

# Harford County Astronomical Society

Bel Air, Maryland  
www.harfordastro.org



*Volume 33 Issue 3*

*March 2007*

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

**Mar 24, 2007 at dusk**

Technical School Parking Lot,  
Next to the Observatory

**General Meeting:**

**Apr 7, 2007, 7:30pm**

At the Observatory

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**Club Calendar for 2007:**

<u>Meeting Night</u>	<u>Open House/Public Star Party</u>
Apr 7, 2007	Apr 28, 2007
May 5, 2007	May 26, 2007
June 2, 2007	June 23, 2007
July 21, 2007	July 28, 2007
Aug 18, 2007	Aug 25, 2007
Sept 22, 2007	Sept 29, 2007
Oct 20, 2007	Oct 27, 2007
Nov 17, 2007	Nov 24, 2007
Dec 15, 2007	Dec 22, 2007

*Please check the website for possible schedule updates and changes:*

<http://www.harfordastro.org>

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## **HCAS Business Meeting**

### **Minutes of March 3rd, 2007**

**1. President Jim Garrett opened the meeting at 7:30 PM.**

**2. The meeting started with a discussion of club issues with Harford Community College.**

Sal Rodano was present to represent the college. The club's goal in these discussions was to facilitate making the observatory more useful to both the club and to the public. This includes making the dome work properly and enabling remote viewing and operation of the observatory telescope. Sal said the time was right to ask for the school to fund projects like this since the new administration is more science-friendly than in the past.

Sal will ask his contacts at the school if there is a problem with club members running ethernet wires through the existing conduits between the dome and the classroom. He did not think there would be a problem with this.

The dome needs to be repaired so that it will turn more easily. We would also like to motorize it. Mark Kregel said that the dome may need to be refurbished in order to make it useable.

The club is also concerned with the rebar sticking out of the ground near the parking lot. Someone could drive or walk there and get hurt.

Tim Kamel asked about topping the trees near the observatory. Sal took a note to check into that.

Sal recommended we use the observatory for a public outreach event, like the next open house. He said we could put the big telescope on one object of interest and have other scopes outside on other objects. School security may be able to provide traffic control and limit access to the proper parts of the site. We could invite the school decision makers to this event to show them what we have and what we'd like to see for improvements. Grace Wyatt noted that many guests are disappointed when they hear that the open houses will not be at the actual observatory.

The club agreed to schedule the April open house at the observatory. We will advertise it and include directions to park in the Harford Tech parking lot and then walk to the observatory building.

Sal will clarify that the college has insurance to cover club activities since we are considered an adjunct to the school. Our existing club insurance covers us too.

Feedback from club outreach events will help improve our relationship with the college. We will forward copies of the thank-you letters we receive, and Grace gave Sal the outreach book to copy for the school to look at.

The discussion was very productive. Sal will contact the Dean to gain her support, and the club will forward any other requests we think of. Sal will propose more detailed meetings with the school's decision makers to continue the planning and coordination of school support.

**3. Minutes of last business meeting:** The minutes from the last meeting were published in the February newsletter. They were approved as written.

**4. Treasurer:** Tim Kamel reported that the club's bank balance was \$5598. There are 52 members on the books now. He noted that elections and subscription renewals are coming soon, and he is collecting renewal information now.

**5. Observatory operations:** None this month.

**6. Outreach:**

a. Tom Rusek is giving a presentation at the Whiteford Library at 7:00 PM on March 13th. It will be an indoor and outdoor event.

b. Carol Manor Elementary School in Baldwin asked the club to support an event on a Friday night in late April or May. They envision a series of stations set up for the kids, with about 200-250 attendees. Candidate dates are April 20th, May 4th, 11th, and 18th. Tim Kamel will call the contact person to make the arrangements.

c. A woman in Monkton called to see if a club member could help her appraise her husband's telescope so that she could sell it for a reasonable price. Jim Garrett said he would call her.

d. Camp Sunrise, an event for kids with cancer at Camp Hidden Valley in White Hall, asked the club to bring scopes out for the kids to use to observe the skies one night between August 5-11. We would have to prepare a proposal and present it to the Cancer Society first. Grace agreed to contact the group and pick a date.

e. Aberdeen Earth Day is on April 21st, and Swan Fest is October 14th this year.

f. Tom Rusek said that the last scout group to come out during our regular open house was very enthusiastic. The event went very well.

g. He reminded the group that we agreed to participate in a big scout Camporee on June 1-3. Our June business meeting is scheduled for June 2nd, so the club agreed to go to this Camporee that night instead. Tom will get the details on the location, times, and any other needs they have.

**7. Old business:**

a. A few members will be attending the Cherry Springs Star Party May 17-20.

b. Mike Talbert said that the scrolling illuminated sign to direct people to the right place for our open houses is on order.

c. Grace will make up membership cards for the club.

d. Tim Kamel is working on the permission letter for Harford Tech. He said he spoke to Cathy Tinger about Broad Creek. She suggested that we not take any additional action with them. They gave us keys to the site, and that means we have permission to be there. The group agreed that this was good enough.

**8. New business:**

a. There will be a presentation at the April 7th meeting by Louis Berman. He was a 14 year-old member of the club when it was founded back in 1970 or so. He will give a talk on the early history and founding of the club. Jim Garrett will get a projector, and Grace will advertise this to the public.

b. Grace wrote a 10 page summary of interesting facts and activities from club activities going all the way back to the club's founding. She said that the books containing the old newsletters were deteriorating and asked if the club would support paying for them to be re-done. This was approved via motion and vote.

**9. The meeting was adjourned at 8:50 PM.**

-Monroe Harden

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**Recent Open House and Outreach Presentations**

**HCCC Astronomy Class Support**

Due to weather problems, there has been little support activity for the HCCC Astronomy class so far this semester. The 1/29 session was cancelled due to cloud cover, cold and high winds. There was no session scheduled for 2/5 due to full moon. The 2/12 session was cancelled because of cloud cover.

**2/26/2007:**

Support for the HCCC class this night was limited. Weather was poor with high level of haze and moving clouds. Nonetheless, Mark and I provided support and provided one telescope (ETX-70) for use by the students. We set up the scope in the parking lot outside of Aberdeen Hall. Only the moon was visible and seeing was very poor. No details were visible. Dr. Thomson used the opportunity to demonstrate the scope and the mount to the students.

**3/5/2007:**

We provided support for the HCCC Astronomy class tonight. Though it was a full moon, we proceeded with the session anyway. Participating tonight were Mark, Roy, Mike, Grace and myself. Dr. Thomson and about 15 of his students were on hand to view what we could bring it and to also tour the observatory.

With the moon to the East, we concentrated our viewing in a westerly direction. Still prime for viewing are the Pleiades, the Orion Nebula, the Beehive, M67, M41 and the open clusters in Auriga.

Saturn, though closer to the moon, was impressive as always.

The night was not without its problems. A new guard opened the doors to the observatory but did not unlock them. After turning on the lights to set up our scopes, we could not get back to shut the lights off and had to call the guard back. When we went to leave, there was a shift change, resulting in a 1/2 hour delay for the guard to come by and lock up. The three of us remaining at the observatory had a chance to bond. Good thing we could now get back into the observatory where it was warm.

## Open House

February 24, 2007

We had an open house function on February 24 at the parking lot for the Technical HS. Though weather conditions were favorable at the beginning of session, it became progressively more overcast as the night wore on. The session ended early, around 8:45 or so, with the only object visible at that time being the moon. It was surrounded by a large halo.

Earlier in the night we enjoyed views of the moon, Saturn, Venus and the Pleiades.

Participation by the club was light, with only myself, Roy and Mark present. We were joined for about one hour by a guest who had recently acquired an 8" Dobsonian and was testing it out. Participation by the public was also fairly light, probably about 10 persons or so.

Complicating this event was the fact that the Technical HS was having a play and attendance was fairly high with many of the attendees using "our" parking lot. It was bizarre setting up a scope in a parking spot between so many parked cars. Headlights were prevalent with cars driving in and looking for parking spots. We did get some of the guests to stop by and take a peek. One guy was on a smoke break at intermission and spent a ½ hour with us. We saw this event as an opportunity and had hoped to catch a view of the attendees as they left the play, but the overcast skies were hopeless and we just packed it in.

Also occurring on this date was an outreach program at the Observatory that was completed by Tom Rusek between 7 and 8 PM. Participating were a Girl Scout troop of some 25 scout and their parents. Some took a peek before moving up to the observatory. Others came back after the session and looked through the scopes.

-Tim Kamel

The seeing conditions were poor at best, so I decided to use the night as an opportunity to test my filter set on the brighter objects in the sky.

I first observed Venus using a #58 green filter. I tried three other filters – light blue #82A, dark blue #80 and red #25, but green gave the best view, eliminating all false color as well as the effects of the planet's shimmering due to its proximity to the horizon (between 15 to 20 degrees). Was able to observe dark spots near the planet's terminator.

I also used the green filter on Saturn while it was still low in the sky. As it rose past thirty degrees however, the light blue filter revealed more detail.

The moon had a haze around it and was encircled by a pretty ice crystal ring. None of the filters penetrated the haze effectively, however.

Therefore, the filters were of some help on an otherwise cloudy evening.

-Roy Troxel

Recent Open House and Outreach Presentations  
**Whiteford Library**  
March 13, 2007



*Tom and his young audience*

On March 13 Tom, Barbara and Angela Rusek gave an astronomy presentation to approximately 40 people at the Whiteford Library. The presentation lasted about one hour. Afterwards the group went outside where Roy Troxel, Mike Talbard, Tim Kamel and Grace Wyatt had telescopes and binoculars available for viewing. Since it was very well lit around the library, viewing was difficult. The group was able to get a look at the Orion nebula, Venus, the Pleiades and Saturn. All seemed pleased with the program.



*Mike Talbard demonstrates his 11" Celestron*

## Future Outreach Events

### **Carroll Manor Elementary School**

4434 Carroll Manor Road, Baldwin, MD.

Friday, May 4, 2007 – Rain date is May 11, 2007

7 PM to 9 PM

This is an astronomy night and is being billed as Starry Night. Attendance expected is on the order of 150 guests. We are being asked to man 4-6 stations with scopes and/or binoculars and also if we could do a table with some handouts.

**Scouting Camporee** on June 2, 2007 at 7pm. Location: North of Bel Air on Route 165 (more info. later).

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## Recent HCAS Observing Sessions

### **Broad Creek**

**March 6, 2007**

6:30pm – 8:00pm

Seeing conditions were hazy when I arrived at sunset. The haze gradually thickened over the next hour-and-a-half, but I used this as an opportunity to see the effect this would have on seeing, particularly regarding the use of filters.

As it happened, nebulae and galaxies were washed out. Even the Orion nebula was unusually dim. On the other hand, star clusters and the planet Saturn were unusually clear – not bright, but highly defined. The haze steadied the atmosphere.

The clusters observed were M93, M47, M46 and NGC2451 in Puppis, south of Canis Major. The M48 cluster in Hydra, M67 and the Beehive in Cancer also were clear and steady.

The big surprise, however, was Saturn. By the time I aimed the refractor at the planet, a very thin cloud layer had developed, which made the planet's image rock-steady. By adding the #82A light blue filter, I was able to see as much detail as ever: rings A, B and C, plus a thick equatorial band displaying two large brown spots.

-Roy Troxel

**March 9, 2007**

6:30pm – 8:30pm

Seeing was average to below average, with considerable turbulence in the air, although the weather clock had predicted good seeing.

Venus wobbled considerably. Even using the filters, I saw numerous false colors. The Orion Nebula did its "dance" as well. I tried for a few minutes to catch all six stars in the trapezium, but at 250x, the entire nebula was wobbling like jello. (Amusing, but not very scientific.)

Surprisingly, various star clusters were steady and bright. I observed the ones in Canis Major, Puppis and Taurus. According to Sue French's *Celestial Sampler*, three of Taurus' clusters –

NGC 1746, 1750 and 1758 – have caused a lot of speculation. The clusters appear to overlap each other. Is this because they are all in the same line of sight from Earth, or are they colliding?

-Roy

**March 11, 2007**

The evening held so much promise. The day was beautiful with blue skies and mild temperatures and not a cloud in the sky. Weather forecast was for a nice evening. Clear Sky Clock had dark blue for transparency. What we got were fast thin clouds that partially obscured the sky as they moved past. The clouds were not thick enough to hide most of the stars, but they sure dimmed some of the deep sky stuff, such as the star clusters in Auriga.

Roy and I went to Broad Creek to do some observing tonight. I invited Eric Brossart to join us. Eric is an ex-member of the club and had been a regular at Broad Creek and Steppingstone in the past. He had turned out at the lunar eclipse session last week. We arrived at about 7:15 and had enough light to assist with the setup. We started packing up at about 10:30.

Tonight, I had decided to take a ride down memory lane and brought my 40-year old Criterion RV-6 Dynascope mounted on an LXD 75 mount, as well as my set of Criterion eyepieces. These are assorted types and include Achromatic Ramsdens, ASPs, a couple of Orthos, an Erfle and a Ramsden mixed in. This scope has a lot of sentimental value to me and I do not like to travel with it. However, when I cleaned the mirror last summer, I noted some pitting and wanted to see if it affected the images.

Roy brought his Orion Refractor and Eric brought his Stellar Vue.

While waiting for Polaris to show so that we could do our alignments, we looked at Venus. It is incredible how bright it is. It is still fairly small, 13" or so but showing a clear disk at 66X. Disk can be seen to be gibbous but just barely. After doing the alignment, I looked at Saturn and worked my way through the eyepieces, from 30 mm (40X) to 4 mm (300X). Always a great subject, tonight was better than usual. Titan could be readily seen and two other moons drifted in and out of visibility. The Cassini Division was difficult but seen, as was a slim shadow of the disk onto the rings. A hint of belts could be faintly seen. The image quality held through the 6 mm Ortho. I am not sure that the 4 mm Ortho added anything.

Next was M 42, trying again to see stars E & F in the Trapezium. No luck. I then tried for the Horsehead!! Not the right night for it with clouds passing by and light reflecting from the underside of the clouds. Not only could I not see it, I could not see any nebulosity.

I had forgotten to bring along an observation list, so I used the Tonight's Tour feature on my Auto Star. I looked at the Pleiades, The Beehive, the Double Cluster and several star clusters in Auriga. I also saw M 81 and 82. Planetary nebulas were not featured tonight, which was a good thing considering the clouds.

Overall, a pleasant night, temperature did not really chill till about 9:30 or so. I must have performed a really good setup and alignment on the mount because it performed much better than usual. I was able to keep Saturn centered in the eyepiece at 300X for several minutes. I did a 270-degree slew with my scope from Saturn to the Orion Nebula and had it in the edge of the view in a 25 mm eyepiece. The optics of the scope did not show any degradation, at least nothing that I could see.

The eyepieces, on the other hand, leave something to be desired. Mostly, it is the field of view, which was much too narrow and really did feel like looking through a straw. I could barely bring in the Double Cluster or M 81/82 in the same field of view. The longer focal length eyepieces showed some color fringing. I could not bring the 50 mm Ramsden to focus. Of the batch, only the 16.3 mm Erfle performed well with nice crisp views and a wide field of view.

Makes me really appreciate the modern eyepieces.

-Tim Kamel

## Lunar Eclipse March 3, 2007

Basically, we were clouded out. Though the day started off without a cloud early in the morning. Clouds moved in during the day in alternating bands of clouds and clear skies. I had hoped that that would be the worst it would be because we would still be able to catch glimpses of the moon as well as other obstacles. Alas it was not to be. As I drove up to the Technical HS parking lot, it was like the clouds were racing me to get there first. By the time I reached the parking lot, it was clouded over with brief openings to the west. Venus peeked through for a few seconds but never long enough to get it centered in a finder scope. To the south, Sirius and Procyon would be seen through the clouds on occasion and one person was able to see the Orion Nebula in a binocular. There was no sign of Saturn.

To the east, it was completely clouded over. We were able to see a crescent moon as it existed totality at about 6:35 and again about a ½ hour later. Each time it was for about 2-3 minutes, long enough to get it in a scope but with not much to see.

Participation at this eclipse was good, the most I have seen since I started participating in these public functions. The parking lot was full with easily 60 guests, many bringing their own binoculars. We also had about 10 club members show up with scopes and binoculars.

What an incredible disappointment. It follows three other big events that were also clouded over - the conjunction of the moon and the Pleiades, the Mercury Transit and the Leonids. Are we forgetting to appease the Goddesses of Astronomy? Should we be making an offering to Athena, Minerva and Urania? Or maybe a sacrifice in the name of Sesat and Sirona is in order?

Tim Kamel

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Photo of the moon – 6/3/2006 Scope: 14" Reflector, courtesy, Mark Kregel. I used a Kodak LS743 digital camera, in video mode. I used Paint Shop Pro to select the best frame, and then adjusted the brightness and contrast – Roy Troxel

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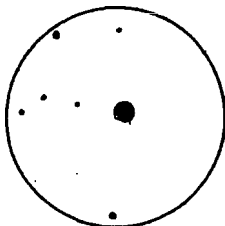
## Messier Objects for Spring

By Steve Krall

Steve uses a 10-inch, F/5 reflector unless otherwise noted. The observations were made in Kingsville, Md.

### **M49:**

4/12/96 – 11:15pm



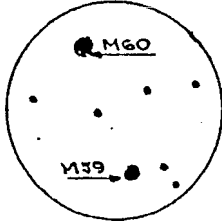
Searching for this elusive denizen somewhat isolated in Virgo, an inconspicuous constellation in a rather desolate part of the sky, can be disconcerting. Just sweeping for this shifty, small, bright, round, pearly patch by guesswork will not cut it. But with some homework and patience you can spot this pretty-looking galaxy on an excellent night. Look for it when it is on the meridian or thereabout, lying about two degrees south and one-half hour west of Vindemiatrix, a weak star yet visible to the naked eye under clear, transparent skies.

Do be careful and avoid getting entangled with the profusion of galaxies just to the north in the Virgo Cluster by keeping your search at arms length from it at all times. Finally, capturing the light emitted from this remote galaxy for my very first time was a thrilling moment for me.



### M59 and M60:

4/17/96--11:00 pm

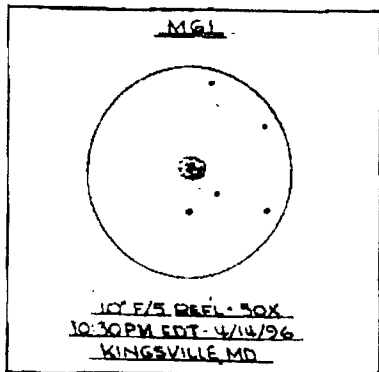


Finding these two galaxies located in the midst of the Virgo Cluster, a swarming aggregation of wall-to-wall obscure galaxies, can be an intimidating task. But by carefully threading your way around this jumble of galactic objects you can spot this neat looking couple rather easily, lying isolated just off to the east of the main group. Look for them about one degree from Vindemiatrix on a straight line to Denebola where you can uncover both M59 and M60 together in your low power field of view. Both are small, dim, rounded, ash-gray in color and fairly bright as far as these shadowy Virgo galaxies go. Using higher power brightened them somewhat, especially at their centers but any resolution was out of the question. This is an impressive sight but a dark night preferably during new moon is essential to catch sight of this elusive pair so remotely distant.

*Note: Messier described this pair as "nebulae in Virgo similar to M58, discovered all three while observing a comet which passed close to them."*

### M61:

4/29/95--11:30pm

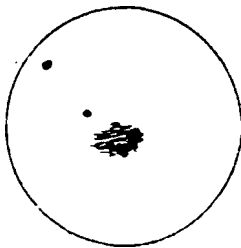


You will have to step up to the plate for this one.

To find this spiral galaxy residing in Virgo, a mind bending 42 million light years away, can be demanding. But on a decent night you can spot this far-off galaxy on a line about one third of the way from Delta Virginis to Nu Virginis where you can find M61 appearing as an unimpressive, small, not quite round, dim, nebulous patch. While you are there, gently nudge your scope just about 5+ degrees to the north to view a spectacular galactic sprawl, the renowned Virgo Cluster, a vast congregation of galaxies. Bringing this remote denizen to light with my own homespun telescope was especially gratifying for me.

*Note: Messier described M61 as "a nebula, very faint difficult to distinguish."*

### M63: 6/15/96--11:15pm--8 inch F/6 Refl.

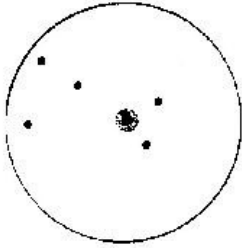


Commonly known as the Sunflower Galaxy, this galaxy appears as a moderately sized, faint, hazy smudge, brighter in the center and enveloped in a faint nebulosity. Although somewhat of a challenge, you can find this remote galaxy, if you are careful. Try for it lying just below the big dipper about 8 to 9 degrees south of and a tad west of Alkaid, the end star in the big dipper's handle. It is oval-shaped, grayish in color, barely discernible and resembles another nearby galaxy, namely M106, in every regard. Though showing only a little visual interest and looking like nothing more than a nebula, I could not help but feel the exhilaration and awe of actually observing the image of this galaxy that has been in transit thru boundless space for a mind-boggling 35 million years! While you are here, you may want to nudge your telescope about 3 degrees westward (use your telrad ) to encounter M94, a rounded, smaller but brighter object.

*Note: Messier described M63 as "a nebula, very faint, contains no star and disappears with the slightest illumination of the micrometer wires."*

### M94:

4/17/96--11:25pm



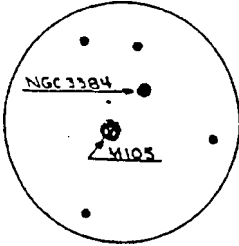
At 40 degrees+ declination, M94 is conveniently placed in that part of the sky for your observing ease. However, wait for a clear night when Cor Caroli (Alpha Canum) and Megrez in the Big Dipper, two fine celestial beacons, are visible to the naked eye. Look for it lying about one degree off Cor Caroli on a straight line drawn to Megrez, where it appears as a small, rounded, mottled patch of light, surrounded by a thin halo with an uncommonly large, bright core giving it a starry appearance. Although low power was best to search out this galaxy, I preferred higher power for more detail, which enlarged and brightened

it quite a bit. While you are enjoying the search and discovery of M94, you might turn your attention due east about 4 degrees (use your Telrad) to find another gratifying discovery, namely M63, a larger, more distant galaxy.

*Note: Messier described M94 as "a small, diffuse halo, bright compact nucleus."*

### M105:

4/19/95--10:30pm



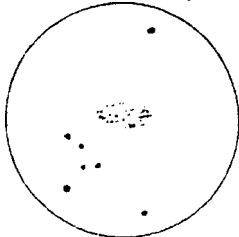
Now is the time to observe this distant galaxy. Look for it and its companion NGC3384 in the magnificent constellation Leo where you can easily bring them both to light in your low power field about half way on a straight line between bright Denebola and brilliant Regulus. They are a haunting looking pair, large, bright, ash-gray in color and appear very much like a couple of unresolved globular clusters but take heed of another similar

looking pair of galaxies just a heartbeat to the south. Capturing the light of M105 and NGC3384 residing 28 million light years beyond our Milky Way is an inspiring sight.

*Note: Mechain wrote to Messier, "Near M95 and M96 there is a third somewhat more northerly an even brighter object." Could this object have been M105?*

### M106:

4/28/95--11:45pm

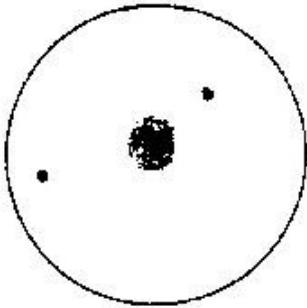


On a good night with low power, you can find M106 fairly easily but be prepared to use averted vision on this shadowy figure seemingly transparent and vanishing into the background at times. Look for it under the bowl of the big dipper and slightly south of a line drawn from Merak thru Phegda and extended for about six degrees. M106 appears as a very faint, oval shaped, smoke-gray cloud, little brighter at the center, and is fairly

large for one of these remote galaxies. It was an exciting moment for me to observe this incredibly distant island universe, amazingly with only a moderate sized amateurs telescope. While you are in the neighborhood you also have the opportunity to visit nearby M63 another faint galaxy similar to M106 in every respect.

Note: Pierre Mechain, Messier's assistant, described M106 as "another nebula close to Ursa Major, near star No.3 of Canes Venatici one degree further south."

**M64:**



4/17/96 11:45 pm

Finding M64, A.K.A. the Black Eye Galaxy located in Coma Berenices, a rather weak constellation and containing only a few potential guide stars can be challenging. Sweep for it carefully several degrees to the north of Alpha Comae Berenices (a mediocre star but visible to the naked eye on a good night) appearing as a shadowy, grayish, imperfect oval shaped patch of light. It is fairly large, fairly bright (a welcomed respite after pursuing those tiny, dim galaxies in Virgo) with a brighter center and is enclosed in a diffuse nebulosity. Moderate power seems to be suited to view this pretty sight but be aware that on a lesser

than good night M64 will appear as nothing more than a tiny rip in the firmament.

Note: Messier described M64 as "a nebula discovered in Coma Berenices which is about half as bright as that which is below the hair, M53."

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## General Announcements

### Earth Day, April 21

HCAS will be participating in Earth Day again this year. We will give out information about astronomy, the club, light pollution and let people take a look at the sun on that day. Earth Day is Saturday, April 21 from 11 AM to 4 PM at Aberdeen Park in Aberdeen. If you would like to help out that day, please contact Grace Wyatt at 410-836-7285 or [dgracew@comcast.net](mailto:dgracew@comcast.net).

### HCAS "History" Presentation

Just a reminder that we will be having a presentation at our next general meeting.

Lewis Berman will give a presentation on the formation of our club in the early 1970s and the events that were associated with it. Lewis was 14 years old at the time and his father, Harold, was one of the founding members. Lewis also has some photos of that time that he will share with us.

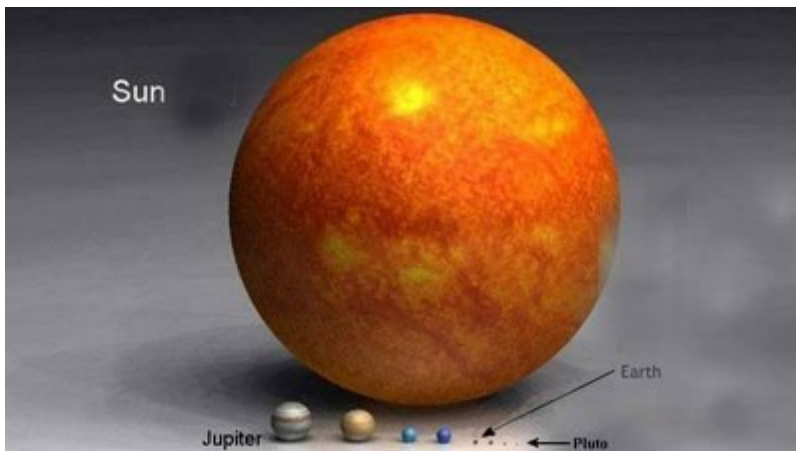
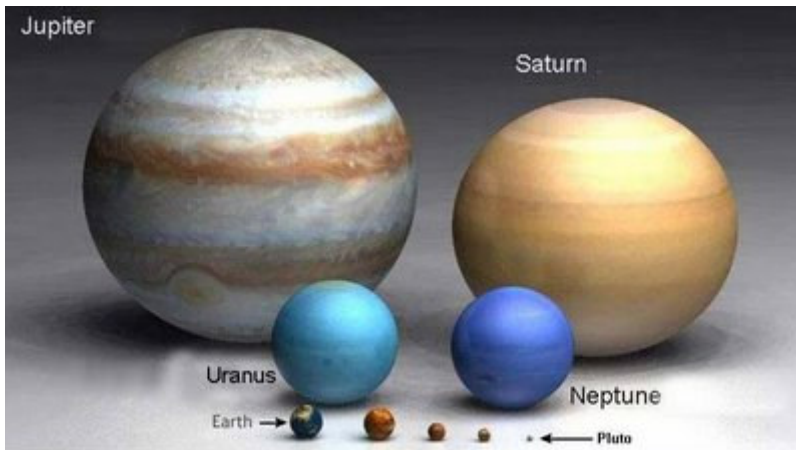
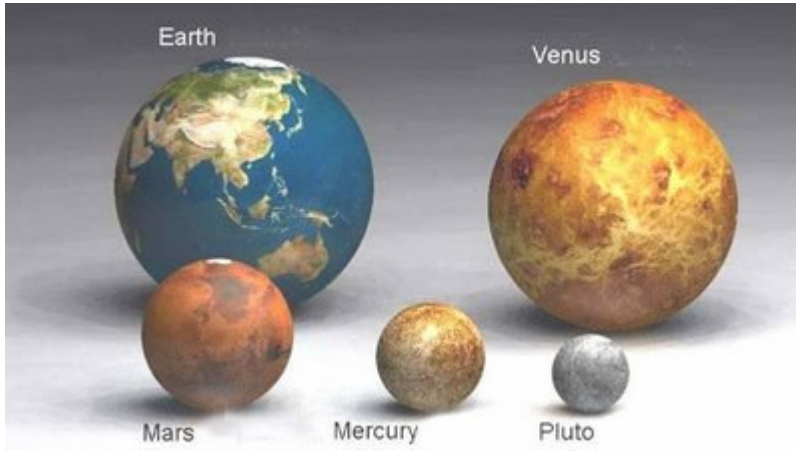
Please plan on joining us at 7:30 PM on 4/7/2007 at the observatory.

If you plan to attend, please contact Grace Wyatt at 410-836-7285 or email at [dgracew@comcast.net](mailto:dgracew@comcast.net).

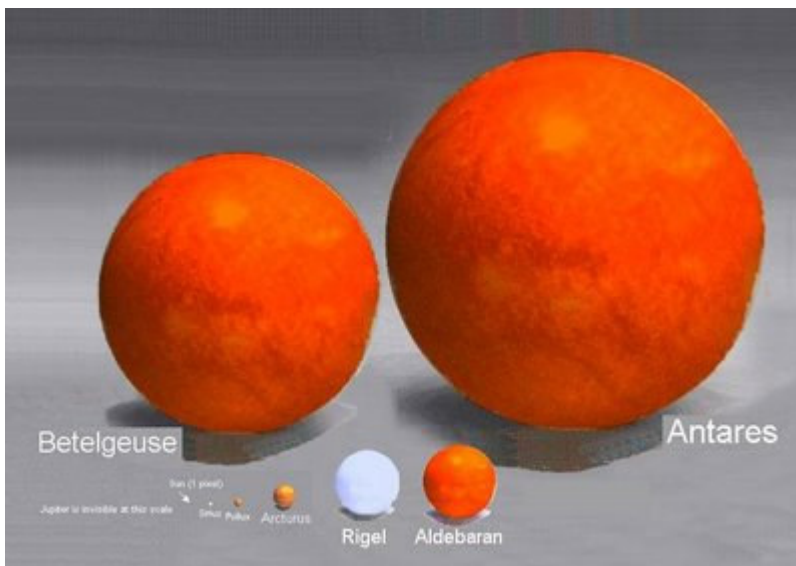
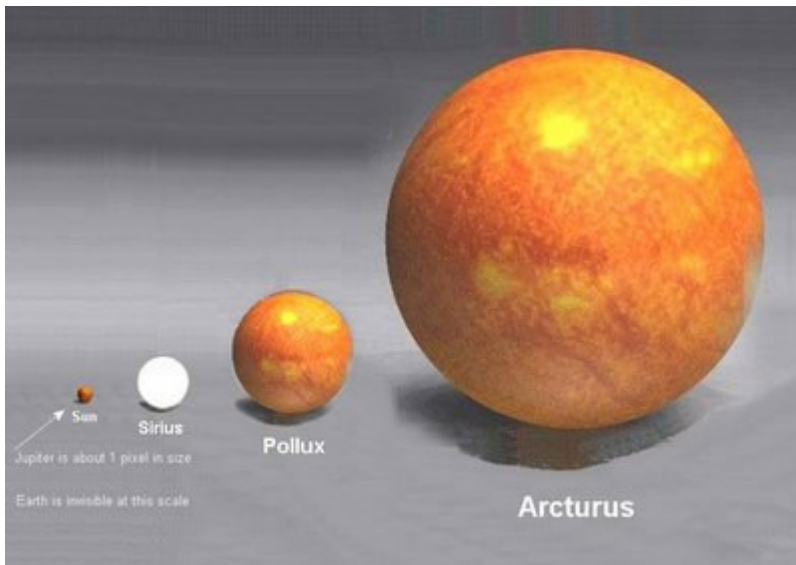
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## Relative Sizes of Stars and Planets

This is a terrific set of diagrams, showing the relative sizes of some stars and planets, beginning with Earth, approximately 7,000 miles in diameter, and ending with Antares, approximately two billion miles in diameter. These and other striking space visuals can be found on this blog site: <http://naturesmightypictures.blogspot.com/search/label/Space>



## Relative Sizes of Stars and Planets (cont.)



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