The Night Sky

Astronomy Club of Akron
Akron, OH USA
http://www.acaoh.org

DEC 2003 / JAN 2004

Presidential Musings

By Gregg Crenshaw

As 2003 has drawn to a close, it gives us a chance to look back over the past year and to look forward into 2004.

The most memorable club event of the past year would have to be the Mars program. Never in my life had I seen so many people at the observatory site. I guess it shows just how much interest there is in the red planet. Many club members came together to help make the event a success. Thanks to all. We were lucky, with the weather so uncooperative last summer that the weather was good on that Saturday in August.

Speaking of the red planet, by the time you read this article we will already know if NASA's latest try at landing a craft on Mars was successful. Hopefully the lander / rover named "Spirit" had a safe landing. The second lander / rover named "Opportunity" is to touch down January 24. We should have lots of new images of Mars' surface if these missions are successful. Log on to the mission web site at http://marsrovers.jpl.nasa.gov/.

On January 2 the "Stardust" probe successfully rendezvoused with Comet Wild 2. The spacecraft took pictures and collected dust grains of the comet's nucleus. The dust grains are to be hopefully returned to Earth in 2 years for study. Check out this mission's web site at http://stardust.jpl.nasa.gov/.

This July NASA's Cassini probe should go into orbit around Saturn. Stay tuned for upcoming events highlighting this historic encounter. If you would like to check the latest updates log onto http://saturn.jpl.nasa.gov.

HOLIDAY DINNER

January 17
6:00 PM

The yearly holiday dinner will be on Saturday, January 17, 2004 at 6:00 pm at the Kiwanis Hall.

Coordinating the dishes for the holiday dinner is Debbie Crenshaw.

The next few months will feature the Frontiers of Astronomy Free Lecture Series at the Cleveland Museum of Natural History. See elsewhere in this newsletter for a listing of upcoming lectures. For more information check out the museum's web site at http://www.cmnh.org.

The "ACA of the Future" steering committee has begun meeting. The first meeting was November 25. The impressive turn out of involved members was great to see. The meeting was very constructive with much discussion on the direction the club should take over the next few years. The group is slated to meet again sometime in January. I hope you can come to the next ACA meeting, February 27 so you can find out what's going on.

The Holiday Dinner is coming up Saturday, January 17 at the Kiwanis Hall at 6:00 PM. My wife Debbie is coordinating the dishes. Give her a call at 330-785-7377. I hope to see you there.

I HOPE ALL MEMBERS OF THE ACA AND THEIR FAMILYS HAD A HAPPY HOLIDAY SEASON

The Night Sky

Editor / Layout	Jeff Hudson
Contributors	Jay Svitko
	Gregg Crenshaw
	Rich Ruggles
	Jeff Hudson

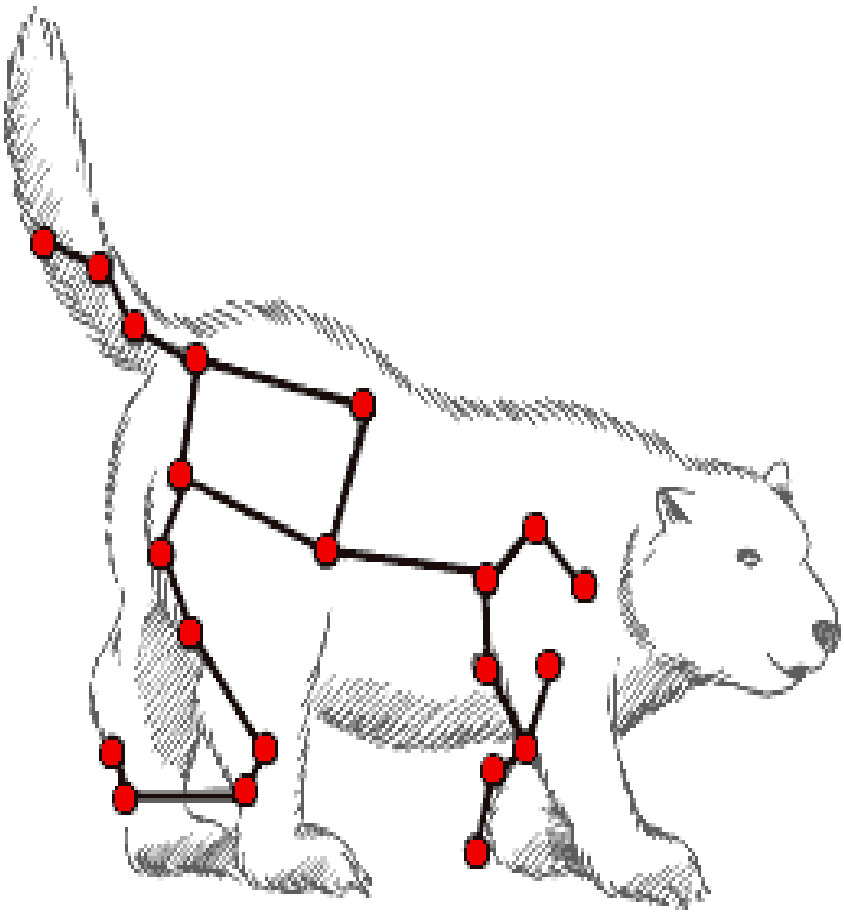
The Night Sky is publish monthly and contains information on upcoming meetings, observing sessions, and articles by members.

Submission Deadline
February 13, 2003

Welcome New Members

Sami Haddad

Jason Shinn



Frontiers of Astronomy

A free lecture series at the Cleveland Museum of Natural History

This free lecture series features the latest astronomy research. Sponsored by the Museum with Case Western Reserve University and The Cleveland Astronomical Society.

On clear evenings, the Museum's observatory is open after the program. Selected Thursdays, 8 pm. No tickets or reservations required. For more information, call (216) 231-4600, ext. 362 or 253.

Magnificent Mars
Dr. Ken Croswell, author
Thursday, 02-12-2004, 8 pm

The planet Mars has long offered the prospect of another living world in the solar system. Ken Croswell shows the best color images of Mars and describes the planet from pole to pole, exploring Martian geology, the Martian atmosphere, Martian volcanoes and Martian water. Along the way, you'll see nearly every image from Croswell's new book, Magnificent Mars, including volcanoes over twice as tall as Mount Everest, canyons that would stretch from Ohio to California and floods far greater than any known on Earth.

Looking for Earths: The Race to Find New Solar Systems
Dr. Alan P. Boss, Carnegie Institution of Washington
Thursday, 03-11-2004, 8 pm

The search for planets outside our solar system had a long and dismal history until 1995. Since then, astronomers have identified more than 100 extrasolar planets. Alan Boss reviews what's been discovered to date: gas giants, like our Jupiter and Saturn. He then presents the next set of challenges: finding ice-giant planets, similar to Uranus and Neptune, and Earth-like planets that could support life. He also talks about the array of ground- and space-based telescopes that NASA had designed to carry out this search over the next two decades.

The Birth and Death of Galaxies
Dr. Robert Kennicutt, University of Arizona
Thursday, 04-15-2004, 8 pm

Understanding the life cycles of galaxies is one of the major scientific challenges of the 21st century. Enormous progress is being made, thanks to new information from space telescopes and a new generation of ground-based telescopes combined with powerful supercomputer simulations. All are providing important clues to the physical processes that build and transform galaxies and trigger star formation within them. Robert Kennicutt highlights recent discoveries, discusses what remains to be found and looks ahead to what a new series of telescopes may reveal about the future of galaxies such as our own.

Make your own spacecraft

This is pretty cool... the European Space Agency (ESA) has a website with plans to build scale models of popular ESA spacecraft. I took a quick look at the plans and it's a little challenging, but if you enjoy building models, this could be fun.

There are model templates and instructions for the following spacecraft:

Gaia a mission that will conduct a census of one thousand million stars in our Galaxy.

Integral is the first space observatory that can simultaneously observe objects in gamma rays, X-rays and visible light.

Mars Express is Europe's first spacecraft to the Red Planet. It carries seven instruments and a lander. As of this writing there is still no word on Beagle 2.

The Solar and Heliospheric Observatory (SOHO) is stationed 1.5 million kilometres away from the Earth. There, it constantly watches the Sun, returning spectacular pictures and data of the storms that rage across its surface.

I am planning on printing the templates on a color printer and hope to start work on the SOHO soon.

Check out the plans at http://www.esa.int/export/esaSC/SEMIMHUZJND_foryou_0.html

Mission Captures Galaxies Galore

NASA Press Release
December 10, 2003

The most sensitive and comprehensive ultraviolet image ever taken of the Andromeda Galaxy, our nearest large neighbor galaxy, has been captured by NASA's Galaxy Evolution Explorer. The image is one of several being released to the public as part of the mission's first collection of pictures.

"The Andromeda image gives us a snapshot of the most recent star formation episode," said Dr. Christopher Martin, Galaxy Evolution Explorer principal investigator and an astrophysics professor at the California Institute of Technology in Pasadena, which leads the mission. "By studying this view of the galaxy in the process of forming stars, we can better understand how that fundamental process works, such as where stars form, how fast and why."

The image of Andromeda, the most distant object the naked eye can see, is a mosaic of nine images taken in September and October of 2003. It combines two ultraviolet colors, one near ultraviolet (red) and one far ultraviolet (blue).

For comparison, a second image shows the Andromeda Galaxy, also called Messier 31, in visible light. Both images, along with other new pictures from the Galaxy Evolution Explorer, are available online at http://www.galex.caltech.edu and http://photojournal.jpl.nasa.gov/mission/GALEX . The new collection of images also includes views of several nearby galaxies; Stephan's Quintet of Galaxies; an all-sky survey image of the globular star cluster M2; and a deep image of the sky in the constellation Bootes. The Galaxy Evolution Explorer team is also releasing the first batch of scientific data, so the science community can propose additional observations for the mission. These images and data display the power of the Galaxy Evolution Explorer to collect sensitive ultraviolet images of large parts of the sky.

"It's very rewarding and exciting for the team to see the fruits of their labors," said Kerry Erickson, the mission's project manager at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "Because people are accustomed to seeing objects in visible light, it's amazing to see how different the universe looks in ultraviolet and how much information is revealed to us by those observations."

Scientists are interested in learning more about the Andromeda galaxy, including its brightness, mass, age, and the distribution of young star clusters in its spiral arms. This will provide a tremendous amount of information about the mechanisms of star formation in galaxies, and will help them interpret ultraviolet and infrared observations of other, more distant galaxies.

The Galaxy Evolution Explorer launched on April 28, 2003. Its goal is to map the celestial sky in the ultraviolet and determine the history of star formation in the universe over the last 10 billion years. From its orbit high above Earth, the spacecraft will sweep the skies for up to 28 months using state-of-the-art ultraviolet detectors. Looking in the ultraviolet singles out galaxies dominated by young, hot, short-lived stars that give off a great deal energy at that wavelength. These galaxies are actively creating stars, and therefore provide a window into the history and causes of galactic star formation.

In addition to leading the mission, Caltech is also responsible for science operations and data analysis. JPL, a division of Caltech, manages the mission and led the science instrument development. The mission is part of NASA's Explorers Program, managed by the Goddard Space Flight Center, Greenbelt, Md. The mission's international partners are France and South Korea. Caltech manages JPL for NASA.

2004 Calendar's & Handbooks

If you placed a pre-order for the 2004 Calendars and/or the RASC Handbook, you may pick up your order at the Winter Dinner on Jan 16, 2004 for contact Jeff Hudson to make other arrangements.

Wall Calendar $10.00
Weekly Calendar $10.00
RASC Handbook $15.00

There are a few extras of each publication available but there are no guarantees.

Dark & Starry Skies

Thom Bemus, Director Stars-n-Parks Cherry Springs State Park

MARS glows a with a rusty color in the southwest sky, standing out easily in Pisces, a constellation with no very bright stars. As the Earth continues to speed ahead in its smaller, faster orbit around the Sun, Mars continues to shrink and dim.

VENUS is low in the southwest sky after sunset. It shines very brightly at magnitude -4, presenting an 80% phase at the beginning of the month. During the month the phase slowly becomes thinner while the Venus grows in size. Venus is closer to the Sun than the Earth and therefore never appear in the night sky very far from the Sun, so they are always seen just before sunrise or just after sunset. Venus also has phases like the moon, which can be observed with a small telescope or binoculars.

SATURN appears between the legs of Gemini, the twins, in the east-northeast. Wait until at least 9:30pm to get a good view of the rings through a telescope.

JUPITER rises just below the constellation Leo, the lion, at about 10pm. Use binoculars or a telescope to watch Jupiter's four bright moons orbit the giant gas-planet. Waiting just 30 minutes will show you these moons are in constant motion around their huge neighbor.

January Lunar & Meteor Shower Highlights:

1/12: Moon only 3º north of Jupiter at 6am

1/14: Venus only 1º south of Uranus at 8pm, Last Quarter Moon
1/21: New Moon

1/24: Moon only 4º south of Venus at 11am, spot a planet during the day with binoculars
DO NOT LOOK AT THE SUN!

1/27: Moon just 3º south of Mars at 10pm
1/29: First Quarter Moon

January is a wonderful time of year to use your binoculars for stargazing. They offer expansive, right-side-up views which make things easy to find and they are the perfect aid for a quick 15 minute observing session, often all the more one can stand before frostbite starts to set in.

The hourglass-shaped constellation Orion (the hunter), with two distinctive bright stars marking his shoulder and foot and three more only slightly less bright stars marking his belt is a sure sign that the bitterly cold, but often clearest skies of the year have arrived.

The entire southeast quadrant of the night sky is alive with targets perfect for the casual stargazer. To the upper left of Orion are Saturn and the bright stars Castor and Pollux marking the head of Gemini (the twins). To the lower left of Orion is the brightest star seen in our northern skies, Sirius, clearly marking the location of Canis Major (the great dog).

There are however, lots of celestial sights to see beyond this obvious collection of bright stars and planets. Three easy to find and interesting targets are in or near Orion. Hanging below the three bright stars of Orion's belt is a dimmer line of stars known as Orion's sword. Using binoculars will show that the middle "fuzzy" stars is actually the great Orion Nebula, the brightest and most detailed nebula available to northern stargazers. Go back to the belt and follow the line of the belt stars to the upper right to a large fuzzy patch, if you have a sharp eye you may see as many as 6 stars in a tight patch. Your binoculars will reveal something that looks like a miniature of the Big Dipper. This is the open star cluster, the Pleiades (the 7 sisters). Back to the belt one last time, but this time follow the line of the belt to the lower left of Orion to the brightest star, Sirius. Just below Sirius your binoculars will show another bright open star cluster, M-41.

These are just two of several dozen nearby nebulae and star clusters that can seen with binoculars or a small telescopes around Orion. Poke around the region and see how many you can find. Brave the cold for a little while and I'm sure you'll find the brilliance of the sky worth the frosty temperatures!

Ursa Major

By Jay Svitko

Artemis, the moon goddess, was followed by a band of beautiful nymphs, all sworn to a vow of chastity. One of the most lovely of these was Callisto. She was espied by Zeus, a god with a particular fondness for mortal women, on one of his many visits to earth. Disguising himself as Apollo, brother of Artemis, he overcame any scruples Callisto may have had and they became lovers. Eventually, Callisto was delivered of a son, and he was named Arcas (from the Greek arktos or "bear"). Knowing that Artemis would be furious with Callisto for breaking her vow, and more especially to shield her from the wrath of his wife, Zeus changed his unfortunate lover into a bear. She was forced into a lonely exile, roaming the forests and hiding from human hunters. At the same time, she was unable to form any close friendships with the animals because she still possessed human feelings. Many years later, her now fully-grown son Arcas was hunting in the woods when he saw a great bear which was, in fact, his own mother. As he lifted his bow and arrow to shoot her, Zeus quickly intervened, and changed Arcas into a little bear so that he immediately recognised his mother. The story has a happy ending as, lonely no more, Callisto and her son were transported to the heavens, thereafter to be known as the Ursa Major and Ursa Minor.

Astronomy Day

By Jeff Hudson

Astronomy Day is a grass roots movement to share the joy of astronomy with the general population - "Bringing Astronomy to the People."

In the past, the ACA has hosted Astronomy Day activities at Chapel Hill Mall in Akron and at the observatory at Portage Lakes State Park. Thousands of people who have never looked through a telescope got the opportunity to see first hand what makes this hobby so exciting.

Astronomy Day is a great event that helps highlight ways the general public can get involved with astronomy - or at least get some of their questions about astronomy answered.

This year Astronomy Day occurs April 24, 2004. Astronomy Week starts the Monday before on April 19 and ends on Sunday, April 25.

Astronomy Day was born in California in 1973. Doug Berger, then president of the Astronomical Association of Northern California, decided that rather than try to entice people to travel long distances to visit observatory open houses, they would set up telescopes closer to where the people were - busy locations - urban locations like street corners, shopping malls, parks, etc.

Since April is not that far away, I recommend that club members start thinking about activities we can do for Astronomy Day and Astronomy Week.

Here are some tips from the Astronomical League's website (http://www.astroleague.org/)

- Register our Astronomy Day events with local newspapers and other media outlets.
- Distribute copies of the Abrams Sky Calendar available for Astronomy Day activities. The April edition will depicted diagrams illustrating the total lunar eclipse of May 15th.
- Hand out materials from the International Dark Sky Association (IDA) and use astronomy day to promote reduction in light pollution.
- Have some kids activities available, such as coloring book pages or activity pages based on Astronomy.

Astronomy Day is a chance to promote astronomy in general and to gather support and possible new members to the ACA.

Look for more information in upcoming newsletters and meetings. There will be opportunites for you to make suggestions or help produce materials for Astronomy Day in the next couple of months.

Answers to trivia on page 9: 1.D, 2.A, 3.B, 4.C, 5.B

Top Space Stories for 2003

Taken from Universe Today http://www.universetoday.com

Columbia Disaster
The lives of seven astronauts were lost on February 1, 2003 as the space shuttle Columbia, on approach to land in Florida, broke up above Texas. Months of investigation revealed that a chunk of foam fell off the external fuel tank and smashed a hole in the shuttle's carbon-fiber wing panels. When Columbia was returning to Earth at the end of its mission, the open hole in the wing allowed hot gasses to penetrate the shuttle's heat protection.

Chinese Space Launch
Astronaut Yang Liwei became an instant celebrity on October 15, when he became the first human the Chinese space program sent into space. Liwei was launched from the Jiuquan desert launch site and orbited the Earth only 14 times in 21 hours. Only the United States and Russia have ever been capable of sending humans into space before this year.

SpaceShipOne Goes Supersonic
On December 17, Scaled Composites - an aircraft manufacturer in California - made news with the first rocket test flight of SpaceShipOne; their suborbital rocket plane. The unique-looking aircraft was carried to an altitude of 14,600 metres by the White Knight carrier plane and then released. It fired its hybrid rocket engine and blasted up to an altitude of 20,700 metres; breaking the sound barrier as it went. SpaceShipOne is considered the top contender to win the $10 million X-Prize which will be awarded to the first privately-built suborbital spacecraft which can fly to 100 km.

Disappearance of Beagle 2
Unfortunately, it looks like Mars has swallowed up Beagle 2; Britain's $50 million, 70-kg Mars lander which traveled on board the European Space Agency's Mars Express spacecraft.

Mars' Closest Approach to the Earth
Mars took center stage this summer when it made its closest approach to the Earth in over 60,000 years. Because of their orbits, the Earth and Mars get close every two years, but on August 27 they were only 55,758,000 kilometres apart.

Biggest Solar Flare Ever Observed
On November 4, 2003, the Sun put out most powerful flare anyone had ever seen. Categorized as an X28 flare, this was just one of a series of powerful flares, many of which were aimed directly at our Earth, sending wave after wave of material our direction.

Farewell Galileo
On September 20, 2003, NASA's Galileo spacecraft finally ended its 14-year journey to the Jovian system with its triumphant crash into the giant gas planet. Photos taken by the Galileo gave scientists proof that three of the moons might have liquid water under their icy surfaces.

Age of the Universe
Thanks to a comprehensive survey of the sky performed by NASA's Wilkinson Microwave Anisotropy Probe (WMAP), astronomers were able to calculate that the Universe is 13.7 billion years old, give or take 200 million years. WMAP is so sensitive, it was able to detect extremely slight temperature changes in the radiation.

Spitzer Space Telescope
The last of great observatories, the Spitzer Space Telescope (previously named SIRTF) was finally launched into space on August 25, 2003. Almost every object in the Universe radiates heat in the infrared spectrum, which Spitzer is designed to detect. The observatory completed its 60-day on-orbit checkout period and calibration, and just before the end of the year the operators released four incredible photographs that demonstrated the potential of this instrument.

Mars Express Arrives
The search for the missing Beagle 2 lander overshadowed the success of the European Space Agency's Mars Express spacecraft, which went into a perfect orbit on December 25, and then performed additional maneuvers flawlessly. Mars Express will begin mapping the surface of Mars with a powerful radar system which should reveal underground deposits of water and ice.

Trivia

1. The apparent backwards motion of planets is called:
A) solar system
B) epicycle
C) gravitaional pull
D) retrograde motion

2. Time it takes for the moon to complete one orbit relative to the stars.
A) Sidereal Period
B) Light Year
C) Synodic Period
D) Neap Tide

3. The point closest to the Earth for a body orbiting the Earth
A) Apogee
B) Perigee
C) Neap tide
D) Node

4. When is the moon in a direct line between the Earth and the Sun?
A) Full Moon
B) Last quarter
C) New moon
D) First quarter

5. What is the point on the celestial sphere where the sun is farthest South?
A) summer solstice
B) winter solstice
C) asterism
D) equinox

Answers on Page 8