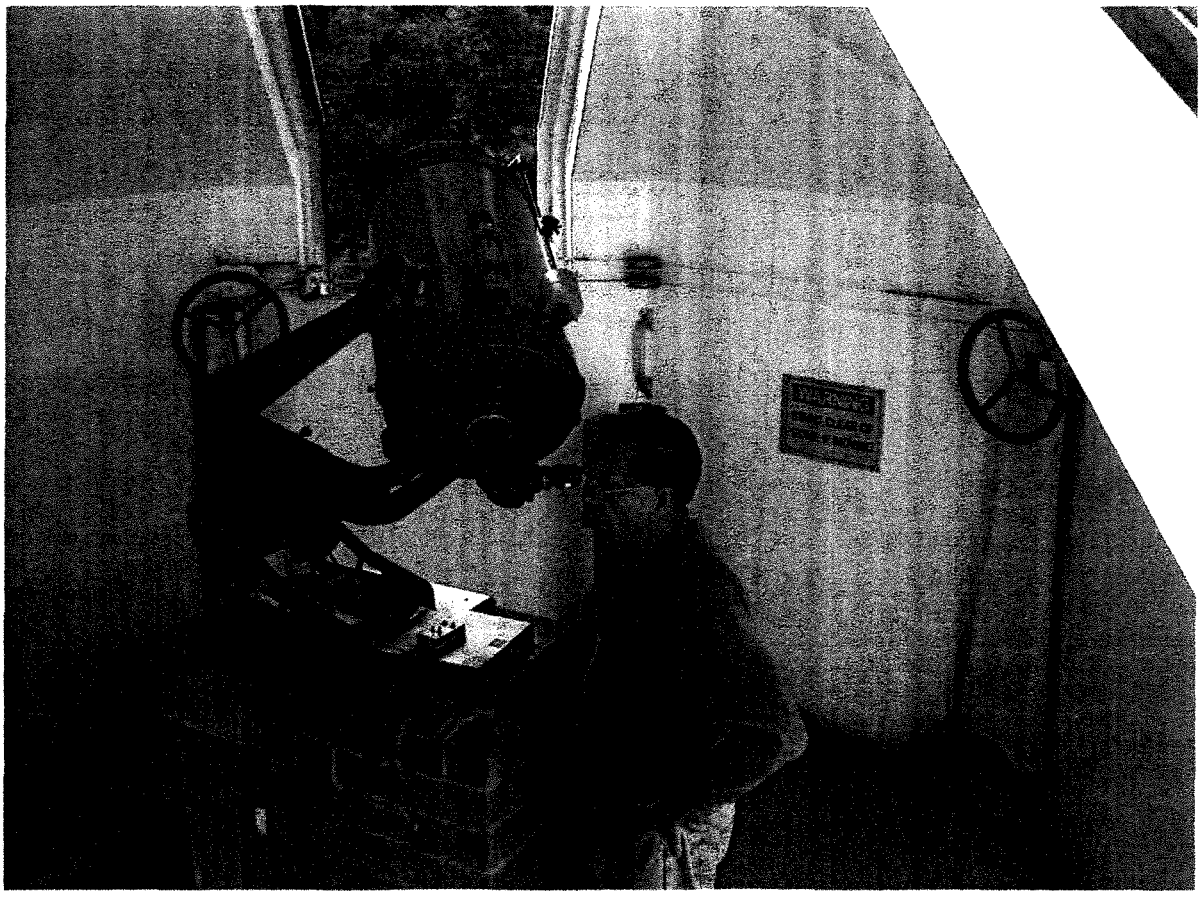
JULY 2004

VollieNews

NEWSLETTER OF THE POVG - THE PERTH OBSERVATORY VOLUNTEERS' GROUP INC.

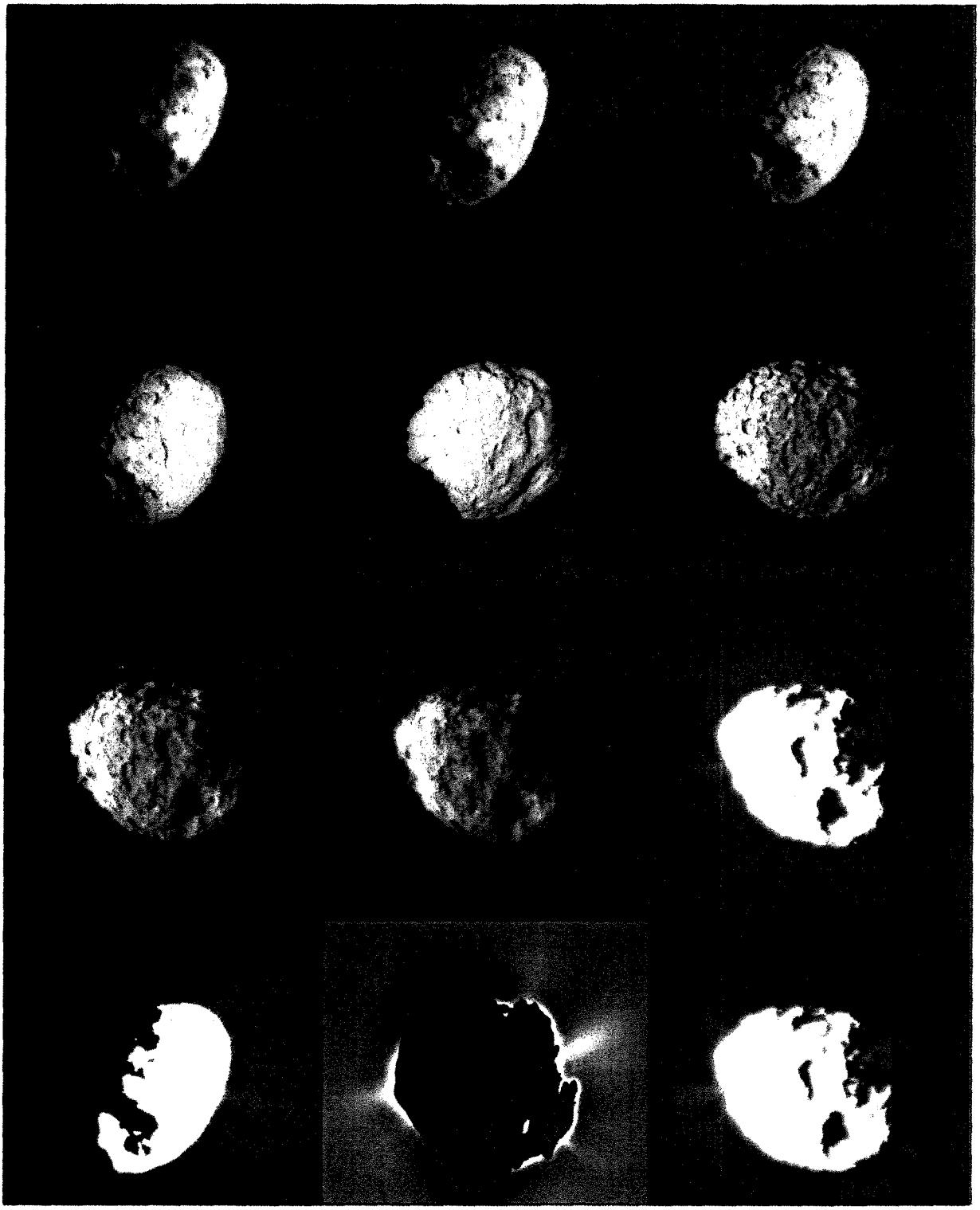
Observatory Star Viewing Nights begin on Friday Sept 17th.



"Where is that damn Alpha Centauri?". Eager to commence the star-viewing season early, POVG secretary John Morris, gets the 14" ready for the 'daytime' sky-viewing tours.

In this issue: POVG's Meeting Minutes Phases of the Moon
Dates & Times for Vollie Training and Meeting Nights
Astronomy news & events for July
Comet Wild Saturn's Rings

NASA Spacecraft Reveals Surprising Anatomy Of A Comet: Comet Wild 2



These 12 images are a good representation of the closest images of comet Wild 2. The temporal sequence starts at the upper left and continues left to right on the first three rows. The overexposed and out-of-sequence images at the bottom are long exposures t aken for autonomous tracking and yield the best jet images. All images were scaled to a constant image scale. http://stardust.jpl.nasa.gov/highres/1097899fig1.jpg

NASA Spacecraft Reveals Surprising Anatomy Of A Comet: Comet Wild 2

NASA Spacecraft Reveals Surprising Anatomy Of A Comet: Comet Wild 2

Findings from a historic encounter between NASA's Stardust spacecraft and a comet have revealed a much stranger world than previously believed. The comet's rigid surface, dotted with towering pinnacles, plunging craters, steep cliffs, and dozens of jets spewing violently, has surprised scientists.

"We thought Comet Wild 2 would be like a dirty, black, fluffy snowball," said Stardust Principal Investigator Dr. Donald Brownlee of the University of Washington, Seattle. "Instead, it was mind-boggling to see the diverse landscape in the first pictures from Stardust, including spires, pits and craters, which must be supported by a cohesive surface."

Stardust gathered the images on Jan. 2, 2004, when it flew 236 kilometres (about 147 miles) from Wild 2. The flyby yielded the most detailed, high-resolution comet images ever.

"We know Wild 2 has features sculpted by many processes. It may turn out to be typical of other comets, but it is unlike any other type of solar system body," Brownlee said. He is lead author of one of four Stardust papers appearing in the Fri., June 18, issue of Science. "We're fortunate that nature gave us such a rich object to study."

Stardust images show pinnacles 100 meters tall (328 feet), and craters more than 150 meters deep (492 feet). Some craters have a round central pit surrounded by ragged, ejected material, while others have a flat floor and straight sides. The diameter of one large crater, called Left Foot, is one fifth of the surface of the comet. Left Foot is one kilometre (.62 miles) across, while the entire comet is only five kilometres (3.1 miles) across.

"Another big surprise was the abundance and behaviour of jets of particles shooting up from the comet's surface. We expected a couple of jets, but saw more than two dozen in the brief flyby," said Dr. Benton Clark, chief scientist of space exploration systems, Lockheed Martin Space Systems, Denver.

The team predicted the jets would shoot up for a short distance, and then be dispersed into a halo around Wild 2. Instead, some super-speedy jets remained intact, like blasts of water from a powerful garden hose. This phenomenon created quite a wild ride for Stardust during the encounter.

"Stardust was absolutely pummelled. It flew through three huge jets that bombarded the spacecraft with about a million particles per second," said Thomas Duxbury, Stardust project manager at NASA's Jet Propulsion Laboratory, Pasadena, Calif. Twelve particles, some larger than a bullet, penetrated the top layer of the spacecraft's protective shield.

The violent jets may form when the Sun shines on icy areas near or just below the comet's surface. The solid ice becomes a gas without going through a liquid phase. Escaping into the vacuum of space, the jets blast out at hundreds of kilometres per hour.

The Stardust team theorises sublimation and object hits may have created the comet's distinct features. Some features may have formed billions of years ago, when life began on Earth, Brownlee said. Particles collected by Stardust during the Wild 2 encounter may help unscramble the secrets of how the solar system formed.

Stardust was launched in 1999. It is zooming back to Earth with thousands of captured particles tucked inside a capsule. The capsule will make a soft landing in the Utah desert in January 2006. The samples will be analysed at the planetary material curatorial facility at NASA's Johnson Space Centre, Houston.

Comets have been objects of fascination through the ages. Many scientists believe they delivered carbon and water, life's building blocks, to Earth. Yet their destructive potential is illustrated by the widely held theory that a comet or asteroid wiped out the dinosaurs. To view Stardust images on the Internet, visit:http://stardust.jpl.nasa.gov or http://photojournal.jpl.nasa.gov/ .

Link found between Earth's oceans and Jupiter's bands

Scientists have discovered a striking similarity between certain ocean currents on Earth and the bands that characterize the surface of large, gaseous planets like Jupiter.

Boris Galperin of the University of South Florida's College of Marine Science in Saint Petersburg and colleagues in the United States, Israel, and Japan report their findings later this month in Geophysical Research Letters, published by the American Geophysical Union.

"The banded structure of Jupiter has long been a subject of fascination and intensive research," says Galperin, a physical oceanographer who analyses turbulence theory and applies theory and numerical modelling to analyse planetary processes. "The visible bands on Jupiter are formed by clouds moving along a stable set of alternating flows."

Galperin and his colleagues have discovered that oceans on Earth also harbour stable alternating bands of current that, when modelled, are similar to the bands on Jupiter, due to the same kinds of "jets." "We think this resemblance is more than just visual," says Galperin. "The energy spectrum of the oceanic jets obeys a power law that fits the spectra of zonal flows on the outer planets."

The observation begs the question of whether these similar phenomena are rooted in similar physical forces. "To answer this question," says Galperin, "one needs to determine what physical processes govern the large-scale dynamics in both systems."

According to Galperin, there is a similarity in the forcing agents for planetary and oceanic circulations. The study maintains that both sets of zonal jets -- the ocean's bands of currents and the bands of Jupiter's clouds -- are the result of an underlying turbulent flow regime common in nature.

Comparing the energy spectra on giant planets and in Earth's oceans can yield valuable information about the transport properties of the oceans, says Galperin, especially about the strongest currents in the mid-depth ocean. "The implications of these findings for climate research on Earth and the designs of future outer space observational studies are important," he says.

The study was funded by the U.S. Army Research Office and the Israel Science Foundation.

http://spaceflightnow.com/news/n0406/22bandsocean/

Astro News

IS TRANQUIL ENVIRONMENT AROUND EARTH UNUSUAL?

Astronomers studying the Tau Ceti system have discovered that it contains ten times as much material in the form of asteroids and comets as our own solar system. Their discovery suggests that even though Tau Ceti is the nearest Sun-like star, any planets that may orbit it would not support life as we know it due to the inevitable large number of devastating collisions. http://spaceflightnow.com/news/n0407/05tauceti/

NASA CREATES FIRST 3-D VIEW OF SOLAR ERUPTIONS

NASA-funded scientists have created the first three-dimensional view of massive solar eruptions called Coronal Mass Ejections. The result is critical for a complete understanding of CMEs, which, when directed at Earth, may disrupt radio communications, satellites and power systems. http://spaceflightnow.com/news/n0407/04cme3d/

CASSINI CLOSE UPS OF TITAN THRILL, MYSTIFY SCIENTISTS

New pictures of Saturn's enigmatic moon Titan, taken by cameras aboard the Cassini probe show strange looking surface features and a deck of methane clouds the size of Arizona. But so far, the instruments have not detected reflections from the surfaces of lakes or small seas of liquid hydrocarbons many scientists believe must form in the ultra-cold environment. http://spaceflightnow.com/cassini/040703titanpix.html

CASSINI FINDS PUZZLES IN SATURN'S RING INGREDIENTS

Just two days after the Cassini spacecraft entered Saturn orbit,preliminary science results are already beginning to show a complex and fascinating planetary system. One early result intriguing scientists concerns Saturn's Cassini Division, the large gap between the A and Brings. http://spaceflightnow.com/cassini/040702puzzles.html

SCIENTISTS MARVEL AT PHOTOS

Making gravity visible, close-up images of Saturn's rings shot by NASA's newly arrived Cassini probe revealed an intricate, never-before-seen tapestry of icy particles herded into spiralling density waves by the effects of nearby moons. http://spaceflightnow.com/cassini/040701science.html

READING TALE OF IONS IN SATURN'S MAGNETOSPHERE

The Cassini spacecraft has barely begun its four-year tour around Saturn,but already a University of Maryland sensor is beginning to reveal new data about the immense magnetosphere of the ringed planet. http://spaceflightnow.com/cassini/040702magnetosphere.html

HUBBLE STUDIES GENERATIONS OF STAR FORMATION

The Hubble Space Telescope captures the iridescent tapestry of star birth in a neighbouring galaxy in this panoramic view of glowing gas, dark dust clouds, and young, hot stars. http://spaceflightnow.com/news/n0407/01hubble/

STATION GYRO RESTARTED

The International Space Station is again operating with three of its four control gyroscopes, thanks to this week's space walk by the Expedition 9 crew. Flight controllers on Friday placed Control Moment Gyroscope #2 back in full operation along with CMGs #3 and #4. The three CMGs are now controlling the Station's attitude and orientation. http://spaceflightnow.com/news/n0407/02isstatus/

CASSINI SAFELY ENTERS ORBIT AROUND SATURN

NASA's $3.3 billion Cassini probe completed a seven-year, 2.2-billion mile voyage Wednesday night, firing its main engine for a nerve-wracking 96minutes to successfully brake into orbit around the ringed planet Saturn. http://spaceflightnow.com/cassini/040630soi.htmlSee Mission Status Centre for live updates: http://spaceflightnow.com/cassini/status.html

FIRST PICTURES FROM SATURN ORBIT SHOW RICH RING DETAIL

The first batch of photographs snapped by the Cassini Saturn orbiter earlier today reached the Jet Propulsion Laboratory around 8:30 a.m. EDT,zoomed-in shots of the planet's myriad rings showing a ghostly tapestry of icy, back-lit particles arrayed in sharply defined bands. http://spaceflightnow.com/cassini/040701pictures.html

INSTRUMENT AIMS AT SATURN'S SPACE ENVIRONMENT

As NASA's Cassini-Huygens spacecraft begins its four-year orbital tour of the Saturn system, mission scientists will use an innovative imaging device to deliver the most detailed look yet at the relationship between the Sun, the giant ringed planet and the diverse collection of moons looping around it. http://spaceflightnow.com/cassini/040630mimic.html

PLASMA NOISE BURST WELCOMES CASSINI AT SATURN

Although Cassini is scheduled to officially arrive at Saturn on June 30,scientists studying the planet's magnetosphere received an official welcome on June 27 when a burst of plasma wave noise indicated that Cassini had crossed the planet's bow shock — the region where charged particles flowing outward from the sun collide with Saturn's magnetic field or magnetosphere. http://spaceflightnow.com/cassini/040629plasma.html

WINDS MEASURED ON SATURN'S MOON TITAN TO HELP LANDER

On top the windswept summit of a Hawaiian volcano, a NASA instrument attached to the Japanese Subaru telescope measured distant winds raging on a strange world — Titan, the giant moon of Saturn — to help the robotic Huygens probe as it descends through Titan's murky atmosphere next January. http://spaceflightnow.com/cassini/040629winds.html

MERCURY ORBITER'S LAUNCH DELAYED A FEW DAYS

Repeated delays in launching a Delta 2 rocket carrying a Global Positioning System satellite this month at Cape Canaveral have created a ripple effect by prompting NASA to postpone by three days the liftoff of the MESSENGER space probe to orbit Mercury. http://spaceflightnow.com/delta/d307/status.html

SEEING DOUBLE: SPITZER CAPTURES OUR GALAXY'S TWIN

What would our Milky Way galaxy look like if we could travel outside it and snap a picture? It might look a lot like a new image by NASA's Spitzer Space Telescope of a spiral galaxy called NGC 7331 - a virtual twin of our Milky Way. The picture shows our twin

Astro News

as never before. Its swirling arms spin outward from a central bulge of light, which is outlined by a ring of actively forming stars. http://spaceflightnow.com/news/n0406/28spitzergalaxy/

SATURN'S ROTATION IS A PUZZLE

On approach to Saturn, data obtained by the Cassini spacecraft are already posing a puzzling question: How long is the day on Saturn? Cassini took readings of the day-length indicator regarded as most reliable — the rhythm of natural radio signals from the planet. The result was 6 minutes longer than that measured by the Voyager 1 and Voyager 2 spacecraft, which flew by Saturn in 1980 and 1981. http://spaceflightnow.com/cassini/040628radio.html

CAMERA TO SHOOT FIRST DIRECT IMAGES OF EXOPLANETS

A University of Arizona astronomer and his collaborators are using a novel camera to hunt for extra solar planets. Their camera has already made stunning images of Saturn's moon, Titan, and discovered an object just 27times the mass of Jupiter. They hope the camera will be the first to directly photograph faint gas-giants similar to Jupiter in solar systems beyond our own. http://spaceflightnow.com/news/n0406/26exoplanets/

SCIENTISTS DISCOVER TWO NEW INTERSTELLAR MOLECULES

A team of scientists using the Green Bank Telescope has discovered two new molecules in an interstellar cloud near the Centre of the Milky Way Galaxy. This discovery is already helping astronomers better understand the complex processes by which large molecules form in space. http://spaceflightnow.com/news/n0406/27molecules/

SPACECRAFT THAT THINK FOR THEMSELVES DEVELOPED

There's nothing worse than a satellite that can't make decisions. Rather than organizing data, it simply spews out everything it collects, swamping scientists with huge amounts of information. It's like getting a newspaper with no headlines or section pages in which all the stories are strung together end-to-end. http://spaceflightnow.com/news/n0406/26autonomous/

MARS SCIENTISTS MARVEL AT MYSTERIOUS ROCK FORMATION

NASA's two Mars rovers, well past their 90-day prime missions, have entered a dramatic new phase of exploration. The Opportunity rover is working its way down a steep slope into Endurance Crater, slowly creeping back in time as it discovers older and clearly different type rocks.Evidence is mounting that shallow seas once pooled in this region,periodically drying out and reforming. On the other side of Mars, Spirit has found one of the strangest rocks discovered to date, one that defies easy explanation. http://spaceflightnow.com/mars/mera/040625formations.html

PHOEBE MOON LIKELY BORN IN OUTER SOLAR SYSTEM

A unveiled a spectacular high-resolution mosaic of Saturn's enigmatic moon Phoebe Wednesday, along with other data from the Saturn-bound Cassini probe showing the moon formed in the extreme outer solar system and later was captured by the ringed planet's gravity. http://spaceflightnow.com/cassini/040623phoebehighres.htmlNASA science release: http://spaceflightnow.com/cassini/040623phoebe.html

SPACE PROBES TRACK BLAST WAVE THROUGH SOLAR SYSTEM

A fleet of spacecraft dispersed throughout the solar system gave the best picture to date of the effects of blast waves from solar storms as they propagate through the solar system. http://spaceflightnow.com/news/n0407/08solarflare/

FREE HUBBLE HOME SOFTWARE NOW AVAILABLE

For many years astronomical images from the world's telescopes were reserved for an elite of astronomers and technical people. Now anyone with a desktop computer running Adobe Photoshop software can try their hand at crafting astronomical images as beautiful as those from the Hubble Space Telescope. http://spaceflightnow.com/news/n0407/08hstsoftware/

JUNE BOOTID METEORS:

Earth is heading for a cloud of dust shed by Comet Pons-Winnecke in the 19th century. An encounter with the cloud might produce a pleasing meteor shower before sunrise on Wednesday, June 23rd. Or not. Forecasters aren't sure. If a shower materialises, sky watchers in western North America and across the Pacific Ocean are favoured to see it.

EARTH HAS 'BLUEBERRIES' JUST LIKE THE MARS ROVER FOUND

Even before marble-shaped pebbles nicknamed "blueberries" were discovered on Mars by the Opportunity rover, University of Utah geologists studied similar rocks in Utah's national parks and predicted such stones would be found on the Red Planet. http://spaceflightnow.com/news/n0406/16blueberries/

SPIRIT, SHOWING SIGNS OF OLD AGE, REACHES COLUMBIA HILLS

After five months on the frigid surface of Mars, one of NASA's hardy rovers is finally beginning to succumb to old age, developing a robotic form of arthritis that could limit its ability to climb steep slopes, officials said Tuesday. http://spaceflightnow.com/mars/mera/040615spiritwheel.html

POVG Minutes

Perth Observatory Volunteer Group Inc.
Minutes of Meeting. June 14th 2004

Meeting Commenced at 7.18pm

Present.

J.Alcroft. L.Martin. R.Boelen. D.Emrich. E.Walker. T.Beston. J.Biggs. G.Lowe. J.Morris. L.Robinson. A.Williams. R.Tanello. B.Harris. K.Ford. F.Bilki.

Apologies.

M.Freeman. S.Schediwy. G.Coletti. E.Cowlishaw. D.Alderson. V.Semmler. V.Smith.Minutes of the Previous Meeting. Confirmed on the Motion of B.Harris, Seconded R.Boelen.

Business arising from the Minutes.

B.Harris reported that he had investigated the current price of the Volunteer Jackets, they now cost $97.60 plus G.S.T. it was requested that an item be placed in the Newsletter asking for names of those who were interested in purchasing individually.

J.Biggs stated that there was a chance that we might be able to obtain a Government grant, for items for the Volunteers, but it was not likely that we could get the grant again for Jackets. B.Harris also tabled samples of Beanies, Navy in colour,if 30 were ordered, they would cost $13.70 Plus G.S.T.

Treasurer's Report.

A letter would be sent to the Taxation Office stating that the Volunteer Group was a non-profit Scientific organisation.General Business. J.Biggs requested that members intending to be available for Night Tour Duties next season confirm their intentions with G.Lowe .

Name Badges

If anyone needs a Volunteer Name Badge contact the office staff.Consideration was being given to an end of season get together , suggestions were welcome,various options were discussed , such as a night session at Sci-tec.

There being no further General Business the meeting closed at 7.45pm

Dont't forget to book your place for the Shoemaker Impact Structure Field Trip. Time's running out.

VOLLIE ROUNDUP

DON'T FORGET TO REGISTER YOUR DAYS (NIGHTS) AND HOURS

In order to assist the Observatory plan its operations for 2004/2005 could all vollies please register their intended number of days and hours per month in the programmes they are currently engaged in (eg. Star Viewing Nights).

Please contact Greg Lowe with this information before 2004/07/01.

The Observatory Star Viewing Night program

Begins on.....Friday Sept 17.
Generally ONLY on most Fri & Sat evenings until mid December when we expand things for a VERY BUSY JANUARY & FEBRUARY.

The customers have voted with their feet basically to tell us that they don't want week nights for most of the season, but anything goes in the summer holiday times.The brochure will be out by July 1...Peter.

Vollie wind-up

Set aside the evening of Wednesday July 28th for the big wingding! Please try to make it to Hog's Breath Cafe at 21 Lake St, Northbridge by 6:30pm or so - we probably should be ordering by 6:45pm.
After dinner, we have to be at Horizon Planetarium, City West Centre, cnr Railway & Sutherland Sts, West Perth, at 8:30pm for a special planetarium show hosted by Jacquie. Finishing time there will be about 9:45pm.

You can bring your partner, but you'll have to pay for 'em: dinner $25, Planetarium $6. OK - ?
I need to have the numbers SOON.
Please let me know by email at: gregl@calm.wa.gov.au, or tell Janet or

Diane by phoning 9293-8255, during office hours. I want to know whether you're coming or not. Thanks. Greg.

Shoemaker Impact Structure expedition, Sept. 8th - 12th.

I expect that Mike Freeman will be wanting commitments from those intending to go on the Shoemaker Impact Structure expedition, Sept. 8th - 12th. Right, Mike?

Thanks to those who've already notified us of your intentions with regard to vollifying next season.Regards, Greg.

Vollie Profile: Frank Bilki

Observatory: Night viewing volunteer

Frank's interest in astronomy began early, and he still possesses a book he wrote in primary school, entitled Progect (sic) Astronomy, complete with freehand drawings of the Solar System and Saturn V rockets. His first telescope was a six-inch Newtonian purchased at auction. "Looking back," he reflected, "I now realise that it was in woeful shape. It was pier mounted with no latitude adjustment – not that it mattered as I had the pier set up backwards anyway. The mirror was damaged and barely reflective, and the eyepiece was from an old microscope, held in with sticky tape." But, it provided his first views of the moon and the occasional planet.

Nowadays his astronomical pursuits range from folklore and history, to programming and mathematics, to photography. Outside of astronomy, Frank's interests include yet more photography—he's twice won Sky and Space Readers' Photos and sells the occasional fine art photographic print—and bonsai gardening.

Frank, a Taurus, lives in Willetton with wife Donna and their cat Lucy. A geologist by training, he now works as Consulting Manager at Micromine, a Nedlands company that develops software for the mining and exploration industries. Part of his work involves training and public speaking, abilities that he also enjoys putting to use during night viewing sessions.

Email: fp.dl.bilki@optusnet.com.au or fbilki@micromine.com.au

PLEASE SEND ME YOUR PROFILE FOR INCLUSION IN THE NEXT NEWSLETTER.
JEFF ALCROFT. ED

POVG Positions Vacant

HELP WANTED
POVG Assistants
Urgently Required
3 positions available

Newspaper article collators

One person (plus deputy) to collect newspaper articles relating to Perth Observatory and other local astronomy/astrophysics activities.

Duties: Scan local newspapers, and the like, for relevant articles. Remove articles from the newspaper. Clearly print source and date on article. Forward articles to Observatory in a timely manner (say at least every two weeks).

Deputy to stand in for short periods when requested. Record and report number of hours the incumbents have spent on the project. These positions are ongoing.

Data analysist

One person to analyse BoM hourly weather data (from 1998) for Perth Observatory (Bickley). Ultimately, they will produce a report with annual averages of wind speed and direction, and relative humidity, as a function of season and time, as well the standard deviation of the quantities.

The successful candidate will probably need familiarity with software such as MS Access and Excel (available at the Observatory), or any other similar software package. It is anticipated that this work should take about 50 hours to complete.

Contact Jamie Biggs for further information or to apply. Applications close 2004/07/01.

Dr James Biggs
Government Astronomer/Director
Perth Observatory
337 Walnut Rd, Bickle. 6076 WA
e-mail: jamieb@calm.wa.gov.au
ph: +61 8 9293 8255
mob: 0407 977 747
fax: +61 8 9293 8138

PHASES OF THE MOON FOR 2004

New Moon	First Quarter	Full Moon	Last Quarter
		Jan 7 23:40	Jan 15 12:46
Jan 22 05:05	Jan 29 14:03	Feb 6 16:47	Feb 13 21:40
Feb 20 17:18	Feb 28 11:24	Mar 7 07:14	Mar 14 05:01
Mar 21 06:41	Mar 29 07:48	**Apr 5 19:03**	**Apr 12 11:46**
Apr 19 21:21	**Apr 28 01:32**	May 5 04:33	May 11 19:04
May 19 12:52	May 27 15:57	Jun 3 12:19	Jun 10 04:02
Jun 18 04:27	Jun 26 03:08	Jul 2 19:09	Jul 9 15:33
Jul 17 19:24	Jul 25 11:37	Aug 1 02:05	Aug 8 06:01
Aug 16 09:24	Aug 23 18:12	Aug 30 10:22	Sep 6 23:10
Sep 14 22:29	Sep 21 23:53	Sep 28 21:09	Oct 6 18:12
Oct 14 10:48	Oct 21 05:59	Oct 28 11:07	Nov 5 13:53
Nov 12 22:27	Nov 19 13:50	Nov 27 04:07	Dec 5 08:53
Dec 12 09:29	Dec 19 00:40	Dec 26 23:06	

http://www.wa.gov.au/perthobs/hpc5mn03.htm

Perth Observatory Volunteers' Group

Training is important for our volunteers, they enjoy it and we need to support these staff members in return for the assistance they render.

Generally, these training nights are scheduled for 7pm the Monday after the week of Last Quarter.

This list (or a part thereof) is also displayed on the volunteer notice board. Your cooperation is appreciated. Jamie Biggs. Govt Astronomer.

2004

12 Jul 9 Aug 6 Sep
11 Oct 8 Nov 6 Dec

2005

10 Jan 7 Feb 14 Mar
4 Apr 9 May 30 May
4 Jul 1 Aug

PERTH OBSERVATORY STAFF

Dr Jamie Biggs	Director and Govt Astronomer
Peter Birch	Astronomer
Ralph Martin	Astronomer
Dr Andrew Williams	Astronomer
Rick Tanello	Astronomer Assistant
Greg Lowe	Astronomer Assistant
Janet Bell	Administration Officer
Di Johns	Clerical Officer
Arie Verveer	Technical manager
John Pearce	Mechanical technician
Marc Appelhof	Maintenance Person/Cleaner

POVG VOLUNTEERS

Mike Freeman	Chairperson
Elaine Walker	Vice Chairperson
John Morris	Secretary
Bevan Harris	Treasurer and newsgroup moderator (contact: ngc2070@bigpond.com)
Jeff Alcroft	Editor (contact: callides@iinet.net.au) or through newsgroup

Observatory's Volunteers' Active Member List

Jeff Alcroft	Giuseppe Coletti	Bert Hollebon	Lloyd Robinson
Dick Alderson	David Emrich	Karen Kotze	Sascha Schediwy
Jeanne Bell	Keith Ford	Erin Lalor	Val Semmler
Trevor Beardsmore	Marcel Fortsch	Vic Levis	Vera Smith
Lyall Bell	Mike Freeman	Rob Loney	Patricia Turner
Frank Bilki	Lynda Frewer	Andrew MacNaughtan	Elaine Walker
Tony Beston	Bevan Harris	Len Martin	Sandra Walker
Ric Boelen	Don Hartley	Jacquie Milner	Matthew Zengerer
Eve Cowlishaw	Mark Haslam	John Morris	

Have you joined the POVG Newsgroup yet?

If you've got any news, information or pics post them on the newsgroup.
To join simply send your email address to Bevan Harris at:
ngc2070@bigpond.com

To unsubscribe send an email to:
perthobsvollies-unsubscribe@yahoogroups.com.au
To modify your subscription, visit the group website at:
http//au.groups.yahoo.com/mygroups

PERTH OBSERVATORY
337 Walnut Road, Bickley WA 6076
http://www.wa.gov.au/perthobs

POVG
Perth Observatory Volunteers Group