Vol. 62 – No 23 July 2013 Issue Number 709

CASMAG

The official magazine of the Canterbury Astronomical Society

CAS home page: http//www.cas.org.nz

Monthly Meeting and Practical Astronomy: Tuesday 16th July

from 7:00 p.m., in room F3 of the School of Forestry, University of Canterbury.

Monthly Speaker: Andrei Cotiga –Astrophotography

CAS members sitting around the midwinter bonfire at the CAS Mid-Winter Barbecue and Bonfire at the West Melton Observatory on Saturday 29th June. See Observatory Directors report on page 7

CAS Contact Information

Canterbury Astronomical Society Inc.
PO Box 25-137
Victoria Street Post Office
Christchurch 8144
Web: www.cas.org.nz

West Melton Observatory

43° 29' 55.5" S, 172° 20' 59.0" E

218 Bells Road, West Melton
Observatory phone: 347-9261

Public open nights for 2013 will be held every second Friday evening Friday 19th April – Friday 20th September. To make a booking inquiry follow the Open Nights link on the CAS website to find out which nights are available. For all other inquiries and bookings please email bookings@cas.org.nz

CAS Meetings

Monthly meetings are held on the 3rd Tuesday of each month from February to November at 7:45 pm, in room F3 of the School of Forestry building, University of Canterbury. Meetings begin with tea/coffee, followed by a 45 minute talk from an invited speaker as advertised on the front cover of CASMAG. Meetings are preceded by Practical Astronomy, from 7:00-8:00 pm in room F3 of the School of Forestry building. This is a friendly, informal meeting open to all interested people, with particular emphasis on new and beginning astronomers. Check the CAS website for details of the topic to be covered each month. Attendees are welcome and encouraged to stay for both meetings.
N.B. Meetings were previously held in the Law Building but remediation of that building has required our change of venue for 2013.

CAS Membership

Subscriptions (as listed below) are due 1 April. Fees for current members who renew before 31 May, and new members joining in 2013/14, will be discounted to the amount shown in brackets, i.e., there is a $10 discount for Adult members etc.
Financial year: April to March
Adult (full) membership $70 ($60)
Family membership $105 ($90)
All other classes (Junior, Senior citizen, Student, Community Services $35 ($30))

Contributions to CASMAG

Member contributions to CASMAG (e.g., letters, observing notes, articles, news) are most welcome. Please submit articles to The Editor, CASMag, PO Box 25-137, Christchurch 8144, or email to editor@cas.org.nz. The deadline for the next issue is the 1st of that month.
Small personal advertisements (less than 8 lines in a column) are free to financial members. Charges for larger items range from $5 to $40; email the editor for full details.

Disclaimer

This newsletter is for general information purposes only. The views expressed herein are not necessarily those of the Canterbury Astronomical Society Inc. (CAS). CAS has taken all reasonable measures to ensure that the material contained herein is correct, but gives no warranty for, and accepts no responsibility for, its accuracy or completeness. Readers are advised not to rely solely on this information, and should seek independent advice before making any decision. CAS reserves the right to make changes at any time, as deemed necessary.

CAS Committee and Officers 2013/2014

President	Euan Mason	president@cas.org.nz
Vice President	Adrian Kelly	vice.president@cas.org.nz
Treasurer	David Brian	treasurer@cas.org.nz
Secretary	Jan Fortune	secretary@cas.org.nz
Observatory Director	Blair Wilson	observatory.director@cas.org.nz
Editor	Sharlene Mullen	editor@cas.org.nz
Membership Secretary	Ryan Ridden-Harper	membership@cas.org.nz
Librarian	Colin Fortune	librarian@cas.org.nz
Web Master	Blair Wilson	webmaster@cas.org.nz
Committee Members	Malcolm Carr	malcolmcarr@clear.net.nz
	Gary Steel	borealis@clear.net.nz
	Andrei Cotiga	acotiga@yahoo.com
	Brenna Gamperle	bgamperle@gmail.com
Public Nights and Group Bookings	Sharlene Mullen	bookings.liaison@cas.org.nz

For more specialized information see the contact information page on www.cas.org.nz

CAS Calendar, July- September 2013

July						
Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

August						
Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

September						
Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

Special event
Public holiday
KidsFest
Monthly meeting
Members open night
Public open night

July Events

Saturday 13th July- Saturday 27th July Kidsfest

Kidsfest is an annual event organised by TV2. For 2013, the CAS observatory will be open every night of Kidsfest from 7:30pm to 9:00pm, weather permitting. Check the home page of the CAS website at 6:30pm each night of Kidsfest for confirmation. Volunteers wanted! If you think you may be able to assist or would like to know more about what is involved, please let us know by emailing the open night organisers at bookings@cas.org.nz.

Tuesday 16th July CAS General Monthly Meeting and Practical Astronomy

Euan Mason has kindly donated back issues of the Sky and Telescope magazine. These will be available to attendees at the meeting for a gold coin donation.
Practical astronomy at 7:00pm followed by the monthly meeting and speaker at 8:00pm onwards.
Monthly Speaker-Andrei Cotiga -Astrophotography.

Until Friday 20th September: Public Open Nights

Our 2013 Open Nights began on Friday 19 April, and will run every second Friday night until the 20th September. Volunteers wanted! If you think you may be able to assist or would like to know more about what is involved, please let us know by emailing the open night organisers at bookings@cas.org.nz. Even if you are

Looking forward

Tuesday 20th August CAS General Monthly Meeting and Practical Astronomy
Monthly Speaker-Martin Unwin-The Unique Astronomer: Occultations, Eclipses and the Transit of Venus.

Friday 6th September - Monday 9th September Herbert Star Party www.treesandstars.com/herbert/

Friday11th October - Sunday 13th October 2013, Starlight Festival

The Festival will comprise a mix of scientific, educational and cultural events over three days, designed to attract school students, family groups and members of the public who are interested in learning more about the stars, the night sky, the problems of light pollution and the appreciation of the environment and outer space.

Notices

All CAS Members- Annual subs are now overdue
Subscriptions (as listed below) were due 1 April.
Early payment discount is no longer applicable.
Financial year: April to March
Adult (full) membership $70
Family membership $105
All other classes (Junior, Senior citizen, Student, Community Services $35)

Reminder, from the CAS Constitution:

3.3. The annual subscription in accordance with the by-laws, falls due on April 1, but if unpaid, is not considered to be in arrears until July 1 following.

3.8.3. Members whose subscriptions are in arrears by three months may be considered to have let their membership lapse and may be removed from the List of financial members.

Don't miss out on getting your CASMAG. To check if you are fully paid for 2013 please contact the Membership Secretary, Ryan Ridden-Harper, membership@cas.org.nz.

BE IN TO

WIN

one of these each month until the end of 2013.

AUGUST'S PRIZE IS ...

Hubble - ESA's anniversary DVD film *"Hubble - 15 years of discovery" covers all aspects of the Hubble Space Telescope project – a journey through the history, the troubled early life and the ultimate scientific successes of Hubble.*

TO ENTER THE DRAW email the answer to the competition question that follows, along with your full name to editor@cas.org.nz by 5pm Tuesday 20th August. Winner will be drawn from correct entries at the CAS main meeting. You must be at the August CAS main meeting to claim the prize if your entry is drawn. There will be an immediate redraw if the entrant is not present.

Who is the monthly speaker for the August members' meeting?

Opportunity to be a part of an international observing team

At June's members' meeting Doug Walker talked about the work GNAT (The Global Network of Astronomical Telescopes) does on variable stars and eclipsing binaries and how CAS member can contribute. This is an opportunity for those interest CAS members to be part of an international observing team, to work with scientifically significant data and publish results that can be presented at internationally recognised conferences.
The Global Network of Astronomical Telescopes (GNAT) headquartered in Tucson, Arizona USA is a membership based organization which is formally constituted as a not-for-profit 501(c)(3) corporation. The GNAT mission is to support research, education and public outreach through a variety of astronomical observing programs and research projects.
GNAT produces a large stream of astronomical imagery using scan mode telescopes which image the sky at a fixed declination for several years at a time.
Two scientific research projects are being proposed. 1. Observations of new discovered eclipsing binary star systems, 2. Asteroid lightcurves and shape determinations.
There are many ways CAS members can be involved from dedicated observers to carry-through on observing runs, operating the SBIG ST-7 CCD Camera through to assisting in drafting out reports and publications.
Please make contact with Doug direct on douglas.walker@pg.canterbury.ac.nz for more information.

A big congratulations to Doug who wed his American bride Holly just a fortnight ago on 25th June and we wish them all the very best for the future.

Monthly Speakers -CAS Member Meetings 2013

The CAS main meeting is held at 8:00pm on the 3rd Tuesday of the month (except December & January), in room F3 of the University of Canterbury School of Forestry. The main meeting at 8:00pm is preceded by the Practical Astronomy for All Ages meeting from 7:00pm to 7:45pm, in room F3 of the University of Canterbury School of Forestry. All members are welcome to attend either or both meetings.

February	Euan Mason	In the footsteps of Tycho Brahe: A pilgrimage to Hven
March	Graeme Kershaw	TOWNSEND TELESCOPE How bad is the damage?
April	Ryan Ridden-Harper	Miss, Are there other planets?
May	Prof. John Hearnshaw	Aoraki Mackenzie Starlight Festival and Dark Sky Reserve.
June	Doug Walker	Work on variable stars and eclipsing binaries with GNAT (The Global Network of Astronomical Telescopes)
July	Andrei Cotiga	Astrophotography
August	Martin Unwin	The Unique Astronomer: Occultations, Eclipses and the Transit of Venus
September	Dr. Loretta Dunne	Seeing the Stolen Starlight with Herschel
October	TBC	

If you have a topic you would like to speak about at any of the available members nights or have someone you would like to invite to speak please contact me at editor@cas.org.nz.

The Day the earth smiled - July 19, 2013

Something great, something big, something very special that's never happened before is about to happen!

On July 19, 2013, the Cassini spacecraft, currently in orbit around Saturn, will be turned to image that planet and its entire ring system during an eclipse of the sun, as it has done twice before during its previous 9 years in orbit.
But this time will be very different. This time, the images collected will capture, in natural color, a glimpse of our own planet alongside Saturn and its rings on a day that will be the first time the Earth's inhabitants know in advance their picture is being taken from a billion miles away.
It will be a day to revel in the extraordinary achievements in the exploration of our solar system that have made such an interplanetary photo session possible. And it will be a day for all of us to smile and celebrate life on the Pale Blue Dot.
My fondest wish is that you, the people of the world, do exactly that.
I hope, at the appropriate time, regardless where or on which side of the planet you are, that you stop what you're doing, go outside, gather together with friends and family, contemplate the utter isolation of our world in the never-ending blackness of space, relish its lush, life-sustaining beauty, appreciate the rarity it is among the Sun's planets, and marvel at your own existence and that of all life on planet Earth.
And then, by all means, rejoice! Hoot and holler, twist and shout, raise a glass, make a toast, dance beneath the diamond sky with one hand waving free, or celebrate in silence. Whatever it takes. But be sure to smile, knowing that others around the world are smiling too, in the sheer joy of simply being alive on a pale blue dot.

Carolyn Porco
Founder, The Day The Earth Smiled
carolynporco.com

Thankyou to Euan Mason for spotting this .
See www.thedaytheearthsmiled.com for more information.

Einstein's universe

"If I were not a physicist, I would probably be a musician. I often think in music. I live my daydreams in music. I see my life in terms of music. I get most joy in life out of music." – Albert Einstein

The Royal Society of New Zealand and Chamber Music New Zealand present Einstein's Universe, an evening of science and music. Professor Brian Foster and violinist Jack Liebeck interweave music and science in a presentation which links Einstein's favourite instrument, the violin, with many of the concepts of modern physics that he founded.

Their illustrated talk will cover the grand sweep of modern physics – from Einstein's Theory of Relativity to the Large Hadron Collider and the Higgs Boson – illustrated with the violin music that Einstein loved to play. Widely acclaimed in the press and featured on the BBC, Brian and Jack have presented the illustrated talk Einstein's Universe around the world and are touring New Zealand in July 2013.

Chamber Music New Zealand will hold a Concert following the talk and a one hour dinner break. It features Jack Liebeck, Victoria Sayles (violin), Julia Joyce (viola), Andrew Joyce (cello) and Stephen De Pledge (piano).- from www.royalsociety.org.nz/events

See www.royalsociety.org.nz/events for ticket details

Observatory Directors Report - Blair Wilson

June was a busy month at the observatory, with a successful working bee on the 6th seeing completion of fibre-glassing the 5m dome skirt, and our annual mid-winter barbecue and bonfire on the 29th, though sadly with low member turnouts for both. Completion of the 5m dome refurbishment will likely now have to wait until summer and longer dry and warm spells, but it's great to have this observatory back into functional condition, particularly with KidsFest just about to start. Big thanks to those members who took time out of their weekend to assist with the working bee and to all those who have helped with the dome refurbishment over the last few years (yes, it's taken that long, with the dome being raised November 21st 2009!).

From the Archives

Installation of the original 5 metre dome at the R.F Joyce observatory in the 1960's. Thankyou to Graeme Kershaw for finding these gems.

Heather's obs...Heather is Back! Ok so she didn't actually go anywhere but due to some email gremlins Heather's last 2 articles didn't make it to CASMAG so here they are.

All Things Bright and Beautiful...[unfortunately, I am not referring to myself!]
So it's a bright moonlit sky, and I hear mumble-mumble,-rude words coming from DSO purists, but, not all is lost though some will disagree... Something we tend to take for granted just because 'it's always there',-- Crux. O.k. it is high in the sky at the mo, and I had to rather contort myself to peer through the finder-scope with a lot of 'OOF and Ouch' straightening myself up again, but it was worth it... First, the lovely double of alpha Cru with a 5th mag. wide companion that I could just make out even in the bright moonlit sky.. And then there is the blue/white beta Cru, but I enjoy mostly looking at the 'tiny' very red star in the same FOV. The Jewel Box, aka kappa Cru,---[try saying kappa Cru very fast as a tongue- twister] aka NGC 4755, looks just as stunning in a dark or light sky in fact, in a light sky, more of the A-shape can be seen and, the red star seems to stand out more... Then there is the fainter, and furthest distanced star of Crux,-delta, and for the Ausie flag,- the orange star,[they have the colour wrong] epsilon..
Scorpius is well placed at the mo and has some nice doubles to enjoy around the claw/head, and, you can still see the brighter open clusters such as, M6 'The Butterfly' M7, and to the top of the sting, NGC6231 and H12.. I also enjoy doing Lunar obs and trying to learn a new crater now and then and try to remember the locations of some others that I have previously learnt.. I bought a really good Lunar map from Whitcouls ages ago, there is one at the observatory, and I got mine laminated so I can spread it out on my table outside to use. For a gibbous to full moon, a moon filter is a help so you don't 'laser' your eyes, or cheaper, an orange filter cuts down the glare... A tip,- look through your finder scope with your None-usual-observing eye,[I am left eyed,-just thought you would like to know that!] and use your usual observing eye for the filtered eyepiece. And, if you want to do any other obs, Do observe the moon last as that Will be the last thing you observe!!! If you are feeling a little sadistic, when there is a full, or nearly full moon at the observatory publics nights, show them the moon and then watch them stumble round half blinded after..--god I can be cruel !!!!!!!! Anyway even in a light sky- Happy Hunting,-[except for DSO purists who will probably tear my article into little shreds whilst muttering very rude words] ... stay warm.. from Heather

Some Handy Hints from Heather...
Before this Casmag, the night sky has not been so good, and I have sometimes had a look out at the night sky, said 'Bugger' and come back inside again, But, there Will be some good nights so I thought I would pass on some handy [I hope] hints.. Now is the time to plant your spring bulbs,--Hang on, wrong subject! Oh Yes, astronomy;- At the beginner's meeting there was some talk about some handy hints. These are some of mine..... It is starting to get colder at night now, so, instead of just one layer of very warm clothes, many layers will keep you warm;- a couple of pairs of long pants, and wear long socks and tuck one pair of pants into your socks to keep out draughts. A couple of pairs of socks is good, and snowboots that you can buy from the Warehouse that are not very expensive. Buy a pair one size too big, and you can line them with something warm and wear your two pairs of socks.. Thermal undies are good, and several warm tops. I even wear two hats when it is really cold. Finger-less gloves still keep your hands warm but also allow you to handle eyepieces.. Perhaps when it is extremely cold, a long scarf is good. I have a very long one that I cross over at the front, it keeps out cold draughts going down my neck, crossed over at the back with a small safety pin in it keep my kidneys warm, and at the front it keeps my [for the women astronomers, boobs warm.] Have hot drinks, but not too much tea or coffee or you may be getting some of 'your places' chilly from going too often to 'little room' And no alcohol unless you enjoy looking at double stars- A Lot, or fuzzy objects! Next,-- I think it is better and more comfortable to look through a scope with both eyes open, and to make it more comfortable and to stop distraction from any stray light, I use an old, dark towel to cover my head. I look a twit, [under the towel] but it helps so who cares! Some like to do some Lunar obs, and I do when I am in the mood, and I have a Lunar filter which is good, also, to cut down Lunar brightness, an orange filter helps to sharpen Lunar features but cut down glare;- the moon looks strange, but it works.. BUT, and here's 'a big But' --[not mine] we all have a dominant or favourite eyepiece-eye, use your Other eye for your finder-scope and use your eyepiece eye for you filter.. Hope some of this may be useful, and you may have a few hints to pass on yourself.. Happy Hunting from Heather..

The Evening Sky in July 2013

- Alan Gilmore, University of Canterbury's Mt John Observatory

Brilliant Venus is the evening star, setting in the northwest around 7:30. Sirius, the brightest true star, sets in the southwest as twilight ends, twinkling like a diamond. Canopus, the second brightest star, is also in the southwest at dusk. It swings south later. Low in the north sky is the bright orange star Arcturus. Above it are Saturn and Spica, a widely-spaced pair, Saturn is the right-hand star and the brighter of the two. South of the zenith are 'The Pointers', Beta and Alpha Centauri. They point to Crux the Southern Cross on their right. Left of the Pointers, along the Milky Way, is orange Antares, the brightest star in Scorpius.

Venus is brilliant to the eye -- bright enough to cast shadows in dark locations -- but isn't great in a telescope. It looks like a tiny gibbous moon without features. Venus is on the other side of the sun from us, 215 million km away mid month. As it swings out from the sun, catching us up, it sets later.

Saturn is worth a look in any telescope. A small telescope shows the ring system and biggest moon Titan looking like a star about four ring-diameters from the planet. Larger telescopes show smaller moons as faint stars closer to Saturn. Saturn is around 1440 million km away in July. Signals from the Cassini spacecraft orbiting Saturn take 80 minutes to reach us. Saturn sets due east around 2 a.m.

Alpha Centauri is the third brightest star. It is also the closest of the naked eye stars, 4.3 light years away. And it is a binary star: two sun-like stars orbiting each other in 80 years. A telescope magnifying 50x will split the pair. Beta Centauri, like most of the stars in Crux, is a blue-giant star hundreds of light years* away.

Canopus swings down to the southern skyline before midnight then moves into the southeast sky in the morning hours. It is a 'circumpolar star': it never sets. Crux and the Pointers are also circumpolar. Canopus is a truly bright star: 13 000 times the sun's brightness and 300 light years away.

Arcturus, in the north, is the fourth brightest star and the brightest in the northern hemisphere sky. It is 120 times the sun's brightness and 37 light years away. It twinkles red and green when setting in the northwest around midnight. It is an orange colour because it is cooler than the sun; around 4000°C.

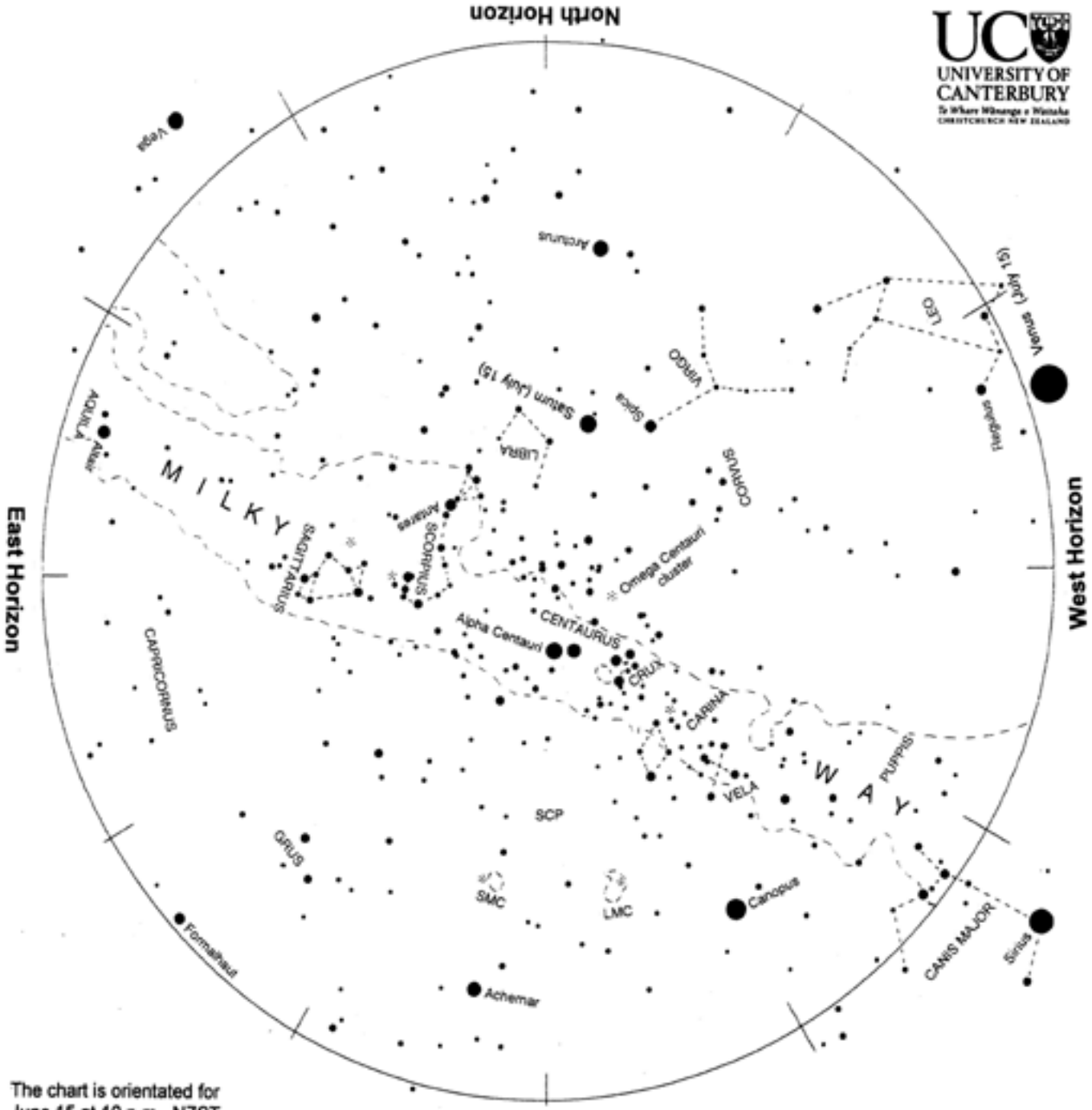
East of the zenith is the orange star Antares, marking the heart of the Scorpion. The Scorpion's tail, upside down, is stretched out to the right of Antares making the 'fish-hook of Maui' in Maori star lore. Antares is a red giant star: 600 light years away and 19 000 times brighter than the sun. Below Scorpius is 'the teapot' made by the brightest stars of Sagittarius. It is also upside down in our southern hemisphere view.

The Milky Way is brightest and broadest in the east toward Scorpius and Sagittarius. In a dark sky it can be traced up past the Pointers and Crux, fading toward Sirius. 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. A scan along the Milky Way with binoculars shows many clusters of stars and some glowing gas clouds.
The Large and Small Clouds of Magellan, LMC and SMC, look like two misty patches of light low in the southern sky. They are easily seen by eye on a dark moonless night. They are galaxies like our Milky Way but much smaller. The large cloud is 160 000 light years away; the small one 200 000 light years.

Jupiter and Mars are close together low in the northeast dawn twilight mid month. Jupiter is the brightest object in the region. Above them are the orange stars Aldebaran and Betelgeuse, similar in colour to Mars but brighter. Mars is above and left of Jupiter till around the 20th. On the 22nd they are little more than a full-moon's width apart. After that Jupiter continues its ascent of the dawn sky but Mars stays put. Mercury moves up the dawn sky and brightens to the right of Mars in the last mornings of July. All this 'closeness' is strictly line-of-sight. On July 25th Jupiter is 900 million km away and Mars is 360 million km away. Both are on the far side of the sun. We are slowly catching up on them. Mercury is 115 million km away and is leaving us behind as it heads toward the far side of the sun.

*A light year (l.y.) is the distance that light travels in one year: nearly 10 million million km or 1013 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.
www.canterbury.ac.nz



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

Evening sky in July 2013

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.

Venus is the brilliant 'evening star', setting in the northwest around 7:30. Sirius, the brightest true star, sets in the southwestern twilight, sparkling colourfully. Saturn and Spica make a wide pair midway up the north sky. Orange Arcturus is below them often twinkling red and green.. Canopus, the second brightest star, is low in the southwest and swings down to the southern horizon later. The Pointers and Crux, the Southern Cross, are south of the zenith. The Scorpion is on its back high up the eastern sky with Sagittarius below it.

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

CASKids Space

News and information for the little astronomers

The Big Explosion No One Saw

About once or twice every 100 years, a gigantic nuclear bomb detonates in our Galaxy. In just a few short weeks, it blasts out as much energy as our Sun will in its entire lifetime! This powerful explosion is called a 'supernova', and it is the result of a star dramatically ending its life.

The most recent supernova in our galaxy, the Milky Way, happened just over 100 years ago. But, unfortunately for our great-great-great grandparents, the explosion was hidden behind thick clouds of gas and cosmic dust, far away from the Earth. So they couldn't witness this very rare sight. Because of this cosmic dust, it wasn't until 2008 that a group of astronomers finally stumbled upon the remains of the obliterated star, which you can see in this photograph.

The expanding remains of the supernova remnant G1.9+0.3.

Normally, when a supernova like this happens, the star's material is blown out evenly in all directions. This leaves behind a cloud that is more or less neat and symmetrical, but the object in this picture doesn't follow a neat pattern. Most of the star's material was blasted towards the top of the picture, and it's still travelling in that direction extremely fast. From these clues, astronomers have deduced that this must have been an unusually energetic and messy supernova explosion!

As far as we know, the last supernova in the Milky Way was over 100 years ago. If they happen on average every 100 years or so, another one should be due really soon.
Keep your eyes on the skies and you might be the one to spot it first!

Thankyou to unawe.org for use of this Space Scoop based on a Press Release from Chandra X-ray Observatory.

Did you know?

NASA's Chandra X-ray Observatory is a telescope specially designed to detect X-ray emission from very hot regions of the Universe such as exploded stars, clusters of galaxies, and matter around black holes. Because X-rays are absorbed by Earth's atmosphere, Chandra must orbit above it, up to an altitude of 139,000 km in space.

Cool Fact

There was a famous supernova at the end of the twentieth century called SN1987a. This explosion happened in a nearby galaxy and was so powerful that it was visible for four whole months!

Canterbury Astronomical Society Inc.

APPLICATION FOR MEMBERSHIP

To: The Membership Secretary

Canterbury Astronomical Society Inc.
P.O.Box 25-137
Victoria Street
Christchurch 8144

Receipt #:	
Date:	
Elected:	
Member advised:	
Editor advised:	

Applicant's name in full (block letters):_____

Address: (Note: a P.O. Box is NOT a legal address) _____

_____

Phones: Home: _____Work: _____Mobile: _____

eMail: _____ Date of birth (if under 18) _____

Occupation: _____

Membership Category (subscription must accompany application. Discounted if paid by 31May)

*Please circle your selection

$70	$60	Adult (any person 18 years of age or over who is not eligible for any other category)
$105	$90	Family (two or more persons living at the same address) §
$35	$30	Junior (under 18 years of age on 1 April of the current year)
$35	$30	Senior Citizen (over 65 years)
$35	$30	Community Services Card holder
$35	$30	Student (any person studying full-time at a tertiary institution; must reapply annually)
$210	$180	Corporate (members have voting rights of one member but cannot take office)

§ If family membership, please list the other persons involved.

Name	Date of birth (if under 18)	Signature

All CAS members receive CASMAG, a monthly newsletter. Would you prefer to receive this

☐ by email as a .pdf attachment? ☐ or by post as a hard copy?

Do you have access to a telescope? What type and size? _____

What are your astronomical interests? _____

I, the undersigned declare that the information given herein is true.

Signature: _____Date: _____

Proposer: _____ Seconder: _____

Address: _____ Address: _____