FOLLOWING FOOTPRINTS

Some remarkable trace fossil discoveries have helped palaeontologists to learn more about God's ancient dinosaurs and the places where they lived.

'DINOSAUR ISLE'

Dinosaur fossils are found all around the world, even in Antarctica. But some places, such as Scotland's Isle of Skye (sometimes called 'Dinosaur Isle'), seem to have been particularly good for making fossils.

In Mesozoic times, the island had warm, shallow seas, lagoons, and steamy fern forests. Many dinosaurs left behind traces like long lines of footprints (trackways) in the mud and these very slowly turned to stone. These traces give us hints about the lives of God's dinosaurs, including some of the biggest to ever walk on Earth.

It's amazing that we can follow the footsteps of God's dinosaurs from millions of years ago.

DR STEVE BRUSATTE

Dr Steve Brusatte, a Christian and palaeontologist at the University of Edinburgh, has always loved dinosaurs. He and other scientists found a big trackway on the Isle of Skye in an area that used to be a lagoon. These trace fossils were made by sauropods [SORE-uh-pods] (see p. XX) – huge, long-necked dinosaurs that were the size of two or three elephants. Can you picture them wading through the shallow lagoons of God's Jurassic period?

EDWARD HITCHCOCK

In America, in the 1800s, church pastor and geologist Edward Hitchcock was looking for new places to mine coal from the ground when he spotted thousands of unrecognizable footprints. Because of the shape of the tracks, he thought that they had been made by 'flightless birds of a gigantic size'. We now know that today's birds are living dinosaurs (see p. XX)! So Edward was closer to the truth than many realized.

TEXAS TRACKWAYS

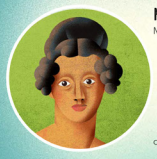
Sometimes we can make funny mistakes when we try to learn more about God's world.

Texas, USA, has a long trackway of fossil footprints left by a herd of sauropods. Next to those footprints are smaller prints. Some of them look a bit like human footprints, so some people wondered if huge dinosaurs had lived at the same time as people. Dr Berney Neufeld, a Christian and geologist, wasn't sure. In 1975, he followed the tracks for many miles. The further he went, the clearer the tracks became, showing footprints with only three toes, like small meat-eating dinosaurs, not human feet. There's no evidence that people and dinosaurs (apart from modern birds) ever lived at the same time.

DISCOVERIES IN HISTORY

People have been uncovering clues about God's dinosaurs for a long time. Often, they found them by simply being curious about the world!

MARY ANN'S MARVELLOUS DISCOVERY



Mary Ann Mantell lived in the 1800s. She loved rocks – the way they lay in the ground, their interesting shapes and the mysterious fossils that they sometimes held. Her husband Gideon was a geologist (and a doctor) and shared Mary Ann's love of rocks.

One day, Mary Ann found several strangely shaped stones that looked like the flat teeth of a gigantic iguana. She didn't know it at the time, but she had discovered a dinosaur! When Gideon wrote about it, he named the dinosaur Iguanodon (meaning 'iguana teeth').

Genus: IGUANODON [ig-WAH-no-don]
Lived: Early Cretaceous period
Length: up to 8m
Weight: up to 4,000 kg

PRAYER
Thank you God for palaeontologists, geologists and other scientists who help us to understand more about your amazing world.

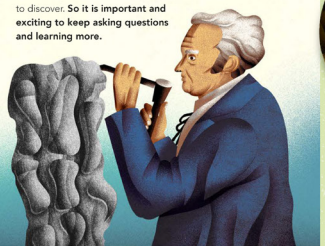
BRINGING DINOSAURS TO LIFE

In the 1850s, more and more dinosaur discoveries were being made. Many people were curious about these mysterious creatures and the history of God's creation.

NOSES OR THUMBS?

English sculptor Benjamin Waterhouse Hawkins made some life-sized dinosaur models, beginning with *Iguanodon*. As well as the teeth found by Mary Ann, people had found *Iguanodon* leg bones and a mysterious horn. At first, they thought *Iguanodon* had a horned nose, so Benjamin's model looked a little like a rhinoceros. But other fossil discoveries meant palaeontologists soon realized that these 'horns' were actually Iguanodon thumb spikes.

Stories like these show us how tricky it can be to work out what the fossil clues are telling us about God's extraordinary creation. God knows everything about each creature he has made, but we still have so much to discover. **So it is important and exciting to keep asking questions and learning more.**



HOT OR COLD?

When people like Mary Ann found dinosaur bones, they were full of questions and ideas. Many wondered if dinosaurs were ancient lizards because some of their bones looked similar to those of modern lizards. Most reptiles (such as snakes and lizards) are 'cold-blooded' – their bodies don't make heat and their temperature depends on the air around them.

Birds and mammals (like us) are different – our 'warm-blooded' bodies make their own heat. Because dinosaurs were thought to be like lizards, people thought they were also cold-blooded. Since working out that birds are living dinosaurs, scientists now think that at least some dinosaurs were also warm-blooded, like us!

Isn't it wonderful how we can keep discovering more and adding to our understanding of God's incredible world?

PUTTING IT ALL TOGETHER

Palaeontologists use fossils to piece together as much as they can about these ancient, mysterious parts of God's creation. Over the years, all sorts of clever people have managed to work out how some dinosaurs moved, what they ate, how they lived and even what colour they were and what sounds they made!

MEET BIG AL!

'Big Al' is the name given to a particular *Allosaurus* [AL-uh-SORE-us] fossil found in Wyoming, USA. All we have are his fossilized bones – no skin, muscles, heart or lungs – but the bones can give us clues about the rest of him. Let's see if we can put Big Al together to picture what he looked like when he roamed God's Earth.

1 SKELETON

Look at Big Al's skeleton. He has holes in his head! Two holes are for his eyes and two for nostrils. Others are for nerves and muscles, like those that powered his huge jaw.

How many fingers and toes does his skeleton have? Look at his leg bones. Do you think he ran on two feet or four?

Al had a rough life. His damaged ribs and vertebrae (back bones) were broken in a fight. His right foot had a swollen, infected toe, which might have made it hard for him to hunt.

2 GUTS AND ORGANS

Now let's add some flesh to Al's bones.

Like you, Al had eyes, a nose, a brain, lungs, kidneys and a stomach and intestines to digest his food.

Al had big eyes, so he could probably hunt at night, and his brain was shaped a bit like a modern crocodile's brain. Alligators and crocodiles are only distant relatives of dinosaurs, but this similarity suggests that, like crocodiles, Al's brain might have had a small area for thinking, but huge areas for making sense of things that he could smell and see.

3 MUSCLES

The ridges and smooth places on bones give us clues about where muscles attached and even how strong they were. We can also get clues about ancient dinosaur muscles by comparing their bones to those of their modern descendants (birds) and more distant relatives, like alligators.

PRAYER
God, you created the muscles, organs, nerves, skin, skeleton – all the details of all these amazing creatures. You're so clever!

4 SKIN

Very little Allosaurus skin has been found, so we don't know exactly what Al's skin was like. But some other fossils might give us clues. Different types of dinosaurs seem to have had different colours and patterns – scientists have found dinosaur skin impressions showing wrinkles, feathers and scales, with some arranged in stripes, circles or spots. So Al's skin might have been smooth, bumpy, covered with scales or even feathers. He could have had fancy patterns and been any colour of the rainbow.

If you could create a dinosaur with God, what would it look like?