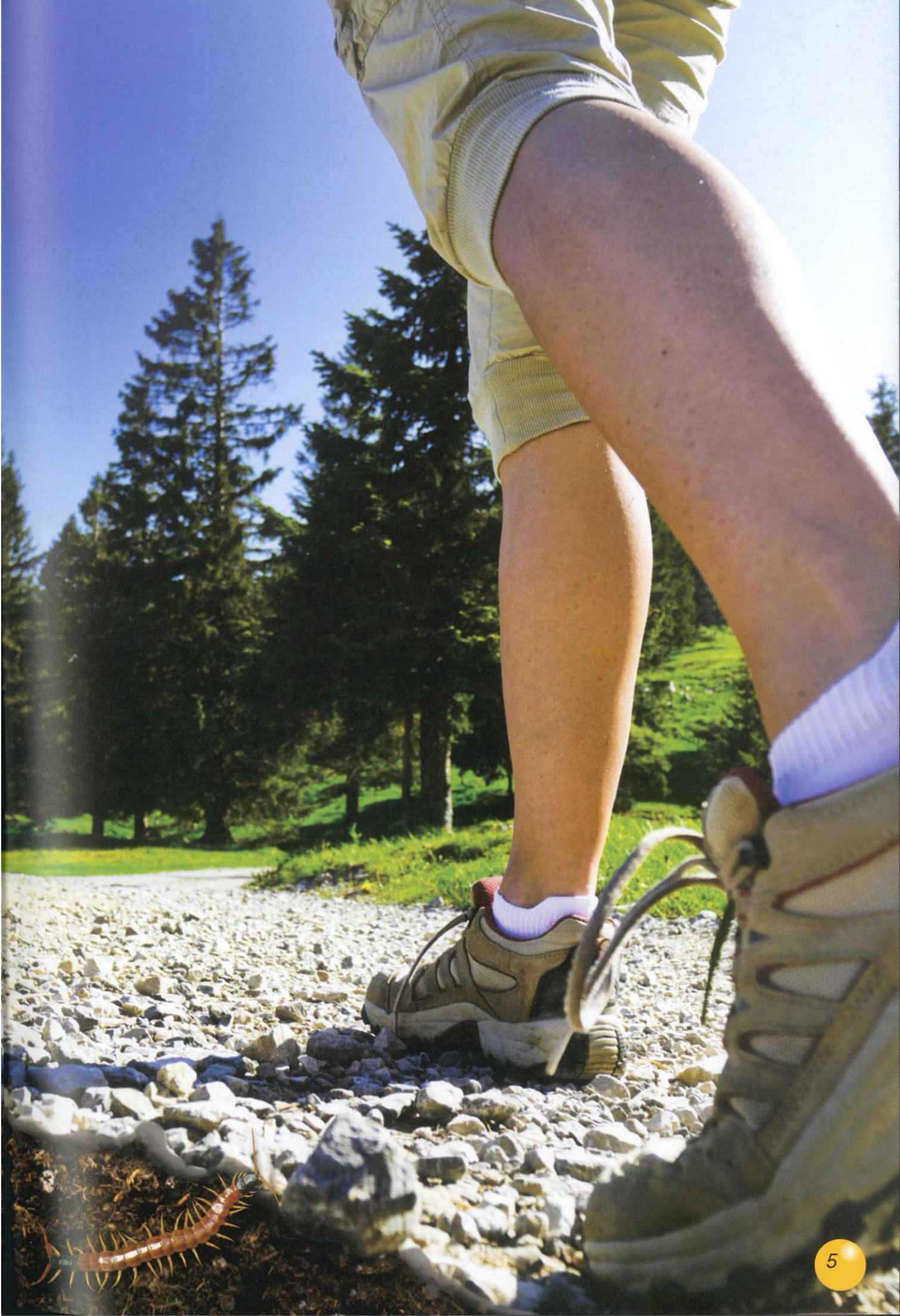


Life

in the Ground

The next time you are outside, take a look at the ground below your feet. You may see dirt or rocks, but look a little bit closer. There is another world right under us. In this world, worms dig large burrows and help plants grow. Snails and slugs slowly creep along, leaving slimy trails behind them. Centipedes hunt for prey in the dark of night. The creatures under our feet are part of a complex world which has existed for millions of years, and there is much to learn about it.





Scientists have found that the origin of humans and most other living things may be an ancient worm. This species of worm – called *Pikaia gracilens* – lived five hundred million years ago. It lived in the oceans and looked like an eel. What does this worm have in common with humans? It had a very special feature: a backbone. It was the first animal on Earth in the chordate family. Animals in this family all have some type of backbone. This family today includes fish, reptiles, birds, and mammals. So in a way, worms are our ancestors!





There is a close link between worms and humans, and it all began a very long time ago. However, many things have changed in the five hundred million years since *Pikaia gracilens* existed. After all, humans do not look anything like their worm ancestors. Worms do not have a backbone. They are part of a large family of animals called invertebrates. But worms and humans still have a close relationship. Some worms actually help us today. For example, earthworms clean the soil and make it a healthy environment for plants to grow. They help plant matter decompose. Without earthworms, farmers might have trouble growing crops. Worms do not just help food grow, though. Sometimes, they are food!



Egypt's Tiny Farmers

One day in ancient Egypt, a farmer walked through his fields near the banks of the River Nile. The Nile Valley was a very fertile place. The rich land surrounding the river provided food for the Egyptian kingdom. The farmer looked at his fields and those of his neighbors. Crops blew in the breeze and there was a smell of blooming plants in the air. Then the farmer saw something moving on the ground. "What is this?" he wondered. He bent down and looked closely at the thin creature. It was as long as his hand and had no legs. He picked it up, and it moved around just like a snake. It had no eyes or face. "Disgusting!" said the farmer. He threw the creature on the ground and crushed it with his foot. It was dead, but another was coming out of the ground right next to it! The farmer got down on his hands

and knees and examined the ground. He saw several more of the small creatures. "How many are there? They seem to live under my farm!"

The farmer walked all over his land. He stepped on all the worms that he saw. His neighbors saw him stomping around. "What are you doing?" they asked.

"These tiny creatures are all over my land!" he answered. "They could be bad for the crops. You should check your farms, too."

Sure enough, the other farmers also found many worms crawling on their land. Worried, they squashed the worms, too. Day after day, they stepped on any worms that they saw. Eventually, they stopped finding the worms, and they all felt much better.



Word spread about the worms. All over the valley, farmers killed any worms that they found. This continued for years, and the farmers were glad to be rid of the worms. However, soon they began to worry about something else. Their crops were mysteriously dying. At first, it was just a few plants. As time went by, though, more and more crops died. Soon there was not enough food to feed the people. They began to panic. "Why is this happening?" they wondered.

Eventually, the news reached Cleopatra. As ruler of Egypt, she was very concerned about the crops. "My people must eat!" she thought. "What could be the cause of this terrible luck we're having?"

Cleopatra decided to try to find out what was happening. She called her advisors and started visiting farms. First, they went to a farm where the crops were still growing. "Your crops are doing well," said Cleopatra. "What is your secret?"

The farmer picked up a worm from the ground and showed it to Cleopatra. "I think these creatures help," he explained.

"Disgusting!" said the queen.

"Yes, they are quite strange. But I leave them alone," said the farmer, "and my crops grow! All of my neighbors kill the creatures, and their crops are withering away."

Cleopatra listened carefully. Then she and her advisors visited the other farms in the area. Some of them had healthy crops and some had empty fields. At one farm, she saw the farmer stepping on a worm. She also saw that the farmer's land was empty. She stopped the farmer. "Do you always kill your worms?" she asked.

"Yes, always," he replied. "These creatures do not belong on my land."

Cleopatra visited other dying farms. She asked all the farmers the same question and got the same answer: "Yes," Cleopatra finally understood. "That first farmer was right," she said to her advisors. "The farms

with worms are all very fertile. The farms without worms have dying crops."

"But my queen," one advisor said, "Why is killing the worms bad for the crops?"

"The gods are punishing the farmers who kill the worms!" Cleopatra said. "Making the gods angry is a terrible mistake. If the farmers continue killing worms, there will be no more food! We must put a stop to this killing!"

So Cleopatra made a new law. "No citizen of Egypt shall kill another worm ever again," ordered the queen. "Worms are very important and we must respect them. Any person who kills a worm will be punished!"

It took some time, but the worms eventually returned to all the farmers' fields. The crops began to grow strong and healthy again, and there was enough food for the whole kingdom. The Nile Valley was fertile once more, thanks to the tiny worm.

