Observations
A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

SEPTEMBER 2003
(VOLUME 11, NO. 9)

## CCAS September Meeting

DATE: **Tuesday September 9, 2003**
TIME: 7:30 p.m. EDT
PLACE: Department of Geology and Astronomy Lecture Room (Room 113 – Boucher Building) West Chester University
LOCATION: South Church Street West Chester, PA

Our guest speaker for September is Fronefield Crawford III, Ph.D., who will give a presentation entitled "How Stars Work," which concerns the processes of stars and star formation. Dr. Crawford is a visiting Assistant Professor of Physics at Haverford College.

Looking ahead to October, our speaker will be Dr. David Klassen, Associate Professor of Physics and Astronomy at Rowan University in Glassboro, NJ. He will talk about his research relating to Mars ( "Infrared Observations of Mars"). Dr. Klassen organizes the International MarsWatch, which collects images and observations from professional and amateur astronomers worldwide.

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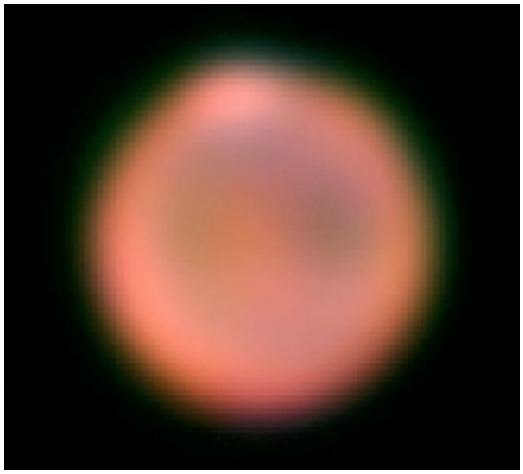
### Mars from Malvern!



This is a processed VRI image of Mars made by five of Deb Goldader's 11th graders from Friends' Central using the 28-inch telescope at the Flower & Cook Observatory on 8/23/2003.

## CCAS September Observing Session

Our September Observing Session will be held at the home of member Vic Carlucci. The star party will start on Friday September 26 at around 7:00-7:30 p.m. There is a "cloud date" of Saturday September 27 (same time). Refreshments, beer, etc., will be served. All CCAS members are welcome to bring some food specialties, families, telescopes, etc.

Directions:

Take RT 100 NORTH from West Chester or Exton, past the EAGLE TAVERN to FONT ROAD. Turn LEFT on FONT ROAD.

Go about 1.4 MILES to BRYAN WYND, turn RIGHT on BRYAN WYND.

Go to the THIRD HOUSE on the RIGHT.

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7 BRYAN WYND
GLENMOORE, PA 19343
610-458-7457
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Please call Vic if you plan to attend so he has some idea about how many people are going to show up. Thanks.

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## CCAS Backyard Observing Class Starting

The fall class, *Backyard Observing*, will concentrate on actual observing: how to find things in the night sky, what's there to see, etc. Each class will include some actual observing, if it is clear that night. Students will be encouraged to bring binoculars and telescopes, if they have them. Each class session will center on some specific constellations visible that night, as well as lunar, solar, and planetary observing. The class will consist of 6 one-hour sessions, on the first and third Tuesdays of the month, starting with September 23. This is the tentative schedule:

| | |
|---|---|
| Sept. 23 | Lyra and Cygnus |
| Oct. 7 | Pegasus and Andromeda |
| Oct. 21 | Cassiopeia and Cepheus |
| Nov. 4 | Lunar and Solar Observing; the Zodiac |
| Nov. 18 | Perseus |
| Dec. 2 | Taurus |

All classes are scheduled to be held at the Flower & Cook Observatory, located in Willistown Township on Providence Road, just west of the intersection with Warren Avenue. Classes will begin at 7:00 p.m. (ET). Registration will be limited to 40 students, due to the classroom size.

Cost is $20.00 per person, $30.00 per family (with the same mailing address), and is FREE for current CCAS members. There will be a drawing at the last class for a copy of the excellent beginner's book *Turn Left At Orion*. All attendees will also receive a copy of Sky Publishing's annual publication *Skywatch 2004*.

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

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

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## September Skies

### Autumnal Equinox: September 23

The Sun crosses the equator on September 23 at 6:47 a.m. Eastern Daylight Time, marking the official beginning of autumn in the Northern Hemisphere. In the Southern Hemisphere, it is the beginning of spring. Equinox means "equal night," meaning that on September 23 the night is about the same length as the day.

### Moon Phases

| | | |
|---|---|---|
| First Quarter | 9/3 | |
| Full Moon | 9/10 | "Full Harvest Moon" |
| Last Quarter | 9/18 | |
| New Moon | 9/25 | |

The Native American name for this month's Full Moon was obtained from the *Farmer's Almanac* Website. The Full Moon closest to the Autumnal Equinox is the Harvest Moon; one out of three years (on average) that puts the Harvest Moon in October. This year, of course, it falls in September. During what is the peak of the harvesting season, farmers can work late into the night by the light of the Full Moon; hence the name. Another lunar tidbit: most of the time the moon rises about 50 minutes later each successive night. Right around the equinox, though, across most of the US it seems to rise only about 25-30 minutes later each night. In Europe and Canada, it rises about 10-20 minutes later each night around the Equinox.

### The Planets

Mercury appears in the morning sky in the latter half of September, rising as early as an hour before the Sun by September 27. That day marks Mercury's earliest rising before the Sun during this morning apparition, meaning it will get fairly high in the east just before sunrise. This means that September 27 is a good morning to look for Mercury.

Venus emerges into the evening sky this month, but doesn't get far from the Sun. It will be very tough to even spot Venus in the September evening sky.

Mars is **still** the big show in our skies in September. It is now receding from Earth after the closest approach in human history at opposition on August 27. Yet even at the end of September it will **still** be closer to us than it will be at any time until 2018! And, it is rising earlier every night, meaning that it is high enough above the horizon for good telescopic viewing **earlier every night**! So get out there and look at Mars!

Jupiter is the brightest "star" in our eastern morning skies, blazing away low in the east before sunrise.

Saturn is in the morning sky, and is high in the southeast by sunrise.

Uranus is in the evening sky in September, not far from Mars.

Neptune is also in the evening sky this month, in Capricornus.

Pluto is now low in the southwest in the evening, in Ophiuchus. The "window of opportunity" for tracking down Pluto this year is either closed, or closing fast.

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## Calendar Notes

| | |
|---|---|
| September 9, 2003 (Tuesday) | CCAS Meeting<br>Location: West Chester University<br>7:30 p.m. EDT |
| September 23, 2003 (Tuesday) | Backyard Observing Class<br>Location: Flower & Cook Observatory<br>7:00 p.m. EDT |
| October 7, 2003 (Tuesday) | Backyard Observing Class<br>Location: Flower & Cook Observatory<br>7:00 p.m. EDT |
| October 14, 2003 (Tuesday) | CCAS Meeting<br>Location: West Chester University<br>7:30 p.m. EDT |
| October 21, 2003 (Tuesday) | Backyard Observing Class<br>Location: Flower & Cook Observatory<br>7:00 p.m. EDT |
| November 4, 2003 (Tuesday) | Backyard Observing Class<br>Location: Flower & Cook Observatory<br>7:00 p.m. EST |
| November 11, 2003 (Tuesday) | CCAS Meeting<br>Location: West Chester University<br>7:30 p.m. EST |
| November 18, 2003 (Tuesday) | Backyard Observing Class<br>Location: Flower & Cook Observatory<br>7:00 p.m. EST |
| December 2, 2003 (Tuesday) | Backyard Observing Class<br>Location: Flower & Cook Observatory<br>7:00 p.m. EST |
| December 9, 2003 (Tuesday) | CCAS Meeting<br>Location: **TBD**<br>7:30 p.m. EST |

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## Newsletter Deadlines

These are the deadlines for submitting material for publication in the newsletter, through the December 2003 issue.

| Issue | Deadline |
|---|---|
| October 2003 | 09/26/2003 |
| November 2003 | 10/24/2003 |
| December 2003 | 11/25/2003 |

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## Treasurer's Report

By Bob Popovich

July 2003 Financial Summary

| | |
|---|---|
| Beginning Balance | $1,268 |
| Deposits | 118 |
| Disbursements | 196 |
| Ending Balance | $1,190 |

Membership Renewals Due

| | |
|---|---|
| 08/2003: | Morgan |
| 09/2003: | Furman |
| 10/2003: | Anderson |
| | Hogate |
| | Liberati |
| | Volcheck |

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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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NASA's Space Place

## Careful Planning and Quick Improvisation Succeed in Space Biz

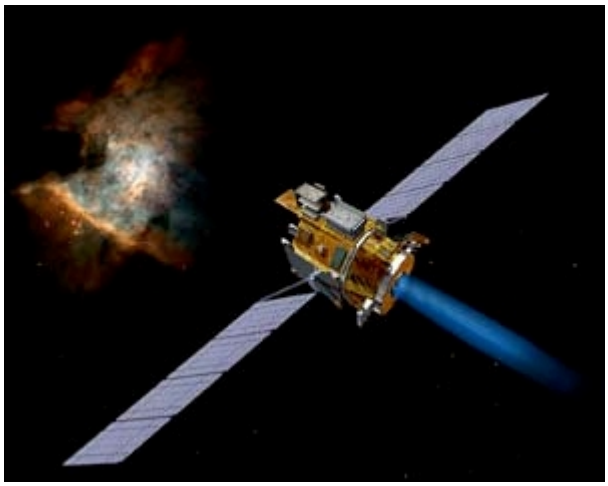
By Dr. Tony Phillips

On December 18, 2001, ground controllers at JPL commanded NASA's Deep Space 1 (DS1) spacecraft to go to sleep. "It was a bittersweet moment," recalls Marc Rayman, the DS1 project manager. Everyone was exhausted, including Deep Space 1, which for three years had taken Rayman and his team on the ride of their lives.

DS1 blasted off atop a Delta rocket in 1998. Most spacecraft are built from tried-and-true technology—otherwise mission controllers won't let them off the ground. But Deep Space 1 was different. Its mission was to test 12 advanced technologies. Among them: an experimental ion engine, a solar array that focused sunlight for extra power, and an autopilot with artificial intelligence. "There was a good chance DS1 wouldn't work at all; there were so many untried systems," recalls Rayman.

Nevertheless, all 12 technologies worked; the mission was a big success.

Indeed, DS1 worked so well that in 1999 NASA approved an extended mission, which Rayman and colleagues had dreamed up long before DS1 left Earth—a visit to a comet. "We were thrilled," says Rayman.



An artist's conception of Deep Space 1 in its native habitat (however, it did not get that close to the Orion Nebula!)

And that's when disaster struck. DS1's orientation system failed. The spacecraft couldn't navigate!

What do you do when a spacecraft breaks and it is 200 million miles away? "Improvise," says Rayman.

Ironically, the device that broke, the 'Star Tracker,' was old technology. The DS1 team decided to use one of the 12 experimental devices—a miniature camera called MICAS—as a substitute. With Comet Borrelly receding fast, they reprogrammed the spacecraft and taught it to use MICAS for navigation, finishing barely in time to catch the comet. "It was a very close shave."

In September 2001, DS1 swooped past the furiously evaporating nucleus of Comet Borrelly. "We thought the spacecraft might be pulverized," Rayman recalls, but once again DS1 defied the odds. It captured the best-ever view of a comet's heart and emerged intact.

By that time, DS1 had been operating three times longer than planned, and it had nearly exhausted its supply of thruster-gas used to keep solar arrays pointed toward the Sun. Controllers had no choice but to deactivate the spacecraft, which remains in orbit between Earth and Mars.

Rayman has moved on to a new project—Dawn, an ion-propelled spacecraft that will visit two enormous asteroids, Ceres and Vesta, in 2010 and 2014. "Dawn is based on technologies that DS1 pioneered," he says.

Even asleep, DS1 continues to amaze.

Find out more about DS1 at http://nmp.jpl.nasa.gov/ds1 . For kids, go to http://spaceplace.nasa.gov/ds1dots.htm to do an interactive dot-to-dot drawing of Deep Space 1.

*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

"Stop and Smell the Roses"

By Bob Popovich

Gazing at the stars is something I love. It's something *we* love. It's a wonderful stop-and-smell-the-roses activity. And when it's taken away (like by an infinite number of consecutive *yucky* days), it is sorely missed. But, I suppose, what's missed is more than merely observing. It's what the brain is doing while the eyes are at work. Our mind connects what we're seeing with what we understand about what we're seeing. A peek at infinity. A look back in time. An inkling of the vastness of creation. Seems like a lot of stuff going on. Yet stargazing is not work. It is a blessing. But in my pent-up eagerness to get out under the stars, I was thinking more about running and observing the roses than about stopping to truly enjoy them.

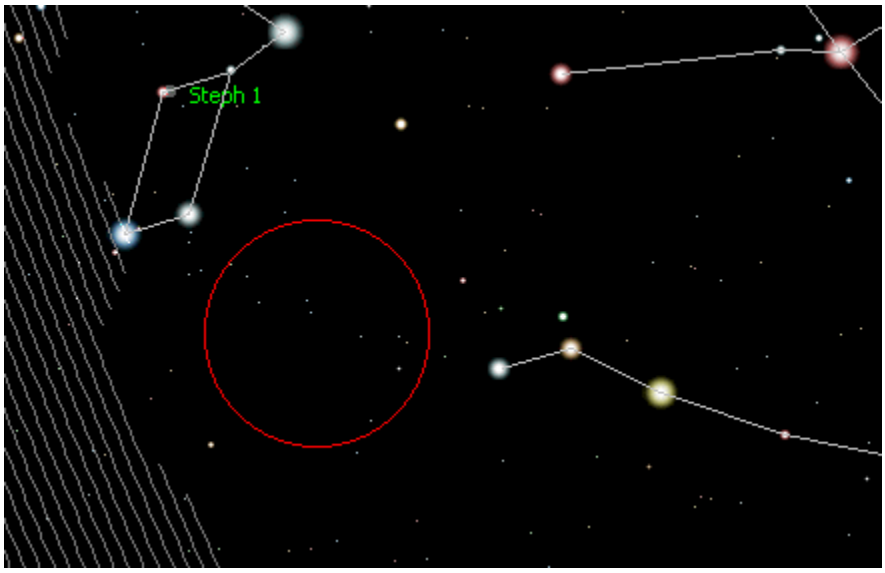
Here and there over the days of rain I had drafted a list of observing targets. It was an all-inclusive list that stretched from the eyepiece to the dew shield. Once clear skies returned, I reasoned, I would begin searching, locating, observing and recording. After all, there was a lot of catching up to do. But that's usually not the way it works with roses. Or blessings. They're rarely planned and never forced. They just unfold in surprisingly delightful ways. Of this I was reminded at our July observing session…

Arriving well before dusk, the equipment set-up proceeded in methodical silence. My star chart was at hand and it was well marked with all that I was to observe that night. And by the looks of it that evening, the atmosphere was going to cooperate wonderfully—it was clear, deep blue and still.

The exclamation "Mercury and Jupiter!" broke the soft silence. In the same binocular field of view, no less. What an unexpected treat! But there still was that list of observing targets; so back to my post I went to review my itinerary. It was nearly show time.

First stop: M13. It's always a lovely sight and its nature simply boggles the mind—500,000 stars so packed together. But how close could they possibly be? Certainly still light years apart. But then how far away must it be that moderate sized telescopes can't resolve any of its component stars? Answer—23,000 light years is the current estimate. As astounding as it is beautiful.

Next I happened to sweep over to see Vega. Star-hopping back to Hercules, I noticed a pretty zigzag line of some 13 stars stretching from the Beta star in Lyra to the Omicron star of Hercules. As if Hercules was straining to reach the lyre, yearning to get in touch with his softer side. I had never noticed this little line of stars. I paused and looked. And that was it. There was to be no more star hopping that night. It was time to stop and smell the roses. It was to be sweet indeed.

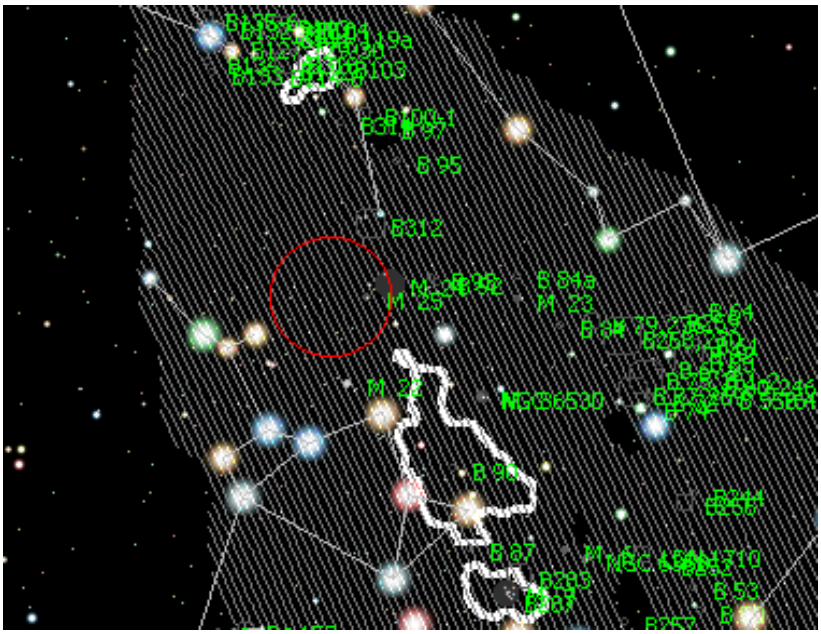



The red circle is a binocular field of view. Hercules is to the right.

After a while I turned south. Viewing south is a big deal with me because our tree line at home blocks the view south. And I was going for the jugular—Sagittarius. Now of course Sagittarius looks a whole lot more like a teapot than it does an archer. It was thrilling to get an unobstructed view to the galactic center. But the zodiacal teapot got me to thinking about another stop-and-smell-the-roses activity: afternoon tea. Betsy introduced this to me years ago and I don't hesitate to call it Britain's greatest contribution to civilization.

Star chart discarded, I sat down and just enjoyed. A seemingly unbroken line of star clouds, nebulae and clusters from Sagittarius' "spout" to the tip of Aquila's tail. Each with a distinctive, haunting beauty of its own.

I was lost in the moment, perfectly content just nudging the scope to and fro between the two constellations. Which of these wonders had Messier recorded? What about Herschel? On that evening, catalogs and numbers didn't matter. "A rose by any other name…"




The red circle is a binocular field of view. The jumbled catalogue listings tell you how crowded this area is.

The enjoyment of the moment was made complete in its sharing for I was accompanied that night by Nick, our younger son, and a friend of his—and they were actually interested in looking with me!

"So Mr. Amateur Astronomer, what did you learn on that clear night?" To this my only reply must be "Aren't the roses lovely, and oh, would you like another spot of tea?"

Next Time: It Takes More than A Village (People)

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Cartoon by Nicholas La Para

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CHESTER COUNTY ASTRONOMICAL SOCIETY

# Backyard Observing

AT

## FLOWER AND COOK OBSERVATORY

*753 Providence Road (near Warren Avenue) Malvern, PA*

**EVERY OTHER TUESDAY- 7:00 PM TO 8:00 PM**

## SEPTEMBER 23, THRU DECEMBER 2, 2003

### Admission Fee

**$20.00 PERSON**

**$30.00 FAMILY**

For family with the same address

### PRICE INCLUDES:

- Six one hour classes
- Hands on Observing Sessions
- Use of CCAS telescopes
- Three month CCAS membership
- CCAS Monthly Newsletter
- S&T's SkyWatch '04 magazine including star charts from Sept..,'03 thru Dec.,'04
- DRAWING for the beginner's guide book "TURN LEFT at ORION" by G. Consolmagno & D. M. Davis
- Glossary of Astronomical terms
- Several handouts
- FREE PARKING

### These Lessons will help you Learn:

- 8 constellations and the beautiful celestial objects they contain.
- How to observe the Sun and the Moon.
- How to find the Zodiac.
- How to find additional information for self-study.

Notes:

- Each session is an independent unit.
- Owning a telescope is NOT required for these classes, but if you have one or binoculars, you are invited to bring it.
- Classes are taught by members of CCAS, a club of amateur astronomers.
- Content of class sessions subject to change without notice.

Visit us online at: www.ccasastro.org

**ENROLLMENT IS LIMITED TO 40 PEOPLE**

**CALL KATHY BUCZYNSKI 610 436-0821 AND RESERVE YOUR SPACE NOW**

# *CCAS Information Directory*

## CCAS Lending Telescopes

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

## CCAS Lending Library

Contact our Librarian, Bill O'Hara, to make arrangements to borrow one of the books in the CCAS lending library. Copies of the catalog are available at CCAS meetings. Bill's phone number is 610-696-1422.

## Contributing to *Observations*

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

Or mail the contribution, typed or handwritten, to:

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

## Get CCAS Newsletters via E-mail

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

**jim.anderson@mckesson.com**

## 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): Frank Angelini
(610-873-7929)

Lunar: Ed Lurcott
(610-436-0387)

Double Star: Jim Anderson
(610-857-4751)

## CCAS Purpose

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

## CCAS Officers

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

**President**: Mike Turco
(610) 399-3423

**Vice Pres:** Steve Limeburner
(610) 353-3986

**Treasurer:** Bob Popovich
(610) 363-8242

**Secretary:** Caitlin Grey
(610) 918-9049

**ALCor and Newsletter:** Jim Anderson
(610) 857-4751

**Librarian:** William O'Hara
(610) 696-1422

**Observing:** Ed Lurcott
(610) 436-0387

**Education:** Kathy Buczynski
(610) 436-0821

**Public Relations**: Vic Carlucci
(610) 458-7457

## CCAS Membership Information

The present membership rates are as follows:

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

## Membership Renewals

Check the date printed on the address label of this issue of *Observations*; "exp." appears in front of it, just after your name. If you are due to renew, you may send your renewal check made out to "Chester County Astronomical Society". Mail to:

**Bob Popovich**
**416 Fairfax Drive**
**Exton, PA 19341-1814**

## *Sky & Telescope* Magazine Group Rates

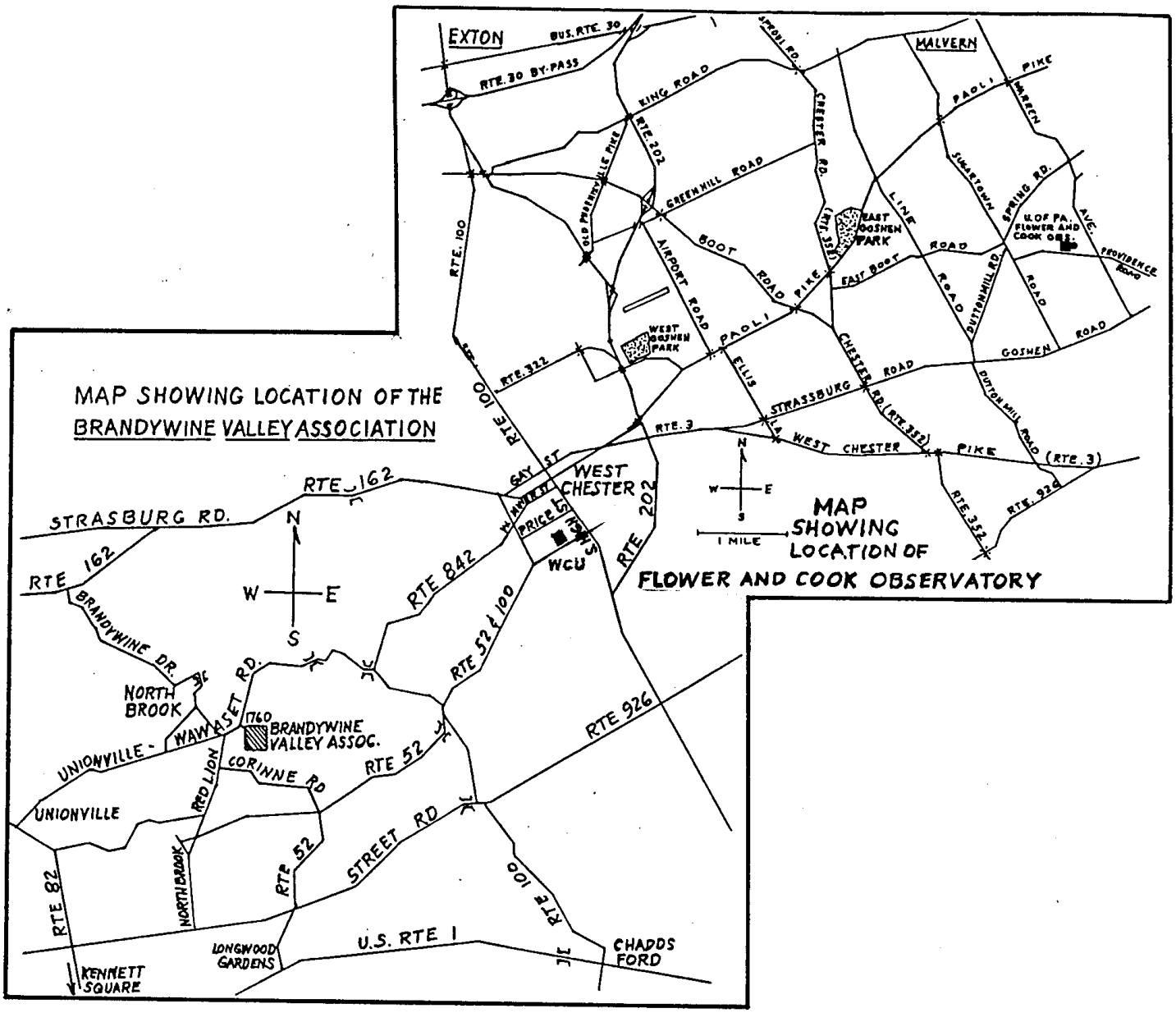
Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$29.95** which is much less than the newsstand price of $54.00, and also cheaper than individual subscriptions ($39.95)! Make out a check to the Chester County Astronomical Society, note that it's for *Sky & Telescope*, and mail to Bob Popovich. Or you can bring it to the next Society meeting and give it to Bob there. Buying a subscription this way also gets you a 10% discount on other Sky Publishing merchandise.

## CCAS Website

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

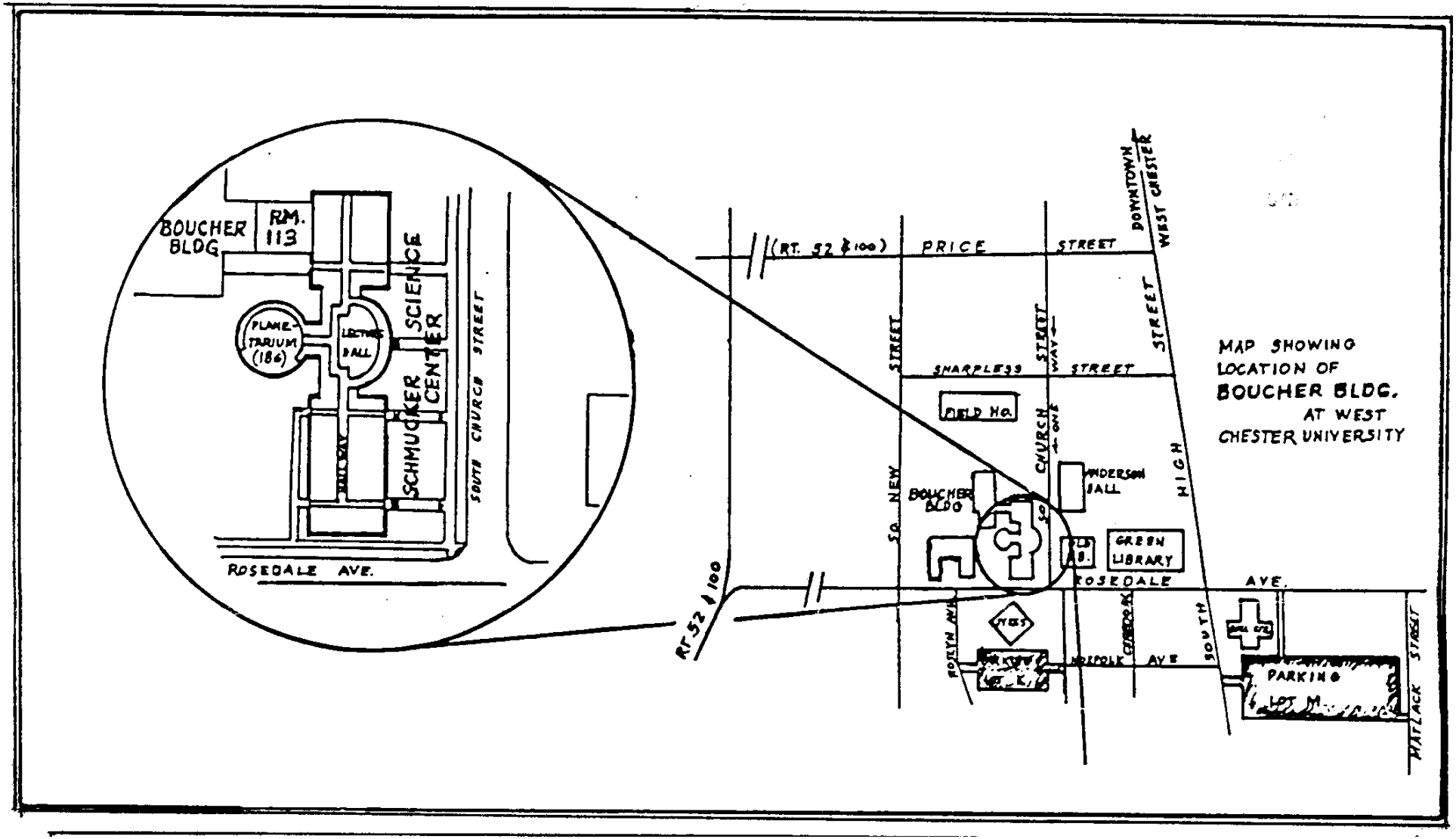
http://www.ccasastro.org/

Pete welcomes any additions to the site by Society members. The contributions can be of any astronomy subject or object, or can be related to space exploration. The only requirement is that it is your own work; no copying copyrighted material! Give your contributions to Pete LaFrance (610-268-2616) or e-mail to **lafrance@kennett.net**




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

To get to the observing site at the BVA property, turn off Route 842 into the parking lot by the office: look for the signs to the office along Route 842. From that parking lot, go up the farm lane to the left; it's about 800 feet or so to the top of the hill. If you arrive after dark, please turn off your headlights and just use parking lights as you come up the hill (so you don't ruin other observers' night vision).




Parking is available behind Sykes Student Center on the south side of Rosedale Avenue (Parking Lot K), and behind the Bull Center at the corner of Rosedale Avenue and South High Street (Parking Lot M). If you arrive early enough, you may be able to get an on-street parking space along South Church Street, or along Rosedale Avenue. You can take the Matlack Street exit from Rt. 202 South; Matlack Street is shown on the map at the lower right corner with Rt. 202 off the map. If approaching West Chester from the south, using Rt. 202 North, you would continue straight on South High Street where Rt. 202 branches off to the right. This would bring you onto the map on South High Street near Parking Lot M, also in the lower right corner.

# THE ADVENTURES OF "OGOL"

PRONOUNCED "OOOHGOL"
like "AAAHRNOLD.

## "OGOL GOES TO MARS"


10, 9, 8, 7, 6 . . .

"BLAST OFF"

CREATED BY
VICTOR CARLUCCI

"SHAKE
RATTLE
AND ROLE"

"JOINING THE
MILE HIGH CLUB

... WOOOH
140,000 LBS.
OF THRUST
FIVE Gs"

"THAT S BETTER, NO GRAVITY"

"ON MY WAY"

WHAT DANGERS AWAIT OUR "OGOL" ON HIS JOURNY TO THE RED PLANET? WATCH FOR THE NEXT EPISODE "THE DREADED PERSEUS".