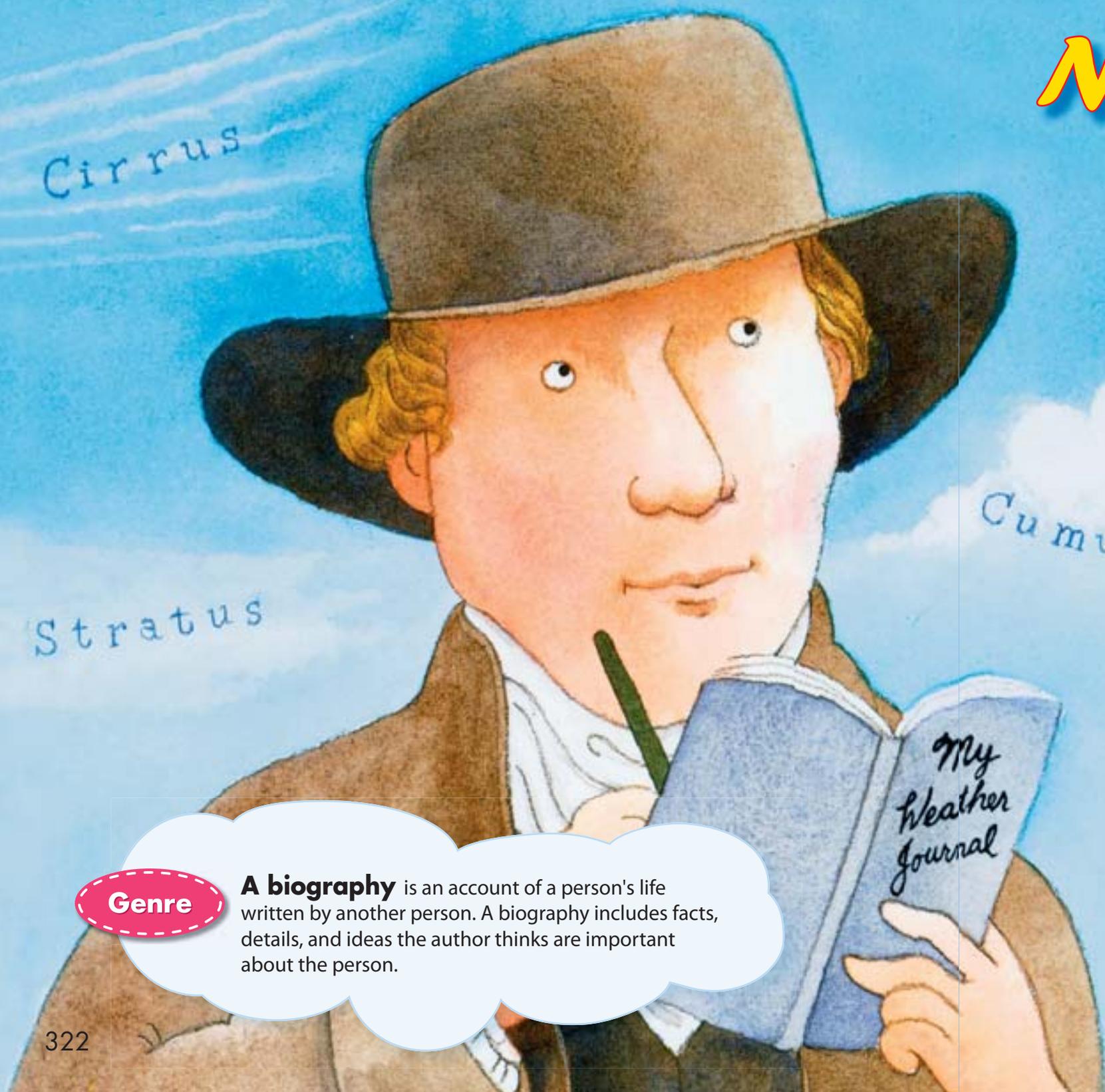


The Man Who Named the Clouds

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Question of the Week
What is the value of looking at patterns in nature?

Genre

A biography is an account of a person's life written by another person. A biography includes facts, details, and ideas the author thinks are important about the person.

Let's
Think
About
Reading!

A person who daydreams is sometimes said to have his or her “head in the clouds.” But daydreams can lead to great accomplishments. As a boy, Luke Howard wondered about the weather and daydreamed about clouds. He began to study them as a hobby. When he grew up, he created the first practical scientific system for naming clouds.



Luke Howard was born on November 28, 1772, in the city of London, England. When he was young, he noticed there were different kinds of clouds. Some were high and feathery. Some were puffy on top and flat on the bottom. Others looked like gray blankets.

Luke didn't get serious about studying clouds until he was ten years old. That's when he began keeping a weather journal to describe what he saw in the sky.



Luke had three younger brothers, one younger sister, and three older half-brothers. Many of them helped in the family's ironworks business. Their father didn't want his children to be lazy. He taught them the importance of working hard and learning.

When Luke was a boy, it was popular to study science and nature. People wanted to know more about metals and **chemicals** that might help in **manufacturing** and making medicines.

And Luke wasn't the only one who was curious about the weather. Many people kept weather journals, hoping to learn more about what caused clouds, rain, and fog. One theory was that clouds were bubbles of air and that the sun's rays gave them the power to float.

In the 1700s, the causes of weather were a mystery. Sailors and farmers could only watch for signs in nature to help them predict storms.



Let's **Think** About...

What questions about predicting weather do you have so far?

Questioning

In dry, sunny weather, they noticed a pine cone's scales opened outward. If its scales folded inward, rain might be on the way.

Rhymes like this one also helped in predicting the weather:



Red sky at night, sailor's delight.

Red sky at morning, sailors take warning.

Sailors like red sunsets because it means the air in the west (where the sun sets) is dry. Wind usually moves weather from west to east, so dry air is coming, and the sky will be clear.

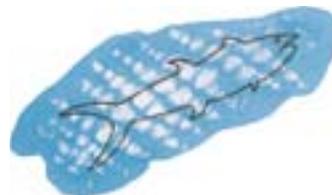
If the sunrise sky is red-colored, it means dry air has already moved from the west to the east (where the sun rises). There is a good chance clouds, rain, or even storms will soon come from the west.

People made up sayings comparing clouds to shapes in nature, such as horses' tails or fish scales.

Mares' tails bring storms and gales.



Clouds are blown into wispy, horse-tail shapes by strong, stormy winds.



*Mackerel sky, mackerel sky,
Never long wet, never long dry.*

Clouds shaped like the pattern of scales on a mackerel fish often bring quick showers that come and go.

Luke and his family were members of a religion called the Religious Society of Friends, or Quakers. Because Quakers didn't belong to the Church of England, England's main church, they weren't allowed to go to the same schools as people who did. Instead, eight-year-old Luke and his younger brother William attended a Quaker boarding school in Burford, England. They lived at the school year-round, except for a short vacation each summer.



As part of his lessons, Luke had to recite Latin words over and over. This wasn't interesting or fun at the time, but it came in handy years later.

Luke finished school at age fifteen and moved back home to live with his parents. He happily began his weather studies outside in the family garden.

Twice a day in his journal, he recorded the weather conditions. He used a thermometer to learn the temperature of the air, a weather vane to check the wind direction, a rain gauge to measure the rainfall, and a barometer to measure the **pressure** of the **atmosphere** on the Earth's surface.

Let's **Think** About...

Have you ever looked for shapes of animals in clouds? Why would people try to connect a cloud's shape with the weather?

Background Knowledge

Let's **Think** About...

What do you want to know about weather instruments?

Questioning

Luke was still very interested in clouds. Since there were no scientific names for different types of clouds, it was hard to write about them. He painted pictures of clouds instead. These are some of his paintings.



Cloud study by Luke Howard, painted sometime between 1808 and 1811

Landscape and cloud study by Luke Howard, painted sometime between 1808 and 1811



Luke's father thought cloud-watching was a waste of time. He wanted his son to learn a trade so he could get a good job. After a few weeks at home, Luke was sent away to work as an **apprentice** in a Quaker chemist shop, where medicines were made and sold.

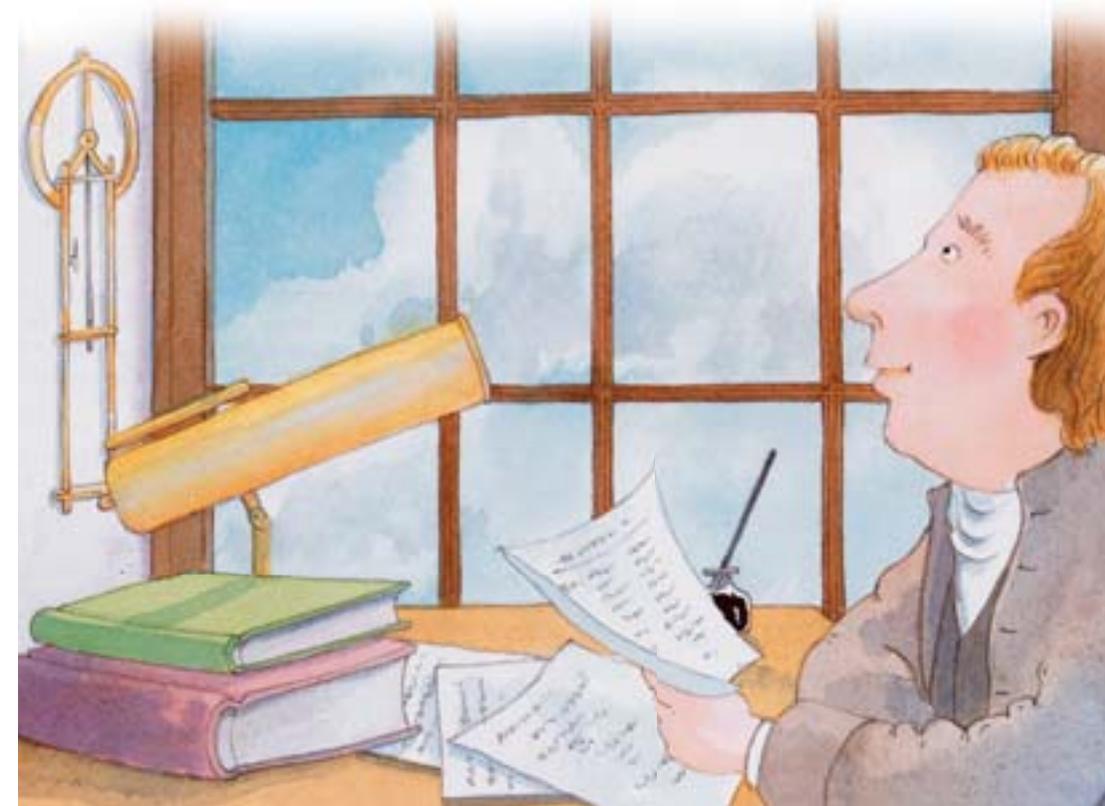
Luke worked long hours at the shop for seven years. He didn't have time to study the weather, so he was unhappy.

When he finally returned home, he went to work for another chemist for a few months. One day, he cut his hand badly when a glass bottle of poisonous chemicals he was holding broke. After he was well again, his father loaned him the money to open his own small chemist shop.

At age twenty-four, Luke married a woman named Mariabella Eliot. Their first daughter, Mary, was born the following year.

About that time, Luke became the manager of a large chemical factory and shop in the English village of Plaistow. He and his new family moved into a house there. Plaistow wasn't crowded with tall buildings as London had been. There were wide spaces where Luke could see lots of sky. Upstairs in his new house, he had a weather-watching room with big windows. He filled the shelves with his science books and instruments for recording conditions in the atmosphere.

This was a happy time in Luke's life. He had a good job and he had made friends who liked to study science. Now he could get back to his hobby of weather study.



Let's **Think** About...

Will Luke's interest in clouds continue even though his father doesn't approve?

Predict

Let's **Think** About...

Why was Luke's new house better for weather watching?

Important Ideas

Luke was determined to find new ways to study the weather. In 1796, he joined a **club** called the Askesian Society. The word *askesian* comes from a Greek word that means “philosophical exercise” or “training.”

Most of the club’s members were Quakers who wanted to learn about science. They did experiments and brainstormed to try to answer questions about weather, astronomy, electricity, and other branches of science. They wrote their ideas in reports and read them aloud at club meetings held twice a month. At every meeting, each member had to read a paper he had written or pay a fine!

It wasn’t easy to discuss clouds because everyone described their shapes differently. Luke knew clouds needed to be classified and named. But scientists had tried this before and failed because their systems weren’t exact enough.



Let's **Think** About...

Describe implicit relationships among ideas in this text organized by sequence. What did Luke do before he joined the Askesian Society?

Inferring

Luke studied the work of a Swedish botanist named Carl von Linné, also known as Linnaeus. In 1735, Linnaeus had created a system for scientifically classifying plants and animals using Latin names. This gave Luke an idea for a way to classify clouds.

At a society meeting in 1802, Luke read an **essay** he’d written called “The Modification of Clouds.” (At the time, *modification* meant “classification” or “naming by categories.”) In his paper, Luke described three main cloud shapes and gave them Latin names.

Cirrus (a Latin word that means “curl of hair”)—
“Parallel, flexuous, or diverging fibres, extensible by increase in any or in all directions.”

Cumulus (a Latin word that means “heap”)—
“Convex or conical heaps, increasing upward from a horizontal base.”

Stratus (a Latin word that means “layer”)—
“A widely extended, continuous, horizontal sheet, increasing from below upward.”

He also described four other types of clouds, which were combinations of the three main ones: *cirro-cumulus*, *cirro-stratus*, *cumulo-stratus*, and *cumulo-cirro-stratus* or *nimbus*. (*Nimbus* means “rain.”) Everyone in the Askesian Society was excited about his essay. Finally, someone had a good idea for a system to name clouds!

Let's **Think** About...

What details help you understand the importance of Carl von Linné?

Important Ideas

Unknown to Luke, a Frenchman named Jean Baptiste Lamarck had made up another cloud classification system earlier that same year. Lamarck believed there were many cloud types. He planned to name each of them in French.

At first, there were arguments about which system was better. Was Latin, French, or maybe English the best language for the system?

Latin was the official language of the Roman Empire for over five hundred years, beginning about 31 B.C.E. Because of Rome's widespread influence, many other European languages were based on Latin. So scientists pointed out that people would probably understand Latin cloud names more easily than French ones.



Luke's essay was printed and sold in bookstores. His cloud-naming system appeared in the *Encyclopedia Americana* in the early 1800s.

Still, scientists argued about his system. Was it really possible there were only seven cloud types as Luke claimed? Although some people proposed different classification ideas, Luke never changed his list of seven cloud types. But, over time, others did.

In 1896, an important conference about weather was held in Paris, France. Scientists who attended agreed on a list of ten types of clouds. Each cloud type was given a name based on its shape and the height of its base. Five of Luke's original names were used on the new list. The other five were combinations or revisions of his cloud names.

Let's **Think** About...

Why was using Latin cloud names more popular? You can reread to find out. **Monitor and Clarify**

Latin	Italian	Spanish	French	English
nubes	nuvola	nube	nuage	cloud
nebula	nébba	niebla	brouillard	fog
sol	sole	sol	soleil	sun
tonitrus	tuono	trueno	tonnerre	thunder
ventus	vento	viento	vent	wind

In 1803, Luke's essay was printed in a magazine many scientists read and trusted called *Philosophical Magazine*. Soon his cloud-naming system became more popular than Lamarck's.

Let's **Think** About...

What details help you understand that Luke's system was accepted by other scientists?

Important Ideas

Let's **Think** About...

Use multiple text features to locate information. How do the diagram and caption help you understand the different clouds?

Text Structure



You can tell different kinds of clouds apart by their shape and by how high they are in the sky. The sky often contains a mix of the ten types of clouds.

Today, the World Meteorological Organization (WMO), an agency of the United Nations located in Switzerland, is the authority on clouds and weather. The WMO still uses these ten basic names.

As news of his cloud-naming system spread, scientists asked him to give speeches about weather. Luke's weather observations were published in 1818 in two book volumes called *The Climate of London*. *Seven Lectures on Meteorology*, his textbook about the science of meteorology, was published in 1837.

Many people admired and praised Luke, but he always tried to be a good Quaker and stay humble.

Luke and Mariabella had a long marriage, and he enjoyed spending time with their eight children. Two of his sons worked in his chemist shop when they grew up. Luke's sister, Elizabeth, said that in his later years, he was "always having some of his children and grandchildren with him."



Even as a very old man, Luke loved to watch the sky. By the time he died on March 21, 1864, at the age of ninety-one, he and his cloud-naming system were famous around the world.

Let's **Think** About...

What information did the author provide about Luke's life and character? How would you describe Luke Howard?

Summarize