OBSERVATIONS

A MONTHLY PUBLICATION OF THE
CHESTER COUNTY ASTRONOMICAL SOCIETY

★President: Edwin Lurcott ★Vice President: Emil Volcheck
★Treasurer: Pete LaFrance ★Secretary: William O'Hara

JANUARY 1997
(VOLUME 5, NO. 1)

CCAS January Meeting

DATE: **Tuesday January 14, 1997**
TIME: 7:30 p.m. EST
PLACE: Department of Geology and Astronomy Lecture Room (Room 113 - Boucher Building **See Special Note below!!!!**) West Chester University
LOCATION: South Church St. West Chester, PA (see maps)

Special Note: Due to possible scheduling problems at WCU, we may not be able to use either Room 113 or the planetarium. Look for directional signs when you enter the Boucher Building!!

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 January has been arranged by Chuck Shorten. We will have our business meeting as usual in the lecture room, and a constellation presentation (Orion) by Pete LaFrance. After that, we will go upstairs to the computer lab for the main program. Chuck will show us around some of the Internet resources that are of interest to astronomers. A map showing the location of the meeting is included.

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Astronomy Day 1997

Astronomy Day 1997 is on Saturday April 12. Members are encouraged to think creatively about how we can promote astronomy in general, and the CCAS in particular. Submit ideas to Ed Lurcott; no idea is too crazy for consideration! We expect to have space available again in Exton Square Mall.

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January CCAS Observing Session

The next observing session will be held on Friday January 10, with a cloud date of Saturday January 11. It will be held at the Brandywine Valley Association (a map is included). 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. Remember to dress warmly, because you don't move around a lot when stargazing, so you can get cold real fast. Dress like you're going to see a football game at the Vet in January.

Future Observing Sessions (all at the BVA)

February 7, 1997 (or Feb. 8)
March 7, 1997 (or Mar. 8)
April 4, 1997 (or Apr. 5)
May 2, 1997 (or May 3)

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January's Skies

Moon Phases

Last Quarter	1/01
New Moon	1/08
First Quarter	1/15
Full Moon	1/23
Last Quarter	1/31

The Planets

Earth was at perihelion (closest point in its orbit to the Sun) on January 1 at 7:00 p.m. EST. It was roughly 147,095,000 kilometers from the Sun, about 3% closer than it is in June. So if you felt a little warm on January 1, now you know why. It wasn't the alcohol.

Mercury will be visible in the morning sky from about Jan. 6 through the end of the month. The best mornings of this appearance are Jan. 11 - 13, when Mercury is about 3° to the left (north) of much brighter Venus. Using binoculars will make it easier to find Mercury.

Venus is in the morning sky again this month, rising before the Sun. It's in the east-southeast sky as morning twilight begins.

Mars is in Virgo, and will be above the horizon by 11 p.m. on Jan. 1, and will rise around 9:30 p.m. by month's end. It's very close to the celestial equator, which means it rises due east. Get ready now, for February and March will be the best Mars show for the next two and a half years.

Jupiter is behind the Sun this month.

Saturn is visible after sunset, looking like a bright star in the southern sky. It's the brightest star in that part of the sky, lined up with the eastern side of the Great Square of Pegasus. It's the best planet for telescopic viewing this month. Its ring system is opening toward us again, tilted about 4° from horizontal.

Uranus is behind the Sun this month.

Neptune is behind the Sun this month.

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

Comet Hale-Bopp

This month we should get a better idea of just how bright Comet Hale-Bopp will be in March and April. In January the comet is in the morning sky, rising due east or just a little north of east. Venus and Mercury are lower in the sky to its right (south) and Vega is higher in the sky and to its left (north and west). Altair will be between it and the horizon. The best time to see the comet will be about the 11th through the 22nd, when the Moon will be out of the way. The experts say that if by the 15th you still need binoculars to find it, and it still looks like a tailless fuzzball, well, consider canceling that "comet cruise" in the Caribbean. If it's showing a short tail, and/or it is obvious to the naked eye, then you can let yourself start getting excited about Hale-Bopp.

Space Exploration Notes

Historical Notes for January

In 1959, the Soviets' Luna 1 becomes the first spacecraft to escape Earth's gravity. Also in 1959, Explorer 1 becomes the first successful U.S. satellite launch.

In 1967, astronauts White, Grissom, and Chaffee die in a cockpit fire while testing the Apollo 1 spacecraft.

In 1969, the first extravehicular transfer of crew members between two spacecraft occurs, by the Soviet crews of Soyuz 5 and Soyuz 4.

In 1971, Apollo 14 launches, to become the third lunar landing mission.

In 1978, the first docking between three spacecraft occurs: Soyuz 26, Soyuz 27, and Salyut 6. Also in 1978, the first automatic resupply ship, Progress 1, docks with Salyut 6.

In 1986, Voyager 2 flies past Uranus. Also in 1986, the space shuttle *Challenger* explodes, killing all 7 crew members.

In 1989, the Soviets' Phobos 2 settles into orbit around Mars.

Mars Mission Updates

Mars Global Surveyor

This spacecraft, designed to orbit Mars and survey the planet from above, launched successfully from Cape Canaveral on November 7. Now it is on the way to Mars.

Mars Pathfinder (& Sojourner)

The spacecraft launched successfully on December 2. Now they are enroute to Mars. Pathfinder will land on Mars on July 4, 1997, open up, and then the little rover Sojourner will roll out and drive around the landing area.

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January Star Story

In the January sky between Taurus The Bull and Pisces The Fishes lies Aries the Ram. This is a very old constellation. Interestingly enough, the Persians, Egyptians, Babylonians, and Greeks all saw these stars as a ram. Before the Babylonians, though, in the same part of the world along the Euphrates there was another culture. From tablets they left behind, we have found *The Tablet of the Thirty Stars*, which tells us that they saw Aries as Gam, the Scimitar (a type of sword with a curved blade). This sword protected the Euphratean kingdom against the Seven Evil Spirits, or Tempest Powers.

The Greek version of the legend about how the ram got here goes like this. The King of Thessaly had two children named Phrixus and Helle. The children

were not liked by their stepmother Ino, who abused them. The god Hermes got wind of this, and sent a ram covered with golden fleece to carry the kids to safety (some variants of the story say the ram's fleece turned golden after the rescue, as a reward.) Alas, while crossing the Dardenelles, Helle fell off into the water and drowned (which is why the ancient Greeks called the Dardenelles the Hellespont, or sea of Helle.) Phrixus made it across safely, and then sacrificed the ram in thanks. Its golden fleece was given to a sleepless dragon for safekeeping. It was from this dragon that Jason and the Argonauts would later "liberate" the Golden Fleece.

The Jewish month of Nisan (our March-April) was associated with Aries. The Jewish historian Josephus wrote that the Sun was in Aries when the Jews were released from bondage in Egypt. From this came the method of determining the date of Passover each year: it is to be on the first Thursday after the first Full Moon after the vernal equinox.

The Chinese saw Aries as a zodiacal constellation too, but they thought it represented a dog. They called it Heang Low, or Kiang Leu.

Some Christians in the 17th century, appalled at all these pagan gods, goddesses, and myths in God's Heaven, renamed all the constellations. The mapmaker Andreas Cellarius drew a beautiful star map of these re-imaginings, but this "reform" movement never caught on. In this schema, Aries (the "first constellation"; see below) became Saint Peter, the first of the Apostles. The nearby constellation Triangulum became his miter. Another interpretation said that Aries was the ram caught in a thicket, and sacrificed by Abraham. One Christian writer, Caesius, thought it was the Lamb sacrificed on Calvary for all of sinful humanity.

Aries is considered the "first" constellation on the zodiac, since the Sun was once in Aries on the day of the vernal equinox: the first day of spring. Nowadays, because of the precession of the Earth's axis (it "wobbles" like a top), the Sun is in Pisces on the equinox. It takes the Earth's axis 26,000 years to complete one "circuit" of precession, so eventually the Sun will again be in Aries on the vernal equinox.

Some ancient writers thought that Aries was the "first" constellation because the Earth was created when the Sun was in Aries. In the 9th century a writer called Albumasar wrote in his book *Revolution of Years* that Creation took place when all "seven planets" (Sun, Moon, Mercury, Venus, Mars, Jupiter, and Saturn) were in conjunction in Aries. He also wrote that the end of the world would come when the "seven planets" were once again in the same conjunction positions, next door in the last degree of Pisces, the last constellation of the zodiac. Dante alludes to this theory in *The Inferno*, although he called Aries by another name, Montone.

Clear Skies!

References:

Celestial Charts: Antique Maps of the Heavens, by Carole Stott
Skywatching, by David Levy
Star Names: Their Lore and Meaning, by Richard Allen

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Last Quarter

"Marduke bade the Moon come forth; entrusted the night to her, made her creature of the dark, to measure time; and every month, unfailingly, adorned her with a crown."
from *Enuma Elish*, 7th century B.C. tablets containing Assyro-Babylonian legends on the creation of the world

Let's talk about the other half of the Moon (in last month's *Observations* we skimmed over the Moon's eastern half, the part visible at First Quarter). The western half is what's visible at Last Quarter. Of course, between First Quarter and Full Moon the terminator moves across the western half of the Moon, so you can study it then.

As noted last month, it's best to begin learning your way around the Moon by learning the large dark areas, or seas (before telescopes it was imagined that these dark patches were oceans). The western half of the Moon is more completely covered with seas than is the eastern half. Starting in the north, there is a long, narrow sea that stretches from east to west. This is Mare Frigoris (Sea of Cold), appropriately named since it is in the north polar region. South of

that is a large sea, Mare Imbrium, (Sea of Rains). In between them is a circular dark patch surrounded by mountains, that looks like a crater. It is a crater, the crater Plato. It has a dark lava-filled floor much like the seas. Can you see the four small craters scattered across the floor of Plato? The mountains that run through this area are the Alps.

To the south and west of Mare Imbrium is a very large sea called Oceanus Procellarum (Ocean of Storms). At first you may think that it is really two seas, because of a series of large bright craters, with large bright ray systems, that stretch across the middle of Oceanus Procellarum. It is, however, considered to be one sea.

South of Procellarum are two small seas. Directly south of Procellarum is Mare Humorum (Sea of Moisture). To the east of Humorum is Mare Nubium (Sea of Clouds). In between them is a fairly large crater called Bullialdus. Near the eastern edge of Mare Nubium is a rather famous formation, the Straight Wall. This is a gigantic fault line in the Moon's surface that runs in a fairly straight line, roughly oriented north-south. It is best seen a day or two after First Quarter, when the terminator is near the Wall and the shadows are longer. At Full Moon you can barely see the Wall.

The crater Tycho is to the south of Mare Nubium. This famous crater becomes easier to find the closer we get to Full Moon. Tycho has an immense set of bright rays stretching out from it, and the rays become more pronounced as Full Moon approaches. In fact, at Full Moon you can see these rays with the naked eye.

Further north, on the southern border of Mare Imbrium, is another large prominent crater with a ray system. This is Copernicus. To the west of Copernicus is another, smaller, rayed crater called Kepler.

We could go on and on, but this is enough to get you started, and to learn the basics of finding your way around the Moon. To learn more, get yourself a good Moon map like the four-page ones sold by Sky Publishing. For more advanced work with larger telescopes, it's a good idea to get a copy of *Atlas of the Moon* from Kalmbach Publishing. You can literally spend years seeing and identifying all the details you can see with even small telescopes on the Moon, our nearest neighbor in space. Have fun!

References:
Atlas of the Moon, by Antonin Rukl
Moon Map, by Sky Publishing

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For Sale

One (1) University Optics primary mirror cell for a 10" or 10.1" mirror. Slightly used. Half-price at $20.00.

One (1) Orion 0.965" star diagonal, mirror type, rarely used, 1/3-price, $10.00

One (1) Orion hybrid 0.965" to 1.25" star diagonal, mirror type, used, 1/4-price, $10.00.

Four (4) 0.965" Orion multi-coated eyepieces, rarely used, all half-price: 25mm Kellner, 18mm Kellner, each $20.00; 9mm Orthoscopic, 7mm Orthoscopic, each $25.00. The first $80.00 takes all four eyepieces.

Contact Jim Anderson at 610-993-0261, or by e-mail at skywalkr@voicenet.com

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Join the Fight against Light Pollution

Consider joining the International Dark-Sky Association. Run by volunteers, this 10 year old organization is dedicated to promoting better outside lighting everywhere—lighting that will reduce energy wastage, truly enhance security, and restore the stars to our sky. The membership dues go to producing a quarterly newsletter, and to the costs of maintaining a library of information that can be used by members in light control efforts. For more info, you can check out their Web page at http://www.darksky.org

Annual dues are $20.00 for an individual (more if you can afford an additional contribution). The IDA is an IRS-registered non-profit organization, so donations (but not dues) are tax-deductible. Checks can be made out to IDA, Inc., and sent to:

International Dark-Sky Association

3545 North 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 **skywalkr@voicenet.com**

Or mail the contribution, typed or handwritten, to:

Jim Anderson
1086 King Road Apt. I-312
Malvern, PA 19355

The deadline for receiving contributions is the 27th of the preceding month.

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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 $27 per year, about half the newsstand price, and also 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. Or you can bring it to the next Society meeting and give it to Pete there.

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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:	Emil Volcheck	(610) 388-1581
Treasurer:	Pete LaFrance	(610) 268-2616
Secretary:	William O'Hara	(610) 696-1422
Program:	Kathy Buczynski	(610) 436-0821
Public Rel:	Kathy Cseke	(610) 644-9543
Obs Chm:	Mike Tucker	(610) 584-8236
Newsletter:	Jim Anderson	(610) 993-0261

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