

POLARIS



Royal Astronomical Society of Canada
London Centre Newsletter
October 2008

Messenger to Mercury By Patrick Whelan

Mercury was named after the fleet footed God Mercury. It is the inner most planet. If you have ever tried to view Mercury yourself, you know how fleet footed it is. Being so close to the Sun, you only ever get 'fleeting' moments when you can see it.

NASA's Messenger spacecraft flew past Mercury for its second time on October 6, 2008. The spacecraft's name is an acronym of: MErcury Surface, Space ENvironment, GEochemistry, and Ranging.

This will be the second flyby of three that are planned.

The first flyby made discoveries of Mercury's magnetic field, volcanic activity and size. It is hoped the second flyby will make even more discoveries about the planet.

On the first flyby Messenger photographed about 20% of the planets surface that was never before seen or photographed. It photographed ancient volcanoes ringing Mercury's Caloris Basin and found a rich plasma nebula trapped in Mercury's magnetic field.

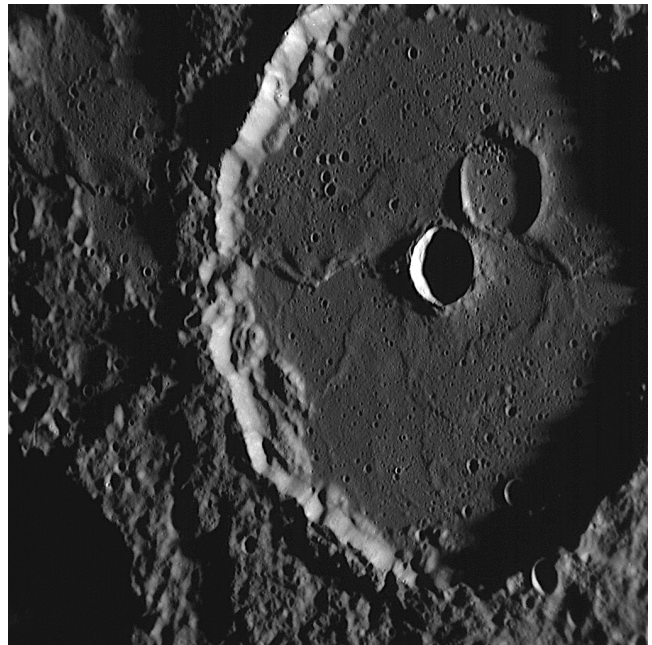
The second flyby will also give Messenger a gravity assist so that it can eventually go into orbit around Mercury in 2011. It will be the first spacecraft to orbit Mercury. It will also photograph more of Mercury's surface that has not been previously seen. Messenger will also use a laser altimeter to measure Mercury's topography. This will help scientists by giving them 3d views of the new high resolution images they are getting of Mercury.

Scientists also hope that Messenger will be able to measure the chemical and mineralogical composition of the inner most planet.

Photo:

Machaut is the name of a crater, approximately 100 kilometer (60 mile) in diameter, first seen under high-sun conditions by Mariner 10 in the 1970s. The crater is named for the medieval French poet and composer Guillaume de Machaut. This NAC image shows an amazing new view of Machaut taken during

MESSENGER's second flyby of Mercury on Oct. 6, 2008. The slanting rays of the Sun cast shadows that reveal numerous small craters and intricate features. The largest



Credit: NASA/Johns Hopkins University Applied Physics Laboratory/
Carnegie Institution of Washington

crater within Machaut appears to have been inundated by lava flows similar to those that have filled most of the floor of the larger feature. The adjacent, slightly smaller crater was formed at a later time and excavated material below the lava-formed surface. MESSENGER science team members will also be studying the shallow ridges that crisscross Machaut's floor.

Photo caption from: http://www.nasa.gov/mission_pages/messenger/multimedia/flyby2_20081007_5.html

Another Messenger photograph can be seen on page 5.

Moon Phases



October 7 9:04



October 14 20:02



October 21 11:55



October 28 23:14

Letter from the Editor

October 2008

Telescope Surgery

I just bought a new focuser for my 10" telescope. It has coarse and fine focusing and makes my telescope a lot more fun to use and a lot easier to focus too. I did the upgrade at home with just hand tools. The hole in the main tube where the focuser mounts needed to be bigger. I went through 3 discs on my dremel tool until I used a big beefy grinder attachment with my hand drill. The tube is steel and the sparks were flying! I had to drill 4 new holes to mount the new focuser. It took a bit to line them up but I used high school geometry for that and all went well. I put the laser collimator in it and collimation was off by 1/4" on the main mirror. What do you want to do with your telescope?

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LONDON RASC MONTHLY MEETINGS

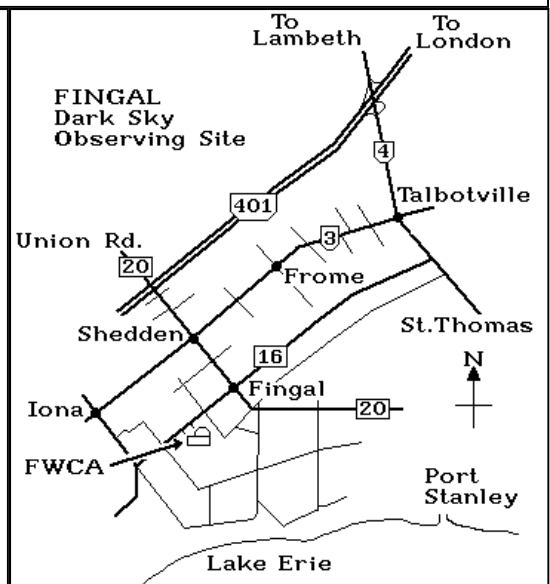
The London RASC group meets at Fanshawe college in London Ontario, September through July on the third Friday of the month at 19:00. They meet in room B1073.

Everyone interested in astronomy is invited to attend and enjoy our guest speaker, member activity and observing reports, announcements of new discoveries and upcoming events, telescopes and telescope accessories show and tell, and other fun activities. Have a look at our future and past activities on our website to see what we are doing.

Parking is free on Friday evenings, and there is plenty of room in the east parking lot off Oxford St. and parking spaces on the south side of B building. Enter the college by B building doors near Oxford Street, just west of the bus stop. College signs at key hallway locations will help you find us. The London RASC webpage can be found at:

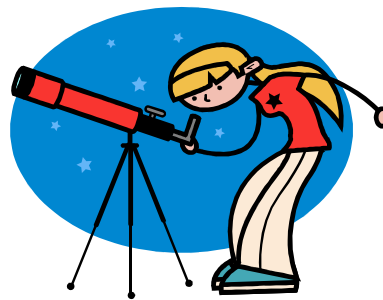
www.rasc.ca/London

They have a preferred observing site at Fingal Wildlife Management area.



Sky Events for September and October 2008

October 17 Moon 0.8° N of Pleiades (M45)
 October 22 Moon 0.9° S of Beehive (M44)
 October 22 Mercury greatest elongation West
 October 23 Regulus 1.9° N of Moon
 October 31 Antares 0.1° S of Moon
 November 2 Daylight Saving time ends
 November 3 Jupiter 1.9° N of Moon
 November 6 Neptune 1.1° S of Moon
 November 13 Moon 0.7° N of Pleiades (M45)
 November 18 Moon 1.2° S of Beehive (M44)



Jupiter transits around 5:30 on the 15th and sets around 10:00
Saturn is in Leo and rises around 3am
Uranus is in Aquarius all year and was at opposition on September 13th
Mercury is visible in the morning during the second half of October
Venus is the evening star this month

R.A.S.C. London Centre Library Books of the Month October 2008 *By Robert Duff*

In order to make our library collection available to members, I bring three books to our general monthly meetings. These “Books of the Month” are available for loan, to be returned at the following monthly meeting.

The books for October 2008 are as follows:

Burnham's Celestial Handbook: an Observer's Guide to the Universe Beyond the Solar System, by Robert Burnham. Revised and Enlarged Edition. c1978.

Volume Two, Chamaeleon—Orion.

Relativity: the Special and the General Theory, by Albert Einstein; authorized translation by Robert W. Lawson; introduced by Roger Penrose. London: The Folio Society, 2004.

Universe on a T-shirt: the Quest for the Theory of Everything, by Dan Falk. c2002.

For a complete listing of our library collection please see our RASC London Centre Web site at: <http://www.astro.uwo.ca/~rasc/>

If there is a particular book or video you wish to borrow, please feel free to contact me by telephone at (519) 439-7504 or by e-mail at rduff@sympatico.ca



Sky and Telescope Subscriptions

Sky & Telescope subscriptions are available at a discounted rate through the London Centre. The cost is \$39.95USD instead of the normal \$49.95USD subscription rate. Please see Bill Gardner for details.

Sparta Beavers Star Night at Fingal

Saturday, October 4th, 2008

By Robert Duff

Clearing skies made for an excellent star night for the Sparta Beavers at Fingal Wildlife Management Area on Saturday, October 4th. Some 20 adults and children, including Beaver's (ages 5—7), were on hand to view the stars. When I arrived around 7:15 p.m., a number of RASC London Centre members were there with their telescopes set up.

Dave McCarter was there with his 25.4cm Dobsonian, Dan Tremblay with his 25.4cm equatorially mounted Newtonian, Craig Levine with his 33cm Dobsonian, Marcus Stevens with his 80mm equatorial refractor, Mike Hanes with his large Dobsonian and Greg Andres with his 25.4cm Dobsonian. I brought my 20.3cm Dobsonian.

The air felt slightly chilly and a few clouds moved overhead throughout the evening, which was otherwise very clear. Dave McCarter showed children and adults views through his telescope and explained astronomy to the group. The Moon and Jupiter were highlights in the early evening. Dave moved his telescope further east to afford a better view of Venus near the western horizon.

I showed people the Moon, Jupiter, the Ring Nebula (M57), the Andromeda Galaxy (M31) and the globular cluster M13 in Hercules.

Globular cluster M13 was impressive at 174.3X, using my 7mm Nagler eyepiece and spectacular at 232.4X, using my 10.5mm Plossl and 2X Meade 140 Barlow lens. People came and went to my telescope and I took the opportunity to look at the "Double-Double" star system, Epsilon Lyrae, which was nicely split with my 7mm Nagler at 174.3X. Dan Tremblay located the Dumbbell Nebula in his 25.4cm Newtonian and also located it for me in my telescope. Dan also located the Veil Nebula in his telescope, viewing it with a nebula filter.

There was an especially bright pass of the International Space Station from the northwest predicted by Dave McCarter. I directed my green laser towards the ISS to highlight it for the group and then outlined the Big Dipper and North Star, Polaris.

The Beavers left around 9:00 p.m. after thanking us for the evening of stargazing. I went over with Mike Hanes and Dan Tremblay to see the warming room, which was indeed heated and cozy, with red ceiling lights. Mike showed us the light timer and the control box with switches for charging the battery (from the solar panel) and for switching on the lights and gas heater. Mike also showed us the section of the pad where the observatory is planned. I left around 9:30 p.m. with some members still remaining, although clouds were thickening overhead.

I would like to express my thanks to RASC London Centre members who helped make this a very informative and enjoyable star night for the Beavers.

Star Night Byron Northview

Public School

Monday, October 6th, 2008

By Robert Duff

Some 70 children and adults showed up for an evening of stargazing at Byron Northview Public School under exceptionally clear skies. I arrived early, around 6:35 p.m., and set up my 20.3cm Dobsonian telescope on the grassy football field. Dave McCarter arrived a little later and set up his 25.4cm Dobsonian.

Dave made an outdoor digital slide presentation using his laptop computer and a projector and screen provided by the school, set up behind a portable classroom on the edge of the field. Beginning with Galileo, Isaac Newton and early telescopes, Dave made a cosmic tour with images of the Moon and many deep-sky objects, alternating between pointing his red laser at the screen and his green laser at the same objects in the sky overhead.

I called Dave's attention to the International Space Station as it passed overhead and everybody took a moment to view its bright passage and disappearance in the Earth's shadow to the east.

Besides the two telescopes that Dave and I brought, the grade-6 teacher also brought out his 20.3cm Dobsonian. One parent brought his 11.4cm Go-To Newtonian reflector, which he was still learning how to use, and another his 60mm alt-azimuth refractor. In all there were five telescopes on the field. Many children and adults lined up at my telescope to view the Moon, Jupiter and the Ring Nebula, M57.

Everybody left by around 9:00 p.m. and Dave packed up at 9:15 p.m. to go out to Fingal to try and observe the asteroid reported by Peter Brown as heading for Earth. I left around 9:30 p.m. The teacher coordinating the event thanked us for what was a very successful and educational star night.

Landon Public Library Star Night

Wednesday, October 8th, 2008

By Robert Duff

Clouds and rain ruled out stargazing on Wednesday evening, October 8th, when I arrived at Landon Public Library, 167 Wortley Road, in London. Dave McCarter and Richard Gibbens were already there with a digital slide projector and screen set up in one of the library meeting rooms in the basement.

Dave had brought his presentation "The Telescope" on his laptop computer. I set up my 20.3cm Meade Starfinder Newtonian telescope on its Dobsonian mount at the front of the meeting room, to the left of the screen.

A total of 16 visitors, youth and adults, arrived to see Dave's presentation, which went for 1-½ hours, from 7:30 to 9:00 p.m., when the library closed. Dave began with a view of the Hubble Space Telescope, noting that the Space Shuttle servicing mission had been postponed from October

(Continued on page 5)

(Continued from page 4)

to January 2009, owing to a sudden new system failure. He then went back and explored the history of the telescope from before Galileo's time to the present. He also explored recent discoveries in astronomy, including the latest images of Mercury from the Messenger spacecraft. Images of the Moon, constellations, star clusters and nebulae by RASC London Centre members were featured along with those by the Hubble Space Telescope and planetary spacecraft. Most interesting was Dave's discussion of Sagittarius A*, the 4.5 million solar mass black hole at the centre of the Milky Way Galaxy, obscured from view by dust clouds but visible in the infrared.

Visitors were greatly impressed by the presentation and a couple of young people asked questions. In spite of the rainy weather people learned a lot about astronomy.

Exploring the Stars, Cronyn Observatory

October 2008—April 2009

By Robert Duff

RASC London Centre members are invited, once again, to help out with the Exploring the Stars program at the University of Western Ontario's Hume Cronyn Observatory. This highly successful astronomy outreach program has been ongoing since 2006.

Astronomy doctoral student Alyssa Moldowan coordinates the program and is joined this year by two other graduate students in astronomy, Ryan Marciniak and Amanda Papadimos. Last year the program ran two nights per week. This year it will be running three nights per week, Tuesday, Wednesday and Thursday, and is already fully booked!

For information please go to the Exploring the Stars Web site: <http://www.astro.uwo.ca/exploringthestars/>

Click on the "Schedule" link on the left side of the Web page for a list of upcoming Exploring the Stars events. Most events run from 7:00—9:00 p.m.

RASC London Centre Exploring the Stars Volunteers Free Parking List

By Robert Duff

I have submitted a RASC London Centre Volunteers Parking List to the Exploring the Stars Coordinator, Alyssa Moldowan, and she will be forwarding it to Parking and Visitor Services at Western before the program begins on October 21st. London Centre members who are on this list are entitled to free parking at the Alumni Hall or Weldon parking lots.

You need only give your name to the parking attendant at Alumni Hall parking lot and tell them you are a volunteer from the RASC London Centre helping out with the Exploring the Stars outreach program at the Cronyn Observatory. If the Alumni Hall lot is full, ask the parking attendant to phone the Weldon lot attendant (across the traffic circle) and make sure you can park in the Weldon lot. I am suggesting this just in case the Weldon lot attendant does not receive a list.

The list of names is reproduced below. Please note that the list submitted to Parking and Visitors Services in-

cludes your phone numbers. I have not included your phone number in the list following below. The list is as follows:

University of Western Ontario

Exploring the Stars Program

Hume Cronyn Observatory

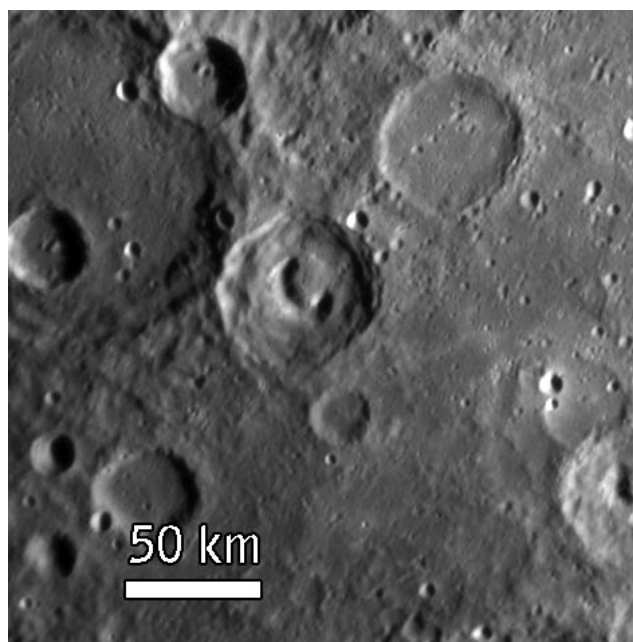
Volunteers Parking List,

October 2008—April 2009

Compiled by Robert Duff

RASC London Centre Star Party Coordinator

Robert Duff, Suzie Chelico, Dave McCarter, David Clark, Peter Jedicke, Richard Gibbens, Gary Hinks, John Rousom, Bill Gardner, Gerald Kennedy, Harold Tutt, Peter Raine
Please note that two other volunteers, Fraser McCrossan and Greg Andres who work at Western, are not on the list as they already have free parking.



MESSENGER's Narrow Angle Camera (NAC) on the Mercury Dual Imaging System (MDIS) acquired this view of Mercury's surface illuminated obliquely from the right by the Sun. The unnamed crater (52 kilometers, or 31 miles, in diameter) in the center of the image displays a telephone-shaped collapse feature on its floor. Such a collapse feature, not seen on the floors of other craters in this image, could reflect past volcanic activity at and just below the surface of this particular crater. MESSENGER team members are examining closely the more than 1200 images returned from this flyby for other surface features that can provide clues to the geological history of the innermost planet.

The crater is located in the southern hemisphere of Mercury, on the side that was not viewed by Mariner 10 during any of its three flybys (1974-1975). This scene was imaged while MESSENGER was departing from Mercury from a distance of about 19,300 kilometers (12,000 miles), about 1 hour after the spacecraft's closest encounter with Mercury. The image is of a region approximately 236 kilometers (147 miles) across, and craters as small as 1.6 kilometers (1 mile) can be seen. Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Carnegie Institution of Washington

2008 TC3

From Wikipedia, the free encyclopedia
http://en.wikipedia.org/wiki/2008_TC3

Discovery

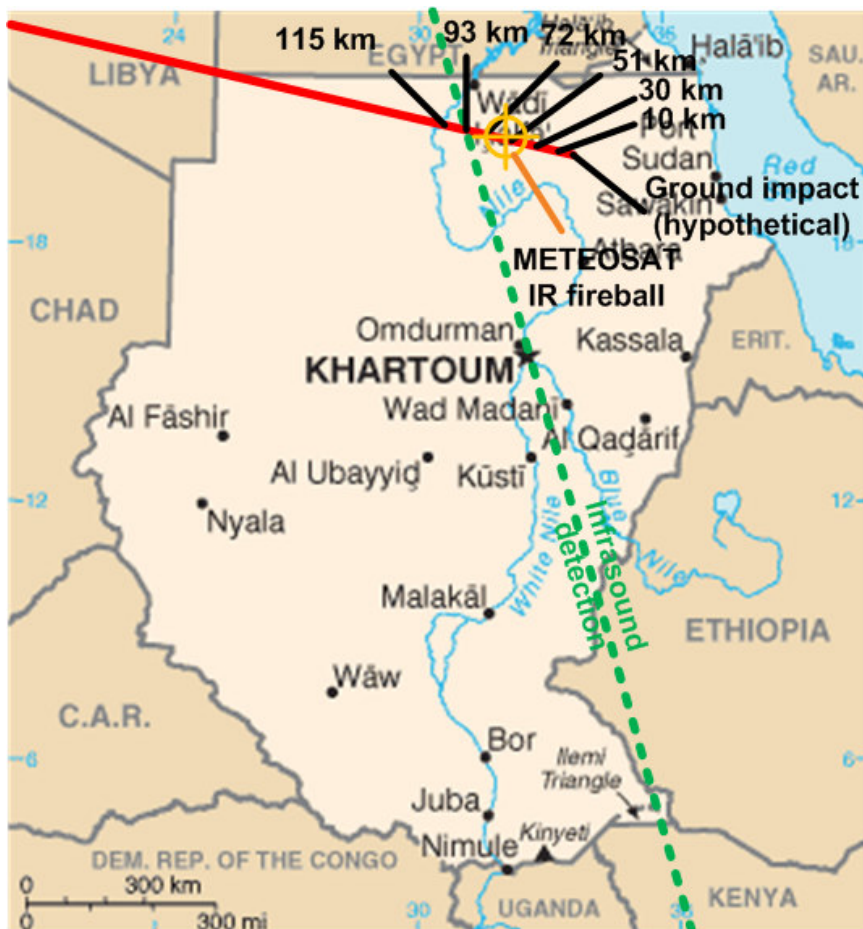
The meteoroid was discovered by an observer at the Catalina Sky Survey (CSS) 1.5 meter telescope at Mount Lemmon, north of Tucson, Arizona, USA, about a day before the impact.

The meteoroid was notable as the first such body to be observed and tracked prior to reaching Earth. The process of detecting and tracking a near-Earth object, an effort sometimes referred to as Spaceguard, was put to a test. In total, 586 astrometric and almost as many photometric observations were performed by 27 amateur and professional observers in less than 19 hours and reported to the Minor Planet Center, which issued 25 Minor Planet Electronic Circulars with new orbit solutions in eleven hours as observations poured in. Impact predictions were performed by University of Pisa's CLOMON 2 semi-automatic monitoring system as well as Jet Propulsion Laboratory's Sentry system. Spectral observations that were performed by astronomers at the 4.2 meter William Herschel Telescope at La Palma, Canary Islands are consistent with either a C-type or M-type asteroid.

Explosion

The meteoroid, also considered a bolide due to its fiery explosion, is confirmed to have entered Earth's atmosphere above northern Sudan at a velocity of 12.8 kilometres per second (8.0 mi/s). Estimated trajectory has the object coming out of the western sky at an azimuth of 281 degrees, and an altitude angle of 19 degrees to the local horizon.

It exploded tens of kilometers above the ground with the energy of around one kiloton of TNT, causing a large fireball in the early morning sky. Very few people inhabit the remote area of the Nubian Desert where the explosion took place; The Times, however, reported that the meteoroid's "light was so intense that it lit up the sky like a full moon and an airliner 1,400 km (870 miles) away reported seeing the bright flash." A low-resolution image of the explosion was captured by the weather satellite Meteosat 8. The Meteosat images place the fireball at 21°00'N 32°09'E? / ?21.00, 32.15. Infrasound detector arrays in Kenya also detected a sound wave from the direction of the expected impact corresponding to energy of 1.1 to 2.1 kilotons of TNT. Meteoroids of this size hit Earth about two or three times a year.



Ground path of the meteoroid over Sudan. The red line (top of picture almost horizontal) is the object's path, terminating where it would have hit the ground. The green line (marked infrasound) is the infrasound detection of the object's explosion. METEOSAT IR fireball location indicated by orange crosshairs. Predicted altitude as the object crossed the Nile River and several other points are listed. Exact path and fireball altitude have not been confirmed. 2008 TC3 (Catalina Sky Survey temporary designation 8TA9D69) was a meteoroid 2 to 5 meters (7 to 16 ft) in diameter that entered Earth's atmosphere on October 7, 2008, at 02:46 UTC (5:46 a.m. local time) and burned up before it reached the ground.