



OBSERVATIONS



A MONTHLY PUBLICATION OF THE
CHESTER COUNTY ASTRONOMICAL SOCIETY

★ *President:* Mike Turco
★ *Treasurer:* Pete LaFrance

MARCH 1999
(VOLUME 7, NO. 3)

★ *Vice President:* Kathy Buczynski
★ *Secretary:* Frank Angelini

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

CCAS March Field Trip

DATE: Friday March 19, 1999
TIME: 7:30 p.m. EST
PLACE: Eastern College Observatory
McInnis Learning Center
Eastern College
LOCATION: off King of Prussia Road
St. Davids, PA (see map)

Note the special date and location for our March meeting!!

From Route 30 near the I-476 (Blue Route) interchange go north on King of Prussia Road. At the intersection with Eagle Road (there's a traffic light there) turn into the main entrance of Eastern College. Drive straight back the main road until you reach a large parking lot. At the other end of the lot is McInnis Learning Center (it has two telescope domes on top of it). Park in this lot or in the one on the side of McInnis. Go inside and make your way to the top floor of the building. Dr. Bradstreet will meet us there to begin the tour.

The McInnis Learning Center at Eastern College houses a planetarium and an observatory. The observatory consists of two computerized 16-inch diameter Schmidt-Cassegrain telescopes, each of which is housed under an automated dome. The telescopes and the CCD (digital) cameras on them are controlled from within a climate-controlled, shirtsleeve warm room. The observatory is used primarily by astronomy students for class assignments and professional research, but is also open to the public one night per week. The planetarium has a 20-foot diameter dome, which houses a Viewlux Model Apollo instrument and more than 50 auxiliary projectors. The planetarium is used by astronomy classes as well as thousands of school children, and other community groups, each year.

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Public Open House(s) at F & C Observatory

Listed below are the dates for upcoming public open house events at the University of Pennsylvania's Flower and Cook Observatory in Malvern, PA. The Observatory is located at 753 Providence Road, which is located just west of the intersection of Providence Road and Warren Avenue. Public open house programs begin at 7:00 p.m. Eastern time.

Friday March 26, 1999

Friday April 23, 1999

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March Observing Session

The next CCAS Observing Session will be on Saturday March 27, 1999 starting at about 7:00 p.m., in conjunction with the Messier Marathon. If it's too cloudy on Saturday, then there will be no Observing Session in March. At the observing sessions, there will be help available to set up and use your telescopes. 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 free of charge. Children are always welcome as long as an adult accompanies them. Dress warmly, because it gets cold quickly when you're standing around a telescope in a meadow!

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CCAS Calendar Notes

March 26/27, 1999: 2nd Annual CCAS Messier Marathon
(see page 3 for details)

April 13, 1999: Planetarium Show at West Chester University by Pru Shran

April 16/17, 1999: CCAS Observing Session at BVA

April 30, 1999: Possible star night for a youth group

May 11, 1999: CCAS Monthly Meeting (Elections) at West Chester University

May 14/15, 1999: CCAS Observing Session at BVA

May 21, 1999: Possible star night for Girl Scouts

May 22, 1999: National Astronomy Day

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CCAS 20" Telescope News

The members of the CCAS extend a big thank you to the members who recently donated money and time to the Society's 20" Telescope project:

Steve Limeburner	\$100.00
Scott Hain	\$100.00
Ed Lurcott	\$100.00
Frank Angelini	\$300.00

This brings the Telescope Fund to \$1600 of the \$1700 cost for the kit from AstroSystems. The Telescope Fund was established to pay for the construction of a telescope around the 20-inch diameter telescope mirror given to the Society by the University of Pennsylvania. On February 22 Ed Lurcott took the 20" mirror to Denton Vacuum (NJ) to be re-coated.

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President's Message March, 1999

I don't know about the rest of you, but I always look forward to the opportunity of observing with a new scope. This month one of our members, Barry Martin, will receive his long-awaited, brand-new, Astro-Physics 105mm (4.1") f/6 EDT Apochromatic Refractor. This scope is named the "Traveler" because of its size and portability. Barry waited almost a year for his scope, and I think that's *after* he got off of the waiting list and made the 50% down payment. This scope has a reputation of being the finest small refractor you can buy, but you have to wait for it because the manufacturer only makes so many each year, and the demand is great. The last time I checked, the optical tube assembly cost about \$2,300.

This scope is manufactured by Astro-Physics of Rockford, Illinois. It is completely American made. It has a fully machined tube assembly with a permanently aligned lens cell, ruggedly built to withstand the rigors of travel. It weighs about nine pounds. It has a 2.7" diameter rack and pinion focuser which allows use of a medium format camera for astrophotography with minimal vignetting, and it comes with adapters for both 1.25-in and 2-in diameter eyepieces. It has brass locking rings so that your eyepieces are clamped all around and are not marred at a single point when you tighten down the thumbscrew.

The objective lens really makes this scope special. It is a triplet (i.e., a three-element) lens that is composed of a positive Super ED glass element surrounded by two matching hard crown meniscus lenses. All surfaces are spherical. The two air/glass surfaces have multi-layer anti-reflection coatings. The manufacturer claims this results in better than 97% light transmission at the peak visual wavelengths. It has a resolution of 1.1 arc seconds and a magnification range of 12x to 400x. It is great for both daytime nature uses like bird watching as well as astronomy.

It is the Super ED (extra-low dispersion) glass which allows color-free (hence "apochromatic") images at the fast f/6 ratio. This means it can be short and therefore portable, while still avoiding the old Achilles heel of refractor telescopes, chromatic aberration. This is a property of refractor telescope lenses that until recently was never quite completely eliminated. It is due to the fact that when a lens focuses light, the red (longer-wavelength) end of the visible spectrum focuses at a slightly different spot than the blue (shorter-wavelength) end. This aberration creates false color fringes around objects that can be a terrible distraction. The old way to minimize this effect was to make the refractor very long, so that the red and blue light focused closer together. This is one reason why the 24" refractor at the Sproul Observatory, for instance, is so long. Older, two-element lenses could not completely correct for this aberration effect, and the coloration was minimized by long focal length (f/ratio) lenses. The Sproul refractor is about 36 feet long which, when divided by 2 feet (the diameter of the objective lens) yields an f/18 focal ratio. The same ratio would make Barry's new scope over six feet

long instead of two. And with any added length, the telescope mount has to be much more massive to keep images steady. Those of you who made the Sproul Observatory visit remember the very massive mount for that scope. So the advantages of a short focal length refractor are many.

Another advantage is we get to look through it at the next observing session. Congratulations Barry! I'm almost as anxious to look through it as you are.

Mike Turco

P.S.

The Chester County Astronomical Society is now listed in *Astronomy* magazine's list of astronomy clubs. Go to

<http://www2.astronomy.com/astro/>

Click on the Site Map, then on the Astronomy Clubs list for Pennsylvania (and some other minor states). We are listed under Thornton, PA since they used my address instead of West Chester. The list has a direct link to our CCAS web site. While you are at that web site you can also check out the National Astronomy Organizations listing with convenient direct links to a number of national organizations.



CCAS Constitutional Crisis

Last month, copies of the proposed amendments to the Society's Constitution were mailed out to the 36 voting members of the Society. Members were asked to review the proposed changes, mark their approval or disapproval, and mail the "ballot" back using the enclosed return envelope. As this newsletter goes to press (Wednesday March 3) only 20 of the 36 ballots have come back. The Constitution states that amendments need to be approved by 2/3 of the voting members of the Society: that means we need at least 4 more ballots returned, or the amendments fail. If you have not yet returned your ballot, please do so immediately. In this situation **your vote really does make a difference!** If you accidentally misplaced your copy, you can get a replacement copy by contacting Jim Anderson at 610-380-4512. As stated in the cover letter, all votes must be received back by March 23, 1999 in order to be counted.



Welcome New Members!

The Society would like to extend a welcome to the new members who joined us in February. Hello and Clear Skies goes out to George Ehr Gott of Malvern, and to Michael Mallon, also of Malvern.



CCAS TO HOLD 2nd ANNUAL MESSIER MARATHON SATURDAY/SUNDAY MARCH 26/27, 1999



Charles Messier

Well it's that time of year again, and you know what that means. It's time to hold The CCAS Second Annual Messier Marathon. Last year, I believe it was March 27/28, several of us converged on the BVA site, armed with scopes and binoculars, and tried our luck at observing as many M objects as possible. Success varied, but John Inburgia and I teamed up and bagged 79 objects between sunset on Friday and when the eastern horizon got too bright Saturday morning. This year's best weekend is March 20/21. However, due to a scheduling conflict and an unfavorable moon, we will hold our marathon the following weekend, Friday/Saturday, 3/26/27. The sun sets at 7:21 on Saturday, 3/26 and rises at 6:55 Sunday morning. Also, the waning crescent moon doesn't rise until 6:55 am Sunday morning and will not be an issue. See me at the Eastern College outing for handouts and further instructions or contact me and I will mail or email the information to you.

Many of you know all about Charles Messier and the 100 plus objects that bear his monogram. However, for those of you who are new to this hobby, here is a brief summary

What is a Messier Marathon? Fanatical observers love a challenge and the Messier Marathon is quite popular. It is based on a list of objects "discovered" or compiled by the French astronomer Charles Messier in the 1700's. While Messier worked hard to discover comets, he compiled this list so that he could avoid mistaking the objects for new comets. Today, amateur astronomers challenge their abilities by finding all the objects on the list in one night. The Marathon is generally held during March, on the weekend that is closest to the equinox. During this evening it is theoretically possible to see all of the objects that Charles Messier listed. One obvious problem with this is that the Moon is going to interfere with the night in question. It so happens that the Moon is in a favorable position once every three years. There is another night to see many of the Messier objects that is close to fall equinox, but a different object order must be used. It is imperative that your observing site have good horizons in all directions. If your view is blocked from the horizon to the East, you will not find the early morning objects at the end of the list.

Dress properly!!! During the marathon most observers will need heavy, cold weather observing clothes. The most important item for keeping warm, which is often overlooked by those who do not observe in cold weather, is a hat. Much body heat is lost through the head, where blood vessels are close to the surface. Wearing a hat can keep your hands and feet from freezing! Layering is the secret to keeping warm. Wear long underwear under your pants, try using overalls such as are used for skiing or snowmobiling. Plan to set up before the sun goes down. Your observing site should be available before sunset. If you must set up all your equipment, try to arrive one hour before sunset. Have all charts & observing aids handy from the start. Make sure you have a place to sit during the night because your body will complain if you do not. Also have some hot liquids to drink (coffee is not really recommended because the caffeine in it tends to narrow the blood vessels, causing one to feel even colder), and something to eat will help you make it through the night.

The Marathon begins as soon as it is possible to see the guide stars for the first objects. The first objects must be hunted quickly. Do not linger over them, as they will be difficult to find and see at best. The first hour of observing will score you the objects early on the list. Once the first early objects are located, you may then begin to work at a slower pace. The first part of the session will end in the Virgo cluster of galaxies. They will challenge even the hardest of observers. After the Virgo cluster is complete, some time around 1 AM, you may then take the one nice long break of the night. You should start back on the search by 2:30 AM, in order to find all the objects left on the list. If you get hung up on any of the remaining objects, remember that they are rising. Don't waste time becoming stranded on one of these, continue with the next objects and come back to the one that tripped you up later. Practice makes Perfect This advice will help you through all aspects of the Messier Marathon. Unless you use a computer-controlled telescope, it is doubtful that you will succeed to see all 110 objects the first year you try it. **Remember, if you plan on applying these observations toward an Astronomical League award, computer control and digital setting circles are not allowed.** However, last year we observed 79 objects using my 10 inch LX-200, and we sort of bent the rules. We would GOTO to a nearby guide star and then manually direct the scope to the M object.

Although an experienced observer can do the marathon on the first try, most of us will probably need more than one Marathon to make it happen. In addition, you can practice for the Marathon all year long! The Virgo cluster of galaxies is probably going to be the stumbling block for many observers. The galaxies are well placed for observing just before marathon time--if you can stay up after midnight to see them, you can practice for a few weeks ahead of time. If they trip you up on your marathon, spend the next weeks getting familiar with them. This way, when the Marathon comes around again, you will be ready for them! If you would like to finish the Marathon, but find yourself lost in the Virgo cluster, you should probably just poke around up there and resolve to spend some time learning to identify them. If you are blessed with setting circles and know how to use them, there's no reason why the cluster should defeat you. If possible, practice looking for those objects that appear first and last on the list of objects--M30, M72, M73, M74, M77, M76. These objects will be elusive and may not actually be visible from your home site.

Frank J. Angelini 2/21/1999

March Skies

Moon Phases

Full Moon	3/02
Last Quarter	3/10
New Moon	3/17
First Quarter	3/24
Full Moon	3/31

Loony Notes: The Full Moon of January 31 was a "Blue Moon" because it was the second Full Moon in one calendar month. That's what a "Blue Moon" is. Then in February there was no Full Moon at all: the next one after January 31 is on March 2. And then there will be another "Blue Moon" on March 31!

The Planets

Mercury is visible in the evening sky during the first part of March. Look low in the sky, about 15-30 minutes after sunset. It won't be easy to find; you need a really good low western horizon. By about mid-month Mercury will disappear into the Sun's glare once again.

Venus will be the first "star" you can see in the evening sky in March.

Mars is rising before 11 p.m. on March 1, and before 9 p.m. on March 31. We are now close enough to Mars for good telescopic viewing, although the best viewing won't be until Mars gets high enough above the eastern horizon to clear the light pollution and atmospheric turbulence. In March, that will mean waiting until after midnight. The situation will continue to get more favorable for evening viewing in April.

Jupiter is low in the western sky in the early evening as March begins. It is getting too low for good telescopic observations, and by month's end will disappear completely in the Sun's glare.

Saturn is high in the west-southwest as darkness falls, east of much brighter Venus (i.e., Saturn is above and to the left of Venus). Saturn is a magnificent sight, and is well-placed for telescopic observations in the evening skies of March. Indeed, it is the best planetary showpiece for this month.

Uranus and Neptune are still pretty much lost in the Sun's glare this month, although they are beginning to climb higher in the morning skies before dawn.

Pluto is getting up around the meridian by dawn. Determined hunters will need dark skies, at least an 8" telescope, and a good finder chart in order to bag Pluto.

Vernal Equinox: March 20 at 8:46 p.m. EST

On Saturday March 20, 1999 spring officially begins in the Northern Hemisphere as the Sun crosses the Earth's Celestial Equator at 8:46 p.m. EST. Of course, it will be the first day of autumn in the Southern Hemisphere. Does anybody know if they call it the Autumnal Equinox in the "Land Down Under"??



Book Review by Jim Anderson

The Messier Objects, A Beginner's Guide

by Kathy Machin & Sue Wheatley

An AL Observing Manual, published by the Astronomical League, 1997

30 8.5" x 11" pages, with charts, drawings and photos
\$5.00 plus \$1.00 postage; order from:

Astronomical League Sales

P.O. Box 572

West Burlington, IA 52655-0572

Ordering information can be found on the Web at:

<http://www.astroleague.org/al/alsales/alsales.html>

I was very pleasantly surprised by the quality of this slim, plain-looking manual. It is intended for use by those seeking to earn the Astronomical League's Messier Certificate(s). The Introduction explains the history of the Messier list, general observing tips, the requirements for the AL Messier awards, and the arrangement of the book. The rest of the book is organized into chapters by seasons: for each season the Messier objects visible in the evening skies during that season are listed and described. The book concludes with several sections listing the Messier objects sorted in different ways, and a copy of the observing log sheet used for the Messier award(s). The book's inside front cover has a very nice chart of the heart of the summertime Milky Way in the Sagittarius/Scutum area, and the inside back cover has an equally good chart of the Virgo galaxy cluster. In fact, this chart alone may be worth the price of the book for some observers. One of the problems with attacking the Virgo cluster is that many star charts, like *Sky Atlas 2000.0* (which is my favorite telescope-side guide) show almost too many galaxies of the Virgo cluster: it can be very difficult to read which of those many dozens of small ellipses are the Messier objects, especially in the dark! The chart in this book shows only the Messier objects, and just a few of the brighter NGC galaxies in that area (so that you won't mistake them for the Messiers.) The text describes star-hopping in this area rather thoroughly, and also describes some other NGC galaxies that you might see in small telescopes as you explore this area (this includes some NGCs not shown on the chart.)

The main text of the book, the descriptions of the objects arranged by season, includes data such as the chart numbers in *Sky Atlas 2000.0* and *Uranometria 2000.0* on which the objects can be found. These are two of the most popular star atlases intended for use at the telescope. One possible problem with the chart numbers for *Sky Atlas 2000.0* is that the numbers were culled from the first edition of that star atlas. Since this book was published in 1997, a second edition of *Sky Atlas 2000.0* has been released, and the first edition is no longer available (except perhaps in the used marketplace, or in stores with old stock still left.) I have a copy of both editions of *Sky Atlas 2000.0*, and a quick survey shows that the differences in the chart divisions and numbers are probably not significant: almost all of the Messier objects are on the same number chart

in the second edition. When I get time for a more exhaustive review, I will publish any corrections I find in the newsletter.

The object descriptions usually start with some suggestions for star-hopping to the objects. Note that if you are pursuing one of the Messier certificates, you are not allowed to use computerized setting circles or telescope pointing programs: you have to find the objects yourself. The object descriptions also tell what the visual observer (a person using just their eyeballs at the telescope, no cameras or CCDs) can expect to see in different sized telescopes. A number of small but clear photos and drawings accompany the descriptions. Some of the drawings look as good as the photos. The authors lament that cost constraints kept them from using more of the drawings and photos that they had available; I join in that lament. It is indeed a shame, given the quality of what **is** included.

The biggest surprise for me, really, was in the Introduction where the requirements for the Messier award(s) were listed. You are **not required** to draw the objects! You **are required** to describe it, though. The authors state that "The description does not need to be elaborate. 'Looks like an elongated Q-tip' is acceptable." (on page 1) I have always thought that drawings were required, more so than descriptions. Kathy Machin, one of the authors, is also the national coordinator for the AL Messier award, so it is obvious that I was wrong about that, and drawings are not required. You learn something new every day in this hobby!

In summary, this manual is a good guide to the Messier objects, useful for both beginners and old pros. I heartily recommend it for Messier hunters. At the low purchase price of \$5.00, this is definitely one of the best bargains in astronomical guide books. The A.L. Sales Office takes only checks or money orders, no credit cards: so you can't speed things up via a phone order (to get a copy in time for the CCAS March Messier Marathon.) My copy took 2-3 weeks to arrive. In your order letter, mention that you are a member of the CCAS, AL Member Society No. 9704.

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May 16, 1999: NE Astronomy/Telescope Show

On Sunday May 16, 1999, the 8th Annual Northeast Astronomy Forum and Telescope Show will be held in Suffern, NY. This event is sponsored by the Rockland Astronomy Club. There will be a number of talks at the Forum by different people, including Richard Berry, Leif Robinson, and Carolyn Shoemaker. There is also a Telescope Show where you will find vendor displays (vendors such as Celestron, Meade, TeleVue Optics, etc.) as well as club and swap tables. The event is held at the Holiday Inn & Conference Center in Suffern; overnight accommodations are available. Contact Jim Anderson for a copy of the brochure.

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June 1, 1999: East Goshen Star Night

East Goshen Township has invited the CCAS to a "return engagement" at the East Goshen Township Park on Paoli Pike. The rain date will be June 3. Mark your calendars now; more details will be published next month.

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June 11-13, 1999: Mason Dixon Star Party

The 10th annual Mason Dixon Star Party will be held on June 11-13 in Spring Valley Park near York, PA. This event features on-site camping, as well as nearby motels. May's Munchables will be providing a 24-hour catering service providing a variety of food. Several speakers will deliver talks on a variety of subjects during the day on Saturday. Door prizes will be given out, including an Orion 8" Deep Sky Explorer Dobsonian telescope. There's a vendor's display area, an astronomical flea market, movies for kids (at night), contests, etc. Copies of the star party handout and registration forms can be obtained by contacting Ed Lurcott.

Or check the Website:

<http://home1.gte.net/dmdewey/mdsp.html>

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July 1-7, 1999: ASP Meeting in Toronto

The Astronomical Society of the Pacific is holding their annual meeting in Toronto. This will be a joint meeting with the Royal Astronomical Society of Canada (RASC) and the American Association of Variable Star Observers (AAVSO). The meeting will "focus specifically on partnerships in astronomy research and Education." Ed Lurcott from our Society is planning on attending. If you're interested in going, contact Ed or Jim Anderson for more details. We have brochures describing the meeting, the speakers, conference topics, etc., in much more detail than can be provided here.

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News from Neighboring Societies

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

Mar. 16	CCD Astronomy	Dave Groski
Apr. 20	Spectrometry at Mount Cuba Astronomical Observatory	Jack Fisher
May 18	Dinner Meeting Black Holes	Dr. Harry Shipman
June 15	TBA	

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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AL Observing Programs

One of the benefits of joining the CCAS is that you also become a member of the Astronomical League, a national federation of astronomy clubs. The AL has a series of Observing Awards, and 4 observing clubs based on these awards have been started in the CCAS. These are the Messier Club, the Binocular Messier Club, the Lunar Club, and the Double Star Club. Working on these awards also gives you a plan of observing: "What will I look at tonight?" becomes "Which Messier objects are visible tonight that I haven't seen yet?" Each club has a volunteer coordinator:

Messier Clubs (both): Frank Angelini (610-873-7929)
Lunar Club: Ed Lurcott (610-436-0387)
Double Star Club: Jim Anderson (610-380-4512)

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CCAS Lending Telescope

You can make arrangements to borrow the telescope for a month by contacting Steve Leiden (296-3793). The 6" f/8 reflector can be borrowed by club members for a month at a time; longer if no one else is waiting to borrow it.

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CCAS Website

Pete LaFrance has set up a Web page for the Society on the World Wide Web (Internet). He has included some pictures taken by CCAS members. Check it out 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).

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Join the Fight for Dark Skies!

You can help fight light pollution, conserve energy, and save the night sky for everyone to use and enjoy. Join the nonprofit International Dark-Sky Association (IDA) today. Individual memberships start at \$30.00 for one year. Send to:

International Dark-Sky Association
3545 N. Stewart
Tucson, AZ 85716

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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 SNY114@aol.com

Or mail the contribution, typed or handwritten, to:

Jim Anderson
19 Bluff Road
Thorndale, PA 19372-1104

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CCAS Lending Library

Our Librarian, Bill O'Hara, has the books in our library all ready for members to borrow. You can drop by Bill's place (call first, of course) to borrow a book. Or you can call Bill before a meeting and ask him to bring a book to the meeting for you. Copies of the catalog are available at CCAS meetings. Bill's phone number is 610-696-1422.

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Sky & Telescope Magazine Group Rates

Subscriptions to this excellent periodical are available through the CCAS at a reduced price of \$27.00, which is much less the newsstand price of \$48.00, and also cheaper than individual subscriptions (\$37.95)! 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.

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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

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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

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CCAS Officers

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

President: Mike Turco (610) 399-3423
Vice Pres: Kathy Buczynski (610) 436-0821
Treasurer: Pete LaFrance (610) 268-2616
Secretary: Frank Angelini (610) 873-7929
ALCor and Newsletter: Jim Anderson (610) 380-4512
Librarian: William O'Hara (610) 696-1422
Observing: Ed Lurcott (610) 436-0387

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