Observations
A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

OCTOBER 2003
(VOLUME 11, NO. 10)
Visit us at www.ccasastro.org

CCAS October Meeting

DATE: **Tuesday October 14, 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 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.

Looking ahead to November, our speaker will be Karl Krasley of Chesmont Amateur Astronomers. His topic will concern light pollution.

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Mars from West Caln Township!

Pastel pencil sketch on Strathmore Bristol board
By Jim Anderson, August 28 2003 21:45 EDT
10" f/6 Newtonian reflector at about 220x

CCAS October Observing Session

Our September Observing Session was clouded out, so Vic Carlucci has invited us to his home again this month. The star party will start on Friday October 24 at around 7:00-7:30 p.m. There is a "cloud date" of Saturday October 25 (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*, concentrates 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 remaining tentative schedule:

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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October Skies

End of Daylight Savings Time: October 26

Daylight Savings Time officially ends on Sunday October 26 at 2:00 a.m. It's "Spring ahead, Fall back", so don't forget to set your clocks back an hour before you retire on Saturday night October 25. Unless of course it's clear out that night and then I know you will all reset your clocks at 2:00 a.m. because you will still be up stargazing!

Moon Phases

First Quarter	10/2	
Full Moon	10/10	"Full Hunter's Moon"
Last Quarter	10/18	
New Moon	10/25	
Fright Quarter	10/31	

The Native American name for this month's Full Moon was obtained from the *Farmer's Almanac* Website. The crops are in, and the deer are nice and fat: time to go hunting. Plus, with the fields cleared it's easier to spot the rabbits and foxes.

The Planets

Mercury appears in the morning sky in the first half of October, rising as early as 45 minutes before the Sun. This means that the first week in October is a good time to look for Mercury. By mid-month it is getting much closer to the Sun and will fade from view.

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

Mars is **still** the big show in our skies in October. It is now receding from Earth after the closest approach in human history at opposition on August 27. It is still close enough, however, to get in good telescopic views in the clear, crisp autumn air of October.

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

Saturn is moving into our evening sky this month. On October 1 it rises around midnight, but by Halloween it is rising around 9:00 p.m. Look for Saturn in the east-northeast, in Gemini.

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 has closed.

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Calendar Notes

October 7, 2003 (Tuesday)	Backyard Observing Class Location: Flower & Cook Observatory 7:00 p.m. EDT
October 14, 2003 (Tuesday)	CCAS Meeting Location: West Chester University 7:30 p.m. EDT
October 21, 2003 (Tuesday)	Backyard Observing Class Location: Flower & Cook Observatory 7:00 p.m. EDT
November 4, 2003 (Tuesday)	Backyard Observing Class Location: Flower & Cook Observatory 7:00 p.m. EST
November 8-9, 2003 (Saturday night)	**Total Eclipse of the Moon** visible from all of Chester County convenient evening hours!
November 11, 2003 (Tuesday)	CCAS Meeting Location: West Chester University 7:30 p.m. EST
November 18, 2003 (Tuesday)	Backyard Observing Class Location: Flower & Cook Observatory 7:00 p.m. EST
December 2, 2003 (Tuesday)	Backyard Observing Class Location: Flower & Cook Observatory 7:00 p.m. EST
December 9, 2003 (Tuesday)	CCAS Meeting Location: **TBD** 7:30 p.m. EST

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Treasurer's Report

By Bob Popovich

August 2003 Financial Summary

Beginning Balance	$1,227
Deposits	25
Disbursements	63
Ending Balance	$1,189

Membership Renewals Due

10/2003:	Anderson
	Liberati
11/2003:	Athens
	Buczynski
	Gatters
	Mathisen
	McHugh
	Okpaku
	Zimmer
12/2003:	Patterson

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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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Newsletter Deadlines

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

Issue	Deadline
November 2003	10/24/2003
December 2003	11/25/2003

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NASA's Space Place

(un)Fasten your Seatbelts

By Patrick Barry and Dr. Tony Phillips

The "fasten seatbelts" light turns off, and you get up to ask the stewardess for a pillow; it's going to be a long flight. Only a kilometer ahead in the cloudless sky, a downward draft of sheering winds looms. When the plane hits these winds, the "turbulence" will shake the cabin violently and you could be seriously hurt.

You don't know about those winds, of course, and neither does the pilot. Today's weather satellites can't see winds in clear skies: they rely on the motion of clouds to infer which way the winds are blowing.

"Believe it or not, their best indication of wind sheer right now is warnings from aircraft that have gone through it ahead of them," says Bill Smith of NASA's Langley Research Center.

But a new satellite technology being pioneered by NASA and NOAA could improve this shaky situation.

It's called GIFTS, short for Geosynchronous Imaging Fourier Transform Spectrometer. GIFTS is an infrared sensor that can detect winds in cloudless skies by watching the motions of atmospheric water vapor. Water vapor is mostly invisible to the human eye, but it reveals itself to GIFTS by the infrared radiation it absorbs.

Smith is the lead scientist for EO-3, a satellite designed to test out this new technology. Slated for launch in 2005 or 2006, EO-3 will carry GIFTS to Earth orbit where it can produce 3-dimensional movies of winds in the atmosphere below.

These wind data will not only improve safety, but also help the airlines save money. Knowing the winds along a flight route allows airlines to adjust the plane's fuel load accordingly, thus reducing the weight that the engines must lift. Saved fuel means saved money and less pollution.

EO-3, carrying the GIFTS instrument, will be in a geosynchronous orbit for extended monitoring of large regions of our planet and enabling observation of weather patterns at higher resolution than possible with existing geostationary satellites.

GIFTS can help planes avoid another potentially lethal problem, too: ice forming on their wings. If a cloud contains "supercooled" water droplets whose temperature is below freezing, those droplets will form ice on the wings of planes that pass through it. By looking at about 1700 different frequencies of the light coming from clouds, GIFTS can measure the temperature of the cloud top and determine whether it contains water droplets that could cause aircraft icing. With information from GIFTS in hand, pilots can simply avoid clouds that appear dangerous.

Once EO-3 demonstrates the accuracy of GIFTS, airlines will be able to capitalize on this potential to make flying a cheaper and safer experience.

Learn more about the GIFTS instrument and other advanced technologies being tested on the EO-3 mission at nmp.jpl.nasa.gov/eo3. Kids can go to The Space Place to play a data compression game related to EO-3 at spaceplace.nasa.gov/eo3_compression.htm .

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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"Thus, as an infant, I came to know the Pleiades, the Little Wagon, the Great Wagon... Also I saw the trail of a falling star; and another; and another. When I asked what they were, my father answered that this was something the Creator alone knew. Thus arose a secret and confused feeling of immense and awesome things. Already then, as later, my imagination was strongly stirred by thoughts of the vastness of space and time."

Italian astronomer Giovanni Virginio Schiaparelli (1835-1910), telling about the time his father, a furnace maker, first showed him the night sky at the age of four.

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Astronomus

"It Takes More than A Village (People)"

By Bob Popovich

In the seemingly unbounded reaches of the universe, the Milky Way is our village. It contains our homes, our history and just about all that our unaided eyes can see. Special though it is to us, a telescope reveals a cosmos full other villages. Faint lamps burning in the windows of villages of all sorts. Whether grouped, paired or solitary, we find them scattered in every direction.

From our vantage point near the edge of our village we have figured out that the Milky Way is spiral in shape (Don't ask me how they did this!). And as astronomers peered further and further into the universe they realized that a spiral galactic shape is quite common.

With a prominent central bulge "crowded" with stars (and a black hole as well, it appears), it thins gradually as we move out to the edges of the spiral arms. In one of these spiral arms is where we find ourselves. But here's where we run into the first of our village problems—observations of spiral galaxies have led astronomers to conclude that the spiral shape (i.e.; the visible part), must be unstable if it truly represents most of the matter comprising a galaxy. It seems that spirals should evolve into other shapes like barred spirals, for example. But 60% of observed spirals are maintaining their shape and are not barred.

Another thing we've observed about spiral galaxies is that the stars orbit the center. Now Doctor Kepler's third law tells us that the orbital velocity of objects out in the periphery of a system must be less than that of objects nearer the center of that system. And whether the system is comprised of our sun and the planets or billions of stars doesn't matter. A law is a law.

This brings us to problem #2. Measured velocity of stars out here in the galactic arms isn't much different than that of stars out Sagittarius-way. In fact, in some instances the velocity of stars near the village edge is actually *greater than* that of stars near village center.

It would seem that these problems have 3 possible explanations: (1) Kepler was wrong (2) Our measurements are wrong or (3) We're not seeing all that there is to see.

Possibility #1 is scary. Possibility #2 is embarrassing to professional scientists. Possibility #3 is intriguing because it hints at something new, preserves Kepler's third law and avoids embarrassing a whole bunch of cosmologists. And as you would guess, #3 is exactly the direction in which scientists have turned. Just what is it that they think we're not seeing? Shouldn't Hubble be able to capture a view? Unfortunately, no. An object that neither emits nor reflects light cannot be photographed (Let's save any discussion of vampires for another time). "You mean?" "Yes, I do." Dark matter. As we move from the center of the Milky Way towards the outskirts of our village, the volume of luminous matter decreases while the volume of non-luminous matter increases. While this does help us with our village problems, it exposes us to a whole new set of questions. What is this unseen stuff? How much of it is there? How does it interact with what we are able to detect, if at all? Exactly what this stuff is remains a question. But that this stuff is an important part of our village is certain.

Enter *The Village People*. You remember them, don't you? I know you do. And one of their big hits was entitled "Macho Man." **MA**ssive **C**ompact **H**alo **O**bjects—MACHO—is an acronym given to dark matter that cosmologists assume forms a halo around our village. Along with WIMPS (**W**eakly **I**nteracting **M**assive **P**articles), we're starting to develop a more complete picture of our village's inhabitants—macho men, wimps and us plain old amateur astronomers.

So it does indeed take more than a village—at least more than a visible village—to hold things together. Probably more than one scientist is a bit anxious about this radical challenge to our notion of matter, but history teaches us all that each new discovery about the nature of the cosmos only serves to strengthen our understanding of the marvelous beauty of creation.

Next Time: Turkeyus Majoris

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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, 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

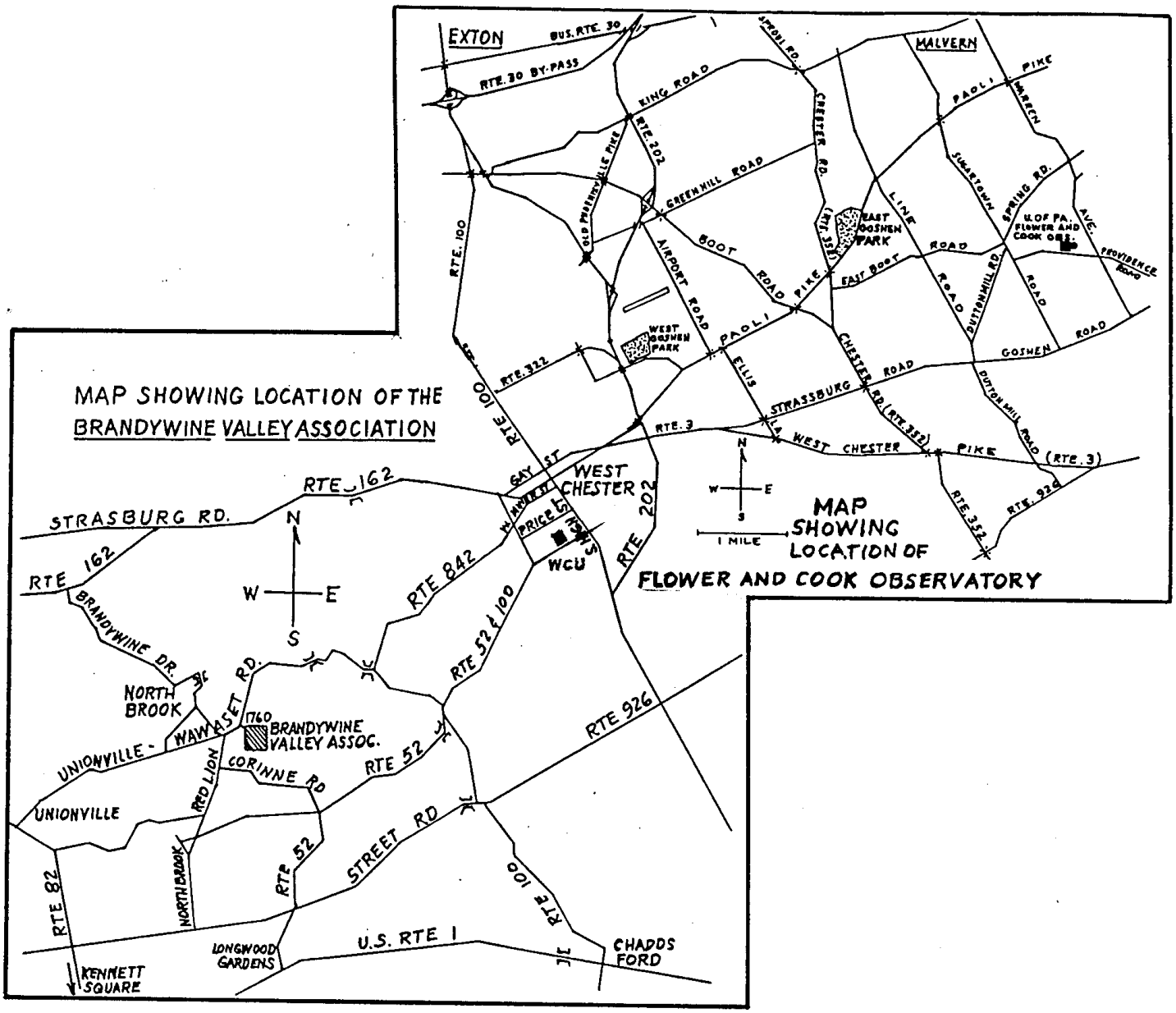
Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$29.95** which is much less than the newsstand price of $54.00, and also cheaper than individual subscriptions ($39.95)! Make out a check to the Chester County Astronomical Society, note that it's for *Sky & 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:

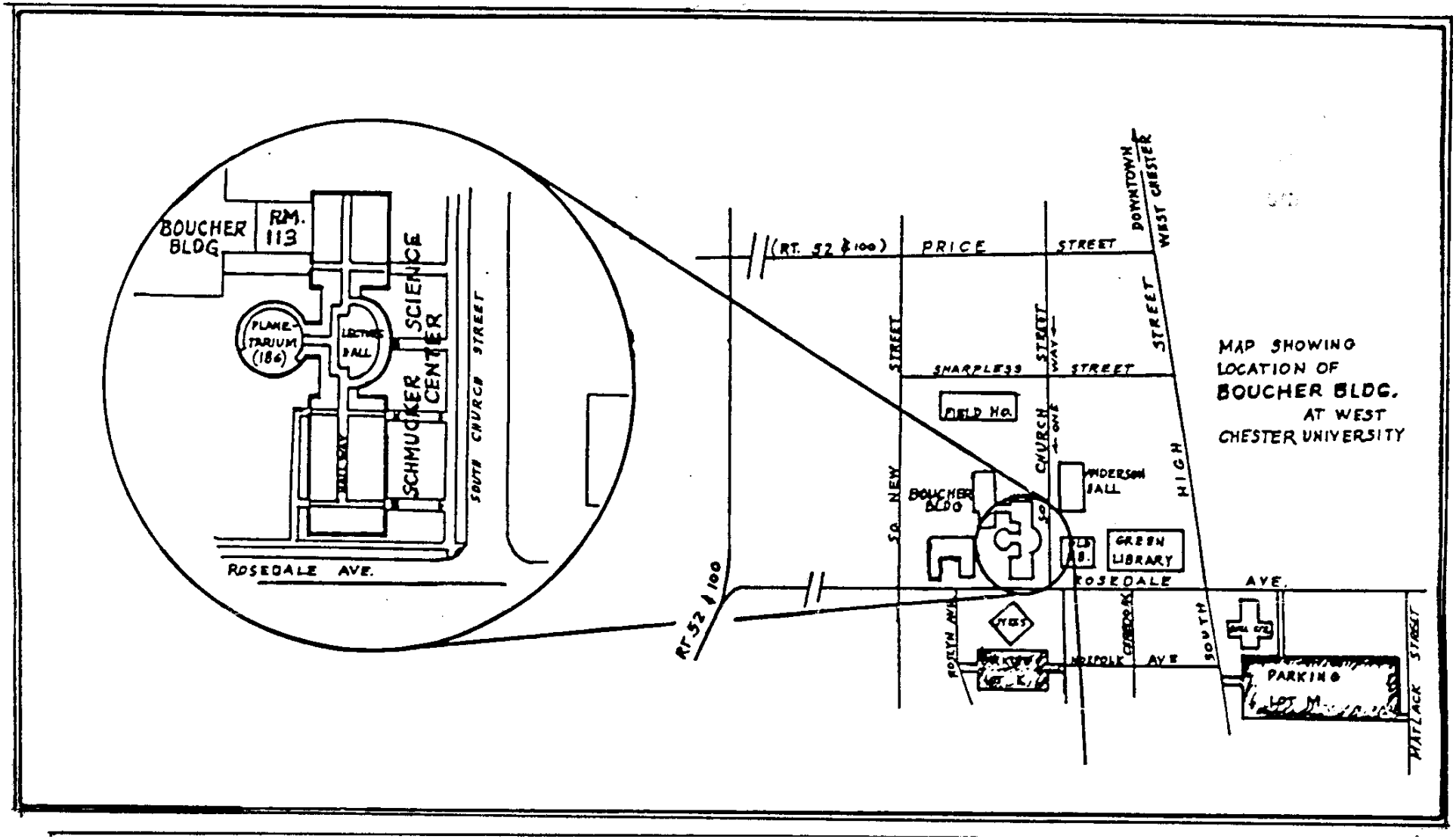
http://www.ccasastro.org/

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.