

Cowichan Valley

StarFinders

Astronomy Society



AQUARIUS, THE WATER-BEARER

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Stardust

If you made it to the meeting - it's Tuesday, Nov 7 - you're holding a hard copy of this newsletter in your hand. However, if you're browsing the net and checking out starfinders.ca you're looking at a pdf version. This is the second newsletter with this fate and we hope it works for you. Certainly the graphics don't have to suffer through the copy process, and that's a good thing. I am also in the process of making a few earlier editions available. At this stage, you need to go to

<http://starfinders.cvnet.net/newsletters.htm>

to browse the collection, and from there go to our website. But hopefully, thanks to Brian our webmaster, we will soon be able to access them directly. Any suggestions what else to put on our site? Well, there should be a link to Island Eyepiece, our foremost sponsor; particularly, since Brian's adds don't show up in most of the online versions.

Just off the PC trouble shooter press ...

A little advice: if you're using Norton antivirus and are still getting spamed with unsolicited e-mail - try the free **avast** antivirus program and like me be free!! And it's affordable. Apparently, Norton, like the popular internet explorer of Bill Gate's fame, is a chosen target for attacks by frustrated programmers. So, if in doubt have Mozilla Firefox ready to go and browse our starfinders.ca site - it's very friendly and you won't get burned, at least not by the fox.

How about checking out the *ATM letters* (first google search result) a journal for **amateur telescope makers**. There you find a free copy of the July/August 2003 issue that features an article on Sir Herschel. That's the guy with the big scope and even bigger scaffolding. Well, he's also the one who discovered Uranus. And this 7th planet will be a prime 2007 target for all amateur astronomers, according to the Farmer's Almanac. More about that in the January edition as well as the mystery of our lofty Moon.

I won't bother you with bulb planting tips or the date when Armadillos mate, but rest assure, you'll receive timely astronomical information via the Canadian Edition of this trusty booklet first published in 1792. Most anything that's been around longer than Frank is worth noting ... how is he anyways? Maybe a Christmas e-mail will find it's way into the next edition, OK Frank?! And if Saskatchewan still has dial up, just leave a note on the #1 going west - and it will get here in time. A special thanks to Mo for mailing a few copies at a time of this newsletter via snail mail to our Frank. Maybe we should also send some west coast cedar kindling, lest he'll be tempted to use the newsletters as such in his fireplace during the long, cold prairie winter.

By the way, what happened to Dave Gamble's Western Canadian SkyTrails? That's a publication that featured Mo on the front page eying at the sun, hopefully with a filter, as we are always reminded. If the big newspaper edition went the way of the dodo then what will be the fate of this micro publication? Maybe Google will make us an offer and throw some money our way - anybody with any connections in the club??? What about the fellow who gave a million \$ to UVic's Physics department the other day - no strings attached? And then there's this article in the 2003 Ring... An "astronomical" gift to the faculty of science will help generations of graduate students in astronomy, physics and the sciences, thanks to a stellar donation of \$500,000 from Mark deGoutiere. "Mark deGoutiere has a heart the size of the universe," says Birgit

Castledine, director of central development. "We're delighted he's chosen to help graduate students with such generosity."

At press time/Oct 06 it is still confirmed that Dave Gamble is an active member of the Okanagan RASCals. Check out there newsletter at

<http://ocrasc.ca/>

But now it's time to get our head out of the stratosphere and back to club business. Norm keeps reminding us all that his reign will end next June (2007). So will the next president please stand up! We are also brain storming about the star party format considering it will likely be just a month before the RASCAl event.

Thanks to Robert Deane, we now have a better idea how stars navigate the Hertzsprung Russel diagram. If you're interested in positively affecting your astro learning curve, then get a hold of a copy of the aussie astro course CD. You won't be disappointed.

If you're looking forward to seeing some of those Cassini images on the 'big' screen, then go no further but to our next meetings in the new year. I'm putting together a few presentations on Saturn, its rings, and satellites that make the images from your 100" look like Captain Hook's spy glass in the fog. And since no member has a 100" and Hook still ticks in Neverland you might as well join us in the Community Centre for some eye candy brought to you via the jet propulsion lab.

Now, take off your lens caps and turn on the red light

Yours

Uli

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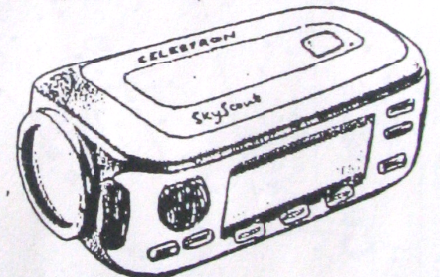
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Asteroid Belt

a collection of stories worth following up on universetoday.com

Podcast: The Search for Dark Matter

Dark matter . . . What is it? Nobody knows for sure, but it's definitely there. Or maybe it's not there, and we just need some redefinition of gravity at vast scales. Join Fraser and Pamela as we discuss the discovery, detection, and possible explanations of dark matter.

Giant Radio Telescope May Go to Australia or Africa

Australia and South Africa have been shortlisted to host the Square Kilometer Array, a massive radio telescope that will be built in 2018. The array will have thousands of antennas, spread out over an area of 3,000 km (1,800 miles), and should be 50 times more powerful than the most powerful array of radio telescopes we have today. The Australian site will be near Meekathara in the western side of the country, while the South African site will be near Carnarvon. Both sites were chosen because of the low interference of man-made radio signals in the surrounding countryside.

First High Res Images from Mars Reconnaissance Orbiter

Now in its final science mapping orbit, NASA's Mars Reconnaissance Orbiter is sending back some of the highest resolution images ever taken of the Red Planet. The images are so sharp, they show objects and features approximately 1 metre (3 feet) across. In addition to its high resolution camera, the spacecraft is equipped with a mineral-mapping spectrometer, a ground-penetrating radar, and a context camera for viewing large swaths of the planet.

A Closer Look at Planetary Formation

Astronomers have used the European Southern Observatory to map a vast disc of gas and dust surrounding a newly born massive star. The star is called HD 97048, and it's located in the Chameleon I dark cloud, a stellar nursery 600 light-years away. The central star has 40 times the mass of our Sun, and the surrounding disc stretches 12 times further than the orbit of Neptune in our own Solar System.

Dark Spot in Uranus' Clouds

The Hubble Space Telescope has discovered a giant cloud vortex in the upper atmosphere of Uranus. This cloudy feature measures 1,700 kilometers by 3,000 kilometers (1,100 miles by 1,900 miles) - large enough to engulf 2/3rd of the US. Although rare on Uranus, these cloud spots are actually quite common on Neptune, since the ice planet has a much more active atmosphere. Since this region of Uranus' atmosphere was previously in shadow, astronomers theorize that heat from the sun created the vortex.

Nearby Universe Mapped in 3 Dimensions

A new map developed by an international team of astronomers should help you find your way around the Universe - at least to a distance of 600 million light years. This new 3-dimensional map plots out the locations of all the major superclusters of galaxies and the voids that surround them. It was developed using data from the 2MASS Redshift Survey, which calculated the redshifts (and therefore the distances) of 25,000 galaxies across the entire sky.

Are There Oceans on Neptune?

Smaller and cooler than the gas giants, Neptune and Uranus are classified as ice giants. It's a good name, since they do have large quantities of water ice mixed in with a largely hydrogen and helium atmosphere. There's very little water at the cloud tops, but the percentage of water increases as you descend towards the heavier core. Could there be a layer on Neptune with enough pressure and temperature for liquid water to form into vast oceans? And if not Neptune, what about a Neptune-like planet orbiting another star?

Survey of Nearby Black Holes

Ever wonder how many black holes are nearby? Well, NASA has gone and counted them for you. According to data gathered by NASA's Swift satellite, there are about 200 supermassive black holes within about 400 million light-years of the Earth. Swift's first job is to scan the skies for gamma ray bursts, but during downtime, the spacecraft hunts for objects that emit X-rays. And supermassive black holes are one of the most powerful sources of X-rays out there.

Black Hole Stops Star Formation in Elliptical Galaxy

New images from NASA's Chandra X-Ray Observatory show the environment around the supermassive black hole at the heart of M87, a nearby giant elliptical galaxy. Chandra detected loops and rings in the hot gas that surrounds the galaxy. These loops are evidence of periodic eruptions near the supermassive black hole, which send shockwaves through the surrounding gas. These outbursts happen every few million years, and prevent the gas in the cluster from cooling to create stars.

Astronomers Peer Inside a Quasar

Quasars are some of the brightest objects in the Universe, and astronomers believe they're caused by the outpouring of radiation from the environment around an actively feeding supermassive black hole. New research using the Chandra X-Ray Observatory has looked inside a quasar, to see the disk of material spiraling into the black hole. Astronomers used the gravity from a relatively nearby galaxy as a gravitational lens to focus the light from the more distant quasar, giving this impressive view.

Astrophoto: The Cocoon Nebula by Dan Kowall

Like shards of shattered glass caught in a spotlight, the stars appear deceptively passive in the night sky. Yet, each one is an object of extraordinary ferocity. Stellar surface temperatures can reach 50,000 degrees Celsius- over ten times hotter than our Sun - and on a few it can reach over one million degrees! The heat within a star reaches even higher levels that typically exceed several million degrees - enough to tear apart atomic nuclei and transform them into new types of matter. Our casual glances upward not only fails to reveal these extreme conditions but it only hints at the enormous variety of stars that exist. Stars are arranged in pairs, triplets and quartets. Some are smaller than Earth while others are larger than our entire solar system. However, since even the nearest star is 26 trillion miles distant, almost everything we know about them, including those in the accompanying picture, has been gleaned only from their light.

Hubble Examines the Closest Known Extrasolar Planet

The Hubble Space Telescope turned its gaze towards a relatively nearby Jupiter-sized world recently. The planet orbits the Sun-like star Epsilon Eridani, which is located only 10.5 light-years away. This makes the planet so close that it could be directly observable by Hubble, and large ground-based observatories. The best opportunity will come in 2007, when the planet makes its closest

approach to its parent star, and the reflected light should make it observable with our best instruments.

Saturn's Moons Could be Creating New Rings

When Cassini passed directly behind Saturn, the Ringed Planet obscured the Sun, and gave the spacecraft a unique view of the delicate ring structure. These observations have shown scientists that the planet's moon system is probably generating new rings. These moons are pounded by micrometeorites over time, but they don't have the gravity to hang onto the material. Over time, this material floats away from the moons and collects into the diffuse rings we see today.

Red Spot Jr. is Getting Stronger

Jupiter's newly formed Red Spot Jr. is increasing in strength, according to new observations from the Hubble Space Telescope. These latest measurements clock its windspeeds at 640 kph (400 mph); almost double the speeds recorded by the Voyager spacecraft when it observed one of the spot's parent storms in 1979. The increased windspeed probably dredged up deeper material from the planet, changing its colour from white to red, similar to the Great Red Spot.

Super Earths Emerge From Snowy Conditions

Many extrasolar planets have been discovered circling other stars, a few of which are 5-15 times the mass of the Earth, and thought to be solid like our planet. Astronomers were surprised to find these planets orbiting small, cooler red dwarf stars. Researchers believe these "super Earths" form in the chilly halo of snow, ice and frozen gasses that collect around red stars as they cool. There probably isn't enough solid material to form rocky planets much larger than Mercury in the star's habitable zone.

Something Recently Collided Into Saturn's Rings

Astronomers have found evidence that a comet or asteroid might have recently collided with Saturn's rings. New images from Cassini show a region of Saturn's D ring that seems to have a series of smaller ringlets outside it. This structure was originally discovered by the Hubble Space Telescope more than 10 years ago, but spacing between the ringlets has decreased by half since then; from 60 km down to 30 km.

Astrophoto: Swan Song for a Comet

On December 2, 1995, the SOHO (Solar and Heliospheric Observatory) spacecraft was launched aboard an Atlas/Centaur rocket from Cape Canaveral Air Station on a two-year mission to monitor the sun. Almost eleven years later, the SOHO spacecraft continues to faithfully record solar activity orbiting the Sun about 1.5-million kilometers inward from Earth. NASA and the European Space Agency operate the satellite jointly. Everyday, SOHO transmits pictures that are freely available for viewing on the Internet. These images inform scientists around the world about the Sun's nature and behavior. Its images and data enable them to predict "space weather" events affecting our planet. Earlier in July of this year, someone discovered a new comet in a SOHO picture and now it's gracing our morning skies as seen in this telescopic image.

String of Pearls in Saturn's Atmosphere

This Cassini photograph shows a strange line of white dots in a line across the atmosphere in Saturn's northern latitudes. The image was made using Cassini's visual and infrared mapping spectrometer, and the line of dots are clearings in Saturn's cloud sys-

tem. There are more than two dozen of these clearings, spaced apart by about 3.5 degrees in longitude. Scientists think they might be caused by a large cloud formation or wave that encircles the whole planet.

New Telescope Will Search for Asteroids and Map Out the Universe

A newly built observatory on Maui is getting ready to release a flood of astronomical data. The 1.8 metre Pan-STARRS telescope will perform an automated search for asteroids that threaten the Earth. While it's searching for asteroids, the telescope will also build up one of the most detailed maps of our surrounding Universe. Researchers will use this data to create a 3-dimensional map of galaxies and dark matter, and measure the properties of the dark energy accelerating the expansion of the Universe.

Day and Night on an Extrasolar Planet

NASA's Spitzer Space Telescope has measured the day and night time temperatures of an extrasolar planet. This planet is located 40 light-years away, circling the star Upsilon Andromedae. It's classified as a "hot Jupiter", and orbits its parent star once every 4.6 days. The temperature difference between the day and night sides is enormous - differing about about 1,400 degrees Celsius (2,550 degrees Fahrenheit). Although the planet itself is tidally locked to the star, and always presents one face, its atmosphere probably does swirl around, and distributes the heat somewhat.

Hubbles Sees Galaxies Under Construction

The latest image released from the Hubble Space Telescope shows a beautiful view of a large galaxy being assembled from a collection of small galaxies. The large galaxy, officially known as MRC 1138-262, but nicknamed the Spider Galaxy, contains dozens of smaller star-forming galaxies. It's incredibly far away, 10.6 billion years, so we see it as it looked only 3 billion years after the Big Bang. These observations match commonly held theories about how small irregular galaxies merge together to form the larger structures we see today.

Night Side Atmosphere on Venus

Mars may get most of the news, but don't forget there's a spacecraft orbiting Venus too. New images released from ESA's Venus Express spacecraft show new details about our twin planet's atmosphere. These night-side infrared images reveal thermal radiation emanating from beneath the planet's thick obscuring cloud deck. The clouds themselves are stretched out because of high-speed winds in the atmosphere.

Gas Bubble Photo Wins NRAO Prize

A beautiful photograph taken by Jayanne English and Jeroen Stil has won a \$1,000 prize from the National Radio Astronomy Observatory. The photograph shows a dusty bubble of gas blown inside the gas disk of the Milky Way. This galactic shell's, officially known as GS 62.1+0.2-18, is located about 30,000 light-years from Earth. The bubble is sculpted by the powerful interstellar winds and radiation from a few dozen massive, hot stars.

Astronauts Relocate Soyuz Spacecraft

The crew of Expedition 14 took a short ride outside the station last week when they repositioned a Soyuz capsule on the International Space Station. They undocked from the Zvezda port, and then redocked to the Zarya module about 20 minutes later. This Soyuz shuffling was necessary to prepare for the arrival of a new Russian Progress cargo ship, later this month.

Mars Express Sees Water's History on the Red Planet

Most of humanity's Mars-bound fleet of spacecraft is searching the Red Planet for evidence of its watery past. New evidence gathered by ESA's Mars Express spacecraft is helping scientists fine tune their theories. A radar instrument on the spacecraft has turned up water ice in Mars' upper layers; a mineral mapping instrument has discovered chemicals formed in a wet environment; and its powerful camera has picked out obvious features on the surface of Mars formed by running water. Here's a breakdown of what Mars Express has found so far.

NASA's Wise Satellite Moves Ahead

NASA's Wide-field Infrared Survey Explorer team got the good news this week when their space telescope was approved for construction. Once in orbit, the "Wise" spacecraft will survey the entire sky in the infrared spectrum. This full-sky survey should turn up many previously unseen brown dwarf stars - objects too dim to be seen in previous surveys. It should also find some of the largest, most luminous galaxies in the Universe - some could be more than 11.5 billion light-years away. The \$300 million spacecraft is expected to launch in 2009.

Go For Launch - An Illustrated History of Cape Canaveral

Spaceports rule! These are one end of our tenuous link with outer space. At one time literary sculptors crafted imaginary sites to blast people up, up and away. Now, hard cold engineering makes them real. A handful of working spaceports dot the Earth's surface. Cape Canaveral is one with the longest history and Joel Powell, with Art LeBrun, show off its illustrious heritage in their book, 'Go For Launch - An Illustrated History of Cape Canaveral'. In it is a glowing tribute to a little tract of land in Florida that was transfigured from swamp land into launch site.

Podcast: More Evidence for the Big Bang

Last week's episode started out with a bang... a Big Bang. This week we continue our discussion into the beginning of everything. We present three additional lines of evidence that have led astronomers to the conclusion that our Universe started out as a singularity 13.7 billion years ago, and has been expanding ever since.

Colliding Spiral Galaxies Captured by Hubble

This Hubble photograph shows two spiral galaxies colliding together. Known as the Antenna Galaxies, aka NGC 4038-4039, these two galaxies started interacting a few hundred million years ago. Thanks to the galactic interaction, perturbed gas clouds in both galaxies collapse into regions of furious star formation (these are the blue regions). Most of these regions will disperse their stars into galactic disks, but some will remain on as super star clusters - similar to the globular star clusters we see in our Milky Way.

Moonlet Tugs at Saturn's Rings

This Cassini photograph shows the power Saturn's tiniest moons have over its gossamer rings. This knot in Saturn's F ring is caused by the gravitational influence of a tiny moon... or moons. Scientists believe there could be several tiny moonlets of various sizes perturbing the rings to create these knots. Cassini took this image on Sept. 25, 2006 when it was approximately 255,000 kilometers (159,000 miles) from Saturn.

Another Galaxy Smashed Through Andromeda 200 Million Years Ago

Astronomers have gathered evidence that the Andromeda Galaxy collided with dwarf galaxy M32 about 200 million years ago. The evidence was seen by NASA's Spitzer Space Telescope, which measured the distribution of gas rings in the galaxy's disk. These dust rings allowed astronomers to calculate when M32 smashed through Andromeda's galactic plane, like tracing ripples in a pond.

No Ice at the Moon's Southern Pole

A new radar survey of the Moon's southern pole has cast doubt on the hope that there might be accessible deposits of water ice in permanently dark craters. This new survey, performed with the Arecibo Observatory in Puerto Rico, found elevated hydrogen levels in regions of bright sunlight - not just inside the shadowed walls of craters. It seems that scattered rocks associated with impact craters have given previous instruments a false reading.

Brown Dwarf Companion Seen Directly

Astronomers have directly imaged a brown dwarf companion to the star HD 3651. This star is already known to host an extrasolar planet - less massive than Saturn, but sitting within the orbit of Mercury. HD 3651 is slightly less massive than the Sun, and is located 36 light-years away in the constellation Pisces. The brown dwarf, or HD 3651B, is probably between 20 and 60 solar masses, and has a temperature between 500 and 600 degrees Celsius.

Biggest Ozone Hole Ever

If you're going to Antarctica, put on your sunscreen. According to NASA and NOAA scientists, the ozone hole above the Earth's Southern Hemisphere is the biggest on record. In late September, the new hole reached 27.5 million square km. Even through most countries banned ozone-depleting chemicals many years ago, they're expected to continue effecting the atmosphere for decades to come.

Europe's New Weather Satellite Blasts Off

MetOp, a new European weather satellite, has successfully launched from the Baikonur Cosmodrome in Kazakhstan. The Russian Soyuz carrying MetOp blasted off from the launch pad on Thursday, October 19 at 1628 UTC (12:28pm EDT). The satellite was successfully placed into an orbit that will bring it 850 km (531 miles) above the Earth's poles. The satellite has 8 instruments designed to gather data about the planet's atmospheric and surface conditions, and 3 additional instruments for viewing space and relaying data.

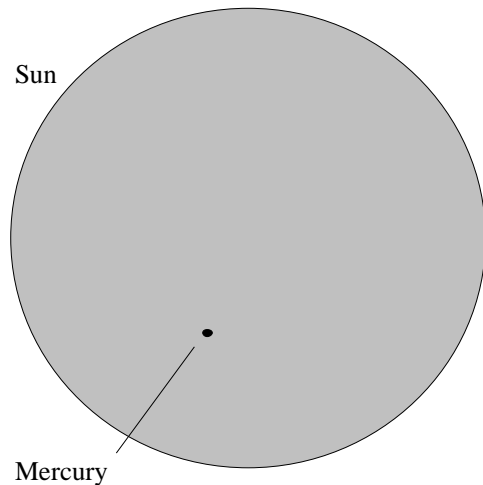
Mineral Discovery Could Explain Martian Landscape

A researcher from Queen's University has uncovered a mineral that could help explain the mountainous landscape on Mars. Dr. Ron Peterson found that solution of epsomite (aka Epsom Salts) will crystallize after several days of sub-zero temperatures. If the crystals are rapidly melted, they create the familiar gullies and channels we see on Mars. Water might have interacted with Martian chemicals millions of years ago; when the surface layer melted, it produced the unusual surface features we see today.

NASA Science News for October 3, 2006

The most powerful volcanic eruption of the 20th century happened in Alaska at a volcano named Novarupta. Because Novarupta was located so near the Arctic, it did some curious things to Earth's climate. Almost a century after the blast, researchers are beginning to understand what happened.

Mark your calendar: On Wednesday, Nov 8th, the planet Mercury will pass directly in front the Sun. The transit begins at 2:12 pm EST (11:12 am PST) and lasts for almost five hours. Good views can be had from the Americas, Hawaii, Australia and all along the Pacific Rim.



Want to see this GIF image animated? - just click on http://science.nasa.gov/headlines/y2006/20oct_transitofmercury.htm?list796219

Here's something to think about while watching the transit: Mercury is fantastically mysterious. More than half of the planet is unknown to us. When Mariner 10 flew by in the mid-70s, it managed to photograph only 45% of Mercury's cratered surface. What lies on the other side? More craters? Or something totally unexpected? You're free to speculate, because the next spacecraft to visit Mercury, NASA's MESSENGER probe, won't enter orbit until 2011.

One of Mercury's greatest secrets is the mystery-material at its poles. Radars on Earth have pinged Mercury and received a strong echo from polar craters. A favorite explanation is ice. While Mercury's daylit surface heats up to 400o C, the temperature in deep, dark polar craters dips below -200o C. If an icy comet landed in one of those craters (or *made* one of those craters), the comet's ices, vaporized by impact, might re-freeze and stick around. As skeptics like to say, however, "it's just a theory," one of many that MESSENGER will check.

Another puzzle is Mercury's wrinkles. Geologists call them "lobate scarps." Like wrinkles on a raisin, the scarps are thought to be a sign of shrinkage. Mercury may actually be collapsing in on itself as its massive iron core cools and contracts. To check this idea, MESSENGER will map Mercury's magnetic field, which springs from the core. If the core is collapsing, the collapse may leave telltale signs in the planet's magnetism. MESSENGER will also look for lobate scarps on the uncharted side of Mercury to see if this is truly a global phenomenon.

The answers are years away. Meanwhile, we watch and wonder, and Nov. 8th is a good day for that.

Transits of Mercury

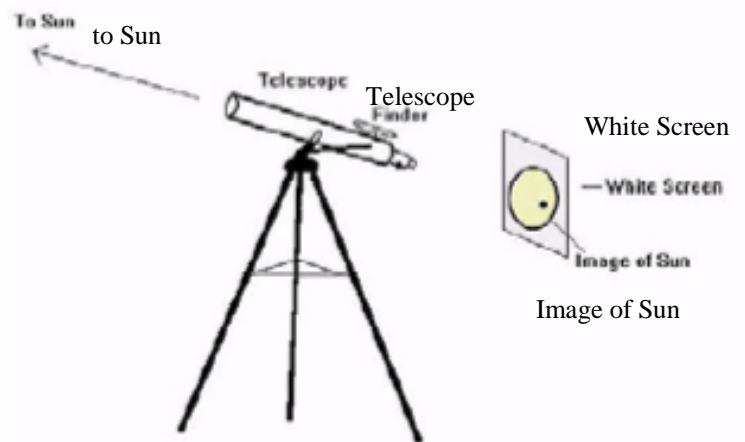
Transits of Mercury are more common than transits of Venus. On average Mercury passes in front of the Sun 13 times each century. It can do so either in May or November. The last transit of Mercury was on 7 May 2003 and there will not be another one visible from Australia until the afternoon of 13 November 2032.

History

The astronomer Johannes Kepler was the first person to predict a transit of Mercury. He thought that he had seen one in May 1607, but after calculating the position of the planet he realised that he had only seen a sunspot. By 1629 he had developed his theory of the planets sufficiently to predict a transit for 7 November 1631. Though Kepler died before the event, on the appointed day the French astronomer Pierre Gassendi became the first person to knowingly watch a transit of Mercury.

These last two paragraphs and the image are from down under

http://www.astronomy.org.au/ngn/media/client/factsheet_20.pdf



Here's another interesting site, from South Africa:

http://www.sao.ac.za/assa/html/deepsky_delights_2006_august.html

There you find Magda Streicher's article "Rings around Lyra" including maps and eyepiece views as well as background lore.



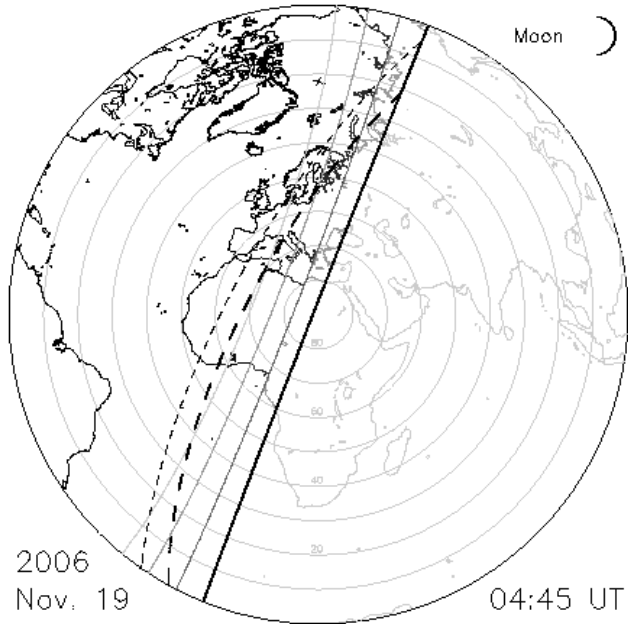
editor's note

<http://www.cnn.com/ELECTION/2006/> will keep you informed on the Senate election south of our border - no need to use any special filters, just look at the color of the state and you'll see whether a democrat or a republican holds the seat. President Bush, while not part of the vote, will play the role of Mercury - passing before the sun - and the result of both transits will be in your local newspaper the next day. Astronomers are well aware of the sun's ability to be a true weapon of mass destruction - if you get too close. While Mercury's track record gets reestablished daily our world leaders usually get to wait till election time to check their soles after walking over a bed of coals. But even with the new cloak of invisibility in the IR, hot coals are HOT. So let us wish all those who run "the race of their life!"

The Leonid Meteors

Predicting the most spectacular meteor storms is now a remarkably exact science, with some excellent Leonid displays happening in recent years, for observers in the right parts of the world. These predictions involve the accurate modelling of dust trails within the Leonid stream.

Leonid outburst in 2006



Are the Leonids back? According to McNaught & Asher (1999), there should be an outburst of the Leonid meteor shower in 2006. Our first results (Vaubailon, 2003, PhD Thesis) suggested that nothing particular was expected, so what the heck is going on here? Later on it was realized that the simulated particles were just too large to efficiently encounter the Earth in November 2006, given the way the simulations are performed (see: Vaubailon et al. 2005a). It is clear now that the Leonids are back, but there will definitely NOT be a storm like in the year 1998-2002 (as already forecasted by McNaught & Asher, 1999).

<http://www.imcce.fr/en/ephemerides/phenomenes/meteor/DATABASE/Leonids/2006/>

provides more on this topic, i.e tables, graphs ...

←—————→
editor's note ... with all the sunshine in September and October we really don't have much to complain about - what a lamb of a summer! Now all we need are some fireworks in November, courtesy Leo the lion. But, as you might be able to tell from the above forecast, it will look more like a drizzle than an all out lawn sprinkler. Do we care? Never mind how fantastic, never mind if the terminator goes right through your backyard - if you're not out there looking, it doesn't really matter anyhow. So, bundle up, grab a hot cup of something and enjoy the evening (five days before and after!!) to see what you can see. And don't bother wrecking a good night sleep by trying to see the shower head on in the early morning hours. Let's hear all about in Dec at the Steak House.

News from the ESA

The European Space Agency's Herschel Space Observatory (formerly called Far Infrared and Sub-millimetre Telescope or FIRST) will be the first example of a new generation of space telescopes. It will be the first space observatory covering the full far infrared and sub-millimetre waveband, and its telescope will have the largest mirror ever deployed in space. It will be located 1.5 million kilometres away from Earth at the second Lagrange point of the Earth-Sun system. Herschel's three and a half metre mirror will collect the light from distant and poorly known objects, such as newborn galaxies thousands of millions of light-years away, and will focus it onto three instruments with detectors kept at temperatures close to absolute zero.

Mission Objectives

ESA's Herschel mission has been designed to unveil a face of the early Universe that has remained hidden until now. Thanks to its ability to detect radiation at far infrared and sub-millimetre wavelengths, Herschel will be able to observe dust obscured and cold objects that are invisible to other telescopes. Targets for Herschel will include clouds of gas and dust where new stars are being born, disks out of which planets may form and cometary atmospheres packed with complex organic molecules. However, Herschel's major challenge will be discovering how the first galaxies formed and how they evolved to give rise to present day galaxies like our own.

Mission Name

Herschel, originally named FIRST (Far Infrared and Sub-millimetre Telescope), was renamed in honour of the pioneering astronomers William and Caroline Herschel.

Spacecraft

Mass - 3300 kg at launch

Dimensions - 9m high, 4m x 4m overall cross section

Launcher - Ariane-5 from Guiana Space Centre

Launch Date - July 2007

Mission Lifetime - 3 years nominal, 4 years extended

Wavelength - Infrared: 60 to 670 μm

A 3.5 m diameter SiC telescope for Herschel mission

Abstract

Since ten years ASTRIUM has developed sintered Silicon Carbide (SiC) technology for space applications. Its unique thermo-mechanical properties, associated with its polishing capability, make SiC an ideal material for building ultra-stable lightweight space based telescopes or mirrors. SiC is a cost effective alternative to Beryllium and the ultra-lightweight ULE. In Complement to the material manufacturing process, ASTRIUM has developed several assembly techniques (bolting, brazing, bonding) for manufacturing large and complex SiC assemblies. This technology is now perfectly mature and mastered. SiC is baselined for most of the telescopes that are developed by ASTRIUM. SiC has been identified as the most suitable material for manufacturing very large cryogenic telescopes. In this paper we present the development of F 3.5 m telescope for Herschel Mission. Herschel main goal is to study how the first stars and galaxies were formed and evolved. The Herschel Space telescope, using silicon carbide technology will be the largest space imagery telescope ever launched. The Herschel telescope will weight 300 kg rather than the 1.5 tons required with standard technology. The Herschel telescope is to be delivered in 2005 for a launch planned for 2007. Publication date: 01 Mar 2003

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