March-April
2009
The International Year
of Astronomy
Volume 57
Issue 2

The Observer

The Newsletter of Central Valley Astronomers of Fresno

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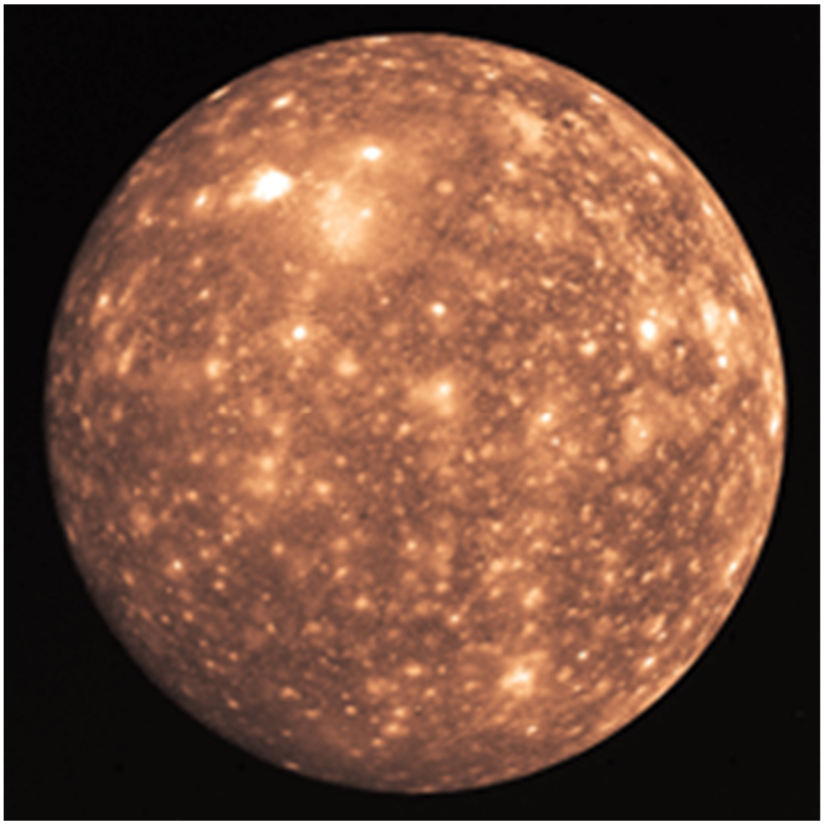
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CVA Calendar

March 7-CVA meeting Fresno State 7PM

March 28-Messier Marathon at Hensley Lake

April 4-CVA Star party at RiverPark

April 18-CVA at Vintage Days CSUF

April 25-Star Party at Hensley Lake

Astronomical Object of the Month

Callisto, one of the four large moons of Jupiter, and also one of the "wonderful things" that Galileo saw in 1609. NASA image

Quote of the Month:

I have seen the most wonderful things!

-Galileo, in 1609, after looking at Jupiter with his new telescope

○ Full Moon March 10 ● New Moon March 26 ○ Full Moon April 9 ● New Moon April 24

The Observer is the newsletter of Central Valley Astronomers of Fresno
Established 1952

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President's Message-

First I would like to give Larry Parmeter a big thank you for his excellent presentation on what it takes to be an astronaut. I always knew NASA had strenuous requirements but did not realize how few actually make it. Well done Larry!

March starts off with an astronomical cluster of star parties. If you can make any of them, your help, telescope, and expertise would be greatly appreciated. March 1, 4, and 6th all have star parties. March 6th is when we kick off the River Park star parties. People are always amazed at looking at the Moon. They never get enough of it! Also Saturn will be out in its enchanted glory. Come out and enjoy the fun. March 7th, Wil Van Breugal from UC Merced will speak on Astrobiology.

Our club is blessed with a good many members who enjoy sharing the heavens with the public. Thank you! Who knows what effect looking through a telescope will have on their minds, both young and old. This year is the International Year of Astronomy, IYA. I submitted all of our star parties and meetings from January to May. The IYA coordinator with the San Francisco Sidewalk Astronomers as well as the Astronomical Society of the Pacific commented on the great community outreach we have. They haven't seen as many clubs this active.

I always look forward to the spring time. When the weather holds favorably for astronomers, the crisp air and the jeweled brightness of the winter skies can take your breathe away. We haven't been too lucky this year so far, astronomy-wise. There is an old saying I learned from a Master teacher eons ago. "If it is green and slimy, it's Biology. If it stinks, it's Chemistry. If it doesn't work, it's Physics." I added one more, "If it is cloudy, its astronomy. But then I can't complain we badly need the rain. I am so looking forward to the Messier Marathon on March 28th. It will be a good time to look at the stars and fellowship with a great group of people. See you at the star parties.

...Steve

Special Star Outings in March and April

March 1-Washington Elementary School in Reedley

March 4-TL Reed Elementary School in Reedley

March 6-Friday night star outing at RiverPark Shopping Center, North Fresno

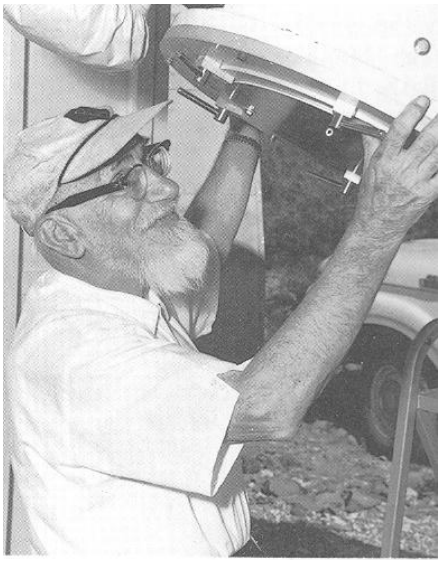
March 20-At Kingsburg Observatory, Kingsburg H.S.

April 18-Vintage Days Solar Observatory at Fresno State U.

April 25-Star Party at Hensley Lake-includes students from UC Merced and Merced City College

Contact Steve Harness or star party coordinator Brian Bellis for more information

Profiles in Astronomy



George Van Briesbroeck 1880-1974

Van Briesbroeck was born and raised in Ghent, Belgium, and initially took on a career as a civil engineer. However, he switched to astronomy, and eventually took a position at the Royal Observatory at Uccle. During World War I, he immigrated to the U.S., became an astronomer at the Yerkes Observatory in Wisconsin, and stayed there for the rest of his life.

Van Briesbroek is best known as a discoverer of asteroids and double stars. During his long career, he found 16 asteroids and three comets. He also discovered over 50 double stars, and studied their characteristics. Before the advent of the Hubble Space Telescope and other deep space satellites, he made a career of finding faint stars, and for many years held the record for discovery of the faintest stars known. Even though he "officially" retired from the Yerkes Observatory in 1945, he continued his researches for many years afterwards, and as late as 1963, worked with the famous astronomer Gerard Kuiper on planetary studies.

A crater on the Moon is named after him, as is an asteroid, and a star, Van Briesbroeck's Star(Wolf 1055B) is also given his name. In addition, the Van Briesbroeck Award is given by the American Astronomical Society every year in his honor.

Sources-
http://en.wikipedia.org/wiki/George_Van_Briesbroeck

"Van Briesbroeck, George," International Encyclopedia of Astronomy. ed. Patrick Moore. New York: Orion books, 1987. P. 443

Astrobiology:
What is Life & Where is it?

By Wil van Breugel
UC Merced, Natural Sciences

Central Valley Astronomers meeting, CSU Fresno, March 7, 2009

- **Origin of Life on Earth, Historical Context**
  - How the origin of live has been perceived by humans
  - What IS life? Modern definitions
- **Is life in the Universe Inevitable?**
  - Cosmic connections
  - Requisites and hallmarks
- Searches for Alien Life
  - Solar System and Exoplanets
  - Synthetic Biology
-

CVA Calendar for March and April 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
March 1	2	3	4	5	6 CVA public star-party at RiverPark	7 CVA meeting at CSUF-7pm
8 Begin Daylight Savings Time	9	10 New Moon The Worm Moon	11	12 Titan's shadow can be seen on Saturn	13	14 Pi Day
15 The Ides of March	16	17 St. Patrick's Day	18	19	20 Spring Equinox	21
22	23	24	25	26 Full Moon	27	28 Messier Marathon at Hensley Lake Titan's shadow can be seen on Saturn
29	30	31	April 1 April Fools Day	2	3	4 CVA public starparty at RiverPark
5 Palm Sunday	6	7 Delta Draconid meteor shower	8 Passover Begins	9 Full Moon The Pink Moom	10 Good Friday 48th anniversary of 1st manned space flight-Vostok 1	11
12 Easter	13 Moon occults Antares Titan's shadow can be seen on Saturn	14	15 Tax Day	16 Vintage Days-CSUF	17 Vintage Days-CSUF	18 Vintage Days-CSUF CVA at Downing Planetarium
19 Vintage Days-CSUF	20	21	22 Earth Day	23	24 Arbor Day New Moon	25 CVA star party at Hensley Lake
26	27 Begin Astronomy Week April 27-May 3	28	29	30	May 1	2
3	4	5	6	7	8 Full Moon	9

What's New in Space

Griffin Resigns from NASA



In a surprise move, NASA administrator Michael Griffin told his assistants on January 15 that he was resigning as the chief executive of the space agency. Griffin did not give any particular reason for his departure, but sources say that, during discussions with President Barack Obama's transition team, he had conflicts with them. It is not known if Griffin left on his own or was asked to resign. Griffin officially left NASA on January 20, the same day that Obama was sworn in as president. His successor was not immediately announced, and it may be a few months before one is. NASA Deputy Administrator Shana Dale also resigned on January 17, apparently for the same reasons

The Russian Manned Moon Program, Part 1

2009 is a year of anniversaries, the most noted of which is the 400th anniversary of Galileo's use of the telescope. But other important milestones crop up this year as well: the 150th anniversary of Darwin's *The Origin of Species*; the 200th anniversary of the birth of Abraham Lincoln(and a series of redesigned pennies will commemorate it), as well as the 200th anniversary of Darwin's birth(Darwin and Lincoln were born on the same day); and also, as I recently learned, the 800th anniversary of the founding of Cambridge University in England, the alma mater of scientific luminaries such as Isaac Newton and Stephen Hawking.

Another anniversary, though, is also up this year, one that may skip peoples' notice among all the others: the 40th anniversary of the first Moon landing. For those of us who remember it, how long ago it seems, watching the ghostly images of Neil Armstrong and Edwin Aldrin walk across the lunar surface while the TV caption read *Live from the Moon.* The Moon landings, starting on that July day in 1969, were the events of the century, showing humanity at its very best.

The American Moon effort has been thoroughly chronicled, in magazine articles, TV programs, movies, dozens of books, and various other media, and I am not going to repeat it here. What I am going to discuss is the Russian/Soviet Moon effort, which has gain much less attraction. For years, during the 1960s and 70s, the Russians denied, despite overwhelming evidence to the contrary, that they ever had a Moon landing program. Not until 1993, after the fall of the Soviet Union, did leading Russian scientists and administrators admit that they had an active Moon landing program, whose intent was to best the United States in the race to put men on the moon. Even today, 2009, much of the Russian manned Moon program is still a mystery, a series of conflicting stories about the missions and the men who intended to fly them.



Like Wernher Von Braun, the guiding genius behind the Apollo Moon landings, the Russian Moon effort, indeed the entire history of the early Russian manned space program centers around one man: Sergei Korolov. From the time he was a boy, Korolev had dreams of going into space. He was a member of GRID, the first Russian rocketry club, in 1931; after serving several years in Stalin's gulag on trumped-up charges, he worked on captured V-2 rockets with German scientists in post- World War II; he designed the first Soviet ICBM in 1952, then refined it into the R-7 rocket(Seymorka, "Old Number 7"), versions of which are still used today. In the mid 1950s, he designed and put into space the first artificial satellite, Sputnik, then designed the Vostok(which he called Korabl-Sputnik) and put Yuri Gagarin into space in it in 1961. He was a giant of the 20th century, a man whose dreams carried him as far as he could go.

Korolev had always envisioned putting a man on the Moon, and in 1961, after the first Vostok flights, he began work on that dream. Vostok was a simple Earth orbiting satellite; it could not maneuver in space or do anything complicated. He began to design a manned spacecraft that he would need for his Moon program. This would be Soyuz, a true sophisticated space vehicle. It would be able to change orbits, dock with other craft, and be used in a variety of other ways. Soyuz would be a three part craft: a cylindrical service module for engines, fuel, and oxygen; a bell-shaped assent and descent module; and a barrel shaped orbital module, where cosmonauts could live and carry out experiments in space. Ironically, the idea for Soyuz came from an American design that Korolev found in a magazine. In 1960, at NASA's request, General Electric had designed a three part spacecraft(very similar to Soyuz) as part of the Apollo design process. NASA ultimately rejected the GE design, but Korolev liked it; it was simple and practical. He began work on it in 1962, and planned to have first test flights in 1965.

At the same time, Korolev and his staff began planning the lunar flights. At first, they considered the most viable way to be through EOR, or Earth Orbit Rendezvous. In this scenario, a large lunar propulsion module, empty, would be launched. Then, up to five R-7 rockets would rendezvous and dock with the propulsion module and fuel it. Once that was finished, a manned craft, either an advanced Vostok or a Soyuz, would dock with the propulsion module, which would put it into a trans-lunar trajectory. The great advantage to this method was that it could be done using existing technology. The disadvantage was that it took only one missed rocket to doom the entire mission.

One of the Russian space program's greatest weaknesses was that, even though it had large powerful booster rockets, they still did not have the power to lift lunar bound spacecraft. The U.S., by the mid 1960s, had mastered cryogenic rocket technology; liquid hydrogen and liquid oxygen were almost seven times lighter than the conventional kerosene/LOX fuel mixture. The Saturn 5, which was being developed at the same time as the Soyuz, had cryogenic fueled engines in its upper stages, and could launch both a manned spacecraft and a lunar lander. The Russians had no such technology; they would have to use multiple rockets, or build even larger, more powerful ones.

As a result of the United States announcing its plans to go to the moon using the Apollo-Lunar Module-Saturn 5 system in December, 1963, Korolev decided to drop the EOR multiple rocket plan and develop a plan similar to the Americans'. He already had the rocket in mind: a giant 8-10 million pound thrust multistage booster that he had originally conceived in the 1950s, to go not only to the Moon, but to Mars as well. He ordered work to start on the new rocket, which he called the N-1(and would be known as the G-1 in the West). Korolev also asked the Soviet Politburo for permission to suspend manned space flights for at least two to three years in order to develop a well organized step-by-step program for landing men on the Moon by 1968, well ahead of the Americans. However, it was not to be that easy.



(on right-the N-1 compared to the Saturn 5)

Over the next few years, while working on both Soyuz and the N-1, Korolev fought his main rival, General Vladimir Chelomei, who wanted to take over the space program. As well, he had to satisfy the Soviet political leadership, which demanded that he make propagandistic "first" space flights, the "Voskhod Follies," as space expert James Olberg has called them. By late 1965, Korolev regained control of the entire program, but it set back Soyuz almost two years, and also cost him his health. He died in January 1966 following surgery.

Korolev's death was a huge shock to the entire Russian space program. No one knew rocket booster-spacecraft design and integration as well as he. Furthermore, when his successor, Vassili Mischim, took over in February 1966, he found a program in chaos. In particular, the Soyuz was nowhere near flight status. It had serious flaws with the heat shield, the electrical system, and the thruster control system. Nevertheless, he was under political pressure to stage a space spectacular for the 50th anniversary of the Russian Revolution in 1967. Mischim at first resisted, but eventually gave in and planned a two spacecraft flight involving rendezvous and docking, and a cosmonaut transfer from one craft to the other. This was the tragic Soyuz 1 flight in April 1967. Veteran cosmonaut Vladimir Komorev wrestled for a day with a spacecraft that was clearly not ready for manned flight, and was killed when the parachutes failed during landing. Three months earlier, the Russians had mocked the U.S. for the Apollo 1 disaster, and claimed that they had a better program. Now, they were silent over their own failure.

To be continued...

NASA's Great Observatories Celebrate International Year of Astronomy

Galileo first turned his telescope to the heavens in 1609, marking the dawn of modern astronomy. To commemorate 400 years of exploring the universe, 2009 has been designated the International Year of Astronomy.

In conjunction with Galileo's birthday on Feb. 15, NASA is releasing images from its Great Observatories -- the Hubble Space Telescope, Spitzer Space Telescope, and Chandra X-ray Observatory -- to more than 100 planetariums, museums, and schools across the country.

The selected sites will unveil a large 9-square-foot print of the spiral galaxy Messier 101 that combines the optical view of Hubble, the infrared view of Spitzer, and the X-ray view of Chandra into one multi-wavelength picture. "It's like using your eyes, night vision goggles and X-ray vision all at the same time," said Dr. Hashima Hasan, lead scientist for the International Year of Astronomy at NASA Headquarters.

Participating institutions also will display a matched trio of Hubble, Spitzer and Chandra images of Messier 101. Each image shows a different wavelength view of the galaxy that illustrates not only the different science each observatory conducts but also how far astronomy has come since Galileo.

Messier 101 is a spiral galaxy about 22 million light-years away in the constellation Ursa Major. It is larger than our own Milky Way galaxy but similar in many ways. Hubble's visible light view shows off the swirls of bright stars and glowing gas that give Messier 101 its nickname "the Pinwheel Galaxy." In contrast, Spitzer's infrared-light image sees into the spiral arms and reveals the glow of dust lanes where dense clouds can collapse to form new stars. Chandra's X-ray uncovers the high-energy features in the galaxy, such as remnants of exploded stars or matter zooming around black holes. The juxtaposition of observations from these three telescopes provides an in-depth view of the galaxy for both astronomers and the public.

"The amazing scientific discoveries Galileo made four centuries ago are continued today by scientists using NASA's space observatories," said Denise Smith, the unveiling's project manager at the Space Telescope Science Institute in Baltimore. "NASA's Great Observatories are distributing huge prints of spectacular images so the public can share in the exploration and wonder of the universe."

From the NASA website http://www.nasa.gov/home/hqnews/2009/feb/HQ_09-026_IYOA.html

Astronomical Trivia

Last issue's astronomical trivia question:

What did William Herschel do for a living before he discovered Uranus?

Mark and Francine Keehnel came up with the answer right away, barely beating out Chris Denny, who also had the right answer. Herschel was a musician by profession. He played several instruments, taught music, conducted orchestras, and even built some musical instruments.

This issue's astronomical trivia question:

Friends of the famous English cosmologist Stephen Hawking have noted that he, Galileo, and Newton are all related, or connected, in an interesting way. What is it?(It has nothing to do with the fact that Hawking is Luscian Professor of Mathematics at Cambridge, the same position that Newton held).

Larry Parmeter is the editor of

The Observer

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Deadline for articles submission for the May-June 2009 issue-

April 19

The issue will be mailed

On April 27

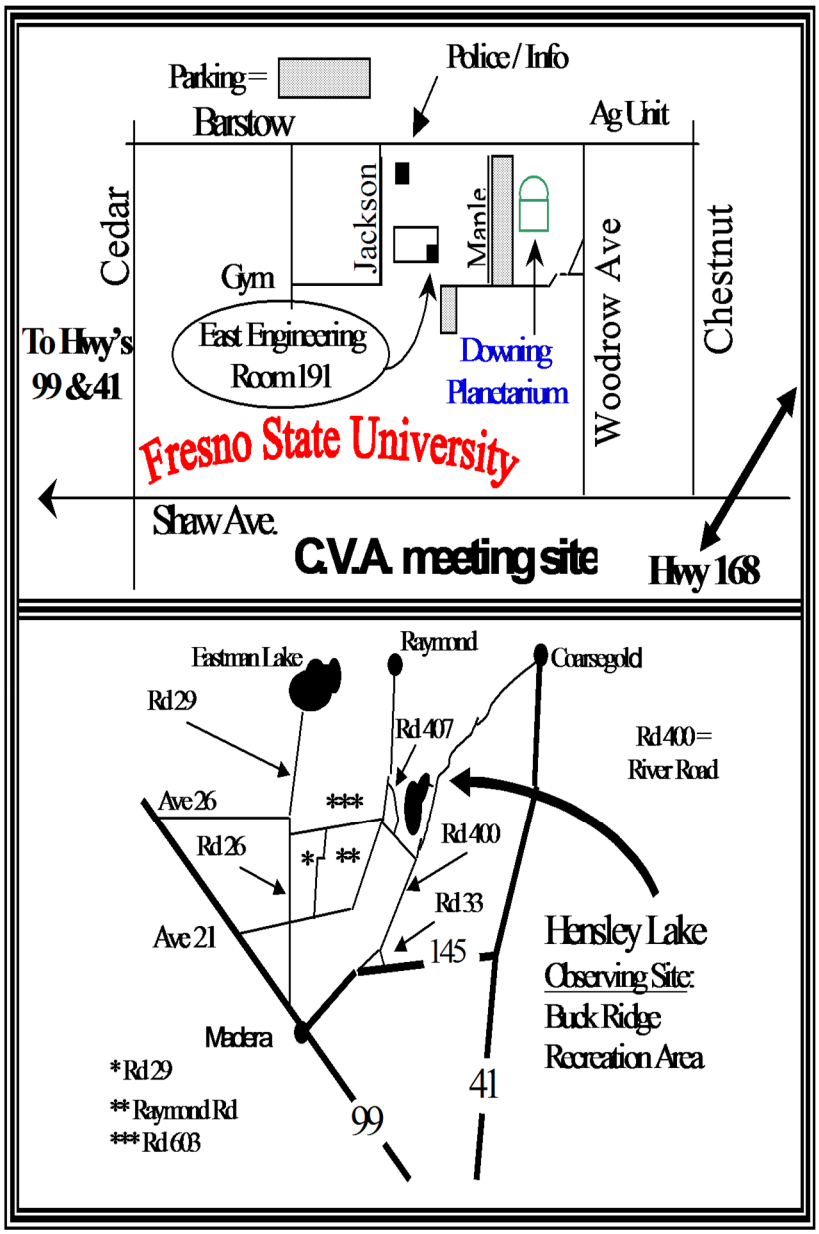
Please submit articles in Microsoft Word format

Astronomy Jokes

Have you heard about the new restaurant on the moon? The food is good, but there's just no atmosphere.

Did you hear about the astronomer with no name?

Astrononamer



Did you know?

The University of Padua, where Galileo taught for many years, is one of the oldest in Europe, with its first classes starting in 1222. It became known throughout Europe as a major intellectual center that was relatively free from the dictates of the Roman Catholic Church, due to its sponsorship by the Republic of Venice. By the 1400s, it had become renowned for studies and research in the newly emerging fields of what was then called natural philosophy, or science. It was especially noted for astronomy, mathematics, and medicine. Today, it is a thriving institution with over 20,000 students. Its motto, adopted in the 1500s, is *Universa universis patavina libertas* (Paduan freedom is universal for everyone)

Galileo was a professor at Padua from 1592 to 1610, teaching geometry, astronomy, and mechanics. Before that, he was a professor of mathematics at the University of Pisa.

Hubble finds Stars that Go "Ballistic"



Even some stars go ballistic, racing through interstellar space like bullets and tearing through clouds of gas.

Images from NASA's Hubble Space Telescope reveal 14 young, runaway stars plowing through regions of dense interstellar gas, creating brilliant arrowhead structures and trailing tails of glowing gas. These arrowheads, or bow shocks, form when the stars' powerful stellar winds, streams of matter flowing from the stars, slam into surrounding dense gas. The phenomenon is similar to that seen when a speeding boat pushes through water on a lake.

"We think we have found a new class of bright, high-velocity stellar interlopers," says astronomer Raghvendra Sahai of NASA's Jet Propulsion Laboratory in Pasadena, Calif., and leader of the Hubble study. Most stars produce powerful winds either when they are very young or very old. Only very massive stars greater than 10 times the sun's mass have stellar winds throughout their lifetimes.

But the objects observed by Hubble are not very massive, because they do not have glowing clouds of ionized gas around them. They are medium-sized stars that are a few to eight times more massive than the sun. The stars are not old because the shapes of the nebulae around aging, dying stars are very different, and old stars are almost never found near dense interstellar clouds.



Depending on their distance from Earth, the bullet-nosed bow shocks could be 100 billion to a trillion miles wide (the equivalent of 17 to 170 solar system diameters, measured out to Neptune's orbit). The bow shocks indicate that the stars are traveling fast, more than 112,000 miles an hour (more than 180,000 kilometers an hour) with respect to the dense gas they are plowing through, which is roughly five times faster than typical young stars.

"The high-speed stars were likely kicked out of their homes, which were probably massive star clusters," Sahai says.

There are two possible ways this stellar expulsion could have happened. One way is if one star in a binary system exploded as a supernova and the partner got kicked out. Another scenario is a collision between two binary star systems or a binary system and a third star. One or more of these stars could have picked up energy from the interaction and escaped the cluster.

Assuming their youthful phase lasts only a million years and they are moving at roughly 112,000 miles an hour, the stars have traveled about 160 light-years.

Runaway stars have been seen before. The Infrared Astronomical Satellite (IRAS), which performed an all-sky infrared survey in 1983, spied a few similar-looking objects. The first observation of these objects was in the late 1980s. But those stars produced much larger bow shocks than the stars in the Hubble study, suggesting that they are more massive stars with more powerful stellar winds.

"The stars in our study are likely the lower-mass and/or lower-speed counterparts to the massive stars with bow shocks detected by IRAS," Sahai explains. "We think the massive runaway stars observed before were just the tip of the iceberg. The stars seen with Hubble may represent the bulk of the population, both because many more lower-mass stars inhabit the universe than higher-mass stars, and because a much larger number are subject to modest speed kicks."

Sahai and his team used Hubble's Advanced Camera for Surveys to examine 35 objects that appeared as bright infrared sources in the IRAS archive. They were looking for long-lived pre-planetary nebulae, puffed-up aging stars on the verge of shedding most of their outer layers to become glowing planetary nebulae. Instead, the astronomers stumbled upon the runaway stars.

"One of the questions that these very showy encounters raise is what effect they have on the clouds," says team member Mark Morris of the University of California, Los Angeles. "Is it an insignificant flash in the pan, or do the strong winds from these stars stir up the clouds and thereby slow down their evolution toward forming another generation of stars?"

From the NASA Web Site http://www.nasa.gov/mission_pages/hubble/science/hst_img_20090107.html

Speaking of Hubble…

The Hubble Space Telescope was originally designed to be operational for only fifteen years, but in now in its nineteenth year of research and discovery. When conceived in the 1970s and built in the early 1980s, it cost $1 billion, a price its critics said could not be justified, but since then it has paid itself many times over in the beautiful and poetic images of the universe it has given to the world. Below is sampling of Hubble images from the last few years. All images from HST /NASA

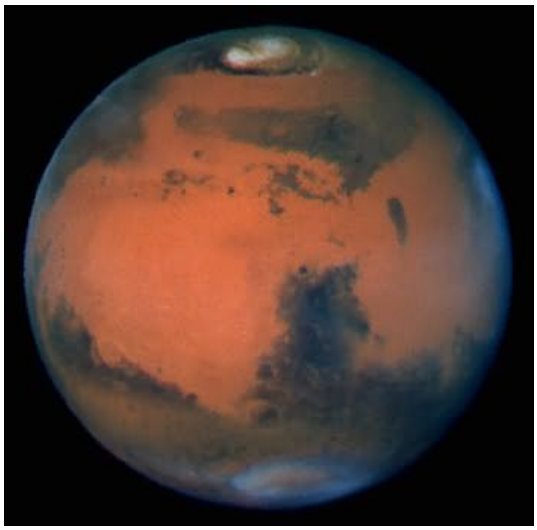


Left-The galaxy NGC 3370, which produced a supernova in 1994

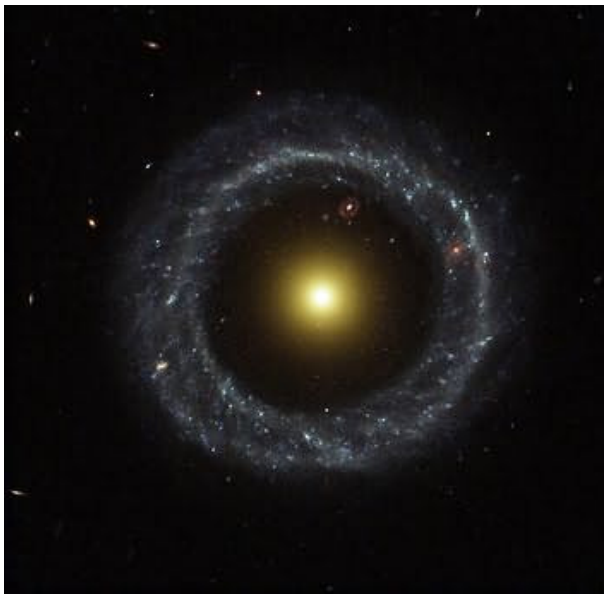


Right-The Spirograph Nebula, IC 418

Below-Mars, taken in March 2007



Below-a rare ring galaxy-Hoag's Object Galaxy





Left-The beautiful Cat's Eye Nebula

Organization

Business Name

Primary Business Address
Your Address Line 2
Your Address Line 3
Your Address Line 4

Phone: 555-555-5555
Fax: 555-555-5555
E-mail: someone@example.com

Your business tag line here.

We're on the Web!
example.com

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Caption describing picture or graphic.