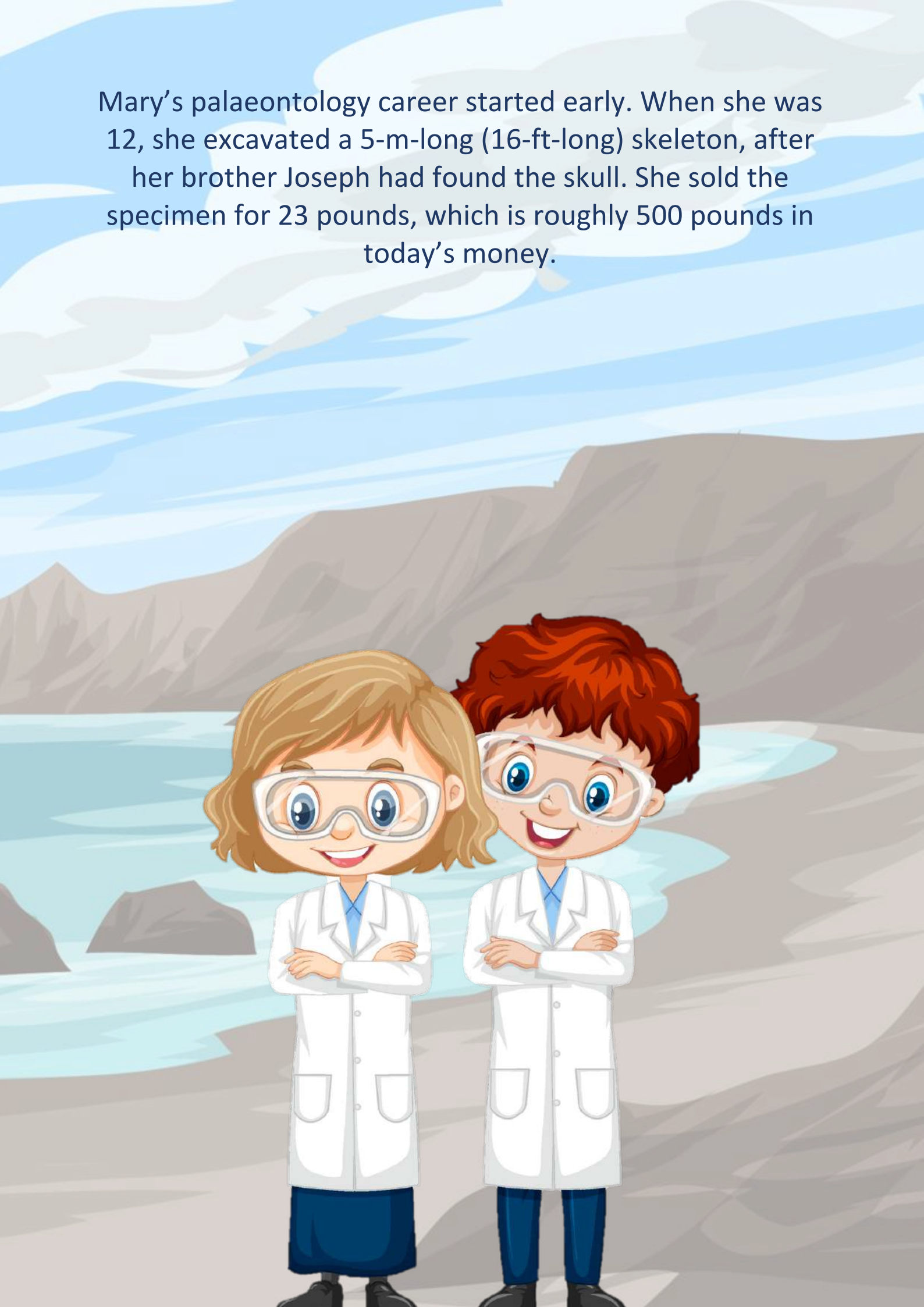

Adventures
From the Land
of Dinosaurs
Mary Anning:
Fossil Hunter
THINK
DIGITAL ACADEMY

Have you ever heard the tongue-twister ‘She sells seashells on the seashore’? it was inspired by Mary Anning. Mary was born on 21 May 1799 in Lyme Regis England. Her family was very poor and Mary sold fossils that she found in the nearby sea cliffs to make money.

With her trusty dog tray at her side, she collected fossils that were between 190 and 200 million years old.

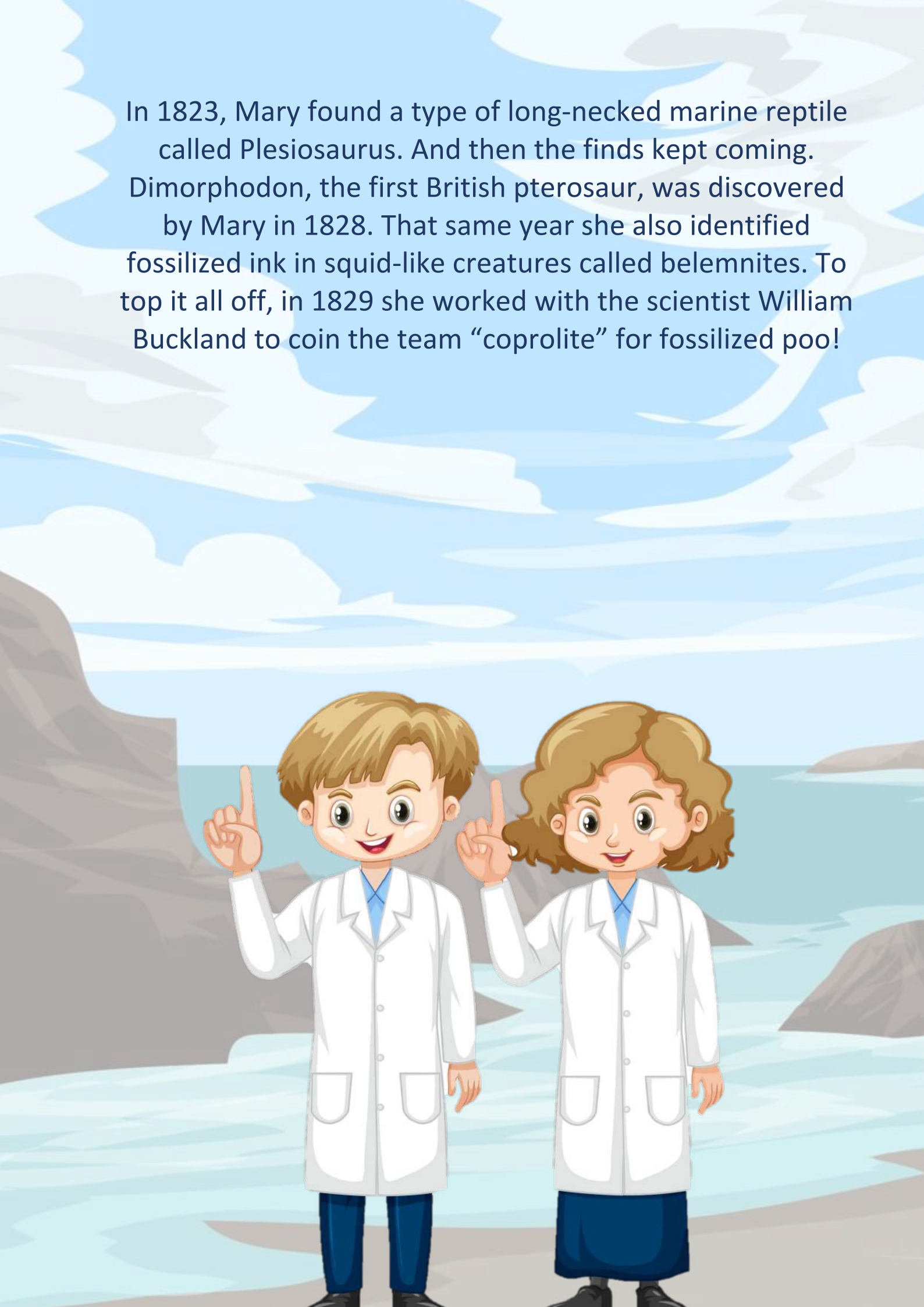
Mary’s palaeontology career started early. When she was 12, she excavated a 5-m-long (16-ft-long) skeleton, after her brother Joseph had found the skull. She sold the specimen for 23 pounds, which is roughly 500 pounds in today’s money.



It was an extinct marine reptile called an ichthyosaur (the first of its kind announced) and it was named **Temnodontosaurus**. But this was just her first incredible discovery…

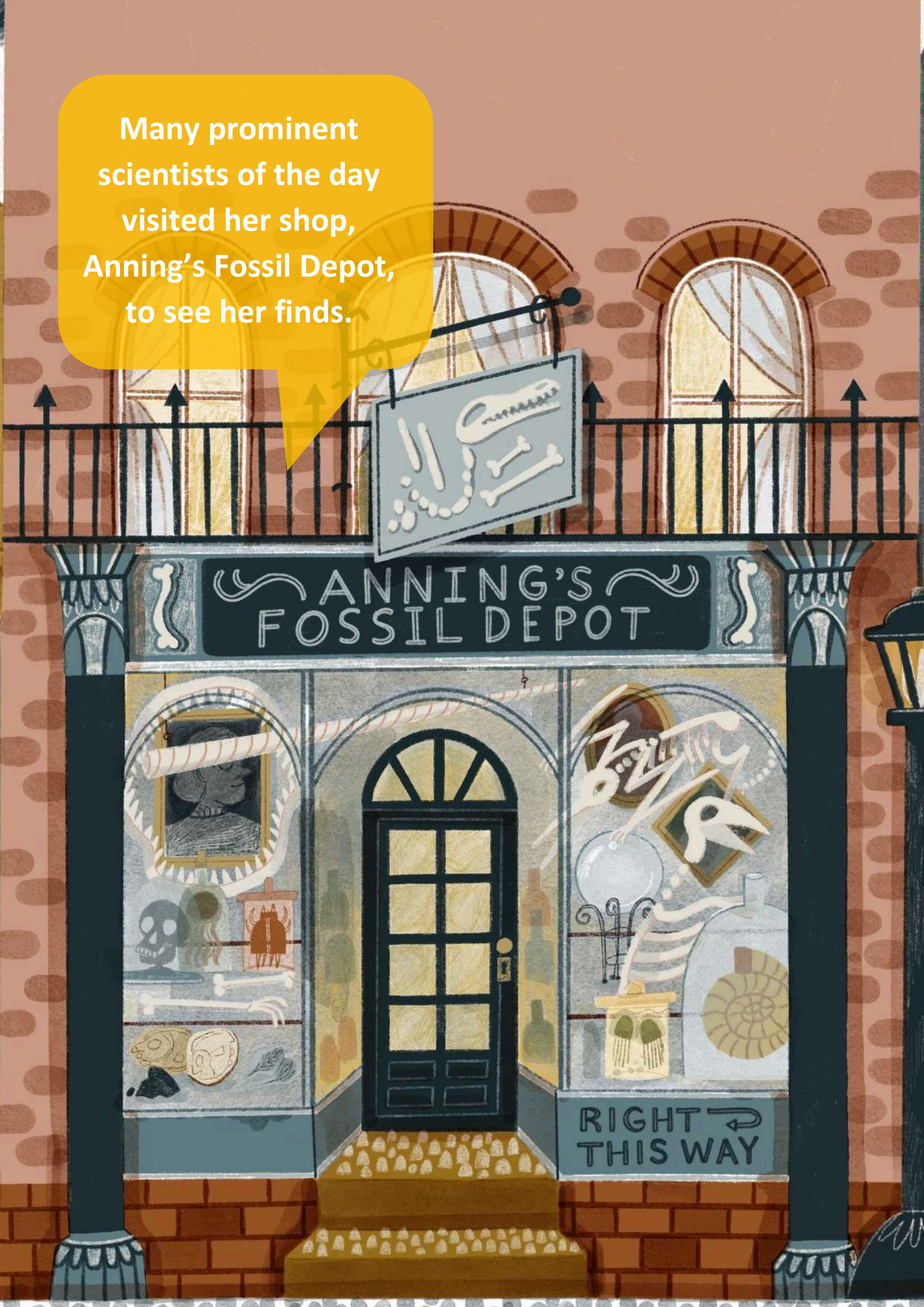

Temnodontosaurus
in better times

In 1823, Mary found a type of long-necked marine reptile called Plesiosaurus. And then the finds kept coming. Dimorphodon, the first British pterosaur, was discovered by Mary in 1828. That same year she also identified fossilized ink in squid-like creatures called belemnites. To top it all off, in 1829 she worked with the scientist William Buckland to coin the team “coprolite” for fossilized poo!



Mary’s fossils are still being used to this day.in 2015, a new species of Ichthysaurus was named in her honour. Scientists had used several specimens to describe the new creature, one of which had been collected by Mary.

While she had no formal education, Mary taught herself geology and biology, and made detailed specimen drawings be candlelight.

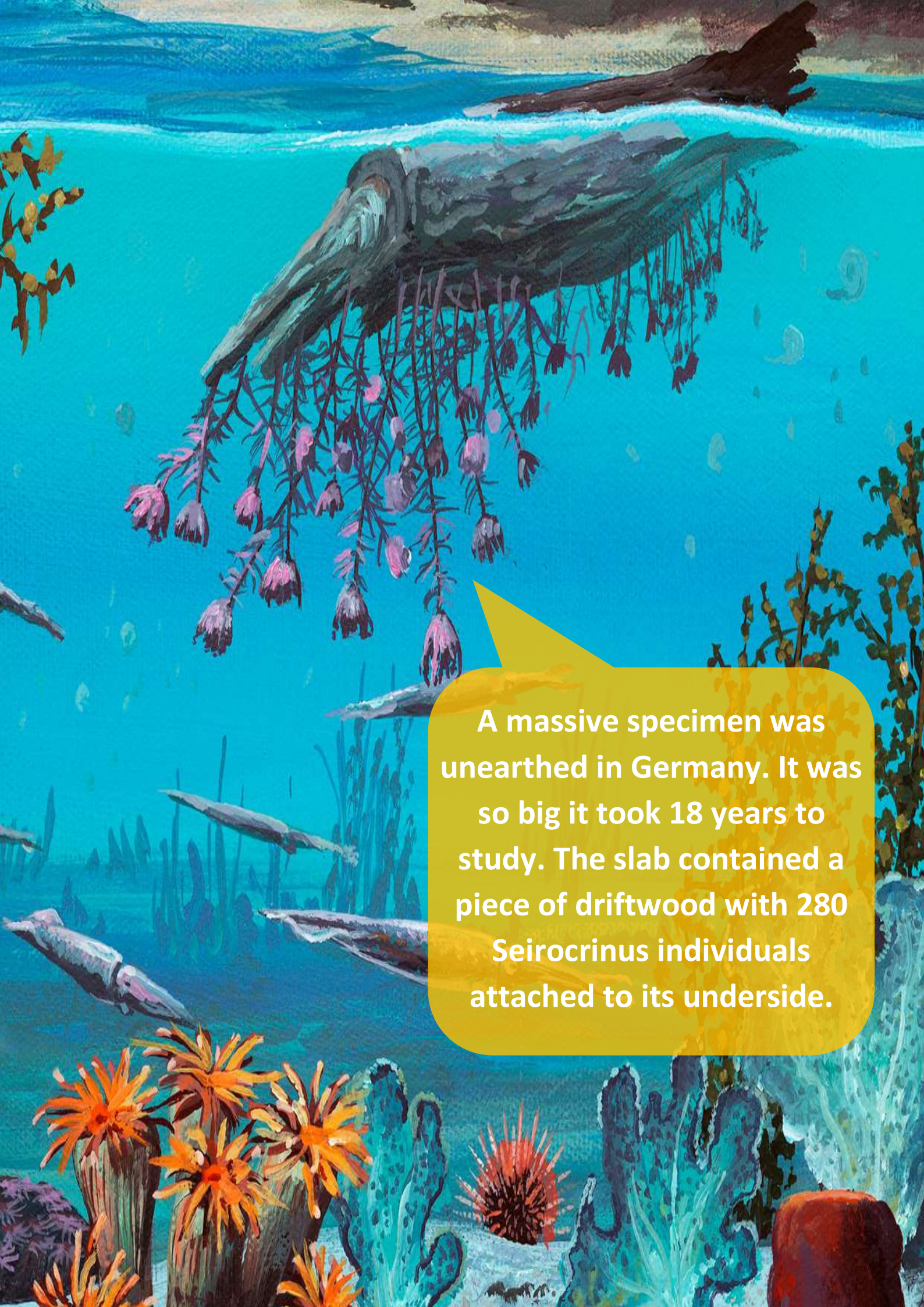

Many prominent scientists of the day visited her shop, Anning's Fossil Depot, to see her finds.
ANNING'S FOSSIL DEPOT
RIGHT THIS WAY

Unfortunately, during her life she was rarely credited for her many discoveries, but today she is celebrated as one of the most famous palaeontologists of all time!


The Megaraft

Once upon a time, something epic was drifting through the prehistoric oceans. On bord were alien-like forms called Seirocrinus. They had a flower-like head and a long stem, and were part of a family called the crinoids, a group that dates all the way back to the Cambrian. But these remarkable organisms weren’t plants – they were marine animals.

Young crinoids swam around until they found the perfect spot to anchor themselves permanently to a surface, usually the seafloor. There, they would use feathery arms to filter tiny pieces of good from the water. But in 1908 scientists found evidence that Seirocrinus behaved quite differently.


A massive specimen was unearthed in Germany. It was so big it took 18 years to study. The slab contained a piece of driftwood with 280 Seirocrinus individuals attached to its underside.

Some had stemmed a whopping 20 m (65 ft) long. They would have dangled beneath the log, resembling a humongous jellyfish.

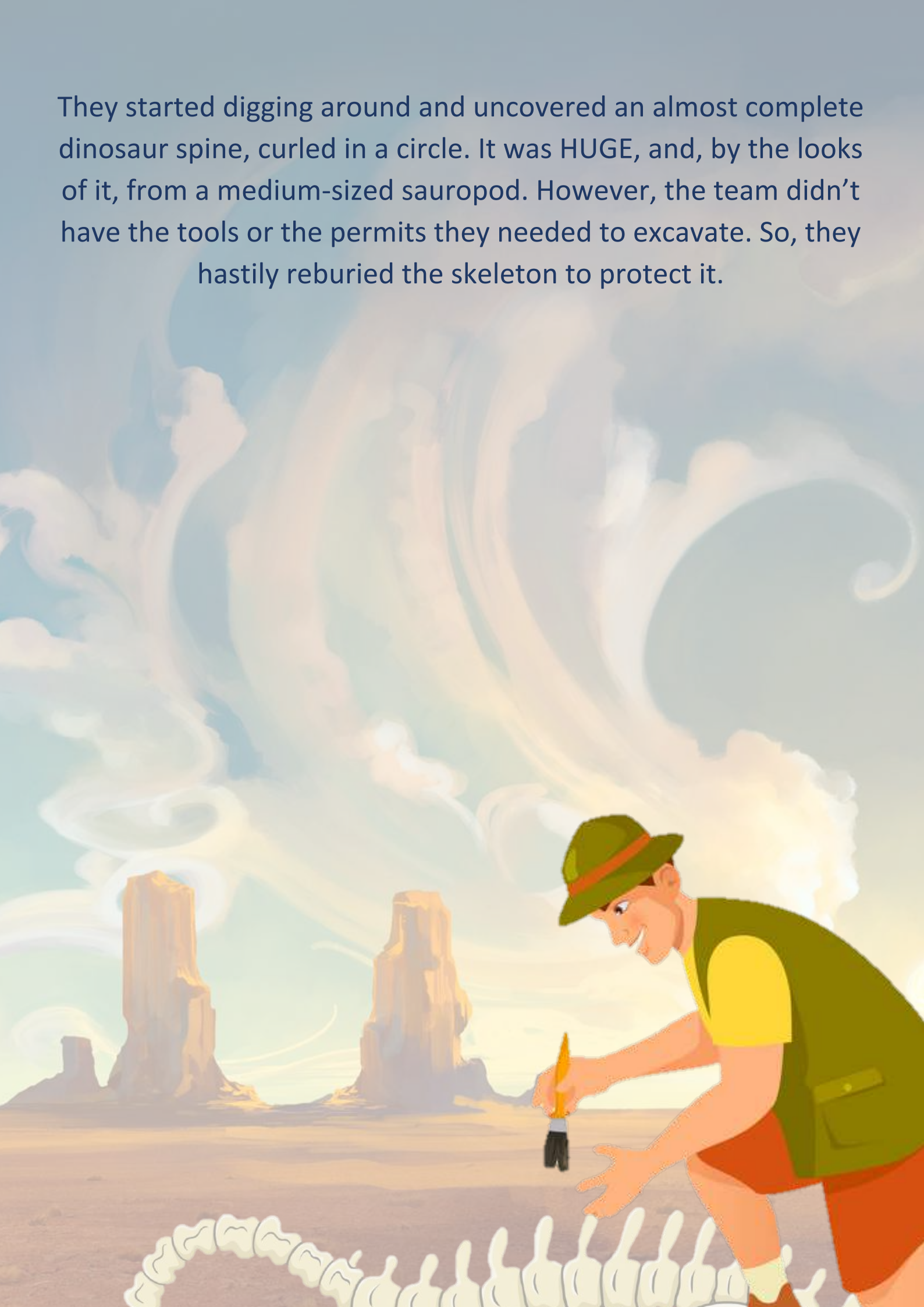
The reasons why these crinoids adopted the floating logs lifestyle might also be why they were so well preserved. They lived 182 million years ago, when an event left the bottoms of the oceans with no oxygen. This meant that crinoids couldn't attach to the seafloor, but also that bacteria or scavengers couldn't destroy the valuable specimen. In 2020, a group of researchers used the spectacular fossil to figure out how long one of these raft colonies stay afloat. They reckoned this log might have sailed the oceans for 20 years.

The Missing Bones

In 2005, a group of scientists from Germany, led by Dr Ulrich Joger, travelled to the Republic of Niger in West Africa. They were looking for dinosaur bones. The local Tuareg people told the team about an area with lots of fossils in the Niger desert, so the team trekked to the hot and remote area.

Sure enough, once they arrived, they found pieces of weathered bone all over the ground.

They started digging around and uncovered an almost complete dinosaur spine, curled in a circle. It was HUGE, and, by the looks of it, from a medium-sized sauropod. However, the team didn't have the tools or the permits they needed to excavate. So, they hastily reburied the skeleton to protect it.



The next year Ulrich received permission to return to the site and remove the bones. He made a trip to the site in November and found the skeleton just as they'd left it – good news. The following March the team headed back to the desert. Five people drove the long way with the gear – a 20-day-trip all the way from Germany.

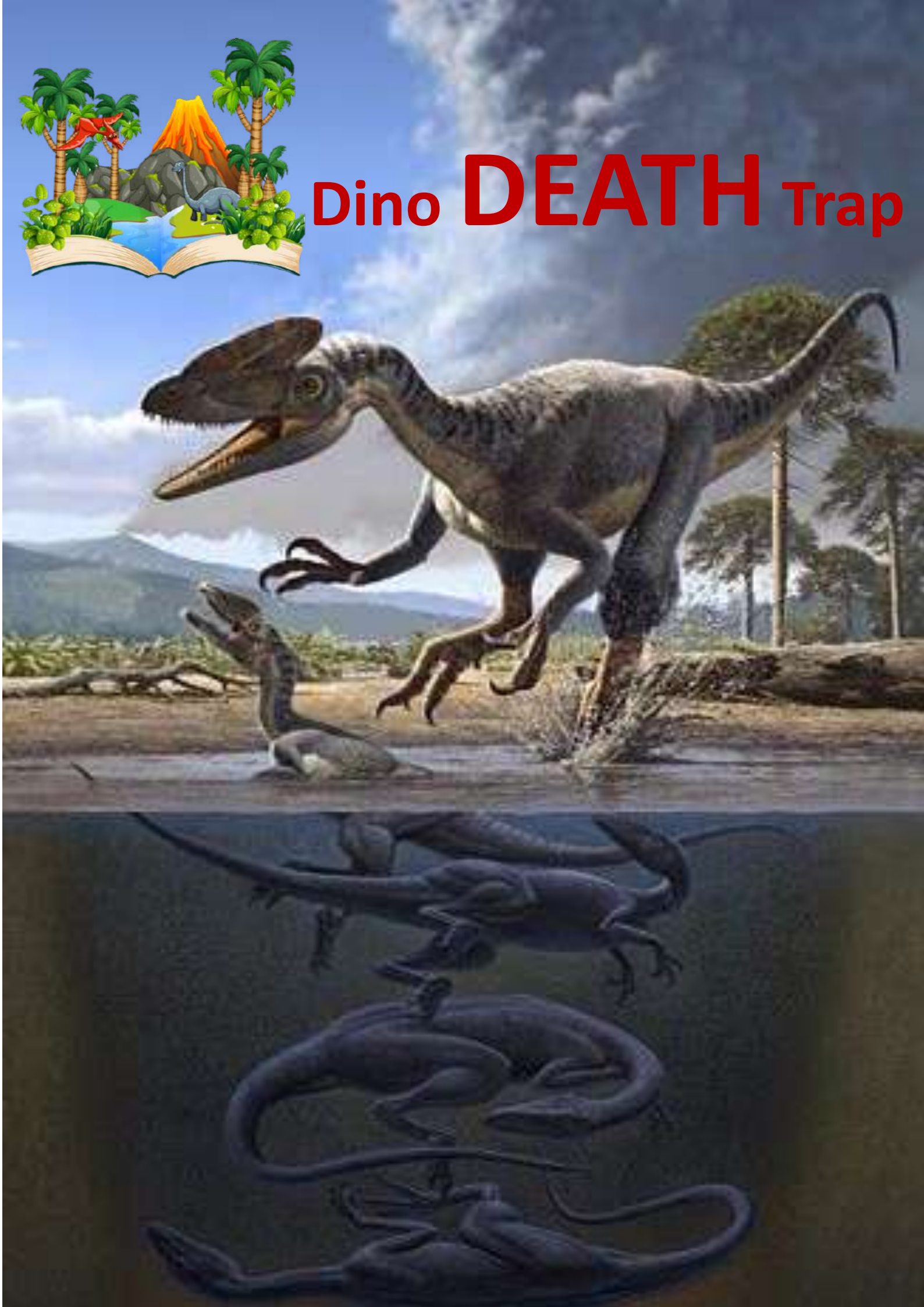
When they finally got to the site, they quickly noticed something was wrong. The skeleton was nowhere to be found. This was bad news. It looked like it had been professionally excavated before they had got there. Devastated, the team scrambled to find another dinosaur to dig up.

Luckily, not too far away they found another skeleton, and it even appeared to be the same kind of dinosaur. After carefully removing all the bones, the team sent them back to Germany.

It took two and a half years back at the lab to prepare the specimen. To the team’s delight, they found it was a new species.

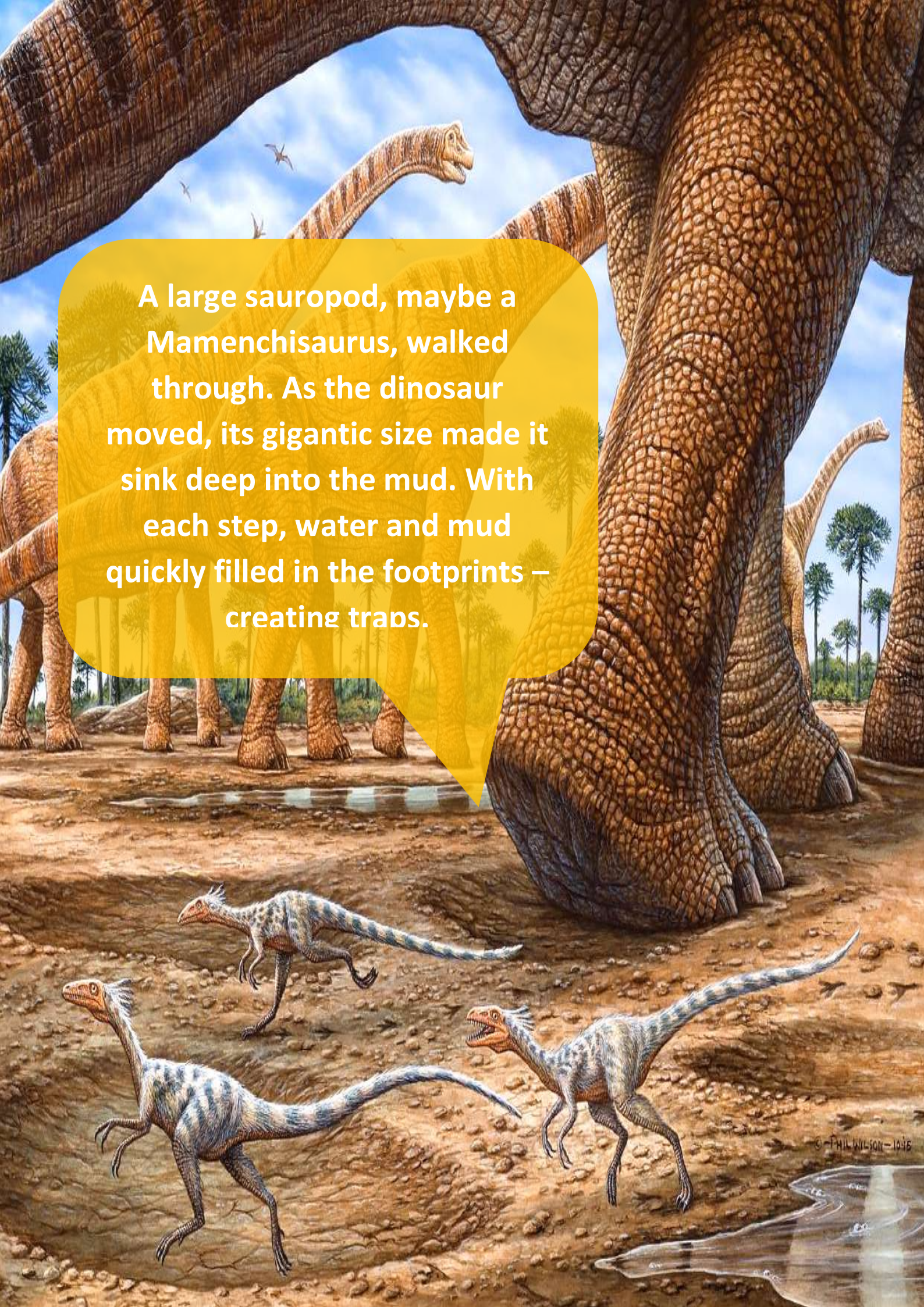
They named it Spinophorosaurus. Unfortunately, their specimen was only about 70% complete, but they got word that there was another similar specimen housed in Spain.

They took a look and to their shock realized it was the missing skeleton. It turned out a crew firm a museum in Spain had excavated it when they were away. Using the two animals, the scientists were able to build a more complete picture of the spectacular dinosaur.


Dino DEATH Trap

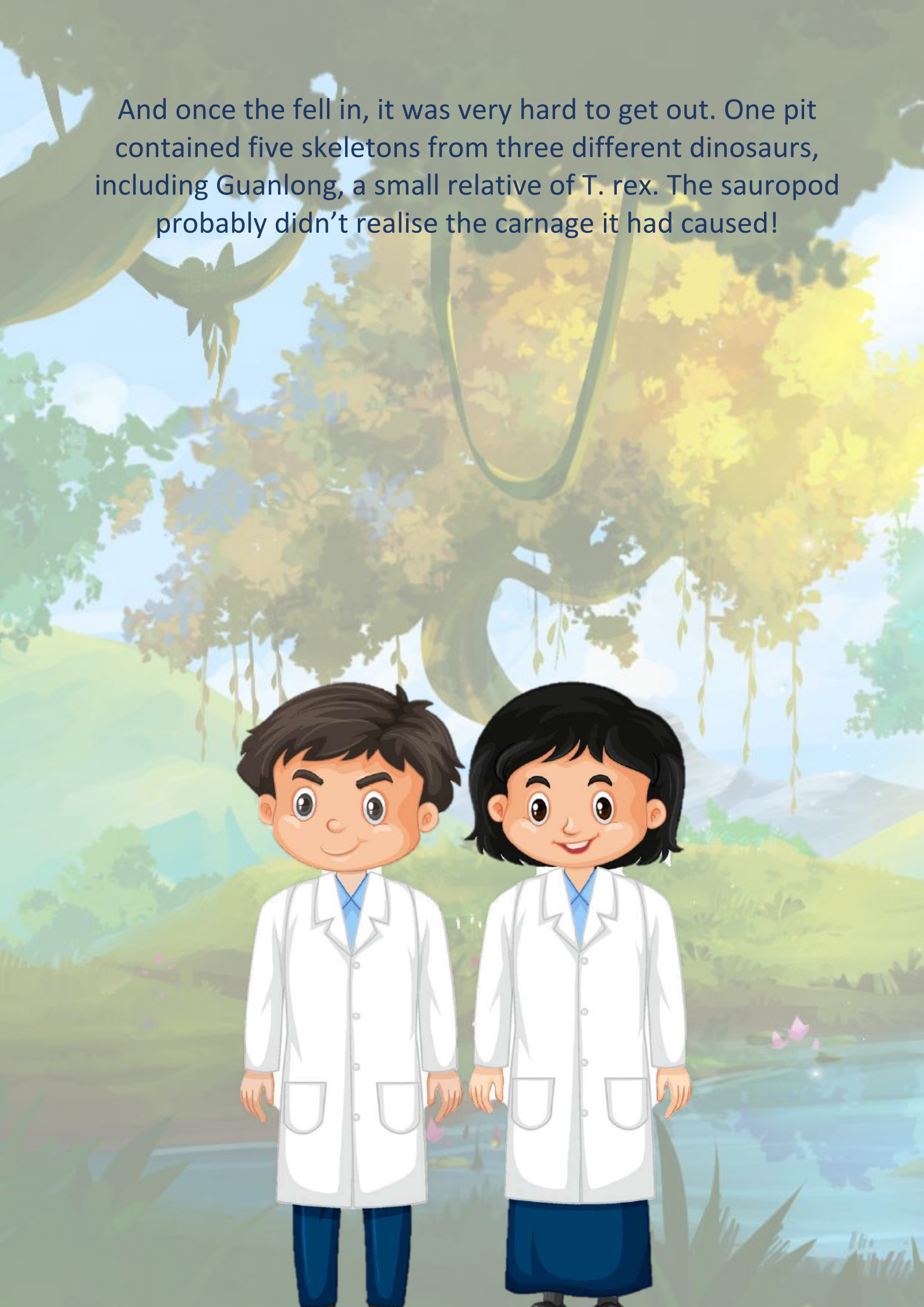
Between 2001 and 2006, palaeontologists found three bone beds in China that were rather odd. Bone beds are usually horizontal, with bones scattered across the surface. But these ones were vertical! The bones of small animals, including dinosaurs, were stacked on top of each other in pits that were about 1-2 m (3-6 ft) wide and deep. The rock inside the pits was formed from a mixture of mud, sand and volcanic ash. It was a head-scratcher. But then the scientists came up with a theory. Here's what they think happened …

Around 160 million years ago, volcanic eruptions blanketed a wetland, creating a hard crust over the muddy marsh.


A large sauropod, maybe a Mamenchisaurus, walked through. As the dinosaur moved, its gigantic size made it sink deep into the mud. With each step, water and mud quickly filled in the footprints – creating traps.
© PHIL WILSON – 2016

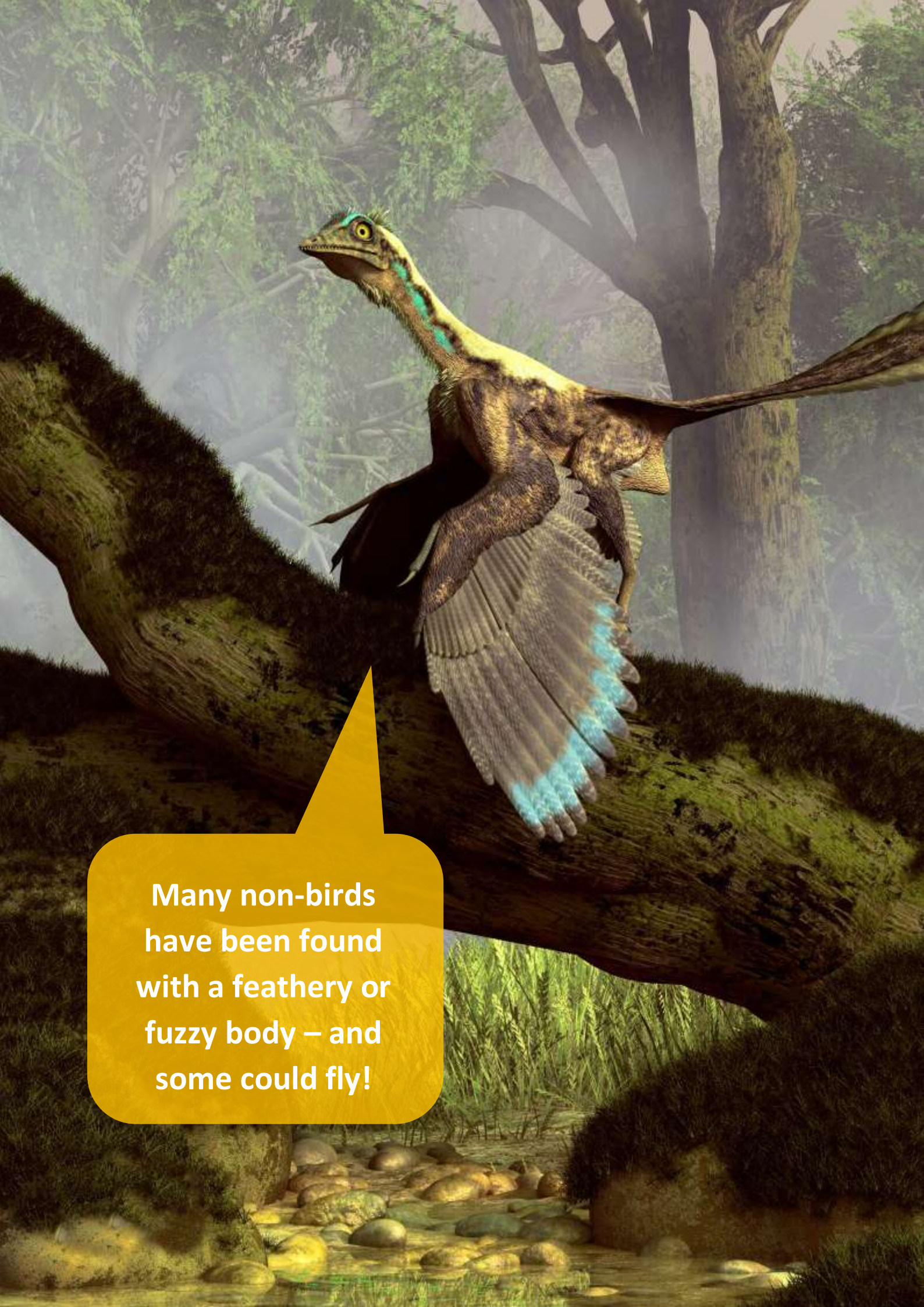

The area was home to many small, feathered dinosaurs that were light enough to walk across the crust without it breaking. However, one wrong step would send them tumbling into the footprint pit!

And once the fell in, it was very hard to get out. One pit contained five skeletons from three different dinosaurs, including Guanlong, a small relative of T. rex. The sauropod probably didn’t realise the carnage it had caused!




Flight, Fuzz
and Feathers

It is really hard to tell when bird-like dinosaurs evolved into birds because they share many features, like hollow bones.


Many non-birds have been found with a feathery or fuzzy body – and some could fly!

Birds

Birds appear in the late Jurassic, around 150 million years ago. While many of the animals on these pages look like birds, only one is usually classified as a bird. Can you find it?

Archaeopteryx is thought to be the oldest known bird. However, some palaeontologists think it was still just a dinosaur.

At 160 million years old, **Yi qi** is the oldest flying non-avian dinosaur. It had leathery, bat-like wings – and the shortest dinosaur name.

Kulindadromeus was covered in “dino fuzz”. It had three types of scales on its arms, legs and tail.

Preserved feathers show that the bird-like dinosaur **Caihong** was black with a brightly coloured head.

Anchiornis was a four-winged dinosaur with leg feathers. It had a red head-crest and black and whites striped on its wings.

Hesperornithoides was a raptor-like dinosaur. It was covered in feathers but couldn't fly.

A fuzzy body covering has even been found on a currently unnamed pterosaur – which isn't a dinosaur or a bird. It's a flying reptile.

Bones

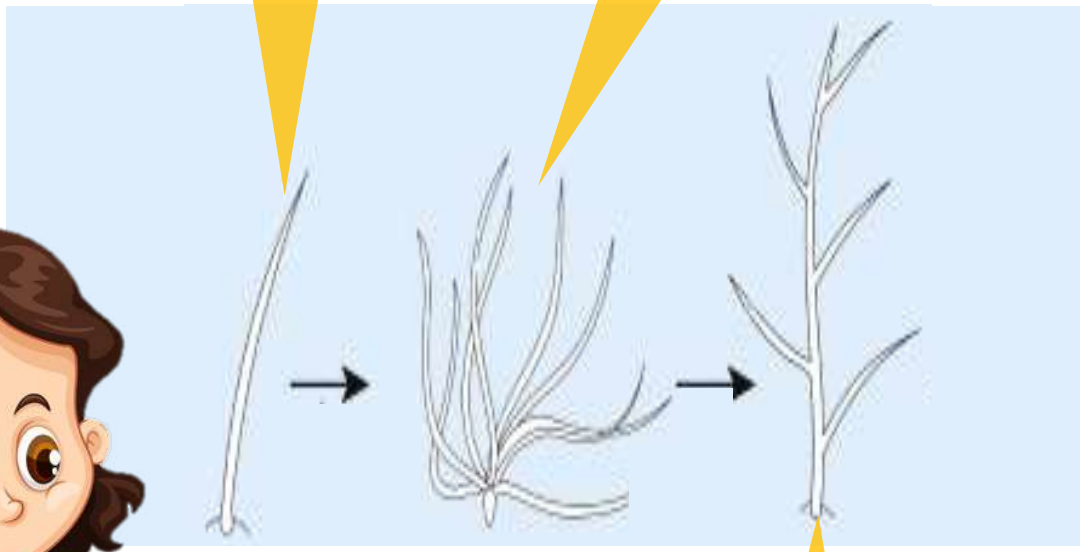
Pterosaurs, theropod dinosaurs, and birds all have hollow bones strengthened by internal struts. They are super light – handy if you want to fly.

Feathers

Feather-like structures have been found on dinosaurs and pterosaurs. This means feathers probably evolved before either of these groups did – in the early Triassic.

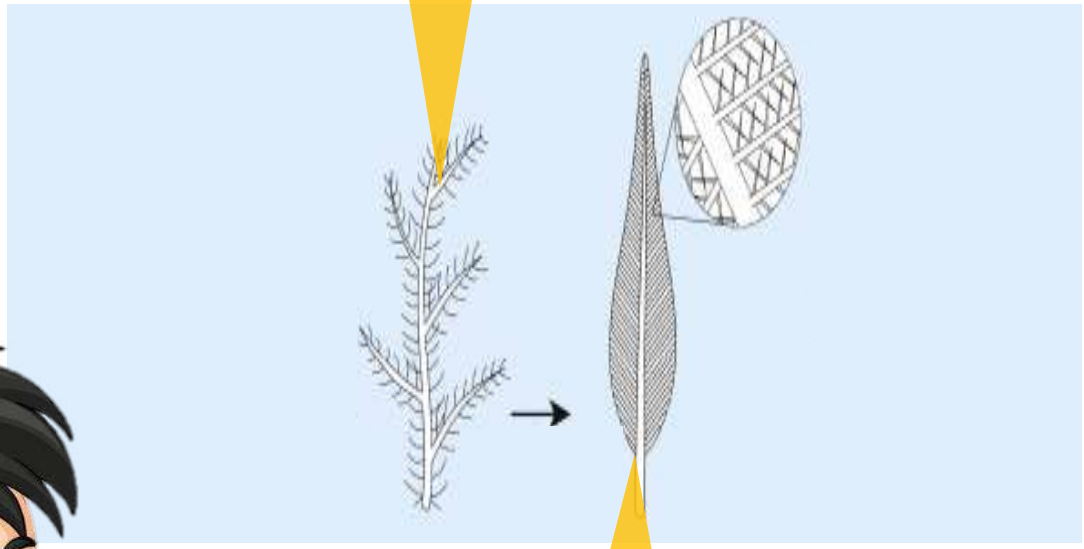
Early feathers had a single hollow filament known as “dino fuzz”

A tuft of filaments called barbs evolved next



Then small branches called barbules appeared

Barbs fused together to form a central shaft called the rachis



Then the barbules developed hooks, holding the feather together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