

Charles Darwin

How He Discovered *Evolution*



With photographs and text by
Stephen Schutz



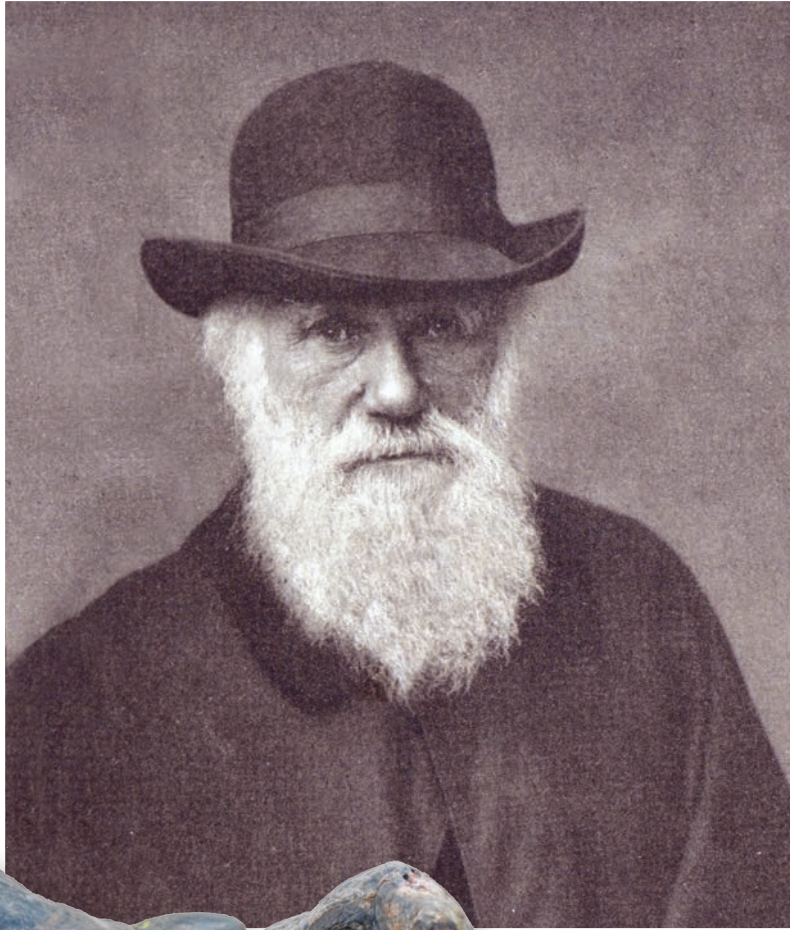
Follow Charles Darwin on his famous voyage to faraway islands.
Learn how he found strange animals and made a great discovery!

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and text

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Charles Darwin was a scientist who studied different kinds of animals.

He discovered how **evolution** occurs in nature. This is one of the most important discoveries ever.





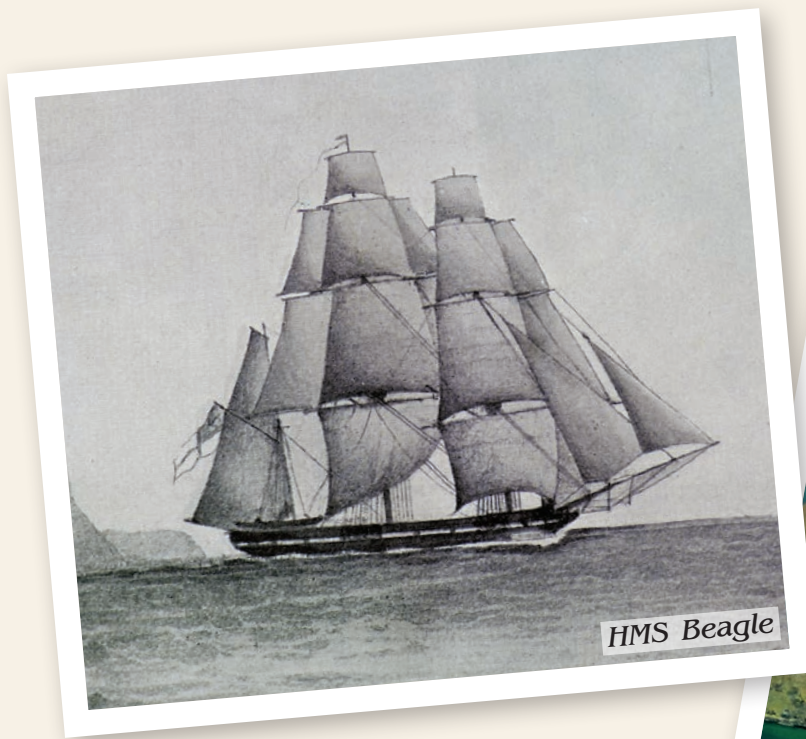
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Charles Darwin, Shropshire, England

Charles was born in England in 1809.

Charles was very curious and asked a lot of questions. He loved to run with his dog and collect beetles.



When Charles grew up, his father wanted him to be a doctor. But Charles wanted to be a scientist.

After graduating from college, Charles worked as a **naturalist** aboard the ship HMS Beagle. He sailed around the world for five years, observing nature and taking careful notes.

On one of the **Galápagos Islands**, off the coast of Ecuador, he found a big surprise...



Ecuador

*Galápagos
Islands*



Saddleback Tortoise

Charles found a giant **tortoise**! It looked strange because it had a very long neck and very long legs.

Charles also noticed that most of the plants on the island were tall. The tortoise had to reach up high to get food. Its long neck and long legs made it possible to reach the tall plants.

When Charles traveled to the next island, he came upon another surprise...



On the next island, Charles found a giant tortoise with a short neck and short legs.

Charles noticed something very peculiar about the plants on this island. They were short!



Charles watched the tortoise eat. It had no problem getting food. Its short neck and short legs were just right to reach the short plants.

“How strange!” thought Charles. “The long-necked tortoises live on the island with the tall plants and the short-necked tortoises live on the island with the short plants!”

“How did this happen?” asked Charles. “*Are these tortoises related, like cousins?*” He decided to observe the tortoises carefully, and take notes.







Charles could see that every tortoise was different. No two tortoises were exactly alike. This reminded him of the dogs in his hometown. He remembered that no two dogs looked exactly alike.



When people wanted a dog for a pet, they picked a dog with a special look or **trait** that they liked. The puppies of these dogs often had the same trait.

Suddenly, Charles had an idea.



Charles imagined what might have happened:

A long time ago, a tortoise was born with a long neck. It could reach the taller plants and get more food. That's why it survived better than the other tortoises.

This tortoise had many children, and they all had long necks. Its children also survived better. After many generations, more and more tortoises on that island had long necks.





Saddleback Tortoise

Charles kept imagining:

After many years, one of these long-necked tortoises was born with long legs. With its long legs and long neck it could reach higher and get more food than the others.

This tortoise was able to **adapt** perfectly to the island with the tall plants. It was almost as if it had been 'selected' to be the survivor.

Charles decided to look at other animals.



Galápagos Marine Iguana

Charles discovered two different iguanas. One lived near the seashore and was colored like the rocks. The other lived inland and was colored like the flowers!



Galápagos Land Iguana

Both iguanas had adapted to hide from hawks.
They were both survivors!



Darwin's Finches

Can you see the difference between these two birds? Charles had to look very carefully, and so do you!



One of these birds has a thick beak that can crush seeds. The other one uses its thinner beak to peck for insects.



Charles discovered how changes in life occur over time in nature.

Any animal might be born with a special trait that helps it survive better. This trait will be passed on to its children. After many generations, more animals will have that trait. Changes like this keep happening again and again over a long time. That's how new life forms are created!

These changes in life are called evolution. This was Charles Darwin's great discovery.



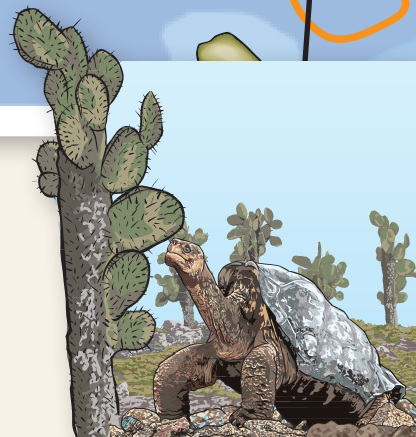
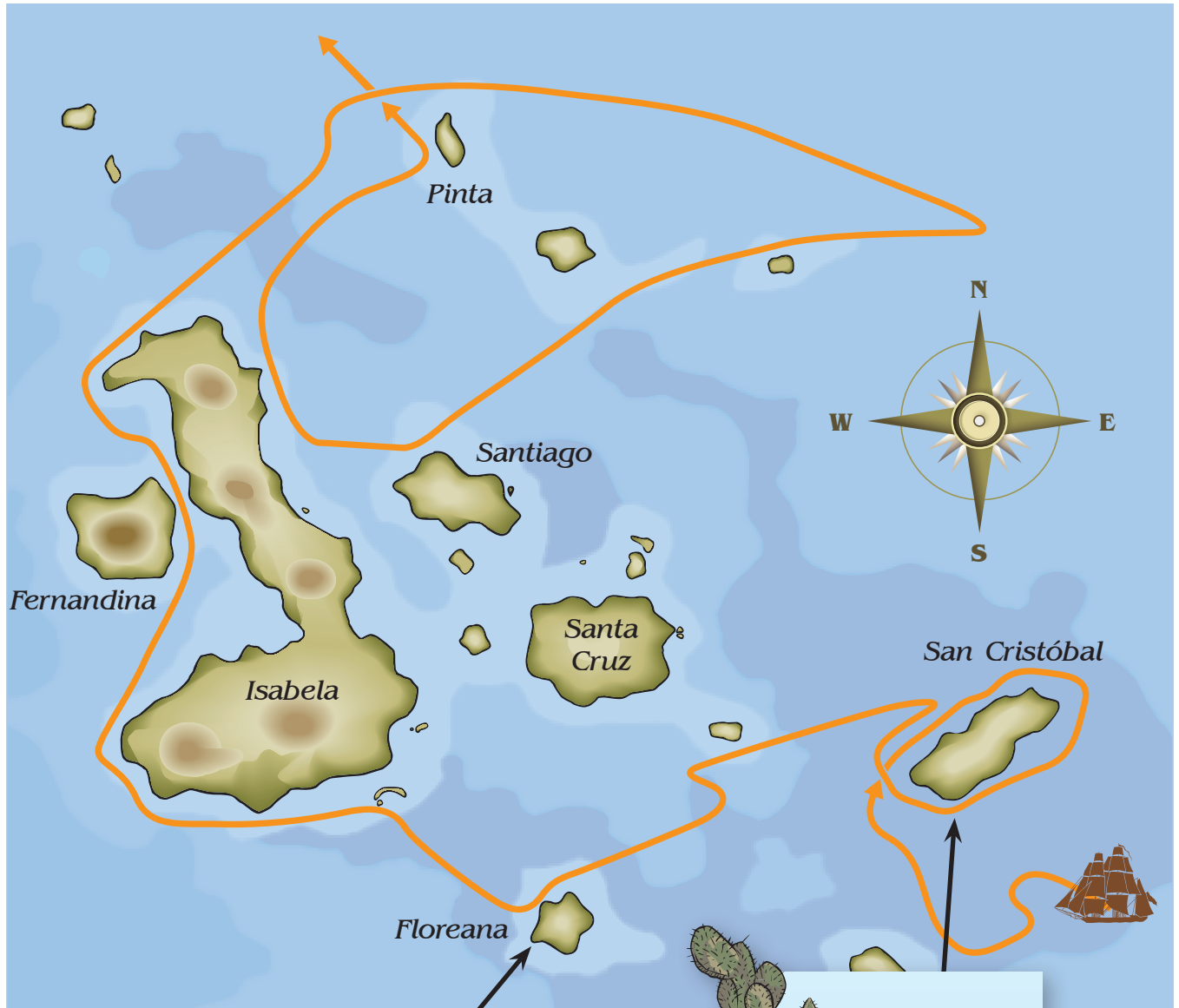
Charles Darwin made his great discovery by carefully observing nature and asking a lot of questions.



Do you carefully observe nature? Do you ask a lot of questions? If you do, you might become a great scientist and make a great discovery, too!

The Galápagos Islands

On this map, you can follow Charles Darwin's journey through the Galápagos Islands, and see where he found the long-necked and short-necked tortoises.



Words You Know

Adapt: To adjust to new conditions.

Evolution: The way new life forms are created through changes over a long time.

Galápagos Islands: Isolated islands that Darwin visited, where he discovered many new animals.

Naturalist: A person who studies nature.

Tortoise: A turtle that lives on the land.

Trait: A special characteristic.

Helping the Tortoises Survive

Giant tortoises and other animals lived alone on the Galápagos Islands for millions of years before people arrived. Pirates made the islands their home about 300 years ago. We don't know if they left any treasure on the island, but they did leave goats, dogs, cats and even some black rats!

These new animals (including humans) caused problems for the tortoises. The goats ate most of the plants and did not leave much food for the tortoises. The rats and dogs ate the tortoise eggs and hatchlings. Sailors often captured the tortoises for food. Every year there were more people, goats, cats and rats, and fewer tortoises.



Today, the giant tortoises are endangered and must be carefully protected. Look back at the tortoise on pages 18-19. He is the last tortoise of his kind! His name is "Lonesome George." Can you guess why he was given this name?

To help tortoises survive, their eggs are collected and hatched in captivity. The babies are kept safely for four years until they can live on their own.



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About the Photographer/Writer Stephen Schutz, Ph.D.

As a very young child, Stephen loved to finger paint. He had trouble learning to read in elementary school but was good at math. He became very interested in photography when he was twelve years old. In high school, his favorite subject was art. In college he studied science. Stephen's favorite color is blue.

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Photo Credits

Lonesome George photo on pages 18-19 courtesy of Marc Shandro.