

Skynotes January 2009

The Universe, Yours to Discover

The *International Year of Astronomy 2009* has begun! It is set to be a public celebration of astronomy to be enjoyed all around the world. The year marks the 400th anniversary of Galileo turning a telescope to the sky and aims to reconnect people with the night sky and highlight the contributions astronomy has made to our society and culture.

Month Highlights

Venus is brilliant in the western sky at sunset. **Mercury** and **Jupiter** are found much lower in the sky and sink below the western horizon by the middle of the month. At sunrise **Saturn** is high in the northern sky. By the end of the month **Mars** and **Mercury** are found in the early hours rising above the eastern horizon.

Partial Solar Eclipse

Australia Day will be celebrated with a solar eclipse. An annular eclipse will be visible from the Indian Ocean to western Indonesia. This occurs when the Moon doesn't quite cover the Sun and a bright ring remains around the dark shadow of the Moon. Unfortunately, here in Melbourne we won't see much of an eclipse. Only 2% of the Sun will be covered by the Moon and it occurs just before sunset, so the Sun will be very low on the horizon.

Eclipse begins	7:41pm
Eclipse maximum	7:55pm
Eclipse ends	8:08pm
Sunset	8:38pm

Planetarium Events

Earth Quest – Outer Space to Inner Earth

Go on a voyage from the outer limits of the Milky Way to the very centre of planet Earth. Discover why we have seasons, how mountains formed, undertake your own dinosaur dig and do some hands on activities in the Experiment zone.

Developed by Questacon – the National Science and Technology Centre, Canberra, Earth Quest will be at Scienceworks until 19 April 2009.

Discover the Night Sky – March 2009

Immerse yourself in the stars of the Melbourne Planetarium, enjoy a glass of wine and discover a new mystery of the night sky each Thursday evening in March. The Melbourne Planetarium at Scienceworks presents special after-dark sessions, **Thursday evenings from 5 to 26 March** at 7pm. All evenings include complementary wine and cheese, the opportunity to chat to the Planetarium's astronomer and be immersed in a planetarium experience. You will finish the evening stargazing through telescopes (weather permitting).

Each evening will showcase a different aspect of the night sky. For more information, pricing or bookings please call the Scienceworks Booking Office on 9392 4819, lines are open Monday to Friday between 9am and 4.30pm.

School Holidays

Scienceworks is open daily (except Christmas Day) from 10am – 4:30pm during the School Holidays (26th December – 1st February). Planetarium session times are:

- 12pm: **Tycho to the Moon**
- 1pm: **Spinning Out**
- 2pm: **The Problem with Pluto**
- 3pm: **The Search for Life: are we alone?**

Sunrise & Sunset Times

	Rise	Set
Thursday 1st	6:02	8:45
Sunday 11th	6:11	8:45
Wednesday 21st	6:21	8:41
Saturday 31st	6:33	8:34

Moon Phases

- First Quarter Sunday 4th
- Full Moon Sunday 11th
- Last Quarter Sunday 18th
- New Moon Monday 26th

The Moon will be at *apogee* (furthest from Earth) on Friday 23rd at distances of 406 115 km.

The Moon will be at *perigee* (closest to Earth) on Saturday 10th, at a distance of 357 500 km.

Let the Moon be Your Guide

The Moon can be used as a pointer to find other objects in the sky:

- After sunset on the 1st the waxing crescent Moon sits to the right of bright **Venus**.
- On the evening of the 7th the waxing gibbous Moon sits with the star cluster **Pleiades**.
- The Full Moon on the 11th travels across the sky with the twin stars of *Gemini*, **Castor** and **Pollux**.
- During the early hours of the 14th, the waning gibbous Moon is near **Regulus** (*Leo, the lion*).
- On the morning of the 15th the Moon lies near **Saturn**.
- The Last Quarter Moon sits above **Spica** on the morning of the 18th.
- Before sunrise on the 22nd the thin crescent Moon sits below the red giant star **Antares** (*Scorpius*).
- After sunset on the 30th the crescent Moon hangs below **Venus**.

Planets

Mercury is best seen at the start of the month sitting above the western horizon. Just below Mercury is the bright planet **Jupiter**. By the middle of the month Mercury disappears below the western horizon and travels past the Sun. It reappears in the morning twilight sky at the end of the month. It can be found low to the eastern horizon, with the planet **Mars** to the right.

Venus begins the month sitting to the left of the crescent **Moon** in the western sky at sunset. As the month progress it slowly moves lower in the sky. At the end of the month it is paired up with the Moon, once again. On the 30th Venus sits above the Moon and on the 31st, the Moon is to the right of Venus.

Earth will be at *perihelion* (closest approach to the Sun) on the 5th at a distance of 147 million km from the Sun. However, this is not the reason behind our summer warmth. The seasons are caused by the Earth's axial tilt. During summer, Australia is tilted towards the Sun, causing the Sun to appear high in the sky and lengthening our days. The Sun's light also increases in intensity because it hits our part of the Earth more directly.

Mars is just visible during the last week of the month. It is slowly rising out of the glow of morning twilight, appearing low to the eastern horizon. During the last few days of the month, the faint planet **Mercury** sits to the left of Mars. **Jupiter** sits just below **Mercury** at the start of the month, low in the western sky after sunset. It quickly disappears

below the western horizon and will not be seen again until February.

Saturn is high in the north at sunrise. It moves across the sky, following the bright star **Regulus**, in *Leo, the lion*. On the morning of the 15th the **Moon** lies to the left of Saturn.

Meteors

The year starts slowly for meteor showers. The month's most active shower, the *Quadrantids*, is a strong Northern Hemisphere shower. Sometimes it is possible to spot some long-pathed meteors around the peak of the shower on the 4th.

The shower best suited for viewing in the Southern Hemisphere is the *Eta Carinids* which is active from 14th to 27th. The meteors are typically faint, with hourly rates of only 2 or 3 at the shower's peak around the 21st. The shower is centred near the faint star **Eta Carina**, which is one of the most massive stars in our Galaxy and found near the *Southern Cross*. This central point is high in the south from midnight to dawn which is the best time for meteor observing.

Stars and Constellations

Orion, the hunter, is now high in the north-eastern sky and easily located by the three bright stars that form his belt. In Australia, we recognise the belt as the base of the *Saucepan*. The handle of the Saucepan (also known as the sword of Orion) contains a spectacular nebula that is a birthplace of new stars. This cloud of glowing gas is 1,500 light-years away but is still easily visible through binoculars. Above the Saucepan is the blue-white star **Rigel** and below is the red star **Betelgeuse**.

On the western side of *Orion* is the hunter's prey *Taurus, the bull*. A small triangle depicts the face of the bull with the brightest star in the group being the red giant, **Aldebaran**. Aldebaran sits in front of a widely spread cluster of about 200 stars called the **Hyades**. *Taurus* also contains a second cluster, the **Pleiades** (or *Seven Sisters*), which is the brightest and most famous star cluster in the sky. Approximately seven stars can be seen with the naked eye but binoculars reveal many more.

The *Southern Cross* and the **Two Pointers** are low in the south-east, which means that the **Magellanic Clouds**, two of our nearest galaxies, are high in the sky. They sit opposite the *Southern Cross* and away from city lights, they appear as two fuzzy patches or 'clouds'.

International Space Station

The ISS orbits the Earth every 90 minutes at an average distance of 400 km. The ISS appears as a bright star that steadily moves across the sky. It can often be seen from

Melbourne, for example at:
6:00am - 6:06am, Thursday 22nd January.

The Station will appear rising out of the north-west near **Saturn** and will move right across the sky to set in the south-east near **Mars**.

Predictions of where and when to see the ISS can be obtained from the website: www.heavens-above.com
(<http://www.heavens-above.com>)

On this Day

1st 1801, the first asteroid, **Ceres**, was discovered by Giuseppi Piazzi (Italy).

2nd 1839, Louis Daguerre (France) takes the first photograph of the **Moon**.

2nd 1959, *Luna 1* (USSR) was launched and became the first spacecraft to flyby the **Moon** and orbit the **Sun**.

4th 1958, the first satellite, *Sputnik* (USSR), fell back into the atmosphere and disintegrated.

5th 1972, the Space Shuttle (USA) program was launched.

6th 1892, an aurora was first photographed.

7th 1610, Galileo Galilei discovered the **Jupiter's** four largest moons: **Io**, **Europa**, **Callisto** and **Ganymede**.

9th 1839, Thomas Henderson (South Africa) is the first person to measure the distance to a star other than the Sun, **Alpha Centauri**.

9th 1998, an international team including Australians announces the discovery that the expansion of the Universe is accelerating.

10th 1946, the US Army Corps bounce a radar signal off the Moon, showing that radio waves could penetrate the atmosphere.

11th 1787, Sir William Herschel discovered the first moon of **Uranus**. 1787>

22nd 1997, Lottie Williams (USA) becomes the only person known to have been hit by space junk when she is struck in the shoulder by a piece of metal, believed to have been part of a Delta II rocket.

24th 1986, *Voyager 2* (USA) made the first flyby of **Uranus** and sent back close-up pictures of the planet.

27th 1967, the *Apollo 1* (USA) fire kills crew of 3.

28th 1986, the space shuttle *Challenger* (USA) explodes after lift-off killing all seven crew members.

31st 1958, *Explorer 1*, was the first USA satellite launched.