



OBSERVATIONS



A MONTHLY PUBLICATION OF THE
CHESTER COUNTY ASTRONOMICAL SOCIETY

★President: Edwin Lurcott

MAY 1996

★Vice President: Jim

★Treasurer: Pete LaFrance

(VOLUME 4, NO. 5)

Sylvester

★Secretary: Nancy Armstrong

CCAS May Meeting

DATE: **Tuesday, May 14, 1996**

TIME: 7:30 PM EDT

PLACE: Department of Geology and
Astronomy Lecture Room
(Room 113 - Boucher Building)
Schmucker Science Center
West Chester University

LOCATION: South Church St.
West Chester, PA (see maps)

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.

Our program for May will be presented by our Newsletter Editor Jim Anderson. His presentation is entitled "Dead Constellations". Using the evening sky for the month of May as a starting point, Jim will talk about constellations that used to be there, but are no longer. What happened to them? Did the Great Extincter wipe them out?? Did they disappear into a black hole??? Come to the May meeting and find out!

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May CCAS Observing Session

This month's observing session will be on Friday May 17, with a rain/cloud date of Saturday May 18, at the Brandywine Valley Association (BVA) property, approximately six miles west of West Chester on Route 842. As usual, 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. A map is enclosed.

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Special-Request Star Parties

The Society received a request to participate in a star party for Girl Scouts (and their parents and

leaders) at Camp Tweedale near Oxford PA on April 27. We first gave a short talk about stars, planets, and astronomical distances. Then the 80+ Scouts broke into 4 groups and moved around to each of the four telescope "stations". Each `scope was pointed at a different type object. Those manning telescopes were Jim Anderson, Frank Angelini, Pete LaFrance, and Ed Lurcott.

The Society also received a request to participate in a star party for first graders (and their parents) at Ridge Pike Elementary School on May 1. It was a real delight to see what the first grade teachers at the Ridge Park Elementary School have accomplished in introducing astronomy to their students. All of their students not only know the planets names, but also some facts about each. These teachers have done an excellent job. We encourage this education and were glad to be a part of this event Mrs. Hampton and Miss Blackburn are to be commended for their efforts. Thanks to Pete LaFrance, Ed Lurcott, Mike Tucker, and a friend of Mike's from the DVAA.

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National Astronomy Day

National Astronomy Day on Saturday April 20 was a success. Lots of shoppers stopped by to ask questions, and 36 of them signed up to receive complimentary newsletters. Many expressed a desire to come to our meetings and join the Society. We wish to thank the Exton Square Mall for providing a table, chairs, and easels for our display. Among those manning the display table were Jim Anderson, Frank Angelini, Kathy Buczynski, Ed Lurcott, Richard and Matthew Koon, and Jim Sylvester.

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CCAS Officer Election News

Election of Society officers is scheduled for the May meeting. Come out and make your voice heard!

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April Society Meeting

The April CCAS meeting was highlighted by a presentation by our Vice President, Jim Sylvester. Jim's presentation was entitled *What is Life?* Jim described how scientists understand the structure of life as it exists on Earth, and how they theorize it began from simpler molecules. The presentation was fascinating and sparked many questions.

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May's Skies

Moon Phases

Full Moon	5/03
Last Quarter	5/10
New Moon	5/17
First Quarter	5/25

The Planets

Venus continues to dominate the evening sky in May, reaching its maximum brilliance for the year on May 4, setting more than 3 hours after sunset. This month Venus will be the first "star" you can see after sunset, in the West. The May 1996 issue of *Astronomy* magazine describes some interesting experiments you can try this month with Venus, like seeing your shadow as cast by Venus.

Mercury will be behind the Sun in May.

Mars is still pretty much lost in the Sun's glare this month.

Jupiter is rising in the southeast by 1 AM as May begins, and rises by 11 PM as the month ends. It is in the constellation Sagittarius this year, and will become a favorite object for observing in July and August.

Saturn is rising earlier each morning this month, but will be too low in the sky for good views until later this summer.

Uranus and Neptune can be found in the morning sky this month. They are near the Capricornus-Sagittarius border. They follow Jupiter across the sky, about one hour of right ascension behind Jupiter.

Pluto is in the constellation Ophiuchus, and reaches opposition on May 22. You'll need good seeing and at least an 8" scope to see it. Both of the major mags had good finder charts for Pluto in the last couple of months.

Space Exploration Notes

Historical Notes for May

In 1959, the first primates fly in space: two rhesus monkeys called Able & Baker make suborbital flights.

In 1961, Alan Shepard becomes the first American in space via a suborbital flight in the Mercury spacecraft *Freedom 7*. Also in 1961, President John F. Kennedy issues his now-famous challenge to Americans to land a man on the moon before the decade ends.

In 1962, Scott Carpenter is the first American to eat food in space, aboard the Mercury spacecraft *Aurora 7*.

In 1963, *Faith 7* makes the last flight for the Mercury program.

In 1969, Apollo 10 makes the last test flight around the Moon before the first lunar landing.

In 1971, the Mariner 9 probe is launched to Mars.

In 1973, the Skylab orbital workshop is launched. A few days later in 1973, the first crew arrives for a four week stay.

In 1975, the European Space Agency is formed.

In 1984, the Viking 1 lander (then on the surface of Mars) becomes the property of the Smithsonian's Air and Space Museum.

In 1989, the Magellan probe is launched to Venus by the Space Shuttle *Atlantis*.

Also Available from Jim Anderson

I have a set of VHS videotapes called *America's Achievements in Space*, from Easton Press. These are NASA films converted to video. There are four tapes, in two binders holding two tapes each. They are available for loan to CCAS members. I'll bring these to the next CCAS meeting.

Binder 1:	Vol. 1:	<i>New View of Space</i> <i>Friendship 7</i>
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Vol. 2:	<i>Apollo 8</i> <i>Gemini 4</i> <i>Mariner 9</i>
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Binder 2:	Vol. 3:	<i>Voyagers</i> <i>Gemini 8</i>
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Vol. 4:	<i>Who's Out There?</i> <i>Columbia 1</i> <i>Apollo 9</i> <i>Pioneer 10</i>
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I have another single VHS tape from NASA on the Viking landings on Mars in 1975, also available for borrowing.

First Light by Jim Anderson

What's the best telescope? That's a really easy question to ask, and the most common question we hear from beginners. It's not really that easy to answer, though. There are several types of telescopes, and several different ways to mount them. The best telescope for you may also depend on some other not so obvious factors.

What will you use the telescope for? Some are best suited for Earth-bound uses, like bird watching. Telescopes that are better suited for astronomy are usually bigger, to gather and concentrate more faint starlight. There are three basic optical types of telescopes. The first, and oldest, is the refractor. A refractor uses a main lens, like the lenses in eyeglasses, but there is only one lens, and it is much larger than eyeglass lenses. A reflector, on the other hand, uses a large curved mirror to focus the light, instead of a lens. Then there are several compound designs that use both lenses and mirrors. The Schmidt-Cassegrain design is probably the most popular compound design with amateur astronomers. Whether the main light-gathering element is a lens or a mirror, it is called the "objective".

The next major component of a telescope is the mounting. The mounting is the mechanics which support and allow the aiming of the telescope tube. Excellent optics on a poor mounting are useless. There are two basic types of mountings. The simplest is the "alt-az" mount, which has two motions: up and down (altitude) and left and right (azimuth). The alt-az is also low in cost and simple to set up. The equatorial mount is more complicated. It has two axes of movement; one of those axes is tilted so that it is parallel to the Earth's axis. Then by rotating the telescope on that axis as the Earth turns, stars stay centered in the eyepiece. If you want to take photos through your telescope, some type of equatorial mounting is necessary.

In terms of the optics, the most important consideration is the "aperture" (the diameter of the objective). For astronomy you should aim for the largest aperture telescope that you can afford, but don't forget the overall size and weight when you decide this point. If you have a monster telescope, but need four people to move it, you won't do much observing with it! Portability and where you will store it are two of those "not so obvious" considerations mentioned above. Is a refractor

better than a reflector, or vice-versa? Both have pros and cons. A refractor is usually more maintenance-free than a reflector, and can give images that are brighter and more contrasty than a reflector of the same aperture. But refractors are more expensive, in terms of cost per inch of aperture, than reflectors. Refractors can also suffer from "false color" in star images. And they are usually longer and heavier than reflectors of the same aperture. The simplest reflector, on a simple but sturdy alt-az mount called the "Dobsonian" (after John Dobson who devised the mount design in the 1970's), or "Dob" for short, is the lowest in cost per inch of aperture of all the designs. Reflectors do not suffer from false color. They do require a bit more maintenance than refractors; usually just adjusting the alignment of the mirrors in it (called "collimation"). And periodically (every so many years) the mirrors may need to have their reflective coatings renewed. The compound designs tend to fall in the middle between reflectors and refractors in terms of cost and maintenance. They are usually rather portable, and have few bad points. Another consideration with a purchased telescope is the quality of the main optics. Sometimes the optics are not as good as they could be. This was a bigger problem some years ago than it is now, but still be careful. Make sure the seller offers a warranty or return period, and check the 'scope out in that period on stars (not terrestrial objects). Return it if it's no good.

Another consideration in connection with the optics is the "f" number, or focal ratio. This is the focal length of the telescope (e.g., 600mm) divided by the aperture (e.g., if it were 60mm, then the example focal ratio would be f/10.) In general, smaller focal ratios give wider fields of view and lower magnification, best suited for deep-space objects. Medium focal ratios (f/6 to f/10) are "general purpose" telescopes. Long focal ratio telescopes (f/11 and above) are excellent for high magnification work, like planetary study and splitting close double stars, but they suffer from more limited fields of view and dimmer images.

The least important consideration, but the most misunderstood, and sometimes the most over hyped, is magnification. You can change the magnification of a telescope by changing eyepieces. However, it is a law of physics that image brightness and sharpness decrease as the power increases. Twice

the power, one-fourth the brightness. So the maximum usable magnification for any telescope is related to its aperture, or light-gathering power. In general, the highest usable magnification for any telescope is 50 to 60 power per inch of aperture. Don't compare telescopes by comparing magnification. It's not a useful comparison. Magnification, or power, is often expressed as a number and an x (e.g., 60x means it magnifies the image 60 times bigger than the naked eye view.)

Often telescopes advertised in terms of magnification use really cut-rate eyepieces to hold down costs of the overall telescope package. When it comes to eyepieces, there really is a pretty good correlation these days between cost and quality. So if you have one of those telescopes, and have been disgusted with what you see (or don't see), don't despair. It may well be you just need to buy some better eyepieces. Good ones can be bought for as little as \$35 to \$50 a piece, and will last a lifetime.

If you haven't bought a telescope yet, come to Society observing sessions where you can look through the telescopes of other Society members, and chat with them about their `scopes (you may have trouble getting some of them to shut up once they get going...) Take your time, consider the various factors, and make an informed purchase. An ill-considered, hasty telescope purchase can easily be a **very** expensive mistake (some commercial telescopes sell for thousands of dollars!)

Also Available

A free brief overview called *Getting Started In Astronomy* is available from the CCAS. It can be picked up at a CCAS function, or you can call the newsletter editor to get a copy mailed to you. Suggestions for improving this introduction to our hobby are always welcome. Articles for the *First Light* column, intended for beginners, are also needed.



Contributing to the Newsletter

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 skywalkr56@aol.com. Or mail to:

Jim Anderson
1086 King Road IVY-312
Malvern, PA 19355

Membership Renewals

Check the date printed on the address label of this issue of *Observations*. 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

Sky & Telescope Magazine Group Rates!

Subscriptions to this excellent periodical are available through the CCAS at \$24 per year, less than half the newsstand price, and even cheaper than individual subscriptions! Make out a check to the Chester County Astronomical Society, note that it's for *Sky & Telescope*, and mail to Pete LaFrance.



CCAS Membership Information

The present membership rates are as follows:

REGULAR MEMBER

(18 years or older)\$20/year

SENIOR MEMBER

(65 years or older)\$10/year

STUDENT MEMBER

(full-time college student) \$ 5/year

JUNIOR MEMBER

(under 18 years old)\$ 5/year

FAMILY MEMBER

(husband, wife & children)\$ 30/year

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

President:	Edwin Lurcott	(610) 436-0387
Vice Pres:	Jim Sylvester	(610) 696-1102
Treasurer:	Pete LaFrance	(610) 268-2616
Secretary:	Nancy Armstrong	(610) 873-7531
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