Science starts with observation. Scientists observe, or look at, the world. By observing the world, they can identify facts about it. A famous scientist once said, "Science is built up with facts, as a house is with stones. But a collection of facts is no more a science than a pile of stones is a house."

So scientists do more than identify facts. They use logic to explain the facts they have observed. The explanations scientists develop based on these facts are called **theories**.

Theories are not accepted on faith. They must be tested to see if they are true. Scientists design experiments to test their theories. If the experiments keep showing that the theory makes sense, the theory is kept. If the experiments do not support the theory, scientists try a new theory. In this way, scientists learn more about the world.

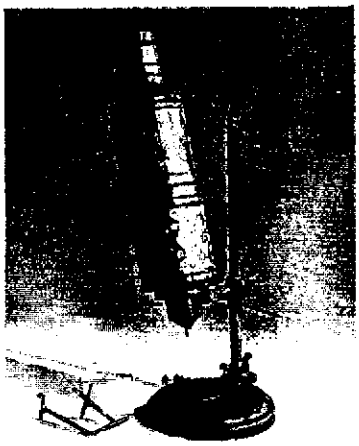
Reading Check
Find Main Ideas
What was the Scientific Revolution?

As you can see, scientific knowledge is based on observations, facts, and logical ideas, or theories, about them. Before the Scientific Revolution, this method of gaining knowledge was uncommon.

New Inventions

During the Scientific Revolution, scientists invented new and better instruments. These helped them study the natural world.

Around 1590, a Dutch lens maker named Zacharias Janssen invented a simple microscope. The first person to use a microscope as a scientific instrument, though, was the Dutch scientist Antoni van Leeuwenhoek (LAY-ven-hook) in the mid-1600s. Examining a drop of pond water with his microscope, he saw tiny plants and animals not visible to the naked eye.



This early microscope was made around 1675. The lens is protected by cardboard and leather and slides up and down.

In 1593, Galileo invented the thermometer. Thermometers are used to measure temperature. About 50 years later, an Italian doctor developed a more accurate model than Galileo's.

The telescope was probably invented by a Dutch lens maker in 1608. The next year, Galileo built a much-improved telescope that he used to make his important astronomical discoveries.

In 1643, the Italian scientist Evangelista Torricelli invented the **barometer**. A barometer is a scientific instrument that measures air pressure. Barometers are used to help forecast the weather.