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Martian Chronicles

Newsletter of the Museum Astronomical Resource Society
Volume 19, Number 5 May 2003

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UPCOMING EVENTS

MAY 2003

Sat. 05/03, evening – SPAC Star Party at Hickory Hill. Call SPAC to confirm and for more information.
Fri. 05/09, 7:30 p.m. - Monthly Meeting at MOSI, Program: Astronomy Day Preparations
Sat. 05/10, evening - MOSI SkyWatch
Sat. 05/17, evening - MARS SkyWatch at MOSI
Sat. 05/24, evening - MARS SkyWatch at MOSI
Sat. 05/31, evening – SPAC Star Party at Hickory Hill. Call SPAC to confirm and for more information.

JUNE 2003

Sat. 06/07, evening - MOSI SkyWatch, tentative, not confirmed
Fri. 06/13, 7:30 p.m. - Monthly Meeting at MOSI, Program: To Be Announced
Sat. 06/14, evening - MARS SkyWatch at MOSI, tentative, not confirmed
Sat. 06/21, evening - MARS SkyWatch at MOSI, tentative, not confirmed
Sat. 06/28, evening – SPAC Star Party at Hickory Hill. Call SPAC to confirm and for more information.

MOSI SkyWatch: Observing sessions are normally held on the Saturday evening nearest the First Quarter Moon and the two Saturday evenings following. SkyWatch sessions are held at MOSI. Call to check on any schedule changes. The Saunders Planetarium: 813-987-6360; MOSI Information Desk: 813-987-6012

SPAC Star Parties: Hosted by the St. Petersburg Astronomy Club (SPAC). Held on the Saturday evenings nearest the new moon, at Hickory Hill near Brooksville. For more information call the SPAC hotline: 813-792-0721

FIRST LIGHT

Hello, friends.

This hastily slapped-together newsletter is intended to help spread the word about Astronomy Day on Saturday, May 10, from 10 am until the end of SkyWatch that evening, at MOSI in Tampa. We will be located in MOSI's grand lobby. I hope that you are able to support our club in this effort. If not by participating, then at least by attending and telling your friends. For more information on Astronomy Day, contact Frances Ferguson at email address faf2@juno.com or telephone number 813-238-8299.

Clear Skies,

Jimmy Thomas

MARTIAN HAPPENINGS

Telescope for Sale
Mr. Ed Thompson of Brandon is currently selling his 10-month-old Meade Starfinder 12" Newtonian reflector telescope. Mounted on a Dobsonian mount, the telescope includes 9mm and 26mm eyepieces, a 2x Barlow lens, a base and transport dolly. Mr. Thompson is asking $950.00 for this telescope and above-noted accessories. To discuss a purchase or for more information, please contact Mr. Thompson at telephone number 813-571-7758.

ASTRONOMY DAY 2003

Saturday, May 10, 2003, will be this year's Astronomy Day, a time when astronomy club around the world come together to "Bring Astronomy to the People." Once again, Frances Ferguson is our Astronomy Day coordinator.

Astronomy Day is an internationally observed annual event to show the public how much fun astronomy can be. Astronomy clubs, planetariums, and other groups of sky lovers take this opportunity to provide information, resources, and encouragement in all facets of astronomy. Begun by amateur astronomers in northern California in 1973, the event has grown across North America and now includes more than a dozen foreign countries.

MARS, MOSI and the Science Library will present an all-day event at MOSI in Tampa. The event will begin at 10:00 a.m. and is free and open to the public. We will be located in the grand lobby at MOSI. The evening will be capped off with the weekly SkyWatch observing session. We need volunteers to set up, talk with the public and take down. Any help you can give will be appreciated.

Do you have an interest you would like to turn into a display or short presentation? Do you have a telescope or binoculars that you could bring as a static display? If you have a solar filter for your telescope, could you perform solar observing for the public?

Could you help with children's crafts like making Solar System necklaces? How about making a "Moon on a Stick" with other children and then using a flood light to demonstrate how the phases of the moon are created? Why not get a big glass bowel, a flashlight, some aluminum foil and water, and demonstrate why stars twinkle? There are many activities that you can do using available MARS materials if you only provide the time.

Can you provide a door prize for the drawings through out the day? Ask a business you patronize to donate to the drawing. Do you have one too many of something and would like to donate it?

This is always a fun day for us, as well as the public, as we expose them to astronomy.

If you have any items or time that you can volunteer to the event, please contact A.D. Coordinator Frances Ferguson at email address faf2@juno.com or telephone number 813-238-8299.

BIOGRAPHY by James M. Thomas

Henrietta Swan Leavitt

Born July 4, 1868 in Lancaster, Massachusetts, died December 12, 1921 in Cambridge, Massachusetts.

American astronomer known for her discovery of the relationship between the period of variation and the luminosity in Cepheid variable stars.

Leavitt was the daughter of a Congregationalist minister. In 1892 she graduated from what would later become Radcliffe College, a women's college affiliated with Harvard College Observatory. She joined the staff of Harvard College Observatory in 1895 as a volunteer assistant in director Edward Pickering's research program to photograph and catalog stars and their stellar magnitudes (star brightness). In 1902 Leavitt became a permanent member of the staff and continued her work toward the establishment of a standard photographic sequence of magnitudes. She soon became head of the department of photographic stellar photometry. The focus of her study gradually shifted to a class of variable stars known as Cepheid variables, or Cepheids. This class is named after Delta Cephei in the constellation Cepheus. Cepheids vary regularly in brightness in periods ranging from a few days to several months. In 1912, after about five years of single-minded study and with he help of a staff of women, Leavitt found that the periods of the Cepheids were proportional to their luminosity. This is known as the period-luminosity law or the period-luminosity relationship, and it was important to the measurement of interstellar and intergalactic distances.

The following year, Leavitt's data enabled Danish astronomer Ejnar Hertzsprung and US astronomer Harlow Shapley to read the stellar data in terms of absolute rather than apparent magnitude. By comparing a Cepheid's apparent magnitude with its absolute magnitude, astronomers could deduce the distance of the stars from the Earth and thus greatly increase our understanding of the size of the physical. It was Leavitt's studies of Cepheids in the Small Megallanic Cloud (SMC) which led to the discovery that SMC was not a part of our Galaxy, but in fact a separate galaxy all its own. Leavitt eventually discovered more than 2,400 variable stars and and four novae.

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ASTRONOMY IS FOR EVERYONE by James M. Thomas

Introduction

"Astronomy is for the amateur as well as the professional. The amateur can see for himself the sights that stirred Galileo, the Herschels, and other great astronomers. A high-school boy may be the first to see a comet, a rug salesman my discover a nova, and a homemaker can observe and map meteor showers.. An amateur's faithful observations of a variable star may be just the data an observatory needs." (Adapted from "The Sky Observer's Guide", published by Golden Press, New York.)

Anyone can be an amateur astronomer. If you like to gaze at the night sky, you are qualified. The great thing about amateur astronomy is that it's such a portable hobby. The only basic requirements are you and a moderately dark sky. You may increase your enjoyment by learning more about the sky with the help of books and magazines. Binoculars and telescopes allow you to gaze even more deeply in to the wonders of the heavens. Photography is another way that some amateurs enrich their observing experience.
Here is some information on the tools available to you. Please use it to answer your questions, direct your attention, and enhance your enjoyment.

Getting Started

A Basic Guide: The beginning observer should have a book on general astronomy. Even a little knowledge greatly increases the pleasure of observing, and it prepares the observer to undertake real astronomical projects. Golden Press puts out some very good pocket-size books that are ready companions for the beginner and the experienced amateur. The are entitled *The Sky Observer's Guide*, *Stars* and *Planets*. Peterson Field Guides and the National Audubon Society both publish excellent astronomy field guides.

A Planisphere: A planisphere, or star-finding wheel, is part of the kit of every astronomer, from the child to the old pro. They consist of a wheel illustrated with night time objects, attached at the center to a second piece, and covered with a third piece that allows a portion of the wheel to be seen through a circular or oval window. They are usually made of thick paper or cardboard. By turning the wheel to indicate your time and date, the window allows you to see which constellations are in your sky at that moment and where they are located.

Binoculars

Every observer should own a good pair of binoculars. These gather far more light than the eye, they magnify images and use the capacity of both eyes. Binoculars are the ideal instrument for the beginning observer for the following reasons:

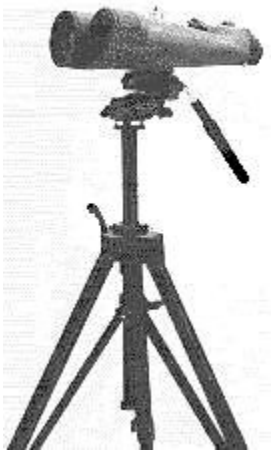
- They are portable.
- They have a wide field of view.
- They are relatively inexpensive.
- They will still be of use even if you later progress to a telescope.

They are ideal for helping the beginner find their way around the night sky. Star colors are more noticeable through binoculars.

Binoculars are well suited for:

- Scanning star clusters
- Picking out nebulae and galaxies
- Recording light changes in variable stars
- Watching for novae and comets
- Observing Jupiter and its 4 main moons
- Observing Mercury in twilight
- Observing the crescent of Venus
- Searching for dim Uranus and Neptune
- Observing bright asteroids
- Getting to know our closest neighbor, the Moon

Choosing Binoculars: The beginning observer might be tempted to think that bigger is better. However, when choosing binoculars a pair with a magnification of 7 to 10 times is advisable because of the increased weight. Anything larger would be difficult to steady by hand.
Consider this scenario before choosing high magnification binoculars.



- Higher magnification
- Heavier binoculars
- More difficult to steady
- Bigger images with bigger and more frequent shakes
- Unhappy observing
- High magnification binoculars are used by many experienced observers, but they are normally mounted in order to provide the steadiest images possible.

Binoculars require prisms in order to give the observer a right side up image. Porro prism binoculars are the most common type. Binoculars of the roof prism design are also very good and they also have the added feature of compactness.

Many stores have seasonal sales on binoculars. This makes it possible to own a good pair of binoculars on even a tight budget. Before buying, you should try them out first to make sure that the images appear sharp and clear. Focus on a point of light as far away as possible and check for flaws in the image. If you see any distortion in the light, that will only be intensified when you are gazing at a sky full of pinpoint light sources! Don't let someone else pick out a pair for you because their eyes might not see an image exactly the way yours do. Another important point when examining binoculars is to check for the presence and amount of coatings on the optics. A good pair of binoculars will have anti-reflective coatings on each surface of every lens and prism in the binoculars. This reduces the possibility of glare and reflected images when observing. Beware of manufacturer packaging. While all say they use coated optics, not all use only completely coated optics.

Telescopes

At some point in their observing, every amateur astronomer considers whether a telescope can aide them in their observing. The light-gathering and magnifying power of telescopes brings out details of the Moon's surface. It reveals Jupiter's larger satellites and its banded clouds, as well as markings on Mars and the rings of Saturn.

There are three popular types of telescopes:

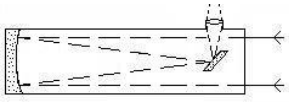
- Refractors, which use lenses to collect and focus light.
- Reflectors, which collect light with a large mirror.
- Catadioptrics, which are a special class of telescope that use lenses as well as mirrors. They are considered by some as modified reflectors.

Refractor Telescopes: The familiar long tube telescope, with the lens in front and the eyepiece in back, is the standard design of the refractor telescope. This design is commonly seen in department stores. While all look generally the same in advertisements, quality varies tremendously.

Beware of advertising claims of extremely high magnification. These are usually achieved by pushing the telescope to its limit, and then the images are not satisfactory.

Look for sturdy mechanical construction. A spindly mount will wobble at the slightest touch and ruin the view. Favor models with low to medium power eyepieces of good quality, rather than those with high-power, low quality eyepieces. Fittings for the eyepieces, diagonal prism, and accessories should be of machined metal, not molded plastic.

Newtonian Reflector Telescopes: The Newtonian reflector (invented by Sir Isaac Newton) is a very popular and economical telescope. Its simple high performance design provides tremendous light grasp at

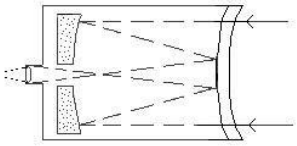


the lowest cost per unit of aperture of any type of telescope. Many observatory telescopes are Newtonian designs.

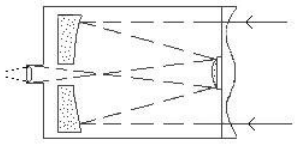
Small Newtonians are very portable because the tube can detach from the mount. Because the light is gathered and bent by mirrors, the image is rotated and usually appears upside-down or sideways.
Their large aperture makes them ideal for deep-space views of galaxies, star clusters, and nebulae. The optical design results in sharp, high-contrast planetary and lunar views.

Compound "Catadioptric" Telescopes: Compound telescopes combine the best features of refractors and reflectors into very compact, lightweight instruments. They use both mirrors and lenses, resulting in telescopes only about twice as long as they are wide. Unlike the basic refractor and reflector, these telescopes are distinctly modern 20th century designs, the products of high-technology manufacturing techniques.

The features are many -- the closed tube, lightweight, rugged designs are easily portable, and the superb optical performance is better in nearly every respect than any single telescope. Little if any maintenance or alignment is required. The lightweight optical assembly allows very strong mounts to be made very light in weight. Camera adapters and many varied accessories are widely available and easily attached.
The one significant disadvantage is just what might be expected: compound telescopes cost more than other telescopes.



Maksutov-Cassegrain Telescopes: The Maksutov-Cassegrain telescope was introduced by D. D. Maksutov in 1944. It uses a deeply curved, thick front corrector lens, with a reflective spot on the corrector acting as a secondary mirror. Large diameter models are very difficult to manufacture and take a long time to reach thermal stability at night.



Schmidt-Cassegrain Telescopes: The Schmidt-Cassegrain design was made commercially economical due to the optical production innovations of Tom Johnson at Celestron International in the late 1960's. His techniques for producing the complex-curved Schmidt corrector plate were the foundation for every major manufacturer in the business.

Unlike the Maksutov, the Schmidt-Cassegrain has a separate, adjustable secondary mirror mechanically attached to the glass corrector plate. The most popular sizes are 8" to 11" diameter models on fork mounts. As with Maksutovs, large diameter models take a long time to reach thermal stability at night.

Telescope Mounts

The mount of a telescope is just as important as the telescope itself. A telescope is of little use if it cannot be kept steadily aimed at the object of interest. there are two main types of telescope mountings: altazimuth and equatorial.

Altazimuth: The altazimuth mounting is simpler to operate than the equatorial mounting. It allows two motions of the telescope - up and down, an "altitude" motion; and horizontal, an "azimuth" motion. This is a good general-purpose mounting. It can be made light, portable, and easy to take down and set up.

Equatorial: The equatorial mounting is designed to be set up in a certain way in a specially prepared location. In its simplest form, the equatorial has two axes at right angles to each other. It is an all-purpose mounting, generally used for serious work. Some equatorials have setting circles, which make it possible to aim the instrument automatically at the right point in the heavens.
Here are some helpful mounting terms:

Altazimuth - A mount in which the telescope is allowed to pan around in the horizontal plane (azimuth) and pivot up and down in the vertical plane (altitude).

Dobsonian Altazimuth - A modified form of altazimuth mounting that has become popular in recent years for short-focus reflecting telescopes. It is named after John Dobson, an American amateur astronomer. The Dobsonian mount is noted for its low cost and portability.

Equatorial - A mounting which directly counteracts the Earth's axial spin and makes it easier to track objects while you are observing. One axis (called the polar axis) is aligned so that it points directly at the north celestial pole. The other axis of the mounting is called the declination axis. It allows the telescope to move up and down in declination (north and south of the celestial equator).

Fork-type Equatorial - a design which has become widely used for catadioptric telescopes.
German Equatorial - the most popular type of equatorial mount design.

Cameras / CCDs

Many amateurs make use of the camera. The eye is sensitive only to the light it is receiving in the present instant, but photographic film is sensitive to light received over a long period of exposure. An amateur's camera can detect faint objects which the eye, even with the aid of a telescope, could never see. Even a simple camera gives exciting and useful results.

In recent years, amateurs have begun using charged coupled devices (CCDs) to collect the light, and store the images on computer disks rather than film. As the popularity of this photographic method has increased, the related costs have lessened. Several periodicals have even been developed to assist the amateur in this endeavour. Until recently, this form of astrophotography was still considered very pricey for the amateur on a shoe-string budget. However, this is changing as more inexpensive CCD and video camcorder equipment becomes available. (above CCD image of Jupiter courtesy of Jerry Scalzo, MARS)

Star Charts

Star charts are the astronomer's maps. With them he locates stars and other objects whose positions on the celestial sphere change little from year to year. On them he plots courses of the Sun, planets, and other objects whose positions change more noticeably. Like maps of Earth's surface, star charts are prepared according to different scales to show varying amounts of detail.

Books

There are many books available on astronomy. By reading them and collecting a modest library, the amateur astronomer can build up their knowledge and be better able to observe the heavens. If you are on a budget, your local public library should have a reasonable collection of basic books on the subject of astronomy. These should allow you to increase your knowledge while you save your pennies for that next special book to add to your personal collection.

Periodicals

There are several monthly and quarterly magazines available for the amateur astronomer. Two of the most commonly known are *Sky & Telescope* and *Astronomy* magazines. Using magazines such as these the amateur astronomer has access to the most accurate information on soon coming events. They can prepare themselves, month by month, for upcoming eclipses, conjunctions, occultations, comets, passing asteroids, or any other occurrence. Magazines such as these make the amateur astronomer's hobby more enjoyable and help to keep the experience always fresh and exciting.

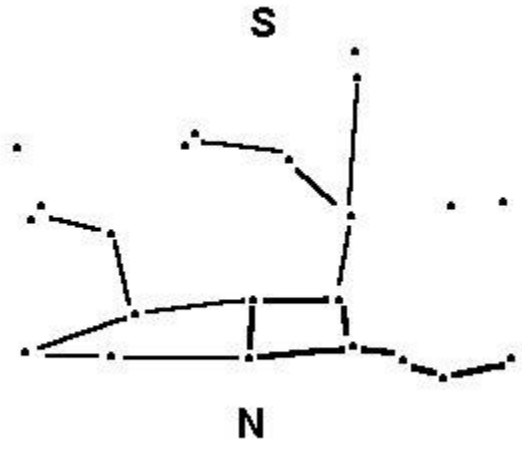
Organizations for Amateurs

Astronomy clubs provide amateurs the opportunity to share their experiences while learning from other more experienced members. Many amateur observers belong to national organizations. These give members information on equipment, observing techniques, and standard methods of reporting their work. They set up observing programs and receive observational data from members. Data are sent to observatories for use in programs of research. Some organizations publish news of developments that interest amateurs. Local groups observe together, compare equipment, and promote public interest in astronomy. Some amateur organizations are:

- American Association of Variable Star Observers, URL: www.aavso.org/
- American Lunar Society, URL: otterdad.dynip.com/als/
- American Meteor Society, URL: www.amsmeteors.org/
- Association of Lunar and Planetary Observers (ALPO), URL: www.lpl.arizona.edu/alpo/
- Astronomical League, URL: www.astroleague.org

CONSTELLATION OF THE MONTH by Craig MacDougal

Ursa Major



Step out into the humid night air at 9:30 this month to find the best known constellation in our sky: **URSA MAJOR** (UR-sa MAJ -or) the **GREAT BEAR**. Face north and look up a bit more than half way up the sky, and the most familiar part of Ursa Major jumps out at you: the **BIG DIPPER**. It is upside down with the bowl on your left and the handle curving off to your right. If you can't find it, then you probably don't realize just how **BIG** it is. From the edge of the bowl on your left, to the tip of the handle spans 25 degrees, which is a tad wider than your hand, held at arm's length, stretched as wide as it can get. The stars of the Big Dipper can lead you to many other guideposts in the sky. The first example is to follow a line drawn along the front of the bowl north to **POLARIS**. Polaris is not too bright, but there are few stars to compete with it in that part of the sky, so it stands out. Follow a line drawn south from the back of the bowl, over your head, to the bright star **REGULUS**. This is the brightest star in the constellation **LEO**. Now follow the

curve of the handle to the east to find reddish **ARCTURUS**, the brightest star in **BOOTES**. Keep going in this grand circle in the sky, and you'll next come to **SPICA**, the brightest in **VIRGO**. The Dipper is not all of the Bear, though. Follow a line form where the handle connects to the bowl, diagonally across the bowl, and out almost another hand's width. Here you will find a pair of stars a little less than a finger's width apart. This is a front foot of the bear. Follow a line from the front of the bowl to Regulus, along the way you'll find a similar, but a little wider pair of stars: another foot. Follow a line from the first foot through the second foot and you'll come across another, although dimmer pair of stars: yet another foot.

There are quite a few different versions of why Ursa Major was placed in the sky. The one that I'll tell you is the probably the best known, even though its popularity is probably based more on the marketing skills of the writer (Ovid) than anything else. The Bear started out as Callisto, who was part of the retinue of Artemis, the goddess of hunting. Lecherous old Zeus came upon her one day and forced himself upon her. She later gave birth to a son Arcas. Zeus' wife Hera decided to punish Callisto and turned her into a bear. (I know, this is starting to sound pretty sexist, isn't it?) Callisto wandered in the woods, trying to stay away from hunters. One day she and her son met. Arcas didn't know it was her, and was about to kill her when Zeus carried them both into the heavens where Callisto became Ursa Major, and Arcas became Bootes, where they can be near each other for all time. The handle of the Dipper, by the way, is the Bear's tail. "Since when do bears have long tails?" I hear you ask. I don't know. Ask an ancient Greek. There are no explanations in any of the writings.

METEOR SHOWERS by James M. Thomas

Eta Aquarid Meteor Shower
Meteors from the Eta Aquarid shower may be visible from April 18 through May 28 with the peak on the evening of May 4 and morning of May 5. The meteor hourly rate fluctuates over the period of the shower, but may reach 35 or more at its peak. The meteors will appear to originate from a point in the constellation of Aquarius, the Water Bearer, near the 4th-magnitude star Eta Aquarii (RA 22hrs 20min, Dec -01°). This shower is one of two caused by Periodic Comet Halley, the second being the Orionid shower in October. The Eta Aquarid meteoroids come into our atmosphere at a speed of 66 kilometers per second. This speed creates the bright fireballs and long paths for which the Eta Aquarids are well known.

This shower was first recorded in 74 BC. The shower actually has several radiants, all of which are centered around the main radiant coordinates. Meteors from this shower can be observed at a moderate rate from April 24 until May 20. There are actually 4 or 5 peaks during the shower's extended maximum, which occurs between May 4 to 8.

Arietid Meteor Shower
This is a daytime shower which is observable by radar. Meteors from this shower fall from May 29 through June 17. On radar, they appear to originate from a point in the constellation Aries, the Ram. The parent comet of this shower is not known.

Lyrid Meteor Shower
Also called the April Lyrids, meteors from this shower may be visible from April 19 through 25 with the peak on April 21/22. The meteors have an irregular rate, but average 12 to 15 per hour. They appear to originate from a point in the constellation of Lyra (RA 18hrs 16min, Dec +34°). Appearances of this shower have been traced back over 2,500 years. The parent of this shower is Comet Thatcher, 1861 I. The earliest record of the Lyrid shower was in 687 BC.

Observing Meteors

Meteors are best viewed from a dark-sky location. Observers in for the duration of the evening, or at least for several hours, should bring along a few things: a sleeping bag or blankets for warmth, a recliner or lawn chair, a hot beverage to help cut the chill, and binoculars to view the smoke trails of just-past meteors.

THIS MONTH IN HISTORY by James M. Thomas

May 5, 1961 - Alan B Shepard Jr. was launched atop a Redstone rocket in the Mercury spacecraft Freedom 7. This was the first U.S. manned flight, being sub-orbital and lasting 15 minutes. Shepard landed safely in the Atlantic Ocean. 40th anniversary.

May 25, 1961 - John F. Kennedy's Moon Goal Speech, stating that the United States should achieve the goal, before the end of the 1960s, "of landing a man on the Moon and returning him safely to the Earth." 40th anniversary.

May 30, 1966 - The U.S. spacecraft Surveyor 1 was launched. It successfully landed on the Moon on June 2 and sent back almost 10,400 pictures during its operation, which included surviving a 14-day lunar night. 35th anniversary of the launch.

May 18, 1969 - The Apollo 10 spacecraft was launched with astronauts Thomas P. Stafford, Eugene A. Cernan and John W. Young. Three days later, the crew entered orbit around the Moon. On the fifth day of the mission, astronauts Stafford and Cernan separated from the Command-Service Module (CSM) and descended in the Lunar Module to an altitude of less than 47,000 feet (14,326 meters) above the Moon. They later re-docked with Young in the CSM. The crew returned safely to Earth on May 26.

May 30, 1971 - The U.S. spacecraft Mariner 9 was launched on the first orbital mission to Mars. It reached Mars on Nov. 13 of that year and sent back more than 7,000 images of the planet during its mission.

May 14, 1973 - Skylab was launched (SL-1), making it the first U.S. orbiting space station. Heavy vibrations during the station's launch caused excessive damage to the station. Among the most notable problems were the loss of one of the two main solar panel arrays and the

loss of crucial radiation shielding. For a time it was thought that the station was uninhabitable. However, with the support of contractors and ground crews, repair techniques were developed and later performed by the first two teams of astronauts to the station. The repairs made the station suitable for performing all of the original mission requirements.

May 25, 1973 - Charles "Pete" Conrad Jr., Joseph P. Kerwin, and Paul J. Weltz were launched as the first crew of Skylab (SL-2). The repaired much of the damage which the space station sustained following its launch. The crew was then able to perform many of the tasks which were originally planned for their mission. The left Skylab and returned safely to Earth on June 22.

May 20, 1978 - The U.S. spacecraft Pioneer Venus 1 was launched. It reached Venus and entered orbit on Dec. 4 of that year. Pioneer Venus 1 spent 14 years studying the planet, and ceased operating on Oct. 19, 1992.

May 4, 1989 - The U.S. spacecraft Magellan was launched on its radar mapping mission to the planet Venus. Magellan made detail radar maps of the planet surface and monitored geological activity. It ceased operating on Oct. 12, 1994.

May 5, 1992 - The Space Shuttle Endeavour was launched (STS-49) with astronauts Daniel Brandenstein, Kevin C. Chilton, Bruce E. Melnick, Pierre J. Thuot, Richard J. Hieb, Kathryn Thornton, and Thomas Akers. The crew successfully recovered the Intelsat 6 satellite by hand in the first 3-person EVA. They then successfully redeployed the satellite to a proper orbit, making it usable for communications. The crew returned safely to Earth on May 16.

May 15, 1997 - The Space Shuttle Atlantis was launched (STS-84) with astronauts Charles J. Precourt, Eileen M. Collins, Jean-Francois Clervoy, Carlos Noriega, Ed Lu, Elena Kondakova, and C. Michael Foale. Atlantis docked with the Russian Space Station Mir and retrieves astronaut Jerry M. Linenger. Linenger's stay aboard Mir had many problems including a fire. Foale transferred to Mir to begin his stay. The revised crew returned safely to Earth on May 24.

PUBLICATION INFORMATION

Martian Chronicles is published monthly by the Museum Astronomical Resource Society (also known as the MARS Astronomy Club) to provide club news and other items of interest to its members. MARS is sponsored by the Museum of Science and Industry (MOSI), Tampa, Florida. Annual club membership dues are $15.00, which may be paid to any officer at club-sponsored events or mailed to the **CLUB MEMBERSHIP/RENEWAL ADDRESS** listed below. Make checks payable to Jerry Scalzo, our club treasurer. Newsletters are available to nonmembers by requesting a complimentary trial issue. Please send all inquiries, comments and newsletter contributions to the address below. The deadline for submitted contributions is the 15th of the month prior to the next issue. Contributions may be delayed in publication due to available space.

NEWSLETTER EDITION DETAILS

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Editor: Wade Holland
Assistant Editor: Jimmy Thomas
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CLUB MEMBERSHIP/RENEWAL ADDRESS:
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