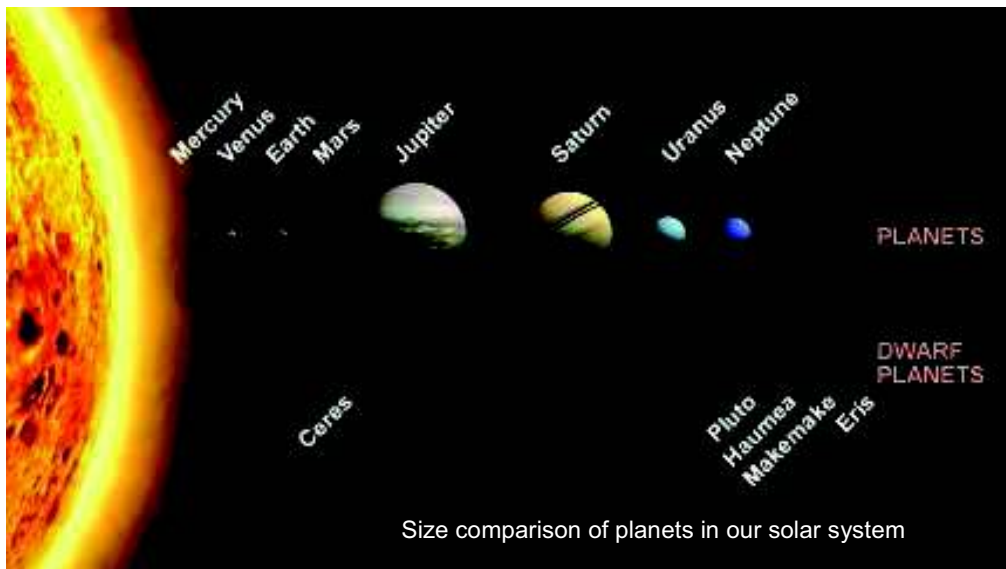




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NEWSLETTER



Size comparison of planets in our solar system

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Secretary Designate

At last we have someone to take the weight off the shoulders of our long serving and overworked Jim Barrowclough. Jonathon Palmer has volunteered, I think that's the word to use, to takeover the secretaryship and has indeed started to do just that. Welcome aboard, Jonathon. You have big shoes to fill.

Weekend Sun Astronomy Column

With the kind assistance of the Weekend Sun the Society has commenced a monthly column in that newspaper appertaining to matters astronomical. It will appear in the first issue of each month, hopefully in the printed hard copy, but if space is short it may be relegated to the Sun Live web site. As they say 'Watch this space'.

The Erin Simpson Show & Toby Hendy's Interview

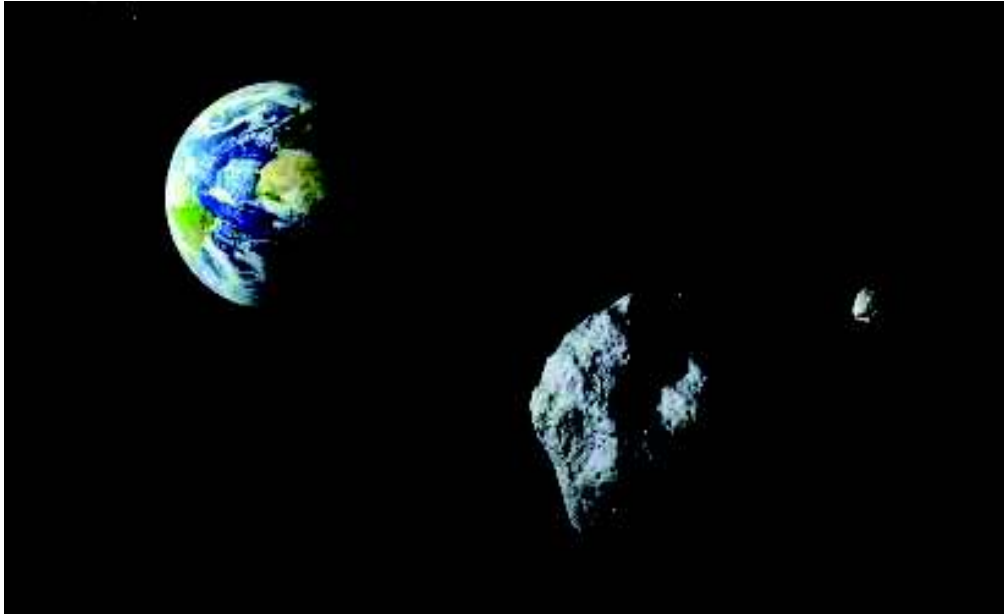
On Oct 25 last year a film crew from TV2 descended, by arrangement, on our observatory to film a segment on our budding astronaut, Toby Hendy, who had previously attended a Space Camp in the US of A. We have been advised the segment will be aired as part of 'The Erin Simpson Show', Wednesday 18th April 2012 on TV2 4.30-5pm. The show we are told is of particular interest to teenagers.

AGM in May 2012

Yes, its time once again, for our Annual General Meeting. It will take place during the public evening of Tuesday 22nd May. The official business shouldn't take up too much time. Come along - have your say.

Team Plans to Stop Asteroid From Hitting Earth

An asteroid with a one in 625 chance of striking Earth in 30 years' time has been identified by Nasa. The 140m ball of rock named 2011 AG5 is potentially on course to hit this planet on February 5, 2040.



The United Nations Action Team on near Earth objects has begun discussions about how to divert the asteroid, amid fears that the likelihood of a collision could increase over the next few years.

While the object has the potential to wipe out millions of lives if it landed on a city, it is far smaller than the 15km-wide asteroid which is believed to have led to the extinction of the dinosaurs 65 million years ago.

Scientists have only been able to observe half of 2011 AG5's orbit, and are hoping to obtain more information about the asteroid's course between 2013 and 2-16, when it will be possible to monitor it from the ground. This will allow them to decide whether action needs to be taken to attempt to alter its course.

Nasa has said options include deflecting the asteroid by attaching a probe to it and using the extra gravity this would create to steer it away from Earth. Nuclear weapons could also be used to break up the asteroid, although this would probably create a potentially deadly shower of rocks.

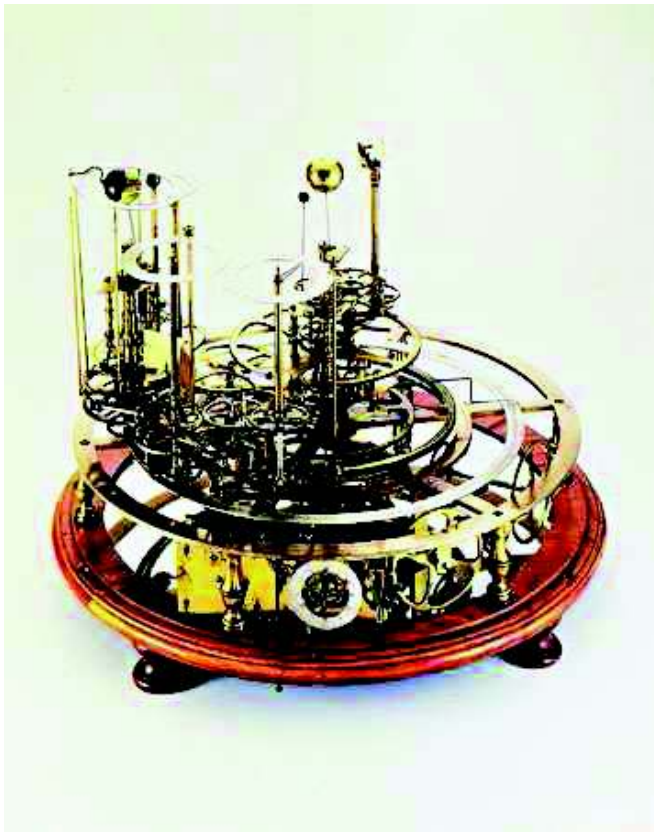
According to sky scans carried out by Nasa, there are around 19,000 "mid-sized" asteroids of between 100m and 1005m wide within 193 million kilometres of Earth.

Orreries

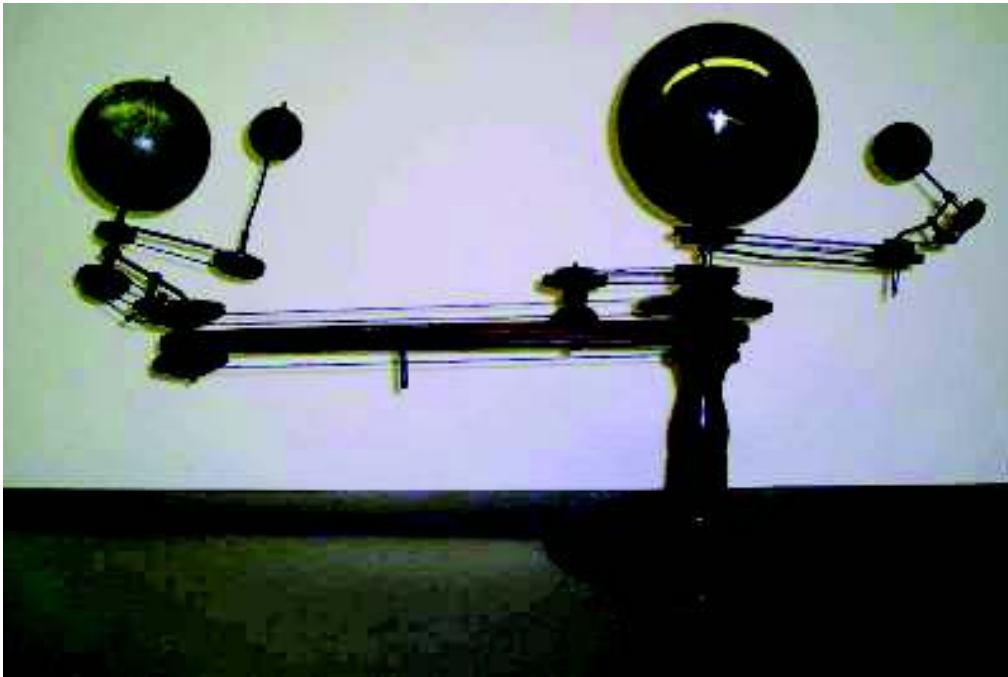
Named for the Earl of Orrery who, at the beginning of the 18th century in Ireland, had one made for his personal collection of scientific apparatus. Orreries are three-dimensional models of how celestial bodies orbit the Sun in our solar system.

They may be exceedingly complex or very simple, finished with precious stones and gold, or made from wood and paper.

They featured in the collector's cabinets of the 18th and 19th Century. Some were made for Kings, heads of State and wealthy patrons. Itinerant philosophers carrying orreries travelled through the educated and enlightened world of the time.



An orrery is a mechanical device that illustrates the relative positions and motions of the planets and moons in the Solar System in a heliocentric model. Though the Greeks had working planetaria, the first orrery that was a planetarium of the modern era was produced in 1704, and one was presented to the Earl of Orrery — whence the name came. They are typically driven by a clockwork mechanism with a globe representing the Sun at the centre, and with a planet at the end of each of the arms.

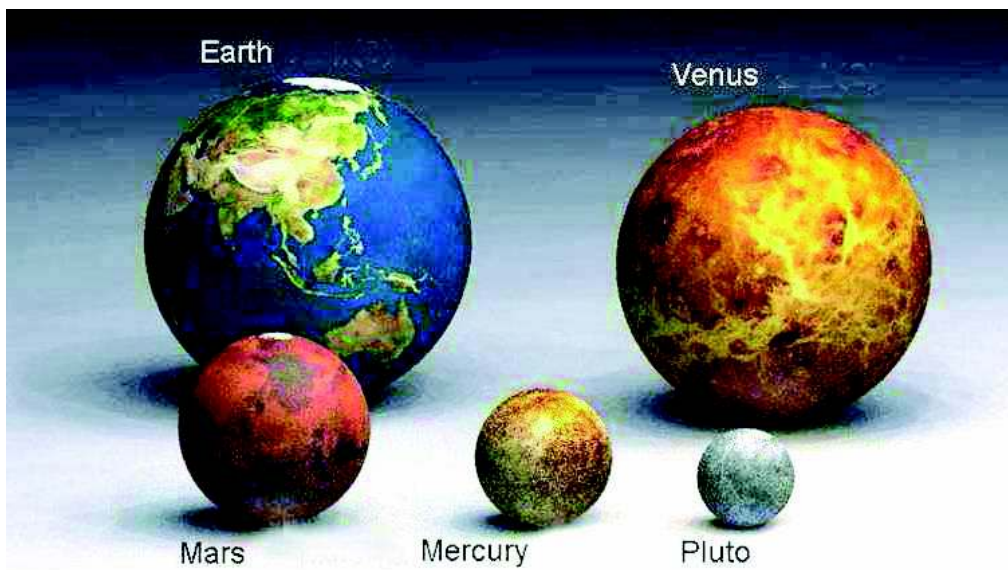
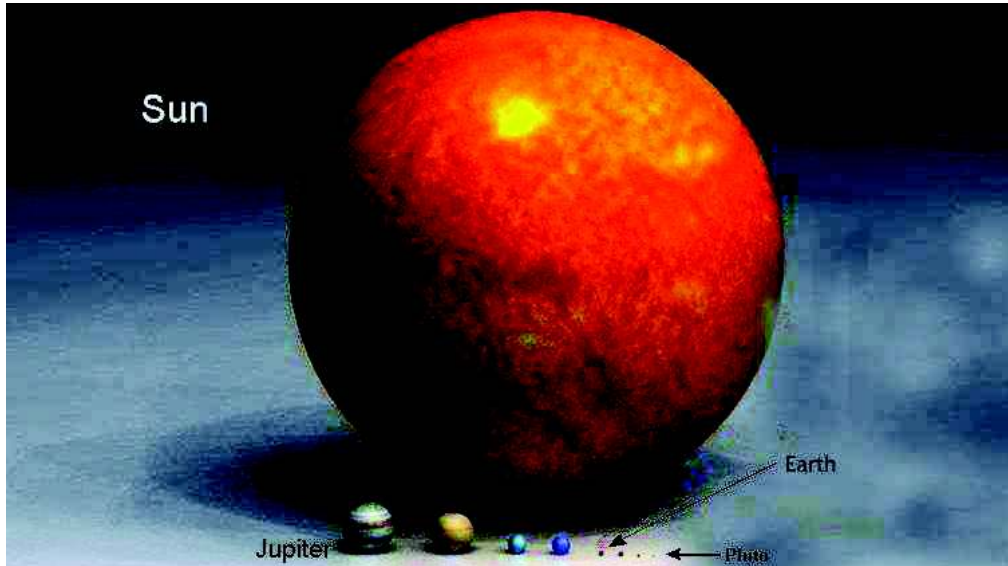


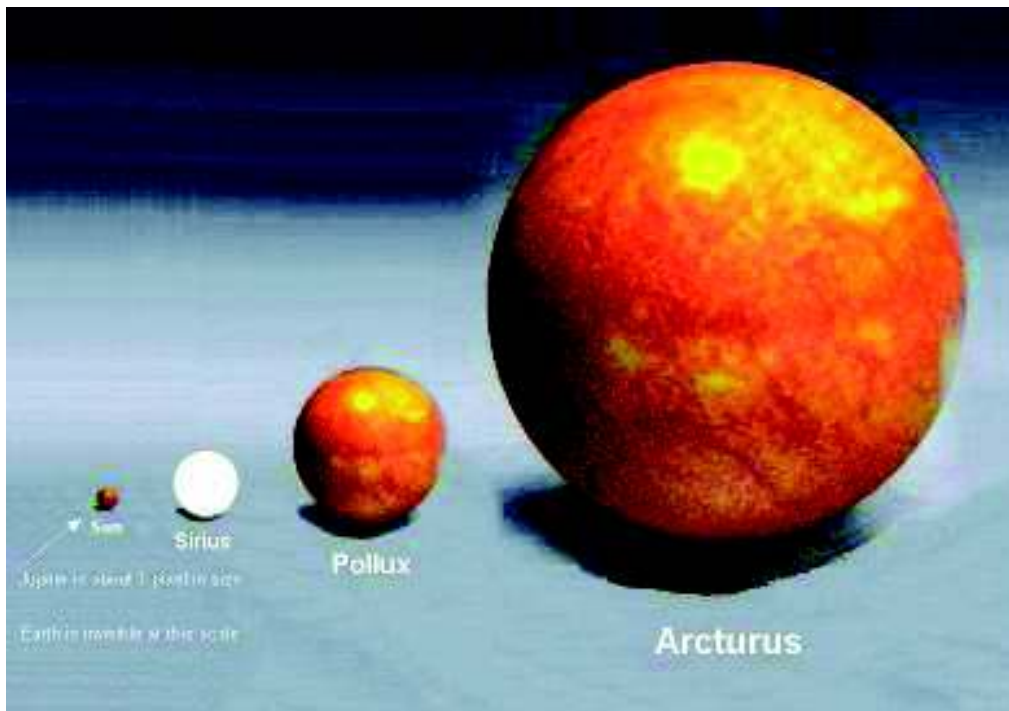
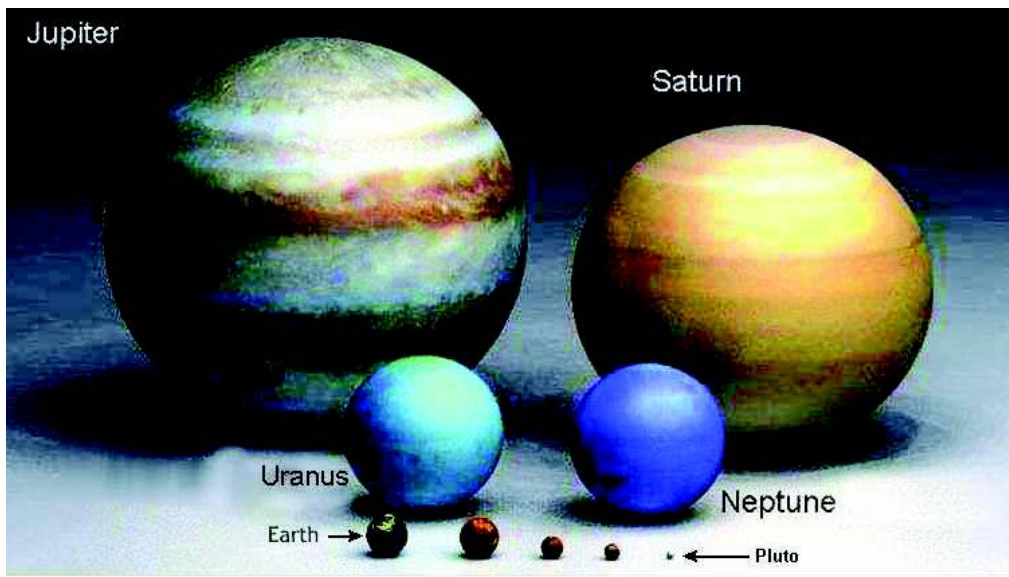
All orreries are planetariums or planetaria (alternative plural). The term orrery has only existed since 1714. A grand orrery is one that includes the outer planets known at the time of its construction. The word planetarium, (plural always planetariums) has been captured and now usually refers to hemispherical theatres in which images of the night sky are projected onto an overhead surface. Planetariums (orreries) can range widely in size from hand-held to room-sized. An orrery is used to demonstrate the motion of the planets, while a mechanical device used to predict eclipses and transits is called an astrarium.

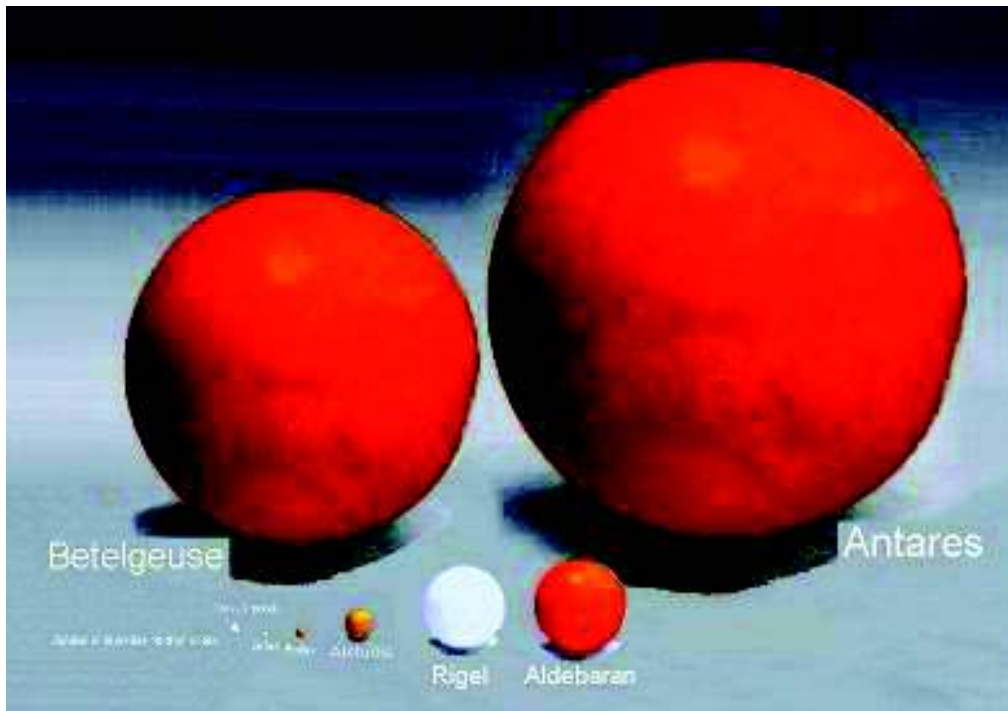
An orrery should properly include the sun, earth and the (earth's) moon (plus optionally other planets). A model that only includes the earth, its moon and the sun is called a tellurion, and one that only includes the earth and moon a lunarium. A jovilabe is a model of Jupiter and its moons.

Size Comparison of the Planets

You might know how big the Earth is compared to other planets in our solar system. But the earth is just like small sand particle in the desert compared to the giant stars such as Pollux, Arcturus, Rigel, Aldebaran, Betelgeuse and Antares.







Type	Name	Equatorial diameter[a]	Mass[a]	Orbital radius (AU)	Orbital period (years)[a]	Inclination to Sun's equator (°)	Rotation period (days)	Confirmed moons[c]	Rings	Atmosphere
Terrestrial planet	Mercury	0.382	0.06	0.39	0.24	3.38	58.64	0	no	minimal
	Venus	0.949	0.82	0.72	0.62	3.86	-243.02	0	no	CO2, N2
	Earth[b]	1	1	1	1	7.25	1	1	no	N2, O2
	Mars	0.532	0.11	1.52	1.88	5.65	1.03	2	no	CO2, N2
Gas giant	Jupiter	11.209	317.8	5.2	11.86	6.09	0.41	66	yes	H2, He
	Saturn	9.449	95.2	9.54	29.46	5.51	0.43	62	yes	H2, He
	Uranus	4.007	14.6	19.22	84.01	6.48	-0.72	27	yes	H2, He
	Neptune	3.883	17.2	30.06	164.8	6.43	0.67	13	yes	H2, He
Dwarf planet	Ceres	0.08	0.0002	2.5–3.0	4.6	10.59	0.38	0	no	none
	Pluto	0.18	0.0022	29.7–49.3	248.09	17.14	-6.39	4	no	temporary
	Haumea	0.15×0.12	0.0007	35.2–51.5	282.76	28.19	0.16	2	?	?
	Makemake	~0.12	0.0007	38.5–53.1	309.88	28.96	?	0	?	? [d]
	Eris	0.19	0.0025	37.8–97.6	~557	44.19	~0.3	1	?	? [d]

[a] Measured relative to the Earth.

[b] See Earth article for absolute values.

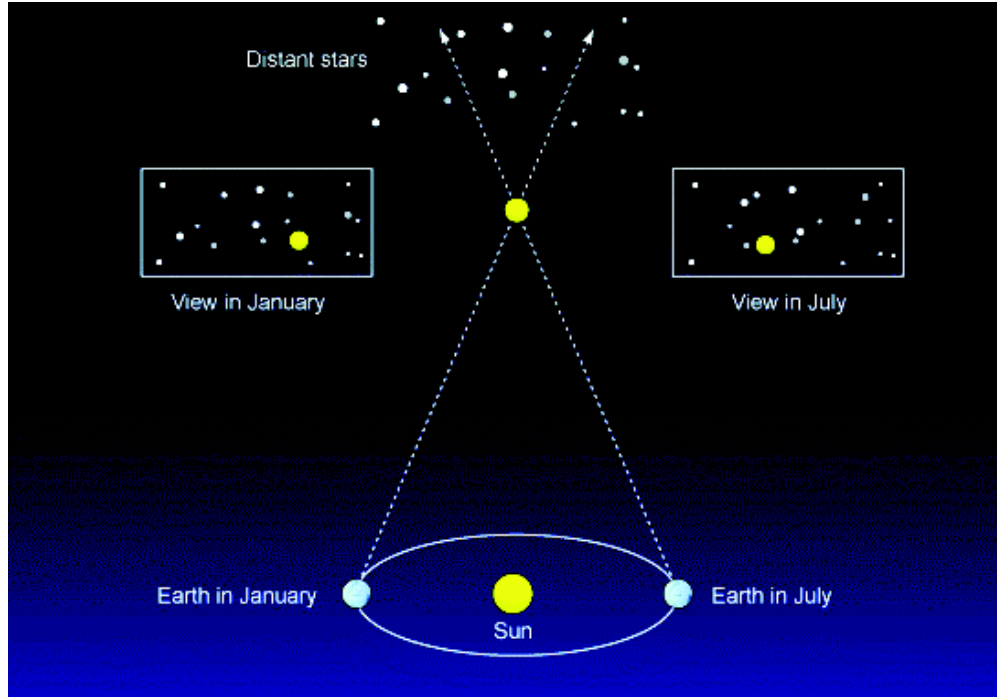
[c] Jupiter has the most verified satellites in the Solar System.

[d] Like Pluto, when near perihelion, a temporary atmosphere is suspected.

There are probably over one hundred trans-Neptunian objects that qualify as dwarf planets under the IAU's recent definition.

Measuring Star Distance

One of the most common questions we are asked at Stardome is how far it is to the stars... followed quickly by "how do you know?"



There are several methods, but one usually used to find the distance to relatively nearby stars using parallax - the effect seen when you hold a pencil still in front of your face and close one eye, and then swap eyes, it will seem as though the pencil has moved.

For stars, the two measurement points need to be as far apart as possible. This is often done by taking one measurement, then waiting six months until the Earth travels half way around the Sun (a distance we know is almost 300,000,000km) and using trigonometry to calculate the distance.

Earth orbiting telescopes like the Hubble Space Telescope have helped to make these vast measurements more accurate.

The closest star to our Sun is 4.24 light years away, or 39,900,000,000,000 kilometres away, while the brightest, Sirius, is 8.6 light years (81 trillion kilometres).

So while we know where they are, we aren't much closer to actually ever going there - at least for now!

Back Page

The Tauranga Astronomical Society holds a monthly meeting on the fourth Tuesday of each month at the Otumoetai Sport and Recreation Club, Fergusson Park, Tilby Dr, Matua. The meeting begins at 7.30pm and all are welcome. In addition the hall and observatory is open on the second Tuesday each month for the people of Tauranga, usually with an “introduction to astronomy” talk and a visit to the observatory to see the moon and a planet if possible.

The Society asks adults for a donation of \$5.00 per meeting unless membership of the society is taken up. Children are admitted free. Current membership fees are below and may be paid to the treasurer on any club night.

Full Time Student	\$15
Ordinary Membership	\$20
Family	\$30

Meetings consist of a presentation of roughly one hour either by a society member or an invited guest on an astronomical subject. After light refreshments, this is followed by viewing, through one of the society’s telescopes, including our new Meade, weather permitting, or the screening of an astronomical DVD.

The Tauranga Astronomical Society Newsletter is published quarterly. Our editor welcomes contributions from members provided they are on an Astronomy related subject and are original. Articles for the newsletter may be submitted electronically by email to:
TAS.Secretary@gmail.com

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Sources:

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