Vol. 62 – No 21 May 2013 Issue Number 707

CASMAG

The official magazine of the Canterbury Astronomical Society

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

Monthly Meeting and Practical Astronomy: Tuesday 21st May

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

Monthly Speaker: Professor John Hearnshaw, Aoraki Mackenzie Starlight Festival and Dark Sky Reserve.

R.F.Joyce Observatory during February's members night. This image taken by Blair Wilson shows members setting up their scopes against the back drop of Crux.

For more of what has been happening out at West Melton see pages 6&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

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	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, May 2013 – July 2013

May						
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	

June						
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						

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			

Special event
Public holiday
Daylight Savings Ends
Monthly meeting
Members open night
Public open night
KidsFest

May Events

Tuesday 21st May: CAS General Monthly Meeting and Practical Astronomy
Practical astronomy at 7:00pm followed by the monthly meeting and speaker at 8:00pm onwards.
Professor John Hearnshaw our guest speaker will talk to us about the Aoraki Mackenzie Starlight Festival and Dark Sky Reserve.

Friday 19th April – 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 only able to assist on one night, your help is greatly appreciated.

Saturday 25th May, 2013, from Dusk CAS Members' Night

May 24 – 26, 2013 RASNZ Conference
The 2013 RASNZ Conference will be held in Invercargill during the last weekend in May. See http://www.rasnz.org.nz/Conference/ . Colin Fortune is our CAS representative at the conference so if you have any matter you would like him to bring up at the AGM held that weekend please email him on librarian@cas.org.nz

Looking forward

Tuesday 18th June CAS General Monthly Meeting and Practical Astronomy
Monthly Speaker-Douglas Walker -Work on variable stars and eclipsing binaries with GNAT
(The Global Network of Astronomical Telescopes)

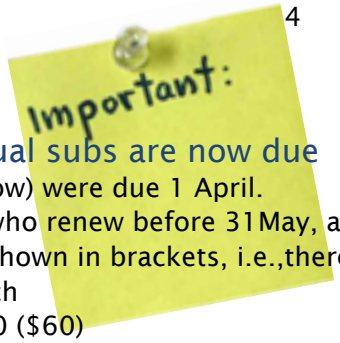
Saturday 22nd June CAS Mid-Winter Barbecue and Bonfire at the West Melton Observatory
This is a great opportunity to catch up with other members of the society.

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.

Friday 6th September - Monday 9th September Herbert StarParty 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. The events will include stargazing, lectures, a concert, an essay and poetry competition, documentaries on the night sky, a photographic exhibition, a market and much more.
See website for more details www.starlightfestival.org.nz

Notices



All CAS Members- Annual subs are now due

Subscriptions (as listed below) were due 1 April.
Fees for current members who renew before 31May, 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))
Please contact the Membership Secretary, email: membership@cas.org.nz, with any questions.

New Members in April A BIG WELCOME

The committee would like to welcome 3 new members who joined the Society in April.
Louise Webster
Steven Lim
Alana Comrie

Monthly Speakers -CAS Member Meetings 2013

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	TBC	
August	TBC	
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.

For Sale: TouCam Pro

TouCam Pro webcam, set up for planetary imaging, with original box and CD.
$80
Phone: 3482671, email: euan.mason@canterbury.ac.nz

A research project opportunity for CAS.

Astronomy is one of the few branches of science to which amateurs regularly contribute significant observations and discoveries. For decades amateurs and professionals have worked together on research projects to compute the orbits of Near-Earth Objects (NEOs), monitor active regions on the Sun, as well as variable stars of various types as they fluctuate in magnitude.

Two scientific research projects are being proposed. 1. Observations of new discovered eclipsing binary star systems, 2. Asteroid lightcurves and shape determinations.

1. Eclipsing binary stars. 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. The analysis of these image strips have led to the discovery of a number of variable stars of varying types. GNAT is in the process of developing a follow-on observing program for a selected set of newly discovered eclipsing binary systems of interest to further enhance the scientific knowledge base of these objects. Observing sites have been established in Tucson, Arizona and in Córdoba, Argentina. Results of these observing programs are published in referred journals such as The Astronomical Journal. (as an example see THE FIRST MOTESS-GNAT VARIABLE-STAR SURVEY, The Astronomical Journal, 134:1488–1502, 2007 October)
The observing protocol would be to do time series CCD imaging photometry on a single star for the duration of a night observing session. The image integration times would depend on individual equipment setups but would likely be in the range of 2 or 3 to 5 minutes.
2. Asteroid lightcurves. In astronomy, a light curve is a graph of light intensity of a celestial object or region, as a function of time. For asteroids, a light curve can be used to estimate its rotation period where the time separation of peaks in the light curve gives an estimate of the rotational period of the object. The difference between the maximum and minimum brightness can be due to the shape of the object, or to bright and dark areas on its surface. The asteroid lightcurve database (LCDB; Warner et al., 2009, Icarus 202, 134-146) is a compilation of published results that now includes period/amplitude parameters for more than 4,000 asteroids. The Minor Planet Bulletin (http://www.minorplanet.info/minorplanetbulletin.html) is the journal for amateurs (and even professionals) to publish individual lightcurves (one at a time or in bulk). The Bulletin is indexed by the ADS and found in the libraries of major observatories and institutions around the world. Since the early 21st century, the MPB has published the vast majority of new asteroid lightcurves.

If you are interested in participating in either one of the programs, please contact Doug Walker at douglas.walker@pg.canterbury.ac.nz for further information.

Imaging the Southern Sky

Stephen Chadwick and Ian W. Cooper have recently published a book called "Imaging the Southern Sky" which is a book about astro-imaging and contains 150 images that have been taken over the last 3 years. Ian and Stephen are visiting Mt John observatory on the weekend of 4th-5th May in order to take part in an event about the book and will present a few talks on the Saturday afternoon and evening and then also on the Sunday. One of the talks will be about the making of the book including a presentation of all the images. There will also be a talk about the technical side of astrophotography in general and possibly something on imaging processing. There will be a room set aside in which an audio-visual of all the images in the book are to be presented throughout the day.

Please see www.southernskyimaging.com for more information.

Outreach report

2013 started off well with a wonderful members night in February. Alot of CAS members and new faces wrapped up warm and were rewarded with clear skies and great conversations. Blair and I were happy to take photos that night rather than observing and took a some shots that captured the scene that night (see cover).

At the end of March the Observatory opened to the public to celebrate Earth Hour, an event that is always very popular due to the publicity it gets throughout the Selwyn community. Open Nights began on Friday 19th April, or should I say they were scheduled to begin. The weather that night didn't want to cooperate and so the observatory closed and the group booking was postponed to the following Friday. We didn't fare any better the following Friday as the weather wasn't suitable for opening that night either. Thankfully the group was able to rebook for another night later in the year. As we have been finding it difficult to have enough open night helpers for Friday nights this year's open nights will be run every 2nd Friday and not every week as previously done. This also means that if bad weather prevents the open night going ahead the group can be offered the following Friday as a back up. As always, volunteers are very much appreciated so 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.

All help is greatly appreciated.

The weather on the last couple of members' nights hasn't been overly conducive to looking through a telescope, so a suggestion has been made to meet elsewhere for a social outing on those nights, or to have organised pot luck dinner/ movie nights at the observatory if there isn't going to be any sky worth looking at.

Suggestions welcome.

There are alot of things happening out at the observatory, not least of which is the grounds work that Blair discusses in the next article.

Working-bee 27th April. - Obs. Director, Blair Wilson

It was a small turnout on Saturday, a stunningly sunny day after the previous weekend's washout. As the new observatory director, and member of several years, I have a long wish-list of maintenance tasks to have completed this year, so it was great to have such enthusiastic helpers on the day.

Euan made an early start, trimming the hedges along the terrace, then started on the mammoth task of pruning the roadside pine trees.

Doug took care of weed-eating and refreshing the white paint on the steps, followed by preparing and painting the 5m dome lean-to doors.

Sharlene and Brenna did a fantastic job of trimming back the flax bushes along the drive, then took up paint brushes and rollers to refresh the paint on the 12" observatory, plus handrails and anything else that wasn't moving.

Gary spent time patching the 16" observatory roof, reporting that it appears to have been "fixed" several times in the past; then started on painting the roll-off support structure, discovering other problems to

be remedied on a future working-bee. Gary's family arrived in the afternoon and got stuck into weeding. With expert guidance and instruction from soon-to-be-member Rob, we finally started on fibreglassing the 5m dome skirt. Rob's fibreglassing prowess comes from building and running a solar-powered car across Australia, so we're very lucky to have him on board. Another full day's work with a few helpers should see this job completed and ready for painting.
Colin got out his fancy electric weed-eater and disappeared into the corner for a while, emerging later to help complete painting the lean-to doors.
Adrian arrived mid afternoon to help with painting, and assisted Doug with replacing the shade-cloth along the back of the terrace.
Yours-truly, asides from a little hedge-trimming and helping Rob with the fibreglassing, made a start on leveling-off the concrete mound on the top terrace; a much larger lump than expected from the few stories heard about it, so a few more hours to be spent on this.

Finally the afternoon wound up with sausages and drinks (generously provided by Brenna), hot chips, and bread in the lodge; a tasty and greasy reward for a big afternoon's work.

It's great to see so many of our new members getting stuck in and helping with keeping our observatory in good order.




A few reminders to members about using the observatory:

- all members are expected to make an entry in the log book when they use the observatory or do work out there; the log book is usually on the table just inside the lodge door.
- The entire observatory site is now officially a non-smoking area.
- I hope to soon announce an observatory equipment booking register, one of the observatory director's responsibilities to maintain and make readily available.
  In the meantime if you are a member and wish to reserve any of the observatories for your use for any night, please email observatory.director@cas.org.nz.
  Currently the entire site is booked for:
  - Every Friday night from 6pm onwards for open nights, through to 27th September.
  - July 13th through 27th, from 6pm onwards for Kidsfest.
  - Every Members' night for all members' use (first Saturday after the third Tuesday of the month)
  - 22nd June for CAS Mid-Winter BBQ.
  - 7th December for CAS Summer Star Party.

Next Working-bee: June 8th, 1pm – 5pm. BBQ and hot chips for the helpers afterward.




The Evening Sky in May2013 - Alan Gilmore, University of Canterbury's Mt John Observatory

As the sky darkens Sirius appears in the west with Orion below it. Canopus is southwest of the zenith. Crux, the Southern Cross, and the Pointers are southeast of overhead. Midway up the northeast sky is Saturn, the brightest 'star' in that region. Above Saturn and slightly fainter is Spica, the brightest star in Virgo. Below them, low in the northeast is Arcturus, a bright orange star whose colour is often separated into flashes of red and green.

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', now tipped on its side. Sirius, 'the Dog Star', marks the head of Canis Major the big dog. Sirius is the brightest star in the sky though planets Venus, Mars and Jupiter can be brighter.

Crux, the Southern Cross, is southeast of the zenith. Left of it are Beta and Alpha Centauri, often called 'The Pointers'. Alpha Centauri is the closest naked-eye star, 4.3 light years away. It is a binary star: two sun-sized stars orbiting each other in 80 years. Beta Centauri, like most of the stars in Crux, is a blue-giant star hundreds of light years away. Canopus is also very luminous and distant: 13 000 times brighter than the sun and 300 light years away.

Low in the east is the orange star Antares, marking the heart of the Scorpion. Antares means 'rival to Mars' in Greek. It is a red-giant like Betelgeuse; 600 light years away and 19 000 times brighter than the sun. Arcturus, in the northeast, is the brightest red star in the sky but, at 37 light years, is much closer than the red-giants previously mentioned. It is about 120 times brighter than the sun.

The Milky Way is brightest in the southeast toward Scorpius and Sagittarius. In a dark sky it can be traced up the sky 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 nearby outer edge is by Orion. A scan along the Milky Way with binoculars shows many clusters of stars and some glowing gas clouds, particularly in the Carina region, to the right of Crux, and in Scorpius.

The Clouds of Magellan, LMC and SMC, are midway down the southern sky, easily seen by eye on a dark moonless night. They are small galaxies. The Large Magellanic Cloud is 160 000 light years away and is about 5% the mass of our Milky Way galaxy. The Small Cloud is around 200 000 light years away and 3% the mass of our galaxy. That's still many billions of stars.

Saturn is the only planet in the later evening sky and a great sight in a telescope. Its rings are easily seen in a telescope magnifying 30x or more. Larger telescopes show Titan, Saturn's largest moon, looking like a star four ring-diameters from the planet. Other fainter moons mostly orbit closer than Titan. Saturn is 1330 million km from us mid month.

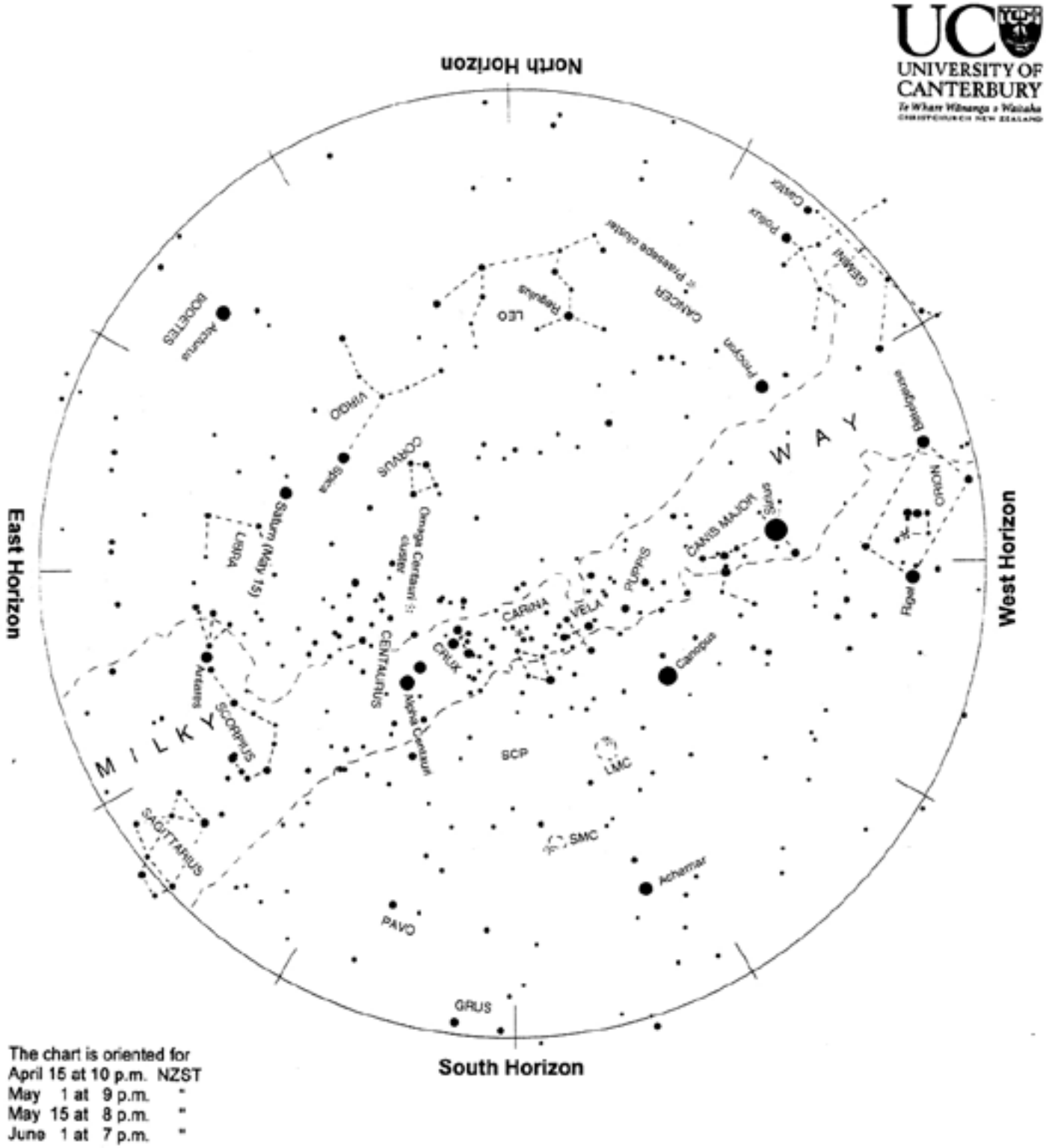
Bright planets gather on the northwest skyline at dusk. At the beginning of May Jupiter sets two hours after the sun. By the end it is setting less than an hour after sunset. Brilliant Venus sets about 20 minutes after the sun at the beginning of the month. By the end of the month it is setting an hour after the sun. Mercury begins an evening sky appearance in mid-May. In the last week of the month the three planets will be closely bunched: golden Jupiter, brilliant Venus, and fainter Mercury.
The apparent grouping of the planets is just a line-of-sight effect, of course. Mercury and Venus are coming around from the far side of the sun. We are leaving Jupiter behind. On the 28th Mercury is 167 million km away; Venus is 245 million km; and Jupiter is 909 million km away.

A solar eclipse occurs around noon on the 10th. Most of the North Island and the northwest part of the South Island will see a small notch on the edge of the sun. That's all. Use solar-viewing glasses.

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



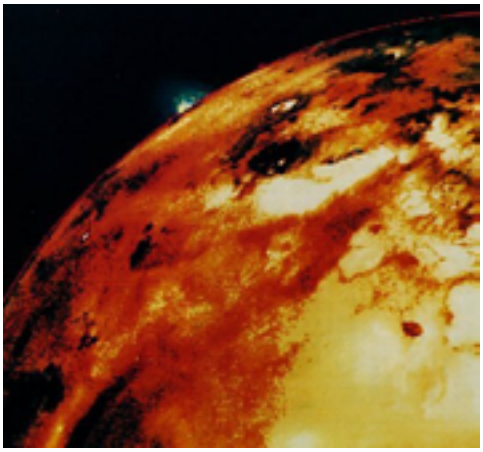
The chart is oriented for
April 15 at 10 p.m. NZST
May 1 at 9 p.m. "
May 15 at 8 p.m. "
June 1 at 7 p.m. "

CASKids Space

News and information for the little astronomers

Volcanoes on Jupiter's moon.

Aside from Earth, Io is the only known body in the solar system to have observed active volcanoes. Volcanoes on Jupiter's moon eject materials at speeds of 1km every second. This is 20 times the speed of what the volcanoes on Earth



achieve. Io was the first of Jupiter's moons discovered by Galileo Galilei on Jan. 8, 1610. He actually discovered the moon the day prior, but could not differentiate between Io and Europa, another Jupiter moon, until the next night.

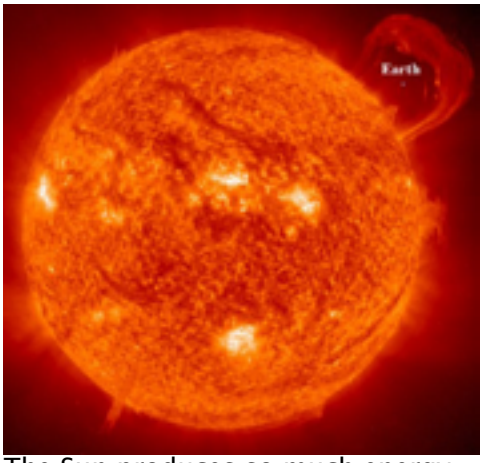
Long-lasting storm in our solar system

On Jupiter, storms can rage for years or even centuries. The Great Red Spot, is approximately 20,000 km long and 12,000 km wide and-large enough to engulf Earth and

Mars side by side. The cloudtops of this storm are about 8 km above the surrounding cloudtops and it has lasted at least 300 years.

Our Powerful Sun

On this image you can see how small Earth is when compared to the Sun.



The Sun produces so much energy, that every second the core releases the equivalent of 100 billion nuclear bombs. Still, our Sun is relatively small compared to other stars.

Your weight on other planets is not the same

As you know different planets have different gravities, which mean that an astronaut's weight will change from planet to planet. For example, an astronaut weighing 75 kilos on Earth would weigh only 28 kilos on Mars, but 177 kilos on Jupiter.

Image credits: NASA

I Can See Your Halo

The Universe is enormous and full of empty space. Light from the nearest star outside our solar system has to travel through empty black space for 4.2 years before it reaches our eyes, even though light moves faster than anything else in the Universe and we live in a very densely populated region of space! Yet somehow, despite all this empty space, galaxies crashing into each other is a fairly common sight. One such collision has been caught in this cosmic picture; which showsthe enormous cloud of hot gas surrounding two large colliding galaxies called NGC 6240.
The two large spiral galaxies seen in this picture are similar in size and shape to our home galaxy, the Milky Way. Both galaxies are believed to be harbouring supermassive black holes at their centres, which are spiralling towards each other as we speak. It's likely that they will eventually merge together to form an even bigger black hole!
Another consequence of this pile up is the birth of millions of new stars in a ‘ stellarbaby boom’ that has lasted over 200 million years! This was caused by the violent collision, which stirred up the gases in each galaxy. The baby boom resulted in the birth of many stars much more massive than the Sun. These then ended their lives in powerful supernova explosions, pumping material into the enormous gas cloud: a 'halo' of hot gas, which can be seen in this picture. And it contains enough material to make 10 billion Suns!

Thankyou to unawe.org for use of this Space Scoop based on a Press Release from Chandra X-ray Observatory.
Unawe.org aim to inspire every child with our wonderful cosmos.

Cool Fact
So, what does the future hold for NGC 6240? In all probability, the two spiral galaxies will one day form an enormous elliptical galaxy. This type of galaxy appears as a round, shapeless blob with no apparent structures, such as the awesome spiral arms of our galaxy.

Did you know?
The radio signal that a spacecraft uses to contact Earth has no more power than a refrigerator light bulb. So to detect those tiny signals from space, the Deep Space Network uses dish antennas with diameters of up to 70 meters (230 feet).

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 31 May)

*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: _____