Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

JULY 2008
(VOLUME 16, NO. 7)
Visit our website at www.ccas.us

In This Issue

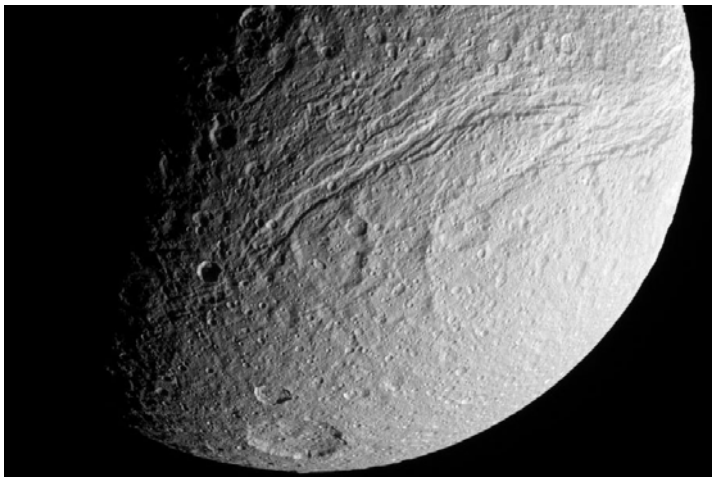
CCAS Summer Schedule

July 5 — Observing Session at BVA

August 1/2 —Observing Session at BVA

Celebrate Independence Day in style!

Stargaze!



Ithaca Chasma: The Great Rift on Saturn's Tethys
Credit: Cassini Imaging Team, SSI, JPL, ESA, NASA

from Astronomy Picture of the Day (APOD)

http://antwrp.gsfc.nasa.gov/apod/astropix.html

Errata

The June 2008 issue of *Observations* had an article entitled "Astronomy Day at Hoopes Park". The article was credited to Kathy Buczynski. This was a mistake on my part.

The article "Astronomy Day at Hoopes Park" was written by Don Knabb, who also supplied the photographs.

I apologize to the members, and especially to Don and Kathy, for this mix-up.

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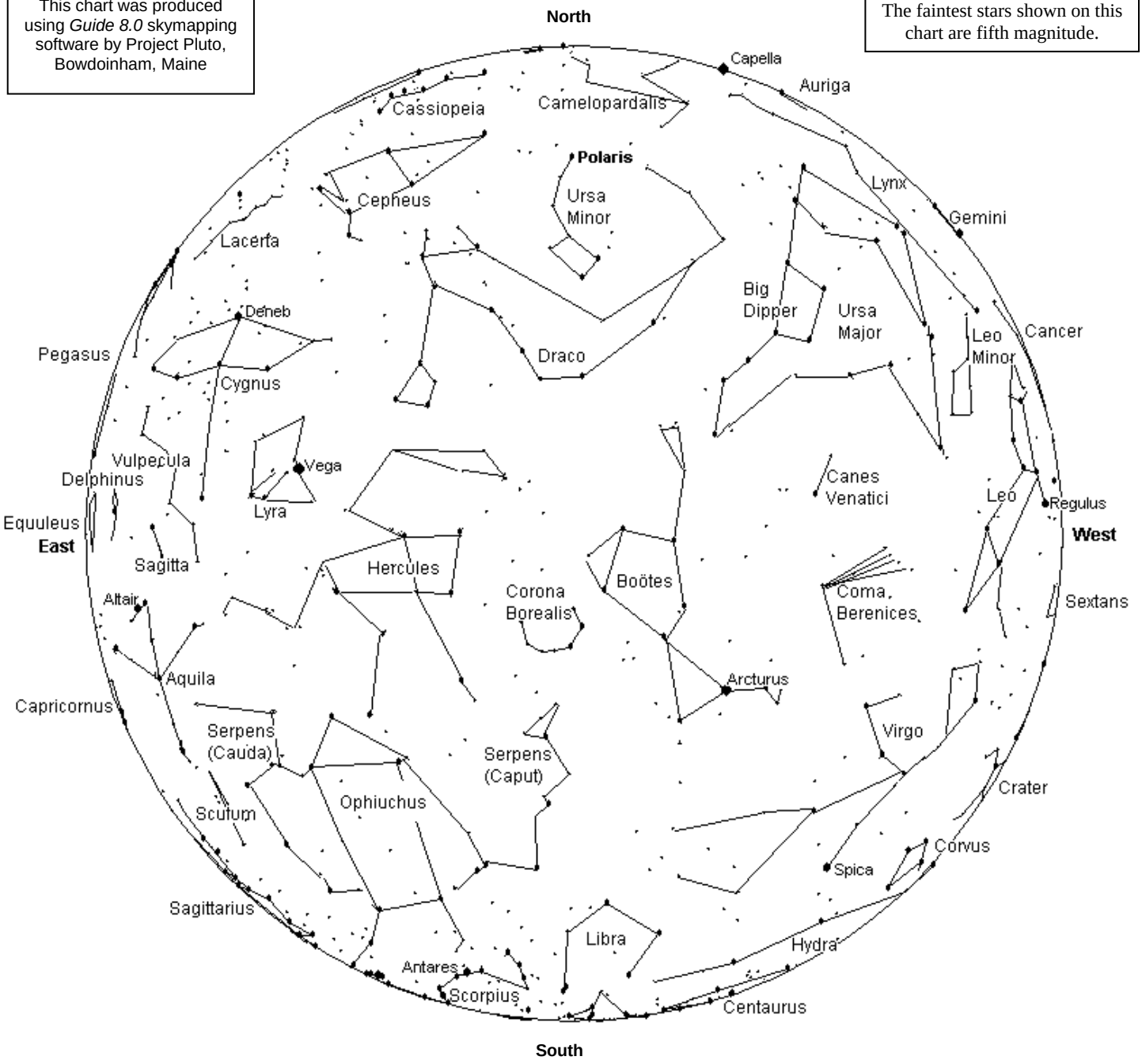
This chart was produced using *Guide 8.0* skymapping software by Project Pluto, Bowdoinham, Maine

The faintest stars shown on this chart are fifth magnitude.



The sky over Chester County

July 15, 2008 at 9:00 p.m. EDT

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

Date	Sunrise	Sunset
7/1	5:38 a.m.	8:36 p.m. EDT
7/15	5:47 a.m.	8:31 p.m. EDT
7/30	5:00 a.m.	8:19 p.m. EDT

Moon Phases	
New Moon	7/02
First Quarter	7/10
Full Moon	7/18
Last Quarter	7/25

July Observing Highlights

by Don Knabb, CCAS Observing Chair

July 2	New Moon, 10:19 p.m.
July 5	The crescent Moon, Mars, Saturn and Regulus are aligned in the evening sky
July 9	Jupiter is at opposition to the Sun and is visible all night
July 10	First quarter Moon, 12:35 a.m.
July 18	Full Moon, 3:59 a.m., the Full Buck Moon or Full Thunder Moon.
July 24-31	The Delta Aquarid meteor shower is strongest
July 25	Last quarter Moon, 2:42 p.m.

The Planets: July is an incredible month for planet viewing! Just before dawn you can see Mercury early in the month while late in the month the next planet from the Sun, Venus, just becomes visible in the glow after sunset. As the light fades you will find Mars and Saturn in the far west and bright Jupiter rising in the east. It doesn't get much better than this for planet viewing, so enjoy the show!

Mercury: Get up about an hour before the Sun early in July and look for Mercury just above the east-northeastern horizon.

Venus: Our sister planet becomes the "evening star" late in July as it comes around from behind the Sun, catching up to us in our race around the big glowing ball of gas at the center of our solar system. It will get higher in the sky and brighten considerably as summer and fall progress.

Mars: Enjoy tiny Mars before it disappears below the western horizon. A special event occurs on July 5th when the crescent Moon, Regulus in Leo, Mars and Saturn line up in the evening sky about an hour after sunset. This will be a beautiful arrangement, so don't miss it! Then on July 10th Mars and Saturn are very close in the evening sky.

Jupiter: The King of Planets is in wonderful viewing position during July, being visible all night. It is at opposition from the Sun on July 9, so it rises around sunset and sets around sunrise. We'll have a few months to enjoy this bright planet but during July we have the best view of the year. Jupiter stays low in the sky, but around midnight is when it is highest above the horizon.

Saturn: The events mentioned in the Mars section above are the highlights of the month for Saturn. Enjoy the ringed planet before it too fades into the glow of the sunset at the end of the month.

Uranus and Neptune: Uranus and Neptune can be found in the southeast before morning twilight brightens the sky. Use the finder charts at SkyandTelescope.com/UranusNeptune to aid your quest.

Pluto: Pluto, shining (if you can use that term for this dull glow) at magnitude 14 is in Sagittarius during July. Finder charts are in the July issue of *Sky and Telescope*.

Constellations: The July nights have many bright stars to guide our constellation hunting. Arcturus in Bootes is in the western sky and bright Vega in Lyra is high in the east at nightfall, with the other two stars of the Summer Triangle, Deneb in Cygnus and Altair in Aquila, not far behind.

Messier/deep sky: While the southern constellations of summer, Sagittarius and Scorpius, are visible don't miss the chance to gaze into the heart of the Milky Way. M4, a globular cluster near red Antares in Scorpius is a nice sight in binoculars or a telescope. Then look high overhead with binoculars and find the coat hanger cluster between Vega and Altair. This is a great object to share with friends.

Comets: There are no bright comets in the sky during July.

Meteor showers: The Delta Aquarid meteor shower peaks on July 27. We won't have an impressive shower, but one might see 10 to 20 fast meteors per hour. The last quarter Moon will not interfere with the fast, small meteors.

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Welcome!

This month we welcome two new members to the Society: Claudia & Eric Rybski. We're glad you decided to join us under the stars! Clear Skies to you both!

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Treasurer's Report

by Bob Popovich

May 2008 Financial Summary

Beginning Balance	$1,531
Deposits	70
Disbursements	31
Ending Balance	$1,570

Membership Renewals Due

07/2008	Hockenberry
	Scarfo
	Stevens
	Tobery
08/2008	Fellwock
	Fragale
	Knabb
09/2008	Bogucki
	De Lucia
	Foley
	Gustainis
	Lurcott

Membership Renewals

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

Bob Popovich
416 Fairfax Drive
Exton, PA 19341-1814

The current dues amounts are listed in the *CCAS Information Directory* on page 13 in this newsletter.

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Mason-Dixon Star Party 2008

July 30 to August 3, 2008

The 19th Annual Mason Dixon Star Party is a fun event for all members of the family. This location offers a large and level camping and observing area with unlimited space for attendees in southern York country, with reasonably dark skies. This event will also bracket a new moon to provide optimal observing.

The Milky Way is easily seen at this site and stars can be seen less than 10 degrees above the horizon!

This is a fun filled Star Party geared for everyone! There will be workshops, speakers, vendors, field trips and raffle prizes for all ages. We also have camping areas, bunk houses, food, showers and facilities, horse shoe pits, sand volley ball courts and a swimming pool too!

For more information and on-line registration see:

http://masondixonstarparty.org/

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Black Forest Star Party: Sept. 5-7, 2008

This star party is held at Cherry Springs State Park in Potter County, Pennsylvania. Cherry Springs State Park is one of the darkest sites in the state of Pennsylvania and has been designated as Pennsylvania's first Dark Sky Park by the PA Department of Conservation and Natural Resources (DCNR). CCAS members who have attended past Star Parties at Cherry Springs have attested to the excellent observing conditions at the Park.

Registration for the Black Forest Star Party is now open. More information and on-line registration is at:

http://www.bfsp.org

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Through the Eyepiece: Globular Cluster M5 in Serpens

by Don Knabb, CCAS Observing Chair

A few days ago I received this photo from my astrophotography pal in Southern California, Brent Crabb. This is a photo of Messier 5, also known as NGC 5904, in the constellation Serpens. I was so taken with this photo that I decided to use it for my July Through the Eyepiece article. Truth be told, globular clusters are among my favorite deep sky objects, so I enjoy the chance to research this object.

Photo credit: Brent Crabb, astrophotographer

A globular cluster is a spherical collection of stars that orbits a galaxy as a satellite. They can contain anywhere from ten thousand to a million stars. These stars orbit the collective center of mass of the cluster in a veritable bee hive of motion, and the cluster itself orbits the Milky Way as a distinct object, occasionally plunging right through the main disk and out the other side. Although the cluster appears extremely dense, the distance between individual stars is actually quite large. As a result, stars within them rarely collide, and globular clusters survive relatively unscathed by their passage through the galaxy's disk.

M5 was discovered by Gottfried Kirch in 1702 when he was observing a comet. Charles Messier found it in 1764 and thought it a nebula without any stars associated with it. William Herschel resolved individual stars in the cluster in 1791, counting roughly 200 of them.

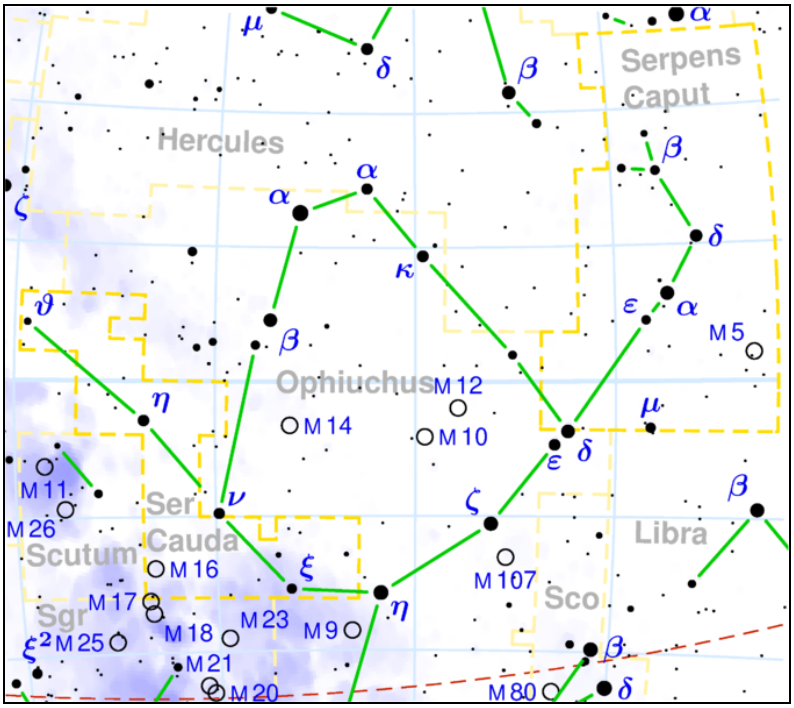
It has an angular size of 17.4 arc minutes and is located within the borders of the constellation Serpens at RA 15 18.6 and Declination 02 05. It is 24,500 light years from the planet Earth which makes it the 52nd furthest Messier object from Earth.

M5 is, under extremely good conditions, just visible to the naked eye as a faint "star" near the star 5 Serpentis. Binoculars or small telescopes will identify this fine cluster as non-stellar while larger telescopes will start to show individual stars, of which the brightest are of apparent magnitude 12.2. The Peterson Field Guided to Stars and Planets calls M5 “one of the finest in the sky”!

Spanning 165 light-years across, M5 is one of the larger globular clusters known. It is also one of the older globulars within the Milky Way Galaxy. The cluster contains more than 100,000 stars, up to perhaps 500,000 according to some estimates.

Under very good viewing conditions, M5 can just be glimpsed with the naked eye (not in Chester County!). The globular cluster is easily visible as small fuzzy patch in good binoculars, and a fine round "nebula" in 3-inch telescopes, brighter toward the center. Starting with a 4-inch telescope, its brightest stars can just be resolved. Larger telescopes or photographs like Brent’s reveal a spectacular sight with thousands of stars.

Use the star chart below to fine M5. Or, wait until around 10:00 pm for it to be fully dark and find Arcturus high in the southwest. Then find red Antares low in the south. M5 is about 1/3 of the way along an imaginary line from Arcturus to Antares.



Sky map credit: http://en.wikipedia.org/wiki/Image:Serpens_constellation_map.png

Information credits:

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

Dickinson, Terence 2006. *Nightwatch: a practical guide to viewing the universe*. Buffalo, NY. Firefly Books

http://en.wikipedia.org/wiki/Messier_5

http://www.absoluteastronomy.com/messier_objects/m5.htm

http://www.seds.org/messier/m/m005.html

http://en.wikipedia.org/wiki/Mel_111

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Space Buoys

By Dr. Tony Phillips

Congratulations! You're an oceanographer and you've just received a big grant to investigate the Pacific Ocean. Your task: Map the mighty Pacific Ocean's wind and waves, monitor its deep currents, and keep track of continent-sized temperature oscillations that shape weather around the world. Funds are available and you may start immediately.

Oh, there's just one problem: You've got to do this work using no more than one ocean buoy.

"That would be impossible," says Dr. Guan Le of the Goddard Space Flight Center. "The Pacific's too big to understand by studying just one location."

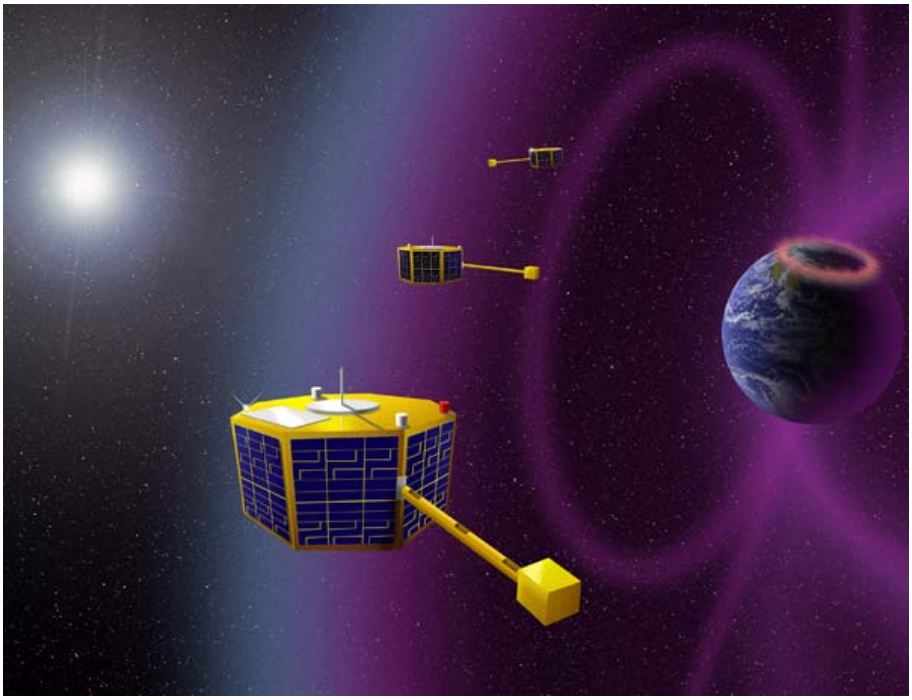
Yet, for Le and her space scientist colleagues, this was exactly what they have been expected to accomplish in their own studies of Earth's magnetosphere. The magnetosphere is an "ocean" of magnetism and plasma surrounding our planet. Its shores are defined by the outer bounds of Earth's magnetic field and it contains a bewildering mix of matter-energy waves, electrical currents and plasma oscillations spread across a volume billions of times greater than the Pacific Ocean itself.

"For many years we've struggled to understand the magnetosphere using mostly single spacecraft," says Le. "To really make progress, we need many spacecraft spread through the magnetosphere, working together to understand the whole."

Enter Space Technology 5.

In March 2006 NASA launched a trio of experimental satellites to see what three "buoys" could accomplish. Because they weighed only 55 lbs. apiece and measured not much larger than a birthday cake, the three ST5 "micro-satellites" fit onboard a single Pegasus rocket. Above Earth's atmosphere, the three were flung like Frisbees from the rocket's body into the magnetosphere by a revolutionary micro-satellite launcher.

Space Technology 5 is a mission of NASA's New Millennium Program, which tests innovative technologies for use on future space missions. The 90-day flight of ST5 validated several devices crucial to space buoys: miniature magnetometers, high-efficiency solar arrays, and some strange-looking but effective micro-antennas designed from principles of Darwinian evolution. Also, ST5 showed that three satellites could maneuver together as a "constellation," spreading out to measure complex fields and currents.



The Space Technology 5 micro-satellites proved the feasibility of using a constellation of small spacecraft with miniature magnetometers to study Earth's magnetosphere.

"ST5 was able to measure the motion and thickness of current sheets in the magnetosphere," says Le, the mission's project scientist at Goddard. "This could not have been done with a single spacecraft, no matter how capable."

The ST5 mission is finished but the technology it tested will key future studies of the magnetosphere. Thanks to ST5, hopes Le, lonely buoys will soon be a thing of the past.

Learn more about ST5's miniaturized technologies at:

nmp.nasa.gov/st5

Kids (and grownups) can get a better understanding of the artificial evolutionary process used to design ST5's antennas at:

spaceplace.nasa.gov/en/kids/st5/emoticon

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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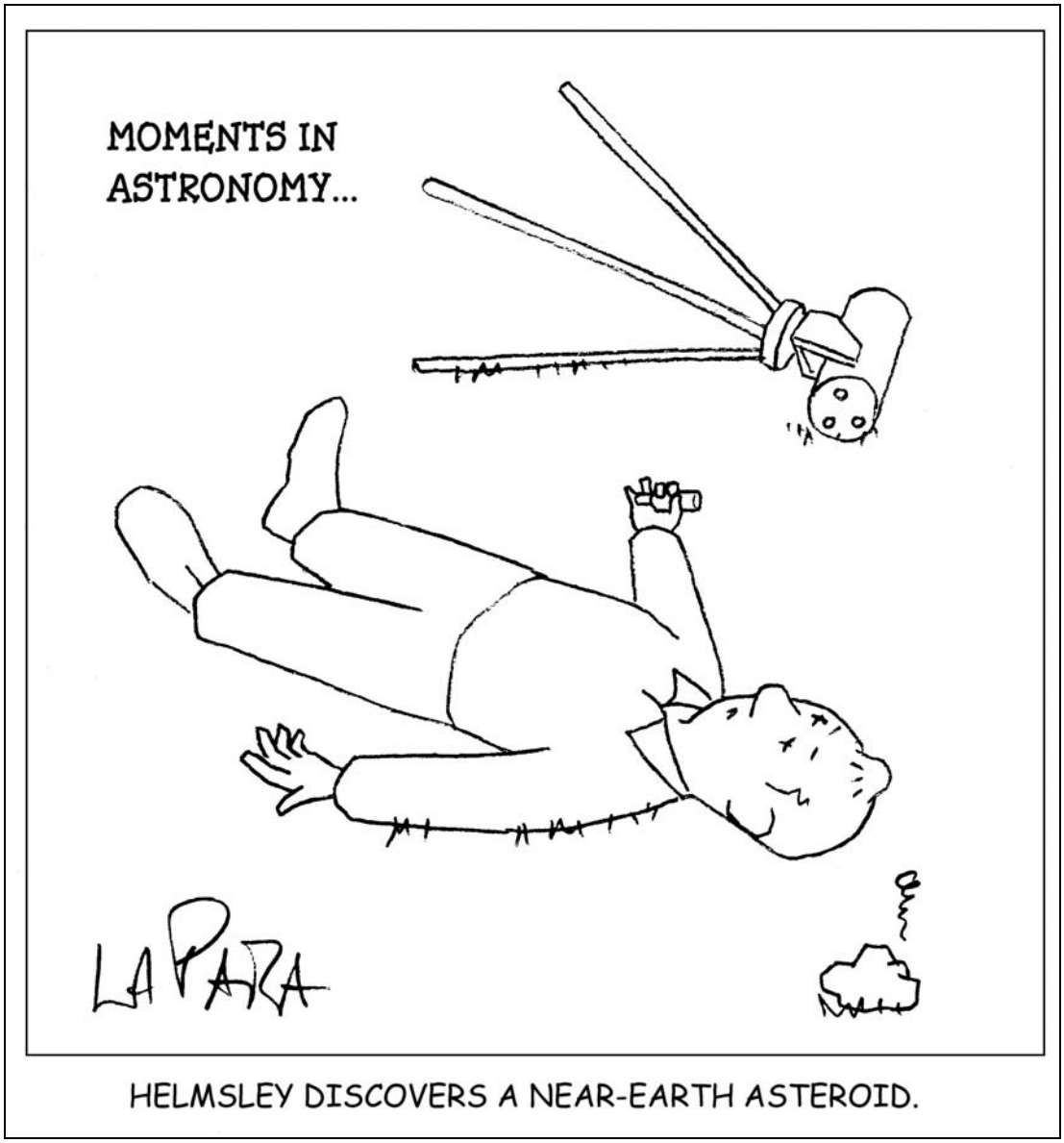

Cartoon by Nicholas La Para

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CCAS Information Directory

Join the Fight for Dark Skies!

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

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

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

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

www.darksky.org

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

Dark-Sky Website for PA

The Pennsylvania Outdoor Lighting Council has lots of good information on safe, efficient outdoor security lights at their web site:

www.POLCouncil.org

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Good Outdoor Lighting Website

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

http://www.starrynightlights.com/

Local Astronomy Store: *Skies Unlimited*

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

Suburbia Shopping Center
52 Glocker Way
Pottstown, PA 19465
Telephone: 610-327-3500 **or** 888-947-2673

http://www.skiesunlimited.net/

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Another Good Outdoor Lighting Website

http://www.greenearthlighting.com

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Find out about Lyme Disease!

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

www.LymePA.org

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

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New Astronomy Store Opens in Manayunk

Spectrum Scientifics

www.spectrum-scientifics.com

CCAS Information Directory

CCAS Lending Telescopes

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

CCAS Lending Library

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

Contributing to *Observations*

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

stargazer1956@comcast.net

Or mail the contribution, typed or handwritten, to:

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

Get CCAS Newsletters via E-mail

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

stargazer1956@comcast.net

CCAS Website

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

http://www.ccas.us/

John welcomes any additions to the site by Society members. The contributions can be of any astronomy subject or object, or can be related to space exploration. The only requirement is that it is your own work; no copying copyrighted material! Give your contributions to John Hepler (484-266-0699) or e-mail to webmaster@ccas.us

CCAS Purpose

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

CCAS Executive Committee

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

President:	Kathy Buczynski 610-436-0821
Vice Pres:	Jim Anderson 610-857-4751
ALCor and Treasurer:	Bob Popovich 610-363-8242
Secretary:	Don Knabb 610-436-5702
Newsletter:	Jim Anderson 610-857-4751
Librarian:	Linda Lurcott Fragale 610-269-1737
Observing:	Don Knabb 610-436-5702
Education:	Kathy Buczynski 610-436-0821
Webmaster:	John Hepler 484-266-0699
Public Relations:	Deb Goldader 610-304-5303

CCAS Membership Information

The present membership rates are as follows:

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

Membership Renewals

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

Bob Popovich
416 Fairfax Drive
Exton, PA 19341-1814

Phone: 610-363-8242
e-mail: B2N2@verizon.net

Sky & Telescope Magazine Group Rates

Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$32.95,** much less than the newsstand price of $66.00, and also cheaper than individual subscriptions ($42.95)! Buying a subscription this way also gets you a 10% discount on other Sky Publishing merchandise.

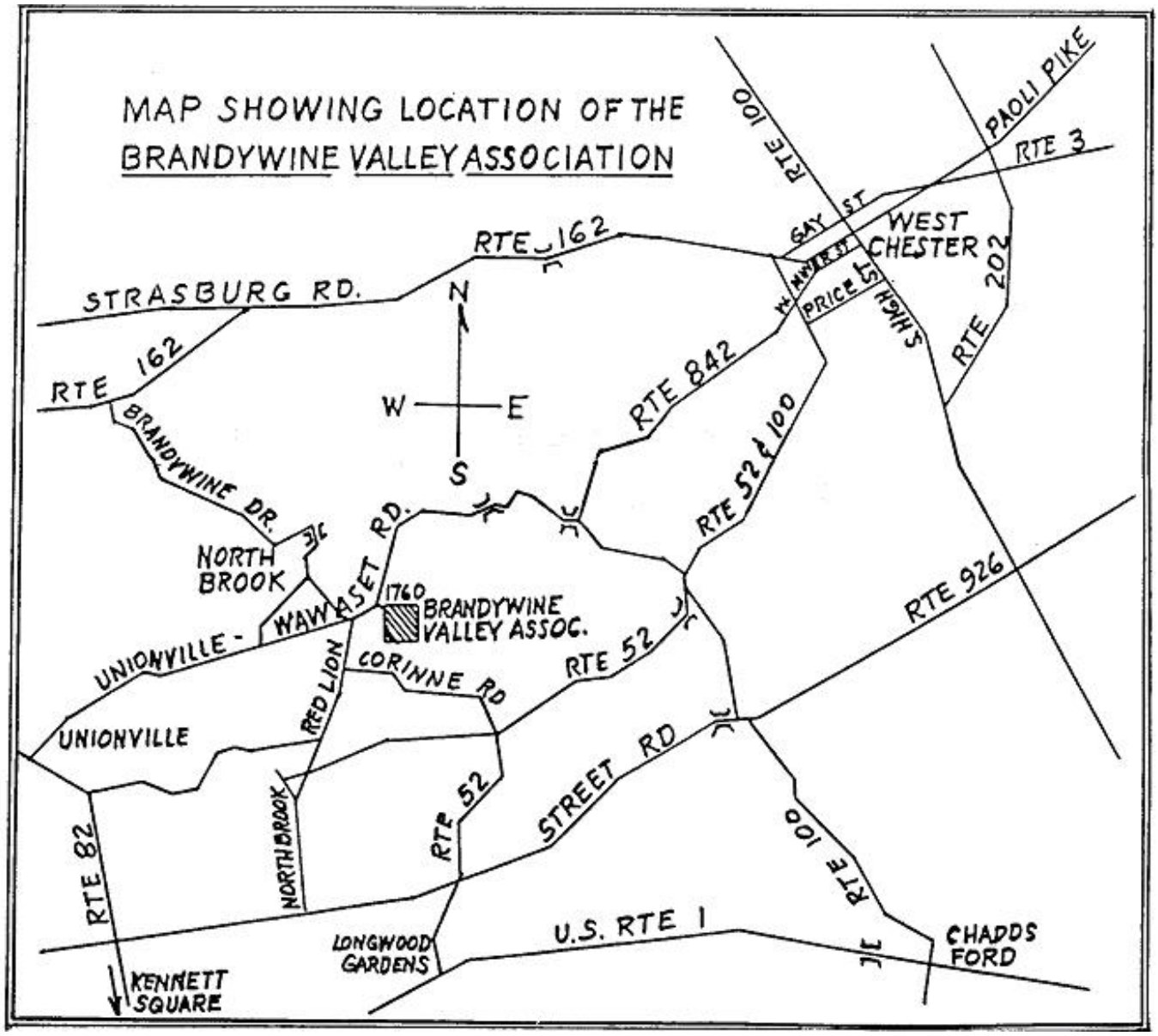
To **start** a **new** subscription, make **sure** you make out the check to the **Chester County Astronomical Society**, note that it's for *Sky & Telescope*, and mail it to Bob Popovich.

To **renew** your "club subscription" contact Sky Publishing directly. Their phone number and address are in the magazine and on their renewal reminders.

If you have **any** questions call Bob first **(610-363-8242).**

Astronomy Magazine Group Rates

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



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).