People have been fascinated by the Whirlpool Galaxy since it was first observed in the eighteenth century. French astronomer Charles Messier (may-see-YAY) was particularly interested in comets. He discovered thirteen of them during his studies of the deep sky. Yet, Messier is perhaps best known for his series of catalogs of all the objects he observed in the sky. He wanted to help other astronomers tell the difference between objects in the sky that were permanent and those that were only temporary. So in 1773 when he observed a glowing blob that did not look like any object he had seen before, he entered it into his catalog as Messier 51, or just M51.

Messier had just found the Whirlpool Galaxy using a small three-and-a-half-foot telescope. He wrote in his notes, “very faint nebula, without stars.” A nebula is a cloud of gas and dust. He noted that the object was difficult to see even with a telescope.

More than seventy years later, another astronomer made notes about what he observed when he, too, spotted the Whirlpool Galaxy. This time, it was an Irish astronomer, Lord Rosse, who used a six-foot telescope, the largest one at that time. Because Rosse’s telescope was more advanced, he was able to observe M51 in more detail. Rosse determined it was a spiral-shaped object, so he called it a “spiral nebula.” He recorded his observations and drew a careful, accurate sketch of it. During their times, neither astronomer probably imagined that the object they observed was something much bigger than a nebula.

It wasn’t until the twentieth century that astronomers had the tools to find out that objects like M51 are whole galaxies with innumerable stars.
A photograph of the Whirlpool Galaxy taken by the Hubble Space Telescope.

M51 is a spiral galaxy and is now called the Whirlpool Galaxy because it looks like a whirlpool of light. By the end of the twentieth century, telescopes had become advanced enough that astronomers could examine close-up photographs taken of the Whirlpool Galaxy.

The Hubble Space Telescope (HST) was carried into orbit by a space shuttle in 1990 and remains in operation. Aboard the HST is the Advanced Camera for Surveys, which first photographed the Whirlpool Galaxy in 2005. In the photographs, dense dust clouds and spiral arms look pink. These pink arms are where stars are formed. They create clusters of new stars. These are visible in bright blue along the outer edge of the spiral. The photographs also show structure in the gas clouds. Streams of dust extend from the spiral arms.

The space telescopes used today are much better than the ones used by Messier and Lord Rosse. The earliest telescopes used glass lenses to magnify objects in the sky. Later telescopes incorporated curved mirrors to improve the image. Today’s space telescopes feature sophisticated technology for taking photographs. Light enters the 43.5-foot-long HST where it is reflected by a series of high-tech mirrors. The equipment aboard the Hubble interprets the light and creates amazing images.

In addition, space telescopes have a better vantage point. Pollution can make it harder to view astronomical objects from Earth. Also, Earth’s atmosphere absorbs much of the ultraviolet and infrared light. This makes images less clear. Space telescopes are not hampered by these factors, so they get a clearer view of everything.

In the future, a new space telescope may be beaming even more incredible images back to Earth.

DID YOU KNOW?
Astronomers think that the spiral shape of the Whirlpool Galaxy could have been caused by contact with a nearby galaxy.