migrates; but the old instinct is in him and will not let him rest. So he wanders through the year, and is never satisfied.

Fortunately nature has been kind to Megaleep in providing him with means to gratify his wandering disposition. In winter, moose and red deer must gather into yards and stay there. With the first heavy storm of December, they gather in small bands here and there on the hardwood ridges, and begin to make paths in the snow,—long, twisted, crooked paths, running for miles in every direction, crossing and recrossing in a tangle utterly hopeless to any head save that of a deer or moose. These paths they keep

tramped down and more or less open all winter, so as to feed on the twigs and bark growing on either side. Were it not for this curious provision, a single severe winter would leave hardly a moose or a deer alive in the woods; for their hoofs are sharp and sink deep, and with six feet of snow on a level they can scarcely run half a mile outside their paths without becoming hopelessly stalled or exhausted.

It is this great tangle of paths, by the way, which makes a deer or a moose yard; and not the stupid hole in the snow which is pictured in the geographies and most natural history books.

But Megaleep the Wanderer makes no such provision he depends upon Mother Nature to take care of him. In summer he is brown, like the great tree trunks among which he moves unseen. Then the frog of his foot expands and grows spongy, so that he can cling to the mountain-side like a goat, or move silently over the dead leaves. In winter he becomes a soft gray, the better to fade into a snowstorm, or to stand concealed in plain sight on the edges of the gray, desolate barrens that he loves. Then the frog of his foot arches up out of the way; the edges of his hoof grow sharp and shell-like, so that he can travel over glare ice without slipping, and cut the crust to dig down for the moss upon which he feeds. The hoofs, moreover, are very large and deeply cleft, so as to spread widely when his weight is on them. When you first find his track in the snow, you rub your eyes, thinking that a huge ox must have passed that way. The dew-claws are also large, and the ankle joint so flexible that it lets them down upon the snow. So Megaleep has a kind of natural snowshoe with which he moves easily over the crust, and, except in very deep, soft snows, wanders at will, while other deer are prisoners in their yards. It is the snapping of these loose hoofs and ankle joints that makes the merry clacking sound as caribou run.

Sometimes, however, they overestimate their abilities, and their wandering disposition brings them into trouble. Once I found a herd of seven up to their backs in soft snow, and tired out,—a strange condition for a caribou to be in. They were taking the affair philosophically, resting till they should gather strength to flounder to some spruce tops where moss was plenty. When I approached gently on snowshoes (I had been hunting them diligently the week before to kill them; but this put a different face on the matter) they gave a bound or two, then settled deep in the snow, and turned their heads and said with their great soft eyes: "You have hunted us. Here we are, at your mercy."

They were very much frightened at first; then I thought they grew a bit curious, as I sat down peaceably in the snow to watch them. One—a doe, more exhausted than the others, and famished—even nibbled a bit of moss that I pushed near her with a stick. I had picked it with gloves, so that the smell of my hand was not on it. After an hour or so, if I moved softly, they let me approach quite up to them without shaking their antlers or renewing their desperate attempts to flounder away. But I did not touch them. That is a degradation which no wild creature will permit when he is free; and I would not take advantage of their helplessness.

Did they starve in the snow? you ask. Oh, no! I went to the place next day and found that they had gained the spruce tops, ploughing through the snow in great bounds, following the track of the strongest, which went ahead to break the way. There they fed and rested, then went to some dense thickets where they passed the night. In a day or two the snow settled and hardened, and they took to their wandering again.

Later, in hunting, I crossed their tracks several times, and once I saw them across a barren; but I left them undisturbed, to follow other trails. We had eaten together; they had fed from my hand; and there is no older truce on earth than that, not even in the unchanging East, where it originated.

Megaleep in a storm is a most curious creature, the nearest thing to a ghost to be found in the woods. More than other animals he feels the falling barometer. His movements at such times drive you to desperation, if you are following him; for he wanders unceasingly. When the storm breaks he has a way of appearing suddenly, as if he were seeking you, when by his trail you thought him miles ahead. And the way he disappears—just melts into the thick driving flakes and the shrouded trees—is most uncanny. Six or seven caribou once played hide-and-seek with me that way, giving me vague glimpses here and there, drawing near to get my scent, yet keeping me looking up wind into the driving snow where I could see nothing distinctly. And all the while they drifted about like so many huge flakes of the storm, watching my every movement, seeing me perfectly.

At such times they fear little, and even lay aside their usual caution. I remember trailing a large herd one day from early morning, keeping near them all the time, and jumping them half a dozen times, yet never getting a glimpse because of their extreme watchfulness. For some reason they were unwilling to leave a small chain of barrens. Perhaps they knew the storm was coming, when they would be safe; and so, instead of swinging off into a ten-mile straightaway trot at the first alarm, they kept dodging back and forth within a two-mile circle. At last, late in the afternoon, I followed the trail to the edge of dense evergreen thickets. Caribou generally rest in open woods or on the windward edge of a barren. Eyes for the open, nose for the cover, is their motto. And I thought, "They know perfectly well I am following them, and so have lain down in that tangle. If I go in, they will hear me;

a wood mouse could hardly keep quiet in such a place. If I go round, they will catch my scent; if I wait, so will they; if I jump them, the scrub will cover their retreat perfectly."

As I sat down in the snow to think it over, a heavy rush deep within the thicket told me that something, not I certainly, had again started them. Suddenly the air darkened, and above the excitement of the hunt I felt the storm coming. A storm in the woods is no joke when you are six miles from camp without axe or blanket. I broke away from the trail and started for the head of the second barren on the run. If I could make that, I was safe; for there was a stream near, which led near to camp; and one cannot very well lose a stream, even in a snowstorm. But before I was halfway the flakes were driving thick and soft in my face. Another half-mile, and one could not see fifty feet in any direction. Still I kept on, holding my course by the wind and my compass. Then, at the foot of the second barren, my snowshoes stumbled into great depressions in the snow, and I found myself on the fresh trail of my caribou again. "If I am lost, I will at least have a caribou steak, and a skin to wrap me up in," I said, and plunged after them. As I went, the old Mother Goose rhyme of nursery days came back and set itself to hunting music:

Bye, baby bunting,
Daddy's gone a hunting,
For to catch a rabbit skin
To wrap the baby bunting in.

Presently I began to sing it aloud. It cheered one up in the storm, and the lilt of it kept time to the leaping kind of gallop which is the easiest way to run on snowshoes: "Bye, baby bunting; bye, baby bunting—Hello!"

A dark mass loomed suddenly up before me on the open barren. The storm lightened a bit, before setting in heavier; and there were the caribou just in front of me, standing in a compact mass, the weaker ones in the middle. They had no thought nor fear of me apparently; they showed no sign of anger or uneasiness. Indeed, they barely moved aside as I snowshoed up, in plain sight, without any precaution whatever. And these were the same animals that had fled upon my approach at daylight, and that had escaped me all day with marvelous cunning.

As with other deer, the storm is Megaleep's natural protector. When it comes he thinks that he is safe; that nobody can see him; that the falling snow will fill his tracks and kill his scent; and that whatever follows must speedily seek cover for itself. So he gives up watching, and lies down where he will. So far as his natural enemies are concerned, he is safe in this; for lynx and wolf and panther, seek shelter with a falling barometer. They can neither see nor smell; and they are all afraid. I have often noticed that among all animals and birds, from the least to the greatest, there is always a truce when the storms are out.

But the most curious thing I ever stumbled into was a caribou school. That sounds queer; but it is more common in the wilderness than one thinks. All gregarious animals have perfectly well defined social regulations, which the young must learn and respect. To learn them, they go to school in their own interesting way.

The caribou I am speaking of now are all woodland caribou—larger, finer animals every way than the barren-ground caribou of the desolate unwooded regions farther north. In summer they live singly, rearing their young in deep forest seclusions. There each one does as he pleases. So when you meet a caribou in summer, he is a different creature, and has more unknown and curious ways than when he runs with the herd in midwinter. I remember a solitary old bull that lived on the mountain-side opposite my camp one summer, a most interesting mixture of fear and boldness, of reserve and intense curiosity. After I had hunted him a few times, and he found that my purpose was wholly peaceable, he took to hunting me in the same way, just to find out who I was, and what queer thing I was doing. Sometimes I would see him at sunset on a dizzy cliff across the lake, watching for the curl of smoke or the coming of a canoe. And when I dove in for a swim and went splashing, dog-paddle way, about the island where my tent was, he would walk about in the greatest excitement, and start a dozen times to come down; but always he ran back for another look, as if fascinated. Again he would come down on a burned point near the deep hole where I was fishing, and, hiding his body in the underbrush, would push his horns up into the bare branches of a withered shrub, so as to make them inconspicuous, and stand watching me. As long as he was quiet, it was impossible to see him there; but I could always make him start nervously by flashing a looking-glass, or flopping a fish in the water, or whistling a jolly Irish jig. And when I tied a bright tomato can to a string and set it whirling round my head, or set my handkerchief for a flag on the end of my trout rod, then he could not stand it another minute, but came running down to the shore, to stamp, and fidget, and stare nervously, and scare himself with twenty alarms while trying to make up his mind to swim out and satisfy his burning desire to know all about it. But I am forgetting the caribou schools.

Wherever there are barrens—treeless plains in the midst of dense forest—the caribou collect in small herds as winter comes on, following the old gregarious instinct. Then each one cannot do as he pleases any more; and it is for this winter and spring life

together, when laws must be known, and the rights of the individual be laid aside for the good of the herd, that the young are trained.

One afternoon in late summer I was drifting down the Toledi River, casting for trout, when a movement in the bushes ahead caught my attention. A great swampy tract of ground, covered with grass and low brush, spread out on either side the stream. From the canoe I made out two or three waving lines of bushes where some animals were making their way through the swamp towards a strip of big timber which formed a kind of island in the middle.

Pushing my canoe into the grass, I made for a point just astern of the nearest quivering line of bushes. A glance at a bit of soft ground showed me the trail of a mother caribou with her calf. I followed cautiously, the wind being ahead in my favor. They were not hurrying, and I took good pains not to alarm them.

When I reached the timber and crept like a snake through the underbrush, there were the caribou, five or six mother animals, and nearly twice as many little ones, well grown, which had evidently just come in from all directions. They were gathered in a natural opening, fairly clear of bushes, with a fallen tree or two, which served a good purpose later. The sunlight fell across it in great golden bars, making light and shadow to play in; all around was the great marsh, giving protection from enemies; dense underbrush screened them from prying eyes—and this was their schoolroom.

The little ones were pushed out into the middle, away from the mothers to whom they clung instinctively, and were left to get acquainted with each other, which they did very shyly at first, like so many strange children. It was all new and curious, this meeting of their kind; for till now they had lived in dense solitudes, each one knowing no living creature save its own mother. Some were timid, and backed away as far as possible into the shadow, looking with wild, wide eyes from one to another of the little caribou, and bolting to their mothers' sides at every unusual movement. Others were bold, and took to butting at the first encounter. But careful, kindly eyes watched over them. Now and then a mother caribou would come from the shadows and push a little one gently from his retreat under a bush out into the company. Another would push her way between two heads that lowered at each other threateningly, and say with a warning shake of her head that butting was no good way to get along together. I had once thought, watching a herd on the barrens through my glasses, that they are the gentlest of animals with each other. Here in the little school in the heart of the swamp I found the explanation of things.

For over an hour I lay there and watched, my curiosity growing more eager every moment; for most of what I saw I could not comprehend, having no key, nor understanding why certain youngsters, who needed reproof according to my standards, were let alone, and others kept moving constantly, and still others led aside often to be talked to by their mothers. But at last came a lesson in which all joined, and which could not be misunderstood, not even by a man. It was the jumping lesson.

Caribou are naturally poor jumpers. Beside a deer, who often goes out of his way to jump a fallen tree just for the fun of it, they have no show whatever; though they can travel much farther in a day and much easier. Their gait is a swinging trot, from which it is impossible to jump; and if you frighten them out of their trot into a gallop and keep them at it, they soon grow exhausted. Countless generations on the northern wastes, where there is no need of jumping, have bred this habit, and modified their muscles accordingly. But now a race of caribou has moved south into the woods, where great trees lie fallen across the way, and where, if Megaleep is in a hurry or there is anybody behind him, jumping is a necessity. Still he doesn't like it, and avoids it whenever possible. The little ones, left to themselves, would always crawl under a tree, or trot round it. And this is another thing to overcome, and another lesson to be taught in the caribou school.

As I watched them the mothers all came out from the shadows and began trotting round the opening, the little ones keeping close as possible, each one to its mother's side. Then the old ones went faster; the calves were left in a long line stringing out behind. Suddenly the leader veered in to the edge of the timber and went over a fallen tree with a jump; the cows followed splendidly, rising on one side, falling gracefully on the other, like gray waves racing past the end of a jetty. But the first little one dropped his head obstinately at the tree and stopped short. The next one did the same thing; only he ran his head into the first one's legs and knocked them out from under him. The others whirled with a *ba-a-a-ah*, and scampered round the tree and up to their mothers, who had turned now and stood watching anxiously to see the effect of their lesson. Then it began over again.

It was true kindergarten teaching; for under guise of a frolic the calves were being taught a needful lesson,—not only to jump, but, far more important than that, to follow a leader, and to go where he goes without question or hesitation. For the leaders on the barrens are wise old bulls that make no mistakes. Most of the little caribou took to the sport verywell, and presently followed the mothers over the low hurdles. But a few were timid; and then came the most intensely interesting bit of the whole strange school, when a little one would be led to a tree and butted from behind till he took the jump.

There was no "consent of the governed" in that governing. The mother knew, and the calf didn't, just what was good for him.

It was this last lesson that broke up the school. Just in front of my hiding place a tree fell out into the opening. A mother caribou brought her calf up to this unsuspectingly, and leaped over, expecting the little one to follow. As she struck she whirled like a top and stood like a beautiful statue, her head pointing in my direction. Her eyes were bright with fear, the ears set forward, the nostrils spread to catch every tainted atom from the air. Then she turned and glided silently away, the little one close to her side, looking up and touching her frequently as if to whisper, *What is it? what is it?* but making no sound. There was no signal given, no alarm of any kind that I could understand; yet the lesson stopped instantly. The caribou glided away like shadows. Over across the opening a bush swayed here and there; a leaf quivered as if something touched its branch. Then the schoolroom was empty and the woods all still.

There is another curious habit of Megaleep; and this one I am utterly at a loss to account for. When he is old and feeble, and the tireless muscles will no longer carry him with the herd over the wind-swept barrens, and he falls sick at last, he goes to a spot far away in the woods, where generations of his ancestors have preceded him, and there lays him down to die. It is the caribou burying ground; and all the animals of a certain district, or a certain herd (I am unable to tell which), will go there when sick or sore wounded, if they have strength enough to reach the spot. For it is far away from the scene of their summer homes and their winter wanderings.

I know one such place, and visited it twice from my summer camp. It is in a dark tamarack swamp by a lonely lake at the head of the Little-South-West Miramichi River, in New Brunswick. I found it one summer when trying to force my way from the big lake to a smaller one, where trout were plenty. In the midst of the swamp I stumbled upon a pair of caribou skeletons, which surprised me; for there were no hunters within a hundred miles, and at that time the lake had lain for many years unvisited. I thought of fights between bucks, and bull moose, how two bulls will sometimes lock horns in a rush, and are too weakened to break the lock, and so die together of exhaustion. Caribou are more peaceable; they rarely fight that way; and, besides, the horns here were not locked together, but lying well apart. As I searched about, looking for the explanation of things, thinking of wolves, yet wondering why the bones were not gnawed, I found another skeleton, much older, then four or five more; some quite fresh, others crumbling into mould. Bits of old bone and some splendid antlers were scattered here and there through the underbrush; and when I scraped away the dead leaves and moss, there were older bones and fragments mouldering beneath.

I scarcely understood the meaning of it at the time; but since then I have met men, Indians and hunters, who have spent much time in the wilderness, who speak of "bone yards" which they have discovered, places where they can go at any time and be sure of finding a good set of caribou antlers. And they say that the caribou go there to die.

All animals, when feeble with age, or sickly, or wounded, have the habit of going away deep into the loneliest coverts, and there lying down where the leaves shall presently cover them. So that one rarely finds a dead bird or animal in the woods where thousands die yearly. Even your dog, that was born and lived by your house, often disappears when you thought him too feeble to walk. Death calls him gently; the old wolf stirs deep within him, and he goes away where the master he served will never find him. And so with your cat, which is only skin-deep a domestic animal; and so with your canary, which in death alone would be free, and beats his failing wings against the cage in which he lived so long content. But these all go away singly, each to his own place. The caribou is the only animal I know that remembers, when his separation comes, the ties which bound him to the herd winter after winter, through sun and storm, in the forest where all was peace and plenty, and on the lonely barrens where the gray wolf howled on his track; so that he turns with his last strength from the herd he is leaving to the greater herd which has gone before him—still following his leaders, remembering his first lesson to the end.

Sometimes I have wondered whether this also were taught in the caribou school; whether once in his life Megaleep were led to the spot and made to pass through it, so that he should feel its meaning and remember. That is not likely; for the one thing which an animal cannot understand is death. And there were no signs of living caribou anywhere near the place that I discovered; though down at the other end of the lake their tracks were everywhere.

There are other questions, which one can only ask without answering. Is this silent gathering merely a tribute to the old law of the herd, or does Megaleep, with his last strength, still think to cheat his old enemy, and go away where the wolf that followed him all his life shall not find him? How was his resting place first selected, and what leaders searched out the ground? What sound or sign, what murmur of wind in the pines, or lap of ripples on the shore, or song of the veery at twilight made them pause and say, *Here is the place*? How does he know, he whose thoughts are all of life, and who never looked on death, where the great silent herd is that no caribou ever sees but once? And what strange instinct guides Megaleep to the spot where all his wanderings end at last?

Country Walks of a Naturalist with His Children
Rev. W. Houghton

ILLUSTRATED WITH EIGHT COLOURED PLATES AND NUMEROUS WOOD ENGRAVINGS.

SECOND EDITION.

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Country Walks of a Naturalist with His Children Contents

PREFACE

In this little book my desire has been, not so much to impart knowledge to young people, as to induce them to acquire it for themselves. I have endeavoured to show that Country Walks may be full of interest and instruction to all who care to make good use of their eyes. If I have failed, the fault rests with me for the way in which I have treated the subject. I am aware that I have occasionally used words and phrases which may puzzle young brains, but I hope that nearly all will be intelligible to boys and girls of nine or ten years old, with a little explanation from parents or teachers.

The chief, if not the sole merit of this little book consists in the illustrations which adorn it; and I must express my sincere gratitude to Mr. Gould, the eminent ornithologist, for his kind permission to copy some of the magnificent drawings in his work on 'The Birds of Great Britain.' To Mr. R. S. Chattock, of Solihull, I am also deeply indebted, for the pains he has taken in reproducing, on a reduced scale, Mr. Gould's drawings, and for the drawings of the sticklebacks and the frontispiece. My generous friend and neighbour, Mr. Eyton, of Eyton, has furnished another instance of his numerous acts of kindness, in allowing me the use of Mr. Gould's work and of various woodcuts. To two lady friends I also express my best thanks; and last, though not least, to the publishers, Messrs. Groombridge, for the care they have taken to present the volume to the public in a very attractive form.

WALK I: APRIL

We could not have a more pleasant day, children, for a ramble in the fields than to-day. It is warm and bright, and the birds are singing merrily, thoroughly enjoying the sunshine; the little lambs are frisking about, and running races with each other. Put away lessons then, and we will have a holiday.

"Oh," said Willy, "it will be so pleasant, and I will take one or two bottles, and my gauze net, because we are sure to find something interesting to bring home. Where shall we go?"

"I do not think it much matters where, for there is always much to observe and to admire wherever we stroll in the country."

"Let us go on the moors, then," said Jack, "for you know, papa, a little boy in the village told me the other day he had found a peewit's nest with four eggs in, and I should like to try and find one myself."

Well, here we are, then; we shall have to jump over a drain or two in our ramble, and as the banks are soft it will be necessary to take great care, or we may tumble in. Ah! do you see, there are two sand-martins, the first I have seen this year. See how fast they fly, now sailing high up in the air, now skimming quite close to the ground. I have not seen any swallows or house-martins yet, but no doubt they will make their appearance in a few days

"Where do they come from, papa," asked May, "because we never see these birds in the winter? You often say, when the spring comes we shall see the swallows, and then they go away again towards the end of summer." Let us sit down on this clump of wood, and I will tell you about the swallows.

We have in this country four different species of the swallow family which visit us every year; they come to us from Africa: these are the sand-martin, two specimens of which we have just seen, the swallow, the house-martin, and the swift. A very little attention will enable you to distinguish these different kinds. The sand-martin is the smallest of the family; as the birds fly by us you notice that the back part is brown, or mouse colour; the under part white. The back of the house-martin is of a glossy black or bluish-black colour; it is white underneath; while the swallow, which is larger than the other two, has a glossy back, like the house-martin; but underneath it is more or less tinged with buff; and see, as I speak here is one flying past us. To-day is the 12th of April, about the time the swallow generally comes to this country. Now you see clearly enough its colour, and you will notice, too, a very marked difference in the form of its tail; see how much forked it is, much more so than the tail of the martin. This forked appearance is produced by the two outer tail feathers, which are much longer than the rest. Now I hope you will take notice of these differences, and call things by their right names, instead of jumbling them all up together under the name of swallow. I have not spoken of the swift, which does not visit this country till May; it is the largest of the swallow family, and has the whole of its body, both above and beneath, of a blackish-brown colour, except a small patch of dirty white under the chin.

"But, papa," said Jack, "do all these four kinds of swallows come from Africa? It is very curious to know how they can find their way backwards and forwards from Africa to this country, and how they come back to the very spots they visited the year before?" Indeed, it is a very curious thing; nevertheless experiments have been made to show that these birds return every year to the same localities.

Many years ago Dr. Jenner procured several swifts from a farmhouse in Gloucestershire, and marked them by cutting off two claws from the foot of twelve of them. Next year their hiding places were examined in the evening, when the birds had gone to roost, when Dr. Jenner found many of the birds he had marked by cutting off the two claws. For two or three consecutive years he examined their nesting places, and always found some of his marked birds. At the end of seven years a cat brought a swift into the farmer's kitchen, and this was one of those which Dr. Jenner had marked.

Now, Willy, I will ask you a question in geography. The swallow family visits this country from Africa. What sea, then, must the birds fly across?

"The Mediterranean, papa."

Quite right; and now can you tell me the narrowest part of the Mediterranean Sea?

"The Straits of Gibraltar."

Right again; and there the passage is about five miles wide; and at Gibraltar swallows, swifts, and martins are often seen as well as several other bird-visitors of this country. People on board ship have seen swallows a long way from land passing between Europe and Africa. Sometimes the poor birds are so tired from their flight that they are obliged to rest on the masts, yards, and rigging of the vessels. This often happens when the weather is hazy.

Holloa, Jack, what is that splash in the water about six yards off? Keep quiet, and we shall see what it was. Ah! it is one of my friends, the water-voles; I see the rogue, with his large yellow teeth and black eyes. Do you see? He is on the other side of the drain, nibbling away at something. People generally call him a water-rat, but he is no relation at all to a rat, nor is he an injurious creature like it.

"Well, but papa," said Willy, "the lads in the village always kill these water-rats, as they call them, whenever they can. I suppose they take them for common rats. Do you say they do no harm?"

Very little, water-voles will not eat young chickens and ducklings; nor do they find their way into stacks and consume the corn; their food is entirely confined to vegetables, such as the roots and stems of water-weeds. I feel, however, pretty sure that the water-vole is fond of beans, and will occasionally do some mischief where a field of newly-sown beans adjoins the river or stream, in the banks of which these animals form their holes. I will clap my hands, and off our little friend with his dusky coat starts, diving under the water, whence when he comes out he will probably escape into a hole on the bank. Some day I will show you the skulls of a water-vole and a rat, and you will see there is a great difference in the form and arrangement of the teeth, and that the first-named animal is not, as I said before, related to the rat. The water-vole is really a relative of that interesting creature you have often read of—I mean the beaver.

"Well, papa," said Jack, "I am tired of sitting here, let us now go and hunt for peewit's eggs."

All right, Jack, and if you find any you shall each have one for your breakfast in the morning. When hard-boiled and cold, a peewit's egg is a very delicious thing, though I think the peewits are such valuable birds, and do so much good, that I should not like to take many of their eggs. We had better separate from each other, so as to have a better chance of finding a nest. Soon we hear a shout from Willy, whose sharp eyes had discovered a nest with four eggs in it; so off we all scamper to him. See how the old bird screams and flaps, and how near she comes to us; she knows we have found her eggs, and wishes to lure us away from the spot; so she pretends she has been wounded, and tries to make us follow after her. Now, Jack, run and catch her. Hah! Hah! There they go. I will back the peewit against the boy. So you have given up the chase, have you? Well, rest again, and take breath. The peewit, as you saw, makes scarcely any nest, merely a hollow in the ground, with, perhaps, a few dried grasses. The peculiar instinct of the peewit in misleading people as to the whereabouts of its eggs, or young ones, is very curious.

LAPWING.

A very observant naturalist says, "As soon as any one appears in the fields where the nest is, the bird runs quietly and rapidly in a stooping posture to some distance from it, and then rises with loud cries and appearance of alarm, as if her nest was immediately below the spot she rose from. When the young ones are hatched, too, the place to look for them is, *not* where the parent birds are screaming and fluttering about, but at some little distance from it. As soon as you actually come to the spot where their young are, the old birds alight on the ground a hundred yards or so from you, watching your movements. If, however, you pick up one of the young ones, both male and female immediately throw off all disguise, and come wheeling and screaming around your head, as if about to fly in your face."

Peewits are certainly bold birds when their young ones are in danger. Mr. Charles St. John says he has often seen the hooded crows hunting the fields frequented by the peewits, as regularly as a pointer, flying a few yards above the ground, and searching for the eggs. The cunning crow always selects the time when the old birds are away on the shore. As soon as he is perceived, however, the peewits all combine in chasing him away. We are told that they will also attack any bird of prey that ventures near their breeding ground; they are quarrelsome, too, and the cock birds will fight with each other should they come into too close quarters. A cock bird one day attacked a wounded male bird which came near his nest; the pugnacious little fellow ran up to the intruder, and taking advantage of his weakness, jumped on him, and pecking at his head, dragged him along the ground as fiercely as a game cock. This was witnessed by Mr. St. John.

"I have often heard peewits uttering their peculiar noise," said Willy, "quite late at night. What do they feed on? I should so much like to have a tame young one."

The food of the peewits consists of insects, worms, snails, slugs, the larvæ of various insects; I am certain they do much good to the farmer by destroying numerous insect-pests.

"Oh, papa," exclaimed May, "do come here, what a splendid cluster of bright golden flowers is growing on the side of the drain." Yes, indeed it is a beautiful cluster; it is the marsh-marigold, and looks like a gigantic buttercup; it is sometimes in flower as early as March, and continues to blossom for three months or more. Country people often call it the may-flower, as being one of the flowers once used for may-garlands. I dare say you have sometimes seen wreaths hanging on cottage doors. Some people have invented what I think very ugly names for this showy plant, such as horse-blob, water-blob.

"Beneath the shelving bank's retreat The horseblob swells its golden ball."

I have somewhere read that the young buds are sometimes pickled and used instead of capers, but I do not think I should like to try them.

"And what," asked May, "are those bright green feathery tufts under the water? They are very pretty, but they do not bear any flowers."

No, there are no flowers at present, but in about a month's time you will see plenty. Out of the middle of the feathery tuft there grows a single tall stem with whorls of four, five, or six pale purple flowers occurring at intervals. Its English name is water-violet,—not a fitting name for it, because this plant is not at all related to the violet tribe, but is one of the primrose family; so we should more correctly call it water-primrose. Its Latin name is *Hottonia palustris*; it is called Hottonia in honour of a German botanist, Professor Hotton, of Leyden.

Willy will tell us that the word *palustris* means "marshy," in allusion to the places where the water primrose is found growing. It is a very common plant in the ditches on the moors here, and I will take care to show you its pretty tall stem when the flowers appear. While I was talking to May about the water primrose, Jack espied a sulphur-coloured butterfly, and off he set in full chase; he did not, however, succeed in capturing it, for his foot tripped over a molehill and down he tumbled—the beautiful sulphur butterfly having fled across a wide ditch and escaped. Not far from where he fell there was a thorn bush and a number of unfortunate moles gibbeted thereon: some had been killed quite recently, so I took three or four from the thorn with the intention of taking them home and examining their stomachs to see what they had eaten. In the meantime, down we sat on an adjoining bank covered with primroses looking so gay and smelling so sweet.

Willy then wanted to know the history of the mole; why people generally think it right to kill these animals, and whether they really are blind. May, of course, could not resist the charm of collecting primroses for mamma. The two boys cared more for animals, so I answered their questions about the mole. First of all I pointed out the amazing strength of its feet, its soft and silky fur, the form of its body so well adapted for a rapid progress through the underground passages it forms. Look, I said, at its soft fur, how it will lie in any direction; each delicate hair is inserted in the skin perpendicularly to its surface, so that the mole can move rapidly either backwards or forwards with great ease; the fur, lying as readily in one direction as another, makes no difficulty to a backward retreat. If you look closely when I push away the fur with my finger and breath in the neighbourhood of the eyes, you will see two tiny black specs; so we can hardly call the mole a blind animal; but as it lives for the most part underground its power of vision must be small. The fore feet do the work of the spade and potato-fork combined; its sense of smell is acute, and this, no doubt, aids the animal in the search of its food; the mole's sense of hearing is also very good.

"Well, but, papa," exclaimed Jack, "a mole has got no ears, so how can it hear?"

There is no outward appearance of ears, it is true, but look: I blow away the fur, and now you see clearly a hole which is the beginning of the passage that leads to the internal ear. The ears of many animals are very admirably made and fitted for the purpose of receiving sounds, but you must not suppose that because some animals—as moles, seals, whales, &c.—have no outward appendages, they are destitute of ears and the power of hearing. But you must wait till you are a little older, and then I will explain to you the matter more fully. The little curiously shaped earbones which are found in all mammalia are found also in the mole; and I have in my drawer at home a mole's earbones which I dissected from the animal.

But here comes, I do think, the mole-catcher himself; let us hear what he has to say.

"Good morning, Mr. Mole-catcher; have you been setting any more traps to-day? I suppose those unfortunate fellows gibbeted on yonder thorn were caught by you."

"Well, yeez, sir," he replied, "I reckons as they were; I have stopped their play, I guess; but there's a plaguey lot more on them about, I'm a thinking."

"What harm do you consider that moles do?" I asked.

"Harm, maister? why, lor' bless you, see them hummocks they throw up all about. The farmers dunna like them ugly heaps, I can assure you."

"Probably not; still if they were spread on the land the soil would be as good as top-dressing. Do you know what moles eat?"

"Well, sir, I believes they eats worms."

"Yes, they feed principally on worms, but they also devour wireworms and other creatures which prey upon the farmer's crops. I think moles do more good than harm, and I have examined the stomachs of many, and I am of opinion that it is a mistake to kill them."

"Lor', sir, you be's a gemman that has seen the inside of a mole's stomach, has you? You may be a cliver sort of a mon, but moles be varmint."

Thus saying, the old fellow wished us good morning and left us.

"Papa," said Willy, "do not moles make very curious places under the ground in which they reside at times? I think I have somewhere seen pictures of these encampments."

Yes, they do; but I only know of them from description and figures; the fortress is generally made under a hillock; it consists of many galleries connected with each other, and with a central chamber. You remember a young mole was brought to us last summer, and that we put it into a box with plenty of loose earth and some worms. We only kept it a day or two. One morning I found it dead. I suppose it had not enough to eat. The mole has an insatiable appetite, and, according to the observations of some naturalists, it will devour birds. Mr. Bell says that "even the weaker of its own species under particular circumstances are not exempted from this promiscuous ferocity; for if two moles be placed together in a box without a very plentiful supply of food the weaker certainly falls a prey to the stronger. No thoroughbred bulldog keeps a firmer hold of the object of its attack than the mole. Mr. Jackson, a very intelligent mole-catcher, says that, when a boy, his hand was so severely and firmly laid hold of by one that he was obliged to use his teeth in order to loosen its hold."

HERON AND YOUNG

We now proceeded on our ramble, and I espied about one hundred yards off a heron on the bank of the Strine. He did not see us at first, but when we got a little nearer, off he flew, with his long legs stretched out behind, and his head bent close to his shoulders. He had evidently been fishing, for we could see the scales of fish on the side of the bank.

Willy asked whether herons built on trees, and Jack wanted to know how they managed with their great long legs while sitting on their nests. These birds in the breeding season assemble together and make their nests on tall firs or oak trees; sometimes they build on rocks near the sea coast. It is said, too, that they will occasionally build on the ground. The heron's nest is not unlike that of the rook, only larger and broader; it is made of sticks and lined with wool and coarse grass; the female lays four or five eggs of a green colour, her long legs are tucked under her. Rooks and jackdaws sometimes take up their quarters near to a heronry, and do you know they steal their eggs, the rogues, and devour them. Both male and female herons take great care of their little ones and bring them food. Besides fish the heron will eat frogs, rats, young ducks, and coots. Eels are great dainties in the opinion of Mr. Heron; and sometimes an eel, after being pierced through the head by the sharp and strong bill of the heron, manages to wrap himself so tight round the bird's neck as to stop his breathing and cause his death.

A good many years ago herons were protected by the law; they were considered royal game, and their capture by the peregrine falcon was looked upon as very exciting sport. As we followed the bank of the stream out flew a couple of kingfishers with straight and rapid flight; we distinctly heard the shrill note these birds utter; they flew about two hundred yards and lighted on a rail near the water's edge.

Let us see if we can get a little nearer to them, I said, and then sit down and see what they will do.

"Papa," said May, "is not the kingfisher a very beautiful bird, and the most brightly coloured of all British birds?"

Yes, it is; its splendid colours remind one of the gorgeous plumage of tropical birds, and we have no other British bird with such brilliant colours. There, did you see that? one of the birds darted off the rail into the water. I have no doubt he has caught a small fish; and now he has lighted on the same rail, and with my pocket telescope I can see him throw his head up and swallow some dainty morsel. It is not at all an uncommon sight to see a kingfisher hover over the water after the manner of a kestril-hawk; suddenly it will descend with the greatest rapidity and again emerge, seldom failing to secure a fish for its dinner.

"Did you ever find a kingfisher's nest, papa?" Willy inquired.

Yes; some years ago I found one in a hole in a bank; there were four eggs in it, and I had to put my whole arm into the hole before I got at the nest, which consisted of sand mixed with a great quantity of very small fish bones. The eggs are very pretty, having a delicate pink tinge, the shell is thin, and the form of the egg almost round.

"But where," asked Jack, "do the little fish bones of the nest come from?"

I think I have told you that many birds—hawks, eagles, owls, shrikes, &c.—throw up from their crops the indigestible portions of their food. It is not uncommon to find these on the ground in the course of one's rambles. Kingfishers possess this power; they throw up the undigested fishbones, and curiously enough, as it would appear, form them into a nest. There is a kingfisher's nest in the British Museum, which I remember to have seen a few years ago. It has been a disputed point whether the parent bird throws the fishbones up at random into the hole where she is going to lay, or whether she forms them into a nest. The nest in the British Museum was secured at the expense of great patience and pains by the celebrated ornithologist and splendid draughtsman, Mr. Gould, whose drawings you may one day see in the library of the museum at Eyton. This specimen, if I remember right, was of a flattened form and fully half an inch thick. It is said that the kingfisher always selects a hole that has an upward slope, so that, though heavy rains may cause the water of the river bank to rise into the hole, the eggs will be dry. Some naturalists have said that kingfishers do not make their own holes, but use those already made by other animals. Mr. Gould, however, is of opinion that kingfishers drill their own holes. The tunnels always slope upwards, as I said; at the further end of the tunnel is an oven-like chamber where the nest is made. The fish-bone nest is thought by Mr. Gould to be really a nest, and intended to keep the eggs off the damp ground. However, there is difference of opinion on this point, and I reserve my own. We will see if we cannot find a kingfisher's nest some time this summer.

Now, May, what little plant have you got hold of?

"Indeed I don't know, papa, but it is a very curious little plant; I gathered it at the bottom of that hedge bank."

Ah, I know it well, and a little favorite it is too; it is the moschatell. You see it is about five inches high, with pale green flowers and leaves; the flowers are arranged in heads of five each, namely, four on the side, and one on the top; it has a delicate musk-like odour, very pleasant and refreshing. Take a few specimens home and put them in water with your primroses. Mamma, I know, is very fond of the pretty little moschatell.

"Oh, papa," exclaimed Willy, "look at the bottom of this drain; what is that strange-looking insect crawling slowly about at the bottom?"

I see; it is a water-scorpion, a very common insect in these drains on the moors,—indeed, it is common everywhere; let us catch him and take him home for examination. He is a queer-looking creature, with a small head and pointed beak; his forearms are something like lobster's claws; his prevailing colour blackish-brown, like the mud upon which he crawls; his body is very flat, and ends in two long stick-like projections; underneath these horny covers of the creature may be seen his two wings. He is an aquatic murderer; inserting that pointed beak into the body of some other insect, and holding his victim in his lobster-like forearms—oh! fatal embrace—he sucks out the juices of the struggling prey. Kirby and Spence say that some of the tribe of insects to which the water-scorpion belongs are so savage that they seem to love destruction for its own sake. A water-scorpion which was put into a basin of water with several young tadpoles killed them all without attempting to eat one. The tail projections, I ought to tell you, are connected with the insect's breathing; they are protruded out of the water and conduct the air to the spiracles at the end of the body, about which I must tell you more at another time. The eggs of the water-scorpion I have frequently found; they are of an oval form, with seven long hair-like projections at one end. But it is time to go home, our walk to-day is over; let us look forward to another holiday and another country ramble.