

Year 7

# Reading Magazine

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# Leeches

Have you ever had the experience of pulling off your sock to find something thick, black, and shiny clinging to your skin? To make matters worse, it may be fat because it is full of your blood. Your first thought was probably, *how do I get this disgusting thing off?*

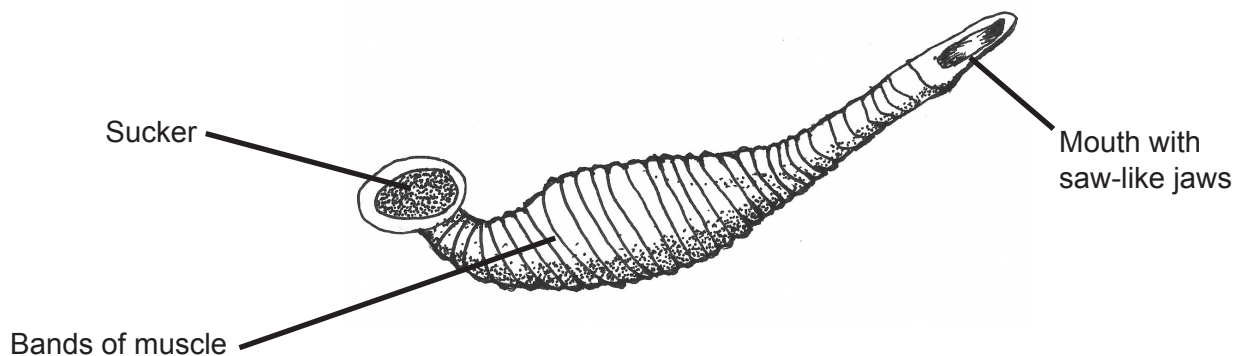


Leech being used for medical purposes

Leeches weren't always viewed as so horrible. In the early 1800s they were seen as being useful as a cure for a whole range of diseases. Leeches have something in their saliva which stops blood from clotting (or thickening). This allows the leech to have its fill of free-flowing blood before dropping off. Medicine today still takes advantage of leeches' ability to stop blood from clotting which can be very helpful during operations.

Leeches have suckers on each end of their body that help them to move. One of these suckers is actually a mouth. Once a leech has hold of you it uses its saw-like jaws to pierce the skin and suck blood. Leeches have been known to suck up to ten times their own body weight in blood.

If you are unlucky enough to get a leech on you, the easiest way to remove it is to pour some salt onto it. Mental note: **PACK SALT IF CAMPING IN LEECH-PRONE AREAS!** Failing this (warning—it's a bit messier) you could also just pull the little creature off.





# Global bathtub



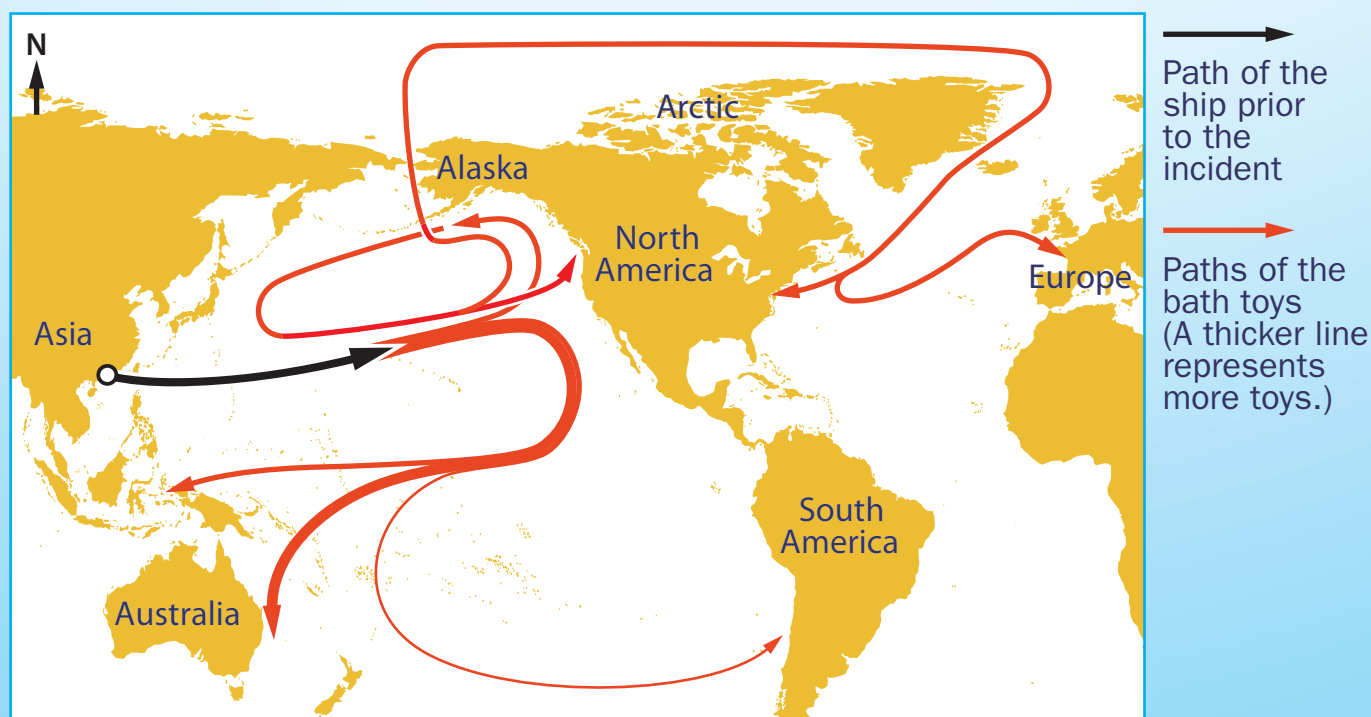
In 1992, a ship sailing from Asia to North America was caught in a storm and twelve shipping containers were washed overboard. One of these containers broke open spilling 29 000 plastic bath toys into the ocean. The lightweight toys were a mix of brightly coloured ducks, beavers, turtles and frogs. Each toy was packed in cardboard and, as the sea water rotted the cardboard, the toys began to float away.

Several months after the incident, the first toys began to wash up on distant shores. Ten toys were found on the coast of Alaska by a beachcomber who was searching the beach looking for treasure and trinkets. The toys had travelled 3200 km. Scientists soon heard about this discovery and they contacted other beachcombers, local residents and coastal workers in a search for more of the toys. At least 400 bath toys were discovered on the shores of Alaska and many of those who found the toys received rewards from the scientists.

The scientists were studying global sea currents and they were interested in the path the bath toys followed so they could better understand the movement of water throughout the oceans. Usually, scientists deliberately release special bottles to monitor currents, but they only release between 500 and 1000 bottles at a time. The accidental release of so many floating objects presented the scientists with a great opportunity to collect data to work with.

Over the next fifteen years, many more of the bath toys turned up on shores in Australia, Asia and South America. Some of the toys travelled 25 000 km around the Arctic to the beaches of Europe, having spent some of the journey trapped for years in the Arctic ice.

Usually, only two per cent of deliberately released objects are found. This means there are likely to be thousands of green frogs and red beavers swimming the oceans of the world for many years to come.



# Brahminy Kite

True to his name he floats, higher and higher  
Until he is a fleck in the vast blueness  
Majestically catching the tiniest breath of wind  
Gently manoeuvring  
Graceful, serene, unflinching  
Eagle-eyed he scans his dominion  
Minute details noted  
The red-eyed tree frog dares not stir  
The leafhopper dares not fulfil his name  
The tiny flash of a Fairy-bluebird tests the air  
The kite's wings gesture a sudden flicker  
Reminded of his purpose

He hovers

Calculates

Then tucking his wings into a streamlined dart

P  
L  
U  
N  
G  
E  
S

Like a lightning bolt through the vastness  
The Fairy-bluebird surrenders  
To mid-air capture  
Her fairy kingdom overthrown  
By talons of power

*by Jody Cook*





# Food miles: how well-travelled is your food?



## The issue

Next time you sit down for dinner, make a list of all the foods on your plate. Investigate where those foods have come from. You could be in for a big surprise.

Has your rice come from India? Have your oranges come from California, or your fish fillets from Vietnam?

'Food miles' is a term that describes the distance food travels between where it is grown, caught or processed and your dinner table.

Why should we worry about this? It is important because the further food travels, the more fuel is required to transport it and the more greenhouse gases are created.

Research has found that the contents of the average family shopping basket have travelled an astonishing 70 000 kilometres.

Every individual can make a difference. If you care about the future, reduce your food miles and your impact on the environment.

## Comments

*Ellen P*  
May 7, 10:00 am I agree. We should all buy food that is grown locally and help our environment.

*Jo*  
May 7, 11:17 am We grow our own veggies. They have zero food miles!

*Busy Dad*  
May 7, 11:20 am Buying local is a great idea, Ellen, but local products cost more than imported ones. Not everyone can afford to buy only local foods.

*Get Real*  
May 7, 11:34 am I don't believe it makes any difference. It's just another excuse for shops to charge more for groceries.

*Green Boy*  
May 7, 11:50 am We all have to take a stand and do what we can. Even if it costs a bit more, I reckon saving the planet is more important than saving money.

*Busy Dad*  
May 7, 12:06 pm Everyone cares about the environment and the future! But we've got to be practical. Who has time to look at every single label at the shops?

*Eco Warrior*  
May 7, 2:12 pm This is more complicated than simply reading labels and buying local. Farming methods vary a lot from place to place. Locally grown food may use less fuel getting from the farm, but maybe it uses more tractors and pesticides and fertilisers. These things damage the environment too.

*BJ*  
May 7, 2:14 pm Yeah. It's the total impact of getting the food to the table that is important, not just how far it travels. Eco Warrior is on the right track.



# Outside the triangle

Holly swung her school bag onto her back, feeling pleased. She liked walking home alone. Her brother Tom was staying back for football practice and her sister Trish was nowhere to be seen.

But then she heard Trish's voice. 'Holl-eee! Wait!'

Holly groaned. Trish arrived, panting beside her. Holly strode off, knowing that Trish would struggle to keep up.

Holly glanced at her sister; Trish had that pleading look. And sure enough ...

'Holly, you should go on Tuesday. He just ... made a mistake.'

Holly flinched. Such a convenient way to put it. Just a mistake.

'This award means a lot to him. You have to go.'

'Really?' said Holly, maintaining her pace.

'Best and fairest player.'

'So what? It's only a school competition. You're going to need a better reason.'

'How about because he's our brother?' Trish panted.

'He is. He's a brother who reads his sister's diary and shares his findings with the world.'

Trish grabbed Holly's bag and forced her to stop. 'You know he didn't mean to hurt you.'

Despite her anger, Holly had to hide a smile as she turned to face her sister. Trish loved casting herself as the peacemaker but it was a role she never actually wanted to succeed in. Trish would already be rehearsing her response to Tom—'I tried everything but Holly ... she's so stubborn ...' Holly studied Trish's face. Yes, she was wearing the mask of the injured again.

They faced each other in silence. Images of her brother began to come unbidden into Holly's mind: his first clumsy attempts to control the ball, his pride at being able to explain the intricate rules of the game, the hours of practice to perfect his skills.

Holly sighed. She was bored she realised; bored with the intrigues, the stupid alliances that formed and just as quickly disintegrated in their sibling trio.

What if she just stepped outside the triangle? Left them to themselves? What surprised her was that as she imagined that first step she did not feel, as she might have expected, more alone. Rather, it was as if Tom was already waiting for her outside. And suddenly it was obvious: of course she would go.

'Actually Trish, you're right. Let's go to the awards night.'

'Really?' Holly saw the disappointment flicker across her sister's face.

'Sure,' she said, resuming her walk home but more slowly now. 'What are sisters for?'





# Animals and earthquakes

Earthquakes are massive in their force, devastating in their impact and, despite intensive scientific research, still largely unpredictable. If we could predict earthquakes reliably and early, we could warn people and hundreds of thousands of lives could be saved. Many people (including some scientists) hold out hope that predicting earthquakes will soon be achievable—not by creating sophisticated, super-sensitive equipment but by observing the natural behaviour of animals.

Perhaps this hope is being built on shaky ground.

There are certainly many reports of animals behaving strangely before earthquakes: dogs running away, cats hiding, caged birds growing restless, wild birds moving their eggs from their nests, hibernating snakes waking up, zoo animals howling. These behaviours, however, are generally reported *after* the event. How trustworthy are these reports?

Before massive evacuations are authorised on the basis of animal behaviour and before hundreds of thousands of people can be convinced to move great distances at a moment's notice, we need to be reasonably confident of two things:

- If an earthquake is about to happen, certain animals will act strangely.
- If an earthquake is *not* about to happen, these animals will act normally.

At the moment, we can't be sure of either of these things. There seems to have been erratic behaviour by snakes, birds, cows and rats before the earthquake in Haicheng, China in 1975. However, in the same region the next year, when another earthquake caused the death of more than 200 000 people, the animals displayed no such behaviour.

There are animals all over the world that *are* behaving strangely at this very moment—nervous dogs, quirky snakes, befuddled ants—but tomorrow, after the ground has remained stubbornly still, no one will recall this behaviour and think, 'Strange!' Let an earthquake happen, though, and listen for the cries of 'Rover knew!' and 'Those ants are smarter than scientists!'

Continue the research into animal behaviour by all means, if only because it may show up interesting evidence about how animals sense changes in the physical environment. But don't start building up hopes that will almost certainly come crashing down.



## Erik, the boat race, and the innovative propeller

Erik's young life had been beset by challenge and adversity. These were not the easily recognisable forms of adversity that might punctuate the plundering, pillaging, winner-takes-all lifestyle of your average Viking. Erik's struggles were of an entirely emotional and intellectual kind. You see, Erik, to be frank, was something of an outcast. His reluctance to act before thinking, combined with his pacifist tendencies, set him apart from every other person in his village, inevitably leading to misunderstandings and other social difficulties. Locally, Erik was known as 'Erik-the-fairly-unusual-one'.

However, Erik had analysed these social difficulties and decided on a course of action. The annual Up-the-Fjord-and-Back-Again Boat Race could provide a unique opportunity to demonstrate a practical application of his intellectual ability in front of the entire Nordaland Fylke community. For some months Erik had been calculating coefficients and angles of rotation for an innovative propeller which would bring them victory over their greatest rival, Sonderland Fylke. His plan was to direct some of the energy generated by the twelve oarsmen to a shaft leading to a submerged propeller which would supply a significant (and unobservable) advantage to the Nordaland Fylke team.

The propeller, crafted from elk horn for its light weight and strength and greased with a good dollop of fat, slid easily into place. Olaf (the boat leader) and Vodn (the chief oarsman), initially sceptical that such a contraption could provide any advantage, had nevertheless followed Erik's detailed installation instructions exactly. More or less exactly.

On race day Erik actually joined in the festivities, such was his expectation of acceptance by the townsfolk. He purchased an elk and duck-egg burger and settled in to survey the scene of his certain triumph. Two blasts on the ceremonial horn and the race began. The first strokes of the oars were critical: an early lead crucial.

The hot egg fell out of Erik's burger and onto his bare foot but he hardly felt the pain. Nothing could compare to the pain he felt as he watched the *Helda 2* shoot off across the water ... in the wrong direction. No amount of rowing could compensate for a propeller that had been fitted the wrong way around. Erik's hopes and dreams for adulation faded, almost as rapidly as Nordaland Fylke's boat disappeared backwards down the fjord in the annual Up-the-Fjord-and-Back-Again Boat Race.







# Square Kilometre Array

*Artist's impression of the SKA*

## Australia – New Zealand's participation

The Square Kilometre Array (SKA) is a collaborative effort between 20 countries to build the world's largest radio telescope. It will be built in two main sites, one in Australia and one in South Africa, beginning in 2016. The cost of the project is about \$2 billion, to be shared by participating countries.

The Australia – New Zealand SKA will consist of thousands of radio antennas (mostly in the form of dishes) arranged in clusters, spreading out thousands of kilometres from a cluster core in Western Australia. The total collecting surface area of these dishes will add up to roughly one square kilometre, giving the project its name. All the antennas will be linked electronically to combine their signals, enabling them to operate as one enormous telescope that can scan vast tracts of space and produce the highest resolution images of our cosmos yet seen.

The sheer size of the SKA, as well as its capacity to scan a wide range of radio frequencies, will make it 50 times more sensitive and 10 000 times faster than any other radio telescope. Sensitivity is vital, because the further astronomers peer into space, the weaker the signals are. With this powerful and responsive new tool scientists hope to 'see' distant objects clearly and solve some of the enduring mysteries of the cosmos such as how galaxies form and the existence of dark matter.

Of course, this marvel of modern science will not be without its challenges. The SKA will not happen without certain computing, communications and manufacturing innovations along the way. One of these will be figuring out how to coordinate and organise the data streaming through the thousands of kilometres of optic fibre cables interconnecting the antennas. This data stream will be many times larger than that produced by the entire current global internet traffic!

The Australia – New Zealand SKA cluster core is to be built on a high desert plain in Western Australia, 315 km north-east of Geraldton. It was the characteristics of this site more than any political or financial influence that won the Australia – New Zealand bid for the SKA. The site has an ideal view of the Milky Way Galaxy, few inhabitants, excellent environmental conditions, and an absence of man-made radio interference. Not surprisingly, the site's radio-quietness is now protected by law.

**END OF READING MAGAZINE**



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## ACKNOWLEDGEMENTS

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