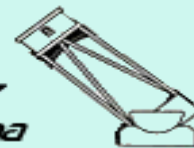


NIGHTFALL

Huachuca Astronomy Club of Southeastern Arizona



HAC MEETING: Friday, March 13, 2009

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

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

Speakers: Richard Harshaw

Topic: "The Wonder of Binary Stars."

STAR PARTY CORNER

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

Participation is the Lifblood of the Club!

Are we experiencing a revolution in star gazing? If you spent the evening at Windy Mountain Observatory, location of the February Member Star Party, you might have reason to believe it. Rich Swanson, (Swanee), the guy who has a big telescope cooped up in a little building is way out front when it comes to the basic home imager. His Meade 14" Schmitt Cassegrain on an alt-az mount sports a digital SLR camera and when connected to a monitor it's like watching the cosmos go by on channel 4. Now I'm speaking on supposition because I was home out of action on that night, but have been there enough times to witness on-screen viewing as the new wave of star party normality.

Rich had the big scope in the little building hooked up to a monitor and thrilled the attending members as he focused on targets featured by the Deep Space Duo of Bob Kepple and Glen Sanner in their February HAC deep space report. Such were the raves of this on-screen viewing that we are going to hook up the RCOS at RGO with a camera and monitor on March 28 -- Messier Marathon night! We plan to do an on-screen (no commercials!) Marathon for those interested in seeing all 109 of the Messier Objects during the course of one night.

To close out the month, the February Public Star Party at JBO started out windy and overcast. Students of HAC member and college professor Kim Rogalski began arriving just as the sun was setting. The night sky cleared, the crowd picked up and by 7 p.m. we had a full-scale Public Star Party. Comet Lulin was the hit of the night followed by the Moon and Venus in conjunction. Everyone had a good time and we can chalk up another month of public viewing to participation.

March Star Party Schedule

Saturday March 21, PSP at JBO. Come say goodbye to Orion and the winter Milky Way as the spring observing season begins.

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STARIZONA
ADVENTURES IN ASTRONOMY & NATURE

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

President's Perspective

Wayne Johnson

We are progressing into the International Year of Astronomy 2009 with fits and starts, but we are beginning to implement some plans to involve club members and the general public in the hobby we enjoy by having Sidewalk Astronomy events to demonstrate that we can view the wonders of the heavens even from our lighted towns. Hopefully while doing our observations we can let people know that the sights through our telescopes would be even better if light pollution were under better control. Currently our club membership stands at about 60. I would like to see that membership grow to about 100 by the end of the year. Activities that involve the public, like Sidewalk Astronomy, is one way to increase our club size. By the way, these events do not have to be large-scale, or even well-organized, but it helps! Individual members can do their own version of Sidewalk Astronomy in their neighborhoods (on Halloween is popular), at picnics, etc., but if you decide to observe in a shopping plaza, please be sure you have permission of the store owner. If you plan it as a club activity, please contact Rich Swanson, our Outreach Coordinator, or one of the Board Members, if he is not available, because the proprietor may demand you have liability insurance, which HAC does. Whether you like to do this activity by yourself or with a group, I would ask all HAC members and anyone else who is interested to participate in what I hope will be many Sidewalk Astronomy "popularization events" for the International Year of Astronomy (IYA 2009).

The first club-organized Sidewalk Astronomy event has been planned and the timing of this announcement will be close to its actual occurrence, (March 5th at 5:15 - 7pm) at the SV Mall, in case the newsletter gets out early) but by the time HAC members see this message I hope that the first of our many Sidewalk Astronomy events in the heart of Sierra Vista will have been a success. Bob Gent volunteered to spearhead our first Sidewalk event at the Sierra Vista Mall. We considered a few potential public areas where we thought people would be traveling during their daily routines and the Mall was one of the first to reply to our proposal. We have also approached Hastings Book Store and Walmart, but have not had any response as of this writing. At the SV Mall we will be near the entrance to the movie theater so that we should be able to attract people on their way in to see the movies and maybe see them on their way out depending on the length of our observing session. This is intended to be an ice-breaker event for Sidewalk Astronomy activities at Sierra Vista public venues and I would like to see how the general public reacts to it. I'm sure people will think it's strange at first, but as the idea catches on, they will actually come to expect someone with a telescope to be there to show them something in the sky. Since we are starting a little early we will also have a solar telescope available to see what's happening on our quiet sun. For this first event Venus and the Moon will be the featured objects as evening approaches. Most of these Sidewalk

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Yearly Membership: Individual: \$25; Family: \$35; Military: \$20; Student:\$10 (with restrictions)

President: Wayne Johnson, mrgalaxy@juno.com ; **Vice President:** Keith Mullen, 520.366.0049/ repogazer@msn.com

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Star Party Coordinator: Keith Mullen, repogazer@msn.com;

Outreach Events Coordinator: Rich Swanson, 803-7298 or telegeek-64@cox.net

Loaner Scopes: Gary Myers 432-4433; Newsletter Editor: Teresa Mullen, edugazer1@yahoo.com / 366-0049

This issue of Nightfall can also be found on-line at hacastronomy.com. Click 'Newsletter' link. There is much more information about astronomy and our HAC activities on our club web site. *To join the HAC-LIST, send an email to hacilist-subscribe@yahoogroups.com .

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events will, by necessity, feature bright objects because of the probable lighting issues, but this gives us a chance to invite those interested to come to our monthly Public Star Parties and our annual Astronomy Day activity in Veteran's Park on Fry Blvd. I hope that Rich (not to put him on the spot!) can bring his scope with StellaCam and TV monitor to some of these "bright light events" to demonstrate that many more astronomical objects can be seen despite the in-town locations.

We could even do something like this with similar organizations, like the amateur radio people at their clubhouse since it seems that Hams and Amateur Astronomers have a lot in common. Another possibility is setting up at the San Pedro House where birdwatchers and those interested in nature congregate, again another activity similar to our stargazing. These would be fairly dark sites and with smaller groups, but worthwhile to try. The Gem and Mineral Club of SV has also asked whether we'd like to participate with them. Just some thoughts, others welcome!

If you attended our February meeting you know that we had a great chance to discuss light pollution issues with SV's newest City Council member, Larry Hampton. He was very interested in our concerns and promises to help where he can. Welcome, Larry, and continued good fortune on the Council!

Unfortunately, it is my duty to inform the membership that one of our recently elected Board Members, Glenn Minuth, has decided to step down. We thank him for his enthusiasm and help on promoting the publicity of our club. We will be taking volunteers who would want to take over Glenn's position(s) as Member at Large and Publicity Chairman. The two responsibilities can be done by either one or two people and are fairly straight-forward. Let me or someone on the Board know if you are interested!

(Continued from page 1)

Saturday March 28, MSP and Messier Marathon at RGO. This is one you won't want to miss. Grab a folding chair and several layers of clothing and come park it in RGO to WATCH Charles Messier's entire list of celestial objects dance across the screen as Rich Swanson and I present the 2009 HAC Messier Marathon on the monitor, LIVE!

Of course you can be old fashion and track them down one by one with a telescope and I'm sure there will be several who do. The object here is to somehow, someway, SEE them all that night. As in previous years, Teresa and crew will have warm beverages and snacks available throughout the night. When the sun comes up, those still up will be treated to a continental breakfast served by the RGO staff of Teresa and Jeanne. If you persevere and make it through the night there will be a HAC Messier Marathon Certificate awarded to you. I'm going to check with our Alcor Rep., Dave Healy, to see if

viewing all 109 objects via monitor qualifies you for an official AL Observer's certificate for the Messier objects! It all happens Saturday, March 28 and you NEED to be here and set up by 6:00 P.M. (and you can quote me on that) so that you don't disturb those who want to catch those early objects without the traffic of late comers.

A Call For Help: We have two events on the schedule that require the help of HAC members. First of these is the May 2, Scopes in the Park Astronomy Day event

which has found its way back to the ball diamond at Veterans Park. Secondly is the C-Row Star B.Q. two day event at RGO on June 19 and 20, 2009. Both of these events can't be coordinated and handled by just one person.

Members are asked to step up and help. To sign up as an event volunteer, call Keith at 366-0049. Without adequate volunteer help, one or both of these events could be in jeopardy of being canceled.

★ Speaker...

★ Synopsis: Double stars are more than just pretty things in the eyepiece! They can contain a wealth of observing challenges, pleasures, rewards, and the opportunity for amateurs to do useful science. This talk will start with the basics (component naming, separation, position angle, epoch, discoverers) and trace the history of binary star observation. Then we will tie how knowing the orbits of binary systems can help us fill in the H-R diagram and the implications this bears for stellar evolution theory, and hence the theory of the cosmos. We will consider the different types of binaries, and then discuss how to do measures and report those measures to peer review bodies. The talk will end with handouts of lists of binaries that are good challenges for amateurs.

★ My bio: I began my interest in astronomy when John Glenn orbited the earth in 1963. Urged along by a supportive father, I viewed the sky with binoculars, then acquired my first telescope (a 60 mm alt-az refractor) while in 7th grade (1964). Eventually, I upgraded to a 4.5" refractor on an equatorial mount, later selling it and getting another refractor (on an equatorial mount). In 1986, I acquired a used Celestron C-8, my first really serious telescope. Discovering I had a much larger universe at my disposal than ever before, I had to come up with a systematic way to observe the sky efficiently. In 2002 I acquired a Celestron C-11, and in 2005 signed a contract with Springer-Verlag to write a book for the Patrick Moore Popular Astronomy Series. That book was eventually titled "The Complete CD Guide to the Universe" and was released in April 2007. (It is the compilation of the observing system I developed when I acquired the C8.) The book contains a CD-ROM with 13,000 pages of finder charts, object lists, descriptions, notes, sketches, and hundreds of pages of supporting files, such as observing checklists, sketch templates, and the like. I have also been published about a dozen times in the Webb Society's "Deep Sky Observer" and various Double Star Circulars. In 2005, I was awarded the code HSW in the Washington Double Star Catalog for my contribution of over 2,000 measurements, making me one of the ten most active binary star observers in the world. Between 2003 and 2005, I acquired ten Astronomical League observing club awards and was awarded Master Observer certificate number 47. I currently reside in Cave Creek, Arizona, where I live with my wife, a retired school teacher. My daughter, son-in-law, and grandchildren live four miles away. I work part time as a consultant to the HVAC industry and operate Brilliant Sky Observatory from my back yard. I am the president of the Saguaro Astronomy Club (SAC) for 2009.

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Space Place Partner Column

Where did all these gadgets come from?!

Ion propulsion. Artificial intelligence. Hyper-spectral imagers. It sounds like science fiction, but all these technologies are now flying around the solar system on real-life NASA missions.

How did they get there? Answer: the New Millennium Program (NMP). NMP is a special NASA program that flight tests wild and far-out technologies. And if they pass the test, they can be used on real space missions.

The list of probes that have benefited from technologies incubated by NMP reads like the Who's Who of cutting-edge space exploration: Spirit and Opportunity (the phenomenally successful rovers exploring Mars), the Spitzer Space Telescope, the New Horizons mission to Pluto, the Dawn asteroid-exploration mission, the comet-smashing probe Deep Impact, and others. Some missions were merely enhanced by NMP technologies; others would have been impossible without them.

"In order to assess the impact of NMP technologies, NASA has developed a scorecard to keep track of all the places our technologies are being used," says New Millennium Program manager Christopher Stevens of the Jet Propulsion Laboratory.

For example, ion propulsion technology flight-tested on the NMP mission Deep Space 1, launched in October 1998, is now flying aboard the Dawn mission. Dawn will be the first probe to orbit an asteroid (Vesta) and then travel to and orbit a dwarf planet (Ceres). The highly efficient ion engine is vital to the success of the 3 billion mile, 8 year journey. The mission could not have been flown using conventional chemical propulsion; launching the enormous amount of fuel required would have broken the project's budget. "Ion propulsion was the only practical way," says Stevens.

In total, 10 technologies tested by Deep Space 1 have been adopted by more than 20 robotic probes. One, the Small Deep Space Transponder, has become the standard system for Earth communications for all deep-space missions.

And Deep Space 1 is just one of NMP's missions. About a half-dozen others have flown or will fly, and their advanced technologies are only beginning to be adopted. That's because it takes years to design probes that use these technologies, but Stevens says experience shows that "if you validate experimental technologies in space, and reduce the risk of using them, missions will pick them up."

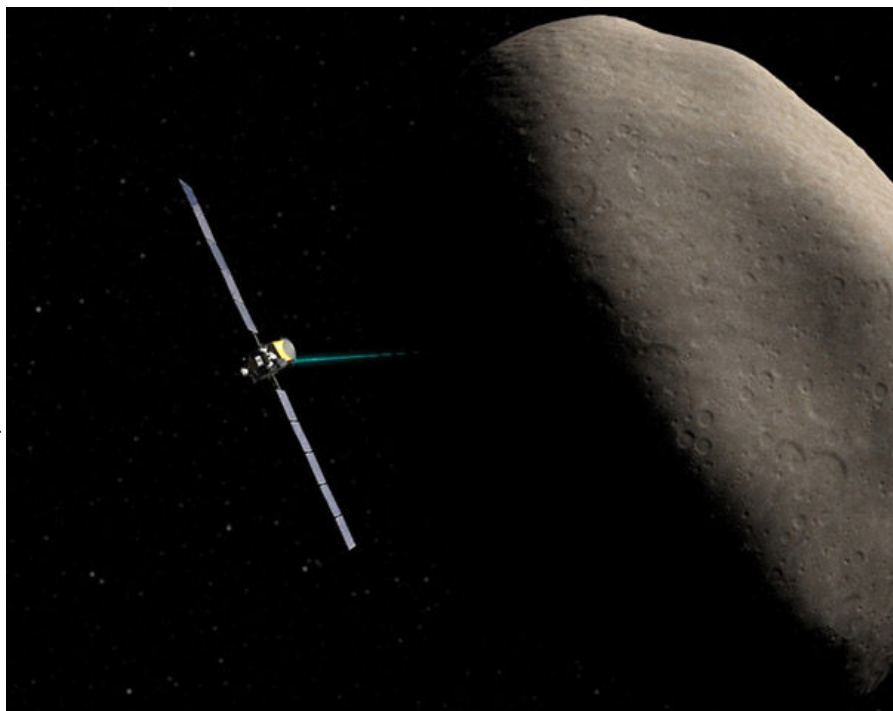
Stevens knew many of these technologies when they were just a glimmer in an engineer's eye. Now they're "all grown up" and flying around the solar system. It's enough to make a program manager proud!

The results of all NMP's technology validations are online and the list is impressive: nmp.nasa.gov/TECHNOLOGY/scorecard/scorecard_results.cfm. For kids, the rhyming storybook, "Professor Starr's Dream Trip: Or, How a Little Technology Goes a Long Way" at spaceplace.nasa.gov/en/kids/nmp/starr gives a scientist's perspective on the technology that makes possible the Dawn mission.

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

Caption:

Dawn will be the first spacecraft to establish orbits around two separate target bodies during its mission—thanks to ion propulsion validated by Deep Space 1.



Travels on the Celestial Sphere

By Bob Kepple & Glen Sanner

Terrific Trios

When spring arrives, it's galaxy season! Other than the showpiece objects, galaxies are generally considered "faint fuzzys", but when there's more than one galaxy in the field the view becomes interesting. Our article reviews some trios that are not necessarily standouts, but nice to observe. Although we describe the views seen through 6 to 16-inch telescopes, people with larger instruments will see a better view. The views and perspectives are different in all apertures but none-the-less pleasing in small telescopes.



M105, NGC 3384, and NGC 3389 (left to right) form a fine galaxy trio

| | | | | | |
|----------|---------------|------------------|------------|----------|------------------------------------------------------|
| NGC 3379 | Type E1, | Dia. 3.9' x 3.9' | Mag. 9.3v, | SB 12.1, | 10 ^h 47.8 ^m +12°24' (M105) Leo |
| NGC 3384 | Type SB(s)0-: | Dia. 5.5' x 2.9' | Mag. 9.9v, | SB 12.8, | 10 ^h 48.3 ^m +12°38' Leo |
| NGC 3389 | Type SA(s)c | Dia. 2.7' x 1.1' | Mag. 11.9v | SB 12.9 | 10 ^h 48.5 ^m +12°32' Leo |

The **M105 Trio** is an interesting group of morphologically contrasting galaxies. The M105 trio members lie about 31 million light years from Earth and are distant members of the M96 Galaxy Group. **M105**, the westernmost and brightest object of the trio, is an almost spherical elliptical galaxy with a smooth brightening toward center culminating with a bright, tiny nucleus. 6 and 8-inch scopes will show a 2.5' diameter halo while 16-inch and larger instruments show a 4' x 3' halo. **NGC 3384**, the northernmost galaxy, has a smooth lenticular halo with a circular core and a stellar nucleus. 8-inch scopes will show a 3' x 1' halo while 16-inch and larger telescopes reveal a 5' x 2' halo. **NGC 2289**, at the SE corner of the trio, is the smallest and faintest of the three. It is a loosely-wound spiral in photos but is featureless in amateur telescopes. An 8-inch scope shows a 2' x 1' halo and a 16-inch reveals a slightly larger 2.5' x 1' halo.

| | | | | | |
|----------|-------------|------------------|-------------|----------|-----------------------------------------------|
| NGC 4270 | Type S0 | Dia. 1.7' x 0.7' | Mag. 12.2v, | SB 12.2, | 12 ^h 19.8 ^m +05°28' Vir |
| NGC 4273 | Type SB(s)c | Dia. 2.3' x 1.1' | Mag. 11.9v, | SB 12.7, | 12 ^h 19.9 ^m +05°21' Vir |
| NGC 4281 | Type S0+:sp | Dia. 2.5' x 1.3' | Mag. 11.3v | SB 12.4 | 12 ^h 20.4 ^m +05°23' Vir |

The **NGC 4281 Group** is a somewhat fainter group than the others in this article but, nevertheless, worthy of attention. There are at least five galaxies visible in one field of view, and many more if you are willing to pan around the surrounding field. Most of these galaxies are

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visible in 6-inch and larger telescopes. **NGC 4270**, the westernmost of this trio, has a lenticular 1.25' x 0.75' halo that contains a broad central concentration centered on a stellar nucleus. Look for **IC 3153**, a tiny smudge lying 3' SW of NGC 4270. **NGC 4273**, at the southern end of the group, is a fairly bright galaxy with a 1.5' x 1' halo that gradually brightens toward center. Look for **NGC 4277**, a faint, very small 25" diameter patch lying 2' east of NGC 4273. **NGC 4281** is the brightest member of the group located at the eastern apex of the brighter galaxies. It has a broad, bright oval core with a stellar nucleus surrounded by a diffuse, much fainter 2' x 1' halo. An attractive pair of 12 and 12.5 mag. stars separated by 13" lies 5.5' SSE of NGC 4281.

| | | | | | | |
|-----------------|--------------|------------------|-------------|----------|-------------------------------------------|-----|
| NGC 4459 | Type SA(r)0+ | Dia. 3.5' x 2.8' | Mag. 10.4v, | SB 12.7, | 12 ^h 29.0 ^m +13°59' | Com |
| NGC 4468 | Type SA0-? | Dia. 1.2' x 0.9' | Mag. 12.8v, | SB 12.7, | 12 ^h 29.5 ^m +14°03' | Com |
| NGC 4474 | Type S0 pec: | Dia. 1.9' x 1.1' | Mag. 11.5v | SB 12.2 | 12 ^h 29.9 ^m +14°04' | Com |

NGC 4459, the westernmost of this trio, is found only 2' NW of an 8.5 mag. star. Through a 12-inch telescope it displays a prominent stellar nucleus embedded in a fairly bright but diffuse, circular 1.5' diameter halo. **NGC 4468**, lying 10' ENE of NGC 4459, is a faint, small, circular spot centered on a stellar nucleus. Scanning another 6' east will bring you to **NGC 4474**, a fairly bright galaxy elongated 1' x 0.5' with an extended core and a faint stellar nucleus. A double star containing 11.5 and 12.5 mag. stars 20" is part of a line of stars lying to the NNE of NGC 4474.

| | | | | | | |
|-----------------|--------------|------------------|-------------|----------|-------------------------------------------|-----|
| NGC 5350 | Type SB(r)b | Dia. 3.1' x 2.5' | Mag. 11.3v, | SB 13.4, | 13 ^h 53.4 ^m +40°22' | CVn |
| NGC 5353 | Type SO | Dia. 2.8' x 1.9' | Mag. 11.0v, | SB 12.7, | 13 ^h 53.5 ^m +40°17' | CVn |
| NGC 5354 | Type SA(r)b: | Dia. 2.2' x 2.0' | Mag. 11.4v | SB 12.8 | 13 ^h 53.5 ^m +40°18' | CVn |

NGC 5350 is the westernmost object of this trio lying just 3' NE of an orange 6.5 magnitude star. It has a fairly faint, diffuse 1.5' x 1.25' halo with a slightly brighter center in 8-inch telescopes. 12-inch scopes will show a faint, diffuse 2.5' x 1.5' halo and a very faint bar-like core. **NGC 5353 and NGC 5354** are a close interacting pair centered 4.5' SE of the 6.5 mag. star. In 10 to 12-inch scopes **NGC 5353**, the southernmost object, is a bright lens-shaped SO galaxy elongated 2' x 1' NNW-SSE with an extended oval core and a stellar nucleus. **NGC 5354**, which touches the northern tip of NGC 5353, is a spiral galaxy with a circular 1.5' diameter halo containing a stellar nucleus. If you scan half a degree ENE of the trio you will find **NGC 5371**, a bright 10.6 mag. galaxy having a 4' x 2.5' halo containing a faint, tiny core with a stellar nucleus at center

If you like galaxies, this is just a start. For more observing fun we suggest looking up the Leo Trio, M65, M66, and NGC 3628. After that you can have a ball in Virgo, start with M84, M86, NGC 4388, and NGC 4387, sometimes called the propeller. From M84 and M86 you can follow the Markarian Chain of Galaxies into Coma Berenices. Use a good star chart such as *NGC 2000* by Sky & Telescope or *The Night Sky Observer's Guide, Volume 2*. Have fun!



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*All makes and models of telescopes are welcome.