Observations
A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

JULY 2004
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VENUS TRANSITS!

On the morning of Tuesday June 8, 2004, the planet Venus made a rare transit across the face of the Sun as seen from Earth. Perhaps even more miraculously, the weather in our area cooperated (more or less, depending on the observing site) and we were able to view an event that had not been seen in 122 years. A series of reports by CCAS members follows.

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The Transit from Marsh Creek State Park

By Kathy Buczynski
Photos by Ed Lurcott and Kathy Buczynski

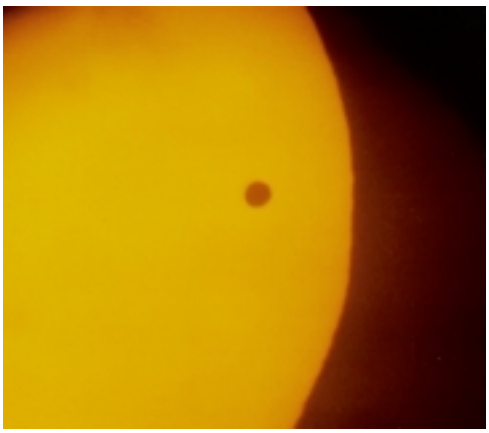
Monday evening, June 7, 2004, I warn Pat that the alarm is set for 3:45AM. He retorts that the only thing I will get up that early for is vacation or some astronomical event. He's right.

Weary, I rise, shower, load the truck, stop for a much-needed coffee and donuts and head out to our predetermined site, near the boat launch at Marsh Creek State Park. When I arrive I notice Ed Lurcott and his son, Stan, already there and set up. In addition, there are two other observers from the Delaware Valley Amateur Astronomers (DVAA). It's a warm morning but foggy and misty over the lake – was this the ideal spot?

As more people arrive and the sun rise time approaches, no sun, a bank of clouds is obscuring what we were looking forward to seeing. The sky is lightening and the third quarter moon is still prominent about 90 degrees to our right (I don't get a chance to see third quarter moon that often) but no sun, or Venus to accompany it. More people arrive, including two families that have attended our classes.

Finally, something bright is peeking through the clouds, it's pink from light refraction. We take the opportunity to admire nature's beauty; the reflection of the small portion of the sun on the lake, the mist still visible, horses feeding behind a split-rail fence, all in the same frame of view in the camera. Nature takes center stage on this morning.

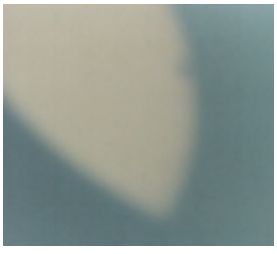
Time goes by, this light gets higher in the sky and becomes a full disk. At this point, because of the atmosphere and clouds, we can view it with no filters or protection, but not for long. THERE IT IS! We can see it with no aid, like a hole punched in the sun, a perfectly round circle working its way across the disk of the sun, it's Venus. Soon the sun gets too bright to view naked-eye. We try to find it in our scopes with solar filters, no luck, not bright enough yet; we try to find it with some solar viewing glasses, not bright enough yet; we try to find it by projection, not bright enough yet. We wait a little longer. Finally, success: many "WOW!" moments.



The DVAA guys are trying video, more people arrive to be with them, they share their eyepiece.

By now we have about 20 people getting views in eyepieces, trying out the "sunglasses" and gathering around the projection. Then we see what looked like a huge bug crawling quickly across the sun; the invasion of some galactic visitor? No, the flight path of some business travelers, more likely. It turns out two more transits of planes were also visible and you can hear the excitement in the crowd from those who witnessed them. A few of us saw them on the projection.

About 7:05 we start looking for the "black drop effect" that we've demonstrated with our own thumb and forefinger. We think we see it! The projection was too small to be sure and there was only one person per scope. We think we see it!



Then after a few minutes, we only see what looks like a bite taken out of the sun, then a smaller bite, then a smaller bite, then at 7:25 we hear an alarm go off (Ed Dunlop has set his PDA to be sure we don't miss the exit of Venus from the sun). Then the bite gets so small, we're not sure we see it. Then we hear someone say, "That's it," and as we watch Venus transform from an evening "star" into a morning "star" the remaining group breaks into applause.

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The Transit from Fox Point State Park

By Nicholas La Para

The alarm went off at 4 AM. Cynthia and I didn't exactly leap out of bed, but up we did get up. How's the sky? A bit hazy, but there's Vega, Deneb and the rest of the Northern Cross, didn't expect them west of the Zenith. A quick breakfast, load the van, and on the road by 4:50, headed for Fox Point State Park on the Delaware River in Wilmington DE. We had scouted out the route the day before.

Quite different early today—fog, mist, fog. At the park lots of astronomers, with a variety of equipment: 60mm refractors, binoculars with home-made solar filters, an AstroPhysics Traveler, a 3.5" Questar, several Celestron 8" SCT's, one with a web cam, a 10" Dob, a home-made 4.5" Newt with a focusing mechanism that slid up and down the tube rather than in and out (of course, this required a slot in the tube for travel room), etc. We took out our 80mm f/6 refractor with Baader solar filter. Met Deb Goldader with two of her students and an ETX 125. Jeff and their two younguns were there too. BUT—the river was fogged over; couldn't even see a light spot where the sun should be. OK, wait a while, go behind the playground equipment and do some Tai Chi, go back, rats, the fog is thicker. Finally, someone reported that if you went out of the park and up Philadelphia Pike, you could see the sun's disk in the haze. Great! This is where a grab-and-go scope shows what it's for.

So, up Edgemoor Ave, right on Phil. Pike - yup! there's the sun. Now where to pull into? Hmm, the State Police building has a nice lot, but maybe not quite the place. Hey, here on top of the hill, Bob's Original Garden Market, nobody there, just lots of plants in pots, small parking area, OK. Ah, good view of the sun over traffic, set up the scope, try to find the sun. Huh, can't locate the sucker with this filter on, and I'm sure not going to try with it off. Mother and two schoolboys saying I can see it, I can see it, top right. I'm telling her not to look naked eye, while I'm still trying to find the cotton-pickin' sun. Good grief, some astronomer! Usually I point the scope at the sun by minimizing the shadow, but the sun is in haze, not much shadow to notice. Finally inspiration: here's Bob's Original Garden Market's good old sandwich-board sign, and it's white! I take off the filter, take out the diagonal and move the scope until it projects a lit disk on the sign. Now I've got it! Filter on, diagonal back, zoom eyepiece in, WOW, there it is, a small totally black disk near one edge of the white solar disk.

I let the mother look, explaining that in the telescope she's seeing a mirror image, so the spot looks upper left, not right, I keep the kids from hanging on the scope while they look, let Cynthia look, I look again, and so on. The mother leaves with her boys, a car pulls in with a young woman. "Can you see it?" she asks, "This is my family's store." "Sure", I say, "Take a look." So it goes. She leaves, Cynthia and I keep watching, waiting for the black drop effect when Venus almost touches the sun's rim on the way out. A truck pulls in to open the store; after a while a young lad (maybe 16) comes out and we give him a look through the scope. "Cool," he says, "I didn't know you could look at the sun, it's so bright." I explain about the filter and burning your eyes. He goes off and returns in a little while with coffee and donuts for the older guy in the store, who doesn't come out. The lad takes another look, and repeats, "Really cool." I'm loving this unplanned astro-outreach. We're right next to this busy commuter road and a traffic light. Several people stop at the light and ask "Can you see it?" I'm surprised so many know what's going on. "Sure," I say, "Pull in and we'll show you." "Can't, I'm late for work."

Getting near Third Contact now. I put in a higher power zoom eyepiece for 80x. I try 120x and 160x, but the views are not so good, and my floaters too prominent. Back to 80x. Starting to see ripples of atmospheric turbulence. Cynthia and I keep taking turns watching. It's getting closer to the rim. 7:05 to 7:06-ish Venus nears and touches the rim with no black drop effect I could see; also no bright line around Venus' outer rim as it begins to emerge from the sun. Oh well, almost didn't see this at all. I'm glad we could and did. About 7:26 it's all over, Venus is completely out of the sun. "C'mon," I say to Cynthia, "Let's go home. I'll buy you second breakfast."

(With Thanks to Bob's Original Garden Market)

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The Transit from West Caln Township

By Jim Anderson

Pastel pencil sketches on Strathmore Bristol board by Jim Anderson, as seen through a filtered 60mm f/15 refractor at about 50x

Donna and I had a nice time observing here at home. Alarm at 5:00, outside and ready with the trusty old 60mm f/15 refractor-now-solar-scope (courtesy of a new Orion solar filter) by 6:15 when local sunrise occurred. Some thin fog/mist/haze, not enough to hide the sun but enough to make

it impossible to detect Venus. Then suddenly at about 6:33 there it was: a large black dot impossible to miss! I gasped out loud (surprised at how big Venus appeared, quite frankly).

6:33 a.m. EDT

After that I never lost it again until about 7:24, after last contact.

6:48 a.m. EDT

Two, small faint sunspots were also visible near the center of the Sun's disk, but not until after about 6:48 a.m.

7:03 a.m. EDT

Donna and some neighbors came by for looks and gasped as well. At one point I saw the silouhettes of two birds cross the field of view and the face of the sun (robins, I think, there were quite a few of them flitting around the neighboring yards). I clearly saw the black drop effect at about 7:05-7:06.

7:05-7:06 a.m. EDT

Meanwhile, it was comfortably cool, a light breeze was blowing, birds were singing: a pleasant spring morning. After last contact I continued tracking the Sun for a while while I got out my pastel pencils and selected a shade of yellow/orange that matched the sun's color in the scope for my sketches. All in all, it was a very pleasant and enjoyable outing. One that will be long remembered.

7:10 a.m. EDT

7:15 a.m. EDT

If you missed observing this transit of Venus, you'll have to wait until June 5, 2012 when it will again be visible from our area at sunset. If you miss it then, tough luck, because the next transit of Venus will not occur until 2117!

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CCAS July Meeting & Observing Session

DATE: **Friday/Saturday July 16/17, 2004**
TIME: sunset
PLACE: Brandywine Valley Association
LOCATION: PA Route 842
West of West Chester, PA (see map)

During the summer months of June, July and August we combine the Observing Sessions with the meetings. The July Observing Session will be on Friday July 16, 2004 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 July 17, 2004. 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 `scope. CCAS Observing Sessions are always free of charge. Children are always welcome as long as an adult accompanies them.

CCAS August Observing Session: Aug. 13/14

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Treasurer's Report

By Bob Popovich

April 2004 Financial Summary

Beginning Balance	$1,376
Deposits	25
Disbursements	94
Ending Balance	$1,307

Membership Renewals Due

06/2004:	Taylor
07/2004:	Quirk
	Reilly
08/2004:	Morgan
	O'Hara

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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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Newsletter Deadlines

These are the deadlines for submitting material for publication in the newsletter, through the September 2004 issue.

Issue	Deadline
August 2004	07/28/2004
September 2004	08/27/2004

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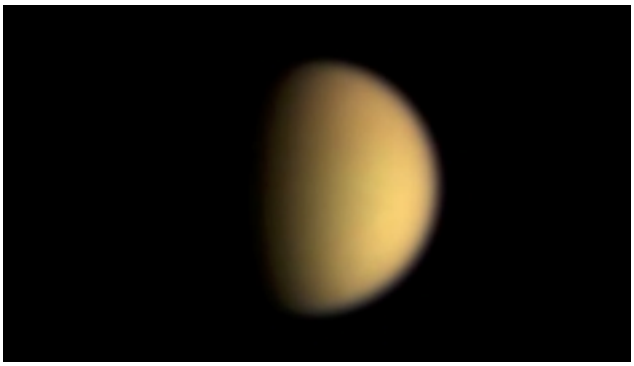

Titan in Natural Color

Despite the views of the surface of Saturn's Titan moon provided by the Cassini spacecraft, the moon remains inscrutable to the human eye. Images taken with the narrow angle camera using red, green and blue color filters were combined to create this view. In true-color images, Titan's photochemical smog, rich in organic material, gives the moon a smooth, featureless, orange glow.

The Cassini orbiter carries specially designed spectral filters that can pierce Titan's veil. Furthermore, its piggybacked Huygens probe will descend through the atmosphere in early 2005, giving an up-close-and-personal look at this mysterious orange moon.

The images making up this color view were obtained at a distance of approximately 13.1 million kilometers (8.2 million miles) on June 10, 2004. (photo and text courtesy JPL/NASA)

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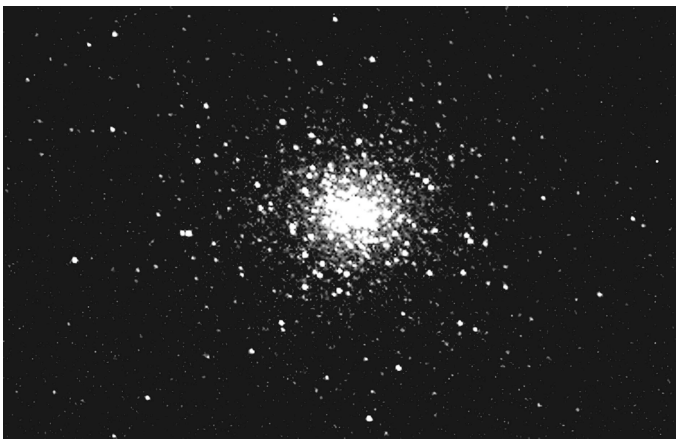
CCAS Members Learning CCD Imaging

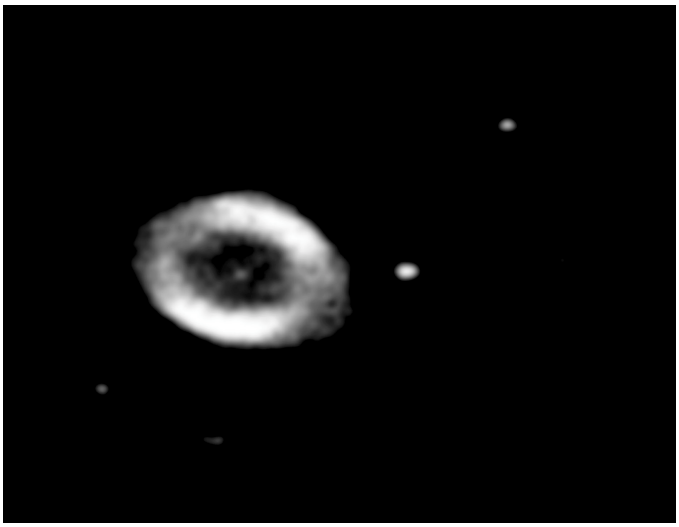
By Jim Anderson

Steve Limeburner and Vic Carlucci have started working together to do some CCD imaging, and they've sent me some more of their efforts (see images below). Vic writes in an e-mail: "Steve Limeburner and I have been doing some CCD imaging. Any one from the CCAS who wishes to join us just E-mail or call and I'll get in touch with times." You can reach Vic by phone at 610-458-7457 or by e-mail at pr@ccas.us

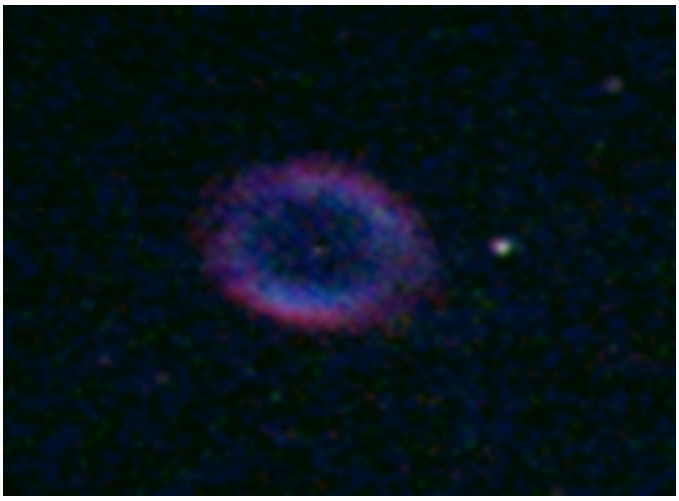
All images below were taken on June 23, 2004 at Vic's StarCatcher Observatory at around 11:00 PM EDT. They were using a Celestron C14 telescope at f/5.3 with 30 sec. exposure each, with a SBig ST6 camera attached.



Globular Cluster M3 in Canes Venatici



Planetary Nebula M57 ("The Ring Nebula") in Lyra



M57 in color

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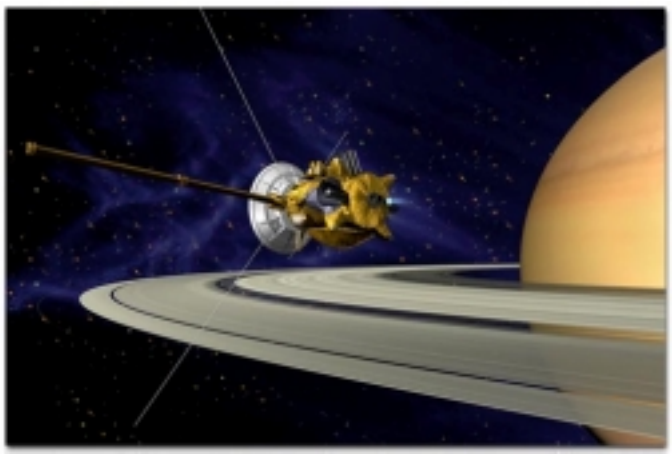
Cassini Mission to Saturn: Update

By Jim Anderson



Artist's conception of Cassini firing its main engine to enter orbit around Saturn. Image courtesy JPL/NASA.

Just in case you missed the news, the Cassini spacecraft successfully entered orbit around Saturn on July 1, 2004. With all instruments and systems performing as expected, the streams of data and pictures coming back is amazing scientists and raising all kinds of questions. One question tentatively answered so far concerns the composition of Saturn's small moon Phoebe. Analysis of the instrumental data seems to indicate that Phoebe is more like a comet nucleus than an asteroid! Early speculation is that Phoebe may have wandered in too close to Saturn from the Oort Cloud of comet nuclei and been captured. Here we'll focus on some of the wonderfully detailed pictures. If you want to follow the mission on a more frequent basis, the Jet Propulsion Laboratory (JPL), has an excellent home page on the Web for the Cassini project. There you can get the latest press releases, see some of the latest pictures (and download full-sized .jpg and .tiff files to view the pictures in their full glory). Point your Web browser at:

http://saturn.jpl.nasa.gov/home/index.cfm

To reach the list of images, click on the large button along the left side of the home page that is labled "Cassini Imagery on Photojournal." Explore the site and have fun following the mission as it unfolds, in more detail than you will likely get from the mass media.

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the Cassini-Huygens mission for NASA's Office of Space Science, Washington, D.C. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The imaging team is based at the Space Science Institute, Boulder, Colo.

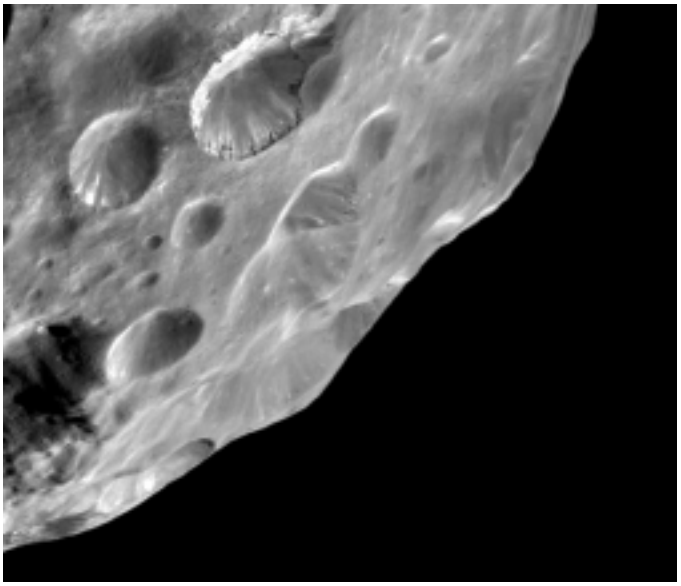
The following images of Phoebe and the accompanying text are all courtesy of JPL/NASA.

Phoebe's true nature is revealed in startling clarity in this mosaic of two images taken during Cassini's flyby on June 11, 2004. The image shows evidence for the emerging view that Phoebe may be an ice-rich body coated with a thin layer of dark material. Small bright craters in the image are probably fairly young features. This phenomenon has been observed on other icy satellites, such as Ganymede at Jupiter. When impactors slammed into the surface of Phoebe, the collisions excavated fresh, bright material—probably ice—underlying

the surface layer. Further evidence for this can be seen on some crater walls where the darker material appears to have slid downwards, exposing more light-colored material. Some areas of the image that are particularly bright—especially near lower right—are over-exposed.

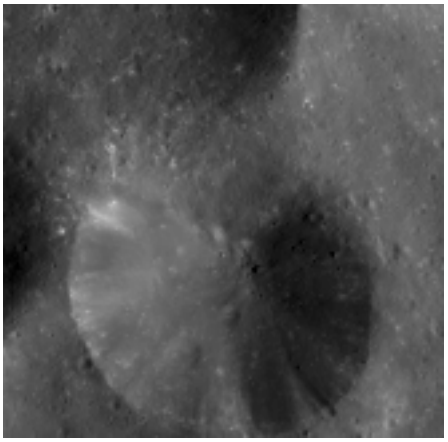
An accurate determination of Phoebe's density—a forthcoming result from the flyby—will help Cassini mission scientists understand how much of the little moon is comprised of ices.

This spectacular view was obtained at a distance of approximately 32,500 kilometers (20,200 miles). The image scale is approximately 190 meters (624 feet) per pixel. No enhancement was performed on this image.



Phoebe delivers on its promise to reveal new wonders to Cassini by showing probable evidence of an ice-rich body overlain with a thin layer of dark material. The sharply-defined crater at above center exhibits two or more layers of alternating bright and dark material. Imaging scientists on the Cassini mission have hypothesized that the layering might occur during the crater formation, when ejecta thrown out from the crater buries the pre-existing surface that was itself covered by a relatively thin, dark deposit over an icy mantle. The lower thin dark layer on the crater wall appears to define the base of the ejecta blanket. The ejecta blanket itself appears to be mantled by a more recent dark surface lag.

This image was obtained on June, 11 2004 at a distance of 13,377 kilometers (8,314 miles). The image scale is approximately 80 meters (263 feet) per pixel. No enhancement was performed on this image.



This eye-popping high-resolution image of Phoebe's pitted surface taken very near closest approach shows a 13-kilometer (8-mile) diameter crater with a debris-covered floor. Part of another crater of similar size is visible at left, as is part of a larger crater at top and many scattered smaller craters. The radial streaks in the crater are due to down slope movements of loose fragments from impact ejecta. Also seen are boulders ranging from about 50 to 300 meters (160 to 990 feet) in diameter. The building-sized rocks may have been excavated by large impacts, perhaps from some other region of Phoebe rather than the craters seen here. There is no visible evidence for layering of ice and dark material or a hardened crust in this region, as on other parts of this moon.

Some of the relatively bright spots are from small impacts that excavated bright material from beneath the dark surface. Images like this provide information about impact processes on Phoebe.

This image was obtained at a distance of 11,918 kilometers (7,407 miles). The image scale is approximately 18.5 meters (60.5 feet) per pixel. The illumination is from the right. No enhancement was performed on this image.

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NASA's Space Place

Space Weather

By Patrick Barry and Dr. Tony Phillips

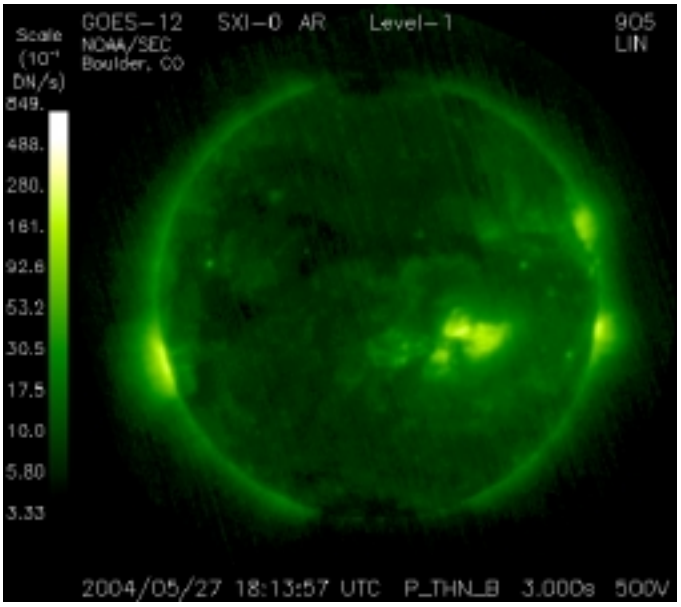
Radiation storms, 250 mile-per-second winds, charged particles raining down from magnetic tempests overhead—it sounds like the extreme weather of some alien world. But this bizarre weather happens right here at Earth.

Scientists call it "space weather." It occurs mostly within the gradual boundary between our atmosphere and interplanetary space, where the blast of particles and radiation streaming from the Sun plows into the protective bubble of Earth's magnetic field. But space weather can also descend to Earth's surface. Because the Earth's magnetic field envelops all of us, vibrations in this springy field caused by space weather reverberate in the room around you and within your body as much as at the edge of space far overhead.

In fact, one way to see these "geomagnetic storms" is to suspend a magnetized needle from a thin thread inside of a bottle. When solar storms buffet Earth's magnetic field, you'll see the needle move and swing. If you live at higher latitudes, you can see a more spectacular effect: the aurora borealis and the aurora australis. These colorful light shows happen when charged particles trapped in the outer bands of Earth's magnetic field get "shaken loose" and rain down on Earth's atmosphere.

And because a vibrating magnetic field will induce an electric current in a conductor, geomagnetic storms can have a less enjoyable effect: widespread power blackouts. Such a blackout happened in 1989 in Quebec, Canada, during a particularly strong geomagnetic storm. These storms can also induce currents in the metallic bodies of orbiting satellites, knocking the satellite out temporarily, and sometimes permanently.

Partly because of these adverse effects, scientists keep close tabs on the space weather forecast. The best way to do this is to watch the Sun. The NASA/ESA SOHO satellite and NOAA's fleet of GOES satellites keep a constant watch on the Sun's activity. If a "coronal hole"—where high-speed solar wind streams out from the Sun's surface—comes into view, it could mean that a strong gust of solar wind is on its way, along with the geomagnetic storms it will trigger. And an explosive ejection of hot plasma toward the Earth—called a "coronal mass ejection"—could mean danger for astronauts in orbit. The advancing front of ejected matter, moving much faster than the solar wind, will accelerate particles in its path to near the speed of light, spawning a radiation storm that can threaten astronauts' health.



This image shows the outer solar atmosphere, or corona, as viewed by the GOES 12 Solar X-ray Imager (SXI). It shows the plasma at 4.0 MK (million degrees Kelvin). Bright areas are associated with sunspots seen in white light images and may produce explosive events known as flares. Dark regions are coronal holes where the fastest solar wind originates. Image courtesy of the Space Environment Center/NOAA.

Look for coming articles for more about space weather and about NOAA's efforts to forecast these celestial storms. Meanwhile, read today's space weather forecast at http://www.sec.noaa.gov/. Kids can learn about the geostationary and orbits of the GOES satellites at

http://spaceplace.nasa.gov/en/kids/goes/goes_poes_orbits.shtml

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

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Astronomus

"Rittenhouse Alcove"

By Bob Popovich

A while back we had the opportunity to enjoy brunch in *Founders* Restaurant of the Hotel Atop the Bellevue. My seat gave me a direct view of a bronze statue of a man clad in colonial garb. He was set in a rather small, but lovely alcove painted cobalt blue and studded with golden stars. Intrigued more by the stars than the statue, I walked over and read the plaque at the statue's base: David Rittenhouse. OK, I thought. Some colonial Philadelphia guy who was known well enough at one time to have this statue and a lovely square in Center City named after him. But who was he? I thought to research him but like so many other things I think about, it just faded from my consciousness…for a while.

Several months later Betsy and I were having lunch at a restaurant overlooking the square and the name once again took center stage in my mind. I did some web surfing followed by much enjoyable reading. David Rittenhouse is an historical figure much to be admired. Working enthusiastically at many different tasks during his 64 years, he would become a civil engineer, surveyor of state borders, President of the Philosophical Society, Member of the Royal Society, Treasurer of Pennsylvania during the Revolution, staunch patriot, first director of the U.S. Mint and a scientist second only to Ben Franklin. A tinker at heart, he refined a collimating device for those pesky reflectors and developed an early diffraction grating as well. And best of all, he was a tireless observer with telescopes of his own making who was acknowledged as America's first world-class astronomer. You'd think we'd know him better. Let's meet him now…

David Rittenhouse was born in 1732 in Germantown, then a separate settlement from the growing city of Philadelphia. His family owned and operated a successful paper mill on the banks of the Wissahickon. Being the precocious child that he was, David learned to read, write and use numbers with little formal help. In and of itself this was quite an achievement. But David also gained access to a copy of Newton's *Principia Matematica* that he not only read but also understood well enough to become one of its chief proponents in a time when Newton's theories were being hotly debated. Becoming a clockmaker, he found himself tinkering with materials and designs in an effort to improve the accuracy of his timepieces. From this beginning, he learned how to make surveyor's tools. A logical extension of these skills would be telescope making. And make then he did. There is little doubt that David made one of the first, if not *the* first, telescope built in the New World.

There may be doubt about whether he built the first telescope in the Americas, but there is no doubt that he built the first orrery on this side of the pond. Not just one, but two magnificent versions. Orreries, as you may know, are named not for their inventor (a fellow named Rowley under the direction of celebrated mechanic and watchmaker George Graham) but rather for the patron of the first device, Charles Boyle, the Earl of Orrery.

Work began in the late 1760s, with one notable interruption for the observation of the transit of Venus June 3, 1769. This transit was eagerly anticipated by European astronomers because it would be the first one where observations could be made on both sides of the Atlantic (Edmund Halley's suggestion). Under the direction of Astronomer Royal**,** Nevil Maskelyne, the intent was a definitive determination of the

sun's parallax so that its distance from the Earth could be defined once and for all.

Three observatories were established in the colonies under the nominal leadership of the Provost of the College of Philadelphia (the University of Pennsylvania). The three were located on State House Square (behind Independence Hall!), Cape Henlopen and near Rittenhouse's farm in Norriton Township. The Norriton observatory would become a more elaborate structure after the Revolution and was, for the rest of Rittenhouse's life, the first and only permanent astronomical observatory in the new United States of America. How about that—Philadelphia as the astronomy capital of the new nation!

Returning to the transit preparations, the true astronomical leadership rested solely with Rittenhouse. Though the three observatories were little more than cabins with sliding roofs, they served their purpose. Under Rittenhouse's direction, the transit was observed and meticulous data recorded. Months would pass before data could be exchanged between the world's observatories but the final results made it worth the while. The calculations yielded a parallax of 8.805, equating to a mean distance of 93 million miles. David Rittenhouse was now counted among the world's premier astronomers.

This done, he turned his attention to constructing the orrery. Here is an excerpt from Rittenhouse's own description:

"This Machine is intended to have three faces, standing perpendicular to the horizon: that in the front to be four feet square, made of sheet-brass, curiously polished, silvered, and painted in proper places, and otherwise ornamented. From the centre arises an axis, to support a gilded brass ball, intended to represent the Sun. Round this ball move others, made of brass or ivory, to represent the Planets:

"They are to move in elliptical orbits, having the central ball in one focus; and their motions to be sometimes swifter, and sometimes slower, as nearly according to the true law of an equable description of areas as is possible, without too great a complication of wheel-work. The orbit of each Planet is likewise to be properly inclined to those of the others; and their Aphelia and Nodes justly placed; and their velocities so accurately adjusted, as not to differ sensibly from the tables of Astronomy in some thousands of years.

"For the greater beauty of the instrument, the balls representing the planets are to be of considerable bigness; but so contrived, that they may be taken off at pleasure, and others, much smaller, and fitter for some purposes, put in their places.

"When the Machine is put in motion, by the turning of a winch, there are three indexes which point out the hour of the day, the day of the month, and the year (according to the Julian account,) answering to that situation of the heavenly bodies which is then represented; and so continually, for a period of 5000 years, either forward or backward…"

When word got out about his orrery, both the College of Philadelphia and the College of New Jersey (Princeton) vied for the honor of being the first school to have the machine. Philadelphia ended up with the honor, Princeton followed. Here is the device as it stands in one of Penn's libraries:

Ah! So that's where the Hotel Atop the Bellevue got the idea for Rittenhouse Alcove!

What a shame that David Rittenhouse is not better remembered among the founders of our nation or among amateur astronomers. Next time you find yourself at Independence Hall, stand out in the square and imagine where the observatory might have stood. Or better yet, how about a David Rittenhouse field trip including the observatory site, viewing of the orrery at Penn, a visit to the Philosophical Society where most of his writings have their home and, of course, a meal at *Founders*.

As I said at the outset, the alcove in *Founders* Restaurant is rather small—much too small for David Rittenhouse.

Next Time: Where the Earth Meets The Sky

★ ★ ★ ★ ★

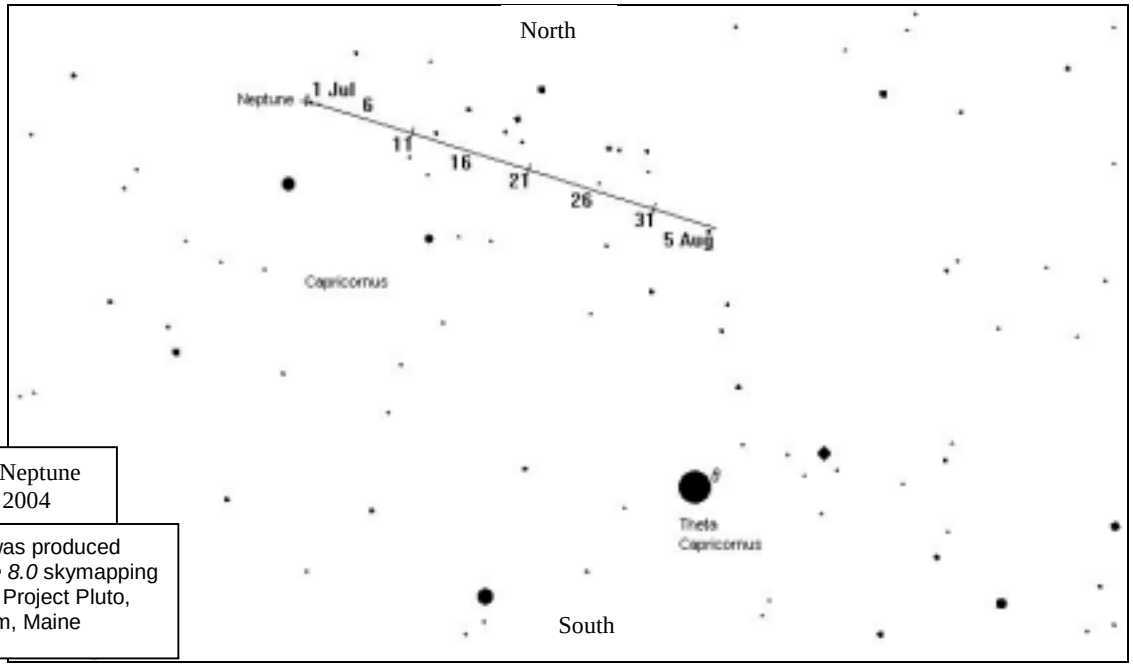
Flower & Cook Observatory News

On June 30, 2004 the University of Pennsylvania completed its sale of the F&C Observatory in Malvern to the Harveys. What this means for CCAS programs there has not been determined yet. Hopefully by next month's issue we will know more.

★ ★ ★ ★ ★

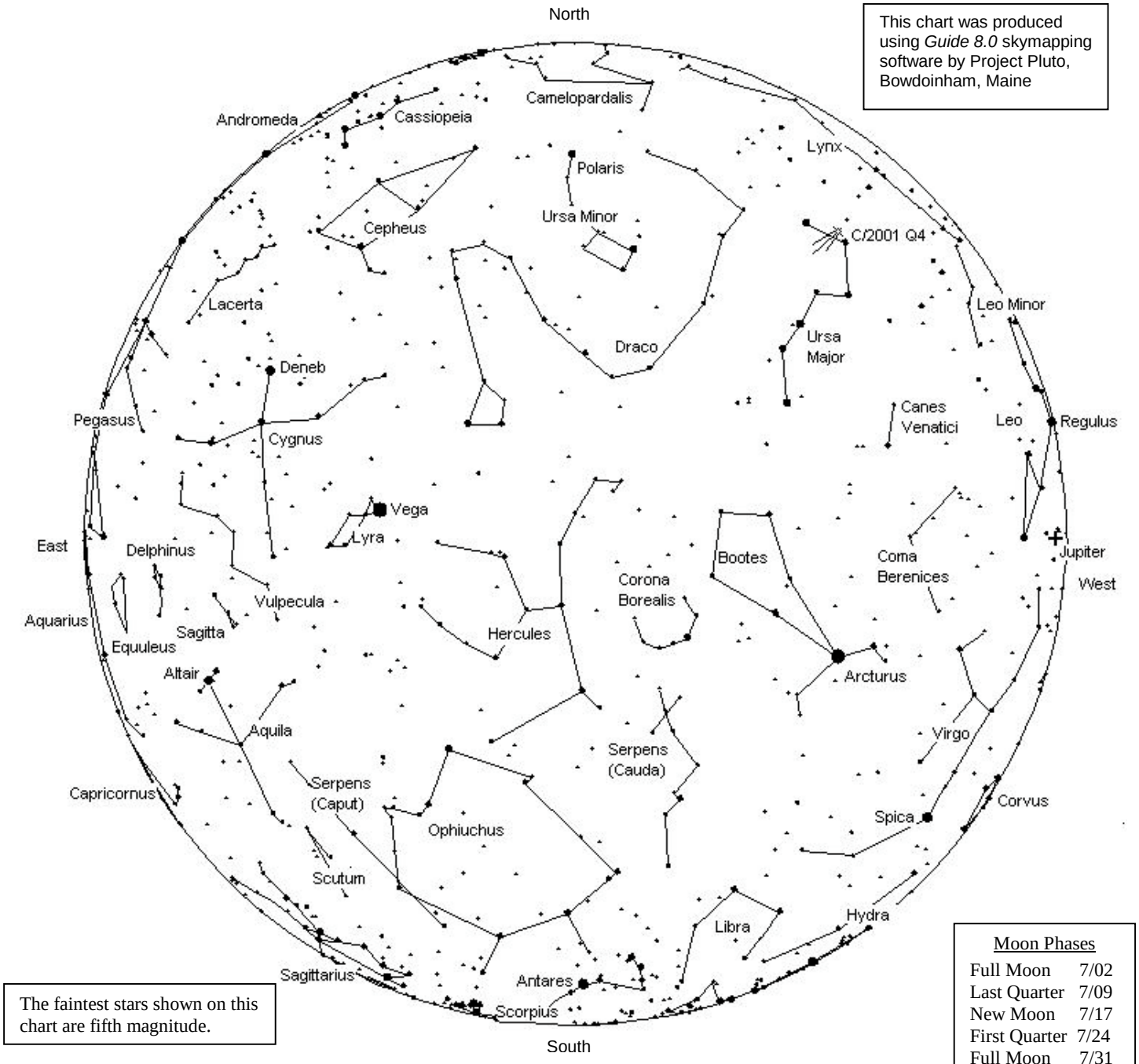
...AND THERE WAS GRAVITY.

Cartoon by Nicholas La Para



Position of Neptune during July 2004

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



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.

Moon Phases

Full Moon	7/02
Last Quarter	7/09
New Moon	7/17
First Quarter	7/24
Full Moon (Blue Moon)	7/31

The sky over Chester County

July 15, 2004 at 9:00 p.m. EDT

The Planets

Mercury is in the evening sky all month, low in the west after sunset, setting about an hour after the Sun.

Venus is in the morning sky. You can't miss it, it's the brightest "star" in the sky before sunrise.

Mars is in the evening sky, moving closer to Mercury. It's a small dot in telescopes. On July 10, Mars may be close enough to Mercury to see both planets in the telescope at the same time.

Jupiter is now high in the west at dusk, in Leo. You can get good telescopic views of Jupiter as soon as it's dark.

Saturn is to close to the Sun to see this month.

Uranus is high enough in the southeast to find by late evening (midnight or later).

Neptune is also high in the southeast by the early morning hours..

Pluto is high in the evening sky, and is now high enough for telescopic viewing. You'll need good charts and patience to find Pluto, as well as at least an 8" telescope. Probably at least 10".

July 27: Delta Aquarid meteor shower peaks in the early morning hours.

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 newsletter@ccas.us

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:

newsletter@ccas.us

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)

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: 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

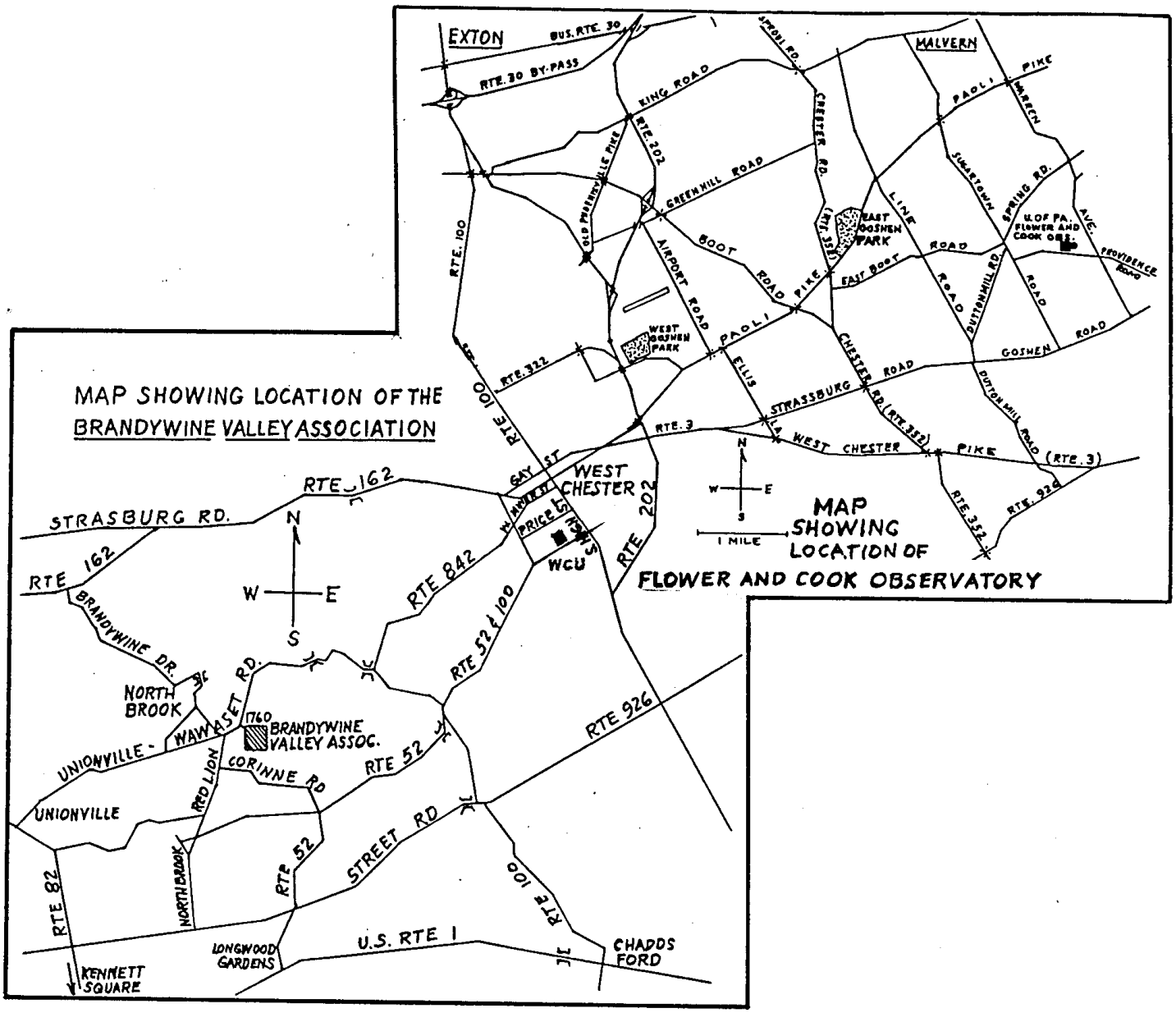
Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$32.95** which is much less than the newsstand price of $66.00, and also cheaper than individual subscriptions ($42.95)! Make **sure** you make out the check to the **Chester County Astronomical Society** (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

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

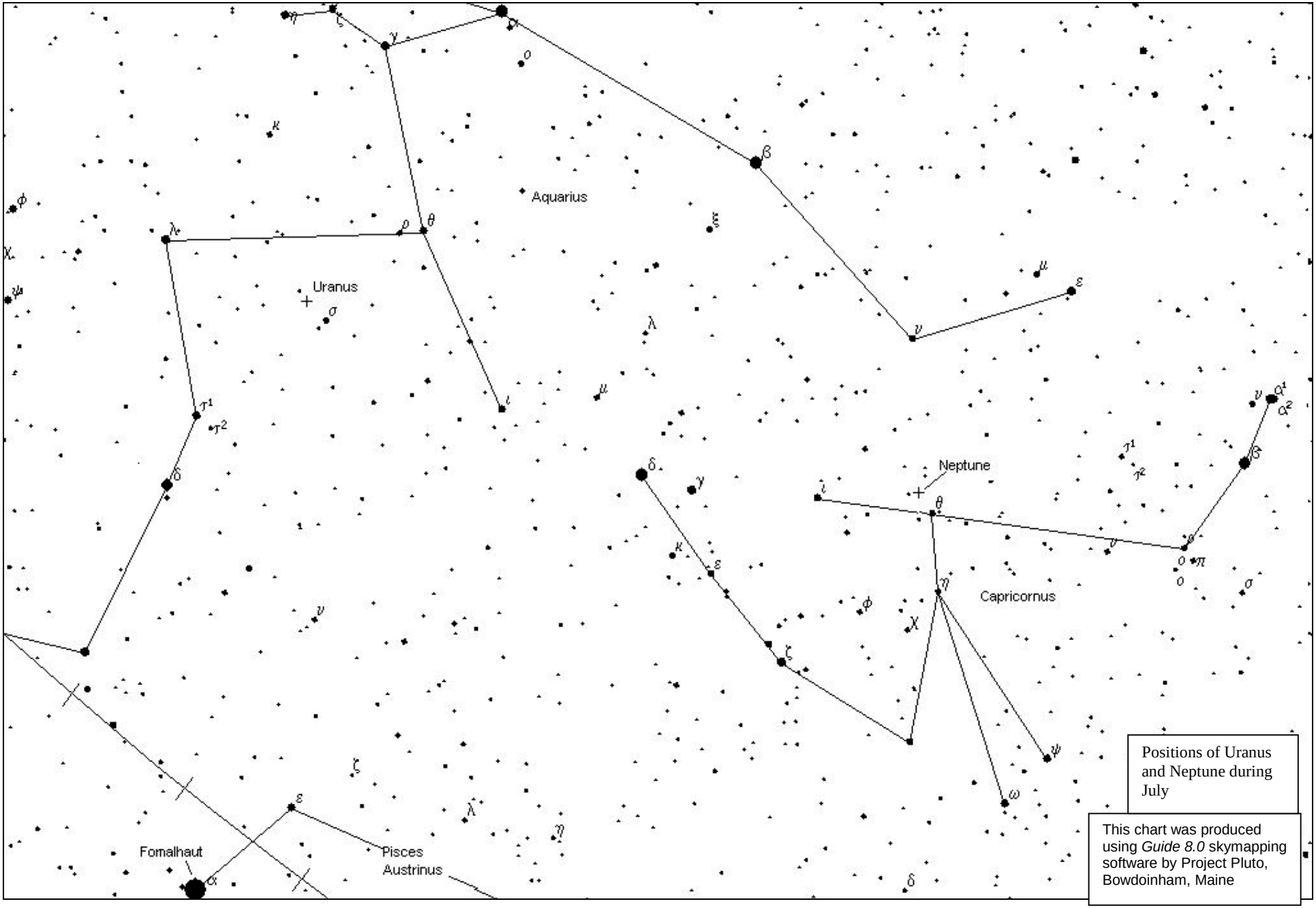
http://www.ccas.us/

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).


Aquarius
Uranus
Neptune
Capricornus
Fomalhaut
Pisces
Austrinus
Positions of Uranus and Neptune during July
This chart was produced using *Guide 8.0* skymapping software by Project Pluto, Bowdoinham, Maine