

# Newsletter

June 2010, Volume 37, Number 5, ISSN 01 147706, [www.was.org](http://www.was.org)

## WELLINGTON ASTRONOMICAL SOCIETY

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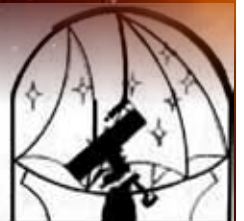
CROSS WORD WITH

MURRAY FORBES-8

**THIS  
MONTH'S  
MEETING  
FEATURES:  
Planetarium  
presentation  
with John Field**

**06-2010**

Wellington  
Astronomical  
Society





## PRESIDENT'S REPORT FOR MAY

The May talk at the new Carter Observatory was presented by John Field and he talked about his astrophotography and how easy it is to get started in the photography.

John showed us his results and just using modest equipment this inspired some people to give it a go.

The June talk at the next WAS meeting at Carter will be a Planetarium Presentation by John Field so it is your chance to see the new digital planetarium in operation so don't miss this event.

Unfortunately the weather was not kind to us for the Pauatahanui Observing on the 15th May in fact it was raining, so we had to cancel the event although it did partially clear about 8:00 PM but not enough to go out to observe.

On Saturday June 26th there will be a Partial Lunar Eclipse it is planned to view this event from Tawa College with Chris and his students. As the maximum coverage

is not until 11pm there will be a long wait however we will have access to one of the rooms at the college to have coffee and a sit down. Check our web site for more details.

I am curious to know what people thought of the new Stellar Cruxword or was it too difficult to do.

The volunteers for the Carter Observatory Saturday evenings appears to be going very well apart from the weather so Saturday the 15th was cancelled for observing but Carter was still open for Planetarium shows and visit the displays.

The Ruth Crisp (Boller & Chivens) telescope has had the optics cleaned the dome has been repaired and is ready for use.

On June 4th there is an Occultation of a 15 mag star by Pluto which is 14 mag therefore to observe this event you will need a 12" or larger telescope. It is planned for a small group of us to use the Carter Observatory 16" Boller & Chivens

to record the event. However we are struggling to come up with a Video recorder that can record faint enough to see Pluto.

I have just had my own 12" telescope's mirror aluminized and ready to install but as I am about to go to Whangarei for a week it will have to wait till I return.

The filters the society ordered from SBIG for the ST7 camera have not arrived but should be here in the next couple of weeks.

John Field is very busy building his own observatory in fact he was about to install his new telescope last weekend. I am hoping to have some photos of John's new set up.

By the time you read this newsletter the RASNZ conference in Dunedin will be underway and unfortunately I will not be able to attend as I will have only just got back from Northland.

## 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.

## May Crossword answers

**Across** 1. VENUS—a very cloudy planet 5. DENE—alpha Cygnus 6. MASS—I weight 6 times less on the Moon, but still have the same ??? 8. SIDEREAL—star time 12. AZIMUTH—horizontal angle around the sky 15. LOKI—volcano on Io 16. ION—an arrested atom 17. HELIUM—second most common element 18. HST—an orbiting telescope 20. LMC—could be mistaken for a cloud 21. REDDWARF—Main Sequence stars cooler & smaller than the Sun, also the name of a cult. szifj comedy series 24. IO—One of the Galilean satellites 25. BINARY—a double star 26. SHEPHERD—astronaut 27. CANOPUS—Antabi 29. NORTH—thorn (anagram) 31. POLARIS—The North Star 32. ECLIPSE—to block light from another object 34. LEO—A lion circling the Earth 36. DINOSAURS—an asteroid may have done them in 39. REDPLANET—Mars 41. ECLIPTIC—plane of Earth's orbit around the Sun 43. EARTH—Tellus 45. NOVA—a new star 47. REFLECTOR—type of telescope 48. BAR—some spiral galaxies have one

**Down** 1. VIRGO—Constellation with Spica 2. MESSIER—a catalogue 3. VEGA—alpha Lyr 4. ASTEROID—road site (anagram) 7. SCHMIDT—type of telescope 9. DAY—24 hours 10. LONGITUDE—Latitude and ? 11. ATOM—smallest indivisible piece of a element 13. ZODIAC—also a small inflated rubber boat 14. UFO—flying saucer 19. SMC—satellite galaxy to the Milky Way 20. LATITUDE—allow some leeway 21. RUTHCRISP—Carter Observatory's public telescope 22. FUSION—process that powers stars 23. TAURUS—You don't want this constellation in a China shop 26. SOHO—satellite observatory studying the Sun 28. ANDROMEDA—Largest galaxy in the Local Group 30. HALO—angels and galaxies both have one 33. CLUSTER—An open or globular ... 35. EQUINOX—23rd September 36. DARWIN—proposed theory of evolution 37. KIWI—New Zealander 38. PELE—volcano on Io 40. NADIR—opposite to zenith 42. GAS—solid, liquid or ... 44. HOUR—unit of time 46. ICE—frozen liquid



## Building a backyard observatory.

*John Field*

For many years I have been observing and imaging from either my back garden in Stokes Valley with darkish suburban sky or at the WAS observatory at Pauatahanui which has much darker sky. Both sites have advantages. The upgrades of telescope and mount at Pauatahanui has made this telescope a great set up for imaging, whether piggy back or prime focus, and should be used more by members. Pauatahanui is about 15 – 20 minutes away and it takes 30 minutes to set up and pack up the equipment. The back garden has ease of access and lack of travel time. The disadvantages are: more light polluted sky and the cost of setting up an observatory. One of my long term projects has been to install a telescope at home in a dome that would allow me to enjoy my hobby without the added travel and set up time. This first article looks at the planning one should do before installing an observatory; or to see if you actually need one!

### Location, Location, Location!

Long before choosing to build a back yard, observatory you will need to look at all the pros and cons of your site. Can power or data cabling be run to the dome? If not can a wireless connection and batteries suffice? Can you place the dome in a part of the garden where you get the best view of the sky? (In my case this meant losing the washing line as it was in the sunniest place!) Will the roof of your own home, or that of your neighbours, block the view or create thermal issues? Does your neighbour have security lights that come on every 30 seconds and shine into where you dome would be? Talk to your neighbours about what you are doing so they don't suddenly see a dome appear next door and in probability they will re-direct the light or turn it off when you are observing. If your sky quality and viewing is severely limited then even the best observatory will not cure these problems. Finally, and most importantly, check the local rules for out building size that needs planning permission along with planning and expenditure permission from your partner; they may be a bit upset to lose their favourite rose bush and found you have spent the money for the next five years holidays. For my location the southwest

corner of the garden offered the best location for both sky and ease of power/data installation. After location the next job is the design of the floor and pier.

A telescope is only as good as its pier (plus drive and optics)!

If you are installing a telescope, the design of your pier will greatly impact on your final enjoyment. A pier needs to provide a solid; stable and vibration free platform to attach your telescope and it needs to be of comfortable height to operate. The pier is normally sites on a large reinforced concrete mass. This has a dual purpose it acts a large damper to vibration as well as stopping your telescope falling over! It will need to be separate from the rest of your structure so that any movement of, or in, the building does not translate to the pier. The pier itself should be a solid design and an unofficial rule is the diameter of the pier should be the same as the optical tube of the telescope to be mounted. If the pier is hollow, it can be filled with sand to help dampen vibrations. You should also allow access for power and any other cables to be either run inside, or on the outside of the pier; a tidy dome is a safe dome.

### Walking on the Moon, well... not really

The floor of your observatory can be a concrete pad or a raised deck. A concrete floor will probably cost more and unless raised above ground bay, will have water issues. A raised floor has the advantage of being above damp ground, allows air circulation under the dome and is handy if your site is not level. The quality of wood should be suitable to be outside use and it pays to have good quality material at the start. To have pull down your dome in two years time due rot would be expensive and frustrating.

### What type of observatory is best for you?

There many types of observatory designs from fibre glass kit sets with motorised domes and shutters to simple do-it-yourself wooden boxes with roll off roofs. Your budget may limit your choices but in probability the simplest design will achieve improved results and comfort during observing sessions. There are number of local astronomers who have built their

own or installed a kit set observatory and contacting them would be a good starting point. I found the nzastronomers Yahoo e-mail group a good place to discuss the different types of observatory designs and equipment that are currently in use. Good articles may be found in astronomical magazines and web sites.

### My wish list.

Over a number of years I researched my “dream list” of what I would like for my back yard observatory and came to the following conclusions:

- A dome of capable of holding a telescope of between 8 – 10 inches and 2 – 3 people plus equipment.
- A mount and drive that is capable of accurate tracking and auto-guiding for astrophotography.
- A telescope of between 8 – 10 inches.
- The ability to control the telescope and other equipment from either in the dome or via network from the garage or house.

After reading a number of articles and feedback from users of different domes (see the pictures on page 5 - *Cruxword*). I settled on the Sirius Domes 2.3 meter Home Dome. This would easily handle a 10 inch telescope and up to 3 people. Being made of fibreglass it is lightweight and can be easily disassembled if we were to move. The mount I was looking at, was a Losmondy G-11 and 10-inch Meade SCT plus guider and accessories. Of course by the time all these are added up the estimated cost would be in the mid \$20,000.00 mark. Seeing this as a long term project I installed a concrete pier in the garden that would give a stable base from which to image from prior to taking the dream further.

In mid 2009 the opportunity arose to purchase a Sirius Dome and a mount and telescope.

This series articles will look at the planning and installation of the foundations, floor, pier, dome and telescope.

*Next month I will go through the process of planning for construction and ground work prior installing the foundation and pier.*

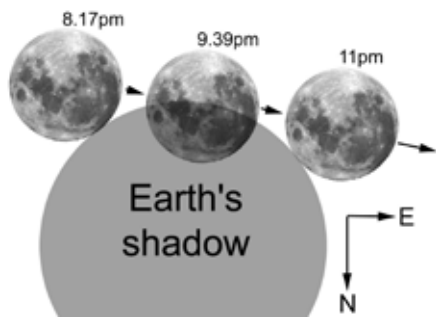
# ASTRONOMY EVENTS 2010

## June

June 26th 2010 – Partial Lunar eclipse  
Visible from all of Australia and NZ.

The Moon will pass through the southern part of the Earth's shadow; at maximum eclipse

(9.39pm AEST) over half the Moon's diameter will be covered.



## July

July 2010 – Four planets after sunset

July sees a dance of the planets Mars, Venus and Saturn in the western sky. By the end of the month, they are joined by Mercury. The diagram at left shows them together on the 31st, when Mars is closest to Saturn.

Mercury passes Regulus on the 28th.



## 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

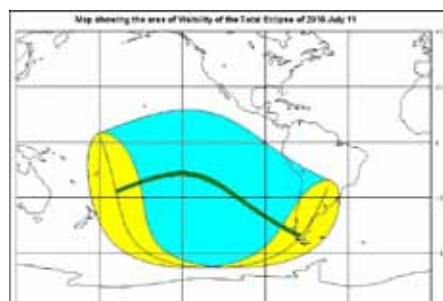
## December

December 21st – Total Lunar Eclipse  
– much of New Zealand

and the Queensland coast will see the Moon rise totally eclipsed.

Times of events:

P h a s e	N Z D S T
S t a r t s	7 . 3 2 p m
T o t a l i t y	starts 8.40pm
M a x i m u m	9 . 1 8 p m
T o t a l i t y	ends 9.53pm
E n d s	11.01pm



# COUNCIL OF THE WELLINGTON ASTRONOMICAL SOCIETY INC.

*President:*

**Gordon Hudson**

gordon@kpo.org.nz

Ph 04 236 5125

*Vice-President: Roger Butland*

roger.j.butland@xtra.co.nz

Ph 04 478 0419

*Secretary: Ross Powell*

rossapowell@hotmail.com

Ph 04 389 9765

*Treasurer: John Talbot*

john.talbot@xtra.co.nz

Ph 04 293 4620

*Newsletter Editor:*

**Haritina Mogosanu**

editor@was.org.nz

*Committee*

**Frank Andrews**

frank.andrews@paradise.net.nz

**Chris Mongatti**

chrison@xtra.co.nz

Mob 021 890 222

**John Homes**

john.homes@paradise.net.nz

**Aline Homes**

aline.homes@paradise.net.nz

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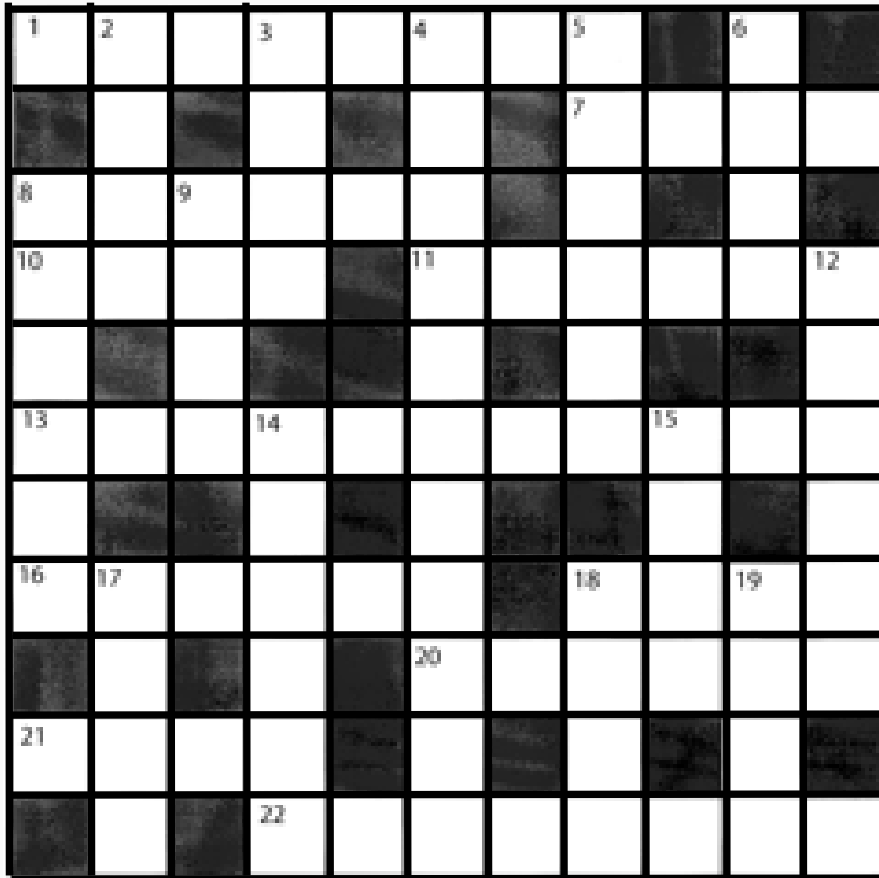
**Murray Forbes**

murray\_forbes@xtra.co.nz

[www.was.org](http://www.was.org)



## Stellar Cruxword



Courtesy of Skyshed Backyard Observatories

**Across** 1. Math, Nora, as a race, is only 42,195m long. (8) 7. The type of cluster containing up to several thousand stars (usually young and hot) spread over only a few light years – found in a hip-hop environment. (4) 8. The name given to the supporting structure of the secondary mirror in many reflecting telescopes. It prides itself. (6) 10. The nation that started the space race. (4) 11. A hearty snack for a large Scot – but not for slimmers. (3, 3) 13. Some cosmologist's view of totality sounds like Shakespeare writing several poems simultaneously. (11) 16. The floral optimist expects things to be this, or rise, at least. (6) 18. The abbreviated showing of mixed up mode. (4) 20. By the way, the orbiter lost the first of its royal leaders. (6) 21. Roll dice for a chance of one in ten. (4) 22. A south drastic is one not in the galaxy halo. (4, 4)

### Down

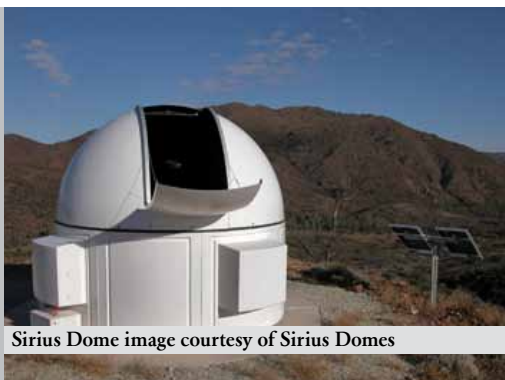
2. Some muddled up friends and a range of moon montes. (4) 3. A doctorate in artificial intelligence. (2, 2) 4. All beings of the type I shove or rub, eat their veges, naturally. (11) 5. A groan signifies absence of seaweed extract. (2, 4) 6. Table lost fifty to become the second brightest star in its constellation, at least initially. (4) 8. This solstice sounds like an adder. (6) 9. A spark or ember found in multi-selenology. (4) 12. This alpha star is not the brightest in its constellation, yet it swivels well. (6) 14. If dirt, this nebula is divided into three parts by thick dust lanes. (6) 15. The street was disheartened but stayed put, as directed. (4) 17. These and zeros constitute the binary system. (4) 18. What the sun does at the end of the day is often used with chips as the entree. (4) 19. This game can be pretty long when scrambled before a parsec. (4)



Courtesy of skyshedpod.com

### Answers to BP Stellar Cruxword \*May 2010

**Across:** 1 ecliptic; 7 Hale; 8 radium; 10 Apus; 11 Persei; 13 Beta Orionis; 16. equant; 18 PSIS; 20 uplift; 21 Kamo; 22 Noel Noel. **Down:** 2 clap; 3 iris; 4 temperature; 5 char go; 6 clue; 8 ramble; 9 dust; 12 insist; 14 Amazon; 15 NASI; 17 quad; 18 plan; 19 if me.



Sirius Dome image courtesy of Sirius Domes

## OBSERVING AT PAUATAHANUI

The next observing at the Pauatahanui will be on June 12th starting at 7.30 PM.

If the weather is looking doubtful please contact **John Field** on his mobile **021-255-1904** to see if the session is going ahead.



## The Evening Sky in June 2010

Venus, the brilliant 'evening star' (planet really), appears in northwest soon after sunset. It sets increasingly later in the night sky; bright enough to cast shadows in dark places. Sirius, the brightest star, appears low in the western sky at dusk before setting in the southwest. It twinkles with all colours like a diamond. Canopus is higher in the southwest sky, circling lower into the south later on. Crux, the Southern Cross, and Beta and Alpha Centauri are south of overhead. Scorpius, upside down, is midway up the eastern sky. Below it is Sagittarius; its brighter stars making 'the teapot'.

Midway down the north sky are Saturn and Spica, similar in brightness and colour; Saturn is on the left and the lower of the two. Below and right of them is orange Arcturus often twinkling red and green. Arcturus is 120 light years\* away and 37 times brighter than the sun.

Midway between Saturn and Venus are Regulus and Mars. Reddish Mars is below and left of Regulus at the beginning of the month. Around June 6 it passes Regulus, moving above and rightward of Regulus thereafter. Mars is 150 million km away in mid month and very small in a telescope.

Crux, the Southern Cross, is south of the zenith. Beside it and brighter are Beta and Alpha Centauri, often called 'The Pointers' because they point at Crux. Alpha Centauri is the closest naked-eye star, 4.3 light years away. A telescope shows it is a binary star: two suns orbiting each other in 80 years. Beta Centauri and many of the stars in Crux are hot, extremely bright blue-giant stars hundreds of light years away. Canopus is also very luminous and distant.

Scorpius is midway up the eastern

sky, lying on its back. Its brightest star is orange Antares, marking the scorpion's heart. Antares is Greek for 'Rival to Mars'. Just now one can see why. Antares is a red giant star: 600 light years away and 19 000 times brighter than the sun. Red giants are much bigger than the sun but much cooler, hence the red colour. They are dying stars, wringing the last of the thermo-nuclear energy from their cores. Antares will end in a spectacular supernova explosion in a few million years.

The Milky Way is brightest and broadest in the southeast toward Scorpius and Sagittarius. It remains bright but narrower through Crux and Carina but fades in the western sky. 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. A scan along the Milky Way with binoculars will find many clusters of stars and some glowing gas clouds. Relatively nearby dark clouds of dust and gas are silhouetted as holes and slots in the Milky Way.

The Clouds of Magellan, LMC and SMC, are in the lower southern sky, easily seen by eye on a dark moonless night. They are two small galaxies about 160 000 and 200 000 light years away.

They are only a fraction the mass of our galaxy but still contain billions of stars.

Saturn's rings are almost edge-on to us now. They look like a broad spike through the globe of Saturn. In steady conditions a telescope shows the shadow of the rings as a dark line on Saturn. In June Saturn is around 1410 million km away.

Jupiter (not shown) rises due east after midnight. It is the brightest star-like object in the late-night sky, but not as bright as Venus. By dawn Jupiter is north of overhead. Binoculars show the disk of Jupiter. A small telescope easily shows Jupiter's four big moons lined up on either side of the planet. In June it is around 750 million kilometres away. Mercury rises about two hours before the sun at the beginning of the month: a lone bright 'star' in the northeast sky. It slowly sinks into the dawn, disappearing mid month.

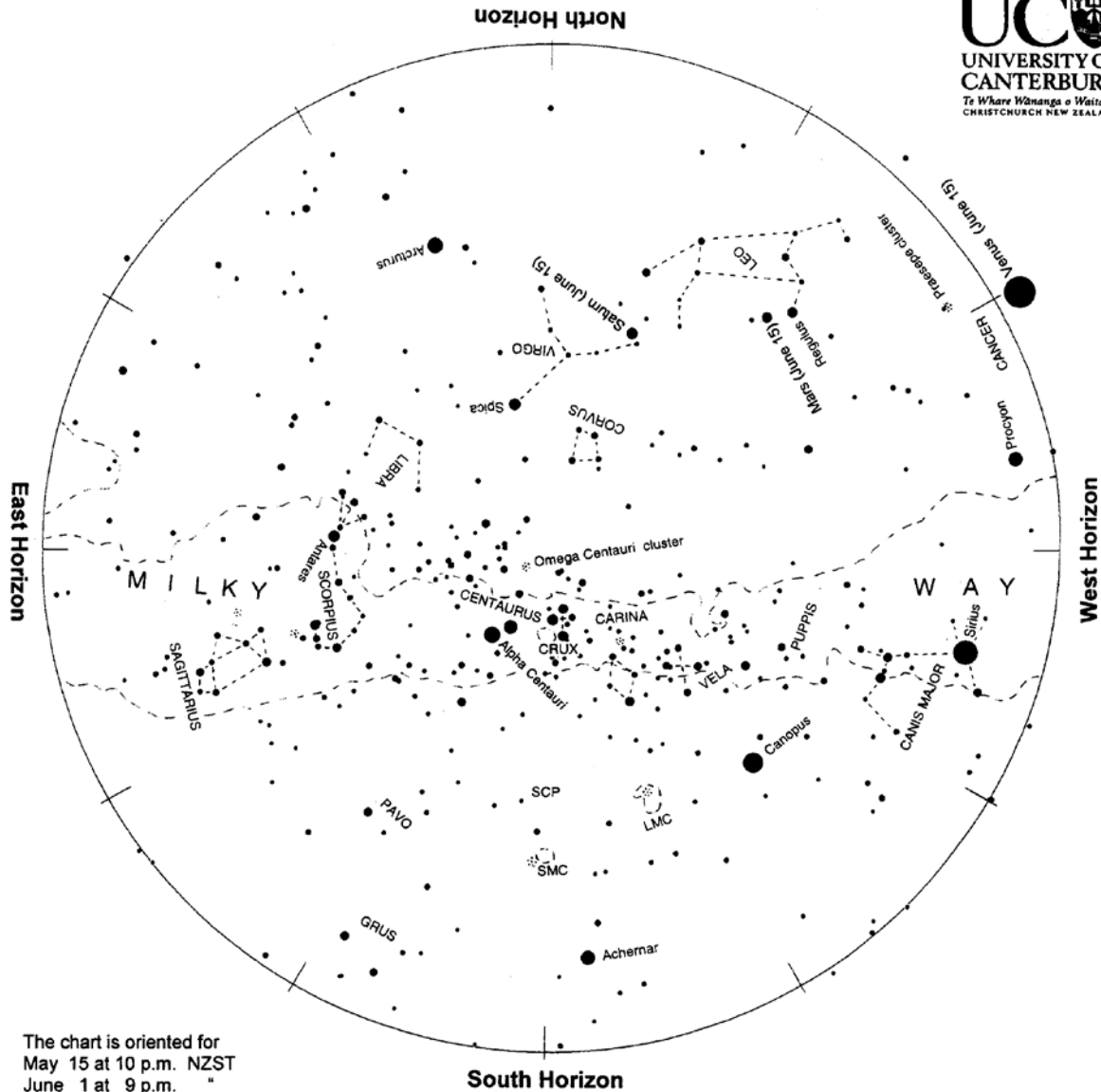
*\*A light year (ly.) is the distance that light travels in one year: nearly 10 million million km or 10<sup>13</sup> km. Sunlight takes eight minutes to get here; moonlight about one second. Sunlight reaches Neptune, the outermost major planet, in four hours. It takes four years to reach the nearest 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. There are public observing evenings at the Thomas King every FRIDAY starting as soon as it gets dark depending on the weather. **Ring Ross on 389 9765.**



The chart is oriented for  
 May 15 at 10 p.m. NZST  
 June 1 at 9 p.m. "  
 June 15 at 8 p.m. "  
 July 1 at 7 p.m. "

### Evening sky in June 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 westward shift each night as we orbit the sun.

Venus is the brilliant 'evening star' appearing in the northwest at sunset and setting mid evening. Sirius twinkles colourfully in the west before setting. Canopus is in the southwest, swinging down to the south through the night. South of overhead are Alpha and Beta Centauri, with the Southern Cross (Crux) to their right. Further to the right are the Diamond Cross and False Cross, with a bright region of Milky Way above them. Regulus, Mars, Saturn and Spica make a line up the northwest sky. Orange Arcturus in the north often twinkles red and green. The Scorpion is on its back midway up the eastern sky with Sagittarius below it. Jupiter (not shown) rises in the east after midnight.

Chart produced by Guide 8 software; [www.projectpluto.com](http://www.projectpluto.com). Labels and words added 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)



## Cross Word with Murray Forbes



EclipseCrossword.com

**Across** 1. Mars; 5. also a small inflated rubber boat; 9. An open or globular ...; 12. satellite galaxy to the Milky Way; 15. type of telescope; 16. horizontal angle around the sky; 17. an asteroid may have done them in; 22. proposed theory of evolution; 26. satellite observatory studying the Sun; 28. angels and galaxies both have one; 31. NEO (abbrev); 33. The North Star; 35. Constellation with Spica; 36. a catalogue; 37. frozen liquid; 40. 24 hours; 41. a double star; 43. A lion circling the Earth; 45. an arrested atom; 46. allow some leeway; 49. Antah; 51. type of telescope; 52. Carter Observatory's public telescope; 53. volcano on Io;

**Down** 1. Main Sequence stars cooler & smaller than the Sun, also the name of a cult sci fi/comedy series; 2. used to prevent moisture condensing on a telescope; 3. plane of Earth's orbit

around the Sun; 4. I weight 6 times less on the Moon, but still have the same ???; 6. Tellus; 7. New Zealander; 8. could be mistaken for a cloud; 9. A type of pulsating variable star, often used for distance measurements; 10. an orbiting telescope; 11. unit of time; 13. solid, liquid or ...; 14. opposite to zenith; 18. Latitude and ?; 19. flying saucer; 20. clip singer in bay (anagram); 21. One of the Galilean satellites; 23. Largest galaxy in the Local Group; 24. road site (anagram); 25. astronaut; 27. second most common element; 29. a very cloudy planet; 30. volcano on Io; 32. A type of star whose core hydrogen has been used up; 34. smallest indivisible piece of a element; 38. star time; 39. some spiral galaxies have one; 42. alpha Lyr; 44. to block light from another object; 47. You don't want this constellation in a China shop; 48. mid-day; 50. a new star;