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Lunt LS35 Deluxe

NEWSLETTER
March
2011

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

THURSDAY March 3rd 2011
Solar Observing from 7pm

Followed by a documentary:
"The Sun"

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 2nd December 2010 from 8.00pm

Present: Members 14 **Apologies:** 2

Guests: Amanda & Corbyn Simpson, Joan Adamson and Josie Dakin

Minutes were read and agreed to be accurate - Moved Bren, Seconded Simon, Carried

Matters arising from previous meeting

- Nil

Correspondence

The following newsletters have been received and are now available to loan from the library

- Aurora & Solar section ,
- Te Patiki ,
- Astronomy South

General Business

- Richard Leach advised that there were two funding applications in place, awaiting response.
- Allen Little brought in his copy of the DVD - The Universe (4 DVD book set) which was showed round among the members. A very interesting set that he is willing to lend to members.

Meeting closed 8:20pm

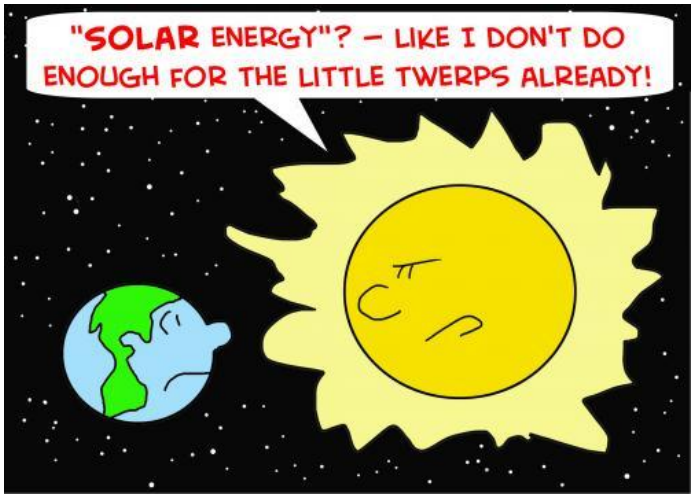
Members then enjoyed a talk from Ian Cooper "The Completion of Sluggish Creek Observatory". This described the building of an observatory by Palmerston North Astronomical Society on Ian's property at Glen Orua. Ian advised that members of FBAS were welcome to visit.

FBAS New Solar Telescope

The Foxton Beach Astronomical Society is the proud owner of a new solar telescope – a telescope with the sole purpose of observing our nearest star - the sun. So henceforth the members of the society can now undertake observational astronomy throughout the day as well as the night.

The Lunt LS35T (pictured on the front cover of this issue) is a dedicated Hydrogen-alpha telescope. It has an unobstructed, front mounted 35mm etalon with a band pass of <0.75A. This enables views of prominences, sun spots and some surface detail.

The Meeting on Thursday 3rd March will start at the earlier time of 7.00pm. We shall have the solar telescope set up for solar viewing. This will be followed by the normal meeting at which we shall watch a documentary on "The Sun" followed by some night time astronomical observing (weather permitting of course).



The hunt is on for a gas giant up to four times the mass of Jupiter thought to be lurking in the outer Oort Cloud.

If you grew up thinking there were nine planets and were shocked when Pluto was demoted five years ago, get ready for another surprise. There may be nine after all, and Jupiter may not be the largest.

The hunt is on for a gas giant up to four times the mass of Jupiter thought to be lurking in the outer Oort Cloud, the most remote region of the solar system. The orbit of Tyche, as it is provisionally called, would be 15,000 times farther from the Sun than the Earth's, and 375 times farther than Pluto's, which is why it hasn't been seen so far. But now scientists believe the proof of its existence has already been gathered by a NASA space telescope, Wise, and is just waiting to be analysed.

The first tranche of data is to be released in April, and astrophysicists John Matese and Daniel Whitmire from the University of Louisiana at Lafayette think it will reveal Tyche within two years. "If it does, John and I will be doing cartwheels," Professor Whitmire said.

Whether it would become the new ninth planet would be decided by the International Astronomical Union (IAU). The main argument against is that Tyche probably formed around another star and was later captured by the Sun's gravitational field. The IAU may choose to create a whole new category for Tyche, Professor Matese said.

The IAU would also have the final say about the gas giant's name. To the Greeks, Tyche was the goddess responsible for the destiny of cities. Her name was chosen in reference to an earlier hypothesis, now largely abandoned, that the Sun might be part of a binary star system with a dim companion, tentatively called Nemesis, that was responsible for mass extinctions on Earth. In myth, Tyche was the good sister of Nemesis.

Tyche will almost certainly be made up mostly of hydrogen and helium and will probably have an atmosphere much like Jupiter's, with colourful spots and bands and clouds, Professor Whitmire said. "You'd also expect it to have moons. All the outer planets have them," he added.

What will make it stand out in the Wise data is its temperature, predicted to be around -73C, four or five times warmer than Pluto. "The heat is left over from its formation," Professor Whitmire said. "It takes an object this size a long time to cool off."

Most of the billions of objects in the Oort Cloud - a sphere one light year in diameter stretching a quarter of the distance to Alpha Centauri, the brightest star in the southern constellation - are lumps of dirty ice at temperatures much closer to absolute zero (-273C).

A few of these are dislodged from their orbits by the galactic tide - the combined gravitational pull from the billions of stars towards the centre of the Milky Way - and start the long fall into the inner solar system.

As these long-period comets get closer to the Sun, some of the ice boils off, forming the characteristic tails that make them visible.

Professors Matese and Whitmire first proposed the existence of Tyche to explain why many of these long-period comets were coming from the wrong direction. In their latest paper, published in the February issue of Icarus, the international journal of solar system studies, they report that more than 20 per cent too many long-period comets observed since 1898 arrive from a band circling the sky at a higher angle than predicted by the galactic tide theory.

No other proposal has been put forward to explain this anomaly since it was first reported 12 years ago. But the Tyche hypothesis does have one flaw. Conventional theory holds that the gas giant should also dislodge comets from the inner Oort Cloud, but these have not been observed.

Professor Matese suggests this may be because these comets have already been tugged out of their orbits and, after several passes through the inner solar system, have faded to the point that they are much harder to detect.

So if it is real, Tyche may not only be disrupting the orbits of comets, it may also overturn an established scientific theory.

(NZ herald, submitted by Paul Matthews)

Orion

The Hunter

Here is Orion, with the huge, star-forming molecular clouds, and also "The Pot" or Orion's belt and sword. The Great Nebula of Orion, M42, like a diving bird, (with the head M43, and the other nebulae and knots of stars), is visible to the naked eye. Orion straddles the equator, and is seen from all inhabited countries. In the south we are blessed to see Orion climbing out of the east as that other spectacular star group, Scorpius, creeps down in the west.

Stellar table and notes

Bayer	name	Mag	Sp	Dist (ly)	Notes
α	**Betelgeux Irr. Var.**	**0.60 0.1-1.3**	**M0**	**652**	**Red supergiant.**
β dbl	**Rigel**	**0.3, 7**	**B8**	**251**	**Blue giant.**
γ	Bellatrix	1.70	B2	113	
δ	Mintaka	2.50, 7	B0	133	
ε	Alnilam	1.80	B0	1631	
ζ	Alnitak	2.00	B0	136	
θ^4	Trapezium	2 at ~ 5	O0	3262	*In* M42
θ		2.20	B0	217	
ι	Triple	2.90, 7.4 11	O0	131	Sep.12" 50"

Bayer	Mag	Sp	Dist (ly)	Notes
St747	5.6, 6.7	A2		Near ι
κ	2.20	B0	217	
η	3.40	B1	466	
λ	3.70	O0	466	
π3	3.30	F8	26	
π4	3.80	B3	3262	
π5	3.90	B3	1087	
σ	3.80	B0	466	
τ	3.70	B5	544	

Orion's **two first magnitude stars** are as stunning as they are different.

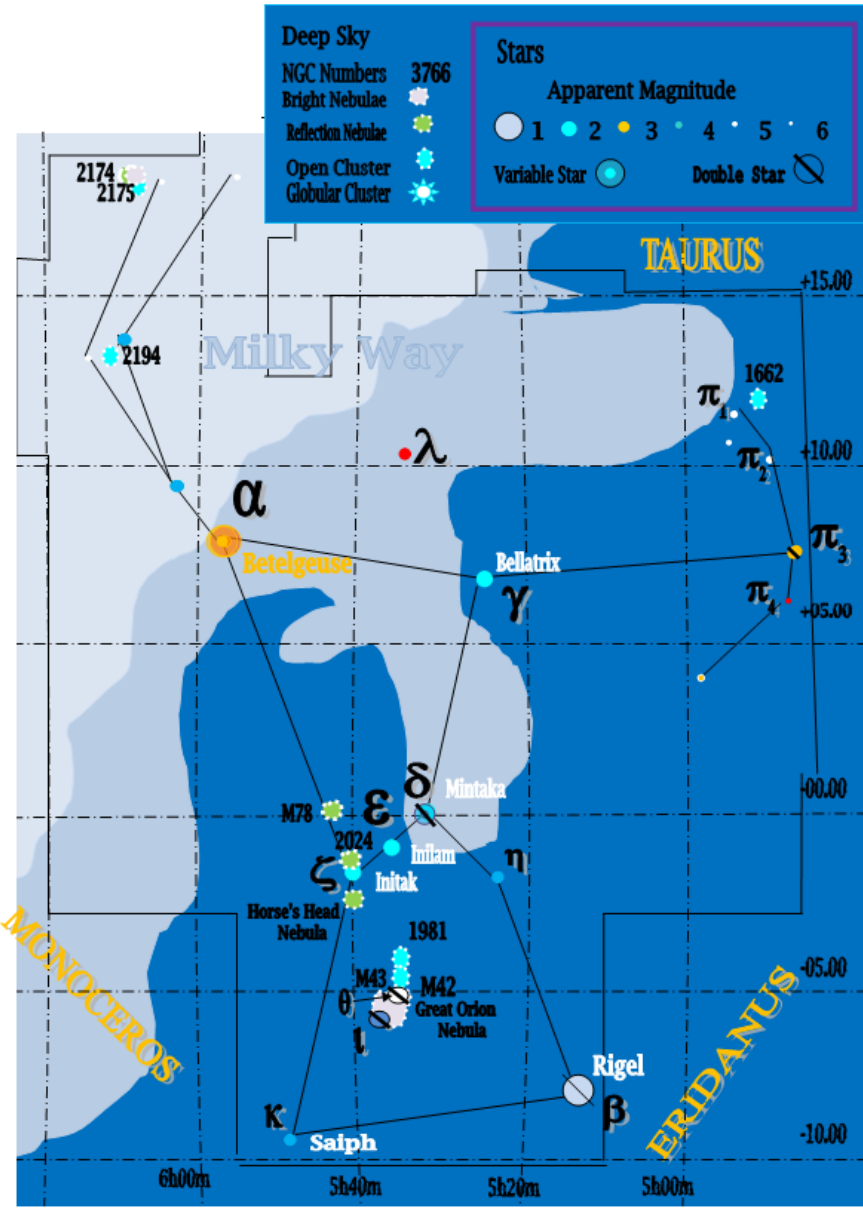
Betelgeuse is a gigantic red supergiant star, and has reached that unstable stage that makes it an irregular variable star (not only in spelling and pronunciation!), perhaps the perfect variable for an amateur to study, graphing its slow changes in brightness on a weekly basis, or when it is easy. It has been brighter than **Rigel** (Hence the ancient alpha status, not so far seen in modern times). **Rigel**, a true celestial searchlight, is 60, 000 times brighter than our Sun, and is itself a double star, as are **Mintaka** and **ι-Ori** (actually a triple!).

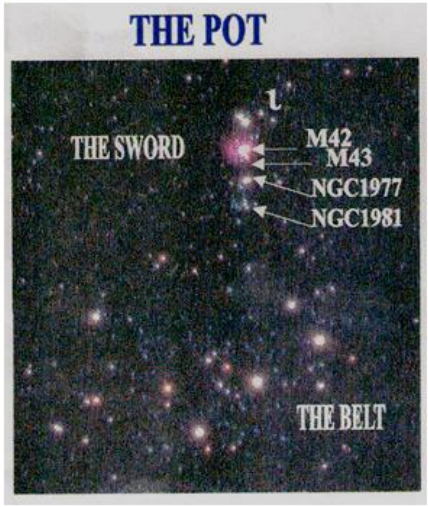
But the most famous multiple star grouping in the sky is theta Orionis, called the **Trapezium** for obvious reasons, and placed in the midst of the Great Orion Nebula. Glimpsed in a three inch refractor, this is easily seen in a 10" RFT.

Orion is well worth observing with the naked eye. The near score of stars brighter than the fourth magnitude suggest "the giant", with the three gems across his belt, and the sparkling nebulous sword hanging from it – though of course from Wellington we see him upside down !

Deep sky table and notes

The deep sky objects in Orion have unequalled surface brightness. **M42, the Great Nebula**, the most photographed of all emission nebulae, is seen through any scope.

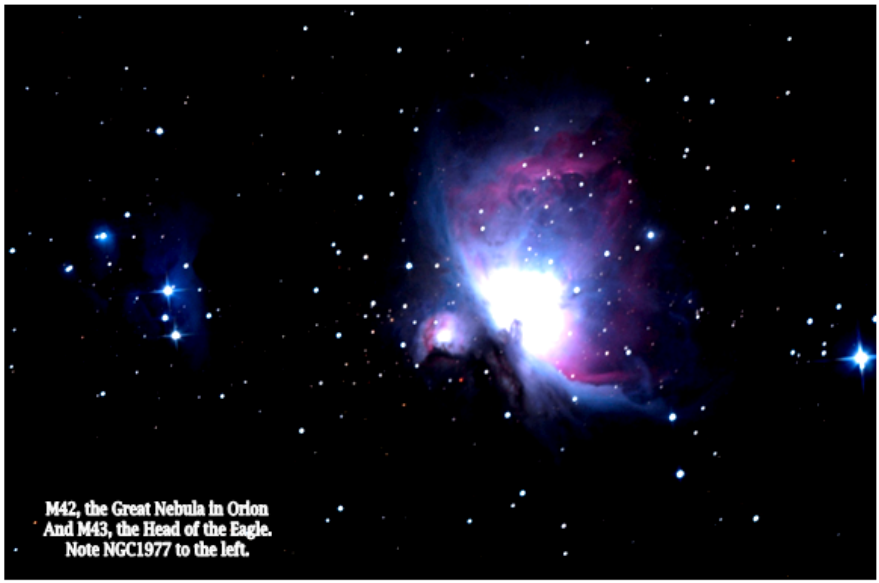




ıt it is ***best*** seen through the fast ıtics (~f4.5) of a Rich Field Telescope as the breathtaking wider field is hard to fit easily into a long focal length Newtonian or an SCT at f8 or f10.

Amazingly, the other famous (and elusive!) sight in Orion – the **Horse's Head nebula** – can be seen through a good 3" refractor. You need to be sure your telescope is pointed straight at it and then crank up the magnification. If the seeing and transparency allow it, at x200 the familiar shape pops into view – not as sharp as in the photos but much more dramatic! A 16" SCT (mine is the Meade LX200) is unsurpassed, however, when viewing this dark nebula, and makes it much more certain you will find it!

Object (NGC)	Proper Name	Mag	Object type	Size	Dist (1yrs)
1976	M42 The Great Nebula	V. bright	EN	66'x60'	1, 400
1982	M43	6.9	EN	20'x15'	
(IC)434	The Horse's Head		DN, EN		1, 100
1980		2.50	OC & EN	14'	
1981		4.2	OC & EN	28'	
1662		6.4	OC	12'	1, 200
2024			EN	30'x30'	
2068	M78	8.0	RN	8'x6'	
2186		8.7	OC	5'	6, 000
2169		5.90	OC	5'	3, 000
2174			EN		
2175		6.80	OC & EN	21'	8, 000
2194		8.5	OC	8.5	



M42, the Great Nebula in Orion
And M43, the Head of the Eagle.
Note NGC1977 to the left.

As when you are observing a planet, take your time observing the sights in Orion. They offer more to both visual and CCD imagers because of their brightness, but you still see more if you look longer. The group has no globular clusters, and the galaxies are too dim for amateur telescopes, but the emission nebulae[1] and open clusters are unequalled.

Cultural Perspectives

A major grizzle of the Greek goddesses was that the gods could dally with mortal girls, but that for a goddess to take a mortal lover was a great disgrace. **Artemis** may have some cause for complaint, because her true love, the great hunter **Orion**, seems to have been killed ***twice*** to end the goddess's affair with him!

Once her mother **Hera** sent a scorpion (q.v.) and another time, as if dying once wasn't enough, her brother **Apollo**, seeing **Orion** walking across the ocean stream with only his head above the surface (as was his want), wagered that Artemis could not put an arrow through "that tiny thing bobbing in the surf". She took the bait and was inconsolable when she realized what she had done.

Both times Orion ended up in the stars, with the goddess of the Moon gazing longingly at her lost love.

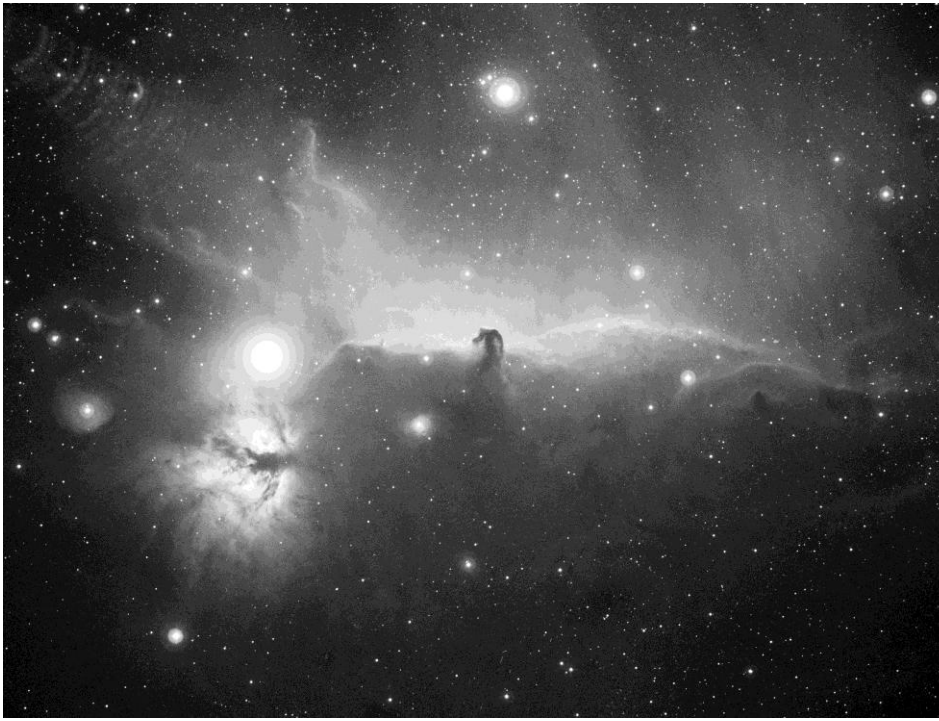
[1] Note standard abb.: Emission nebulae (EN), Reflection nebulae (RN), dark nebulae (DN), open clusters (OC).

(Diagrams and text by Douglas Jackson)

Aurora Astronomy School

The Aurora Astronomy School is a unique opportunity for Year 12 and 13 students, and will take place 26th to 30th April 2011, in the Easter vacation. The free camp will be held at the University of Canterbury, and the observatory at Mt. John. On campus we will talk about the universe past, present and future, the life cycles of stars, planet exploration, extra-terrestrial life and more. We will then travel to the Mt John Observatory at Tekapo where we will explore our cosmic neighbourhood with modern astronomical instruments. The programme will contain a mix of seminars and practical work. The closing date for applications for this camp is Friday 25th March. More details are on the application form at http://www.outreach.canterbury.ac.nz/

The View from the Sand Dune Observatory



The Horsehead and Flame Nebulae
(IC434 & NGC2024)

The horsehead nebula is one of the most recognisable deep sky objects seen in photographs. Visually it is much more challenging to see and requires a very dark sky and good optics. The nebula itself is a 'dark nebula'. Dark nebulae are clouds of dust and gas dense enough to obscure the light from background stars. In the above image you can see the Horsehead silhouetted against part of the huge emission nebula that covers most of the constellation of Orion. (The Great Nebula, M42, is simply the brightest part of this huge nebula).

The bright star to the left of the Horsehead is Alnitak, which is the easternmost star in Orion's belt. The Flame Nebula gets its unique appearance from the lanes of dark nebula found throughout plus the reflected light from Alnitak.

(Image and text by Stephen Chadwick)

Calendar of Events

March 3rd: General Meeting
Solar Viewing from 7pm at the school followed by a documentary: "The Sun"

April : Star Party at Allen's house

May 5th: Annual General Meeting

Annual General Meeting

On May 5th 2010 we shall be holding our 21st Annual General Meeting.

Please could you email your nominations for the following post to the editor: stevechads@hotmail.com by 30th March. The list of nominations shall then be printed in the April newsletter.

President
Vice President
Secretary
Treasurer
Committee Members x5

Nomination will also be called from the floor on the night.

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
CARTHEW TERRACE
FOXTON BEACH