



NEWSLETTER

Polynesian Navigation

Wednesday, 7th of December, 7:30PM

@CarterObservatory

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This months meeting

Features Haritina Mogosanu talking about ancient knowledge of the navigators with emphasis on the Polynesian Wayfinding.

The Polynesians were explorers on the greatest ocean of the Earth covering distances nearly 1/3 of the surface of the planet ...but mostly these feats were accomplished by navigating over the water. Amazingly this was at a time when other cultures were hugging coastlines.

Vicki Irons, WAS Editor





CHAIRMAN'S REPORT FOR DECEMBER 2011

I would like to thank the members who attended the AGM on 2nd November and who endorsed the new Council.

The new Council is:

President: John Talbot

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Vice-President: Gordon Hudson

gordon@kpo.org.nz Ph 04 236 5125

Secretary: Chris Monigatti

chrismon@xtra.co.nz Mob 021 890 222

Treasurer: Lesley Hughes

hpwas@hugpar.gen.nz Ph 04 472 5086

Committee

Roger Butland roger.j.butland@xtra.co.nz

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Positions Outside Council

Newsletter Editor: Vicki Irons

editor@was.org.nz Ph 04 970 5215

Email newsletter Murray Forbes

murray_forbes@xtra.co.nz

Other members may be co-opted should the need arise.

Frank Andrews was also elected to the status of Life Member of WAS at the AGM. Frank has been a member since we literally don't know when but certainly for decades. He has presented many talks at our meetings and has done "the Sky at Night" section of many meetings in the last few years. He is a regular lecturer at WEA. We trust he will continue to attend and take part in our society for many years to come.

He joins John Field and Dennis Goodman as Life Members.

The next meeting on Wednesday December 7th at 7:30 pm will be by Haritina Mogosanu. She will be telling us about Early Polynesian Navigation and how they used the stars to steer their waka by.

There will be a final lunar eclipse for 2011 on 11th December when the moon will rise while already exiting the shadow of the Earth and will be

fully out before sunrise from Wellington.

2012 will have a number of rare astronomical events that we will be highlighting during the year.

For me the most important will that twice in a life time event (if you are lucky) a Transit of Venus on 6th June and for Wellington should take place from 10:15 am to 04:50 pm NZT. The last one was on June 8th 2004 and was only briefly visible in Northland and the next one is not until Dec 11 2117 and will again be visible over all New Zealand. As usual when observing the Sun special precautions or equipment will be needed so it would be a good idea to start preparing your options.

There will also be an opportunity to see a Total Eclipse of the Sun at dawn on 13th November in Nth Queensland near Port Douglas or if you have a boat you could go a few hundred km north of NZ.

We have more about these events at the meetings nearest before them.

We have started looking for good topics for lectures for next year. If you have a suggestion or would like to give a presentation please contact me at john.talbot@xtra.c.nz.

John Talbot, WAS President 2011.

WAS RESEARCH ASTRONOMY GROUP

The Research Group which was formed over a year ago now and meets each month at 6:30 pm before the main meeting. These meetings are open to all WAS members.

Our main topics so far have been: observing Occultations, both Lunar and Asteroidal, which also includes the possibility of observing close double stars. 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 where there have already been 47 positive observations so far this year.

The other main topic has been observing 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



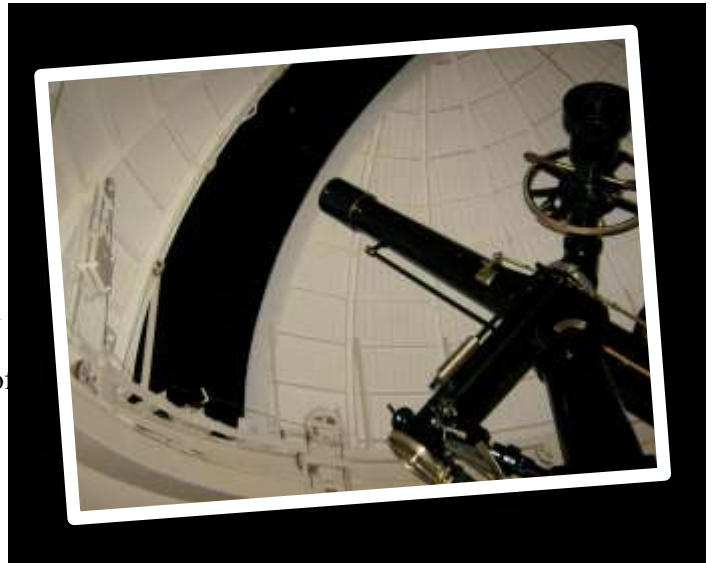
document that can serve as an introduction to photometry.

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

THOMAS COOKE TELESCOPE VOLUNTEERS

As Carter Observatory will continue opening through the summer holidays season we have been asked to continue to provide volunteers to help man the Thomas Cooke Telescope on Saturday evenings. As Gordon has pointed out this is our quid pro quo in getting free rent of the Carter meeting room so please do put your hand up. 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.



ASTROPHOTOGRAPHY CORNER WITH JOHN FIELD



This 2 second image of the Moon was taken to reveal the pale blue colour of Earthshine on the lunar surface. The image reveals may rays, bright craters and other features normally only seen at the time of Full Moon. The rays from the crater Tycho can be seen arcing across the Moon with a definite shortening on one side and the much longer rays stretching towards the sunlit part of the Moon.

This would imply that the object that struck the Moon was at an oblique angle. Another interesting feature is a dark halo around the crater itself.

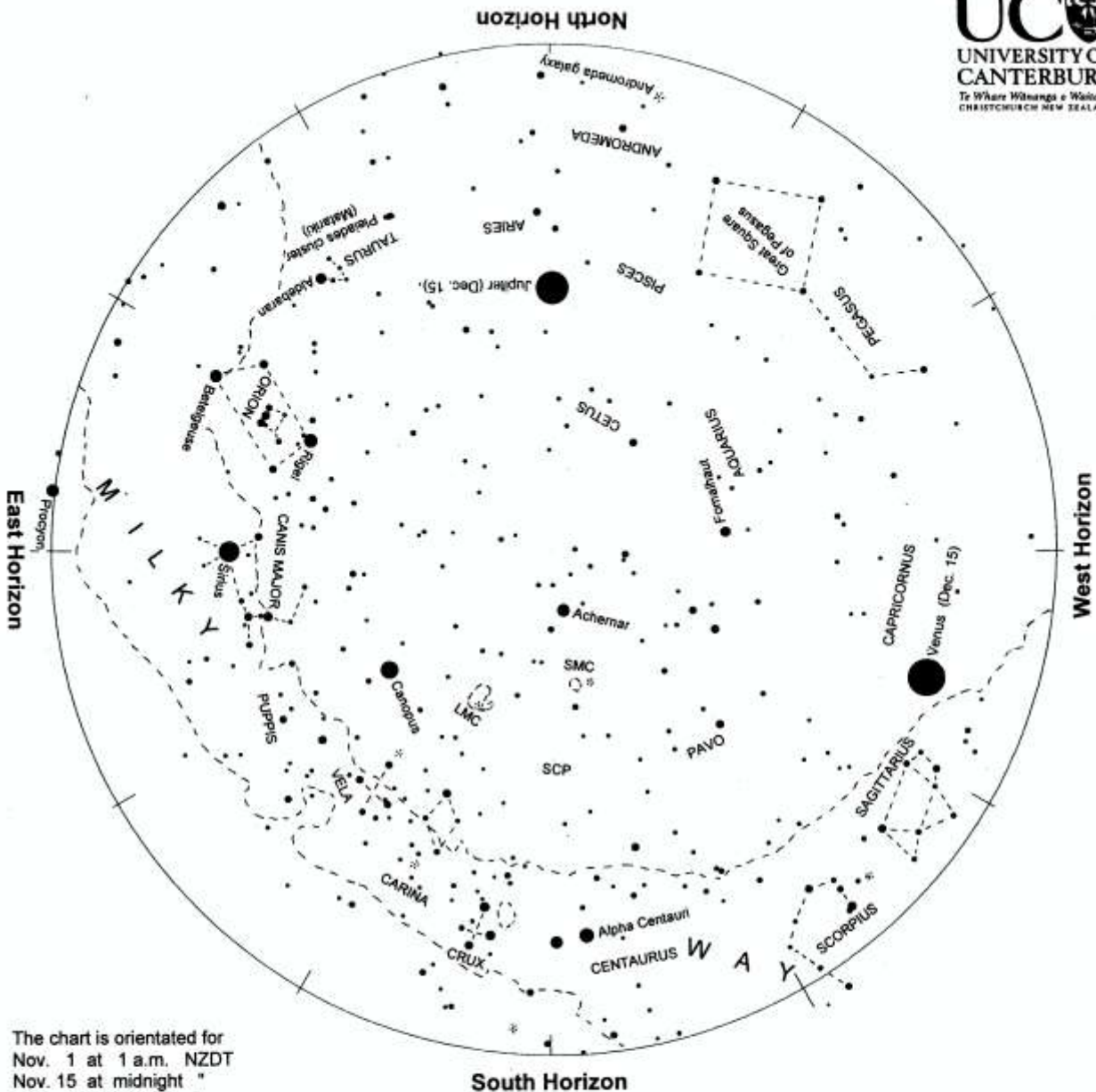
Image taken by John Field with a Canon 1000D through a Skywatcher ED 80 mm f7.5 refractor at ISO 200. Scope and camera mounted on a Skywatcher NEQ6 ProMoun.

OBSERVING AT PAUATAHANUI

December's observing at Pauatahanui will be on the 17th with a back up day on the 24th November starting at 8pm. If doubtful please ring Chris Monigatti on his mobile 021 890 222 to see if the session is going ahead.



SKY MAP DECEMBER 2011



The chart is orientated for
 Nov. 1 at 1 a.m. NZDT
 Nov. 15 at midnight
 Dec. 1 at 11 p.m.
 Dec. 15 at 10 p.m.

Evening sky in December 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 also shows a small extra clockwise rotation each night as we orbit the sun.

Venus and Jupiter are the first 'stars' out after sunset. Venus is low in the west, setting two hours after the sun. Jupiter is midway up the north sky. It sets around 3 a.m. Sirius, the brightest star, is due east, twinkling like a diamond. Left of it is Orion, with 'The Pot' at its centre. Further left is Taurus and the Pleiades/Matariki/Seven Sisters star cluster. The Pointers and Crux, the Southern Cross, are low in the south. The Milky Way is bright along the skyline from southwest to southeast but fades below Orion. Right of Canopus, the second brightest star, are the Clouds of Magellan (LMC and SMC on the chart), two nearby galaxies. The Andromeda Galaxy is faint and low in the north. The moon is eclipsed in the morning hours of December 11.

Chart produced by Guide 8 software; 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



THE EVENING SKY IN DECEMBER 2011

Venus and Jupiter are the 'evening stars', appearing soon after sunset. Brilliant Venus is low in the west. It sets two hours after the sun. In a telescope it looks like a gibbous moon. Venus is on the far side of the sun from us, 200 million km away. Jupiter is more interesting. Its disk and four big moons are easily seen in a telescope. Two of the moons might be seen in binoculars. It is 650 million km away.

The brightest stars are in the east and south. Sirius, the brightest of all the stars, is due east at dusk, often twinkling like a diamond. Left of it is the bright constellation of Orion. The line of three stars makes Orion's belt in the classical constellation. To southern hemisphere skywatchers they make the bottom of 'The Pot'. The faint line of stars above and right of the three is the Pot's handle. At its centre is the Orion Nebula, a glowing gas cloud nicely seen in binoculars. Rigel, directly above the line of three stars, is a hot blue-giant star. Orange Betelgeuse, below the line of three, is a cooler red-giant star.

Left of Orion is a triangular group making the upside down face of Taurus the bull. Orange Aldebaran is the brightest star in the V shape. Aldebaran is Arabic for 'the eye of the bull'. Still further left is the Pleiades /Matariki/Seven Sisters/ Subaru cluster, impressive in binoculars. It is 400 light years* away.

Canopus, the second brightest star, is high in the southeast. Low in the south are the Pointers, Beta and Alpha Centauri, and Crux the Southern Cross. In some Maori star lore the bright southern Milky Way makes the canoe of Maui with Crux being the canoe's anchor hanging off the side. In this picture the Scorpion's tail can be the canoe's prow and the Clouds of Magellan are the sails.

The Milky Way is wrapped around the horizon. The broadest part is in Sagittarius low in the west at dusk. It narrows toward Crux in the south and becomes faint in the east below 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 thick hub of the galaxy, 30 000 light years away, is in Sagittarius. The nearby outer edge is the faint part of the Milky Way below Orion. A scan along the Milky Way with binoculars will show many clusters of stars and a few glowing gas clouds.

The Clouds of Magellan, LMC and SMC, high in the southern sky, are two small galaxies about 160 000 and 200 000 light years away, respectively. They are easily seen by eye on a dark moonless night. The larger cloud is about 1/20th the mass of the Milky Way galaxy, the smaller cloud 1/30th.

Very low in the north is the Andromeda Galaxy seen in binoculars in a dark sky as a spindle of light. It is similar in size to our Milky Way galaxy and three million light years away.

There is a total eclipse of the moon on the morning of December 11th. The moon begins to enter the fuzzy edge of Earth's shadow, the penumbra, at 12:32 a.m. NZDT. It shows an obvious darkening on the right edge when it meets the dark inner shadow, the umbra, at 1:45 a.m. By 3:06 it will be fully eclipsed. At 3:58 it begins to leave the inner shadow, first brightening on the top edge. It is fully clear of the umbra by 5:18. The moon sets before it is fully clear of the penumbra at 6:32.

The Geminid meteor shower peaks in the morning hours of December 15. The meteors appear to come from the constellation of Gemini, low in the northeast at midnight, moving to the north by dawn. Light from the gibbous moon will hide the fainter meteors.

Mars and Saturn rise in the morning hours. Mercury appears low in the dawn later in the month. Mars rises after midnight mid-month, easily recognised by its orange-red colour. It is brightening as we catch up on it. Mars is 180 million km away mid month. Saturn makes a close pair with Spica, the brightest star in Virgo. Saturn is brighter of the two and lower. Saturn is 1500 million km away. Mercury moves up into the dawn in the second half of December. It is 120 million km away mid month, moving to the far side of the sun. At mid-month the three planets are equally spaced in line and similar in brightness.

**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.*

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



NOVEMBER 2011 CROSS-WORD ANSWERS

Across

3. NOBEL—top prize for Scientists;
 5. WEST—the Sun sets in this direction;
 7. SUNSPOT—A darker patch on the Sun’s surface;
 11. REFLECTOR—type of telescope; 12. GEMINI—one of the twins; 13. NASA—space agency; 14. HELIUM—second most common element; 16. SCORPIUS—constellation with a sting; 17. TRANSIT—James Cook made a special voyage to see one; 18. REFRACTION—when the path of light is bent by entering a different medium; 19. DAY—24 hours; 21. EMISSION—some is in (anagram); 24. HERSCHEL—discovered Uranus;
 27. ATOM—smallest indivisible piece of a element;
 29. HUBBLE—discovered universe was expanding;
 31. SIRIUS—alpha Canis Major; 35. CLUSTER—An open or globular ...; 38. NOVA—a new star;
 39. CHANDRA—X-ray telescope; 40. SPIRAL—type of galaxy; 42. DESDEMONA—smallest satellite of Uranus, also one of Shakespeare’s characters;
 43. CHAOS—Maxwell’s Smart’s nemesis; 45. NOISE—one is (anagram); 46. BICONVEX—type of lens;
 49. SMC—satellite galaxy to the Milky Way; 51. BAR—some spiral galaxies have one; 56. TIDE—“... and time wait for no man”; 57. MATARIKI—signals it’s time to start spring planting of kumera; 58. VULPECULA—northern constellation of the fox;

60. GALILEO—discovered the four largest moons of Jupiter; 61. RADIANT—meteor showers appear to come from one;

Down

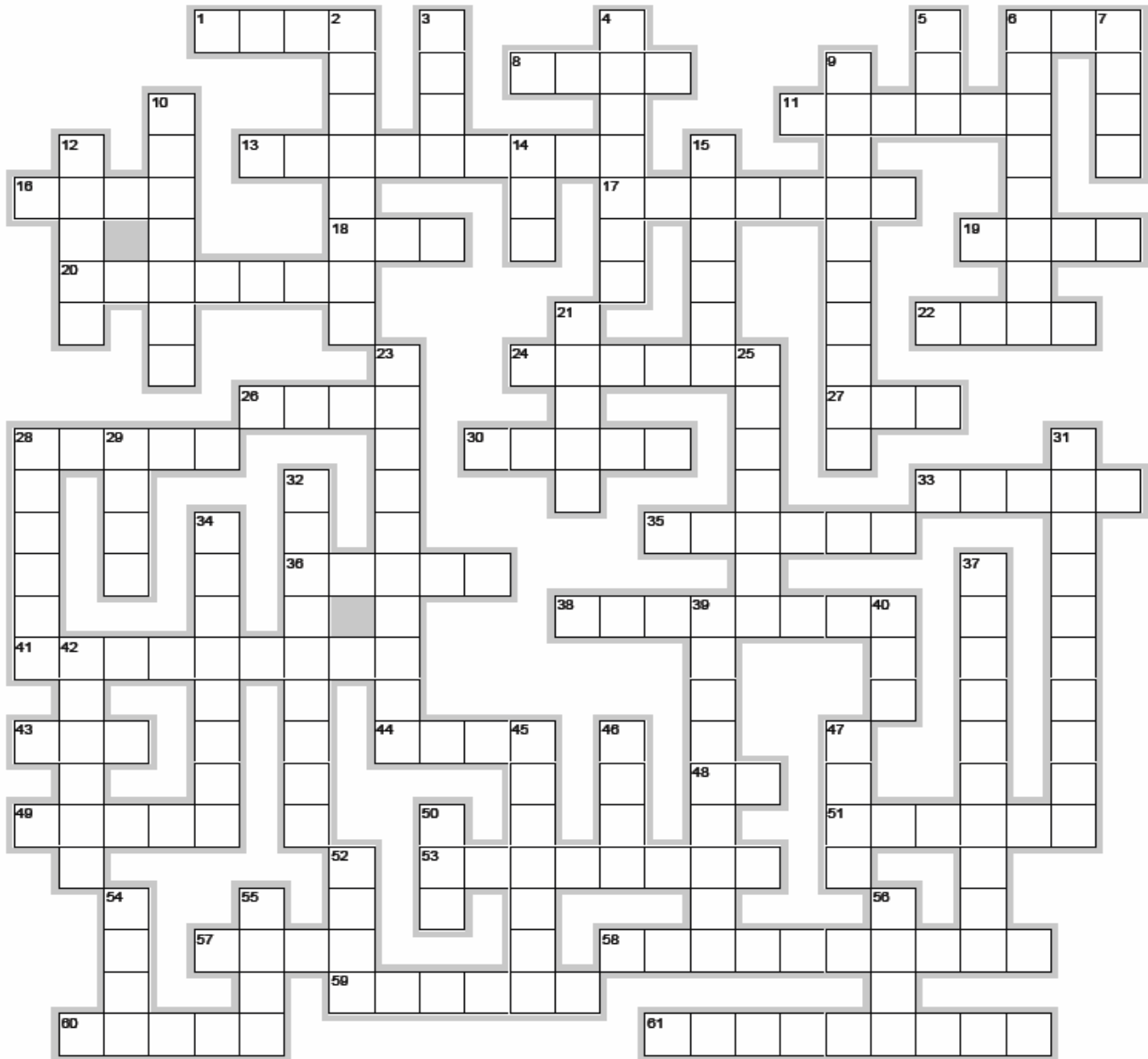
1. ZENITH—opposite of nadir; 2. STAR—rats (anagram); 4. EPOCH—used as a standard reference date; 6. POINTERS—can be used to find South;
 8. TELESCOPE—let cop see (anagram); 9. CLEMENTINE—recent lunar surveyor;
 10. PRISM—triangular shaped glass used to re-act light; 12. GAS—solid, liquid or ...; 15. HST—an orbiting telescope; 20. APEHLION—leap on hi (anagram); 22. SUN—closest star; 23. NEUTRONSTAR—may left over after a supernova explosion; 25. EAST—direction of sun rise; 26. HOUR—unit of time; 28. OORT-CLOUD—comet reservoir around the solar system;
 30. LMC—could be mistaken for a cloud; 32. REFRACTOR—type of telescope; 33. APOGEE—The farthest point of an (Earth orbiting) object from the Earth; 34. MASS—I weight 6 times less on the Moon, but still have the same ???; 36. URANUS—bland gas giant; 37. MARS—God of war; 41. ARCSECOND—cored cans (anagram); 44. ION—an arrested atom; 47. IO—One of the Galilean satellites;
 48. EQUINOX—Around 23rd June or September;
 50. CORVUS—The Crow; 52. ALTAIR—Alpha Aquilae; 53. POLAR—... bear; 54. PAULI—predicted the neutrino; 55. LEO—A lion circling the Earth; 59. UFO—flying saucer;



[Terence Galuszka](#) an unprocessed video frame from partial eclipse 25 November 2011, This is taken through a handycam with a Baader astrofilm filter in front from Te Raekaihau point.



CROSS WORD WITH MURRAY FORBES



EclipseCrossword.com

lipseCrossword.com

Across 1. tide; 6. satellite galaxy to the Milky Way; 8. a form of dark matter; 11. unit of time; 13. due to Doppler Effect; 16. unit of time; 17. Around 23rd June or September; 18. some spiral galaxies have one; 19. the Sun sets in this direction; 20. circle midway between the poles of a planet; 22. angels and galaxies both have one; 24. spacer (anagram); 26. space agency; 27. frozen liquid; 28. Encke is one; 30. the hunter; 33. alpha Cygnus; 35. Alpha Aquilae; 36. astronomy popularizer; 38. The water constellation; 41. can be used to indicate distance to a galaxy; 43. 24 hours; 44. a new star; 48. One of the Galilean satellites; 49. Constellation of the wolf; 51. large moon of Neptune; 53. inertia; 57. satellite observatory studying the Sun; 58. recent lunar surveyor; 59. who to blame when it clouds over; 60. predicted the neutrino; 61. Carter Observatory's public telescope;

Down 2. lighter shadow of an eclipse; 3. God of war; 4. unpaid astronomer; 5. flying saucer; 6. star time; 7. at the heart of the matter; 9. fear of BEM's; 10. quick-silver planet; 12. top prize for Scientists; 14. an arrested atom; 15. discovered universe was expanding; 21. once thought to be seas on the Moon; 23. type of telescope; 25. An open or globular; 28. The Crow; 29. object of the Cold War space race; 31. closest point in a binary system's orbit; 32. study of the formation and structure of the universe; 34. constellation with a sting; 37. when the path of light is bent by entering a different medium; 39. 1/60th of a degree; 40. closest star; 42. bland gas giant; 45. horizontal angle around the sky; 46. mid- day; 47. BEM search; 50. could be mistaken for a cloud; 52. smallest indivisible piece of an element; 54. alpha Lyr; 55. volcano on Io; 56. rats (anagram);