

# Comprehension

## Genre

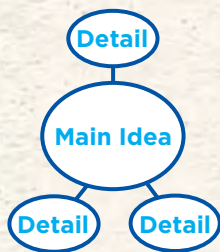
A **Biography** is a story about the life of a real person written by someone else.



## Evaluate

### Summarize

As you read, fill in your Main Idea Web.



## Read to Find Out

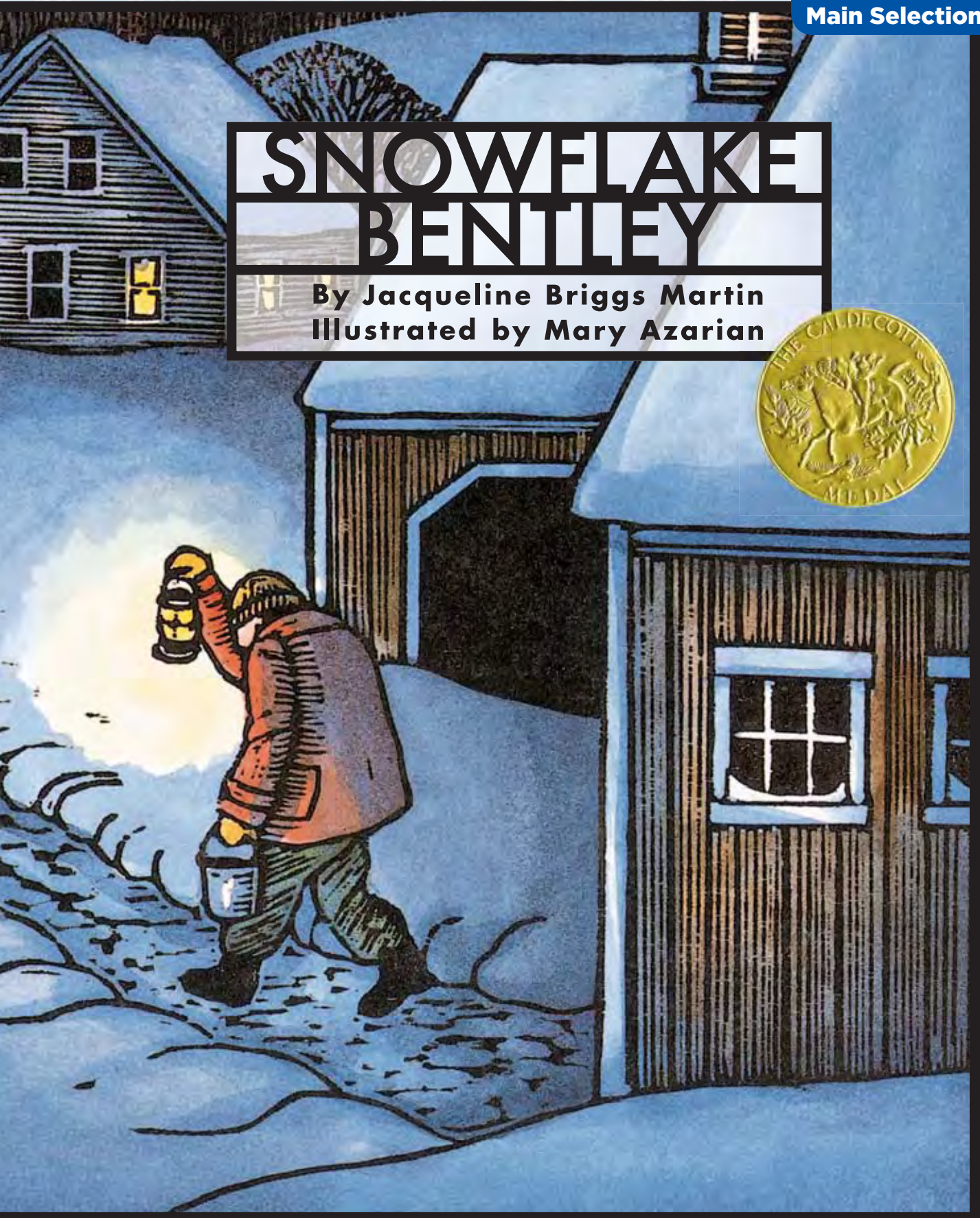
What did the world give to Snowflake Bentley, and what did he give to the world?





# SNOWFLAKE BENTLEY

By Jacqueline Briggs Martin  
Illustrated by Mary Azarian





Wilson Bentley was born February 9, 1865, on a farm in Jericho, Vermont, between Lake Champlain and Mount Mansfield, in the heart of the “snowbelt,” where the annual snowfall is about 120 inches.



In the days when farmers worked with ox and sled and cut the dark with lantern light, there lived a boy who loved snow more than anything else in the world.

Willie Bentley's happiest days were snowstorm days. He watched snowflakes fall on his mittens, on the dried grass of Vermont farm fields, on the dark metal handle of the barn door. He said snow was as beautiful as butterflies, or apple blossoms.





Willie's mother was his teacher until he was fourteen years old. He attended school for only a few years. "She had a set of encyclopedias," Willie said. "I read them all."

He could net butterflies and show them to his older brother, Charlie. He could pick apple blossoms and take them to his mother. But he could not share snowflakes because he could not save them.

From his boyhood on he studied all forms of moisture. He kept a record of the weather and did many experiments with raindrops.



When his mother gave him an old **microscope**, he used it to look at flowers, raindrops, and blades of grass. Best of all, he used it to look at snow.

While other children built forts and pelted snowballs at roosting crows, Willie was catching single snowflakes. Day after stormy day he studied the icy crystals.





He learned that most crystals had six branches (though a few had three). For each snowflake the six branches were alike. "I found that snowflakes were masterpieces of design," he said. "No one design was ever repeated. When a snowflake melted . . . just that much beauty was gone, without leaving any record behind."

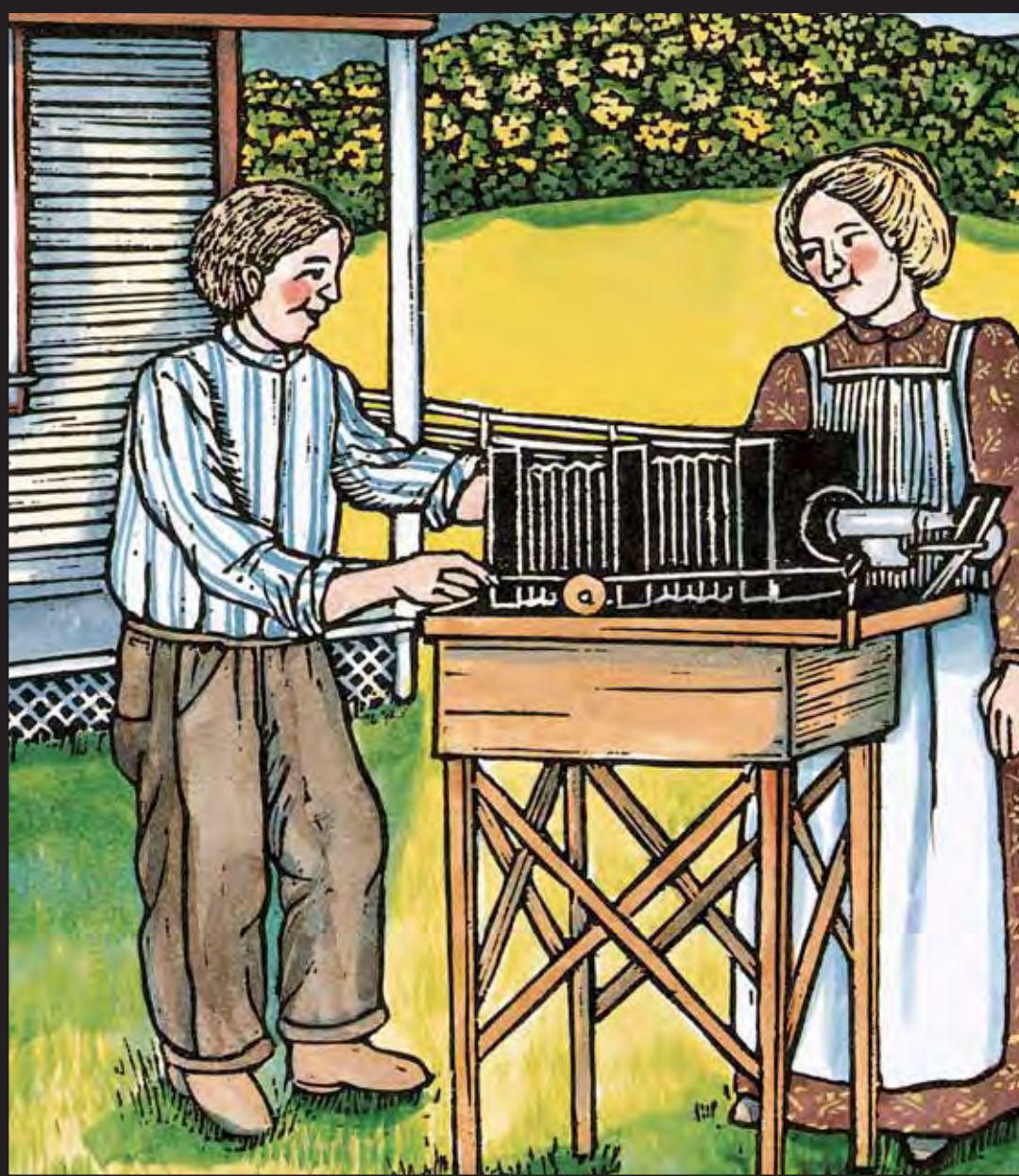
Starting at age fifteen he drew a hundred snow crystals each winter for three winters.

Their intricate patterns were even more beautiful than he had imagined. He expected to find whole flakes that were the same, that were copies of each other. But he never did.

Willie decided he must find a way to save snowflakes so others could see their wonderful designs. For three winters he tried drawing snow crystals. They always melted before he could finish.



The camera made images on large glass **negatives**. Its microscope could **magnify** a tiny crystal from sixty-four to 3,600 times its actual size.

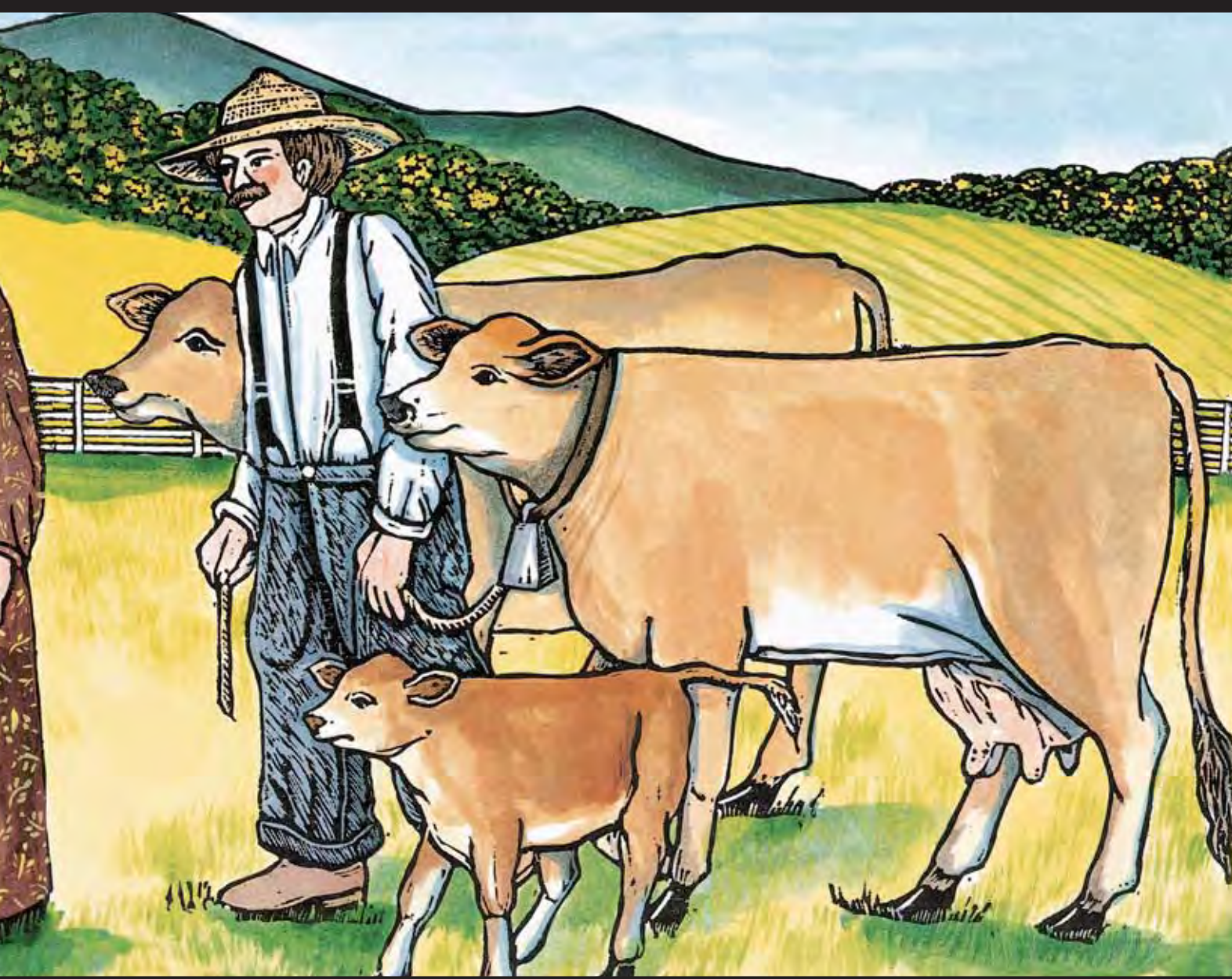


When he was sixteen, Willie read of a camera with its own microscope. "If I had that camera I could photograph snowflakes," he told his mother.

Willie's mother knew he would not be happy until he could share what he had seen.

"Fussing with snow is just **foolishness**," his father said. Still, he loved his son.





When Willie was seventeen his parents spent their savings and bought the camera.

It was taller than a newborn calf, and cost as much as his father's herd of ten cows. Willie was sure it was the best of all cameras.

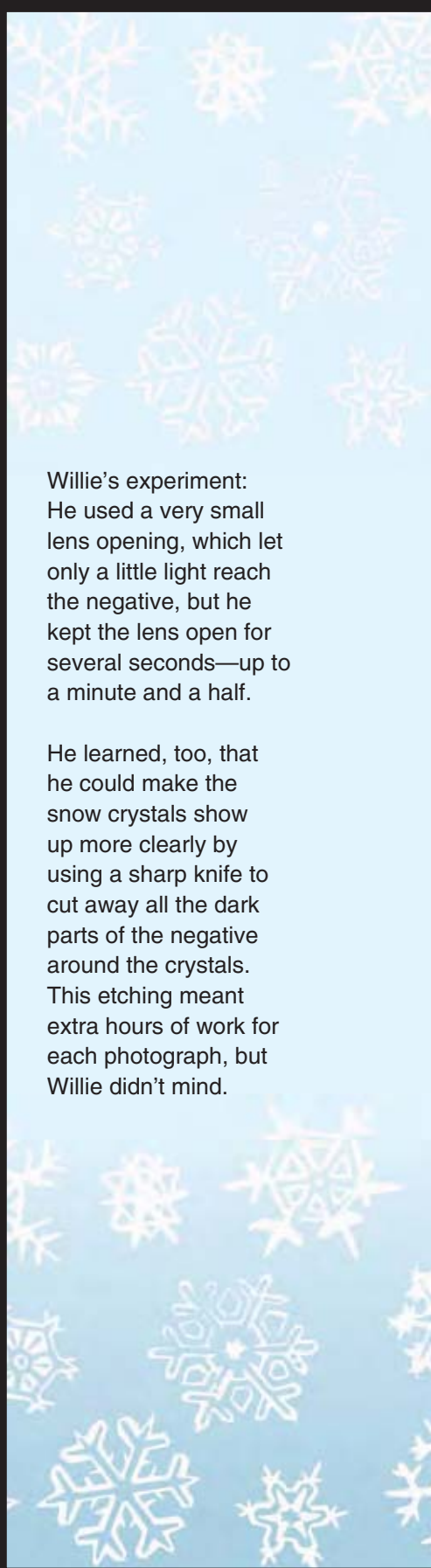




Even so his first pictures were failures—no better than shadows. Yet he would not quit. Mistake by mistake, snowflake by snowflake, Willie worked through every storm.

Winter ended, the snow melted, and he had no good pictures.





Willie's experiment:  
He used a very small lens opening, which let only a little light reach the negative, but he kept the lens open for several seconds—up to a minute and a half.

He learned, too, that he could make the snow crystals show up more clearly by using a sharp knife to cut away all the dark parts of the negative around the crystals. This etching meant extra hours of work for each photograph, but Willie didn't mind.

He waited for another season of snow. One day, in the second winter, he tried a new experiment. And it worked!

Willie had figured out how to photograph snowflakes! "Now everyone can see the great beauty in a tiny crystal," he said.



The best snowstorm of his life occurred on Valentine's Day in 1928. He made over a hundred photographs during the two-day storm. He called the storm a gift from King Winter.



But in those days no one cared. Neighbors laughed at the idea of photographing snow.

“Snow in Vermont is as common as dirt,” they said. “We don’t need pictures.”

Willie said the photographs would be his gift to the world.

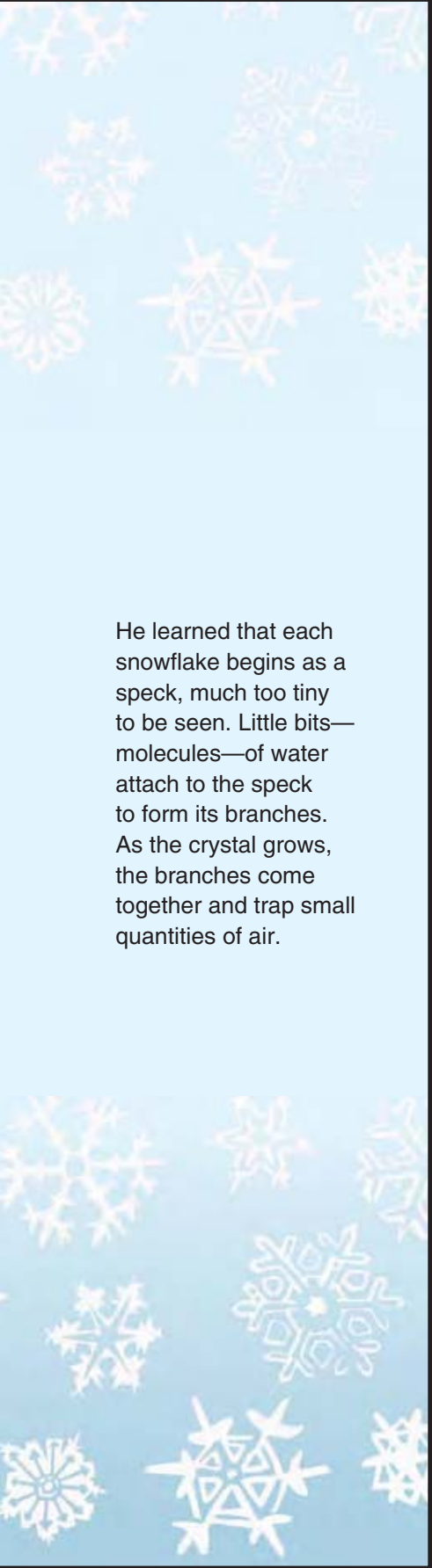




While other farmers sat by the fire or rode to town with horse and sleigh, Willie studied snowstorms. He stood at the shed door and held out a black tray to catch the flakes.

When he found only jumbled, broken crystals, he brushed the tray clean with a turkey feather and held it out again.





He learned that each snowflake begins as a speck, much too tiny to be seen. Little bits—molecules—of water attach to the speck to form its branches. As the crystal grows, the branches come together and trap small quantities of air.

He waited hours for just the right crystal and didn't notice the cold.

If the shed were warm the snow would melt. If he breathed on the black tray the snow would melt. If he twitched a muscle as he held the snow crystal on the long wooden pick the snowflake would break. He had to work fast or the snowflake would **evaporate** before he could slide it into place and take its picture. Some winters he was able to make only a few dozen good pictures.

Some winters he made hundreds.



### Summarize

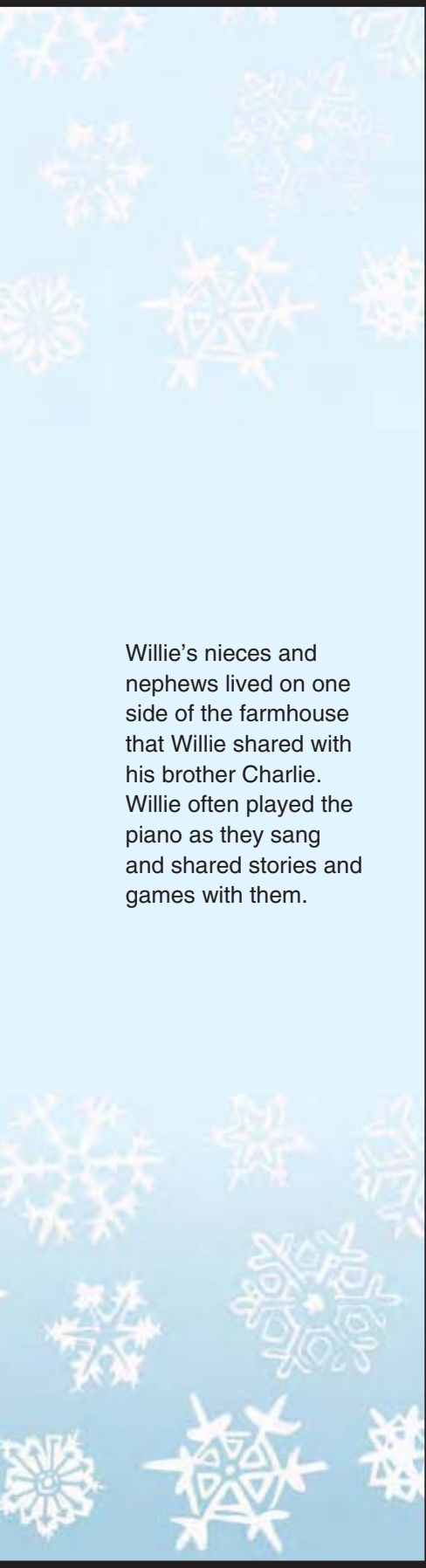
Summarize how Willie would capture and photograph snow crystals. Include only important information.





Many things affect the way these crystal branches grow. A little more cold, a bit less wind, or a bit more moisture will mean different-shaped branches. Willie said that was why, in all his pictures, he never found two snowflakes alike.





Willie's nieces and nephews lived on one side of the farmhouse that Willie shared with his brother Charlie. Willie often played the piano as they sang and shared stories and games with them.

Willie so loved the beauty of nature he took pictures in all seasons.

In the summer his nieces and nephews rubbed coat hangers with sticky pitch from spruce trees. Then Willie could use them to pick up spider webs jeweled with water drops and take their pictures.

On fall nights he would gently tie a grasshopper to a flower so he could find it in the morning and photograph the dew-covered insect.



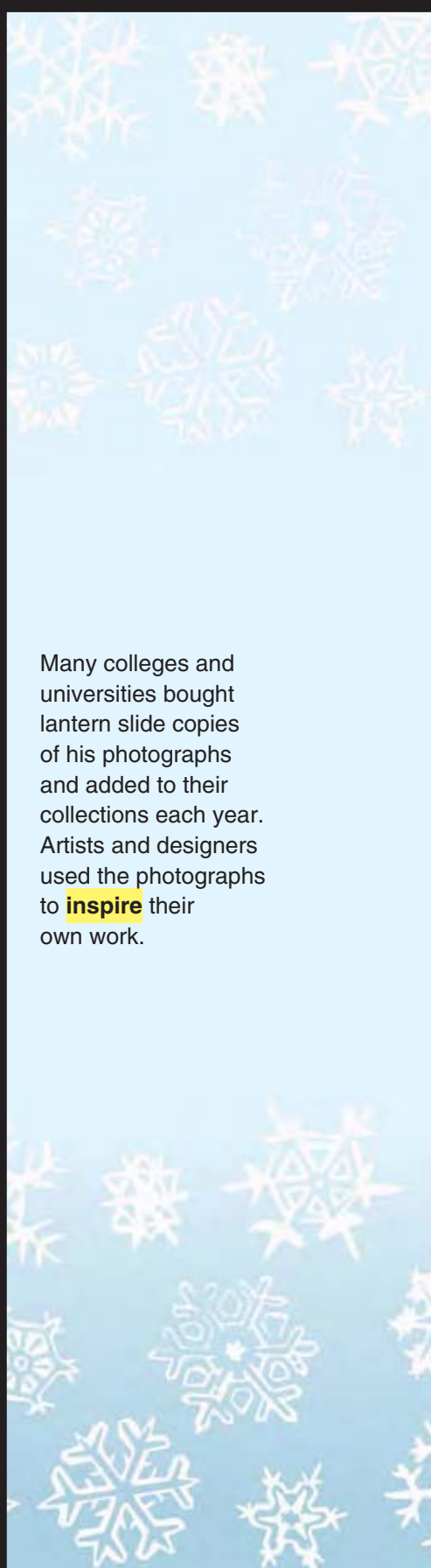






But his snow crystal pictures were always his favorites. He gave copies away or sold them for a few cents. He made special pictures as gifts for birthdays.





Many colleges and universities bought lantern slide copies of his photographs and added to their collections each year. Artists and designers used the photographs to **inspire** their own work.

He held evening slide shows on the lawns of his friends. Children and adults sat on the grass and watched while Willie projected his slides onto a sheet hung over a clothesline.



Even today, those who want to learn about snow crystals begin with Wilson Bentley's book, *Snow Crystals*.

By 1926 he had spent \$15,000 on his work and received \$4,000 from the sale of photographs and slides.



He wrote about snow and published his pictures in magazines. He gave speeches about snow to faraway scholars and neighborhood skywatchers. “You are doing great work,” said a professor from Wisconsin.

The little farmer came to be known as the world’s expert on snow, “the Snowflake Man.” But he never grew rich. He spent every penny on his pictures.

Willie said there were treasures in snow. “I can’t afford to miss a single snowstorm,” he told a friend. “I never know when I will find some wonderful prize.”

Other scientists raised money so Willie could gather his best photographs in a book. When he was sixty-six years old Willie’s book—his gift to the world—was published. Still, he was not ready to quit.

Less than a month after turning the first page on his book, Willie walked six miles home in a **blizzard** to make more pictures. He became ill with pneumonia after that walk and died two weeks later.



The plaque on the monument says

“SNOWFLAKE”  
BENTLEY

Jericho’s world famous  
snowflake authority

For fifty years Wilson A. Bentley, a simple farmer, developed his **technique** of micro-photography to reveal to the world the grandeur and mystery of the snowflake—its universal hexagonal shape and its infinite number of lovely designs.

A monument was built for Willie in the center of town. The girls and boys who had been his neighbors grew up and told their sons and daughters the story of the man who loved snow. Forty years after Wilson Bentley’s death, children in his village worked to set up a museum in honor of the farmer-scientist.

And his book has taken the delicate snow crystals that once blew across Vermont, past mountains, over the earth. Neighbors and strangers have come to know of the icy wonders that land on their own mittens—thanks to Snowflake Bentley.



### Summarize

Summarize how Snowflake Bentley lived his life.





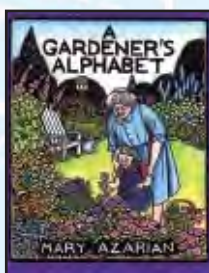


# SNAPSHOTS OF JACQUELINE AND MARY



Jacqueline Briggs Martin began to write this story after she saw a snowflake and thought about an article she had read about a man who loved snow. Jacqueline saw lots of snow when she was growing up. She lived on a farm in Maine, where she enjoyed nature, stories, and history.

Other books illustrated by Mary Azarian



Mary Azarian has also seen a lot of snow. Just like Wilson Bentley, she lives on a farm in Vermont. Mary used her experiences on the farm to create her woodcut illustrations.



Find out more about Jacqueline Briggs Martin and Mary Azarian at [www.macmillanmh.com](http://www.macmillanmh.com)

## Author's Purpose

Why did Jacqueline Briggs Martin write *Snowflake Bentley*? Was her purpose for writing this biographical piece to explain, inform, entertain, or persuade? How do you know?



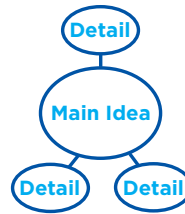


## Comprehension Check



### Summarize

Use your Main Idea Web to summarize *Snowflake Bentley*. Remember to include only the most important information in your summary.



### Think and Compare



1. Why did Wilson Bentley choose to make snowflake photography his life's work? **Evaluate: Summarize**
2. Look back at page 384 of *Snowflake Bentley*. Why did Wilson Bentley's father say that his son's hobby was "**foolishness**"? **Analyze**
3. If you could spend your life studying one thing in nature, what would it be? Explain your answer. **Synthesize**
4. Why is it important to study the world—even at the microscopic level? **Evaluate**
5. Compare the information in the main body text with the information in the sidebar text from *Snowflake Bentley*. How is the information different? How is it similar? Use details from both the main body text and the sidebar text in your answer. **Reading/Writing Across Texts**

