

# Newsletter

September 2010, Volume 39, Number 6, ISSN 01 147706, [www.was.org.nz](http://www.was.org.nz)

## THIS MONTH'S MEETING FEATURES:

**Black Sun in the  
South Pacific:  
eclipse chasing in  
the Cook Islands**

**Luca Quaglia**

Wed 1st of September at  
7:30pm at Carter Observatory

Last July 11th the Sun and the Moon met to give rise to a total solar eclipse over the vast expanses of water of the South Pacific. Remoteness was the key-word for this eclipse: the shadow of the Moon touched very little landmass and most of the locations where the eclipse was total are among the most isolated places on our planet. The talk will cover my eclipse expedition to the beautiful island of Mangaia in the Cook Islands and will describe a flash spectrum experiment I have attempted. The talk will be interspersed with tidbits about solar physics and the mathematics of solar eclipses.

WELLINGTON  
ASTRONOMICAL  
SOCIETY

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09-2010

Wellington  
Astronomical  
Society



## WAS Special general Meeting Notice. Constitutional change

A Special General Meeting will be held at 7:30 pm on Wednesday 1st of September 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 a 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.

*A hundred years ago on 22 August 1910, the Wellington Philosophical Society, now the Royal Society of New Zealand Wellington Branch, formed an Astronomical Section. Thus was formed the beginnings of what are now Wellington Astronomical Society and the Phoenix Astronomical Society, both formed more than a decade ago from the Astronomical Section.*

*In 1912 an observatory was built in the Botanic Gardens.*

*Carter had died in 1896, bequeathing £2,240 for an observatory, now named after him. It took over 40 years.*

*And note the spelling of Kelburne.*

*George Jones*





## PRESIDENT'S REPORT FOR SEPTEMBER

The meeting last month was supposed to start off with a Special General Meeting so that we could change our constitution to make it easier to have the required number of members present for our next AGM. However for the special meeting we still needed to have 25 paid up members, although we had more than 25 people attend we needed to have 25 paid up members we fell short by 3 members. The change in the constitution is to avoid the very situation we found ourselves in so we now have to carry it over to September. Now because this is the end of the financial year and subs are now due we can avoid the problem of not having enough paid up member

present because we can say they were paid up members over the last year and the fact that we still have to pay for the coming financial year. Therefore we can say that anyone who is present at the next Special General Meeting can be deemed to be paid up members providing they were members during the previous year. This also applies to new and prospective members who may be there for this meeting.

### SUBS ARE NOW DUE

Last months presentation on Variable Stars using only Binoculars was most informative and well presented by Dr Aline Homes. She showed how

simple it is to contribute to science with the most basic of equipment.

This flowed on nicely from the Research Group meeting prior to the main meeting where we talked about variable stars and some up coming events.

John Fields talk on the Night Sky was very well done and this shows his knowledge of the night sky and made it easy for anyone to be able to follow. Also Johns article on the building of his observatory is quite fascinating and we look forward to some spectacular photographs.

*The monthly Night Sky at the Panatahanui observatory had to be canceled yet again because of the ground conditions at the site.*



Laying a path of Special Plastic Paving Slabs



On the weekend of the 21st Chris Mongatti and I went out to the observatory and laid a path of Special Plastic Paving Slabs each slab 400mm square and they interlock so we now have a paved plastic path to the observatory (see photo). These paving slabs were donated by the Gifford Observatory which originally came from Carter Observatory as you may remember they were on the ground under the old Pipe Henge that used to be there. Thanks Gifford Observatory.

The next observing at Pauatahanui will be on September 11th. New Moon is on the 8th of September so there will be a crescent moon in the sky which will be ideal for observers to look at.

The Stellar Cruxword that I get from Northland will be back and in next month's newsletter.

**Remember the Research Group meeting starts an hour before the main meeting.**

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 time as it is not a pay and display it is free parking but for a two hour time limit.

Recently I attended a symposium called "Urban Design Protocol" run by the 'Ministry for the Environment' this was a one day symposium about Stretching the Horizon perhaps it should have been Lighting the horizon so that you could see it better at night. The only mention of lighting was that the idea is to go back to White Lights as you can see better at night the fact that they cause glare didn't seem to enter into the equation. This meeting was attended by about 120 people with speakers from Australia and from the UK and from Councils and Architects and designers and Roading Engineers throughout the country.

The night time environment was barely touched on except by the speaker from the UK who showed one area of night

lighting using the Sodium lights which was very effective.

I spoke to several attendees during the breaks about lighting but I feel it fell on deaf ears. Ideally there should have been a presentation about proper lighting at this meeting.

**On October the 15th Carter Observatory will have in place a new exhibition about the Life and achievements of the late Peter Read.** There will feature his 6" Refracting Telescope which I am in the process of restoring along with 21 of his original paintings and some film footage from his past shows (providing TVNZ allow Carter to use them).

We at Carter are in contact with one of his sons and he is going to loan us some of Peters material from his shows. We will be interviewing people who used to know Peter and worked with him and this will be a 10 min show of memories of and about Peter Read.

This show will run until about July next year and following that we are looking at sending it on tour around the country.

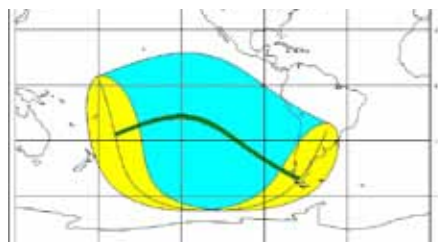
## ASTRONOMY EVENTS 2010

### 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:

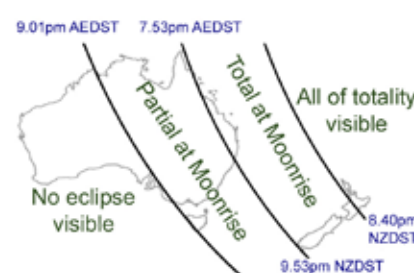
Phase NZDST Starts 7.32pm

Totality starts 8.40pm

Maximum 9.18pm

Totality ends 9.53pm

Ends 11.01pm



### Research Astronomy Group

*Two bright events. Feasible with 6inch scopes.*

#### Asteroid events Sept near Wellington:

Sat 25 Sept 09:48 (11650) 1997 CN occults HIP 91347 (mag 5.9)

Nice bright target early evening but near full moon.

#### Lunar events:

Tuesday 2010 Sep 14 9 6 37 Gr 2379 G6 8.6 8.2 41+ 79 41 \*\*

GRAZE: CA 12.2S; Dist. 22km in az. 155deg. [Lat =-41.50+0.36(E.Long-174.77)]

Well away from terminator glare. Half moon.

Path runs through Wairarapa eastern hills about 3 Km east of Martinborough.

Good peaks from +3km to -8 km.

Tuesday night Possible good Team effort ??





## Recent observations, mostly of Mercury and Venus.

By Ross Powell.

There have been some recent nights when the sky was clear of cloud, and the air very still (good 'seeing'). These are the best conditions for seeing planetary detail, and usually occur in winter, often when a light southerly wind dies away. Both Venus and Mercury have been well placed in the evening sky after sunset. Mercury appeared as a reddish coloured object, shining steadily, below and to the left of Venus. When I have seen it previously, it has appeared pink. Through the Cooke refractor (9.75" aperture) I saw it as a quarter moon shape, with a round, dark area in the middle, near the terminator (the line between night and day). The colour was a rusty red. Through the smaller 5" refractor attached to the Cooke, it appeared similar, but the colour was less obvious.

Venus usually appears as a brilliant white object, with a darker patch near the terminator. It showed a quarter phase also, being near its greatest elongation (angle from the sun). On an exceptionally still evening recently I saw something different. With the Thomas King telescope (5.5" aperture refractor), I saw a spiral pattern in the atmosphere of Venus, and no dark patch near the terminator. It resembled those photographed by space probes in ultraviolet light, so I was surprised to see it in visible light. The image was very steady.

The dark area near the terminator, seen when the air is less steady, may be an effect of seeing the planet side on, at right angles to the direction of the sun's rays. It may just be poorly illuminated. Why this effect should disappear in exceptional seeing is an interesting question. Mercury also had a dark area in the middle, near the terminator. This was very round and may be a surface feature such as the Caloris basin. Mercury has negligible atmosphere.

Now is the time to see Beta Cygni (Albireo), the famous binary star. The two components are yellow and blue, and easily separated. On a line between Vega and Altair, it is about half way.

Messier 11, the 'Wild Duck' cluster is near the tail of Aquila. It has a fan shape in the Thomas King, and is a beautiful, complex nebula in the Cooke.

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## Building a Backyard Observatory: Part Four

*John Field*

### Polar aligning your telescope

With the dome completed and the telescope and mount in place I was itching to see how well the system works. An initial viewing of the Moon and double Alpha Centauri revealed lovely sharp and crisp images; the detail on the Moon was far superior to what I had seen through a telescope in a very long time. The corrector plate had some small areas of fungus and a slight haze. After reading the manual I gingerly removed the corrector plate and cleaned with a mixture of isopropyl-alcohol and water. This removed the haze as well as the fungus. The primary mirror had no markings or even dust on it, considering the age of the telescope and being unused for a number of years it is testimony to the design and the care of Bevan and Anne in looking after the telescope. The greatest test of a telescope drive and alignments is astrophotography. In this final article I will cover the "dark art" of polar alignment.

### Why polar align?

As the Earth rotates on its axis everyday the stars rotate around the South Celestial Pole (SCP), this is the point directly above the Earth's south pole. Rough alignment can be done using the Sun at Solar noon and using the altitude setting circles on the telescope to align with the SCP. Although this may be fine for visual work for long exposure astrophotography more accurate alignment is needed. In the pre-digital camera era this could be achieved using an eyepiece with an illuminated reticule. Centering on a star near zenith of the celestial equator the drift of the star is monitored. *(continued on page 6)*



(continued from page 5) By adjusting the azimuth of the mount east or west you can align the scope to face due north. Following this, a star on the Celestial equator about 20 degrees above the east, or west, horizon is centered. Once again the drift is observed, this time the angle of the mount is adjusted in altitude to match so that it is centered on the SCP. This process requires time, patience and an illuminated reticule. Today, however, we can use a digital camera at prime focus to aid the process.

With a rough alignment completed and camera attached the telescope is pointed at the Celestial Equator near the zenith. Using a ISO setting of 800 you take a 130 second image of the night sky. For the first 10 seconds the



Original RA

drive is left tracking as normal, then for 60 seconds you drive the telescope at its lowest speed east and then driven west for 60 seconds. If the mount is properly aligned the result would be a



Final RA

straight line. If it is not aligned then there will a "VS." across the image.

By adjusting the mount east or west you keep repeating the process until the

line is straight. Once this is done you point the telescope is pointed to a star about 20 degrees above the east/west horizon as with the drift alignment and the process repeated except you adjust the altitude until a straight line appears. Once this is done go back to the north and check your alignment here. Make any small adjustments, if needed, and you should be well aligned. By extending you exposure length you can get further accuracy. The only error that should not remain is Periodic Error due to errors in the drive and gears. To remove this you need to either use an illuminated reticule and manually correct or by using Periodic Error Correction Software. 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.

## August Crossword answers

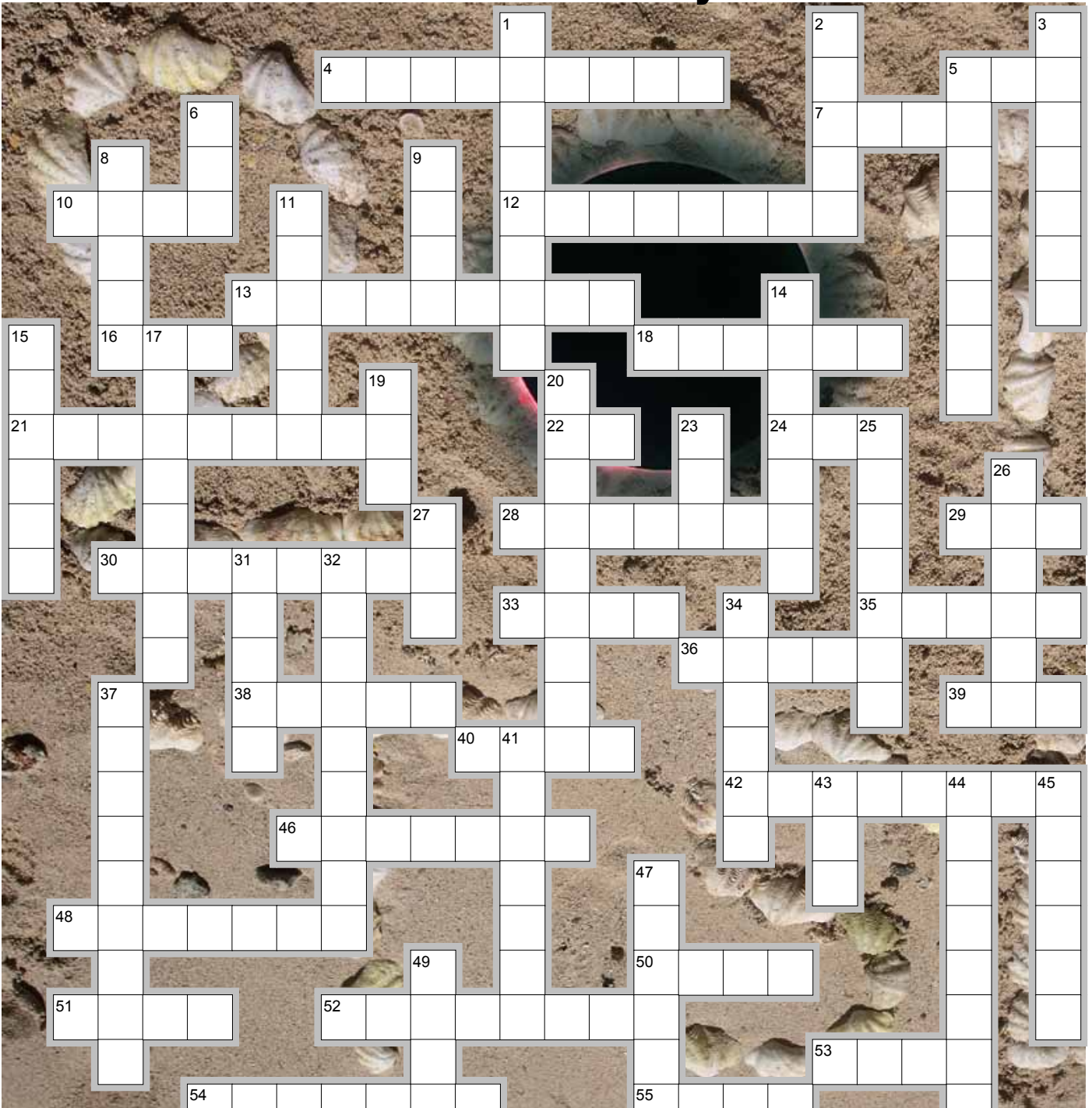
**Across** CEPHEID, *A type of pulsating variable star, often used for distance measurements*; 5. MESSIER, *a catalogue*; 8. ASTEROID, *road site (anagram)*; 11. CANOPUS, *Antarctica*; 13. LATITUDE, *allow some leeway*; 18. ATOM, *smallest indivisible piece of a element*; 23. REDGLANT, *A type of star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

**Down** 1. SCORPIUS, *constellation with a sting*; 2. VIRGO, *Constellation with Spica*; 4. PARALLAX, *apparent shift of an object against a distant background due to the observer's movement*; 6. SMC, *satellite galaxy to the Milky Way*; 7. GAS, *solid, liquid or ...*; 9. ION, *an arrested atom*; 10. RUTHCRISP, *Carter Observatory's public telescope*; 12. NOVA, *a new star*; 14. EARTH, *Tellus*; 15. LOKI, *volcano on Io*; 16. ZODIAC, *also a small inflated rubber boat*; 17. BAR, *some spiral galaxies have one*; 19. HST, *an orbiting telescope*; 20. ECLIPSE, *to block light from another object*; 21. NOON, *mid-day*; 22. DINOSAURS, *an asteroid may have done them in*; 24. ECLIPTIC, *plane of Earth's orbit around the Sun*; 25. NADIR, *opposite to zenith*; 30. NORTH, *thorn (anagram)*; 32. EQUINOX, *23rd September*; 34. TAURUS, *You don't want this constellation in a China shop*; 36. PANDORA, *a shepherd satellite of Saturn's F ring, also the first woman in Greek mythology*; 39. ICE, *frozen liquid*; 40. HALO, *angels and galaxies both have one*; 41. SHEPHERD, *astronaut*; 42. POLARIS, *The North Star*; 43. DENEK, *alpha Cygnus*; 45. SOHO, *satellite observatory studying the Sun*; 48. DAY, *24 hours*; 49. LMC, *could be mistaken for a cloud*;



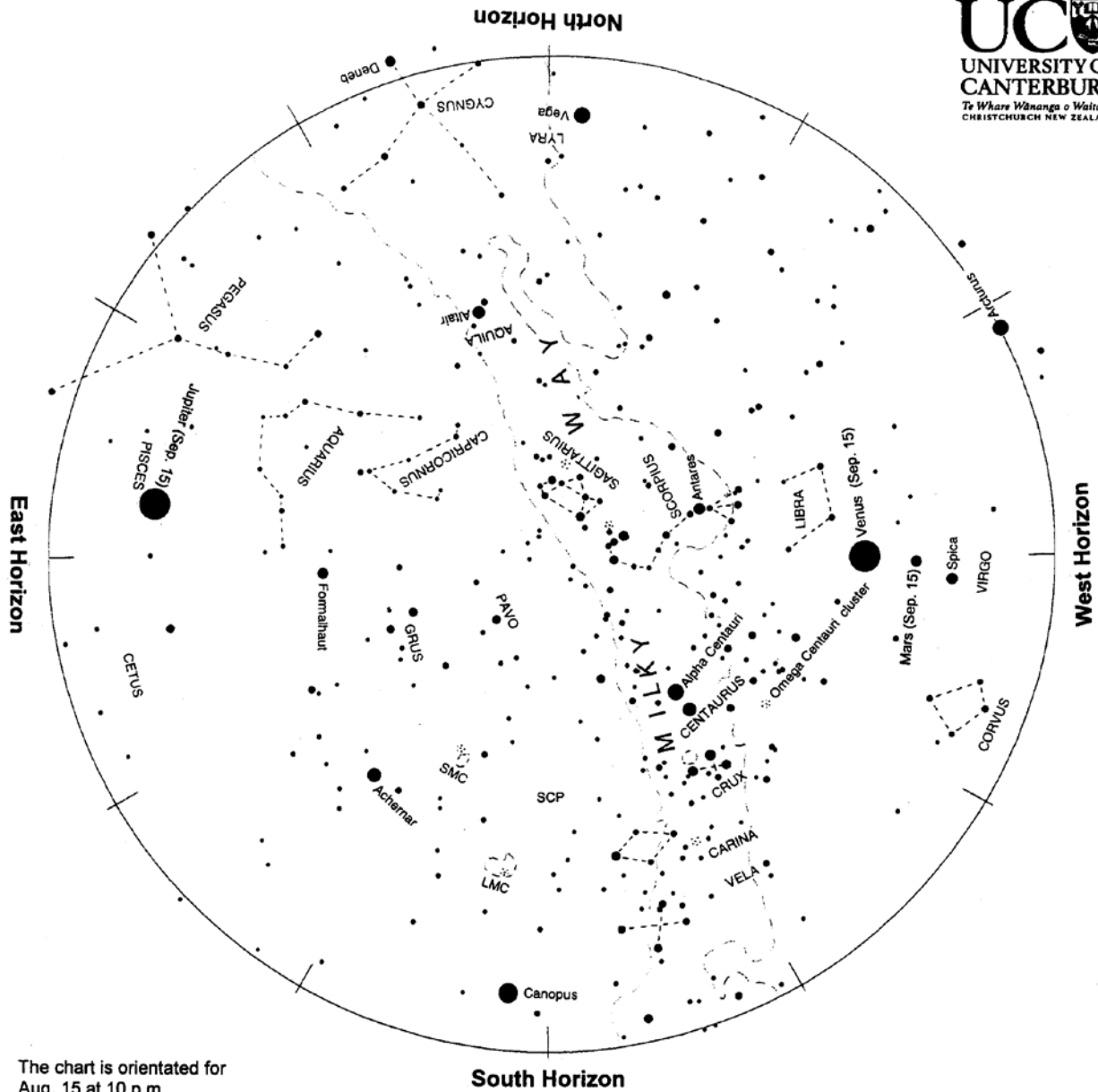


## Cross Word with Murray Forbes



**Across** 4. *Carter Observatory's public telescope*; 5. *could be mistaken for a cloud*; 7. *a new star*; 10. *mid-day*; 12. *The Seven Sisters*; 13. *Latitude and ?*; 16. *an orbiting telescope*; 18. *used to prevent moisture condensing on a telescope*; 21. *A satellite of Uranus, a character in Othello*; 22. *One of the Galilean satellites*; 24. *frozen liquid*; 28. *The North Star*; 29. *A lion circling the Earth*; 30. *Main Sequence stars cooler & smaller than the Sun, also the name of a cult sci fi/comedy series*; 33. *angels and galaxies both have one*; 35. *opposite to zenith*; 36. *Constellation with Spica*; 38. *Tellus*; 39. *satellite galaxy to the Milky Way*; 40. *I weight 6 times less on the Moon, but still have the same ???*; 42. *A type of star whose core hydrogen has been used up*; 46. *A type of pulsating variable star, often used for distance measurements*; 48. *a shepherd satellite of Saturn's F ring, also the first women in Greek mythology*; 50. *smallest indivisible piece of a element*; 51. *alpha Lyr*; 52. *astronaut*; 53. *New Zealander*; 54. *a catalogue*; 55. *satellite observatory studying the Sun*;

**Down** 1. *constellation with a sting*; 2. *a very cloudy planet*; 3. *type of telescope*; 5. *allow some leeway*; 6. *an arrested atom*; 8. *thorn (anagram)*; 9. *volcano on Io*; 11. *Name of ESA spacecraft that intercepted Halley's comet*; 14. *to block light from another object*; 15. *also a small inflated rubber boat*; 17. *star time*; 19. *solid, liquid or ...*; 20. *an asteroid may have done them in*; 23. *some spiral galaxies have one*; 25. *23rd September*; 26. *second most common element*; 27. *flying saucer*; 31. *alpha Cygnus*; 32. *Largest galaxy in the Local Group*; 34. *a double star*; 37. *Mars*; 41. *horizontal angle around the sky*; 43. *24 hours*; 44. *road site (anagram)*; 45. *You don't want this constellation in a China shop*; 47. *an open cluster in Taurus*; 49. *volcano on Io*;



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

### Evening sky in September 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 is the brilliant 'evening star', appearing in the west at sunset. Orange Mars is below it but much fainter. Jupiter, bright and golden, rises due east in the early evening at the beginning of the month and is up at dusk by the end. Orange Antares, the Scorpion's heart, is west of the zenith. The Scorpion's tail, a.k.a. the fish-hook of Maui, curls toward the zenith. Crux, the Southern Cross, and the Pointers are in the south-west. Canopus is near the south horizon, moving up into the eastern sky. Vega shines on the opposite horizon. The Milky Way spans the sky from north to south. Arcturus twinkles red and green as it sets in the northwest.

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)





## The Evening Sky in August 2010

Venus, the brilliant 'evening star' (planet really), appears in the west soon after sunset. You can see it in daylight, if you know where to look. It sets in the southwest in the dark late evening sky. In a telescope it looks like a crescent moon, getting taller and thinner through the month as it comes closer and turns more of its dark side toward us. In September Venus's distance shrinks from 89 million km to 56 million km. Venus is the same size as Earth and is covered with white cloud.

At the beginning of September Venus is close to Spica, the brightest star in Virgo. Below them is reddish Mars. Through the month Venus and Mars hold their relative positions as Spica and other stars slip down past them. Mars is on the other side of the sun from us, 330 million km away, so it is very small in a telescope.

Jupiter is in the eastern sky in the evening. At the beginning of the month it rises before 8 pm; by the end of September it is above the horizon at dusk. It is the second brightest 'star' after Venus and shines with a steady golden light. Binoculars will show the disk of Jupiter. A small telescope easily shows its four big moons and the parallel stripes in Jupiter's clouds. Jupiter is the biggest planet by far, as heavy as all the other planets combined. It is nearly 12 times wider than the earth at the equator and 320 times Earth's mass. It spins once in 10 hours, stretching it at the equator. It is at its closest now, 590 million km from us. Jupiter is north of overhead at midnight and low in the west at dawn.

Canopus, the second brightest star, is near the south skyline at dusk. It swings upward into the southeast sky through the morning hours. Canopus is a truly bright star: 13 000 times the

sun's brightness and 300 light years\* away. On the opposite horizon is Vega, one of the brightest northern stars. It is due north at dusk and sets in the late evening. Arcturus, the brightest northern star, sets in the northwest at dusk. It often twinkles red and green as the air splits up its orange light.

Midway down the southwest sky are 'The Pointers' – Beta and Alpha Centauri. They point down to Crux the Southern Cross. Alpha Centauri is the third brightest star. It is also the closest of the naked eye stars, 4.3 light years away. And it is a binary star: two sun-like stars orbiting each other in 80 years. A telescope magnifying 50x will split the pair. Beta Centauri, along with most of the stars in Crux, is a blue-giant star hundreds of light years away.

West of overhead the orange star Antares marks the heart of the Scorpion. The Scorpion's tail hooks toward the zenith like a back-to-front question mark, 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. Red giants are stars wringing the last of the thermonuclear energy out of their cores. Antares is expected to explode as a supernova in the next few million years. Above Scorpius 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 south. To the north it crosses 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 clouds appear as gaps and slots in the Milky Way. A scan along the Milky Way with binoculars shows many clusters of stars and some glowing gas clouds, particularly in the Carina region below Crux, and in Scorpius and Sagittarius.

*\*A light year (l.y.) 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.

# SUBSCRIPTION RENEWAL 2010-2011

PO BOX 3126, WELLINGTON

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

Section 1 - Please complete in full

Receipt required

Name:..... Signature:.....

Adult/Waged  \$ 50.00  Cheque (to Wellington Astronomical Society Inc)

Student/Unwaged  \$ 30.00  Cash - please bring exact amount to meeting

Family  \$ 70.00  Internet Banking: use acct no 03-0502-0508656-00

Give name as reference so WAS knows who paid

Section 2 - Contact Detail Changes (complete in full if any changes are required)

Address:.....

.....

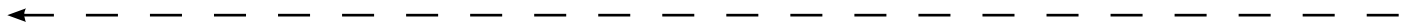
Phone:..... Mobile:.....

Email:..... Please email 1. announcements  2. newsletter

Subscriptions for the new financial year are now payable:

You should have received renewal note by email or post by now. If not then get a renewal slip from our web site at <http://was.org.nz/> and follow the link near Membership.

Bring your cash or cheque to the meeting on Wednesday or post it in if you can't get to the meeting.



## WAS COUNCIL NOMINATION FORM

Wellington Astronomical Society is looking for more committee members.

Nomination forms must be received by WAS Secretary by Monday 11th October 2010.

You must be a paid up member to stand or to Nominate a member.

This nomination form will be available at the October meeting.

The person nominated must sign the form.

I wish to nominate \_\_\_\_\_

For the position of \_\_\_\_\_

Nominee \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_