



Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

NOVEMBER 2007

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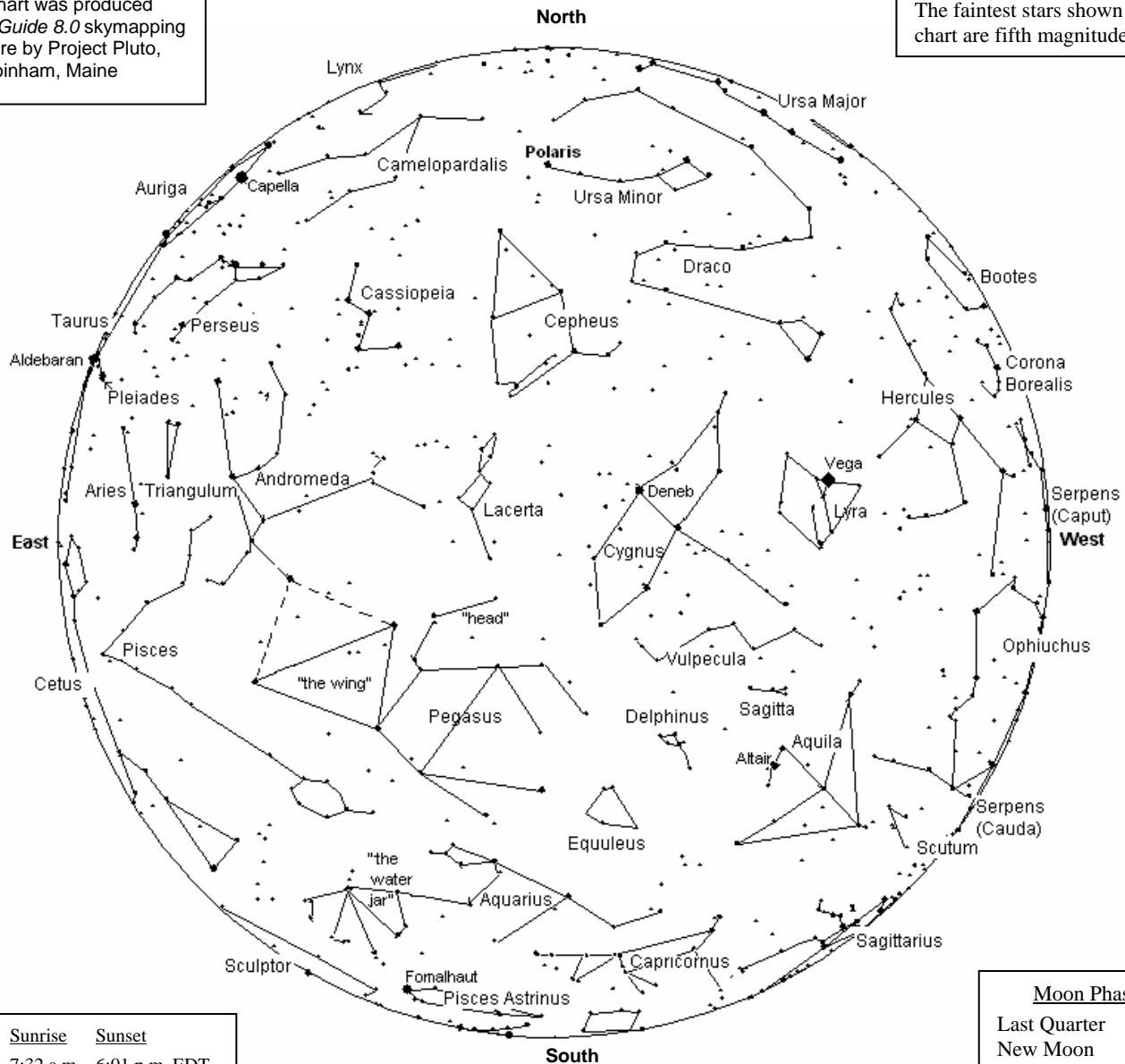
Important November 2007 Dates

- 1 Last Quarter Moon, 5:18 p.m. EDT.
- 4 **End of Daylight Savings Time** for 2007 at 2:00 a.m. EDT: turn clocks **back** one hour.
- 5 The Moon is near Venus in the early dawn sky and today the Moon can be used to find Venus during daylight hours. Try it!
- 9 New Moon, 6:03 p.m. EST.
- 9/ **CCAS Observing Session**
- 10 Location: **Brandywine Valley Association**
Time: sunset, or earlier (see page 4 for more details.)
- 13 **CCAS Meeting**
Location: West Chester University
Room 113, Boucher Building
7:00 – "Searching for Distant Galaxies" (DVD).
7:30 – Regular Meeting Starts
Constellation of the Month: Andromeda
Main Presentation: "Cataclysmic Variable Stars"
See page 4 for more details.
- 17 First Quarter Moon, 5:32 p.m. EST.
- 17 The Leonid meteor shower peaks tonight – the best viewing is 3:00 a.m. November 18th
- 22 **Happy Thanksgiving!**
- 24 Full Moon, 9:30 a.m., the Full Beaver Moon. It is sometimes also referred to as the Frosty Moon.
- 26 The Moon is near Mars around midnight.



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
11/1	7:32 a.m.	6:01 p.m. EDT
11/15	6:48 a.m.	4:47 p.m. EST
11/30	7:05 a.m.	4:39 p.m. EST

Moon Phases	
Last Quarter	11/01
New Moon	11/09
First Quarter	11/17
Full Moon	11/24

The sky over Chester County November 15, 2007 at 7:00 p.m. EST

The Planets, by Don Knabb

Mercury: Mercury is giving us its best show of 2007 low in the east-southeast before sunrise from November 4th to the 16th. This is a great time to see the fast moving planet that is closest to the Sun.

Venus: Venus continues to rule the morning skies! At mid-November it rises several hours before dawn. On November 5th, it will be easy to spot Venus during the day using the Moon as a guide. Use binoculars to help find it near the Moon, then you should be able to see it with just the naked eye.

Mars: Mars, currently in the constellation Gemini, rises around 8:00 p.m. in the middle of November. By the end of the month the Red Planet is getting quite bright in the sky and it will be a nice target in a telescope. By month's end it will outshine all but the brightest stars in the sky.

Jupiter: Jupiter is diving below the horizon just after the sun, so get your last glimpse before we lose sight of the King of the Planets in the glare of the sun.

Saturn: The ringed beauty is rising just after midnight in the mid-November and is high overhead at dawn.

Uranus & Neptune: Both of the outer gas giants are in good viewing position as evening twilight fades. Look in the constellations Aquarius and Capricornus, respectively. The July issue of *Sky and Telescope* has maps to help you find these planets in the southern sky.

Pluto: Pluto, the ex-planet, is near Jupiter, but impossible to see anymore this year. Wait until next summer and autumn to take a shot at finding Pluto.

Note: the constellation stick figures used on the chart above were adapted from the book *The Stars: A New Way to See Them*, by H. A. Rey. This excellent guide to learning the constellations can be purchased at many area book stores, or from online booksellers.

November Observing Highlights

by Don Knabb, CCAS Observing Chair

Planets: Mars is taking over as the planetary highlight of the night. It continues to grow brighter as November progresses and by month's end is a real beacon on the ecliptic. We say goodbye to Jupiter and need to get up early to see Mercury, Venus and Saturn.

Constellations: Now that we are well into autumn and back to Eastern Standard Time, there are many hours of stargazing possible without staying up late. The Summer Triangle is past center stage and is heading for the western horizon. Pegasus is well up in the southern sky in the early evening, and the jewel that is the Pleiades is rising in the east. Capella in Auriga is a bright point of light above Taurus. As it gets a bit later our old friend Orion returns from his summer vacation.

Deep sky: There are many deep sky treats in the autumn and winter sky. My favorite this time of year is the trio of star clusters in Auriga, M36, M37 and M38. Compare the structure of these open clusters and log them as a great start in pursuit of the binocular or telescopic Messier club of the Astronomical League.

Comets: There are no bright comets in the sky at this time, but Comet C/2007 F1 (LONEOS) is visible with binoculars or a telescope early in November. Astronomy magazine has a chart to help you find this 6th magnitude fuzz ball

Meteor shower: The Leonid meteor shower peaks on November 18th. No major outburst of activity is expected, but the best chance of one is before midnight on November 17th when Earth crosses the orbital node of the Leonids' parent comet, 55P/Tempel-Tuttle. After 3:00 a.m. one can expect to see 20 to 40 meteors per hour on the morning of November 18th. If it is clear take a look! It's a Saturday night, so you can sleep in on Sunday after the show.

- Nov. 1** Last quarter Moon, 5:18 p.m. EDT
- Nov. 5** The Moon is near Venus in the early dawn sky and the Moon can be used to find Venus during daylight hours. Try it!
- Nov. 9** New Moon, 6:03 p.m. EST
- Nov. 17** First quarter Moon, 5:32 p.m. EST
- Nov. 17** The Leonid meteor shower peaks tonight – the best viewing is 3:00 a.m. November 18th.
- Nov. 24** Full Moon, 9:30 a.m., the Full Beaver Moon. For Native Americans, the time of this full moon was the time to set beaver traps before the swamps froze, to ensure a supply of warm winter furs. Another interpretation suggests that the name Full Beaver Moon comes from the fact that the beavers are now actively preparing for winter. It is sometimes also referred to as the Frosty Moon.
- Nov. 26** The Moon is near Mars around midnight.

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Through the Eyepiece: The Open Clusters in Auriga

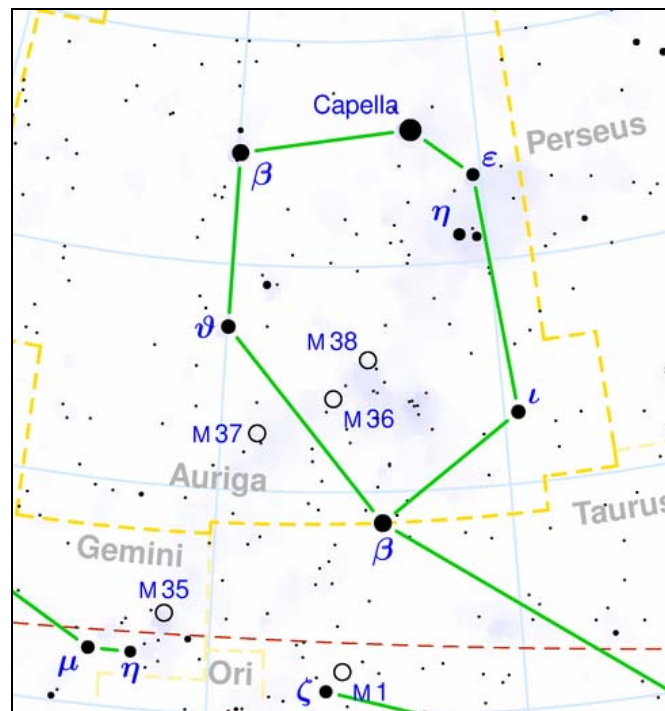
by Don Knabb, CCAS Observing Chair

As autumn enters the time when the leaves start to turn color and fall to the ground, I always look forward to the bright star Capella rising in the east not long after sunset. I often ask myself, is that a plane, a UFO, or Capella? Capella, in the constellation Auriga, is the 6th brightest star in the sky. Auriga is called the Charioteer, or sometimes the Wagoneer. Auriga is one of the oldest constellations going back to the Babylonian times.

Here's today's trivia for you: What other meanings are associated with the word Auriga? How about "a Roman slave chauffeur"? Or the name of a spaceship in the movie *Alien: Resurrection*? This is according to Wikipedia...

When I see Capella, rising in the glow of West Chester on our northeastern horizon, I know the deep sky wonders of the autumn and winter sky are not far behind. The first of these deep sky objects I look for are the three open star clusters in Auriga, M36, M37 and M38.

Open clusters, also called galactic clusters, contain fewer and younger stars than globular clusters. Also unlike globular clusters, open clusters are generally confined to the plane of our Galaxy. I like to look at all three clusters of Auriga in a short time span and compare the unique appearance of each cluster to the others.

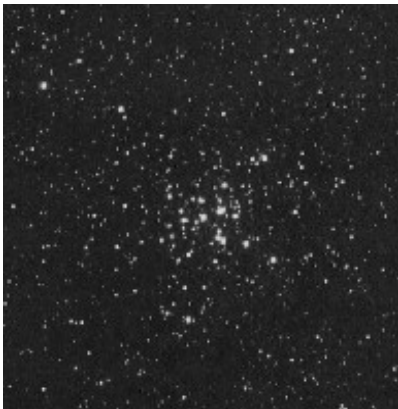


Map source:
http://en.wikipedia.org/wiki/Image:Auriga_constellation_map.png

Auriga has many open clusters and other objects because the Milky Way runs through it. M36, M37 and M38 are all visible in binoculars or a small telescope in suburban skies. A larger telescope resolves individual

stars. The clusters are about 4100, 4400, and 4200 light years distant, respectively. Their apparent visual magnitudes are 6.3, 6.2, and 7.4, respectively.

M36 is a rather faint cluster of about 50 to 60 stars, in a very compact area. A large scope is necessary to resolve the individual stars.



M37 is considered the most spectacular of the three Messiers. Binoculars will only show a large fuzz ball. You really need a scope for this one. A medium sized scope should reveal at least twelve red giants, with the brightest one found at the center of the cluster. Some observers find this star more orange than red. The cluster is considered to be about 200 million years old.



M38 is just to the northwest of M36. Some observers have described this cluster of about a hundred stars as having a cross-shape or an oval shape.



While researching this article I found another open cluster mentioned: NGC 2281. This 7th magnitude cluster contains about 30 stars. It is well to the northwest of the other clusters. I'll add this to my observing list for our next BVA gathering.

Information sources:

http://en.wikipedia.org/wiki/Auriga_%28constellation%29

<http://www.coldwater.k12.mi.us/lms/planetarium/myth/auriga.html>

http://www.dibonsmith.com/aur_con.htm

http://www.seds.org/Maps/Stars_en/Fig/auriga.html

Pasachoff, Jay M. 2000. *A Field Guide to the Stars and Planets*. New York, NY. Houghton Mifflin.

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CCAS November Meeting

DATE: **Tuesday November 13, 2007**

PLACE: Room 113 – Boucher Building
West Chester University

LOCATION: South Church Street
West Chester, PA

TIME: **7:00 p.m. EST for Cosmology Class**
7:30 p.m. EST for regular meeting

A map of the campus showing the location is on page 21.

Cosmology Class: **Searching for Distant Galaxies**

This month's Constellation of the Month (COM) will be **Andromeda**, presented by Don Knabb.

This month's main presentation will be "Cataclysmic Variable Stars" by Dr. Ed Sion of Villanova University.

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CCAS Observing Session

November 9/10, 2007

We're back to the Brandywine Valley Association for the November Observing Session. The Observing Session will be on Friday November 9, starting at sunset, if the weather is good enough. In case of bad weather ("mostly cloudy" qualifies as bad weather for stargazing, even if it's not raining) then we will observe on Saturday November 10 (if the weather cooperates). If the weather is good both nights, we can observe both nights. You can arrive before sunset to set up if you want to. CCAS Observing Sessions are free and open to the public. You can bring friends and family.

If you have any questions write to observing@ccas.us or dknabb00@comcast.net, or call Don Knabb at 484-888-1831. Directions are on page 20.

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Minutes for October CCAS Meeting

The club met on October 9th at WCU.

14 members were in attendance.

The pre-meeting DVD for this month was "Expansion of the Universe and the Big Bang."

This month's main presentation was "Classical Novae - Things That Go Pop in the Night" by Dr. Karen Vanlandingham. After the presentation Dr. Vanlandingham answered member's questions for several minutes.

The Constellation of the Month was Vulpecula, presented by Kathy Buczynski.

Reports:

Finance - nothing of note to report this month.

Website - no items to discuss this month.

Observing - upcoming events were presented and a discussion for a presentation for the Federation of Galaxy Explorers was held, led by John Seago, a club member and one of the leaders of the Federation of Galaxy Explorers, a science and engineering group of children from 3rd to 8th grade. No "canned" presentation is available, so John will develop one or work with Deb Goldader to see what she has available. If the weather permits we can do some observing after the presentation on November 10th.

Field trip - CCAS has rented a van for the trip to the Museum of Natural History in NYC on October 20. Linda will send out an e-mail with details on where and when to meet.

Other topics:

Ed Lurcott's observatory: the Brandywine Valley Association has been contacted by Kathy to see if they would allow Ed's observatory to be moved to a site on the BVA property. We are waiting for a reply. A vote was taken to follow up this idea with further study if we receive approval from BVA. We will need to investigate the feasibility and cost of moving the observatory, and what ongoing support would be required for the structure if it is moved to BVA.

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Treasurer's Report

by Bob Popovich

August 2007 Financial Summary

Beginning Balance	\$1,516
Deposits	115
Disbursements	<u>0</u>
Ending Balance	\$1,631

Membership Renewals Due

- 11/2007: Athens
Bower
Buczynski
Hepler
Murray
O'Hara
- 12/2007: no renewals in December.
- 01/2008: Kovacs
Porreca
Rowan

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 in this newsletter.

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Star Party with West Chester Recreation

by Don Knabb

On October 12, 2007 the Chester County Astronomical Association hosted a star party for West Chester Recreation. This is the group that organizes all the recreation events in the Borough of West Chester such as the Restaurant Festival, Super Sunday, the Halloween Parade and the Christmas Parade.

The event was held at Hoopes Park in West Chester. CCAS was represented by Kathy Buczynski, Fred and Pat De Lucia, Nicholas LaPara, Bob Richter and Barb and Don Knabb. We had four telescopes set up and a West Chester family brought out their telescope.

Even though the star party had not been well publicized, perhaps a dozen families stopped by to view the night sky. West Chester Recreation would like us to host another star party in the spring, and they will issue a press release and make it a higher-profile event.

Observing conditions were good and the observing location was very nice, although some of the horizon was obscured by high trees.

Thanks to everyone for coming out! The photos below were taken by Barb Knabb.



Here's Kathy Buczynski explaining Einstein's theory of relativity (or something like that) to a family. [Editor's note: I think you're wrong, Don. With kids Kathy usually sticks to the simple basics, like String Theory...]



This was Fred and Pat De Lucia's first star party with CCAS. Welcome to the club, Pat and Fred!



We put our banner to good use at the star party. In the background you can see a set of red Christmas lights that we set up to lead attendees to the observing site.



Here I am, wearing my "headgear", sharing a view of Jupiter with a family. Let's hope this is the first of many star parties in our club's "home town." I hope to see you at our next party in the spring of 2008!

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Welcome!

This month we welcome two new members to the Society: Anna Huges of Chester Springs, and Janine Doubleday of Downingtown. We're glad you decided to join us under the stars! Clear Skies to you both!

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The Exploding Comet 17P/Holmes!

This usually-faint periodic comet stunned astronomers on October 24 by suddenly brightening in one day from magnitude 24 to between magnitudes 2 and 3: a factor of over a million times! (the magnitude scale is a logarithmic scale.) In Perseus, it can be seen with the naked eye. Also, the comet's coma has been expanding. In binoculars and telescopes it is easily seen to be disk-shaped. Don't miss it! A finder chart is on page 22.

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To The Moon via Webcam

by Don Knabb



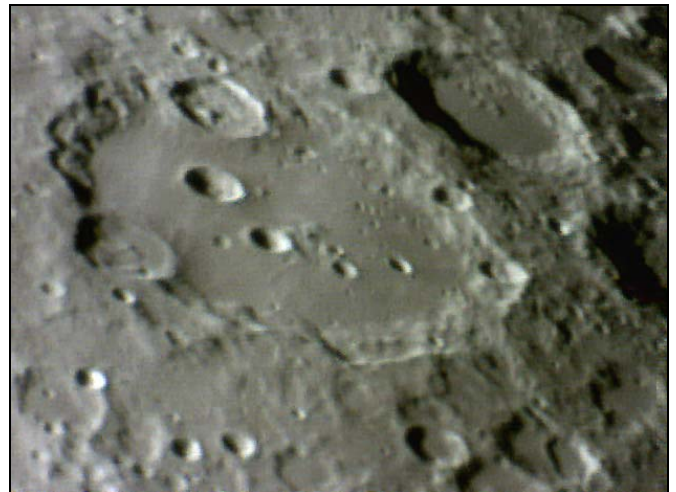
Here is my latest effort on using a webcam my "astronut" friend in California gave me. This is a photo of sunrise at the crater Gassendi (just left of center) in the southwest quadrant of the Moon. The crater is 110 km across and the walls reach 3600 meters in height on the northern side of the crater, dipping down to just about the level of Mare Humorum in the south. The terminator has new wonders to see every night of the lunar month.

I took the photo with my 4 inch Meade Schmidt-Cassegrain and a Logitech webcam. *Craterlet*, a "freeware" program, was used to take the raw movie, then *RegiStax4*, another free program, was used to process the movie file into a photo. I am a real novice at taking astrophotos, but I am learning as I go and having fun at it.

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Clavius Crater via Webcam

by Vic Long



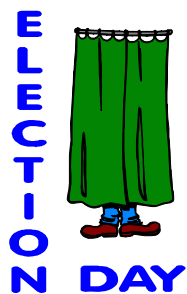
I took this photo on October 21 using a Neximage webcam and a Vixen VMC 200mm telescope. Although seeing was only average, this is my best shot of Clavius to date. With the image on the computer screen doing a slow boil, I found it difficult to get a decent focus. The photo was obtained by registering and stacking nine of the best video frames using *Registax*.

Clavius is, without a doubt, my favorite lunar formation. According to *Wikipedia*, this 225 kilometer (km) diameter walled plain in the Moon's southern highlands was likely formed during the Nectarian period about 4 billion years ago. Its most striking feature is the arc of craters of decreasing size extending counterclockwise across its floor starting at the large crater Rutherford (54km). From largest to smallest, these craters are designated Clavius D (28km), C (21km), N (13km), J (12km), and JA (9km?). A remnant of a central massif lies between Clavius C and N.

The most interesting features to me are the many smaller craterlets dotting its floor. I have identified over 20 in this photo using Antonin Rukl's excellent *Atlas of the Moon*. Some of these are only a few km in diameter. These were all visible visually but patience was required due to the less than ideal seeing.

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We now take a break from *Dueling Webcams* for this important public service announcement:



is Tuesday November 6. Don't forget to vote!

We now resume our regular programming, with more *Dueling Webcams*.

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Sinus Iridum and Plato via Webcam

by Don Knabb

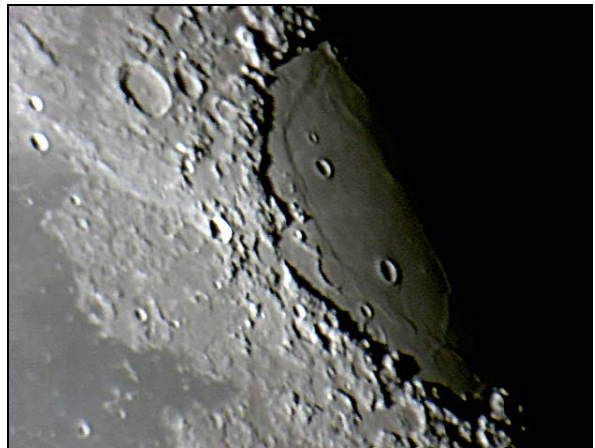


Here's the other photo I took Sunday night. Sinus Iridum on the left, Plato on the right.

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Mare Crisium via Webcam

by Vic Long

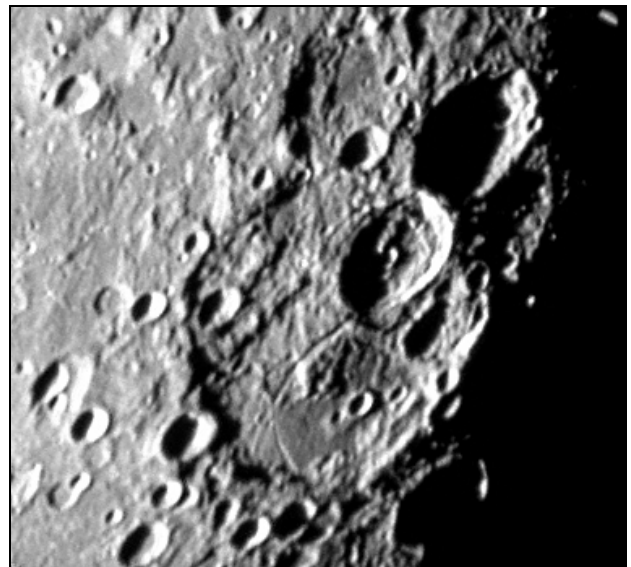


This photo captures of the western edge of Mare Crisium. It shows the bright ray crater Proclus to the west of the mare and the gray plain of Palus Somni to the SW of Proclus. The largest crater on the mare itself is Picard. To the lower left of Picard is the incomplete ring of the flooded crater Lick, with a small complete crater Greaves above it. To the left of Picard is another incomplete crater Yerkes on the border of the mare. To the upper left of Picard are Pierce and Pierce B. To the west of Pierce is the 300km mare ridge Dorsum Oppel. I took the photo last night (Sept 29th) with an 8 inch f/4.9 reflector and webcam.

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Janssen Crater via Webcam

by Vic Long



I took a photo of the large hexagonal crater Janssen last night (Sept. 29). In its northeast sector is the 78km diameter crater Fabricus. The interior of Fabricus appears to be very old with a ton of detail, I found it quite striking in the 8-inch reflector I used to capture this webcam image. To the NE of Fabricus is the 88km diameter crater Metius.

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CCAS trip to the American Museum of Natural History in New York City

by Don Knabb

On Saturday October 20 a group from CCAS traveled to New York City with Kathy Buczynski at the helm of a large red van. There are a few stories about getting home from the big city, but you'll need to join us at our December holiday meeting to hear them.

The Museum of Natural History is home to the Hayden Planetarium and the Rose Center for Earth and Space. To say this museum and science center is a wonderful place does not do it justice. One could spend days in the place—it is 16 square blocks in size!

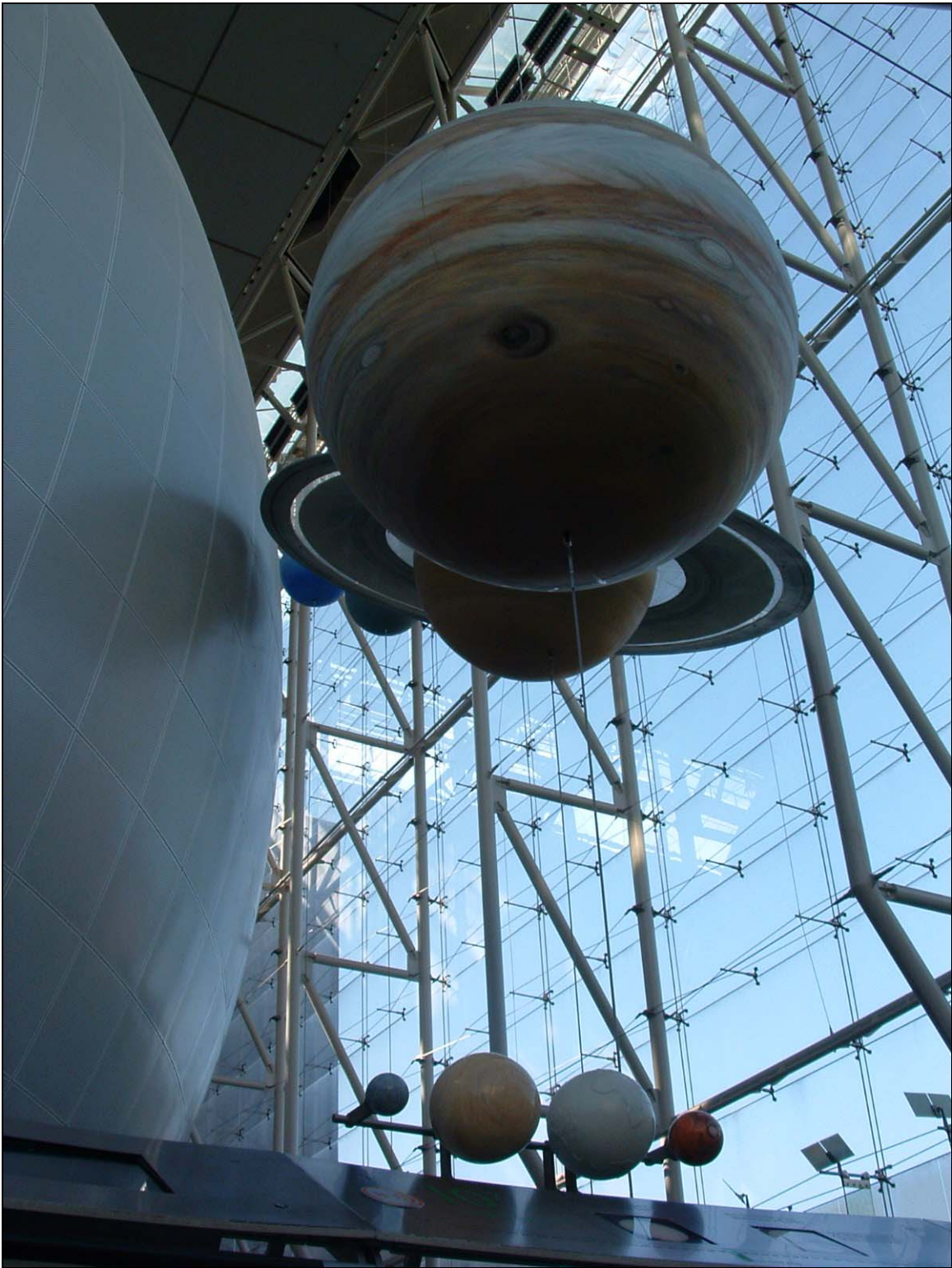
Here are a few pictures from the trip:



The happy group with gift shop goodies in hand! And yes, that is a real meteorite behind us.



Deb, Jeff and Barb examining the meteorite in the Rose Center.



The incredible scale model of the solar system. The Sun is the large sphere on the left that houses the planetarium and the "Big Bang" theater.



Kathy and Barb looking at the display on the scale of the universe. This display takes you from the size of the entire universe down to the size of a quark.



And yes, the museum has countless other wonders of the natural world to see.



Astronomy Trip Report: New Mexico

by Bill Marella

Are some states more “astronomical” than others? If so, New Mexico gets my vote. After spending ten days there, it’s clear they have much to offer those of us who walk around at night and in the early mornings looking up. For one thing: there is a lot less light pollution. One night as we were leaving the Stakeout Grill & Bar just outside Taos, I realized how clear the sky was and how many more stars I could see there. I pulled the car off to the side of the road, and we just stood in near-pitch blackness, with not even the moon to spoil the view. It was actually difficult to find familiar constellations because there were so many more stars than I’m used to seeing. That night also gave me the first naked-eye view of the Milky Way I’ve had since I was a child.

We initially chose to visit in early October to time our trip with the annual “Balloon Fiesta” in Albuquerque. People come from all over the world to fly their hot air balloons in this event. The city has dedicated a large park to the Balloon Fiesta that can accommodate up to 700 launch sites. Seeing that many balloons taking off at once is something to see, and even though everyone got up at 4 a.m., there’s a carnival-like atmosphere to it...like the Macy’s Day parade but more vertical. I took the picture on the right just before dawn as a nearby balloon rose past the moon and Venus (below and to the right of the moon).



Albuquerque also boasts several science-based museums, including the National Atomic Museum (www.atomicmuseum.com) and the New Mexico Museum of Natural History (www.nmnaturalhistory.org), which are right down the street from one another at the edge of Old Town. In addition to a planetarium, the Natural History Museum has a permanent space exhibit that includes an actual-size replica of the Mars rover (which was larger than I expected—about half the size of a Volkswagen Beetle) and a model showing us our “place” in the solar system (see photo).



Another highlight of the trip was a visit to the Very Large Array (VLA) outside Socorro, NM, about a two-hour drive south of Albuquerque. The VLA (www.nrao.edu) is a set of 27 radio antennae splayed out like a large letter Y. These antennae are linked

together to operate as one large radio telescope, and the VLA constitutes the largest radio telescope on Earth. If you've seen the movie *Contact* (and if you haven't, you should), the VLA is featured prominently, and several critical scenes of the movie were filmed there.



Image courtesy of NRAO/AUI

The image above belies the size of the array. Each arm of the array is 13 miles long, and when the antennae are spread out as far as possible, this simulates a single antenna that would be 22 miles in diameter. If you placed the array over the Washington DC metropolitan area, the VLA would be larger and, you could argue, possibly a better use of the space.

The array spends part of each year in several different configurations. The closer together the antennae are, the better resolution they get. The further apart they are, the better their magnification.



The VLA is open year-round for visitors, and they have a small exhibit space and a self-guided walking tour. But we lucked out, because only two days out of the year they have tours conducted by the scientists who use the array, and our trip coincided with one of them. Not only did we have a professional astronomer to explain how the array works, but he also took us into the control rooms that are usually off-limits to visitors.

Below are just a few images produced at the VLA. Their web site has an extensive gallery with good explanations of the images' significance. The planet with the belt and parentheses around it is not Saturn but Jupiter. The "belt and parentheses" are radio emissions generated by fast-moving electrons captured by Jupiter's strong magnetic field. The second image is of the sun, showing the distribution of brightness on the sun's disk. This image demonstrates that the sun is brightest in two symmetrical bands around the equator.

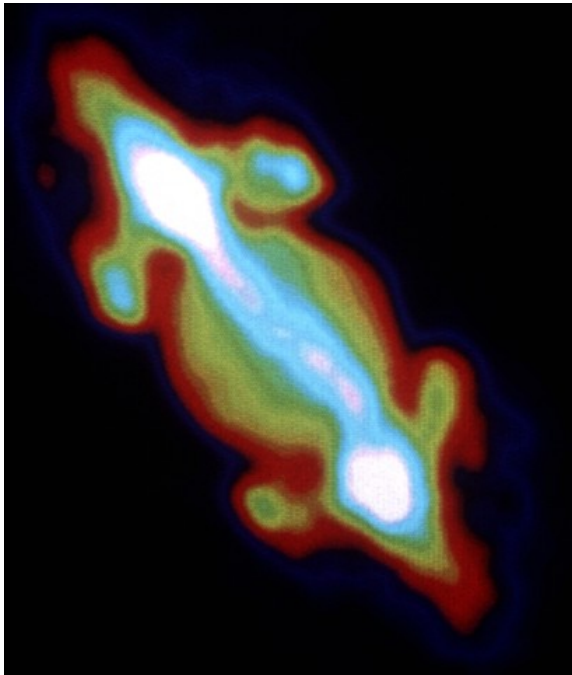


Image courtesy of NRAO/AUI

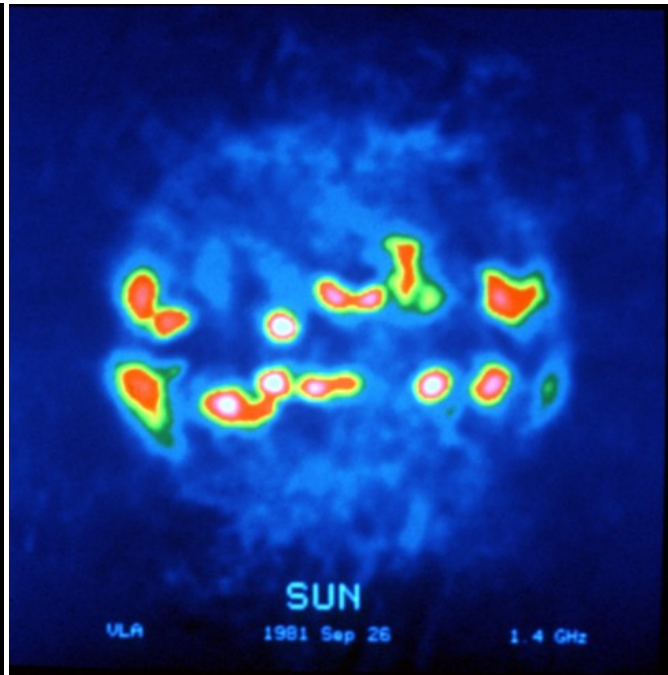


Image courtesy of NRAO/AUI

If you have any plans to visit New Mexico, I recommend spending an evening with Peter Lipscomb of Astronomy Adventures (www.cosmonut.org or 505-577-7141). Peter takes groups out in the hills to High Feather Ranch about 30 minutes outside Santa Fe to a terrific observing site with very little light pollution. He has a number of excellent scopes, and the one he had out the night we went was a 20-inch truss tube Newtonian reflector.

Unfortunately, the weather didn't want to cooperate the night we went, and the skies were hazy much of the evening. We did get good views of Jupiter and its moons just before it set behind the mountains, the beautiful yellow and blue double Albireo in Cygnus, and the Andromeda Galaxy, and several star clusters.

If anyone in the group is planning a trip out west and has questions about New Mexico, where we stayed, what else there is to do there, or just to swap stories, drop me a line at wmarella@ecri.org. I'm new to the group, and work keeps conspiring to interfere with CCAS observing sessions, but hopefully I'll get to meet some of you soon under dark skies.

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Astronomus

"NOvember"

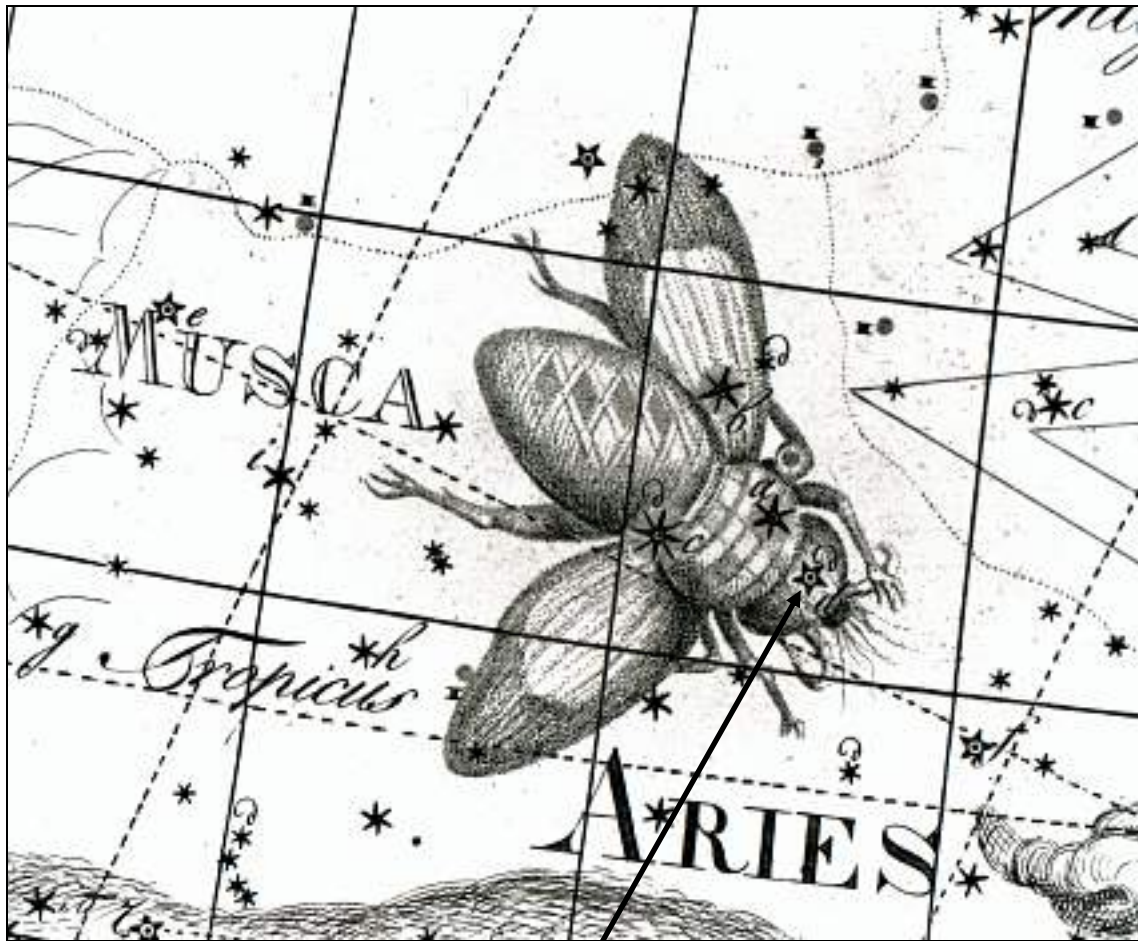
By Bob Popovich

Amidst all the observing clubs available to us through the Astronomical League, I don't believe they offer "Targets of the Month Club." Sort of like "Jelly of the Month Club"¹ but for astronomy. But did you know that, using the first two letters of each of the twelve months; you can devise your very own observing club? The Astronomical League may not be too keen on the concept, but so what? You could even create a suitable certificate to mark completion of the circuit.

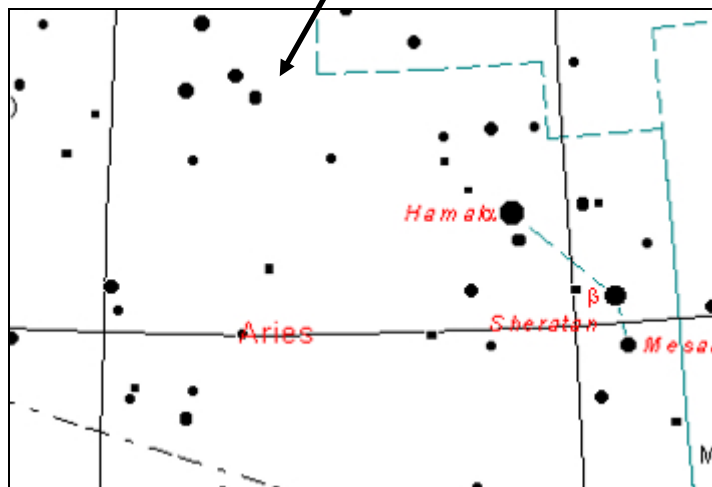
Since this is NOvember, why not begin with some NOvember observing? And though I write these words at the end of an OOctober day when the temperature red-lined at nearly 90, I trust that by the time you read this there will be multiple crisp NOvember nights to acquire our targets of the month. Here they are—good hunting:

While the AAU currently acknowledges 88 official constellations, the ash-heap of astronomical history contains many more. One of these is known as Musca Borealis, or the NOrthern Fly. Since the southern skies contain a fly as well, it was necessary to specify NOrthern (Borealis) to distinguish it from its southern (Australis) cousin. The challenge here is to overcome our brain's tendency to overlay modern constellations whenever we gaze heavenward. So observing the NOrthern Fly requires you to reconnect some of the stars of Aries the Ram as shown by Hevelius in his 17th century masterpiece *Atlas Coelestis*.

(1) From *National Lampoon's* film "Christmas Vacation"



We can easily convert this image to a more contemporary version that should make target acquisition much easier:

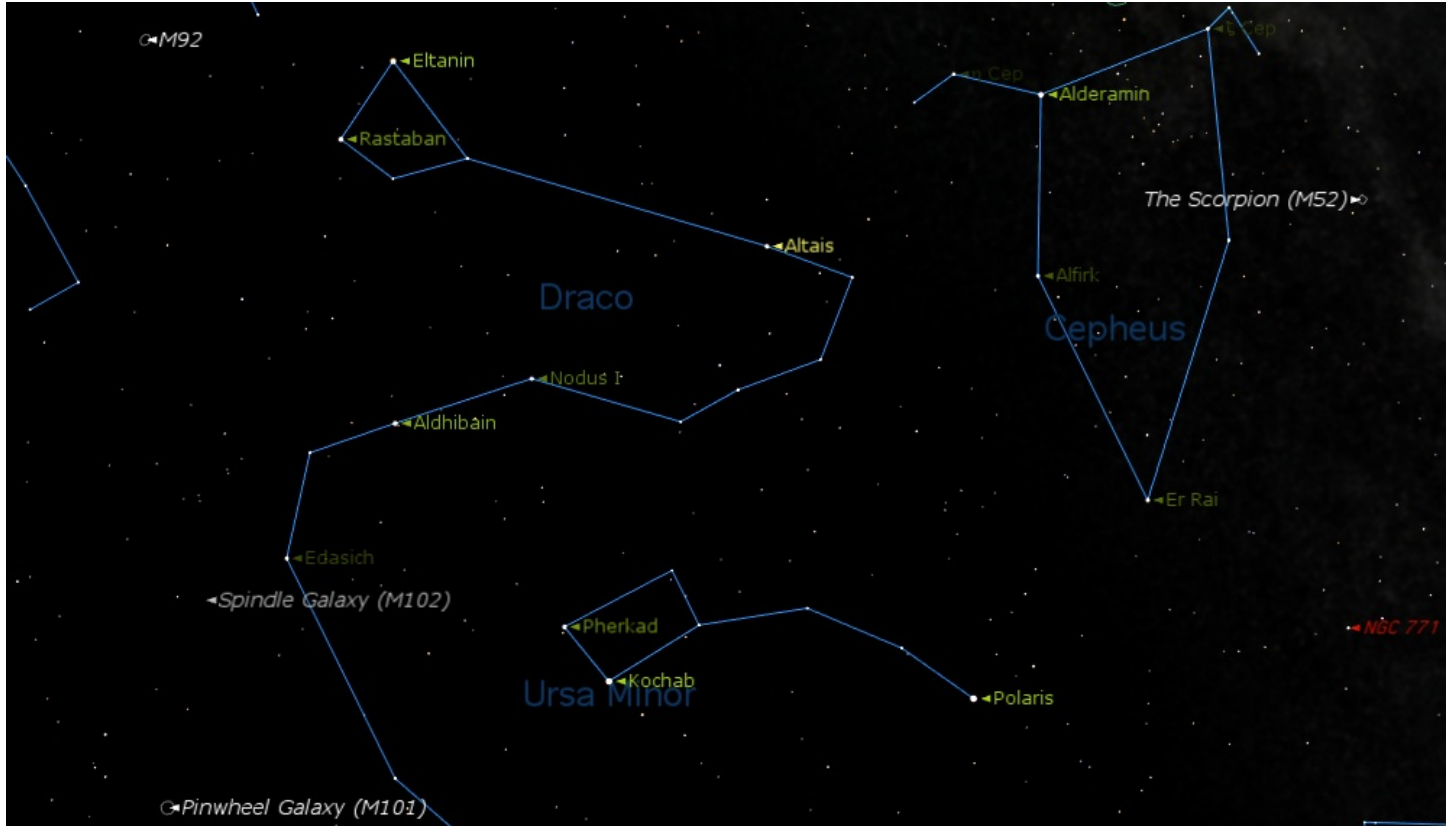


Notice that the star positions recorded by Hevelius don't quite match up to the modern version, but this is not at all unusual given the totally manual process that existed at Hevelius' time. In fact, it's impressive that the charts of bygone days are as accurate as they are—just imagine charting the heavens by alternating from your eyepiece to paper and pencil.

Our second target is, appropriately enough, known as Nodus Secundus. You astronomers out there may better recognize δ (delta) Draconis or Altair, part of the second of four loops in the dragon's body. The ancients saw these loops as knots—hence the use of the Latin word for knot, *nodus*. Now there is also a Nodus Primus, also known as ζ (zeta) Draconis or Aldhibah. If you succeed in finding this star in addition to Altair you receive *extra credit* that you can proudly note on your Targets of the Month Club Award Certificate.

Draco is actually a very interesting constellation with Nodus secundus being a 3rd magnitude star lying a bit more than 20 degrees from Polaris. It is a class G giant set at a distance of about 100 light-years from the Earth. As you observe this star, consider that physicists tell us that it is currently (well, as of 100 years ago) converting its core helium into carbon and oxygen. Sometime in the near future, astronomically speaking, the helium will run out and the star will brighten as it prepares to slough its outer envelope and become a white dwarf. As far as Nodus primus is concerned, it is a B class star three times further from us than Nodus secundus and still chugging away on its supply of hydrogen.

While you've got Altair in your eyepiece, see if you are able to resolve a 12th magnitude "companion" lying some 88 arc seconds distant. Astronomers know next to nothing about this star. In fact, it's not even sure whether this is a true companion star or merely lies in our line of sight. Aldhibah is, regrettably, all by its lonesome.



The North Star is our next target. As noted above, it's 20° from Nodus secundus. Though it's not exactly at the celestial north pole, it's close enough to be incredibly important to star gazers, sailors and scouts. Seemingly stationary at 40° north latitude, time lapse imaging shows that the North Star actually travels a very small circle around the point of the true celestial north pole while all the rest of the northern hemisphere's stars make larger circles around that point. Each night when I venture out I make it a point of locating the North Star first, my way of calibrating myself to the night sky.

Our final target is, in a manner of speaking, right under our telescope mount. It is the North American nebula in Cygnus. Located just a bit more than 3° east of Deneb, this diffuse nebula spans a full 2° and is actually a naked-eye object under dark skies. Binoculars will show it well but you'll need a telescope with CCD imaging to bring out its characteristic shape. If any of you shutter bugs have imaged the North American nebula, I'd love to see it.



The continent is tipped to the right. Are you able to see the Gulf of Mexico?

There is actually a additional member of the NOvember list, but it would unfair to include the constellation NOvember as it lies south of Scorpio and is thus not visible from Chester County.

So if you successfully observe our NOvember list you will have completed 1/12th of the new Targets of the Month Club. And you still have 11 months to design the certificate...

Next Time: A Whale of a Good Time.



The Red (Hot?) Planet

By Patrick L. Barry

Don't let Mars's cold, quiet demeanor fool you. For much of its history, the Red Planet has been a fiery world.

Dozens of volcanoes that dot the planet's surface stand as monuments to the eruptions that once reddened Mars's skies with plumes of glowing lava. But the planet has settled down in its old age, and these volcanoes have been dormant for hundreds of millions of years.

Or have they? Some evidence indicates that lava may have flowed on Mars much more recently. Images of the Martian surface taken by orbiting probes show regions of solidified lava with surprisingly few impact craters, suggesting that the volcanic rock is perhaps only a million years old.

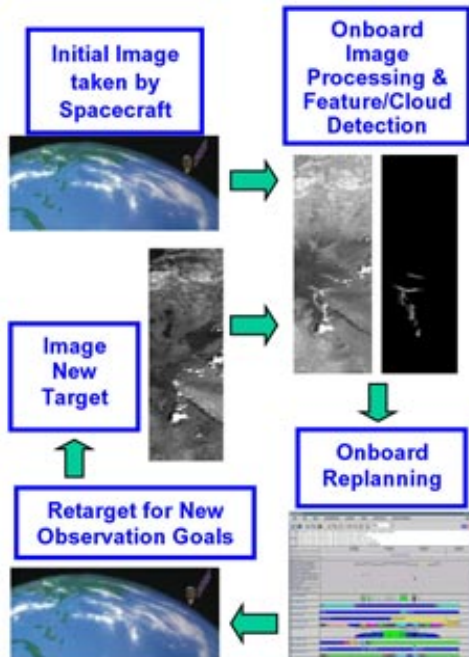
If so, could molten lava still occasionally flow on the surface of Mars today?

With the help of some artificial intelligence software, a heat-sensing instrument currently orbiting Mars aboard NASA's *Mars Odyssey* spacecraft could be just the tool for finding active lava flows.

"Discovering such flows would be a phenomenally exciting scientific finding," says Steve Chien, supervisor of the Artificial Intelligence Group at JPL. For example, volcanic activity could provide a source of heat, thus making it more likely that Martian microbes might be living in the frosty soil.

The instrument, called THEMIS (for Thermal Emission Imaging System), can "see" the heat emissions of the Martian surface in high resolution—each pixel in a THEMIS image represents only 100 meters on the ground. But THEMIS produces about five times more data than it can transmit back to Earth.

Scientists usually know ahead of time which THEMIS data they want to keep, but they can't plan ahead for unexpected events like lava flows. So Chien and his colleagues are customizing artificial intelligence software called ScienceCraft to empower THEMIS to identify important data on its own.



Just as changing cloud patterns on Earth were identified using *Earth Observing-1's* Advanced Land Imager along with ScienceCraft software, the THEMIS instrument with ScienceCraft on the *Mars Odyssey* spacecraft can avoid transmitting useless images.

This decision-making ability of the ScienceCraft software was first tested in Earth orbit aboard a satellite called *Earth Observing-1* by NASA's New Millennium Program. *Earth Observing-1* had already completed its primary mission, and the ScienceCraft experiment was part of the New Millennium Program's Space Technology 6 mission.

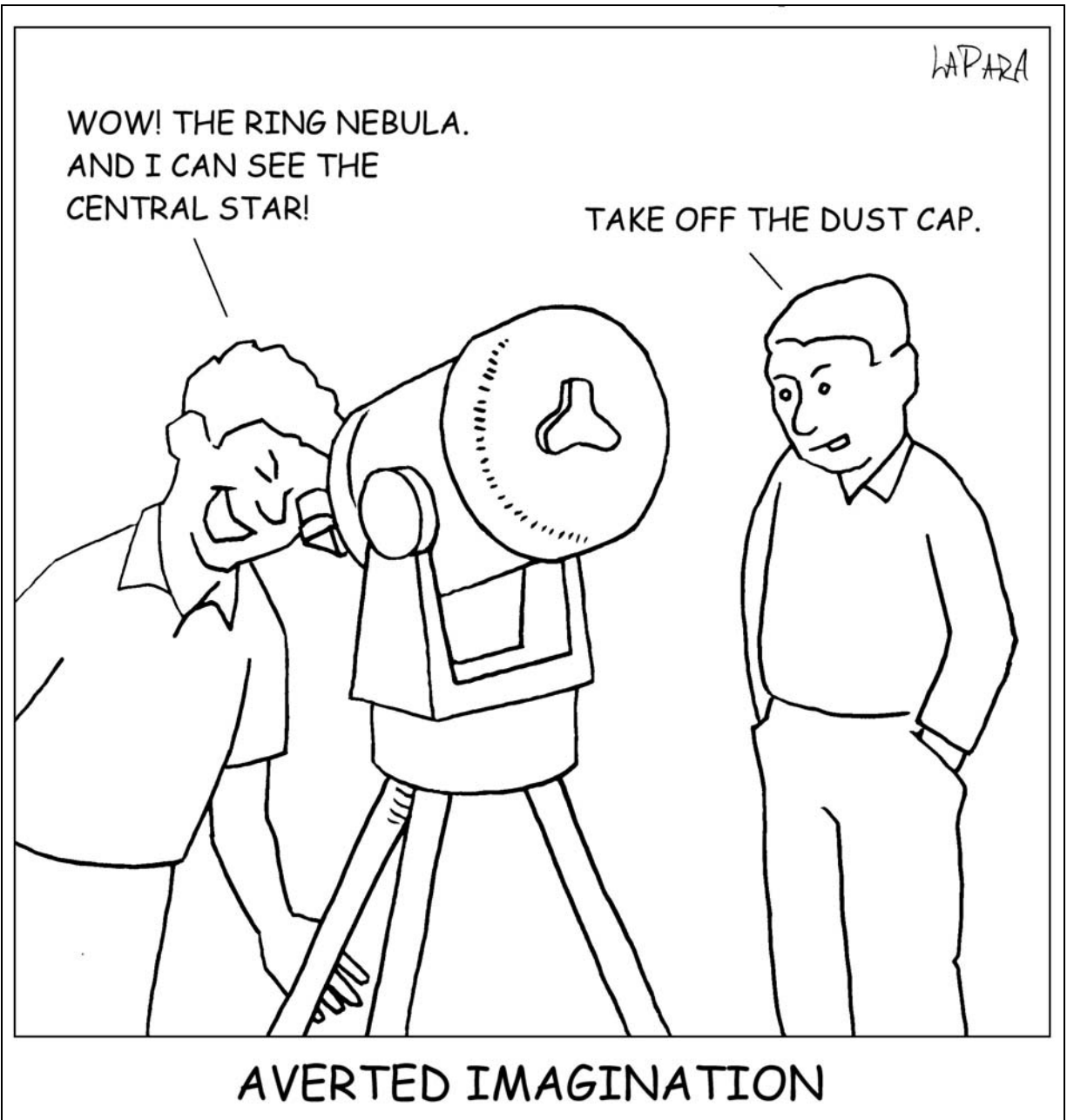
On *Mars Odyssey*, ScienceCraft will look for anomalous hotspots on the cold, night side of Mars and flag that data as important. "Then the satellite can look at it more closely on the next orbit," Chien explains.

Finding lava is considered a long shot, but since THEMIS is on all the time, "it makes sense to look," Chien says. Or better yet, have ScienceCraft look for you—it's the intelligent thing to do.

To learn more about the Autonomous ScienceCraft software and see an animation of how it works, visit

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

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

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:

www.POLCouncil.org

★ ★ ★ ★ ★ ★ ★ ★

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! And save energy at the same time!

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



Local Astronomy Store: *Skies Unlimited*

There is an astronomy equipment store called *Skies Unlimited* in our area, in Pottstown to be specific, at:

Suburbia Shopping Center
52 Glocker Way
Pottstown, PA 19465

Telephone: 610-327-3500 or 888-947-2673

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



★ ★ ★ ★ ★ ★ ★ ★

Find out about Lyme Disease!

Anyone who spends much time outdoors, whether you're stargazing, or gardening, or whatever, needs to know about Lyme Disease and how to prevent it. You can learn about it at:

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"!

★ ★ ★ ★ ★ ★ ★ ★



CCAS Members at the 2007 Lunar-X Party in July.

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 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 (484-266-0699) or e-mail to webmaster@ccas.us

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: Don Knabb
610-436-5702

Newsletter: Jim Anderson
610-857-4751

Librarian: Linda Lurcott Fragale
610-269-1737

Observing: Don Knabb
610-436-5702

Education: Kathy Buczynski
610-436-0821

Webmaster: John Hepler
484-266-0699

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

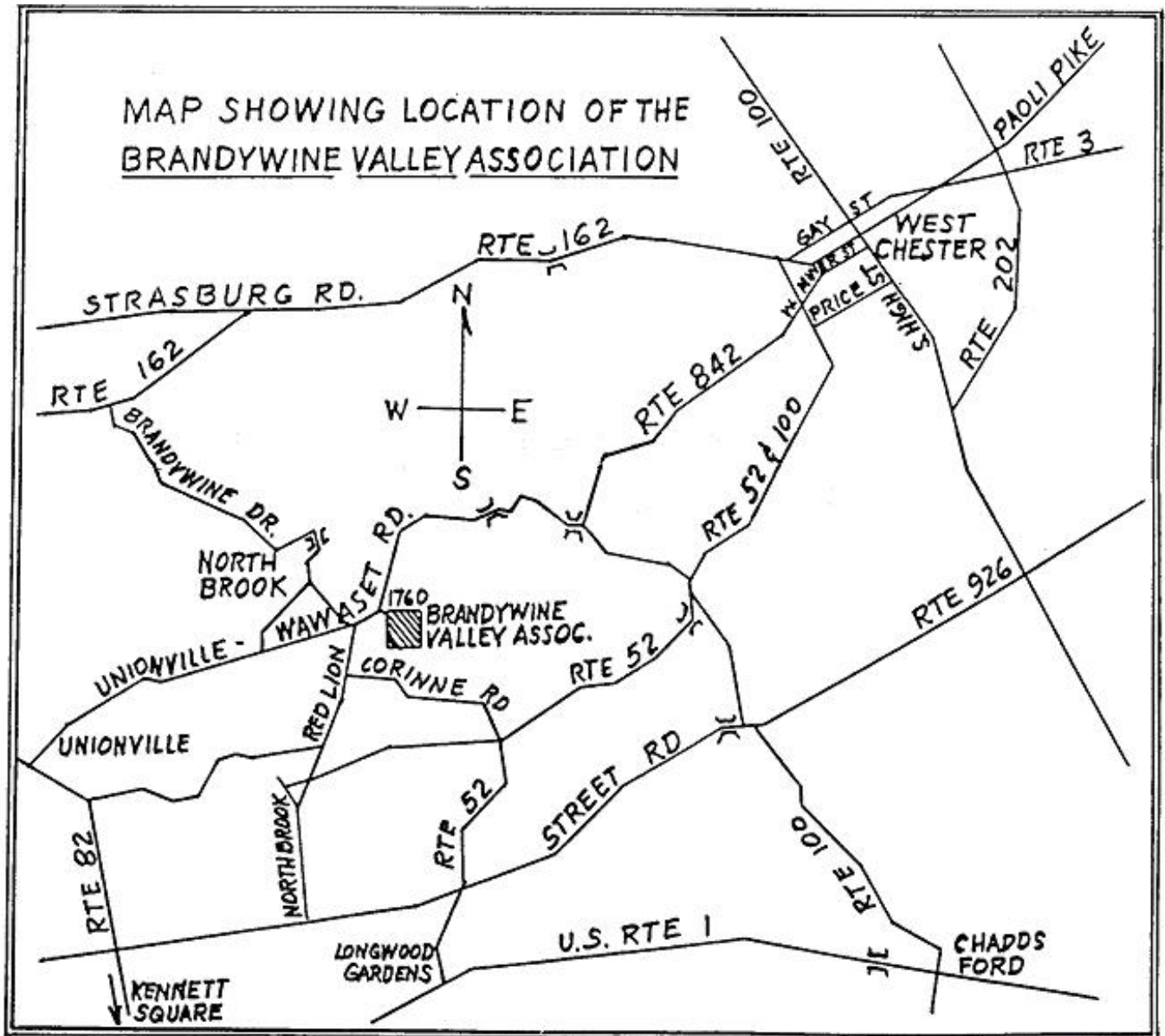
Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **\$32.95** which is much less than the newsstand price of \$66.00, and also cheaper than individual subscriptions (\$42.95)! To start a subscription, make **sure** you make out the check to the **Chester County Astronomical Society** (do **not** make the check out to Sky Publishing, this messes things 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.

Astronomy Magazine Group Rates

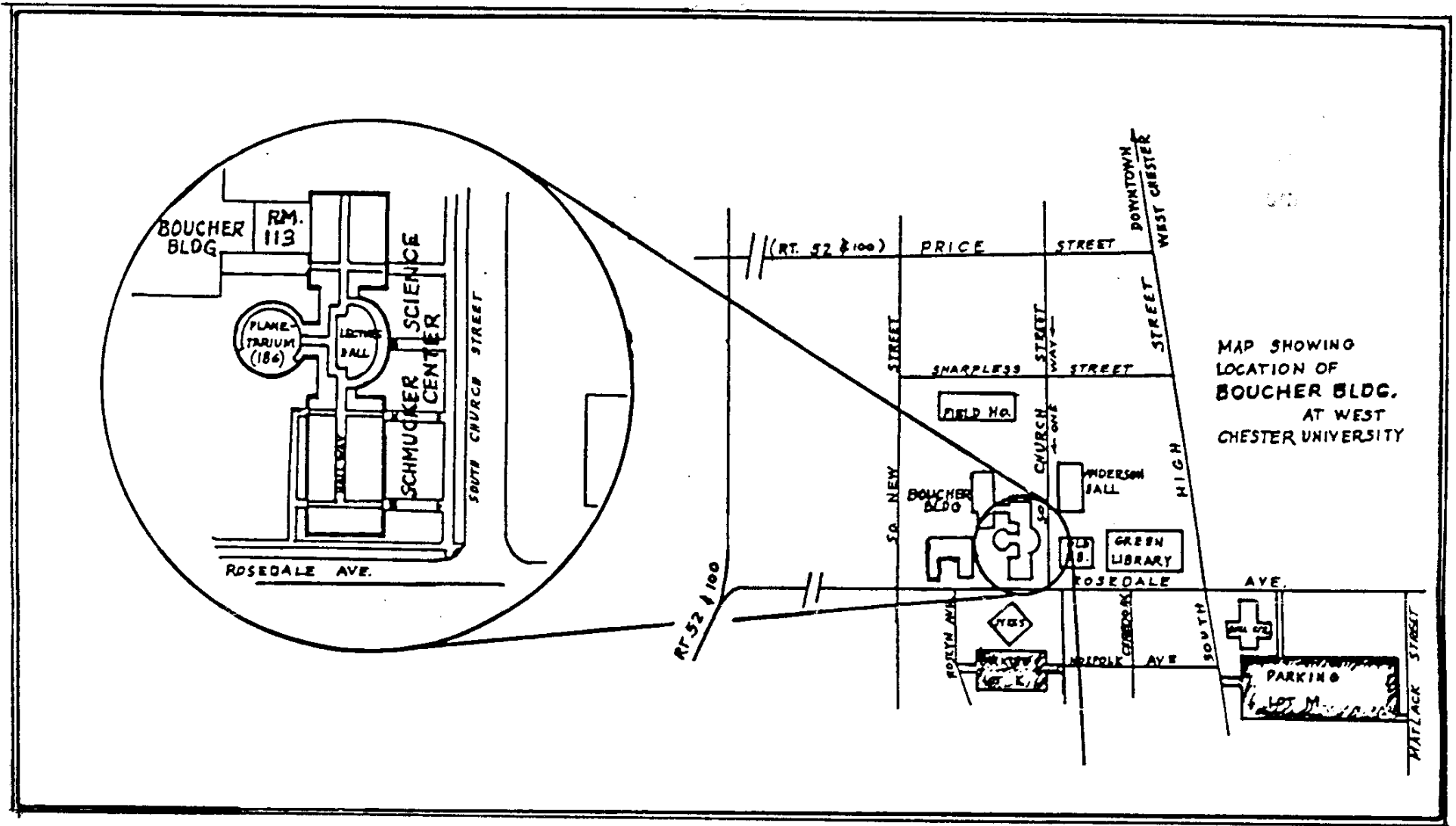
Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **\$34.00** which is much less than the individual subscription price of \$42.95 (or \$60.00 for two years). If you want to participate in this special Society discount offer, **contact our Treasurer Bob Popovich.**

Phone: 610-363-8242

e-mail: B2N2@verizon.net



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.

Chart from <http://www.skyandtelescope.com/>
Used with permission.

