



# Observations

A Monthly Publication Of The  
**CHESTER COUNTY ASTRONOMICAL SOCIETY**

**JUNE 2004**

(VOLUME 12, NO. 6)

Visit us online at [www.ccas.us](http://www.ccas.us)

## CCAS Summer Schedule

<u>June</u>	<u>July</u>	<u>August</u>
Friday June 18: Observing Session/Meeting Brandywine Valley Assoc. begins around sunset	Friday July 16: Observing Session/Meeting Brandywine Valley Assoc. begins around sunset	Friday Aug. 13: Observing Session/Meeting Brandywine Valley Assoc. begins around sunset
Saturday June 19: cloud date	Saturday July 17: cloud date	Saturday August 14: cloud date



### Flower and Cook Observatory Update

By Bruce Holenstein

Some of you know that the Flower and Cook Observatory is scheduled to be sold in June by the University of Pennsylvania to its Willistown Township neighbor. A group of "FCO Supporters," led by CCAS members Kathy Buczynski, Debbie Goldader, Paul Liebman, and Bruce Holenstein, have been meeting and communicating with officials from Penn, the Willistown Conservation Trust facilitating the sale, the attorneys from both sides, and everyone else we think can help. Penn has promised to make the new owners maintain public access for the Observatory. The FCO Supporters want to see that commitment in writing and to ensure that the "public access" is not temporary. Towards that end, we want Penn to require that a public access easement or stable long-term lease be provided to a non-profit that would make FCO available to the community, scouts, school kids, and scientists in perpetuity.

Unfortunately, we have been unsuccessful in our efforts so far. If you have an interest or any contacts that might be able to help us FCO Supporters, please contact one of the people listed above. Bruce can be reached at 610 405-7552 or [Bruce@Holenstein.com](mailto:Bruce@Holenstein.com).



### Far-out Ideas

By Patrick L. Barry

Ever had a great idea for a new spacecraft propulsion system, or for a new kind of Mars rover? Have you ever wondered how such "dinner napkin sketches" evolve into real hardware flying real missions out in the cold blackness of space?

The road to reality for each idea is a unique story, but NASA has defined some common steps and stages that all fledgling space technologies must go through as they're nursed from infancy to ignition and liftoff.

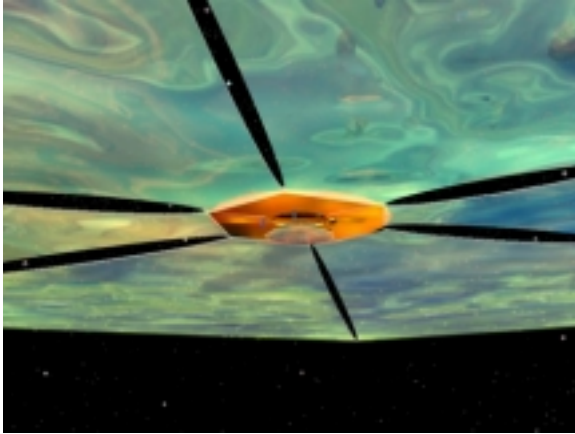
Suppose, for example, that you've thought of a new way to shield astronauts from harmful radiation during long space missions. In the first stage, you would simply "flesh out" the idea: Write it down, check the physics, and do some quick experiments to test your assumptions.

If the idea still looks good, the next step is to build a "proof of concept." This is the "science fair project" stage, where you put together a nifty demonstration on a low budget—just to show that the idea can work.

For your radiation-shielding idea, for example, you might show how a Geiger counter inside a miniature mock-up doesn't start clicking when some radioactive cobalt-60 is held nearby. The shielding really works!

Once that hurdle is cleared, development shifts into a higher gear. In this stage, explains Dr. Christopher Stevens of JPL, the challenge isn't just making it work, but making it work in space.

"Some conditions of space flight cannot be adequately simulated here on Earth," Stevens says. Cobalt-60 doesn't truly mimic the diverse mixture of radiation in space, for example, and the true microgravity of orbit is needed to test some technologies, such as the delicate unfolding of a vast, gossamer solar sail. Other technologies, such as artificial intelligence control systems, must be flight tested just because they're so radically new that mission commanders won't trust them based solely on lab tests.



This is just one idea of how a solar sail could be used to power an interstellar probe. A solar sail is one possible type of new technology that NASA's New Millennium Program would test in space before it would be risked on a scientific mission.

Stevens is the manager of NASA's New Millennium Program (NMP), which does this sort of testing: Sending things to space and seeing if they work. In recent years the NMP has tested ion engines and autonomous navigation on the Deep Space 1 spacecraft, a new "hyperspectral" imager on the Earth Observing 1 satellite, and dozens of other "high risk" technologies.

Thanks to the NMP, lots of dinner napkin sketches have become real, and they're heading for space. You can learn more at the NMP website, [nmp.nasa.gov/](http://nmp.nasa.gov/).

*The preceding article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*



## Astronomus

### "From the Bottom Up"

As every English schoolboy knows, the distance from West Chester to the moon is about one quarter of a million miles. Something less than 2.5 days as the Apollo flies and something less than 2 seconds as the photon flies. Astronomically speaking, the two locations are virtually identical. But does this mean that the observing experience is identical as well? Well—let's find out...

Now imagine being plunked right down on the moon. With our telescopes, of course. What would we see? What wouldn't we see?

Allowing our imagination the freedom of the night sky, the possibilities are legion. Personally, the first thing I'd want to determine is where on the moon I was. Unless we happened to

find ourselves near a relic of our space program, there are relatively few natural features on the moon that would be of help given that we'd standing inside or alongside them. So, picture if you will, this landscape: behind us, a mountain chain. A veritable wall rising at a slope of about 30°. And it continues to the left and the right in semicircular fashion as it fades away towards the horizon. At our feet the surface is darker gray than the wall to our back (clue #1). Turning then, and facing the opposite way, here's our view:



As we know, there are no shortages of either mountains or flat areas on the moon. And lots of places where the two meet. Standing on the surface of the moon we could certainly say that it is, as an Apollo astronaut said, "magnificent desolation." Poetic, but not very helpful. So, since the view at the surface doesn't help, how about the view up above?

Almost surreal, the Earth stands as a giant swirl of blue and white. (Just imagine seeing a planet in our sky nearly 4 times the size of the moon!) In last quarter phase (clue #2), it shares dominance of the sky with the sun. And yet even with a glaring sun and an Earth reflecting a significant amount of sunlight, stars are still visible! In the absence of an atmosphere to reflect light rays about, stars abound everywhere except in the vicinity of the sun and Earth where the brightness of the light (generated and reflected, respectively) hinders our view. It is magnificent! Stars in every direction all the way down to the horizon. Crisp, piercing points of light. No moon person could ever have composed "Twinkle, Twinkle Little Star." And the Milky Way, nothing short of breathtaking. (But we're wearing *Acme* space suits; so don't worry about having your breath taken away!)

The temptation to turn a telescope skyward is strong, but I'm still stuck on understanding where *on moon* we are.

Now we could start wandering about to see if we'd come upon an unmistakable feature. But the moon is over 2,000 miles in diameter, so even with our turbo moon-buggy (as long as we're pretending, let's pretend first-class) this would be a difficult and time-consuming process.

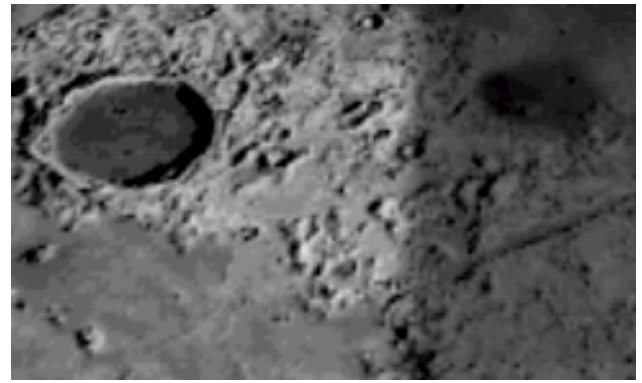
Since we can't go up the mountain, it's westward across the plain. Cruising past craterlets we start to see what appear to be hills in the distance. As we continue, the hills grow. But about 40 Km into our journey an interesting phenomenon takes place overhead. The black sky is getting brighter (clue #3). It is taking on a milky appearance not unlike West Chester's light-polluted sky. Perhaps even with tinges of color. It's difficult to accept the reality of what we're seeing when we all *know* that it's not supposed to be that way. By the time we've traversed an additional 20 Km, the brightness is even more pronounced. Then, as suddenly as it had appeared, it disappeared. The sky

reverts to the limitless black to which we've become accustomed. What could this have been?

Before we can sort out this mystery we arrive at a formation that we realize were once mountains as well. But now they are collapsed (clue #4). And as we turn to face the direction from which we came, we notice that these collapsed mountains stretch out to our right and left as they fade towards the horizon. In the distance, the mountains that were to our back at the start of our journey are nowhere to be seen. Wait a minute. This is nearly the same view we had at the other side (clue #5). We've traveled 104 Km (clue #6) from one semicircular wall to another semicircular wall. We're in a crater! And not only that, but a crater displaying TLP—transient lunar phenomenon!

Given that the moon is smaller than the Earth, the arc of its sphere is more pronounced than ours. Thus, at 104 Km distant, even mountains as high as 2,000 meters would be below the horizon. That's why we couldn't tell that a mountainous wall surrounded us.

So what do our 6 clues tell us? A crater that's near the terminator in the last quarter having a diameter of 104 Km with a collapsed wall on the western side. Its soil is a darker gray, there is no prominent central summit, and it presents TLP. Reaching into the glove box of the moon buggy for our handy lunar atlas, we look for possibilities. There is really only one crater of this size with these features that would presently be at the terminator. It is this one:



Do you know its name? Go out to your moon buggy and look it up!

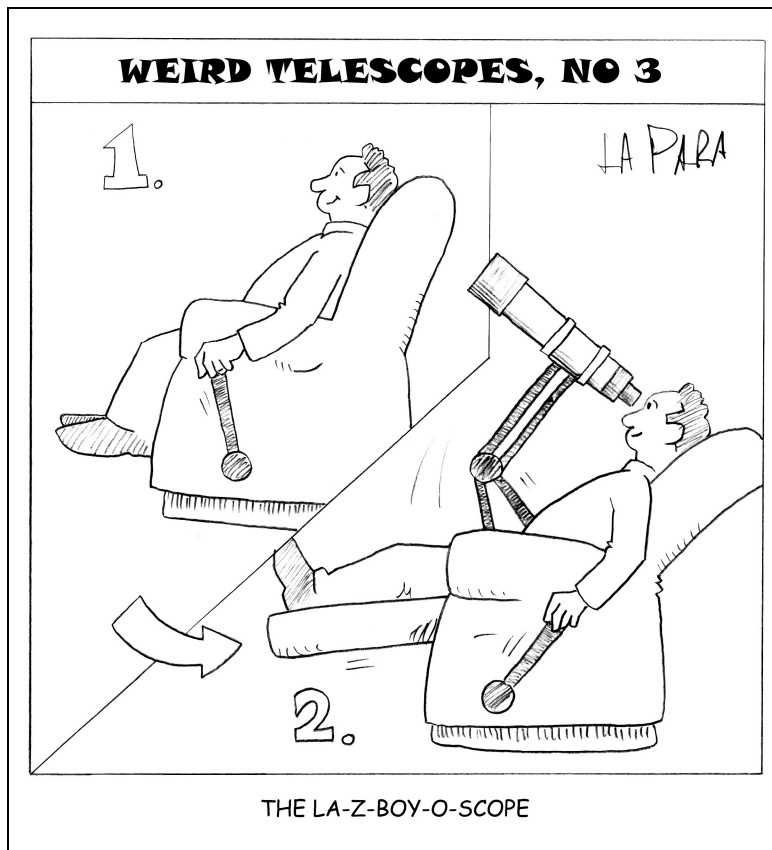
Next time: Rittenhouse Alcove



### Newsletter Deadlines

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

<u>Issue</u>	<u>Deadline</u>
July 2004	06/25/2004
August 2004	07/28/2004
September 2004	08/27/2004
October 2004	09/27/2004
November 2004	10/27/2004
December 2004	11/26/2004



Cartoon by Nicholas La Para

## CCAS Information Directory

### CCAS Lending Telescopes

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

### CCAS Lending Library

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

### Contributing to *Observations*

Contributions of articles relating to astronomy and space exploration are always welcome. If you have a computer, and an Internet connection, you can attach the file to an e-mail message and send it to [newsletter@ccas.us](mailto:newsletter@ccas.us)

Or mail the contribution, typed or handwritten, to:

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

### Get CCAS Newsletters via E-mail

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

[newsletter@ccas.us](mailto:newsletter@ccas.us)

### CCAS A.L. Award Coordinators

These are the members to contact when you have completed your observing log for the Messier, Binocular Messier, Lunar, or Double Star Awards:

Messier (both): Jim Anderson  
(610-857-4751)

Lunar: Ed Lurcott  
(610-436-0387)

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

### CCAS Purpose

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

### CCAS Executive Committee

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

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

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

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

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

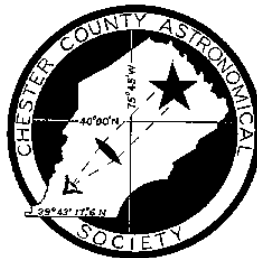
**ALCor and  
Newsletter:** Jim Anderson  
(610) 857-4751

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

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

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

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



### CCAS Membership Information

The present membership rates are as follows:

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

### Membership Renewals

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

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

### Sky & Telescope Magazine Group Rates

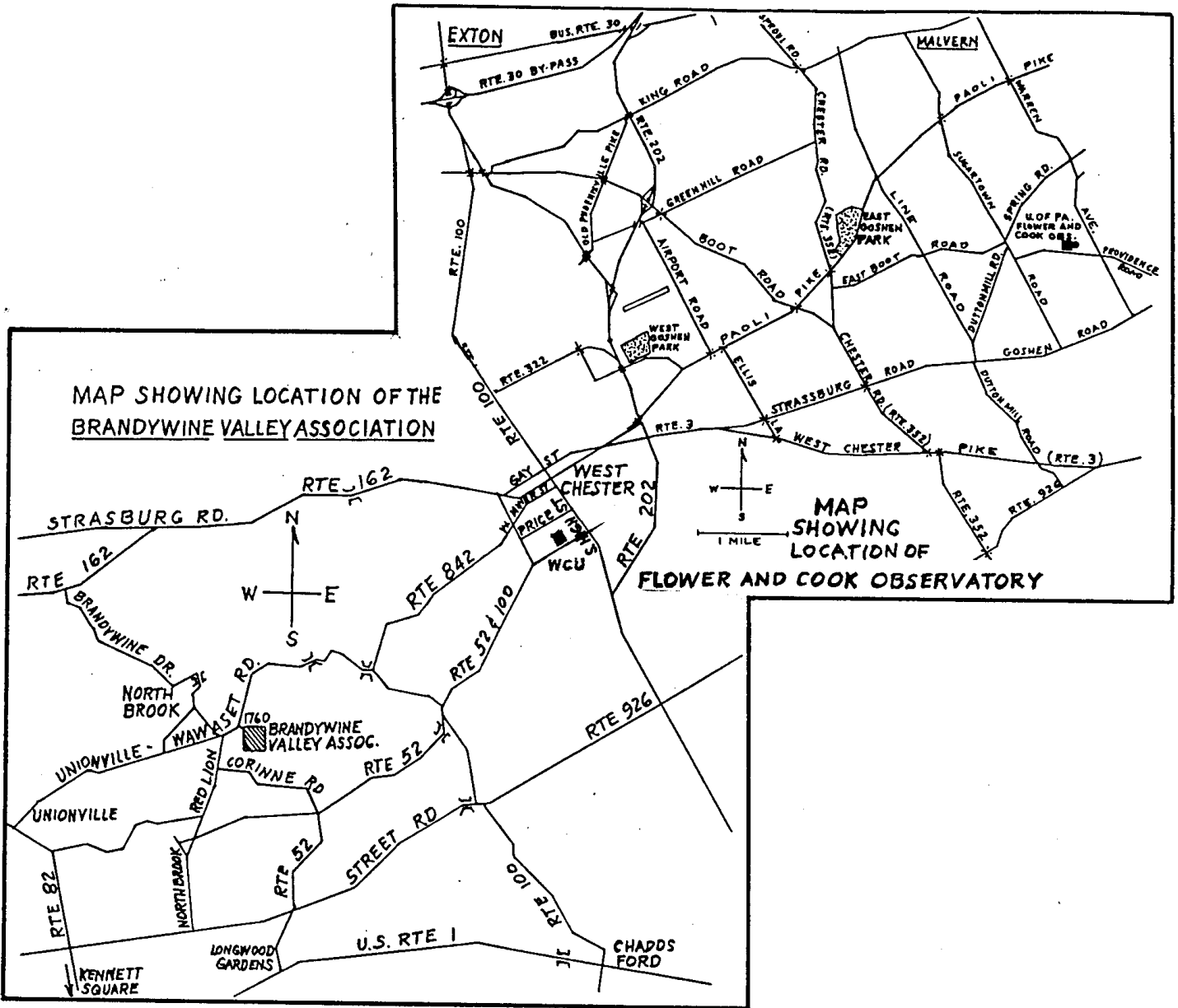
Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **\$32.95** which is much less than the newsstand price of \$66.00, and also cheaper than individual subscriptions (\$42.95)! Make sure you make out the check to the **Chester County Astronomical Society** (do not make the check out to Sky Publishing, this messes things all up big time), note that it's for *Sky & Telescope*, and mail to Bob Popovich. Or you can bring it to the next Society meeting and give it to Bob there. **If you have any questions by all means call Bob first (610-363-8242)**. Buying a subscription this way also gets you a 10% discount on other Sky Publishing merchandise.

### CCAS Website

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

<http://www.ccas.us/>

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