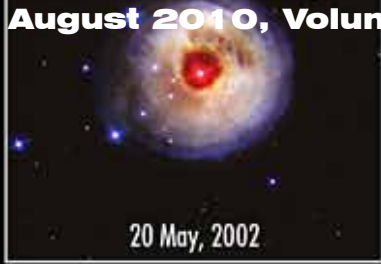


# Newsletter

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## WELLINGTON ASTRONOMICAL SOCIETY

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## THIS MONTH'S MEETING FEATURES:

**"Breaking The Firmament:  
Variable Stars,  
the Expanding  
Universe  
and You"**

### Dr. Aline Homes Variable Stars South

Wed 4th August at 7:30pm  
at Carter Observatory

Variable stars have helped shape our modern view of the universe. Variability takes a number of forms and some of these are discussed. Recent advances in equipment have put the observation of subtle variability within the reach of the serious amateur but worthwhile contributions can still be made with only the most basic of tools. Some preliminary results from two such projects will be presented.

Wellington  
Astronomical  
Society



## WAS Special general Meeting Notice. Constitutional change

A Special General Meeting will be held at 7:30 pm on Wednesday 4th August at Carter Observatory before the normal monthly meeting scheduled for that night.

The following change to the Quorum requirements for General Meetings has been moved:

### Current wording:

*Section 16 (7) The quorum for all General Meetings of the Society shall be 25 Ordinary, Associate, Family or Life Members present in person. No business shall be transacted at any General Meeting unless a quorum is present at the commencement of such meeting. If within 30 minutes from the time appointed for the holding of the meeting a quorum is not present, the meeting if convened upon the requisition of the members shall be dissolved.*

*In any other case, the meeting may be adjourned by the chairperson to such time and place as he or she may appoint.*

### Proposed wording:

*Section 16 (7) The quorum for all General Meetings of the Society shall be calculated from the total number of all Ordinary, Associate, Family or Life Members of the Society. This quorum will be either 25% of the total number or 25 such Members, whichever is the lesser amount. No business shall be transacted at any General Meeting unless a quorum is present at the commencement of such meeting. If within 30 minutes from the time appointed for the holding of the meeting a quorum is not present, then*

*the meeting shall stand adjourned to the next scheduled normal meeting date, place, and time, and if at the adjourned meeting a quorum is not present within 30 minutes from the time appointed for the meeting the number of persons present and entitled to vote at the expiration of that time shall constitute a quorum.*

### Explanation:

When the number 25 was originally put in the constitution we had about 100 members. In 2008 we did not have 25 members available at the November meeting and the AGM had to be postponed to December. The current paid up membership is about 70 so a quorum of 25% would be about 17. This approach to quorum definition would minimise the risk of failing to meet quorum if membership or attendance numbers should fall again and defines a method to ensure a quorum at the next meeting.

The proposed adjournment sub clause constrains opportunity for a hostile takeover to take place. It is suggested that discussion be allowed about the actual percentage and number etc and if someone wants to propose amendment(s) to this motion then that should be in order.

If a proposed amendment is adopted then the new substantive motion should be put to a separate vote and if the amendment fails then the original motion should be put to the vote or other amendments be considered.

This is being moved as an SGM rather than at the AGM so that it can be in effect by the next AGM.

It is also moved that the Registered Office be amended:

### Current wording:

*Section 20. (1) The registered office of the Society shall be situated at Science House, Turnbull Street, Thorndon, WELLINGTON, or such place as the Council shall decide from time to time.*

### Proposed wording:

*Section 20. (1) The registered office of the Society shall be situated at Carter Observatory Botanic Gardens Upland Road WELLINGTON, or such place as the Council shall decide from time to time.*

### Explanation:

As we no longer meet at RSNZ it seems more appropriate to have Carter as our registered street address where we have a number of members on staff.

Proposed: *John Talbot*

Seconded: *Gordon Hudson*

Dated: 30-May-2010

## CARTER VOLUNTEERS

Remember we are now based at the New Carter Observatory and at the first meeting at Carter I called for volunteers to assist in the running of the very famous Thomas Cooke Refractor at Carter on Saturday evenings. Carter will be open to the public every Saturday evening and the Wellington Astronomical Society will be assisting in running this telescope and maybe another as well.

The response for volunteers was very encouraging and we have 15 names down as volunteers. Claire from Carter will be in



touch by e-mail with each of you as to how the roster will work. Remember we are getting the full use of these facilities for our meetings once a month for nothing.

When we were at the Royal Society Rooms we were paying up to \$1000 per year. So any contribution you make will be a huge saving for the society. So think of it as your contribution to help the society to save some money.

Royal Astronomical Society of  
New Zealand Email Newsletter  
Number 116, 22 July 2010  
[www.rasnz.org.nz/](http://www.rasnz.org.nz/)

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*If you would like a copy of the newsletter please ask John Homes or John Talbot to forward by email*





## PRESIDENT'S REPORT FOR JULY

Murray Forbes talk to on the 'Power of the Sun' was very good and educational as we learnt what powers the Sun and how. Thanks Murray for a great presentation.

The first meeting of the Research Group went very well with John Talbot advising us as to what was coming up and how to go about observing the events. Although we only had a fairly small number of 10 members this was a very good start. We will narrow the focus for each meeting in the future so we can concentrate on particular events.

On Thursday the 15th July we had Heather Couper and Nigel Henbest as guest speakers at Carter Observatory and this was very well attended with 100 people turning up for this amazing presentation. The talk was called 'Cosmic Quest' and they just about covered everything from the Big Bang through the ages and the controversy of the Earth at the Centre of the Solar system to Comets and how big is the Cosmos. The presentation was given by both of them passing from one to the other as they each

spoke on their own specialist subject. Great presentation.

The monthly Night Sky at the Pauatahanui observatory had to be canceled because of the ground conditions at the site.

However Chris Mongatti still went there with a group of students and another couple turned up as well and the sky was clear. But Chris said it was very cold and very wet has the rain stopped the day before but it is gumboot weather out there.

The next observing at Pauatahanui will be on August 14. This is 4 days after New Moon so there will be a crescent moon in the sky which will be ideal for observers to look at.

The Grazing Occultation we were to attend on the 21st July was a non event because of total cloud cover. John Talbot suggested we all stay home to see if the event was visible as it was not worth while traveling when the weather was getting worse. Nobody had a clear sky.

The Stellar Cruxword that I get from Northland is on hold at present until I get the next versions from them.

**Remember the Research Group meeting starts at 6.30pm on Wednesday 4 th August.**

The Public Night program on the Saturdays is running very well and thanks to those who have given up their Saturday Nights to help Ross man the Thomas Cooke Telescope.

Members are now able to park at the Skyline carpark on the evenings of our meeting and in fact any evening but remember that during the day up to 6pm it is pay and display but after 6pm the parking is free.

The September meeting will be about Solar Eclipses especially the recent eclipse on July 11th that was visible through the Cook Islands or was it visible.

## July Crossword answers

**Across** 1. DINOSAURS,—an asteroid may have done them in; 5. PELE,—volcano on Io; 6. AZIMUTH,—horizontal angle around the sky; 7. VIRGO,—Constellation with Spica; 10. SMC,—satellite galaxy to the Milky Way; 11. ZODIAC,—also a small inflated rubber boat; 13. NORTH,—thorn (anagram); 17. TAURUS,—You don't want this constellation in a China shop; 18. VENUS,—a very cloudy planet; 19. HALO,—angels and galaxies both have one; 20. IO,—One of the Galilean satellites; 21. LMC,—could be mistaken for a cloud; 24. REDGLANT,—A type of star whose core hydrogen has been used up; 25. DAY,—24 hours; 26. HOUR,—unit of time; 28. DENEb,—alpha Cygnus; 31. EQUINOX,—23rd September; 32. ASTEROID,—road site (anagram); 36. MESSIER,—a catalogue; 39. VEGA,—alpha Lyr; 40. LOKI,—volcano on Io; 41. FUSION,—process that powers stars; 45. CLUSTER,—An open or globular ...; 46. NADIR,—opposite to zenith; 48. DARWIN,—proposed theory of evolution; 51. SCORPIUS,—constellation with a sting; 52. SCHMIDT,—type of telescope; 53. REDPLANET,—Mars;

**Down** 1. DEWCAP,—used to prevent moisture condensing on a telescope; 2. NOVA,—a new star; 3. UFO,—flying saucer; 4. KIWI,—New Zealander; 6. ATOM,—smallest indivisible piece of an element; 8. GIOTTO,—Name of ESA spacecraft that intercepted Halley's comet; 9. SOHO,—satellite observatory studying the Sun; 12. ANDROMEDA,—Largest galaxy in the Local Group; 14. BINARY,—a double star; 15. EARTH,—Tellus; 16. POLARIS,—The North Star; 22. CANOPUS,—Antabi; 23. ION,—an arrested atom; 25. DIFFRACTION,—Bending of light around the edge of an obstruction; 27. REDDWARF,—Main Sequence stars cooler & smaller than the Sun, also the name of a cult sci fi comedy series; 29. ECLIPTIC,—plane of Earth's orbit around the Sun; 30. MASS,—I weight 6 times less on the Moon, but still have the same ???; 33. BAR,—some spiral galaxies have one; 34. LATITUDE,—allow some leeway; 35. LEO,—A lion circling the Earth; 37. ECLIPSE,—to block light from another object; 38. RUTHCRISP,—Carter Observatory's public telescope; 42. ICE,—frozen liquid; 43. CEPHEID,—A type of pulsating variable star, often used for distance measurements; 44. HELIUM,—second most common element; 47. GAS,—solid, liquid or ...; 49. NOON,—mid-day; 50. HST,—an orbiting telescope;

## ASTRONOMY EVENTS 2010

August

August 2010 – Triple conjunction with moon. The four planets are still visible mid August, and are joined by the Moon on the 13th. Planetary conjunctions:

8 August: Venus closest to Saturn

8 August: Venus closest to Mars.



October

International Space Week

October 4 – 10

Astronomy Day – 16 October

–Astronomy Week 11 – 17

December

December 21st – Total Lunar Eclipse – much of New Zealand and the Queensland coast will see the Moon rise totally eclipsed.

Times of events:

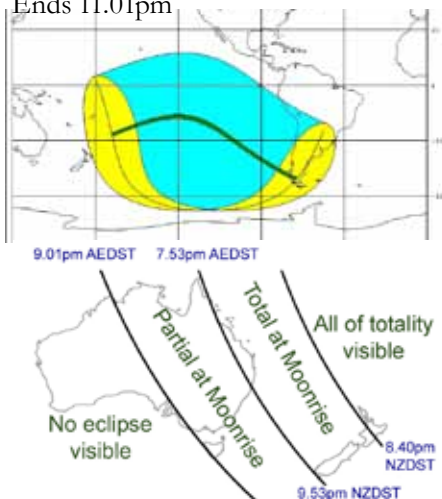
Phase NZDST Starts 7.32pm

Totality starts 8.40pm

Maximum 9.18pm

Totality ends 9.53pm

Ends 11.01pm



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## COUNCIL OF THE WELLINGTON ASTRONOMICAL SOCIETY INC.

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## Building a Backyard Observatory: Part Three

*John Field*

Last month I explained the process of how the foundations, pier and floor of the observatory were installed. This month I will go through the placement of the walls, dome and installation of telescope. Originally I was intending to cover polar alignment but, in hindsight, I think this topic requires an article on its own.

On the Sunday following the installation of the floor the weather forecast was for a sunny day so I organised the family to assist me in erecting the observatory. On the day it rained during the morning but the afternoon was lovely. The observatory is a fiberglass kit set consisting of 6 wall sections with 1 being the door (very handy that!), two with instrument bays and the final sections plain. The dome is made up from two hemispheres with a lower hinged shutter and an upper section that slides back over the dome. The instructions that came with dome were easy to understand and by reviewing the demonstration on the Sirius Dome website it looked easy to assemble. Prior to installation Gordon Hudson suggested that all the attachments should be stainless steel, this would ensure that corrosion is minimized and if we either move it should be easy to disassemble. Although this is an additional cost the long term advantage of using stainless steel, and quality materials throughout the construction will pay off over the long term.

The wall sections were placed onto the floor, leveled, and loosely bolted them together at to form a guide of the wall shape. In between each section is a foam strip that forms a watertight seal and protects the fiberglass. I decided to put the door in the leeward side of the dome and the two instrument bays facing south towards the garage for the eventual running of power and other cables to the garage and house. The dome was then assembled on the ground near to the observatory and the roll off shutter put



on along with the rope for opening and closing the shutter. Once complete the dome was lifted on to the walls.

Due to its fiberglass construction the dome was easily lifted by the four of us on to the wall. Once on the walls were adjusted to allow free running, if needed, shims were placed under sections to allow even and free running of the dome. Following this we tightened all the wall units.



A final check for free running was done, there is one lip which occasionally catches, and then walls were bolted to the floor. Internal fittings were installed and by four in the afternoon the observatory was complete! The following evening I ran waterproof silicon sealant along the wall joints and around the base. During the wild weather we have recently had there have two small leaks around the dome floor that I will reseal when the weather improves, but otherwise the dome has been completely dry. I am very impressed with the design and ease of installation and would recommend these domes happily.



With the dome complete I installed the mount and telescope on the pier and the next challenge, which I will cover next month, is to polar align the scope.

## The region around Artistoteles and Eudoxus.



*John Field*

This Image shows the northern region of the Moon around the the craters Aristoteles, the largest crate (87km)r, in this image and below it is the crater Eudoxus (67km). Both caters terraced walls an central peaks with rilles in the crater floors. Debris can be seen radiated away around Aristoteles. On the right (east) of Aristoteles is the crater Mitchell (30Km). The large flat area to the north is the Mare Frigoris (Sea of Cold) in which can be ssen the crater Galle (21km) along with a number of smaller craters and wrinkle ridges. To the left of Aristoteles is the flooded crater Egede (37km) which forms a low ring. Below Eudoxus are the peaks of the Montes Caucasus

(Caucasus Mountains) the peaks of which may reach 6km above the surrounding region. Or final feature, at far right, is the crater Bürg (40km) which sits in the Lacus Mortis (Lake of Death) a 150 km wide feature reseblming a flooded crater. Terraces and a central peak can be seen in Bürg and as well as a number ridges and and faults in the surrounding lake.

This image was taken with a Meade LPI camera at Prime Focuse of a Takahashi TSC-225 f-12 on the 18th of July 2010 by John Field and is a composite of 34 images stacked and combined in Meade Auto-Suite.





## The Evening Sky in August 2010

Venus, the brilliant 'evening star' (planet really), appears in the northwest soon after sunset. (You can see it in daylight, if you know where to look.) It sets in the dark mid-evening sky, an eye-catching object bright enough to cast shadows in dark places. In a telescope it looks like the moon at first quarter, but pure white. Venus is the same size as the earth and around 110 million km from us at mid-month.

At the beginning of August Mars and Saturn are close together above Venus. Mars, on the left, is orange; Saturn cream-coloured. Well below Venus is Mercury, setting before 8 pm. Mercury keeps about the same distance from Venus till mid month then sinks down into the twilight as it passes us on the inside lane. Saturn slips steadily down the sky, too, passing Venus around the 10th. Mars falls below Venus after the 20th.

This is all line-of-sight, of course. Mercury is catching up on us from the far side of the sun, then passing between us and the sun. It is 94 million km away at closest. Venus is also catching up on us, but more slowly. It is at its maximum swing out from the sun around the 20th. Mars and Saturn are being left behind on the far side of the sun. Mars is 310 million km from us at mid month; Saturn is 1550 million km away.

Jupiter (not shown) rises due east about 10 pm at the beginning of the month and is up around 8 pm by the end. It is the second brightest 'star' after Venus and shines with a steady golden light. Binoculars will show the disk of Jupiter and perhaps one or two of its bright moons. A small telescope easily shows all four moons and the parallel stripes in Jupiter's clouds.

Canopus, the second brightest star, is near the south skyline at dusk. It swings upward into the southeast sky through the morning hours. On the opposite horizon is Vega, one of the brightest northern stars. It is due north in mid-evening and sets around midnight.

Midway down the southwest sky are 'The Pointers' – Beta and Alpha Centauri. They point down and rightward to Crux the Southern Cross. Alpha Centauri is the third brightest star and the closest of the naked eye stars, 4.3 light years\* away. Beta Centauri, like most of the stars in Crux, is a blue-giant star hundreds of light years away and thousands of times brighter than the sun.

Arcturus, in the northwest at dusk, is the fourth brightest star and the brightest in the northern hemisphere. It is 120 times the sun's brightness and 37 light years away. When low in the sky Arcturus twinkles red and green as the air splits up its orange light. It sets in the northwest around 10 pm.

Just north of overhead the orange star Antares marks the heart of the Scorpion. The Scorpion's tail hooks around the zenith like a back-to-front question mark. Antares and the tail make the 'fish-hook of Maui' in Maori star lore. Antares is a red giant star: 600 light years away and 19 000 times brighter than the sun. Below or right of the Scorpion's tail is 'the teapot' made by the brightest stars of Sagittarius. It is upside down in our southern hemisphere view.

The Milky Way is brightest and broadest overhead in Scorpius and Sagittarius. In a dark sky it can be traced down past the Pointers and Crux into the southwest. To the northeast it passes Altair, meeting the skyline right of Vega. The Milky Way is our edgewise view of the

galaxy, the pancake of billions of stars of which the sun is just one. The thick hub of the galaxy, 30 000 light years away, is in Sagittarius. The actual centre is hidden by dust clouds in space. The nearer dust clouds appear as gaps and slots in the Milky Way. Binoculars show many clusters of stars and some glowing gas clouds in the Milky Way.

The Large and Small Clouds of Magellan LMC and SMC look like two misty patches of light low in the south, easily seen by eye on a dark moonless night. They are galaxies like our Milky Way but much smaller. The LMC is about 160 000 light years away; the SMC about 200 000 light years away.

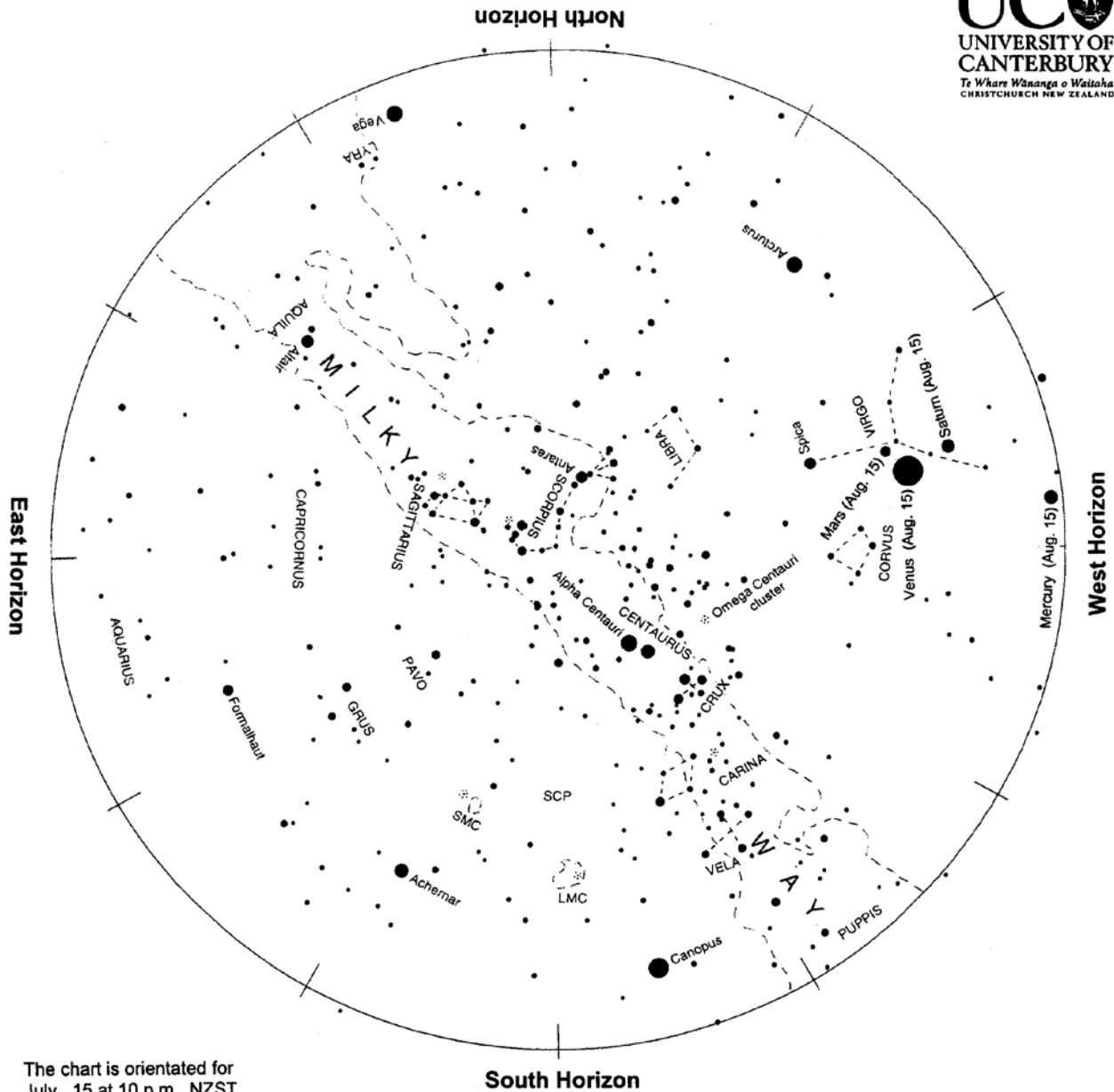
*\*A light year (ly.) is the distance that light travels in one year: nearly 10 million million km or 10<sup>13</sup> km. Sunlight takes eight minutes to get here; moonlight about one second. Sunlight reaches Neptune, the outermost major planet, in four hours. It takes four years to reach the nearest star, Alpha Centauri.*

Notes by Alan Gilmore, University of Canterbury's Mt John Observatory, P.O. Box 56, Lake Tekapo 7945, New Zealand. [www.canterbury.ac.nz](http://www.canterbury.ac.nz)

### OBSERVING AT THOMAS KING

All public observing evenings will be held at the Thomas King Observatory run by our Observatory Director Ross Powell. from 7:30.

**Ring Ross on 389 9765. to check if there are public observing evenings on most FRIDAYS, starting as soon as it gets dark depending on the weather and Ross's availability.**



The chart is orientated for  
 July 15 at 10 p.m. NZST  
 Aug. 1 at 9 p.m. "  
 Aug. 15 at 8 p.m. "  
 Sep. 1 at 7 p.m. "

### Evening sky in August 2010

To use the chart, hold it up to the sky. Turn the chart so the direction you are looking is at the bottom of the chart. If you are looking to the south then have 'South horizon' at the lower edge. As the earth turns the sky appears to rotate clockwise around the south celestial pole (SCP on the chart). Stars rise in the east and set in the west, just like the sun. The sky makes a small extra clockwise rotation each night as we orbit the sun.

Venus, the brilliant silver 'evening star', appears in the west at sunset. Nearby are Mars, Saturn and Mercury. Orange Arcturus in the northwest often twinkles red and green. The Pointers and Crux, the Southern Cross, are midway down the southwest sky. Canopus is low in the south. The Milky Way spans the sky from northeast to southwest with its broad centre overhead. The Scorpion's tail curls around the zenith. Vega crosses the northern sky, staying low. Jupiter rises due east in the later evening, the second brightest 'star' after Venus.

Chart produced by Guide 8 software; [www.projectpluto.com](http://www.projectpluto.com). Labels and text added by Alan Gilmore, Mt John Observatory of the University of Canterbury, P.O. Box 56, Lake Tekapo 7945, New Zealand. [www.canterbury.ac.nz](http://www.canterbury.ac.nz)



## Cross Word with Murray Forbes



Full Moon in Wellington (Haritina, July 2010)

**Across** 3. A type of pulsating variable star, often used for distance measurements; 5. a catalogue; 8. road site (anagram); 11. Antab; 13. allow some leeway; 18. smallest indivisible piece of a element; 23. A type of star whose core hydrogen has been used up.; 26. A lion circling the Earth; 27. a very cloudy planet; 28. used to prevent moisture condensing on a telescope; 29. process that powers stars; 31. volcano on Io; 33. alpha Lyr; 35. type of telescope; 37. second most common element; 38. I weight 6 times less on the Moon, but still have the same ???; 39. One of the Galilean satellites; 40. unit of time; 43. A satellite of Uranus, a character in Othello; 44. flying saucer; 46. Mars; 47. Name of ESA spacecraft that intercepted Halley's comet; 50. NEO (abbrev); 51. An open or globular ...; 52. Latitude and ?

**Down** 1. constellation with a sting; 2. Constellation with Spica; 4. apparent shift of an

object against a distant background due to the observer's movement; 6. satellite galaxy to the Milky Way; 7. solid, liquid or ...; 9. an arrested atom; 10. Carter Observatory's public telescope; 12. a new star; 14. Tellus; 15. volcano on Io; 16. also a small inflated rubber boat; 17. some spiral galaxies have one; 19. an orbiting telescope; 20. to block light from another object; 21. mid-day; 22. an asteroid may have done them in; 24. plane of Earth's orbit around the Sun; 25. opposite to zenith; 30. thorn (anagram); 32. 23rd September; 34. You don't want this constellation in a China shop; 36. a shepberd satellite of Saturn's F ring, also the first women in Greek mythology; 39. frozen liquid; 40. angels and galaxies both have one; 41. astronaut; 42. The North Star; 43. alpha Cygnus; 45. satellite observatory studying the Sun; 48. 24 hours; 49. could be mistaken for a cloud;