

ECLIPSE



NATURE

NOTES

Vol.13, No.8.



First the Good News..

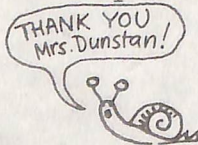
I'm opening my Restaurant on page 6 & 7!

Now the Bad News..

Prices for Nature Notes and Probe will have to rise in 1977 to :

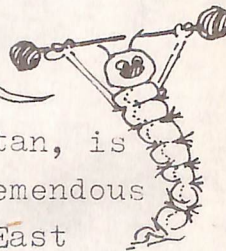
- * NATURE NOTES 10cents each.
\$1 a year for the 10 issues.
- * PROBE 5cents each.
50c a year for the 10 issues.
- * THESE PRICES INCLUDE THE COST OF POSTAGE
however if you order 2 magazines or less
- * the cost will be \$2 (whether they are
Probes or Nature Notes.)

We announce these new prices now so that Schools can INCLUDE THE MAGAZINES ON 1977 BOOKLISTS as an optional extra, especially since these prices mean that Schools will no longer have to bear the cost of postage. An order form will be in the next issue.



Even Worse!

What do they mean "little caterpillars"?



One of our very best artists, Mrs. Anne Dunstan, is leaving us this month. She is one of the tremendous team of voluntary workers from the Ringwood East Mothers' Club who do so much for Nature Notes. Mrs. Dunstan drew Wonderoo, P.A.W. and many of the headings in Probe and Nature Notes, but her favorite drawings are the little caterpillars, snails and bees!

TOTAL ECLIPSE OF THE SUN

A Solar Eclipse

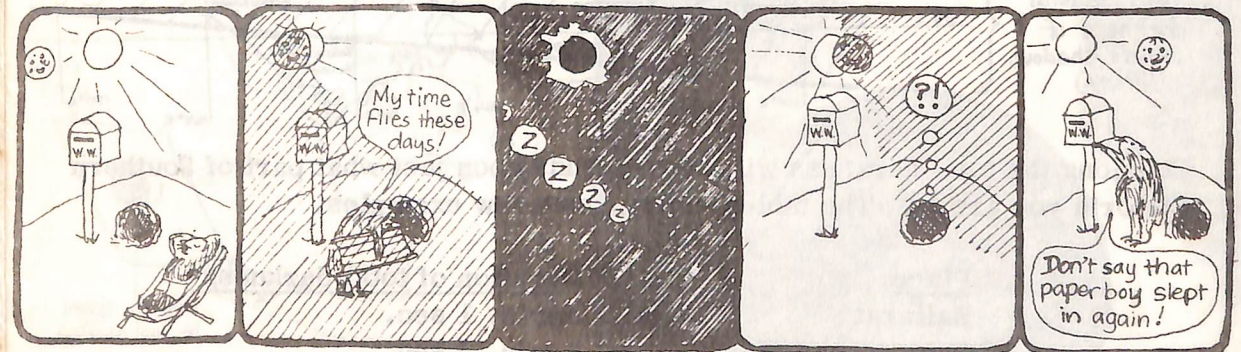
by Mr. R. Philbrick
(Planetarium lecturer,
Science Museum of
Victoria.)

Saturday, October 23, 1976 will be a day to remember, because on that day people in Southern Victoria will experience a total eclipse of the sun.

The result? - during the afternoon, we in Melbourne will have total darkness for about 2 minutes 45 seconds. During this total darkness the stars will be visible. Because this darkness will occur at around 4.40pm in the afternoon

- * people doing their gardening will have to stop for a while.
- * cricket matches will be delayed.
- * animals may become distressed, thinking that night has arrived early.
- * car headlights and street lighting will be in use.

How it will happen in Melbourne - October 23, 1976.



3.33pm.

Normal
light

3.34pm.

- 4.39pm.
Gradually
fading light

4.39pm.

- 4.41pm.
Total
darkness

4.42pm.

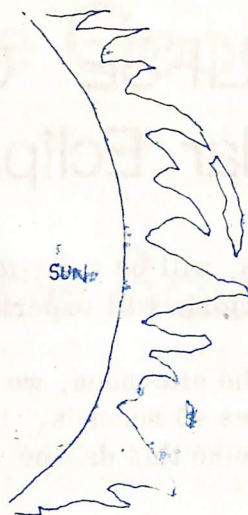
- 5.42pm.
Light gradually
getting back to
normal

5.42pm.

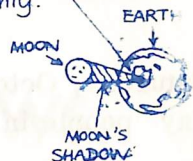
Normal
light

The Cause:

A total eclipse of the sun occurs when the moon travels between the earth and the sun in such a way that it blocks out light from the sun, preventing the sun's light from reaching part of the earth's surface. So the moon's shadow falls onto the surface of the earth. If you stood in the moon's shadow, you would be experiencing a total eclipse of the sun.



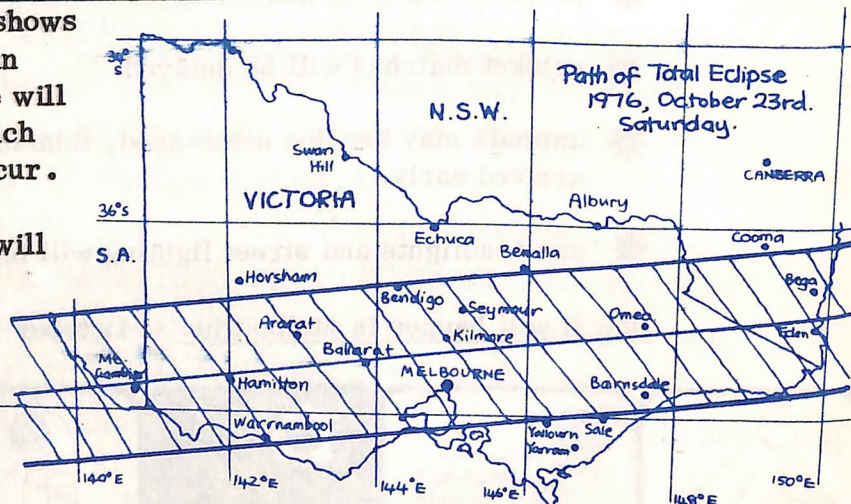
At the black spot there is total darkness. Elsewhere the eclipse is seen as partial only.



(NOT drawn to scale - the sun should be much bigger & the earth farther away.)

Where will it be visible? For how long?

The map on the right shows the areas of Victoria in which the total eclipse will be visible, i.e. in which total darkness will occur. In all other parts of Australia the eclipse will be seen as partial.



Path of total darkness of moon's shadow. (Umbra)

How long the total darkness will last depends upon just what part of Southern Victoria you are in. The table below gives a few examples.

| Place | Duration of total darkness |
|------------|----------------------------|
| Ballarat | 3 min. 1 sec. |
| Hamilton | 3 min. 5 sec. |
| Melbourne | 2 min. 36 sec. |
| Geelong | 1 min. 39 sec. |
| Bairnsdale | 1 min. 36 sec. |
| Seymour | 2 min. 31 sec. |
| Bendigo | 00.10 sec. |
| Mornington | 00.02 sec. |

Hmm. If I go to Hamilton I'll get a longer sleep.



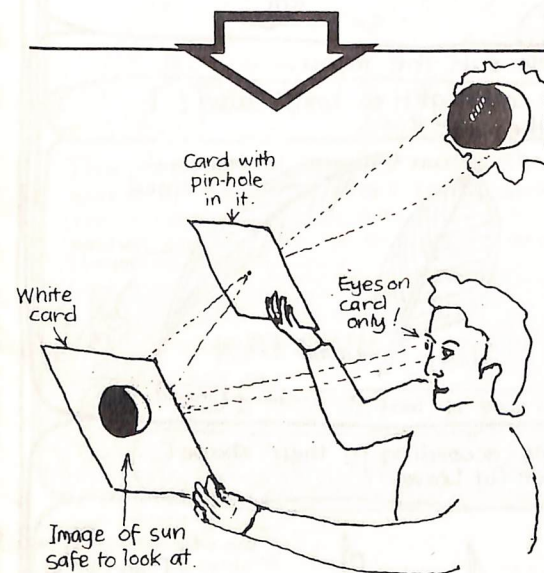
Viewing the eclipse.

If you wish to view the eclipse, then take note of the following "Do's & Don't's".

Do's ✓

Do read as much as you can about solar eclipses, both total and partial.

Do view the eclipse using two pieces of paper, one with a pin-hole in it. Project the sun's image through the pin-hole onto the other piece of paper, and you will be able to watch the progress of the eclipse in perfect safety without fear of damage to your eyesight.



Don't's ✗

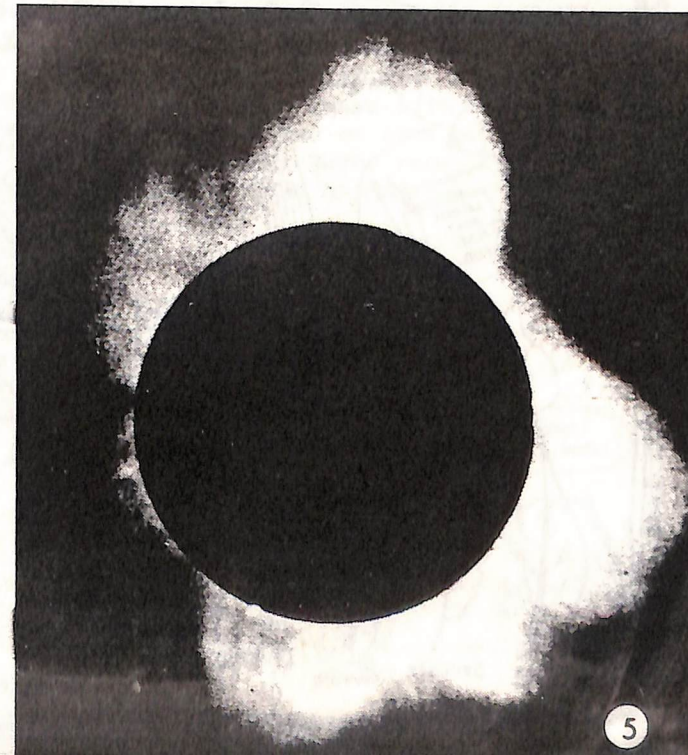
Don't look at the sun with the naked eye at any time, whether it is during an eclipse or not.

Don't view the sun through sun-glasses, fogged film, smoked glass, welding glass, painted glass.

Don't try to take photographs of the eclipse without the special filters required. You may ruin both your camera and your eyesight.

Don't ignore this don't column.

The moon covers all but the sun's corona.



NB. Although it is perfectly safe to look at the eclipse when the moon completely covers the sun (as in the picture at right) we must be extremely careful to wait until TOTAL darkness before doing so. Even when the sun is just peeping from behind the moon, and it doesn't seem very bright, DAMAGE to EYES will occur - so if in doubt, watch it on T.V!

YOU CAN GET ANYTHING YOU WANT AT

Wally's Restaurant!

After many embarrassing mistakes, Wally Wombat

Hey waiter! What's this fly doing in my soup!?

Uh... Breaststroke

That's not fair! Why didn't I get a fly in mine?

...eventually learns what sort of food to give to which sort of customer

Ants in my Soup! YUMMY!

...and I'll finish off with a preserved caterpillar.

Sure beats catching your own!

OCT. 22nd.
TONIGHT'S
SPECIALTY
INSECTS!
TOMORROW
LEAVES!

Hm. Nice Mantis. I wonder is he on the Menu!?

... but it takes quite a lot of research to work out the menu.

Good grief - I never knew leaves could get so complicated! I wonder which sort they'll like the best?

Parallel Veins

Net Veined

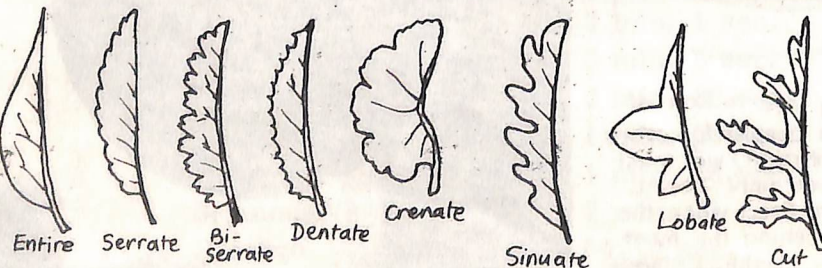
Loop veined

Marginal Veined

Varicose Veined?

* Can you help Wally find one of each sort of leaf? I tried, but I looked in vein!

Perhaps I should sort them out into groups according to their shape? I could sell 'Savoury Shape Leaves' and 'Crinkle Cut Leaves'!



But all the hard work paid off & the money rolled in!

What'll we have to eat next?

Yum, yum, Manna Gum

I'm sure glad Wally branched out into this line of business!

Gall insects having a feed on gum leaves!

SAT. OCT. 23rd
TODAY'S
SPECIALTY
For Koalas, possums
LEAVES
TOMORROW
SEAWEED

I'm off to the bank - see ya!

* There are 3 names of native plants hidden in this frame - find them if you can!

When suddenly....

O.K. Fuzzy face! Make with the loot!

A silly galah and an old croc!

You tell him, Boss. You tell him!

I wonder what's holding up Wally?

OK. Who turned off the lights!

That's funny. I haven't got any lights in my outdoor restaurant!?

Yeah. Who's the wise guy?!

The nocturnal animals make short work of the intruders in the darkness... (With his excellent night vision, Wally spins on his attacker and 'e clips him under the ear - which is quite hard to find on a crocodile!)

KAPOW!!
OUCH my poor hand!

... the light returns a few minutes later, and business gets back to normal er... except that an emu mistook the money bags for some rocks and swallowed them to aid her digestion!

What do we do now Boss?

That'll be the most cents she's ever had!

Oh Ethyl Emu! Now I'm stony broke!

I wonder who did turn out the lights! *

Well I've heard of banking on wales - but emus! That's just too ridiculous!

* Answer underlined in second-last frame!

THE SOLAR SYSTEM

Just a speck in the Universe....

A great activity to try is to make a model of our Solar System. Balloons covered with paper mache and painted make ideal mini-planets. Apart from the colors listed below for some of the planets, you might paint Jupiter brown with lighter stripes and a red patch, Saturn a pale yellow and Mercury orange - being so close to the sun. Venus and Pluto are mystery planets as far as their surfaces go, so a misty pale grey or blue would be an appropriate color. You could mark in on some of your planets where man-made rockets have landed.

There are thought to be well over 40,000 of these asteroids - which are orbiting lumps of rock. Only 19 have a diameter > 160km, one being about the size of Victoria or England.

The mysterious 'red spot' of Jupiter.

Slightly flattened poles because of speed of rotation. (Only 9 $\frac{1}{2}$ hrs!)

The Asteroids

THE SUN

MERCURY

Smallest planet. Diameter 4,800 km. No atmosphere. Always seen close to the sun, so very difficult to observe.

VENUS

The 'twin' of earth in size. Too hot for life & a very dense atmosphere of carbon dioxide - which is what we breathe out!

1 Venus' year = 224 $\frac{3}{4}$ Earth days.

1 Venus' day = 243 Earth days!

Fancy having a day longer than a year!!

EARTH/MOON

The moon is 385,000 km from the earth and is sometimes thought of as part of a double planet system with the earth - rather than a satellite.

MARS

The red planet. Has two small moons. Un-manned American space-craft are on Mars at the moment.

JUPITER

The largest planet. Always drawn by Astronomers with 'south' at the 'top' for some strange reason. (Still, when you're in outer space there is no 'up' or 'down'.) Jupiter has 12 moons or satellites, the largest of which (called Ganymede by Marius in 1610) is actually bigger than Mercury. The 4 largest moons were the first bodies in the solar system discovered by using a telescope - they can be seen using a good pair of binoculars even!

SATURN

The 2nd. biggest (not counting its rings). Diameter = 122,300 km, compared with Jupiter's 142,750 km and Earth's 12,742 km. The rings are made up of particles of various sizes. As well, Saturn has 10 satellites - one the same size as Mercury. The planet is less dense than water!

URANUS

Discovered in 1781 - faintly visible to the naked eye. Telescopes don't show much more detail - except that it's a greenish color. 5 faint satellites. Denser than Saturn or Jupiter.

NEPTUNE

Discovered in 1846. Slightly smaller than Uranus but much denser. One large moon and one very small one. Seen through binoculars as a small bluish planet.

PLUTO

Discovered in 1930. Very cold. Strange shaped orbit.

SUNSPOTS & SOLAR PROMINENCES: Sunspots, the dark patches on the sun, are probably areas of cooler gases - but they are still extremely hot! (See page 14) Solar prominences are like huge flames leaping off the surface of the sun. They can be up to 160,000 km long! That's some flame-thrower they've got up there!!

NOTE: Like our cover picture, this picture is NOT drawn to scale. The sun on this page if fully drawn would be about 1 metre across (diameter). On that scale, the earth should be drawn as a tiny dot some 190 metres away, whilst Pluto would have to be about 7.3 km away!! We just might have enough paper to draw them that far apart - but we certainly couldn't afford to post a Nature Notes that thick to you!

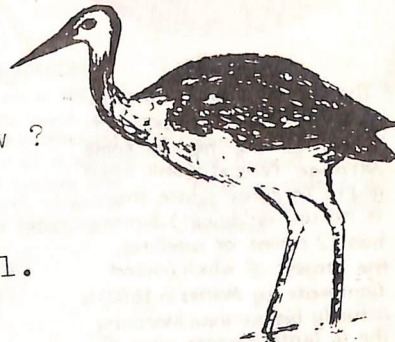
LETTERS

Blackburn Lake is the home of a White-faced Heron which the children of the nearby school are keeping a watchful eye on - hoping that the improving cleanliness of the water and care of the native trees will encourage the bird to stay. Samantha Howells wrote this poem about it :

WHITE-FACED HERON WILL YOU STAY ?

Seeking food in the Blackburn Lake
The White-faced Heron comes,
Looking, hunting for some food -
Trying to survive.
His paradise is being spoiled by the stupidity of Man.
The heron is trying to survive, but do you think he can?
Men let drains run into the lake
Carrying chemicals and wastes.
The lake water turns dark and muddy,
The sunlight can't get through.
The fish in the lake that the heron feeds on will die.
The lake has become a playground where children play all day.
Shouting and playing their noisy games
While the heron hides away.
White-faced Heron will you stay ?
Or will you go far, far away ?
Will you wish for your paradise to grow ?
Or will you leave the lake and go ?

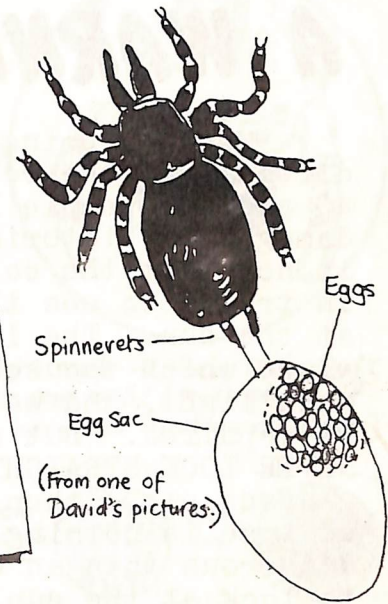
Samantha Howells, Grade 6.0
Blackburn Lake Primary School.



Sometimes we receive a letter so long that we can't fit it all into Nature Notes. Last month we received a project on SPIDERS by David Morrison which had 7 pages of beautiful pictures and excellent script.

Here is just a bit of it :

Most spiders inject a poison into their prey. After doing so, the spider squeezes out all the juice of the animal. Then he sucks it all up with a tube near the mouth. Some spiders jump several inches to attack prey. Others catch their prey in webs. There are four main types of web - the wheel web, the sheet web, the lattice web and the net web. One of the strangest webs is made by the Golden Web Spider - its web is made horizontally. Older female spiders lay some eggs and then spin a sac around them all. Some carry the sac on their backs whilst others have it on the web.



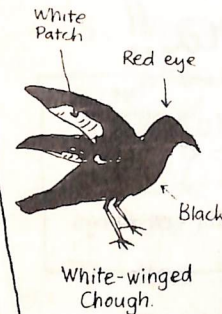
This question comes from Ross Macfarlane of Piangil.

Dear Editor,

I hope you can answer my question. I think this story is very intriguing.

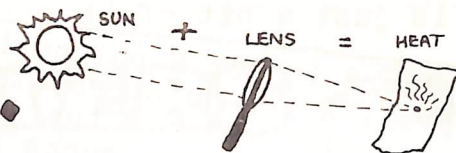
I was sitting by myself near an old stony football field. All at once, a party of White-winged Choughs began making a tremendous racket in the scrub next to it. A party of a dozen or so Choughs flew down to the field while more Choughs remained in the scrub calling. Now the party began an interesting display. Calling and flapping wings they moved down the field, but about halfway down most had stopped, and some pecked at the ground. One however, continued to display until the party reached the end of the field, then all flew back into the scrub.

I would be interested to know why this display took place. Could the party that stayed in the trees have any significance?



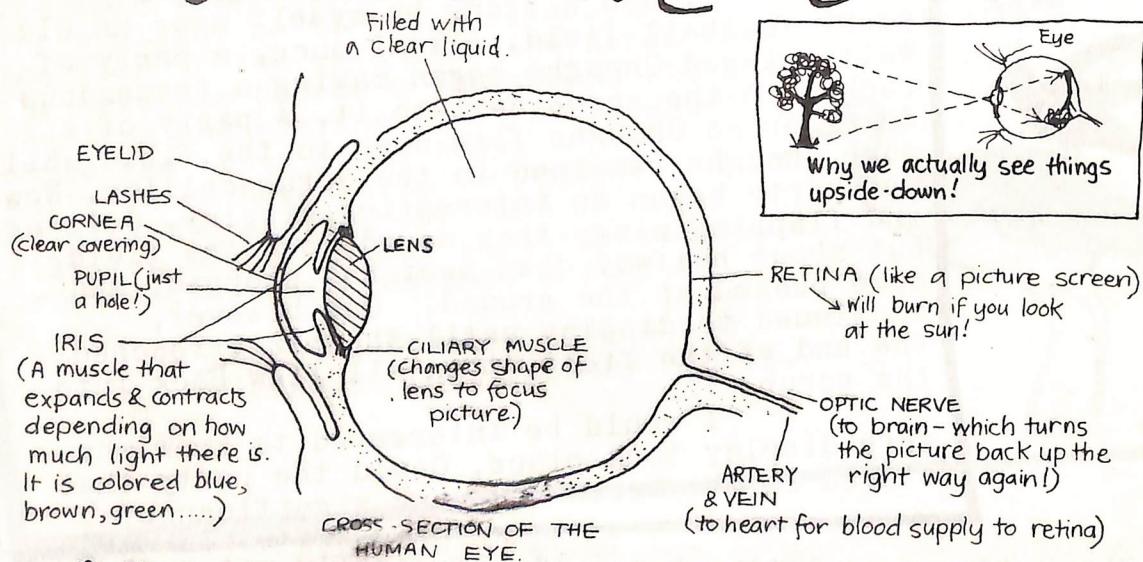
Thanks for your letter Ross. I'm afraid I'm not much of a bird expert - but I'll pass your letter on to one of our Committee who is. I do know that Choughs are communal birds and defend as a group - but perhaps some of our other readers may know?

A WARNING..



Much is being said about the dangers of looking directly at the eclipse. In the past, somewhere between 40 and 180 people have had their eyesight permanently damaged in Victoria alone at each partial eclipse. It is not that the eclipse itself is dangerous, but because in trying to see the eclipse these people looked directly at the sun. The lens of our eye is just like a magnifying glass which focuses light on our "screen" or retina - too much light, and we burn a hole in our retina which can't be repaired. But as long as we remember the simple rule NEVER LOOK STRAIGHT AT THE SUN (not even through special glasses etc.) then our eyes will never suffer. The eclipse is nothing to be afraid of - it is no more dangerous than an ordinary sunny day when no-one bothers to look at the sun. Besides, there is a better than even chance it will be cloudy - then we'll all have to watch it on T.V! But let's take a closer look at one of the most amazing "machines" in the natural world:

The Automatic Color Movie Camera!!



- * If you get something in your eye, don't rub it - just cry! (Your automatic color movie cameras are also SELF-LUBRICATING!)
- * Notice that the optic nerve is not in the centre of the retina. This is because where it leaves the eye it creates a blind spot. You can find your blind spot by putting a black dot on a piece of paper, and, whilst looking straight ahead, positioning the paper near your eye so the dot disappears!

8 EYED MONSTERS

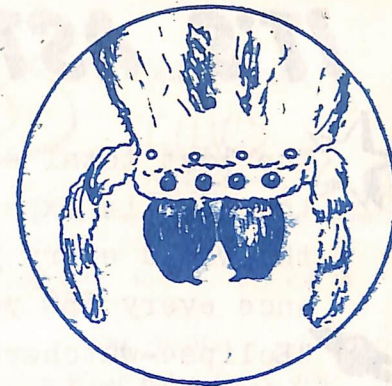
and other marvels!

There are few things more interesting than to look at the Animal Kingdom in terms of the development of the senses used by its members. Some animals rely heavily on their sense of smell (e.g. dogs), others have extraordinary eyesight (e.g. eagles) whilst others have amazing hearing or sense of touch.

See if you can find the answers to these questions:

1. Are dogs all color blind?
2. What animals have no eyes at all?
3. What animals have more than 2 eyes?
4. Can a fish see straight ahead?
5. What do people mean when they talk about "a fish-eye lens"?
6. Which animals are known for their ability to see in the dark? How can they do this?
7. Man has tried to copy the eye and build a machine like it. What is it? Is it as automatic as the eye?

You may find some of the answers to these questions in the pictures on this page - but it would be better to visit your library and do some research.



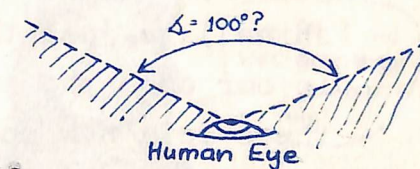
Eight eyes - & they still can't see too well! (A close-up of a harmless Huntsman spider.)



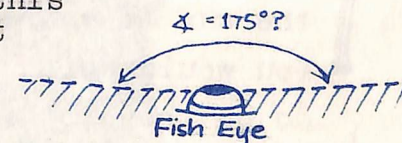
CAT'S EYES

The Iris of a cat's eye adjusts amazingly well to extremes of light & shade. (Cover one of your own eyes & leave both of them open for a minute. Get a friend to look at them & tell you which pupil is biggest.)

FIELD OF VISION



FIELD OF VISION



The earthworm has no eyes, yet it can tell night from day because its whole body is sensitive to light!

Humans, birds and insects appear to be the only animals that can distinguish colors clearly. All that talk about male cows charging at red colored objects is a lot of bull!

IT'S ASTRONOMICAL!!

I want to go home. I'm scared of heights



★ The last total eclipse over Melbourne was in 1835 and the next is expected in 2220. They occur somewhere in the world every year, but on average, they happen only once every 350 years at any one place.

☛ "Eclipse-watchers" from all over the world have booked in at places like Mt. Gambier and Ballarat (which have the longest period of total darkness), and the Astronomical Society has even booked a 727 jet to make sure that clouds don't get in the way of their members' view of the eclipse.

☛ Sunshine, Moonshine, Starshine Earthshine??????
Sunshine and starshine are the same thing, for the sun is simply the closest star to us. Stars are different to planets in that stars give off their own light because of their great heat. (The coolest place on the sun is in a sunspot - and even that's over 3,800°C!) Moonshine, earthshine (or "planet shine") is just the reflection of light from a star, in our case the sun. You can see "earthshine" when there is a new moon (or an old one), the bright section of the moon is reflected sunlight, the dull part is reflected "earthlight" (which also comes from the sun of course.)



☛ You would weigh 28 times more on the sun than you do on the earth. Why?



So that's why the Weight Watchers want to go to Mercury!

☛ Sunlight takes $8\frac{1}{4}$ minutes to reach earth. If a car travellin at 90kph could reach the sun, it would take around 175 years! (And if it crashed into the sun - the sound of the explosion would take over 14 years to get back to us!)

BIRD WORDS

by SUE TAYLOR

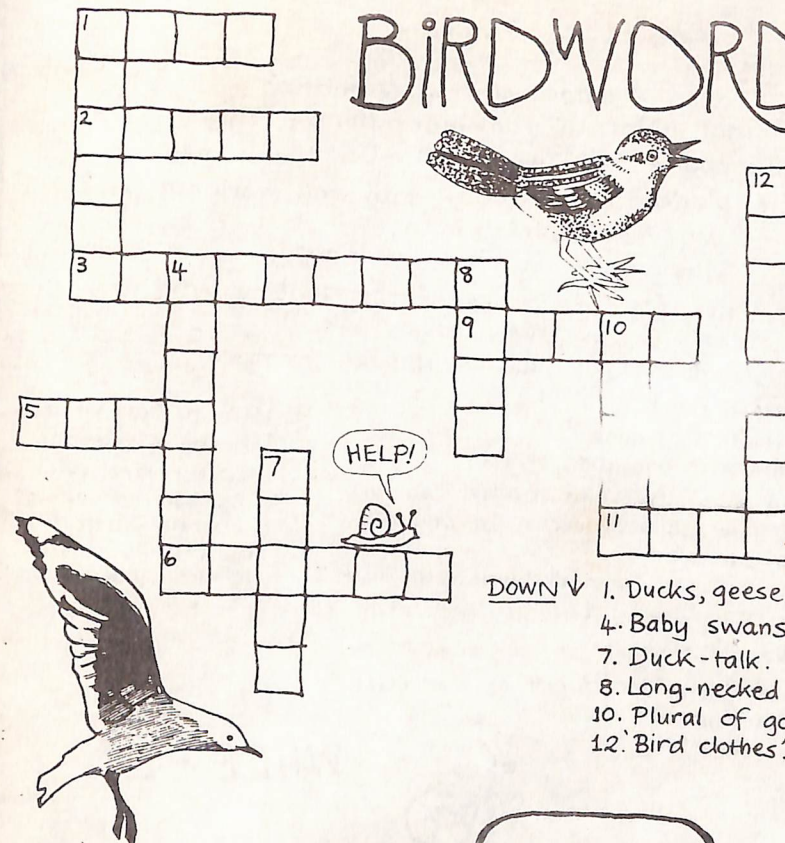
CLUES

ACROSS →

1. Ducks, geese & swans are ----- birds
2. What this bird is at ----- by ducks
5. What baby ducks are covered with when they hatch.
6. Ducks love to eat them!
9. All birds have them - but not all can fly with them.
11. What came first? The birds or the -----?

DOWN ↓

1. Ducks, geese & swans have ----- feet.
4. Baby swans.
7. Duck-talk.
8. Long-necked waterbird.
10. Plural of goose.
12. Bird clothes!



ODDS & ENDS

● ODD SPOT

An Alsatian dog, left at Moscow airport when his master was forbidden to take him on a plane, has met incoming flights for the past two years searching for his owner.

I wonder how many more of these animal horror films we'll have to put up with? First 'Jaws' and now 'Grizzly' (or was it 'Claws'?) have arrived to scare us.

It's a shame that some people get the wrong idea of animals from this sort of film - as if they are things to be feared rather than understood.

Yes, well there's no need to get grizzly about it!



Gee. All I did was give them a little bear hug!



QUIZZES & QUESTIONS

A mnemonic is something that helps us remember things. This little rhyme helps us to remember the names of the planets in order — can you work out how?

My very earnest man,
Just show us Natures Plan.

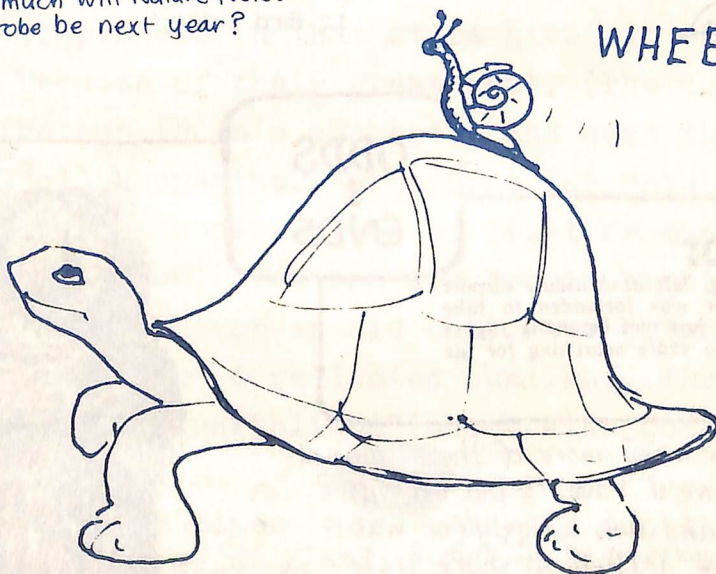
Now here's a mnemonic for the colors of the rainbow: ROYGBIV,
(Red, Orange, Yellow, Green, Blue, Indigo, Violet.)

THE ANSWERS TO THESE QUESTIONS ARE IN NATURE NOTES:

1. What sort of gum leaves do Koalas like?
2. Which planet has the most moons?
3. Which planet was the last one discovered?
4. Name four different ways the veins in a leaf can run.
5. About how often do total eclipses occur for any one spot on the earth's surface?
6. Name two animals that see especially well in the dark.
7. What part of the eye is damaged if you look at the sun?
8. What muscle makes it possible for our eyes to focus?
9. What is the name of the colored part of our eyes?
10. How much will Nature Notes and Probe be next year?

* Have a Quiz Race.
Line up & take one step forward each time you answer correctly & before the others. First to go 5 paces wins.

WHEE - EE !



ARTISTS this month were:
W. Prohasky
A. Dunstan
F. Little

Nature Notes
P.O. Box 28,
Ringwood East, 3135.
Phone: 879.1263

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