

NEWSLETTER

Next Meeting
 Wednesday 4th April 2012 at 7:30 pm
 at Carter Observatory, Upland Rd, Kelburn, Wellington

At April's meeting the topic will be:

Observing the Transit of Venus 2004

Presented by: **Emeritus Prof John Harper**- will tell us of his experience from the 2004 event. John is one of our long term members and will explain what to look for and give us some tips on how to do it safely.

(Victoria University of Wellington)



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Chairman's Report for Apr 2012

The last meeting on Wednesday March 7th was by Prof. David Wiltshire of Canterbury University. He described recent work that helps to confirm his ideas about "Dark energy and cosmic structure" in which he looks at the detailed structure of galactic structures rather than treating the whole universe as a uniform average when solving Einstein's field equations for the expansion of universe. This approach gives significant differences in the age of the universe depending from where you are observing. In particular our Milky Way galaxy sees a younger universe than if we were observing from one of the many voids that separate galaxy clusters.

Our **next meeting** on Wednesday April 4th at 7:30pm at Carter Observatory will be by Emeritus Prof John Harper - The Transit of Venus - will tell us of his experience from the 2004 event. John is one of our long term members and will explain what to look for and give us some tips on how to do it safely.

WAS has purchased a quantity of the **RASNZ Solar viewers** (see last page) suitable for observing the transit of Venus. These will be available at the next meeting for \$2.00 each. If you will not be coming to the meeting but would like to get one posted to you the price will be \$3.00 to cover postage and envelope.

The viewers will be ideal for viewing the transit of Venus that will take place, and be visible from New Zealand weather permitting, on 6 June 2012. And for the partial eclipse of the Sun in November.

These viewers have been safety tested by one of the world's leading authorities on solar viewing devices and provide full eye protection when observing the Sun directly. Note that the viewer **should not be** used in conjunction with any optical device such as telescope, binoculars, camera etc.

During the transit, Venus is of sufficient apparent diameter to be able to be seen by eye through the filter. Later in the year an eclipse of the Sun will occur and the viewer will also provide a safe and easy way to observe this event, too. Each viewer is supplied with an information sheet about these two events.

If you want a bulk supply for a school or similar then please place an order for Solar Viewers by going to:
<http://www.rasnz.org.nz/Sales/SolarViewers.html>

WAS Research Astronomy Group

The Research Group meets each month at 6:30 pm before the main meeting. These meetings are open to all WAS members.

Occultation Reports There were 3 positive asteroidal occultation events reported for Australia and New Zealand in February. All from amateur astronomers.

Occultation predictions for the Wellington area are published on our web site at <http://was.org.nz/01Occs.html> or look at the RASNZ Occultation Section web site at <http://occsec.wellington.net.nz> for both predictions and results from the Australia/New Zealand region.

Variable Stars. We have also been working through a series of tutorials by Murray Forbes on processing images with IRIS software in order to get accurate star magnitudes from CCD or Digital Camera images. We hope to have these put into a single document that can serve as an introduction to photometry for variable star observations. Remember visual observing of variable with naked eye or binoculars can also be valuable and a good introduction to the activity.

We would welcome other observers to these meetings including those who would like to introduce us to their favourite astronomical research topics.

This is also a good place to come to ask questions about your telescope or equipment. Remember there are no stupid questions just stupid answers.

Thomas Cooke Telescope Volunteers

Our quid pro quo in getting free rent of the Carter meeting room is to provide support for Carter staff on Saturday evening observing following their planetarium show, so please put your hand up to do a shift one Saturday evening. A list of dates will be at the next meeting so please come and sign on. I will be doing a couple of nights. It is actually quite fun to work the TCO and it really does need two people to manage the scope and the people. You do not need to know a lot about astronomy to be able to answer most of the questions and there will always be the Carter Representative to help with the ones you can't answer. It is a great way to learn a bit more yourself.

If we cannot get enough volunteers we may have to start paying Carter rent for our meeting nights and that would mean we would have to put subs up for everyone.

Global Astronomy Month 2012 - Official Press Release for New Zealand.

From the **Astronomy Without Borders** team dedicated to fostering understanding and goodwill across boundaries by creating relationships through the universal appeal of astronomy.
email awbnewzealand@gmail.com

April 2012 will again be a busy month for amateur and professional. The main event will be the Global Star Party on April 28th 2012, where millions of people will be encouraged to look up, and amateur astronomers across the globe will be outside with their telescopes for public viewing sessions. Many events are already planned around New Zealand with more to come as we approach April. Global Astronomy Month (GAM) returns again (its initial success was in IYA 2009). Astronomers, educators and astronomy enthusiasts worldwide are invited to reserve dates in April 2012 for public outreach, hands-on activities, observing sessions and more, while sharing the enthusiasm with others across the globe during Global Astronomy Month.

More information:

Web: <http://www.gam-awb.org/>

News Updates: <http://www.astronomerswithoutborders.org/news/newsletters/subscribe.html>

Email: info@gam-awb.org

Facebook: <http://www.facebook.com/gam.awb>

Twitter: http://twitter.com/GAM_AWB (#GAM2012)

Youtube: <http://www.youtube.com/user/globalastronomymonth>

Some New Zealand events already registered;

South Canterbury Astronomers Group (Timaru)

-contact Robert McTague 03 688 3735 mobile 0274883735

email; langwood@xtra.co.nz

Web: www.scastro.co.cc

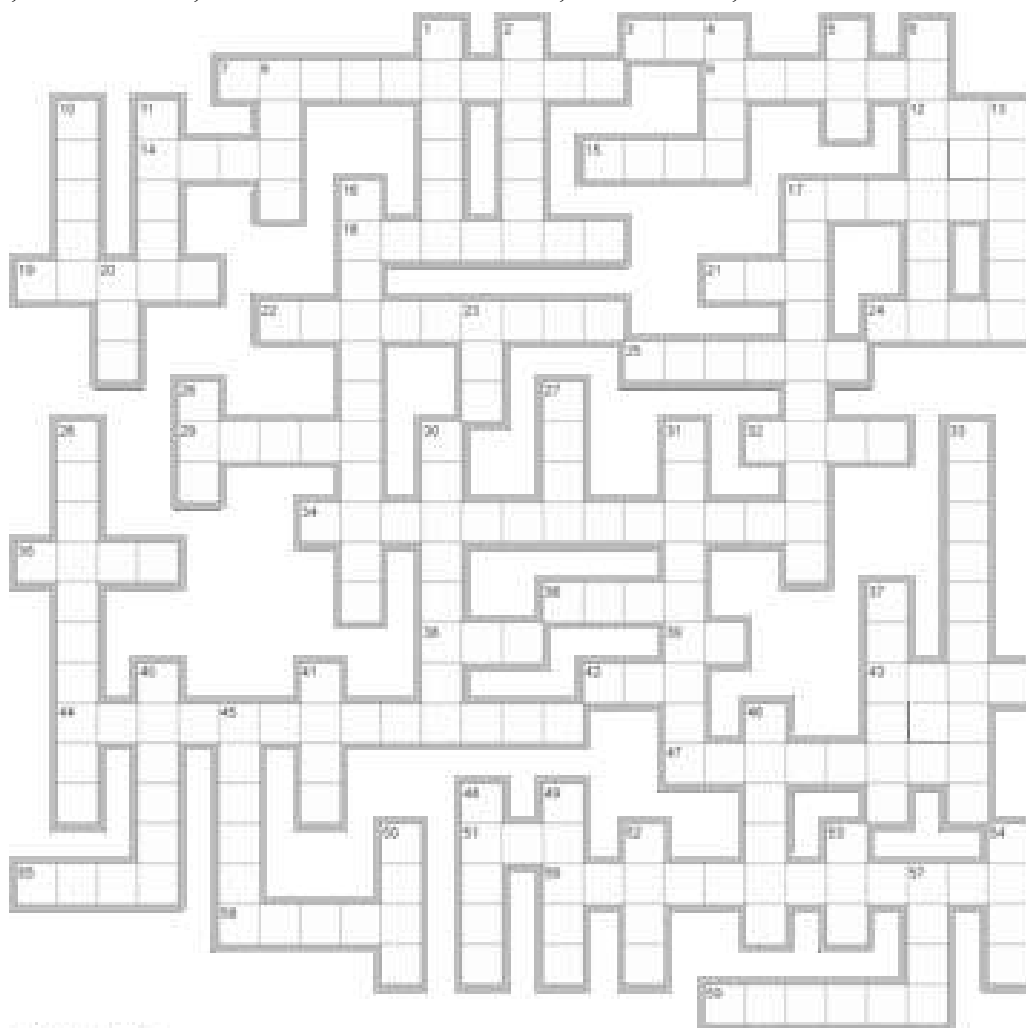
Astro Crossword compiled by Murray Forbes

Across

3. an arrested atom; 7. an optical design technique; 9. bright star in Canis Major; 12. satellite galaxy to the Milky Way; 14. angels and galaxies both have one; 15. alpha Lyr; 17. process that powers stars; 18. "2001, A Space; 19. triangular shaped glass used to refract light; 21. could be mistaken for a cloud; 22. a nebula; 24. rats (anagram); 25. cloud of dust and gas; 29. the Demon star; 32. mid-day; 34. to enlarge an image; 35. God of war; 36. Period of Earth's revolution about the Sun; 38. some spiral galaxies have one; 39. One of the Galilean satellites; 42. flying saucer; 43. BEM search; 44. magnificent globular cluster; 47. the longest day; 51. A lion circling the Earth; 55. New Zealander; 56. Stars spend most of their life on this; 58. used as a standard reference date; 59. The Eagle;

Down

1. Andromeda is one; 2. a fishy constellation; 4. space agency; 5. 24 hours; 6. e.g Jupiter; 8. smallest indivisible piece of an element; 10 bear; 11. Maxwell Smart's nemesis; 13. The Crab; 16. site of a radio telescope; 17. in-coming parallel rays of light are refracted through this by a lens; 20. frozen liquid; 23. an orbiting telescope; 26. solid, liquid or ...; 27. volcano on Io; 28. cluster of galaxies containing the Milky Way; 30. lighter shadow of an eclipse; 31. minor planets; 33. 80% of the universe is made of this stuff; 37. "... censorship" - why Black Holes can't be naked; 40. one of the twins; 41. volcano on Io; 45. The farthest point of an (Earth orbiting) object from the Earth; 46. there are nine of them in the solar system; 48. a Disney character; 49. Encke is one; 50. satellite observatory studying the Sun; 52. a form of dark matter; 53. closest star; 54. the Sun sets in this direction; 57. a new star;



UPCOMING EVENTS:

The next observing evening at the Tawa College observatory on: Saturday 14 April.

Text Chris Monigatti on his mobile 021 890 222 if you want to attend.

Note if cancelled due to bad weather, this will be deferred to Saturday 21 April.

Variable Stars; by Aline Homes Part Three**T Pyxidis, U Scorpii and Other Recurrent Novae**

This month's targets call for a slightly different approach, so there are no charts and comparison stars. Since April sees the first anniversary of the unexpected eruption of the recurrent nova (RNe) T Pyxidis, I thought it might be an appropriate time to consider this class of catastrophic variables and suggest a few things you can do.

Like classical novae, recurrent novae are close binary systems where mass is being transferred from a donor star to the surface of a white dwarf. This accumulated material will eventually start a thermonuclear explosion that results in the nova eruption. It is likely that all such systems are recurrent and RNe are a subset in which the repeat-time is less than a century. RNe are very rare. Only 10 are currently known, although the list is likely to grow as old novae are observed to make a second eruption. The list of known galactic recurrent novae is given in **Table 1**. What makes a recurrent nova? Firstly, the white dwarf must be close to the Chandrasekhar Limit (1.4 solar masses) and secondly, the accretion rate must be high. A high-mass white dwarf (>1.2 solar masses) means a high surface gravity allowing a relatively small mass of accreted matter to reach kindling temperature, leading to a runaway thermonuclear reaction.

Interest in these systems is fuelled by the hypothesis that they may be Type 1a supernova precursors, and while this may seem plausible, there are two problems. Firstly, there simply aren't enough of them to account for the observed number of Type 1a supernovae, so it is likely they are not the sole precursors of such explosions. Secondly, account must be taken of the mass lost in the RN event. If this equals or exceeds the mass accreted in the interval between nova eruptions, the white dwarf will never exceed the Chandrasekhar limit and will therefore never collapse as a 1a supernova.

To predict whether a given RN will give rise to a Type 1a supernova we need to know the recurrence time, the accretion rate and the mass loss per eruption. The latter two parameters are determined by studying variability during the declining stages of the eruption and during quiescence (Schaefer 2009). Since these systems are typically very faint, such observations are beyond all but the best-equipped amateurs, but just about anyone can help with the first.

Table 1: Known Galactic Recurrent Novae

RN	Constellation	RA	Declination	V(peak)	V(min)
CI Aql	Aquila	18:32:35.9	-01:28:39.3	9.0	16.7
V394CrA	Corona Australis	18:00:25.97	-39:00:35.1	7.2	18.4
T CrB	Corona Borealis	15:59:5	+25:55	2.5	9.8
IM Nor	Norma	15:39:26.42	-52:19:17.9	8.5	18.3
V2487 Oph	Ophiuchus	Recent discovery, position na		9.5	17.3
RS Oph	Ophiuchus	17:50:3	-06:43	4.8	11.0
T Pyx	Pyxis	09:08:00	-25.52	6.4	15.5
U Sco	Scorpius	16:32:30.78	-17:52:42.8	7.5	17.6
V745 Sco	Scorpius	17:55:22.27	-33:14:58.5	9.4	18.6
V3890 Sgr	Sagittarius	18:30:43.28	-24:01:8.9	8.1	15.5

Sources: Magnitudes - Schaefer 2009; positional data – various.

Variable Stars by Aline Homes

How Can You Help?

In spite of all the automated sky surveys, a good many nova eruptions are still detected visually because someone noticed a new star in a familiar area of sky. You can choose to monitor a particular area of sky with binoculars, observing every few days or on every fine night, but you need to know the star-field really well, and to have a good memory. A better way is to image an area of sky regularly and look for differences. This is easiest if you load two images from successive nights into two different windows on your computer screen and toggle between them -a technique known as “blinking”. This makes differences more obvious. If you are set up to do photometry, you can try to estimate the magnitudes of known recurrent novae and chart any changes.

Why is This Important?

For several reasons. Although some RNe have been intensively studied, and there are many recorded eruptions, other systems are poorly known. Even with intensively studied systems, it is probable that some eruptions have been missed. This is certainly the case for U Sco. Brad Schaefer of Louisiana State University, who has made a lifetime study of galactic recurrent novae, has estimated that the vast majority of RN events are missed for one reason or another. Eruption dates and predictions are given in **Table 2**. Amateur observers in the southern hemisphere are well placed to track known recurrent novae as most of the known ones lie south of the celestial equator and therefore low in the sky for northern observers. If you see a new star at any of the given locations (or anywhere else in the sky), contact VSS or the AAVSO, so that professional astronomers can be alerted.

Table 2: Eruption Dates and Predictions

RN	Known Eruptions (Year)	Next?
CI Aql	1917,1941, 2000	2024
V394CrA	1949, 1987	2017
T CrB	1866,1946	2026
IM Nor	1920, 2002	2084 (or 2043)
V2487 Oph	1900, 1998	2016
RS Oph	1898,1907,1933,1945,1958,1967,1985,2006	2021
T Pyx	1890,1902, 1920, 1944, 1967, 2011	??
U Sco	1863,1906,1917,1936,1945,1969,1979,1987,1999,2010	2019
V745 Sco	1937 1989	2010 (?overdue)
V3890 Sgr	1962, 1990	2015

Reference

Schaefer, Bradley E., Comprehensive Photometric Histories of All Known Galactic Recurrent Novae: arXiv:0912.4426v1 [astro-ph.SR] 22 Dec 2009. Be warned, this is a very long paper!

RASNZ Conference June 15-17

From Dennis Goodman, Chair, RASNZ Standing Conference Committee:

Well as I write this it is just under 3 months to Conference - and that time will fly by very quickly. Conference registrations are starting to come in now, and we encourage you to register early.

Registration forms are available on the RASNZ Webpage. (www.rasnz.org.nz)

Likewise for those wanting to present papers/poster papers - please lodge your intentions via the paper/poster-paper form on the RASNZ Webpage. The deadline to get the early registration discount is still some weeks away, but by registering now you will make sure you don't miss out.

Carterton is a lovely town within the Wairarapa region. It is blessed with a nice, temperate climate, good shopping, some nice cafes, high quality wineries nearby, and also nearby is Stonehenge Aotearoa. A visit to the latter will be an option for those wishing to take it.

Again, our thanks to The Phoenix Astronomical Society for hosting the 2012 Conference. They are putting in plenty of work, so let's show our appreciation by turning up in substantial numbers.

We are also advancing with plans for the RASNZ Conferences in 2013 in Invercargill, and 2014 in Whakatane. In a few months we will call for a host for the 2015 Conference. If your Society is thinking of hosting sometime please look out for the invitation to host in July/August. And if you have any questions in advance please ask us -conference@rasnz.org.nz - in fact use that address for any questions, queries etc. See you at Conference.

Third International Starlight Conference

The Starlight Conference is at Lake Tekapo, 11-13 June 2012. The website is accepting registrations and on-line requests to give an oral or poster paper. Visit www.starlight2012.org for full details.

It will be a multidisciplinary conference on the scientific and cultural benefits of observing dark starlit skies. The meeting will be of interest to RASNZ members and to many other interest groups in education, tourism, environmental protection and to those interested in the cultural and ethnic aspects of astronomy. As participation will be limited, early registration is encouraged.

The Starlight Conference is jointly hosted by the University of Canterbury and by RASNZ, and is being sponsored by the University of Canterbury, by RASNZ, by the Royal Society of NZ, by Endeavour Capital Ltd and by the NZ National Commission to UNESCO.

-- Abridged from a note by John Hearnshaw.

WAS will be represented by Gordon Hudson and we hope to have a report from him at a future meeting.

RASNZ Annual General Meeting

The 2012 Annual General Meeting of RASNZ will be held during conference as usual. However the Annual Conference will be held 15 - 17 June 2012 in Carterton. This is to place the conference after the transit of Venus and the 3rd Annual International Starlight Conference which is being held in Tekapo from 11 to 13 June. Normally the AGM should be held before the end of May but Rule 64 of the RASNZ Rules allows for Council to delay the AGM for special circumstances.

Any notices of motion need to reach the RASNZ Secretary at least six weeks before the AGM, so would need to be received by 5 May 2012. A formal notice of the AGM will be sent out in the next newsletter with details of location and time.

Rory O'Keefe, Executive Secretary RASNZ.

RASNZ Conference cont...

As with the 2010 and 2011 Conference there is no on-site accommodation.

Carterton is a town rather than a city, but there are plenty of accommodation options in the town itself, or very nearby. The Standing Conference Committee has grabbed a motel within the camping ground. There are more motels and nice cabins there, and there are motels, and hotel accommodation, in the town. Plus several B & B's, backpackers and the like. The Carterton Events Centre is a nice venue, with tiered seating so everyone can easily see the screens.

On the registration form there is the train timetable for those who need public transport from Wellington to Carterton. The train station is all of 5-10 minutes walk from the Carterton Events Centre, and from some of the accommodations options.

As Orlon Petterson and Warwick Kissling put together the papers timetable information will be put on the RASNZ Webpage. But the feature papers will be those from Ed Budding (Fellows lecture), and from our guests Wayne Orchiston and Clive Ruggles. Clive will also give a public lecture late on the Sunday afternoon. All details will be on the RASNZ Webpage as they become available.

Conference takes place a little over a week following the Transit of Venus. We are anticipating several people will want. If enough interest is indicated we could set aside time to discuss the transit, present observations, findings etc. within the programme then we can do so. But, please tell us...

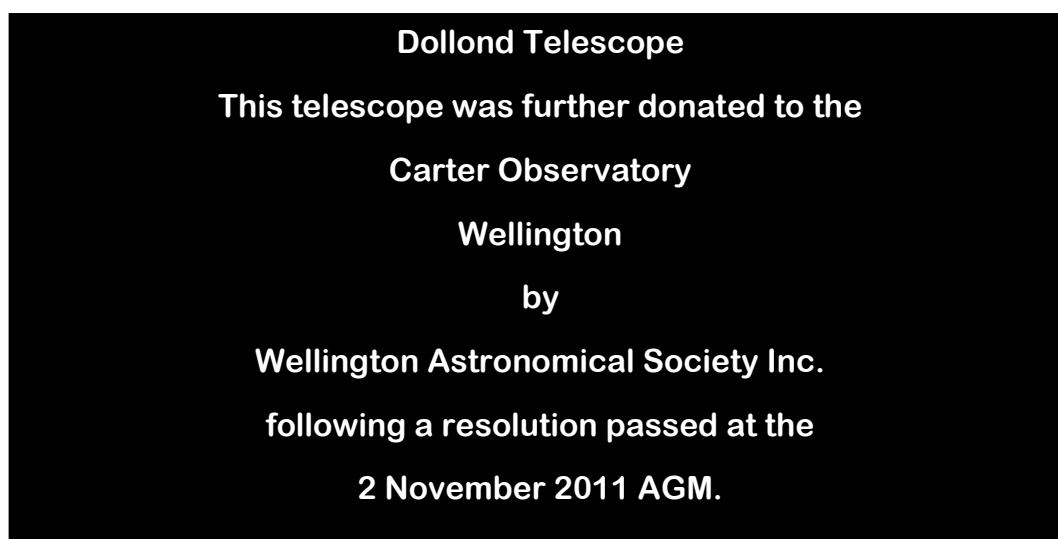
Wellington Festival Event "The Galileo Project" March 16th

As part of the Wellington Festival of Arts, Toronto's Tafelmusik Baroque Orchestra presented "**The Galileo Project**" at the Town Hall on Friday 16th of March. There was a full house and the audience got two encore tunes for the prolonged applause. Even the DomPost music critic who can be very tough gave them a good review which says a lot.

I don't know how many other astronomers attended but as the Town Hall holds about 500 people we would have been in a minority even if you all had turned up. The texts read by the "chorus" were very useful in putting the music in context and the astronomical pictures which included many Hubble Telescope shots, were also great. I was glad to see that the northern and southern views of constellations were about equally featured. Orion upside down is surprisingly hard to recognise. It

Dollond Telescope.

As approved at our November AGM, the Dollond telescope that has belonged to the Powells family was handed on to Carter Observatory on the 7th March. A plaque below was attached to the wooden case to make sure that the history and provenance is maintained.





The Evening Sky in April 2012

Three or possibly four bright planets can be seen in the early evening sky. Venus is the brilliant 'evening star', appearing low in the northwest at dusk. It sets two hours after the sun. In a telescope it looks like a crescent moon. Jupiter, even lower in the west, might be seen briefly in the bright twilight. Venus is 85 million km from us mid-month, coming closer. Jupiter is 890 million km away on the far side of the sun.

Mars is the orange-red 'star' midway up the north sky. In April it stays parked by Regulus, the brightest star in Leo. Mars is now fading, and getting smaller in a telescope, as we leave it behind. At mid month it will be 125 million km from us. A telescope shows only a tiny disk. Saturn is midway up the east sky at dusk. It is below Spica, the brightest star in Virgo. A telescope magnifying 20x shows Saturn's rings. Its largest moon, Titan, is four ring-diameters from the planet. Saturn is 1310 million km away in mid-April. It is midway up the north sky around midnight.

Sirius is the first true star to appear at dusk, midway down the northwest sky. It is soon followed by Canopus, southwest of the zenith. Below Sirius are Rigel and Betelgeuse, the brightest stars in Orion. Between them is a line of three stars: Orion's belt. To southern hemisphere star watch-ers, the line of three makes the bottom of 'The Pot', now tipped on its side. Orion's belt points down and left to a V-shaped pattern of stars making the face of Taurus the Bull. Below and right Sirius is Procyon.

Sirius, 'the Dog Star', marks the head of Canis Major the big dog. A group of stars above it make the dog's hindquarters and tail. Sirius is the brightest star in the sky both because it is relatively close, nine light years* away, and 23 times brighter than the sun.

Low in the north are Pollux and Castor, the heads of Gemini the twins, making a line vertical to the skyline. Above and right of them is the Praesepe cluster, marking the shell of Cancer the crab. Praesepe is also called the Beehive cluster, the reason obvious when it is viewed in binoculars. Orange Arcturus rises in the northeast in the later evening, twinkling red and green when low.

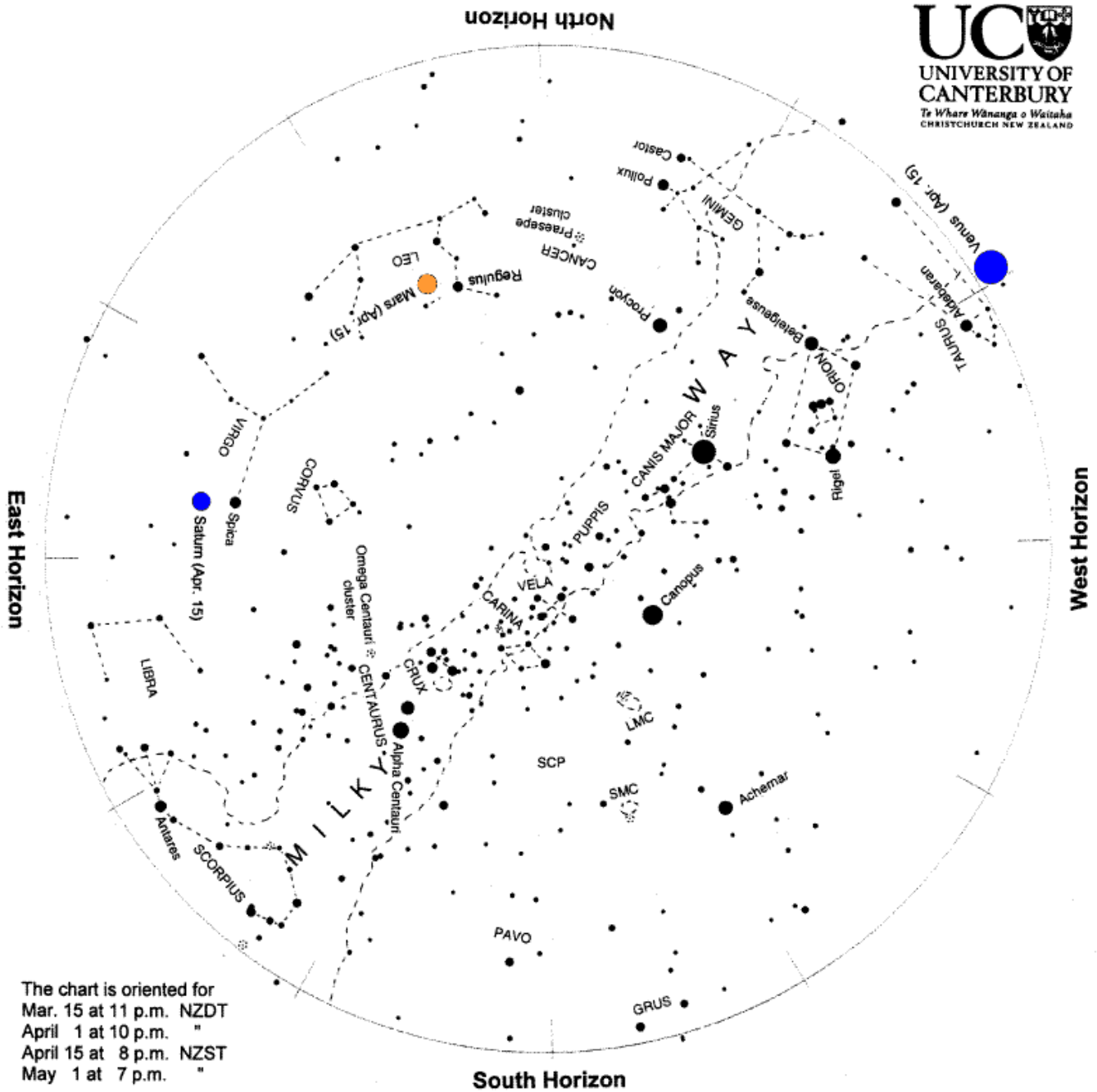
Rigel, left of Orion's belt, is a bluish supergiant star, 40 000 times brighter than the sun and much hotter. It is 800 light years away. Orange Betelgeuse, right of the line of three, is a red-giant star, cooler than the sun but much bigger and 9000 times brighter. It is 400 light years from us. The handle of "The Pot", or Orion's sword, has the Orion Nebula at its centre; a glowing gas cloud many light-years across and around 1300 light years away.

Crux, the Southern Cross, is high in the southeast. Below it, and brighter, are Beta and Alpha Centauri, often called 'The Pointers'. Alpha Centauri is the closest naked-eye star, 4.3 light years away. Beta Centauri, like most of the stars in Crux, is a blue-giant star hundreds of light years away. Canopus is also a very luminous distant star; 13 000 times brighter than the sun and 300 light years away.

The Milky Way is brightest in the southeast above Crux. The Milky Way can be traced to nearly overhead where it fades. It becomes very faint in the northwest, right of Orion. The Milky Way is our edgewise view of the galaxy, the pancake of billions of stars of which the sun is just one. The centre of the galaxy is toward Sagittarius, below Scorpio's sting, where the Milky Way is broad and bright.

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

Mercury (not shown) makes its best morning sky appearance of the year in April. It rises due east two hours before the sun at mid month. It is easy to identify as it is the brightest 'star' in the eastern sky. It is small in a telescope: crescent-shaped at the beginning of the month; changing to a last-quarter-moon shape by month's end. It is 95 million km from us at the beginning of April; increasing to 155 million km at the end as it moves to the far side of the sun. Mercury is one-third of Earth's diameter.



The chart is oriented for
 Mar. 15 at 11 p.m. NZDT
 April 1 at 10 p.m. "
 April 15 at 8 p.m. NZST
 May 1 at 7 p.m. "

Evening sky in April 2012

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 or clockwise shift each night as we orbit the sun.


Venus is the brilliant silver 'evening star'. It appears low in the northwest soon after sunset and sets two hours later. Mars, orange-red in colour, is midway up the north sky beside Regulus. Saturn is midway up the eastern sky below Spica. Sirius, the brightest true star, is midway down the western sky. Below it is Orion with bright stars Rigel and orange Betelgeuse. Orion's belt and sword, aka 'The Pot', appears between them. Canopus, the second brightest star, is southwest of overhead. Crux, the Southern Cross, and The Pointers, Alpha and Beta Centauri, are high in the southeast sky. The Scorpion, on its back, is rising in the southeast. The Milky Way spans the sky from SE to NW.

Chart produced by Guide 8 software; www.projectpluto.com. Labels and text added by Alan Gilmore, Mt John Observatory of the University of Canterbury. www.canterbury.ac.nz

RASNZ now has for sale its Safe Solar Viewers for the upcoming Transit of Venus (June) and Partial Eclipse (November). Prices and details included in the flyer. These handy viewers have been safety tested for RASNZ by Associate Professor Ralph Chou (School of Optometry, University of Waterloo, Ontario, Canada) for use during the Transit of Venus on the 6th of June and the Partial Eclipse on November 14th this year. Your society or group may like to place an order to sell the viewers to the local community - a perfect way to fundraise, to promote your group, or to use during your own organised events. There is nothing like exciting astronomical goings on to stir the public's imagination and to get everyone along to check out what your group gets up to....

WAS has purchased a batch of these. They are \$2.00 each. If interested please ask at the next meeting or email john.talbot@xtra.co.nz

RASNZ SAFE SOLAR VIEWER



View the 2012 Transit of Venus and Partial Eclipse of the Sun

Everyone can view this year's Transit of Venus on June 6th and the Partial Eclipse of the Sun on November 14th by ordering the Royal Astronomical Society of New Zealand's specially designed Solar Viewers for these two exciting events. Perfect for use at Home, in Schools, Clubs, the Workplace, or anywhere you happen to be under clear skies.

DON'T MISS THESE RARE EVENTS, PLACE YOUR ORDER NOW!


www.rasnz.org.nz

ALL PRICES INCLUDE POSTAGE

1 - 9 Solar Viewers	\$2.50 each
10 - 99 Solar Viewers	\$2.00 each
100+ Solar Viewers	\$1.50 each

TO PLACE AN ORDER

Online: www.rasnz.org.nz/Sales/SolarViewers.html
Email: president@rasnz.org.nz
Phone: (04) 460 0569 **FAX:** (04) 498 3535
Post: RASNZ Solar Viewers
P.O.Box 3181, Wellington



Each Solar Viewer comes with a helpful information pamphlet about both events.

Or you can purchase direct see <http://www.rasnz.org.nz/Sales/SolarViewers.html>

As these events will take place during the working week, family, friends, workmates and local schools might like to order a few, so please pass on the information.

Thanks everyone, Jennie McCormick, For RASNZ

Council Members of the WAS council for 2010-11 elected at recent AGM;

Executive:

President; John Talbot john.talbot@xtra.co.nz

Vice President; Gordon Hudson gordon@kpo.org.nz

Secretary; Chris Monigatti chrismon@xtra.co.nz

Treasurer; Lesley Hughes hpwas@hugpar.gen.nz

Curator of Instruments; Gordon Hudson Website; John Homes

Telescope Custodian; Chris Monigatti

General Council Members- Frank Andrews, Roger Butland, Aline Homes, John Homes and Bill Parkin,

Terry Butt (co-opted).

Newsletter Editor; Vicki Irons