

The Water Down Under

M. TUESDAY
PRIVATE
DETECTIVE



Written by Deborah Rodney
Illustrated by Jessica Bonin

The Water Down Under

A World Water Monitoring Day™ Mystery
with Detective Tuesday

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World Water Monitoring Day™ (WWMD) is an international education and outreach program that builds public awareness and involvement in protecting water resources around the world.

WWMD is coordinated internationally by the Water Environment Federation and the International Water Association.

Dedicated to everyone, everywhere, who is involved in protecting the world's precious water and especially to the world's water monitors—past, present, and future.



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Deborah Rodney

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I am a private detective. It's my job to solve problems. I don't look at them as problems, though. I see them as opportunities.

My name is Michelle Tuesday. I'm always busy because, you see, I handle creature cases. Somebody has to be their voice. It's my specialty. I've met slippery fish, troubled trees, excited beavers, possums in a panic—you name it. My partner Reggie is a rat (really!) who I met on a case once.

I've made a lot of creature friends because I speak their language, listen to their problems and try to help out. My dragonfly friend has a cousin in Australia who invited me for a visit. I love my job, but everybody needs a vacation sometime.



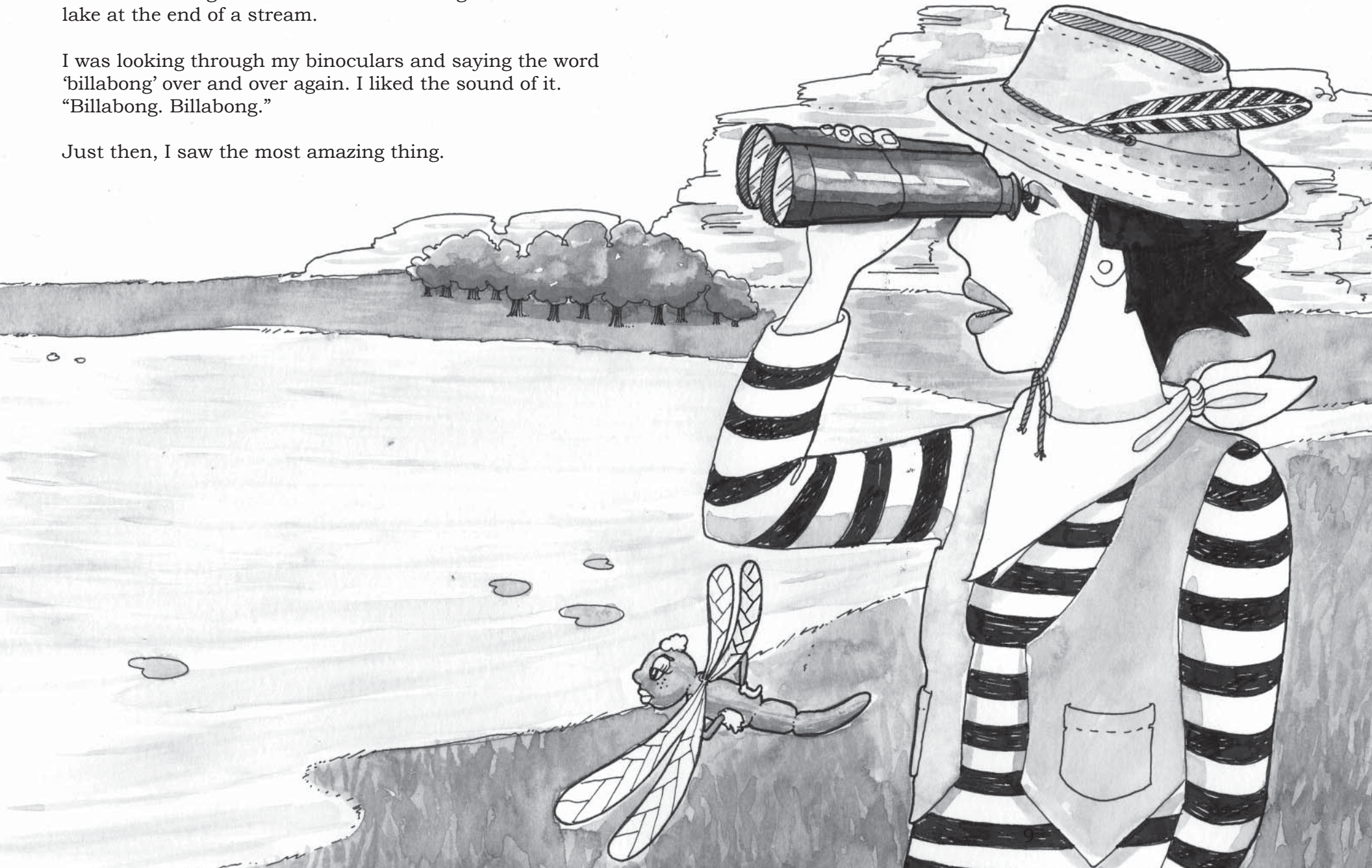
My story begins on a Wednesday at 1:10 p.m. in Australia. I was in the outback on a hike.

Flitter-By, my friend's cousin, and I had just finished some bush tucker—that's a lunch of local Australia food—and we were relaxing on the bank of a billabong—that's a small lake at the end of a stream.

I was looking through my binoculars and saying the word 'billabong' over and over again. I liked the sound of it. "Billabong. Billabong."

Just then, I saw the most amazing thing.

"Flitter-By, come look at this funny animal! It's the size of a small cat, has the bill of a duck, the tail of a beaver, fur like a rat, the claws of a small bear, and flippers like an otter." For a moment, I thought I'd landed on another planet.



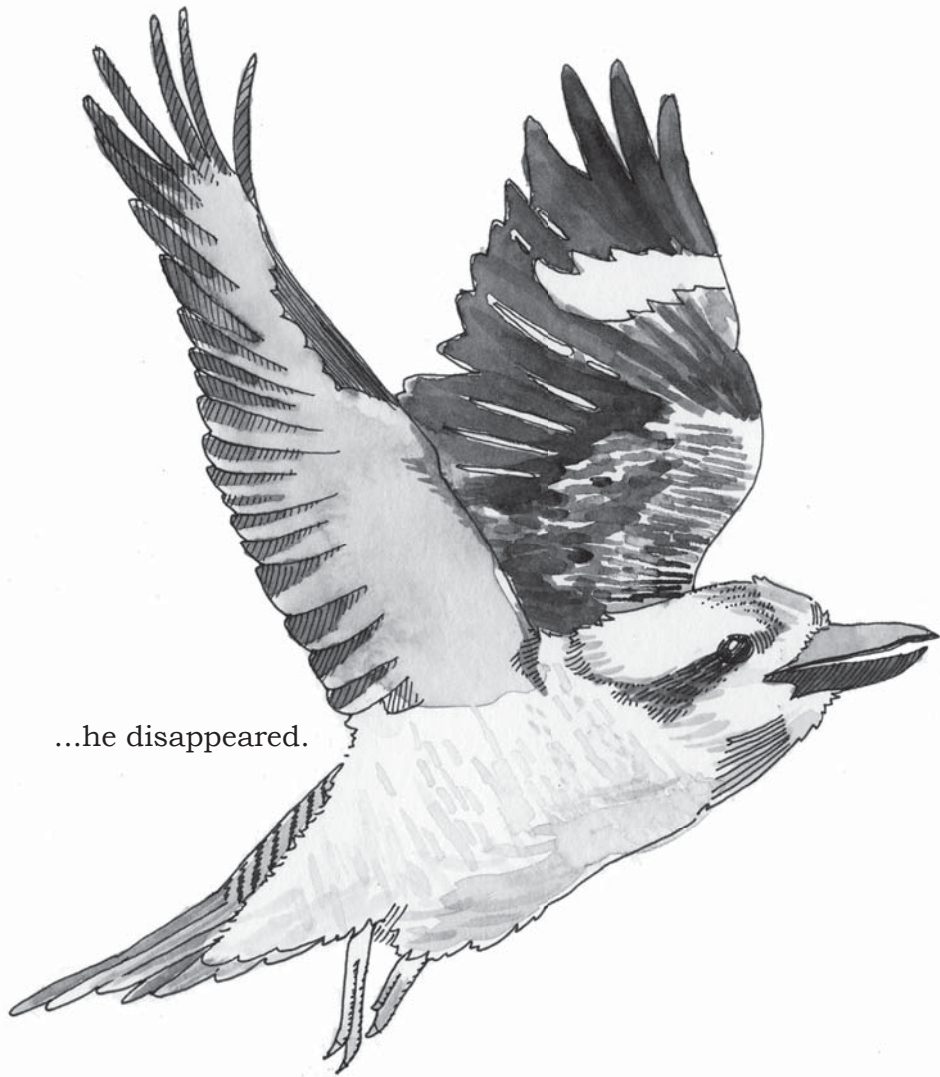
Flitter-By flittered by, gave a polite little snort, and said,
“Oh, that’s just a platypus, one of the world’s *weirdest* little
animals.”

I thought that was an understatement.

“And the only place in the whole world you’ll find a platypus
is here in Australia,” she added.

I couldn’t wait to meet him, but before I could introduce
myself...





...he disappeared.

Just then, I heard wild laughter coming from all directions. The only thing I could see was a big bird with brown markings flying back and forth.

"Who's making all that racket?" I asked.

"That's Kooka. He's a kookaburra." Flitter-By fluttered over to the bird. "Kooka, come here and meet Michelle Tuesday."

The bird laughed and said, "G'day, mate. I thought it was *Wednesday!*" And then he laughed even louder.

Kooka seemed to be the happiest bird I'd ever met. And Australia was turning out to be one very fascinating place.

"You won't see the Professor anytime soon, mate," the merry bird sang. "Nope. Nope. Nope. He's very shy and besides he's busy, busy, busy. He's conducting an investigation. Yep, a very important investigation, mate."

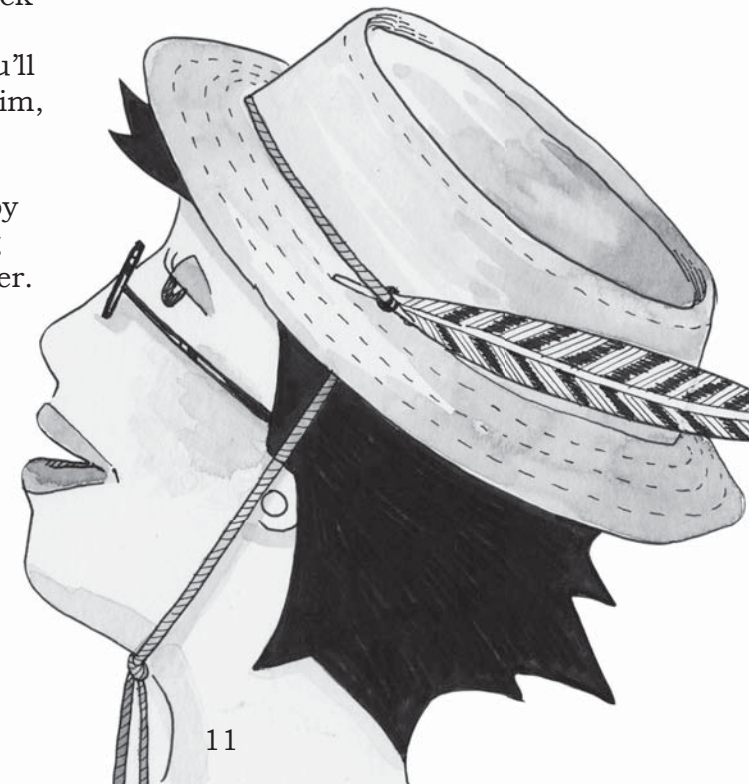
My ears perked up. "What kind of investigation?" I asked.

Kooka told us that many of the platypuses had been packing their bags and leaving the area. "The Professor is losing many of his students, so he's trying to figure out what's happening." He laughed hysterically.

Then he abruptly stopped laughing and said, "And it's not funny."

"I just happen to be a detective, Kooka," I said. "Maybe I can help."

"Well, come back just before sunset and you'll probably see him, mate," Kooka said. He flew off, propelled by another strong blast of laughter.



I couldn't wait to get to my laptop and check out Professor Platypus.

I found him on a social networking site called Platyspace. He is, no contest, the most amazing animal that I've ever encountered. And I've met a lot of them.

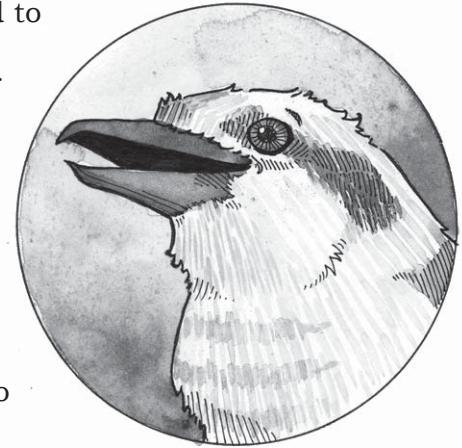
He eats worms, insect eggs, and small shrimp. And he finds his food underwater with his eyes *closed*! That is some trick. I had to know how he did it. I searched a little deeper and found out that on his strange bill are thousands of little sensors. These sensors detect the movement of his prey—which quickly become his food. He stores this food in his bill until he gets out of the water and then he eats it.

"How cool is that?" I said aloud to nobody in particular.



Just before sunset, we returned to the billabong and were greeted once again by the loud laughter of Kooka. I asked him if he was always so happy.

"Of course," he chirped. "It's much better to laugh, laugh, laugh all day even when there are problems, mate. And it's certainly better than mooing all day like the dismal cows who recently mooed into the neighborhood."



I looked around for the cows but got distracted because Kooka said, "I'll call the mallangong, the boondaburra, the tambreet for you and arrange an introduction, mate."

"Right now, I just want to meet the Professor," I said.

Kooka laughed like he was crazy. When he caught his breath he said, "Those are special names that the Aborigines call the platypus, mate. The Aborigines are the ancient people who've lived in Australia for thousands of years."

And he flew off calling, "Cooee! Cooee!"

I was saying 'boondaburra' to myself as he disappeared. Flitter-By seemed fidgety and said, "I'm not too thrilled about meeting the Professor. Platypuses eat insect eggs. It's humiliating to think that some ridiculous creature with the backend of a beaver and the front end of a duck might eat my eggs. Actually, it would be way beyond humiliating."

I thought about it for a second and said, "If the water quality isn't good, the Professor and his platypus students may indeed be hungry. Only a healthy waterbody can provide plenty of food for all the creatures who live there."

Good thing I had packed a water quality test kit for World Water Monitoring Day in my backpack. "I think I'd better check out what's up with the water," I said.

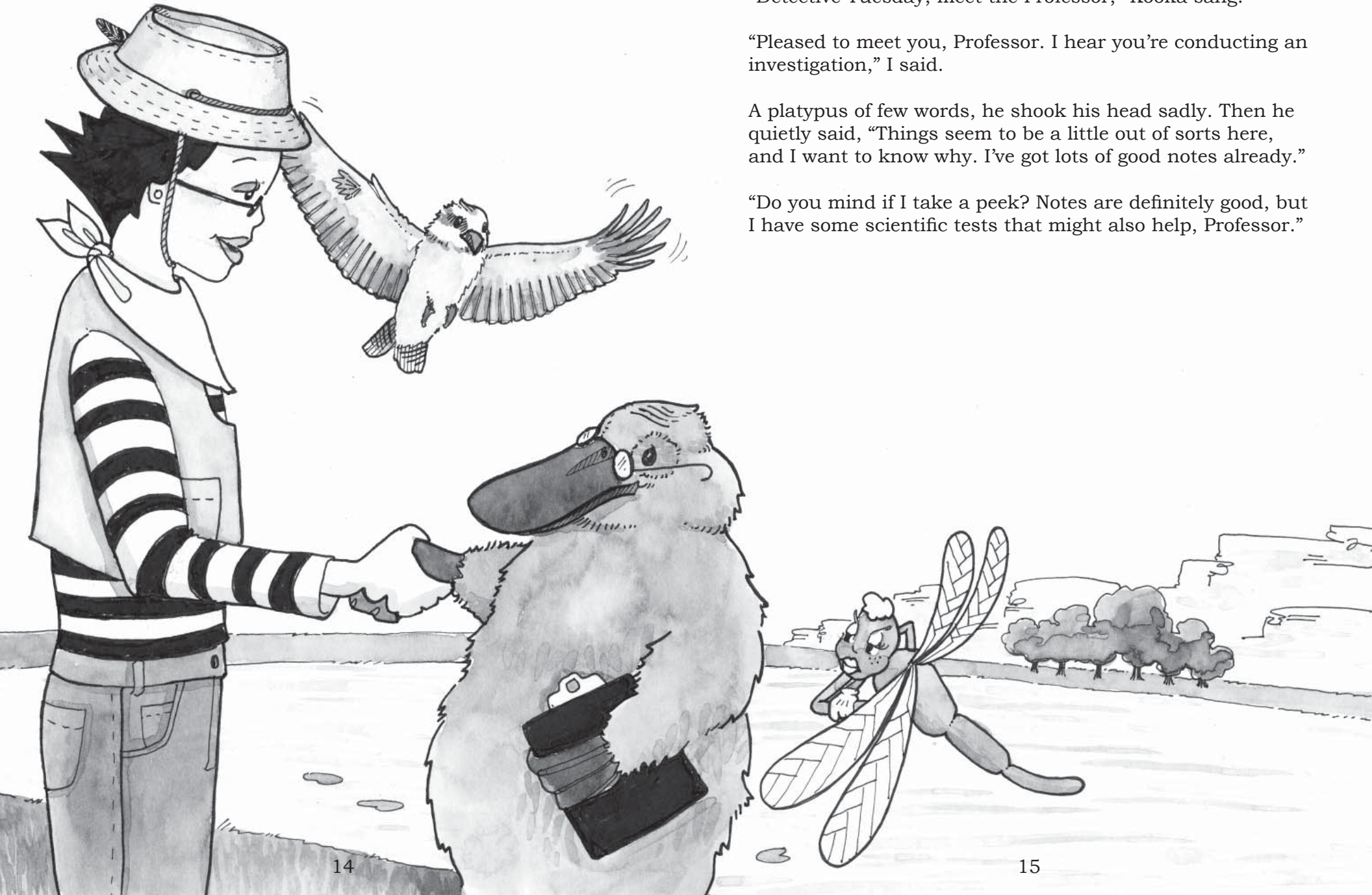
A few minutes later, we heard Kooka's laughter. And then the Professor appeared out of the evening shadows. He was reading his notes and scratching his head like a dog.

"Detective Tuesday, meet the Professor," Kooka sang.

"Pleased to meet you, Professor. I hear you're conducting an investigation," I said.

A platypus of few words, he shook his head sadly. Then he quietly said, "Things seem to be a little out of sorts here, and I want to know why. I've got lots of good notes already."

"Do you mind if I take a peek? Notes are definitely good, but I have some scientific tests that might also help, Professor."



I showed him the test kit for World Water Monitoring Day. He seemed quite interested when I mentioned that people all over the world, from Nigeria to Costa Rica, were testing the water in their neighborhood waterbodies.

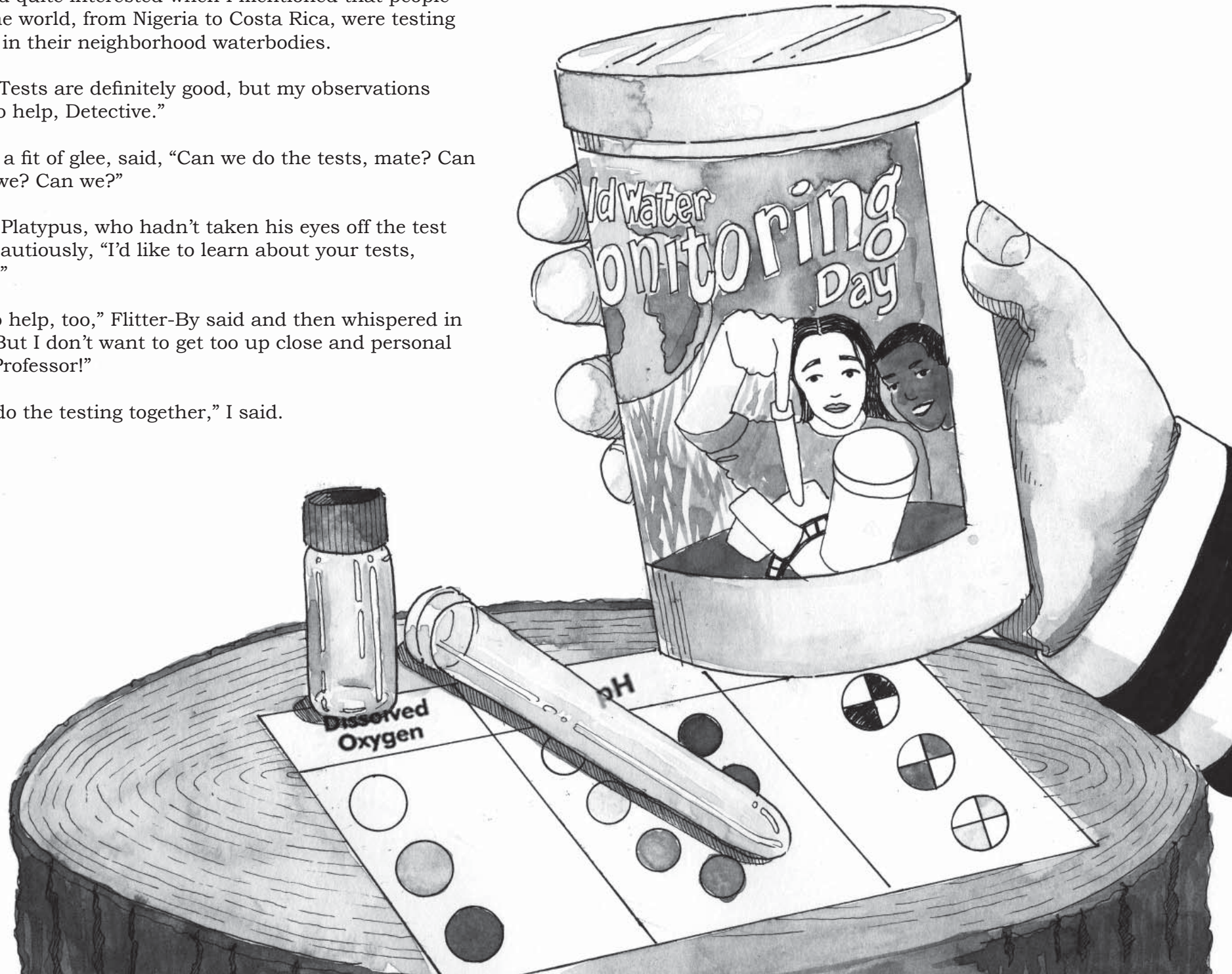
He said, "Tests are definitely good, but my observations might also help, Detective."

Kooka, in a fit of glee, said, "Can we do the tests, mate? Can we? Can we? Can we?"

Professor Platypus, who hadn't taken his eyes off the test kit, said cautiously, "I'd like to learn about your tests, Detective."

"I'd like to help, too," Flitter-By said and then whispered in my ear, "But I don't want to get too up close and personal with the Professor!"

"Let's all do the testing together," I said.



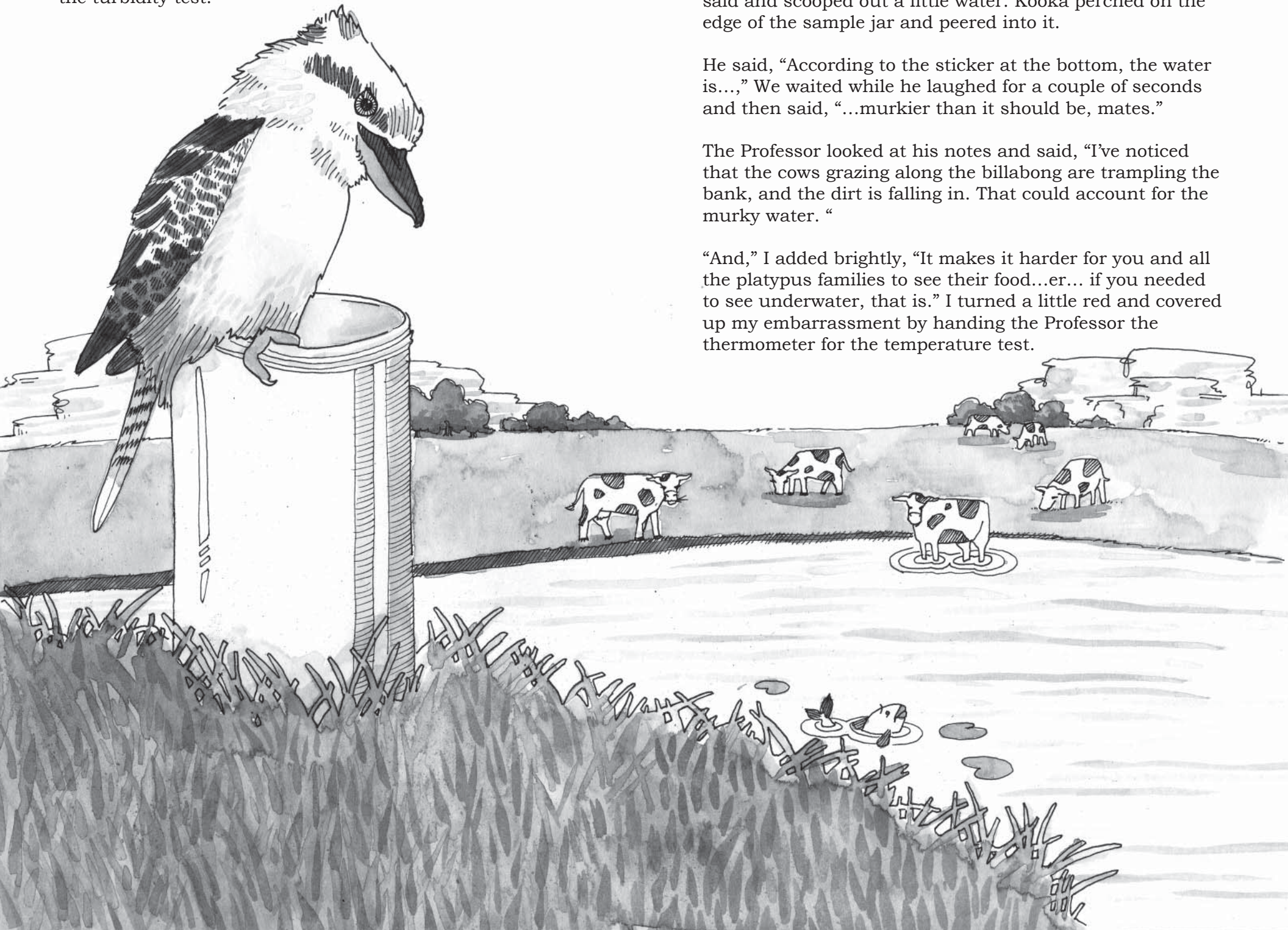
First, I showed everybody
the turbidity test.

"It's a test that shows how clear or murky the water is," I
said and scooped out a little water. Kooka perched on the
edge of the sample jar and peered into it.

He said, "According to the sticker at the bottom, the water
is..." We waited while he laughed for a couple of seconds
and then said, "...murkier than it should be, mates."

The Professor looked at his notes and said, "I've noticed
that the cows grazing along the billabong are trampling the
bank, and the dirt is falling in. That could account for the
murky water. "

"And," I added brightly, "It makes it harder for you and all
the platypus families to see their food...er... if you needed
to see underwater, that is." I turned a little red and covered
up my embarrassment by handing the Professor the
thermometer for the temperature test.



He checked the temperature by sticking the thermometer strip onto the sample jar. He held the jar about four inches below the surface of the water. After a few minutes, he pulled it out and read the result. I wrote the number down.

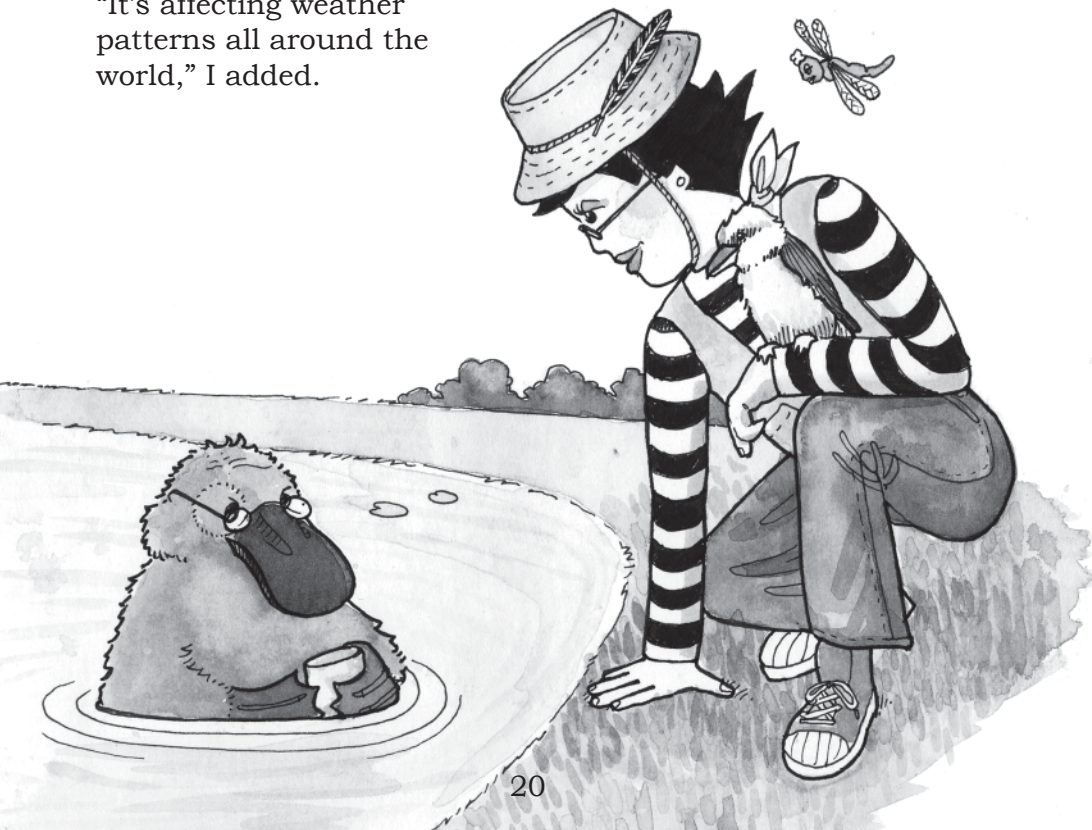
"It's warmer than it used to be," the Professor observed, "And the water level is lower, too." We could see from the water marks on the dry, crumbly bank that it was. "Australia always has droughts, but this has been a particularly bad year for rain," he added.

"And if the water is shallow, it will be warmer," I said. "Especially if there aren't trees to shade the water and help keep it cool."

We all looked at the bank. There weren't very many trees.

The Professor said slowly, "The lack of rainfall could be because of global warming—which is increasing the temperature of the Earth's surface air and the oceans."

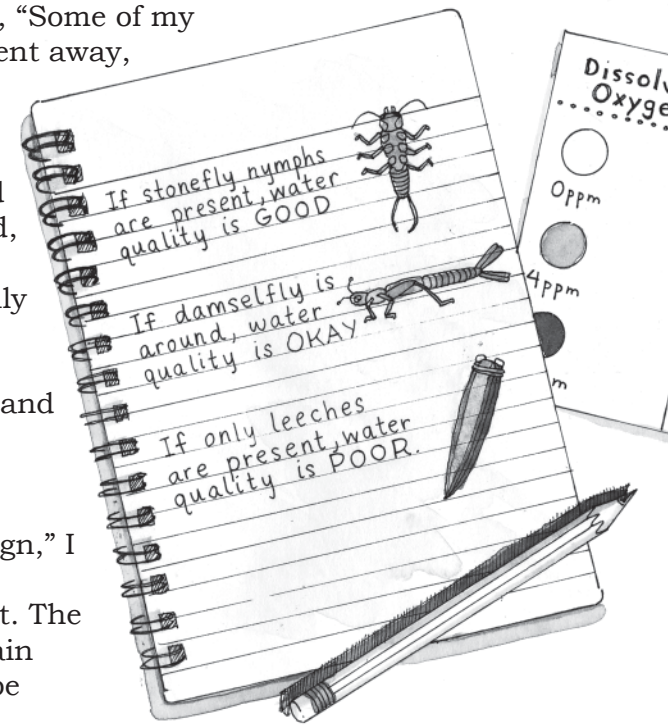
"It's affecting weather patterns all around the world," I added.



Flitter-By said sadly, "Some of my dragonfly cousins went away, and I haven't seen them for months."

The Professor looked at his notes and said, "Some insects are sensitive and can only live in water that's healthy. I've noticed that the damselflies and the crane flies are disappearing, too."

"That's not a good sign," I said. "So let's do the dissolved oxygen test. The water needs to contain plenty of oxygen to be healthy."



We checked the dissolved oxygen level by filling the small test tube vial carefully with water. Then Kooka dropped in two of the tiny test tablets. We took turns flipping the vial carefully back and forth to help the tablets dissolve.

"Look! The test tube is changing color," said Flitter-By as she observed the water turning a very light pink.

I held the test tube vial with our water sample next to the kit's color chart and noted that the reading was low. I suspected that the higher water temperature might have something to do with it.

The Professor said, "We all need oxygen to live. So do the insects. The low dissolved oxygen could be the problem."

"That explains why so many insects went off looking for a different billabong," said Flitter-By.

And I was guessing that without insect food, the Professor's students were leaving, too.

We had one more test to do. The pH test measures whether the water is acidic, basic, or neutral. Healthy water should be close to neutral, which is 7 on the scale.

Kooka laughed and said, "Acidic is like sour, sour, sour cranberry juice. You might like to drink it but, if you're a fish, you wouldn't want to live in it."

"And," I added, "Smelly mop water with ammonia is basic. I wouldn't want to live in a river like that either."

"Yuck," said Flitter-By crinkling up her antennae. "Or anywhere near it."

The Professor filled the pH test vial, Flitter-By dropped in the pH test tablet, and I shook it until it dissolved.

When we checked the results on the chart, we discovered the water was a little on the acidic side.

"Now, who, who, who would put cranberry juice in the water?" Kooka joked and laughed outrageously.

The Professor checked his notes and said that he had observed two important things. "One," he noted, "Someone camped recently and dumped garbage in the billabong. And, two, there is a coal burning power plant nearby with a big smokestack."

"Ah, ha!" I said. "When it *does* rain, the smokestack could be causing acid rain that is finding its way to the billabong. And, of course, garbage of any kind is very bad no matter where it's dumped."

We were getting somewhere.



We could see that the water should have been healthier.

The Professor said fences could be built for the cows, but there wasn't much anybody could do about the lack of rain.

"But, we can all help reverse global warming," I said.

"Right, right, right, mates," said Kooka. "You humans can use your foot power more and drive cars less. I'm happy, happy, happy I don't need a car, a bicycle, or a boat. Bet you wish you could fly, mate!"

He laughed and flew in little circles around us.

"Good point, Kooka," I said, getting a little dizzy watching him. "When cars and other engines burn gasoline, they create gases that warm up the air."

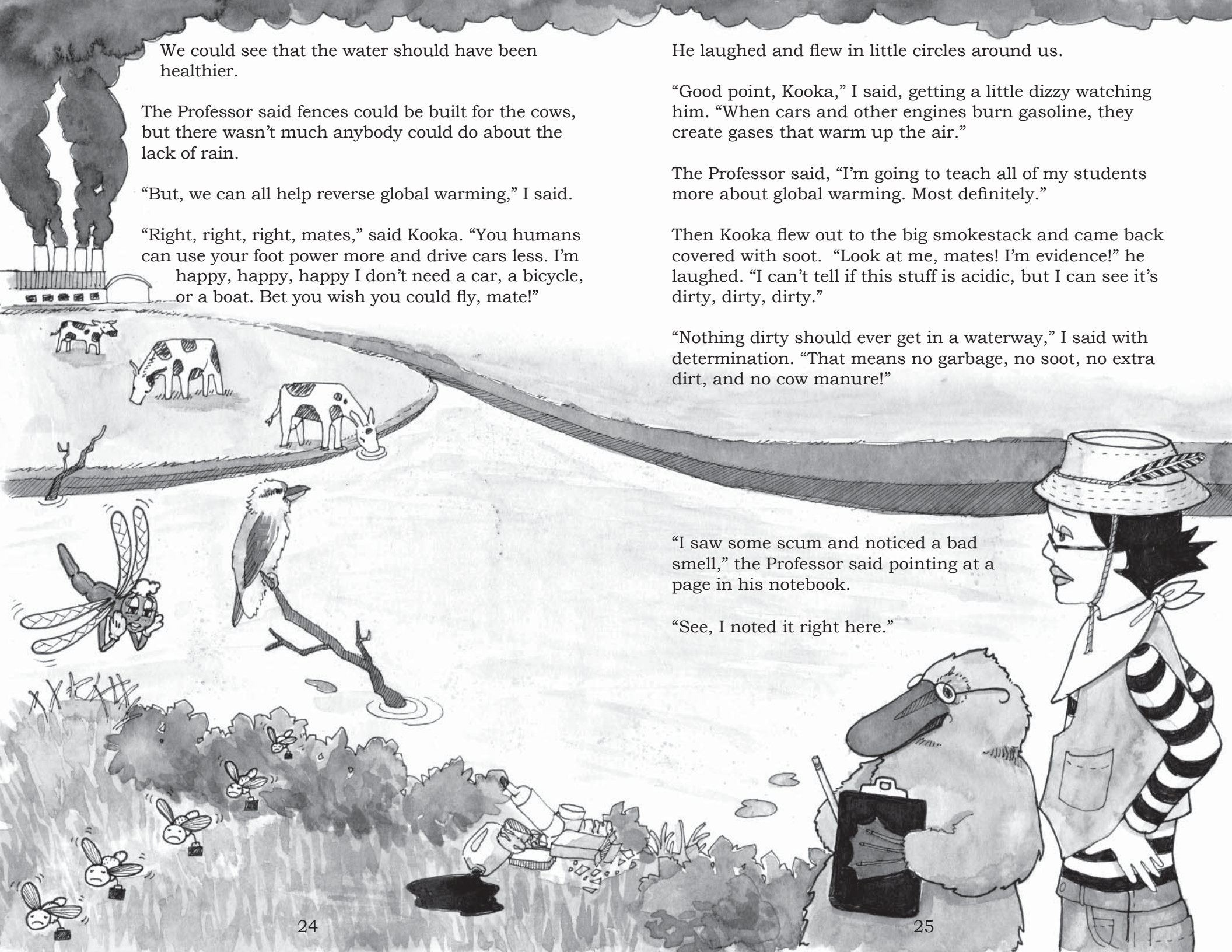
The Professor said, "I'm going to teach all of my students more about global warming. Most definitely."

Then Kooka flew out to the big smokestack and came back covered with soot. "Look at me, mates! I'm evidence!" he laughed. "I can't tell if this stuff is acidic, but I can see it's dirty, dirty, dirty."

"Nothing dirty should ever get in a waterway," I said with determination. "That means no garbage, no soot, no extra dirt, and no cow manure!"

"I saw some scum and noticed a bad smell," the Professor said pointing at a page in his notebook.

"See, I noted it right here."





Flitter-By smiled at the Professor and said, “We all make a really, really good detective team, don’t you think?”

I thought I saw the Professor smile, but it was hard to tell by looking at his bill.

“Both our observations *and* the test kit tell us a lot about the health of the water,” he said in his shy way. “I would like to order some kits and show all my students how to be water monitors for World Water Monitoring Day.”

“Just log onto www.WorldWaterMonitoringDay.com and you’ll find everything you need to know,” I said. “And don’t forget to report your data! I’ll get our test results off today.”

The Professor, Flitter-By, crazy Kooka, and I had a good time together, and my vacation was so fun that I wanted to stay in the ‘Land Down Under’ forever. I even had some luck with the farmer who agreed to put up a fence for her cows. But just as I was thinking about staying another week, I got a call from my partner Reggie.

“Detective,” he said, “Your cases are piling up, and I’m feeling like a drowned rat here!”

So, I took the long plane flight halfway around the world and arrived back in my office.



A few months later, I got an email from the Professor.

“Hey Reg,” I called to the next room. “Look! I just got an email from my Australian friends and a photo. The Professor and his students organized a garbage cleanup and planted some Yellow Box and Blackwood trees to keep the water cooler.”

“Wow! They’ve been busy,” Reggie called back.

So things are much better in the Professor’s neighborhood. Now he has plenty of students who are testing more and more of the waterways in Australia for World Water Monitoring Day.

I put my feet up on the desk and felt very good about being a detective. Just then the phone rang. There would always be another case; another problem to solve.



As I reached for the phone, I looked out the window. A line of ducks with suitcases was headed toward my door.

Look for Clues!

Be a World Water Monitoring Day detective and use *your* observation skills. Take some notes, like Professor Platypus.

- ☒ What do bird or animal tracks near your waterbody tell you?
- ☒ What kind of plant life is growing nearby? Are there trees, shrubs, or grasses? Are they adequate to hold the soil in place? Are they making shade? Are they providing homes for our creature friends?
- ☒ How do people have an effect on the waterbody? Do they live, work, or play near it?
- ☒ Where has the water in your waterbody come from, and where is it going? What things might the water have picked up along the way?
- ☒ How does the weather affect it? Do you remember what the weather was like yesterday? That could have an impact, too!
- ☒ How does it look? Do you see garbage, oil, or foam? Do you see any strange or unnatural colors?
- ☒ Reggie Rat, the detective's partner, uses his nose. Use yours, too. What does it smell like?
- ☒ Are insects living there, or have they packed their suitcases and left the scene? How many different kinds of insects can you see? *Hint: Carefully turn over a few rocks.*
- ☒ Are there logs and rocks and other places for little creatures to hide from bigger creatures?

For some additional clues and answers, visit <http://www.WorldWaterMonitoringDay.org> and search for "Observation Guide".



A Little More About Our Friends...



The Australian Aborigines have a legend about the kookaburra. When the sun rose for the first time, the god Bayame ordered the kookaburra to laugh like crazy to wake up humankind so no one would miss the beautiful sunrise. Although they are found only in Australia, the kookaburra's laughter is world famous and has been used in movie soundtracks.

To hear a chorus of them, go to <http://www.environment.nsw.gov.au/resources/nature/daceloNovaguineae.mp3>.



Dragonfly eyes contain up to 30,000 tiny lenses. Human eyes only have one. They have two sets of wings, but they don't have to beat their wings in unison like other insects do. Their front wings can be going up while their backs ones are going down. They can loop-the-loop, hover, and fly backwards.

To learn more about dragonflies, go to <http://australianmuseum.net.au/image/Dragonfly-life-cycle>.



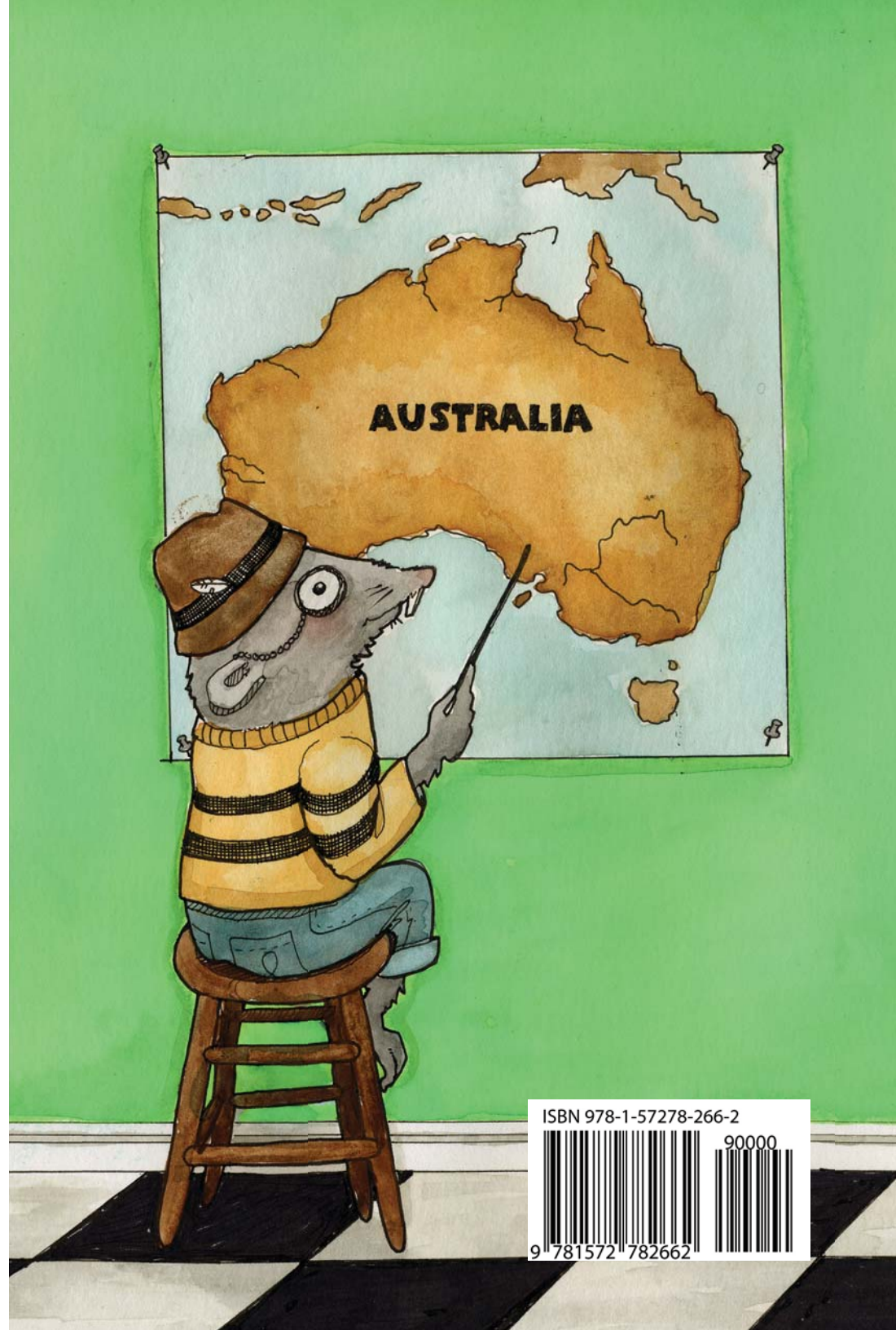
When the platypus was first encountered by Europeans in 1798, a pelt and a sketch were sent back to Great Britain. Scientists thought that it was a trick and believed someone had sewn a duck's beak onto the body of a beaver. But, the unique and mysterious platypus is very real. Just ask Detective Tuesday!

To read more about the platypus, visit <http://animals.nationalgeographic.com/animals/mammals/platypus>.

The Facts

Use this page for writing down *your* observations.

This image shows a single page from a notebook or ledger. It features approximately 20 evenly spaced horizontal black lines across its entire width, providing space for writing. The margins are uniform on all sides.



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