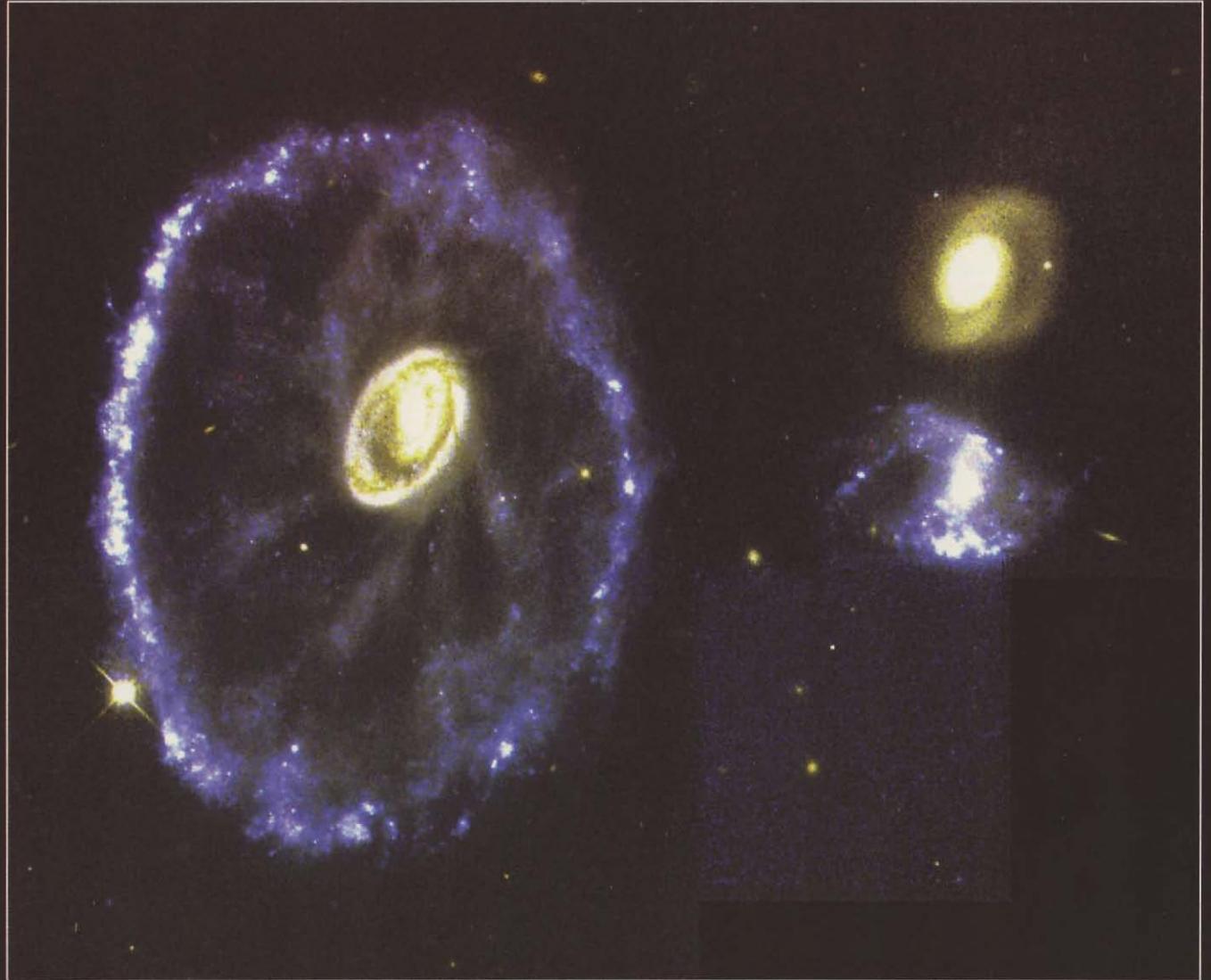
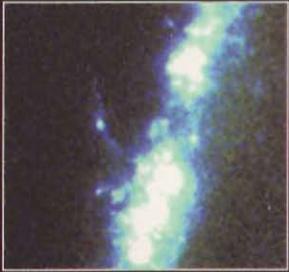


# Cartwheel Galaxy



## Cartwheel Galaxy

This image shows the results of a rare and spectacular head-on collision between two galaxies. The bright blue ring around the galaxy reveals billions of new stars born because of the collision.

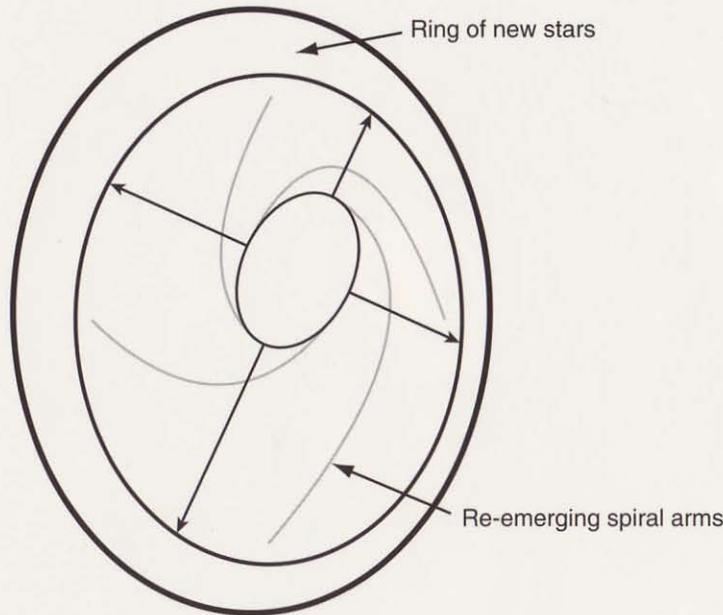
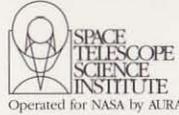
## Galaxies

A *galaxy* is a giant assembly of gas, dust and millions or billions of stars. The Cartwheel Galaxy was once a normal galaxy similar to our home galaxy, the Milky Way, with pinwheel-like spiral arms winding outward from the galaxy's center. The Cartwheel's spiral structure is beginning to reemerge as seen in the faint arms extending out from the bull's eye core to the outer ring. Some galaxies are found in great clusters, with dozens or even thousands of members that gravitationally jostle each other.

## Colliding Galaxies

Galaxies travel through space at speeds approaching two million miles per hour. In clusters, the member galaxies are relatively close together. Inevitably, collisions occur. In the Cartwheel Galaxy, a smaller intruder galaxy, possibly one of the two galaxies on the right side of the image, careened through the galaxy's core. Like a rock tossed into a lake, the collision sent a ripple of energy into space, plowing gas and dust in front of it at 200,000 miles per hour. The great energy wave heated and compressed the galaxy's dust and gas, producing an expanding ring of several billion new stars. This is an unusual opportunity to study new stars, because that many stars would ordinarily take much longer to form.

# Cartwheel Galaxy



## About the Image

The Cartwheel Galaxy was photographed by the Wide Field & Planetary Camera 2 on board NASA's Hubble Space Telescope on October 16, 1994. The image is a combination of exposures, a 60-minute exposure in blue light and a 30-minute exposure in *near-infrared* light. The ring is so large (150,000 light years across), our entire Galaxy could fit inside. The detail (front, top left) shows the ring's knot-like structure produced by large clusters of star formation. The view of the galaxy's core (front, bottom left) shows a tremendous amount of dust with bright pinpoints of light from stars forming in giant clusters.

## Definitions

**Cluster of Galaxies:** a collection of galaxies containing a few to several thousand members.

**Galaxy:** a large assembly of gas, dust and millions or billions of stars; seen in different shapes including pinwheel-shaped spirals, smooth round ellipticals, and irregulars having neither spiral arms nor round shape.

**Light Year:** the distance light travels in a year ( $6 \times 10^{12}$  or 5 trillion 900 billion miles).

**Near-infrared:** electromagnetic radiation (light energy) of longer wavelengths than visible light; infrared radiation (heat energy) reveals clouds of dust and gas where stars are born.

## Fast Facts

### Age

The ring resulted from a collision that probably occurred 200 million years ago.

### Location

The galaxy is in the southern hemisphere constellation Sculptor.

### Distance from Earth

500 million light years

### Size

150,000 light years across

## Electronic Addresses

You can get images and other information about the Hubble Space Telescope using the Internet.

Using ftp or gopher, connect to [ftp.stsci.edu](ftp://ftp.stsci.edu) and find files and directories in /pubinfo.

Using the World Wide Web (Mosaic, NetScape, Lynx, and other browsers), use URL <http://www.stsci.edu/public.html> and follow links from there.