EYES AND NO EYES BOOK 7.

NATURE'S NURSERIES

R. CADWALLADER SMITH

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BOOK 7

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BY

R. CADWALLADER SMITH

PUBLISHER'S NOTE

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

Some of the old images were not of a high enough quality to reprint so we have included many high quality photographs to accompany the text.

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

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

Living Book Press.
2025.

CONTENTS

Frog Eggs (left) Ragfish Egg

LESSON I

FISH FAMILIES

BABY fish, like baby frogs, when they first see the world are quite unlike their parents. The sea swarms with countless numbers of these fish-babies: if you scooped up some of them in a bucket, you would hardly know that they were fish. But let us begin at the beginning—the egg!

A bird's egg, as we all know, is a hard shell containing "white" and yolk. Is that all? No, we have left out the most important part, called the germ. The chick is formed neither from the yolk nor the "white," but from a minute "germ." This is a speck of life, but, by living on the large yellow yolk, and the transparent "white," it grows and grows, and by slow degrees becomes a perfect chick. The yolk is so large, and is such rich food, that it lasts until

the chick is perfectly formed and ready to burst through the hard walls of its prison.

The baby fish is not so well off. It comes out of a tiny egg, in which is no room for a rich store of food for the germ to live on. So, of course, it cannot wait within the egg until it is a perfect fish, but must come out and face the world as an imperfect one. In this baby form it is known as a larval fish.

The bird baby is well off, for, on leaving the egg, it is a small copy of its parents, while the fish or frog, coming from a starved little egg, is merely a larva. It has to become a perfect fish or frog outside the shelter of the egg! We might compare it with the child of poor parents, forced to go into the big world before it has really grown up!

Frogs' eggs are easy to keep: most of us have watched them hatch into tadpoles, and the tadpoles develop into small frogs. But fish-eggs are more difficult to keep: so let us suppose we have dived into the clear water of a sparkling stream where we can see the eggs of a trout. They were laid in the clean gravel bed, several hundred

Lake Trout Eggs

of them, nearly three months ago! Although the fish did her best to cover them over with gravel, many have been gobbled up by ducks, eels, and other enemies; but those that escaped are now ready to hatch.

Each egg breaks, and out wriggles a queer little object with two black discs on its head—its eyes. Can this odd-looking scrap of life ever become a handsome, strong, speckled trout? As it lies on its side, tired out with the exertion of escaping from prison, we notice a queer lump fastened to the underside of its body. What can it be?

It is a part of the egg-yolk; and for the next few weeks the baby fish depends on it for food. If you like, you can call it the baby's feeding-bottle. Only, as you will notice in our picture (below), the feeding-bottle is not connected with the baby's mouth, but with its body! Why is that?

Trout Alevin

The reason is a strange one. The throat, or foodpipe, is at first closed up, therefore the baby would starve and die, but for the remains of egg-yolk in the "feeding-bottle."

This store of food keeps the little creature alive, and it can stay hidden away in the gravel while it is so weak and helpless.

So the weeks go by: our baby fish escapes its many enemies, comes out of hiding, and we see it chasing and eating small things, such as waterfleas. Its food-bag has now all gone. It begins to look more like a fish. It has a good appetite for small worms, grubs, and fresh-water shrimps, and so grows up to be a lovely, shining, red-spotted Trout.

Now all fish do not begin life quite in that way, but a great many do. As the eggs and babies have no nursery, and no parents to protect them, many are destroyed; to make up for this, each female fish must lay a great number of eggs. Some of our riverfish lay many, but sea-fish take first prize for huge families. The Cod, for instance, lays millions of eggs, the Flounder more than 1,000,000, and the Herring from 20,000 to 40,000!

The Herring, Cod, and most of the fish you see in the fish-shop, are very careless parents. They simply shed their spawn into the sea, and swim away as if nothing had happened! We must notice, however, that they do not lay their eggs just *anywhere* in the great ocean, but in certain parts. They choose suitable water, neither too cold nor too warm, neither too deep nor too shallow!

This habit is a most important one—for us as well as for them. The Herring likes to shed its eggs in fairly shallow water. The Cod gather in millions off the coast of Newfoundland, where the water is perfect for the eggs,

the babies, and the grown-up Cod as well. Now fishermen study these habits of fish: they know when and where to find the mighty shoals of Herring as they travel to the spawning-beds: and we all know of the famous Cod-fishery of the foggy Banks of Newfoundland.

The eggs of these fish do not take months to hatch, like those of the Trout, but a few days only. When we consider the dangers they run it is surprising that so many fish remain! The shoals of Herring, for instance, are beyond count! In the year 1927 no fewer than 21 million of these fish were landed by Yarmouth fishing boats in *one day*, and the total catch for one week, at this seaport only, was *85 million Herrings*!

All fish are not so careless of their eggs as the Herring, Cod, etc. The Trout and Salmon, for instance, hide them under gravel: others do more than this, and make nests: and some, like our common Stickleback, or "Red-Throat" as boys call him, even guard their eggs and young. Most of us have seen how fiercely this handsome little fellow guards his property. How he makes brave charges at intruders, with spines set like fixed bayonets. He is ready to

Juvenile trout (silver) and stickleback

MOUTHBROODING

fight anyone and everyone; in his Spring suit of green and red and gold, he shines like a jewel against the mud of his watery home.

Scattered all over the world are other nest-building fish: and, like the birds, each has its own idea of the best kind of nest to make. Strange to say, there are fish which have a special pocket of skin in which to carry the eggs. The common Pipe-fish (which you may see at the Zoo, or sometimes at the fish-shop, or in nets at the seaside) is one of these fish with pockets. Another queer fish, to be found in tropical seas (and also at the Zoo!) carries the eggs in its mouth and gills, until they hatch! Needless to say, this fish is content with a small family of 20 or 80.

Round our own coasts may be found fish which place their eggs in empty shells, and mount guard over them. Others there are which press their eggs into rock crevices, and protect them with their own bodies from roving enemies.

But fish that build nurseries, or guard their families in any way, are rare. As a rule, there is no nursery life for the baby fish. After leaving the egg, it finds itself helpless in a world of enemies. The chances are that it will soon be found by one of them, and speedily eaten!

A SALMON LEAPS FROM THE WATER

EXERCISES

I. How does the baby trout exist for the first few weeks of its life?

2. Where do the Cod lay their eggs? Name one famous Cod fishery, and one port famous for its fleet of Herring boats.

3. Mention four fish which lay their eggs and leave them; and two which guard their eggs.

A FROG WITH ITS EGGS

LESSON II

FROGGIE'S FAMILY

IN early Spring-time, when "pussy-willows" are beginning to look gay, and the Marsh Marigolds flaunt their shining yellow in the swamps, Froggie journeys to the water, to lay her eggs. In a few days' time, masses of jelly, dotted with little black spots, show where she has been. But we see no sign of Froggie, for she has hidden in the grass and weeds, leaving her eggs to look after themselves.

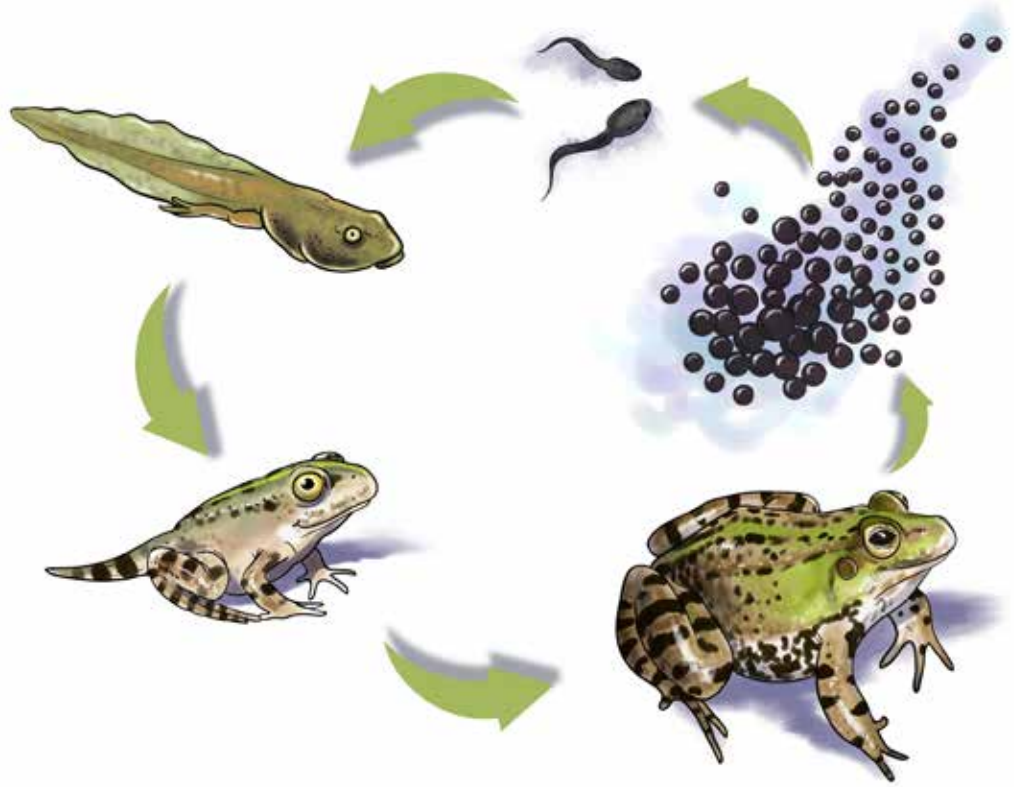
"But all frogs do that," you may say, "and they never behave in any other way." It is quite true that our frogs never show any regard for their families. Some frogs of other lands behave in a very different way, however, as we shall see later in this lesson. First let us see the many curious things that happen to Froggie's eggs.

The frog's life is like a story with many chapters, though very few of Froggie's big family live from Chapter I to the end of the story! The eggs, tadpoles, and baby frogs are, to many creatures, what chocolate-cream is to boys and girls—something to be made an end of at once! So the frog's family daily gets less and less, like the ten little boys in the rhyme! As the eggs have no protecting nursery, it is as well that the frog—like the cod and herring we saw in the last lesson—lays so many of them!

Now fishes and frogs, as you know, are not related. They belong to two distinct groups in Nature's great family, but in one thing at least they are alike. Both the baby frog, and the baby fish, when they first hatch into the world, appear in a form quite unlike that of their parents. They are, in fact, in a larval stage.

About two weeks after Froggie laid her eggs, a little black creature wriggles out of each jelly envelope, in which it has passed Chapter 1 of its life. In Chapter 2 it is very lazy. It does nothing but cling to the water-weed by means of two suckers under its head. It has no eyes and no mouth. It is simply waiting for its mouth to grow. And, as it is not really a tadpole yet, we must call it a larva. It breathes by means of tufts that branch from each side the "neck."

Chapter 2 ends in a few days, when our larval frog has a mouth. A very small mouth, but a strange one! It is armed with wonderful rows of rasps, or teeth. If our eyes were immensely strong, we could count more than 600 of these tiny teeth! The two beady eyes also appear now, but the breathing tufts soon disappear.



THE LIFE-CYCLE OF A FROG

Our larva has gone a stage farther in its life-story. It has reached Chapter 3 in which it is a tadpole, breathing like a fish through slits in each side of its neck. It eats greedily, and grows. For the most part it feeds on particles of weed, but is quite ready to dine off the dead bodies of its own relations! Its body is inky black with gold spangles, and, like a fish, it swims by wriggling its strong tail.

In Chapter 4 of its story we must call it a frog-tadpole, for its legs begin to show, first the long hind ones, and then the front ones. It is leaving its baby tadpole period, and nearing the time when it will be a perfect frog. But first it has some most important changes to make, before it can enter Chapter 5 of its life, and leave the water.

The frog-tadpole ceases to feed, and casts off its gills

and jaws! Other wonderful changes occur in its body: it begins now to come to the surface of the water. Perhaps you can guess the reason? It has given up breathing by means of *gills*, as a fish breathes, and now needs air to fill its *lungs*, just as we do. At last it has gone through all the stages of its babyhood, and swims ashore as a little frog. It has reached the last chapter of its life as a water-baby: if it does not now hurry ashore all the tadpoles seem to take a delight in nibbling its toes!

Before entering on its new life on land, it throws away its old clothes. In other words, it casts its skin: its tail, as you see in the picture below is now nearly gone. Has it dropped off? No, it was not wasted, but used up as food by the body, during that eventful Chapter 4, when so many things are happening to the frog-tadpole that it is unable to eat.

Our baby frog sets out, with thousands of others, to

seek its fortune on land—only to meet more enemies! Being no larger than your finger nail, it can hide away in the daytime in any tiny crevice, coming out at night when the earth is moist. After a spell of dry weather, the first rain-storm brings the froglings out in their thousands, until the earth seems alive with them. Indeed, it used to be said that they had "all fallen down with the rain"! They set out to explore the world—much to the delight of all the ducks in that district!

We leave them to grow up into big frogs, while we skip several thousand miles in search of other frogs. In the country of Brazil lives one which is called by the natives "The Blacksmith," for its voice resounds like the hammer on the smith's anvil. But it also has the habit of making a kind of nursery for its eggs and young.

To make the nursery, the female frog collects mud for building material, and uses her feet as a mason uses his trowel. She plasters the mud together, and so constructs

BLACKSMITH FROG ULRICH PETERS (CC BY-SA 3.0)

a round wall in the shallow water of a pond or marsh. She works until the edges of this mud basin show above the water. She then levels the floor, lays her eggs inside the basin, and leaves them.

Another frog of the same country makes a neater nest than that. She climbs up the stem of a plant. Then, with the help of her mate, she bends a leaf into the shape of a funnel. In this odd nest she deposits her eggs, where they are fairly safe from enemies.

But there are other frogs, and toads also, which are not content with such nurseries. They make no nest at all, but prefer to carry their eggs about with them! Toads, as you may know, lay their eggs in long rows, like so many pearls in a necklace, and leave them in the water. But a foreign toad has the odd habit of winding the eggs *around his hind legs*! With this jelly string coiled about him, he hides away until night-time, when he comes out to eat and bathe the eggs in a pond or in dew. The female toad has nothing to do with them once they are laid: but Mr. Toad makes himself useful, and acts as a nurse as well as a nursery!

We will look at one more nursery, and that one perhaps the oddest of all! In this case we find a male frog taking charge of the eggs; and instead of placing them on his body, he thrusts them into a pouch, or bag, under his mouth! This is surely an odd place for a nursery! Of course his family is a small one-about a dozen eggs, as a rule. This frog was discovered by the great naturalist Darwin: it is also famous as being the smallest frog in the world—it

never grows beyond half an inch in length!

Though the queer frogs and toads we have glanced at are dwellers in foreign lands, you may sometimes see them at the Zoo. Two things we must notice before we leave them: one is, that the male frog or toad is sometimes the nurse; another is, that they have *small* families, and not large ones like those of our own frogs and toads. Can you guess the reason?

EXERCISES

1. Keep some frog-spawn in a jar of water; make drawings of the eggs and tadpoles.
2. Write what you know of each chapter in the frog's life.
3. What happens to the tail of the tadpole?
4. What made some people say that the baby frogs "fell down with the rain"?
5. Describe the nursery habits of one foreign frog or toad.

MIDWIFE FROG CARRYING EGGS BERNARD DUPONT (CC BY-SA 2.0)

ANTS TENDING TO THEIR EGGS

LESSON III

THE INSECT NURSERY

CAN you think of any insects which make nurseries, or tend their young? Of course you will at once remember the hive of the wonderful honey-bee, and the nests of wasp and ant! Those three insects rear their babies with remarkable care.

In the hive, nurses attend day and night to those cells which contain eggs or *larvae* (grubs). They bring food to the growing grub, clean out its nursery, and in every way devote themselves to their work as nurses. They act as if they knew that the health of the babies was most important for the welfare of the whole hive!

If you look into the teeming ant-town you find the same care taken. If the egg-nursery in the underground nest is too warm or too cool, at once the eggs are carried to another part of the nest. The grubs, when hatched, are quite helpless; they depend on their nurses, and would soon die if neglected. There is no fear of that! They are fed and cleaned. Is the sun shining warmly on the nest? Then up they must go for an airing. If you then open the nest what a rush and a scramble take place! But, even in the face of great danger, see how the ants' first care is for their young! Each ant seizes one in her jaws, and does her best to carry it to a place of safety.

Later on, the grubs become cocoons, and still they are 'Watched and tended, and carried here and there. And when the little prisoner is ready to emerge from the cocoon, the nurses are there, eager to help. With their strong jaws they cut open the tough envelope, and assist the weak baby from its old coverings. At first it is too feeble to crawl. So they bring it food, lick it, and watch over it until it is strong enough to take its share in the work of the nest.

A TERMITE NEST

An insect of warm countries, the Termite or White Ant, builds nests that are as hard as the hardest cement. Only part of the nest shows above the earth; but it is so large that from a distance a

number of such nests may be mistaken for a native village! The baby White Ants are kept in special nurseries in this huge insect city.

As you know, the nurses in the ant-nest and beehive are *workers*. The eggs are laid by the *queen*, who has no other duty to perform. There are, however, many kinds of bees and wasps which live alone, and not in a hive or nest. Let us follow one, and see how she provides for her young.

On a sunny bank in early summer we see a wasplike insect, orange-and-black in colour, flying and running quickly to and fro. She is much too excited and busy to sting you or do anything at all but rush about on her long legs. Is she looking for food? Yes, but not for herself.

At last she dashes under a dead leaf. In a minute she is out again, dragging a fat spider as large as herself! How

WASPS TENDING TO THEIR NEST

she tugs and tugs at that spider! If its legs catch in the grass she only pulls all the harder. It *has* to come where she wishes. Then she leaves the spider in a tuft of grass and flies away.

After a time we see the wasp return. She hunts about like a dog looking for a lost bone! Soon she finds her spider, and again pulls at it with all her strength. We follow her, and at length we watch her stop by a neat little hole in the sand. This is the end of her journey, for she drags the spider down, and out of our sight.

Perhaps you can guess the meaning of her actions! She will lay her egg on the spider: and, after filling the hole up, will fly away and return no more. Her nursery task was a hard one, was it not? Of course the egg hatches into a grub, which eats the poor spider, and in due time itself becomes a spider-hunting wasp.

Perhaps you wonder why the fierce spider does not struggle for life, and use its poison fangs. The reason is that the wasp, when she made her first attack, cleverly stung her prey so that it can no longer fight or even move!

Most insects take no notice of their eggs or young. You know how the Cabbage Butterfly, for instance, lays her eggs on a cabbage and flits gaily away in the sunshine. Nature guides her, and hosts of other insects, to lay their eggs where the young will find food; but that is all.

CABBAGE BUTTERFLY EGGS

Now one common and

despised insect may be said to act like a mother—the Earwig. In early Spring the Earwig starts her nursery duties by burrowing into the soil and laying about fifty eggs that look like little pearls. You would expect her to run away then, and forget all about them!

Instead of doing that she remains in the hole, generally head down, to guard her eggs. Now if you scatter this odd nursery you will find that very soon the eggs are replaced and covered up by the careful insect. And, strange to say, the Earwig will sometimes move her precious eggs from one burrow to another—perhaps to a drier or warmer spot!

In our picture you see the mother Earwig with a few eggs, and some newly-hatched babies. Notice that they are much like the adult insect in shape: Earwigs do not begin life as grubs, like so many other insects. Notice, too, the silvery colour of the baby Earwigs, making them look like little ghosts. But they are active, hungry ghosts, ready to run about and feed, though what they find to eat I cannot say. They *do* feed, however, for in two weeks' time their coats are too tight. Each one then moults—that is, it casts off its old skin.

EARWIG WITH EGGS AND YOUNG

The mother insect still guards them. She finds new feeding-places, with her brood around her. Four times the young ones