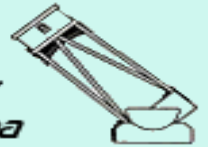


NIGHTFALL

Huachuca Astronomy Club of Southeastern Arizona



HAC MEETING: Friday, July 18, 2008

7 pm, Cochise College, Sierra Vista, Rm. 305A/B

PLUS our monthly Show-N-Tells, upcoming event details, refreshments & NEW Exciting Door Prizes!

Speaker: Wayne (aka Mr. Galaxy) Johnson

Topic: "Solar Eclipses, the Moon's Gift to Mankind".

Star Party Corner

Keith Mullen, Star Party Coordinator (520) 366-0049 email: repogazer@msn.com

Participation is the Lifblood of the Club!

June was the breakout month we all have been waiting for, the winds have calmed and clear nights were once again a common event. On June 7th we were treated to three Celestron department heads spending a weekend at RGO and attending our first C-ROW Star B.Q. More than 35 members and guest attending and a whopping 24 Celestron telescopes all lined up in front of RGO, it was the best event of the year bar none. I'm going to plan on having another one next May or June and hope to top this year's numbers a bunch. I have been invited to have a meeting and tour of the Celestron plant on Monday, July 7th to discuss getting our event on their web page which would be an asset to the club. Stay tuned for the results.

July Star Party Schedule

Saturday, July 5th Member Star Party, Rain or shine we dine at WMO. Oh yeah, we swim too. Rich Swanson has graciously extended an invitation for a swimming Star Party with fajitas for dinner. With our "No More No go" policy this means that a wet & wild day at Swanee's is guaranteed. It all starts at 2 p.m. so bring a swim suit, an eyepiece and your appetite. Rich will do another scope/monitor show later in the evening. Directions on the HAC web page.

Saturday, July 25th Public Star Party at JBO. Dave will be recovering from a knee tune up and Gary Myer might be running Big Blue so let's get out there and give him some support.

STARIZONA
ADVENTURES IN ASTRONOMY & NATURE

Official Donor of the Huachuca Astronomy Club Door Prizes!!!

About the Speaker...

July speaker: Wayne (aka Mr. Galaxy) Johnson will talk on: "Solar Eclipses, the Moon's Gift to Mankind".

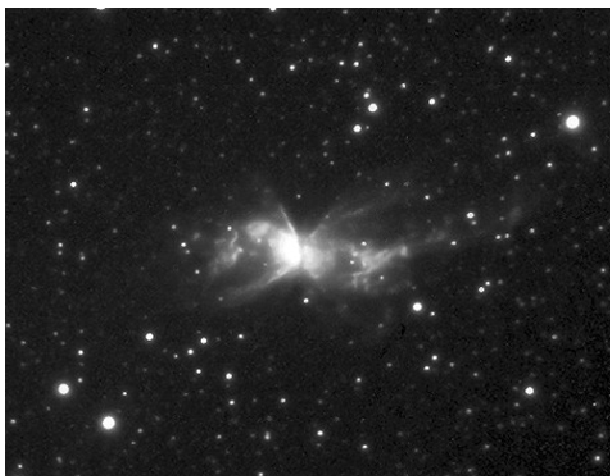
Synopsis: Solar eclipses are among the most magnificent natural spectacles for people to witness. This is a power point presentation containing some of the best eclipse images available to illustrate the magnificence of an eclipse. The talk will be about the four solar eclipses he has seen and his journeys around the world to see them.

Biography: Wayne is the current president of HAC and, among his varied interests in astronomy, is an avid solar eclipse chaser. Next year (2009) he and his wife, Arlene, plan to travel to China for a cruise trip to see the longest solar eclipse of this millennium.

Travels on the Celestial Sphere

Planetary Nebulae - Stellar Deaths

By Bob Kepple and Glen Sanner



NGC 6302, "The Bug Nebula," in Scorpius, has an unusual figure-8 shape that give rise to its name.

This month we review some of the most interesting planetary nebula in the summer sky. These objects are the death shrouds of red giant stars that have puffed off their outer layers at the end of their life cycles. Some have multiple shells suggesting that ejection of the star's envelope has required several episodes. Their typical blue-green color comes from the 4959 and 5007 Angstrom radiation of doubly-ionized oxygen from the central star which continues to illuminate the shell but no longer generates energy by nucleosynthesis. Often the central star may be visible, check its magnitude to see if it is within reach of your telescope's aperture. The name "planetary" was given to these objects by William Herschel because many of them display a visual disk reminiscent of the disks of Jupiter, Saturn, Uranus, and Neptune. Planetary nebulae come in an impressive array of size, and shapes. Some are very bright showpiece objects, while many are extremely faint. The use of a UHC, O-

III, or Deep-Sky Filter is highly recommended. The O-III gives the maximum contrast, however, I have found that while using small telescopes or viewing the fainter planetary nebulae, the UHC is a better choice because it does not dim the object's disk as much. Use as much magnification as seeing conditions will allow because these objects are generally small. If you use too low a power, the object may appear stellar and you could pass right over it. If you get any clear nights during the coming monsoon season, try viewing these interesting objects. Good luck and happy viewing.

NGC 6153 PI Neb Type 4, Size 25", Mag. 10.9v, CS 15.4v RA 16^h31.5^m, Dec -40°15', Scorpius

NGC 6153 shows a fairly bright, circular disk in small telescopes. In 16-inch and larger instruments it dis-

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plays a greenish 25" disk without the central star visible. Averted vision gives hints that the center may be slightly darker.

NGC 6210 PI Neb Type 2+3b, Size 14", Mag. 8.8v, CS 13.7v, RA 16^h44.5^m, Dec +23°49', Hercules

NGC 6210 forms a thin triangle with a yellow 7.5 mag. star 8' SE and a 9.5 mag. star 4' NE. Small scopes will show a bright blue 25"x15" E-W oval disk. In 12-inch and larger telescopes the disk grows to 30"x20" E-W with the central star fading in and out of view with the changing air currents. Look for triple star Struve 2094 lying 20' SSW (AB:7.4, 7.7, 1.3", 77°, AC: 11.0, 24.9", 312°).

NGC 6302 PI Neb Type 6, Size 50", Mag. 9.6v, CS 21.1v, RA 17^h13.7^m, Dec -37°06', Scorpius

"The Bug Nebula." NGC 6302 does, indeed, look like a "bug" with extensions to the ENE and WSW surrounding a bright central area. It is highly visible in small telescopes but larger scopes will show more detail especially at high power. Its irregular figure-8 shape resembles an ant. Both extensions brighten slightly some distance from its core before fading at the ends.

NGC 6309 PI Neb Type 3b+6, Size 16", Mag. 11.5v, CS 13.0v, RA 17^h14.1^m, Dec -12°55', Ophiuchus

"The Box Nebula." NGC 6309 is centered 25" south of an 11.5 mag. star. In an 8-inch scope it displays a fairly bright greenish disk somewhat rectangular in shape. The 13th mag. star is intermittently visible. 16-inch instruments will show a bright oblong disk with a pinched center with its northern lobe longer and more distinct than the southern one.

NGC 6369 PI Neb Type 4+2, Size 30", Mag. 11.4v, CS 15.6v, RA 17^h29.3^m, Dec -23°46', Ophiuchus

"The Little Ghost Nebula." NGC 6369 is located in the Bowl of the Pipe Nebula a nice area for binoculars, however the planetary nebula would not begin to be visible at such low power. It is visible in small telescopes as a bright 30" diameter disk. Larger scopes will show a darker center but does not approach the ring effect of M57 in Lyra. What is the smallest scope that will show a darker center? Let us know if you can see the ring and at what aperture.

NGC 6543 PI Neb Type 3a+2, Size 20", Mag. 8.1v, CS 10.9v, RA 17^h58.6^m, Dec +66°38', Draco

"The Cat's Eye Nebula." NGC 6543 is an easy number to remember with its descending numerals. Lying just 3' ESE of an 8th mag. star, NGC 6543 is a bright but small disk displaying a greenish cat's eye tint in small scopes. The central star is also quite visible in small scopes but may require high power in 3-inch or smaller scopes. With an 8-inch scope some outer haze may be visible. 16-inch and larger scopes show a bright bluish-green disk that provides an excellent contrast to the bright yellowish 10.9 mag. central star. The inner halo is elongated 20"x15" NE-SW and surrounded by a faint outer shell. The central portion is slightly darker around the central star because of a small central "hole" in the nebula itself. When seeing is steady, very high power will reveal disk structure. This object is Draco's "showpiece."

NGC 6765 PI Neb Type 5, Size 38", Mag. 12.9v, CS 16.0v, RA 19^h11.1^m, Dec +30°33', Lyra

NGC 6765 is faint in small telescopes but that doesn't mean you can see it - you don't know until you try. In 12-inch telescopes it resembles a face-on galaxy with a faint 35" disk slightly elongated N-S. The center is slightly brighter reminiscent of the typical galaxy's core. A UHC filter accentuates the planetary's oval shape and makes the halo appear brighter north of center. 3.5' SSW of the planetary is a 45" wide pair of 12th mag. stars pointing toward the object. Okay, since you're in Lyra, go look at M57, the Ring Nebula.

NGC 6772 PI Neb Type 3b+2, Size >62", Mag. 12.7v, CS 18.2v, RA 19^h14.6^m, Dec -02°42', Aquila

NGC 6772, lying just 4.5" SE of a 10th mag. star, is a faint, large, round, diffuse glow without a central star visible in small telescopes. With a 12-inch scope it becomes fairly bright and may show a vague annular structure. The annularity is fairly distinct using 16-inch or larger instruments.

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NGC 6781 PI Neb Type 3b+3, Size >109", Mag. 11.4v, CS 16.2v, RA 19^h18.4^m, Dec +06° 33', Aquila

NGC 6781 is large, round and fairly bright in small telescopes. An 8 or 10-inch is needed to discern a darkening of its center. In 12-inch and larger scopes the 1.5' diameter disk is conspicuous with the southern edge noticeably brighter and better defined than the northern periphery. A 12.5 mag. star nearly touches the disk's NE edge.

NGC 6818 PI Neb Type 4, Size 17", Mag. 9.3v, CS 16.9v, RA 19^h44.0^m, Dec -14°09', Sagittarius

"The Little Gem Nebula." NGC 6818 is a bright bluish 15" disk in small scopes. 12" and larger telescopes will show a bright 20"x15" N-S disk with a dark center. Can anyone with a smaller scope see the dark center? A UHC filter will show faint segments along the outer halo near the long axis.

Club Resources

The Club has iron on HAC Patches available for \$2.00 ea. Contact Bob Kepple at 366-0490/ astro-cards@aol.com or Jeanne Herbert at 366-5690.

Library News by Hans Clahsen

Publication	Month/Year
Astronomy	Feb/Apr/May
Astronomy	Jun/Nov/Dec 2006
Astronomy	Jun-Oct 2002
Astronomy	Feb/Apr/Dec 2003
Astronomy	Feb (2)/Mar 1992
Astronomy	Nov 1991
Astronomy	Jan – Dec 2004
Astronomy	Jan – Sep 2005
Sky & Telescope	Jan – Sep 2006
Sky&Telescope	Nov/Dec 2006
Sky&Telescope	Feb/June 2005
Sky&Telescope	Aug – Nov 2005
Sky&Telescope	Jan – Sep 2004
Sky&Telescope	May 2001
Sky&Telescope	Feb/May/Oct 2002
Sky&Telescope	Oct 2007

Exploring Space with a Camera

Messier Marathon (Field Guide)

100 Billion Suns by Rudolf Kipperhahn

Celestial Objects for Common Telescopes

Small Astronomical Observatories

The Messier Album

Observers Handbook 2005

Sundial by Albert Waugh

Universe Byron Preiss

Across the Sea of Suns

Nova

Voyage to the Milky Way

The Observers Skyatlas

The Hunt for Life on Mars

Light and Colour in the open air

Astro Photography by Barry Gordon

Astro Photography by Robert T. Little

The Hubble Wars by Eric Chaisson

Billions and Billions by Carl Sagan

Sky Catalog 2000.0 No. 1 and No.2

Are we Alone? by Paul Davies

Space – The Free Market Frontier by Edw.L.Hudgins

The Universe in a Nutshell by Stephen Hawkins

Encyclopedia of Astronomy and Space

Then Astronomical Almanac 1996

Amateur Telescope Making (2 books)

Guide to Stars and Planets by Ian Ridpath

Star Ware by Philip S. Harrington

Planet Earth by Jonathan Weiner

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I am considering asking UA in Tucson for a tour of their mirror-making lab sometime in the summer/fall timeframe. I hope that we can do it on a Saturday, maybe in September, depending on how busy the schedule is. We'll pass around an interest sheet at the next meeting to see how many think they may want to go. I think we'll keep the size of the group, like the LBT tour, to about 30 people and do some car-pooling again to save on gas.

I have been trying to contact someone from the Phoenix Marslander project to come talk to our club for this month's meeting, but at the moment have not heard back from them. Unless they reply at the last moment, I will be giving a presentation on some of the spectacular solar eclipses that my wife, Arlene, and I have had the pleasure to see. I hope to encourage others in the club to take a trip to experience these marvelous shows that mother nature has to offer and see the rest of the world.

Clear skies, Wayne, your resident President

Space Place Astronomy Club Article

Space Buoys

By Dr. Tony Phillips

Congratulations! You're an oceanographer and you've just received a big grant to investigate the Pacific Ocean. Your task: Map the mighty Pacific's wind and waves, monitor its deep currents, and keep track of continent-sized temperature oscillations that shape weather around the world. Funds are available and you may start immediately.

Oh, there's just one problem: You've got to do this work using no more than *one* ocean buoy.

"That would be impossible," says Dr. Guan Le of the Goddard Space Flight Center. "The Pacific's too big to understand by studying just one location."

Yet, for Le and her space scientist colleagues, this was exactly what they have been expected to accomplish in their own studies of Earth's magnetosphere.

The magnetosphere is an "ocean" of magnetism and plasma surrounding our planet. Its shores are defined by the outer bounds of Earth's magnetic field and it contains a bewildering mix of matter-energy waves, electrical currents and plasma oscillations spread across a volume billions of times greater than the Pacific Ocean itself.

"For many years we've struggled to understand the magnetosphere using mostly single spacecraft," says Le. "To really make progress, we need many spacecraft spread through the magnetosphere, working together to understand the whole."

Enter Space Technology 5.

In March 2006 NASA launched a trio of experimental satellites to see what three "buoys" could accomplish. Because they weighed only 55 lbs. apiece and measured not much larger than a birthday cake, the three ST5 "micro-satellites" fit onboard a single Pegasus rocket. Above Earth's atmosphere, the three were flung like Frisbees from the rocket's body into the magnetosphere by a revolutionary micro-satellite launcher.

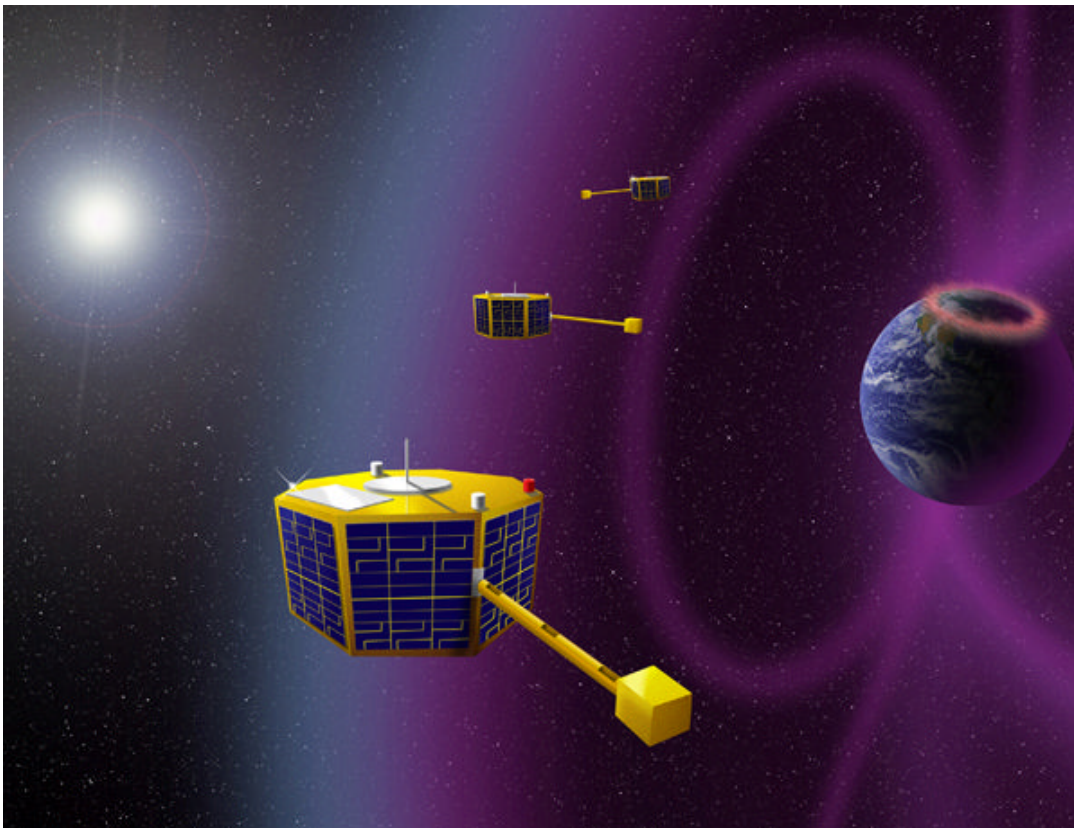
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Space Technology 5 is a mission of NASA's New Millennium Program, which tests innovative technologies for use on future space missions. The 90-day flight of ST5 validated several devices crucial to space buoys: miniature magnetometers, high-efficiency solar arrays, and some strange-looking but effective micro-antennas designed from principles of Darwinian evolution. Also, ST5 showed that three satellites could maneuver together as a "constellation," spreading out to measure complex fields and currents.

"ST5 was able to measure the motion and thickness of current sheets in the magnetosphere," says Le, the mission's project scientist at Goddard. "This could not have been done with a single spacecraft, no matter how capable."

The ST5 mission is finished but the technology it tested will key future studies of the magnetosphere. Thanks to ST5, hopes Le, lonely buoys will soon be a thing of the past.

Learn more about ST5's miniaturized technologies at nmp.nasa.gov/st5. Kids (and grownups) can get a better understanding of the artificial evolutionary process used to design ST5's antennas at spaceplace.nasa.gov/en/kids/st5/emoticon.



This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Caption: The Space Technology 5 micro-satellites proved the feasibility of using a constellation of small spacecraft with miniature magnetometers to study Earth's magnetosphere.

Note to editors: The image may be downloaded from http://spaceplace.nasa.gov/news_images/st5_art.jpg.



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Visit us on the web at hacastronomy.com

Happy Independence Day!

