nature notes

vol 8 no 4 6 cents

contents

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Cover:

Hyla aurea, Golden Bell Frog;
Photo: F. Rogers.

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Sketches:
Mrs. Sharpin.

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Next Issue:
7/7/71

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Category B.

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editorial

Dear Girls and Boys,

At the beginning of a book called "Conservation and You", Allen Hitch talks about King Solomon. You will remember that in the Bible there is the story of Solomon's great temple which was built at Jerusalem. For this huge building Solomon needed strong timber. The timber came from Tyre, a nearby country that was where Lebanon is today. For in those days Tyre had tall forests of cedar trees. Hiram was the king who owned the trees, and into those forests he sent: "three score and ten thousand that bare burdens, and fourscore thousand hewers." (I Kings 5:15)

In the way that these authors of the Bible spoke, (and as you know, we must be very careful how we read the Bible these days) this "fourscore thousand" may just mean "a huge number". But however many timber cutters there were, the forests in those ancient times must have seemed endless to them.

Today, the huge forests of Lebanon are gone; the country is bare, parched, a difficult place to grow things. Have a close look at "Conservation and You", it is probably in your school library.

Best wishes,
Ian Legg.

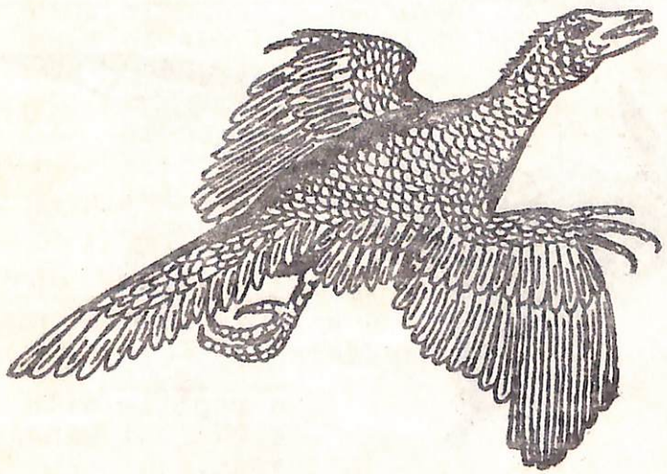
origin of birds

A great scientist once described birds as "reptiles with feathers"; and this is a good definition. You see, although there are many differences apart from the possession of feathers or scales, there are also very many likenesses between the two groups.

Usually we are able to trace the way in which groups of animals evolved from simpler and earlier groups of animals. This is probably because quite good series of fossils have been found which link the two groups.

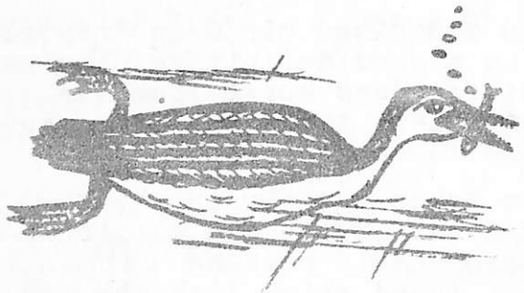
But where birds and reptiles are concerned, only three fossils have been found which are part-way between reptiles and birds. And these are all fossils of the one kind of creature. Scientists have called him Archaeopteryx. (the ancient winged creature). These fossils were found in fine-grained stone in quarries in Germany, stone which was formed about 170 million years ago. Although this creature had feathers and could glide even if it could not fly well, it had a skeleton which is quite like that of a reptile and unlike that of a modern bird.

After all this, we have had to use the methods that detectives use and compare birds with the extinct reptiles to find out what we believe happened in the change from reptile to bird.



Archaeopteryx was probably a very poor flier.

ORIGIN OF BIRDS (Continued.)

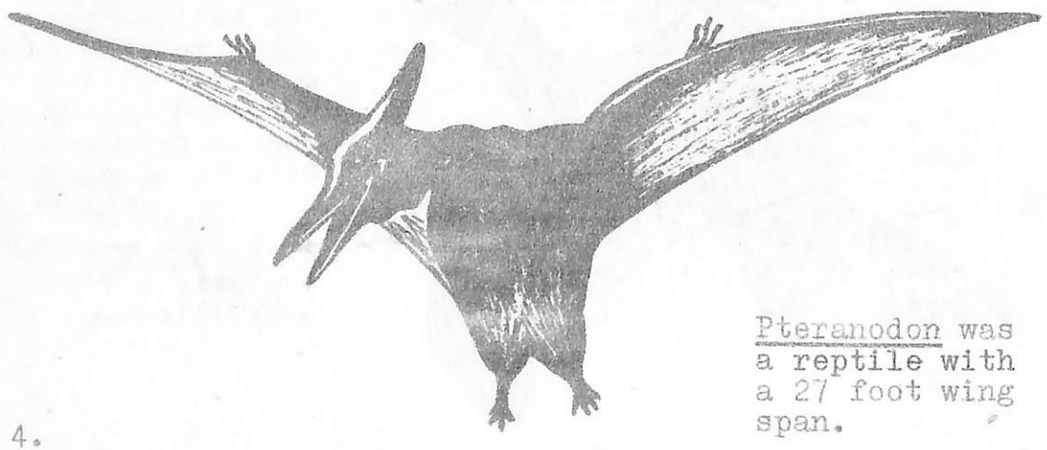


Hesperornis lived about 100 million years ago in America's inland seas. Its beak was lined with sharp reptilian teeth.

We now believe that the latest reptile ancestors of birds lived about 225 million years ago. These were Pseudosuchians, small creatures which ran on their hind legs and had skulls which were very much like those of modern birds.

Just recently two bird feathers have been found as fossils in mudstone at Koonwarra in Victoria. These are about 140 million years old. So you see, we may still find the "missing links between reptile and bird.

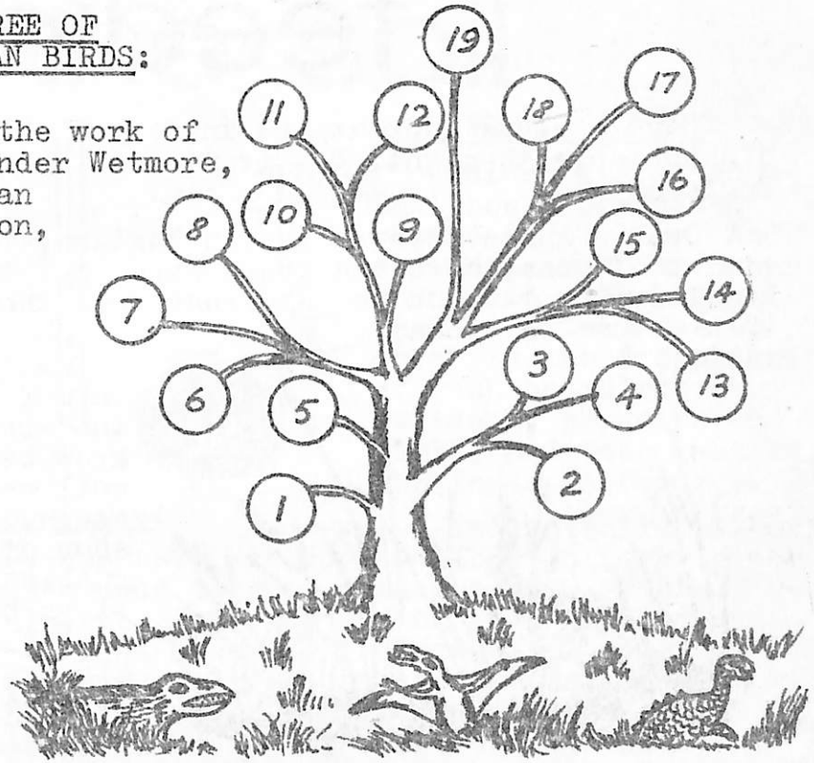
27 feet



Pteranodon was a reptile with a 27 foot wing span.

FAMILY TREE OF AUSTRALIAN BIRDS:

Based on the work of Dr. Alexander Wetmore, Smithsonian Institution, U.S.A.



Follow the numbers on this"family tree"and you will get some idea of the evolution of birds. You must use a book with large pictures of birds as you work. Here are some of the birds which belong to the numbers.

1. Cassowary and emu.
2. Penguins.
3. Grebes.
4. Albatross, petrel.
5. Pelicans, cormorants.
6. Herons, ibis, spoonbill
7. Duck, geese, swans.
8. Hawks, eagles, falcons.
9. Mound builders.
10. Brolga, waterhens.
11. Snipe, plover, gulls.
12. Pigeons and doves.
13. Parrots, cockatoos.
14. Cuckoos.
15. Owls.
16. Frogmouths, nightjars.
17. Swifts.
18. Kingfishers.
19. All the Passeriformes: a huge group: swallows, larks, crows, thrush, magpies, honeyeaters, finches etc.

feeding

Have a close look at the knife you use at the dinner table to-night. Was it made at Sheffield in England?

Over a hundred years ago in England, large quantities of bone, horn and ivory were used to make knife handles. The rubbish and shavings from the bone were then thrown on a heap.

Rotting bones feed the soil.

An observant farmer noticed that the grass and weeds grew better in the soil near these heaps. He collected some of this bone rubbish and spread it on his land. He was delighted when his crops improved at once. Other farmers followed his example. Before long, bones became scarce.

Eventually this caused much trouble because, as the story goes, famous battle-fields were turned up in the search for HUMAN bones!!

Does your father use BLOOD and BONE to feed the soil in your garden? Where does this fertilizer come from? What else does a gardener add to the soil?

An experiment for you to try:

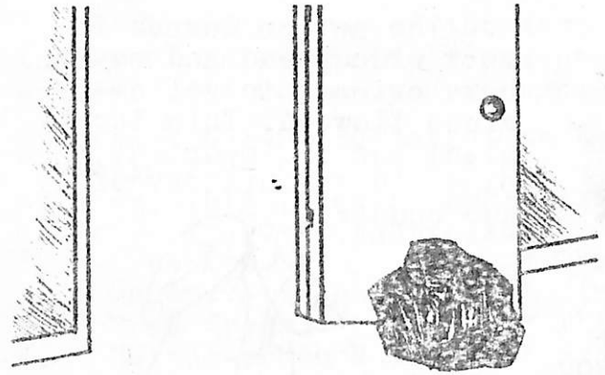
What happens?

Soil only.

Plant some bean seeds in both pots and add some blood & bone to one.

Blood and bone mixed with soil.

the soil



A famous doorstop!

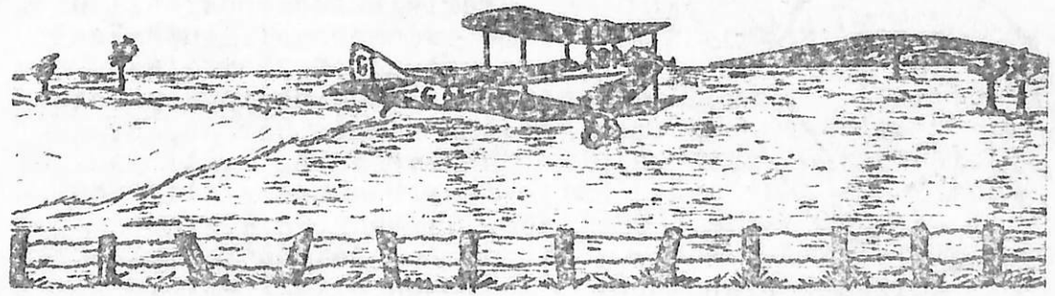
A CHANCE DISCOVERY:

Scientists found that bones contained phosphate of lime. And so the search for other phosphoic rock began. They knew that guano, which is the droppings of such sea birds as pelicans, penguins and gulls, had been used by the Incas in Peru.

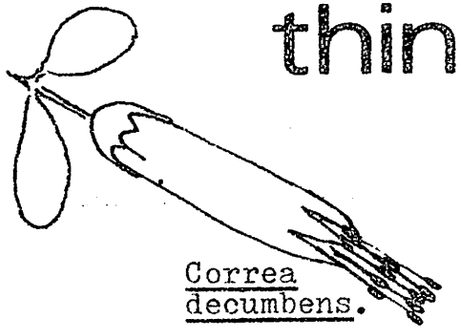
In Australia, Albert Ellis, a Sydney chemist, was curious about a large piece of rock which was used to prop open the door of his laboratory. He later found it to be rich in phosphate and was delighted to find that the islands of Nauru and Ocean Island contained large quantities of similar rocks. You see, on these islands guano, from millions of sea birds , had become fixed in the coral over thousands of years.

Things to find out: What happens to this rock when it is unloaded in Melbourne? What is it then called? Who makes use of this fertilizer? How are aeroplanes proving useful? Find out all you can about Nauru and Ocean Island.

A fast way to feed the soil:



things to look for in june

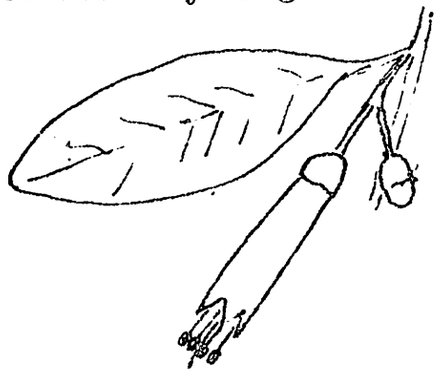


Correa decumbens.

A specimen of Correa was collected by Joseph Banks and Daniel Solander at Botany Bay in May, 1770. The genus was named after a Portuguese ambassador and botanist. His name was Jose Correa de Serra.

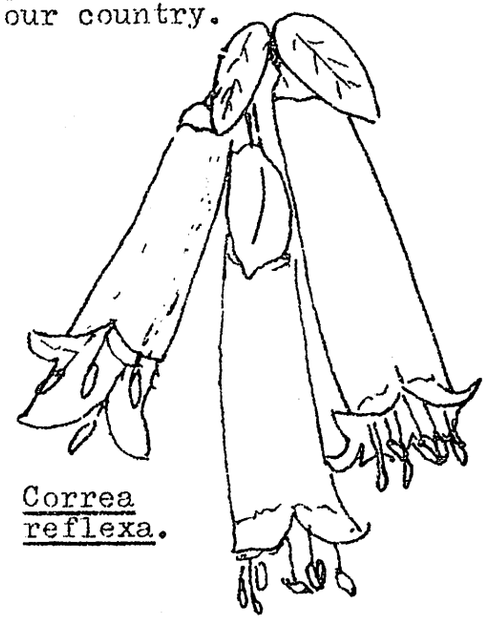
Correas vary in shape from a prostrate species found in South Australia, to a small tree up to 30 feet high.

Correas make excellent garden shrubs and what is more, they attract honey-eaters to your garden.



Correa lawrenciana.

The native Correa is very widespread and may have crimson to yellow-green flowers. This lovely plant has an important place in the history of our country.



Correa reflexa.

Ed. On page 63 of the "Periwinkle" book called "Wilflowers of South-East Australia" there is a very good photograph of the Common Correa, or Native Fuchsia. If you use this book carefully you will be able to recognise up to one hundred of our common wildflowers.

With the coming of the damp weather it is likely that you can find some frogs hopping around. How many species of frog can you recognise?

Frogs belong to the class Amphibia, which means "able to live both in and out of water". Frogs are the only Amphibia found in Australia. There are four groups of frogs found in Australia:

1. Tree frogs.
2. Southern frogs.
3. True frogs.
4. Narrow-mouthed frogs.

* The largest frog you will find is possibly Hyla aurea.
* This is the Golden Bell Frog. It is a green colour with yellow spots or stripes. The toes have a small pad at the end.

There are some other tree frogs you can find. One of them is Hyla verreauxi. It is also called Verreauxi's Tree Frog. It is a small brown and black frog. A broad patch runs back from a point between the eyes to well down the back. Have a look at the fold of skin that is across its chest. Behind this fold of skin the surface is very rough: like a lot of grains. You will also be able to pick out the hearing plates, or "tympanic membranes" behind the eyes. You will probably find this frog in a damp place: in grass or vegetation. But it will be low down, close to the ground, near pools and creeks and so on.

Hyla ewingi is the scientific name for Ewing's Tree Frog. It is very similar to verreauxi. It is a little over an inch long, and usually has a dark brown colour with lighter brown stripes.

The Bullfrog has two other common names: Banjo Frog and Pobblebonk. He has a long scientific name: Lymnodynastes dorsalis. This one is easy to pick. It is large, squat and looks like a toad. You can easily see that it has a raised oval glandular area on the outside of the tibia, and a clear yellow ridge that runs from below the eye to the shoulder. The stomach surface is smooth. Look closely at the fingers; the are not webbed.

activities

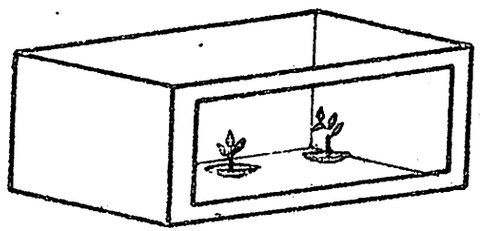
Grow some wheat, or maize or oats on some cotton-wool. Keep it watered but not too wet. Do not forget to place it where it can get plenty of light.

Now put some beans or pea seeds on some cotton wool in another saucer. Keep them side by side and watch them closely.

When the young plants begin to grow, compare them. Look very closely at the shapes of the new leaves. There is a special name for these seed leaves; it is cotyledons. Now in your saucers, you have two different kinds of cotyledons; one of them is called a mono-cotyledon and the other is called a dicotyledon. Now "mono" is a word that means one, and "di" is a word that means two. In your two saucers, which is which?

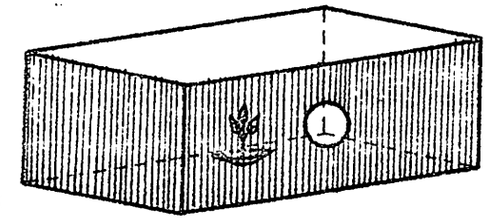
If you have an empty chalk box, cut a small piece out of the side and replace it with a glass or cellophane. Find some good soil to put in the box. Now place some seeds inside the box, but against the glass so that you can watch them grow. There are other ways in which you could arrange this experiment, perhaps by using a wide, shallow glass container. But remember that we will want to remove some or all of the plants later on. Once again, find a good spot in the classroom, where there is plenty of light.

Chalk box.



glass.
young plants.
soil.

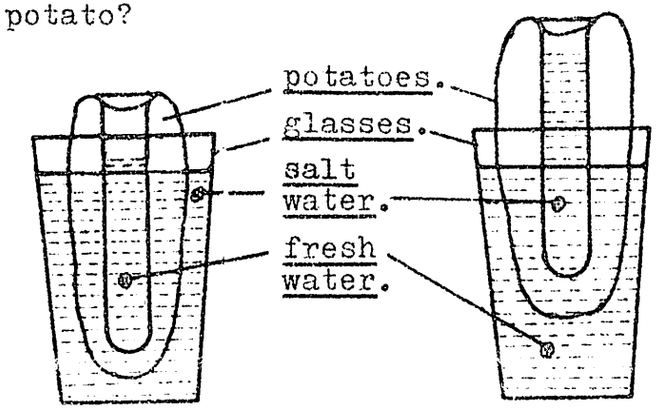
When you have the plants growing in the cotton wool, put them into a chalk box which has a small hole in one side. The best way to arrange this is to have the chalk box upside down so that light may only enter through the hole. Now watch closely to see what happens to the plants. Does this give you any ideas about the way in which plants grow? Where do plants put on the new growth? Do they put it on at the very tip of the green shoots, or do they put it on down near the roots so that the stem is pushed up through the ground?



Chalk box with porthole.

And now, here is an interesting activity using two potatoes. Take two large potatoes and hollow them out. Find two glasses which are larger, and put salt water in one, and fresh water in the other. Now put salt water in one potato and fresh water in the other. Place the potatoes in the glasses so that the salt water potato is in the fresh water, and the fresh water potato is in the salt water. Now colour each amount of salt water with red or blue dye.

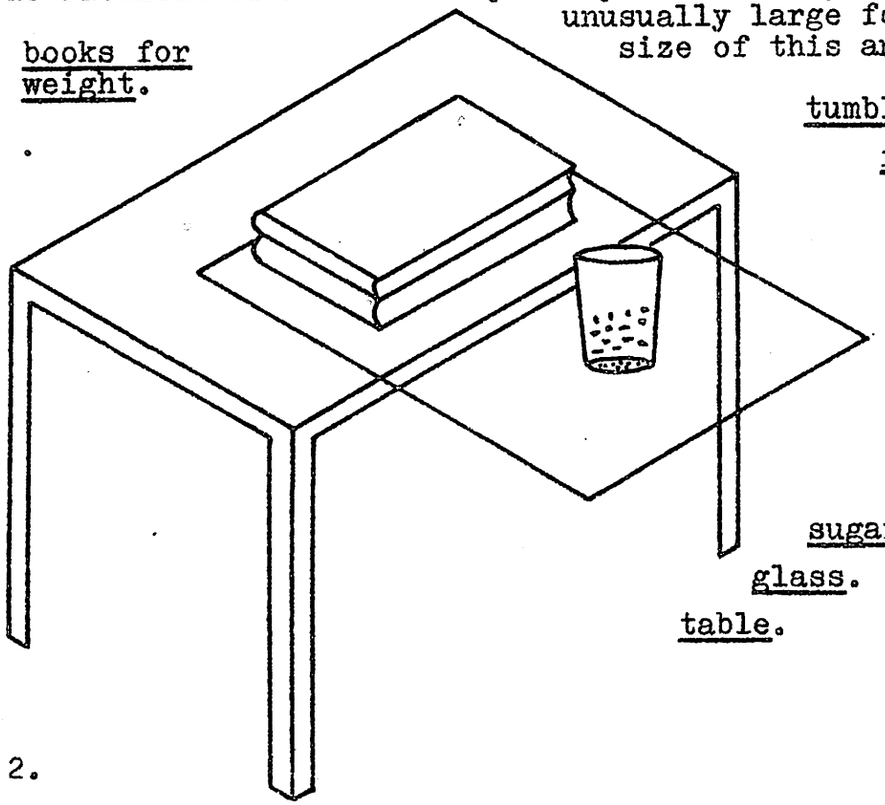
Watch the experiment very closely and talk about what happens. Does this give you any ideas about the way in which plants feed? What reasons can you give for this? Have you any ideas on how you would need to design a machine so that it did the same sort of thing as the potato?



ACTIVITIES, (Continued):

Flies are very interesting to watch at close range. You will need a good hand lense of 10X or 15X magnification. You will also need a sheet of glass. You may think that flies are unpleasant to watch at first, but you will get used to it. Everything needs to be studied, and if we can see clearly the way that a fly operates, we will be in a better position to prevent it from doing us harm.

Set up your experiment as it is shown in the diagram. You will want to watch the flies feeding. Leave them in the container for a few hours; this will make sure that they are very hungry. Now put some sugar inside. Watch them very closely with your magnifying glass. Does this give you any ideas why it is not wise to eat food that has been exposed to flies? Would you say that the neck was flexible or not? Would you say that the eyes were unusually large for the size of this animal?



letters

A CRAB AT INVERLOCH.

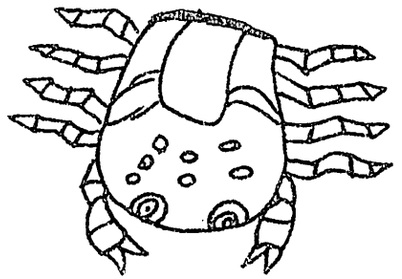
Dear Editor,

One morning when I was at Inverloch, a beach resort on the South Gippsland coast, I decided to go for a walk along the rocks. I was pleased to find it was low tide and the rocks were exposed.

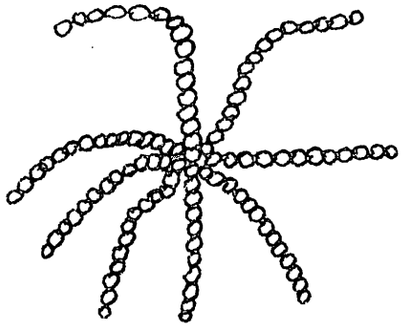
I lifted up a rock and a brown crab ran out. This crab had two big pincers and eight four-jointed legs. These legs were about one and a half inches long and they projected from under a shell which protected the crab's soft body. The shell was heart-shaped and four legs were on either side, the pincers being at the front of the body. This crab, like all others, moved sideways. Crabs are incredible creatures, for they can stand high tide depths of nine feet to no water at all at low tide.

Crabs can be found in all the zones of rocks, the first one being the one which is known as the galeolaria zone, from the small limey tube worms that encrust the rocks in this zone. The second is the barnacle zone and the third is the cungevoi zone. After finishing my inspection of the crab I put it down into the water and replaced the rock I had found it under to its original position.

Antony Brown, 6B, Laburnum Primary.



Crab.



Neptune's Necklace or Kail Weed.

LETTERS:(CONTINUED)

And now, here is a very good letter from Deirdre Williams at Vermont Primary School. Deirdre has been watching a case moth very closely .....

Dear Sir,

For about three months I've been keeping a large case moth. I named her Bertha. A vase is on the mantlepiece with a piece of small branch for food, and a long thin stick, to use when she makes her case bigger.

My father saw her cut a piece of stick about half an inch long and round off the ends so they won't hook on to things. She cut a slit in her case and then sewed the stick in the slit. She isn't doing a good job of her case because she hasn't had the materials to do so.

She likes to go walking: up the wall, along the mantlepiece, across the floor. She leaves a silky ladder where she goes. Sometimes when she comes out, I pat her and she doesn't pop in again.

For about two weeks she was wriggling in her case. Then she came out and had a big feed. When she had finished eating, I picked her up and in the bottom was something crumpled. After a few days she pushed it out. It was her old skin.

Casemoth.

(Picture by Deirdre.)

prize letter

The prize for this month goes to a boy in Grade 4B at Heathmont Primary School. His name is Justin Finighan and he will soon receive his prize of one of the latest "Periwinkle" books.

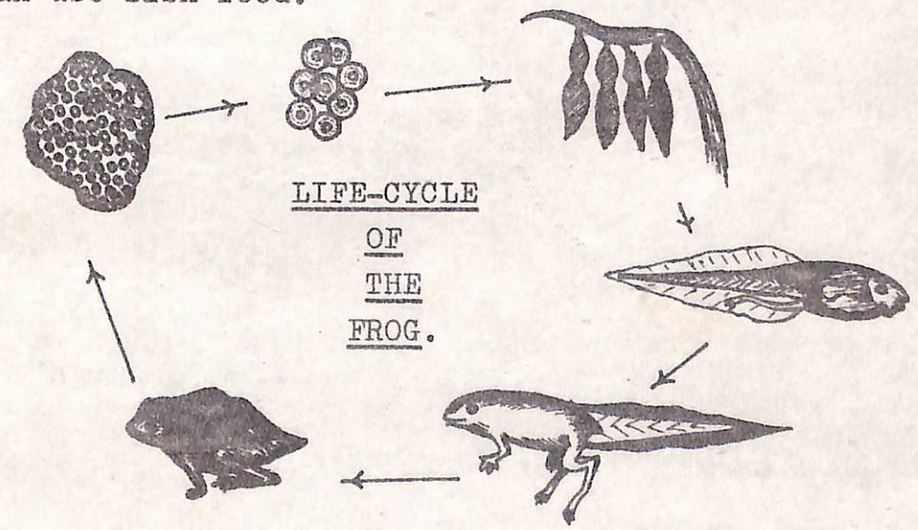
Tadpoles.

The tadpole hatches out of the egg in much the same way as the fish does. In about a month's time, it begins to grow legs. The back legs grow before the front legs. Soon its tail is fully absorbed because the energy inside its tail goes into the legs. It then is a frog and can jump out of the water.

* * * * * * * *

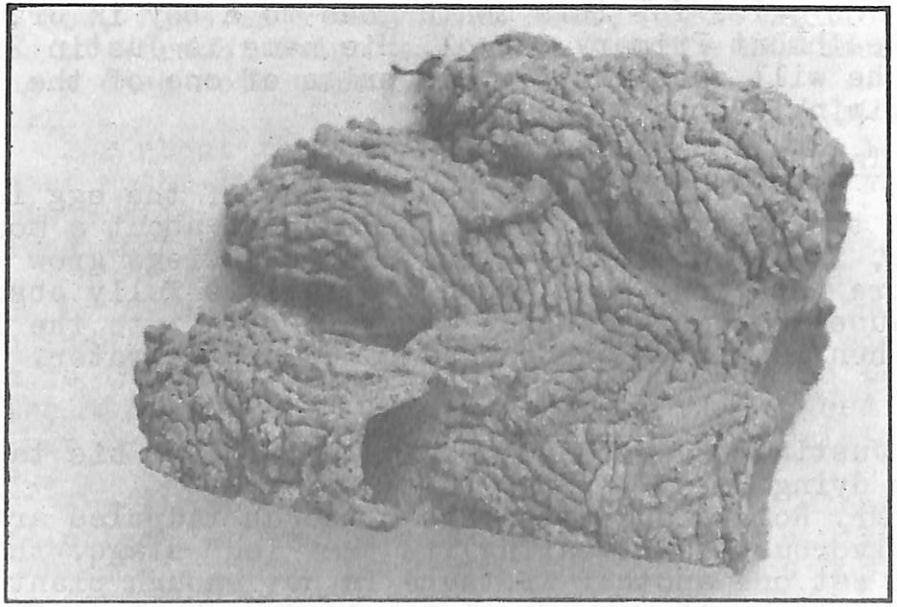
Ed. Justin was wanting to know why some of his tadpoles were dying.

Mr. Rogers suggests that although tadpoles are herbivorous (plant-eating) to the "leg" stage, they will eat one another if there is not enough plant food in the tank. If you cannot supply enough plant food, you can use fish food.



Can you name all of these stages?

what is it



Clue: This picture is related to a picture in Volume 8 Number 2. We will put the answer in next month's Nature Notes.

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NATURE NOTES COMMITTEE:

1. Mr. L. Delacca
   Vermont Primary School.
2. Mr. F. Rogers
   Lilydale Primary School.
3. Mr. F. Tyrrell
   Blackburn East Primary S.
4. Mr. M. Coote
   Blackburn Lake P. S.
5. Mr. I. Legg
   Blackburn Lake P. S.