



THE STAR★WITNESS



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Special Feature

Hubble Reveals Orion in Picture-Perfect Glory

By NASA's Amazing Space reporters
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IMAGINE visiting a hospital to see thousands of babies being born at the same time. The weight of these newborns ranges from a few pounds to a ton (2,000 pounds). Does this story seem possible? The story may not be possible for babies, but it is an ordinary event for stars.

In fact, the Hubble Space Telescope is giving us the clearest view yet of a turbulent star-forming region where more than 3,000 stars are being born. The region, called the Orion Nebula, is the closest stellar nursery to Earth.

What's in a name?

It is called "Orion" for its location and "Nebula" because it is a cloud of gas and dust. The nebula resides along a spiral arm of the Milky Way, in the middle of the sword region of the

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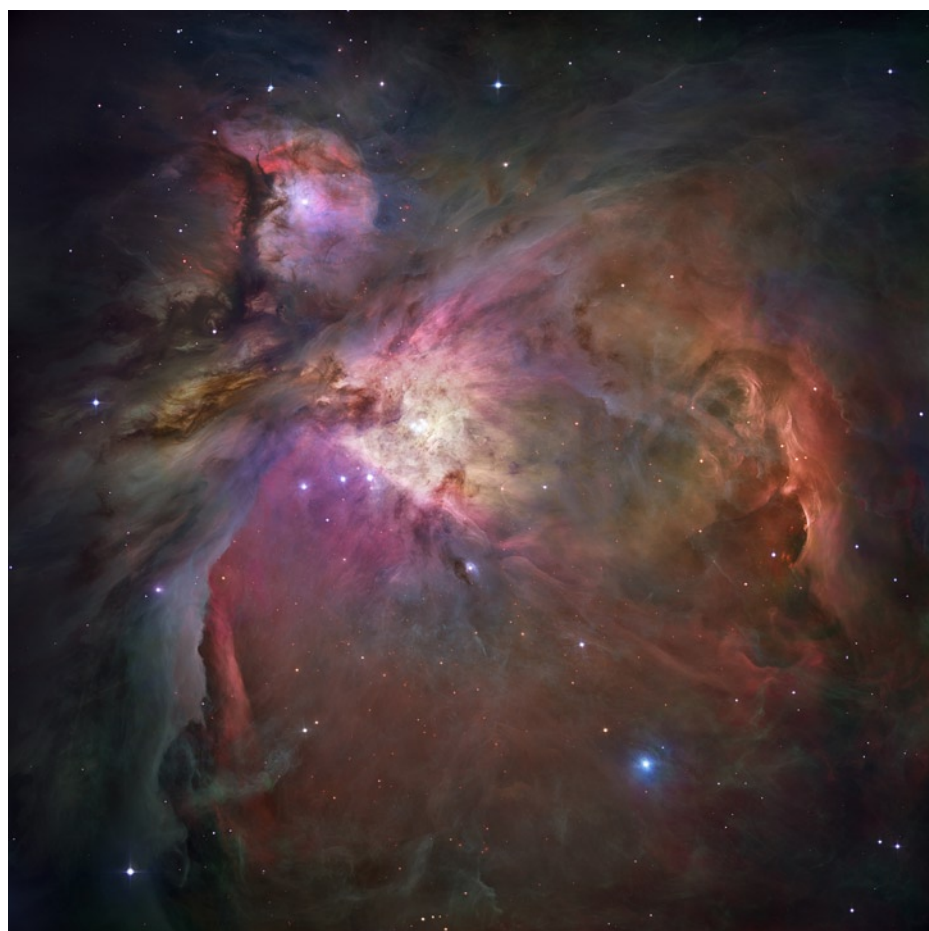


IMAGE: NASA, ESA, and M. Robberto (STScI)

Orion Nebula: See page 3 for details.

constellation Orion, the Hunter. Constellations are imaginary pictures in the sky that ancient civilizations created. By linking together the brightest stars that appear close to each other, they formed geometric patterns that represented features of gods, heroes, animals, and mythological creatures. Often, ancient people created myths or stories about why these creatures appear in the sky. The constellation tales not only provided amusement but also helped the ancient astronomers remember the positions of the stars. Orion is one of the constellations that can be seen in the Northern Hemisphere's winter sky.

Many pictures tell a story

Orion, like the Grand Canyon, is so vast that many of its details cannot be captured in a single picture. Astronomers, therefore, used multiple images from Hubble and ground-based telescopes to see Orion's dramatic landscape of glowing gas and dark dust. The images provide clues to the nebula's formation and history.

A perfect star-birth laboratory

Orion is a perfect laboratory for studying the birth of stars because it is so close to Earth. In this crisp image (see p. 3), astronomers are discovering a never-before-seen tapestry of star formation. As many as 3,000 stars of various sizes can be seen here. The image shows a typical star-forming region. Our own Sun was probably born in a cloud like this one, 4.5 billion years ago.

Why study the Orion Nebula?

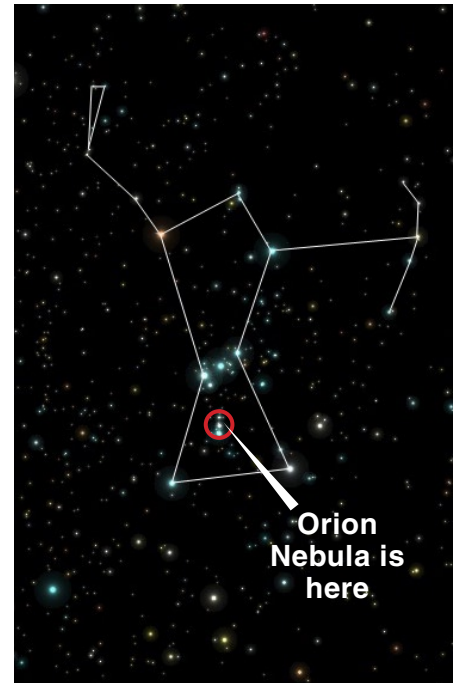
Astronomers study star-forming regions to learn how stars are born and how they change over time. Each star in Orion tells a story and adds to a fuller picture of star formation.

In stellar nurseries, many stars often form in the same cloud of gas and dust. The biggest stars begin producing light before the smaller stars. This means that the energy released by the biggest stars can affect the smaller, still-forming stars that are near the big stars.

In the case of the Orion Nebula, the big stars in the center have pushed out most of the dust and gas in which they formed, carving a cavity on the surface of the dark cloud. The cavity gives astronomers a clear view of this crowded star-forming region.

By studying this star-studded region, astronomers may be able to answer many puzzling questions, such as why Orion has such a wide range of star sizes and how the largest stars affect the growth of smaller ones. ★

SEE MORE Hubble images and read more stories like this at Amazing Space, NASA's award-winning educational Web site for K-12 students and teachers, at amazing-space.stsci.edu.



Orion the Hunter: Below is a beautifully imagined version by Johannes Hevelius.

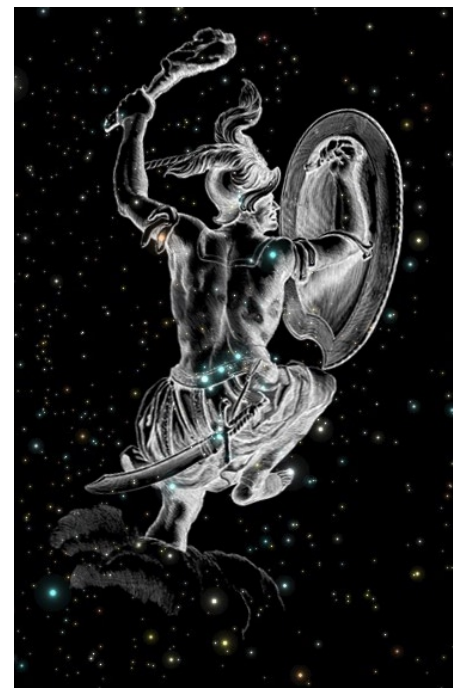


IMAGE: Drawing is from the "Uranographicarum," by Johannes Hevelius; courtesy U.S. Naval Observatory

The Orion Nebula

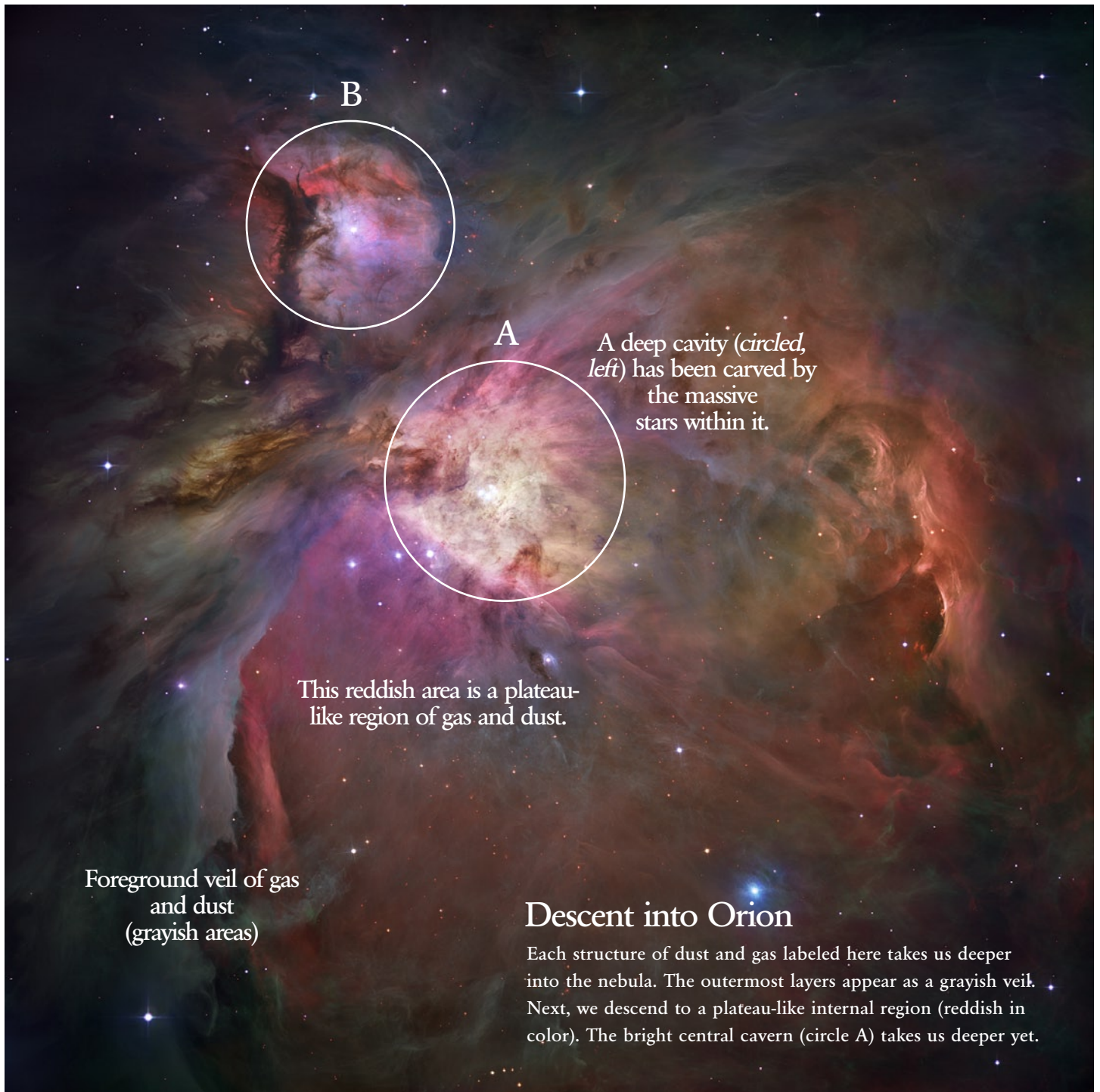


IMAGE: NASA, ESA, and M. Robberto (STScI)

The Orion Nebula is 1,500 light-years away, the nearest star-forming region to Earth. Astronomers used 520 Hubble images to make this picture. They also added ground-based photos to fill out the nebula.

Circled region “A”: Called the Trapezium, this bright central region is the home of the four most massive stars in Orion. The light unleashed by these stars is carving a cavity around them and disrupting the growth of less massive stars.

Circled region “B” is a smaller, bright region being sculpted by the young, massive star at its core.

