bservations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

AUGUST 2006
(VOLUME 14, NO. 8)
Visit our website at www.ccas.us

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Important August 2006 Dates

1 Hercules Observing Cluster meets.
Call Kathy Buczynski at 610-436-0821 for details.

2 First Quarter Moon

8 Hercules Observing Cluster meets.
Call Kathy Buczynski at 610-436-0821 for details.

9 Full Moon—the Fruit Moon or Green Corn Moon.

11 Perseid meteor shower peaks.

15 Hercules Observing Cluster meets.
Call Kathy Buczynski at 610-436-0821 for details.

16 Last Quarter Moon.

22 Hercules Observing Cluster meets.
Call Kathy Buczynski at 610-436-0821 for details.

23 New Moon.

25/26 **CCAS Observing Session**
Location: Brandywine Valley Association
Time: sunset, or earlier (see page 4)

29 Hercules Observing Cluster meets.
Call Kathy Buczynski at 610-436-0821 for details.

31 First Quarter Moon.

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CCAS Autumn Schedule

Meetings	Observing Sessions
September 12, October 10, November 14	September 22/23. October 20/21, November 24/25,
All held at West Chester University, 7:30 p.m.	December 22/23: at Brandywine Valley Association

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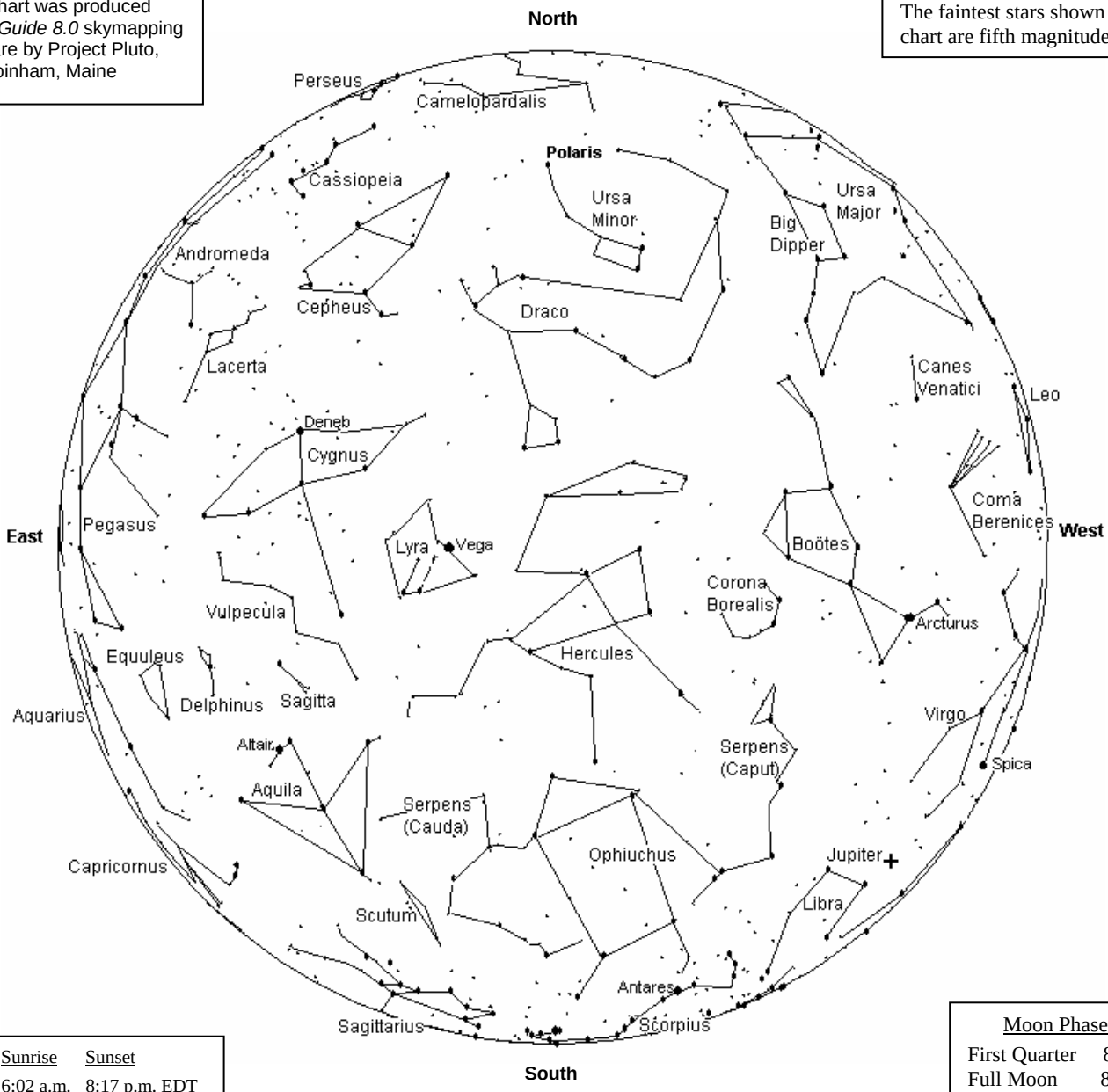
This chart was produced using *Guide 8.0* skymapping software by Project Pluto, Bowdoinham, Maine

The faintest stars shown on this chart are fifth magnitude.



Date	Sunrise	Sunset
8/1	6:02 a.m.	8:17 p.m. EDT
8/15	6:15 a.m.	8:00 p.m. EDT
8/30	6:29 a.m.	7:38 p.m. EDT

The sky over Chester County
August 15, 2006 at 9:00 p.m. EDT

Moon Phases	
First Quarter	8/02
Full Moon	8/09
Last Quarter	8/16
New Moon	8/23
First Quarter	8/31

The Planets, by Don Knabb

Mercury: Mercury can be seen in the dawn sky during most of August. On August 7 it is at its greatest elongation and on August 10 and 11 it is close to Venus. The best show is on August 21 and 22 as discussed below under Saturn.

Venus: Venus continues to be a bright beacon in the dawn sky and gets some friends in Mercury and Saturn during August.

Mars: Mars is lost in the glare of the sun by mid-month and will not be easily viewed until December.

Jupiter: The king of the planets rules the evening sky and is the first point of light visible as the sun sets. By the end of the month it will be setting around 10:00 pm, so be sure to soak in the sights of this gas giant and its swarm of moons before it is gone from our evening sky.

Saturn: The ringed planet rises about an hour before the sun by the third week of August. On August 21 and 22 there will be a wonderful grouping of Saturn, Mercury, Venus and the crescent Moon in the pre-dawn sky. If you have binoculars with a fairly wide field of view you might be able to see all these objects at one time! On August 26 Saturn and Venus are so close together you can see two planets in one telescopic field of view at medium power.

Uranus & Neptune: Both gas giants are in reasonably good position for viewing around midnight. The May issue of Sky and Telescope magazine has charts to help you find the blue and green planets.

Pluto: Pluto is highest in the south during the evening, but to find this 14th magnitude speck you'll need at least a 10 inch telescope and good charts, not to mention clear skies!

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 online.

August Observing Highlights

by Don Knabb, CCAS Observing Chair

Planets: The opportunities to see the planets change dramatically during August compared to the last few months. Mars is gone until later in the year and Saturn slips into the dawn sky. Later in the month there is a great view of planets in the morning sky. If you get up before dawn you can see Saturn, Venus and Mercury together with a very thin moon. Jupiter remains in charge of the evening sky as the sun sets. And if you have charts you can find Uranus and Neptune late at night.

Constellations: Ah, August! The warm nights and bright stars make for some great observing opportunities. The summer triangle and all its treasures are shining overhead and if we get a good clear night the Milky Way arches overhead. The Dipper is holding water and Cassiopeia is climbing up the other side of the sky. As the night gets late the Great Square of Pegasus is easily visible so grab your binoculars and look for our neighbor galaxy Andromeda.

Deep sky: August is a great time to catch the Messier objects in the southern constellations of Sagittarius and Scorpius. If you can find a clear view of the southern horizon you can find M4, M6, M7, M17, M8 and M22.

Meteor shower: On August 11 the Perseid meteor shower peaks. The bright Moon will hide all but the brightest shooting stars, but this shower can send down some real fireballs so definitely take a look. I have seen bright shooting stars that travel most of the way across the sky. They seem so close you think you can smell them!

August 2	First Quarter Moon
August 7	Mercury at greatest elongation from the Sun.
August 9	Full Moon, 6:54 AM, called the Fruit Moon or Green Corn Moon.
August 11	Perseid meteor shower peaks.
August 16	Last Quarter Moon.
August 21	Look for Saturn, Venus, Mercury and the Moon grouped together in the pre-dawn sky.
August 23	New Moon, 12:31 a.m.
August 26	Saturn is in a very close conjunction with Venus.
August 31	First Quarter Moon.

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Through the Eyepiece: The Heavenly Harp, Ring Nebula and Coat Hanger Cluster

by Don Knabb, CCAS Observing Chair

During August if you look nearly straight up you will find the bright star Vega in the constellation Lyra the Lyre. A lyre is a harp-like musical instrument of ancient Greece and this constellation resembles a harp somewhat. On a dark night you can see a parallelogram of stars with bright Vega at the northwest corner. There are many interesting features in this area of the sky. You can see one of these objects with binoculars and the other two with a telescope, preferably a Dobsonian since you will be looking nearly straight up in the sky, but any type of telescope will do if you have been practicing yoga.

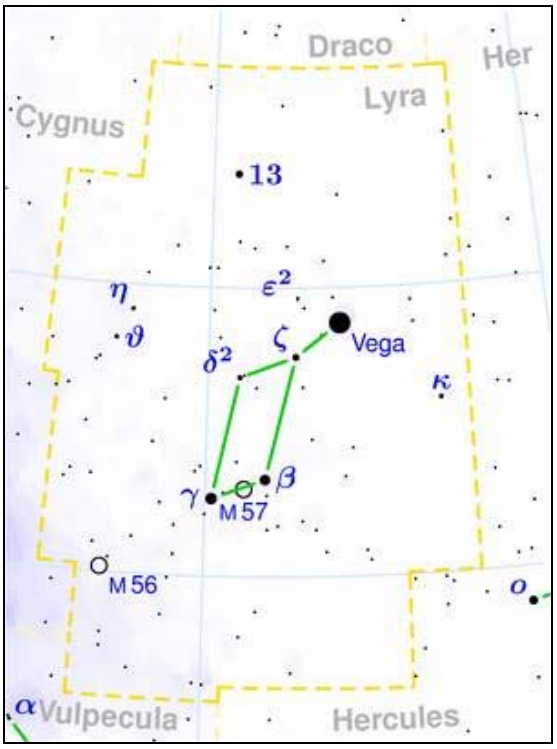

Image source: http://en.wikipedia.org/wiki/Lyra

The first object I'll mention is not even on the star chart above, but if you draw a line from Vega through M56 and go that much further and down a bit you will find the Coat Hanger Cluster. And yes, it looks just like one! More officially called Brocchi's Cluster, this asterism, or grouping of stars, was first described as far back as 964. In the 1920's D. F. Brocchi created a map of this object for use in calibrating photometers.

Photos do not do this cluster justice. Grab your binoculars and sweep from Altair (the southeast star of the summer triangle) toward Vega. You'll need to lean way back so you might want to try this sitting down. If you've not seen this cluster before be prepared to let a "wow" slip out. It turns out that this is not a true cluster of stars, just a chance alignment of stars, but it is one of the most fun objects in the sky to share with friends new to astronomy.

Next on my list of objects in this area of the sky is "the double double" star in Lyra. To the upper left of Vega in the chart above you will find Epsilon Lyra. With binoculars you can "split" this star into a double, but you'll need a telescope to go deeper and split each of that pair further into doubles themselves. So, it's a pair of pairs, the sky's most spectacular double double.

There is also an interesting variable star in Lyra. Beta Lyra is actually two suns orbiting each other and when one passes in front of the other the apparent brightness changes from week to week. This variable nature of the star can be easily observed if you compare it to its neighbor Gamma Lyra to its left.

Lastly, just between the two stars mentioned above is M57, the Ring Nebula. Although we need the Hubble telescope to get the kind of picture shown below, the Ring Nebula is still a wonderful sight in a telescope and looks like a little cosmic smoke ring. M57 is the most famous of the planetary nebula. It is a shell of gas expanding from a central star in its death throes. The central star is a blue dwarf that blew off its outer layers. This is the end that is predicted for our sun perhaps 5 billion years from now.

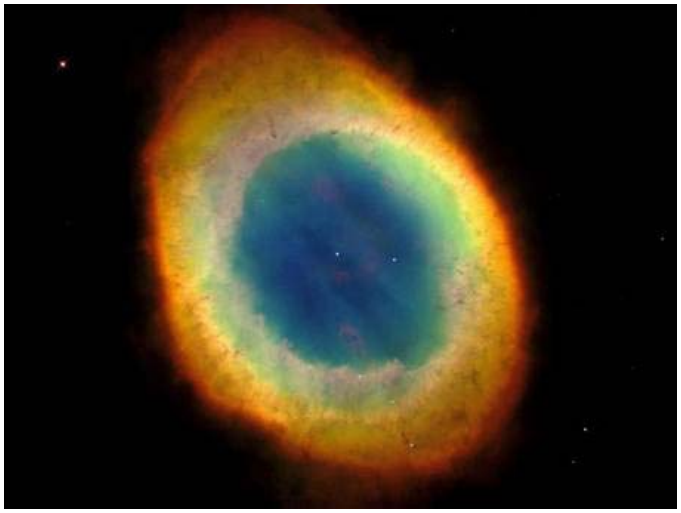

Image source:
http://en.wikipedia.org/wiki/Image:M57_The_Ring_Nebula.JPG

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CCAS Observing Sessions

August 25/26, 2006

CCAS Observing Sessions will be at the Brandywine Valley Association's Myrick Conservancy Center (see map on page 14) on Fridays 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 the next day, Saturday. 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 and open to the public.

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Welcome!

We welcome some new members to the Society this month. First we say hello to Wayne Tobery, and add "happy birthday, with love, from his daughter Cindy!" Cindy gave Wayne a CCAS membership as a birthday present.

We also welcome Michael Sleeper, of Malvern. We're glad you decided to join us under the hazy stars of tropical August in Chester County! Clear skies to all!

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Treasurer's Report by Bob Popovich

June 2006 Financial Summary

Beginning Balance	$1,581
Deposits	190
Disbursements	416
Ending Balance	$1,355

Membership Renewals Due

08/2006	Fragale
	Knabb & Family
09/2006	Bogucki
	Holenstein
10/2006	Anderson
	Angelini
	Charitnonchick
	End
	Hillenbrand
	Massarella
	Padgett
	Vely

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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CCAS July Observing Session

by Don Knabb, CCAS Observing Chair

Well, the summer weather is not providing much stargazing at BVA! In June we were rained out and in July the skies were partially cloud covered on Friday night, so we went out on Saturday night when the skies were fairly clear. Attendance was low, but as you can see from the picture below we had a beautiful Moon to observe. We zoomed in to see Messier A and B, then found the elusive wall that goes from the raised center of the crater Petavius to the crater edge. This feature is known as "Petavius Wall" on the Lunar Club list.

After we gazed at the moon we focused on Jupiter. Despite the humid atmosphere, the air was steady and at 150X we had a wonderful view of the bands of color on Jupiter, and we could even pick out some features on the bands. Unfortunately the Great Red Spot was not in position for viewing.

There was not much else worth looking at. M13 was only a smudge and the Ring Nebula was undetectable. But the fireflies and bug songs were wonderful to watch and listen to.

Let's hope for clearer skies in August!

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CCAS Lunar X Party Report

by Don Knabb, CCAS Observing Chair

On July 3 a group of CCAS members, including some brand new members, gathered at the Knabb observing circle to seek the elusive Lunar X. Here are a few photos of club members and interested neighbors and friends:

We had a good turnout of members and had five telescopes set up for viewing. Unfortunately the elusive Lunar X remains elusive as it seems our timing was off a bit. We could clearly see where the X feature had formed but that entire area of the lunar surface was illuminated by sunlight by the time we were able to gather.

The observing conditions were not ideal as the Moon played a bit of hide and seek with a few clouds, but there was plenty of clear viewing time to drink in long views of the lunar terminator and interesting features nearby. Needless to say, it was a real fun event and many "ooohhs and aaahhhs" were heard as we zoomed in on lunar features and then to Jupiter and its moons. We snacked the night away on great contributions of salads, picnic treats and fruit from everyone. The Lurcott cookies were clearly the most sought after dessert.

The Knabbs extend their thanks to those who participated and contributed food and drink. We need to find a good excuse to gather again next summer…

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Star Party Request: September 27, 2006

by Don Knabb, CCAS Observing Chair

On Wednesday September 27 we will be hosting a star party for the Spring-Ford Area School District Evening School Program. We'll need lots of help from members, with and without telescopes! It will be held at the headquarters of the Schuylkill Canal Association. There will be more details in the September newsletter, but please mark your calendars now and let me know if you can help out. Thanks.

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CCAS USNO Trip Update: Change of Date

by Linda Lurcott Fragale, Trip Coordinator

When I tried to arrange our trip for August, I was informed by the USNO that no tours are provided in August. **Our new requested tour date will be October 16th, with an alternative date of October 30th.**

I need to request our tour date 4-6 weeks ahead. So, please call me by September 5th to let me know if you want to go.

Thanks.

If you are interested in going, please contact Linda Lurcott Fragale at **610 269-1737 by September 5, 2006.** When you call, have your full name and birthdates (exactly as they appear on your photo ID, such as a driver's license) ready so you can give that information to Linda. This is needed for the security checks. The security is required because the home of the Vice President is also located on the USNO grounds.

The U.S. Naval Observatory is open for tours on Monday evenings (except national holidays) 8:30 to 10:00 p.m. We will tour the Observatory and be able to observe (weather permitting). We can reserve a date for up to twenty people. We must reserve in advance and they will confirm via e-mail or phone, no later than the Friday prior to requested date. Upon arrival (gates open at 8 p.m.) we must each show a valid photo ID and go through a security procedure.

We will travel to Washington on Monday evening, arriving in time for the tour at the USNO. After that, we will stay overnight and visit the new National Air and Space Museum Annex out by Dulles Airport on Tuesday, before traveling home on Tuesday evening. We plan to carpool (or vanpool if we get enough people)**.**

About the Naval Observatory:

The U.S. Naval Observatory is one of the oldest scientific agencies in the country. Established in 1830 as the Depot of Charts and Instruments, its primary mission was to care for the U.S. Navy's chronometers, charts and other navigational equipment. Today, the U.S.N.O. is the preeminent authority in the areas of Precise Time and Astrometry, and distributes Earth Orientation parameters and other astronomical data required for accurate navigation and fundamental astronomy.

The U.S.N.O. performs an essential scientific role for the United States, the Navy, and the Department of Defense. Its mission includes determining the positions and motions of the Earth, Sun, Moon, planets, stars and other celestial objects; providing astronomical data; determining precise time; measuring the Earth's rotation; and maintaining the Master Clock for the United States. Observatory astronomers formulate the theories and conduct the relevant research necessary to improve these mission goals. This astronomical and timing data, essential for accurate navigation and the support of communications on Earth and in Space, is vital to the Navy and Department of Defense. It is also used extensively by other government agencies and the public.

The U.S.N.O. 26-inch refracting telescope is located on the grounds of the Observatory and is included as part of the Monday night tour when skies are cloudy.

Completed in 1873 at a cost of $50,000, it was the largest refracting telescope in the world for a decade. The lens and mounting were made by the renowned firm of Alvan Clark & Sons of Cambridgeport, MA, and the great telescope was erected on the grounds of the old Naval Observatory site in the Foggy Bottom section of Washington.

It was from this site, in August of 1877, that astronomer Asaph Hall discovered the two moons of Mars, Phobos and Deimos, with the "Great Equatorial Telescope," bringing the attention of the world to the U.S.N.O.

The move to the Observatory's present site in 1893 allowed the telescope to be re-mounted in a new dome with a new mounting designed by the Warner & Swasey Company of Cleveland, OH. This design incorporated a rising floor to facilitate access to the eyepiece. This floor is still the largest elevator in the city!

Today, the telescope is used on every clear night to measure the parameters of double stars. Several thousand stars are measured annually, and the database of such observations, added to the visual observations dating back over a century, provide for one of the most comprehensive double star catalogs in the world.

The telescope is also used to measure the positions of the moons of the outer planets to help refine their orbital parameters. These data are vital in planning missions to such distant worlds.

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Equipment for Sale

by Ed Lurcott, for Sylvia Hogate

Our fellow CCAS member, Sylvia Hogate, is now in a nursing home in West Chester. In her present physical condition she will not be able to use her telescope or binoculars. It is her wish to sell them, giving CCAS members first chance to purchase them. The money she gets for them will help toward her expenses in the nursing home. She is also donating all her astronomy books, a sizeable collection, to the CCAS Library.

The equipment is hardly used, only a few years old, and hence is in like-new condition. The following is a list of the equipment for sale, with current prices from the Orion catalog:

Orion 6-inch Dobsonian "Skyquest XT6 Classic Telescope" (no eyepieces)	259.95
Orion carrying case for O.T.A. above	69.95
Orion Red-dot "E-Z Finder II"	34.95
Orion carrying case for tripod	34.95
Orion Tripod (no model no., looks similar to Orion's Paragon HD F2)	99.95
Orion "Little Giant II" 20x70 binoculars (includes L bracket for attaching to tripod)	279.95
total current Orion prices	**$ 779.70**

Sylvia is willing to sell it all, as a package deal, for a total of $550.00.

Contact Ed Lurcott at **610-436-0387** for more information.

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Roy Scarfo Elected to Board of Trustees of the IAAA

CCAS member Roy Scarfo, an internationally known space artist, has been elected to the Board of the International Association of Astronomical Artists. His term of office will start July 1, 2006 and run for two years.

The IAAA (**www.iaaa.org**.) is a non-profit foundation whose members implement and participate in astronomical and space art projects, promote education about astronomical art and foster international cooperation in artistic work inspired by the exploration of the Universe.

The IAAA was founded in 1982 and was formally registered as an association of astronomical artists in 1986. Since its founding the IAAA has grown to number over 130 member representing twenty countries. To view some of Scarfo's work and to visit his blog, go to **www.royscarfo.com**.

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Kids' Space Program in Malvern: Aug. 14-17

The Malvern Library is offering a free four-session class for kids on "the LRO (Lunar Reconnaissance Orbiter), to be launched in October of 2008." There are actually two classes, a morning one for kids entering second and third grades, and an afternoon one for kids entering grades four through six.

The sessions run Monday 8/14 through Thursday 8/17 and will be taught by librarian Linda Meachen. Times are 10 a.m. and 1:30 p.m. Call **610-644-7259** to register. The place is the Malvern Library, 1 East First Ave., right by the Malvern Police Station (which is handy if the kids get too rowdy…)

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August 25-27, 2006: Black Forest Star Party

This annual star party is also held at Cherry Springs State Park in Potter County PA. You can read about Cherry Springs State Park in the note above. You can find out more about the details, as well as register online, for the Black Forest Star Party at the website:

http://www.bfsp.org/starparty/index.cfm

The Black Forest Star Party is organized through the Central Pennsylvania Observers, Inc. (a group of amateur astronomy clubs) via a long term agreement with the DCNR of the Commonwealth of Pennsylvania.

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Oct. 20-22, 2006: Stella Della Valley Starfest

This 20th annual star party will be held at Camp Onas, Ottsville, PA, and is sponsored by the Buck-Mont Astronomical Association. Vendors, swap meet, pizza party, door prizes, raffles, and even some stargazing. For more information, visit the website:

http://www.bma2.org

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September 16-18, 2006: ASP Annual Meeting

The Astronomical Society of the Pacific is an organization dedicated to astronomical education. This year they are holding their annual meeting in **Baltimore, Maryland.** The **Space Telescope Science Institute**, from which the Hubble Space Telescope is controlled, is co-sponsoring the meeting. This is a great opportunity to learn from the best about astronomy and space science education and outreach. More information about the ASP, their educational resources, and their annual meeting, can be found at their web site:

http://www.astrosociety.org/

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October 18-22, 2006: Mason-Dixon Star Party

This annual star party in York County PA has been moved to October (it was previously held in late May or early June). See the website for more info:

www.ycas.org

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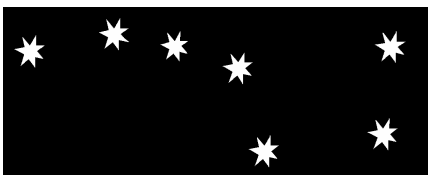

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Astroimages

by Pete LaFrance

These images were acquired with a new telescope (120mm Orion F5). My images taken though the blue filter are bloated, and thus the final image puts a blue halo around bright stars. I think with more processing I can reduce this artifact significantly.

There are numerous astro images that a long focal length won't encompass, especially in the summer skies. I get remarkable detail with my CGE-1100, but capturing the whole object with a smaller telescope is just as sweet. It also allows me to show what the "upclose and personal" image looks like from a wider perspective. Also, at longer focal lengths, guiding piggy back is a lot easier. The PEC (Periodic Error Correction) isn't as bad.

It's easy to see just how big the North American Nebula is, as I can only get the Pelican Nebula, whereas whe imaging the Veil Nebula and M8 (Lagoon Nebula) I can capture the entire object. All these images were taken with the Orion 120mm telescope.

M8, Lagoon Nebula: 45 minutes

The east part of the veil Nebula: total of 100 minutes.

The Pelican nebula was taken for 25 minutes using an HA (Hydrogen Alpha) filter.

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Astronomus

"Z for…"

By Bob Popovich

Relegated to the very end of the Latin alphabet, Z is a bit of a peculiar character. It's used sparingly, yet it's very distinctive. As schoolchildren, learning words that began with "z" was often a source of distinct pride. In Scrabble, "z" words were always a blockbuster. But how many z-words come to mind when you think about astronomy? Zodiac, of course. And zenith. Anything else? "No," you say? Well, there is a corner of the sky containing a constellation where you can catch lots of Zs—so to speak. So, to test your summertime zeal, let me zing you a few kernels of information on where to catch some celestial Zs. How efficiently can you zero in on the Zs? Ready, *zet*, go!

Five of its principal stars (α, β, γ, δ, ν [alpha, beta, gamma, delta & nu]) carry classical names beginning with the letter Z. So as not to be too cruel, I will add that modern texts usually retain the "z" names for only the 2 brightest members.

Its α star is actually about 0.1 magnitude dimmer than the β star (does this bug you as much as it does me?)

One of the "Z" stars lies almost exactly on the ecliptic. This narrows it down a bit, doesn't it?

The sun occults the α star annually on November 7. And on the very next day in this year, Mercury, Venus, Mars and Jupiter will all join the sun within the confines of our "Z" haven.

Numerous ancient civilizations—Babylon, Sumeria, Rome, India and China—viewed the constellation as essentially the same, inanimate object (hint: it's not a zither.) Yet, the Arabic names for the α and β stars translate as "Northern Claw" and "Southern Claw." Why, you may ask, would stars have names of an animal's appendage when they belong to a constellation that I've mentioned represents an inanimate object? Well, interestingly enough, the Greeks associated our mystery stellar assemblage as part of another constellation that was a living creature.

α is named Zuben al genubi and has a magnitude of 2.7. It is a class A3 star. The star has a visual companion with a magnitude of 5.8.

β is Zuben el schamali with a magnitude of 2.6. It's a class B8

γ, Zuben el akrab, is a binary in which the principle star is a class K0.

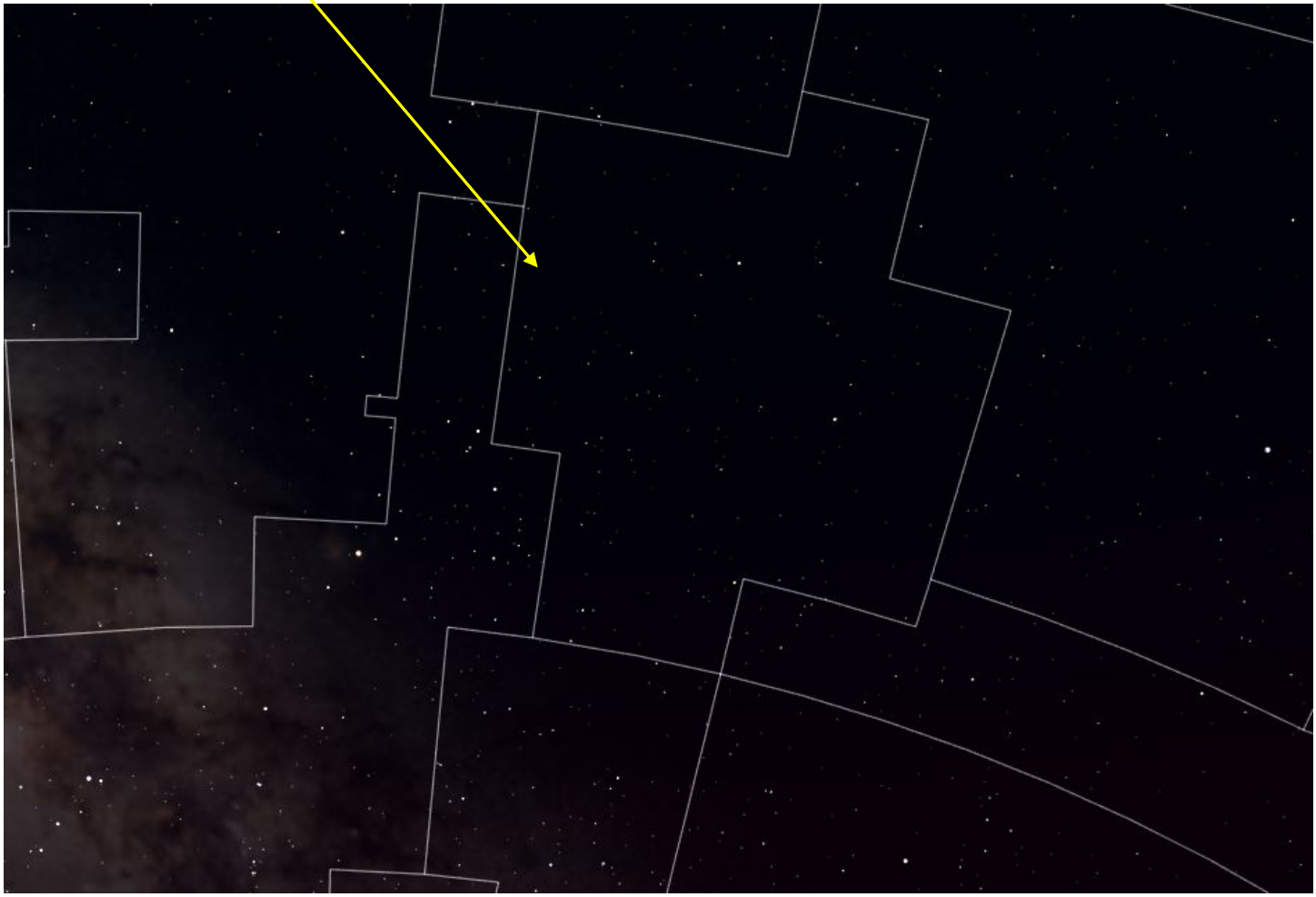
δ is Zuben el akribi—a bright eclipsing variable of the Algol type. It has a range in magnitude of 4.8 to 5.9. The primary star is a class A0. Its companion is thought to be a G class.

ν Zuben hakrabi—a K2 star that, though shining at only a apparent magnitude of 5.2, actually has the luminosity of some 3,400 suns.

You might be able to catch it early this month low in the west.

It's a constellation of the zodiac.

Our celestial Zs are here



Figured it out yet? The first person to contact me with the correct constellation name will receive a copy of the book "Astronomy Hacks," an A to Z guide to all sorts of practical information. Good hunting!

Bob can be reached at **610-363-8242.**

Next Time: Paradoxically

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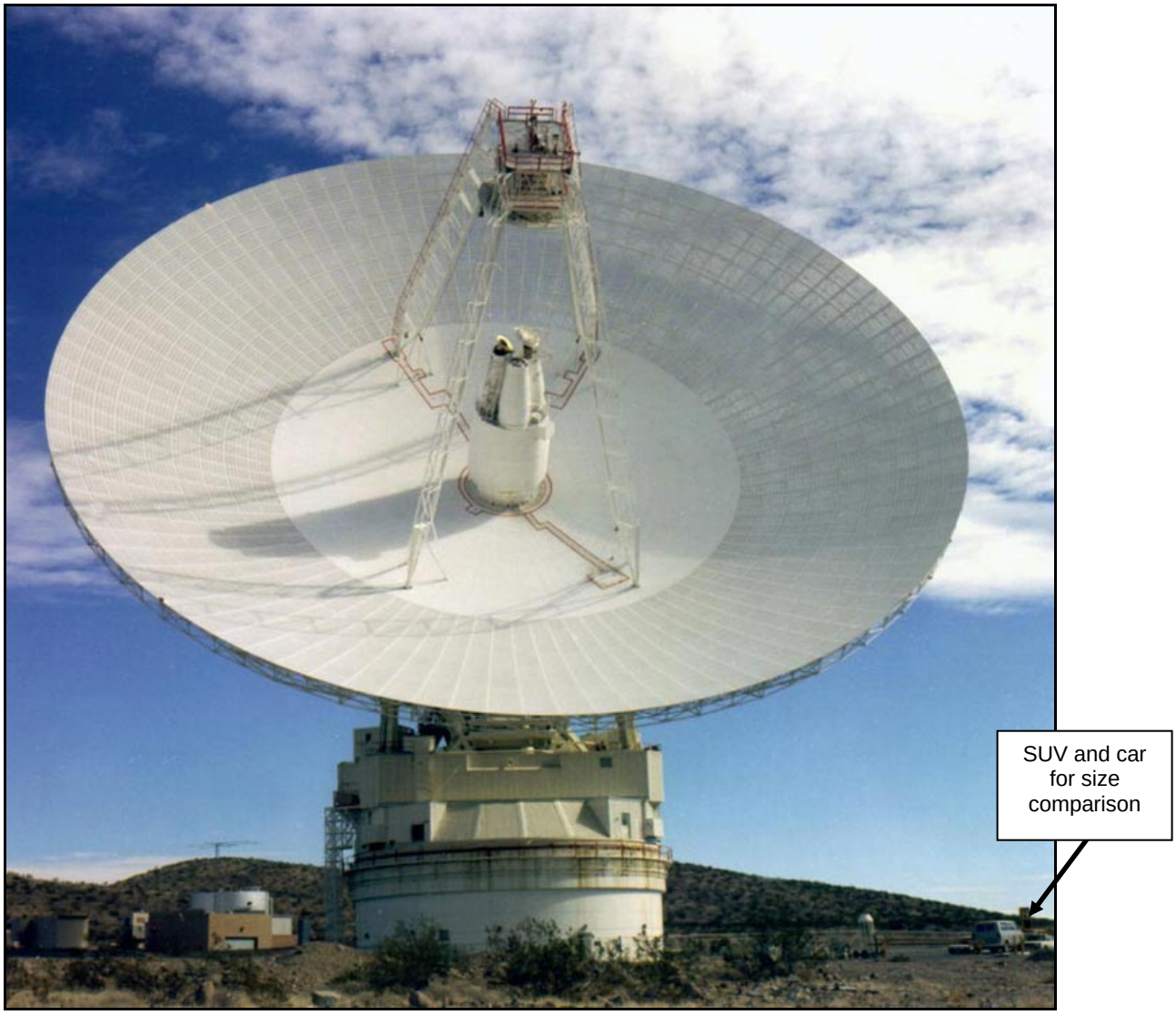
Celebrating Forty Years of Intent Listening

By Diane K. Fisher



For over 40 years, the “Mars” 70-meter Deep Space Network antenna at Goldstone, California, has vigilantly listened for tiny signals from spacecraft that are billions of miles away.

In nature, adjacent animals on the food chain tend to evolve together. As coyotes get sneakier, rabbits get bigger ears. Hearing impaired rabbits die young. Clumsy coyotes starve. So each species pushes the other to “improve.”

The technologies pushing robotic space exploration have been like that. Improvements in the supporting communications and data processing infrastructure on the ground (the “ears” of the scientists) have allowed spacecraft to go farther, be smaller and smarter, and send increasingly faint signals back to Earth—and with a fire hose instead of a squirt gun.

Since 1960, improvements in NASA’s Deep Space Network (DSN) of radio wave antennas have made possible the improvements and advances in the robotic spacecraft they support.

“In 1964, when Mariner IV flew past Mars and took a few photographs, the limitation of the communication link meant that it took eight hours to return to Earth a single photograph from the Red Planet. By 1989, when Voyager observed Neptune, the DSN capability had increased so much that almost real-time video could be received from the much more distant planet, Neptune,” writes William H.

Pickering, Director of the Jet Propulsion Laboratory (JPL) from 1954 to 1976, in his Foreword to the book, *Uplink-Downlink: A History of the Deep Space Network, 1957-1997*, by Douglas J. Mudgway.

Mudgway, an engineer from Australia, was involved in the planning and construction of the first 64-meter DSN antenna, which began operating in the Mojave Desert in Goldstone, California, in 1966. This antenna, dubbed "Mars," was so successful from the start, that identical 64-meter antennas were constructed at the other two DSN complexes in Canberra, Australia, and Madrid, Spain.

As Mudgway noted in remarks made during the recent observance of the "Mars" antenna's 40 years of service, "In no time at all, the flight projects were competing with radio astronomy, radio science, radar astronomy, SETI [Search for Extra-terrestrial Intelligence], geodynamics, and VLBI [Very Long Baseline Interferometry] for time on the antenna . . . It was like a scientific gold rush."

In 1986 an ambitious upgrade program began to improve the antenna's performance even further. Engineering studies had shown that if the antenna's diameter were increased to 70 meters and other improvements were made, the antenna's performance could be improved by a factor of 1.6. Thus it was that all three 64-meter DSN antennas around the world became 70-meter antennas. Improvements have continued throughout the years.

"This antenna has played a key role in almost every United States planetary mission since 1966, and in quite a few international space missions as well. Together with its twins in Spain and Australia, it has been a key element in asserting America's pre-eminence in the scientific exploration of the solar system," remarks Mudgway.

Find out more about the DSN and the history of the Mars antenna at **http://deepspace.jpl.nasa.gov/dsn/features/40years.html**

Kids (and grownups) can learn how pictures are sent through space at
http://spaceplace.nasa.gov/en/kids/phonedrmarc/2003_august.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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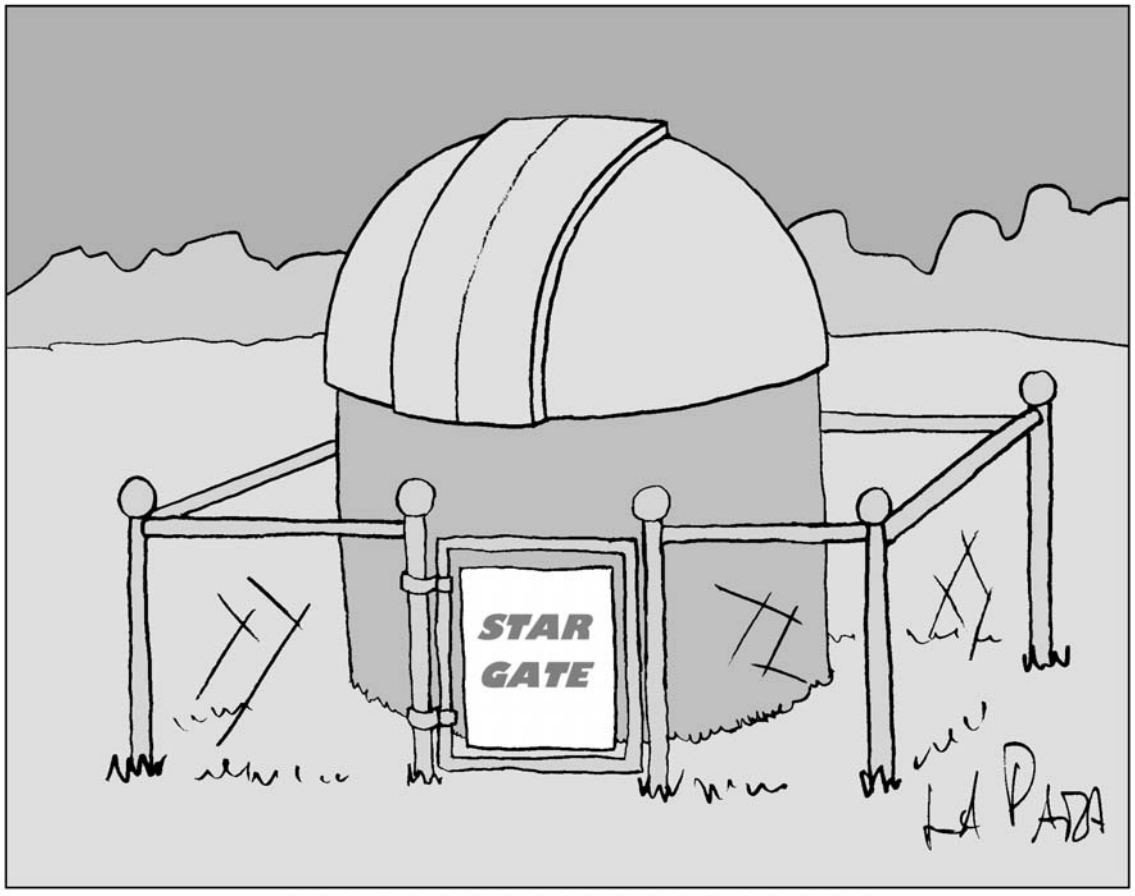

Cartoon by Nicholas La Para

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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:

http://home.epix.net/~ghonis/index.htm

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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/

Our Local Astronomy Store: *Skies Unlimited*

In case you didn't know it, there is an astronomy equipment store called ***Skies Unlimited*** in our area, in Glenmoore to be specific. Their phone number is (610) 321-9881, and their Website URL is www.skiesunlimited.net.

Directions: Go north on PA-100, four miles past the Downingtown interchange of the PA Turnpike; then turn left onto PA-401, then immediately turn left again into Ludwig's Village. The store is next to Ludwig's Village Market.

http://www.skiesunlimited.net/

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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. Hopefully you will not also need to know how to recognize its symptoms, but you can learn all 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!"

★ ★ ★ ★ ★ ★ ★ ★

www.ccas.us

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 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)

Constellation Hunters: 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:	Kathy Buczynski 610-436-0821
Vice Pres:	Jim Anderson 610-857-4751
ALCor and Treasurer:	Bob Popovich 610-363-8242
Secretary:	Vic Long 610-399-0149
Newsletter:	Jim Anderson 610-857-4751
Librarian:	Linda Lurcott Fragale
Observing:	Don Knabb 610-436-5702
Education:	Kathy Buczynski 610-436-0821
Webmaster:	John Hepler 484-266-0699
Public Relations:	Deb Goldader 610-304-5303

CCAS Membership Information

The present membership rates are as follows:

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

Membership Renewals

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

Bob Popovich
416 Fairfax Drive
Exton, PA 19341-1814

Sky & Telescope Magazine Group Rates

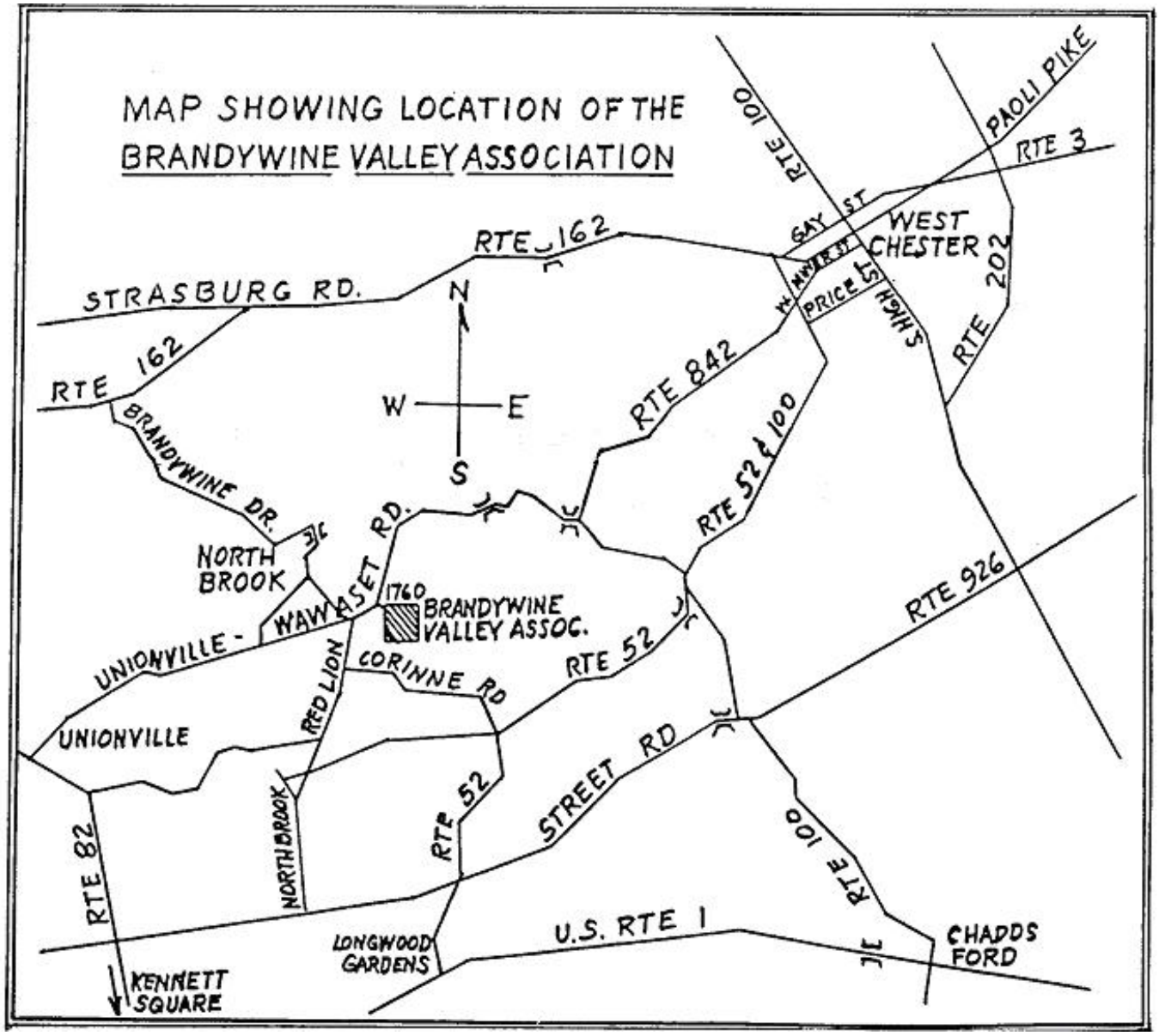
Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$32.95** which is much less than the newsstand price of $66.00, and also cheaper than individual subscriptions ($42.95)! Make **sure** you make out the check to the **Chester County Astronomical Society**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

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**



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).