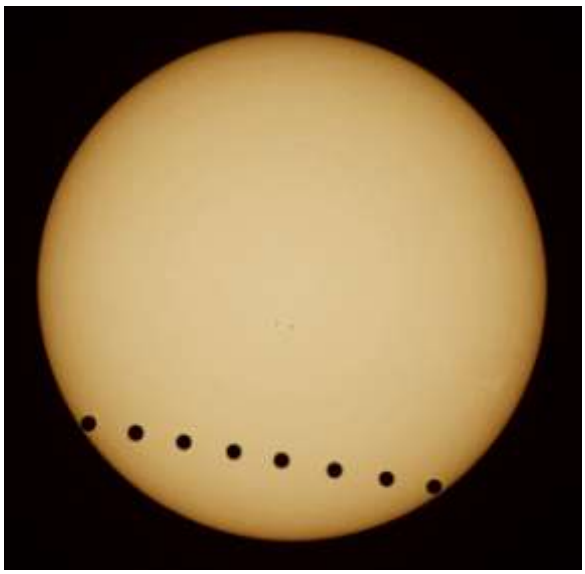
NEWSLETTER

Next Meeting is
Wednesday 6th June 2012 at 7:30 pm

Topic: **Transit of Venus 2012**

Presented by: John Talbot and Chris Monigatti

If the weather has been fine then **John Talbot and Chris Monigatti** will describe the observations of the **Transit of Venus** they have made. Final results will probably not be available but we hope to be able to at least show the basic curve described in the article (below). If the weather has been unfavourable then we will show a DVD and discuss what might have been.



A picture of Comet Lovejoy earlier this year
by Gordon Hudson
with his observatory in the foreground

July Meeting will be by Stu Parker on his "Supernova Factory" discoveries.

Chairman's Report for June 2012

The last meeting on Wednesday May 2nd

First we had Luca Quaglia who described the Huddle method of observing the Transit of Venus in which a series of pictures is taken of the Sun over as long a period as possible and then the distance from Venus to the centre of the Sun is measured. The square of the distance is then plotted against time and a least squares fit curve is plotted to the data. The minimum distance is calculated from the equation of the curve and the distance and time are noted. A second set of observations at a different latitude then allows the parallax angle to be calculated. This method is easy to implement and avoids the uncertainties of timing ingress and egress caused by the black drop effect.
John Talbot brought the simple Sun Funnel (see last newsletter) and **Gordon Hudson** brought one made from a "Trainer Cone" from a sports shop. Each cost less than $20 for materials and took little time to assemble.
The second speaker was Gordon Hudson. He described how to collimate a telescope using a small low power laser in a fitting that is inserted into the eyepiece tube and another that shines a bright diffuse light into the eye piece tube. In each case there are a number of adjustments that may be needed to correctly align your optical path. All instruments can get slightly out of optimum adjustment over time and Gordon had several simple tips on what to look for.

Transit of Venus on 6th June 2012

Wellington Astronomical Society (WAS) will holding a public observation of this rare event in Wellington Civic Square near the Pyramid on top of Capital E. (Weather permitting !) WAS members will be observing from about 10:00 am to about 02:30 pm.
We will be using a Sun Funnel mounted on a 140 mm Mead reflector which has been stopped down with a front aperture disk to about 32mm. This enables us to safely let several people at once see the progress of Venus across the face of the Sun.
We will take pictures with a cheap, hand held, point and shoot, digital camera that also records the time as part of the JPG image. We will try to take pictures at about 10 to 15 minute intervals from 1st contact to 4th contact. The whole image of the Sun must be in the photo but for best results we need to have at least a few photos on each side of the central point which is at about 01:30 pm.
The exact interval is not important as long as the relative time of the shots stay accurate so don't change cam-eras or batteries during the exercise. The angle of the Sun is also not important. No de-rotation is required. For slightly improved absolute accuracy we will take a picture of a PC "Adjust Time and Date" screen just after it has had it clock synchronised, with the msltime.irl.cri.nz Internet Time Server, before and after the event. This should allow us to get within about 2 seconds of Absolute UTC time. Later we will download the pictures to a PC with Excel or Open Office on it and MS Paint or similar tool that reports pixel co-ordinates of the cursor. The time can be obtained by looking at the picture in a camera software package, or by using Windows Explorer or similar and right click the image file and look for the Modified date which in Windows displays time to the second. We will apply any offset adjustment from the Time calibration above. Then for each picture we will use Paint (or similar) to note the X,Y co-ordinates of the extreme edges of the Sun, Left, Top, Right, Bottom and fill in data in an Excel workbook. When all the date has been entered we should have a roughly parabolic graph of Distance from Venus to the centre of the Sun. When all the data points have been entered we use the Solver Add-in to find least sum of squares fit quadratic. The quadratic equation will then enable us to solve for minimum distance in arc seconds of Venus from centre of the Sun. We hope to be able to present some preliminary results at the WAS meeting at Carter Observatory at 7:30pm that night.

Enquiries to: John Talbot Mailto:john.talbot@xtra.co.nz

Thomas Cooke Telescope Duty at Carter

May was well covered and we only need one more volunteer for June and 4 for July, 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.

WAS member off to Space?

By Chris Monigatti

As near as he can manage!
Connor Hale, a Yr 12 student member of WAS from Tawa College is going to attend the International Space Camp in Huntsville, Alabama, USA. Each year the Royal Society of New Zealand invite students to apply for scholarships to attend this prestigious event. In 2012, 4 students have been selected, (3 from greater Wellington, and one from Auckland). In Huntsville, the students experience aspects of Astronaut training and Mission planning, activities that Connor will be well suited for as he has already had some flying training. He is also studying Photography at college (and Astrophotography on observing nights)

So we will hopefully be able to publish some images from the trip in the September Newsletter. Longer term members may remember that in 2008 another WAS member / Tawa College student, Patrick Sharp, gave a short presentation after his scholarship to Space Camp. We look for-ward to hearing of Connor's experiences.

RASNZ Conference June 15-17

The Annual RASNZ Conference is now less than three weeks away. The programme has come together, and we think there will be something there to interest everyone.
Don't forget our Guest Speakers - Clive Ruggles and Wayne Orchiston. And also, Ed Budding will give the Fellows Lecture on the Friday night following the opening. We look forward to what everyone delivers in their papers. (See more next page)

WAS Research Astronomy Group;

Occultation Reports There were 5 positive asteroidal occultation events reported for Australia and New Zealand in April. All of these were 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 -photometry soft ware 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 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.

Council Members of the WAS council for 2010-11elected 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,.
Newsletter Editor; Vicki Irons

ROYAL ASTRONOMICAL SOCIETY OF NEW ZEALAND

89th Annual General Meeting 16 June 2012

Carterton Event Centre, at approximately 4:00pm.

Agenda; Apologies.

Respect for Deceased Members; Greetings to Absent Members.

Minutes of the 88th AGM held in Napier; Matters arising from the Minutes.

Annual report of council for 2011; Annual accounts for 2011 Election of Officers and Council for 2012 to 2014; Nominations received:

Position	Nominee	Proposed by	Seconded by
President	Gordon Hudson	John Talbot	Graham Blow
Vice President	nil		
Secretary	Rory O'Keeffe	Brian Loader	Pauline Loader
Treasurer	Simon Lowther	Rory O'Keeffe	Glen Rowe
Councillors	Steve Butler	Bob Evans	Brian Loader
	Bob Evans	Steve Butler	Pauline Loader
	Antony Gomez	Rory O'Keeffe	Glen Rowe
	Orlon Petterson	Karen Pollard	John Hearnshaw
	Karen Pollard	John Hearnshaw	Orlon Petterson
Fellows' Councillor	Phil Yock	Grant Christie	Bob Evans

The current President remains on Council as Senior Vice President.

After the conclusion of the RASNZ conference in Carterton the Beatrice Hill Tinsley Lecture will be held."**This public lecture is part of the inaugural series of Beatrice Hill Tinsley Lectures presented by the Royal Astronomical Society of New Zealand"**

Ancient Astronomies - Ancient Worlds

by CLIVE RUGGLES

We know a good deal about ancient astronomical knowledge and practices in places such as ancient China and Babylonia from the evidence contained in their recorded history, but people all over the world strived to make sense of what they saw in the sky long before the written record existed. What can we ever know of this?
Many people have suggested that Stonehenge and many other prehistoric constructions around the world provide proof of sophisticated sky knowledge that existed as far back in the Stone Age. If that is so, how did our distant ancestors acquire it and how did they use it?
In the absence of written evidence, we must find indications in the evidence available to the archaeologist: things such as man-made objects, human debris, and the layout of monuments and buildings. There are also valuable clues in beliefs and practices that have survived among indigenous peoples right through to modern times. Trying to make sense of this type of evidence is the business of the fields of study that have become known as archaeoastronomy and ethnoastronomy.

As Clive will show, some of the world's most iconic ancient monuments provide tantalising glimpses of long lost beliefs and practices relating to the sky, although they often have to be interpreted with considerable caution. Taking in examples from many different parts of the world, including his own ongoing field projects in Europe, Peru and Hawaii, Clive will use these insights to build up a broad picture of the diverse ways in which ancient peoples perceived and understood the world—the cosmos—within which they dwelt.

CLIVE RUGGLES is Emeritus Professor of Archaeoastronomy at the University of Leicester, UK. His is apparently the first University Chair in this subject to be created in the world. Archaeoastronomy is the study of beliefs and practices related to the sky in the past, and Clive trained as an astro-physicist before switching fields and becoming an archaeologist. He is a leading figure in a joint initiative by UNESCO and the International Astronomical Union to promote, preserve, and protect the world's most important astronomical heritage sites.

More details on RASNZ web site at http://www.rasnz.org.nz/

A Night to Remember -or maybe to Forget!

by Gordon Hudson

On Saturday April 14 at 10am I drove to Upper Hutt to pick up the late Jack O'Kane's telescope. I'd had a call from Graham Blow to say that Jack's widow was donating his telescope to the WAS and could I pick it up. I thought that I remembered the size of this telescope but when I saw it, it was much bigger than I remembered. I was expecting a 6" Newtonian on a small equatorial mount, but it was an 8" f8 Newtonian on a substantial German equatorial mount.

Fortunately I went to pick it up in my van so there would be no trouble with it fitting in but the problem was how to pick it up to get it in. It was very heavy. I removed the telescope from the mount and then removed the mount from its trolley. I struggled to lift the mount into the van but managed in the end. When I got it home I reassembled it and rang John Talbot who said he was quite keen to see the mount and maybe he could use it. The telescope itself has been dismantled and will be made into a Dobsonian.

The sky was clear and looked like staying that way so I arranged to pick up Murray Forbes to come to my place and observe a couple of variable stars together. I was to pick up Murray at 7pm. Before I left home at 6.30pm I had earlier at 5.30pm turned the cooling on for the ST7 camera so that it had plenty of time to cool down. At 6.15pm I went out to the observatory to take some twilight flats for the evenings viewing as I wanted to compare these with my newly acquired electro-luminescent screen which was to replace trying to do twilight flats. At 6.30pm I drove to pickup Murray and arrived back home at 7.30pm (Murray lives 25km away from me).

First of all Murray set up the sequence for exposing the flats, darks & bios. Then we started exposing flats using the electro-luminescent screen. The original light from this screen was far too bright and therefore had to be dimmed. Unfortunately you could not dim it electronically you have

to do this by placing sheets of paper in front of the light until you get an acceptable amount of light. Two sheets of paper did the job.

The screen is attached to the dome and when you swing the telescope so that it lines up with the screen it has the screen about 100mm away from the front of the telescope. You do not want any stray light around when doing these flats as it could affect the result. The darks are taken with the cover over the front of the telescope so this part is easy and the exposures are the same as you do for the flats, between 3 and 5 sec on my system. After sorting out the flats and darks etc it was time to find the star field and then the star. My system is fully Go To and should make finding the star quite easy. That is providing the computer that is running the telescope has the exact time running, otherwise it will not point to the exact coordinates.

But no! it is not that straight forward, are you looking at the right star? The coordinates say you are looking at the right place, but is it? You need some sort of reference so that you can check which star field and star you are looking for. Fortunately, Murray had a printed star chart of the field so we could identify the field and then the star.

Focusing the ST7 camera is quite tricky as you have to keep taking images and checking to see if they are in focus in keep doing this until you have it right. We were going to observe not using the filters so it was unfiltered images we were taking. We thought we were on to the star and so we started to expose using the sequence that Murray had set up. The sky was still clear and we finished our exposing of what we thought was the correct star.

Murray downloaded the night's work onto a memory stick, to work on at a later date.

By this time it was 11pm so we closed up the observatory and I drove Murray home by 11.30pm so it was midnight by the time I got back home. But for me, the nights viewing was just half-way, there were several hours to go before I would get to go to bed. We discovered the next day that the computer clock was not correct.

Murray informed me that the electro-luminescent flats we had taken would be alright. As to the results of the actual observing the variable star; it looks as though we were not looking at the right star.
We were close but not close enough!

This was good timing as I was scheduled to meet Graham blow at Carter Observatory at 2pm as we were to use Carters Observatories 16" Boller & Chivens telescope to record a Minor Planet event (13.1 mag star and Asteroid Leda 14.1 mag) at 4.40am. I left home at 1.30pm after a late supper and met Graham at 2pm at Carter. We spent the next 2 hours setting up Graham's equipment which seems to have wires running in all directions.

Finding the field was easy -the hard part is finding the star. The Boller & Chivens uses the old setting circles. These circles are quite accurate on this telescope providing the telescope has been set up on a bright star first so that you can check your coordinates. We used Antares, however you cannot rely on this and you have to check to make sure it is the same as the printouts of the star field that you have. This is when it gets tricky. After spending an hour convinced we were looking at the right star, we started recording with the Watec 120N. Sometimes you can see the minor planet approaching the star but not this time. We started recording at 4.30am and recorded till 4.45am. We ran the recording back and replayed it but visually we could not see an occultation occur. If an occultation had been visible on screen the star would have dimmed possibly by 2 magnitudes.

The occultation members use a program called Li-movie, which analyses the star and shows if an event has taken place. The problem with observing these events is mainly whether you are looking at the right star, if it missed the star, or maybe it was early or even late!

We packed up at Carter and left there at 5.30am. I got home at 6am just as dawn was breaking. Several days later Graham checked the event by running it through Li-movie and we recorded a miss.

From the time I left home at 10am on the Saturday morning and finally got to bed at 6am Sunday morning I had travelled 250km and no actual positive event to show for my effort.

Since that evening I have observed several minor planet events- all have missed.

Maybe one day!!

Adam Art Gallery Exhibition 'Dark Sky'

DARK SKY is an exhibition about photography that takes as its subject -the skies above us. Coinciding with the 2012 Transit of Venus, it gathers nearly 90 items ranging from small-scale postcards made by commercial photographers, to large, multipart installations conceived for the occasion by contemporary artists, to digital prints sent from space probes on lunar missions, to highly manipulated images that turn the stars into artists' drawing devices. Spanning an extended history from 1874 to the present, the show includes works from Germany, England, the United States, Australia and New Zealand, setting out to blur distinctions between art, science and the popular imaginary.

Conceived to mark the historic event of the last Transit of Venus any of us will witness. DARK SKY canvasses much more than that single phenomenon. Bringing together an array of ways in which the firmament has been pictured, the show navigates an idiosyncratic path through a rich history.

Adam Art Gallery Te Pataka Toi is at Victoria University of Wellington until 8th July.
Entry is Free.
The exhibition is supported by Carter Observatory and the Royal Society of New Zealand.

The Evening Sky in June 2012

Venus crosses over the sun's disk on June 6. This transit of Venus will be visible from all of New Zealand. The planet will begin to make a tiny dent in the bottom edge of the sun just after 10:15 a.m. NZST. It is fully onto the sun's edge by 10:34. Venus's disk will be 1/30th of the sun's diameter. It is midway toward the centre of sun's disk at 1:30 p.m. After that it moves toward the edge. It begins to leave the sun's disk at 4:25 and is fully off the sun by 4:44. For more details visit Transit. Transits of Venus happen in pairs eight years apart, separated by more than a century. The next transits are in 2117 and 2125.

Safe methods must be used to view the Sun. Viewing the Sun directly can result in instant blindness. The safest way is to project the image of the Sun onto a suitable screen. Alternatively a specially designed solar filter may be placed in front of the telescope. It is NOT safe to use a filter at the eyepiece as the focussed heat from the Sun could shatter it. If unsure of safe methods consult your local astronomical society about suitable ways of observing the sun. Safe solar viewers can be purchased on line or they can be bought for $2.50 each p.p. from RASNZ Solar Viewers, PO Box 3181, Wellington 6140.

There is a partial eclipse of the moon on June 4. The moon begins to enter the dark part of the Earth's shadow, the umbra, at 10 pm. At 11:03 a third of the moon will be in shadow. The moon leaves the umbra at 12:06 a.m. It will be in the outer part of Earth's shadow from 9 pm to 1 a.m.

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, with 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 the lower of the two and a nice sight in a small telescope. Left of Saturn and Spica is orange Mars. It is 200 million km away and very small in a telescope. Below and right of Saturn is orange Arcturus, similar in colour to Mars. It is the fourth brightest star and often twinkles red and green.

Mercury (not shown) moves up the northwest evening sky through the month. It sets two hours after the sun at the end of June. It is on the far side of the sun from us, about 170 million km away.

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. Beta Centauri and many of the stars in Crux are hot, extremely 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 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, red hot.

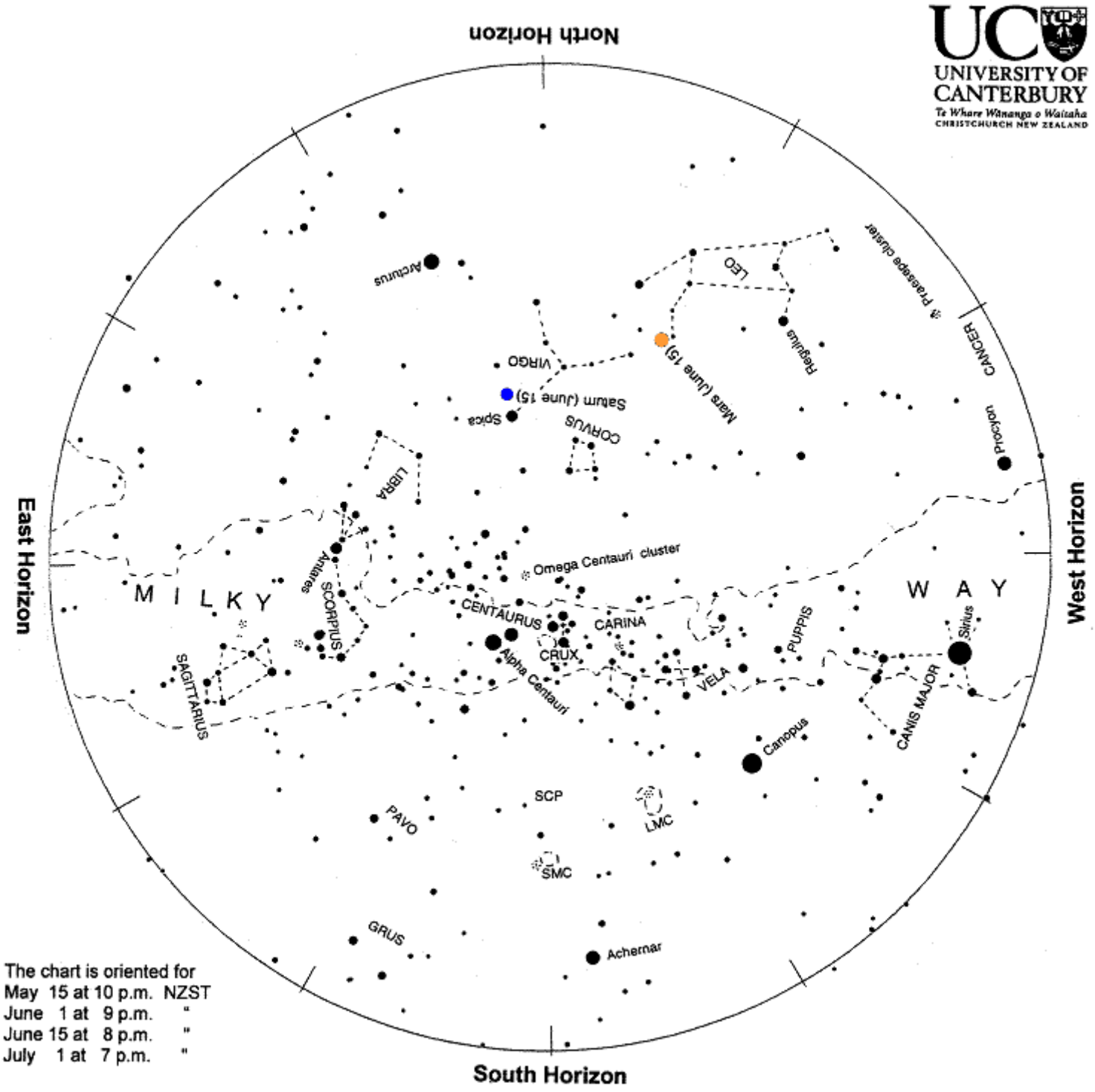
The Milky Way is brightest and broadest in the southeast toward Scorpius and Sagittarius. It remains bright but narrower through Crux and Carina then fades in the western sky. The Milky Way is our edgewise view of the galaxy, the pancake of billions of stars of which the sun is just one. The thick hub of the galaxy, 30 000 light years away, is in Sagittarius. 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 160 000 and 200 000 light years away.

Jupiter (not shown) rises in the northeast around 6 a.m. mid month. It shines with a bright steady golden light. Brilliant silver Venus moves rapidly up the dawn sky after its transit, catching up with Jupiter. By the end of June the two bright planets are level. The Matariki/Pleiades cluster is on their left and orange Aldebaran is right of Venus. Jupiter is 890 million km away; Venus 45 million km.

Notes by Alan Gilmore, University of Canterbury's Mt John Observatory, P.O. Box 56, Lake Tekapo 7945, New Zealand.

www.canterbury.ac.nz 12/04/29



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.