



Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

NOVEMBER 2003

(VOLUME 11, NO. 11)

Visit us online at www.ccasastro.org

Total Eclipse!

**What: A total eclipse
of the Moon**

**When: Saturday
November 8,
2003**

**Where: visible from
all of Chester
County**

**Equipment needed:
None. Just your eyes.**



Times:

**Partial eclipse
begins: 6:32 p.m. EST**

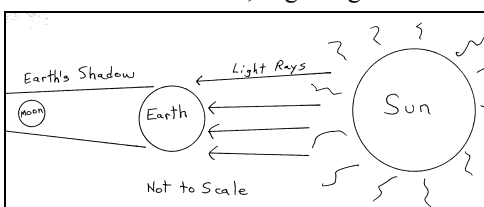
**Total eclipse begins:
8:06 p.m. EST**

**Total eclipse ends:
8:31 p.m. EST**

**Partial eclipse ends:
10:04 p.m. EST**

Eclipse Notes

The eclipse will begin not long after the Moon rises (which at Full Moon is the same time as sunset), so look for it in the eastern sky. The Moon will be passing through the Earth's shadow in space (Earth has a shadow caused by the Sun just like the shadow you have on a sunny day). The Moon will be passing close to one edge of the Earth's shadow, so the darkening and coloration will appear to be uneven from one side of the Moon to the other, much like you see in the above image. The reddish color is caused by some sunlight that is bent by the Earth's atmosphere, and thus makes it around the edge of the Earth. The light toward the blue end of the spectrum is scattered more by the Earth's atmosphere so it's mostly reddish light that gets through. The darkness of lunar eclipses varies from one eclipse to another; this seems to be related to the amount of aerosols in the Earth's atmosphere (from pollutants, volcanic eruptions, large forest fires, etc.). An eclipse can also be fun to watch through a telescope, as you watch the edge of the Earth's shadow moving across the lunar terrain, engulfing one feature after another.

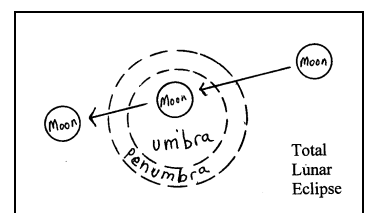


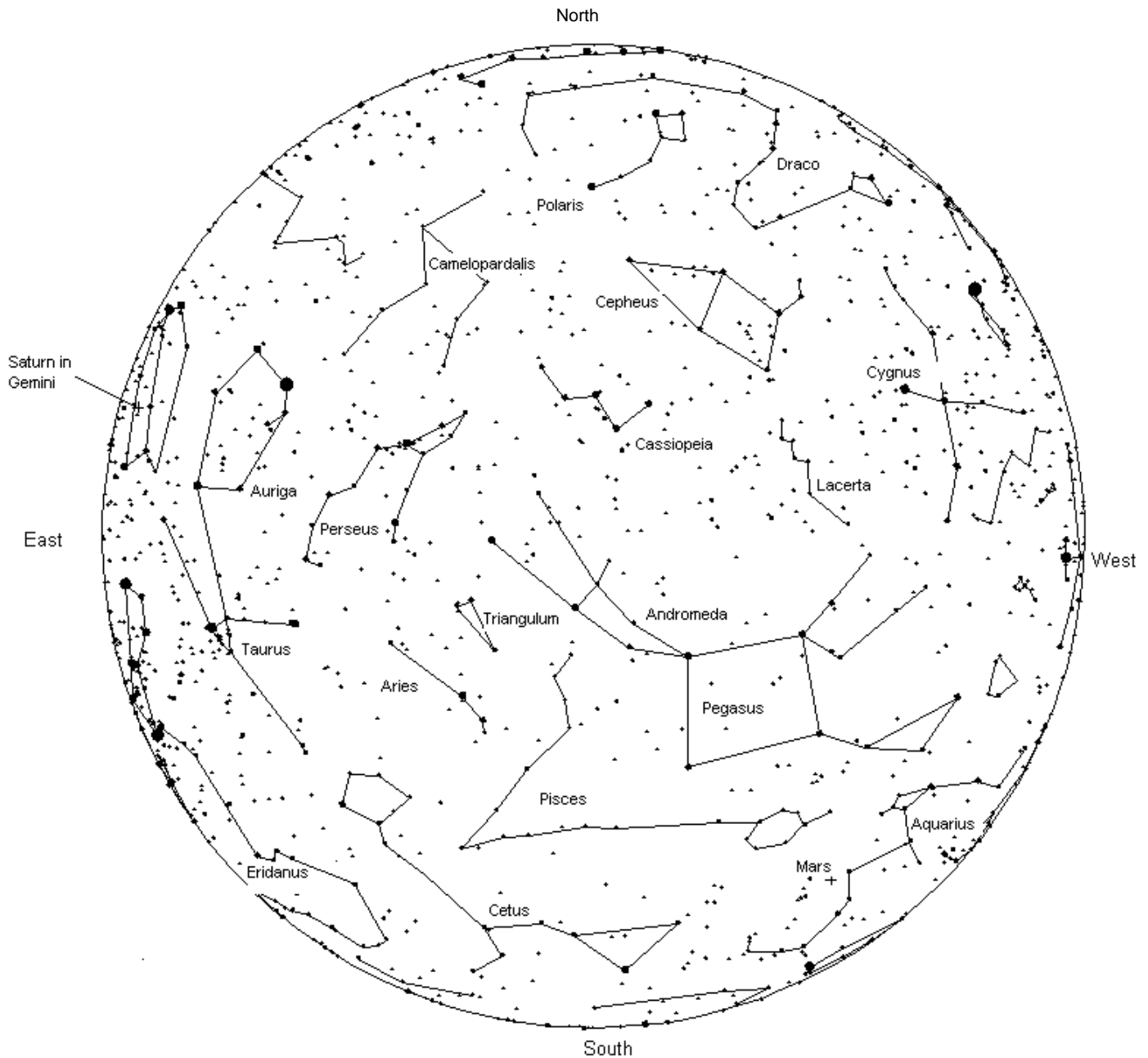
Diagrams showing a total lunar eclipse

Left: as seen from the side

Right: as seen from the Earth

(the umbra is the darkest part of the Earth's shadow)





The sky over Chester County
November 15, 2003 at 9:00 p.m. EST

Moon Phases

Full Moon	11/08
Last Quarter	11/16
New Moon	11/23
First Quarter	11/30

This month's Full Moon is called the "Full Beaver Moon," because it's time to set the beaver traps before the swamps freeze. This Native American name for the Full Moon comes from the *Farmers' Almanac* website.

The Planets

Mercury is in the evening sky in late November, below Venus.

Venus is in the evening sky, setting about 1.5 hours after the Sun by month's end.

Mars is in the evening sky, in Aquarius.

Jupiter is rising earlier each night, but is still best seen in the early morning hours.

Saturn is rising early enough now for good telescopic views by 11:00 p.m. EST. The

rings are nicely tipped for good viewing, and as a matter of fact, this year is one of the best years to see the rings! After this year, they once again slowly "close" to our line of sight.

Uranus is in the evening sky, not too far from Mars in Aquarius.

Neptune is in the evening sky, in the southwest in Capricornus.

Pluto is now too close to the Sun to see.

Other Notes: The annual Leonid meteor shower peaks on the morning of November 18, 2003.

CCAS November Meeting

DATE: **Tuesday November 11, 2003**
TIME: 7:30 p.m. EST
PLACE: Department of Geology and
Astronomy Lecture Room
(Room 113 – Boucher Building)
West Chester University
LOCATION: South Church Street
West Chester, PA

Our guest speaker will be Karl Krasley, President of the Chesmont Amateur Astronomers. His topic will concern light pollution, “the biggest threat to astronomy today”: what the problem is, and how to solve it.

Karl has been an amateur astronomer for 35 years (“strictly a deep sky observer,” he says.) He founded the Chesmont Amateur Astronomers in 1988, and has been President since then (“nobody else wants it”). He has been writing, giving interviews, and doing presentations on light pollution for 17 years. He has given interviews with newspapers, magazines like *Better Homes and Garden*, and even with PBS radio. He has given many presentations at star parties, from the Franklin Institute ones to a PBS-sponsored event. Karl started the Pennsylvania Outdoor Lighting Council (POLC) in 1995, and is currently its spokesman.

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CCAS November Observing Session

The next CCAS Observing Session will be at the Brandywine Valley Association’s Myrick Conservancy Center (see map on a later page) on Friday November 21, 2003 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 November 22, 2003. 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 always free of charge.

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CCAS Backyard Observing Class

The fall class, *Backyard Observing*, concentrates on actual observing: how to find things in the night sky, what’s there to see, etc. Each class includes some actual observing, if it is clear that night. The class consists of 6 one-hour sessions, on the first and third Tuesdays of the month, starting with September 23. This is the remaining tentative schedule:

Nov. 4 Lunar and Solar Observing; the Zodiac
Nov. 18 Perseus
Dec. 2 Taurus

All classes are held at the Flower & Cook Observatory, located in Willistown Township on Providence Road, just west of the intersection with Warren Avenue. Classes begin at 7:00 p.m. (EST).

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Calendar Notes

November 4, 2003 (Tuesday) Backyard Observing Class
Location: Flower & Cook Observatory
7:00 p.m. EST

November 11, 2003 (Tuesday) CCAS Meeting
Location: West Chester University
7:30 p.m. EST

November 18, 2003 (Tuesday) Backyard Observing Class
Location: Flower & Cook Observatory
7:00 p.m. EST

November 21/22, 2003 (Friday/Saturday) CCAS Observing Session
Location: BVA
sunset

December 2, 2003 (Tuesday) Backyard Observing Class
Location: Flower & Cook Observatory
7:00 p.m. EST

December 9, 2003 (Tuesday) CCAS Meeting
Location: The Popovich’s (see page 4)
7:00 p.m. EST

December 19/20, 2003 (Friday/Saturday) CCAS Observing Session
Location: BVA
sunset

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Treasurer’s Report by Bob Popovich

September 2003 Financial Summary

Beginning Balance	\$1,189
Deposits	520
Disbursements	<u>679</u>
Ending Balance	\$1,030

Membership Renewals Due

11/2003: Athens
Buczynski
Gatters
Mathisen
McHugh
Okpaku
Zimmer

12/2003: Patterson

01/2004: Kovacs
Whitman

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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 a later page in this newsletter.

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December CCAS Party at the Popovichs' Home

The annual CCAS Holiday Get-together (and meeting) will be hosted by Bob and Betsy Popovich this year. It will be at their home, located at 416 Fairfax Drive in Exton (610) 363-8242. The gathering will start at 7:00 p.m., and wrap up at 9:30, on Tuesday December 9. Light buffet and drinks will be served. All members are welcome. Mark your calendars now! A map and directions will be included in the December newsletter.

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For Sale: *Skywatch '04*

The *SkyWatch '04* annual magazine from Sky Publishing, which includes September 2003 to December 2004 monthly star charts, excellent articles about telescopes, 2004 astronomical highlights, astrophotography and much, much more, is now available to CCAS members at a reduced rate. Newsstand price: \$6.99 plus tax. Buy it here for ONLY \$6.00—WHILE SUPPLIES LAST (the proceeds, which aren't much, benefit the Education Fund of your Society.)

This magazine would make an excellent stocking stuffer or Hanukkah gift.

Call Kathy Buczynski @ 610-436-0821 to reserve your copy.

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Price Increase: *Sky & Telescope*

The special subscription rate for astronomy club members, available to CCAS members, has been raised to \$32.95 per year for any "new" subscription. If you received a renewal notice from Sky Publishing that lists the old club rate of \$29.95, they will honor that price until January 2004. Contact Treasurer Bob Popovich for details on using this club benefit (610-363-8242).

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Newsletter Deadlines

These are the deadlines for submitting material for publication in the newsletter, through the December 2003 issue.

<u>Issue</u>	<u>Deadline</u>
December 2003	11/25/2003

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Hurricane Team Work

By Dr. Tony Phillips

On a gray breezy day last month thousands of people got in their cars and reluctantly left home. U.S. east coast highways were thick with traffic. Schools were closed. Businesses shut down.

Perfect!

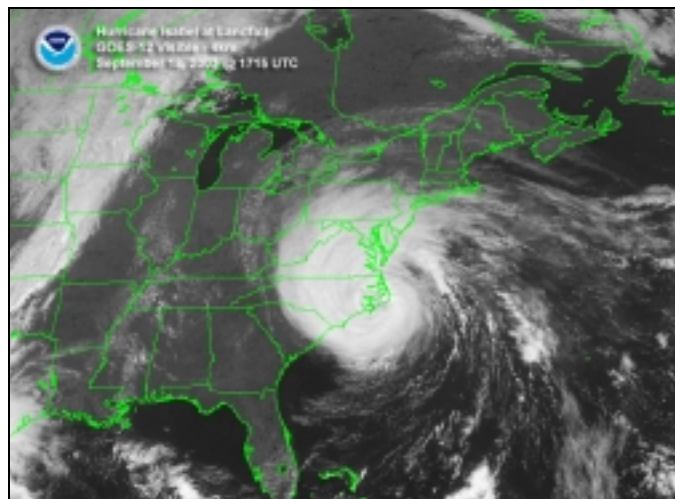
When powerful Hurricane Isabel arrived some 38 hours later nearly everyone in the storm's path had fled to safety.

Days later Vice Admiral Lautenbacher, in a briefing to President Bush, praised the National Atmospheric and Oceanic Administration (NOAA): "Without NOAA's excellent track forecasts, hurricane Isabel's toll on lives and property would have been even more devastating. This is NOAA's first year of providing 5-day forecasts—and the 5-day forecast for Isabel was as good as our 2-day forecasts have been over the last decade."

Many people in NOAA played a role. A team of pilots, for instance, flew Gulfstream-IV High Altitude Surveillance jets right up to the approaching hurricane, logging 25,000 miles in the days before landfall. Their jets deployed devices called dropsondes—little weather stations that fall toward the sea, measuring pressure, humidity, temperature and wind velocity as they plummet. The data were radioed back to the aircraft and transmitted to forecasters on shore.

While two Gulfstream-IV crews flew night and day around the storm, a NOAA satellite named GOES-EAST monitored Isabel from above. (GOES is short for Geostationary Operational Environmental Satellite.)

From an orbit 22,300 miles above the Atlantic Ocean, GOES-EAST had a unique view. "It could see the entire hurricane at once," says Ron Gird of NOAA. "Scientists used infrared spectrometers onboard the satellite to estimate the height of the storm clouds, their temperature and water content. GOES can also measure the temperature of the ocean surface—the source of power for hurricanes."



GOES-East satellite image of hurricane Isabel as it makes landfall on September 18, 2003 at 1715 UTC.

Constant streams of data from GOES and the Gulfstream aircraft were fed to supercomputers at NOAA's Environmental Modeling Center in Maryland where sophisticated programs, developed over the years by meteorologists and programmers, calculated the storm's most likely path.

Supercomputers. Satellites. Jet airplanes. Scientists. Programmers. Pilots. It took a big team using a lot of tools to predict where Isabel would go—accurately and with time to spare.

Says Vice Admiral Lautenbacher: "I hope everyone at NOAA shares the pride of being part of a team effort that so

effectively warned the public of impending danger and enabled citizens to take action to protect themselves and their loved ones."

Well done, indeed.

To learn more about the GOES, see www.oso.noaa.gov/goes/ . For kids, the SciJinks Weather Laboratory at scijinks.nasa.gov has lots of fun activities and fascinating facts about the wild world of weather.

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



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 N. First Avenue
Tucson, AZ 85719-2103



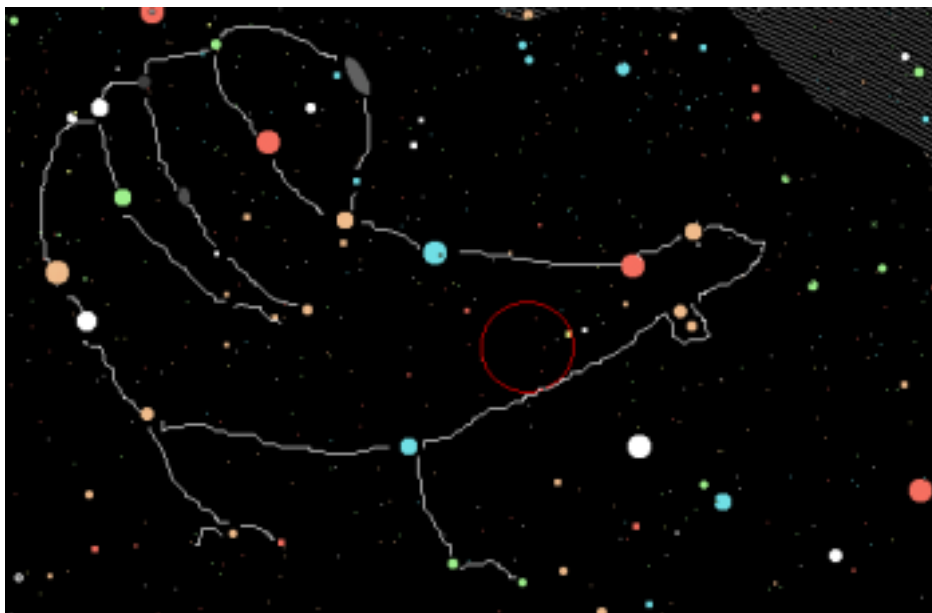
Astronomus

"Turkeyus Majoris"

By Bob Popovich

Ever since I first read Edith Hamilton's *Mythology*, I've always been fond of classic Greek myths. Equally entertaining and insightful, they give us a peek into the mindset of the times and always carry a good dose of truth. These stories and the characters in them are an integral part of our enjoyment of astronomy. In fact, you could even call them part of the tradition of amateur astronomy.

But sometimes traditions need a bit of updating. Let's tap into the dynamic energy of crass commercialism. Every season and every holiday has its symbols, colors and traditions. Why, there's even a meat of the month! November is here, and that means Thanksgiving. The quintessential American holiday. If the ancients sprinkled the night skies with their own stories and traditions, why can't we? Set your mind to redrawing the "old" constellations of November and, with sharpened pencil in hand, let's officially redraw the November night sky by designating the first-ever constellation of the month: Turkeyus Majoris!



The constellation Turkeyus Majoris.

Dark-Sky Website for PA

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



Help Needed With Society's 20" Telescope

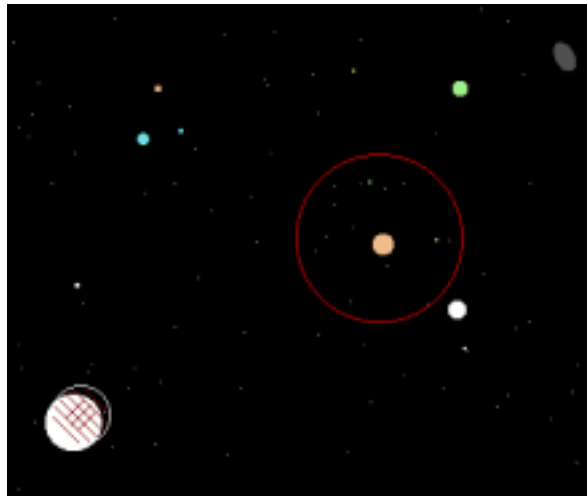
The Society's 20" telescope belongs to the whole Society; it is intended to be available for use by members at Observing Sessions, and even for short-term borrowing by Society members. The problem we have with implementing this policy is, simply put, lack of mobility. We need a member with a big enough truck or minivan, and preferably with the storage space at home for the telescope, to volunteer to be the telescope's "custodian" and "chauffeur." The custodian would of course be able to use the telescope whenever it wasn't out on loan. The biggest part of the telescope is the bottom part; it weighs a couple hundred pounds. We have wheels and handles that convert that piece into a large "wheelbarrow" for moving it, though, and ramps so it can be wheeled right into a vehicle. Ed Lurcott is willing to keep storing the telescope in his garage, if someone can volunteer to be the chauffeur, but not the custodian. If you can help, please call Ed Lurcott at (610) 436-0387. Thanks.

(As you may have guessed, I was not an art major.)

Trotting high in the sky this month, this big turkey lies near the Milky Way. It is stuffed with numerous celestial targets for both binoculars and telescopes. But let's start with locating the constellation first. If you actually want to see it, you have to get into the mood of the season. You must banish the old images from your thoughts for this seasonal constellation is comprised of sections of six of the traditional constellations. It is readily found by its body—three relatively bright stars forming an upside down right triangle. By the way, the circle as seen in the chart below doubles as a binocular field of view *and* a bull's eye.

Once you've identified the body, try locating the tail feathers that include the magnificent galaxy know as "Gobbler's Cloud" (M31). At a distance of some 2,700,000 LY, it is the furthest object that the unaided human eye can perceive. And the star colors of the tail feathers—green, red, yellow and blue—strongly remind us of a turkey's beautiful shading. Also in the tail is M33, known as the "Pilgrim Galaxy." At magnitude 14.20, it is a telescopic object. And just about halfway between these two Messier objects is the lovely red star named Mirach—"cranberry" in Arabic.

The bottom tail feather includes a pumpkin-colored star named Hamal, Arabic for "gourd." If you center this star in the field of view of 7x50 binoculars (as shown below), you will see a number of visual and binary doubles including the challenging λ (lambda) star with its companion. The lambda star is to the right of Hamal. And while we're focused on Hamal and its neighbors, the lunar eclipse will reach totality just about 12° to the east of the "gourd."



↑ The Moon

So during totality on November 8, why not grab heaping helpings of both the turkey's tail feathers and the eclipsed moon? Don't you just love Thanksgiving?!

Hopping over to the head of this most noble bird, the eye is marked by a G-class star that has two visual companions that binoculars should separate easily. And just about 8° below the eye are a pair of stars called Waddle 1 and Waddle 2.

I hesitate to describe telescopic objects in Turkeyus Majoris because, after all, Thanksgiving is a holiday meant to be enjoyed in a relaxed manner. So pull out the beach chair, bundle up and enjoy. You might even want to loosen your belt a notch!

(P.S.- The Arabic translations contained herein have not been verified)

Next Time: "Hi—ya like dees?"



Pssst—want a CCD camera for under \$100?

By Jeff Goldader

Conventional CCD cameras cost at least several hundred dollars. Short on cash but rich in imagination, a small cadre of brave hobbyists discovered that with a little work, they could take images through their telescopes using the tiny CCDs used in webcams costing less than \$100, such as those made by Logitech and many other companies. Their adventures are chronicled on the QuickCam and Unconventional Imaging Astronomy Group (QCUIAG) website at <http://www.qcuiaig.co.uk>. *Sky and Telescope* had an article on imaging with webcams in their June, 2003 issue.

A few weeks ago, I appropriated our little-used Logitech QuickCam Web (purchased new 2 years ago for about \$75 but mainly sitting on the shelf ever since). The QuickCam Web uses a small color CMOS chip (similar to a CCD), 320x240 pixels across. The camera can interpolate to 640x480 pixels in hardware, and most new webcams are 640x480 to start with. It connects to my laptop via the USB port.

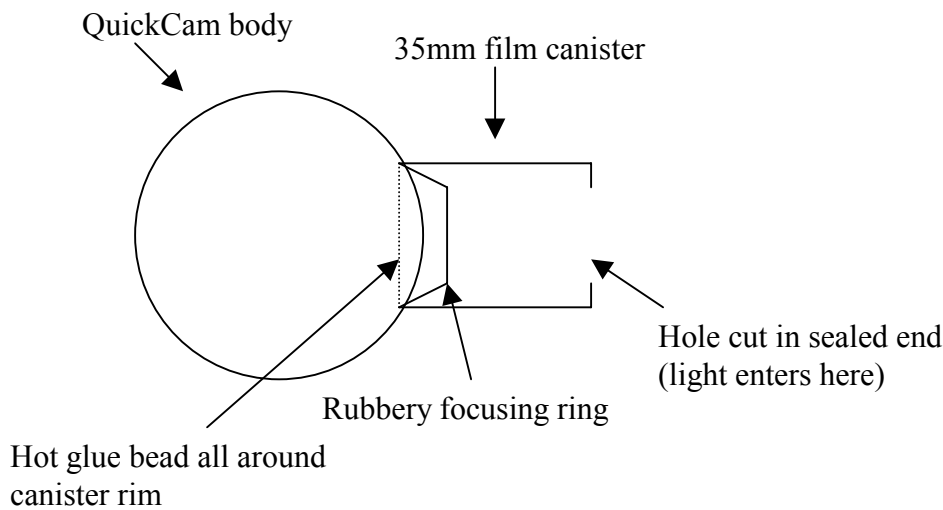
Then I needed some software to control the camera. Because webcams are not cooled, they are limited to short exposures (at most a few seconds) and are generally used for imaging bright objects such as the Moon, planets, and bright stars. In effect, I would be recording a movie consisting of a very large number of very short exposures. I decided to use *K3CCDTools*, available at <http://www.pk3.org/Astro/index.htm?software.htm>. It lets me set the exposure time and frame rate (number of exposures per second). If I save 5 (or fewer) frames-per-second, I can save the video at highest quality (24-bit color at 640x480 pixels resolution). The resulting .AVI movie files are big: a 50-second-long movie at 5 frames per second is about 220 Mb. *K3CCDTools* also lets me view the live video which really helps with centering and focusing.

Each frame of the movie is an individual image. Because of the short exposures, individual frames usually contain faint or noisy images. By aligning and averaging many frames together, good final images can be created. *K3CCDTools* offers a simple tool for doing this. I also use *RegiStax* 2.1, available at <http://aberrator.astronomy.net/registax/>. *RegiStax* not only registers and stacks frames, it contains additional image processing tools. Both *K3CCDTools* and *RegiStax* are free!

One way to use a webcam is to simply record the view through an eyepiece. Debbie and I managed to get images of Mars this way on September 11, 2003, before I made any modifications to the camera. She held the camera over a 26mm eyepiece on our 25-year-old Celestron C8 telescope while I ran the computer. We found that keeping Mars in the QuickCam's field of view was very difficult, but we were able to obtain images of about 4-5 arc-seconds resolution.

Encouraged, I decided to go ahead and make two modifications to the camera. First, I would install an adapter to so I could attach the camera directly to the telescope for imaging at prime focus (without an eyepiece.) I discovered that the open end of a plastic Kodak 35mm film canister fit neatly over the focusing ring of the QuickCam. All I had to do was cut out the closed end of the canister to let light through, and I did this with a very sharp knife. I would use my wife's crafting hot-glue gun later to glue the tube to the webcam. Even better, the tube had precisely the same outside diameter as 1.25-inch eyepiece! It fits snugly into the diagonal and the telescope's visual back. You can probably get a handful of canisters for free at any photo shop.

FIGURE 1: How to attach the film canister to a QuickCam Web camera (side view)



The second modification has to be done BEFORE attaching the film canister, and requires courage. It involves removing the lens and infrared filter assembly from the camera. To do this, you have to open the camera. Needless to say, this is far, far worse than tearing off those little tags on your pillows that say DO NOT REMOVE THIS TAG UNDER PENALTY OF LAW: disassembling the camera totally voids any warranty on your camera. My camera was held together by a single screw. I used a grounding strap as I worked, so as not to damage the video board with static electricity. The camera opened easily. The lens assembly was attached to the video board with a threaded fitting, and unscrewed easily. I found that the focusing ring could be removed from the lens assembly. I did this, putting the focusing ring back into its slot in the camera housing, replacing the video board into its slot, and closing the camera back up. Elapsed time: about 10 minutes. The camera looked the same as it did before, except the CCD was exposed. I then attached the film canister over the focusing ring with a bead of glue from the hot-glue gun. I was ready to take images.

But first: why remove the IR filter and lens? The IR filter (part of the lens assembly) blocks very red light, so by removing it, you effectively increase the sensitivity of the camera, resulting in brighter images of deep-sky objects. If you don't mind imaging at prime focus, removing the lens takes a fairly low-quality optical element out of the light path. Taking out the entire lens assembly leaves open the possibility of reassembling the webcam later, and restoring it to regular operation. Note that if you remove the IR filter, the proper

color balance of your camera will be lost, but you can fix your images up later. I also suspect that the image quality suffers because telescopes cannot focus infrared light as well as visual colors.

Finally it was time to go outside. At around 9pm on September 22, I set up the telescope and tripod, notebook computer, QuickCam, and portable battery pack in my front yard. I tried just sticking the camera into the diagonal, but had only totally black images after a frustrating hour of work. Debbie realized that the camera's CCD wasn't right at prime focus. She first focused the telescope by eye using a 40mm Plossl and the diagonal. We then took the whole diagonal off, and stuck the film canister directly into the visual back of the telescope. Success! The PC screen showed a bright orange ring, an out-of-focus image of Mars. The image quality is very dependent on accurate focusing.

We ended up being able to see live images good enough to reveal the color differences between the north and south hemispheres and to see the Martian south polar cap. I took a number of minute-long movies at 1/500 and 1/1000 sec exposures (Mars is REALLY bright!), with a frame rate of 5 frames per second, refocusing before each movie.

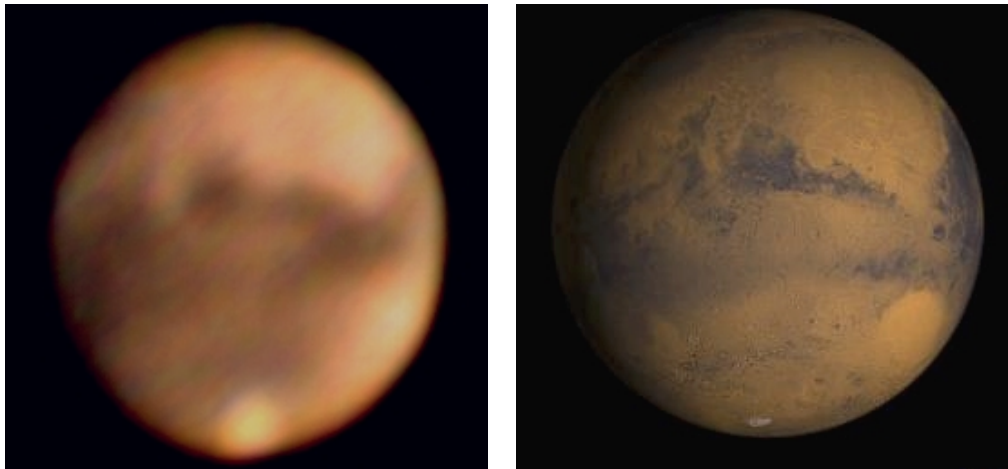
On October 5, I tried again, using a 2x Barlow lens. It was more difficult, since the field of view was smaller and accurate tracking was critical. A little processing produced the image on the next page—the smallest details visible are around 2 arc-seconds across. (I've seen Mars images on the web taken with a similar setup, but with sub-arc-second resolution. It's time to clean the mirror!)

I have learned that having an infrared blocking filter is important for accurate color reproduction for planetary imaging, but that you need to get rid of it for deep sky imaging. Well, with my QuickCam, the IR-blocker is just a coating on the lenses, so I can't simply put it back in. The filters (one is made by Baader, Sirius makes one as well, I believe) retail for \$40-\$80. I haven't gotten one yet, but I'm on a waiting list for a Baader filter from alpineastro.com. Lumicon will be making a 1.25" IR-blocking filter real soon now. With so many people using webcams now, the Baader filter (which webcam users swear by) is just in short supply. A New Jersey company, maxmax.com, makes one as well, but it's a 30mm filter, which I don't think will thread into 1.25" filters, so I've been reluctant to buy it.

Here are a few more pointers. First, be really sure you want to gut your camera. If you're not, then try just attaching a film canister and using an eyepiece projection adapter. Or consider Meade's new LPI camera (\$150), which is basically a webcam designed for Meade telescopes with the Autostar system. Second, be patient. Getting your first images might take a few hours of work. Third, have lots of hard disk space available, and try to get power for your laptop. The battery in mine drained quickly with all the disk access, and I was scrambling to find an extension cord. Fourth, time spent processing the images makes a huge difference. Finally, have fun! I sure did.

All in all, I am very satisfied with the results. Being able to take images has reinvigorated my interest in my telescope, and Saturn will be up this winter!

Figure 2: Results



Left: Mars, as imaged by Jeff Goldader, Oct. 6, 2003, 01:18 UT, taken with a C8 and 2x Barlow, stacked and enhanced with RegiStax, then color-corrected in Photoshop LE. This is a sum of 60 images, 1/125 second each, from a single 50-second-long, 200-frame movie.

Right: Simulated view of Mars at 01:15 UT from the JPL Solar System Simulator. Mars was 19.7 arc-seconds across.

Jeff Goldader would like to hear from club members who try using Webcams with their telescopes. He'd especially like to hear from anyone who has used the new Meade imager. Can it be used with non-Meade equipment? Or does it HAVE to be plugged into an Autostar unit to even work? Jeff can be reached via e-mail at:

jgoldad@dept.physics.upenn.edu





THE 4-H CLUB BARNSCOPE

Cartoon by Nicholas La Para



How dark is the Moon when fully eclipsed?

This can be measured with the naked eye, using the Danjon Scale of Brightness:

<u>Value</u>	<u>Description</u>
0	Very dark eclipse. Moon almost invisible, especially at midtotality.
1	Dark eclipse, gray or brownish coloration; details can be distinguished only with difficulty.
2	Deep red or rust-colored eclipse, with a very dark central part in the umbra and the outer rim of the umbra relatively bright.
3	Brick-red eclipse, usually with a bright or yellow rim to the umbra.
4	Very bright copper-red or orange eclipse, with a bluish, very bright umbral rim.

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, Bill O'Hara, to make arrangements to borrow one of the books in the CCAS lending library. Copies of the catalog are available at CCAS meetings. Bill's phone number is 610-696-1422.

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 jim.anderson@mckesson.com

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 by 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:

jim.anderson@mckesson.com

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): Frank Angelini
(610-873-7929)

Lunar: Ed Lurcott
(610-436-0387)

Double Star: 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 Officers

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

President: Mike Turco
(610) 399-3423

Vice Pres: Steve Limeburner
(610) 353-3986

Treasurer: Bob Popovich
(610) 363-8242

Secretary: Caitlin Grey
(610) 918-9049

**ALCor and
Newsletter:** Jim Anderson
(610) 857-4751

Librarian: William O'Hara
(610) 696-1422

Observing: Ed Lurcott
(610) 436-0387

Education: Kathy Buczynski
(610) 436-0821

Public Relations: Vic Carlucci
(610) 458-7457



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 date printed on the address label of this issue of *Observations*; "exp." appears in front of it, just after your name. If you are due to renew, you may send 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

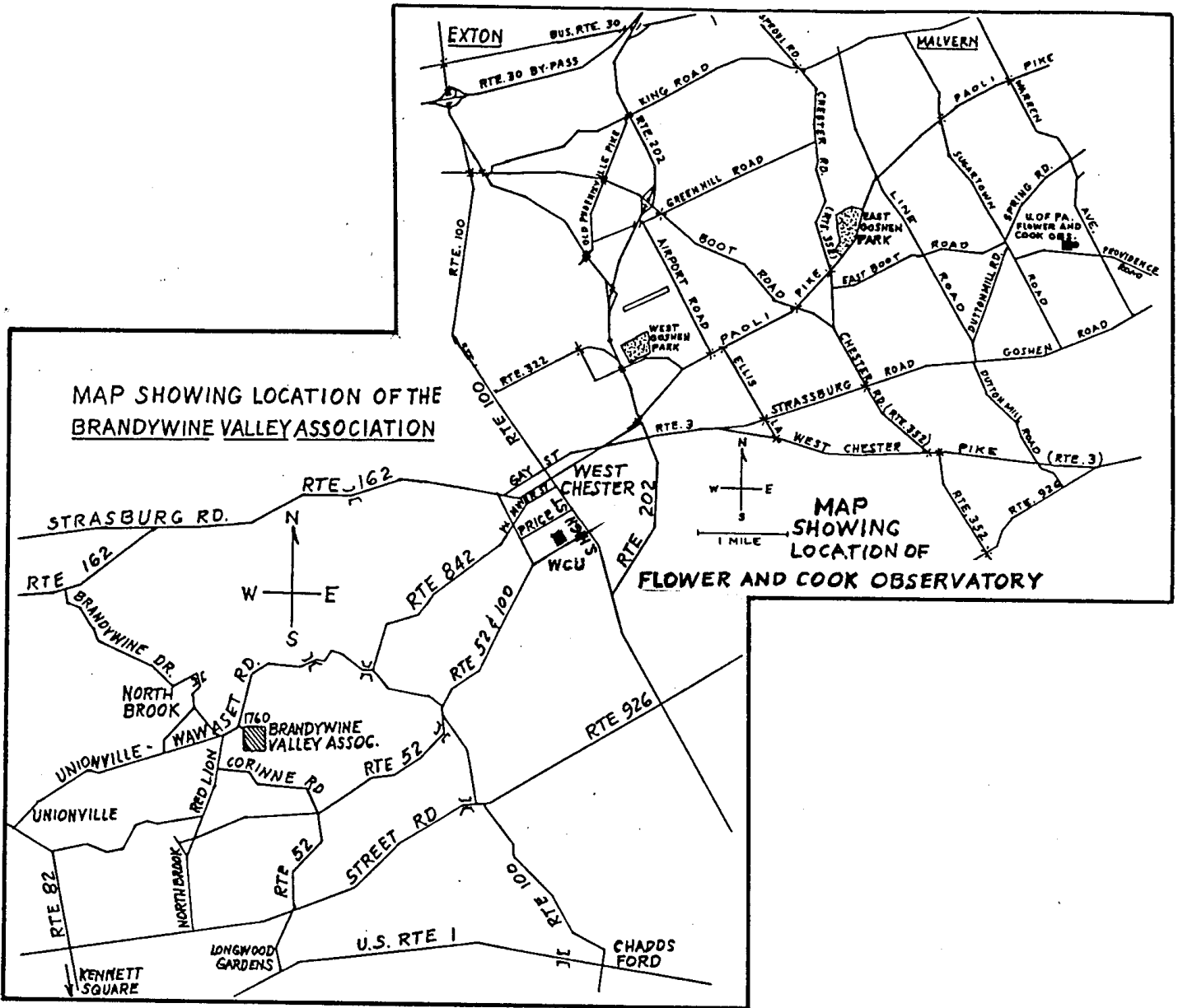
Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **\$29.95** which is much less than the newsstand price of \$54.00, and also cheaper than individual subscriptions (\$39.95)! Make out a check to the Chester County Astronomical Society, note that it's for *Sky & Telescope*, and mail to Bob Popovich. Or you can bring it to the next Society meeting and give it to Bob there. Buying a subscription this way also gets you a 10% discount on other Sky Publishing merchandise.

CCAS Website

Pete LaFrance is the Society's Webmaster. You can check our Website at:

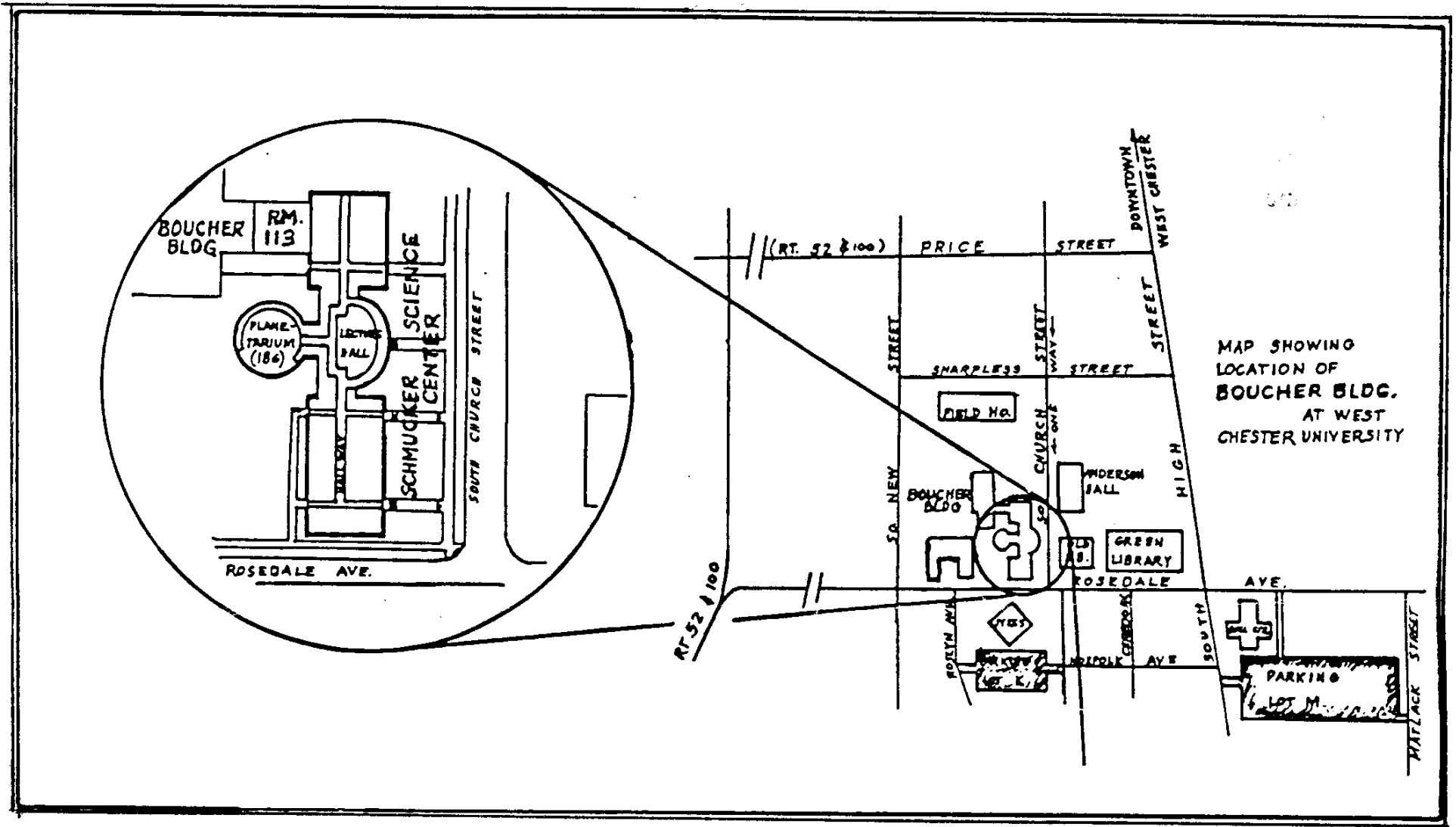
<http://www.ccasastro.org/>

Pete 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 Pete LaFrance (610-268-2616) or e-mail to lafrance@kennett.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.