

The next WAS meeting will be held on Wednesday 2nd of September 2015 at 7:30 pm

Some Highlights from 40 plus Years of Optical Astronomical Observing

Denis Sullivan, Victoria University of Wellington



Although my postgraduate training was in experimental nuclear physics, commencing in August 1972, my research at VUW has been dominated by optical astronomy. This has involved instrumentation development and a lot of observing, primarily but not exclusively at Mt John at Lake Tekapo.

This talk will provide a brief overview and also focus on a few astrophysics topics, some of which relate back to my nuclear physics background.

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PRESIDENTS REPORT SEPTEMBER 2015 GORDON HUDSON

The month of August has been a trying month which started at the meeting after Dave gave his talk on the New Horizons flypast of Pluto. This talk was well attended and well presented a lot of questions were asked after the presentation. Dave finished talking at about 8.30pm as was expected and we settled down to have supper. At 8.50pm I was approached by the lady at the front desk to say that we had to be out of Carter by 9pm.

This was the first I or any of us had heard about this and so we were not that happy as we still had to finish supper and put the chairs away and clean up. Which we managed to do and we left at 9.10pm. Normally we would finish speaking at 9pm and out by 10pm but this seems to have been changed. The problem is the lady at the front desk is only there from 5pm to 9pm.

We have also been asked to move from the evening of Wednesday 4th of November which is our AGM evening as the WCC will be using the room. A time or date or place has not been decided as yet but we will inform you on our website and in the next newsletter.

Discussions are ongoing with Museums Wellington who manage Carter Observatory.

For many of us the news of John Talbot has come as a shock with John having a triple bypass operation. John was taken into hospital on 24 July his operation was on 7th August. Although the operation was successful and while in recovery he had a Stroke he was put into ICU and is now out of there. His recovery process is going to be slow. On Monday 17 August John was moved to Kenepuru Hospital which is the stroke recovery unit

for Capital & coast Health. I visited John on the 18th August at Kenepuru which is only 3km from my place and he was looking much better although the stroke is down his left side and will be slow to recover. John hopes to be back at his home before the end of August. However John is not likely to be back at WAS this year.

With John not available to run the Research Group Murray Forbes stepped in and helped and presented what John would normally have done. Thanks Murray.

The funds from the Syd Cretney Bequest have been invested in a Trust fund with the Lawyers who acted on our behalf in obtaining this Bequest. The planning for the Gifford Observatory has begun on the WAS automated telescope. There are many decisions to be made and possibly a new steering committee to be formed as this is going to be on going for the next year and possibly longer.

2015 — 2016 Subscriptions Due

The new subscription year begins in September, so WAS looks forward to receiving your subscription renewal.

Renewal forms can be found on the website, but a summary follows:

Subscription for Newsletter by Email 2015 -2016

Adult/Waged	\$ 50.00
Student/Unwaged	\$ 30.00
Family	\$ 70.00

Payment method:

Cheque (to Wellington Astronomical Society Inc),

Mail address is PO Box 3181, Wellington

Direct Deposit or Internet Banking: use acct no 03-0502-0508656-00 with reference, so WAS knows who paid.

Cash - please bring exact amount to meeting

WAS COUNCIL MEMBERS AND CONTACTS

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The following members were elected to Council at the Nov 2014 AGM

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IS THE MILKY WAY SPECIAL? SPECIAL PRESENTATION: OCTOBER 5TH

We are on the verge of finally getting to know our celestial neighborhood. New missions such as Gaia and Fermi are poised to reveal the Milky Ways past, present and perhaps future, and so it seems an excellent time to ask whether there's anything really special about our home galaxy. In this talk, Chris Lintott will draw on cutting-edge research and results from his own Galaxy Zoo project to compare the Milky Way to the other galaxies which surround us, and ask whether we were living in a special

time in its history. For starters, it seems there's something odd about the black hole that lurks in the centre of the Milky Way.

Chris Lintott is Professor of Astrophysics and Citizen Science in the Department of Physics at Oxford University. Lintott is involved in a number of popular science projects aimed at bringing astronomy to a wider audience. He is the primary present-

er of the BBC series *The Sky at Night*, having previously been co-presenter with Sir Patrick Moore until Moore's death in 2012. Lintott co-authored 'Bang! - The Complete History of the Universe' with Patrick Moore and Queen guitarist and astrophysicist Brian May.

Venue: The Royal Society Meeting Room. More details will be in the October newsletter!

2015 Harry Williams Astrophotography Competition

Entries to the Harry Williams Astrophotography competition close on September 7. Winners of the competition will be announced at the Auckland Astronomical Society's annual Burbidge Dinner.

This year's competition will be judged by Pete Lawrence who is an expert in image processing and one of the UK's foremost

astrophotographers. Pete is probably best known for being one of the co-hosts of the very popular BBC "Sky at Night" television program where he routinely provides advice on astro-imaging and general astronomical observing. Pete also has a degree in physics with astrophysics.

This year the Deep Sky category is spon-

sored by the Nikon D810a full frame astrophotography camera. Nikon has very generously provided a cash prize of \$500 for the winner of the category as well as a loan of their new Nikon D810a, Nikon's first dedicated astrophotography DSLR.

For Competition details and the Entry Form see: <http://www.astronomy.org.nz/new/public/default.aspx>

Herbert Astronomy Weekend - September 11-14

The Herbert Astronomy Weekend will be on the weekend of September 11th to 14th at Camp Iona, 2 km to the west of Herbert in North Otago, beginning from Friday afternoon.

The overnight fees are \$34 per adult for two nights and \$17 for one night. For secondary school teenagers, they are \$14 and \$28 for one and two night per teenager, and for primary schoolchildren they

are \$11 and \$22 for one and two nights. For those staying the full three nights at Camp Iona, the charge is \$38. There is also a daytime or evening visitor charge of \$6 per person for those who wish to our Herbert Astronomy Weekend without the need to stay overnights at Camp Iona. Those fees are payable in cash or cheque at Camp Iona.

Speakers are welcome at our Herbert

Astronomy Weekend, and a data projector is available for those who wish to speak. Please contact: Euan Mason at euan.mason@canterbury.ac.nz if you wish to speak.

The Herbert Astronomy Weekend's website is: <http://www.treesandstars.com/herbert/> where online registrations are encouraged for those attending the Weekend.

StellarFest 2015 at Foxton

StellarFest ran from 14-16 August 2015 at Foxton Beach. About 70 people registered for this event, including a dozen or so students enrolled in the astronomy paper running this semester at Massey University. There were many excellent presentations including, amongst others, observing - solar, variable stars, DSLR night sky and light pollution meters; basic

physics - observing equipment, gravity; recent discoveries - exoplanets, New Horizons probe and the infra-red satellite (WISE). The most up-to-the-minute presentation (by Skype) was by Paul Delaney of York University, Toronto, about dwarf planet Pluto: firstly a brief history of the discovery and the definition of a planet and then some detail on the

images which indicate relatively recent activity, in contrast to the previously assumed view of it as a dead, cold world. The question to be resolved is, what is the source of the energy for this activity?

As well as the interesting lectures the clouds cleared on Saturday night to allow some viewing.

Occultation Alert

Everyone mark the following date in their observing diaries – Wednesday 30 September at 11:52 UT. The minor planet (697) Galilea is predicted to occult the bright (magnitude 6.3) star HIP 113998 in the constellation of Aquarius **and Wellington will be directly under the path of the shadow as it sweeps across the Earth.**

The picture with the globe map gives the details of the event. At the time of writing (Thursday 27 August), four WAS members have already registered for this event on OccultWatcher. The path will also sweep across Australia, so we can expect a lot of observers for this event (two of our Aussie cousins have already registered).

The large Rank (97) of this event means the prediction is considered to be very accurate. Galilea has an 80 km diameter – in other words the width of the shadow will be 80 kilometres across and will cover the top part of the South Island and Wellington to Kapiti/Wairarapa in the North Island (see the other, zoomed-in, map). We don't even have to leave our home observatories to see this event!

Although the target star is fairly bright, so you could easily star hop or directly 'goto' with your scope, I have listed the details of two, even brighter, pre-point stars;

Pre-Point Time UT			Star (mag)	J2000				Dec Offset (ArcMin)	Star Name
h	m	s		RA		Dec			
			(h)	(m)	(°)	(')			
10	09	44	4.3	21	22.2	-16	50	-13.6	SAO 164346
09	53	30	4.1	21	05.9	-17	14	+10.5	SAO 164132

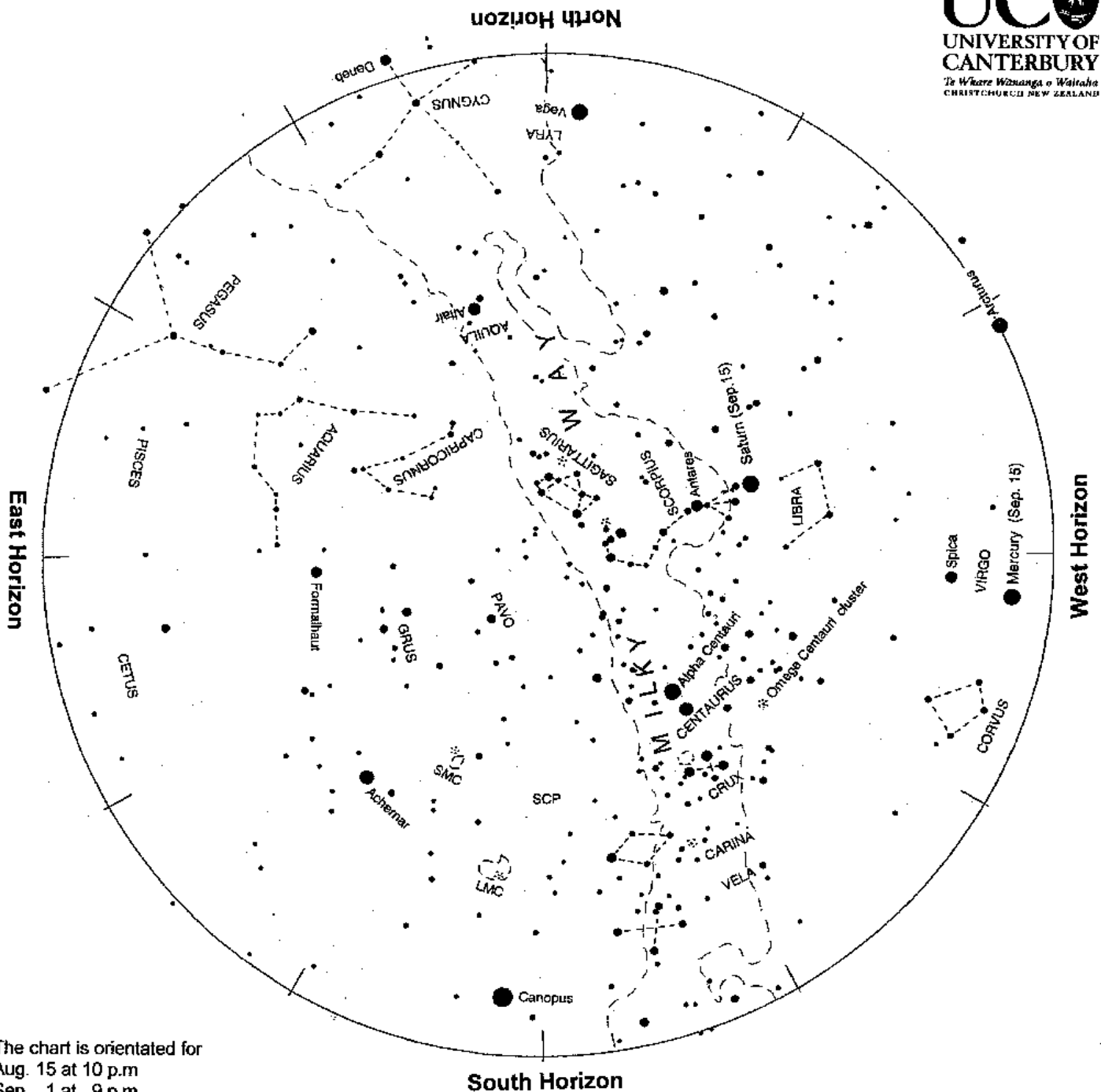
With a maximum duration of the occultation predicted as 9.5 seconds and with the error in the time of the event estimated as 5 seconds, you should observe at least 24 seconds ($= 9.5 + 3 \times 5$) before and after the predicted time for your location. For most observers' scope & camera configurations, it takes a star about 1 minute to drift through your video camera's field of view, so you could simply stop your scope's tracking at the relevant time for the pre-point star and just let the target star drift across your camera during the event. However I prefer to stop tracking the pre-point star 10 minutes before the pre-point time and resume tracking 10 minutes before the event time and measure at least five minutes before and after the event. This gives me more time to recover in case something goes wrong, and also may just lead to the discovery of a previously unknown satellite of the asteroid.

I have a spare occultation toolkit that I'm prepared to lend to a good home (observatory) for this event, so if anyone has a telescope but doesn't have the appropriate video camera/GPS VTI gear, give me a call (murray_forbes@xtra.co.nz). However the star is bright enough, the magnitude drop is large enough and the duration long enough that even visual observers could make useful measurements. As an added bonus – the star has a fairly large angular diameter (1 mill-arc second), so we may see the combined light intensity gradually fade and come back (rather than the more common instantaneous 'off' and then later another instantaneous 'on' again).

All we need now are clear skies – so if anyone knows a good 'anti-rain' dance please start practising.

Cheers,

Murray.



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 2015

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.

Saturn and Mercury are bright 'stars' in the western sky at the beginning of the month. Mercury fades into the twilight but Saturn remains. Orange Antares, the Scorpion's heart, is above Saturn and fainter. The Scorpion's tail, a.k.a. the fish-hook of Maui, curls toward the zenith. Arcturus twinkles red and green as it sets in the northwest. Crux, the Southern Cross, and the Pointers are in the south-west. Canopus twinkles like a diamond near the southern horizon. Vega shines on the opposite horizon. The Milky Way spans the sky from north to south.

The Evening Sky in September 2015

Mercury and Saturn are bright planets in the evening sky. At the beginning of the month Mercury is making its best evening sky appearance of the year, low in the west. Cream-coloured Saturn is north-west of the zenith at dusk and midway down the western sky by late evening. Mercury and Saturn are similar in brightness to orange Arcturus on the north-west skyline. Above Saturn is orange Antares. Crux, the Southern Cross, and the Pointers are midway down the southwest sky. Canopus, the brightest star in the sky, skims along the southern skyline. It is matched on the northern skyline by Vega, one of the brightest northern stars. The Milky Way spans the sky from northeast to southwest.

Mercury makes its best evening sky appearance of the year at the beginning of the month, setting more than two hours after the sun. It slips down the sky night to night, setting earlier, then disappears as it passes between us and the sun at the end of the month. The crescent moon will be below and right of Mercury on the 15th. Above Mercury is Spica, the brightest star in Virgo. Mercury is small in a telescope. It looks like a tiny first-quarter moon at the beginning of September, waning to a taller crescent as it comes closer. Mercury is one-third of Earth's diameter. It is 116 million km away mid-month.

Saturn, being distant, moves little against the background stars. It stays by the Scorpion's claws through the month as the region sinks lower in the west. Saturn is worth a look in any telescope. Even binoculars will show it as an oval, the planet and rings blended together. It is 1550 million km away mid-month.

The Milky Way spans the sky from north to south. Many of the brightest stars are scattered along it or near it. Two exceptions are Canopus, near the south skyline, and Arcturus, setting early in the northwest. Both stars are shining through a lot of air which makes them twinkle colourfully. Canopus, being white, shows all colours like a diamond. Orange Arcturus twinkles red and green. Canopus is a truly bright star: 13 000 times the sun's brightness and 300 light years* away. On the opposite horizon is Vega, the second-brightest northern star after Arcturus. It is due north at dusk and sets in the late evening. Vega is 52 times brighter than the sun and 25 light years away.

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. Beta Centauri, along with most of the stars in Crux, is a blue-giant star hundreds of light years away.

West of overhead, above Saturn, is orange Antares. It 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. 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 passes Altair, meeting the skyline right of Vega. The Milky Way is our edgewise view of the galaxy, the pancake of billions of stars of which the sun is just one. The thick hub of the galaxy, 30 000 light years away, is in Sagittarius. The actual centre is hidden by dust clouds in space. The nearer clouds appear as gaps and slots in the Milky Way.

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

Brilliant Venus (not shown) is the 'morning star'. It rises in the east two hours before the sun. A telescope shows it as a thin crescent. Earth-sized Venus is 60 million km away mid-month.

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

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New Zealand

Special Observing Event September 19 at Tawa College

On September 19th is The International Observe the Moon Night and this will also be the WAS Observing evening. Starting at 7pm at Tawa College.

At the September meeting we will reintroduce the Night Sky, we will also be looking at the Meridian Flares how and where and when to find them, and will also look at the Space Station Flyovers.