

Pages for All Ages: Careful Study

Some words and phrases to know before you read

- microscope
- surgery
- monarchy
- natural sciences
- distortion
- lenses
- stammer
- dissect
- university
- possess
- perseverance
- smallpox
- depressed
- encourage
- research partners
- experiments
- wound
- procure
- germ
- infected, infection

Joseph Jackson Lister and Joseph Lister were a father and son who each used basic science to help humanity. Joseph Jackson Lister invented a microscope that helped people see tiny things clearly. His son, Joseph Lister, discovered ways for doctors to make surgery safer.

The Lister family had been Quaker ever since Joseph Jackson's great-grandfather joined the faith around 1705. During the 1700s, Quakers set up their own schools for their children. They did not want their children attending the English public schools, where they would learn mostly about ancient Greeks, ancient Romans, and the English monarchy. The Quakers wanted their children to learn about the natural sciences and mathematics. They thought that nature gives us a peek straight into the mind of God.

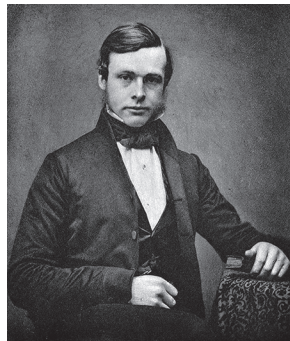
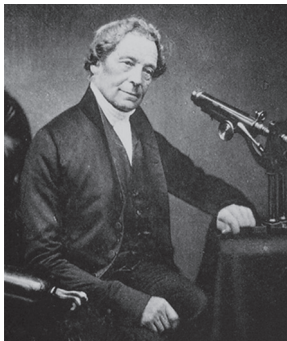
Joseph Jackson was born in 1786. All his life, he loved learning about nature. He loved tinkering with gadgets, too. When he became an adult, whenever he had free time, he would bring home plants and animals to study. Often, he studied them with a microscope. Back in the

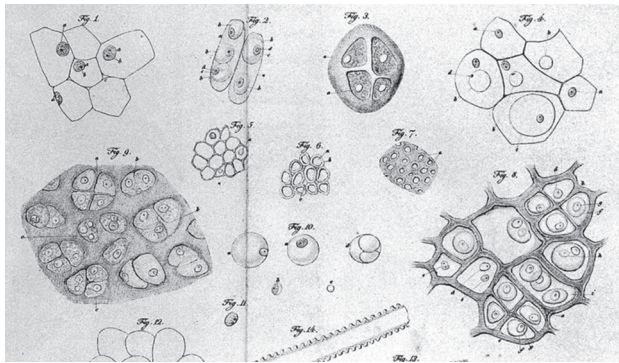
early 1800s, most people thought that a microscope was just a toy. It let a person look at things *very* close-up, but it added in some weird colors and distortions. Back then, nobody used microscopes for serious work. Joseph Jackson Lister had some ideas about fixing the problems with microscopes. He knew about lenses, he knew about gadgets, and he worked on the problem of the microscope for thirty years until he fixed it. His answer was to stick two lenses together. The two lenses had opposite problems, but together, they worked almost perfectly.

In 1818, Joseph Jackson married Isabella Harris, who was also a Quaker. They had six children: Mary, John, Isabella Sophia, Joseph, William Henry, and Arthur Hugh. The Lister children grew up in a home filled with love for nature and science. Joseph was born in 1827, when his father was just starting to become famous for his work with microscopes. Joseph Jackson won a national award for that work when Joseph was five.

As a child, Joseph spoke with a stammer. So, his parents didn't send him to school until he was eleven. He studied at home. The family lived in the countryside near a river, and Joseph could easily go out and catch small animals and fish. He would dissect the creatures and study them under his father's microscope.

Joseph started attending Quaker schools when he was eleven. When he was sixteen and ready for university, it was good that he had already decided to become a surgeon. Most universities in England didn't admit Quakers. But Quakers were allowed to attend the





University College London Medical School, and that's where Joseph went.

Joseph worked hard and won many prizes. He knew that hard work was his best ability. In a letter to his father, he wrote, "I am honest and a lover of truth, which is perhaps as important as anything. As to brilliant talent, I know I do not possess it, but I must try to make up as far as I can by perseverance."

Joseph's older brother, John, died of smallpox when Joseph was nineteen. The next year, Joseph caught smallpox, too. He recovered from the disease quickly, but it left him depressed, and he quit university. His father was still feeling terribly sad about John's death, and he started writing letters to Joseph to encourage both of them. He wrote, "Cherish a pious cheerful spirit, open to see and to enjoy the bounties and the beauties spread around us." After resting for a year, Joseph recovered his mental strength and returned to university. For the rest of his life, he carried a deep tenderness for human suffering.

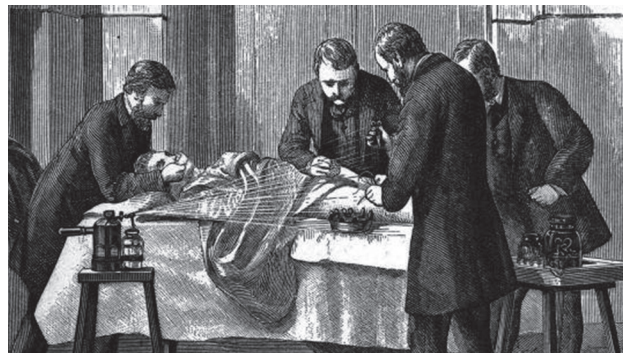
After graduating from university, Joseph decided to begin his work as a surgeon in Scotland. People in England treated surgeons like butchers. People in Scotland treated surgeons like scientists. Scotland would give a researcher like Joseph Lister a good start.

Joseph's first job was with James Syme, one of the best surgeons in the world. Right after he got that job, Joseph fell in love with Syme's daughter Agnes. They married in 1856. They never had children. Instead, they were research partners for more than thirty years. They built a research laboratory in their home and worked on experiments together.

Early in his medical career, Joseph Lister and another doctor were looking at a wound that was healing nicely. Joseph said, "The main object of my life is to find out how to procure this result in all wounds." At that time, most people who died from surgery died because their wounds got infected. Joseph Lister was looking for an answer. One day, he heard that Louis Pasteur had proven that a germ can float through the air, land on a cup of milk, and make the milk go bad. Here was the answer! Wounds got infected because germs got into them.

Back in the early 1800s, doctors didn't even wash their hands between surgeries. People thought infections came from "bad air." Joseph Lister spent the next thirty years figuring out practical ways for doctors to keep germs away from wounds. He also spent nearly thirty years arguing with people who didn't understand that surgery needs to be clean.

Joseph Jackson Lister died in 1869 at the age of 83. Joseph Lister died in 1912 at the age of 84.



- Have you ever had trouble getting people to believe you?
- How can you help someone keep going when they want to give up?
- How is knowing something different from believing something?

Photos on page 16 are of Joseph Jackson Lister (left) and Joseph Lister (right). Drawings of cells on page 17 were made possible by Joseph Jackson Lister's microscope and are from Schwann's Mikroskopie (1839). Drawing of antiseptic surgery is from William Watson Cheyne's 1882 book on the subject. The tiny pictures around the page are human ova. All images are in the public domain.

