

"You must wonder! You must watch closely; then you will see and know for yourself," said Maria Mitchell's father, standing beside his little daughter on the roof of his Nantucket house and looking with her at the stars. These words became Maria's guide throughout her life.

And what better place to wonder and to see than on this island thirty miles off the coast of Massachusetts. In the 1830s Nantucket was the greatest whaling port in the world. Sometimes from the roof of her home Maria could see the sails of ninety ships—little ships that had ridden out wild storms, proud ships ready to go to the "other side of land" in quest of great whales to provide oil for the lamps of the new world. Often, too, as she sat quietly by the chimney, Maria heard her elders tell tragic tales of long, fruitless voyages, of violent storms and lives lost, of ships lying becalmed, of strange lands and faraway peoples.

Always the sky was part of these stories, for every ship coming back to its island home was guided by the stars. Every dark-edged cloud warned of storms and delays. Children and men and women all studied the heavens.

Maria Mitchell's father did not go to sea. He taught school, and he loved to watch the stars. From her earliest years, Maria climbed with him at night to the roof of their house where, together, they watched the moon rise. They plotted the courses of the stars, and Maria filled her notebook with figures and charts and observations. She never forgot the day of February 19, 1831, when she and her father ticked off the seconds as the world grew darker and quieter and seemed almost to stop for a moment. It was the beginning of an eclipse of the sun.

For all her interest in astronomy and mathematics, Maria's life was much like that of other Quaker girls on the island. She had eight brothers and sisters and a mother and father who loved her and expected her obedience. There were dishes to wash and other chores to be done. There were small brothers and sisters always asking for stories. And there were lessons to study. Maria had trouble making herself memorize long lessons, but she loved to read and her mother had filled the house with books from her days as a librarian. Always Maria asked questions. Always she sought answers.

Maria kept her collections of flowers and stones and driftwood in the attic of the big square house where the Mitchell family lived. The attic was a favorite place of all the children. There was the wonderful smell of apples and onions and fish and beef, all drying on strings from the rafters. In one corner was Grandfather Coleman's sea chest, with the fascinating log of his adventures.

These Quaker children had no radio or television, nor any other entertainment except that which they made for themselves. There were no carnivals; for even when the minstrel show came to Nantucket, Quakers were not allowed to go. The Quakers did not celebrate Christmas either, though they always shared with those who had less. At night the nine children crawled into three four-poster beds to keep warm. A fire was not lighted in the fireplace unless someone was ill, for that would have been an extravagance. As Maria grew older, this Quaker discipline carried over into her study of mathematics, into her accuracy in observing and recording and evaluating. Astronomy was based on mathematics, not just

on stargazing. During the day and on cloudy nights Maria spread out her compass and her rulers and worked at geometry and trigonometry. The Reverend Cyrus Pierce was her teacher now, and he insisted that everything be absolutely precise.

Then came the day when Maria was seventeen and advertised her own school. White and black children, rich and poor, came to learn from the young woman with the inquiring mind. The new teacher told them, "Learn to observe. The eye learns to see. Open yours wide to nature's revelations. Watch after sunset . . . watch before dawn."

Years later her eyes, which had been taught to see, were the first to discover the comet of 1847, later named the Maria Mitchell Comet. This was her first contribution to astronomy, and for it the king of Denmark awarded her a gold medal. Famous astronomers and other scientists came to see her at Nantucket, where she had become head of the

Atheneum, the island's library.

Later Maria taught at Vassar College and served as director of the Vassar College Observatory. She taught hundreds of young women to open their eyes, to love ideas and the order of nature, to question and observe, and always to wonder. She was the first woman member of the American Academy of Arts and Sciences and of the American Association for the Advancement of Science.

But Maria Mitchell was interested in more than science. She served as president of the Association for the Advancement of Women and worked to better the position of women in education, especially in the sciences. Only now are some of her ideals becoming reality. Education is open to all women, and women are accepted in all the sciences. The little girl who stood on the roof of her father's Nantucket house looking at the stars left a rich heritage of achievement to the questioning minds of children everywhere.

## CHECK YOUR READING

- 1. Maria Mitchell's father encouraged her to**
  - A mind her manners
  - B think for herself
  - C be kind to animals
- 2. From the roof of her home Maria could see**
  - A fields of grain
  - B dense forests
  - C the sails of many ships
- 3. As a child, Maria heard many stories about**
  - A long voyages at sea
  - B Indian attacks on early settlers
  - C the Boston tea party
- 4. The people of Nantucket often studied the sky because most of the men were**
  - A pilots
  - B farmers
  - C whalers
- 5. One day that Maria never forgot was the day she watched**
  - A an eclipse of the sun
  - B the rescue of a ship at sea
  - C her brother go off to sea
- 6. Maria did not like to**
  - A read
  - B memorize lessons
  - C tell her brothers and sisters stories
- 7. To be a good astronomer, Maria had to be a good student of**
  - A geography
  - B reading
  - C mathematics
- 8. When she was seventeen, Maria**
  - A went to college
  - B started her own school
  - C got married
- 9. The king of Denmark gave Maria a medal in recognition of her**
  - A teaching at Vassar
  - B discovery of a comet
  - C work for women's rights
- 10. Maria Mitchell helped women to achieve**
  - A better education
  - B equal pay
  - C the right to vote

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