NIGHTFALL
Huachuca Astronomy Club of Southeastern Arizona

February Highlite:
Wednesday, February 20th
Total Lunar Eclipse visible in AZ at moonrise (1802hrs.)

HAC MEETING: Friday, February 15, 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: Rich Swanson Topic: Windy Mountain Observatory

&

Speaker: Dean Salman Topic: A recent trip to Keck

Star Party Corner

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

Participation is the Lifeblood of the Club!

We found ourselves in Benson at Jim McCaw's for the January Member Star Party. The clouds never really gave us a chance to set up the scopes but Jim's Mulligatawny Stew was well worth the drive. Del showed up with his new binos and everyone took a look at what would have been a spectacular view had it been clear! I had 12 members sign in that night for another evening of casual conversation and just good company. As long as we participate and make the effort we find good things happen. The next weekend was billed as the Mars Extravaganza/Public Star Party which was held at the Patterson Observatory. We had 5 scopes and well over 100 public attendees were treated to a variety of Messier objects, the Moon and of course Mars. Thanks go out to Rich and Scott for providing the 14's with Del and I setting up the clubs 10" Meade and my Celestron 11 GPS. The 20" OGS RC in the Observatory was the hit of the evening as it gave the clearest views of Mars. After the event it was decided that more of the Public Star Parties will be held at the Patterson Observatory and be themed events. More on these later this spring .

February Star Party Schedule

Saturday, February 2nd Member Star Party; 6 PM at RGO the 10-day weather forecast indicates clear for that night so I want to see some scopes out there. I know Doug just got his new little GO-TO cube and will be there with it. I think it's time we got out and looked at some faint fuzzies. Snacks and other goodies will as always be in abundance at an RGO Star Party.

Saturday, February 9th Finds us back at JBO for the Public Star Party. This will be another good opportunity to catch some of those winter objects that we too often miss due to weather. Dave says the 32" will be ready and he'll be taking requests. We are going to need some telescopes out there so drag yours along and lets' all meet at JBO on the 9th at 6 PM.

Reminder… Messier Marathon is March 8th at DCO; contact Gary Myers at 432-4433 for more details!

President's Perspective

Wayne Johnson

Slowly, but surely we are starting to leave winter behind, though as I write this article it's cloudy and we have a smattering of rain. We will start having more club observing activities such as the themed public star parties at Patterson Observatory on the UA South campus. We had over 100 people in attendance at our Mars Madness Party and we had great support from club members bringing their telescopes. Keep up the wonderful participation! We have the Messier Marathon coming up quickly, a Saturn-themed Public Star Party at Patterson Observatory, and we're going to try a new location for our Astronomy Day event later this year. More details to follow in Keith's article.

I'd like to thank David Butler on behalf of the club for a wonderful presentation about he and his wife, Gloria's, trip to Chile. It was well presented, very informative, and showed some beautiful sites in that country to possibly encourage others in the club to wander down south to see their beautiful skies.

Also, Jim Sevarese, has taken up the gauntlet and has offered to become our new Publicity Chairman. Our board of directors will work with him so that he can get the word out to the local press about our up-coming club activities.

And last, but certainly not least, Helen Patterson, will continue to assemble our new member packets and has offered to be our greeting committee at the HAC general meeting to welcome new members and offer them friendly advice. We should all help her in that regard to be sure that attendees at our meetings feel like they are at home.

Clear skies,

Wayne (aka Mr. Galaxy), your resident president.

Outreach Biz

Rich Swanson

The winter pause for events continues unabated. We are beginning to see some activity in the request department for near term event support. But as of this newsletter, there are no requests for our support in February. But be aware that as the weather starts to warm in March, I expect event requests to pick-up (I am probing for assistance at the SV Library in early March). Keep 'em lookin' up, ya'll!

Huachuca Astronomy Club P.O. Box 922 Sierra Vista, AZ 85636 **http://hacastronomy.com ,** email: mrgalaxy@juno.com
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 or repogazer@msn.com
Treasurer: Bob Kepple: 366-0490 or astrocards@aol.com; **Secretary**: Jeanne Herbert, 366-5690
Star Party Coordinator: Keith Mullen, repogazer@msn.com
Outreach Events Coordinator: Rich Swanson, 803-7298 or blakstar64@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 ***haclist-subscribe@yahoogroups.com .***

Backyard Astronomer

Neal Galt

What's UP...

One big astronomical event for February this year will be the lunar eclipse on February 20th. You might want to start viewing it at about 7 PM local time, although the really dark part will be between 8:00 PM and 8:52 PM. As the sky darkens, the nearby bright Saturn and Regulus should provide an enjoyable sight. Put this one on your calendar.

2/7/2008 in the evening or 2/8/2008 early morning hours may provide a few very bright and very fast meteors that sometimes will leave a persistent train of glowing gases that can hang in the sky for several minutes.

Mercury is still an evening object low over the western horizon at the beginning of the month only. Then it moves to the morning sky by the end of the month. Venus and Jupiter are dancing on the morning of the 1st over the eastern horizon. Watch them for the next few weeks as Venus gets lower and Jupiter climbs higher.

Mars is now starting to dim, although it still is about as bright as Saturn and very red. It is located high in the southeastern sky when the evening begins. Saturn reaches opposition (opposite the sun in our sky) on 2/24/2008. That means it is rising in the east as the sun sets in the west. Saturn is currently in Leo and near the bright star Regulus.

Why is Ground Hog Day an astronomical event? Because it is a cross-quarter day. That means on 2/2/2008, we will be half-way through winter and halfway to spring. Of course, the way you say that as an astronomer is that cross-quarter days are between soltices and equinoxes. Now go out and kiss a ground hog and let's get this place to warm up!

Dollar$ & Cent$

Bob Kepple

The Club has a checkbook balance (mid January) of $4,503.16 with $120.16 in petty cash. We have 11 Calendars left.

Dues 2008

Time to renew your membership! You will be past due as of January 31st.
Dues will be the same as last year; $25 single, $35 family, $20 Military, $10 student.

You can send a check made out to HAC to:

Huachuca Astronomy Club
PO Box 922
Sierra Vista, AZ 85636

By sending in your dues you will help lesson the confusion at meetings.

About the Speakers:

Rich Swanson: Moved to Sierra Vista after retiring from 21 ½ years in the Army, where he served as an intelligence analyst. During his final years in the service, his childhood interest in astronomy was rekindled when his mother-in-law purchased a 5" Newtonian reflector for his birthday. After joining the San Angelo Amateur Astronomy Association in Texas , he soon realized he was greatly out-classed by his fellow club members at star parties and public events. He obtained a kitchen pass from his wife and purchased one of the first production 10" Meade LX200GPS telescopes available and immediately became the hit of his club, not only because of all the cool gizmos. But also because this scope made him able to find objects in the sky very early, keeping early visitors to events entertained until other scopes could begin observing. After moving here he decided that he wanted to start getting into astrophotography and possibly some science, so he purchased a 14" version of his Meade. Since this scope weighed 168 pounds, he decided it was time to build an observatory to permanently house his scope.

Dean Salman : I have been into astronomy since I was in 2nd grade and have been doing astrophotography since 1973. I have given planetarium shows when going to college and did the night time programs for the national parks and US Forest in California, Utah, Colorado, and Missouri in the 1980's. I have had my images published in astronomy, Sky and Telescope, and about a dozen other journals around the world. I was also one of the imagers selected in the recent issue of Sky and Telescope's Beautiful Universe 2008.

Sierra Vista Outdoor Lighting Code Update

Preserving the Night Skies of Cochise County

Here's a wild idea I'd like to propose. Let's get more active in fighting local light pollution. With a quick night tour around the area, we quickly discover people who've never heard of the LP code in our state, city, or county. There are many unshielded flood lights, and those horrible dusk-to-dawn glare bombs are seen quite often.

Here's what I've done to fight LP in my neighborhood. Three of my neighbors have installed unshielded flood lights, and they can be a real annoyance. In one case, the neighbor agreed to keep the lights off unless they are needed for visitors or special events. In another case, I asked if I could snap on a "par shield" on an offending light, and the neighbor said please do this. This made an amazing improvement. In the third case, I am still working on them.

Some clubs have bought shields and shielded lights to be used to replace offending lights. If we buy larger amounts, the discounts are greater. I would like to invite HAC to buy Par shields to make them available to anyone who'd like to shield a bad Par floodlight. If this works OK, we could consider other purchases.

There is another project to work on. Have you noticed that many of the lighting fixtures at Lowes are unshielded, and they do not comply with local codes? We need someone to begin working on this project for the long term. We need to point them in the right direction, so the lighting is the best available and complies with our zoning standards. This would involve working with distributors, the corporate office, and the store management.

Please consider these ideas, and what else we can do. Any volunteers to help us get started?

Clear skies and bright stars,
Bob Gent

Space Place Astronomy Club article

No Mars Rock Unturned

by Patrick L. Barry

Imagine someday taking a driving tour of the surface of Mars. You trail-blaze across a dusty valley floor, looking in amazement at the rocky, orange-brown hillsides and mountains all around. With each passing meter, you spy bizarre-looking rocks that no human has ever seen, and may never see again. Are they meteorites or bits of Martian crust? They beg to be photographed.

But on this tour, you can't whip out your camera and take on-the-spot close-ups of an especially interesting-looking rock. You have to wait for orders from headquarters back on Earth, and those orders won't arrive until tomorrow. By then, you probably will have passed the rock by. How frustrating!

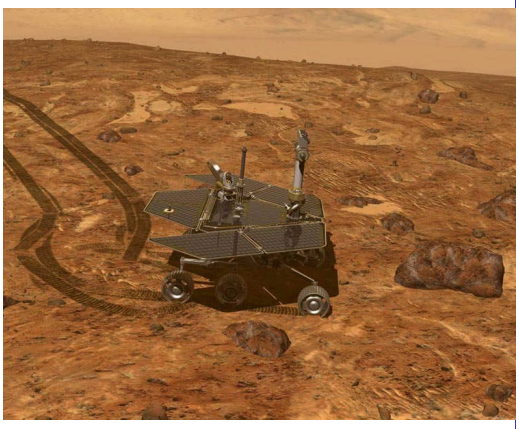
That's essentially the predicament of the Spirit and Opportunity rovers, which are currently in their fourth year of exploring Mars. Mission scientists must wait overnight for the day's data to download from the rovers, and the rovers can't take high-res pictures of interesting rocks without explicit instructions to do so.

However, artificial intelligence software developed at JPL could soon turn the rovers into more-autonomous shutterbugs.

This software, called Autonomous Exploration for Gathering Increased Science (AEGIS), would search for interesting or unusual rocks using the rovers' low-resolution, black-and-white navigational cameras. Then, without waiting for instructions from Earth, AEGIS could direct the rovers' high-resolution cameras, spectrometers, and thermal imagers to gather data about the rocks of interest.

"Using AEGIS, the rovers could get science data that they would otherwise miss," says Rebecca Castaño, leader of the AEGIS project at JPL. The software builds on artificial intelligence technologies pioneered by NASA's Earth Observing-1 satellite (EO-1), one of a series of technology-testbed satellites developed by NASA's New Millennium Program.

AEGIS identifies a rock as being interesting in one of two ways. Mission scientists can program AEGIS to look for rocks with certain traits, such as smoothness or roughness, bright or dark surfaces, or shapes that are rounded or flat.



In addition, AEGIS can single out rocks simply because they look unusual, which often means the rocks could tell scientists something new about Mars's present and past.

The software has been thoroughly tested, Castaño says, and now it must be integrated and tested with other flight software, then uploaded to the rovers on Mars. Once installed, she hopes, Spirit and Opportunity will leave no good Mars rock unturned.

Check out other ways that the Mars Rovers have been upgraded with artificial intelligence software at http://nmp.nasa.gov/TECHNOLOGY/infusion.html#sciencecraft.

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

Winter's Star Clusters

By Bob Kepple & Glen Sanner

Since we did an article on autumn's star clusters we thought we would do a follow-up article for the winter months. For your convenience, the following information is repeated from the last star cluster article:

The typical globular is compact and sphereoidal in shape with hundreds of thousands of stars but open clusters come in a wide variety of sizes, concentrations, textures, and star numbers. Some are so sparse and irregular that they hardly stand out against the star field while others are highly concentrated showpieces. Open clusters may be composed of bright stars while others may just be dim misty patches of unresolved stars, a factor of their distance from us in space. No matter what size telescope you use there are suitable star clusters for viewing. Below is a selection of interesting star clusters suitable for small and medium-size telescopes, but just because you may have a large telescope that doesn't mean you should ignore objects listed for small telescopes as they will look even more impressive with an increase in aperture. Clusters are rated from five to one asterisks, the more asterisks the brighter or more interesting it is.

Try Type = Trumpler Type Roman numerals indicate: I. detached with a strong central concentration; II. Detached with a weak central concentration; III. Detached with no central concentration; IV. Not well detached from star field. Second number indicates: 1. Small magnitude range; 2. Moderate magnitude range; 3. Large magnitude range. Letters indicate: (p) Poor (less than 50 stars); (m) Moderately Rich (50-100 stars); (r) Rich (more than 100 stars); (n) Nebulosity associated with the cluster.

NGC 2169 Open Cl. 30* Dia. 6' Mag. 5.9v Tr Type I 3 p n $06^h08.4^m$ $+13^o57'$ Orion ***

NGC 2169 is a neat cluster that spells the number "37" (however, the numerals are upside down as seen through an inverting telescope). Nine stars form the "3" on the SE side and five stars to the NE form the "7". Small scopes show a few more stars not involved in the numeral asterism sprinkled about. The cluster's lucida (brightest member) is a close double star (Struve 848: mags 8.3, 9.0; sep 2.5"; PA 108^o) involved with the formation of the "7." Two 9^{th} magnitude stars lying 28" and 43" south of Struve 848 and two additional 12^{th} magnitude members turn this double into a multiple star. 12-inch scopes will reveal at least three dozen stars.

M41 NGC 2287 Open Cl. 80* Dia. 38' Mag. 4.5v Tr Type II 3 m $06^h47.0^m$ $-20^o44'$ Canis Major ***

Messier 41 is a large, bright, open cluster located 4 degrees south of Sirius, the sky's brightest star. It lies approximately 2,350 light years away and has a diameter of around 24 light years. On clear dark nights it is visible to the naked eye and binoculars partially resolve it. 4 to 6-inch scopes will show at least 50 stars, most of them being blue B-type giant stars. Near the cluster's center is a 7^{th} magnitude reddish K-type giant star that is about 700 times more luminous than the Sun. It has a 7.5 magnitude yellow companion. A couple more K-type stars are sprinkled about and contrast nicely with the cluster's predominately blue stars. The cluster is irregular in its distribution of stars with some gaps and starless lanes visible here and there. 8 to 10-inch telescopes will reveal over a hundred stars.

(Continued on page 7)

(Continued from page 6)

M 50 NGC 2323 Open Cl. 80* Dia. 16' Mag. 5.9v Tr Type II 3 m 07^{h}03.2^m -08^{o}20' Monoceros ***

Messier 50 is, perhaps, the finest cluster in Monoceros, visible in binoculars as a bright, large, irregularly round concentration of stars. It was first seen by Cassini some time before 1711 and Charles Messier rediscovered it on April 5, 1772 while observing the comet of that year. The cluster is 2,900 light years away and is 14 light years across with a luminosity of 6,400 suns. It appears as a conspicuous patch of stars in small scopes while 8-inch telescopes show about 50 stars with its central concentration forming a blunt arrowhead pointing north. Increasing your aperture to 12-inch will reveal nearly 150 stars having a wide range of magnitudes. The cluster's magnitude 7.8 reddish-orange lucida is conspicuous in its southern part. A star stream stretches out of the cluster to the SE.

NGC 2360 Open Cl. 80* Dia. 12' Mag. 7.2v Tr Type II 2 m 07^{h}17.8^m -15^{o}37' Canis Majoris **

NGC 2360 is a beautiful group lying 20 minutes east of a 5th magnitude star. It is large, very rich and irregular in shape. It will appear as a faint but nice patch of 11th and 12th magnitude stars in small telescopes. 8-inch instruments may reveal about 60 stars while 12-inch telescopes may discern over a hundred members. The western half is more concentrated and star-rich while the eastern portion shows several conspicuous starless gaps.

NGC 2362 Open Cl. 60* Dia. 8' Mag. 4.1v Tr Type I 3 p n 07^{h}18.8^m -24^{o}57' Canis Major ***

NGC 2362 is a bright, beautiful group surrounding the 4th magnitude star Tau Canis Majoris. The cluster is quite young, only about one million years old, and therefore is among the youngest known star clusters. It is also quite near to us in space, only some 5,000 light years away. If we viewed our Sun from that distance it would only be about magnitude 15.5. The cluster's diameter is about 8 light years across and is naturally composed of young O and B-type stars. Although it appears much more brilliant than the other stars Tau Canis Majoris is believed to be a true cluster member and not just a foreground star. Small scopes will show several dozen stars surrounding Tau CMa while 12-inch scopes will reveal over 50 stars in a highly compressed clump.

M47 NGC 2422 Open Cl. 30* Dia. 29' Mag. 4.4v Tr Type I 2 m 07^{h}36.6^m -14^{o}30' Puppis ***

Messier 47 is an extremely large, bright open cluster visible on a clear night to the unaided eye as a hazy spot in the Milky Way while 10x50 binoculars will partially resolve it. Its brightest stars are blue-white B-type stars that contrast nicely with the orange variable star KQ Puppis lying 40' due west of M47. This cluster lies about 1,700 light years away and is about 15 light years in diameter. M47's stars are rather young being only 25 to 30 million years old, compared to the Sun's age of nearly 5 billion years. Small scopes will resolve at least 50 stars having a wide range of brightness. 8-inch telescope users may see over 75 stars. There are two nice double stars within the cluster, one at the very center (Struve 1121: mags 7, 7.5; sep 7.5"; PA 304^o), the other near the west edge (Struve 1120: mags 5.7, 9.6: sep 19.6"; PA 36^o).

Melotte 71 Open Cl. 80* Dia. 9' Mag. 7.1v Tr Type II 2 r 07^{h}37.5^m -12^{o}04' Puppis **

(Continued on page 8)

P. O. Box 922
Sierra Vista, Arizona 85635

Visit us on the web at hacastronomy.com

(Continued from page 7)

Melotte 71 is an excellent cluster for small to medium-size telescopes. In small scopes at low power it resembles a very loose globular cluster. In 8-inch telescopes at least fifty 11th magnitude and fainter stars may be resolved against a hazy background. The brighter stars lie along the east and west sides with the fainter members concentrated at center.

M46 NGC 2437 Open Cl. 100* Dia. 27' Mag. 6.1v Tr Type II 2 r $07^h41.8^m$ $-14^o49'$ Puppis ***

Messier 46, discovered by Charles Messier in 1771, lies in the rich star fields of Puppis just 1.5 degrees east of M47 and both may be seen in the same binocular field of view. Both clusters are large and bright but are anything but twins: M47 is beautiful because of its half dozen bright blue-white stars while M46 is superb because of its richness and uniformity of its faint stars. M46 is also notable for containing a nice planetary nebula, NGC 2438, a foreground object lying about 3,300 light years away compared to the clusters distance of 5,000 light years. M46 has a diameter of about 40 light years across. It is estimated to be 300 million years old, ten times the age of its neighboring blue-star rich cluster M47. 4 to 6-inch scopes may discern some 50 stars having an evenly distributed pattern and uniformly bright stars of 11th to 12th magnitude. The planetary nebula is visible as a hazy disk in the NE portion. 8 to 10-inch telescopes may see at least 80 stars.

These star clusters are well placed for early evening viewing in February and March so take advantage of any clear night to see this fine assortment of objects before they are gone for another year. We hope you enjoy observing them.