Let's Go Dinosaur Tracking!

By Miriam Schlein

Put on your boots. Put on your pith helmet. And take some water in a canteen. We're going to do some dinosaur tracking.

Here's the first set of tracks. Who made them, and what do they tell us? We know one thing right away. Each footprint is 38 inches long. Whoever made these tracks sure was big. And heavy! Look how deep the footprints are. We can stand in them. There's a fish swimming in one! Who made these giant steps?

More than 100 million years ago a big sauropod walked by along a mud flat by the side of a lagoon. The feet that made these footprints carried a 70-foot-long 30-ton body. No wonder they sank so deep in the mud!

Sand blew over the mud and covered the tracks. In time—millions and millions of years of time—the mud turned to stone and saved this track to tell us that all those years ago a sauropod went by here.

Look! He wasn't alone. Here are different tracks—with three pointy claws. This is bad news. These are probably the footprints of an allosaur—a meat eater, with big jaws and sharp, curved teeth. Spying the sauropod, the allosaur began running after him. The sauropod looked like a good meal to him.

Did he ever catch him? Or did the sauropod get away? We don't know. The tracks lead under a big limestone cliff. We can't get to them. Maybe someday we'll find out how the story ended.

These chase tracks were discovered near the town of Glen Rose, Texas, in 1938, by dinosaur expert Roland Bird. People around there always thought they were just big holes in the ground. But when Bird saw them, he knew right away they were dino tracks, probably the tracks of a sauropod. But what kind? Because of bones found nearby, scientists think the tracks were made by a kind of sauropod known as a brachiosaurid.

Another time when Roland Bird was in Texas, someone said to him, “Say, do you want to see some elephant tracks?” Bird went with the man to a ranch near San Antonio. Let's take a look at what they saw.

There's one problem. Scientists can analyze rock to see how old it is. They could tell that this rock with the tracks was formed more than 100 million years ago. There were no elephants then! So—who made these “elephant tracks?”

The truth is, it was another sauropod. The track looks different from the others because it's only the front footprints. Now wait a minute! Don't tell me the sauropod was doing some kind of acrobatic balancing act, walking on his front feet! What was going on, anyhow? Here's a clue...Here's also one single sauropod hind footprint.

Have you ever pushed yourself along in shallow water, “walking” on your hands along the bottom, with your body and feet drifting behind you? That's what the sauropod was doing—pushing himself along in water with his front feet, leaving these “elephant tracks” to puzzle us more than 100 million years later. He left that one back print when he was kicking into a turn.

We can see something else. These prints are not so deep. That's because his body weight was being buoyed up by the water.

Let's go. There are more tracks to follow. Have you got your flashlight ready? We're going down 400 feet into a Colorado coal mine. How can we find dino tracks down here?

There they are—up on the ceiling! Big, three-toed footprints. They're 34 inches long and 34 inches wide. But how could the dinosaur walk underground, upside down?

This is what happened. About 80 million years ago a 25-foot-tall hadrosaur came by here. Sometimes it walked on all fours. Other times it stood up on its hind legs to browse on conifers and palm trees. When it wanted to move fast, it ran on its hind legs.

This one was not hanging around, browsing. The footprints are 15 feet apart. That shows it was running fast through the soft peat. Why? We can only guess...Time passed. The peat hardened to coal, leaving these tracks for us to find.

Of course, the hadrosaur was not walking underground, or upside down. What happened was this: Over millions of years sand and sediment settled over the spot till the footprints were buried deeper and deeper. They were not seen again till the mine was dug. And he wasn't walking upside down either. What

we see here is the bottom of the prints.

Dino tracks can give us clues about how dinosaurs lived—things we wouldn't know by just looking at their fossilized bones. The Glen Rose sauropod track showed that sauropods walked on land. Before then, paleontologists used to think that sauropods had to live in water because their bodies were too heavy to be supported by feet.

Different sauropod tracks showed something else—that these giant plant-eating dinosaurs often traveled in herds, the way elephants do. The young ones walked in the middle, where they were protected.

Tracks of many Deinonychus are found bunched together. They show that these flesh-eating dinosaurs probably did their hunting in packs. *Tyrannosaurus tracks* show us that these big flesh-eaters traveled alone, or in pairs.

We used to think all dinosaurs were very sluggish and slow. Dinosaur tracks tell us this was not really so. By studying tracks scientists now have ways to figure out how fast different dinosaurs could run. Some, they say, were pretty speedy.

“Ostrich dinosaurs” could probably run at the rate of 35 miles per hour (mph) or more. This is not as fast as a race horse (45 mph.). But it's faster than an elephant (22 mph).

Most scientists think that Tyrannosaurus was slow and clumsy. But some experts now believe it possible that Tyrannosaurus may have been able to run up to 30 mph—at least for a short distance.

Tracks made in Texas by some therapods (two-footed flesh-eaters) showed a running speed of 26 mph.

A hadrosaur track showed a running speed of 16 mph. Apatosaurus (a kind of sauropod) left a slow-speed track—about 2 to 4 mph. (This is like the walking speed of a human.) We do not know, though, if this was its top speed. It may have been walking slowly, through mud, or just not been in a hurry.

Figuring speed is a new kind of dinosaur study. And it's not very exact. Not all scientists “read” the tracks in the same way. Some use different formulas. And they come up with different opinions. So they don't all agree exactly on how fast different dinosaurs could run. But what we do know now is that dinosaurs—at least some of them—could probably move around much faster than we used

to think they could.

Some Fact Scientists Use to Figure Dino Speed

1. Length of dinosaur's **stride**. This is the distance from one footstep to the next step of the same foot. With animals of the same size, a longer stride shows faster speed.
2. **Hip height**. We get this by measuring the length of the leg bones.
3. **Size of foot**. We get this from the footprint.
4. **Width of track**. Usually, a wide track has been made by a slow walker. A narrow track shows faster speed.

Test you own stride:

1. Find a place where your footprints will show (in damp sand).
2. Walk slowly.
3. Walk faster.
4. Run.
5. Measure the stride of each set of footprints.
6. Which prints show the longest stride? (Running). Which prints show the shortest? (Slow walking)

Well, this pith helmet is hot. My canteen is empty. My boots are covered with mud. Let's go home and think about the things we've learned from tracking dinosaurs.