Canterbury Astronomical Society

CASMag

Notable events in this month:

Nov 8th – Hororata Highland Games – CAS has a stall!

Nov 18th – **CAS Special General Meeting** to Consider & Vote on the Proposed Changes to the CAS Constitution, in Rm 225 Level 2 Ernest Rutherford Building, University of Canterbury

Nov 22nd – CAS Working Bee @ CAS Observatory afternoon (weather permitting – backup day is Nov 29th)

Nov 22nd - CAS Members Night @ West Melton observatory

Dec 6th – CAS Christmas BBQ – starts @530pm

Dec 7th – CAS stall at the Rolleston Christmas Parade

Inside this November 2025 Issue

Editor's Thoughts for November

Wow, only 55 days to Christmas!! We are just whizzing round to the end of the year really quick. CAS however is not slowing down – CAS will have a stand at the Hororata Highland Games. Thousands of people in that one day equals a great opportunity to share about CAS activities.We usually set up telescopes for people to get a look at the sun and stars like Alpha Centauri and the moon during the day. Being just before Christmas, it's a great time for people to purchase our gorgeous 2026 CAS Calendar and CAS membership as Christmas gifts.

****Most important for November** is the **CAS Special General Meeting on NOV 18th** for members to vote to accept the proposed changes to the CAS constitution which Simon presented at October's CAS meeting and also which was published in the special edition October CASMag. We hope by now everyone is familiar with the proposed changes and will be confident to cast their vote on the proposed changes to the CAS constitution to bring us in line with the updated legislation.

This CASMag also contains information on Stardate S.I. 2026. AND to round out CASMag for 2026, we were lucky to have a guest article by a visiting astronomer from France on his adventures exploring our beautiful skies. We're almost at the end of our 2025th lap around our lovely sun and this is the last CASMag for 2025. I hope you have enjoyed the content in the CASMag, and I thank everyone who has submitted their article this year. I look forward to publishing more CAS member content next year. Wishing you a wonderful Christmas and a joyful New Year. Clear skies everyone and keep looking up – *Preetha Sreedharan*

Stardate South Island: Thursday 19th - Sunday 22nd March 2026 *by Rob Glassey*

Save the dates! Planning is underway for next year's Stardate S.I. at Staveley Camp. It will be held a few weeks later next year due to another group booking a wedding very early (18 months in advance!) on our usual February new moon weekend. But later in the year means an extra hour of darkness, with it getting dark from 8:15pm and truly dark, Staveley dark, by 9:15pm - even with daylight saving. Fingers crossed for that traditionally stable March weather to deliver some spectacular nights!

The extra night on Thursday at this year's (Stardate S.I. 2025) was well received, with plenty of people booking in for the extra night. While the weather didn't cooperate on Thursday night, we all had a great time and enjoyed a very relaxed Friday with a bit of solar viewing. So, we'll be trying it again for Stardate S.I. 2026! We do need to get enough people registered in advance for Thursday night to confirm it, so please register for Stardate S.I. 2026 as soon as registration opens!!

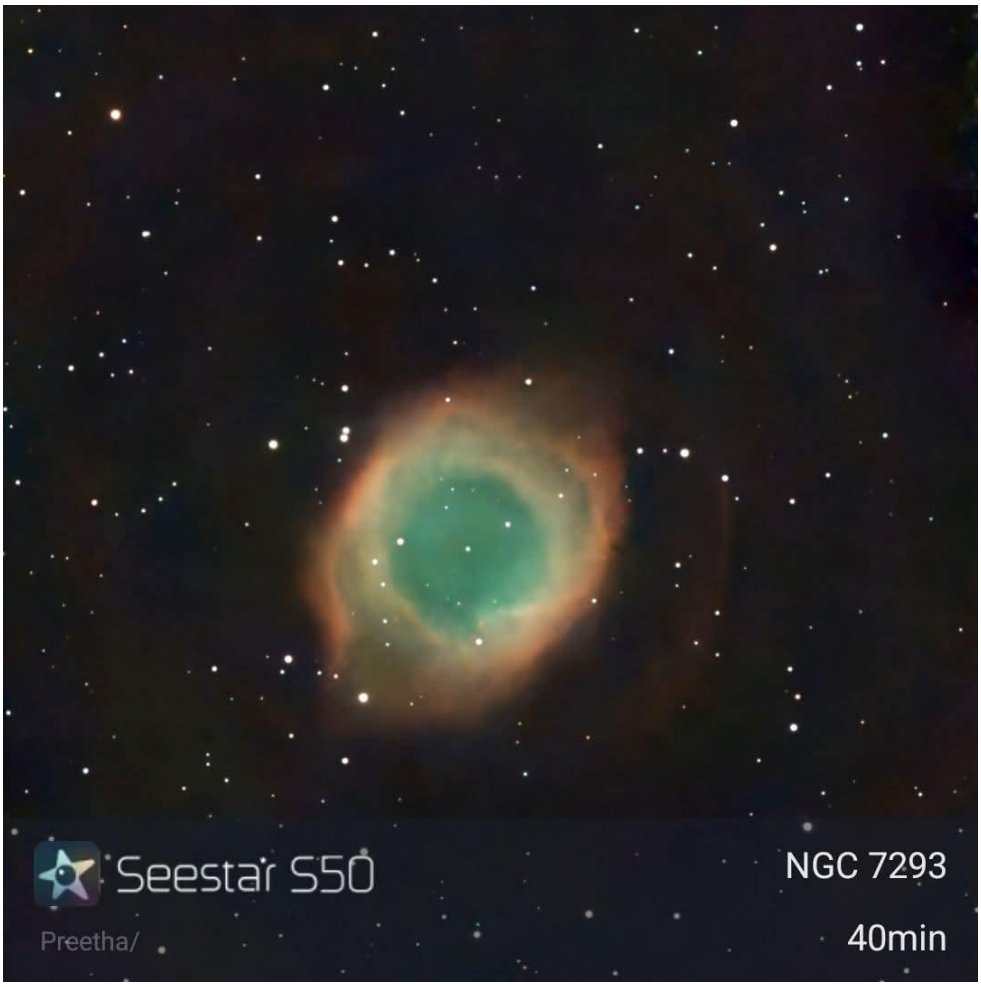
For Stardate S.I. 2025, we got some viewing late on Friday night this year, with the gray sky finally clearing after 11pm, and even revealing a hint of an aurora on camera. Friday night also saw Andrew from Astronz giving his night sky orientation workshop, with the floor covered in cardboard stars! Haritina Mogoșanu and Sam Leske from Milky Way Kiwi were our guest speakers, along with Dr Ryan Ridden talking about his latest research, and extra talks from John Pickering and myself, as well as some good soapbox talks and society updates. All up we had over 50 people attending Stardate S.I. 2025.

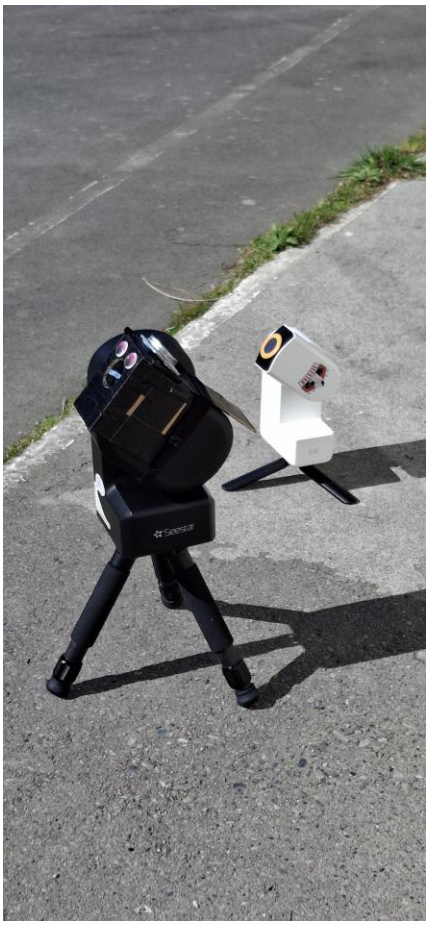
We are calling for presenters for 2026, so if you are interested in doing a talk, or just a short soapbox talk, ***please email me: rob@cas.org.nz***

Registrations for Stardate S.I. 2026 opens soon.
Check out our Facebook page: "Stardate SI 2026",
or email campmother.stardatesi@gmail.com for details.

Among the Stars in Herbert, Sept 19 - 22 – *by Preetha Sreedharan*

Attending this astronomy camp is always such a pleasure. The venue where it is held, Camp Iona, is a wonderful little spot nestled on the shoulder of a valley. It is a great dark sky spot and the views of the Milky Way there on a cloudless night are so very stunning. This year's camp was well attended by CAS members – myself, Rob Glassey, Simon Lewis, Carol McAlvey, Huai Parker, John Pickering, Neil Heslop, Sasha Green and her partner Mike. We only had one night of viewing this time as the next night we were plagued by clouds. This is my SeeStar capture of the Helix Nebula that night. Then there was the decision to dash back up to Christchurch to stay ahead of the clouds to catch the Partial Solar Eclipse. But at a Smart Astronomy camp there is opportunity for a family photo so ZWO SeeStar scopes – here is a picture of my SeeStar S50 (black scope adorned with a home made solar filter using Baader film) and Huia Parker's SeeStar S30 (white scope with the solar filter it ships with). Below is a picture from Rob Glassey of the solar viewing we did – as you can see all scopes large and small were taking in views of the sun. Simon brought his lovely Heliosphere to share some of the most amazing sights of the sun that day – in the picture below, it's the scope with people clustered around it.





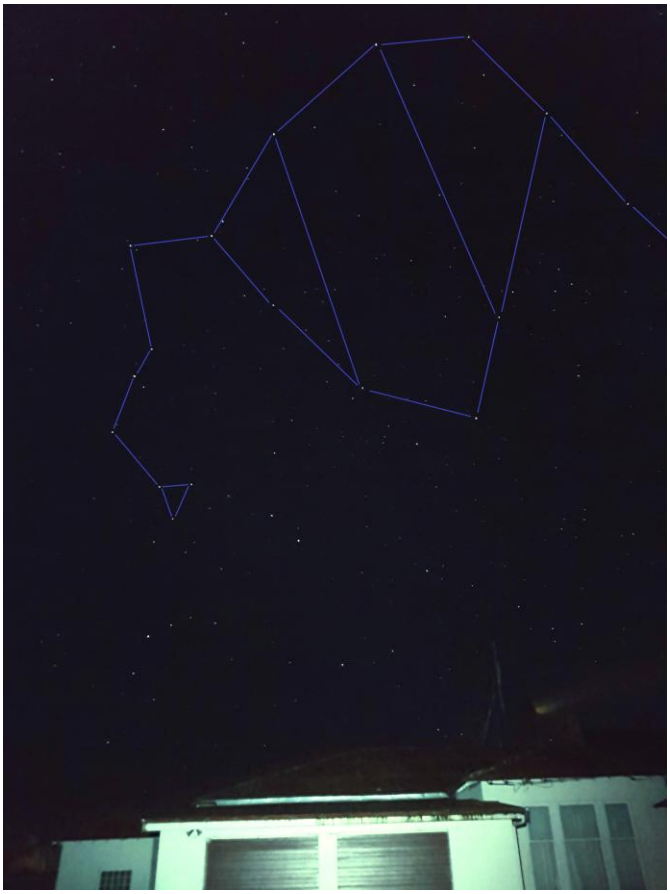
Always fun even if I cut my time at Herbert short this year to race back to Christchurch – my attempt at keeping ahead of the clouds and catching the partial eclipse. As you can see from the Special Edition October CASMag, I did make it 🤓

Guest article on "Exploring the Southern Skies" – *by Father Francois-Xavier Cazali*

My name is Father François-Xavier Cazali, a Frenchman and the Prior General of the Brothers of Saint John, which means I am the superior of the brothers at the Catholic parish of West Christchurch. Benefiting from eight days of rest between July 15 and 23, I took the opportunity to explore the southern sky in the International Dark Sky Reserve near Fairlie and at the University Observatory on Mount John, by Lake Tekapo. The weather was cold but splendid.

My first goal was, of course, to familiarize myself with the constellations of the southern hemisphere—those catalogued by Keyser and Houtman and included in Johannes Hevelius' Uranometria in 1603, as well as those added in the middle of the 18th century by my compatriot, the deacon Nicolas-Louis de Lacaille, who completed the celestial map after a long stay in South Africa. It must be said that these latter constellations are the most difficult to identify. It takes several attempts to memorize the exact location of constellations like Mensa (the Table) or Horologium (the Clock). In the north, the constellations are easily recognizable for a Frenchman—but of course, they appear upside down.

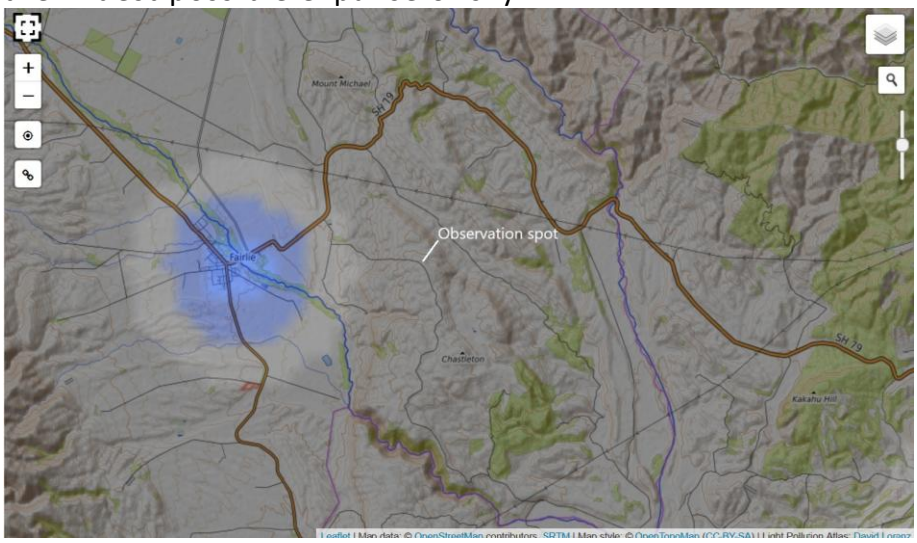
Reversal of Constellation around the Equator:



Picture - The sky facing north above the Catholic presbytery In Fairlie

Picture - The same constellation above my priory in France facing South, shortly before my trip

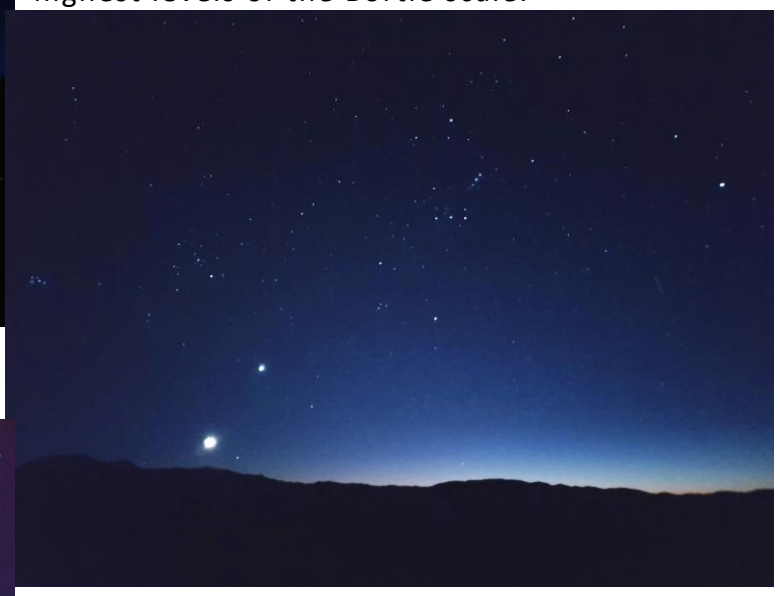
My second objective was to observe the main deep-sky objects that are beyond reach under the observing conditions I'm used to in France, and to do so under the best possible conditions. I was able to do this in Fairlie, where the sky is already magnificent, but especially from a particularly favorable spot 8 km away and above the town, both in the evening and morning, to see the widest possible expanse of sky.



Spot location in "Dark site finder"

Picture above - The observation spot in the morning

A portable 150x750 telescope, generously lent to me by Rob Glassey, allowed me long hours of exploration of Omega Centauri, 47 Tucanae, Eta Carinae and its nebula, the Tarantula Nebula, and more. I also observed certain objects visible in the northern hemisphere but low in the south, such as the Sculptor Galaxy and the Helix Nebula. I was surprised by how clear their shapes were when they were high in the sky and when the sky was so dark, probably at the highest levels of the Bortle scale.



Picture above - Appearance of Orion at the end of the night.

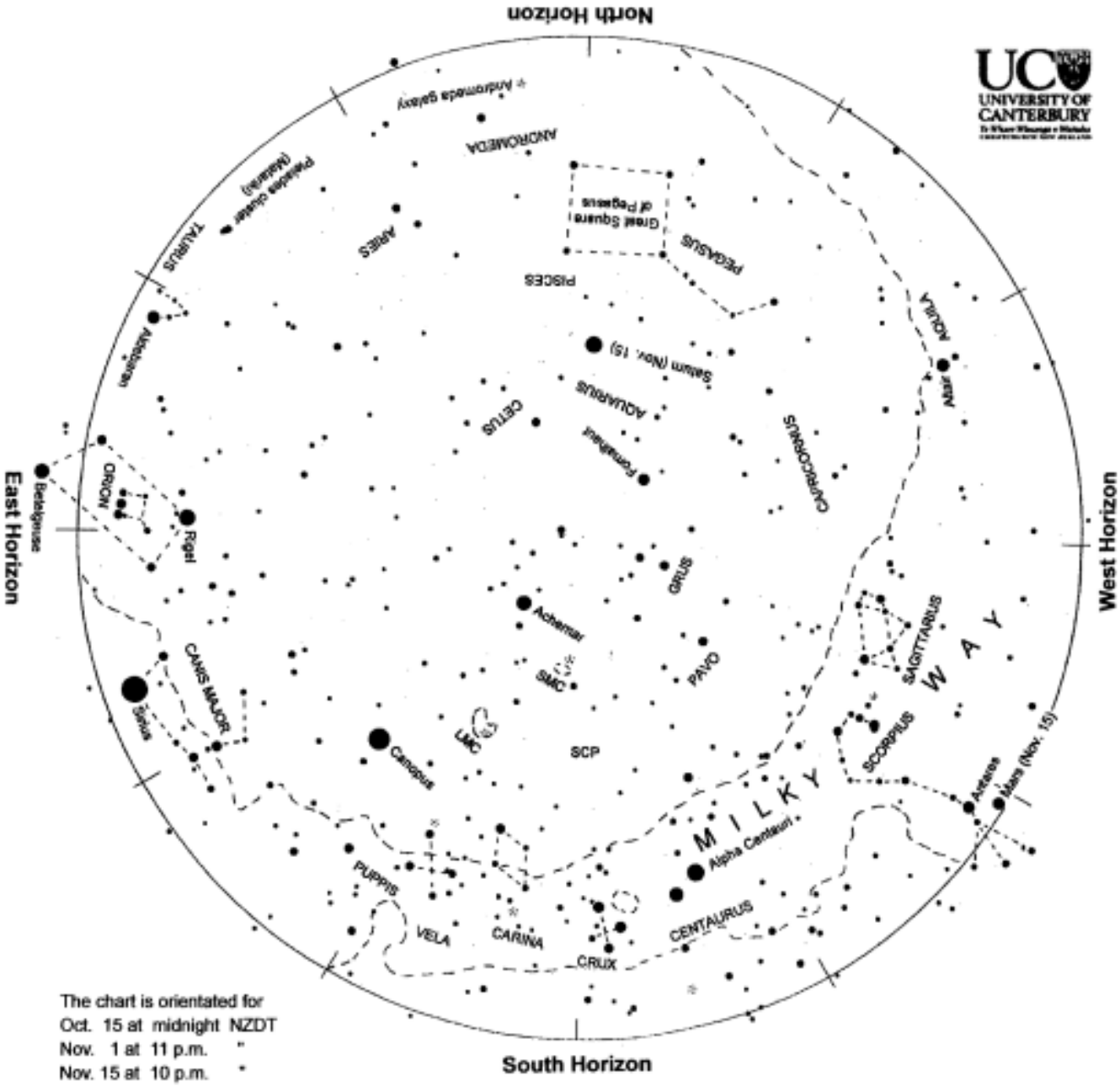
Picture of moonrise behind the mountains, seen through the telescope

My third objective was to visit the University Observatory on Mount John. I was warmly welcomed by Alan Gilmore and his wife Pam Kilmartin, and I was able to visit the main instruments in the late afternoon. After being invited to dinner, I had the opportunity to use the 24-inch telescope under its dome for visual observation, and then to participate in a session of the Near-Earth Object (NEO) tracking program. That evening, we focused on an object whose orbit crosses that of the Earth at a distance of 90,000 km—about a quarter of the distance to the Moon. It was an object estimated to be 12 to 37 meters in diameter, depending on its albedo, which has not yet been determined.

Picture above - Alan Gilmore and Pam Kilmartin in front of their 24-inch telescope at Mount John Observatory

Picture above - Observing with the 24-inch telescope.

This was, in short, an astronomically thrilling stay in the mountains of the Mackenzie District! –*Father Francois-Xavier Cazali*



Evening sky in November 2025

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.

Sirius, the brightest true star, appears in the east twinkling colourfully. It rises after 10 pm at the beginning of the month and is up at dusk at the end. Left of Sirius is Orion containing 'The Pot'. Further left are Taurus and the Pleiades/Matariki star cluster. Canopus, the second brightest star, is midway up the southeast sky. The Pointers and Crux, the Southern Cross, are low in the south. The Clouds of Magellan, small nearby galaxies, are two misty patches high in the south above Canopus. The Milky Way is wrapped around the horizon. Low in the north is the Great Square of Pegasus with the Andromeda galaxy below and right of it. Saturn is a medium brightness 'star' in the north above the Great Square. Mercury, not on the chart, appears as a bright star low in the west in the first 10 days of November then fades and sinks into the twilight.

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 November 2025

Mercury ends its best evening sky appearance of the year in the first half of the month. At the beginning of November it will be setting two hours after the Sun and is the brightest 'star' in the lower western sky. Above it will be orange **Antares** and below it orange-red **Mars**, the two similar in brightness. Mercury fades and slips lower in the twilight as it moves between us and the Sun and more of its sunlit side is turned away. On the 13th it will be beside Mars, and similar in brightness, as the two planets set around 9:30 NZDT. By the 15th it will be below Mars and fading in the twilight, so it isn't on the chart.

Saturn is high up the north sky in the evening, looking like a medium-bright star with a cream tint. In a telescope it looks like a ball with a spike through it as the ring is nearly edge-on to our view. The Moon will be near Saturn on the 2nd and again on the 29th.

Sirius, the brightest true star, is low in the east, twinkling colourfully. It rises around 9:30 mid-month and is up at dusk by the end. **Canopus**, the second-brightest star, is in the southeast. Both stars twinkle like diamonds as the air disperses their white light.

Sirius is the brightest star both because it is relatively close, nine light-years away, and bright as stars go. Seen up close it would be 23 times brighter than the sun. By contrast, Canopus is 300 light-years* away and 13 000 times brighter than the sun.

Left of Sirius is the constellation of **Orion**, with 'The Pot' at its centre. **Rigel**, a bluish supergiant star, is directly above the line of three stars; orange **Betelgeuse**, a red-giant star, is straight below. Left again is orange **Aldebaran**. It is at one tip of a triangular group called the Hyades cluster. The Hyades and Aldebaran make the upside-down face of **Taurus** the bull. Still further left is the **Pleiades** or **Matariki** star cluster, also called the Seven Sisters, Subaru and many other names. Six stars are visible to most eyes. Dozens are seen in binoculars. The cluster is 440 light-years away and around 100 million years old.

The **Milky Way** is low in the sky, visible around the horizon from the northwest, through south into the eastern sky. The broadest, brightest part is in **Sagittarius**, to the right of the Scorpion's sting. The Milky Way is our edgewise view of the galaxy, the pancake of billions of stars of which the Sun is just one.

Low in the south are the Pointers, Beta and **Alpha Centauri**, and **Crux** the Southern Cross, now upside down. In some Māori 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. Alpha Centauri is the closest naked-eye star; 4.3 light-years away.

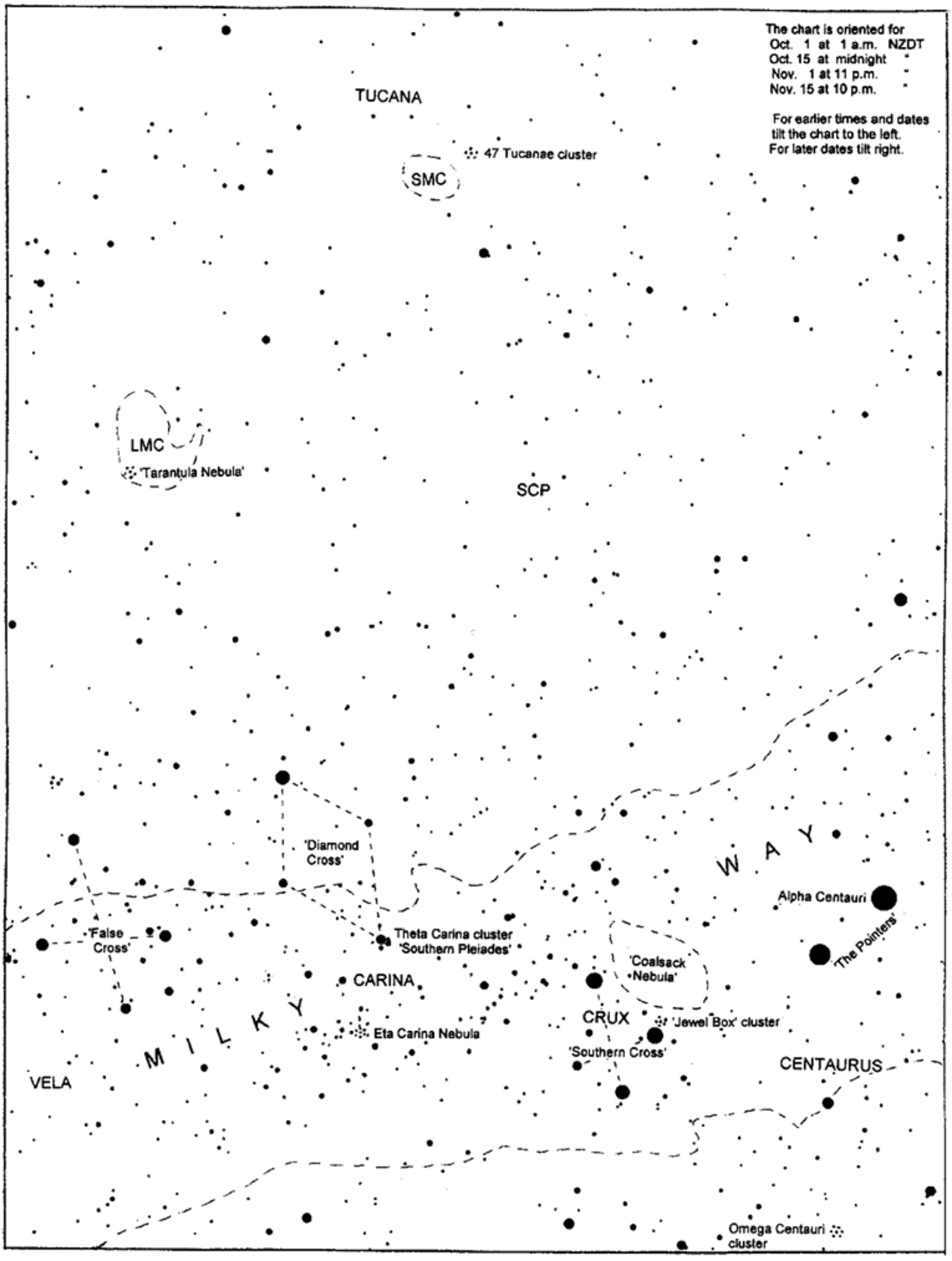
The Clouds of Magellan, **LMC** and **SMC**, high in the southern sky, are two small galaxies about 160 000 and 200 000 light years-away, respectively. In a dark sky they appear as luminous patches. The globular star cluster 47 Tucanae looks like a slightly fuzzy star near the top-right edge of the Small Magellanic Cloud, SMC. It is 13 000 light-years away and on the line of sight to the SMC. Globular clusters are spherical clouds of ancient stars.

Very low in the north is the **Andromeda Galaxy**, easily seen in binoculars in a dark sky, and faintly visible to the eye. It is like our Milky Way Galaxy and nearly three million light years away.

Jupiter rises in the northeast around 1:40 a.m. at the beginning of the month and 11:40 p.m. at the end (so isn't on the chart). It is the brightest 'star' in the morning sky and shines with a steady golden light. Any telescope will show its disk and its four 'Galilean' moons lined up on each side. The Moon is near Jupiter on the morning of the 11th. From places with a sea horizon to the east, Venus might be seen rising 30 minutes before the Sun. It is now on the far side of the Sun from us and will soon be invisible until it reappears in the western evening sky around March 2026.

*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 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 251003



Southern Evening Sky in November

The chart shows the sky south of overhead. Interesting star clusters and nebulae are indicated with asterisks. They are described on the other side of this page.

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

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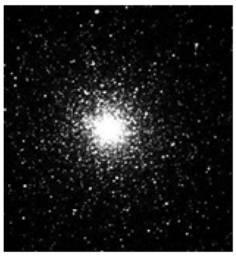
Interesting Objects in the Southern Sky

Large & Small Clouds of Magellan (LMC & SMC) appear as two luminous patches, easily seen by eye in a dark sky. They are two galaxies like the Milky Way but smaller. Each is made of billions of stars. The Large Cloud contains many clusters of young luminous stars seen as patches of light in binoculars and telescopes. The Large Cloud is about 160 000 light years away, the Small Cloud 200 000 l.y; away very close by for galaxies. (1 light year is about 10 000 billion km, or 10^{13} km.)



47 Tucanae, looks like a faint fuzzy star on the edge of the SMC. It is a globular cluster, a ball of millions of stars. A telescope is needed to see a peppering of stars around the edge of the cluster. Though it appears on the edge of the SMC it is one-tenth the distance, 15 000 light years away, and is has no connection to the Small Cloud. Globular clusters are mostly very old, 10 billion years or more; at least twice the age of the sun. **Omega Centauri**, very low in the south, is a similar cluster.

Tarantula nebula is a glowing gas cloud in the LMC. The gas glows in the ultra-violet light from a cluster of very hot stars at centre of the nebula. The cloud is about 800 light years across. It is easily seen in binoculars and can be seen by eye on moonless nights.

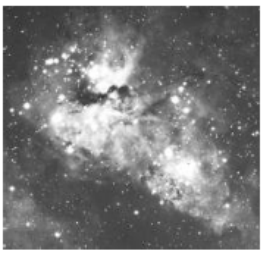
This nebula is one of the brightest known. If it was as close as the Orion nebula (in The Pot's handle) then it would be as bright as the full moon.

Canopus is the second brightest star. It is 14 000 times brighter than the sun and 300 light years away. Sirius, low in the east on spring evenings, is the brightest star in the sky.

Alpha Centauri, the brighter Pointer, is the closest naked-eye star, 4.3 light-years away. Alpha Centauri is a binary star: two stars about the same size as the sun orbiting around each other in 80 years. A telescope that magnifies 50x splits the pair. (A very faint and slightly closer star, Proxima Centauri, orbits a quarter of a light-year, or 15 000 Sun-earth distances, from the Alpha pair.)

Coalsack nebula is a cloud of dust and gas about 600 light years away, dimming the more distant stars in the Milky Way. Many similar 'dark nebulae' can be seen, appearing as slots and holes in the Milky Way. These clouds of dust and gas eventually coalesce into clusters of stars.

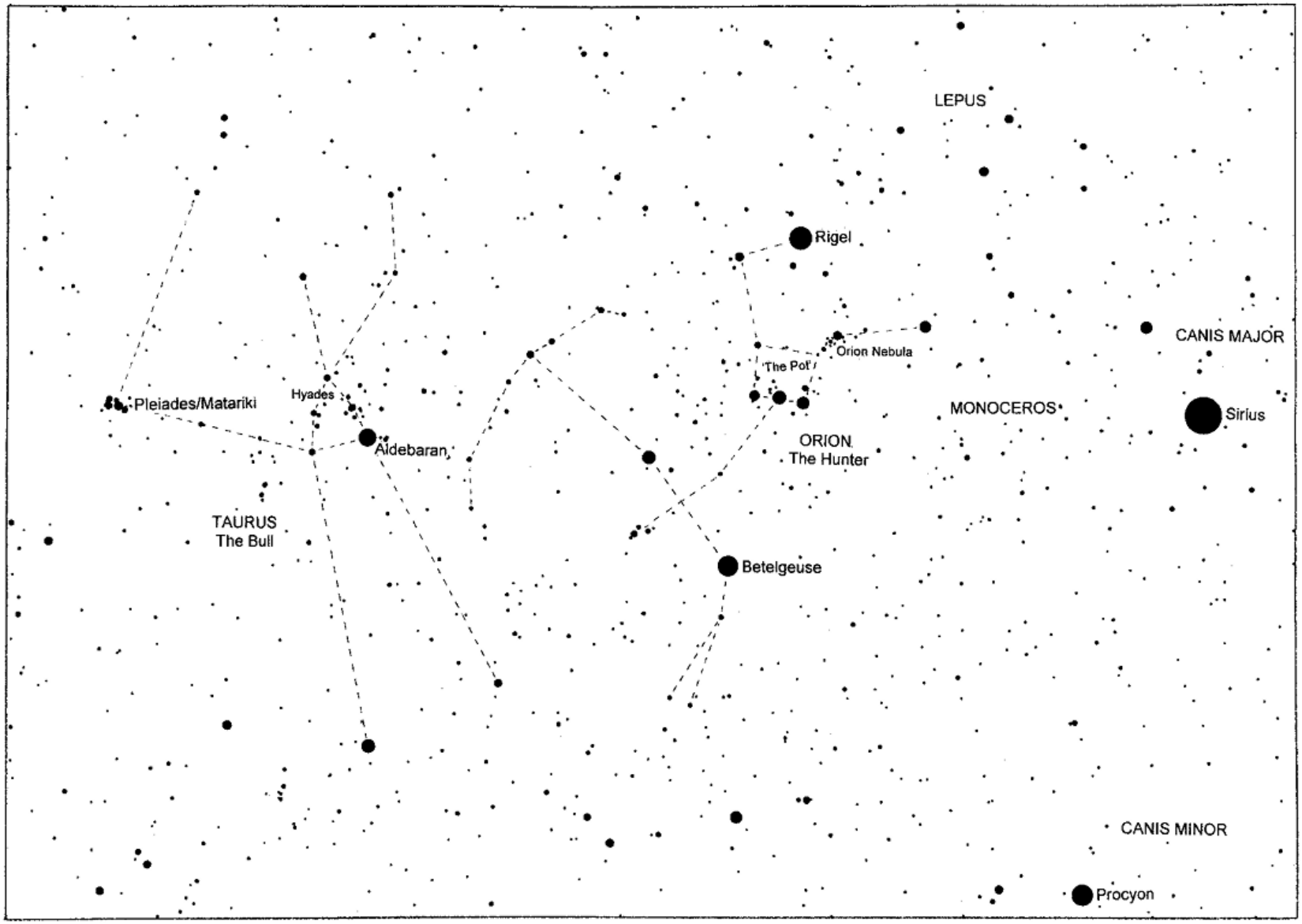
The Jewel Box is a compact cluster of young luminous stars about 7000 light years away. The cluster formed around 25 million years ago. To the eye it looks like a faint star.



Eta Carinae nebula is a glowing gas cloud about 8000 light years away. The golden star in the cloud, visible in binoculars, is Eta Carinae. (Eta is the Greek 'e'.) It is estimated to be to be 60 times heavier than the sun and a million times brighter but is dimmed by dust clouds around it. It is expected to explode as a supernova any time in the next few thousand years.
Many star clusters are found in this part of the sky.

The Southern Pleiades is a newish name for a cluster of stars at one point of the 'Diamond Cross'. It is formally the **Theta Carinae cluster**, after its brightest star but is also known as the 'Five of Diamonds' cluster, the reason obvious when it is seen in a telescope. It is much fainter and smaller than the real Pleiades in Taurus but a nice sight in binoculars. The cluster is about 500 light years away and is around 10 million years old.

Text and photos by Alan Gilmore, Mt John Observatory of the University of Canterbury,
P.O. Box 56, Lake Tekapo 7945, New Zealand. www.canterbury.ac.nz 211007



Eastern Evening Sky in Spring

This chart shows the area of sky in the east on spring evenings. During the night these constellations move into the north, tilting leftward as they go. Interesting objects are described on the other side of the page.

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

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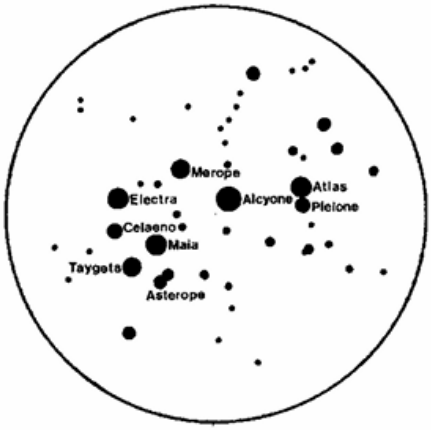
Interesting Objects in Orion and Taurus

Taurus the Bull and **Orion** the Hunter are constellations recognised by most northern hemisphere cultures. To see the northern hemisphere pictures turn the chart upside down. The face of Taurus is outlined by the V-shaped **Hyades** cluster. The brightest star in this group is orange **Aldebaran**. Taurus's long horns extend down our sky. In the northern hemisphere picture the **Pleiades** cluster rides on the Bull's back.

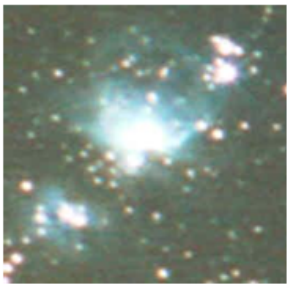
Orion, in the northern hemisphere view, has a shield raised toward Taurus and a club ready for action. The line of three stars makes **Orion's Belt**. The line of faint stars above and left of the belt form **Orion's Sword** in the northern view, dangling from his belt. To most southern hemisphere sky watchers the belt and sword form **The Pot**, **The Iron Pot**, or **The Saucepan**.



The **Pleiades / Seven Sisters / Matariki / Subaru**, and many other names, is a cluster of stars well known in both hemispheres. Though often called the Seven Sisters, most modern eyes see only six stars. Dozens are visible in binoculars. The cluster is about 440 light years away. Its brightest stars are around 200 times brighter than the sun.

One **light year (l.y.)** is the distance light travels in one year: about 10 million million km or 6 million million miles. Light from the sun reaches us in 8 minutes; from the moon in 1 second. Sunlight takes 4 hours to reach Neptune, the outermost significant planet, and 4 years to reach Alpha Centauri, the nearest star.

The **Hyades** cluster is 160 light years away. Its brightest stars (not Aldebaran!) are about 70 times brighter than the sun. The cluster is 630 million years old. **Aldebaran** is not a member of the cluster but simply on the line of sight. It is 65 l.y. away and 150 times brighter than the sun. Aldebaran is a giant star about 25 times bigger than the sun though only five times heavier. Its orange colour is due to its temperature, around 3500° C. The sun is 5500° C.



The **Orion Nebula** is visible in binoculars as a misty glow around the middle stars of Orion's Sword or the handle of The Pot. It is a vast cloud of dust and gas about 1300 l.y. away and more than 20 l.y. across. Ultra-violet light from a massive, extremely hot star in the cloud causes it to glow. Some stars in this region are only two million years old. The sun, by contrast, is 4.6 billion years old. Stars continue to form in a giant cloud behind the glowing nebula. There are many bright and dark nebulae in this region. The Horsehead nebula, a favourite of astronomy books, is beside the right-hand star of Orion's Belt, but too faint to be seen in small telescopes.

Rigel is a blue 'supergiant' star around 40 000 times brighter than the sun and 800 l.y. away. Its surface temperature is around 20 000°C, giving it a bluish colour.

Betelgeuse is a red giant star 250 times bigger than the sun -- wider than earth's orbit! -- but only around 20 times heavier, so it is mostly very thin gas. It is around 10 000 times brighter than the sun, about 400 l.y. away, and has a surface temperature around 3000°C.

Sirius is the brightest star, though the planets Venus and Jupiter, and sometimes Mars, are brighter. Sirius appears bright because it is both brighter than the sun and relatively a close 8.6 l.y. away. Sirius was often called 'the dog star' being the brightest star in Canis Major, one of the two dogs that follow Orion across the sky.

Pictures and words by Alan Gilmore, University of Canterbury's Mt John Observatory, Lake Tekapo, New Zealand;
www.canterbury.ac.nz

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Members Interest Section
This section is for members who have as an interest under the umbrella of Astronomy. Your interests could be around Meteors / Comets / Photometry / Solar observing / Photography / Telescope building / Spectroscopy / Aurora's / Occultation's / Variable Stars / Satellite tracking / Lunar observations/ Jupiter impact monitoring / Radio Astronomy / Eclipses. You are welcome to share your thoughts and see who other like minded people would like to join you. You can form your own interest section. Below are a few members who have started their own interests sections. You can also use the CAS forum to discuss other ideas to check out who else would be interested in starting a new members interest section.

Tune into Jupiter or the Sun with Radio Astronomy
Radio astronomy can be done during the day and even cloudy nights. Terry has built a receiver and with his computer can log activity of the Sun and Jupiter.
For more information contact Terry Richardson, email: vice.president@cas.org.nz Cell: 021 776 458

Bounce Signals off the Moon
Beam a signal at the Moon or at a lunar orbiting satellite
For more information contact Simon Lewis Vice, email: president@cas.org.nz Cell: 022 640 6649

Spectroscopy
CAS has recently purchased a diffraction grating which can be attached to a telescope eyepiece or camera on the telescope. The grating, like a prism, spreads the light from starlight into component colours (distribution of wavelengths). Thus begins the engaging look into the not so private lives of stars, nebulas and galaxies.
For more information contact Ray Pointon, email: rpointon@cyberxpress.co.nz

Other Information

***** IMPORTANT NOTE - UC PARKING ******

There are bollards now installed by the Rehua Building and these will be raised at 6pm daily till 7am. Do not park in the areas by these as you risk getting locked in! Please note its just this one area where the EV chargers are located that has been protected by bollards. All the rest of the campus remains the same. Be wary where you are parking!! The map at this link shows where accessibility parks are >>> https://www.canterbury.ac.nz/about-uc/our-campus-and-environment/maps

CASMag will be published every alternate month and will contain information on CAS activities, articles contributions from CAS members, monthly star charts. I'd like to invite members new and experienced, young and mature to send in your contributions, can be short articles (50 – 100 words) on what your experience has been being a CAS member, what you have learnt, what astronomy projects you're working on etc. Send your contributions to Editor@cas.org.nz by the 3rd week of the month at the latest.

Application for Membership

If you wish to apply for CAS membership, then please head on over to our website https://cas.org.nz/register to register and apply for membership.

Contacts information:

For Public Group Bookings - bookings@cas.org.nz

CAS COMMITTEE AND OFFICERS 2025/2026

President:	Simon Lewis	president@cas.org.nz
Vice President:	Terry Richardson	vice.president@cas.org.nz
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