



SCORPIUS

The Journal of the
Astronomical Society of Frankston Inc.
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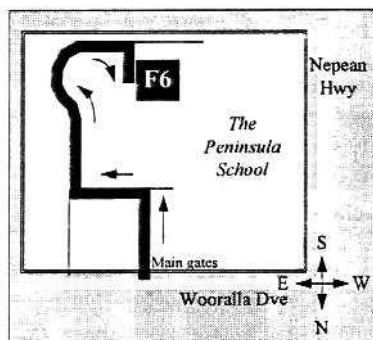
(Jul - Aug)

The Astronomical Society of Frankston was founded in 1969 with the aim of fostering the study of Astronomy by amateurs and promoting the hobby of amateur Astronomy to the general public. The Society holds a General Meeting each month for the exchange of ideas and information. Regular observing nights, both private and public are arranged to observe currently available celestial objects. For decades the Society has provided *Astronomy on the Move* educational presentations or observing nights for schools and community groups exclusively in the area bounded by Moorabbin, Dandenong and Tooradin.

Meeting Venue: *Peninsula School*, Wooralla Drive, Mt.Eliza (Melways map 105/F5) in room F6 at 8pm on the 3rd Wednesday of each month except December.

Internet: <http://www.peninsula.starway.net.au/~aggro>

Visitors are always welcome!



Annual Membership	
Full Member	\$30
Pensioner	\$25
Student	\$20
Family	\$40
Family Pensioners	\$35
Newsletter Only	\$10

DUE 1ST OF JANUARY EACH YEAR

President & Editor	
Peter Skilton	(03) 9776 5898
Vice President	
Peter Lowe	(018) 318 920
Treasurer	
Bob Heale	(03) 9787 1748
Secretary & Loan Telescope	
Richard Pollard	(041) 739 6807
Committee	
Ken Bryant, Roger Giller, Don Leggett	Ian Porter

All phone calls before 8:30pm please.

FUTURE EVENTS

General Meetings:

Wed 15th Jul '98

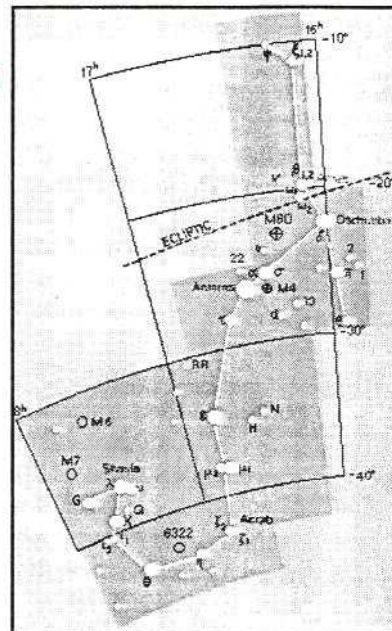
Session 1: Peter Skilton speaks on his recent visit to *The Johnson Space Centre* in Houston, and reveals some shocking truths from NASA.
Session 2: *Show and Tell* session of member items of astronomical interest, including also items for sale/swap if you have any. Members are asked to bring along any astronomical curiosities they have, and remember, the success of this depends on you and what you can bring along.
Session 3: At least one instrument outside if the forecast is clear.

Wed 19th Aug '98

Session 1: Ian Porter will speak on *Near Earth Asteroids*.
Session 2: Video on the *Highlights of the Voyager Missions*.
Session 3: At least one instrument outside if the forecast is clear.

Wed 16th Sep '98

Session 1: To be finalised, but possibly on *Astrophotography*.
Session 2: Chat session revolving around Astronomy Software. Members are asked to bring along portables or example outputs from their favourite



programs.

Session 3: At least one instrument outside if the forecast is clear.

Wed 21st Oct '98

Session 1: Roger Vodicka of the ASV and David Girling will speak on *Meteors*, before the Leonids shower.
Session 2: Chat session, with finding out your accurate Latitude, Longitude & elevation above sea level. If any member has a Global Positioning System (GPS) unit, they are asked to bring this along and demo it.
Session 3: At least one instrument outside if the forecast is clear.

Wed 18th Nov '98

Session 1: Annual General Meeting. Bill Birch of Museum of Victoria will speak on *Meteorites*.
Session 2: At least one instrument outside if the forecast is clear.

Viewing Nights:

Members Only:

Sat Jul 18, 25 and Aug 15, 22 all at *The Briars*, Nepean Hwy, Mt.Martha (Melways 145/E12).

If weather forecast for the Saturday looks bad, the Friday before may be used instead. New

attendees must always confirm with **Ian Porter** on (03) 5985 4203 or 0414 308 072 (if no answer) before attending. Follow the signs at *The Briars* from the Visitor Centre. Remember for security reasons you can only attend on planned Members' Nights, unless by prior arrangement with Ian who will liaise with *The Briars* accordingly. Last person out must switch on the shed security light.

Public, School & Community Groups Viewing/slide nights:

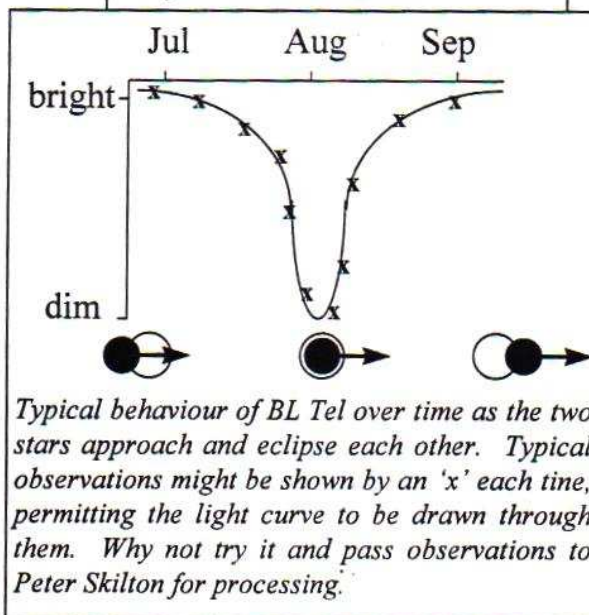
If you can assist, please contact the Secretary.

- The once-a-month basic public viewing nights at *The Briars* will continue on the first Friday of each month. The next nights are on Fri 7th Aug and Fri 4th Sep both at 8pm. Assistants to go on the roster are now required, even if you can only spare time once every few months. Please contact the co-ordinator, Don, on (0359) 854927.
- Mt. Martha Field Naturalists will have a talk on the Cranbourne Meteorites on 3rd Sep at *The Briars*. No help is needed with this one.
- Seaford North Primary school is likely for a viewing night in the week starting 26th Oct.

Phenomenal Events:

- The variable star *BL Tel* is known to undergo eclipses once about every 778 days, and the next one is predicted for early August 1998. The star is located in the constellation of Telescopium (which is abbreviated to *Tel*), next to the tail of Scorpius. How can a single star be eclipsed? The answer is the system actually consists of 2 giant or supergiant stars in orbit around each other; one being fainter than the other so that once around the orbit, the fainter star blocks off some of the light reaching the Earth from the brighter star. It takes several weeks for the fainter star to move right across the face of the other star. The result is the combined light observed from the system is seen to dim during this period, reaching a minimum light level at mid-eclipse. The stars are so far away that telescopes cannot separate them individually. For *BL*

Tel, the normal brightness is about magnitude 7 (I made it 7.0 on 27th Jun in 7x50 binoculars), readily determined with simple binoculars. At mid-eclipse it can drop to magnitude 9 or 10, requiring maybe a 2-3 inch telescope. It is surprisingly easy to determine the magnitude of a star to the nearest decimal point, once you've been shown how. The aim is to monitor the star every few days (or more frequently around mid-eclipse) and just estimate its brightness at a time and date convenient to you; just record what it was and the date/time also. By combining such results from all observers (even if only one or two from each person), an average "light curve" can be built up, showing the eclipse in detail. Previous light curves have been published in *Sky & Space* magazine e.g. April 1997. Members are asked to start observations immediately, and continue until *BL Tel* returns to its normal brightness. This exercise makes an excellent astronomy project for students who might have access to only binoculars. Advice and further instructions from the basics onwards can be obtained from any of our keen variable star observers or other experienced night sky followers. It really is easy, once you've been shown how.



Social Events

- Nine members took up the invitation to visit the Burwood Observatory of the *Astron. Soc. Vic.* on Sat 31st May, with several others

phoning but unable to make it at the last minute. The facilities included an annex on the back of a tenanted house on the property, which has undergone considerable renovation effort over the years. This room is used for society section and special interest meetings, and can seat about 25. It is decked out with a computer, some reference books, astronomy posters and an area for tea/coffee. Basically it is a small clubroom, providing a focus for interaction between members. In addition, a garage has been converted into a split roll-off roof observatory, sporting a fast f/4 20 inch mirror in a fork-mounted wooden tube. This latter design feature is unfortunately very susceptible to collimation and humidity problems, though longer term plans are being made to try and rebuild the assembly to a different design. The sturdy mount was apparently donated by Telecom and was formerly used for an antenna. A generous storage area and adjacent workshop area also fall within the garage roof line. Unfortunately on our visit night, the sky became totally overcast, precluding any observing. The location is in a suburban street, however, it is reasonably dark considering the surrounds, and was chosen as a central location for

Melbourne-based enthusiasts to gather. There was much inter-society information sharing, including curiosity about *The Briars*. Those who attended kindly thanked the hospitality of the 6 ASV members present, and especially Ian Sullivan who helped organise it at the ASV.

- Film day on Sun 19th Jul at Frankston Village cinema (Melway 102/C2, Nepean Hwy, Frankston), followed by a BYO everything picnic and film post mortem at Mt. Martha Park straight after (remember there are free electric BBQ facilities present, shelter from the weather and kids play equipment, Melways 150/H7, Forest Dve, Mt. Martha). The film is *Deep Impact*, depicting the effects of a comet collision with Earth. Since the cinema was unable to confirm a time more than a week or so in advance, interested members are

asked to phone the cinema on (03) 9781 3944 to find the time closer to this date. The session will be the first one at 10:30am or after. If for some reason the film is cancelled by the cinema, the picnic will occur regardless at 1:30pm.

- Informal equinox dinner at the Dava hotel, Esplanade, Mornington on Fri 18th Sep at 7-7:30pm. Melways 145/C6. All members and friends are welcome, and remember you can select a meal to suit your budget.

YOUR SOCIETY

NEW MEMBERS

Welcome to the following new Society members:

John Catchlove
Phillip Holt
Geoff Lloyd
Patricia Meiers
Max Perrott
Andrew Thorton

The ASF is one of the largest groups in Australasia. Membership is currently at 101. Please feel free to say hello at general meetings. Specialised badges, windcheaters, T-shirts, books & posters are available at meetings. Society name tags are free to new members who attend meetings. Members are able to borrow library books and are entitled to attend special viewing nights at *The Briars* where you can discover the secrets of the night sky.

HELP NEEDED

Articles, features, book reviews, member observations and points of general interest for this journal are always welcome. New contributors are encouraged. For example do a bit of reading and pass on some information, but remember not to plagiarise. Hand written material is fine; computer text files are perfect.



We are still on the lookout for a plumber and an electrician to help connect our observatory site at *The Briars*. All offers from members will be gratefully accepted. Does any member have any contacts in the steel industry for steel framing for the *Briars* Observatory? Also the bricks, sand and cement are at *The Briars*, now all we need is someone skilled enough to do a reasonable job of designing and

building a brick barbecue. Can you help? Do we also have any woodworking skills (or, indeed, spare timber) to help make some picnic tables (like those in public parks) for the *Briars* site? Members are asked to bring along to meetings any posters, photos or other material of interest on their observing, or other astronomical interests e.g. visits to astronomical sites.

SECRETARY'S JOTTINGS

Strong winds during May literally blew away our steel storage shed at *The Briars*, which was found about 30 metres away wrapped around a gum tree. Fortunately, nothing breakable was inside at the time. The Society is therefore on the lookout for another shed, which will be more firmly fastened down this time. Is there a conscientious member who would care to donate a 3 metre by 3 metre shed to the Society, or donate materials for the construction of a wooden one? This adds to our Society's lucky patch over the years with buildings, having already lost one observatory to fire, one being interred under soil and another blown away already. A manual electrical switch has been installed under the security light on the large shed at *The Briars*, so that we can turn off the light when observing on member nights. Please ensure this security light is turned back on when leaving for the evening. This is the responsibility of the last person to leave. We are writing to neighbouring Shires to make our presence known as a community group that can service them and be included in their lists of local societies. Alternative higher quality methods of copying newsletters for members were costed and found to be unacceptably high without raising subscriptions substantially. Therefore the existing arrangements will continue. Our laser collimator is out of collimation again! Options are being considered as the alignment seems to be unusually fragile for field use.

SUPERNOVA SEEN

Member Ian Porter reports that he successfully observed the new supernova 1998bu in M96 (Leo) on May

21, it being just North of this galaxy and visible using averted vision in his 8 inch Dobsonian telescope. The supernova was discovered on May 9 at a brightness of magnitude 13. Fortunately, Ian had observed and sketched this same galaxy on May 1, before the supernova appeared, and so could easily positively identify the difference in the star field. A supernova is a star that reaches the end of its life with a titanic explosion, which seeds the surrounding space with material from the star.

COMET SOHO

A new visitor graced our skies from mid-May; comet SOHO, or comet 1998 J1, named after the orbiting Solar observatory satellite that discovered it close to our Sun. Ground-based comet hunters missed this one entirely. After rounding the Sun on May 8, it steadily became readily visible to the naked eye, with it reportedly reaching magnitude 2-3 on May 20. Its tail was apparently just visible to the unaided eye using averted vision, and about 2 degrees long in 7x50 binoculars as it passed near the three belt stars of Orion. The tail was seen to be a greenish colour in a telescope and extending to 7 degrees in length. If any member made any hand sketches of the comet, these could appear in a future edition.

FIREBALL WITNESSED

Peter Lowe reports that on Tuesday 1998 June 2 at Dandenong, he observed a bright fireball during daylight which travelled in an Easterly direction,

about 20 degrees above the horizon, and took 4-5 seconds to cross the sky before flaring. The exact time of the event was not related, but did any other member witness the spectacle on this day?

MINOR PLANET CAUGHT

On May 31, the asteroid (705) *Erminia* was predicted to pass in front of a background star, causing the star to momentarily disappear from view. By timing how long it disappeared for, it is possible to calculate the size of this rock in space. Last minute amateur measurements of the asteroid's position, showed its shadow would pass across Southern Tasmania and New Zealand. At the time of writing, 3 kiwi observers saw an occultation that will enable the size and shape of this asteroid to be determined. Local observers on the Mornington Peninsula region were all clouded over at the time. Predictions for the second half of 1998 for these types of minor planet occultations are now available at monthly meetings.

RECENT MEETINGS

May's meeting was chaired by the Vice-President. Bob Heale presented *Sky for the Month*, and Ian Porter gave his *What Goes Up* segment. After tea break it was decided not to show the video on Sputnik, but rather listen to Peter Lowe's Recurrent Nova talk. Established members will have heard this talk before many years ago, and naturally by the ambiguous title, they are likely to hear it again in the future! The meeting closed at 10:30pm.

June's meeting was chaired by the President and saw 48 attend on a very cold, but clear evening. Bruce Tregaskis reported a small group of

Sunspots, and several other members reported having seen comet SOHO, though it is now fading. Bob Heale presented *Sky for the Month* for here and for France, having recently returned from 5 weeks over there in four different locales, naturally taking his binoculars with him. The Northern skies presented a challenge for him, especially finding the Plough, and the familiar constellations in the sky were naturally upside down. Nevertheless, he successfully observed several deep sky objects, with the French wines helping his night vision no end. A reminder and finder charts were issued for the upcoming eclipse of variable star BL Telescopii, near the tail of Scorpius, and for minor planet occultations for the second half of 1998. Peter Lowe explained about the recently photographed, supposed lone planet, detected as being ejected from a nearby binary (2) star system. The speaker for the evening was out of action with the flu, so a few changes to the line-up were made. After tea break, it was decision time, and the group split into 3 parallel sessions. For the hardier and curious folk with thick hides, several members had kindly brought their telescopes and binoculars and ran a guided observing session outside in the crisp Winter conditions. Inside in the warm, a documentary video on Apollo 13 was shown, and next door a slide tour of the Solar System was given by the President. For some members the choice was difficult, and they preferred to sample a bit of each. The meeting closed at 10:35pm.

Thanks to the following members who participated in one or more of the viewing nights below: Ken Bryant, John Cleverdon, Roger Giller, Neil Hewson, Don Leggett, Peter Lowe, Carl Moser, Richard Pollard, Peter Skilton, Sue & Emma Stoner.

Cranbourne Library was visited on May 4, and saw 50 members of the public treated to a talk and viewing at the scopes outside under clear conditions.

On May 11, we visited Langwarrin Park Primary school on a night that rained almost continuously. Nevertheless, 130 staff, grade 5/6 students and parents crammed into the staff room to have all their questions

about the Universe answered. More people even spilled out into the hallways as they jockeyed for a spot in earshot, but didn't seem to mind.

One hundred Grade 6 pupils and parents from Cranbourne North Primary school were treated to a brief "chat", then telescope viewing on May 25. The night started with 1 telescope on site due to total cloud cover. When the clouds lifted totally, there was a quiet panic as it was realised that the number of scopes organised was somewhat less than required. Surprise! Peter Lowe's chat was therefore lengthened to an hour whilst more instruments were summoned from the surrounding regions. It ended up a great evening.

The next Briars public night on June 5, saw 35 attending to hear about comets, meteors and Earth impacts. Due to threatening weather, the ensemble viewed outside first, then had a tea break and talk afterwards. All were able to observe comet SOHO in the South West through Ken Bryant's binoculars, though no tail was visible due to the moonlight. All were also able to hold and examine sizeable samples of the Henbury crater iron meteorites.

LIBRARY MATTERS

The library has acquired a new book which is available for borrowing. Remember that past copies of astronomy magazines and other society's newsletters make very interesting reading and are available during meetings.

Handbook for Star Trackers: Making and Using Star Tracking Camera Platforms, by Jim Ballard. This is for anyone who has a camera and wishes to photograph the night sky successfully at minimal cost by making their own simple mounting to follow the stars across the sky as the Earth rotates. Many simple and diabolically ingenious designs are included and explained from scratch for the layperson with the simplest of tools. Well worth a browse for the hobbyist, handyperson or as an interesting school project at little cost.

Kathy Stabb

JUST FOR STARTERS

THE LIGHT YEAR

One of the first things most newcomers to astronomy marvel at is the incredible distance between objects in space. To help keep a convenient handle on these distances, the “*light year*” was introduced, and more recently in professional circles, the parsec is employed (explained in an earlier edition this year).

A *light year* is the distance that a beam of light can travel in one Earth year. Light (such as from a torch, a laser or our Sun) or any other form of electromagnetic radiation, such as radio waves, travels at the truly phenomenal velocity of just under 300,000 kilometres per second (in fact 299,792.5 km/sec).

At this rate, in one second of time, a beam of light can travel nearly 8 times around the Earth, and it takes about one and a quarter seconds to go from the Earth to the Moon. Even though the speed of light is exceedingly fast, if you phone internationally to say England, and your phone conversation is relayed by geostationary satellites in Earth orbit, you can detect the delay in the conversation, limited by the speed of light for the radio communications occurring over a distance of about 72,000 km.

The delay is even more pronounced if you go from Earth to the outer most planet of our solar system, Pluto, as light now takes about 5.5 hours to make the journey. Therefore any spacecraft at the outer regions of

our solar system will have a delay of hours before it receives broadcast commands sent to it from Earth. To travel to the nearest star to our Sun, Proxima Centauri, would take over 4 years for light, and to travel across our galaxy, the Milky Way, takes light over 100,000 years. To travel to the nearest major galaxy, the great spiral in Andromeda, would take over 2 million years, and to travel to the edge of the observable Universe will take approximately 14,000 million years.

IN THE NEWS

RUNAWAY PLANET PICTURED BY HUBBLE

The Hubble Space Telescope’s near infrared camera has provided the first direct look at what is possibly a planet outside our solar system, within a star forming region 450 light years away in Taurus. The object, designated TMR-1C, appears to lie at the end of a strange filament of light that suggests it has apparently been flung away by a slingshot effect at 10 kilometres per second from the vicinity of a newly forming pair of stars. It is destined to drift forever around the Milky Way.

It is believed the object might only be a few hundred thousand years old, and therefore around 3 times the mass of Jupiter, or it could be up to 10 million years old, and be a giant protoplanet or brown dwarf star that failed to sustain nuclear reactions.

Current models of planet formation predict that very young giant planets are still

warm from gravitational contraction. This makes them relatively bright in infrared light compared to old giant planets such as Jupiter. Even so, young planets are difficult to find in new solar systems because the glare of the central star drowns out their feeble glow. Young planets ejected from binary systems would therefore represent a unique opportunity to study extrasolar planets with current technology.

The discovery also challenges conventional theories that predict gas giant planets take millions of years to coagulate from dust in space. Instead, it favours more recent ideas that large, low-density planets may condense out of gas very quickly, at the same time as does their parent star.

UNDER CONSTRUCTION

The new Keck II telescope in Hawaii has discovered what appears to be a forming solar system around a nearby star in Centaurus, called HR4796, which is 220 light years from us. Its infrared pictures show a swirling disk of dust around the star, with a telltale empty inner region that may have been swept clean when material was pulled into newly formed planetary bodies. This cleared region is about 100 astronomical units across, with the overall dust disc being about 200 astronomical units diameter (1 AU is the distance from the Sun to Earth).

This may be what our solar system looked like at the end of its main planetary formation phase. Comets may be forming right now in the disk’s outer portion from the remaining

debris. The same team of astronomers plans to study several other stars for planet forming regions as well, including *Vega*, which was featured prominently in the movie *Contact*.

SOHO SUN CRASHES

In a rare celestial spectacle, two comets have been observed plunging into the Sun on June 1 and 2 by the SOHO (Solar and Heliospheric Observatory) satellite. This unusual event on our star was followed on June 2 by a likely unrelated, dramatic ejection of solar gas and magnetic fields on the South west limb of the Sun. The eruption of solar gas was directed away from Earth and did not pose a hazard to our planet or orbiting astronauts.

FEATURE

THE BIGGEST BANG SINCE THE BIG BANG

A recently detected cosmic gamma ray burst released over 100 times more energy than previously thought theoretically possible for a star, making it the most powerful explosion since the creation of the universe in the *Big Bang*. Amazingly, for about two seconds, this burst was as luminous as all the rest of the entire universe.

The faint galaxy from which the burst originated was measured at 12,000 million light years from the Earth. The observed brightness of the burst, despite this great distance, implies an enormous energy release.

The burst was detected on Dec.

14, 1997, by both the Italian/Dutch BeppoSAX satellite and NASA's Compton Gamma Ray Observatory satellite. The Compton observatory provided detailed measurements of the total brightness of the burst, while BeppoSAX provided its precise location, enabling follow-up observations with ground-based telescopes and the Hubble Space Telescope.

The burst appears to have released several hundred times more energy than an exploding star, called a supernova, until now the most energetic known phenomenon in the universe. Finding such a large energy release over such a brief period of time is unprecedented in astronomy, except for the Big Bang itself.

In a region about 200 kilometres across, the burst would have created conditions like those in the early universe, about one millisecond after the Big Bang.

Gamma-ray bursts are mysterious flashes of high-energy radiation that appear from random directions in space and typically last a few seconds. They were first discovered by U.S. Air Force Vela satellites in the 1960s. Since then, numerous theories of their origin have been proposed, but the causes of gamma-ray bursts remain unknown. The 17 tonne Compton observatory has detected several thousand since its launch in April 1991, but has been unable to pinpoint their location in space before they faded away.

The principal limitation in understanding the bursts is the

difficulty in pinpointing their direction on the sky. Unlike visible light, gamma rays are exceedingly difficult to observe with a telescope, and the bursts' short duration exacerbates the problem. It's like seeing a flash of light in the corner of your eye, but not knowing if it is from someone close-by holding a torch, or someone on the horizon with a laser beam.

With BeppoSAX, scientists now have a tool to localise the bursts on the celestial sphere with sufficient precision to permit follow-up observations with the world's most powerful ground-based telescopes.

This breakthrough led to the discovery of long-lived afterglows of bursts in X-rays, visible and infrared light, and radio waves. While gamma-ray bursts last only a few seconds, their faint afterglows can be studied for several months. Study of the afterglows indicated that the bursts do not originate within our own galaxy, the Milky Way, but rather are associated with extremely distant galaxies.

Both BeppoSAX and NASA's Rossi X-ray Timing Explorer spacecraft detected an X-ray afterglow. As the visible light from the burst afterglow faded, the team detected an extremely faint galaxy at its location, using one of the world's largest telescopes, the 10-metre Keck II telescope at Mauna Kea, Hawaii.

The galaxy is at a redshift of $z=3.4$, or about 12 billion light years distant (assuming the universe to be about 14 billion years old).

Although the burst lasted approximately 50 seconds, the energy released was hundreds of times larger than the energy given out in supernova explosions, and it is about equal to the amount of energy radiated by our entire Galaxy over a period of a couple of centuries. Scientists say it is possible that other forms of radiation from the burst, such as neutrinos or gravity waves, which are extremely difficult to detect, carried a hundred times more energy than that.

NASA is now planning other missions to further investigate competing theories for the origin of gamma-ray bursts, but the front runners are theorised to be colliding black holes or neutron stars, though no-one yet knows. These gamma ray bursters have now been given the impressive name of "hypernova".

THE PLANETARIUM AT LAUNCESTON AND THAT AT HOBART TOWN

In April I was fortunate enough to go on holidays to Tasmania. I usually make a point of visiting a local planetarium if at all practically possible when on trips. During this visit, our travels took us to Hobart and to Launceston. Each city has its own planetarium, though the one at Hobart is not well known, and certainly not mentioned in tour guides. This seems to be because it is tucked away in the centre of Hobart within *Dreamworld Antarctic Adventure*, a commercial venture located in Salamanca Square. This attraction is certainly fascinating in its own right, covering many aspects of experiencing life in Antarctica,

and includes a modest 5 to 6 metre diameter geodesic dome decked out so that about 15 people can sit around the inside equator of the dome. There were no age limits on who could enter the dome, and there was certainly room for a pram or two. The planetarium projector in the centre was a Starlab SL-220, of cylindrical design. Although the guide was humble, and acknowledged not being an astronomer, the information provided was most accurate, though the good old Scorpio/Scorpius confusion did arise. The hourly show ran for about 40 minutes and included not only the night sky as seen at the latitude of Hobart, but also afterwards as what it would appear like at the South Pole, which was a nice touch to see the sky pivot around a point in the sky directly overhead at the zenith. This latter demonstration did cause some problems with the operation of the projector, as the change in latitude moved the projector so that it pinched its cabling, inhibiting operation. This was a minor hiccup, and rectified quickly by the operator. This planetarium was certainly not high tech, but nevertheless quite enjoyable in the context of the other attractions present, and certainly within the budgetary capacity of a moderately sized astronomical society to duplicate. The facilities are open every day except Christmas day from 10am to 5pm, and can be contacted on (freecall) 1800 350 028, or on the internet at <http://www.antarctic.com.au>.

The other planetarium I visited was in the North of Tasmania in Launceston, located on the ground floor of the Queen Victoria Museum and Art

Gallery in Wellington St. The 8 metre diameter dome seated up to 45 people in aircraft-style seating, and was supported by several very interesting, illuminated, perspex astronomical displays outside. These included details on space missions and occultations and a unique cosmic ray counter that was busily incrementing as I watched, and a solar refractor telescope on the Museum's roof that was tracking and viewing the Sun's disk in real-time through a hydrogen-alpha filter, and showed a couple of prominences and sunspots. The projector was a Zeiss ZKP-1, which functioned perfectly. These facilities are maintained by funding from their city council and their state government. The show was presented by Martin George, an office bearer in the *Astronomical Society of Tasmania* and the Assistant Director at the Museum, and was factually accurate. The show was entitled *Comets: Snowballs of Space*, and explored comets and their appearance throughout recorded history. There is one show per day Tuesday to Friday, and two on Saturday, closed on public holidays, lasting about 35 minutes, with children under 5 not permitted. After the show that gave the night sky at Launceston, a brief interactive update ensued on current phenomena for the next couple of days, including a favourable conjunction of planets. My overall impression was that the facilities were very similar to the former Melbourne planetarium, and I would have to say of the many planetariums I've visited around the world, I enjoyed this one's overall feel the most, and can highly recommend it.

Enquiries on (03) 6331 6777.

Peter Skilton

TWINKLE, TWINKLE LITTLE STAR

Did you realise that this famous children's rhyme was adapted from a poem written nearly two centuries ago by the English poet Jane Taylor (23rd Sep 1783 - 13th Apr 1824)? It was entitled *The Star*, and included in her *Rhymes for the Nursery*. The full verse is:

Twinkle, twinkle, little star,
How I wonder what you are!
Up above the world so high,
Like a diamond in the sky!

When the blazing sun is set,
When the grass with dew is wet,
Then you show your little light,
Twinkle, twinkle, all the night.

Then the traveller in the dark,
Thanks you for your tiny spark;
He could not see which way to go
If you did not twinkle so.

In the dark blue sky you keep,
And often through my curtain peep,
For you never shut your eye,
Till the sun is in the sky.

As your bright and shiny spark,
Lights the traveller in the dark,
Though I know not what you are,
Twinkle, twinkle little star.

IRIDIUM COMING

On a recent business trip to the United States, I was fortunate enough to sit next to an Australian whose company is putting together the global marketing and advertising effort for the Iridium set of 66 satellites in orbit. These are satellite communications relay devices in low Earth orbit, that are primarily for global personal communications anywhere on

Earth (i.e. voice, computer data, fax and paging applications even from the most remote places on the planet). These satellites link into ground-based switching gateways, enabling contact with any public telephone anywhere. By the end of 1998, you will be able to use a pocket-sized phone and communicate with anyone else for a cost of about \$5 per minute, by your call being relayed up to one satellite then bouncing from one to another before being downlinked back to Earth.

This marketing executive wished to try out his forthcoming presentation to the "big boys" in San Diego, so I offered to give him some comments if he wanted to try it on me, which he duly did. While much of the material seemed to be aimed at middle high-school level (I think this might say something), there were some snippets of other info.

The global rollout of the system is expected later this year and will be a big-bang approach virtually simultaneously across the globe, the first time this has ever been tried by any company. The Iridium project is a truly multinational consortium to afford the launch of so many satellites, with China being a very significant partner, and Motorola catering for the technology. A few satellites have in fact failed in orbit already (no failures on launch), so others have been sent up to replace them unannounced.

One of the markets they were particularly keen to penetrate in Australia was for company data communications to and from remote locations, such as from

geologists and oil rigs. I mentioned about the practice among astronomers for predicting and viewing bright flashes from the satellites' solar panels, but he was completely oblivious to the sport, or to the fact that these satellites would interfere with astronomical photography across the globe. He is now fully aware.

Another interesting aspect was the brand logo they were shortly going to agree upon to represent Iridium globally. The front-runner by far was to be the main stars of the constellation of the *Plough*, to which I pointed out that most of the population of the Southern hemisphere wouldn't know the shape of the *Plough* anyway as it is a Northern constellation, and I suggested why didn't they consider a zodiacal constellation that both ends of the planet could identify with. He was totally unaware of this little astronomical fact, and it set him to wondering; so who knows what the logo will be now. It will probably remain as the *Plough* since the overwhelming majority of its likely customers are in the Northern hemisphere.

Peter Skilton

FROM AROUND THE PLANET



Leading Astronomical Societies exchange each other's newsletters to assist in sharing items of interest. This column grabs some of the highlights of recent receipts. You can find out more in the library.

Astron. Group. Mount Isa (QLD)

- Shared comet SOHO with the Mt. Isa Institution of Engineers and to the Double Helix Club. A member joined a recent eclipse expedition in Hawaii for the Feb 26 event in Antigua and received spectacular views, including a large prominence, 3 long coronal

streamers, and numerous fine polar brushes. Mercury & Jupiter were easily visible to the sounds of a bag-piper who announced First Contact.

Astron. Soc. South Aust. (SA) - They secured funding of \$1,000 from Science Week organisers for a bus to shuttle 150 members of the public to and from their Stockport observatory. Fraser Farrell has published a guide to buying your first telescope in Australia on the internet (<http://www.dove.net.au/~fraserf/scope.htm>). They continue to do school and public nights, including even Year 1 primary school pupils. They provided scopes for Adelaide's Symphony Orchestra night entitled *Space: The Final Frontier*, which was attended by 500 people. Detailed dossier given of eta Carinae, visible to the naked eye or binoculars. All about averted vision and how you can see fainter things.

Astron. Soc. New South Wales (NSW) - They conduct an annual auction of astro paraphernalia. A detailed blow-by-blow description given of NACAA, including its delegates' meeting. A series on the Sun has been started. A member recounts a trip to the European Southern Observatory in Munich, and another on a Caribbean eclipse cruise for 3 minutes and 6 seconds of totality at dead centre of the totality path. A volcano on Montserrat was in the process of erupting. More neat planetaries, this time in Vela and the former constellation of Argo Navis near the False Cross. Article on the 72 inch speculum reflector at Birr Castle in Ireland, the largest scope in the world during the 19th century and built by the Earl of Rosse, and which will be fully functional again this year. Aboriginal legends about the Sun, Moon and Southern Cross.

Astron. Soc. South West (WA) - Their facilities were visited by staff from the ABC, and from the tourism commission who were checking them out to include on their tourist itinerary. Their society offered a 6 night course in astronomy at their observatory, which was attended by 51 people, close to its capacity limit. Fact sheet provided on Iridium satellites.

Sutherland Astron. Soc. (NSW) -

More on asteroid XF11, the one originally touted to shave Earth in 2028. Standards Australia has adopted AS4282 on *Control of the Obtrusive Effects of Outdoor Lighting*, which includes designated observatories, such as *The Briars*. Article on planispheres, including finding sunrise, sunset, right ascension and sidereal time. Recent sketches of Jupiter from an 8 inch scope given. The NACAA convention, which they hosted, was a success, culminating in visits to Sydney and Macquarie University observatories.

Astron. Soc. Victoria (Vic) - Articles on the astronomy of Easter, and on image intensifier usage, and feedback from those that attended the NACAA conference this year. Much collaboration has been occurring between their meteor section and several Frankston members who are giving this form of observing a try. Currently members are competing to see who can photograph the youngest Moon after New Moon each month. So far the record is 19 hr 44 min.

Bendigo District Astron. Soc. (Vic) - They issue Iridium satellite flare predictions at meetings, have a loan telescope and extensive library. Snippets of current happenings in aerospace and astronomy given.

Astron. Soc. Tasmania (Tas) - This is our first receipt from them. Formed in 1934, they meet monthly at a school in Sandy Bay, Hobart, have a small library, and hold adult education classes. They are marginally smaller than our society, with 95 members and 20-30 attending monthly meetings. Much information given on current spacecraft. Detailed report on the Caribbean solar eclipse, with the Montserrat Tourist Board advising that no part of the eclipse was safe to watch by eye, and a couple being married during the event. How to observe aurorae by eye and report them. Series of articles starting on Global Atmospheric Change.

Astron. Assoc. Queensland (Qld) - Currently have 82 members. Notes about their President's eclipse expedition that was onboard another ship in the mid-Caribbean (there was more than one vessel out for the eclipse). Apparently the ship wasn't

happy with astronomers as they didn't drink much, they didn't gamble and they kept getting up from dinner to try for the Green Flash phenomenon at sunset. They are conducting a TAFE course in astronomy. Article on naked eye observing of satellites. They are preparing for the 1998 7-day long Queensland Astrofest at Linville. They have been successful in applying to their State's Gaming Fund to buy 3 8-inch Meade telescopes for field nights. Report on a large fireball witnessed on 19th May. Advice that the finder chart for Pluto in *Astronomy 1998* is not good enough for practical field use, and a replacement chart is shown. An account is given of the passage of the Earth through the tail of comet Tebbutt in 1861, and the atmospheric effects observed from this.

FINAL PRONOUNCEMENT - FLUORESCENCE

First observed in antiquity from certain minerals, this often misspelt name is pronounced "flew-ress-sence". It is a physical phenomenon in which energy, such as light, can be absorbed by a material that then re-radiates it back out. The absorption only occurs if the colour of the light exactly matches energy levels within the material. The emitted light from the material is redder than that absorbed. This is because some energy is lost in the process within the material. In deep space, fluorescence occurs readily in some nebulae. These are areas of space filled with gaseous material that can be excited by the ultraviolet light from nearby stars. Often the stars themselves are completely obscured from our view by intervening dust. The emitted fluorescent light from the gas clouds is in visible colours enabling us to readily detect them. Closer to home, laundry detergents include fluorescent whitener compounds that give the illusion of producing white clothing once washed in them. Normally, clothes yellow with age, and the fluorescence given off these compounds, after they absorb ultraviolet light from the Sun, combines with the true yellow to give your eye the illusion of whiteness.

If you have any Astronomical query that has been niggling you, drop it in the question box at a General Meeting and let us look into it for you.

COMPETITION: The correct answer to last edition's word game competition was "No Air, Wind or Water". Several entries were received in time, though not all were correct, and some entrants apparently shamelessly employed the power of computing packages to try to crack it. The drawn winner was Gerard Martin who wins from the book section a copy of *Chasing The Shadow: An Observers Guide to Eclipses* with a retail price of \$24.95, plus a copy of *Sky & Space*. Congratulations Gerard, your book will be posted to you shortly.



Left - Working Bee at the ASF Briars site in 1998

Photo - By John Cleverdon

From left - Bob Heale, Bruce Tergaskis, Vivienne Lowe, Peter Lowe, Ian Porter & Marty Rudd



If this box is ticked then membership needs renewing and this may be your last edition of the newsletter, so please contact the Treasurer in this case. Newer members who join late in a calendar year will have this time taken fairly into account when renewing in January, and should remind the Treasurer of this.

It is crowded in Earth orbit. In mid-June, NASA reports there were 2,556 satellites of all kinds going around the planet, including military, scientific and commercial vehicles. On average, three new craft are launched into orbit each week, adding to this inventory. More than 50% of all the objects put into space since 1957 (the year Sputnik was launched) are still up there, and have been launched by 40 countries or consortia. Aside from satellites in orbit, there are also 6,224 bits and pieces of rocket nose cones, nuts, bolts, spanners etc. bigger than a few centimetres across up there, not to mention the millions of flecks of paint buzzing around from previous rocket stage separations, and considerable human waste from earlier missions in orbit. These all pose a considerable hazard to astronauts in low Earth orbit, whether in the Space Shuttle, Mir spacestation or the forthcoming International Space Station, due to their high relative velocity. In 1997, orbiting debris collided with a Japanese communications satellite, rendering a solar panel and its connected satellite useless, and impacts with microscopic paint flecks have been previously recorded on the Space Shuttle's glass portals, having had the equivalent effect to firing a rifle bullet at these windows.