Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

SEPTEMBER 2004
(VOLUME 12, NO. 9)
Visit our website at www.ccas.us

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6 Last Quarter Moon

9 Meeting of CCAS Constellation Hunter Club. 7:00 p.m. EDT; see page 3 for details.

10/11 CCAS Observing session at Myrick Conservation Center (BVA) starts at sunset. Map with directions is on page 10.

14 New Moon

CCAS Meeting 7:30 p.m. EDT, "Observing at Cherry Springs State Park in PA". Details on page 3.

20 Backyard Oibserving class meets at West Goshen Township Building. Class starts at 7:00 p.m. EDT. Details on page 3.

20-21 See asteroid 4179 Toutatis fly by Earth! More details on page 2.

21 First Quarter Moon

22 Autumnal Equinox: Sun crosses the Celestial Equator at 12:30 p.m. EDT.

28 Full Moon

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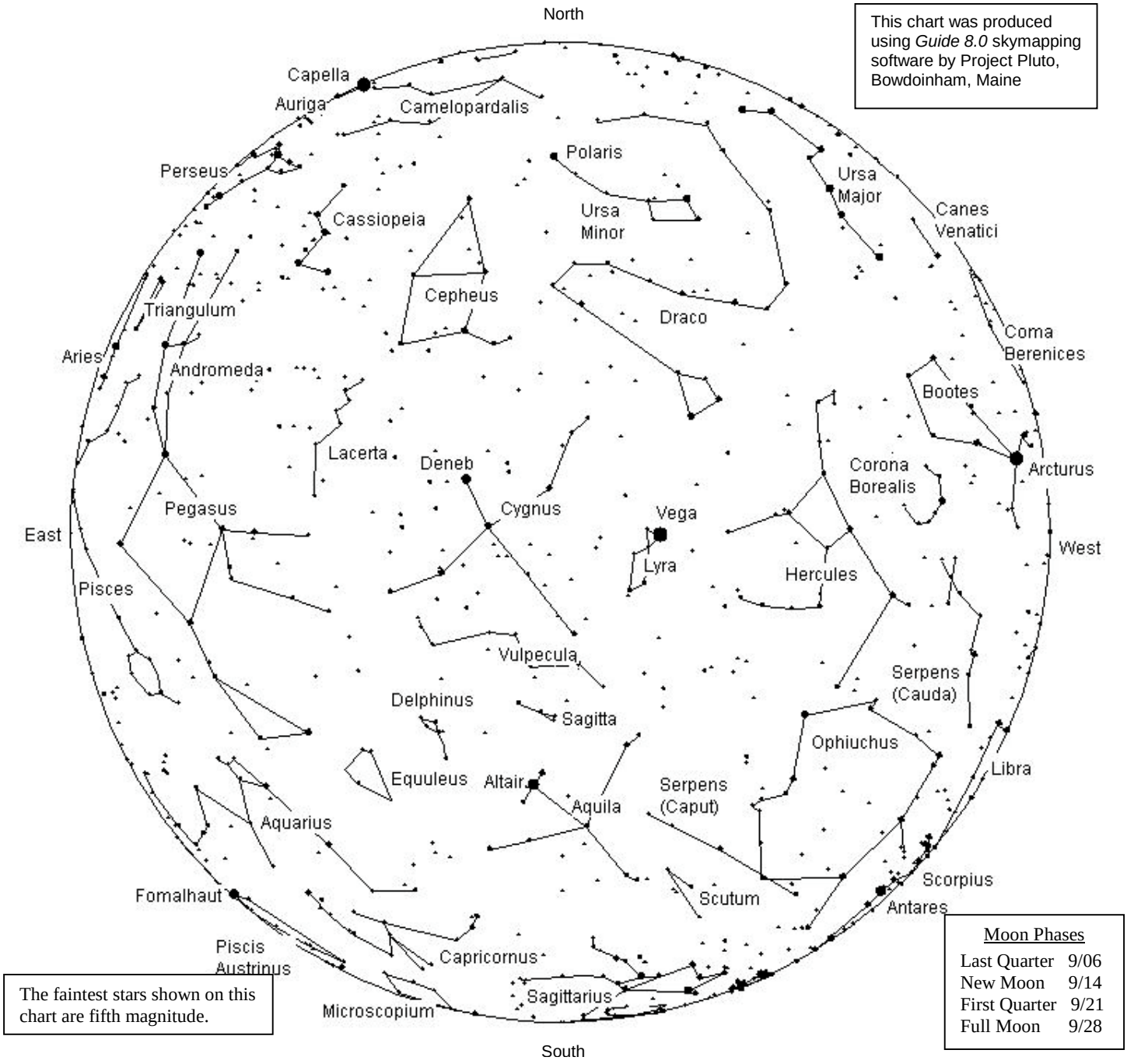
Become a certified

Constellation Hunter!

For more information see page 3.



The sky over Chester County

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

The Planets

Mercury is in the morning sky in September; best time to look for it is around September 9.

Venus is in the morning sky, rising as much as four hours before the Sun. You can't miss it; it's the brightest "star" in the sky after 2:30 a.m. or so when it rises.

Mars is behind the Sun for most of the month, and hence not visible in September.

Jupiter is also behind the Sun this month.

Saturn is in the morning sky, close to Venus as the month begins.

Uranus is in the evening sky, in Aquarius. Uranus is well placed for telescopic viewing in the late evening hours.

Neptune is also in the evening sky, in Capricornus.

Pluto is in the evening sky, high in the south at sunset in Ophiuchus. You'll need at least an 8-inch telescope, good star charts, dark skies, and patience to find Pluto.

Sept. 20-25: Asteroid 4179 Toutatis flies by the Earth. Visible in telescopes at magnitude 10.7-9.7, on these dates it will be moving through Capricornus at a rate of 3-10 arcseconds per minute. You can actually see it move by watching a minute or two. Finder chart on page 12.

CCAS September Meeting

DATE:	**Tuesday September 14, 2003**
TIME:	7:30 p.m. EDT
PLACE:	Department of Geology and Astronomy Lecture Room (Room 113 – Boucher Building) West Chester University
LOCATION:	South Church Street West Chester, PA

A map of the campus showing the location is on page 11.

At the September 14 CCAS meeting, Steve Limeburner will be giving an illustrated presentation about his experiences observing at Cherry Springs State Park (CSSP), Pennsylvania's first officially designated "Dark-Sky Park", and location of the annual "Black Forest Star Party" (Sept.10-12, 2004). The park is located in northcentral Pennsylvania near the New York border, and is reputed to be one of the darkest observing sites ("Stargazer's Paradise") on the east coast. Although registration is closed for this years event on Sept. 10-12, the park currently offers FREE observing and camping for astronomers anytime weather permits.

In addition to attending two Black Forest events at CSSP with fellow CCAS members Ed Lurcott and Pete LaFrance, Steve recently visited CSSP for a week, and had the opportunity of observing with astronomers from Erie, Harrisburg, Buffalo, and Rochester, as well as with some visitors from our area. Among the telescopes Steve observed with was "Northwestern Pennsylvania's Largest Portable Telescope", a 30-inch behemoth weighing in at approximately 300 lbs! The telescope's owner was an astronomy teacher and was very generous in sharing the eyepiece with everyone, especially visitors at Saturday Night's "Stars N Parks" Program, a FREE educational program open to the public.

In addition to describing CSSP's facilities and policies, Steve will discuss things to do during the day (besides sleep!), and some accomodations he used within 12 miles from the observing field (places to eat and/or stay overnight). He will also illustrate some of the most popular telescopic, binocular, and naked eye objects to observe there, including color astrophotography done by other observers on site at CSSP. It's a long drive to CSSP, but well worth the trip!! If you have visited Cherry Springs, you are encouraged to share your experience at this meeting.

For October's meeting: Dr. Jeff Goldader, a former staffer at the Space Telescope Science Institute (which runs the Hubble Space Telescope), will give an illustrated talk about the Hubble.

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Constellation Hunter Club to Meet

The Constellation Hunter Club will have a meeting at Kathy Buczynski's house just outside West Chester on Thursday September 9 at 7:00 p.m. EDT. We're holding the meeting inside so we're not dependent on the weather like we were last month when we tried for the Observing Session. This way we can definitely meet and talk things over so people can get started whenever it's clear. Many thanks to Kathy for hosting this meeting at her home.

The Constellation Hunter "Club" is simply any CCAS member who wishes to work on the Astronomical League's Constellation Hunter Award. At the meeting, we can cover any questions people have about working on the award; members can share tips and experiences, and encourage one another to keep looking up! Copies of the program description will be available at the meeting, or you can get your own copy from the A.L. website at www.astroleague.org . You may want to bring along a dim or red flashlight, some paper and something firm to write/draw on (you have to keep a logbook), a pencil with eraser, and a planisphere or monthly star chart (like the one on page 2). No telescope is needed—this is a "naked-eye" observing program.

Directions: From Rte. 202, take the Paoli Pike exit.

Turn left onto Paoli Pike (coming from north or south on 202).

At the first traffic light, turn left onto Five Points Road (West Goshen Township Building is on left).

At the next traffic light, turn right onto Fern Hill Road (West Goshen Community Park is on left).

Turn at the first right, into development, onto Oxford Road.

Take the first right onto Afton Way. At the end of the cul-de-sac, is 106 Afton Way, brown cedar siding, red truck in drive.

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CCAS September Observing Session

The next CCAS Observing Session will be at the Brandywine Valley Association's Myrick Conservancy Center (see map on page 10) on Friday September 10, 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 September 11, 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 telescope. CCAS Observing Sessions are free of charge.

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CCAS Backyard Observing Class Starting

The fall class, *Backyard Observing*, will concentrate on actual observing: how to find things in the night sky, what's there to see, etc. Each class session will center on some specific constellations visible that night, as well as lunar, solar, and planetary observing. The class will consist of 7 one-hour sessions, on alternate Mondays, starting with September 20. This is the tentative schedule:

Sept. 20	Lyra and Cygnus
Oct. 4	Pegasus and Andromeda
Oct. 18	Lunar and Solar Observing; the Zodiac
Nov. 1	Cassiopeia and Cepheus
Nov. 15	Perseus
Nov. 29	Taurus
Dec. 13	

All classes are scheduled to be held at the West Goshen Township Building at the intersection of Paoli Pike and Five Points Road, just outside West Chester. Classes will begin at 7:00 p.m. (ET). Registration will be limited to 40 students, due to the classroom size.

Cost is $20.00 per person, $30.00 per family (with the same mailing address), and is FREE for current CCAS members. There will be a drawing at the last class for a copy of the excellent beginner's book *Turn Left At Orion*. All attendees will also receive a copy of Sky Publishing's publication *Skywatch 2005*.

If you would like to reserve space in this class, please contact CCAS Education Chair Kathy Buczynski at 610-436-0821, or via e-mail at kbuczynski@aol.com

If you would like to assist with this effort, please contact Kathy.

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Help Us To Keep in Touch…And Save Money, Too!

by Bob Popovich

Receiving CCAS correspondence by email allows you to have the latest award-winning newsletter and to be informed about special activities—all in the twinkling of an eye! You also get to see the newsletter (and the pictures therein) in full color. It also saves all of us the cost of postage and printing. If you have email and are not now receiving the newsletter in this manner, please send a note to Bob Popovich at b2n2@aol.com.

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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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Treasurer's Report by Bob Popovich

July 2004 Financial Summary

Beginning Balance	$1,199
Deposits	188
Disbursements	93
Ending Balance	$1,295

Membership Renewals Due

09/2004:	Compton
	Furman
	Schmitt
10/2004:	Anderson
	Hogate
	Liberati
	Smith
	Volcheck
11/2004:	Athens
	Buczynski
	Hepler
	Okpaku
	Zimmer

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Calendar Notes

September 9, 2004 (Thursday)	Constellation Hunter Club meeting Location: Kathy Buczynski's home 7:00 p.m. EDT
September 10/11, 2004 (Friday/Saturday)	CCAS Observing Session Location: BVA sunset
September 14, 2004 (Tuesday)	CCAS Meeting Location: West Chester University 7:30 p.m. EDT
September 20, 2004 (Monday)	Backyard Observing class Location: West Goshen Twp. Bldg. 7:00 p.m. EDT
October 4, 2004 (Monday)	Backyard Observing class Location: West Goshen Twp. Bldg. 7:00 p.m. EDT
October 12, 2004 (Tuesday)	CCAS Meeting Location: West Chester University 7:30 p.m. EDT
October 18, 2004 (Monday)	Backyard Observing class Location: West Goshen Twp. Bldg. 7:00 p.m. EDT
October 27, 2004 (Wednesday)	**Total Elipse of the Moon** Completely visible from all of Chester County Starts at 9:14 p.m. EDT
November 1, 2004 (Monday)	Backyard Observing class Location: West Goshen Twp. Bldg. 7:00 p.m. EST
November 9, 2004 (Tuesday)	CCAS Meeting Location: West Chester University 7:30 p.m. EST
November 15, 2004 (Monday)	Backyard Observing class Location: West Goshen Twp. Bldg. 7:00 p.m. EST
November 29, 2004 (Monday)	Backyard Observing class Location: West Goshen Twp. Bldg. 7:00 p.m. EST
December 13, 2004 (Monday)	Backyard Observing class Location: West Goshen Twp. Bldg. 7:00 p.m. EST

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Newsletter Deadlines

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

Issue	Deadline
October 2004	09/27/2004
November 2004	10/27/2004
December 2004	11/26/2004

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Resisting Retirement: Earth Observing 1

By Patrick L. Barry

The Hubble Space Telescope isn't the only satellite that scientists have fought to keep alive beyond its scheduled retirement. Scientists also went to bat for a satellite called EO-1, short for Earth Observing 1, back in 2001 when the end of its one-year mission was looming.

The motivation in both cases was similar: like Hubble, EO-1 represents a "quantum leap" over its predecessors. Losing EO-1 would have been a great loss for the scientific community. EO-1, which gazes back at Earth's surface instead of out at the stars, provides about 20 times more detail about the spectrum of light reflecting from the landscape below than other Earth-watching satellites, such as Landsat 7.

These images, made from EO-1 data, are of La Plata, Maryland, before and after a tornado swept through the town on May 1, 2002.

That spectral information is important, because as sunlight reflects off forests and crops and waterways, the caldron of chemicals within these objects leave their "fingerprints" in the light's spectrum of colors. Analyzing that spectrum is a powerful way for scientists to study the environment and assess its health, whether it's measuring nitrate fertilizers polluting a lake or a calcium deficiency stressing acres of wheat fields.

Landsat 7 measures only 8 points along the spectrum; in contrast, EO-1 measures 220 points (with wavelengths between 0.4 to 2.5 µm) thanks to the prototype Hyperion "hyperspectral" sensor onboard. That means that EO-1 can detect much more subtle fingerprints than Landsat and reveal a more complete picture of the chemicals that comprise the environment.

As a NASA New Millennium Program mission, the original purpose for EO-1 was just to "test drive" this next-generation Hyperion sensor and other cutting-edge satellite technologies, so that future satellites could use the technologies without the risk of flying them for the first time. It was never meant to be a science data-gathering mission.

But it has become one. "We were the only hyperspectral sensor flying in space, so it was advantageous to keep us up there," says Dr. Thomas Brakke, EO-1 Mission Deputy Scientist at NASA's Goddard Space Flight Center.

Now, almost three years after it was scheduled to be de-orbited, EO-1 is still collecting valuable data about our planet's natural ecosystems. Scientists have begun more than a dozen environmental studies to take advantage of EO-1's extended mission. Topics range from mapping harmful invasive plant species to documenting the impacts of cattle grazing in Argentina to monitoring bush fires in Australia.

Not bad for a satellite in retirement.

Read about EO1 at eo1.gsfc.nasa.gov. See sample EO-1 images at http://eo1.usgs.gov/samples.php. Budding young astronomers can learn more at spaceplace.nasa.gov/eo1_1.htm.

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

"Jungle Stargazing"

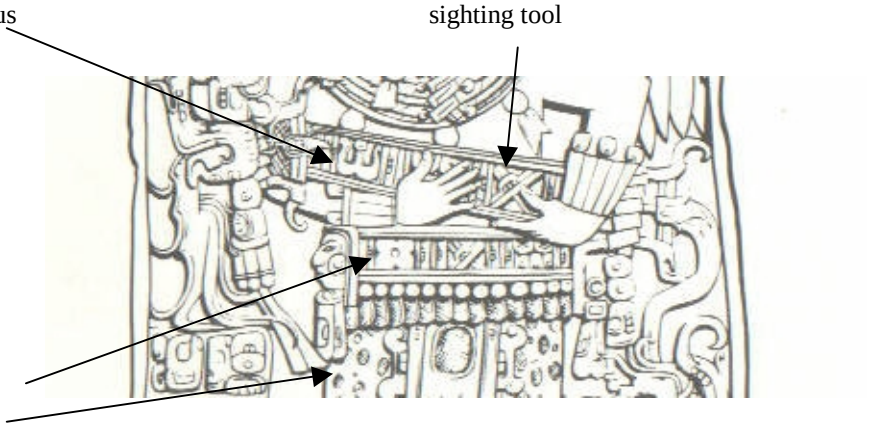
By Bob Popovich

Heading southwest from Chester County takes us through varied topography, climatic zones and histories. The farmlands of our home yield to the piedmont of the Appalachians. The Union gives way to the Confederacy as we cross the Mason Dixon. Running along Skyline Drive through the Shenandoah we eventually emerge in the coastal plain of the Gulf of Mexico. Then, as we hug the coast through (the Republic of) Texas and into Mexico we gradually come 'round to the east, eventually arriving at a point where we can turn north to the Yucatan or south to Guatemala. Either direction would deliver us to the sultry, dense jungles of Central America. Here, too, we'd find both mountains and coastal plains but rather than oak and white tail deer, we'd be surrounded by palms and iguanas. And by centuries of Mayan history. Today, these people find themselves a beleaguered "minority" in both Mexico and Guatemala. But a millennium ago they were riding high as a mighty power in the region. A power that rested not solely on their considerable military might, but also on the body of knowledge they had assembled—they had a written language (using hieroglyphs), a calendar (accurate to within 1 day per 500 years), a number system (including zero) and extensive records of observational astronomy. If you will, let's spend some time on these early astronomers of Mesoamerica.

Religion was a central social and cultural feature of the Maya. And astronomy was essential to that religion as they wove together Earthly control with a celestial mandate. The high priest was called "He of the Sun" and a major portion of his duties involved the making and recording of astronomical observations—in particular the sun, the moon and Venus.

Carved in stone at a site in Guatemala is this stella of a high priest:

Examining the detail of his scepter and skirt we see some symbols of his cosmic connection:

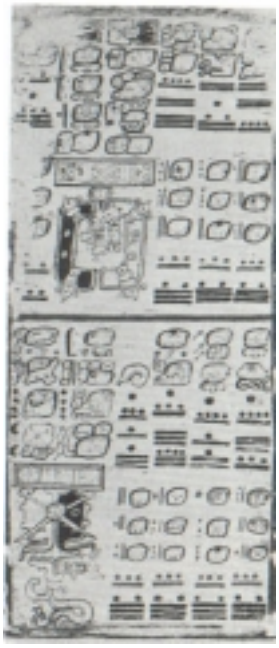


And here is a detail of a carving showing a member of the temple using the sighting tool to observe the position of some celestial object. (Let's hope he wasn't looking directly at the sun!)

Understanding the motions of celestial bodies afforded Mayan priests not only control over the common people, but also gave their jungle observing a sense of being sacred. Coupled with patience over many years, they were able to accurately assemble data on eclipses and the rising & setting of the moon, the sun and Venus. All these were dutifully recorded in books, which tragically, except for four volumes, were destroyed by the Conquistadors.

Written on pounded-out tree bark with pages joined in accordion fashion, the works were painted in four colors. Somehow, three of the four surviving volumes found their way to Dresden, Germany—becoming known as the Dresden Codex. These books detail much knowledge about Mayan observational astronomy. We can only mourn the loss of what's been lost. They recorded variations in lunar

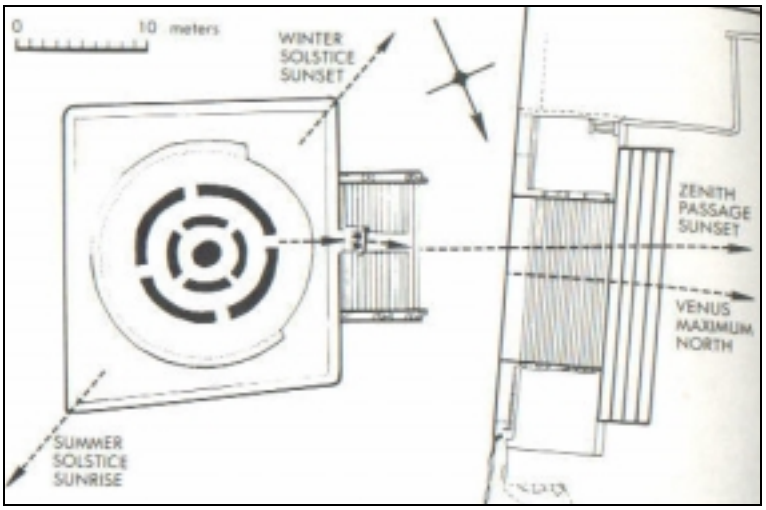
positions over a period of 450 lunations. The resulting eclipse predictions are of amazing accuracy. While a study of the hieroglyphs is beyond the scope of our little journey, it's still fascinating to see this page from the table of lunar eclipse data:



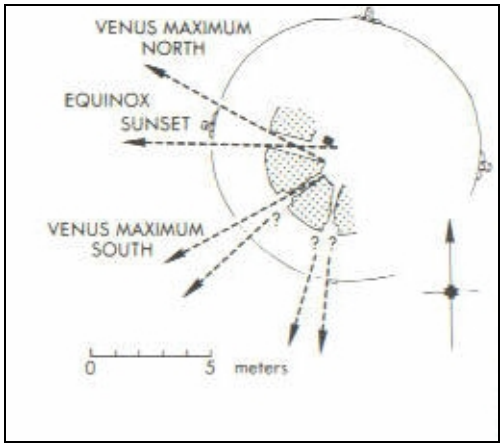
So important to Mayan culture was the tie between observing and recording of the motions of these critical celestial bodies, that they actually constructed buildings whose layout seems odd when compared to surrounded structures—but that's only if you look at them without thinking like an astronomer.

Take for instance the structure shown below. The tower depicted in this illustration (as it looked 1,000 years ago) sits on an oddly shaped plaza. Furthermore, the tower stairs and the plaza stairs are not aligned.

But seen from above it makes astronomical sense:



And if we could venture up into the tower (which stands in partial ruin today), the alignment of some of its windows gives further evidence to the importance of observing celestial objects:



Can you think of an observatory in Europe at this same time in history? Yes, they were simple in their approach and limited in their scope, but the Maya were patient and accurate to a fault. And when it comes to traits that define good astronomy, patience and accuracy must surely head the list.

In addition to this dedication to observing, the Maya also felt the need to display the sacred connection between Earth and sky through the symbolism of color. For example, the columns of the tower are painted red (the color of the sky at sunrise and sunset) and black (the color of the night sky—the REAL color of the night sky). These two colors are also integral to the Dresden Codex as are yellow (the sun) and blue (the daytime sky).

Patience and a sacred reverence for the heavens. Things to take to heart the next time I observe—even if it's not in the jungle…

Next Time: A Foxy Little Constellation

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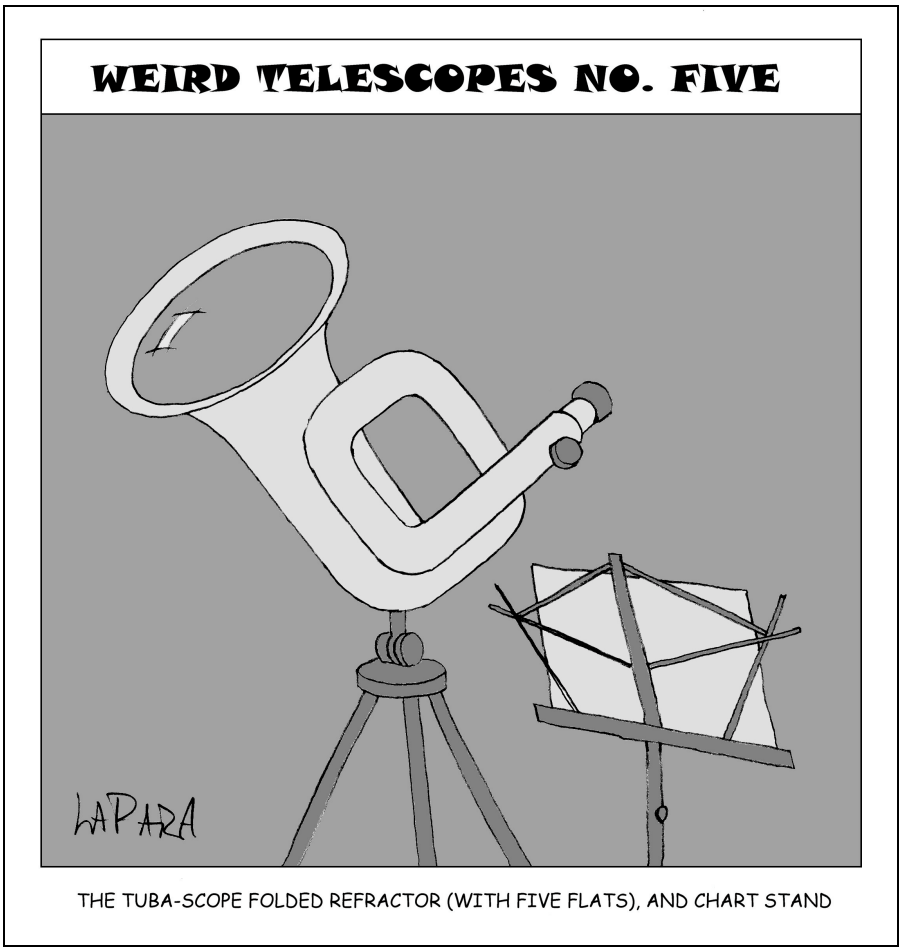


Cartoon by Nicholas La Para

CCAS Information Directory

CCAS Lending Telescopes

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

CCAS Lending Library

Contact our Librarian, 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

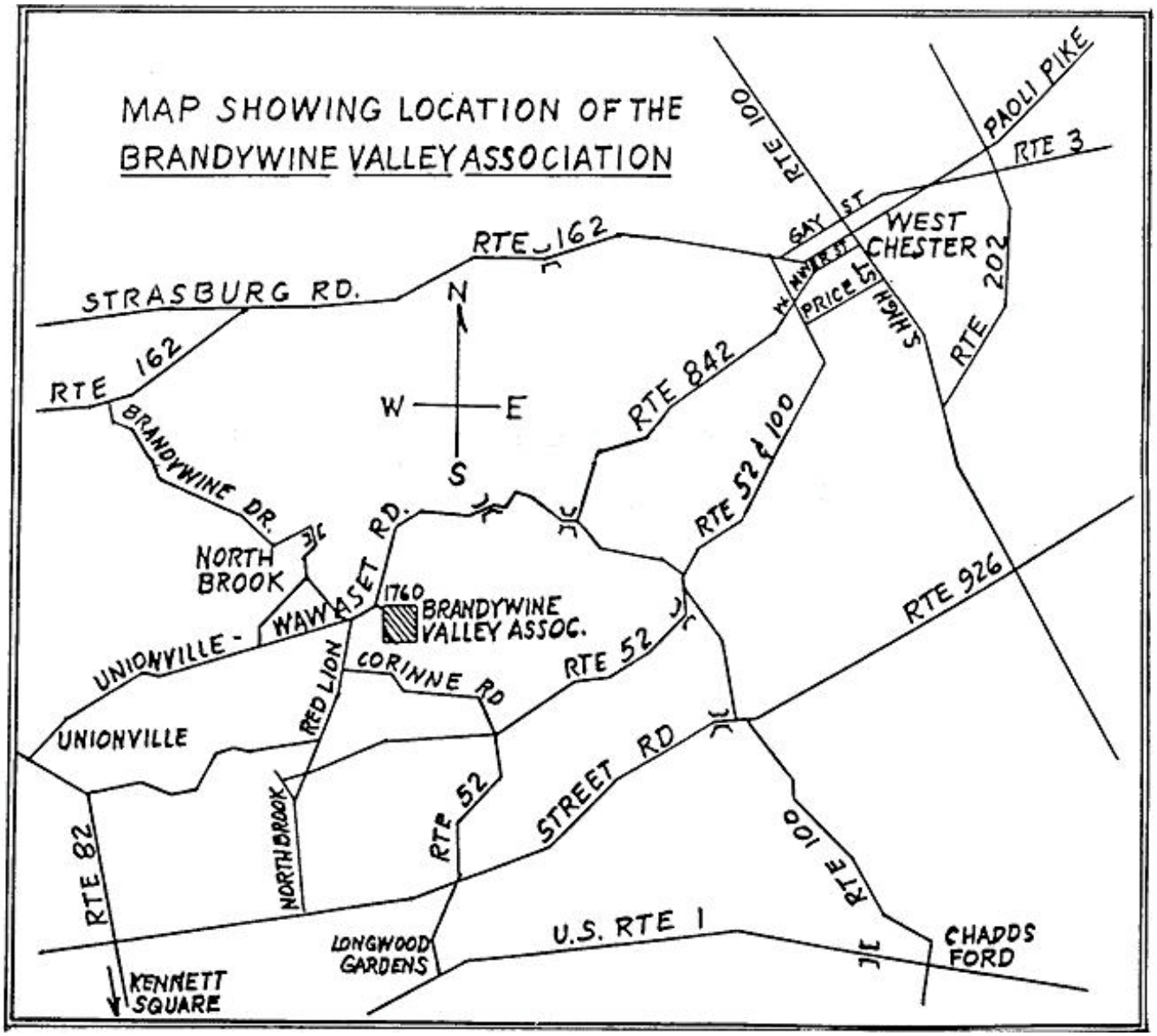
Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$32.95** which is much less than the newsstand price of $66.00, and also cheaper than individual subscriptions ($42.95)! Make **sure** you make out the check to the **Chester County Astronomical Society**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

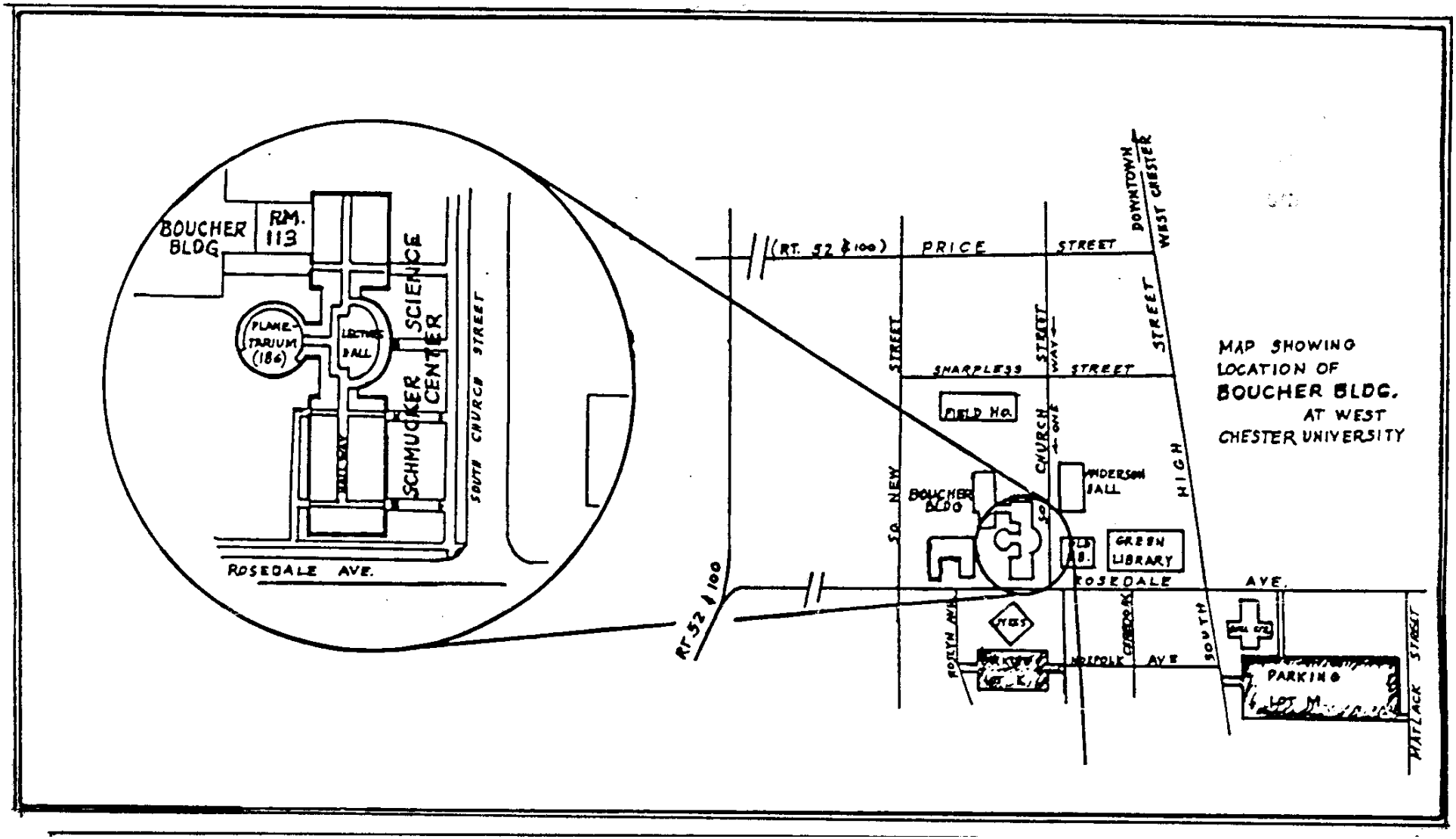
http://www.ccas.us/

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**

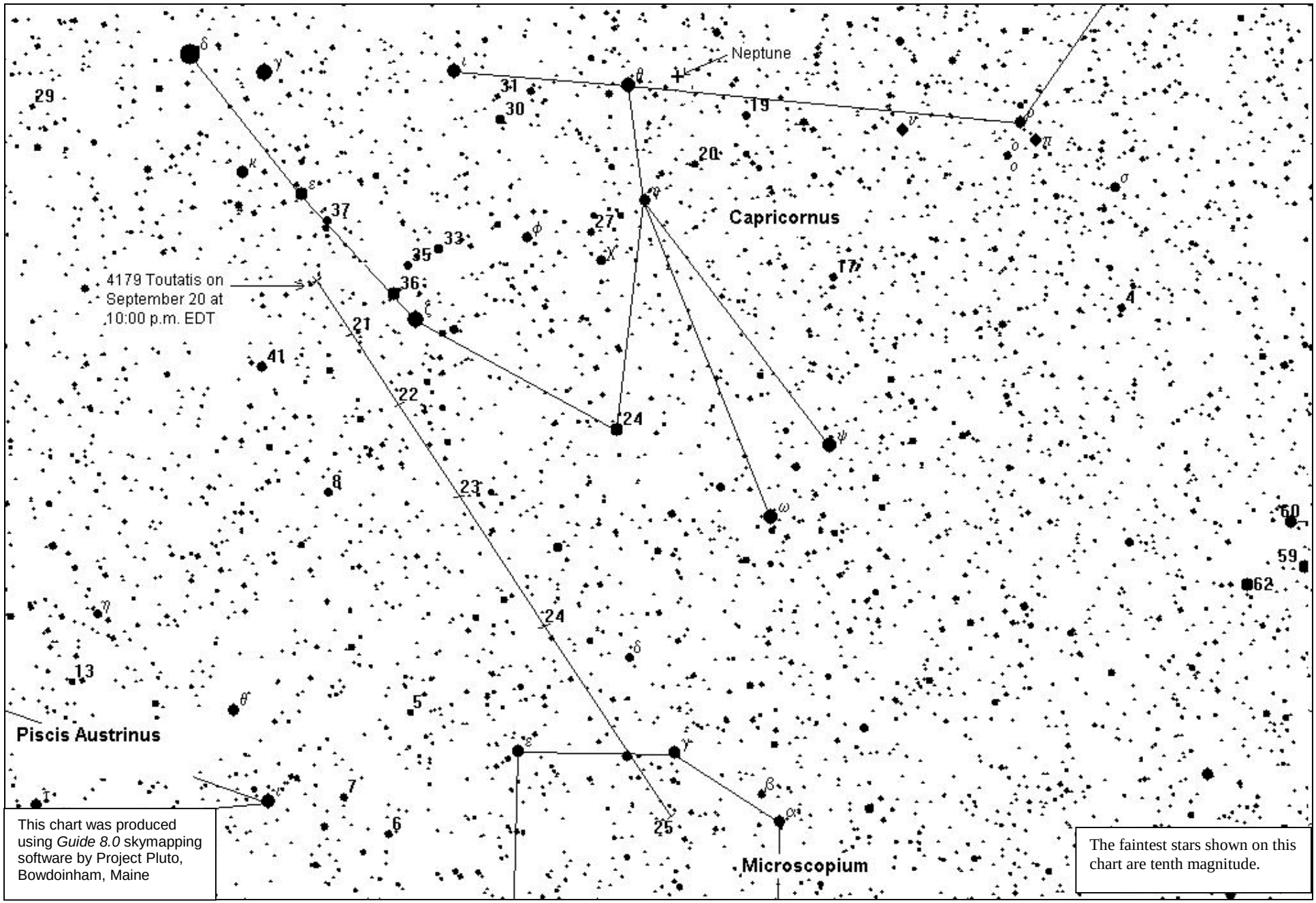


To get to the Myrick Conservation Center of the Brandywine Valley Association from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles.

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).



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.



Position of Toutatis at 10:00 p.m. EDT on the nights of September 20-25 (each labeled tickmark shows position that day at 10:00).