

# NIGHTFALL

Huachuca Astronomy Club of Southeastern Arizona



## **HAC MEETING: Friday, June 12, 2009**

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 Johnson**

**Topic: "Past and Future Total Solar Eclipses"**

### STAR PARTY CORNER

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

***Participation is the Lifblood of the Club!***

May 2009 will go down in the books as the month that didn't. We didn't have our Telescopes in the Park in conjunction with IYA 2009; we cancelled an outreach event at the Mall and we didn't see very many at the Member Star Party at JBO on the 23<sup>rd</sup>. It was Dave and I until well after dark when Cindy Lund showed up with her two friends and later Tom Kaye also made a brief appearance. We kept telling each other that the whole club must have gone to RTMC this year, while we pondered at objects like Omega Centauri, M-65 & -66 and Saturn with its ring knife on yielded some of its not too often seen inner satellites. Let's all put a little more effort into the HAC adventure in June. We do have a full schedule with the Celestron C-Row Star B.Q. at RGO. Not to mention a meeting and public star party back-to-back on Friday the 12<sup>th</sup> and Saturday the 13<sup>th</sup>. So I'm not going to bore you with more didn't happen in May stories, let's just move on...

### June Star Party Schedule

Friday, June 13<sup>th</sup>: Member/Public Star Party at JBO, a warm summer night's observing along with some of the locals who seem to come out on nicer nights. Give me and Dave a hand and drop by with a scope.

Friday and Saturday, June 19<sup>th</sup> & 20<sup>th</sup>: Member Star Party and Special Event: Celestron is coming to RGO, with its C.E.O. and the two new Vice Presidents of Marketing and Public Relations along with the service technicians who will be doing Basic Maintenance on any Celestron equipment you might want to bring out. What a great opportunity to get that old C-8 cleaned up. There is a limit on attendees so if you are a HAC member and plan to attend, please contact Keith at 366-0049 or [repogazer@msn.com](mailto:repogazer@msn.com) to verify that you are on the list. Star B.Q. Raffle tickets will be on sale during the June 12<sup>th</sup> meeting for \$1.00 each. The raffle is worth thousands with a Celestron CPC 800 scope as first prize and is itself valued at \$2,000.00.

**STARIZONA**  
ADVENTURES IN ASTRONOMY & NATURE

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## President's Perspective

Wayne Johnson

I and several other HAC members had a great time in southern California over the Memorial Day weekend. It's too bad more HAC members couldn't make it, but those who did were treated to wonderful conditions! The weather in Big Bear was about as good as I have ever seen it for observing. The temperature was very comfortable (day and night), the skies were clear and steady, and the talks I attended were good, but frankly the skies from my back yard are a bit darker and Steadier.

There were fewer vendors this year, but still enough to find some fun stuff, and the attendance was about 1100. The RTMC gave away some great door prizes, enough to make the trip worth it, though I didn't win anything (as usual!). In all the 20+ years I have attended the RTMC, I have never made the swap meet, which is supposed to be the big attraction of this event, and this year was no exception, though I found some good deals later in the day! Dr. Ed Krupp, from the Griffith Park Planetarium, was the featured speaker and was, as always, excellent. I even heard a talk about string theory which, believe it or not, was very enjoyable. There are many activities targeting beginners at the RTMC and if there is one major star party where you can pick up valuable information this one is well worth your effort.

Meanwhile, here in Arizona, shortly before leaving for the RTMC, we had a very successful Outreach event in beautiful, downtown Elgin at the elementary school. It took Adam Hebert and I a little while to find the school, neither GPS nor the Garmin gave the correct location, but luckily we had a phone number and were given good directions, which was fortunate because it was getting dark. By the time we got there, our Outreach Coordinator, Swanee, who made an extra effort to make it, had everything

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

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This issue of Nightfall can also be found on-line at [hacastronomy.com](http://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](mailto:haclist-subscribe@yahoogroups.com) .

*(Continued from page 2)*

under control. We had about five telescopes show up for around 60 children and all of us had a great time! The weather was perfect and the telescopes were set up in a nice courtyard. I want to heartily thank our club members and several local amateurs who showed up after seeing my pleas on the HACList. Thank you all!

We are supposed to have a Sidewalk Astronomy event at the Mall of SV in a couple days as I write this article. I hope to see a good crew of members showing off the Moon and Saturn from downtown and I hope the weather cooperates! We seem to be having premature monsoon conditions that I hope do their job during the day and leave the nights skies scrubbed clean.

### ALCon 2010 to be Held in Tucson

The Tucson Amateur Astronomy Association, the International Dark-Sky Association, and the Astronomical League will be jointly hosting the annual convention of the League from June 24 until 26, 2010 at the Tucson Hilton East. We are planning for great speakers and exciting tours. The AL holds its annual awards banquet and it presents major national awards during the conference. Among others, the National Young Astronomer Award will be presented. In addition, astronomy vendors from across the USA will display their latest products. We also expect leaders in IDA's dark sky movement to participate. Keith Schlottman, VP of TAAA, and Bob Gent, Past president of the Astronomical League, are the event's co-chairs. Please mark your calendars and stay tuned for additional updates.

#### About the Speaker...

The talk will feature several eclipses that my wife, Arlene (aka Mrs. Mr. Galaxy), and I have travelled around the world to see. I will also talk about the circumstances involving the upcoming total solar eclipse in July 2009. It will be the longest eclipse of the 21st century and is related to the very long eclipse that we observed in Baja California in 1991, which was the longest eclipse of the 20th century.

Wayne Johnson (aka Mr. Galaxy) is the current president of the Huachuca Astronomy Club (HAC). He is well-known for his six supernova discoveries and was the first amateur astronomer to find two supernovae in one night. He and his wife have travelled around the world to successfully view four total solar eclipses on land and at sea.



# Globular Clusters in Ophiuchus

By Bob Kepple & Glen Sanner

*Messier 10 is a class 7 globular cluster.*



Globular clusters are some of our favorite objects. We have heard many say that they all look alike – this is certainly not true. This statement can only be made by someone who really hasn't taken the time to observe them closely. If you take the time to really look at each one you will find that they are quite diverse in appearance, with much contrast and variety from one cluster to the other.

Globular clusters contain some of the oldest stars in our Milky Way Galaxy. Since they are so old you will find no nebulosity among them as the stars have long since dispersed any remaining hydrogen left over from star formation with their solar winds. Globular clusters contain typically hundreds of thousands of stars, the average cluster having over half a million stars or more, spread over an average diameter of about 100 light years.

This makes for a most conspicuous and visually impressive type of star group. By comparison, the open cluster, may contain only a dozen stars to several hundred stars. In the globular cluster, the degree on star-crowding toward center is expressed by its Shapley-Sawyer Concentration Class -- class I globulars being the most star-dense and class XII the lowest. Some class XI and XII are hardly richer than the most populous open clusters. The lower density globulars are the easiest clusters to visually resolve while the higher density class clusters are the hardest to resolve individual stars. In the high density globulars you may only resolve stars toward their edges. One can observe globulars with almost any size of telescope, even under light polluted skies. Small telescopes can detect the fuzzy outlines of many clusters while medium size telescopes (10-14 inches) may totally resolve clusters in the mid-range (V-VII) classification. As you observe each globular, pay attention to its class and note the different density in each cluster. You will soon see that each one has a personality of its own, the cores have different degrees of compactness, while the outer areas may display loops and strings that radiate outward. Since our club is a member of the Astronomical League you can receive a Certificate and an Award Pin for observing 50 globular clusters.



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## Space Place Partner Column

**Scoring More Energy from Less Sunlight**

For spacecraft, power is everything. Without electrical power, satellites and robotic probes might as well be chunks of cold rock tumbling through space. Hundreds to millions of miles from the nearest power outlet, these spacecraft must somehow eke enough power from ambient sunlight to stay alive.

That's no problem for large satellites that can carry immense solar panels and heavy batteries. But in recent years, NASA has been developing technologies for much smaller microsattellites, which are lighter and far less expensive to launch. Often less than 10 feet across, these small spacecraft have little room to spare for solar panels or batteries, yet must still somehow power their onboard computers, scientific instruments, and navigation and communication systems.

Space Technology 5 was a mission that proved, among other technologies, new concepts of power generation and storage for spacecraft.

"We tested high efficiency solar cells on ST-5 that produce almost 60 percent more power than typical solar cells. We also tested batteries that hold three times the energy of standard spacecraft batteries of the same size," says Christopher Stevens, manager of NASA's New Millennium Program. This program flight tests cutting-edge spacecraft technologies so that they can be used safely on mission-critical satellites and probes.

"This more efficient power supply allows you to build a science-grade spacecraft on a miniature scale," Stevens says.

Solar cells typically used on satellites can convert only about 18 percent of the available energy in sunlight into electrical current. ST-5 tested experimental cells that capture up to 29 percent of this solar energy. These new solar cells, developed in collaboration with the Air Force Research Laboratory in Ohio, performed flawlessly on ST-5, and they've already been swooped up and used on NASA's svelte MESSENGER probe, which will make a flyby of Mercury later this year.

Like modern laptop batteries, the high-capacity batteries on ST-5 use lithium-ion technology. As a string of exploding laptop batteries in recent years shows, fire safety can be an issue with this battery type.

"The challenge was to take these batteries and put in a power management circuit that protects against internal overcharge," Stevens explains. So NASA contracted with ABSL Power Solutions to develop spacecraft batteries with design control circuits to prevent power spikes that can lead to fires. "It worked like a charm."

Now that ST-5 has demonstrated the safety of this battery design, it is flying on NASA's THEMIS mission (for Time History of Events and Macroscale Interactions during Substorms) and is slated to fly aboard the Lunar Reconnaissance Orbiter and the Solar Dynamics Observatory, both of which are scheduled to launch later this year.

Thanks to ST-5, a little sunlight can go a really long way.

Find out about other advanced technologies validated in space and now being used on new missions of exploration at [nmp.nasa.gov/TECHNOLOGY/scorecard](http://nmp.nasa.gov/TECHNOLOGY/scorecard). Kids can calculate out how old they would be before having to replace lithium-ion batteries in a handheld game at [spaceplace.nasa.gov/en/kids/st5\\_bats.shtml](http://spaceplace.nasa.gov/en/kids/st5_bats.shtml).

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

**Caption:**

*Helen Johnson, a spacecraft technician at NASA's Goddard Space Flight Center, works on one of the three tiny Space Technology 5 spacecraft in preparation for its technology validation mission.*



## C-ROW STAR B.Q. 2009

Keith Mullen, V.P. & Coordinator

HAC Members, let me give you a little history on what C-Row is all about. During the time I was Observatory Director for the SVAS we would line up sometimes 30 Celestron telescopes in a row without having another make in the line, it caught on and every month we had the same group set up in the same place, hence C-ROW. We contacted Celestron and they ran a story of this in their web pages event section. This lasted for three years.

Last summer we had a handful of Celestron friends out to RGO for a star party and we called it C-Row reborn, Arizona style.

The Celestron management asked me if I wanted to run with this idea, and of course, I said yes! We put together a program where Celestron would sponsor an event for other clubs nationwide, donating a large cache of raffle and door prizes -- hopefully enough for the club to cover its expenses with some left over for the club's treasury. This year, Celestron has decided to up the ante a bit by sending out its C.E.O., marketing and public relations V.P.'s and the service department staff. A maintenance station will be set up in their tent where the service staff will inspect and do basic maintenance on Celestron telescopes, binoculars and mounts for no charge. All this we get plus several thousand dollars worth of door and raffle prizes.

Celestron has been good to HAC these past 5 years, always donating a new scope for our Scopes in the Park events, and even when we had internal fundraising programs such as the Essay awards. You remember where two young HAC members wrote such great essay and we had only one used scope donated as a prize? One phone call to Celestron and "Poof" we got another new scope for nothing. The Club's loaner Sky Scout is another donated item from Celestron and the list goes on!

So, this all leads us to this year's event here at RGO on Friday and Saturday, June 19 & 20, 2009 We have invited Starizona to attend and Dean will be here both nights and will contribute a lot more to the door and raffle prize bins. Infinites Astro apparel will be here to sell event T-Shirts as well, and last but not least, a well-rounded selection of speakers and some very special guests will be here too -- but I'm not saying who!

We have had to file for a Cochise County special use permit and have an absolute maximum attendance figure of 150. WE ARE GETTING CLOSE!

Let's get to the nuts and bolts of this -- we have asked all those who are non-members to register and to pre-purchase \$20 in raffle tickets. We are behind the expenses in ticket sales and we need all HAC members to support our club. HAC members have not been asked for advanced ticket purchases, although we did have a "early bird" sale at the May meeting and tickets will be sold at the June 12<sup>th</sup> meeting and both days during the event.

We are encouraging HAC members to come on Friday night, observe and leave their scopes set up and covered until Saturday night's observing. On Friday the actual event begins and carries over until Sunday morning. Friday night is dark sky observing night with Starizona doing imaging demonstrations. The speakers will be scheduled on Saturday afternoon at 2:30 p.m. and Saturday evening after 7:00 p.m. Members and non-members alike will be required to follow the same rules: all those coming without a scope will be directed to park outside the front gate along the gravel driveway pointing out. Only those bringing scopes will be permitted to park inside as well as those with handicapped placards.

The club will supply the BBQ pit as well as hot and cold beverages and water for the dinner. We do ask that all HAC members attending bring a side dish along with your choice of a main dish; you will cook your own steaks or David Levy will cook it for a \$25.00 donation. Hans Clahsen is Head Chef and will control the BBQ area, We light the BBQ at 3:30 and begin cooking /eating at 4:30. There is also the option to have a catered RIB dinner delivered at 4:30 p.m. for \$23.00, but you must pre-pay by 6-6-09.

We are also asking that you bring along a folding chair (ever try to find 150 chairs before?). The raffle will be run by me and Celestron C.E.O. Joe Lupica, Jr. and will begin at 6:00 p.m. with speakers and observing to follow. All attendees are asked to be gone from the site by 4:00 p.m. Sunday, June 21<sup>st</sup>.

If you haven't already signed up to attend and are planning to attend, please contact Keith Mullen at 366-0049 or [repozazer@msn.com](mailto:repozazer@msn.com) ASAP. If we hit the 150 limit and you haven't signed up, you will not be able to attend,

Thank you for listening (reading)



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For information see the League's Web Site.

**Sample observations:**

**NGC 6356** (Class 2): This globular is fairly faint overall. It has a broad, dense core that fades gradually to a very faint, circular, unresolved halo. The core spans nearly half of its diameter.

**NGC 6293** (Class 4): Fairly faint, fairly small, although small and fainter than the other Ophiuchus showpieces, this class 4 globular displays a dense, irregular core surrounded by a much fainter outer halo of stars with only about 8 to 10 stars resolving around the edges.

**M10** (Class 7): Bright, large, and very pretty! Both the core and edges are irregular. The core has a faint, dense unresolved background glow with a nice overlay of brighter stars sprinkled over them. Among these prominent stars are strings that radiate outward into the star field, the most prominent forming a lazy-S crossing from N-S through the core. The strings give the cluster a spidery appearance.

**M107** (Class 10): M107 is fairly bright with a moderately well-concentrated, irregular core. The halo is much thinner than the core and fades outward to the periphery. There is a nice overlay of foreground stars, four of which are fairly bright with another 8 or 10 prominent but less bright stars standing out against the faint stars. The cluster is well-resolved right into the core.

**Globular Clusters in Ophiuchus**

For the fun of it, try estimating the globular class of each object.

NGC #	Other #	Mag.	Size	Hr	Min	Sec	Deg	Min.
6171	M107	7.8	13	16 <sup>h</sup>	32 <sup>m</sup>	32 <sup>s</sup>	-13	03.2
6218	M12	6.1	16		47	14	-01	56.8
6235		8.9	5.0		53	25	-22	10.6
6254	M10	6.6	20.0		57	09	-04	06.0
6266	M62	6.4	15.0	17 <sup>h</sup>	01	13	-30	06.8
6273	M19	6.8	17.0		02	38	-26	16.1
6284		8.9	5.6		04	29	-24	45.9
6287		9.3	5.1		05	09	-22	42.5
6293		8.3	7.9		10	10	-26	34.9
6304		8.3	6.8		14	32	-29	27.7
6316		8.1	4.9		16	37	-28	08.4
6325		10.2	4.1		17	59	-23	46.0
6333	M9	7.8	12.0		19	12	-18	31.0
6342		9.5	3.0		21	10	-19	35.2
6355		8.6	5.0		23	58	-26	21.2
6356		8.2	10.0		23	35	-17	48.8
	IC1257	13.1	5.0		21	08	-07	05.6
6366		9.5	13.0		27	44	-05	04.6
6401		7.4	5.6		38	37	-23	54.6
6402	M14	7.6	11.0		37	36	-03	14.8
6426		10.9	4.2		44	54	+03	10.2
6517		10.1	4.0	18 <sup>h</sup>	01	51	-08	57.5



# Huachuca Astronomy Club

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**Friday, June 19th and Saturday, June 20th, 2009**

**For event registration and directions visit:  
[www.hacastronomy.com](http://www.hacastronomy.com) or call 520-366-0049**