

# NEWSLETTER

The next WAS meeting will be held on  
**Wednesday 4<sup>th</sup> February 2015 at 7:30 pm**  
**at Carter Observatory, Upland Rd, Kelburn,**

**Wellington**

The probability of extrasolar life.

**Ian J. Miller**

Obviously, the answer to the question, "Is there life elsewhere in the Universe?" is speculative, but this talk will make the case that based on theory, the answer is, "Most certainly, and it will be based on RNA/DNA." The basic assumption is that if the chemicals required to form life are available, and the conditions suitable, life will evolve. The talk will then discuss the chemistry needed to get to where the system shows that the characteristics of life could evolve. Some of the problems that would inhibit the development of life will be discussed, yet the existence of these problems helps clarify some of the routes that the evolution of life must have followed. The talk will then show why the basics of life must be based on the elements we use (C, H, O, N, P), and show why life *must* start with RNA. This involves showing *why* ribose is critical, even though it is not one of the easiest sugars to form, and having done this, how homochirality must have originated. This is an example of the issues involved in how to form theories. There has been a huge amount of work trying to explain how homochirality arose, none of which is convincing. Here is an exercise for the audience, to test your ability: can you produce an answer where all others have failed? The answer is reasonably simple when you answer, *why* did homochirality evolve? As a second bonus for those adept at sugar and nucleobase chemistry, I shall propose an experiment that should prove or disprove much of what I have outlined.

Given the mechanisms in this talk, life will be basically restricted to a rocky planet around a G type star or perhaps the heavier K-type stars, and will be restricted to significantly less than half of these. However, there are plenty of contender stars, although they are usually fairly widely spaced. Within our solar system, Mars is of interest not for forming life, but because its fluid systems are separable; had the process of generating life got underway, it would have finished at different stages, so if chemical fossils remain, they would outline part of the process. Finally, I show why there will be no life under-ice on Europa – the basic chemistry cannot take place.

Ian Miller was born on the 7th August, 1942 and studied chemistry at the University of Canterbury (BSc Hons 1, PhD) followed by post-docs at Calgary, Southampton and Armidale.

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**Presidents Report March 2015: Gordon Hudson**

Last month's talk was supposed to be by Tom Watson who is the President of the Astronautics Association of New Zealand (AANZ) unfortunately he was not able to make the presentation due to health issues and Antony Gomez stepped in at short notice and gave us a talk about current research into galaxies and galactic clusters at radio wavelengths and current and future radio telescopes. This was a great presentation and many thanks to Antony for stepping in at short notice. Hopefully this month's talk, by Ian Millar, will be more straight forward! The abstract for his talk "The probability of extrasolar life" will be elsewhere in the newsletter.

On the 3rd of February WAS has taken over the use of the World War 1 Gun Bunker by the Dominion Observatory. There are several items already stored in the Bunker. The Royal Astronomical Society of NZ has taken ownership of the Carter Observatory Palomar Sky Atlas which consists of three Steel filing cabinets and these are now stored in the Gun Bunker. Bill & Lesley Parkin, along with myself, removed them on Friday 20th from the Museums Trust store at Ngauranga.

We are in the process of creating a membership card so that we know whose who at meetings.

In May we should have the Beatrice Hill Tinsley Lecturer who this year will be Professor Gerry Gilmore however times and dates for this event have yet to be sorted. Later in the year in October we will have Professor Chris Lintott visiting us and this should be quite a memorable occasion however details for this lecture are still be sorted so watch this space.

The WAS dome which has been stored at my place for the last 2 years is about to go to Tawa College. Work has begun on ground preparation for the piles and pier. The Syd Cretney Bequest is still being discussed. If we are successful in our bid the Gifford Observatory will be our preferred place to house an automated Observatory we are

also in the planning stages with the Thomas King Observatory.

We are starting to acquire a rather a lot of items and as we can no longer store equipment, books, newsletters and other material at Carter (the workshop is being emptied for other purposes), leaves us with a problem as to where we can store items until we have a home of our own. At present items are spread around several of our members. Having acquired use of the Gun Bunker this will help with our storage over the next 12 months.

The volunteering at Carter is going well but it is mainly through the efforts of a couple of our members. We need more volunteers. Have you helped yet? We assist on Tuesdays and Saturday evenings so put your hand up at the next meeting.

Finally the WAS observing evening once a month at Tawa College is struggling with lack of observers. Where are you all? The next observing evening at Tawa College is on 14 March starting at 8.30pm be there.

**Council Members**

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

**President:** Gordon Hudson [gordon@kpo.org.nz](mailto:gordon@kpo.org.nz)  
ph 04 - 2365125

**Vice President:** John Talbot  
[john.talbot@xtra.co.nz](mailto:john.talbot@xtra.co.nz) ph 04 293 4620

**Secretary:** Chris Monigatti [chrismon@xtra.co.nz](mailto:chrismon@xtra.co.nz)  
mob 021 890 222

**Treasurer:** Lesley Hughes

**Councillors:**

Aline Homes

John Homes + Webmaster

Roger Butland

Frank Andrews

Murray Forbes

Antony Gomez

Duncan Hall

**Newsletter Editor:** [editor@was.org.nz](mailto:editor@was.org.nz)

**UPCOMING EVENTS:****Society Observing night**

The next Observing The next observing evening at Tawa College is on 14 February 2015 starting at 8.30pm be there. There will be no reserve day this month. Text Chris Monigatti on his mobile 021 890 222 if you want to attend.

**A wander through Orion:****John Field**

In the north during our summer evenings we see the bright stars forming Orion with Rigel, the seventh brightest star in our night sky sitting above the three stars that form Orion's belt. Upside down to us Orion's belt and sword are known forming part of "the saucepan" too many New Zealanders and as "Te Manu Rore" the bird snare to Maori. Below the belt are the stars Betelgeuse and Bellatrix forming his shoulders and chest.

Let's start our tour at Rigel the brightest star in the constellation. At magi 0.3 this young blue giant is a staggering 100,000 times brighter than our Sun and 850 light years away. It has magnitude 6.3 companion that can be split in smaller telescopes under good conditions. In my 9.25 inch telescope I can split them at 25x making a pretty sight. Drop below the belt to our next stop at Betelgeuse. This reddish star is 650 light years distant and is at the tail end of its life expanding to become a



red supergiant. The three stars of Orion's belt are Alnitak (the eastern most star), Alnilam and Mintaka and sitting above is a fainter line of stars that form Orion's sword.

Here we find the famous Orion Nebula (M42 & M43) which appears as a hazy star to the unaided eye and 10x50 binoculars a hazy cloud. Any size telescope will reveal a range of sights that will increase along with the aperture of your telescope.

## WELLINGTON ASTRONOMICAL SOCIETY

My 9.25 inch SCT reveals filaments of light and dark as well as the famous 'trapezium' of four stars at the base of the nebula. At 1300 light years this is the closest major region of star birth and is estimated to be 24 light years across with a the total mass 2000 times of our Sun. Below the pair of M42 & 43 is the much fainter NGC 1977 that is sometimes called the 'Running Man' nebula.

Our final challenge sits on the western side of Alnitak and is called the Flame Nebula which, to

### 2015 RASNZ Conference

The next conference of the Royal Astronomical Society of New Zealand (RASNZ) will be held at Lake Tekapo from 8th-10th May 2015. Our guest speakers will be Professors Gerry Gilmore (University of Cambridge) and Edward Guinan (Villanova University), and the Fellows Lecture for 2015 will be delivered by Associate Professor Karen Pollard from Canterbury University. Titles and abstracts for these talks will be released when they are available. For further information on the RASNZ conference and registration please visit the conference website at [www.rasnz.org.nz/Conference](http://www.rasnz.org.nz/Conference) The conference will be preceded by a two day symposium to celebrate the 50th anniversary of the Mount John University Observatory - see <http://www.phys.canterbury.ac.nz/mtjohn50/> for registration information and other details of this meeting. Immediately after the conference the

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me, resembles the dark trunk and branches of a tree with the surrounding canopy formed by the glow of the nebula. This region is host to a number of faint nebulae, including the famous 'Horsehead', which can be best seen in large telescopes. I have easily photographed this object but never seen it is visually.

Orion is home to bright stars and nebulae but also to a large number of fainter and more challenging targets so why not take a wander through Orion tonight!

Ninth Trans-Tasman Symposium on Occultations (TTSO9) will also be held at the Godley Hotel, Lake Tekapo on 11th-12th May. For details see <http://occultations.org.nz/meetings/TTSO9/TTSO9.htm>. Note that registrations for TTSO9 can ONLY be made through the RASNZ Conference registration page.

The RASNZ standing conference committee invites and encourages anyone interested in New Zealand Astronomy to submit papers, with titles and abstracts due 1st April 2015. The link to the paper submission form can be found on the RASNZ conference website given above, or you can go to the RASNZ wiki [www.rasnz.org.nz/wiki](http://www.rasnz.org.nz/wiki). Please note that you MUST be registered for the conference to make a presentation. Even if you are just thinking of presenting a paper please submit the form, and we can follow up with you at a later date. Sincerely yours, Warwick Kissling, RASNZ Standing Conference Committee

**WELLINGTON ASTRONOMICAL SOCIETY**  
**Comet Lovejoy (C/2014 Q2) puts on a summer**  
**time display: John Field**

**March 2015**

Found in August 2014 by prolific comet discovery Terry Lovejoy this comet has exceeded expectations by reaching magnitude 4 in January 2014 and sprouted an impressive photographic tail. Unfortunately the Moon hampered viewing in early January but even so it was easily seen through 10 x 50 binoculars from by suburban backyard as a bright hazy ball. Short, 30-45 second at iso 800, exposures revealed a bright centre with a decreasing haze. Image courtesy of John Field stacked 1 hour of 2 minute exposures



**Occultation Observing:**

There were 2 positive events for January and 11 events reported with clearly observed misses several with 2 observers. Reports have been posted to:  
<http://www.occultations.org.nz/planet/2015/plnr/es15.htm>

RASNZ has formally announced that Steve Kerr will be the new Director of Occultation Section replacing the late Graham Blow. Steve was nominated by Graham as his successor about 2 Years ago and I made a formal nomination to

RASNZ back in January with several Occ Sec members seconding the proposal. In the mean time if you have any issues that you might have sent direct to Graham, please send to Director Occ Sec [Director@occultations.org.nz](mailto:Director@occultations.org.nz) This will reach Steve and members of the Occsec "Executive Group" who have been holding the fort in the meantime. Also when sending Occultation Reports to me, please add a CC: to Director Occ Sec [Director@occultations.org.nz](mailto:Director@occultations.org.nz) This will protect you against loss of data should I be the next MIA.  
John Talbot

Two bright planets light up the twilight sky. Silver **Venus** appears low in the west. Golden **Jupiter** appears in the north-east. Venus soon sets, but Jupiter stays in the northern sky all night, setting in the northwest in the morning hours. Bright stars are overhead and down into the southeast sky.

Jupiter is the biggest planet by far. Its mass is greater than all the other planets put together. In a telescope it shows parallel stripes. These are zones of warm and cold clouds, made narrow by Jupiter's rapid rotation. Any telescope shows Jupiter's disk with its four bright 'Galilean' moons lined up on either side. Jupiter is 680 million km from us in March. The Moon will be near Jupiter on March 3rd and 30th.

Northwest of overhead is **Sirius** the brightest star in the sky. It is fainter than star-like Venus and Jupiter. Southwest of the zenith is **Canopus**, the second brightest star. 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 watchers, the line of three makes the bottom of 'The Pot'. Orion's belt points down and left to a V-shaped pattern of stars. These make the face of **Taurus** the Bull. The orange star is **Aldebaran**, Arabic for the eye of the bull. Continuing the line from Orion down and left finds the **Pleiades** or **Matariki** star cluster.

**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. **Rigel**, above and 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**, below and 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 1300 light years away.

In the north are **Pollux** and **Castor** marking the heads of **Gemini** the twins. Left of Jupiter is the star cluster **Praesepe**, marking the shell of **Cancer** the crab. Praesepe is also called the Beehive cluster, the reason obvious when it is viewed in binoculars and is some 500 light years from us.

**Crux**, the Southern Cross, is in the southeast. Below it 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.

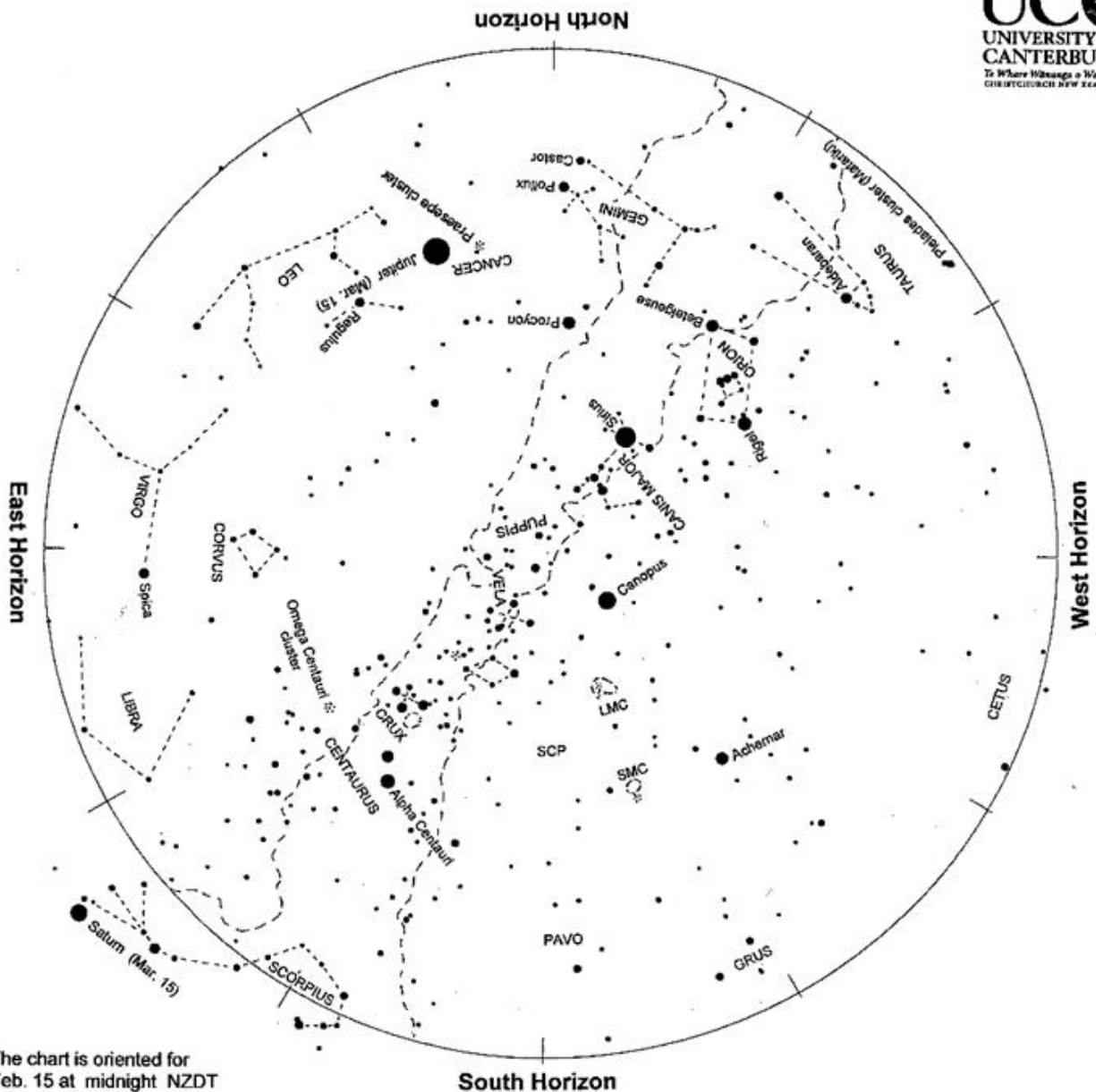
The **Milky Way** is brightest in the southeast toward Crux. It becomes broader lower in the southeast toward **Scorpius**. Above Crux the Milky Way can be traced to nearly overhead where it fades. It becomes very faint in the north, right of Orion.

The Clouds of Magellan, **LMC** and **SMC** are high in the south sky, easily seen by eye on a dark moonless night.

**Saturn** rises in the southeast before midnight at the beginning of March. It is on the lower end of a curve of stars making the Scorpion's claws. To its right, slightly higher in the sky and fainter, is orange Antares, marking Scorpio's heart. By the end of the month, Saturn is up around 10 p.m. A telescope magnifying 20x shows Saturn's rings. Saturn is 1430 million km away in mid-March. The Moon is by Saturn on the 12th.

**Mercury** (not shown) ends its best morning sky appearance of the year during March. At the beginning of the month it rises around 5 a.m. It is the brightest 'star' in that part of the sky. By the end of the month it is rising at 7 a.m.

Notes by Alan Gilmore, University of Canterbury's Mt John Observatory



The chart is oriented for  
 Feb. 15 at midnight NZDT  
 Mar. 1 at 11 p.m. "  
 Mar. 15 at 10 p.m. "  
 April .1 at 9 p.m. "

**Evening sky in March 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 westward shift each night as we orbit the sun.

Venus and Jupiter are the 'evening stars'. Venus sets in the west at dusk. Jupiter crosses the north sky through the night, setting in the morning hours. The Praesepe star cluster is left of Jupiter. Sirius is the brightest true star, northwest of overhead. Orion, containing 'The Pot', is below Sirius in the northwest sky. Canopus, the second brightest star, is southwest of overhead. The Southern Cross and Pointers are midway up the southeast sky. Nearby galaxies the Clouds of Magellan, LMC and SMC, are high in the southern sky. Saturn rises in the southeast in the late evening. It is just below Scorpio's claws, left of orange Antares.

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)