

# Harford County Astronomical Society



## Monthly Newsletter

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Volume 35 Issue 9

September 2009

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### **Public Star Party (Open House):**

Saturday, September 26, 2009

at Dusk

At the HCAS Observatory

Planets and Moons

*Activity: Pocket Solar Systems; Featured Object: Jupiter*

### **General Meeting:**

Thursday, October 1, 2009

7:00pm

In the Observatory Classroom

Presentation: "The Constellation *Lyra*"

by Tony Mullen

Please check our new website for possible schedule updates and changes:

<http://www.harfordastro.org>



<http://astroleague.org/>



<http://nightsky.jpl.nasa.gov/>

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## HCAS General Meeting

### Minutes of August 27, 2009

The meeting was called to order at 7:04pm by President Tom Rusek.

Minutes from the last meeting were approved as published in the last newsletter.

Newsletter issues are looking great, there were wonderful pictures including the M13 Hercules Globular Cluster taken with the Group's CCD camera.

**Treasurer's Report:** We have 42 paid members. The new roster was submitted to the College, and subscriptions to Sky & Telescope and Astronomy Magazine were paid. Current balance is \$4609.35. The dues for the Astronomical League need to be paid, and there is a reimbursement to Tim for the 2 - 12 volt power packs. Tim reports that we also owe Jim Garrett \$100. Tim also reports that the 501(c)3 status is being worked on by the college so that we may accept donations and have our flyers posted in Cecil County schools and libraries.

**Outreach:** Open House was on August 22, special thanks to Jimi for cooking up a comet, and Phil for his presentation about Meteorites. Even though we had bad weather, there were 6 people who showed up. Upcoming Outreach dates: Swanfest is October 11, Edgewood Library October 22, Astronomy Day at the College is October 24. The Faculty/Staff Open House will be scheduled after the Dome Renovations are complete. We were asked to give Outreach to two groups: Reschedule date for Carroll Manor Elementary School, we decided that either November 13th or 20th would be best, Grace to submit those for consideration. Aberdeen Proving Grounds is having the "Year of the NCO" and asked for a presentation in November, Grace will submit November 10th or 17th to them for approval.

**Observatory Operations:** Joe has completed refurbishing the 13" Odyssey Dobsonian in the storeroom. He says that it still needs a Telrad, but it looks great after being painted.

**Dome Renovations:** Mark reports that there are some problems getting parts to come in, such as the rollers, and there is some college red tape to work through with the purchasing department. The Gear Reducer is different than what we had before, and he will have to remachine the mount. There is a bit of discussion as to what the \$20,000. that Steve Garey has been approved to spend covers. We will have to review what needs to be done and go from there. Mark reports that there is still a lot of work to be done. Mike says that he would like to see the telescope base, and Mark will help him with what he needs.

Observing Reports: Recently there was a large group at Broad Creek for a Star Party. Email went around to club members talking of the get-together. Roy reports that the Black Forest Star Party will take place at Cherry Springs on Sept 18-20. Tony Mullen reports that the DelMarVa Stargazers is having their Star Party at Tuckahoe State Park that weekend as well.

**Night Sky Network:** Grace reports that there is a Teleconference tonight (the night of the General Meeting) about the LCROSS mission. The next Teleconference will be on Sept 29th and will be about the Fate of the Universe.

**Highlights of Board Meeting:** We have instituted an Email Coordinator, which is Grace. If you have some news to report to the Membership, email Grace and she will email to all current HCAS members. She will put the contact's information at the bottom of the email for follow up. Larry reports that the new website is online. Please check it out!

**Observing Awards from the Astronomical League:** Karen had awards to present from the Astronomical League to the following members:

Outreach Awards to Gary George, Jimi Hajek, Larry Hubble and Phil Schmitz.

Stellar Outreach Awards to Karen Carey, Tim Kamel, Tom Rusek, Roy Troxel and Grace Wyatt.

Northern Constellation Hunter's Award to Phil Schmitz.

With the earning of the Northern Constellation Hunter's Award, Phil has completed 10 Observing Clubs. Phil was awarded Certificate #90 in the Master Observer's Club. Please join me in congratulating Phil in his wonderful Accomplishment!

**New Business:** Tim reports that Chesapeake Optics will be going out of business. Don't wait too long for specials!

The meeting was adjourned at 7:58pm.

- Karen Carey, Secretary

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**Dates for 2010 Open House Events and Business Meetings:**

<b>Open House</b>	<b>Business Meeting</b>
Jan 23	Jan 28
Feb 20	Feb 25
Mar 20	Mar 25
Apr 24	Apr 29
May 22	May 27
Jun 19	Jun 24
Jul 17	Jul 22
Aug 14	Aug 19
Sept 18	Sept 23
Oct 16	Oct 21
Nov 13	Nov 18
Dec 11	Dec 16

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## **New Members**

September 12, 2009

Please welcome the Almes Family, who joined in August. They have been interested in Astronomy for 5 years and own a telescope.

Welcome aboard!

## **\*\*\*\*\*Observation Reports\*\*\*\*\***

### **PLEASE NOTE**

**The best times to observe at Broad Creek are between the last quarter and first quarter of the lunar cycle. The next two such periods are :**

**Sept. 11th to Sept. 25th**

**Oct. 11th to Oct. 25th**

**Try to keep some of these dates open on your schedule.**

Because of the unpredictable weather conditions, we cannot set a specific date and time to observe. Sometimes the decision to go to BC is made within a few hours before sunset. In any case, all club members will be notified by email.

### **Broad Creek August 15, 2009**

The turnout at Broad Creek Saturday night was outstanding! This is just what the club needed--a night out for club members only. We really need more of this. It's nice to help the public once in a while, but we as a club need to do serious observing and photography. That's the great thing about being in a club—people getting together to share their love for astronomy. I think the count was at one time up to 10 or maybe even 12 participating.

The dew was terrible but the sky still kept fairly transparent until late, making Jupiter a good target showing much detail. Of course what blew my skirt up was having two astrophoto work stations going at the same time. Tim Kamel was imaging Jupiter with his Meade Planetary Imager. The preliminary results looked very good. At the same time Gary George and I were imaging M27, the Dumbbell Nebula. Members loved looking at Jupiter and the Dumbbell and then coming over and seeing the results of our images. Tim was getting more detail on Jupiter than you could see with the scopes, and M27, even with fighting all the dew, had some members going "wow" out loud. Cathy Tingler thinks it's better to do a spur of the moment BC Star Party than trying to plan one because when you try to plan, the weather will not cooperate.

Gary and I plan to go up again soon when there is less humidity and dew and re-shoot M27. If it looks this good under terrible conditions, we want to see what we can do under ideal. The plan was to use my Canon 50D and the club's CCD imager to see the comparison between the two cameras' abilities to capture the red end of the spectrum. We could not do this Saturday because it was too hard to keep the dew off the primary. The club's imager should be much better with the red emission nebula.

- Larry Hubble



**Messier 27, The Dumbbell Nebula**

*Photographed by Larry Hubble and Gary George, using a Canon 50D camera.*

*Note: Newsletter images are low-resolution and not suited for printing, wallpaper, etc. If you are interested in a CD of the full-resolution, uncompressed .tif files of our results so far, just ask or email Larry Hubble and he will bring it to the next club meeting. Larry can be reached at: [lhubble@comcast.net](mailto:lhubble@comcast.net)*

**Broad Creek  
Aug. 15, 2009  
9pm to 1:30am**

This was a well-attended session, with at least ten members arriving to observe and photograph! As for myself, I decided this would be good night to experiment with filters, especially since there was a slight haze in the sky. Our club members have varying attitudes toward filters, some members find them indispensable, while others use them only for specific objects, and still others have no use for filters at all. This might suggest that each person's eyes perceives color differently. As for me, a dark- or light-blue filter works best with Jupiter because it dims enough of the planet's light, so that detail can be seen. On the other hand, I found that the UltraBlock filter permitted certain details to be seen that could not be seen by other filters. The slight haze in the southern sky actually helped to steady the planet's image so that you didn't see the wobbling that is associated with the observing objects at low altitude in the sky.

I started with some of the dimmer globular clusters in the Sagittarius-Scorpius-Ophiuchus area. These were all low in the south, where most of the haze and light pollution was collecting. To penetrate all of that, I used Orion's UltraBlock filter.

I began my search in the low-lying regions of Ophiuchus and was able to locate about half of the clusters I searched for: NGC6284, 6293, 6304 and 6316, and M19. Each of these clusters exist in a rich area of the Milky Way that also contains many dark nebulae. Although most of these objects are obscured by the light dome in the southern horizon at Broad Creek, I have seen all them at Cherry Springs. On this night, however, it was hard to differentiate the clusters, because they all appeared as faint white disks, surrounded by a halo of outer stars.

I moved on to Sagittarius, and, at the suggestion of Phil Schmitz, observed the “twin” globulars NGC 6522 and 6528. They appeared in the same field of view of my 12mm Nagler eyepiece. Although the light dome actually became slightly brighter as the night progressed,

I was able to see NGC6553 and 6558, as well as an open cluster, M21, all in Sagittarius. The southeast sky was darker than the southwest, so I aimed my scope toward Aquarius for views of globulars M2 and M72. M2 was very bright, round and easily resolved -an impressive sight in a somewhat blank area of the sky.

Moving upward in the eastern sky, I observed M15 in Pegasus, which appeared bright and round, a very nice object. The galaxy NGC7331, however, was dim. M92 in Hercules was bright, round, attractive, very near the zenith. The sky was now becoming hazy overall, so I concluded with M56, a globular cluster in Lyra, which now almost overhead. Unlike the clusters in Sagittarius, none of these clusters appeared to any advantage using the UltraBlock filter. In fact, the filter only made the objects dimmer and it completely eclipsed the surrounding stars.

M27, the Dumbbell Nebula, was high in the eastern sky and looked good in the 9mm eyepiece, as it almost covered the entire field of view. It looked better in the 12mm, however, because the lower power and wider field made the nebula's “dumbbell” or “apple core” shape more apparent. On the other hand, the galaxy M33 was dim, because it was low in the northeast sky, where haze was developing.

I decided to conclude the session by observing the planets. There were three of them available – Jupiter, Uranus and Neptune.

I had been observing Jupiter during the course of the night, when it was at different altitudes and with different filters. At this time, about midnight, with a 9mm Nagler eyepiece and light blue #82A filter, I could see considerable detail on the dark northern band - spots and curlicues. The Great Red Spot resides on this band, was not in view at the time. I also tried two other filters, the blue #80A and the green #58, each of which presented slightly different details, although the #82A gave the best overall presentation. I even tried the UltraBlock, although it darkened the planet a little too much, giving it a murky blue appearance. Neptune is currently in Aquarius, and not that far from where it was discovered in September, 1846. On this night, it appeared as a 9th-magnitude blue dot next to a reddish star, about 3 degrees from Jupiter.

Uranus: I saw a pale white disk; others saw a greenish tint. Uranus is currently a 5.8 magnitude object, and probably visible to the naked eye, under darker skies than Broad Creek's.

By midnight, the globular cluster M30 had risen high enough in the south to be observed. It is now in the dim constellation Capricornus, a rather blank area of the southern sky. I was able to observe one or two of its “legs”; i.e., strings of stars that seem to protrude from the cluster.

I closed my session with Almach, (Gamma Andromedae), a beautiful blue-and-gold double star.

- Roy Troxel



*Tim Kamel's Elite Brick Counterweight*



Observing at Broad Creek  
August 15, 2009



*Paul Sokolowski*

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*Jeff Schluedenberg*

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## Observation Report August 15, 2009



*Jupiter and 3 moons. See below for details.*

Saturday, August 15<sup>th</sup> was a beautiful day and was shaping up to have a beautiful night, one of the best we have had for a long, long time. Transparency and seeing were better than average. A group was planning a session at Astronomy Hill and sent me an e-mail. I usually have other commitments on Saturdays but was free this one, so I went. I am so glad I did. Viewing was great, the weather was mild, and we had one of the biggest turnouts we have had in several years, and the most I have been part of. There were 10 of us that night.

Besides me, there were Gary George, Larry Hubble, Roy Troxel, Grace Wyatt, Phil Schmitz, Cathy Tingler, Paul Sokolowski and Jeff and Mrs. Schluderberg.

This evening, it was my intent to do some astrophotography using a Meade Lunar Planetary Imager (LPI). I had gotten this camera as part of a purchase of a scope I had made on Astromart back in 2005. I had yet to use it, lacking a suitable laptop. I wanted to get some shots of Jupiter, which had just hit opposition, and possibly some shots of Neptune, which was a degree or so away. Tonight, I had the club's laptop, which has XP operating system (Vista does not recognize the camera). I debated heavily on which scope to bring, a 6" f/8 or an 8" f/4, both of which run on my LXD GOTO mount. The f/8 is a much better scope for shooting planets but at the last minutes I opted for the 8", going with more aperture.

I got there around 8 PM and still had some light to get set up. I found that when I opted for the 8" scope, I forgot to bring enough counterweights. I considered going home to get it (an hour and half round trip) but Gary improvised. He found two half bricks with a hole through them. Grace contributed the duct tape, and I was in business.

All-in-all, I took some 300 individual photos that night. Many of these were for getting Jupiter centered in the scope and focused, and then trying to find the best exposure time. I then had several decent shots but Jupiter was too small. So I then added a Barlow and then had to repeat the process of centering and focusing before being able to get some shots.

Well, I got some good ones, better than I thought I could with this old camera. I forwarded several of them to Larry, who used his software to stack the photos, bring out the colors and also use other photos to enhance the Jovian moons. He did an excellent job.

My attempts to find Neptune were fruitless. So I tried Uranus instead, figuring that it is brighter and would be easier to find. Well, I found it and went through the routine of centering and focusing and then got some shots, but Uranus was tiny. So I tried the Barlow again but somehow I could not get it centered in the field of view of the camera. By this time, the laptop was giving



me fits, kept kicking me out of the software I was using. It was now close to 1:00 AM and those of us still there decided to pack it in.

A most satisfying night. I was able to get the camera to work. Tracking was fairly good. I have some homework to do on how to deal with the power issue.

I can't wait till Saturn comes around again.

– *Tim Kamel*

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## HCAS Founder's Observation Report from Brazil

A lifelong goal of mine has been to view the southern sky at night. 42 years later, my goal has been fulfilled! On Saturday evening, August 15, I was treated to the greatest naked-eye nighttime experience of my life on a remote farm a few kilometers from Diamantina, a mining town in a mountainous area of Brazil (approx. 22 degrees south latitude). It is the dry season (maybe 20% humidity), and observing is optimal.

The Milky Way stretched from horizon to horizon, glowing brightly, its dark divisions readily apparent. Jupiter shone brightly in the east - as brightly as I can recall. Scorpius was directly overhead, stretching somewhat toward the north. There were so many stars to the west that it was difficult to identify Alpha Centauri, the brightest.



Unfortunately, I was prepared neither with star map nor binoculars. However, I did manage to give an astronomy lesson to my friends who have lived there their entire lives!

Sincerely,

Lewis Berman

*Lewis founded HCAS in 1970.*

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## Outreach Programs Open House August 22, 2009

August 22<sup>nd</sup> was our August Open House and hey, guess what, it rained again. This is getting to be monotonous. This is the International Year of Astronomy and we can't get any decent weather to hold some public functions.

We again had a good turnout by members. In addition to me, attendees included Grace, Mark, Paul, Larry, Roy, Tom and Angela, Karen and Maggie, Jimi, who cooked up a comet, and Phil, who gave a presentation on meteorites.

We had six guests, which is pretty good considering the weather.

By 9:00, the guests had departed and we packed up and left.

- *Tim Kamel*

PS: How annoying is this? As I write this on the night of Tuesday, 9/1, it is perfectly clear outside with better than average transparency and seeing! It was the same yesterday and tomorrow and the next day are predicted to be more of the same. Great nights except for an almost-full moon lighting up the sky and washing out all the DSOs. No Fair.

**Open House  
August 22, 2009**

**Comet Chef**



*At our recent Open House, Jim Hajak displayed the ingredients for a typical solar-orbiting comet.*



*The completed comet!*

## UPCOMING OUTREACH EVENTS

### Swanfest

October 11, 2009 11 AM to 4 PM

Swanfest is a family fun day held by the Aberdeen Board of Parks and Recreation, Inc., at Swan Harbor Farm, 401 Oakington Road, Havre de Grace, MD 21078 HCAS sets up a table and display to answer questions about astronomy, give out astronomy related materials and hold viewing sessions for the public. (We look at the sun. One year we also saw the moon and Venus in the middle of the day) For more information about Swanfest visit <http://www.aberdeennpr.com/Programs/swanfest.htm>

### Edgewood Library

October 22, 2009

6:30 to 7:30 PM

629 Edgewood Road,  
Edgewood, MD 21040

HCAS will be providing a LEAP program at the library called Harry Potter's Astronomy Class: What did Harry and his friends see through their telescopes from the top of the Astronomy Tower? If the weather permits we will go outside to view the moon and other items through telescopes.

According to the Edgewood Public Library site, "[LEAP \(Learn, Explore and Play\)](#) is an innovating science enrichment program for children and youth based at the Edgewood Branch of HCPL. Introducing different science themes through programs led by scientists and engineers, and take-home science oriented kits, LEAP encourages children and teens to consider pursuing science and technology careers that are and will be the basis of many jobs in the local area. "

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### Astronomy Day

October 24, 2009

#### Chesapeake Hall

11 AM to 4 PM

#### Observatory

7 PM to 10 PM

### Help Needed!

October 24 is the date of our regularly scheduled open house. Because it is Astronomy Day, we will also have an event from 11 AM to 4 PM. We will have a number of stations set up to show the public what HCAS and HCC have to offer the community.

We will have stations set up in Chesapeake Hall during the day. We will need people to help out by answering questions, giving out materials, setting up displays, taking down displays and providing relief to those who will be working most of the day. At night we will have a session at the observatory. We will have telescopes and binoculars set up if the weather permits. If you have some time to help out, please come by. I would like to set a goal that every HCAS member gives 30 minutes that day. If you can't give 30 minutes to help, at least stop by and introduce yourself so we see every member that day.

To make this event a true success, we will need maximum club participation. If you have not been involved in the past, now is your chance. Not only can you help out, but you can meet other members and see what we have been doing. You don't have to come for the entire time; you can schedule to be there for support anytime during the day or evening activities.

During the day, we will have the following areas with displays:

- HCAS and HCC (will include Night Sky Network, Astronomical League, International Year of Astronomy and Birthday stars)
- Lunar Samples
- Meteorites and comets
- Astrophotography
- Telescopes and Binoculars
- Weather permitting solar viewing (telescope with filter available)

Each station will need at least one person there at all times. We can use help at all the stations except lunar samples which has already been assigned to those certified to be lunar borrowers by NASA.

We will continue with International Year of Astronomy themes for the night time activities. The program is titled "What is the Fate of the Universe. Activities include telescopes as time machines and birthday stars. The featured viewing object will be the Andromeda Galaxy. For program information check out this website:

[http://nightsky.jpl.nasa.gov/download-view.cfm?Doc\\_ID=309](http://nightsky.jpl.nasa.gov/download-view.cfm?Doc_ID=309)

When you get to the page with a survey, you can scroll to the bottom and click on skip to get the manual.

Think about how you can help out and let Grace ([dgracew@comcast.net](mailto:dgracew@comcast.net)) know as soon as possible. Again, you don't have to be there all day, but if you have some time (either during the 11 AM to 4 PM session or the evening session), please commit to assist. It may seem early to get a commitment, but this event needs to be advertised heavily and flyers will need to be made soon to post and give out.

Even if you can't help out, stop by to say "Hi," and meet some of the other members.

If you have any questions or would like to sign up for one of these events, please let me know.

Thanks,

Grace Wyatt  
[dgracew@comcast.net](mailto:dgracew@comcast.net)

### Meteorite Raffle!

Harford County Astronomical Society will be holding a second raffle to raise money for the club. Phil Schmitz has donated a meteorite to the club to be raffled (*See photo*). Tickets are \$1.00 each. The raffle will be held at our Astronomy Day event on October 24. If you are interested in purchasing a raffle ticket or getting some tickets to sell, please contact Grace Wyatt [dgracew@comcast.net](mailto:dgracew@comcast.net)

Thank you for your support!



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**Galileo Exhibit  
Franklin Institute  
Philadelphia**

The year 2009 has been named "The International Year of Astronomy". We celebrate the 400th Anniversary of Galileo turning a simple instrument to the night skies, recording and publishing his findings. In conjunction with the *Istituto e Museo di Storia della Scienza*, The Franklin Institute in Philadelphia, Pennsylvania exclusively brings us "Galileo, the Medici and the Age of Astronomy" Exhibit. To say that I was moved is a gross understatement.

Anyone interested in the Renaissance, History, Science, Cartography and Astronomy would have enjoyed this exhibit. There were beautiful paintings of the Medici family. Michelangelo's compass and artist tools are there as well. I found an entire section devoted to cartography very interesting, showing not only the tools of the trade, but beautiful 17th Century maps of the known world. There are artifacts related to pre-Galilean astronomy such as astrolabes and Armillary Spheres, but the focus of this exhibit is how the Medici family of Florence and Tuscany were the cornerstones in the Renaissance idea of gaining scientific knowledge. In this Age of Enlightenment, Galileo was able to gain patronage from the Medici family and further his scientific studies.

The Hallmark piece of this exhibit was one of Galileo's original scientific telescopes. It was made in 1610, and bears writing on the tube that has been proven to be Galileo's. I bent down on the floor to look through the eyepiece and down the tube that this magnificent scientist looked through 400 years ago. It brought a tear to my eye. In the same room, I saw copies of Galileo's books *Siderius Nuncius* (The Starry Messenger) and *Dialogo sopra i due massimi sistemi del mondo* (The Dialogue Concerning the Two Chief World Systems). The first was where Galileo announced his findings of the phases of Venus, the craters of the Moon and the orbits of the Galilean satellites of Jupiter. The second is the book that supported the Copernican Heliocentric model for the Solar System and infuriated the Catholic Church. As a result of this book, Galileo was forced to renounce his scientific findings and placed under house arrest until his death in 1642.

In an adjoining room, centered around Galileo's findings, I was most impressed with the journal of the orbits of the Jovian satellites. In the same case was a letter signed by Galileo in which he did not know what to make of Saturn. His letter shows a basic drawing of a larger sphere with two smaller spheres on each side, his impression of Saturn and its rings through his low-powered telescope. I was completely in awe of the sights before me. There were a few post-Galileo artifacts as well, including a copy of Christian Huygens's book *Systema saturnium* concerning his observations of Saturn. Finally, there was a section of hands-on experiments showing how different types of lenses and telescopes work.

After viewing the Galileo Exhibit, we went through the Franklin Institute and caught the "Two Small Pieces of Glass" movie in the Planetarium.

This exhibit was an awesome experience for me and the family. Maggie had a wonderful time. I only wish I had planned to see the exhibit earlier so that I could have gotten more people to see it. Since seeing the exhibit, I've been on a crusade to learn as much as I can about Galileo and his writings. A wonderful place to start is Wikipedia: [http://en.wikipedia.org/wiki/Galileo\\_galilei](http://en.wikipedia.org/wiki/Galileo_galilei).

- Karen Carey

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## HCAS Astronomy Quiz

### This quiz is on the constellation Sagittarius

1. Sagittarius is known as the  
Centaur Archer Hunter Arrow
2. Who discovered the Trifid Nebula, M20?  
Messier Le Gentil Halley Barnard
3. What open star cluster is associated with M8, the Lagoon Nebula?  
NGC 6520 M23 M 24 NGC 6530
4. What globular cluster listed is considered by some scientists to be part of a galaxy colliding with our galaxy?  
M54 M55 M70 M70
5. What constellation does not border Sagittarius?  
Corona Australis Scorpius Scutum Aquarius

### Answers to Last Month's Quiz

1. In what constellation do NGC 147 and NGC 185, two of M31 satellite galaxies, reside?  
Andromeda Perseus **Cassiopeia** Pegasus  
These two companion galaxies are just over the border in Cassiopeia and are very faint.
2. M31 is what type of galaxy?  
**Spiral** Elliptical Barred Spiral Irregular  
M31 is a spiral galaxy, while our galaxy is a barred spiral galaxy.
3. There is a bright region within the Andromeda galaxy, what is its NGC designation?  
NGC 205 **NGC 206** NGC 221 NGC 891  
NGC 206 is a huge star region in the southern part of the galaxy. Several hundred stars are at least 10,000 times more luminous than our Sun. This region is about 3000 light years by 1500 light years in size. NGC205 and NGC221 are satellite galaxies of M31 and NGC891 is a spiral galaxy in another region of the Andromeda constellation.
4. Who was the first person believed to see M31 in a telescope?  
Galileo Kepler **Marius** Messier  
Simon Marius is credited with seeing M31 through a telescope around 1611.

Al Sufi, a Persian astronomer, noted it in the 10th century as the "Little Cloud".

5. What is the approximate distance of the Andromeda galaxy?

2 1/2 million miles    **13 thousand quadrillion miles**    48 trillion miles    370 billion miles

Or easier said, about 2 1/2 million light years!

- Phil Schmitz

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## Miscellaneous

### Observe Pluto This Year!

By Tom Koonce

Antelope Valley Astronomy Club

Lancaster, California

[takoonce@aol.com](mailto:takoonce@aol.com)

How many planets have you observed? How many minor planets and dwarf planets? Even though this month's IYA theme is "Planets and Moons" our new Dwarf Planet, Pluto, offers an interesting challenge. Let's not debate the terms "Planet" or "Dwarf Planet", but instead ask if you have you ever observed faint Pluto? It's a difficult object to see and to verify.

Pluto can be observed through an 8" telescope, but in my opinion it is HARD to do for an intermediate-level observer. In Greek mythology, Pluto was named after Hades, the God of the underworld, and you'll think about sending this challenge to the same location, but stick with it because spotting Pluto on your own for the first time is an extremely rewarding experience.

You need exceptionally dark skies, a decent telescope and a lot of patience! There is an equation to help you work out how far down the magnitude scale you can get with a telescope (Remember big magnitudes = fainter objects):

There is an equation to help you work out how far down the magnitude scale you can get with a telescope (Remember big magnitudes = fainter objects):

$$\text{Telescope Limiting Magnitude} = (\text{Visual Limiting Magnitude}) - (5 \cdot \log d) + (5 \cdot \log D)$$

where d is the aperture of the human eye in meters and D is the aperture of the telescope in meters. So to give some examples, let's consider a normal sky where the visual limit is around Magnitude 4.5 and using a 3-inch (76 mm) refractor telescope. We'll use 6 mm as an example aperture of the dark-adapted human eye (young eyes can get to 7 mm):

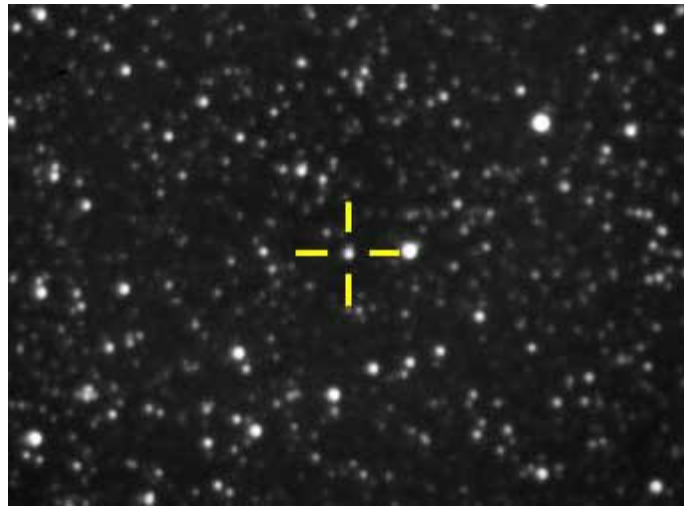
$$\text{Telescope Limiting Magnitude} = 4.5 - (5 \cdot \log(0.006)) + (5 \cdot \log(0.076)) = 10.0$$

So with a small refractor you can theoretically see down to a limit of about Magnitude 10.0 under these conditions. Pluto however is at Magnitude 13.8, so this is well out of the range of such a small telescope. Under very good skies with a limiting Magnitude of 7.0 and using a telescope of 10 inches (254 mm) aperture, the limiting magnitude becomes.

$$\text{Telescope Limiting Magnitude} = 7.0 - (5 \cdot \log(0.006)) + (5 \cdot \log(0.254)) = 15.1$$

This puts Pluto easily into “realistically observable” status. Why not set the goal of observing all the planets, and Pluto – just for fun?

Depending upon the type of telescope you have and if you have astrophotography skill, you may choose to image Pluto instead of working on the drawing recommended here. Either way you'll have to know where to look. It's recommended that you determine (and memorize) the field of view that you will use during your observation. You can utilize the “[12DString FOV Calculator](http://www.12dstring.me.uk/fov.htm)” online here: (<http://www.12dstring.me.uk/fov.htm>) to help figure out the field of view you will see in the eyepiece. You can use a Go-To scope or you can star-hop to the location of Pluto. Either way you must use your telescopes' clock drive to keep the field around the suspected position of Pluto and carefully draw the field of stars. It is critical to spend a lot of time making this drawing because you'll use it over the next two nights to determine which of the faint dots of light is moving and which are static. Fixed = background stars... moving = Pluto!



You will see something like this in your eyepiece:

*Photo by Chris Peterson, 12-inch telescope, [Cloudbait Observatory](#), Guffey, CO*

### **Take the Pluto Observing challenge!**

Try to observe all of the planets and at least one dwarf planet within the next twelve months!  
Maybe you'll be able to see or image Charon, Pluto's moon!

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## **HCAS Members Receive AL Awards**



*Front row: Karen Carey, Grace Wyatt, Phil Schmitz, Jimi Hajek, Roy Troxel  
Back row: Larry Hubble, Gary George, Tom Rusek (Photo by Joe Manning)*

Eight members of the Harford County Astronomical Society recently received awards from the Astronomical League. All received awards for public outreach activities. Phil Schmitz also received the Constellation Hunter Northern Skies Award and Master Observer Award.

Larry, Gary, Phil and Jimi each received an Outreach certificate and pin for completing at least 10 hours of outreach spread out over 5 events. Karen, Grace, Tom and Roy received Stellar Outreach certificates for completing the Outreach level, 50 additional hours of outreach plus a written report of one outreach activity.

For the Constellation Hunter Northern Skies Award, Phil needed to identify and sketch 39 constellations. The Master Observer Award is given to Astronomical League members who have fulfilled the requirements of ten observing clubs. The Astronomical League is made up of over two hundred and forty amateur astronomy clubs throughout the United States. Phil is only the 90<sup>th</sup> person to achieve the Master Observer Award. Congratulations Phil on your hard work to achieve this status. There are many award certificates and pins that members of HCAS could work on to earn their own awards. Visit the Astronomical League to get a list of observing clubs and the rules for each at [www.astroleague.org/observing.html](http://www.astroleague.org/observing.html)

Karen Carey is our ALCor (Astronomical League Correspondent). If you have any questions or if you complete the requirements of a club present them to Karen and she will submit them for your award. Karen's email is [karebear1012@verizon.net](mailto:karebear1012@verizon.net) Get a list and start looking up!

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## **The New HCAS Web Site is Up and Running!**

**<http://www.harfordastro.org>**

Be sure to visit our new web site. It is very high-end and graphic intense, with Flash and JavaScript content.

Our webmaster, Larry Hubble advises upgrading to Internet Explorer 8 or Firefox 3.5. Both of these browsers are Flash- and Java-friendly, faster, and more secure as well. A high-speed Internet connection would be beneficial also.

If you have questions about the site, you can contact Larry by email at: [lhubble@comcast.net](mailto:lhubble@comcast.net)

**You can download Firefox 3.5 for free from this site:**

**<http://www.mozilla.com/en-US/>**



## **ASTRONOMY DAY - OCTOBER 24, 2009**

**11 AM to 4 PM Chesapeake Hall--Dining Room South**

**7 to 10 PM HCC Observatory - viewing session**

**HARFORD COUNTY ASTRONOMICAL SOCIETY**

**with HARFORD COMMUNITY COLLEGE presents ASTRONOMY DAY**

### **LUNAR SAMPLES**

(Samples brought back from the moon by Apollo astronauts)

### **TELESCOPES & BINOCULARS**

(What should I buy? If you have a telescope and don't know how to use it, bring it with you for assistance.)

### **ASTROPHOTOGRAPHY**

(See club members' photos. Ask questions and receive information)

### **METEORITES AND COMETS**

(Meteorite display)

### **SOLAR VIEWING**

(Weather permitting--learn how to safely view the sun)

### **BIRTHDAY STARS**

(Find your birthday star and learn what it means)



[www.nightsky.jpl.nasa.gov](http://www.nightsky.jpl.nasa.gov)

**HARFORD COMMUNITY COLLEGE**

[www.harford.edu](http://www.harford.edu)



[www.astroleague.org](http://www.astroleague.org)

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[www.harfordastro.org](http://www.harfordastro.org)



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**And be sure to visit our Web Site:**

<http://www.harfordastro.org>  
**Webmaster: Charles Jones**

