



Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

MARCH 2006

(VOLUME 14, NO. 3)

Visit our website at www.ccas.us

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Important March 2006 Dates

- 6** First Quarter Moon.
- 7** **Introductory Astronomy class** meets at West Goshen Township Building. Class starts at 7:00 p.m. EDT. Topic: *The Other Kids on the Block*.

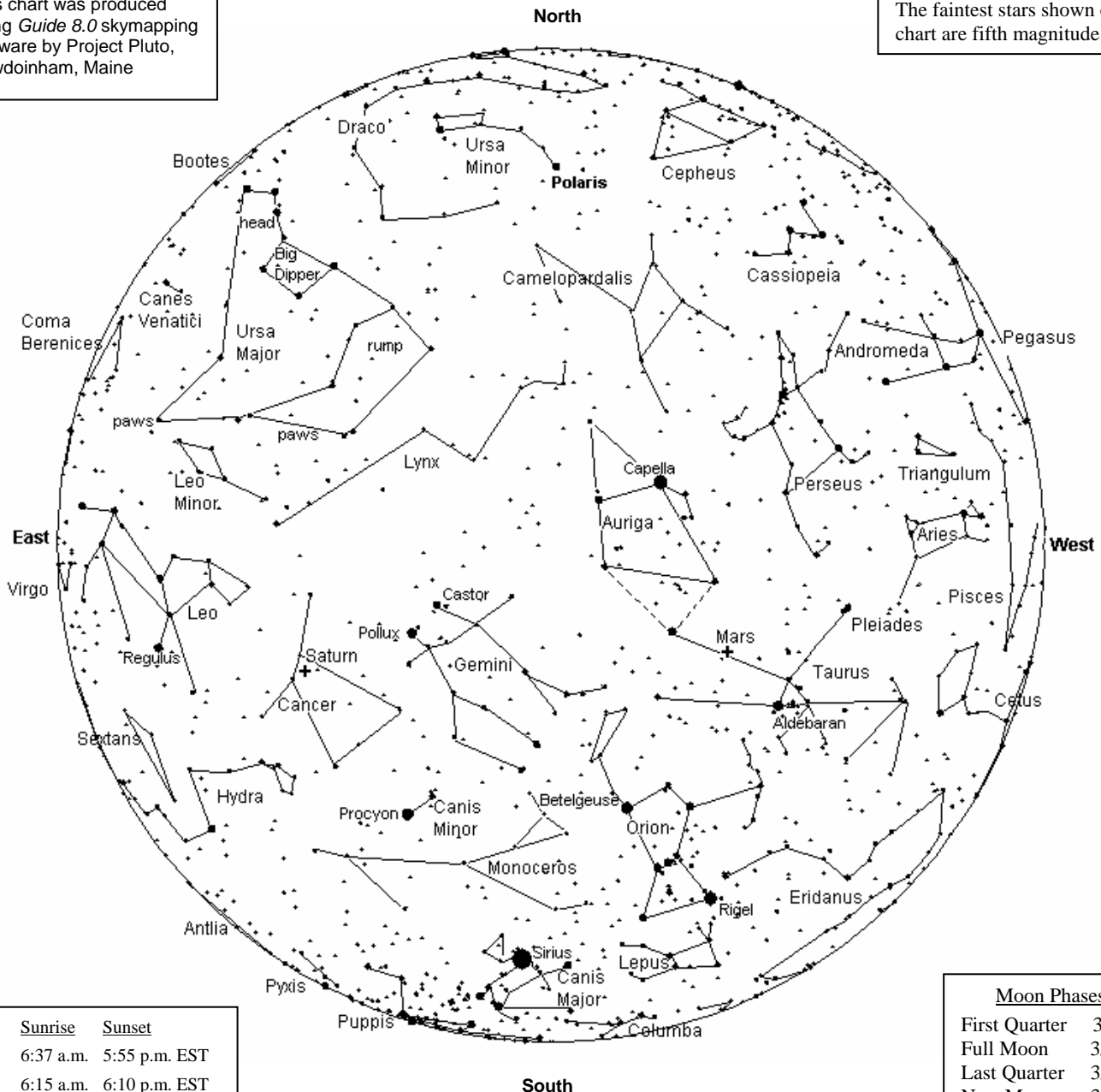
Also: Hercules Observing Cluster meets **at the West Goshen Township building**.
- 14** Full Moon.
- 14** **CCAS Meeting**
Lunar Eclipse Party and Observing (at sunset)
OR
Regular Meeting at 7:30 p.m. EST
(see page 3)
- 14** Hercules Observing Cluster meets.
Call Kathy Buczynski at 610-436-0821 for details.
- 20** **March Equinox at 1:26 p.m. EST**
First Day of Spring in Chester County.
- 21** **Introductory Astronomy class** meets at West Goshen Township Building. Class starts at 7:00 p.m. EDT. Topic: *Planispheres/Star Charts*.

Also: Hercules Observing Cluster meets **at the West Goshen Township building**.
- 22** Last Quarter Moon.
- 24/** **CCAS Observing Session**
25 Location: Brandywine Valley Association
Time: sunset, or earlier (see page 3)
- 29** New Moon
- 28** Hercules Observing Cluster meets.
Call Kathy Buczynski at 610-436-0821 for details.



This chart was produced using *Guide 8.0* skymapping software by Project Pluto, Bowdoinham, Maine

The faintest stars shown on this chart are fifth magnitude.



Date	Sunrise	Sunset
31	6:37 a.m.	5:55 p.m. EST
3/15	6:15 a.m.	6:10 p.m. EST
3/30	5:51 a.m.	6:25 p.m. EST

Moon Phases	
First Quarter	3/06
Full Moon	3/14
Last Quarter	3/22
New Moon	3/29

The sky over Chester County March 15, 2006 at 7:00 p.m. EST

The Planets, by Don Knabb

Mercury: Mercury will become lost in the glare of the Sun in the first week of March.

Venus: On March 25 it reaches greatest elongation west (47°). Try to find Venus during the broad daylight of mid-morning for a fun challenge!

Mars: Mars stands more than 50° high in the southwest in Taurus at the end of the evening. It sets near 1 a.m. in the Northwest.

Jupiter: During March Jupiter shines at magnitude -2.3 and is stationary in Libra on March 5, beginning retrograde (westward) motion.

Saturn: The excellent show of Saturn and the Beehive star cluster (M44) is a must see for binoculars. During March the rings tilt 20° from edge-on for the last time in the decade.

Uranus: During March Uranus is unviewable due to its closeness to the Sun in the sky.

Neptune: During March telescope users looking for a real challenge can try glimpsing dim Neptune when Venus passes 2° N of it on the mornings of March 26 and 27 about an hour and 20 minutes before sunrise.

Pluto: Pluto is up before dawn but is not well placed for a few more months.

Constellation line drawings used in the above chart were adapted from the book *The Stars: A New Way to See Them*, by H. A. Rey, Houghton Mifflin Company, New York, NY, 1980. This book is available in bookstores; it is a good guide to the constellations.

March Observing Highlights

by Don Knabb, CCAS Observing Chair

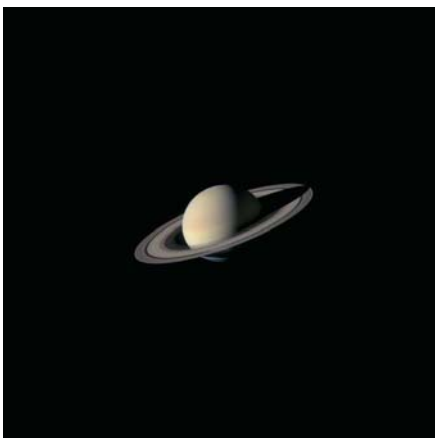
Constellations: In early March the Big Dipper is standing upright on its handle early in the evening. Follow the arc to Arcturus! And climbing into the springtime sky in the east is Leo, the springtime Lion. Look for the asterism known as the Sickle, a backward question mark. In the west you can still see the Great Square of Pegasus, a symbol of autumn; it will soon be out of sight.

- Mar. 1** Look for Mercury far below the crescent Moon in the West after sunset.
- Mar. 5** The Moon is 0.3° N of Pleiades (M45).
- Mar. 6** First Quarter Moon.
- Mar. 14** Full Moon, the Egg Moon.
- Penumbral eclipse** in progress at moonrise. If the weather is good our March meeting will begin just before sunset by the WCU South Campus tennis courts to observe the eclipse. If the weather doesn't cooperate we will have our normal meeting at 7:30.
- Mar. 20** Equinox, Spring begins at 1:26 p.m. EST
- Mar. 21** Antares 0.3° N of Moon.
- Mar. 22** Last Quarter Moon.
- Mar. 25** Venus reaches greatest morning elongation west of the Sun.
- Mar. 29** Double shadow transit on Jupiter 0h 53m EST
- Mar. 29** New Moon, total solar eclipse over Brazil, North Africa, Central Asia

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Through the Eyepiece: The Magnificent Rings

by Don Knabb, CCAS Observing Chair



For me, nothing compares with the sight of Saturn in a telescope. No picture can give you the same view as looking through the eyepiece at this amazing planet. If you want to get a "WOW!" from a new stargazer, just show them Saturn in a telescope.

Although Saturn was at opposition on January 27, the viewing will continue to be excellent for several months. The most

amazing feature of Saturn is of course its rings, so here are a few facts to provide some background for your observing.

Galileo described the rings as "handles" or large moons on either side of the planet. Two years later he was puzzled to discover the rings had disappeared. What happened is that Galileo happened to look at Saturn when the rings were edge on and they were invisible to his telescope. This happened most recently in 1996 and will happen again in 2011.

Saturn's rings and equator are inclined by 27° to Saturn's orbit, so we see them from different aspects at different times, with the angle varying over a 30 year period. During March the rings are inclined at 20° so the viewing is excellent.

You'll need at least 30X to see the rings, and more magnification to see the structure of the rings. There are hundreds of individual rings, but the most prominent are the A, B and C rings. Also, with a 100mm or 200mm scope you will be able to see the Cassini division, a gap between rings A and B, discovered in 1676 by (you guessed it) Giovanni Cassini. The C ring is the most difficult to see and usually requires good seeing and a telescope of at least 150mm (6-inch). Also look for the shadow of the rings on Saturn and Saturn's shadow on the rings.

The rings are truly huge, stretching from edge to edge the distance from Earth to the Moon. They consist of billions of particles that range in size from microscopic to huge boulders. Numerous studies indicate the rings are composed of ice, rock and dirt—that is, they are made of "dirty snowballs" like tiny comets with diameters typically of only about 10 centimeters.

There are two general theories about how Saturn's rings formed. One is that the rings are the material that was unable to congeal into a satellite. The other is that the rings formed when an existing satellite wandered too close to Saturn and was torn apart.

For their size, Saturn's rings are one of the thinnest structures in nature. If Saturn's rings were reduced to the size of a football field, they would be thinner than a magazine cover.

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CCAS March Meeting

DATE: **Tuesday March 14, 2006**

A map of the south campus showing the location is on page 17.

In March, there is a **penumbral lunar eclipse** the same night as our meeting. We have made arrangements with the Department of Geology & Astronomy at West Chester University to have a joint observing session that night. **We will therefore meet near the tennis courts on South Campus that night.** Please bring your telescopes or binoculars. You can arrive before 7:30 if you want to. The eclipse will be in progress when the Moon rises, so if you can arrive before sunset to get set up then do so. We will then continue observing, even after the eclipse is over, for as long as people want to stay. Invite family and friends, it's free.

IF the weather on March 14 does not cooperate, if it's cloudy, then we will meet at the usual time of 7:30 in Room 113 in the Boucher Building. There Dr. Marc Gagne of WCU will present a talk on exoplanets (planets outside our own solar system). Main campus map is on page 18.

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CCAS March Observing Session

The next CCAS Observing Session will be at the Brandywine Valley Association's Myrick Conservancy Center (see map on page 16) on Friday March 24, 2006 starting at sunset; or earlier, if you can get there earlier. If it's too cloudy on Friday, then the Observing Session will be on Saturday March 25, 2006. At the observing sessions, there will be help available to set up and use your telescopes. If you're having trouble using your telescope, or finding your way around the sky, come on out and get some assistance. All members are invited whether they have a telescope or not. Telescope owners are always glad to share the view through their telescope. CCAS Observing Sessions are free of charge and open to the public.

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CCAS Introductory Astronomy Class

The Education Committee of the CCAS has started a class intended to introduce people to basic astronomy. This series of eight classes is being held on the first and third Tuesdays of each month, starting at 7:00 p.m. and ending at 8:00 p.m. These are the remaining classes:

March 7	The Other Kids on the Block
March 21	Planispheres/Star Charts
April 4	Stars by Design: Constellations
April 18	The Secret Life of Stars
May 2	Planetarium Field Trip (WCU)
May 16	Beyond Naked Eye

The classes are held in the West Goshen Township Building at the intersection of Paoli Pike and Five Points Road. This is just a short distance from the Paoli Pike exit off U.S. Route 202 outside West Chester.

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Treasurer's Report by Bob Popovich

December 2005 Financial Summary

Beginning Balance	\$1,566
Deposits	203
Disbursements	<u>112</u>
Ending Balance	\$1,657

Membership Renewals Due

03/2006:	Lyons Nelson
04/2006:	Goldader Kerson Popovich

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Membership Renewals

You can renew your CCAS membership by writing a check payable to "Chester County Astronomical Society" and sending it to our Treasurer:

Bob Popovich
416 Fairfax Drive
Exton, PA 19341-1814

The current dues amounts are listed in the *CCAS Information Directory* on page 15 in this newsletter.

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Calendar Notes

March 7, 2006 (Tuesday)	Introductory Astronomy class Location: West Goshen Twp. Building 7:00 p.m. EST Also: Hercules Cluster meets at same place.
March 14, 2006 (Tuesday)	CCAS Lunar Eclipse Observing Location: TBA Sunset (or Moonrise, if you prefer)
March 21, 2006 (Tuesday)	Introductory Astronomy class Location: West Goshen Twp. Building 7:00 p.m. EST Also: Hercules Cluster meets at same place.
March 24/25, 2006 (Friday/Saturday)	CCAS Observing Session Location: BVA sunset
March 28, 2006 (Tuesday)	Hercules Observing Cluster meets Call Kathy Buczynski for details
April 4, 2006 (Tuesday)	Introductory Astronomy class Location: West Goshen Twp. Building 7:00 p.m. EDT Also: Hercules Cluster meets at same place.
April 11, 2006 (Tuesday)	CCAS Meeting Location: West Chester University 7:30 p.m. EDT Hercules Observing Cluster meets Call Kathy Buczynski for details
April 18, 2006 (Tuesday)	Introductory Astronomy class Location: West Goshen Twp. Building 7:00 p.m. EDT Also: Hercules Cluster meets at same place.
April 21/22, 2006 (Friday/Saturday)	CCAS Observing Session Location: BVA sunset
April 25, 2006 (Tuesday)	Hercules Observing Cluster meets Call Kathy Buczynski for details
May 2, 2006 (Tuesday)	Introductory Astronomy class Location: West Chester University 7:00 p.m. EDT
May 6, 2006 (Saturday)	International Astronomy Day
May 9, 2006 (Tuesday)	CCAS Meeting Location: West Chester University 7:30 p.m. EDT
March 16, 2006 (Tuesday)	Introductory Astronomy class Location: West Goshen Twp. Building 7:00 p.m. EDT
May 19/20, 2006 (Friday/Saturday)	CCAS Observing Session Location: BVA sunset

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Report on February CCAS Meeting

Photos by Kathy Buczynski

Text by Jim Anderson

If you missed the February Society meeting, you missed a good one. After the Constellation of the Month presentation on Lepus, Vic Long gave us a pleasant surprise. Vic put together a brief talk on the crater Clavius on the Moon. The talk and handout gave us many interesting facts about Clavius, and about who it was named for. The handout was illustrated with several of Vic's excellent webcam images of Clavius.

Which brings up an interesting point. Perhaps you have a topic, something astronomical you looked into and found interesting. You could do a mini-talk like the one Vic did. Just show up at the meeting when you have it ready, and let the officer in charge (usually our Prez, Kathy Buczynski) know that you have a brief talk for the group. It could be about your favorite double star or planet, favorite galaxy, favorite spot on the Moon, anything astronomical. It doesn't have to be a long presentation with slides and all that. The important thing is the information sharing.

We also learned that the Society has purchased two filters for use on the Society's 20-inch telescope: a wide-band light pollution filter, and an OIII filter. The light pollution filter is good for blocking light pollution (a problem around here) when viewing objects such as nebulas. The OIII (that's an "oxygen three" filter, usually shortened to "oh-three") enhances the view of planetary nebula, because it passes light centered on the spectral lines of doubly-ionized oxygen, which is usually strong in the light from planetary nebula.

The main presentation concerned Lyme Disease, a serious health threat in our area. People who spend much time outdoors (such as amateur astronomers, gardeners, etc.) are in greater danger of contracting this disease. The disease is transmitted by bites from the deer tick, which is very widespread in our area (just like the deer which serve as hosts for the ticks' mating season). Outside of the mating season, the ticks are carried by any small mammal: cats, dogs, and especially mice, shrews, voles, moles, and the like.



How serious is this threat in our area? The federal Centers for Disease Control (CDC) track the numbers via reports from the doctors treating patients with disease. Unfortunately, the CDC says many doctors do not file the reports due to time

constraints—the CDC estimates that only about 10% of the cases are actually reported to them. Even so, the CDC numbers are alarming. Reported cases in Pennsylvania rose 38% in 2005 over 2004; cases reported in Chester County were up 35% in 2005 from 2004. And, most alarming is the fact that Chester County has the most cases reported in any county in Pennsylvania, **and** there are more cases reported in Pennsylvania than in any other state! Chester County is one of the "hot spots" for Lyme Disease in the US! A survey by the Lyme Disease Association of Southeastern Pennsylvania (LDASP), conducted in Pocopson Township in Chester County, found that 47% of the households in the township had one or more members suffering from the disease.

The best measure is prevention. Spray yourself and clothing with a good insect repellent containing DEET ("Deep Woods Off" is a good one). Only DEET is an effective repellent. Even better is the insecticide permethrin: it not only repels ticks, it kills the little vermin on contact. This insecticide is extremely safe to use, and is virtually non-toxic (you would have to drink really huge quantities before it would hurt you). The U.S. military has been treating field gear for our troops with permethrin for several decades now, with no adverse effects (except on the crummy little ticks). You can spray it on your clothing, socks and shoes (or boots) included, rather than on your skin. A treatment will last for a month, even if you wash the clothes. Once dry, the permethrin has no smell or tactile sensation: the presenters had treated clothing samples they passed around. If they had not told us, we would not have known it was treated. This is a big advantage over DEET, which does have an odor. The presenters recommended having a complete outfit (or two) treated with permethrin that you use only for outdoor wear, when gardening or observing. Hang it in the garage or basement when not in use. One caveat is that permethrin treatment lasts longer on cotton cloth, so it's best to use that for your "observing suit." You can get permethrin spray for treating clothes at most sporting goods stores in our area; look in the camping gear section.

Another neat trick is to use "tick tubes," sold in our area at Agway stores. It is a tube filled with cotton balls treated with permethrin. You place these around your property, and mice and such find them and take the cotton balls back to line their nests. Great idea. Ticks like to catch rides on mice, but when they get home the ticks die! The permethrin does not harm the mice. Just the ticks. The only good tick is a dead tick.

Above all, wear tightly-woven socks and pants of light color outside. Tuck the pant legs into the socks. Check for ticks when you get back inside. Take a good shower and use lots of soap. If you develop a rash or other symptoms, see your doctor. Be aware that **there is NOT a reliable test for Lyme Disease**. The doctor has to diagnose it from the symptoms. A good source of information for your doctor is Dr. John Knaur at the Chester County Department of Health. You or your doctor can also get more information from the LDASP website:

www.LymePA.org

Take the time to learn about this health threat and how to protect yourself and your family. It is truly "time well spent!"

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Report on CCAS February Observing Session

by Don Knabb, CCAS Observing Chair

On Friday, February 24 three stargazers gathered at BVA for some chilly staring at the night sky. The view was excellent although the temperature was not for the faint hearted. Each member set up a scope of a different type with Nicholas La Para viewing through his refractor, Steve Limeburner using his large Dobsonian reflector (what a light bucket!) and me with my four-inch Schmidt-Cassegrain. We arrived in time to see Mercury just over the trees and watched it set as the sky darkened.

Steve and Nicholas started picking out several Messier objects and other deep sky items of interest. I bounced all over the sky with my small binoculars and saw clusters with them that I was never able to pick out before. That is partly because of the excellent conditions and partly because I'm learning more about what to look for in the winter sky. Then I aimed my scope at the Orion Nebula and just stared at the jewels of the Trapezium.

Nicholas zoomed in (literally, with a zoom eyepiece) to NGC 457, the Owl Cluster near Cassiopeia, also known as the ET Cluster since it looks like that famous alien with outstretched arms.



Steve aimed high into the sky, picking out the clusters in Auriga. Then he drilled deep into space and picked off a few items from the Herschel 400. As his scope cooled down he was seeing stars down to 13th magnitude if my cold brain registered what I heard correctly!

I learned a lesson for cold weather observing. I had read that one should dress for a temperature that is 20 degrees colder than what the actual temperature is expected to be that night. Well, that must be about right since I dressed more for the actual temperature and found myself going through a cycle of sitting in my truck with the heater on high for 10 minutes, then venturing outside for 10 or 20 minutes until I started shivering too much.

So yes, it was cold. But I'd say that the clarity was some of the best I've ever seen in Chester County and it was definitely worth the effort.

Join us at the next observing session on March 24 when the weather should be a bit milder! Until then, keep looking up!

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Don Knabb Becomes a Certified Lunatic



At the February Society meeting, President Kathy Buczynski had the pleasure of presenting an Astronomical League Lunar Observing Award to Don Knabb. In the photo above, Kathy is holding the certificate and letter, and Don is holding the lapel pin for the award. Don successfully found one hundred features on the moon, using just his eyes, binoculars, and telescope. Congratulations Don!

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Photos from the Introductory Astronomy Class



And Ed said "Let there be light," and there was light... In the first class session, *Spaceship Earth*, Ed Lurcott illustrates why we have seasons on Earth: the 23.5° tilt in the Earth's axis. The light bulb is the Sun's stunt double for this demonstration.



In the picture at left, you can see the tilt of the Earth's axis a bit more clearly.



After the classes, if it is clear outside, participants get a chance to do some actual observing with Society members. In the photo above, some eager students are using the Society's six-inch loaner telescope.



Is someone protecting dark-adapted eyes from the camera's flash, or is someone in the Witness Protection Program?? Some other participants enjoy a look though Nicholas La Para's refractor.

Observing for the classes is done on the athletic fields adjacent to the West Goshen Township Building, where the classes are held. Members of the Society's Hercules Observing Cluster, which usually meets nearby on Tuesday nights, meet at the Township Building on class nights to provide telescopes and expertise. They help the students find things in the sky, and help them use the telescopes.



During the February 21 class, *The Moon*, Bob Popovich gets some expert assistance in demonstrating the difference between rotation and revolution.



Later during that same class, Bob enlists even more help in demonstrating why the Moon goes through phases.

Pictures in this article taken by Kathy Buczynski. Text by Jim Anderson.



Binocular Sky Hook

by Don Knabb

I like to look at the night sky any way possible, using just my eyes, my telescope or my binoculars. Naked eye is easy since you only have your map and flashlight to hold. The same is true for a telescope since it's on a tripod or base of some sort. And to share what you are looking at is relatively easy since the telescope keeps pointing at where you were looking, and for naked eye observing you can use a laser or star hop to help your fellow sky gazers see what you are seeing. But binoculars present more of a problem. When you hand them off to someone else it might be difficult or impossible for them to see what you were seeing. And high powered binoculars are heavy and the image is not steady enough when you hand hold them. But binoculars are great for pulling in a lot of light and for large clusters, so I wanted to find a way to make them easier to use.

One solution I've used is to fasten an adapter to the binoculars, and fasten them to a tripod. That works really well for many objects in the sky, but it may be difficult for people of different height to get to the eyepieces. Anything near the zenith is very difficult to see since the tripod interferes, or your neck just doesn't bend that far. And, you can't use binoculars mounted on a tripod if you are sitting down, which is a nice way to observe the sky.

A better solution is to use a parallelogram-style mount that functions as a "sky hook" for the binoculars, holding them away from the tripod so you can stand or sit under them. They eliminate arm strain and shakiness and allow you to aim the binoculars high overhead. In addition, you can raise or lower them while staying fixed on a target so you can easily share the wonders in the sky.

So, you can go on-line or to the nearest astronomy store and write a check for a couple or hundred dollars, and have a nice sky hook for your binoculars. I've looked at mounts on-line and at *Skies Unlimited* and they appear well made of good materials, mostly metal and some plastic parts. But I happened to have a few woodworking tools and some left over lumber in my basement, so I decided to try making a sky hook out of wood and a few pieces of hardware.

You don't need a lot of equipment to build a functional binocular mount, but you need at least a stationary saw of some sort such as a table saw, a radial arm saw or a band saw. And you need a good drill, or ideally a drill press. And if you want to clean up the look of the mount you'll need sandpaper and perhaps a hand held power sander. Sounds like a lot, but if you've done any woodworking you probably have all those items and many more.

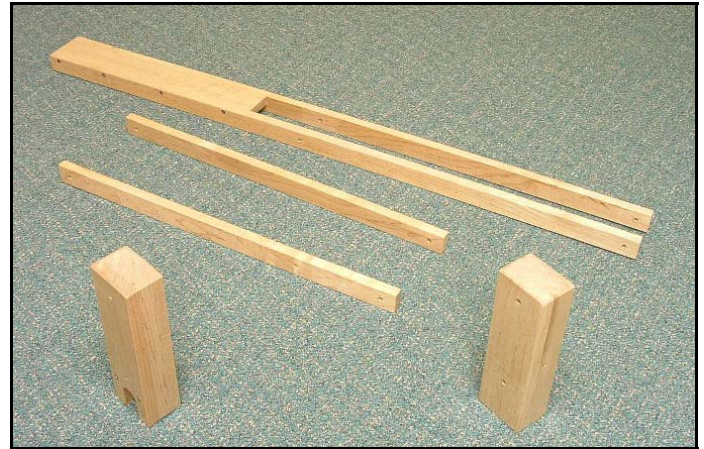
Here's the finished product:



My mount came out much bigger than the typical commercially available ones. I did this so it would be easy to use from a sitting or lounging position. The only downside to this is that the whole thing came out heavier than I'd like it to be. But the added mass makes it more stable and it is easy to use sitting down, lounging or standing, so the added weight is a trade-off I am happy to accept.

I won't go into great detail on how to construct one of these, but I'll give some general directions, and talk about the materials and hardware used. If you want more pictures or help just send me a note at dknabb00@comcast.net.

I used maple with a finished thickness of $\frac{3}{4}$ of an inch to build my sky hook. You could use almost any wood, even pine. Here's a picture of the wooden parts:



The main support arms are 51 inches long, 1 $\frac{1}{2}$ inches high and $\frac{3}{4}$ inches thick. They are glued and screwed into a piece of wood 20 inches long, 2 $\frac{3}{8}$ inches wide and $\frac{3}{4}$ inch thick. That piece of wood has some L brackets screwed into the bottom of it that hold a 2 foot length of $\frac{3}{8}$ inch threaded rod. That rod is what you put your counter weights on to balance the weight of the binoculars. In my case I had some old wheels lying around, but you can use whatever you have such as old weight lifting weights, etc. Here's a picture of the counterbalance hardware installed:



The lower support arms are 27 inches long and the same 1 $\frac{1}{2}$ inches high and $\frac{3}{4}$ inches thick as the main arms. The center support and binocular holder blocks are glued up from the $\frac{3}{4}$ inch wood to end up at 3 inches by 2 $\frac{1}{4}$ inches by 10 inches high. The most difficult part of the whole project was figuring out how to mount the center support to the tripod. I found a bracket at the hardware store that I could drill a hole through for my tripod screw to come through. I had to hacksaw the bracket to the right size and use my table saw to make a recess for the bracket in the bottom of the support. Then I screwed that bracket

to the bottom of the center support after I band sawed out an opening where the tripod screw would come through. Here's how that looks:

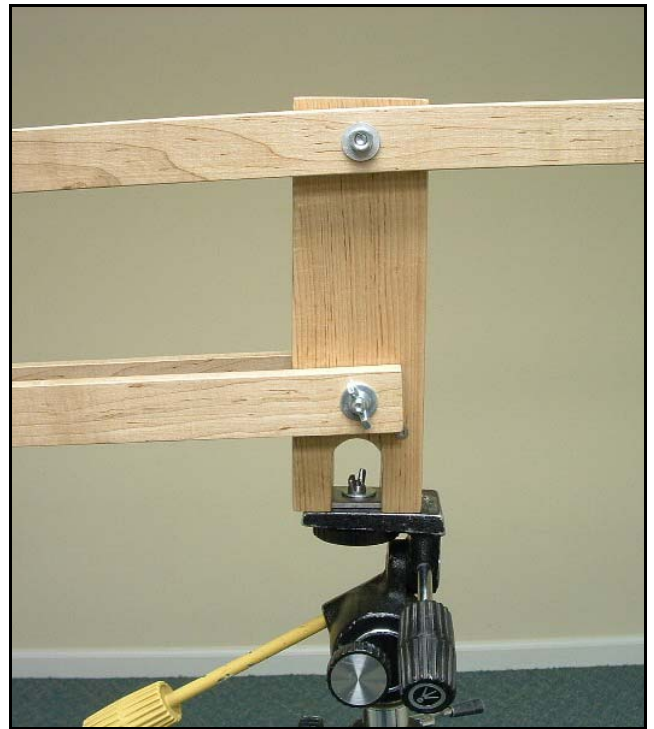


Then I drilled the holes to mount the support arms. The hardware I used for the project is pictured here:



At the top is the 3/8 inch rod that holds the counterweights. On the lower right is the L bracket that fastens onto the binocular support block. It pivots so I can point the binoculars at any angle. The binoculars fasten to the bottom of that bracket and they pivot there too, but for aiming I mostly pivot the entire assembly on the tripod. The four bolts you see are 5/16 inch by 4 1/2 inch long. The white pieces you see are pieces of plastic I use to provide some friction but keep the movement smooth. I just cut apart some old freezer containers and drilled a hole for the bolt to go through. They always are placed between any two pieces of wood so the wood pieces don't rub on each other.

Here are some close-ups of the binocular support, and the center support:



I sanded and finished the entire assembly. You don't need to do that, but it did come out presentable enough to take out in public. The dimensions of the sky hook aren't critical. You could make it at least a foot smaller, maybe more. I just guessed at what size might work by looking at pictures of all the commercial mounts that I could find on the internet. You can see that I used wing nuts on two of the support arms and double nuts on the other two. That allowed me to lock in some friction to stabilize the mount, and I use the wing nuts to adjust the friction as needed. I used double nuts on the counterweight rod to lock it in place after I balanced the entire assembly. The weights are held on by a wing nut so that they are easily removed for transporting the mount.

So, how does it work? Pretty good! I gave it a test in late January and was able to sit down and look through my 20x80 binoculars at the Great Orion Nebula, the Pleiades, Saturn with the Beehive star cluster next to it, and M36, M37 and M38 which were directly overhead. And I was able to get out of my chair and let Barb, my wife, sit down and she found all the same objects immediately. About the only negative is the size and weight of the mount as discussed earlier, but it's not too hard to haul around.

Come out to the Hercules Cluster or BVA and give it a try!



Cherry Springs Star Party: June 22-26, 2006

The annual Cherry Springs Star Party, at Cherry Springs State Park, in Potter County, PA, will be held on June 22-26, 2006. Cherry Springs State Park is Pennsylvania's premier dark site for astronomical viewing, and is the state's first official Dark-Sky State Park (meaning that strict controls are enforced on light pollution). Several members of the CCAS (Ed and Linda Lurcott, Steve Limeburner, and Pete LaFrance are four) have

been to star parties at Cherry Springs and can attest to the superior observing conditions there.

If you would like to go, you can get more information at the website, and even register online:

<http://www.cherrysprings.org/>

You can also contact Robert Werkman, a member of the organizing committee, who lives in Hershey:

Robert F. Werkman, MD
telephone: 717-533-2224
email: rwerkman@giacp.com

The Cherry Springs Star Party is organized through the Astronomical Society of Harrisburg via a long term agreement with the DCNR of the Commonwealth of Pennsylvania.



June 21 - 24: Green Bank Star Quest III

Combining Optical and Radio Astronomy at One Event!

This event is held June 21st-24th, 2006 under the dark skies of West Virginia for the 3rd annual Green Bank Star Quest at the National Radio Astronomy Observatory in Green Bank, WV. By day, check out all the NRAO has to offer, like the new multi-million dollar Visitors Center, and free tours of the facilities, including the 100 meter GBT which is the worlds largest fully steerable radio telescope. Star Quest will have 4 days of lectures, imaging classes, vendors, raffles, kids activities, keynote talk by Seth Shostak of the SETI Institute, and nighttime optical observing on over six acres of camp sites at the low price of \$ 75.00 for a party of two or \$ 100.00 for a family.

For more information contact Joe Gonzalez at (304) 626-5012 or visit our web site at:

<http://www.greenbankstarquest.org>

Register before 5/31/2006 to receive a 10% discount off your total registration fees: just write Web Deal on the registration form!



Join the Fight for Dark Skies!

You can help fight light pollution, conserve energy, and save the night sky for everyone to use and enjoy. Join the nonprofit International Dark-Sky Association (IDA) today. Individual memberships start at \$30.00 for one year. Send to:

International Dark-Sky Association
3225 North First Avenue
Tucson, AZ 85719

Telephone: 520-293-3198
Fax: 520-293-3192
E-mail: ida@darksky.org

For more information, including links to helpful information sheets, visit the IDA web site at:

www.darksky.org

Note that our CCAS Webmaster John Hepler has a link to the IDA home page set up on our Society's home page at www.ccas.us.

Dark-Sky Website for PA

The Pennsylvania Outdoor Lighting Council has lots of good information on safe, efficient outdoor security lights at their web site: <http://home.epix.net/~ghonis/index.htm>



Our Local Astronomy Store: Skies Unlimited

In case you didn't know it, there is an astronomy equipment store called *Skies Unlimited* in our area, in Glenmoore to be specific. Their phone number is (610) 321-9881, and their Website URL is www.skiesunlimited.net.

Directions: Go north on PA-100, four miles past the Downingtown interchange of the PA Turnpike; then turn left onto PA-401, then immediately turn left again into Ludwig's Village. The new store is next to Ludwig's Village Market.

<http://www.skiesunlimited.net/>



Good Outdoor Lighting Website

One of the biggest problems we face in trying to reduce light pollution from poorly designed light fixtures is easy access to good ones. When you convince someone, a neighbor or even yourself, to replace bad fixtures, where do you go for good lighting fixtures? Now there is a web site and business intended to address that very problem. At this site you can find information on all kinds of well-designed (that is, star-friendly) outdoor lighting fixtures. This company, Starry Night Lights, intends to make available all star-friendly fixtures they can find, and information on them, in one place. Check it out, and pass this information on to others. Help reclaim the stars!

<http://www.starrynightlights.com/>



Astronomus

“Beware the Ides of March—Not”

By Bob Popovich

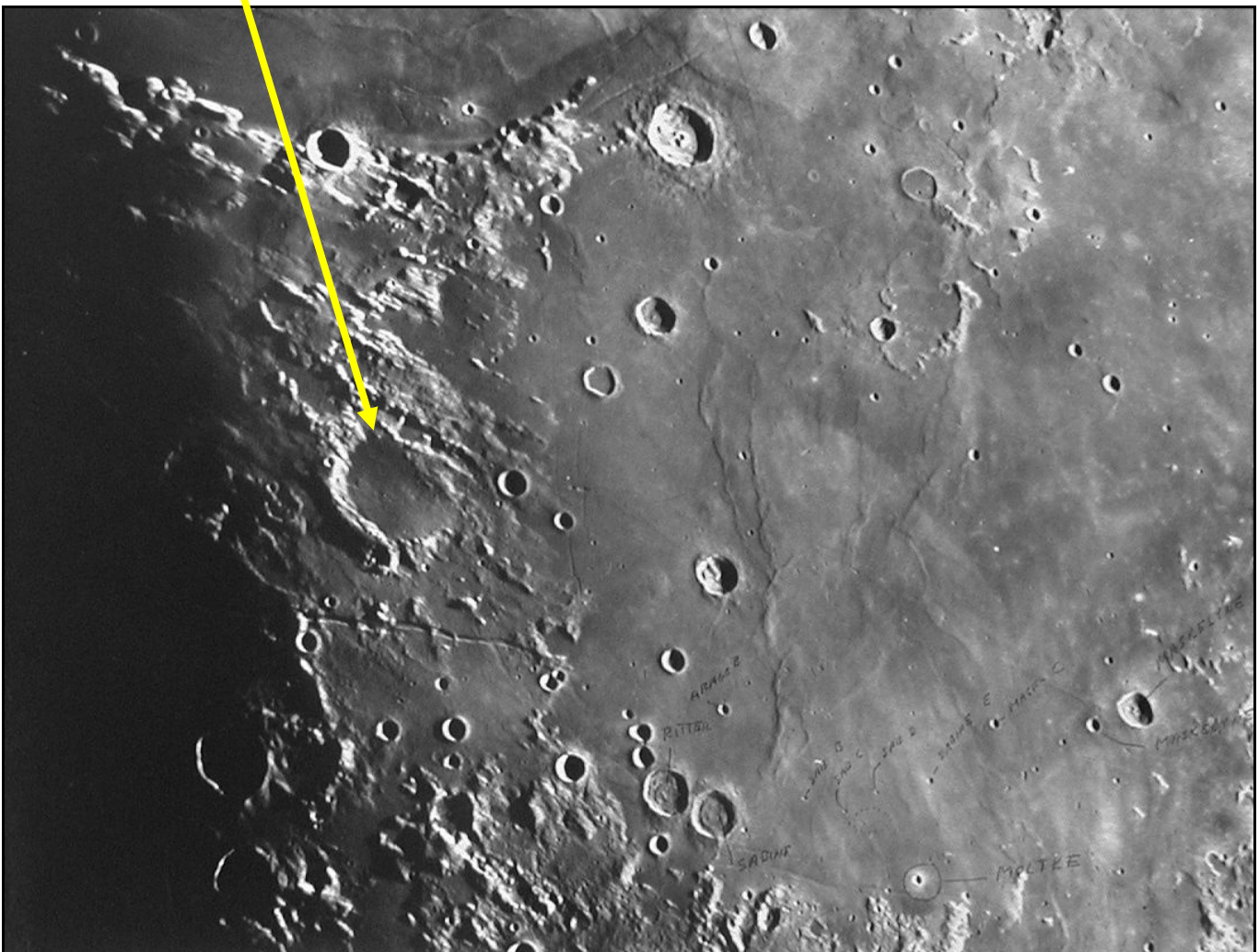
On the 15th of March 44 BC the Roman Emperor and dictator for life (*dictator perpetua*) Julius Caesar was assassinated. Now we can't say that Caesar wasn't warned—at least so Shakespeare tells us. The soothsayer made it clear to “Beware the Ides of March.” But we have no need to fear mention of Ides for this word is merely a vestige of the old Roman calendar's way of denoting March 15. In fact, every month had Ides, falling on or near the 15th. Now, filing that piece of history away, let's turn our attention to a selenographic Roman monument—the *crater* Julius Caesar.

A detailed study of any one particular lunar feature is a venture calling for fearless patience and discipline. On a celestial body as complex and (relatively) monochromatic as the moon, things can look alike. And yet, that is precisely why I submit that it's worth pursuing. Diligence is how the great observational astronomers unlocked the majesty of the heavens—by viewing, sketching, modeling and recording... night after night. And by this inquisitiveness they opened a portal through which we would one day launch Ranger, Clementine, and Apollo.

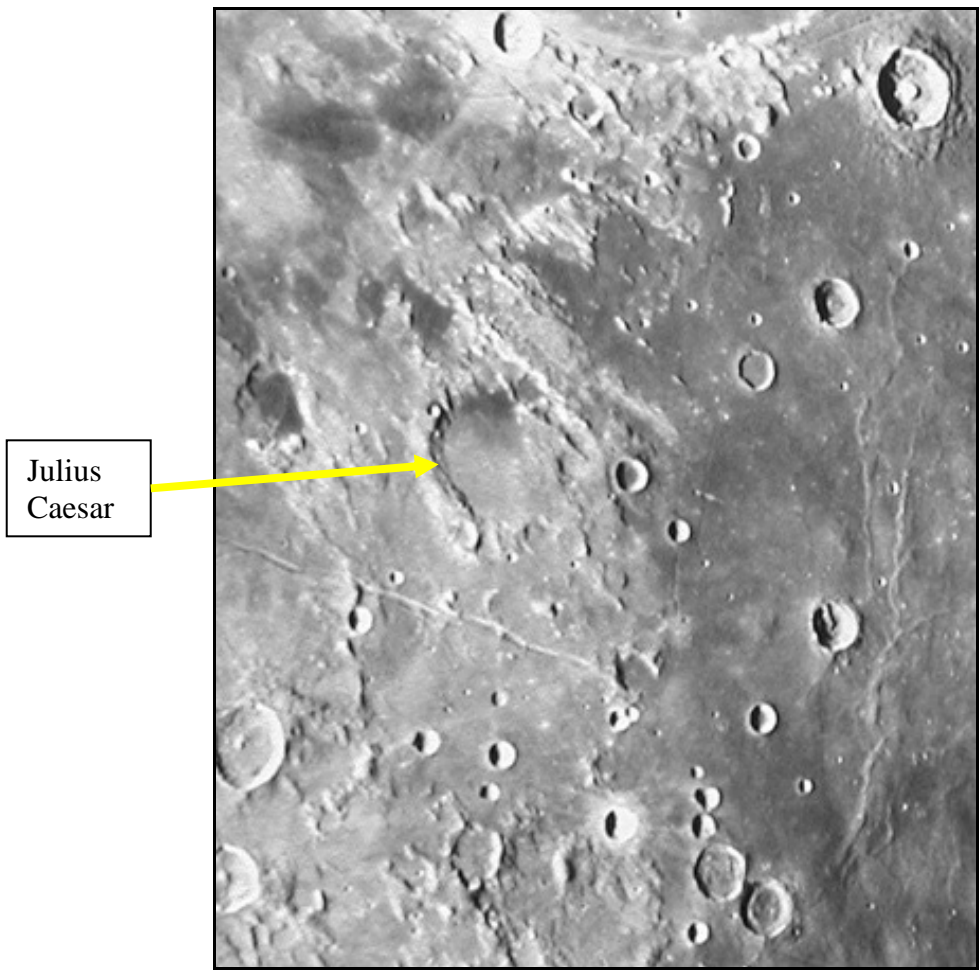
Devoting time to our dictator perpetua also hones our observational skills. With the moon only 380,000 kilometers away, my 120mm refractor reveals lunar objects down to about 4Km in diameter, placing within my grasp an astounding level of detail. Skill honing I always need, but the greater lure is the exhilarating wonder of seeing an object with 3-D aspects. Courtesy of our sun and the shadows it casts, Caesar is a marvel to behold. So, friends, Pennsylvanians, fellow astronomers; let us proceed.

At first blush, Julius Caesar, some 90Km across, appears to sit on an isthmus of highlands separating the Sea of Tranquility from the Sea of Vapors. As is true for nearly all lunar features, the two optimal times for study are during the lunar morning and during the lunar afternoon. Specifically, Julius Caesar's time is about the 6th day of lunation (lunar morning) and again about the 19th day of lunation (lunar afternoon) as shown in these two photographs from the Lunar & Planetary Institute:

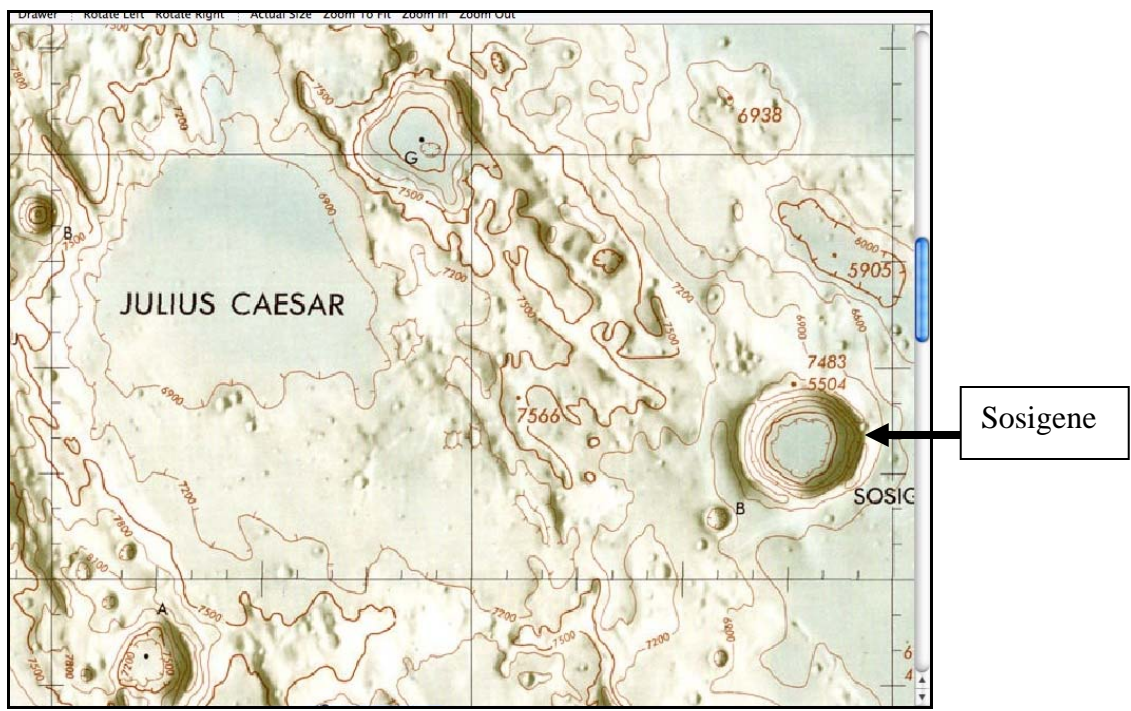
In the morning, Julius Caesar with Tranquility to the east and the Sea of Vapors, in shadows, to the west.



Notice the many distinctions when the lunar afternoon arrives around day 19:



The seeming appearance and disappearance of features in and around our noble Roman makes for rewarding observing experiences. But to better *feel* our crater, it is helpful to understand the topography. Over decades of lunar study, the US Geological Survey has assembled an extensive collection of maps.



Studying this map arms us with understanding of not just where to look, but *how* to look.

Now, observation of the crater shows us that the south/southeast wall is destroyed. But looking at the USGS map with its contour-line scale of 300 meters tells us something fundamentally different—there really is no south/southeast wall of *crater* Julius Caesar. In fact, Julius Caesar is not a crater at all, but rather a broad valley. This knowledge in hand, we now bravely analyze what we’re observing in a different light—Julius Caesar has no true walls to the east or the north, either. Notice the contour lines—the floor’s elevation varies little from the surrounding terrain. Even its west “wall” is less steep and with less definition than those of a classic impact crater like Sosigenes, to the east. See how steeply Sosigenes’ contour lines plunge down its walls.

The deep gash to the northwest is more defined on the 19th day (after New Moon) than on the 6th, but the surrounding ridges are better defined on day 6. The white colorations (impact ejecta) to the northeast, waiting for things to “warm up,” emerge in the afternoon sun. And if you can crank up your magnification, the southern area of the valley is littered with small craters. Add a light blue filter to the mix and you’ll enhance your viewing even more.

The possibilities for intriguing observation and study far exceed what’s been noted here. Try making a shaded-relief sketch. And if you’re really artistic, try modeling it in clay (I humbly note that my clay model of the near side of the Moon garnered 1st place in my 8th Grade Science Fair at Le Moyne Elementary School in Chicago)

One last comment is related to TLP—transient lunar phenomena. Persistent reports of fleeting, colored, specter-like clouds have been reported in several areas of the moon, including Julius Caesar. I have never seen one, but TLP stories persist with one possible explanation being releases of gas from cracks in the surface. Keep your eyes open for you never know...

Be courageous—give time to our moon. Allow yourself to be drawn into its magic. But if you are approached by a group of men in togas, RUN!

Next Time: Reclining Nude.



Micro-sats with Macro-potential

By Patrick L. Barry

Future space telescopes might not consist of a single satellite such as Hubble, but a constellation of dozens or even hundreds of small satellites, or “micro-sats,” operating in unison.

Such a swarm of little satellites could act as one enormous telescope with a mirror as large as the entire constellation, just as arrays of Earth-bound radio telescopes do. It could also last for a long time, because damage to one micro-sat wouldn’t ruin the whole space telescope; the rest of the swarm could continue as if nothing had happened.

And that’s just one example of the cool things that micro-sats could do. Plus, micro-sats are simply smaller and lighter than normal satellites, so they’re much cheaper to launch into space.

In February, NASA plans to launch its first experimental micro-sat mission, called Space Technology 5. As part of the New Millennium Program, ST5 will test out the crucial technologies needed for micro-sats—such as miniature thrust and guidance systems—so that future missions can use those technologies dependably.

Measuring only 53 centimeters (20 inches) across and weighing a mere 25 kilograms (55 pounds), each of the three micro-sats for ST5 resembles a small television in size and weight. Normal satellites can be as large and heavy as a school bus.

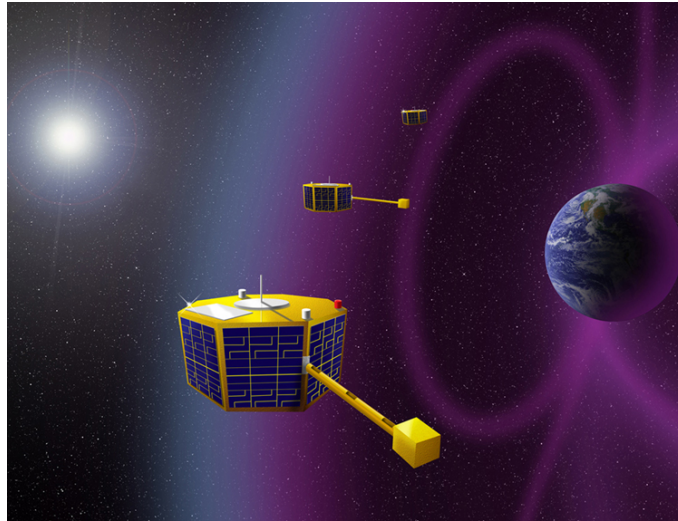
“ST5 will also gather scientific data, helping scientists explore Earth’s magnetic field and space weather,” says James Slavin, Project Scientist for ST5.

Slavin suggests some other potential uses for micro-sats.

A cluster of micro-sats between the Earth and the Sun—spread out in space like little sensor buoys floating in the ocean—could sample incoming waves of high-speed particles from an erupting solar flare, thus giving scientists hours of warning of the threat posed to city power grids and communications satellites.

Or perhaps a string of micro-sats, flying single file in low-Earth orbit, could take a series of snapshots of violent thunderstorms as each micro-sat in the “train” passes over the storm. This technology would combine the continuous large-scale storm monitoring of geosynchronous weather satellites—which orbit far from the Earth at about 36,000 kilometers’ altitude—with the up-close, highly detailed view of satellites only 400 kilometers overhead.

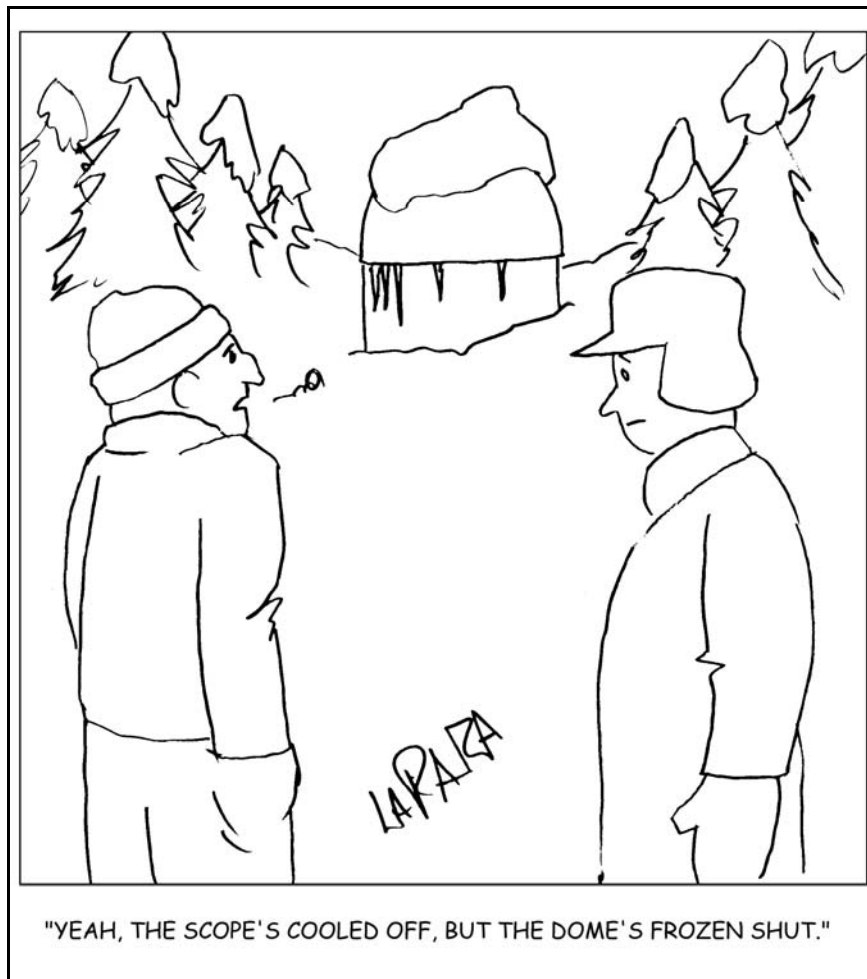
If ST5 is successful, these little satellites could end up playing a big role in future exploration.



The Space Technology 5 mission will test crucial micro-satellite technologies.

The ST5 Web site at nmp.jpl.nasa.gov/st5 has the details. Kids can have fun with ST5 at spaceplace.nasa.gov, by just typing ST5 in the site's Find It field.

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



Cartoon by Nicholas La Para



CCAS Information Directory

CCAS Lending Telescopes

Contact Kathy Buczynski to make arrangements to borrow one of the Society's lending telescopes. CCAS members can borrow a lending telescope for a month at a time; longer if no one else wants to borrow it after you. Kathy's phone number is 610-436-0821.

CCAS Lending Library

Contact our Librarian, Linda Lurcott Fragale, to make arrangements to borrow one of the books in the CCAS lending library. Copies of the catalog are available at CCAS meetings, and on the CCAS website. Linda's phone number is 610-269-1737.

Contributing to *Observations*

Contributions of articles relating to astronomy and space exploration are always welcome. If you have a computer, and an Internet connection, you can attach the file to an e-mail message and send it to stargazer1956@comcast.net

Or mail the contribution, typed or handwritten, to:

Jim Anderson
1249 West Kings Highway
Coatesville, PA 19320-1133

Get CCAS Newsletters via E-mail

You can receive the monthly newsletter (**in full color!**) via e-mail. All you need is a PC or Mac with an Internet e-mail connection. To get more information about how this works, send an e-mail request to Jim Anderson, the newsletter editor, at:

stargazer1956@comcast.net

CCAS A.L. Award Coordinators

These are the members to contact when you have completed your observing log for the Messier, Binocular Messier, Lunar, or Double Star Awards:

Messier (both): Jim Anderson
(610-857-4751)

Lunar: Ed Lurcott
(610-436-0387)

Double Star: Jim Anderson
(610-857-4751)

Constellation Hunters: Jim Anderson
(610-857-4751)

CCAS Purpose

The Chester County Astronomical Society was formed in September 1993, with the cooperation of West Chester University, as a non-profit organization dedicated to the education and enjoyment of astronomy for the general public. The Society holds meetings (with speakers) and observing sessions once a month. Anyone who is interested in astronomy or would like to learn about astronomy is welcome to attend meetings and become a member of the Society. The Society also provides telescopes and expertise for "star nights" for school, scout, and other civic groups.

CCAS Executive Committee

For further information on membership or society activities you may call:

President: Kathy Buczynski
610-436-0821

Vice Pres: Jim Anderson
610-857-4751

ALCor and Treasurer: Bob Popovich
610-363-8242

Secretary: Vic Long
610-399-0149

Newsletter: Jim Anderson
610-857-4751

Librarian: Linda Lurcott Fragale

Observing: Don Knabb
610-436-5702

Education: Kathy Buczynski
610-436-0821

Webmaster: John Hepler
610-363-0811

Public Relations: Deb Goldader
610-304-5303



CCAS Membership Information

The present membership rates are as follows:

REGULAR MEMBER\$25/year
SENIOR MEMBER\$10/year
STUDENT MEMBER\$ 5/year
JUNIOR MEMBER\$ 5/year
FAMILY MEMBER\$35/year

Membership Renewals

Check the Treasurer's Report in each issue of *Observations* to see if it is time to renew your membership. If you are due to renew, you can mail in your renewal check made out to "Chester County Astronomical Society." Mail to:

Bob Popovich
416 Fairfax Drive
Exton, PA 19341-1814

Sky & Telescope Magazine Group Rates

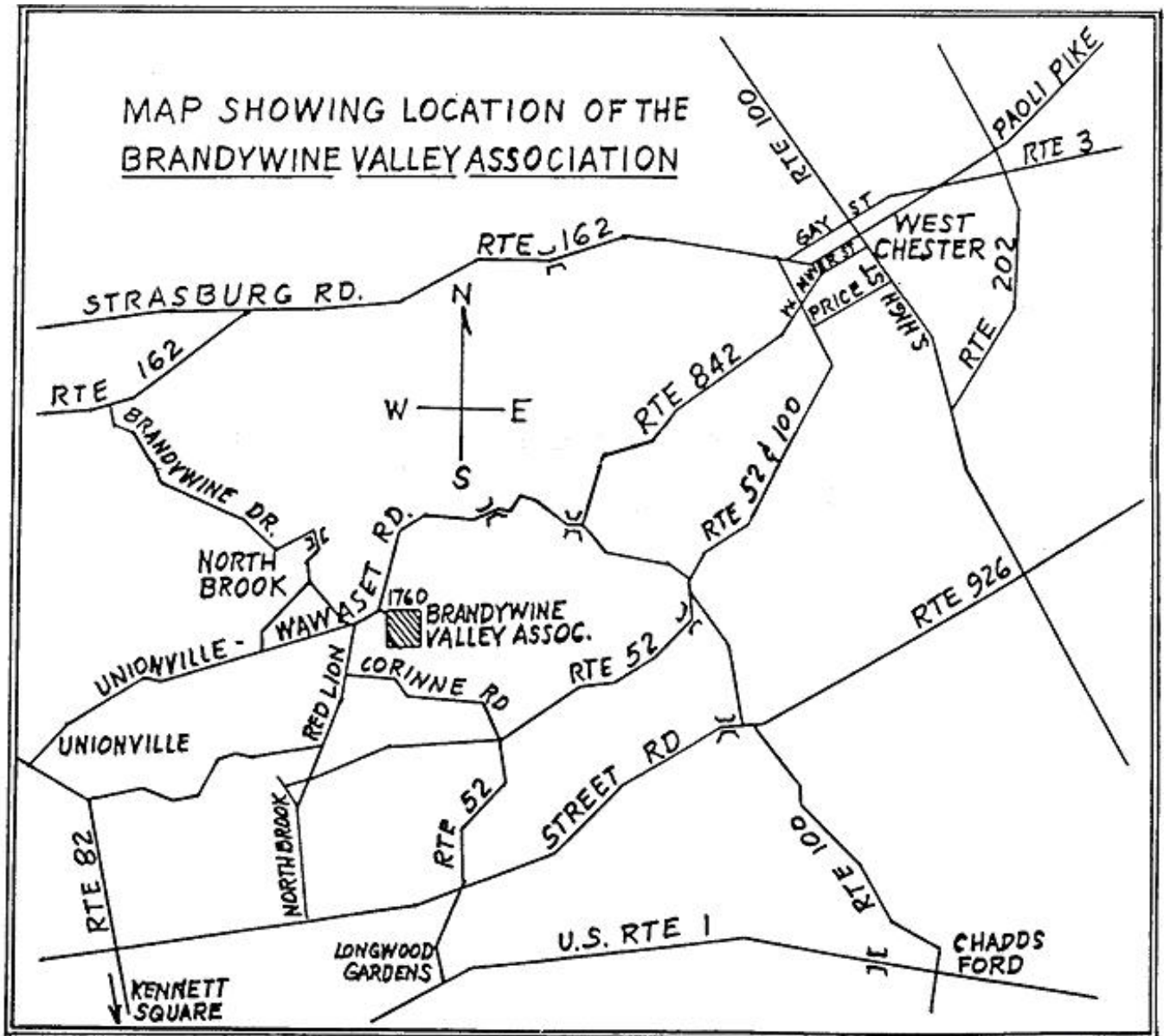
Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **\$32.95** which is much less than the newsstand price of \$66.00, and also cheaper than individual subscriptions (\$42.95)! Make **sure** you make out the check to the **Chester County Astronomical Society** (do **not** make the check out to Sky Publishing, this messes things all up big time), note that it's for *Sky & Telescope*, and mail to Bob Popovich. Or you can bring it to the next Society meeting and give it to Bob there. **If you have any questions by all means call Bob first (610-363-8242).** Buying a subscription this way also gets you a 10% discount on other Sky Publishing merchandise.

CCAS Website

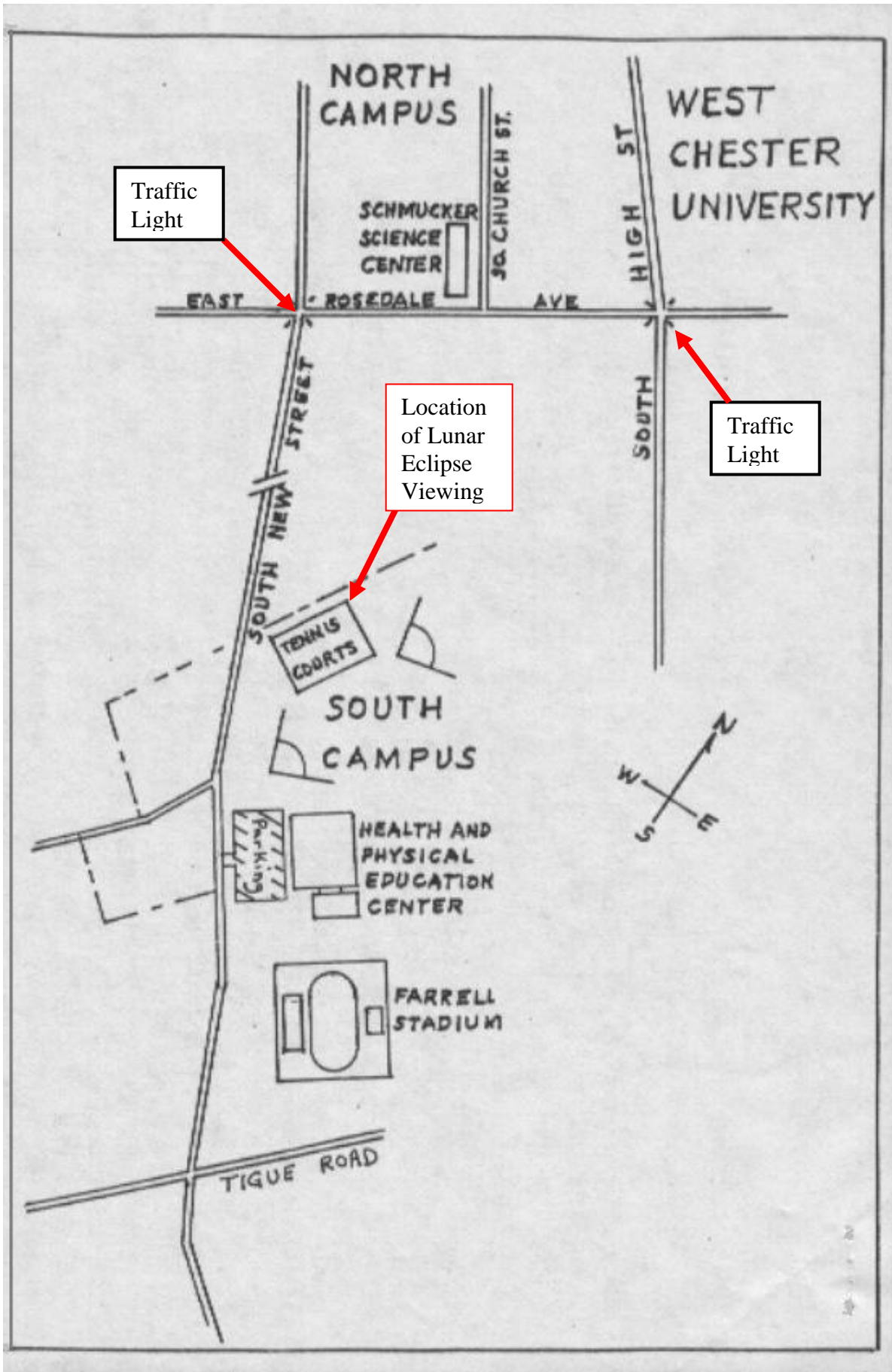
John Hepler is the Society's Webmaster. You can check our Website at:

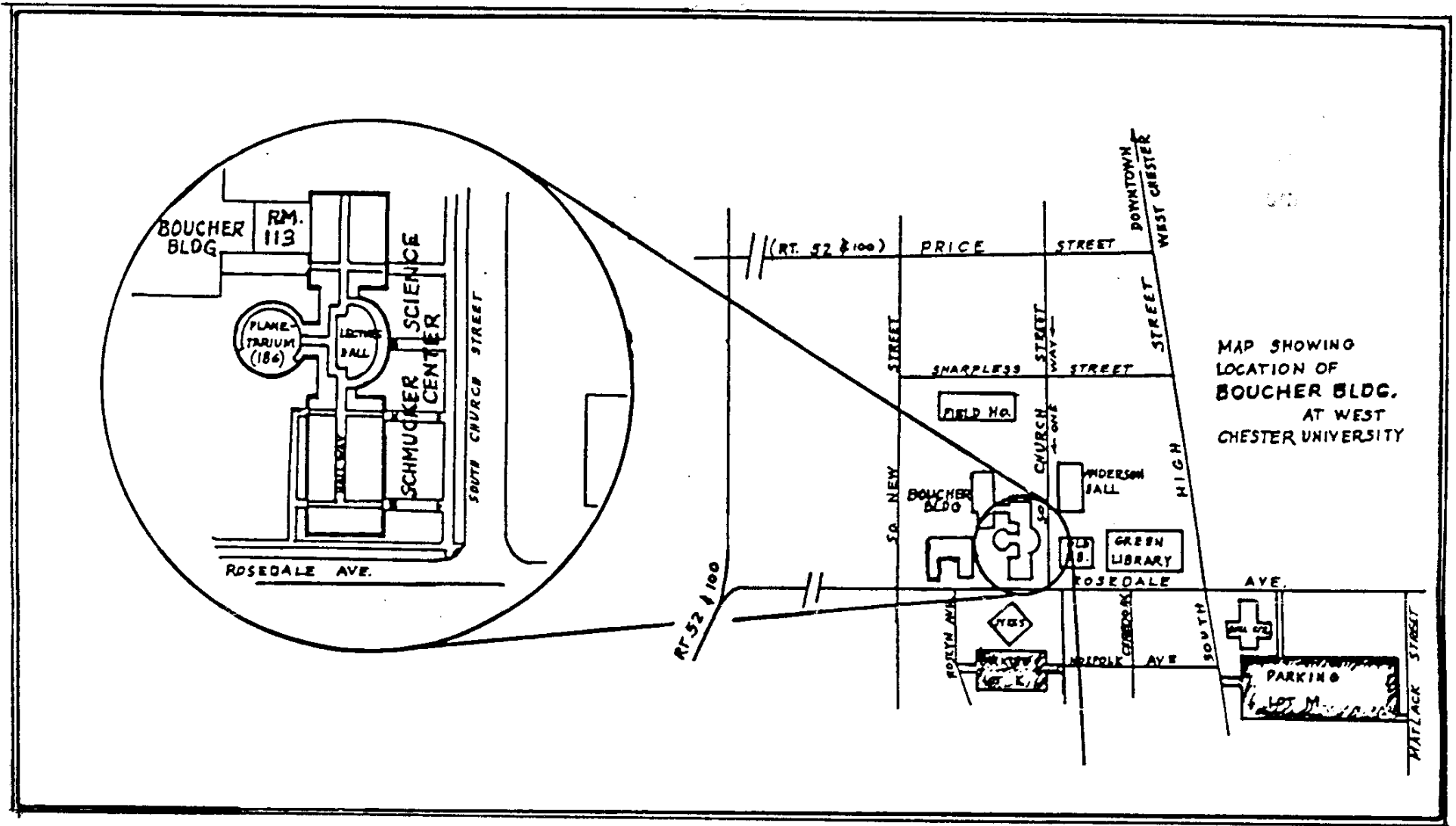
<http://www.ccas.us/>

John welcomes any additions to the site by Society members. The contributions can be of any astronomy subject or object, or can be related to space exploration. The only requirement is that it is your own work; no copying copyrighted material! Give your contributions to John Hepler (610-363-0811) or e-mail to webmaster@ccas.us



To get to the Myrick Conservation Center of the Brandywine Valley Association from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BVA property, turn off Route 842 into the parking lot by the office: look for the signs to the office along Route 842. From that parking lot, go up the farm lane to the left; it's about 800 feet or so to the top of the hill. If you arrive after dark, please turn off your headlights and just use parking lights as you come up the hill (so you don't ruin other observers' night vision).





Parking is available behind Sykes Student Center on the south side of Rosedale Avenue (Parking Lot K), and behind the Bull Center at the corner of Rosedale Avenue and South High Street (Parking Lot M). If you arrive early enough, you may be able to get an on-street parking space along South Church Street, or along Rosedale Avenue. You can take the Matlack Street exit from Rt. 202 South; Matlack Street is shown on the map at the lower right corner with Rt. 202 off the map. If approaching West Chester from the south, using Rt. 202 North, you would continue straight on South High Street where Rt. 202 branches off to the right. This would bring you onto the map on South High Street near Parking Lot M, also in the lower right corner.