

Newsletter

WELLINGTON ASTRONOMICAL SOCIETY

SEPTEMBER 2009, Volume 36, Number 8, ISSN 01 147706

**Dont miss
this month's talk!
3rd of September!**

Comets through the Ages

With Ian Cooper

The generation that is now fifty years or more in age who have lived their lives in New Zealand had the chance to see three Great Comets prior to the arrival of that most famous of comets, Comet Halley in 1986. To be called a 'Great Comet,' the comet has to have those enduring qualities that make them stand in the memory of those lucky enough to witness them.

The younger generation have also had the chance to marvel at a further three Great Comets since the apparition of Halley. The last Great Comet, also called "The Millenium Comet", McNaught, was seen in January 2007 from all over the southern hemisphere.

Come on a journey through time and space to witness for yourself these spectacular visions that have heralded the death of kings and other momentous events in human history.

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Wellington
Astronomical
Society



WAS MONTHLY MEETING:

7.30pm Wednesday 3rd September 2009
Science House, Turnbull Street, Thorndon
(see map on last page)

09-2009



PRESIDENT'S REPORT

Occultation observing

Last month's talk by John Talbot was an excellent introduction into **occultation observing** whether Lunar events or Minor Planets events. A lot of interest was shown in Grazing Occultations as the society members had recently participated in such an event on August 1st at 1:00 AM in the Wairarapa passing through Martinborough. Even though the weather was not that great with high winds and some rain. There were 15 members of the society who set up 10 stations to monitor this event nearly all travelling from Wellington. Well done!

The Night Sky was again well presented by Frank Andrews using Stellarium and showing us some of the spectacular sights you can see in the August Night Sky.

Graham Blow the head of the RASNZ Occultation section showed us some of the **Video recordings** made at the Lunar Graze on August 1st at 1:00 AM. It was quite obvious from the videos that everyone had problems with the wind as telescopes were being shaken and quite violently as they were buffeted by the very strong wind gusts of up to 70 km per hr. Even with this wind several of us managed to get some timings and we look forward to seeing the results.

July 21st Lunar Landing Anniversary

This was an excellent presentation by Dave MacLennan president of the NZ Space Flight Association at the Wellington City Library. This presentation was very well



Lunar talk with Dave MacLennan

attended with about 60 people attending. Dave showed us historical video of parts of the event and where to next for NASA and Space Flight.

Talks

August 12th **Comets** by Ian Cooper of Palmerston North. About 60 people attended this presentation by Ian entitled Comets through the Ages. This well presented presentation featured all the famous Comets over the last 200 years.



Ian explained what a comet is made up of and touched on their orbits but mostly on how spectacular they appear in the night sky. With the improvement of photography over the years we can see these Comets against different backgrounds of starfields and terrestrial views. This was a most interesting presentation and we look forward to seeing it again at our usual monthly meeting in September.

August 13th Islamic Astronomy at Kilbirnie Library

to celebrate Islam Awareness Week.

Four telescopes were set up on display in the Kilbirnie Library along with posters and astronomy related books. *(continued on page 6)*



Telescopes at Kilbirnie City Library

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The Graze Occultation from 31st of July 2009

Grazing in South Wairarapa

No, not the sampling of the local fare but this was grazing of the Lunar occultation kind.

On Friday evening 31st July, after time enough for gatherings, greetings and goodbyes a diverse group of about 15 people met at Peter Graham's place near Martinborough before venturing forth in the wind, rain and scudding clouds to record the flash phenomenon of a Lunar grazing occultation.. When the equipment failed the visibility was still good enough to see the bright sigma scorpil turn off and on again. After the event we again gathered and compared results which, despite vibrating videos and spattered scopes, were clear enough to add to the general picture so useful results were obtained.

The other delights on offer were the Moon halos and Moonbows that were seen by several of our intrepid group. A great astronomy occasion and worth participating in!

by Vicki Irons

Grazing Lunar Occultation of sigma Scorpil on 2009-07-31

by Roland Idaczuk

The grazing occultation event was a very enjoyable experience!

We, (a group of about 15 observers) met at the home of Peter and Ruth before and after the event. For the observation I was assigned to a location several kilometres south of Martinborough, with two observers about 1 km away on either side. I wished I had had an assistant! The time finally available for setup and target acquisition was rather short as it turned out.

(continued on next page)

As seen by Frank Andrews

In the the early hours of 2009 July 31 a particularly favourable grazing occultation of the 2.9 magnitude star Niyat (Sigma Scorpil) was observed by WAS members from sites close to Martinborough. The graze path ran the length of the Wairarapa, but Martinborough provided the easiest access to the graze path for the team of observers.

I teamed up with Murray Forbes because he had all the observing equipment but no telescope and I had the telescope and no observing equipment. Murray and I also live very close to each other.

In order to make certain that Murray's equipment and my telescope were compatible we took advantage of the only fine night the week before the occultation to do a trial run under near perfect weather conditions. Everything worked perfectly, so we were confident that only the weather could get in the way of a successful set of observations on the night. When the day came the weather was doubtful with a gale force northerly wind, occasional light wind blown showers; the sort of weather that is touch and go whether good results will be possible.

Murray and I left Upper Hutt with all the equipment carefully packed in the car. We had a Gastronomy break at the "Rocket" fast food shop in Greytown which produces huge, very tasty hamburgers in home made buns. From there it was short trip to Martinborough and our point of assembly at the home of Peter Graham. Here Graham Blow sorted out and allocated the sites for the observing teams.

We found our site easily, but were just about blown off our feet as we assembled and tested the telescope and timing equipment with occasional, light, wind blown showers travelling parallel to the ground.

Fortunately my telescope is a 13cm, f/10, J.S.O. Schmidt Cassegrain on a very

solid, clock driven German Equatorial. Although the wind and the rapidly passing low cloud did cause problems we were very lucky. I was able to guide the telescope with the hand controller while Murray monitored the data and recording equipment. We managed to get the entire event and only missed one event due to passing cloud.

This was a very interesting graze because Sigma Scorpil is a multiple star and is bright enough to be easily accessible to small telescopes. This means that we expected and got a complicated light curve with multiple disappearances and reappearances. Because Sigma is a multiple star system disappearances and reappearances were also stepped as the brighter and fainter components were sequentially covered and uncovered by hills and valleys on the edge of the Moon.

By accurately timing occultations of this type, it is possible to accurately measure the separations of the components with an accuracy of 1 to 2 milliseconds of arc! We also obtained several fades as the stars slipped behind or reappeared from behind the uneven lunar surface at grazing angles.

Once the observations were complete we re-packed our equipment only managing to have one plastic bag blown away and lost. From there we returned to Peter Graham's home for a debriefing session and supper and a comparison of results. Most of the teams had been at least partially successful despite the difficult conditions and it looks as if the combined results will make this a very worthwhile and successful expedition. Finally Murray and I drove to the Phoenix Site and bedded down in the club rooms at 4:20 am, returning home feeling a little jet lagged next morning.

For the doubters: Yes! it was worthwhile and a lot of fun! We also had the satisfaction of knowing that we had contributed a tiny bit to science.



(Continued from page 3) It took a while to create a reasonably sheltered spot to set up the telescope. That was necessary due to a strong NW wind. Most observers had very shaky images. Mine were quite steady as a result of using a very small telescope on a comparably heavy mount. Anyway, I ended up with a miserably aligned telescope and therefore lost the target each time it clouded over for an extended period. This led to delayed reacquisition of the target and a lot of movement in my images, because I had to manually correct the pointing almost continuously.

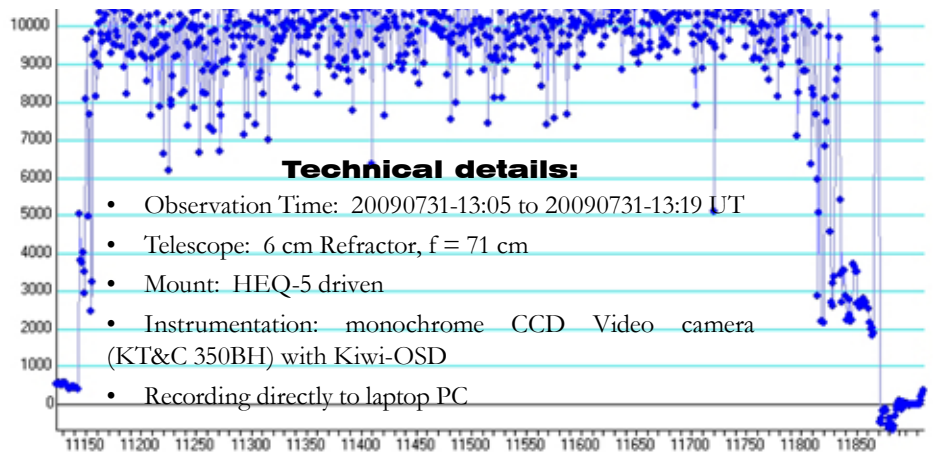


Figure 2: Light-curve of the 'valley crossing' event produced in LiMovie.



Figure 1. Sequence of video stills showing the stages of the 'valley crossing' event.

As a result of this I could not use a tool for an automated photometric evaluation, but had to take a manual reading of each one of the data points.

I ended up with 13.5 minutes of video (at 25 frames per second), whose evaluation took the better part of 12 hours. In the process I edited it down to a 4.5-minute highlights version. While some events are clearly visible, it was not immediately clear if some dimming and blinking was just a result of the moving clouds.

I was able to evaluate three distinct events. The first one was the 3-step disappearance of sigma Sco behind the dark edge of the Moon. The second event showed a complete crossing of a Lunar valley in about 30 seconds, where both the reappearance and disappearance of the star happened in steps (figures 1 and 2). The last event was extremely difficult to measure as the star skimmed along the edge of the Moon, egressing from behind a brightly lit mountain. As cloud set in, it became obvious that the star had well separated from the Lunar surface. I have roughly sketched my results on the assumed Lunar profile

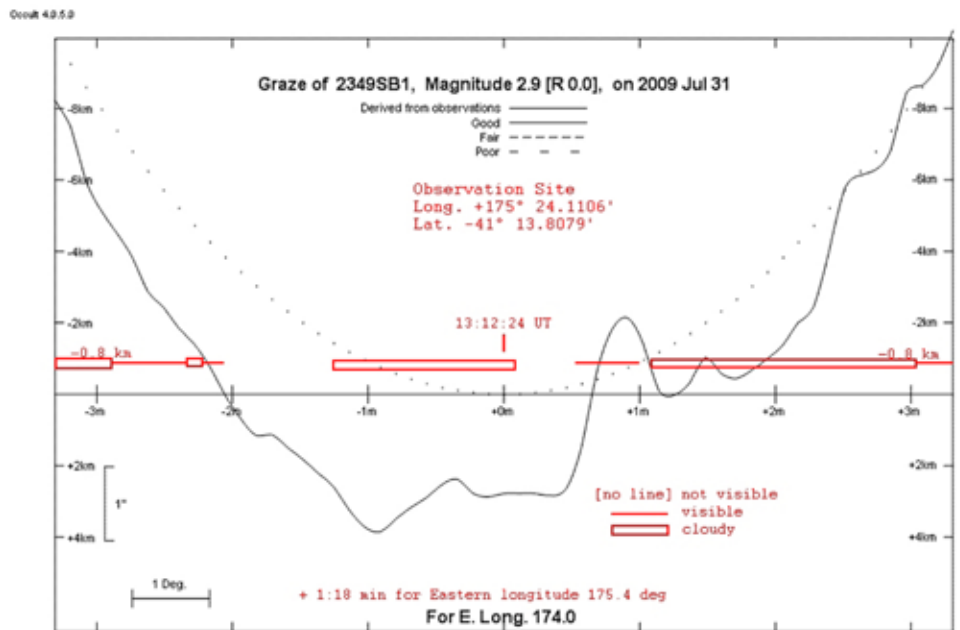


Figure 3: Rough sketch (red) of the observation data against the assumed Lunar profile.

(figure 3) and am very interested to compare it with the official results to be published in the near future.

Anyway, seeing the star cross a Lunar valley and disappear on the other side in stages, as it is a multiple (quadruple) star system, was quite a sight! I can only recommend such an experience. If you have never experienced

an event like this, you should consider coming along next time. It will be worth it!

Many thanks are due to Peter and Ruth for their generous hospitality on the night. I also thank all the other observers for making this a very successful expedition and last, but not least, Graham Blow for his never-ending enthusiasm and leadership.



Occultation Observing

Why Observe?

For the amateur astronomer it is one way of contributing to the pool of scientific data with relatively simple instruments.

We may be able derive more accurate position information for one of the objects.

We may reveal or confirm binary (or multiple) objects.

When we have many observers for a single event then we can derive the projected shape of the nearer object.

Small (<1000 km) targets mean amateurs more likely to be in (or be able to get to) the right place to see an event.

With professional telescopes the same basic method but more expensive instrumentation is used for exoplanet searches.

What do you need?

A prediction

Clear Sky – although if you have accurate setup setting circles or a good GOTO system and a little luck, then you may be able to work on a partly cloudy night.

A visual Observer or video camera or large CCD that can be used in drift mode, even a digital SLR will work.

To know where you are. (Lat, Long, Height) Preferably using a GPS, but Google Earth or survey map can give good measurement. If using video you should aim for 0.1 arc sec accuracy for Lat and Long (1 Sec of time \approx 15 arc sec of Long \approx 400 meters) (1 field of PAL TV \approx 20 mSec \approx 0.3 arc sec of Long \approx 8 meters)

A clock to measure event time. Eg. Stop watch, WWV receiver, Beeper box, GPS-OSD video.

Some way of pointing your observer or instrument at the right part of the sky. Good setting circles, or GOTO or use Star hopping or Pre point setup. This is actually the part that I find hardest to do.

Observe and yell

“Gone” and “Back” or click stopwatch.

Measure of your reaction time (Personal Equation) typically 0.4 to 1 second.

Check your reaction time using the React.xls program at <http://occsec.wellington.net.nz/software/software.htm#React>

CCD (or digital camera) Drift equipment

Point your telescope at the expected mid point of the event. Need accurate setting circles, or use prepoint method, or track target object keeping it to east side of view until just before predicted time.

Open shutter at half full drift time before expected mid point and accurately note the time.

Close shutter at half full drift time after expected mid point and accurately note the time.

Look for dip in brightness of target object and measure D and R points and interpolate times.

Maybe add timing point by tracking for 1 sec. Record time as accurately as possible.

Video recording equipment

High sensitivity cameras eg PAL KT&C 350BH or NTSC PC-164C or WATEC-120N. Some sort of video recorder or capture device. Cheap DVRs with 250Gb SATA drive available for about \$300.

Time base - ideally a GPS-OSD eg KIWI-OSD (but these are currently out of production) or TIM-10.

These can measure time to 1mS ie better than field accuracy (20millisec for PAL) and also give GPS location when going mobile. Could also feed WWV or Beeper into your Audio channel.

Pre-point drift suitable for all types of scope. Or use tracking if you have an equatorial or computer driven mount.

(continued in page 7)

By John Talbot,

(RANZS Occultation Section, WAS Council)

Part of the talk presented at
WAS Meeting 5-Aug-2009

Occultations - some definitions

Appulse or conjunction – when two objects appear close to each other

Occult – To hide one object behind another.

An occultation is an event that occurs when one object is hidden by another object that passes between it and the observer.

Transit refers to cases where the nearer object appears smaller in apparent size than the more distant object, eg Mercury in front of Sun

Predictions

<http://www.asteroidoccultations.com> for Global events.

<http://occsec.wellington.net.nz> for AUS and NZ (m13 or brighter) Minor Planet events.

Occult 4 software for personal predictions and for Lunar events.

Occult Watcher software for most Minor Planet and most planetary mutual events. Both the above tools have 3 day weather forecast links built in and can be downloaded from. www.asteroidoccultation.com/observations/

Visual observing equipment

Eyeball for bright stars M1, M2 (events are rare at this magnitude)

Binoculars for down to M4 or M5. Tripod mount helps.

Telescope as available. Dobson mounts are fine if using Prepoint method.

Audio Recorder or stopwatch with multiple laps eg in most Cell Phones

Accurate time reference. Ideally +/- 0.2 Sec. eg WWV



Calendar of events for the next 3 months

2009	Wellington Astronomical Society	Wellington City Libraries
SEPTEMBER 09	September 2nd Comets (Ian Cooper) September 26 Workshop on astrophotography	September 9th Cosmology (Matt Visser)
OCTOBER 09	October 7th Light Pollution (Steve Butler)	October 6th Light Pollution (Steve Butler)
NOVEMBER 09	November 4th AGM and Peter Read Videos	November 18th Mata Ora (Toa Waaka)



Telescopes at Kilbirnie Library

The evening started off at 6:00 PM with food provided by the Muslim community. About 40 people were in attendance to hear an excellent presentation by Hazet Adam about the importance of Islam Astronomy and how the Lunar Cycle is so important to the Muslim people and especially now that Ramadam starts on the New Moon of August 20th.

(continued from page 2)



Hazet Adam at Kilbirnie Library

speech and then I invited everyone outside to observe through the telescopes.

Jupiter was high in the sky and clear so we observed this whereas most of the people had never looked through a telescope and so Jupiter was really special for them. The viewing was most appreciated by the Muslim community and would like to invite us back to do it again.

Carter Observatory

Carter Observatory will open in February 2010 and therefore all there equipment which is in storage is being moved back into Carter. DOC want the Gun Bunker back to open to the public in October and so this means that WAS is also moving out of the Gun Bunker. The two Dobsonians telescopes which remain for hire are now in the Gifford Observatory.

- WAS Library is now on a rack in Carter Observatory.
- The mirror grinding gear has gone to Tawa College.
- The Dodson Mount has been sold and the Telescope will be made into a dobsonian, although it will be quite long as it is an 8" F8.



Islamic astronomy and cuisine at Kilbirnie Library

CROSSWORD AUGUST ANSWERS

Across: 3.JUPITER—largest planet in the solar system; 8.AZIMUTH—horizontal angle around the sky; 9.HST—an orbiting telescope; 11.SAGITTARIUS—The Archer (Constellation); 13.NOBEL—top prize for Scientists; 17.ARIES—The Ram; 20.ALGOL—The Demon Star; 22.LEO—A lion circling the Earth; 24.IO—One of the Galilean satellites; 25.DUST—obscures centre of our galaxy; 26.EPOCH—used as a standard reference date; 27.CORVUS—The Crow; 29.SEMIMAJOR—The largest axis through an ellipse; 30.NADIR—opposite to zenith; 32.PHOTON—light particle
33.MOON—object of the Cold War space race; 35.PRECESSION—slow change in the axis of a spinning body; 38.SOHO—satellite observatory studying the Sun; 40.INFRARED—Even redder than red; 43.PLASMA—fully ionised gaseous state of matter; 44.LGM—acronym for aliens; 47.ADAPTIVEOPTICS—star light anti-twinkle technique; 50.CALDWELL—southern successor to the Messier Catalogue; 51.GAS—solid, liquid or ...; 52.GILMORE—one of Mt John's resident astronomers; 53.SCORPIUS—constellation with a sting

Down: 1.DAY—24 hours; 2.VIRGO—Constellation with Spica; 4.ECLIPSE—to block light from another object; 5.STAR—rats (anagram); 6.MASS—I weight 6 times less on the Moon, but still have the same ???; 7.CYGNUS—centre of the Milky Way is in this constellation; 10.BAR—some spiral galaxies have one; 12.ATOM—smallest indivisible piece of a element; 14.ECLIPSED—over shadowed; 15.PARSEC—spacer (anagram); 16.HYPERBOLIC—an open geometry; 18.REDDWARF—also a cult sci-fi TV series; 19.EAST—direction of sun rise; 21.LOKI—volcano on Io 23.OPPOSITION—when a planet and the Sun are in disagreement about the Earth; 28.FREDHOYLE—Believed in the steady state universe; 30.NOON—mid-day; 31.REDPLANET—Mars; 34.ION—an arrested atom; 36.SUN—closest star; 37.NASA—space agency; 39.PELE—volcano on Io; 41.EQUINOX—23rd September; 42.LMC—could be mistaken for a cloud; 43.PISCES—The fish constellation; 45.MARS—God of war; 46.PAULI—predicted the neutrino
48.ICE—rozen liquid; 49.SETI—BEM search



(continued from page 5)

Video Analysis

Transfer your video to PC in AVI format.

Use Limovie software to analyse video and produce a light curve and maybe produce a CSV file.

Maybe use Occular software to look for event in Limovie CSV output for low S/N events.

Note “Disappear” and “Reappear” times and estimate accuracy.

Reporting

There are separate reporting forms for Lunar and MP events at <http://occsec.wellington.net.nz/report.htm>

Send Lunar reports to Brian Loader moonocc@gmail.com at end of each month.

Grazes go to the local event co-ordinator if there is one eg Graham Blow for 31-July event and then to Mitsuru.Soma@nao.ac.jp

MP reports to John Talbot john.talbot@xtra.co.nz as soon as you can. For MPs please report both positive and negative (misses) results. Don't delete your raw recorded data for at least a month if possible, in case questions arise. Eg we may find that you were very close to the edge of an MP and may have ignored a short drop as noise or there may be questions about possible binary stars etc.

What happens then?

Data from all regional reporters is sent about once a month to Dave Herald in Canberra. He merges data into an archive format. This is sent to the IOTA and MPC global databases for inclusion with any professional data.

The MP data is used to refine the orbital parameters of MPs and gets fed back into the prediction data for future events and NEO searches.

If you are an observer of new discoveries such as new Binary Star or Binary MP then you could become an author of a scientific paper published as result.

Results online

Results for last 11 years in Australia and NZ can be viewed at <http://occsec.wellington.net.nz/planet/plnreslt.htm>

Other zones use links at <http://www.asteroidoccultation.com/observations/>

For more information and software downloads for Occultations

<http://occsec.wellington.net.nz/>

<http://www.asteroidoccultation.com/observations/>

Contact John.talbot@xtra.co.nz

Talks at the City Library

As part of the continuing International Year of Astronomy celebrations with WAS and Wellington City Libraries, **Ian Cooper** from Palmerston North Astronomical Society inspired an audience of around 60 people with his talk about Great Comets at Central Library on August 12. Starting with Comet McNaught and taking us on a journey back in time, Ian educated and inspired the audience about different aspects of great comets and offered interesting perspectives on historical views and interpretations of comets recorded in paintings and literature. Thanks for sharing your knowledge and passion for comets with us Ian and we hope you get to discover your own comet one day too.

Bringing people together from across different cultures to share their knowledge, understanding and enthusiasm for astronomy is a key aim of IYA2009 and this was certainly the case at Kilbirnie Library on August 13. Around 60 people came along as part of Islam Awareness Week celebrations at the library to hear **Hazet Adam** from Kilbirnie Mosque speak about the importance of astronomy in Islam culture and share Islamic perspectives on astronomy throughout history. This was a wonderful opportunity to share knowledge and different perspectives on astronomy and it was great to have WAS members there and the telescopes out to share the night sky further while people eagerly had a look at Jupiter - a big thank you to everyone who came along and shared their knowledge and passion for astronomy and helped to make this such a successful occasion!

Rebecca Waechter

Wellington City Libraries



Lunar talk with Dave MacLennan



Ian Cooper on Comets



Moon News with John Field

X - Marks the Spot

Although many features on the Lunar surface are billions of years old the interplay of light will make some interesting features appear for only a few hours. One of these features is known as the "Lunar X". I had read about this feature and seen pictures of this but had never seen it myself until the 30th of July 2009. The "X" is visible just before first quarter and lasts for around four hours as the Sun rises of this region of the Moon. The "X" is the result of the sunlight being reflected of the rims of the craters Blanchinus, la Caille and Purbach, the crater floors are still in shadow and the rising of the Sun soon reaches the floors and the "X" disappears.



Lunar X

OBSERVING AT PAUATAHANUI

The next observing evening at the Pauatahanui observatory will be on **September 19th**. If the weather is looking doubtful please contact John Field on his mobile **021-255-1904** to see if the session is going ahead.

Congratulations to John Field

After 4 years of study John has completed Graduate Diploma in Astronomy at Swinburne University of Technology in Melbourne. He will travel to Melbourne with his wife Vivienne and Marilyn Head for their graduations in October. WELL DONE JOHN

Around the "X"

The two craters to the upper left of the "X" are Werner (70 km) and Aliacesis (80km), The crater to the left of the X is Playfair (94 km) and in the lower left is the smaller crater Playfair (49 km). The crater to the upper right of Playfair, with flat floor and rim shadow Apianus (63 km). A number of flooded craters with just their rims visible can be seen below Playfair.

Albategnius and Hipparchus

Also imaged on the same night are the craters Albategnius (136 km), upper center and Hipparchus (150 km), lower center. The floor of Albategnius is mostly in shadow and shows the long



Albategnius and Hipparchus

OBSERVING AT THOMAS KING

All public observing evenings will be held at the Thomas King Observatory run by our Observatory Director Ross Powell. There are public observing evenings at the Thomas King nearly **once a week** starting as soon as it gets dark depending on the weather.

Ring Ross on 389 9765.

shadows that gave rise to the mistaken belief that the Lunar surface was covered in steep peaks and valleys.

The bright feature in the center is central mountain that is probably a rebound effect from the craters formation. In comparison most of the floor of Hipparchus is in light and reveals at least two flooded craters along with the more recent crater Horrocks (30 km) in the lower left.

The crater on the rim between Hipparchus and Albategnius is Halley (36 km)

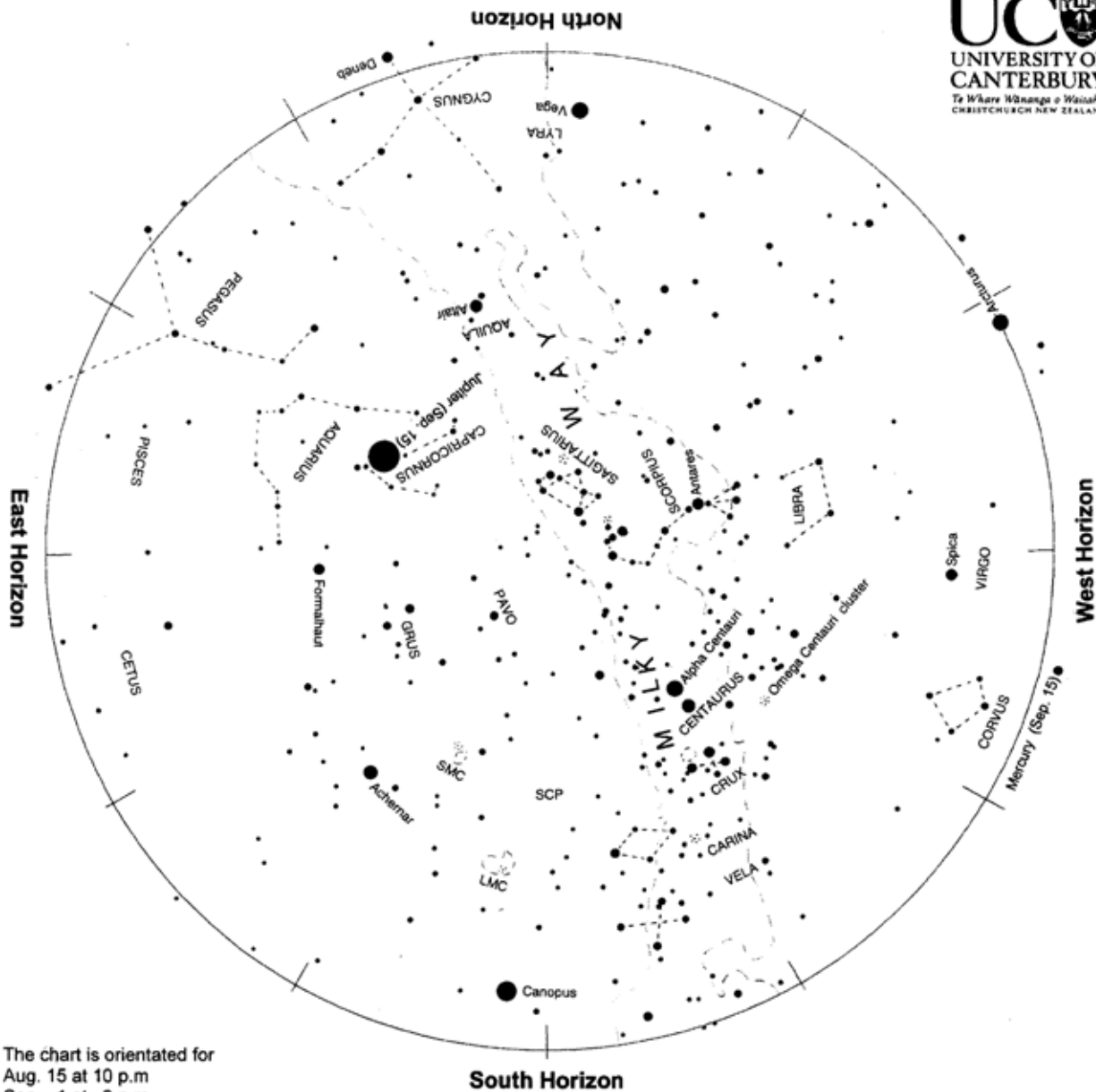
Star Party at Hutt International Boys School (HIBS) on Friday 18th of September. Your help needed!

Following the success of the last Star Party the school have requested another public evening on the 18th of September. This will be open to school students, teachers, parents and the public. We need your help in making the evening a very special event by bringing along yourselves! This gives us all an opportunity to share our wonder and knowledge of the Stars. If you have a telescope, or binoculars, bring them along. If you are just happy to talk and show people the constellations that would be great. There will be presentations if the weather is not the best, so you will also have a goodtime. Hutt International Boys School is in Trentham, close to the race course, with swags of parking.

For more information and to register your interest in attending contact John Field at: john.field@paradise.net.nz or 938 4526.



THE EVENING SKY IN SEPTEMBER 2009



The chart is orientated for
 Aug. 15 at 10 p.m.
 Sep. 1 at 9 p.m.
 Sep. 15 at 8 p.m.

Evening sky in September 2009

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.

Golden Jupiter is northeast of overhead in the evening, setting in the southwest around dawn. Mercury is prominent low in the western sky at dusk at the beginning of the month. It fades and sinks lower, disappearing mid month. Orange Antares, the Scorpion's heart, is west of the zenith. The Scorpion's tail, a.k.a. the fish-hook of Maui, curls toward the zenith. Crux, the Southern Cross, and the Pointers are in the south-west. Canopus is near the south horizon, moving up into the eastern sky. Vega shines on the opposite horizon. The Milky Way spans the sky from north to south. Arcturus twinkles red and green as it sets in the northwest.

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

Observing Jupiter.

by Ross Powell.

Jupiter is in the east, in Capricorn. It is much brighter than the stars, and a yellowish colour. Even a small telescope will show 3 or 4 of the moons. If only 3 are visible, one is usually in front of the planet or behind it. This month one moon is sometimes hidden behind another. On August 14 only 3 were visible mid-evening when I started observing, but later a 4th appeared nearby. Checking later, I found an occultation of one moon by another had occurred. This happens when the equator of Jupiter and the orbits of the moons are edge-on to the earth.



Jupiter and the Galilean satellites

Sometimes a round, inky, black spot appears on Jupiter. This is the shadow of one of the moons. I saw this last on 25 July. The moon itself was not visible, but in front of the planet.

On the planet itself, several dark bands ('belts') appear. A small telescope will show the north and south equatorial belts (NEB and SEB) on either side of the

Comets through the Ages

this month talk's abstract, by Ian Cooper

Some people aged over fifty years may harbour long distant memories of being woken in the hours just before dawn to marvel at a rare astronomical phenomenon, a "Great Comet." To be called a 'Great Comet,' the comet has to have those enduring qualities that make them stand in the memory of those lucky enough to witness them. Brightness and size, preferably a good dose of both, is what makes a Great Comet. The generation that is now fifty years or more in age who have lived their lives in New Zealand had the chance to see three Great Comets prior to the arrival of that most famous of comets, Comet Halley in 1986.

The younger generation have also had the chance to marvel at a further three Great Comets since the apparition of Halley.

equator. A larger telescope (15 cm) will show more. With the Thomas King (TK) I usually see the south temperate belt, and occasionally the north temperate belt as well, as I did on August 1. The NEB is darker and thinner, the SEB broader and more diffuse. Often dark spots or ovals are seen in the belts. These are atmospheric storms, and are best seen with high magnification (about 180X). Occasionally the long oval shape of the Great Red Spot (GRS) can be seen in the SEB. This requires good seeing (steady air). It is not red at the moment. The belts usually look grey in the TK, but may appear brown in a reflector, which has more accurate colour. Refractors have good contrast between light and dark however.

In as little as ten minutes the GRS can be seen to move, from left to right, if north is at the top. Remember that a diagonal with your eye piece will reverse left and right. I once briefly wondered if time was going backwards before I remembered that I was using the diagonal! The planet is distinctly oval in shape. Due to rotating in less than 10 hours, it bulges in the middle.

The view is usually better later in the evening, when it is higher above the horizon, reducing image distortion due to the earth's air.

The last Great Comet, Comet McNaught, was seen in January 2007 from all over the southern hemisphere. In brightness, and with its spectacular rooster tail a standout feature, Comet McNaught is rightly considered a millennium comet.

How do these great comets of our life time compare with the legendary comets of the historical era? Come on a journey through time and space to witness for yourself these spectacular visions that have heralded the death of kings and other momentous events in human history.



Comet Ikeya-Seki, Oct '65 - Painting by Peter Reed

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**P.O.Box 3126
Wellington**

**WAS MONTHLY
MEETING:**

**7.30pm
Wednesday
3rd of September
2009**

**Science House,
Turnbull Street,
Thorndon**

