

# Newsletter

WELLINGTON ASTRONOMICAL SOCIETY

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Wednesday, 3rd of August,  
7:30 PM at Carter Observatory

08-2011

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## THIS MONTH'S

### MEETING FEATURES

**The Square  
Kilometer Array**  
a presentation by Dr.  
**Melanie Johnston-Hollit**

Wellington  
Astronomical  
Society





## Presidents Report for August 2011

In the last month 6 new members joined us and I would like to welcome them and hope that they find us interesting and sometimes entertaining.

The month of July was very quiet on the astronomy scene although we have had one or two average nights but that was about all.



The Square Kilometer Array - reconnecting people with stars

Observing at Pauatahanui on July 9th was clouded out and canceled so we moved observing to the following July 23rd and this to was clouded out. Observing seems to be getting less and less frequent as the weather gets cloudier and wetter and colder. Frank's talk at our July meeting was very educational topic about the Lunar Calendars & Matariki.

Septembers meeting will be another of the Videos DVD from our collection.

Back at the end of June I was to go to Blenheim in the South Island and talk to the Grovetown primary school about Matariki and observe with a couple of our telescopes but unfortunately the school which is only small could not guarantee sufficient numbers to warrant the expense of going to the South Island. So it was postponed but it may happen again later in the year.

At last months committee meeting the committee though it might be a good idea to donate one of the societies telescopes to Carter Observatory. This is the very

old Dollond telescope which is not used by the society and is quite valuable but only as an antique. It has no mount or a tripod and is only suitable for display purposes. I will write up a proposal for this which I will present at the WAS AGM in November.

It was also discussed about the newsletter

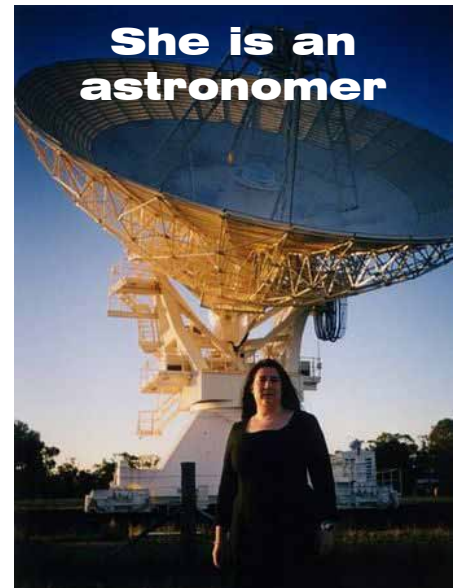
printing which is costing us more and more as it is not just printing but the posting and the cost of someone physically going to get it and put into envelopes that are pre-printed with the address and then post it. By the time of the AGM in November we hope to have and almost zero printing and nearly all newsletters emailed to members.

We are still trying to get our 6" dobsonians returned so that they can be checked. So if you have one we would like it returned at the next meeting. I have already have two returned.

We have other members waiting for these telescopes.

We are still requiring members to assist at the Carter Observatory observing on Saturday nights so if you haven't volunteered yet now is your chance to do so. Register your name with

On August 6th there will be a first quarter moon.



Dr. Melanie Johnston-Hollitt

This is just one of five 22m dishes that make up the Australian Telescope Compact Array in New South Wales. Melanie operates it remotely over the internet.

### Dr. Melanie Johnston-Hollitt - Bio

Dr. Melanie Johnston-Hollitt completed her PhD in radio astronomy jointly at the CSIRO Australia Telescope National Facility (ATNF) and the University of Adelaide. The topic of her dissertation was detection of magnetic fields in galaxy clusters through radio observations of Faraday Rotation. Following this she was appointed as the inaugural LOFAR Fellow in the Netherlands where she worked on design aspects and science drivers for the Low Frequency Array radio telescope. She returned to Australia in 2004 to take up a tenured faculty position in the Radio Astronomy Group at the University of Tasmania where she led a research group investigating the environmental conditions required to generate radio emission in galaxy clusters. In January 2009 she moved to New Zealand as leader of a new radio astronomy group within the School of Chemical & Physical Sciences at Victoria University of Wellington. Upon arriving in NZ she was elected the founding chair of the New Zealand Square Kilometre Array Research and Development Consortium (NZSKARD), a group which brings together researcher from all over NZ exploring the new techniques that are needed for operation of the Square Kilometre Array. In 2011 she led a successful bid for NZ to join the Murchison Widefield Array (MWA), an official SKA precursor instrument being constructed on the Australia-NZ SKA core site. Recently she has been appointed as New Zealand's science representative on the international Founding Board of the Square Kilometre Array.





## OBSERVING AT PAUATAHANUI

The next observing evening at Pauatahanui is on August 6th starting at 7.00 pm, alternative August 20th. **If doubtful please ring Chris Monigatti on his mobile 021 890 222 to see if the session is going ahead.**

## OBSERVING AT THOMAS KING

All public observing evenings will be held at the Thomas King Observatory run by our Observatory Director Ross Powell. from 7:00 pm. **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.

## WAS August's talk resumé

**Presenter: : Dr. Melanie Johnston-Hollitt**

**Duration:** approx. 50 minutes

**TITLE:** "Science with Next Generation Radio Telescopes: On the Path to the Square Kilometre Array"

The international radio astronomy community is currently cooperating to design, plan and build the next generation of radio telescopes.

Instruments like the Square Kilometre Array (SKA) and associated pathfinder telescopes will open a new window on the universe and herald a renaissance for radio science. Major questions in astronomy and physics such as when did the first stars and galaxies form and what is the origin of cosmic magnetism will be answered. In this talk I will present an overview of the SKA and its pathfinder instruments and discuss the science for these next generation of radio telescope with particular focus on New Zealand's engagement.

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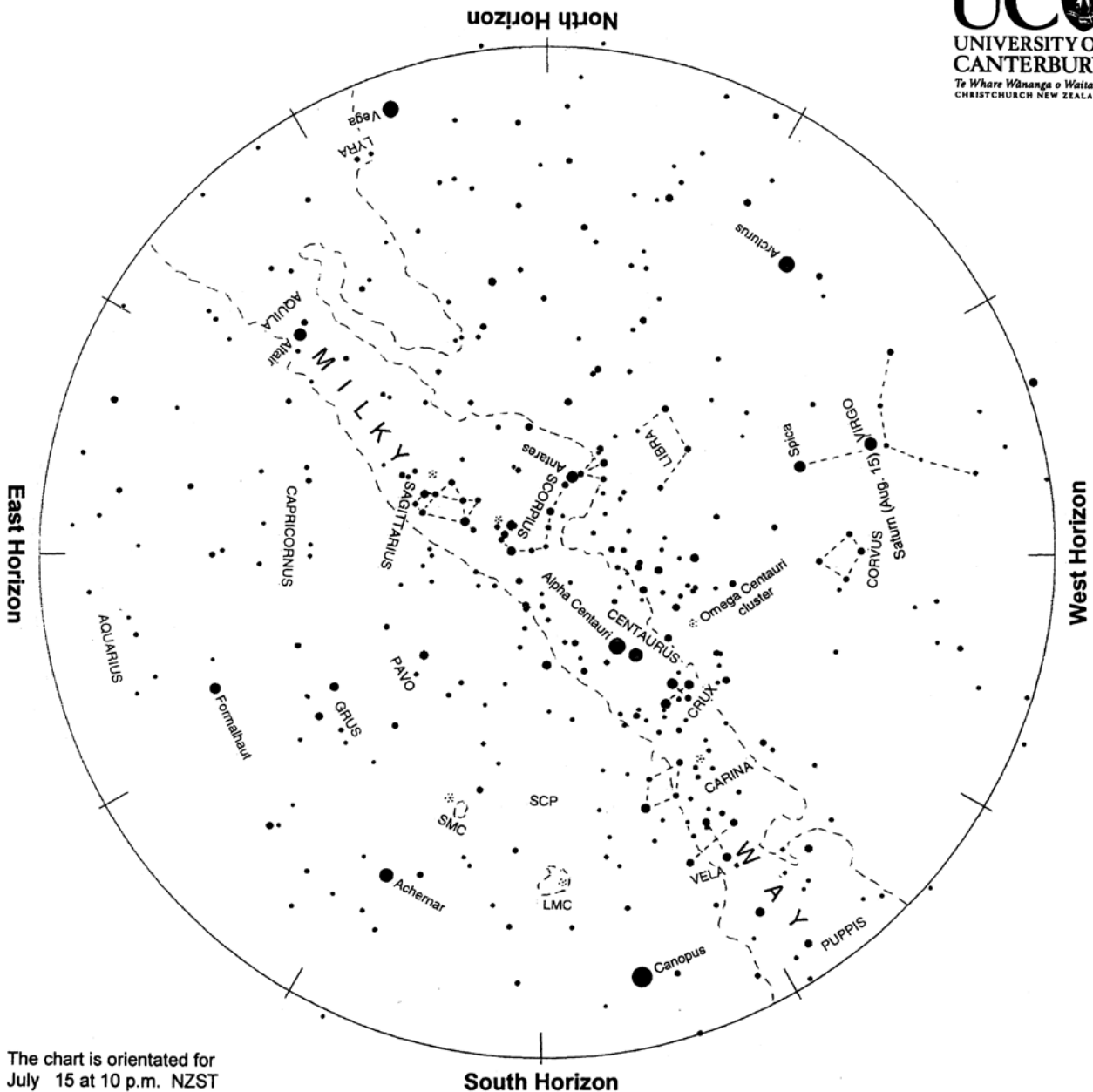
## July 2011 Crossword answers

**Across**

1. **KEPLER**, Early German astronomer - formulated 3 laws of planetary motion; 4. **SOHO**, satellite observatory studying the Sun; 6. **ICE**, frozen liquid; 7. **PAVO**, The Peacock constellation; 8. **POLARIS**, The North Star; 11. **BAR**, some spiral galaxies have one; 13. **UFO**, flying saucer; 17. **SPIRAL**, type of galaxy; 19. **ANDROMEDA**, Largest galaxy in the Local Group; 21. **LMC**, could be mistaken for a cloud; 24. **GAS**, solid, liquid or ...; 25. **SCHMIDT**, type of telescope; 26. **DESDEMONA**, A satellite of Uranus, a character in Othello; 27. **SMC**, satellite galaxy to the Milky Way; 28. **SIDEREAL**, star time; 32. **VIRGO**, Constellation with Spica; 33. **REDPLANET**, Mars; 35. **HALLEY**, a very famous comet; 38. **DAY**, 24 hours; 39. **LOKI**, volcano on Io; 41. **PROCYON**, brightest star in Canis Minor; 44. **HALO**, angels and galaxies both have one; 45. **VENUS**, a very cloudy planet; 46. **CRESCENTMOON**, men's concerto (anagram); 47. **HST**, an orbiting telescope; 49. **FUSION**, process that powers stars; 50. **ASTEROID**, road site (anagram); 51. **NOVA**, a new star; 52. **HELIUM**, second most common element; 54. **DARWIN**, proposed theory of evolution;

**Down**

2. **ECLIPSE**, to block light from another object; 3. **KIWI**, New Zealander; 4. **SEYFERT**, type of galaxy with unusually bright nucleus; 5. **hour**, unit of time; 8. **PHOBOS**, A Moon of Mars; 9. **ION**, an arrested atom; 10. **VEGA**, alpha Lyr; 12. **ATOM**, smallest indivisible piece of a element; 14. **BLUEMOON**, Once in a ...; 15. **LARGEMAGELLANICCLOUD**, LMC; 16. **MASS**, I weight 6 times less on the Moon, but still have the same ???; 18. **HYADES**, an open cluster in Taurus; 20. **NORTH**, thorn (anagram); 22. **COSMOLOGY**, study of the large-scale structure and origin of the universe; 23. **PEGASUS**, The winged horse constellation; 25. **SHEPHERD**, astronaut; 29. **RUTHCRISP**, Carter Observatory's public telescope; 30. **ASTROCAMP**, A NZ astronomy winter weekend getaway; 31. **NADIR**, opposite to zenith; 34. **PLEIADES**, The Seven Sisters; 36. **LEO**, A lion circling the Earth; 37. **PRECESSION**, son's recipe (anagram); 40. **KILOGRAM**, The SI unit of mass; 42. **PELE**, volcano on Io; 43. **BOLIDE**, A meteor that appears to explode; 48. **SETI**, A serious search for aliens (abbrev); 53. **IO**, One of the Galilean satellites;



The chart is orientated for  
 July 15 at 10 p.m. NZST  
 Aug. 1 at 9 p.m. "  
 Aug. 15 at 8 p.m. "  
 Sep. 1 at 7 p.m. "

### Evening sky in August 2011

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.

The Scorpion's tail curls around the zenith. The Pointers and Crux, the Southern Cross, are midway down the southwest sky. Orange Arcturus in the northwest often twinkles red and green. Left of Arcturus are Saturn and Spica. Mercury is below them early in the month. Canopus low in the south is matched by Vega crossing low in the north. The Milky Way spans the sky from northeast to southwest with its broad centre overhead. Bright Jupiter rises around midnight.

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 2011



Just north of overhead the orange star Antares marks the heart of the Scorpion. The Scorpion's tail hooks around the zenith like a back-to-front question mark. Antares and the tail make 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. Below or right of the Scorpion's tail is 'the teapot' made by the brightest stars of Sagittarius. It is upside down in our southern hemisphere view.

Midway down the southwest sky are 'The Pointers', Beta and Alpha Centauri. They point down and rightward to Crux the Southern Cross. Alpha Centauri is the third brightest star and the closest of the naked eye stars, 4.3 light years away. Beta Centauri, like most of the stars in Crux, is a blue-giant star hundreds of light years away and thousands of times brighter than the sun.

In the western sky are Saturn and Spica making a vertical pair of similar stars, Saturn being the lower of the two. Spica is the brightest star in Virgo. It is 260 light years away and 2500 times brighter than the sun. To the right of Saturn and Spica is orange Arcturus, brightest of the northern stars, often twinkling red and green as it sets in the northwest. It is 120 times the sun's brightness and 37 light years away.

In early August Mercury (not shown) might be seen setting in the western twilight, below and left of Saturn. To the right of Mercury is Regulus, similar in brightness. Mercury will be above the crescent moon and Regulus on August 1. Mercury slips down the

sky to be level with Regulus around August 12 as both are fading into the twilight. Regulus is the brightest star in Leo. It is 120 times brighter than the sun and 77 light years away.

Saturn is always worth a look in a telescope. The rings are now 'opening' after being edge on in recent years. A small telescope shows Saturn's biggest moon Titan about four ring diameters out from the planet. Larger telescopes show fainter moons, mostly inside Titan's orbit. Saturn is 1540 million km away.

Canopus, the second brightest star, is near the south skyline at dusk. It swings upward into the southeast sky through the morning hours. On the opposite horizon is Vega, one of the brightest northern stars. It is due north in mid-evening and sets around midnight. Canopus is truly bright: 13,000 times brighter than the sun and 310 light years away. Vega is 52 times brighter than the sun and 25 light years away.

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 southwest. To the northeast 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 dust clouds appear as gaps and slots in the Milky Way. Binoculars show many clusters of stars and some glowing gas clouds in the Milky Way.

The Large and Small Clouds of Magellan LMC and SMC look like two misty patches of light low in the

south, 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.

Jupiter (not shown) rises in the northeast about midnight mid month. It is the brightest 'star' in the morning sky and shines with a steady golden light. Binoculars show the disk of Jupiter and perhaps one or two of its bright moons, looking like faint stars very close to Jupiter. Any telescope easily shows all four moons and stripes in Jupiter's clouds. By dawn Jupiter is midway up the north sky. It is 700 million km away.

Mars (not shown) rises in the northeast around 5 a.m. It is below two stars of similar brightness and orange colour. Aldebaran is on the left and Betelgeuse is below 'The Pot' or Orion's belt and sword. Mars is on the far side of the sun from us, 300 million km away, and very small in a telescope.

*\*A light year (l.y.) is the distance that light travels in one year: nearly 10 million million km or  $10^{13}$  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.*

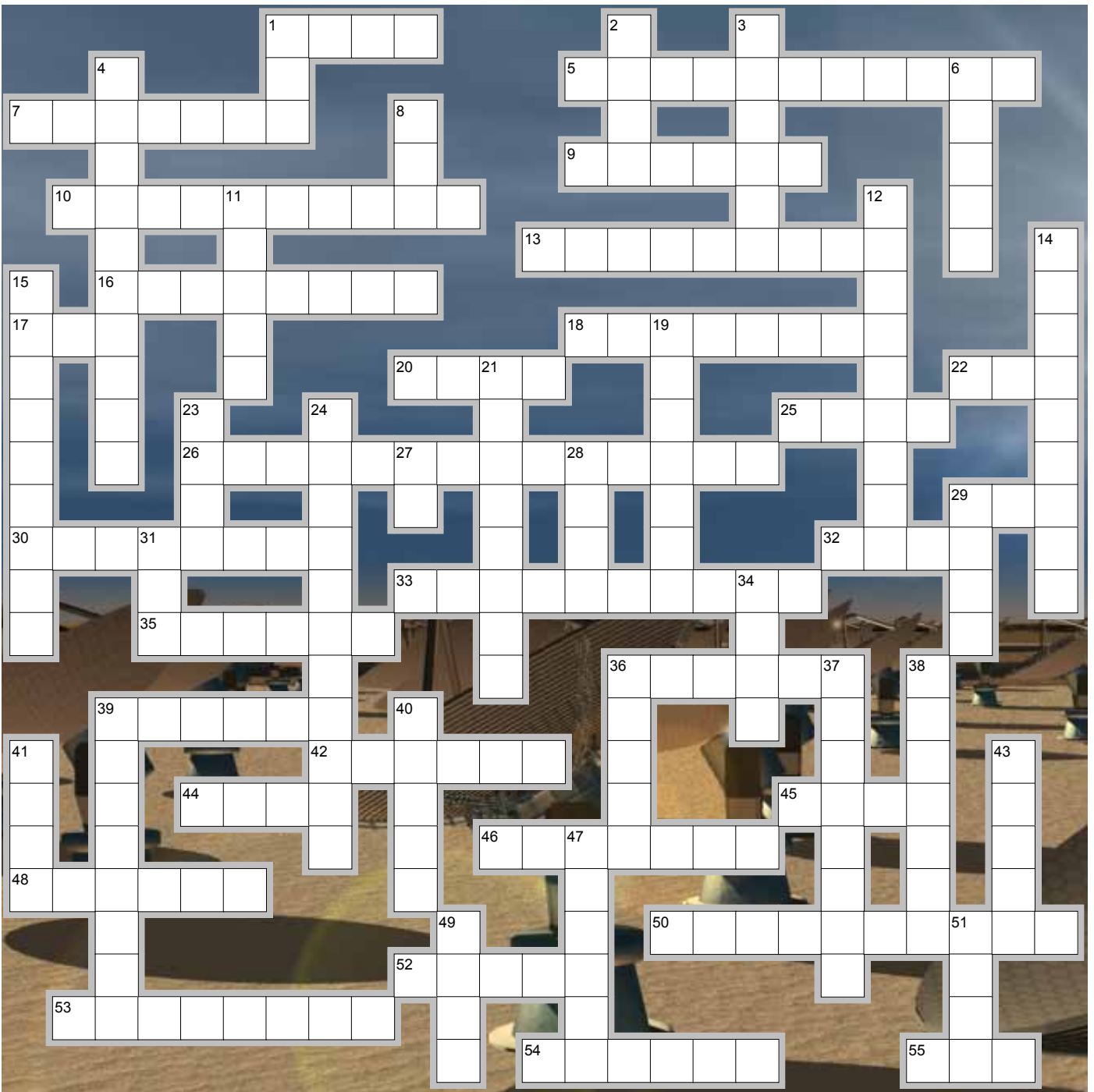
Notes by Alan Gilmore,  
University of Canterbury's  
Mt John Observatory, P.O. Box 56,  
Lake Tekapo 7945, New Zealand.  
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## Cross Word with Murray Forbes



EclipseCrossword.com

### Across

1. *obscure centre of our galaxy*; 5. *alignment of two solar system objects as seen from Earth*; 7. *caused by mass (Newtonian viewpoint)*; 9. *"... censorship" - why Black Holes can't be naked*; 10. *end stage in a star's life*; 13. *rough lane (anagram)*; 16. *just beyond the red end of the spectrum*; 17. *an arrested atom*; 18. *... gaps in the asteroid belt*; 20. *direction of sun rise*; 22. *frozen liquid*; 25. *a form of dark matter*; 26. *star light anti-twinkle technique*; 29. *A lion circling the Earth*; 30. *some is in (anagram)*; 32. *angels and galaxies both have one*; 33. *recent lunar surveyor*; 35. *cloud of dust and gas*; 36. *popular sidewalk telescope*; 39. *alpha Canis Major*; 42. *large moon of Neptune*; 44. *"... and time wait for no man"*; 45. *I weigh 6 times less on the Moon, but still have the same ???*; 46. *the start of it all*; 48. *Alpha Aquilae*; 50. *a 17th century Danish astronomer*; 52. *a balanced constellation*; 53. *pen a diet (anagram)*; 54. *centre of the Milky Way is in this constellation*; 55. *satellite galaxy to the Milky Way*;

### Down

1. *24 hours*; 2. *satellite observatory studying the Sun*; 3. *process that powers stars*; 4. *be part find (anagram)*; 6. *path of one object around another*; 8. *some spiral galaxies have one*; 11. *Tellus*; 12. *small satellite of Uranus, also one of Shakespeare's characters*; 14. *let cop see (anagram)*; 15. *common astronomical unit of distance*; 19. *meteor showers appear to come from one*; 21. *astronaut*; 23. *God of war*; 24. *a group of stars formed from the same gas cloud*; 27. *One of the Galilean satellites*; 28. *volcano on Io*; 29. *volcano on Io*; 31. *closest star*; 34. *space agency*; 36. *alpha Cygnus*; 37. *a wobble in a planet's polar axis*; 38. *An open or globular ...*; 39. *the longest day*; 40. *Constellation with Spica*; 41. *alpha Lyr*; 43. *thorn (anagram)*; 47. *Andromeda is one*; 49. *New Zealander*; 51. *smallest indivisible piece of a element*;