OBSERVATIONS

A MONTHLY PUBLICATION OF THE

Chester County Astronomical Society

DECEMBER 2000

(VOLUME 8, NO. 12)

http://members.tripod.com/~ccas_2/ccas.html

★*President:* Mike Turco ★*Vice President:* Steve Limeburner

★*Treasurer:* Pete LaFrance ★*Secretary:* Doug Liberati

CCAS December Meeting

DATE: Tuesday December 12, 2000
TIME: 7:30 p.m. EST
PLACE: Department of Geology and Astronomy Lecture Room Room 113, Boucher Building West Chester University
LOCATION: South Church Street West Chester, PA (see map on a later page)

Parking is available behind Sykes Student Center on the south side of Rosedale Avenue, and behind the Bull Center at the corner of Rosedale Avenue and South High Street. If you arrive early enough, you may be able to get an on-street parking space. CCAS meetings are always open to the public, and free of charge. Children are welcome as long as an adult accompanies them.

Dr. Rex Saffer of Villanova University will be our guest speaker. Dr. Saffer spoke to us in Decmber 1998 about his research on the frontiers of astronomical theory concerning stellar evolution. Now he is back to tell us about his continuing research into blue straggler stars in globular clusters, research that has revealed the first direct evidence for the collisions of stars! *Sky & Telescope* magazine, in their October 2000 issue, had a "NewsNote" about this, with Hubble Space Telescope photos of cluster NGC6397 in Ara. Don't miss what is sure to be a fascinating presentation!

❄ ❄ ❄ *Happy Holidays* ❄ ❄ ❄

The Executive Committee would like everyone to join us for some holiday cheer following the regular meeting on Tuesday December 12, 2000. We will be gathering at The Bar and Restaurant, 18-22 Gay Street, West Chester. The reservation is for 9:30 p.m.; the restaurant closes at 10 p.m. Hope to see you all there!

Holiday Greetings to all!

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Public Open House: FCO

There will be a **FREE** public open house program at the University of Pennsylvania's Flower & Cook Observatory in Malvern, PA on Friday December 15, 2000. The program starts at 8:00 p.m. EST with a talk entitled "Photo of the Millenium" by Dr. Jeff Goldader of the University of Pennsylvania. This is a reprise of the overwhelmingly popular talk that Jeff presented a year ago. If the skies are clear, there will be observing with the Observatory's telescopes. Children are always welcome as long as an adult accompanies them.

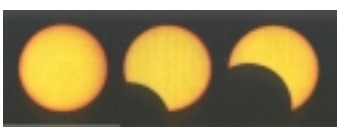
The Observatory is located on Providence Road, just west of the intersection with Warren Avenue. A map is included on a later page.

CCAS December Observing Session

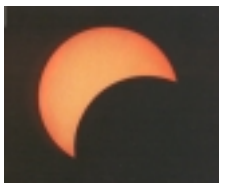
The next CCAS Observing Session will be on Friday December 22, 2000 starting at sunset; or earlier, if you can get there earlier. If it's too cloudy on Friday, then the Observing Session will be on Saturday December 23, 2000. At the observing sessions, there will be help available to set up and use your 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 `scope. CCAS Observing Sessions are always free of charge. Children are always welcome as long as an adult accompanies them. Make sure to dress warmly, as it gets cold rather quickly at this time of year.

To get to the observing site at the BVA, 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. A map showing the location of the BVA is included on a later page.

Partial Solar Eclipse On December 25, 2000!



The show will start at 11:07 a.m. EST on Christmas Day, when the Moon first starts moving in front of the Sun. At maximum, about 55% of the Sun will be covered; that occurs at 12:45 p.m. The Moon will finally move completely off the Sun at about 2:19 p.m. EST, ending the spectacle. There are more details, including safe ways to view eclipses without damaging your eyes, on page 4.



Recent Activities of the Chester County Astronomical Society

by Jim Anderson

Photo by Ed Lurcott

Photo by Ed Lurcott

Star Night for Several Girl Scout Troops

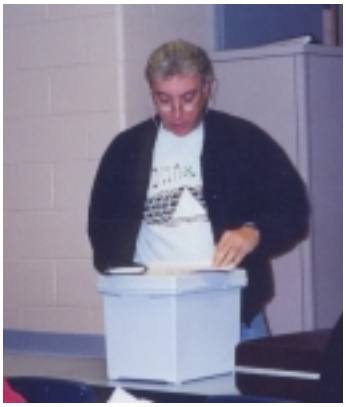
Cochranville, Pa.

November 3, 2000

On the evening of Friday November 3, 2000, the Chester County Astronomical Society provided an educational session for several troops of Girls Scouts. About 50-60 Scouts turned out for the meeting, along with their leaders and parents. CCAS members Jim Anderson, Kathy Buczynski, Roy and Elise Furman, Steve Limeburner, Ed Lurcott, and Mike Turco were there with telescopes, handouts, and audio-visual aids to provide some basic astronomy education. On the upper left, Kathy talks to a group of Scouts about telescopes, with Steve's 10" Dob in front of them (Steve is at upper left in the photo, in the background.) On the lower left, Kathy talks to the whole group about constellation mythology. On the upper right, Steve talks about the kinds of symbols on star maps, and what they mean. On the lower right, two of the Scouts listen to Steve's discussion. After the indoor classroom sessions, we went back outside to see if the clouds had cleared. They had not cleared completely, but there were enough breaks to give the waiting crowds looks at Saturn, Jupiter, the Moon, and several other objects. Our reward for our labors this night was seeing kids literally dancing and jumping about, squealing "Oh my gosh, I saw Saturn! I really saw it! I saw the rings!" You will notice that the age of the "kids" is not specified in that last sentence…

Photo by Jim Anderson

Photo by Jim Anderson



November CCAS Meeting

West Chester University, West Chester Pa.

November 14, 2000

Photos by Jim Anderson

The November presentation, entitled "Astronomical Vacations," was given by CCAS members Roy and Elise Furman. In the photos above, on the left CCAS President Mike Turco discusses several club business items with members before the featured talk. In the center photo, Elise Furman follows the discussion while Roy reviews his notes for the talk. In the photo at right, several members listen to the Furmans' presentation. In the front at left is Bob Popovich; to his right at the same table is Sylvia Hogate and Nicholas Lapara. Just behind Bob's left shoulder is Kathy Buczynski, and further to her right at the third table is John Imburgia.

President's Message December 2000

As Yuletide approaches, I ruminate. If the ghost of Christmas future would appear to show me what this holiday has in store, here is what I wish I would see.

The tree is up and decorated two days before the 25th. All the lights are working even after they are put on. The stockings are hung by the fireplace and the house is in total order, in spite of the presence of a six- and a one-year-old. Greeting cards, wreaths and holly adorn the banisters and no needles are on the floor. My wife decides not to put 10 candlelights in every window and settles for just one, thereby saving the electric meter from spinning itself to pieces.

It's quiet and still as the midnight hour approaches. Over a shared cup of hot chocolate sound the waning chords of Charlie Brown's Christmas soundtrack. I peer out the window to see the beginnings of a snowfall, the kind with no wind and large flakes, at once laying a blanket on both grass and stone. Lights out.

Sleep comes easily. I awake to six inches of pure white over every surface, but luckily with no broken tree branches to worry about. A nice breakfast and a church service to remember the real meaning of the day. Kids open presents and the wrappings miraculously disappear from underfoot. All batteries have been included. Then I receive my gift.

The clouds part, I place the filter on over the objective of the white refractor, and at 12:45 p.m. I witness a celestial wonder as the invisible moon passes in front of the sun. And sunspots too. Ahhh… a Christmas to remember.

Merry Christmas and Happy Holidays to all!

Mike Turco

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Has Anyone Seen Frank Angelini?

By Frank Angelini

There seem to be some rumors circulating recently that I was lost or something. Well no, not lost, but on the move, and missing all of those interesting CCAS activities. As a business development manager for a major electrical manufacturer, I do tend to travel quite a bit, but the year 2000 has been unusual. Last February I began a business development initiative in South America, Central America and Mexico. Since then, I have logged almost 100,000 air miles and visited eight countries, including, Mexico, Costa Rica, Panama, Venezuela, Columbia, Brazil, Peru and Chile. The experiences have been unforgettable but this rate of travel can be exhausting. Whenever possible, I try to take some time off or stay over a weekend to explore interesting places. Many of the remote locations I have visited have very dark skies and I have had to reacquaint myself with the southern constellations. I usually travel with my 10x50 binoculars and sometimes bring my 4-inch CAT. The southern sky can be beautiful, with sights like the Small and Large Magellanic Clouds and Eta Carina easily seen naked eye objects. Alpha and Beta Centauri have become familiar also.

One of the highlights of a recent trip to Chile was a visit to La Silla Observatory. I had been attending meetings all week in Santiago, and was chatting with a customer during lunch. I mentioned my interest in astronomy, and learned that his company was in the process of installing some new equipment at La Silla. They had scheduled the start-up of the equipment for the following weekend. When he realized my interest, he asked if I would like to join him and two of their field engineers at the site. A few phone calls later, family was advised of my late return and airline reservations were duly modified. La Silla is a 2400-meter mountain bordering the southern extremity of the Atacama desert in Chile, about 600 km north of Santiago, in the province of Elqui. Its summit houses the European Southern Observatory, a set of more than 15 astronomical instruments devoted mainly to exploring the southern celestial hemisphere. It was selected on account of its large number of clear nights per year. Apart from a 15-m diameter parabolic antenna devoted to radio observations, its largest instruments include a couple of 3.6-m optical reflectors, the rest of the telescopes ranging in aperture from 2.2-m to half a meter. Compared to Mauna Kea, with its world record telescopes, La Silla seemed second rate. But when the skies darkened it reminded me of the first time my father took me to the Fels Planitarium, pitch dark and pin point stars. I'll never forget this trip to La Silla and the new friends I made. We hope to keep in touch over the internet, and hopefully at least one might visit the USA next year

Photo of La Silla Observatory by Frank Angelini

Well, that's where I have been! Hope to see you all at the December meeting.

Cheers,

Frank

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Welcome New Members!

It has been a long time since we last welcomed new members to the Society: April 1999 to be specific. So we have a lot of catching up to do. I apologize to everyone that this has been overlooked for so long. If I made any mistakes on the following list of those who joined since April 1999, please let me know. Thanks.

The Society would like to extend a welcome to Doug Clark, Edward Dunlop & family, James Goss, Patricia Groff & family, John Klebon, Beryl Kuntz, Heather Lammond, Nicholas Lapara, Bob Murray, Cecile Pileggi, Bob Popovich, John Raum, Meg & Mark Reber, Michael Sarrafian, Robert Schultz, and Joseph Timothy. Clear Skies!

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December Skies

Moon Phases

First Quarter	12/03
Full Moon	12/11
Last Quarter	12/17
New Moon	12/25

The Planets

Mercury is lost in the Sun's glare for the month of December.

Venus is in the evening sky this month, rising higher above the Sun each day, and thus setting almost 4 hours after the Sun by month's end. It will be the first bright star you see after sunset.

Mars is a faint flicker in the southeast at daybreak this month.

Jupiter is rising in the northeast in our evening skies this month, after Saturn, and close to Aldebaran. The trio make quite a sight, especially with the Hyades and Pleiades star clusters close by. Jupiter is a captivating sight in a telescope of any size!

Saturn is near Jupiter all month, making it easier to find, and not far from the Pleiades star cluster (the Seven Sisters). Saturn's rings are tilted open at about 24°, and its apparent size is now the largest it has been since 1976! Don't miss this show! It's one of the most sublimely beautiful sights in the galaxy!

Uranus and Neptune are still fairly well placed for telescopic observations in this month's evening sky. They are in Capricornus, high in the southwest as the Sun sets.

Pluto is hopelessly lost in the Sun's glare this month.

Geminid Meteor Shower: December 13, 2000

This annual meteor shower peaks in the early morning hours of Wednesday, December 13. Unfortunately, the Moon will be nearly full that night, and it will also be in the constellation Gemini (where the meteors appear to originate). That means you probably won't see many meteors that night, because the Moon's glare will wash them out from view.

Ursid Meteor Shower: December 22-23, 2000

This weak annual meteor shower occurs the nights of December 22 and 23, when the Moon will be out of the way. The Ursids appear to originate from Ursa Minor, streaking outward over the sky from there. The Little Bear is also know as the Little Dipper, and the radiant point for the meteors is located in the bowl of the Dipper. The Bowl will be highest in our sky in the early morning hours, but since it is circumpolar it will be above our horizon all night long. Look towards the north to see the most meteors. The Ursids typically produce about 10 slow-moving meteors per hour, but there were outbursts of higher activity in 1945 and 1966.

Partial Eclipse of the Sun: December 25, 2000

As mentioned on page 1, there is a partial eclipse of the Sun on Christmas Day, visible from all of the United States (well, the 48 contiguous states). Here in the Philadelphia area, about 55% of the Sun will be covered by the Moon at mid-eclipse.

First, a word about safety. NEVER look directly at the Sun unless you are using a proper light filter. Sunglasses or exposed file negatives are NOT effective filters. Permanent blindness can result from looking directly at the Sun. There are no pain nerves in the retina (the rear inside wall of your eyeball, where the light sensing nerves are located), so you don't feel any pain if you look at the Sun. That does NOT mean that damage isn't being done. Don't take chances with one of your most precious gifts, your eyesight, especially when proper safety filters can be bought for as little as $2.50 per person! There is more information on proper filters at the end of this article.

To recap the times for the Philadelphia area:

First Contact: 11:07 a.m.

Mid-eclipse: 12:45 p.m.

Last Contact: 2:19 p.m.

One of the easier and safest ways to watch the eclipse is to use the projection method. The easiest way to build a suitable pojector is with two pieces of cardboard or cardstock. By late morning on Christmas day, many of you will have ample quantities of cardboard or cardstock laying around. Others may call it "trash" but we all know this is actually sophisticated astronomical observing equipment "in the rough." Take a piece of cardboard, about 12 inches square. None of the dimensions in this description are critical to success; they are mentioned just as general guidelines. Your piece of cardboard can be bigger or smaller, a rectangle, whatever. In the center of this piece, cut a hole about 1 inch square. Over this hole, tape a piece of aluminum foil. Using a small sharp pin or needle, very carefully make a tiny pinhole in the foil (near the center so the cardboard doesn't get in the way.) The smaller and rounder this hole is, the better; but again, this is not a critical success factor for the projector. This is your "projector lens." The second piece of cardboard, about the same size, should be white in color: this will be the "screen" where you will project the Sun's image. If you don't have any white cardboard, just tape a piece of plain white paper on the cardboard. Now you're all set. Since the Sun is so low in our sky in December, you can watch the eclipse from indoors if you have south-facing windows. Pull the shades or blinds in your "projection room," leaving just a small shaft of light in somewhere. Hold the "projector lens" between the "screen" and the Sun, keeping the two pieces of cardboard roughly parallel. Move them around until you see a big white circle on the "screen": this will be the Sun's image, as projected through the "lens." If the eclipse has started, you should see a "bite" missing out of one side of the Sun. That is the Earth's Moon moving between the Earth and the Sun. You can watch as the size and orientation of this "bite" changes during the eclipse. Obviously, your arms will get tired of holding the cardboard, so you will probably want to take a look periodically during the eclipse. This projector can be used to look at the Sun anytime,

by the way; you may want to build your projector ahead of time and practice with it a bit. If there are large sunspots or sunspot groups on the Sun when you look, they can be seen this way. If you decide to make a drawing of what you see or write down descriptions, please consider sharing them with the Society via *Observations*. Thanks.

You can also project the Sun's image using a telescope, but this can be trickier and more dangerous. It should also be done outdoors, because looking through window glass will distort the magnified image you get with a telescope. If the aperture of your telescope is more than about 5 inches, consider using an aperture mask that reduces the telescope's effective aperture to less than 5 inches. This reduces heat buildup in the telescope's tube. Also keep the finderscope covered so you don't accidentally fry your eyes while trying to align the telescope. Hold a piece of cardboard behind the eyepiece to serve as a projection screen. Move the telescope until you can see the bright white circle of the Sun's image on the screen. Now adjust the focusing knobs and the position of the screen until you get an image size and sharpness that you like. It helps to attach pieces of cardboard to the telescope around the eyepiece holder to create some "shade" for your projection screen.

You can also purchase safe filters to place on your telescope to allow you to look directly into the eyepiece. These filters must always be inspected carefully before use to make sure there are no scratches or pinholes in the metal coatings that filter the Sun's light. Just hold them up to a bright light source (NOT the Sun, obviously) and look for any light leaking through the filter. Any leak, no matter how small, makes the filter UNsafe and you should not use it! Once you know it is ok, put in in place and proceed to align your telescope and watch the eclipse.

This same filter material is also used to make special "eclipse viewers" (which can actually be used anytime to look safely at the Sun, not just during eclipses). These viewers are pieces of heavy cardstock, with holes cut in them, and across the holes are stretched pieces of mylar plastic coated with the same metal coating used on the telescope filters mentioned above. These viewers are sometimes cut in the shape of glasses, so they can be worn just like sunglasses (these are often called "eclipse shades"). They may also be just a rectangle that you hold in front of your eyes to look through the filter material. The same safety rules described in the section on telescope filters apply to these viewers as well: check them ahead of time, and if there is any light leaking through the filter element do NOT use that filter to look at the Sun. As long as there is no light leak, these filters are perfectly safe for watching the eclipse.

You can also use welder's glass, shade 14 or higher, which can be purchased at welding supply stores. Don't use grades less than 14 because they don't give enough protection. Use these filters just like you use eclipse viewers: hold the glass in front of your eyes and look directly through it at the Sun. Do NOT use welder's glass on a telescope: the glass cannot handle the concentrated heat.

Sources for safe Sun filters:

Astro-Physics, Inc. Rockford IL

Phone: 815-282-1513

Web: www. astro-physics. com

Supplier of Baader-AstroSolar Safety Film

Hands On Optics Damascus, MD

Phone: 301-482-0000

Web: www. handsonoptics. com

Filters for telescopic and naked eye viewing

Orion Telescopes Santa Cruz, CA

Phone: 800-447-1001

Web: www. telescope. com

Filters for telescopes and cameras

Rainbow Symphony Reseda. CA

Phone: 800-821-5122

Web: www. rainbowsymphony. com/ soleclipse. html

Eyeglass type shades (not for telescope use)

Roger W. Tuthill Mountainside, NJ

Phone: 800-223-1063

Web: www. tuthillscopes. com

Maker of Solar-Skreen aluminized Mylar film

Thousand Oaks Optical Thousand Oaks, CA

phone 800-996-9111

Web: www. thousandoaksoptical. com

Filters of metallized glass and polymer film

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Observer's Handbook 2001: Save Money!

By Jim Anderson

Our order has arrived. If you reserved a copy of this excellent annual reference book, bring your payment to the next CCAS function. I'll have the books with me. I ordered 10 copies (with 7 reservations), but Ed Lurcott and Steve Limeburner already snapped up 2 of the 3 extra copies. We now have just one extra copy still available at $13.50.

Contact me at 610-380-4512 to reserve the last available copy.

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A.L. Observing Awards Updates

Anyone else working on an A.L. observing award? Let *Observations* know how you're doing. It would be nice to recognize members who are working on the awards.

CCAS Messier Certificates:

Jim Anderson, Basic
Frank Angelini, Honorary
John Imburgia, Basic
Ed Lurcott, Honorary

CCAS Lunar Certificates:

Jim Anderson
Elise Furman

CCAS Double Star Certificates:

Jim Anderson
Steve Limeburner
Ed Lurcott
Mike Turco

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Mike Turco in *Sky & Telescope!*

CCAS President Mike Turco has published an article in *Sky & Telescope* magazine. It appeared on page 15 of the December 2000 issue.

Way to go, Mike! Congratulations!

If you don't get *Sky & Telescope*, but you have back issues of *Observations*, it was published there in April 1999 as the President's Message for the month. It is about Mike's purchase of his Astro-Physics refractor, and is entitled "It's Gotta Be White!"

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Calendar Notes

January 9, 2001 (Tuesday)	CCAS Meeting Location & Topic: TBA 7:30 p.m. EST
February 13, 2001 (Tuesday)	CCAS Meeting Location: WCU, Boucher Bldg.Rm.113 Topic: Lunar Interferometry by Steve Davis of Univ. Pennsylvania 7:30 p.m. EST
March 13, 2001 (Tuesday)	CCAS Meeting Eastern College Observatory Field Trip 7:30 p.m. EST
April 10, 2001 (Tuesday)	CCAS Meeting Location: WCU, Boucher Bldg.Rm.113 Topic: TBA 7:30 p.m. EDT
April 28, 2001 (Saturday)	National Astronomy Day
May 8, 2001 (Tuesday)	CCAS Meeting & Officer Elections Location: WCU, Boucher Bldg.Rm.113 Topic: TBA 7:30 p.m. EDT

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Newsletter Deadlines

These are the deadlines for submitting material for publication in the newsletter, through the June 2001 issue.

Issue	Deadline
January 2001	12/28/2000
February 2001	01/29/2001
March 2001	02/26/2001
April 2001	03/27/2001
May 2001	04/26/2001
June 2001	05/28/2001

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Quotable Quote

"Look at the stars! Look, look up at the skies!
O look at all the fire-folk sitting in the air!
The bright boroughs, the circle-citadels there!"

Gerard Manley Hopkins (1844-1889)

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News from Neighboring Societies

[Editor's Note: All that is required to have notices published here is to include Jim Anderson on the mailing list of your society's newsletter. See below for Jim's address.]

From *Focus*, the newsletter of the Delaware Astronomical Society:
Upcoming Meeting Topics and speakers:

January 16, 2001 (Tuesday) 8:00 p.m. EST	"The Moon" by Sarah Baird, Junior member
February 20, 2001 (Tuesday) 8:00 p.m. EST	"Star Lore" by Sally O'Byrne, Delaware Nature Society
March 20, 2001 (Tuesday) 8:00 p.m. EST	"Evening at the McCullough Planetarium" by Hank Bouchelle
April 17, 2001 (Tuesday) 8:00 p.m. EDT	"Creation of the Universe" by Billie Westergard
May 15, 2001 (Tuesday)	Annual Dinner Meeting speaker TBA
June 17, 2001 (Sunday)	Annual picnic and star party

DAS meetings are held at the Mount Cuba Observatory in Greenville, Delaware. For more info contact President Warren Jacobs (610-566-0510). Or check their Website at: http://www.physics.udel.edu/

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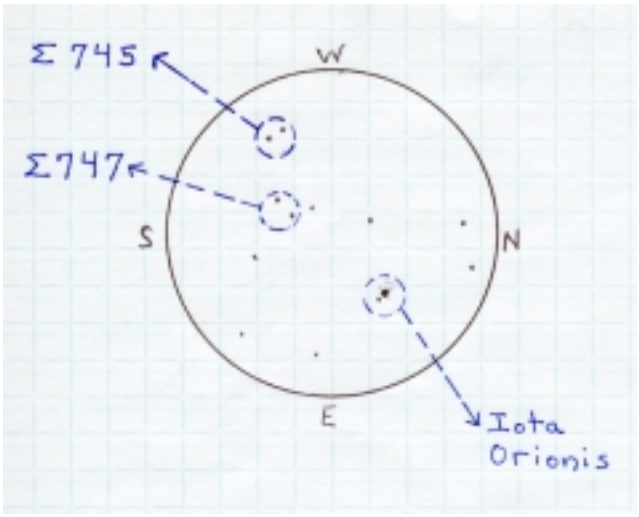

Having trouble identifying double stars in Orion, in the area of ι Orionis (Iota Orionis)? Here's a guide drawing.

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Closing Quote

". . . the perceptible Universe exists as a cluster of clusters, irregularly disposed."

Edgar Allan Poe (1809-1849)

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CCAS Information Directory

CCAS Lending Telescope

Contact Kathy Buczynski to make arrangements to borrow the Society's lending telescope. CCAS members can borrow the 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 email message and send it to the editor at **skywalker56@earthlink.net**

Or mail the contribution, typed or handwritten, to:

Jim Anderson
19 Bluff Road
Thorndale, PA 19372-1104

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:

skywalker56@earthlink.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): Frank Angelini
(610-873-7929)

Lunar: Ed Lurcott
(610-436-0387)

Double Star: Jim Anderson
(610-380-4512)

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: Pete LaFrance
(610) 268-2616

Secretary: Doug Liberati
(610) 827-2149

ALCor and Newsletter: Jim Anderson
(610) 380-4512

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

Observing: Ed Lurcott
(610) 436-0387

CCAS Membership Information

The present membership rates are as follows:

REGULAR MEMBER.....$20/year
SENIOR MEMBER.....$10/year
STUDENT MEMBER..….....$ 5/year
JUNIOR MEMBER.....$ 5/year
FAMILY MEMBER.....$ 30/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 our Treasurer, Pete LaFrance. Mail to:

Pete LaFrance
413 Church Rd.
Avondale, PA 19311-9785

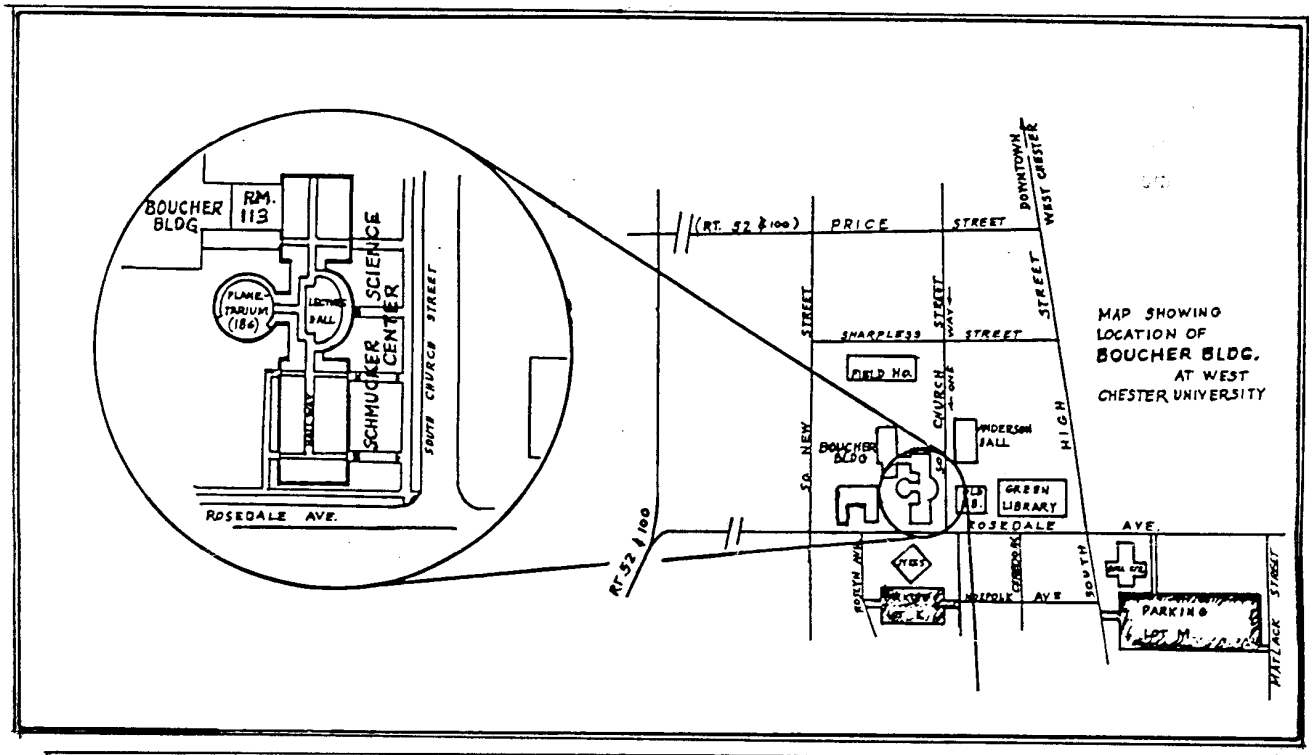
Sky & Telescope Magazine Group Rates

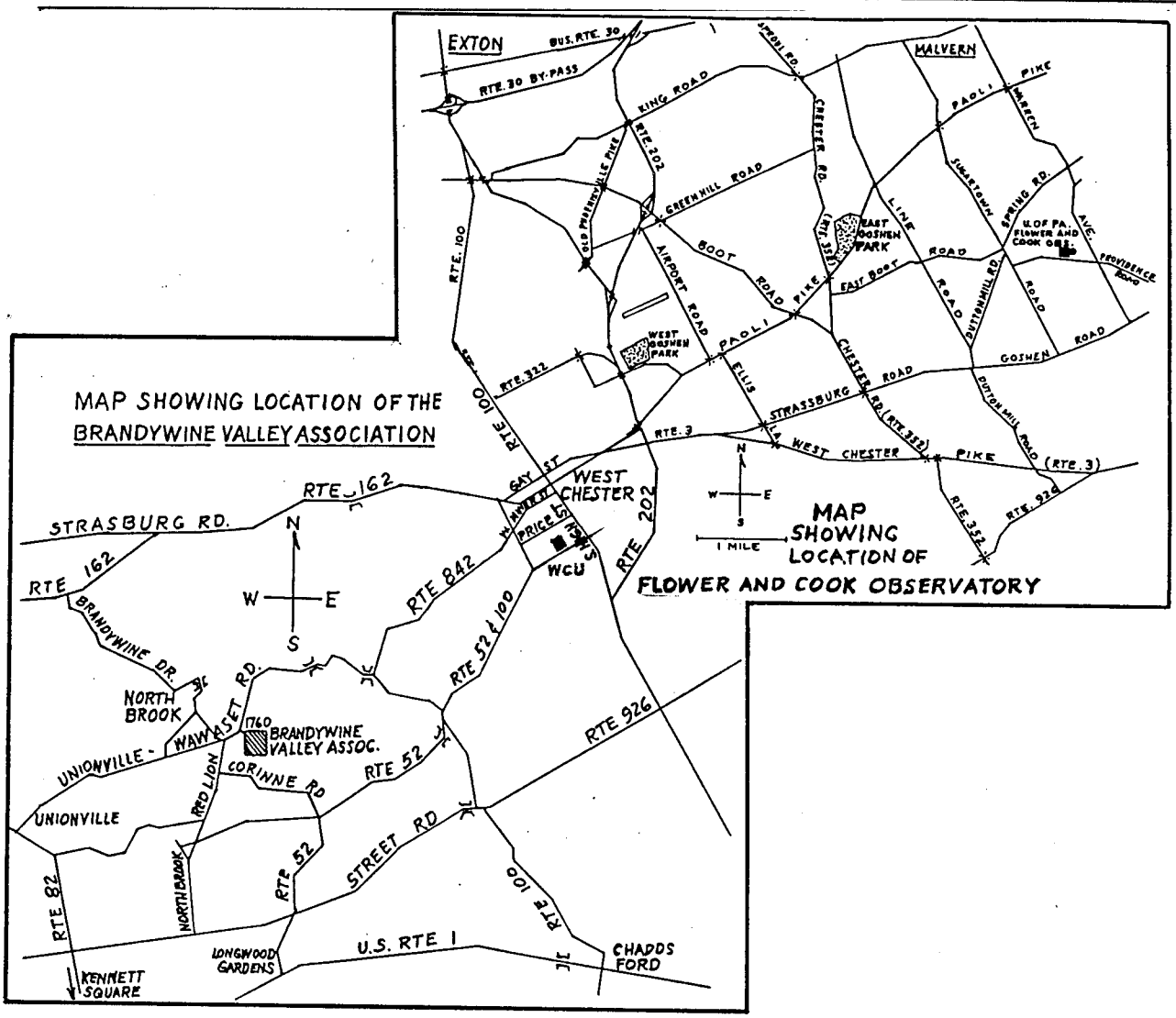
Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$29.95** which is much less than the newsstand price of $54.00, and also cheaper than individual subscriptions ($39.95)! Make out a check to the Chester County Astronomical Society, note that it's for *Sky & Telescope*, and mail to Pete LaFrance. Or you can bring it to the next Society meeting and give it to Pete 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://members.tripod.com/~ccas_2/ccas.html

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@chesco.com


BOUCHER BLDG.
RM. 113
PLANETARIUM (186)
LECTURE HALL
SCHMUCKER SCIENCE CENTER
SOUTH CHURCH STREET
ROSEDALE AVE.
(RT. 52 & 100)
PRICE STREET
DOWNTOWN WEST CHESTER
SHARPLESS STREET
FIELD HO.
CHURCH STREET
ONE WAY
HENDERSON HALL
HIGH STREET
SO. NEW STREET
BOUCHER BLDG.
G.B.
GREEN LIBRARY
ROSEDALE AVE.
VOIS
NORFOLK AVE
SOUTH
PARKING LOT M
WATLACK STREET
MAP SHOWING LOCATION OF BOUCHER BLDG. AT WEST CHESTER UNIVERSITY


EXTON
BUS. RTE. 30
RTE. 30 BY-PASS
KING ROAD
RTE. 202
GREENHILL ROAD
OLD PHOENIXVILLE PIKE
RTE. 100
AIRPORT ROAD
BOOT ROAD
PIKE
WEST GOSHEN PARK
PAOLI
RTE. 322
ELLIS
STRASSBURG
RTE. 3
WEST CHESTER PIKE
MARSHALL ST.
GAY ST.
WEST CHESTER
PRICE ST.
WCU
RTE 202
STRASBURG RD.
RTE 162
BRANDYWINE DR.
NORTH BROOK
WAWASET RD.
1760 BRANDYWINE VALLEY ASSOC.
UNIONVILLE - WAWASET
RED LION
CORINNE RD
RTE 52
UNIONVILLE
RTE 842
RTE 52 & 100
RTE 926
STREET RD
RTE 82
NORTH BROOK
RTE 52
RTE 100
U.S. RTE 1
LONGWOOD GARDENS
KENNETT SQUARE
CHADDS FORD
MAP SHOWING LOCATION OF THE BRANDYWINE VALLEY ASSOCIATION
MALVERN
PAOLI PIKE
SWEDESFORD RD.
SPRING RD.
LINE ROAD
EAST GOSHEN PARK
EAST BOOT ROAD
DUTTON MILL RD.
GOSHEN ROAD
PROVIDENCE ROAD
AVE.
OLD PA. FLOWER AND COOK OBS.
DUTTON MILL ROAD (RTE. 3)
RTE. 352
RTE. 926
1 MILE
MAP SHOWING LOCATION OF FLOWER AND COOK OBSERVATORY