

Head in the Stars

The Hubble telescope is a miracle machine, say the authors, not an 'orbital Mr. Magoo.'

HUBBLE VISION

Astronomy With the Hubble Space Telescope.

By Carolyn Collins Petersen and John C. Brandt.

Illustrated. 252 pp. New York: Cambridge University Press. \$39.95.

By Marcia Bartusiak

AROUND 1610 Galileo pointed a new instrument, a telescope, at the heavens and began to unveil the universe. He saw spots on the sun, craters on the moon and a multitude of stars within the foggy glow of the Milky Way. Three centuries later, using a telescope with a 100-inch-wide light-gathering mirror atop California's Mount Wilson, Edwin Hubble discovered that our Milky Way was but one of billions of galaxies roaming the vast gulfs of space.

Now an optical telescope named in Hubble's honor has been orbiting Earth for more than five years, extending astronomers' vision even farther, a venture superbly chronicled in the pages of "Hubble Vision," a beautifully illustrated book. Its overriding aim, according to its authors — Carolyn Collins Petersen, a science journalist and planetarium-show writer, and John C. Brandt, an astronomer who is the principal investigator of one of the Hubble Space Telescope instrument teams — is to wipe away any lingering image the Hubble may have as an "orbital Mr. Magoo" in light of its initial focusing problems (now fixed). Some people, the authors write, have seen the Hubble as a "multibillion-dollar boondoggle... a 'techno-turkey.'" To others, it is "a complex engineering project... a miracle machine... the solver of mysteries." Upon finishing this book, a reader is likely to endorse the latter sentiment.

"Hubble Vision" is exactly the type of astronomy book that first captured my imagination as a child: large, glossy pages that offer a stunning tour of the cosmos in pictures. It allows us to ponder and marvel at celestial sights previously hidden, starting in our solar neighborhood and working out to the fringes of the visible universe.

The Hubble's launch history, instrumentation and scientific achievements are the book's prime subjects, but it also serves as an informative and engaging introduction to astronomy. The

authors explain that it is not the images alone that are important, but rather the telescope's ability to sort the light it receives into its separate electromagnetic components. In them can be found the means to unravel the physics and chemistry of the phenomena studied: water on Mars, Venus's sulfuric-acid cloud cover or a volcanic-like "burp" of ammonia ice crystals welling up through Saturn's turbulent atmosphere.

Nevertheless, it is the images that draw us into the science. We can gaze at the filamentary structure of the famous Crab Nebula, an ancient supernova remnant, its stringy red, green and yellow remains spread across the page like a Jackson Pollock painting. A dramatic movie unfolds as we witness Jupiter taking hit after hit from Comet Shoemaker-Levy 9, the resulting dark splotches temporarily scarring the Jovian atmosphere. Then there is the spiraling galaxy M100, located tens of millions of light-years away. Such images, say the authors, "are among the most beautiful and evocative pieces of cosmic artwork we can imagine." I agree.

THE authors are Hubble enthusiasts, and the tone of the book occasionally turns hyperbolic. Because of the Hubble, it says, "our understanding of the universe has changed forever." Well, to a degree. While the instrument has had its share of triumphs, its spaceborne vision has more often extended and impressively clarified discoveries that were first disclosed in observations from the ground. And a complete account of the universe's goings-on still requires the use of additional telescopes that gather the extensive radio, infrared, gamma and X-ray radiation emanating from celestial objects. The visible light waves the Hubble collects provide only part of the story.

Yet, indisputably, the Hubble Space Telescope has made inroads, gathering compelling evidence, for instance, that supermassive black holes are indeed lurking in the hearts of many galaxies. Its mission is scheduled to end in 2005. With 10 more years to go, a further torrent of novel sights surely awaits us. Just recently the latest picture from Hubble — a spectacular view of embryonic stars hatching in the Eagle Nebula — showed up in newspapers and magazines around the globe. I eagerly anticipate a second edition of "Hubble Vision" — for good reason: I'm hopelessly addicted to these images. □

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