



Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 27, No. 3 **Three-Time Winner of the Astronomical League's Mabel Sterns Award** ☼ 2006, 2009 & 2016 March 2019

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M51, The Whirlpool Galaxy



Image courtesy of CCAS President & Program Chair Dave Hockenberry. For more about M51, see pg. 6

Membership Renewals Due

03/2019	Angelini Fulton Sterrett Traini Zandler Zibinski
04/2019	Hepler Imburgia Miller Richter Rossomando
05/2019	Cunningham Hertweck Klapholz La France O'Hara

March 2019 Dates

- 6th • New Moon, 11:03 a.m. EST
- 10th • Daylight Saving Time begins, 2:00 a.m.
- 14th • First Quarter Moon, 6:27 a.m. EDT
- 14th • The Lunar Straight Wall is visible
- 20th • Spring Equinox, 11:03 a.m. EDT
- 20th • Full Moon, 9:42 p.m. EDT
- 22nd • The Zodiacal Light is visible after evening twilight for the next two weeks
- 28th • Last Quarter Moon, 12:09 a.m. EDT



CCAS Upcoming Nights Out

In addition to our monthly observing sessions at the Myrick Conservancy Center, BRC (see pg. 2), CCAS has several special "nights out" scheduled over the next few months. Members are encouraged to help out during these events any way they can. See below for more information.

- ☼ **Saturday, April 6, 2019** - CCAS Special Observing Session at Hoopes Park, West Chester, PA. The observing session starts at sunset. The session is from 8:00 p.m. to 9:30 p.m.
- ☼ **Saturday, April 27, 2019** - CCAS Special Observing Session with the Atglen Public Library at Wolf's Hollow County Park, Atglen, PA. The session is from 8:15 p.m. to 9:45 p.m.

Winter/Spring Society Events

March 2019

8th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset. The session is from 7:00 p.m. to 9:00 p.m.

10th • Daylight Saving Time begins, 2:00 a.m. Set clocks ahead one hour.

12th • CCAS Monthly Meeting, Room 113, Merion Science Center (former Boucher Building), West Chester University. The meeting starts immediately after at 7:30 p.m. Guest Speaker: Dr. Veronique Petit from the University of Delaware.

14th-15th • The von Kármán Lecture Series: [The Golden Age of Exoplanet Exploration](#), Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

20th • Open call for articles and photographs for the April 2019 edition of [Observations](#).

22nd • Live public presentation, *Killer Rocks from Outer Space*, at the [West Chester University Mather Planetarium](#). Doors open at 6:30 p.m. with presentation starting at 7:00 p.m. Cost is \$6.00.

26th • Deadline for newsletter submissions for the April 2019 edition of [Observations](#).

April 2019

6th • CCAS Special Observing Session at Hoopes Park, West Chester, PA. The observing session starts at sunset. The session is from 8:00 p.m. to 9:30 p.m.

9th • CCAS Monthly Meeting, Room 113, Merion Science Center (former Boucher Building), West Chester University. The meeting starts immediately after at 7:30 p.m. Guest speaker: Dr. Marc Gagne, West Chester University.

18th-19th • The von Kármán Lecture Series: : ["The Future is Cloudy: NASA's Look at Clouds and Climate,"](#) Jet Propulsion Laboratory, Pasadena, California. Live stream of free lecture presented by NASA & Caltech.

20th • Open call for articles and photographs for the May 2019 edition of [Observations](#).

26th • Live public presentation, *Your Backyard Sky*, at the [West Chester University Mather Planetarium](#). Doors open at 6:30 p.m. with presentation starting at 7:00 p.m. Cost is \$6.00.

26th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset. The session is from 7:00 p.m. to 9:00 p.m.

26th • Deadline for newsletter submissions for the May 2019 edition of [Observations](#).

27th • CCAS Special Observing Session with the Atglen Public Library at Wolf's Hollow County Park, Atglen, PA. The session is from 8:15 p.m. to 9:45 p.m.

March 2019 CCAS Meeting Agenda

by Dave Hockenberry, CCAS Program Chair

Our next meeting will be held on March 12, 2019, starting at 7:30 p.m. The meeting will be held in Room 113, Merion Science Center (former Boucher Building), West Chester University. Our guest speaker is Dr. Veronique Petit from the University of Delaware. This will be Dr. Petit's second presentation for CCAS. Seven years ago, she spoke to us about Gamma Ray Astronomy. This time she will be talking about Massive Stars and Gravitational Waves.

On April 9th, CCAS will have another returning astronomer, West Chester University professor Dr. Marc Gagne. His subject will be announced later.

Then on May 14th, CCAS will welcome Dr. Chris D'Andrea, astronomy professor at Haverford College. He will be presenting a talk entitled, "Supernovae: Going Out with a Bang."

Please note that inclement weather or changes in speakers' schedules may affect the program. In the event there is a



Dr. Veronique Petit
University of Delaware

change, CCAS members will be notified via e-mail with as much advance notice as possible.

As for future meetings, we are looking for presenters for our 2019-2020 season. If you are interested in presenting, or know someone who would like to participate, please contact me at programs@ccas.us.

Upcoming Spring 2019 Astronomy Classes

by Don Knabb, CCAS Treasurer & Observing Chair

Once again, CCAS has collaborated with the Chester County Night School to offer our class, *Astronomy, a Beginner's Guide*. Classes are Monday evenings from 7:00 to 8:00 p.m. at Rustin High School. Registration fee is \$59.00. To register yourself or a friend or family member, visit the [Chester County Night School](#) website.

- March 18 - Spaceship Earth – Roger
- March 25 - Our Moon: Phases and Faces – Steve
- April 1 - Other Kids on the Block – Dennis
- April 8 - Star Charts and Planetarium Software – Don
- April 15 - Using a Telescope – Dave
- April 29 - Beyond Naked Eye Observing (Deep Sky Stuff) – Don Miller or John Conrad

No class scheduled on April 22nd due to the Easter holiday weekend. Please contact [Don Knabb](#) if you can assist the instructors.

Moving Forward: A Message from the New CCAS President

by Dave Hockenberry, CCAS President & Program Chair

As of January 2019, the Chester County Astronomical Society has some new leadership on the Executive Committee. As many of you know, our past President Roger Taylor stepped down at the beginning of the year after leading our group for nearly 10 years. This is the longest anyone has served as president of CCAS, and we all owe Roger a great debt.

Under his leadership, several changes have been made, and it has all been to the good. Our Society membership has grown from about 60 to over 100 members as of the end of 2018. Many changes have been made in the format of our meetings, de-emphasizing the very didactic sessions we used to have to a much more member-oriented, interactive and social environment.

The numbers speak for themselves. We have become a much more inclusive and social society. Roger suggested changes where he thought it was needed, and then let each department chair “run with it.” The whole experience has become much more inviting and fun, from the monthly meetings and star parties all the way up through Executive Committee. Thank you, Roger, for all that you have done for longer than anyone else has ever done it.

So now, we move forward with some new faces leading our Society into the immediate future. The new lineup is now Dave Hockenberry as President, Pete Kellerman as Vice President, and Bea Mazziotta as Secretary. Don Knabb has graciously continued as Treasurer, one of many

hats he wears for our Club. Dennis O’Leary has joined Don as Education Co-Chair. Among the changes made by Roger and Kathy, the Chairs of all the different “appointed” positions are now included in the Exec committee meetings, and have an equal vote. Ann Miller has moved into the Public Relations chair, and I will continue to act as Program Chair until the end of the current academic year. At that time, Bruce Ruggeri has kindly volunteered to take over as Program Chair.

Bruce already has great facility with programming as for years he has been doing it for the local chapter of the Planetary Society. I know he will do an even better job as Program Chair than I ever could.

So let me first thank Pete, Bea, Bruce, Dennis, and Ann for stepping up and helping to take CCAS into the future. Let me also thank Don, John Hepler as Webmaster and Observations editor, and Librarian Barb Knabb for continuing the great work they do for all of us. Your contributions make CCAS better and better with each year, and we are extremely fortunate to have such dedicated members.

As your new President, I plan to continue building on the success of my predecessors. I believe some tweaks and adjustments need to be made to our Constitution to reflect the changing realities our club encounters. As some have pointed out, we have not had elections in a long time, and indeed none was held this year. Since only one person volunteered for each position, it wasn’t really necessary to con-

vene an election committee as spelled out in the by-laws. I believe that our organization should be accessible to all members who wish to contribute, and I’d like to make elections happen on an as-needed basis only if two or more persons are interested in the same position. The Society’s constitution should address this in a practical way. I welcome all input from any member who would like to share ideas about this.

As President, I’d like to devote more time and effort into getting youth and younger people involved with amateur astronomy. This is an issue for Astronomical League clubs nationally, and although the Society is doing better than most, I think there is still more that can be done. Lastly, I would like to acknowledge and encourage the efforts of members who have taken steps to further our Society in “unofficial” but very meaningful ways.

One example is Pete Kellerman’s initiative with the Yahoo CCAS group and his ad-hock trips to Blue Mountain Vistas and Cherry Springs. Another is Steve Leiden’s “Breakfast Club” monthly meetings that provide even more fun (as well as tasty) social cohesion among our membership in an informal and relaxed way.

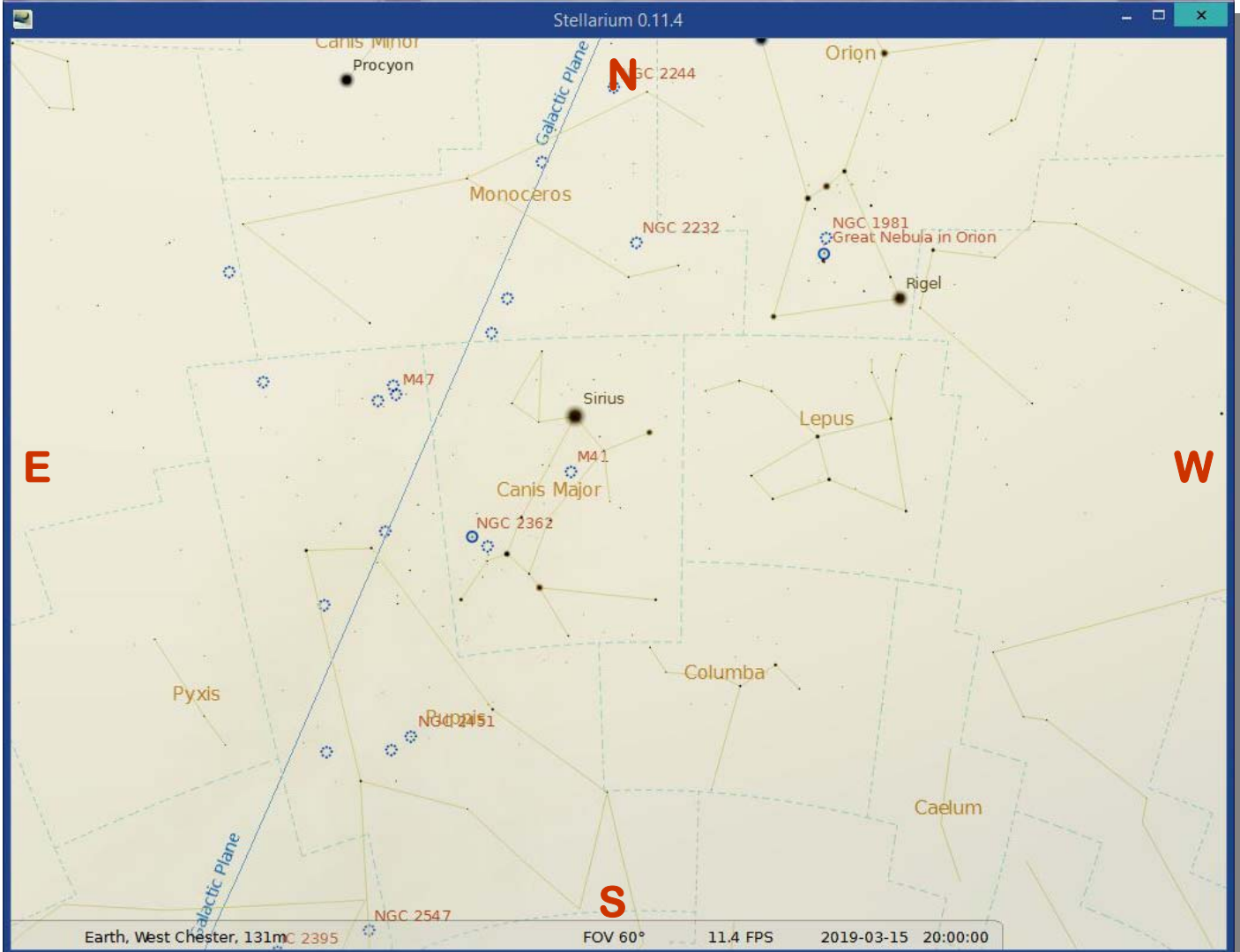
Mostly, I’d like to maintain our Society as a place where anyone, no matter what their background, interest or experience level, can feel comfortable with. Indeed, the hallmark of this Club has been outreaching and education. A few of us are

(Continued on page 12)

The Sky Over Chester County

March 15, 2019 at 8:00 p.m. ET

Note: This screen capture is taken from Stellarium, the free planetarium software available for download at www.stellarium.org.



Date	Civil Twilight Begins	Sunrise	Sunset	Civil Twilight Ends	Length of Day
03/01/2019	6:07 a.m. EST	6:34 a.m. EST	5:52 p.m. EST	6:19 p.m. EST	11h 18m 01s
03/15/2019	6:45 a.m. EDT	7:12 a.m. EDT	7:07 p.m. EDT	7:34 p.m. EDT	11h 54m 46s
03/31/2019	6:19 a.m. EDT	6:46 a.m. EDT	7:23 p.m. EDT	7:50 p.m. EDT	12h 36m 59s

Moon Phases					
			New Moon	03/06/2019	11:03 a.m. EST
First Quarter	03/14/2019	6:27 a.m. EDT	Full Moon	03/20/2019	9:42 p.m. EDT
Last Quarter	03/28/2019	12:09 a.m. EDT			

March 2019 Observing Highlights

by Don Knabb, CCAS Treasurer & Observing Chair

6	New Moon, 11:03 a.m. EST
10	Daylight Saving Time begins, 2:00 a.m.
12	The Moon is near the Hyades star cluster in the constellation Taurus
14	First Quarter Moon and the Lunar Straight Wall is visible, 6:27 a.m. EDT
20	Spring Equinox, 11:03 a.m. EDT
20	Full Moon, the Full Worm Moon or the Maple Sugar Moon, 9:42 p.m. EDT
22	The Zodiacal Light is visible after evening twilight for the next two weeks
28	Last Quarter Moon, 12:09 a.m. EDT

The best sights this month: Early risers can see a thin crescent Moon, Venus, Saturn and Jupiter in a nice line up on March 1-3 just before sunrise. For evening viewing, the Moon, the Hyades in Taurus, the Pleiades and Mars make a nice grouping on March 11-13. Daylight Saving Time begins on March 10th and Spring begins on March 20th, both of these events mean less evening observing hours. But they also mean warmer temperatures are coming, so dust off your telescope and binoculars in anticipation of seeing the wonders of the night sky without donning heavy winter clothing!

Mercury: Mercury is visible during the first few days of March, low in the western sky as darkness falls. By late March Mercury reappears in the pre-dawn sky.

Venus: Our sister planet rises 2 hours before the Sun early in the month and shines brightly in the pre-dawn sky. But Venus is sliding closer to the horizon every day as it pulls ahead of us in the race around the Sun.

Mars: The red planet is half-way up the southwestern sky at sunset and sets around midnight. Mars is getting dimmer as the year progresses but puts on a nice show when it is near the Pleiades at the end of the month.

Jupiter: By the end of March Jupiter is rising

around 1 a.m. and shines brightly in the east.

Saturn: Saturn rises about 2 hours after Jupiter and is to the left of the “teapot” of Sagittarius.

Uranus and Neptune: Neptune cannot be observed during March but Uranus can be seen low in the west just after the sky becomes fully dark.

The Moon: The Moon is full on March 20th. This is the Full Worm Moon according to Native Americans. As the temperature warms and the ground begins to thaw, earthworm casts appear (an earthworm cast is a nice word for worm poop), heralding the return of the robins. This full moon is also called the Full Crow Moon, the Full Crust Moon and the Full Sap Moon. Native Canadians called this the Maple Sugar Moon.

Constellations: In mid-March around 9:00 pm the winter constellations are in the western half of the sky heading toward their summer sleep before too many weeks have passed. Catch the Pleiades, Taurus and Orion before we lose them to the spring constellations that are rising in the east. In the spring group Leo, the Lion is heading toward center stage. The Big Dipper in Ursa Major is high overhead. Follow the arc of the Dipper handle to bright Arcturus in Boötes.

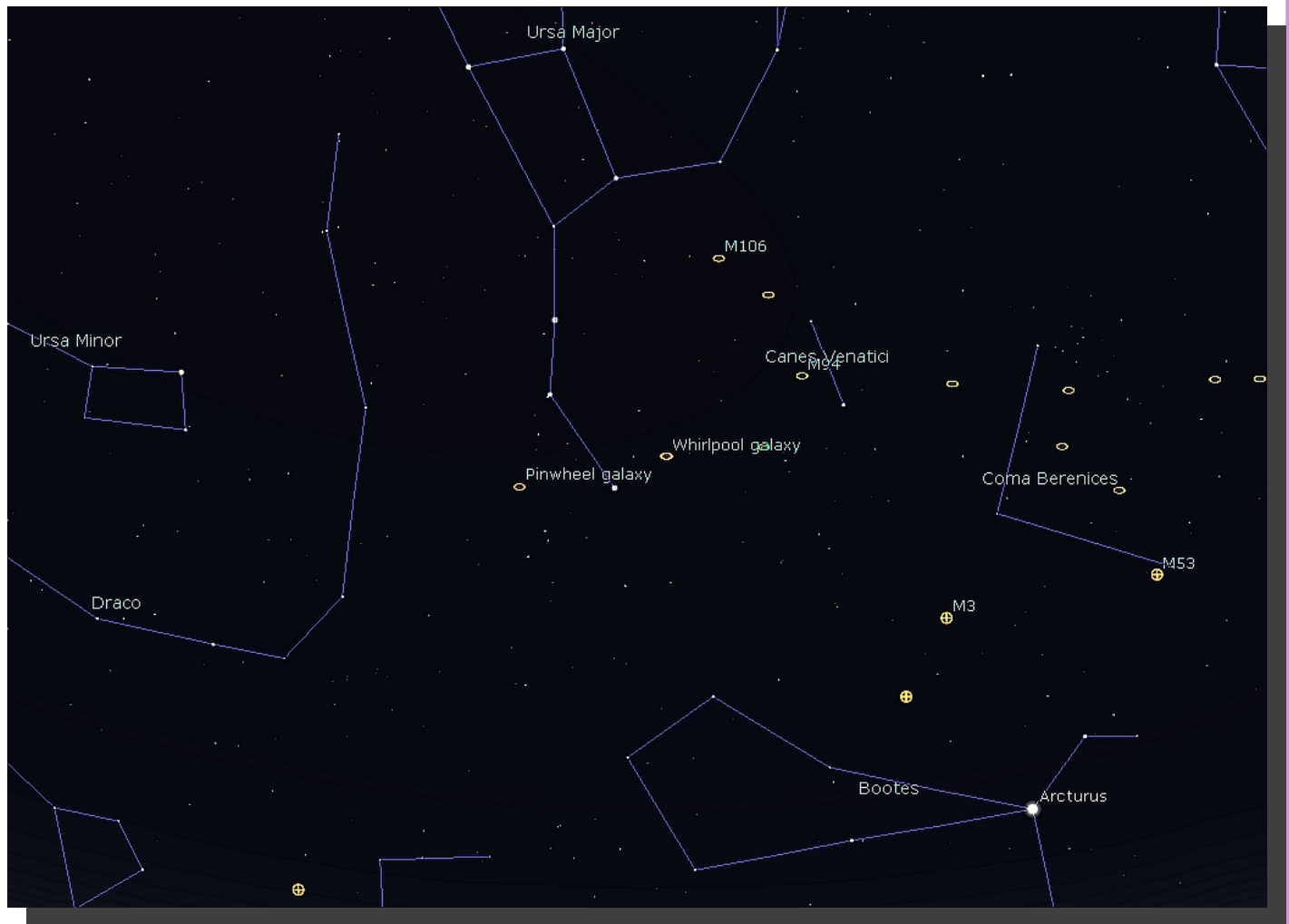
Messier/deep sky: There are many wonderful deep sky sights as winter turns to spring. Early in the evening look to the left of Canis Major, Orion’s hunting dog companion, for M46, a beautiful open cluster. The star clusters in Auriga are heading toward the western horizon but are still well positioned for viewing through the minimum amount of atmosphere early in the evening. Later in the night look overhead to find the galaxies M81 and M82 in Ursa Major. And use your binoculars to look for M35 in Gemini, an open star cluster containing several hundred stars in an area the size of the full Moon.

Comets: There are no bright comets in the sky during March.

Meteor showers: There are no major meteor showers during March.

Through The Eyepiece: M51, the Whirlpool Galaxy

by Don Knabb, CCAS Treasurer & Observing Chair



Sky map generated with Stellarium, the free planetarium program

During spring the handle of the Big Dipper is high in the sky and one of the few galaxies whose spiral structure can be glimpsed in a backyard telescope is also in good viewing position. M51, the Whirlpool Galaxy, can be seen about half way up the eastern sky late in the evening. As seen in the sky map above, M51 is under Alkaid, the star at the end of the handle of the Big Dipper, the asterism that makes up part of the constellation Ursa Major.

To see the spiral structure of M51 you need a fairly large telescope, preferably 8 inches or

larger. But the true magnificence of M51 only shows up in long exposure photographs such as the one taken by CCAS President Dave Hockenberry on this month's cover page.

No, you won't see anything that looks remotely like the photograph above, but knowing that the photons being perceived by your eye left the Whirlpool Galaxy 27 million years ago makes whatever you see amazing.

Wait for a night when the Moon is not visible in the sky, or is just a sliver setting in the west. Try different eyepieces until you find the best image. Averted vision is

a good tool in our Chester County skies to help you pick out these faint and fuzzy objects since light pollution will make this dim object fade quite a bit. Take your time and give your eyes the chance to adjust to the dark skies.

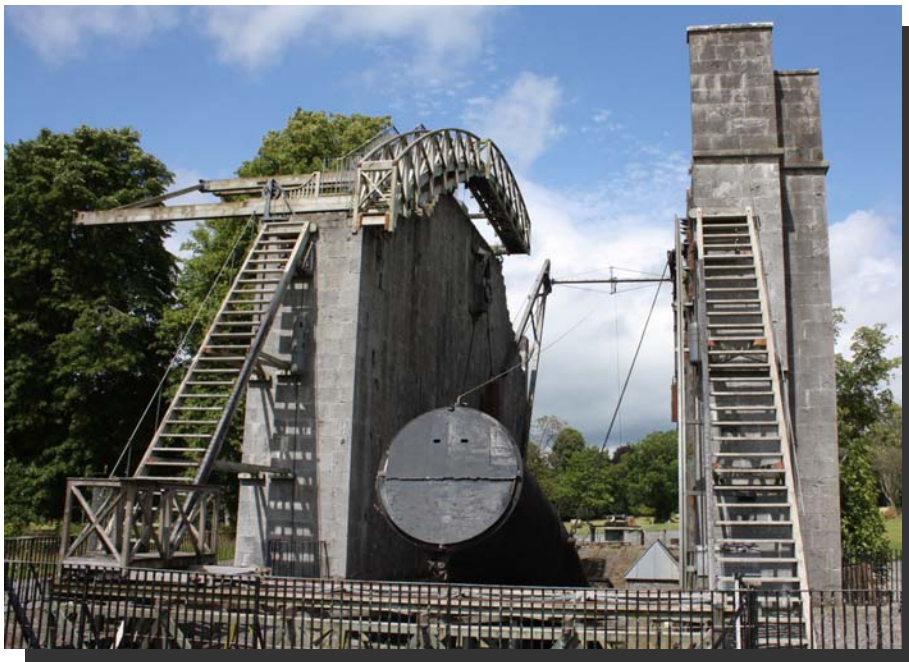
The Whirlpool Galaxy was discovered by Charles Messier in 1773 when observing a comet, and described it as a "very faint nebula, without stars". Its companion galaxy, NGC 5195, was discovered in 1781 by Pierre Méchain. It was however not until 1845 that the Whirlpool

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Eyepiece (Cont'd)



Sketch of M51 by Lord Rosse in 1845



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became the first galaxy to be recognized as a spiral. This was achieved by Lord Rosse employing a 72-inch reflecting telescope, which he constructed at Birr Castle, Ireland. This telescope was called the Leviathan of Parsonstown, which was the largest telescope in the world from 1845 until the construction of the 100-inch Hooker Telescope in California in 1917 (See Dave Hockenberry's photo to the left.

Most astronomers feel that the pronounced spiral structure is a

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NASA Night Sky Notes: Hexagon at Night, Quartet in the Morning

by David Prosper

This article is distributed by the NASA Night Sky Network, a coalition of hundreds of astronomy clubs across the US dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, stargazing info and more.

March brings longer days for Northern Hemisphere observers, especially by the time of the equinox. Early risers are treated to the majority of the bright planets dancing in the morning skies, with the Moon passing between them at the beginning and end of the month.

The **vernal equinox** occurs on **March 20**, marking the official beginning of spring for the Northern Hemisphere. Our Sun shines equally on the Northern and Southern Hemispheres during the moment of equinox, which is why the March and September equinoxes are the only times of the year when the Earth's north and south poles are simultaneously lit by sunlight. Exacting astronomers will note that the length of day and night on the equinox are not *precisely* equal; the date when they are closest to equal depends on your latitude, and may occur a few days earlier or later than the equinox itself. One complicating factor is that the Sun isn't a point light source, but a disc. Its edge is refracted by our atmosphere as it rises and sets, which adds several minutes of light to every day. The Sun doesn't neatly wink on and off at sunrise and sunset like a light bulb, and so there isn't a perfect split of day and night on the equinox - but it's very close!

Ruddy **Mars** still shines in the west after sunset. Mars scoots across the early evening skies from Aries towards Taurus and meets the sparkling Pleiades star

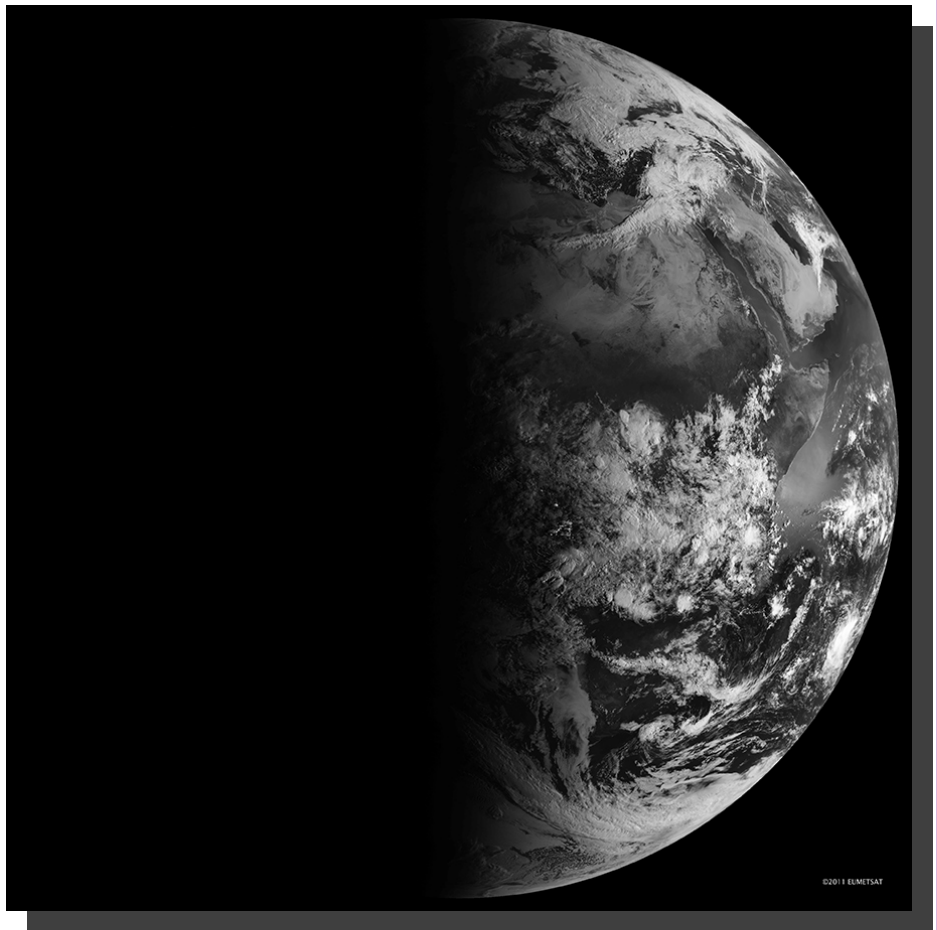


cluster by month's end.

March opens with the morning planets of **Jupiter**, **Saturn**, and **Venus** spread out over the southeastern horizon before sun-

rise. A crescent **Moon** comes very close to Saturn on the 1st and occults the ringed planet during the daytime. Lucky observers may be able to spot **Mercury** by the end of the month. March 31 opens with a beautiful set of planets and a crescent Moon strung diagonally across the early morning sky. Start with bright Jupiter, almost due south shortly before dawn. Then slide down and east towards Saturn, prominent but not nearly as bright as Jupiter. Continue east to the Moon, and then towards the beacon that is Venus, its gleam piercing through

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Caption: Earth from orbit on the March equinox, as viewed by EUMETSAT. Notice how the terminator – the line between day and night – touches both the north and south poles.

Additional information can be found at <http://bit.ly/earthequinox>

Image credit: NASA/Robert Simmon

Night Sky Notes (Cont'd)



Caption: The morning planets on March 31. Image created with assistance from [Stellarium](#).

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the early morning light. End with a challenge: can you find elusive Mercury above the eastern horizon? Binoculars may be needed to spot the closest planet to the Sun as it will be low and ob-

scured by dawn's encroaching glow. What a way to close out March!

Discover all of NASA's current and future missions at nasa.gov

Eyepiece (Cont'd)

(Continued from page 7)

result of M51's current encounter with its neighbor, NGC 5195. Due to this interaction, the gas in the galaxy was disturbed and compressed in some regions, resulting in the formation of new young stars.

Information credits:

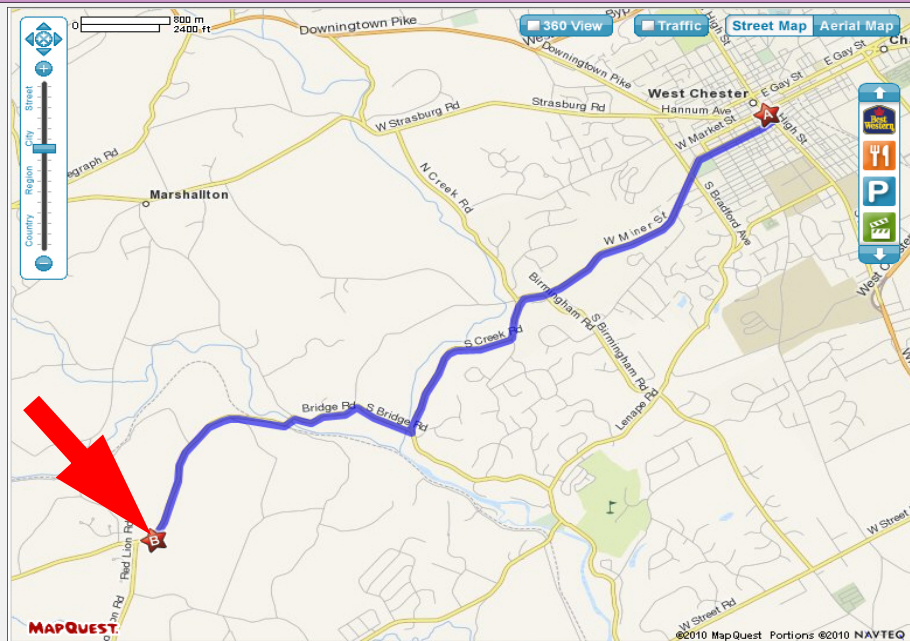
Dickinson, Terence 2006. *Night-watch: a practical guide to viewing the universe*. Buffalo, NY. Firefly Books

Hewitt-White, Ken. *Night Sky Magazine*, The Whirlpool Galaxy

<http://www.seds.org/messier/m/m051.html>

http://en.wikipedia.org/wiki/Messier_51

CCAS Directions



Brandywine Red Clay Alliance

The monthly observing sessions (held February through November) are held at the Myrick Conservation Center of the Brandywine Red Clay Alliance.

To get to the Myrick Conservation Center 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 BRC property, turn left 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 left through the gate and drive up the farm lane about 800 feet to the top of the hill. The observing area is on the right.

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).

Brandywine Red Clay Alliance

1760 Unionville Wawaset Rd
West Chester, PA 19382
(610) 793-1090

<http://brandywinewatershed.org/>

BRC was founded in 1945 and is committed to promoting and protecting the natural resources of the Brandywine Valley through educational programs and demonstrations for all ages.

NASA's Night Sky Network: Assisting Clubs with Outreach Since 2004!

by Dave Prosper, Program Manager for Outreach, Astronomical Society of the Pacific

Astronomy outreach to the general public is, for many of us, one of the most social and fun parts of amateur astronomy. For astronomy clubs in particular, outreach programs provide a reliable avenue for publicity and attracting new members. NASA launched the Night Sky Network (NSN) program in 2004 to assist clubs with outreach. Based on input from club leaders across the United States, the NSN aimed to make outreach easier and more accessible to all members of astronomy clubs, regardless of their individual levels of experience. In addition, NSN provided a set of tools to help clubs manage their volunteers and events, and by extension, their club rosters, messaging, and general day-to-day management needs.

The Night Sky Network's most famous feature are the astronomy outreach toolkits: portable kits of easy-to-use astronomy outreach resources, specifically designed for amateur astronomers to use in the field. These toolkits offer great activities for club meetings, public star parties, and indoor or daytime events. The toolkits provide vital backup activities in case of bad weather—something we very much appreciate ourselves, since we are headquartered in the notoriously foggy San Francisco Bay Area! These kits are free to NSN member clubs that regularly report on their events using the NSN website's logging system, and are shipped out quarterly. Toolkits are sponsored by NASA and the National Science Foundation to bring the big ideas of astronomy down to Earth, and help clubs



Dave Prosper

Dave Prosper is the program manager for amateur astronomy outreach at the Astronomical Society of the Pacific, in San Francisco, California. Born and raised under the dark skies of the Adirondack foothills in northern New York State, he came to love the night sky at a young age and has been watching the stars ever since.

inspire the next generation of space scientists. Topics covered by the kits include gravity and black holes, the search for exoplanets, our Solar System, meteorites and space rocks, telescopes, life in the universe, eclipses, and even space weather and solar storms. While you may not think of exoplanets as the hottest topic at the telescope, amateurs report a lot of questions about these other worlds (and of course, the possibility of alien life on them) and these outreach toolkits provide helpful ideas and demonstrations to turn the conversation to the actual science of how scientists are searching for new worlds.

We fit the various toolkit props and reference materials into medium-size boxes, and many kits also include large, eye-catching vinyl banners shipped in sepa-

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A visitor to Johns Island County Park takes a tactile tour of the solar system with help from members of the Lowcountry Stargazers. Photo Credit: Jay Messeroff

Nightsky Network (Cont'd)



Ken De Silva of the Mount Diablo Astronomical Society discusses the solar system with some Girl Scout Daisies at Loma Vista STEAM Night. Phot Credit: Ken De Silva/Mount Diablo Astronomical Society

(Continued from page 10)

rate cardboard tubes. In addition to banners, kit materials usually include customizable handouts, official NASA lithographs, models, manuals on suggested practices for using the materials, and even a DVD filled with demos of the toolkit activities—handy if you still have a physical player available. Links to electronic versions of these materials, assembly guides, and archives of the training videos can also be found on the program website; they are freely available to everyone at nightsky.jpl.nasa.org.

Aside from toolkits, there are other substantial benefits to participation in the NSN program. We offer members-only monthly webinars with NASA scientists working on the latest missions. Some of our recent webinars featured mission scientists from the Transiting Exoplanet

Survey Satellite (TESS), Parker Solar Probe, Lunar Reconnaissance Orbiter (LRO), and Europa Clipper. Members are also offered “enrichment” webinars focused on education and outreach: citizen science participation, inclusive ways to work with young girls and all audiences at the telescope, featured toolkit activities, and shared outreach stories and techniques.

And there is even more! The NSN offers online tools to help astronomy club leaders manage their clubs and events. The NSN website features include a custom calendar and RSVP system, a volunteer hour tracker, a roster management tool, and a messaging system. When available, the club can also receive printouts from NASA and other science partners, discounts on astronomy magazines, and the ability to request “refresher” materials from toolkits—all provided, of course,

that your event reports and club contact information is up to date.

We ask NSN members to frequently report on their events using the website’s event log system. Event reports help us inform NASA about the kinds of outreach that astronomy clubs are performing, confirm participation in the program, and help us judge what outreach materials are the best fits for member clubs’ outreach programs. Member reports enable us to show NASA the effective reach of NSN member clubs to the general public and are the program’s lifeblood.

One final thing: one of our favorite traditions at the Night Sky Network is the annual “Outreach Award Pin,” which features a fresh design every year. We want to reward individual club members with pins and certificates for all of their hard work in outreach, and we rely on club coordinators to keep track of their members’ volunteer hours and report on their events to qualify. We do have to charge a nominal fee to cover the cost of the pins and shipping, but we strive to keep costs as low as possible, and every club that has reported on events for the previous year qualifies for three free pins. Some folks have accrued quite an impressive collection of pins over the years due to their hard work.

We are always working hard to find great ways to help clubs share the latest in NASA science. See this space next time, as I’ll feature more useful NSN resources to help your astronomy outreach. May you have clear, dark skies!

CCAS Directions

West Chester University Campus

The monthly meetings (September through May) are held in Room 112 in Merion Science Center (formerly the Boucher Building), attached to the Schmucker Science Center. The Schmucker Science Center is located at the corner of S. Church St & W. Rosedale Ave. Parking is generally available across Rosedale in the Sykes Student Union parking lot (Lot K).



New President (Cont'd)

(Continued from page 3)

“gearheads,” some of us are superb teachers, and some of us are happy with a small telescope, a pair of binoculars or a laser pointer. Some of us have no equipment at all, and just enjoy sharing astronomy and the night sky with the gang. My goal is to maintain and extend this warm, inviting atmosphere well into the future, and I look forward to working with each and every member of the Chester County Astronomical Society to make it happen.

CCAS Membership Information and Society Financials

Treasurer's Report

by Don Knabb

Feb. 2019 Financial Summary

Beginning Balance	\$1,118
Deposits	\$200
Disbursements	<u>-\$165</u>
Ending Balance	\$1,153

New Member Welcome!

Welcome new CCAS members Steve DellaPenna from Coatesville, and Chris Etherington from West Chester, PA. We're glad you decided to join us under the stars! Clear skies to you!

Membership Renewals

You can renew your CCAS membership by writing a check payable to “Chester County Astronomical Society” and sending it to our Treasurer:

Don Knabb
988 Meadowview Lane
West Chester PA 19382

The current dues amounts are listed in the *CCAS Information Directory*. Consult the table of contents for the directory's page number in this month's edition of the newsletter.

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
 3225 North First Avenue
 Tucson, AZ 85719
 Phone: 520-293-3198
 Fax: 520-293-3192
 E-mail: ida@darksky.org

For more information, including links to helpful information sheets, visit the IDA web site at:

<http://www.darksky.org>

Dark-Sky Website for PA



The Pennsylvania Outdoor Lighting Council has lots of good information on safe, efficient outdoor security lights at their web site:

<http://www.POLCouncil.org>

Find out about Lyme Disease!

Anyone who spends much time outdoors, whether you're stargazing, or gardening, or whatever, needs to know about Lyme Disease and how to prevent it. You can learn about it at:

<http://www.LymePA.org>

Take the time to learn about this health threat and how to protect yourself and your family. It is truly "time well spent"!

Good Outdoor Lighting Websites

One of the biggest problems we face in trying to reduce light pollution from poorly designed light fixtures is easy access to good ones. When you convince someone, a neighbor or even yourself, to replace bad fixtures, where do you go for good lighting fixtures? Check out these sites and pass this information on to others. Help reclaim the stars! And save energy at the same time!



Light pollution from poor quality outdoor lighting wastes billions of dollars and vast quantities of valuable natural resources annually. It also robs us of our heritage of star-filled skies. Starry Night Lights is committed to fighting light pollution. The company offers the widest selection of ordinance compliant, night sky friendly and neighbor friendly outdoor lighting for your home or business. Starry Night Lights is located in Park City, Utah.

Phone: 877-604-7377
 Fax: 877-313-2889

<http://www.starrynightlights.com>



Lighthouse Outdoor Lighting is a dedicated lifetime corporate member of the [International Dark-Sky Association](#). Lighthouse's products are designed to reduce or eliminate the negative effects outdoor lighting can have while still providing the light you need at night.

Phone: 484-291-1084

<https://www.lighthouse-lights.com/landscape-lighting-design/pa-west-chester/>

Local Astronomy-Related Stores

Listing retail sites in this newsletter does not imply endorsement of any kind by our organization. This information is provided only as a service to our members and the general public.



Skies Unlimited is a retailer of telescopes, binoculars, eyepieces and telescope accessories from Meade, Celestron, Televue, Orion, Stellarvue, Takahashi, Vixen, Losmandy and more.

Skies Unlimited
Suburbia Shopping Center
52 Glocker Way
Pottstown, PA 19465

Phone: 610-327-3500 or 888-947-2673
 Fax: 610-327-3553

<http://www.skiesunlimited.net>



Located in Manayunk, Spectrum Scientifics educates and entertains customers with an array of telescopes, microscopes, binoculars, science toys, magnets, labware, scales, science instruments, chemistry sets, and much more.

4403 Main Street
Philadelphia, PA 19127

Phone: 215-667-8309
 Fax: 215-965-1524

Hours:
 Tuesday thru Saturday: 10AM to 6PM
 Sunday and Monday: 11AM to 5PM

<http://www.spectrum-scientifics.com>

CCAS Information Directory

CCAS Lending Telescopes

Contact Don Knabb 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. Don's phone number is 610-436-5702.

CCAS Lending Library

Contact our Librarian, Barb Knabb, to make arrangements to borrow one of the books in the CCAS lending library. Copies of the catalog are available at CCAS meetings, and on the CCAS website. Barb's phone number is 610-436-5702.

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

Or mail the contribution, typed or handwritten, to:

Dr. John C. Hepler
21103 Striper Run
Rock Hall, MD 21661

CCAS Newsletters via E-mail

You can receive the monthly newsletter (in full color!) via 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 Dr. John Hepler, the newsletter editor, at: newsletter@ccas.us.

CCAS Website

Dr. John Hepler is the Society's Webmaster. You can check out our Website at:

<http://www.ccas.us>

Dr. Hepler 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 copyrighted material! Give your contributions to Dr. Hepler at (410) 639-4329 or e-mail to webmaster@ccas.us

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 "nights out" for school, scout, and other civic groups.

CCAS Executive Committee

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

President: Dave Hockenberry
610-558-4248

Vice President: Pete Kellerman
610-873-0162

ALCor, Observing, & Treasurer: Don Knabb
610-436-5702

Secretary: Beatrice Mazziotta
610-933-2128

Librarian: Barb Knabb
610-436-5702

Program: Dave Hockenberry
610-558-4248

Education: Don Knabb
610-436-5702

Dennis O'Leary
610-701-8042

Webmaster & Newsletter: John Hepler
410-639-4329

Public Relations: Ann Miller
610-558-4248



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 Membership Renewals on the front of each issue of *Observations* to see if it is time to renew. If you need to renew, you can mail your check, made out to "Chester County Astronomical Society," to:

Don Knabb
988 Meadowview Lane
West Chester PA 19382-2178

Phone: **610-436-5702**
e-mail: treasurer@ccas.us

Sky & Telescope Magazine Group Rates

Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **\$32.95**, much less than the newsstand price of \$66.00, and also cheaper than individual subscriptions (\$42.95)! Buying a subscription this way also gets you a 10% discount on other Sky Publishing merchandise.

To **start** a new subscription, make **sure** you make out the check to the **Chester County Astronomical Society**, note that it's for *Sky & Telescope*, and mail it to Don Knabb.

To **renew** your "club subscription" contact Sky Publishing directly. Their phone number and address are in the magazine and on their renewal reminders. If you have **any** questions call Don first at 610-436-5702.

Astronomy Magazine Group Rates

Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **\$34.00** which is much less than the individual subscription price of \$42.95 (or \$60.00 for two years). If you want to participate in this special Society discount offer, **contact our Treasurer Don Knabb**.