Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

NOVEMBER 2005
(VOLUME 13, NO. 11)
Visit our website at www.ccas.us

In This Issue

Newsletter Deadline

December 2005 issue ..... November 23

NOTE WELL: I moved this month's deadline up because of the Thanksgiving Holiday.

Important November 2005 Dates

1 New Moon

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

3 Good evening to see both Venus and Mercury, low in the west after sunset.

6 Mars reaches opposition; it is visible all night long.

8 First Quarter Moon

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

8 **CCAS Meeting** 7:30 p.m. EST

Location: Room 113, Boucher Building, West Chester University
COM: Cassiopeia
Presentation: Lunar Observing (see page 3)

15 Full Moon

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

17 Leonid meteor shower peaks in the early morning hours of the 17th.

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

23 Last Quarter Moon.

25/26 **CCAS Observing Session**
Location: Brandywine Valley Association
Time: sunset, or earlier (see page 3)

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

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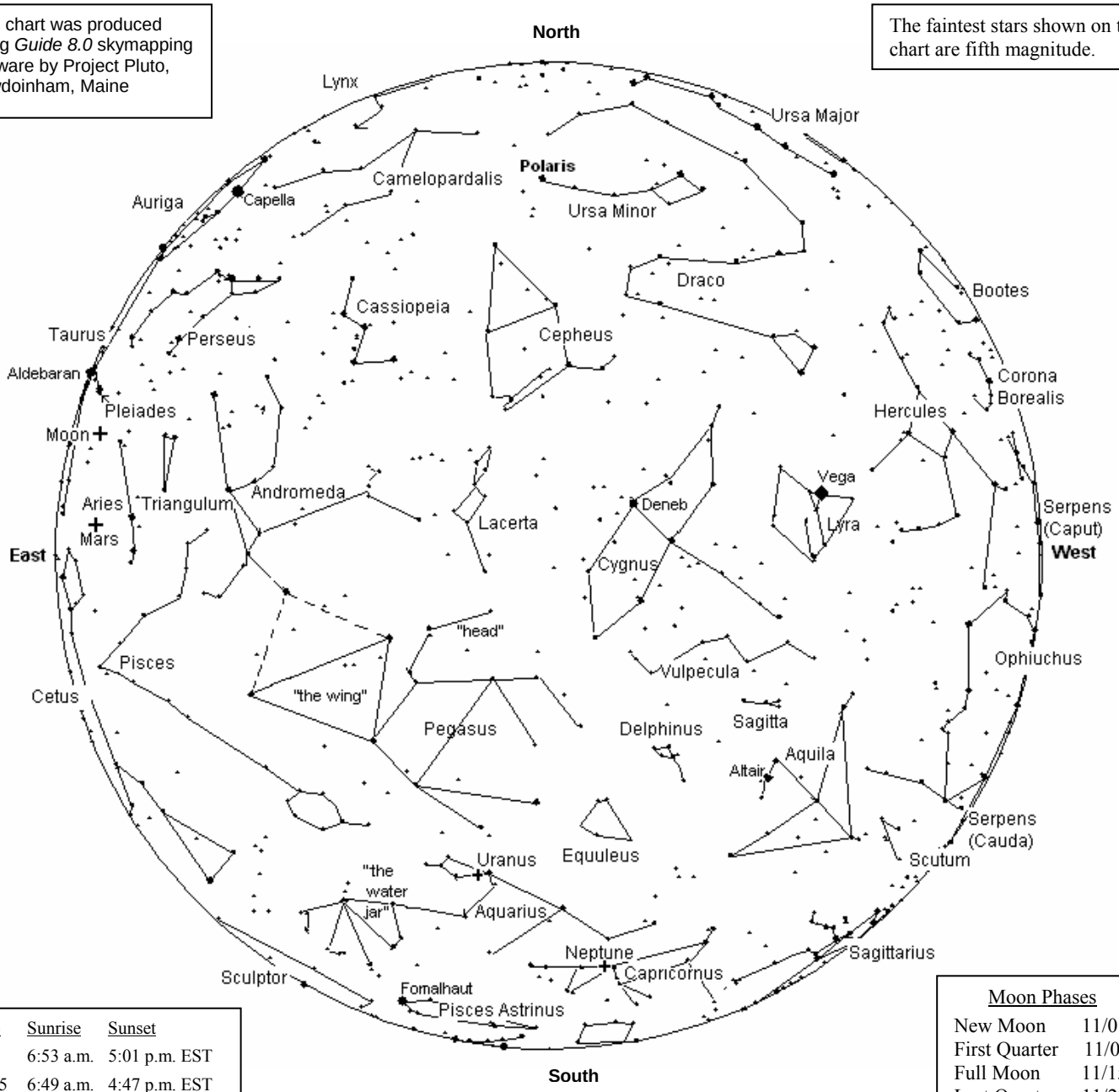
This chart was produced using *Guide 8.0* skymapping software by Project Pluto, Bowdoinham, Maine

The faintest stars shown on this chart are fifth magnitude.



Date	Sunrise	Sunset
11/1	6:53 a.m.	5:01 p.m. EST
11/15	6:49 a.m.	4:47 p.m. EST
11/30	7:05 a.m.	4:39 p.m. EST

Moon Phases	
New Moon	11/01
First Quarter	11/08
Full Moon	11/15
Last Quarter	11/23

The sky over Chester County

November 15, 2005 at 7:00 p.m. EST

The Planets

Mercury is in the evening sky in the first week of November, pretty low and hard to spot.

Venus is also in the evening sky all month.

Mars: it's "Mars Month" again in November! The best views of Mars will be after 10:00 when Mars is higher in the sky. Mars will not be this close to us again until 2018! Mars will be closest to us during the first week of the month, after that we start pulling away from it and Mars will get smaller as the month goes on. Catch it in the first week of November!

Jupiter is getting higher in the morning sky this month.

Saturn is now rising about 11:00 p.m. as November begins, and around 9:00 p.m. by month's end. M44, the Beehive Cluster in Cancer, is only 2-3 degrees away from Saturn all month. This could be a nice sight in binoculars.

Uranus is well placed in the south for observation as darkness falls.

Neptune is also well placed in the south for observation as darkness falls.

Pluto is now out of reach for this year, disappearing behind the Sun. You'll have to wait for next spring to try for Pluto again.

Leonid Meteor Shower: peaks in the early morning hours of November 17. You might see up to 20 meteors per hour this year. Moon glare will "wash out" a lot of the fainter ones.

CCAS November Meeting

DATE: **Tuesday November 8, 2005**
TIME: 7:30 p.m. EST
PLACE: 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.

This month's constellation will be Cassiopeia, presented by Don Knabb.

Jim Anderson will give a presentation on lunar observing. We encourage all members to attend and share their experiences in moongazing.

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CCAS November Observing Session

The next CCAS Observing Session will be at the Brandywine Valley Association's Myrick Conservancy Center (see map on page 12) on Friday November 25, 2005 starting at sunset; or earlier, if you can get there earlier. If it's too cloudy on Friday, then the Observing Session will be on Saturday November 26, 2005. 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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CCAS Polo Shirts Available

You can purchase a classy polo shirt with the CCAS logo embroidered on the left breast. Price is $30.00 per shirt. Adult sizes S, M, L, XL only. Contact our Treasurer Bob Popovich to purchase yours!

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Treasurer's Report by Bob Popovich

September 2005 Financial Summary

Beginning Balance	$1,161
Deposits	281
Disbursements	133
Ending Balance	$1,309

Membership Renewals Due

11/2005:	Athens
	Buczynski
	Eaves
	Heck
	Hepler
	Okpaku
	Streib
12/2005:	Henderson
	Limeburner
01/2006:	Kovacs
	Whitman

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Membership Renewals

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

Bob Popovich
416 Fairfax Drive
Exton, PA 19341-1814

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

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Welcome!

We extend a warm welcome to our new members this month, Marty & Joan Malloy of West Chester; and Monica Charitnonchick and Joseph End, both of Malvern. We hope to see you all soon, and until then, clear skies!

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Calendar Notes

November 1, 2005 (Tuesday)	Hercules Observing Cluster meets
November 8, 2005 (Tuesday)	CCAS Meeting Location: West Chester University 7:30 p.m. EST COM: Cassiopeia
November 8, 2005 (Tuesday)	Hercules Observing Cluster meets
November 15, 2005 (Tuesday)	Hercules Observing Cluster meets
November 22, 2005 (Tuesday)	Hercules Observing Cluster meets
November 25/26, 2005 (Friday/Saturday)	CCAS Observing Session Location: BVA sunset
November 29, 2005 (Tuesday)	Hercules Observing Cluster meets
December 6, 2005 (Tuesday)	Hercules Observing Cluster meets
December 9/10, 2005 (Friday/Saturday)	CCAS Observing Session Location: BVA sunset (moon gazing night)
December 13, 2005 (Tuesday)	CCAS Meeting Location: TBA 7:30 p.m. EST
December 13, 2005 (Tuesday)	Hercules Observing Cluster meets
December 20, 2005 (Tuesday)	Hercules Observing Cluster meets
December 21, 2005 (Wednesday)	December Solstice at 1:35 p.m. EST First Day of Winter in Northern Hemisphere
December 27, 2005 (Tuesday)	Hercules Observing Cluster meets

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John Hepler Receives his Webmaster of the Year Award

CCAS President Kathy Buczynski presents John Hepler with the Astronomical League's Webmaster of the Year Award at the September 2005 CCAS meeting. Congratulations John!

Photo by Ed Lurcott

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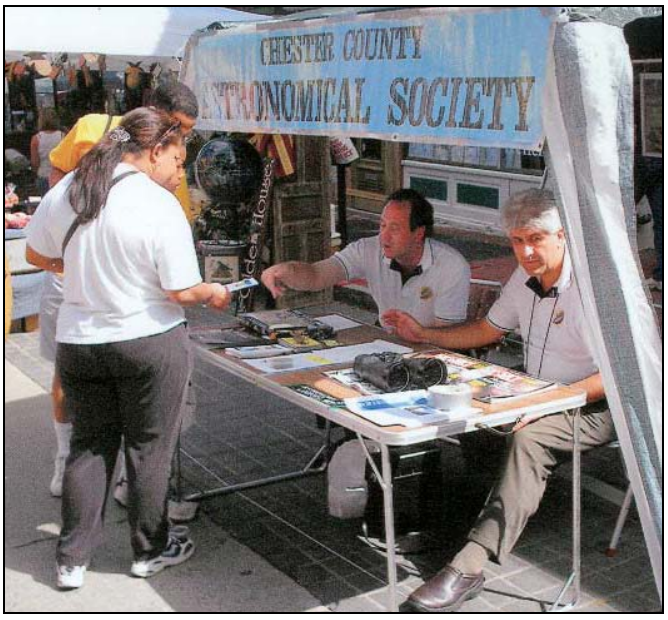
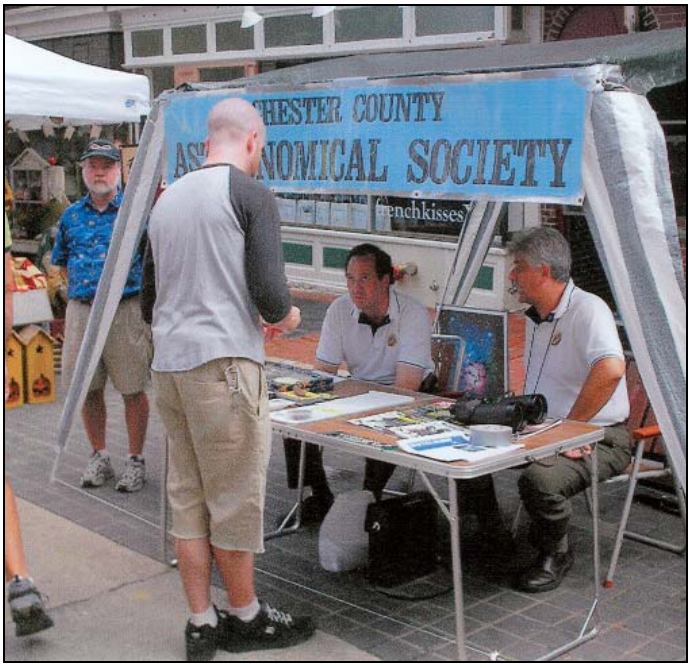
CCAS Display at the West Chester Restaurant Festival: September 18, 2005

We had a display booth at the West Chester Restaurant Festival this year. This gave us an opportunity to meet and talk with a lot of people about astronomy. Ed Lurcott took these photos of our display that day.



Jim Anderson and Bob Popovich talk with some passers-by. How about those classy CCAS polo shirts? Wouldn't you like to have one too? Contact Bob to get yours now before they're all gone!



Another visitor: boy, were we busy that day! Don Knabb waits at the left to relieve either Jim or Bob for a lunch break.

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Report on Sally Ride Science Festival

By Kathy Buczynski

On Sunday, October 9, 2005, the Society was asked to participate in the Sally Ride Science Festival held at West Chester University. The Festival's aim is to encourage middle school aged girls in the sciences. Other exhibitors included the Brandywine Valley Association, Glaxo Smith Kline, and the Physics Department of the University of Pennsylvania.

The CCAS Display at the Festival.

Many stopped by our booth to look through a telescope and observe the orreries. We passed out information on how to get started in astronomy and information on the CCAS.

About 600 people attended the Festival which included discovery stations and a keynote speech by Sally Ride herself. Dr. Ride discussed her background and space travel. She included a slide presentation of photos taken from her shuttle flights and a question and answer session.

Dr. Sally Ride

John Hepler, Sally Ride, and Kathy Buczynski.

After the speakers, John Hepler and I stuck around to get some lunch and to see if we could get more pictures. Just before the end of the day, Dr. Ride came to the exhibitor's hall where we met, thanked her for her efforts and took some pictures. Personally, I was a bit awestruck; she got to do what many of us only dream of.

I'd like to thank the following CCAS members for attending and bringing their equipment and informational material: Don and Barb Knabb, Ed Lurcott, Deb and Neil Goldader, Bill O'Hara, and John Hepler.

Thank you. Without your participation, we would not have been successful.

Dr. Ride and Kathy shake hands after Dr. Ride autographed Kathy's "Sally Ride Science Festival" shirt.

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Helpful Hints From a Beginner in Pursuit of the Lunar Club Award

By Don Knabb

At one of the first meetings I attended as a new member of the Chester County Astronomical Society, I heard one of the more experienced members talk about the Astronomical League observing clubs. It was mentioned that some of the clubs are relatively straightforward and the Lunar Club can be completed in several nights of observing. Well, I thought those pins looked pretty neat, and I've always been interested in our nearest neighbor in space and what the heck, this sounded like fun for those nights when the moon is overpowering the stars!

I'm now about 6 months into the quest and although it's not quite as easy as it sounded, it's not that much more difficult either. And along the way I've gained an appreciation for the moon that I would never have without pursuing the Lunar Club certificate. It is absolutely true that the more you look, the more you see.

I haven't observed all the items on the list, but I can see my way through to the end before too many more lunar cycles pass. So I thought I'd share a few ideas that I picked up along the way to help you get off to a good start if you want to pursue this award. If you're the kind of person who would rather figure things out for yourself, then don't read any further. But if you'd like a few hints to get you started then read on.

First of all, you need the information from the Astronomical League website. Go to http://www.astroleague.org/ and use the drop down menu under Observing Clubs. The Lunar Club is considered an Introductory Club and you can find all

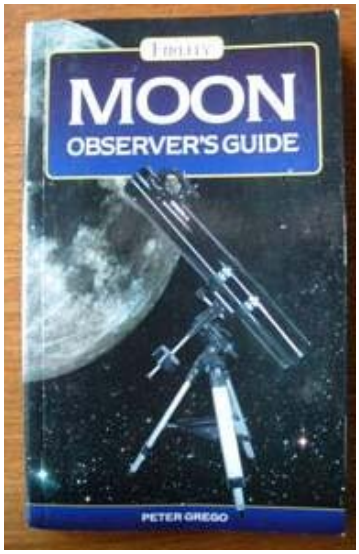
the rules and checklist of objects by following the links.

[Editor's note: Jim Anderson usually has copies of the Lunar Club rules and observing list at CCAS meetings.]

Next, you need a good moon map. I'm sure there are several that will work, but the one I use is *Map of the Moon* by Antonín Rükl.

I bought mine from the *Sky and Telescope* website at http://www.shopatsky.com/index.asp?PageAction=VIEWPROD&ProdID=308. The map has almost everything you are looking for already labeled. And when you use a telescope for some of the observations, there is a mirror image on the back of the map that is very useful. There's also a detailed list of every labeled object and coordinates to help you find the objects on the main map or the mirror map. It's also cool that Dr. Rükl labeled all the landing sites of every moon mission, manned and robotic. That was fun to share with some neighbors a few weeks ago when we were doing some moon and star observing.

You might be able to complete the observations with just the map, but I also used a book called *Moon Observer's Guide*, by Peter Grego.



What's nice about this book is that it lists the days of the lunar month and the items that are best observed at those times. Here's an example of how the lunar days are covered.

As you can see, a day is shown in a top and bottom half and several pages of text discuss the features. This is helpful to pick which objects to look for on what date.

What else do you need? There are naked eye, binocular and telescope objects on the observing list, so you need that equipment. Also helpful are a table and chair since you'll be observing for several hours over several nights and it's very difficult to do all this while standing holding several things.

One other thing you might want to have available is a piece of free software, the Virtual Moon Atlas. You can find it at http://www.astrosurf.com/avl/UK_index.html. This isn't necessary, but it's fun to look at on cloudy nights.

I started by listing the dates of the lunar month alongside the checklist for the items. That is, if the list says something can be viewed on lunar day 7, I used a calendar and the date of the new moon to figure what date on the calendar is day 7. That helped me a lot, but what really was a breakthrough for me was to put little sticky notes near the items I was searching for, as seen in this picture of my map.

What this did was allow me to put the map down on my table and start observing. Before I used the sticky notes I was repeatedly turning the map over to find the location of the items. That sounds easy, and it is in the kitchen, but in the dark with a flashlight and a breeze it gets to be difficult.

There are 100 features that must be observed to earn the award. If you just can't find some of them there are optional activities that you can do to still earn your certificate without all the listed observations. Some nights I've only seen 2 or 3 items, some nights I've picked up over a dozen. Of course the weather is a big factor in your observations. If there a few cloudy nights in a row you must wait a month to try for some of the objects again. One would think you could get them all near full moon, but that's actually a difficult time to observe due to the lack of shadows. Features just don't stand out with the direct light from the sun. The best time to view an object is when it's relatively near the terminator of light and darkness.

The Astronomical League gives you a person to contact if you have questions on the objects. I contacted this person to clarify one object. The list has an item named "Petavius Wall." I couldn't find this item mentioned on the map or in my book. But, I could clearly see in photos a rille (wall) extending from the center of the crater Petavius to the edge of the crater. Steve Nathan, the Lunar Club coordinator confirmed that this rille is indeed what is meant by Petavius Wall. I haven't found it yet, but now I know what to look for.

Pursuing this club has been a lot of fun. It's sort of a "Where's Waldo" quest in the dark. If you chose to give this a try I guarantee you will see more of the moon than you ever did before.

And guess what? The Astronomical Club is opening a new club in December. It's called The Lunar II Club. That sure sounds like more fun!

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Photos from the Hercules Observing Cluster

By Kathy Buczynski

Marty Malloy observing with his granddaughters Morgan (left) and Becka (right).

Ed Lurcott and Nicholas La Para work with the Society's 8-inch loaner telescope at the August 23 meeting of the Hercules Cluster.

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Book Review: *The Elegant Universe*

By Bob Popovich

"A View From The ISS"

I'd like to offer a very high-level (from the space station) review of a recent addition to our library—an outstanding book entitled *The Elegant Universe* by Brian Greene. It's not often that a book on physics (both quantum and cosmological) is named a Pulitzer finalist, but this one was. Not only that, it was a PBS series on *Nova* as well.

Of all the books on quantum physics, relativity and string theory with which I have wrestled (and to whom I've lost), this one stands head and shoulders above the rest. Why, you ask? Well, it's because it is so clearly written that it can actually be understood—at least on some elementary level. Avoiding complex math, Greene (usually) uses simple examples to illustrate the principals of string theory, relativity and the thus-far elusive theory that would tie these two together.

The writing is crisp and rich and his examples are well thought-out. Covering the essentials from a micro level that staggers my imagination to a macro level of equal awe, *The Elegant Universe* is a most enjoyable book.

I encourage you to read it. Perhaps we can even sit down and have a discussion on string theory over a cup of coffee. And it's probably a good bet that you'll be the first kid on your block to do that!

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NASA Space Place

A Wrinkle in Space-Time

By Trudy E. Bell

When a massive star reaches the end of its life, it can explode into a supernova rivaling the brilliance of an entire galaxy.

What's left of the star fades in weeks, but its outer layers expand through space as a turbulent cloud of gases. Astronomers see beautiful remnants from past supernovas all around the sky, one of the most famous being the Crab Nebula in Taurus.

When a star throws off nine-tenths of its mass in a supernova, however, it also throws off nine-tenths of its gravitational field.

Astronomers see the light from supernovas. Can they also somehow sense the sudden and dramatic change in the exploding star's *gravitational field*?

Yes, they believe they can. According to Einstein's general theory of relativity, changes in the star's gravitational field should propagate outward, just like light—indeed, at the speed of light.

Those propagating changes would be a gravitational wave.

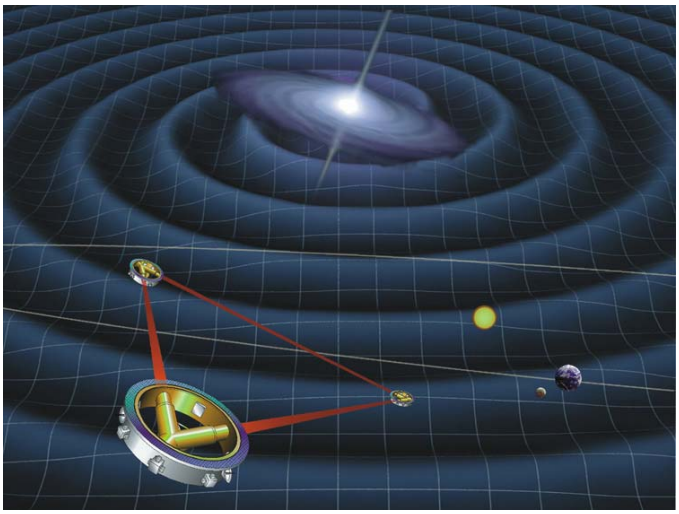
Einstein said what we feel as a gravitational field arises from the fact that huge masses curve space and time. The more massive an object, the more it bends the three dimensions of space and the fourth dimension of time. And if a massive object's gravitational field changes suddenly—say, when a star explodes—it should kink or wrinkle the very geometry of space-time. Moreover, that wrinkle should propagate outward like ripples radiating outward in a pond from a thrown stone.

The frequency and timing of gravitational waves should reveal what's happening deep inside a supernova, in contrast to light, which is radiated from the surface. Thus, gravitational waves allow astronomers to peer inside the universe's most violent events—like doctors peer at patients' internal organs using CAT scans. The technique is not limited to supernovas: colliding neutron stars, black holes and other exotic objects may be revealed, too.

NASA and the European Space Agency are now building prototype equipment for the first space experiment to measure gravitational waves: the Laser Interferometer Space Antenna, or *LISA*.

LISA will look for patterns of compression and stretching in space-time that signal the passage of a gravitational wave. Three small spacecraft will fly in a triangular formation behind the Earth, each beaming a laser at the other two, continuously measuring their mutual separation. Although the three spacecraft will be five million kilometers apart, they will monitor their separation to one billionth of a centimeter, smaller than an atom's diameter, which is the kind of precision needed to sense these elusive waves.

LISA is slated for launch around 2015.



LISA's three spacecraft will be positioned at the corners of a triangle 5 million kilometers on a side and will be able to detect gravitational wave induced changes in their separation distance of as little as one billionth of a centimeter.

To learn more about *LISA*, go to http://lisa.jpl.nasa.gov. Kids can learn about *LISA* and do a gravitational wave interactive crossword at

http://spaceplace.nasa.gov/en/kids/lisaxword/lisaxword.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

"Now You See, Now You Don't"

By Bob Popovich

Generally, generalizations leave one open to brilliant retorts commencing with "Yeah, but…" So if I were to say that generally, people prefer routine to change, you could (and should) reply "Yeah but, you know what they say: 'variety is the spice of life.'" Spice, indeed. And to me, delightful spice at that.

But not all stargazers have shared this perspective for, going back in time as far as you care to travel, people not only preferred order and constancy in the celestial heavens, they positively expected it. And in those cases when the perpetual routine was spiced with the unexpected, emotions from surprise to shear dread were the likely result. Now for us sophisticated amateur astronomers (you know who you are), unexpected changes to the workings of the celestial machinery are probably very few in number. Perhaps that's too bad. And when they do occur, we can probably figure them out relatively quickly and without any overwhelming desire to sacrifice a virgin.

But the history of astronomy is punctuated with the spice of that which is not routine. And despite preference for the normal, the weird, (even if frightening) is usually more interesting. And few things in the night sky would seem to be more routine than the constancy of a star's brightness. Yet, there are stars that refuse to behave routinely. It must have taken early astronomers a while to notice, but once they did, these spicy aberrations must surely have become a source of fascination and fear.

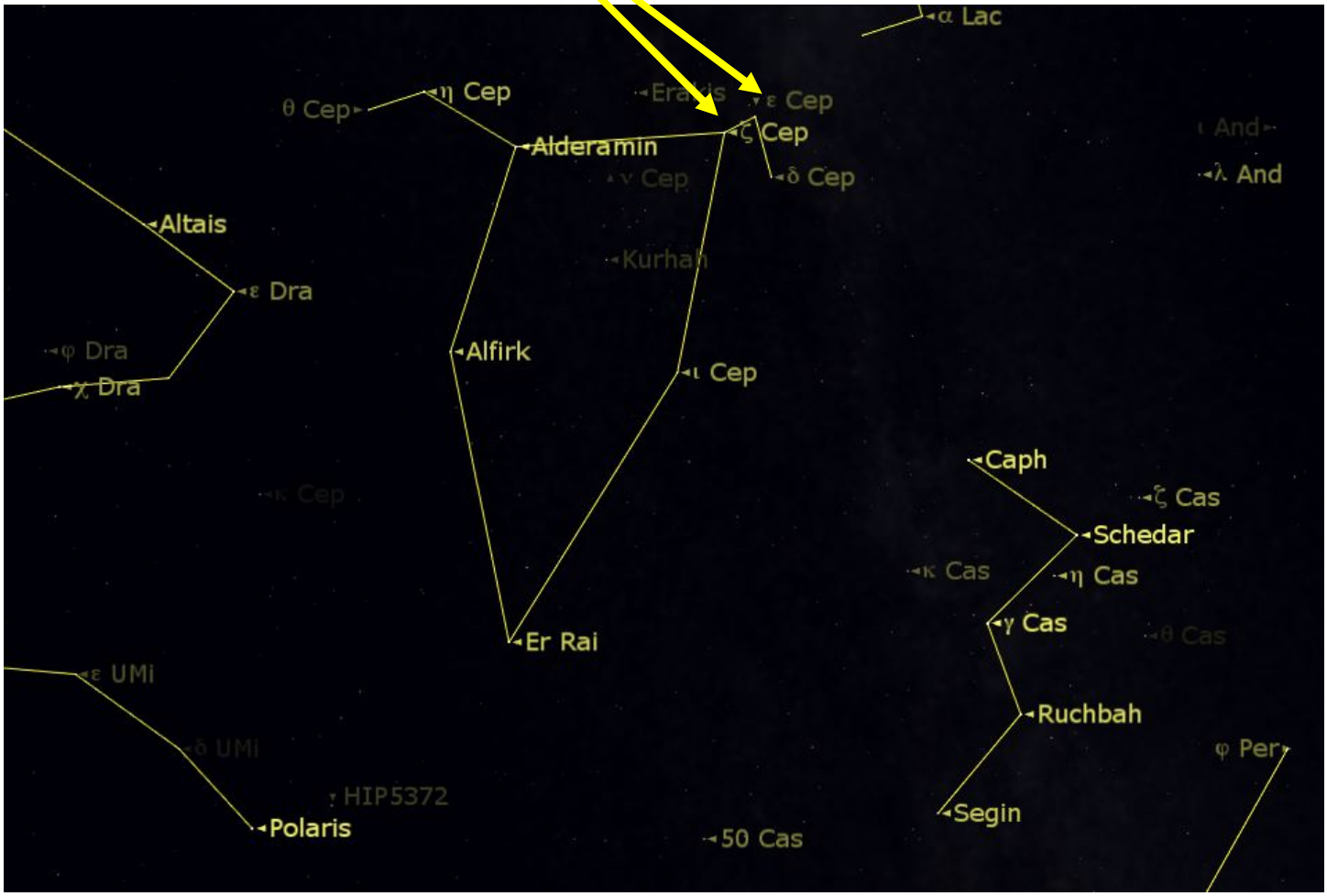
No season is without these variable suns, but the autumn contains some that are especially engaging to yours truly. Observing them takes patience over more than one night and a bit of research. You may not see the variability in a single evening, but as you observe consider…

- A star whose energy output is waxing and waning on a precise cycle
- A star whose energy output varies without rhyme or reason
- A star burning with unwavering output but whose appearance is changed by an unseen companion.

So if you're ready, let's look at one notable example of each of these three.

The prototype regular variable star has to be Delta (δ) Cephei. All stars are subject to outward pressure from their nuclear radiation and inward pressure from their gravity. Most stars maintain a balance between these two opposing forces and pour out radiation in a routine manner for millions or billions of years. Delta Cephei, however, struggles—it swells as its radiation pressure balloons its size and then shrinks as its gravitational force gets the upper hand. Completing a cycle every 5 days, 8 hours and 47 minutes, it has been the subject of intense study, literally without interruption, since its identification in 1784. It's easy to find. A good ephemeris will give you the dates and times of minima and maxima, but if you'd simply like to enjoy noticing the change by ocular interpolation, compare the magnitude of Delta to the two neighboring stars as noted in the illustration below:

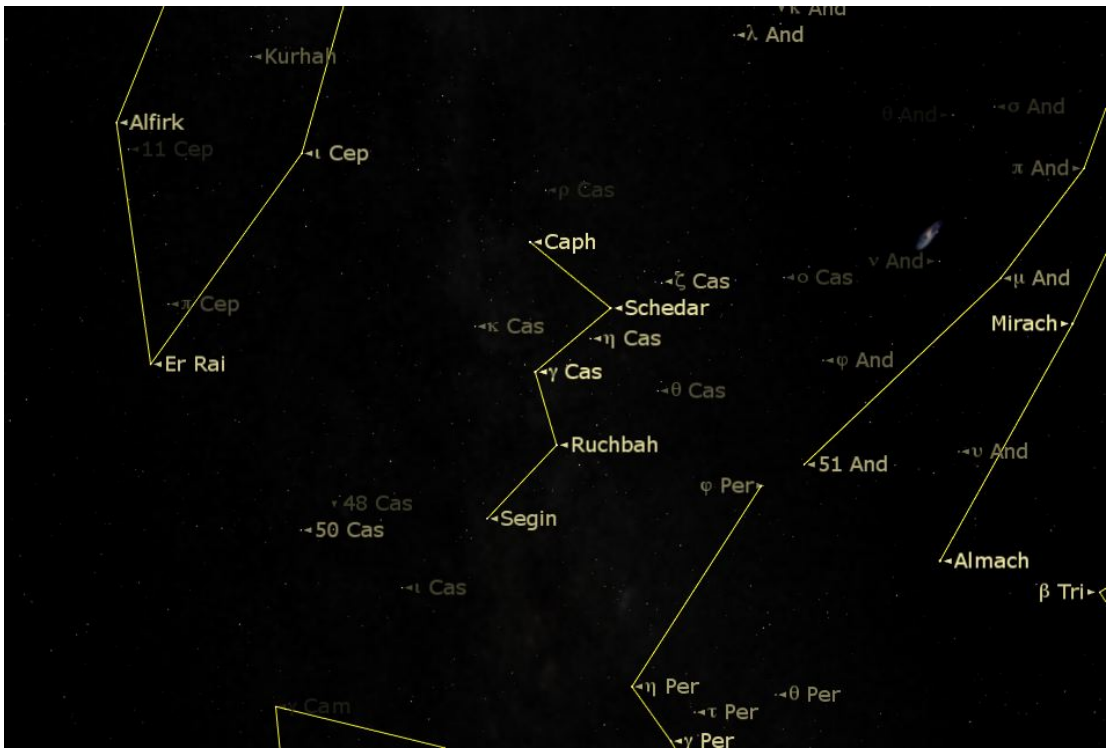
Compare Delta's brightness to these two (ε Cep and ζ Cep)



If you enjoy reading about astronomy, Delta Cephei has a fascinating place in the history of astronomy and cosmology—check it out!

In sharp contrast to the precision of Delta Cephei, nearby Gamma (γ) Cassiopeiae is an irregular variable. Astronomers theorize that it is spinning at some 300 Kmps (150x that of our sun), throwing off mass in the process. This star has been recorded varying in magnitude by 50%—from magnitude 1.6 to 3.0. You may never see an appreciable change, but then again, it's worth a peek. It's interesting to note that this Gamma star, though quite bright, is not a named star. The ancients had a habit of naming bright stars so the fact that this one is not named may be an indication that it was noticeably dimmer in ancient times.

Gamma (γ) Cassiopieae is the middle star of Cassiopeia's "W". In the illustration below, notice its proximity to Cepheus (on the left).



The last of our irregular trio is a named star with a long history. Arab astronomers noticed and tracked the variability of this star. But having no way to understand the nature of the variability they dubbed this red star *al ghoul*—"the demon." We of course know it as Algol, the Beta (β) star in Perseus. Over a period of 2.867 days Algol varies in brightness from magnitude 2.1 to 3.4. But unlike the previous two stars, this variability is not its own doing. Algol, you see, has a dimmer binary companion that we can't see but that we can detect. As it passes to either side of Algol we see the cumulative brightness of both stars—the maxima. As it passes behind Algol the apparent brightness drops—the minima. Another lesser dimming occurs as the companion passes in front of Algol. The minima lasts about 10 hours. So, checking an ephemeris, you could follow Algol through its minima phase and perhaps even notice some brightening. Here again comparing your observing target to nearby non-variable stars is very helpful. In any case, imagine the movement of Algol's unseen companion as you observe.

Notice Cassiopeia in the upper left of this chart.

Autumn is a great time to spice up your observing menu. And giving time to these observing targets builds patience and allows you to deepen your appreciation of the mechanics of the universe. Such an appreciation must certainly be a spice of life…

Next Time: Home for the Holidays

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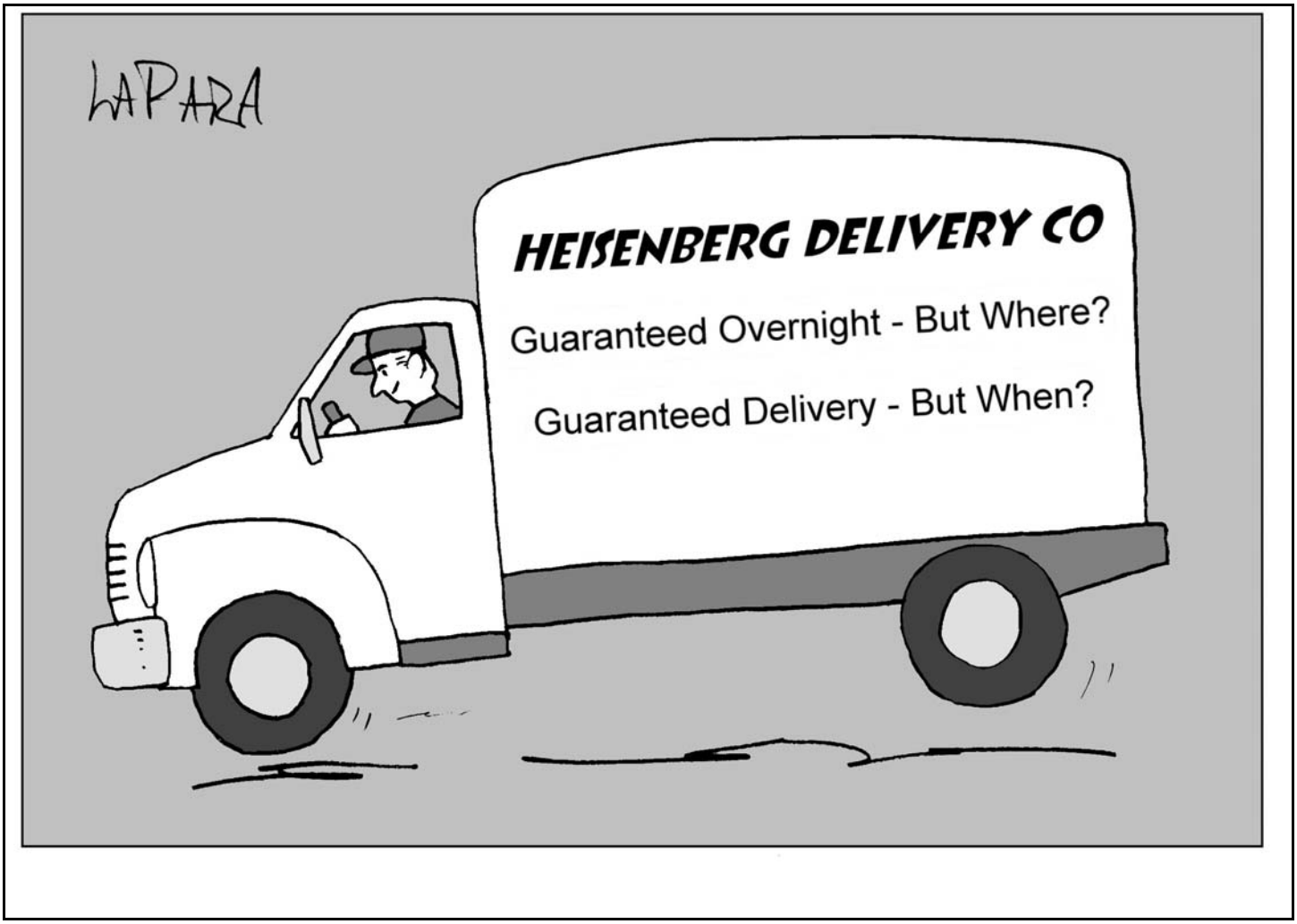

Cartoon by Nicholas La Para

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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
(610) 269-1737

Observing: Ed Lurcott
(610) 436-0387

Education: Kathy Buczynski
(610) 436-0821

Webmaster: John Hepler
(610) 363-0811

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

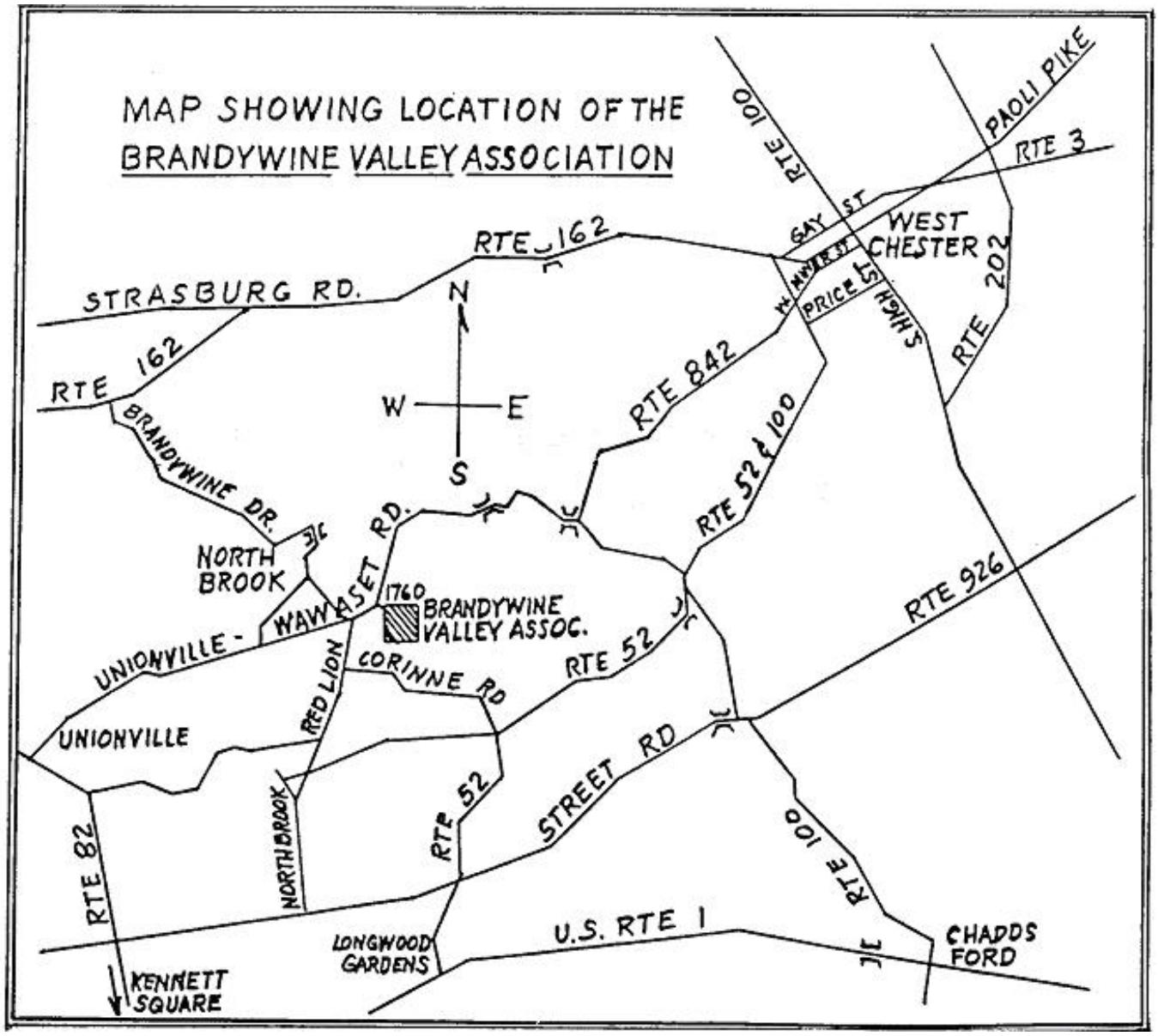
Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$32.95** which is much less than the newsstand price of $66.00, and also cheaper than individual subscriptions ($42.95)! Make **sure** you make out the check to the **Chester County Astronomical Society**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

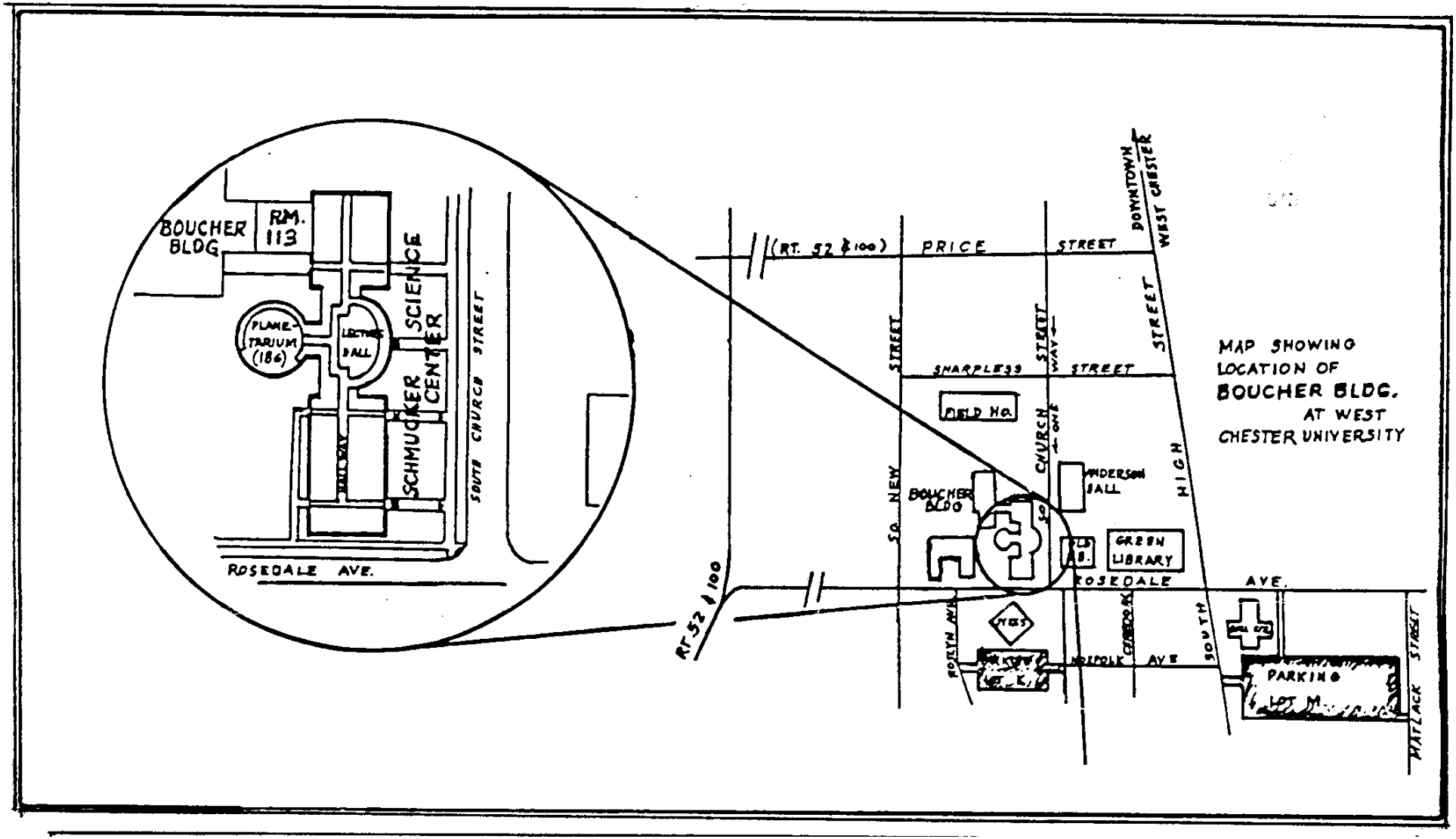
John Hepler is the Society's Webmaster. You can check our Website at:

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 (610-363-0811) or e-mail to **JohnHepler@comcast.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.