

Harford County Astronomical Society

Bel Air, Maryland
www.harfordastro.org



Volume 34 Issue 9

September 2008

General Meeting:
Thursday, September 18, 2008
7:00pm - Business Meeting
At the Observatory
8:00pm - "Earth's Impact Craters and Tektites"
Presented by Phil Schmitz

Public Star Party (Open House):
Saturday, October 11, At Sunset
At the Observatory

Club Calendar for 2008:

Open House/Public Star Party

November 8
December 6

Meeting Night

October 16
November 13
December 11

Please check the website for possible schedule updates and changes:

<http://www.harfordastro.org>



<http://astroleague.org/>



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

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HCAS Business Meeting

Minutes of August 14, 2008

1. The Harford County Astronomical Society held its August business meeting on August 14th, 2008, at the observatory. The regular business meeting was preceded by a special meeting called to discuss the status of the club's Board of Directors.
2. President Tom Rusek opened the special meeting at 6:00 PM. Three officers, one director, and two members attended. The group discussed the current state of the board of directors and the by-laws requirements for the board. The group agreed that the 4 current officers will be temporary directors until the next election. Mark Kregel is a life member and life director. This group of five will appoint two more directors to make the total number seven. At the next election, the current officers will surrender their positions as directors and four new directors will be elected by the membership. Directors will serve two-year terms with half (3 or 4 depending on the year) coming up for election each year.

The board is soliciting volunteers for the two currently open positions. From the list of volunteers, the board will either hold a special election or the volunteers will be chosen and appointed into their positions.
3. The regular business meeting was called to order at 7:10 PM by President Tom Rusek. 12 members were present.
4. The minutes from the June meeting were approved. July's minutes will be in the soon-to-be-published August newsletter.
5. Tim Kamel gave the treasurer's report. The club's bank balance is \$5596.64. There are 34 paid members. Major bills paid recently include \$94 for the PO Box, \$320 for insurance, and \$204 for the *Astronomy Magazine* subscriptions for 6 members. The Astronomical League bill will be paid by September 1st. The *Sky and Telescope* magazine discount program requires at

least 5 members to participate. The 5th signed up at tonight's meeting, so these payments will be processed soon.

6. Tom Rusek reviewed recent and upcoming outreach activities:

a. Swanfest takes place on October 12th at Swan Harbor Farms near Havre de Grace.

b. Tom will contact the Elkton library to schedule his presentation. They want this to take place sometime this fall.

c. Grace Wyatt reported that a group of approximately 20 students plus parents from Boys Latin school wants to attend an HCAS open house. Their teacher will come in September and the group will come in November.

d. A high school girls' space club called Ace of Space is interested in coming to the October club meeting. They want to hear a presentation on black holes.

7. Grace Wyatt presented information on Night Sky Network activities.

a. We received a new supernova tool kit and a training video from the Night Sky network. We also received instructions for an essay contest aimed at children aged 5-18. All entrants who send in a stamped reply envelope will get a fragment of a stony meteorite for their participation. This is sponsored by a different organization, not the Night Sky Network.

b. Other Night Sky Network activities include a teleconference on August 28th about the LCROSS mission. Grace will send out the teleconference information. The Network is also sponsoring a contest to win a Hubble Space Telescope photo.

8. Observatory Operations.

a. Tom Rusek emailed Sal Rodano with a list of items the club would like the college to do for the observatory. This includes fixing and motorizing the dome, fixing the laptop computers, keys for the classroom office, and the set of Braille astronomy books. In his reply, Sal recommended we wait until after the observatory upgrades are complete to invite the school's leaders to visit. He also said that the school will purchase several sets of the Braille books. Tom will get with Sal to prepare whatever paperwork is necessary to execute these tasks.

b. Tim Kamel and Larry Hubble used the old CCD camera on the observatory telescope for an astrophotography session. Tim passed around some of the photos.

9. Observing Reports. Roy Troxel wrote an article on his recent astronomy trips around the country in the newsletter. He also reminded everyone that he frequently goes to the Broad Creek site, and any members interested in coming should let him know.

10. Old Business: The club discussion of the potential purchase of an upgraded CCD camera was deferred from last month's meeting until this month. Tom Rusek asked the members for their opinions on the pros and cons of making this purchase. Cathy Tingler suggested waiting to purchase this because there are only a few people who know how to operate the dome and telescope. The camera warranty may expire before we can get enough people familiar with the equipment so they can use it. Mark Kregel noted that the observatory will be out of operation for 3-4 months once the dome upgrades are started. Tim Kamel said that the camera could be used on other telescopes besides the one in the dome. Monroe Harden asked if any club money would be needed to pay for the dome upgrade. Mark Kregel said that none would be needed. Monroe was concerned that if we spent a lot of the treasury's funds on the camera, there might not be enough left for the dome if needed. Monroe also recommended we wait until reviews from actual users are available. He does not think a purchase this large should be based solely on

manufacturer's literature. Mark Kregel said that he thinks this purchase would be a good thing for the club and would help bring in new members.

Tom Rusek said that more discussion would be necessary. Grace Wyatt made a motion that this be addressed by the Board of Directors. Mark Kregel seconded the motion, and the group agreed.

11. New Business:

a. Tom Rusek summarized the special meeting that took place before the regular business meeting. This is the same information shown in paragraph 2 above. Tim Kamel noted that recent meetings have been very long and have taken away from the time available to the speakers. The Board of Directors can handle the complicated business topics and then present overviews to the membership at the regular meetings, thereby saving time for speakers and other activities.

b. Grace Wyatt will send a copy of the ALCOR list to HCAS security with instructions on how we want people to have access to the facility. There have been issues with people not on our list being denied access even when accompanied by a member.

c. Leo Heppner's camera and telescope equipment are available for sale. The items are in the storage room for anyone interested in examining them.

12. The meeting was adjourned at 8:02 PM.

- *Monroe Harden*

Outreach Programs

Open House

September 13, 2008

Hot, humid and totally clouded is how the night started. It ended hot and humid with a brief view of Jupiter and the moon. We had 4 people attend the open house. A father/daughter team with a Christmas telescope were already there when we started arriving around 7:00 PM. Karen was great showing the young girl and dad how to use the refractor they had been having problems using. Karen gave her general observing tips, explained sky charts, helped her make a planisphere and showed her how to use it. Larry set up his laptop and gave a breath taking astrophotography show of his work. Just as we were packing up another father/daughter team showed up. Unfortunately, we were finishing up for the night. They had attended in the past and are planning to attend the general meeting on Thursday to hear Phil's presentation about impact craters and tektites. We packed up the open house around 9:00 PM. Mark Kregel, Larry Hubble, Tom Rusek, Roy Troxel, Karen Carey, Grace Wyatt and Gary George attended the event to help out.

Observation Reports

Broad Creek

August 22/23, 2008

8:30pm to 12:15am

The sky was a dark blue at sunset when Cathy Tingler and I arrived at BC, and it looked like it was to be a very clear night. The gibbous moon would be rising around 11:00pm, so, allowing for twilight, we would have about two hours of dark-sky observing time. Cathy brought her 5-inch Cassegrain and two pairs of binos.

My project for the night was to test the club's 35mm Panoptic eyepiece by viewing the entire span of the Milky Way. On my 12.5" obsession, the EP yields a field of view of 1.5 degrees, and a magnification of 45x. At sunset, the MW stretched gloriously from Cassiopeia, low in the northeast, to Sagittarius, slightly to the southwest. (The Panoptic is a 2-inch EP made by TeleVue.).

While waiting for the sky to darken, I focused first on Jupiter. The bands were very clear – about five or six of them, with the Great Red Spot (appearing white this night) appearing on the southern equatorial band. There were two satellites on the west of the planet, very close to each other, and very close to the planet. Within an hour, both had disappeared. As it turned out, one had gone behind the planet and one in front. Two hours later, one of the satellites could be seen emerging from behind the planet on the eastern limb, while a small black dot appeared west of the planet's center. I was able to use relatively high magnification at this time (175x), with a 9mm Nagler eyepiece and a #80A blue filter.

Eventually, the sky was dark enough to begin using the 35mm EP on the Milky Way area, beginning with Sagittarius. I was able to find M22 quickly, just above the spout of the Teapot asterism.

Moving up from The Lagoon nebula (M8), through the Trifid (M20), M16 (the cluster but not the accompanying Eagle nebula), M17 (The Swan) and finally to M11 (Wild Duck). All appeared brightly in the wide stellar field of view provided by the 35mm Panoptic.

The open cluster M103 in Cassiopeia appeared very sharp and distinct, with its triangle of three bright stars filled inside with a dozen or so fainter ones.

Other notable sights during this clear evening were M13, M92, Double Cluster, Uranus and Neptune.

By 11:30, however, clouds were forming over much of the sky and the moon had risen above the trees in the east. We packed up and drove home.

- Roy Troxel

Broad Creek

August 24/25, 2008

8:30pm to 1:00am

I arrived at BC and set up the scope by 8:30 pm. My first target was Jupiter, which displayed a number of bands, not as clearly as on Friday night, but the Great Red Spot was still very obvious.

As the sky darkened, I decided again to use the club's 35mm Panoptic eyepiece on the Sagittarius region. The region was unusually clear tonight, without the southwest light dome, and around 11 p.m., large areas of the sky above Sagittarius became unusually transparent. In fact,

the Milky Way area that includes Cygnus, Aquila, and Scutum were brighter than I had ever seen them before at BC. The Scutum Star Cloud was unusually bright and revealed not only a myriad of stars through the 35mm, but also a distinct cloudy appearance. M11 (the Wild Duck Cluster) shone brightly, as did its lesser-viewed companion, M26. But the brightest nebula of all was the Swan. This was turning into another fine night! The Orion UltraBlock filter helped make the various nebulae stand out in the eyepiece. At this time, the Milky Way had expanded well into Ophiuchus, and to the base of Lyra's bottom two stars. I have never seen the Milky Way appear that wide before at Broad Creek. (On the other hand, the galactic areas in Perseus and Cassiopeia could not be seen at all, partly due to the light dome in the northeast.)

Around 11:30 p.m., I noticed that Pegasus and Andromeda were now quite high in the sky and the area around them was unusually clear. In fact, looking at the Andromeda galaxy through the 35mm eyepiece, all three galaxies in that vicinity (M31, 32 and 110) appeared bright and distinct. With what appeared to be star clusters of throughout its entire length. I could detect the star cloud NGC206 in M31, as well as hints of other clouds. M33 in Triangulum appeared with a bright central core, although I couldn't distinguish the spirals.

NGC 7331 in Pegasus, was also visible, but I was unable to locate the nearby Stephen's Quintet group, however, because I was having problems with my ArgoNavis push-to system.

I also began using the 13mm Nagler eyepiece on some of the above-mentioned objects, but by 1 a.m., the moon had risen about 5° above the horizon, and clouds were beginning to fill the sky. I packed up my scope and drove for home, after a very satisfying evening – with no dew!

- Roy Troxel

Broad Creek

August 31, 2008

8:00 PM to September 1, 12:30 AM.

Observations were made with 25/40 by 100mm binoculars. When I left Baltimore for Broad Creek the temperature was 84 degrees. Arriving at Broad Creek, the temperature was 68 degrees. The transparency started at a 5 and stayed that way to the end of the session. The seeing was around a 4 and dropped to a 3 at the end of the session. Attending were: Tim, Gary George, Cathy, Matthew and Caleb, and myself.

Through the binos Jupiter showed three satellites on one side and one very close satellite on the other side. The belts of Jupiter were obvious.

Moving into Scorpius (which was just about completely visible, including the stinger stars, which are always low in the sky), M4, a globular cluster, was a large diffuse sphere of stars. The two open clusters M6 and M7 were seen. M6 appeared rather small, but many stars resolved in the binos. Its larger companion M7 was brilliant and many stars were easily seen.

In Canes Venatici, I decided to look for M51 and NGC 5195, both were just visible using averted vision as two almost equal lobes. Cor Caroli was also split in the binos. M3, the very impressive globular in Canes Venatici, was seen. In Ursa Major, the galaxies M81 and M82 were visible at 25X in the same field of view. Both were rather faint as they are getting low on the northern horizon. Mizar also split easily.

In Sagittarius, M8 (the Lagoon) and its associated open cluster NGC 6530 were very visible as was M20, the Trifid Nebula. The nebulosity of the Trifid was obvious, although the rifts were not visible. Being of low surface brightness, sometimes less magnification is better for this object! The Sagittarius star cloud M24, filled about half the binocular field of view. This star cloud should be visited more often. The smaller open cluster, M25, to the east of M24 is still impressive, although a lot smaller. The globular clusters M22 and M28 were obvious. M17, the Omega or Swan nebula was easy in the binos as a soft oval glow. M16, an open cluster with nebulosity (also known as the Pillars of Creation) in neighboring Serpens showed quite a few stars and the nebulosity was

easily visible.

In Scutum, M 11 and M26 (first time I have seen this cluster in the binos) were seen. M1 is the nicer appearing of the two open clusters.

Polaris, the northern star did split, but just barely, the seeing was starting to deteriorate. In Ophiuchus, the large bright open star cluster IC 4665 is another fine example of an open star cluster. How the NGC missed this object is a mystery. M13, a globular cluster in Hercules was impressive as always. M15, a globular cluster in Pegasus, appeared as a bright, but small sphere of stars. M2, a globular cluster in Aquarius, appeared rather faint, much fainter than it should have appeared. So, I checked my binos, and sure enough, the dew had collected on the objective lenses. Tim had his hairdryer with him, so with help from Tim, Matthew and Caleb we moved my binos and tripod over to my car so I could plug Tim's hairdryer into my cigarette lighter (first time I used my cigarette lighter in my three-year-old car!). It only took a few minutes to clear the lenses and we moved the binos back to where they were and we were back in business.

Matthew and or Caleb noticed a bright flashing light on the eastern horizon. At first I thought it was Capella, because that is where Capella should be. When I checked it out in my binos, I was convinced it was a plane coming right at us. After all it had brilliant green and red flashing lights. Tim insisted it was Capella. After ten minutes or so, I capitulated, it was Capella, oh well. The bad seeing made Capella a very colorful object. I remember years ago, down in Arbutus, (I believe it was at Arbutus Elementary School) I showed Vega to some visitors as it was rising on the horizon, it was a red, white, and blue object, due to the movement in the upper atmosphere!

The double cluster in Perseus was an outstanding sight in the binos. We looked at the spiral galaxy M31 and its companion elliptical galaxy M32 in Andromeda and the Alpha Persei Group, a large open star cluster around Alpha Persei, which is in Perseus. As we closed up and left, the temperature was at 61 degrees.

- *Phil Schmitz*

Cherry Springs

August 30/31, 2008

8:30 p.m. to 4 a.m.

The skies at Cherry Springs had been predicted to be clear over the Labor Day weekend, and that was too much to resist, so I packed the Obsession into the VW Jetta and headed for northern Pennsylvania!

It's worth noting that in June, CSSP was designated as the second International Dark Sky Park (IDSP) by the International Dark-Sky Association (IDA). The announcement was made at IDA's annual meeting in Tucson, Arizona.

I arrived at 2 p.m. on Saturday afternoon and set up in the southeastern field, which offered a clear view of the Sagittarius region. Over the next three days, about 150 different people came and went from the park.

If there was a keyword to the weekend it was: astrophotography. During the night it seemed that every other observer had a laptop attached to a camera that was attached to a telescope. Each night, you could see numerous red laptop screens glowing throughout Cherry Springs.

During the daylight hours, a group of us discussed ways of bringing younger members into the astronomy hobby. We decided that too many kids have grown up in suburban areas where they probably were aware of only a handful of stars at night. Possibly the new night vision technology will be able to cut through the suburban skies and enable young kids to see the stars again.

The nightlong observing session began with Jupiter; however, the image wobbled in the turbulence caused by moisture in the atmosphere. (It had rained at Cherry Springs that morning.) Throughout the night, there were high altitude clouds that also might have interfered with transparency and seeing. Nonetheless, there were six or seven bands distinctly visible on Jupiter at all times, thanks to CSSP's very dark skies.

I inserted the club's 35mm eyepiece, and aimed the scope first at the Veil Nebula in Cygnus. I was able to view all three sections of the nebula within the same field of view.

A special treat was the double cluster in Perseus. Both clusters almost fit within the field of view of the 35mm eyepiece. I then used the eyepiece to roam the entire Scutum Star cloud. M11 and M26, appeared almost in the same field of view, as well.

My next target was the NGC7331 galaxy in Pegasus. It appeared small and I wasn't able to see any of the dimmer galaxies that are sometimes visible around it. Seeing Stefan's Quintet was a treat, although I could distinguish only three of the galaxies at any one time, due to atmospheric flickering.

In the Andromeda galaxy, I tried to locate the star cluster G1, but had no luck. On the other hand, NGC206 was glowing brightly, on the "southwest" edge of the galaxy, along with some smaller star clouds.

By 11 p.m., the Milky Way was casting a shadow. Just to make sure I wasn't seeing things, I placed my hand in front of a sheet of white paper and yes, there was a shadow there, made by the southern part of the Sagittarius region, that was now near the horizon.

With the sky now in total darkness, I began to look at some of the more difficult DSOs. Again, the 35mm was helpful in letting me examine wide stellar fields, such as Cygnus and Cassiopeia. The objects viewed in these fields included:

Aquarius:

NGC7293, the Helix Nebula, appearing as a large gray ball with a dark center. Couldn't really see the helix pattern, however.

NGC7009, the Saturn Nebula, appearing as an intense blue smudge, but couldn't see the "ring" features.

M2, M72, M75. (M75 is about 60,000 light years away, on the opposite side of our galaxy's nucleus)

Capricornus:

M30 globular cluster

Pegasus:

NGC7662 – Another tight blue planetary nebula

Cetus:

M77 – A Seyfert galaxy with a brilliant nucleus.

Andromeda:

NGC752, 7686 – Star clusters.

NGC891 – Galaxy.

Draco:

NGC6543 – One more blue planetary nebula.

Cassiopeia:

M52, NGC7889, M103

NGC654 and 663 – Twin clusters

NGC7635 – Bubble Nebula

Pisces:

M74 – Spiral Galaxy.

Hercules:

M13 and 92 – Globular clusters

Perseus:

M76 The “Little” Dumbbell, a planetary nebula

Lyra:

M56 (Ring Nebula), M56 (globular cluster) and the Double-Double (Epsilon Lyrae)

Camelopardalis:

NGC1502 – star cluster

NGC2403 - Irregular Galaxy

After midnight, the winter constellations began to rise, beginning with Taurus and Auriga. This brought M1, M45, M37, 36, and 38 into view. By 4:00am, Orion had risen enough for me to observe the Flame Nebula, NGC2024 - easily seen using the UltraBlock filter. However, I couldn't make out the Horsehead Nebula, because I did not have a Hydrogen-B filter. The only disappointment was M42, as I could see only four of the Trapezium stars. I can often see at least five at Broad Creek. At 5 a.m., there appeared a triangle of light across the East that might have been the Zodiacal Light. (A group of us debated this during the day.)

All in all, a successful night.

- Roy Troxel

Cherry Springs

August 31, 2008

8:30 p.m. to 12 midnight

This night's session was cut short at midnight due to haze in the upper atmosphere, as well as considerable dew. From 11:30 p.m. on, I watched the Milky Way become dimmer and dimmer, even near the zenith.

Prior to midnight, however, seeing conditions were quite good and I took the opportunity to observe dark nebulae, in particular the ones catalogued by E. E. Bernard. Unfortunately, the most famous of these, B72, the Snake Nebula in Ophiuchus, could not be seen, due to the constellation's low position in the West. The Bernard nebulae that I did see were B103 on the west side of the Scutum Star Cloud; B133, a black spot on the Cloud and B142 /143, two dark nebulae that form the letter “E” in Aquila. The easiest of these to find was B85, the dark lanes in the Trifid Nebula.

With the sky becoming hazy and the dew becoming thicker, I turned the scope upwards, almost to the zenith, and caught Stephan's Quintet. It was the clearest view yet, very satisfying and made up for the rest of the dewy, hazy evening. Around 12 midnight, I decided to cover the scope with an extra tarpaulin and then went into the pup tent to sleep.

Cherry Springs

September 1, 2008

8:30 p.m. to 12 midnight

I began this evening by looking for some more of Bernard's dark nebulae and located B104 and B108 near M11, the Wild Duck. Also explored the Sagittarius star cloud (M24) and the nearby area, which contains a number of dark nebulae. Averted vision helps in locating these objects, as well as an OIII filter.

The rest of the evening was spent looking at the same objects as the previous two nights, but with 13mm and 9mm Naglers, which provided higher magnification, 121x and 175x. By midnight, the dew had struck again, as well as the haze, so I packed up for the night – as did most of the other observers.

- Roy Troxel

HCAS Observatory
Double Shadow Transit on Jupiter
Sunday, Sept. 7, 2008
7:45pm to 9:00pm

On Sept 7th, the satellites Io and Ganymede both cast their tiny black shadows onto Jupiter from 8:12 to 8:38 p.m. EDT.

Larry Hubble, Grace Wyatt and myself met at the club's observatory to watch the event. Initially, there was only one shadow, a black dot in the upper left of the planet's disk. The dot lingered there for almost an hour before disappearing from the planet. A second spot appeared within a half-hour on the right side of the disk, on the southern equatorial band. It moved quite swiftly, compared to the shadow on the planet's left side. By the time we left the observatory at 9:30, it was halfway across the face of the planet. We were unable to see the actual satellites themselves, but the opportunity to view the overall event was remarkable.

-- Roy Troxel

*****HCAS Astronomy Quiz*****

A Monthly Feature

This month's quiz will be on double stars!

1. The Double-Double is located in which constellation?

Perseus Lyra Andromeda Lynx

2. The gold and blue stars called Almach is located in which constellation?

Cygnus Delphinus Orion Andromeda

3. The north star, Polaris, is located in which constellation?

Ursa Major Canes Venatici Draco Ursa Minor

4. Zuben Elgenubi is located in which constellation?

Libra Capricornus Aquarius Scorpius

5. Cor Caroli is located in which constellation?

Ursa Major Canes Venatici Coma Berenices Sagitta

Answers to last month's quiz:

Which object doesn't fit?

1. Sirius Vega Rigel **Orion**
Orion doesn't fit - it's a constellation, but the other three are stars.

2. Vesta **Deimos** Eros Pallas
Deimos is actually a satellite of Mars. The others are asteroids.

3. **Vela** Ursa Major Cepheus Hercules
Although all are constellations, Vela is in the south, the others in the north.

4. Callisto **Titan** Europa Ganymede
Titan is a satellite of Saturn, but the others are satellites of Jupiter.

5. Ras Algethi Betelgeuse **Rigel** Antares
Rigel is a blue giant, but the others are red giants.

- Phil Schmitz

Miscellaneous Announcements

Dundalk Community College Fall 2008 Star Parties

<http://www.cbcemd.edu/catonsvilleplanetarium/starparties.html>

Location: Dundalk Campus, 7200 Sollers Point Road

Directions: Upon entering the campus, turn immediately to the right and park in the parking lot.

Telescope: Celestron 14 inch CGE 1400 XLT telescope

Friday evenings:

September 5, 2008 8 - 10 p.m.

September 19, 2008 8 - 10 p.m.

October 10, 2008 8 - 10 p.m.

November 7, 2008 7 - 9 p.m.

November 21, 2008 7 - 9 p.m.

December 5, 2008 7 - 9 p.m.

Weather Related Cancellations: Call 410-282-3092 approximately 45 minutes before the session if you are uncertain as to whether the sky is clear enough for the session to be held.

SWANFEST

October 12, 2008

11 AM to 4 PM

Swan Harbor Farms

401 Oakington Road,

Havre de Grace, MD 21078

Swanfest is a family oriented event that takes place every year at Swan Harbor Farms. HCAS is given a table each year to educate the public about astronomy, give visitors a view of the sun and advertise our club events. Last year the sun, the moon and Venus were visible during the day. *Swanfest* is fast approaching. If you have a telescope or binoculars with solar viewing capability, please bring it to *Swanfest*. Visitors love to look at the sun (although apprehensive at first) through the telescopes.

If you don't have a telescope or binoculars, come anyway. Volunteers are needed to answer questions, give out information, and greet visitors to our table. Even if you feel you cannot answer astronomy related questions, you can come and learn from the answers given by other club members.

Please contact Grace Wyatt if you are interested in helping out at our table. You can call 410-836-7285 or email at dgracew@comcast.net

Cameras and Telescopes for Sale From the Estate of Leo Heppner

The Harford County Astronomical Society recently lost one of the founding members, Leo Heppner. Items from his estate are currently offered for sale. Below is a listing of the astronomy and photography items available for purchase.

- Celestron 5 inch Reflector, Orange color \$150.00
- Meade 2 inch Refractor with Case and Mount \$250.00
- Bogen Manfrotto Tripod with 3-Way Pan Head #3030/A \$150.00
- OmegaView 4x5 View Camera with Zeiss S-Tessar 300mm f5.6 Lens \$450.00
- Finder Scope Mount \$25.00
- Pentax ZX-L 35mm Camera Kit, includes Pentax AF 28-80 Zoom Lens, Pentax AF-330 TFZ Flash, Original Strap and Tenba Carrying Bag, Black \$200.00
- Lowepro Compact 35 Gadget Bag, Navy color \$25.00
- Tripod Accessory Tray \$10.00
- Hyundai Hyper120 Zoom 35mm P&S Camera with Tamrac Case, Black \$20.00

For Further Information, please contact Leo P. Heppner at 443-421-1662/410-939-6247 or email: Leopictureman@verizon.net

Or contact Larry Hubble at lhubble@comcast.net

For Sale:

**SkyView Pro 127
GoTo Maksutov Cassegrain**

- GoTo computer control with 13,000+ celestial objects
- 127mm aperture and 1540mm focal length
- Includes sturdy tripod and equatorial mount
- Includes 2 eyepieces, case and Starry Night software
- Also includes a polar axis finder scope that was purchased separately.

--Price: \$900

Please contact George Ford at 410-789-0878 if interested.

For Sale:

**Celestron Nextar 8
Schmidt-Cassegrain GoTo Telescope,**

- 2032 mm Focal Length, F/10
- 40mm eyepiece
- AC adapter
- Orion glass solar filter.
- Excellent condition.

--Price: \$950

Call Rick Saville at (410) 256-8562, before 1 PM

This newsletter is the official publication of:

**Harford County Astronomical Society
P.O. Box 906,
Bel Air, MD 21014.**

Items for the newsletter are due to the editor by the 13th of the month of publication.

Please send all contributions (electronic format is strongly encouraged) to:

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