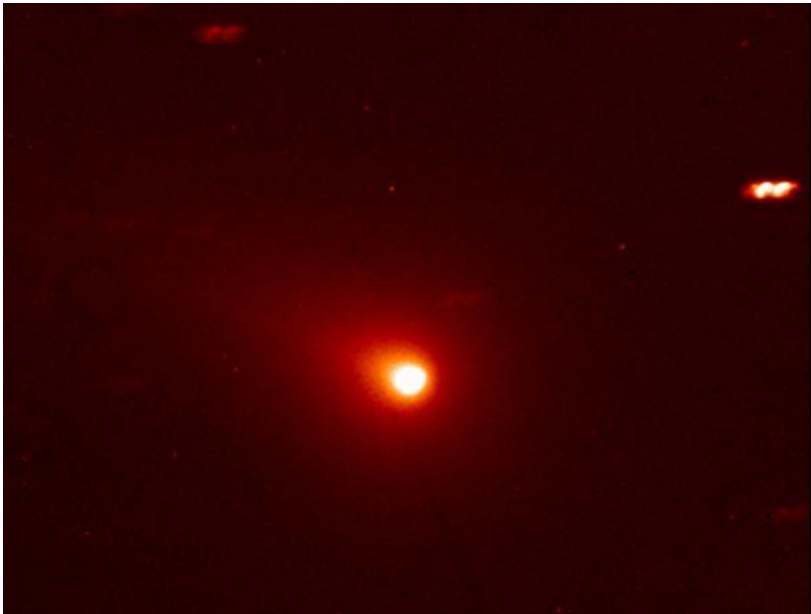




www.fbas.org.nz



Comet Hartley

NEWSLETTER
November
2010

FOXTON BEACH ASTRONOMICAL SOCIETY

List of Officers 2010-2011

President:	Stephen Chadwick	Ph 329-9458
Vice President:	Ian Cooper	Ph 329-7829
Secretary:	Tina Hills	Ph 368-6926
Treasurer:	Simon Hills	Ph 368-6926

We welcome contributions from any members - observing reports, photos, news, links to interesting websites, just about anything astronomical will be considered. Please have your contributions in by the 21st of the month. Address any newsletter contributions to Stephen Chadwick at stevechads@hotmail.com or post to 628 Himatangi Beach Road, RD11 Foxton.

NEXT MEETING

Special Guest Speaker:

Carl Knight

“Variable Stars”

THURSDAY November 4th 2010 at 8.00 pm

at the Foxton Beach School staff rooms, Carthew Terrace,
Foxton Beach.



Tea, coffee and biscuits are now available at all meetings at a nominal charge of 50c

We are a Registered Charity. All donations over \$5.00 can be used to claim a Tax refund.

Minutes of the General Meeting held on 7th October 2010 from 8.00pm

Present: 13 Members **Guests:** 2 **Apologies:** 1 member

Minutes from previous meeting were read and agreed to be accurate

Matters arising from previous meeting

- Nil

Correspondence

In bound:

- The following newsletters have been received and are now available to loan from the library:
 - Te Patiki September 2010
 - Aurora & Solar Section no 239 Sept 2010
 - Aurora & Solar Section Circular no 29

Outbound:

- Nil

General Business

1. President announced that the street light outside school has been shaded by the Horowhenua District Council and looks very good.
2. New screen in use for first time. Bought from \$25 off Trademe from Carterton. Thanks for Ken Douglas for picking this up.
3. Orders are being taken for the Almanac now.
4. Report given about Spring Fling. Special thanks extended to Joan Bassett, John Honore and Paul Matthews.
5. Report given about International Observe the Moon Night from Mike White. Quiet night due to weather but indoor event went off well.

Meeting closed 8:15 pm

This was followed by a DVD The Universe – Introducing the Constellations
This was well received by all present.

Due to weather no viewing was possible this month

A Multi-Cultural Night at the Dome

On Friday 15th October we were host to a group of 60 overseas high school students. Every culture imaginable was represented – I spoke to students from Brazil, Germany, Hong Kong, France to name but a few.

Up until the time they were due it was looking really likely that the night would have to be called off as the cloud was so thick you couldn't even tell where the moon was. However, luckily their bus driver was late picking them up and the students were half an hour late. During that half hour gaps began to appear in the clouds and the Moon and Venus became easily visible.



"Wow the moon looks small" (in a foreign language)

With the Dobsonian and the Meade set up, along with telescopes brought along by Paul Matthews, Douglas and John, students began to enjoy great views of the Moon and Venus. Venus got the most comments; it is presently such a small crescent that many students thought it was the Moon!

As the evening progressed Jupiter came into view and then eventually enough of the sky was clear enough for Ian to talk the students through the constellations. An enjoyable evening for all.



"What's up tonight?"

Thanks to all that came along to help
Stephen

(Pictures by John Honore)

Around the Moon in 28 Days

Brian Ventrudo, One-Minute Astronomer, has a number of excellent helpful resources for Astronomers of all levels. One of his recent additions is an on line course "Around the Moon in 28 Days: Lunar Observing for Beginners".

Of the thousands of sights in the night sky, none is easier to see than our own Moon. The Earth's only natural satellite covers a patch of sky smaller than your thumbnail, yet it reveals hundreds of fascinating surface features to a casual stargazer with even the smallest telescope. But after hundreds of years of study, the Moon, in many ways, remains a mystery.

Consider this...

- No other terrestrial planet in our solar system has such a large natural satellite. In fact, our Moon is larger relative to its host planet than any other in the solar system. How did our planet come to have such a large moon?
- Even a casual glance at the Moon reveals dark areas called maria, or "seas". What distinguishes these seas from the brighter areas on the Moon? And what can they tell us about the history of the early solar system?
- While the Moon has no water or atmosphere like Earth, and so experiences no erosion, is it really an unchanging and dead world? Or is it possible to see and understand subtle changes on the Moon's surface caused by its unguarded exposure to the harsh environment of interplanetary space? **Around the Moon in 28 Days: Lunar Observing for Beginners** helps you answer these questions.

This detailed course takes the reader on an astonishing journey through time and space that reveals the fascinating history of our Moon, from its cataclysmic beginnings more than 4 billion years ago, to its massive collisions with rogue asteroids, to the austere "magnificent desolation" (in the words of astronaut Buzz Aldrin) of the present-day lunar surface. As the learning advances, the reader will learn to find some shockingly beautiful lunar features, with even the most modest telescope including...

- A puzzling sight near the western limb of the Moon that is one of only four like it in the solar system. Planetary scientists still don't know what it is!
- A deep, 177-km-long chasm across the northern Moon best seen in stark relief about 6 days after new Moon

- A tiny, sinuous groove in the Moon's surface visited by the astronauts of Apollo 15
- Two grand craters over which you can enjoy a dramatic lunar sunrise over the course of an evening's viewing, when the hills and ledges around the crater cast the most striking shadows.



"We've got to move closer to work.
These 200 light year commutes are killing me."

The Changing face of Jupiter



The S.E.B. has currently disappeared

This is the first time I have been able to image Jupiter since it reappeared in our skies with the South Equatorial Belt (SEB) missing. The GRS and some quite nice cloud detail is visible and I was intrigued by the small dark storms that dotted their way across the disk from the GRS, roughly where the SEB usually is. I had read somewhere that when the SEB reappears after being absent it is usually preceded by a string of storms that spread across the planet, so I wondered if that was happening here. Maurice Collins suggested I send the image to John Rogers at the BAA (British Astronomical Association), which I did, and he responded with the following 2 points:- “i) small bluish patches in the SEB(N): significance unknown, but they have been sputtering along for some time and don't represent anything energetic.ii) the very numerous dark spots in the STBn jetstream (not connected to the SEB).”

So, it appears the dark spots are in the South Temperate Belt (STB) and not the SEB, and we are not going to see the SEB again soon after all. Never mind, who knows, maybe one day I'll catch something like the reappearance of the SEB or an asteroid impact. Until then...Clear Skies!

(Imaging details: 24 October 2010, 0823-0825 UTC (2123-2125 NZDST) using an Imaging Source DMK41AF02 camera and 2x Barlow on an Orion XT10 Newtonian and NEQ6 Pro mount. Seeing was about A-II (8/10), which was surprising, as there was thin high-level cloud overhead and quite thick cloud approaching from the north-east.)



The S.E.B. present a year ago

(Images and Text by Mike White)

The two images are just over a year apart and show the dramatic transformation of the South Equatorial Belt (S.E.B.) from August 2009 to October 2010. The S.E.B. has faded like this in the past and no doubt it will return to normal in the near future. When you have been used to the two distinctive stripes it sure does look strange with only one!

(Ian Cooper)

Astronomers find oldest galaxy yet

Astronomers have spotted the oldest galaxy ever seen, one born just 600 million years after the Big Bang.

Their report, published in the journal *Nature* on Wednesday, confirms that the distant smudge first spotted by the orbiting Hubble Space Telescope is the farthest and thus oldest object ever imaged.

The galaxy has the unglamorous name of UDFy-38135539, the team of European researchers said.

"Here we report the detection of ... photons emitted less than 600 million years after the Big Bang," they wrote.

Light travels at a speed of 186,000 miles a second, or about 6 trillion miles (10 trillion km) a year. Astronomers can use light-speed as a kind of time machine, and seeing light emitted from objects very far away shows them as they were in the past.

In this case, the galaxy's light first started traveling 13 billion years ago, right after the Big Bang.

The distance is measured using what is called red shift, a kind of Doppler effect of light. Just as a train's whistle seems to change in pitch as the train approaches and passes, light's colour also shifts.

This galaxy has a red shift of 8.55, making it the farthest and oldest ever seen. At this time in the early universe, a haze of hydrogen gas was everywhere, but radiation from primeval galaxies was causing a process called ionization that changed the nature of the hydrogen.

The report "represents a fundamental leap forward in observational cosmology",

Michele Trenti of the University of Colorado, Boulder, wrote in a commentary.

(Reuters October 2010)

Comet Hartley – naked eye object in late 2010?



A comet, discovered by Australian astronomer Malcolm Hartley in 1986, is making a close pass by Earth.

The Deep Impact spacecraft – which was launched by NASA in 2005 and successfully sent a collider into Comet 9P/Tempel – had its orbit around the sun tweaked in May of 2010 with the goal of sending it close to Comet Hartley 2. Now called EPOXI, the spacecraft is closing in on Hartley 2 and is due to make a flyby (within 965 km) on November 4.

Comet 103P/Hartley 2 orbits the sun about every 6.5 years. Until now, however, gravitational interactions with Jupiter kept shifting the comet's path, sending it closer to the sun and thus farther from Earth during each subsequent return.

This year comet Hartley 2 is on course to make its closest pass by Earth at a mere 17.7 million km on October 20—but visible in the Northern Hemisphere.

Starting in November observers in the Southern Hemisphere will have a good view of the comet as it heads away from Earth. As the comet nears the sun, it may become bright enough to see with the naked eye from dark, rural areas, where it will appear as a glowing smudge in the sky. And even the smallest optical aid will help to show details.

Binoculars are a good way to observe comet Hartley 2; through a telescope the comet may fill the field of view, but may let you see structure in the bright centre and faint tails.

Comet Hartley 2 was discovered recently because only close encounters with Jupiter in the last decades shifted the comet's orbit, making it visible.

On the night of October 27, the waning gibbous moon will meet up with Comet Hartley 2 in front of the constellation Gemini the Twins.

Your first chance to see this comet in a dark sky will probably be on or near October 29. In late October, Comet Hartley 2 will pass in front of the feet of the constellation Gemini, to the right of Gemini's brightest stars, Castor and Pollux.

But what should the amateur expect to see? Observers in the north have seen it with binoculars. Below right is a *long-exposure camera shot – no telescope used*. The comet is in the middle of this photo: the fuzzy object just above and to the right of the star in the photo's centre (I Cas). *Averted vision* may help in light polluted areas! Comet Hartley appears as a faint, fuzzy patch of light. In late October and early November, the comet is moving steadily south, and is in the southern sky after midnight. Below is a chart with north at bottom for use in the Sth. Problems with moonlight aside, this is a comet worth looking for as soon as possible, and don't forget the spacecraft making a close encounter!

Modern comet watching is like modern rugby watching in the intrusion of technology, but comets are still rare events in our skies. Enjoy while you can!

Comet 103P/Hartley 2 is expected to brighten to about magnitude 4.5 towards the end of October, although it will then be very low in NZ skies.

During November it will get much higher as the comet moves south of equator. Although it then will have faded a magnitude, it should still be visible in binoculars. By early December it will be in the sky all the short night, but will become too faint for viewing with binoculars, requiring a small telescope.

At the end of October Hartley 2 will be in Gemini. It moves across a corner of Monoceros and into Canis Minor during the first week of November. On the 6th it will be a little under 7° from Procyon. By early December the comet's motion will have slowed, its path will curve round about 12° from Sirius.



The chart below shows its approximate position and estimated visual magnitude during this time. Note that for most of November it should be a naked eye object.



(Douglas Jackson)

CERN scientists eye parallel universe breakthrough

Physicists probing the origins of the cosmos hope that next year they will turn up the first proofs of the existence of concepts long dear to science-fiction writers such as hidden worlds and extra dimensions. And as their Large Hadron Collider (LHC) at CERN near Geneva moves into high gear, they are talking increasingly of the "New Physics" on the horizon that could totally change current views of the universe and how it works.

"Parallel universes, unknown forms of matter, extra dimensions... These are not the stuff of cheap science fiction but very concrete physics theories that scientists are trying to confirm with the LHC and other experiments."

This was how the "ideas" men and women in the international research center's Theory Group, which mulls over what could be out there beyond the reach of any telescope, put it in CERN's staff-targeted Bulletin this month.

As particles are collided in the vast underground LHC complex at increasingly high energies, what the Bulletin article referred to informally as the "universe's extra bits" -- if they do exist as predicted -- should be brought into computerized, if ephemeral, view, the theorists say.

Optimism among the hundreds of scientists working at CERN -- in the foothills of the Jura mountains along the border of France and Switzerland -- has grown as the initially troubled \$10 billion experiment hit its targets this year.

PROTON COLLISIONS

By mid-October, Director-General Rolf Heuer told staff last weekend, protons were being collided along the 27-km (16.8 mile) subterranean ring at the rate of 5 million a second -- two weeks earlier than the target date for that total. By next year, collisions will be occurring -- if all continues to go well -- at a rate producing what physicists call one "inverse femtobarn," best described as a colossal amount, of information for analysts to ponder.

The head-on collisions, at all but the speed of light, recreate what happened a tiny fraction of a second after the primeval "Big Bang" 13.7 billion years ago which brought the known universe and everything in it into being.

Despite centuries of increasingly sophisticated observation from planet Earth, only 4 per cent of that universe is known -- because the rest is made up of what have been called, because they are invisible, dark matter and dark energy.

Billions of particles flying off from each LHC collision are tracked at four CERN detectors -- and then in collaborating laboratories around the globe -- to establish when and how they come together and what shapes they take.

The CERN theoreticians say this could give clear signs of dimensions beyond length, breadth, depth and time because at such high energy particles could be tracked disappearing -- presumably into them -- and then back into the classical four.

Parallel universes could also be hidden within these dimensions, the thinking goes, but only in a so-called gravitational variety in which light cannot be propagated -- a fact which would make it nearly impossible to explore them.

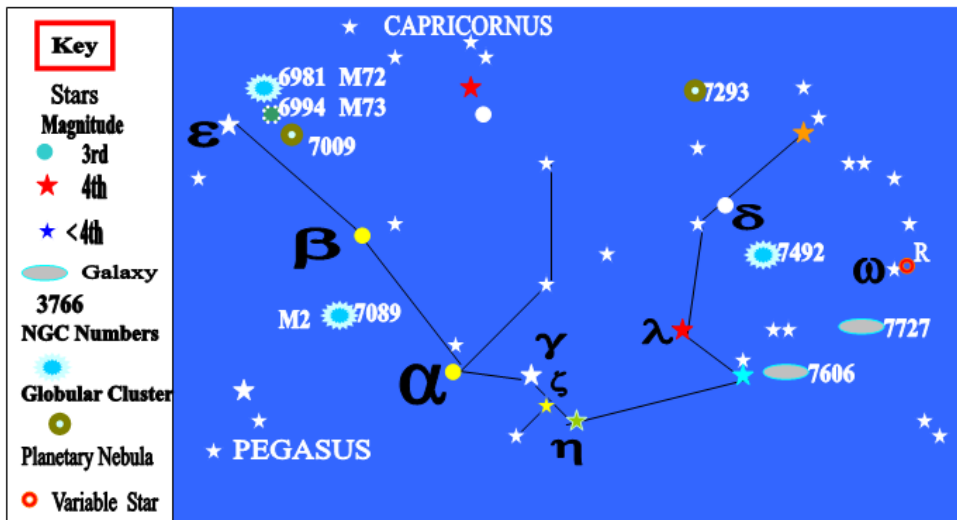
(Reuters October 2010)



Aquarius

The Water Bearer

Aquarius may be vast and dim, but its deep space objects are (mostly) of the first water.



Stellar Table

Bayer	name	Mag	Spectra	Dist (ly)	Notes
α	Sadalmaalik	3.20	G0	272	
β	Sadalsuud	3.1	G0	544	
γ	Sadalachbia	4.0	A0	71	
δ	Skat	3.50	A2	86	
ε	Albali	3.8	A0	155	
η		4.1	B8	131	
λ		3.80	M0	192	
88		3.80	K0	326	
R (near ω)	(See chart*)	5.8-12.4	M6		Long Period Variable (387 d)
ω	Double	4.6, 5.2	A0, A5	80, 204	OD. ref. for R.
ζ	ζ 1	4.6	F2	148	Binary, separation 1.5"
	ζ 2	4.40	F2		
τ	τ 1	4.2	K5	155	Binary, separation 23'
	τ 2	5.7	B9		

a 10" RFT shows some ghostly detail. But to see the real thing you need a monster scope and a CCD!

Aquarius has some weird things in it: A **Messier** list object that is just a few stars (**M73**) in chance alignment (have a look!), and the other **Planetary**: The "**Saturn**" nebula. As for the **Helix**, even medium backyard scopes will not (visually) show the little projections or **ansaetha** that stick out at the sides and make this nebula look like **Saturn**, but they are *so* clear in photographs! **NGC7009** is looked at more in hope than anything; it is only 25" in diameter, the size of **Mars** in a great apparition! I always try, hoping to join that select group who have seen the "*ears*" *visually in a 10" scope* – if you believe them! A 17.5" f4.5 apparently shows them easily!

NGC6891 (M72) & especially **M2 (NGC7089)**, both fine **Globular Clusters**, are a tonic to The **Water Bearer's** frustrations! **M72** begins to be resolved nicely by 8" reflectors, and just gets better as the scope gets bigger. **M2** is magnificent, twice as big as **M72** (13' across!) and an obvious **globular** in a 6" at low power.

Both the **galaxies** listed are relatively easy to locate, and are interesting objects to see.

Cultural Perspectives

Aquarius is not mentioned by **Homer (Iliad, Odyssey)** or **Ovid (Metamorphosis)** or anyone describing **Classical Greek Myth**, and the word is from the **Latin** of the **Romans** (*aqua*, water). Speculation by the "experts" (in **Encyclopaedia Britannica**, no less!) has suggested the water symbol usually accompanying **Aquarius** and the fact that the **Sun** is in **Aquarius** in the rainy season *cannot* be a coincidence. But of course it could be, it being the nature of coincidences to be *unexpected*.

The impersonal water bearer, devoid of genius or personality, has a more **Roman** feel to it, however, and smacks of their colourless, relentless piety. A **Greek** water bearer would die of thirst, or drown in his own water, or something...**Ptolemy** was a **Greek** living in **Roman Egypt**, so the fact that this **constellation** is one of his originals does not solve the puzzle of where it comes from.

The fact that **Aquarius** lies on the **ecliptic**, or path of the Sun (and Planets, broadly), means it is a sign of the **Zodiac**. It is part of *astrology* as well as *astronomy*, and the astrologers have, no doubt, a much better origin-tale of the **Water Bearer**, going back twenty thousand years at least, and full of morbid auspices.

The musical "**Hair**" featured a delightful song: "This is the dawning of the age of **Aquarius!**" meaning a tolerant, peaceful, loving time, tailor-made for the gentle, long-haired **Hippies**. Of course the last thirty years have verified the aphorism of **John Lennon**: "Life is what happens while you are making other plans..." The modern **mythology** associated with **Aquarius** may be richer than the ancient.

(Text and diagrams by Douglas Jackson)

The View from the Sand Dune Observatory



The Sculptor Galaxy (NGC253)

NGC 253 was discovered by Caroline Herschel in 1783 and is named after the constellation in which it is found. In 1830 John Herschel wrote *"very bright and large (24' in length); a superb object.... Its light is somewhat streaky, but I see no stars in it except 4 large and one very small one, and these seem not to belong to it, there being many nearby."* Of course, as we all know now, the Sculptor galaxy consists of many more than 5 stars!

It is located at the centre of the Sculptor Group, which is one of the nearest groups of galaxies to the Milky Way – near being a mere 11.4 million Light Years.

It is one of the brighter galaxies in the sky and is a good sight even with binoculars – see if you can spot it before it sinks too low.

(Image and text by Stephen Chadwick)

Calendar of Events

November 4th: Monthly Meeting

Special Guest: Carl Knight will discuss his work observing and monitoring variable stars.

December 2nd: Monthly Meeting
TBA

January 6th-11th 2011 STARDATE, Tukituki, Hawkes Bay



If undelivered please return to:

**Foxton Beach Astronomical Society
c/o 6A York Street, Levin 5510**



Nelson Bartlett Observatory

(Photo by W Marshall)

**THE FOXTON BEACH ASTRONOMICAL SOCIETY
NELSON BARTLETT OBSERVATORY
FOXTON BEACH SCHOOL STAFF ROOMS
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