SCORPIUS

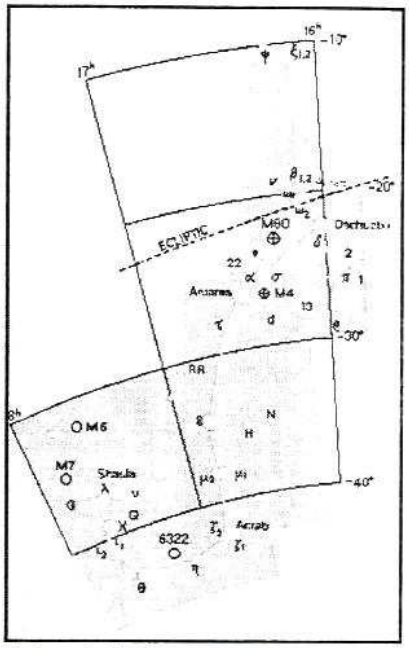
The Journal of the Astronomical Society of Frankston Inc.

P.O. Box 596, Frankston, Victoria 3199

Reg. No. A268

Volume VIII, No. 1 1999

(Jan - Feb)

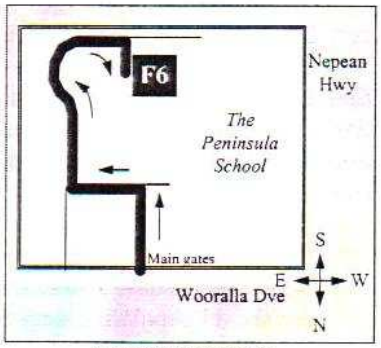


The Astronomical Society of Frankston was founded in 1969 with the aim of fostering the study of Astronomy by amateurs and promoting the hobby of amateur Astronomy to the general public. The Society holds a General Meeting each month for the exchange of ideas and information. Regular observing nights, 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	$15

DUE 1ST OF JANUARY EACH YEAR

President & Editor
Peter Skilton (03) 9776 5898

Vice President
Ian Porter (03) 5985 4203

Treasurer
Bob Heale (03) 9787 1748

Secretary & Loan Telescope
Richard Pollard (0419) 100 802

Committee
John Cleverdon, Roger Giller, Don Leggett, Peter Lowe

All phone calls before 8:30pm please.

FUTURE EVENTS

General Meetings:

Wed 20th Jan '99

Session 1: Ken Bryant will speak about his *18 inch Langwarrin Leviathon Telescope.*
Session 2: Video on *Black Holes.*
Session 3: At least one instrument outside if the forecast is clear.

Wed 17th Feb '99

Session 1: Peter Norman will speak on the subject of *Light.*
Session 2: Video on *The Quest for Planet Mars.*
Session 3: At least one instrument outside if the forecast is clear.

Viewing Nights:

Members Only:

Sat Jan 16/23, Feb 13/20, Mar 13/20, Apr 10/17, May 8/15, Jun 12/19 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 5th Feb and 5th Mar all at 8pm. Assistants are required. Please contact the co-ordinator, Don, on (0359) 854927.
- The annual Friday public nights series at *The Briars* are on at 8pm on the Fridays 8th, 15th, 22nd January. Assistants are required for the roster - again contact Don.
- Mt.Martha Rotary Club is having a talk and viewing on Mon 25th Jan at the Mornington Golf Club. David Girling is organising this one, and no assistance is currently required.

Phenomenal Events:

- Eclipses abound in February. On 1st Feb the Moon will travel into the Earth's penumbral shadow. The maximum of this lunar eclipse occurs about 3:17am, however, darkening will be minimal and fairly difficult to see.
- Easier to see will be an approx 50% partial annular solar eclipse on 16th

Feb from 5:39pm to 7:33pm (max at 6:36pm only 19 degrees above the horizon). A 99% coverage will occur at Geraldton in WA.

- Predictions for minor planet occultations of background stars have arrived from New Zealand for the first half of 1999. See the editor if you wish a copy. The predictions give various asteroids that are likely to pass in front of background stars, thereby momentarily blocking out their light. By timing how long this disappearance occurs for you can contribute to determining the size and shape of the asteroid - the most accurate method other than visiting them by spacecraft. This is one of the most valuable areas that backyard astronomers can make a definite scientific contribution with a small telescope.
- Keep an eye out for the close approach of Venus and Jupiter in the morning sky of 24th Feb, separated by only 0.1 degrees.
- **VASTROC**, the *Victorian Astronomy Conference* and premier gathering of backyard astronomers in Victoria, will be held once again by our Society on the Labour Day weekend of NSW/SA this year on Sat/Sun 2nd & 3rd Oct. Mark it in your diaries now. The venue is likely to be the same as previously in Mt.Eliza, with its adjacent hotel rooms, and local transport may be arranged if you find it difficult to attend for lack of it. Booking will be on a first paid, first served basis, with a discount for early birds, and registration for one or part days will be possible. No age limits apply, though astronomers over the age of 8 will appreciate the talks most.

NASA VISITS DROMANA

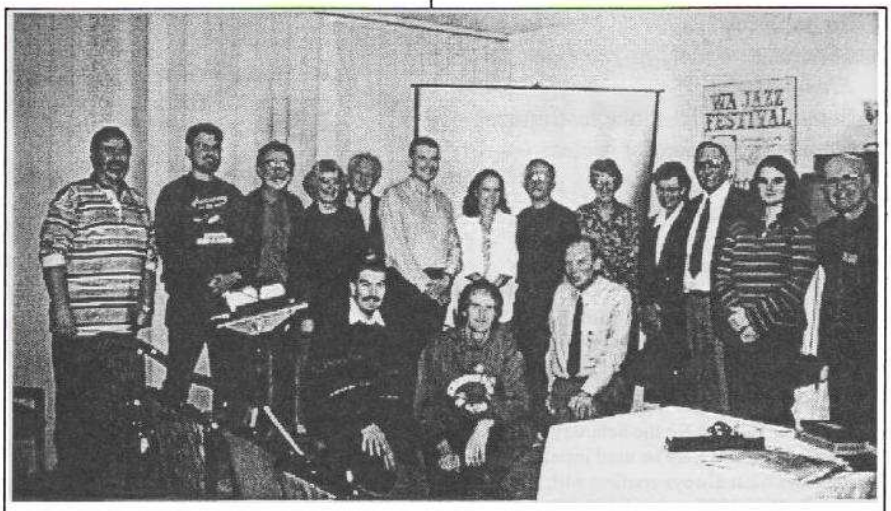
On 1st October, during the height of our State's gas crisis, the *International Astronautical Federation Congress* was held in Melbourne, and was attended by many aerospace dignitaries from around the world.

Amongst the attendees was Paul Maley, who agreed to come to Dromana on his whistlestop tour in Melbourne to speak to us at the Mt.Martha Valley Country Club & Reception Centre on the subject of *The Iridium Flare Phenomenon and Earth Satellite Observing*. We issued invitations to all Victorian Societies and several guests were able to attend from these, however, unfortunately there was little chance for proper notification of his multimedia talk as arrangements were all made at the last minute.

Paul is a manager of the Cargo Mission Support group at *NASA's Johnson Space Centre* in Houston, responsible for integration of payloads into the Space Shuttle's cargo bay and mid-deck, and familiar with such payloads as the Starshine mission. He is also Executive Vice-President of IOTA in Texas, the *International Occultation Timing Association*, and a member of the *Johnson Space Centre Astronomical Society*, a group formed in 1965 of backyard astronomers, and bearing many resemblances to our society. He has travelled extensively around the world and has seen 22 total solar eclipses since 1970, and attended innumerable lunar graze expeditions. He is considered the founder of amateur asteroid occultation timing, and was responsible for organising the world record 1983 Pallas event in the USA where 500 observers viewed this minor planet pass in front of a background star. From this effort, 130 chords were obtained across the face of the asteroid, and its size and shape are now well known as a result.

The talk at Dromana, preceded by dinner in the Atrium restaurant, was supported by slides, overheads and videos and concentrated on how to follow Iridium flashes in the sky, where the main antenna of these communications satellites reflects sunlight back to the Earth along a narrow strip, causing a ground-based observer beneath the strip to see a spectacular brightening and fading over a period of about 20 seconds. Incredibly, the brightening can rival the light output of a full Moon and certainly commands attention. Clearly a good source for UFO reports in the future. Several video taped actual flares were shown to the attendees. Following the talk, much discussion arose on the Iridiums and their disruptive effects on Earth-based astronomers and night sky photographs and, indeed, on whether astronomical societies should popularise them and hence encourage more such launches.

On the day following the talk, we took Paul and his wife Lynn down to Phillip Island to see the penguins, koalas and a kookaburra, which were all on their "must-see" list before flying out the next morning. Special thanks to Ian Porter for organising the venue and Bob Heale for some last minute Treasurer duties.



Recent special visit to our Society at Dromana of Paul & Lynn Maley from NASA's Johnson Space Centre. Pictured from left to right are Bob Parsons, David Shead, Ken Bryant, Pam Marchington, Don Leggett (background), Ian Porter (kneeling), Peter Skilton, Jim Blanksby (kneeling), Lynn Maley, Paul Maley, Alfred Kruijshoop (kneeling), Marj Walker, Bev Giller, Roger Giller, Sherryn Shead, Rex Farmer. Camera-shy attendees are unfortunately absent.

Social Events

- The working bee at *The Briars* on 1st Nov was well attended by members who attacked nature's growth with vigour. Thanks to John Cleverdon, Bob Heale, Neil Hewson, Peter & Vivienne Lowe, Ian Porter, Martin Rudd and Bruce Tregaskis for their help.
- Several members of the Society visited the *Latrobe Valley*

Astronomical Society on 21st Nov, at their Wirilda Site near Tyers for a barbecue and look about their site. The evening was sadly totally overcast, but the children enjoyed acting as search parties in the grass for the concrete viewing pads, and members had a wonderful chance to meet similar kindred spirits and chat about both societies. The ATCO hut donated by the electricity commission is in need of a little work, but will form an excellent large clubroom and observatory facility in due course. I still marvel how they got a building that large up the steep, loose incline leading up to their site. The visit was well enjoyed and we hope to reciprocate soon.

- The Society had its annual breakup barbecue on 5th Dec at Mt.Martha Park. Twenty-six members attended including several children who revelled in the playground despite brief showers and overcast conditions. The site is quite ideal for this type of function as it has free electric barbecues, a playground, picnic tables and a covered shelter with built-in internal fireplaces. These were kept in use throughout the evening using the odd dried fallen branch around and provided a very cosy social area. Just as the kids were leaving for bed, a noise was heard from the clouds and a bell sounded shortly after from up the mountain. About 60 scouts in the Camp next door heard this and scampered to the cyclone fence to see the arrival. Santa Claus pranced into the area and went on to generously hand out lollies and small gifts. With eyes wide and mouths agape the children gathered, gave him hugs and proceeded to unashamedly reel off what they wanted for Christmas, after they had naturally assured him they had been good during the year. One member from Dromana, who shall remain nameless, then said with a smile that her husband hadn't been a good boy this year. One of the children from Rye was heard to say she'd like a little telescope, just like her Dad's, who is now probably planning something bigger as a result. In a trice Santa departed into thin air above the cloud cover and the party continued as the children went excitedly off to their beds. It was good to see Carl Moser again after a long illness, and special thanks to local media personality Ian Cuthbertson for his invaluable assistance.
- Members, family and friends are invited to a barbecue at Ballam Park, Frankston, on Sun 21st Feb at 5pm (Melways 103/B4). BYO everything, though free electric BBQ's are onsite as well as a king-size children's playground and the historical homestead next door. Keen members might even want to bring the odd telescope or two.
- The Astron. Soc. NSW is holding its 7th *South Pacific Star Party* on 19-22nd Mar this year near Mudgee. The theme is *The Magellanic Clouds* and cost is $35 entrance, plus food, accommodation, etc. Forms are available at meetings.

Peter Skilton appears with the combined prep grades at a recent visit to Frankston Heights Primary School with telescopes, models and fossils to study. It truly is inspiring how much they know about space even at the age of 6.

YOUR SOCIETY

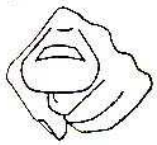
NEW MEMBERS

Welcome to the following new Society members:

Joe Cooper
David Huby
Jane McConnell
Heinz & Ilse Rummel

The ASF is one of the largest groups in Australasia. Membership is currently at 114. 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. The editor will even correct any mistakes you might make, so don't be bashful.

We are still on the lookout for a plumber or electrician to help connect our observatory site at *The Briars* to existing facilities. A wooden shed is being assembled by Don Leggett. Does any member have any contacts in the steel industry (e.g. Lysaghts) whom we might approach for a donation of steel framing for *The Briars* Observatory? Does any member have any wood working skills and/or timber to help make some picnic tables (like those in public parks) for *The Briars* site? Did anyone pick-up a video tape at September's meeting? The VHS tape that was mislaid was on the Russian attempt at a manned Moon landing. If you found it, please drop it off to the Library or phone the editor.

GENEROUS DONATION FROM AUBREY MATHER

Life member, Aubrey Mather, who hasn't been able to attend meetings recently due to mobility and vision restrictions, has kindly donated his home-made 8 inch Newtonian to the

Society for the benefit of others. The telescope will be named the *Aubrey Mather Telescope* in recognition of this generosity.

IN THE DOG HOUSE

Drum roll....correspondents inform me that Peter Lowe has finished his backyard domed observatory, which has been christened *The Dog House Observatory*. The erected structure has been weather tested in the howling conditions leading up to Christmas and has shown no leaks, and so now proudly houses his 11 inch instrument on a temporary mount while thoughts for a more permanent arrangement are unleashed. Peter will now be able to monitor his favourite variable star *T Pyxidis* in true style.

RECENT MEETINGS

October's meeting was attended by 50 and was chaired by the President on the night of the *Orionids*. In the absence of the planned ASV speakers who withdrew at a late hour, David Girling gave a brief talk on the *Leonids* meteor shower, including charts on how to find it and tips on the best times to see it. He was planning to drive off to Woomera to view the anticipated spectacle on the early morning preceding October's meeting. Others had similar plans at travelling. John Cleverdon reported identifying comet *Giacobini-Zinner* in his 6 inch reflector, though it showed no tail. Comet *Hale-Bopp* was becoming too faint to view in a similar size instrument. Bruce Tregaskis indicated there were only a few small sunspots present on the solar disc. Roger Giller had attempted to time the occultation of Jupiter by the Moon since last meeting, but had been thwarted by effects of the low altitude. Following the tea break, the group split into two sessions. About 40% watched a video on the Christmas Star, reviewing the ideas on the source of the star of Bethlehem. The others heard Bob Heale present *Sky for the Month*, together with hand-out sheets, and Ian Porter gave a detailed account of the launches that had occurred recently. All Iridium satellites are now up and in place, and during the month North Korea had made elaborate attempts to hide under misinformation a ballistic missile launch over Japanese territory. The meeting closed at 10:10pm.

November's meeting was the Annual General Meeting and was chaired by the President. Forty-nine attended with many absent due to travelling far afield hopefully to better observe the Leonids meteor "storm". Most members had risen early in the morning to witness the spectacular event promised by the media. Fireballs with persistent trains visible up to 5 minutes after their passage, and even an Iridium flash was noted by Karen Simonsen, Roger Giller, Valda Hede, Ian Porter, Bob Heale, John Cleverdon, Peter Skilton and several others, with the most meteors witnessed on the Mornington Peninsula being between 24 and 26, but due to cloud most only saw less than a dozen. Members resolved to try again next year, especially in light of the news that the Azores in the Atlantic had reported over 200 meteors per hour about 12 hours earlier (in our daylight). If this occurs in 1999, we should have the true storm conditions. The AGM concluded in 39 minutes, having much special business to address, including the minor rate change for newsletter only subs, and changes to the constitution including a committee invitation clause for member participation, correction of errors in wording to reflect reality of timing and setting of subs each year by the membership, and compulsory grievance procedures. All motions were passed unanimously. After the AGM, members had a coffee break with cake provided by Bev Giller and Ros Skilton, and purchased *Astronomy 1999*, then reconvened to hear Dr. Bill Birch, Senior Curator of Geology at the Museum of Victoria, give a presentation on the meteorites of Victoria. In an informative, hands-on talk, the falls of rock from the sky across our State were presented, including a few that had occurred since 1990 in North West Victoria and were found by "curious farmers", and in the Latrobe Valley at Willow Creek. Slides were shown of the fall sites and the discoverers themselves. Examples of meteorites were displayed including a sizeable $25,000 chunk of the Murchison meteorite, which was quite black, surprisingly light weight, and having a distinctive odour of methylated spirits. Its fall in 1969 was accompanied by a sonic boom. Other polished meteorites present showed characteristic cooling patterns from their birth inside asteroid cores. Within Victoria, discovered meteorites are owned by their finders and named after the locality of the fall position, however, the Museum eagerly seeks new specimens and encourages donation or partial donation where possible. Members are encouraged to search the North West of Victoria with metal detectors or just by eye as there is a concentration of known falls there. After many questions, the gathering thanked our visitor then half inspected the specimens up close, while the remainder heard Bob Heale deliver *Sky for the Month*. Due to the late hour, Ian Porter's and Peter Skilton's material was held over until next time. 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, Roger & Marj Cleverdon, Ian Cuthbertson, Roger Giller, David Girling, Bob Heale, Karen Helweg, Neil Hewson, Don Leggett, Peter Lowe, Pam Marchington, Jane McConnell, Richard Pollard, Ian Porter, Peter & Ros Skilton, Trent & Greg Veitch, Ronnie Wernert.

The Society visited the First Ranaleigh Scout Group on 27th Oct and entertained thirty-five on what turned out to be a very good night for viewing. Instruments present included telescopes up to 10 inches diameter as well as refractors and binoculars, including image stabilised ones.

The 6th Nov was a clear night *at The Briars* for a public evening. About 20 satellites were spied during the course of events, with Jupiter's band systems and Galilean moons readily seen. Saturn's rings were also clearly visible, as was a magnificent Orion nebula. Comet *21P/Giacobini-Zinner* was on show during the night, but not displaying a tail for the crowd of forty.

On 2nd Dec, 85 grade 3 & 4 pupils and teachers from Alphington Grammar were visited at Camp Manyung. The night was very balmy and unfortunately cloud prevented any viewing through telescopes, however, the students had a multitude of questions answered on the evening.

The next public night at *The Briars* was held on 4th Dec, with 25 attending, including a visitor from the UK who was thrilled to bits. Several satellites were seen during the evening, including an Iridium flash low in the

North East skies. Richard Pollard and Ian Porter gave a magnificent duet presentation on the planets, and included everything from ancient Viking barbaric practices to the latest tidbits from the internet, including the count of space junk in orbit to the nearest piece!

The public night on 8th Jan saw 30 visitors at *The Briars*, with Peter Lowe giving the talk and very clear conditions prevailing. The visitors included women sailors from France & Japan from the World Sailing Championships keen to sample the southern sky and compare navigational notes across the hemispheres.

SECRETARY'S JOTTINGS

The committee meeting in November was somewhat unusual in that attendees raced outside at 2136 AESuT to see a magnitude -5.5 flash from a passing Iridium satellite near alpha Centauri. Discussion of VASTROC is now underway in earnest, with the conference theme, timing and venue being finalised in January. We have received a grant for a suitable portable whiteboard to assist with school and public viewing nights that will help enormously in explaining difficult concepts. It was reported that a dead tree fell at *The Briars* during the *Leonids* meteor fall in 1998. While not witnessed, it is unlikely the cause was rocks falling from the sky! It was decided not to progress with a public viewing night for the 16th Feb eclipse of the Sun at Ballam Park, due to the inherent dangers involved. We are currently applying for a low light video camera grant for use at viewing nights. The Society's grant application to build the *Matthew Flinders Orrery* and *Federation Observatory* at *The Briars* has been submitted. Construction costs for the end rooms of the Observatory are being assessed. It is hoped to have the shed, which blew away last year, replaced and utilities connected by March. The Society is investigating advertising its presence in the local telephone directories and having a voicemail facility.

LIBRARY MATTERS

The library has acquired some more material that is available for borrowing. Our librarian, Kathy Stabb is more than willing to show you what is available.

Colours of the Galaxies by David Malin and Paul Murdin, hardback, 198 pages. This very picturesque and informative book from these two world renowned astronomers shows the secrets of many well-known photos from the night sky and explains the techniques that are used to capture them, such as image manipulation (e.g. unsharp masking) and other clever photographic and computer effects. The underlying causes of the colours of stars, nebulae and other celestial phenomena are also explained.

JUST FOR STARTERS

HOW BRIGHT IS IT?

Starlight has a total illumination of 0.00022 Lux, whereas light scattered from small particles in the air (airglow) is about 0.002 Lux. For comparison, your average home video camera might be able to see light levels as low as 2 Lux, and for high sensitivity security cameras, as low as 0.1 Lux.

If you wish to calibrate your camera's photographic light meter, the brightness (B) of the Sun in Lux is given by:

$$\log_{10}(B) = 3.74 + 3.97*H - 4.07*H*H + 1.47*H*H*H$$

where H is the altitude in degrees, divided by 90. It is accurate to 0.02 Lux if the Sun is between 20 and 90 degrees above the horizon.

For the full Moon, the equivalent expression for its brightness in Lux is:

$$\log_{10}(B) = -1.95 + 4.06*H - 4.24*H*H + 1.56*H*H*H$$

Peter Skilton

IN THE NEWS

HERE COMES EROS - THERE GOES EROS !

On December 23, the Near Earth Asteroid Rendezvous spacecraft *(NEAR)* made a flyby of minor planet Eros, but not without a hitch developing. For 27 critical hours on its final approach on December 20, mission operations personnel lost contact with the craft after they requested it burn its engines to insert *NEAR* into orbit around Eros. This planned engine burn did not occur and so it will not now enter the asteroid's orbit in January this year as originally hoped. The fault is thought to be due to a computer software error. However, onboard fail-safe mechanisms were successfully initiated by the spacecraft itself, and it eventually regained contact with Earth, enabling the instruments at least to be trained on the approaching target rock.

Time sequence of negative images of asteroid Eros as the NEAR spacecraft approached from upper left to lower right. Notice how the rocky body is clearly tumbling as time progresses.

These provided valuable science data, including over a thousand multicolour images, spectral data, and magnetic field measurements, and these are now being beamed back to Earth from the on-board recorder. They should help determine the size, shape, morphology, rotational state, and colour properties of Eros, and to search for any small moons, as well as determining what minerals are present (possibly for future mining). Doppler navigation data and real-time telemetry from *NEAR* will help determine the mass and density of the asteroid. Camera imaging showed that Eros rotated about half a turn in two hours, with the best photos resolving features down to 500 metres.

Due to the missed critical firing of the engines in December, *NEAR* zipped past Eros at a distance of 4,100 kilometres, and the two bodies are now travelling in separate orbits around the Sun, however, their trajectories should enable a rendezvous to occur in mid-February 2000, thereby providing a second opportunity to put the spacecraft into orbit around this asteroid, from where it will undertake a year long study.

Eros is *NEAR's* second asteroid encountered. On June 27, 1997, *NEAR* flew by the main-belt asteroid Mathilde at a range of 1,212 kilometres.

LEONIDS LOCALLY DISAPPOINTING

In a media frenzy, whipped up by somewhat optimistic or naive predictions from some amateurs of thousands of meteors likely per hour on the 3rd Wednesday morning of last November, a good fraction of Victoria's population arose about 2am to stand in cold and generally cloudy conditions to try and see the Leonids; remnants of sand-sized particles left from the tail of comet Temple-Tuttle. Most were severely disappointed, only able to see about a half dozen brief flashes of light and then only if they persisted until dawn. Highest numbers from other members within Victoria were around 2-3 dozen Leonids, with many sporadics also visible. Some luckier individuals witnessed up to two dozen events, but none could be described as spectacular. David Girling reports a good number of meteors were seen in Woomera, with some producing smoke trains that were visible for up to an hour afterwards in the jet stream, affording good photographic fodder. Contacts from other organisations report that Sharron & Chris Fletcher, using their alt-azimuth mounted Harley Davidson, were able to experience similar levels of activity. Reports from Western Australia ranged from normal levels of activity around Geraldton, to higher levels from further North. Better showings were actually on the Tuesday morning instead. In no case would "storm levels" be an appropriate description. Initial reports from the Atlantic of up to 2,000 meteors per hour turned out to be a reporter error, where results from several observers were actually added together to get this number, taking no account of events in common between observers. The true number was less than 260 per hour. In fact, 1999 is the predicted year for maximum activity for the Leonids, so mark it in your diary now.

EARTH-LIKE PLANETS FOUND

The idea of being able to detect Earth-like planets around other solar systems was believed to be decades away, however, astronomers have now tentatively reported achieving this with a powerful new observing technique.

Of the more than a dozen planets so far discovered around other stars, all have relied on seeing wobbles or other periodicities in the motion of their parent star over time. These have shown the presence of planets of a size comparable to Jupiter, i.e. very large. Ideally, the search for life elsewhere would seem to require the presence of small rocky planets, much like Earth.

Since 1994, an international team has monitored a binary star system 60 light years away called *CM Draconis,* in the Northern skies. Using a network of 10 telescopes around the globe, they looked for slight dimming of the light from the system due to transits of small planets across the face of the star. Several such dips in light level have been detected and instrumental and atmosphere effects have been ruled out. The results show the detected planets are in the range of 1½ to 3 times the size of our Earth. Final confirmation awaits a repeat performance as any planets will periodically cause such a dip once each orbit around the star.

POSTERITY IN A BOTTLE

Don't want to go to Mars? How about achieving immortality further afield then? A Texas company is offering for $US70 to send a strand of your hair or a piece of skin into space. This is the same company that sent a piece of Star Trek's Gene Roddenberry into space not long ago. Launch on an Ariane 5 rocket is planned for 2001, and will carry about 10,000 samples onboard. The rocket will use Jupiter's gravity to sling shot it out of the Solar System. One guy addressed his sample as being from Ted, living on the third planet from the Sun, and giving his street address. There is always the chance that it might be picked up in the distant future, and an entire colony cloned from it. Quite a frightening thought really.

ZEISS BIRTHDAY

It is now just over 75 years since the Jena-based company Carl Zeiss introduced an instrument to bring a reliable and always cloudless view of the sky to its users. Their initial planetarium projector was released in Munich on 21 Oct 1923 at the Deutsches Museum, which then became the first public planetarium in the world. The basic design has not really changed much to this day.

STARDUST FOR LAUNCH

Set for launch from Cape Canaveral in Florida on Feb 6, the *Stardust* spacecraft will be the first US mission dedicated solely to a comet and will return the first sample of extraterrestrial material other than Moon rocks.

The primary goal of this mission is to collect comet dust and related measurements during a planned close encounter with the icy comet Wild 2 (actually pronounced "Vilt-2") in January 2004. Additionally, the *Stardust* spacecraft will bring back samples of interstellar dust particles recently discovered streaming into our Solar System. Ground-based laboratory analysis of these samples after their return in January 2006 should yield insights into the evolution of the Sun and planets, and possibly into the origin of life itself.

FEATURE

THE GREAT BARRIER REEF OBSERVATORY

Ray Johnston of the Great Barrier Reef Observatory on Hamilton Island became aware of our society after meeting Peter & Vivienne Lowe at the last NACAA. He lived in Mt.Martha for 25 years and knows *The Briars* well, and has kindly shared his experience in viewing under tropical conditions. He writes:

"We operate a small observatory perched on a ridge overlooking the Coral Sea, and we are blessed with dark skies. We have sea horizons to the East and West, which make for some spectacular moonrises and sunsets, though these can be tempered by a wind which starts somewhere the other side of Tonga. Our dome has survived three cyclones of around 180 kph, and yet was almost completely demolished by a runaway golf buggy - the island's main form of transport.

Operating as a complementary facility for guests, we have three scopes - an

80mm refractor, a 200mm Newtonian mounted in the dome, and a 300mm LX200 Schmidt Cassegrain. We volunteer our time and would accommodate among 2,000 to 2,500 visitors during our season which, because of the weather, runs from April to December. We are required to store our telescopes in controlled atmospheric conditions during the monsoon, otherwise, with the humidity, moulds and fungi have a field day on our optical surfaces. This coming wet season, we will be experimenting with storage by placing the Schmidt Cassegrain and the mirror from the Newtonian into those popularly advertised vacuum clothing bags.

Opening the observatory each evening requires a slightly different technique from that in the temperate zone. Firstly, we must check for snakes, and we have actually had two intruders. One was discovered by my good lady who exited the dome at a speed close to that of escape velocity, and later, a second who had entwined itself inextricably around the equatorial mount, and it was a dickens of a job to remove it. They were just harmless tree snakes, but we tell people they were taipans - makes us sound braver!

Next we must check the dome tracks for tree frogs, who have a bad habit of kipping down in the wheel recess, and it is most distressing to swing the dome and hear a horrible squishing sound. Then there are the geckos, who can always seem to find their way into the tube of the Newtonian and leave sticky little footprints all over the primary. Above, a multitude of flying foxes circle, which makes working near the zenith very hazardous, but to date our optics remain pristine. We put up with all this for, in mid-winter, whilst you conduct your viewing all rugged up in a parka and beanie and clutching hot cocoa, we are in shirt sleeves sipping on a lightly chilled chardonnay.

We have a mix of nationalities coming to see our dark skies, and the evening viewing is usually conducted in a number of broken languages, accompanied by much arm waving and pointing. This leads to a lot of laughs, and we don't get too serious about things. We just enjoy the expressions of delight from people seeing the beauty of the night skies for the first time. We may not be at the cutting edge of the science, but the heart of astronomy is alive and well up here. If any of your members are heading this way, we would be delighted to meet them, and show them our skies. We can even point out Iridium's Plough! Ask anybody on the island where to find us - it's not that big, and we do have a certain notoriety. Good viewing!"

Ray Johnston, Director

Ed: Ray can be contacted at PO Box 40, Hamilton Island, QLD, 4803, phoned on 07 4946 8686 or emailed at star@whitsunday.net.au.

UPGRADING YOUR BINOCULARS

Most of the more expensive binoculars come with winged rubber eyeguards. These block out light coming in from the side of both eyes. The image you see is that of the field of view, surrounded by pitch black. The good news is that these eyeguards can be bought separately. After trialing one pair, I've now fitted them to most of my binoculars. As far as I am concerned, they are must have items, particularly if street lights or neighbour's lights are a problem. I also think the eyeguards make the binocular view of the sky more pleasing at a dark sky site.

These eyeguards are simple to install. Firstly, one focuses the binoculars (i.e. get each eyepiece to give a good image simultaneously). Secondly, ensuring that the focus positions are not changed, one gently pries off the old eyeguards, and then stretches on the new ones. However, more than likely, you will be the only person suited to those eyeguard positions. Any other person using your binoculars would have to flip back the right eyeguard wing, and rotate the right eyepiece.

The eyeguards can be purchased from *the Telescope and Binocular Centre* in California, whose ads appear in every issue of *Sky and Telescope* and of *Astronomy* magazines. The details are: *Item No - 7412, Set of 3, Contoured Eyeguards, US$6.95 for each set of three.*

Postage can be expensive through this store, at around US$20 for their cheapest carrier, APP. Thus, you would probably be wanting to buy something else, or be ordering a lot of eyeguards to make it economical to buy the eyeguards from this outlet. Let's hope someone starts retailing these locally.

Renato Alessio

EYEGUARDS FOR YOUR EYEPIECES

If some of your eyepieces do not have eyeguards, or have inadequate eyeguards, then their performance can be enhanced through the purchase of appropriate eyeguards. The improvement one notices may just be aesthetically pleasing, namely having an image surrounded by pitch blackness. On the other hand, there may be physical improvement of the image, from either stopping stray light entering into the eyepiece at odd angles, or from enabling one's eye pupil to expand and to see the available image.

There are two types of eyeguards available. The first type is the winged rubber eyeguard, like those seen on Ultima and Ultrascopic eyepieces. These only block off light from the side of your eye, and rely on your nose to block off light from the other side. As such, these eyeguards work best for the higher power eyepieces, which have short eye relief (n.b. eye relief is the distance your eye's pupil is from the eyepiece glass to see the image). They also work well on medium power wide angle eyepieces, which also have fairly short eye relief. I've fitted the winged eyeguards to my 5mm to 20mm standard sized eyepieces.

The winged eyeguards are handy because they can easily be flicked back when you don't need them. Such times occur frequently when you are contorting your body to see if an object is in the eyepiece yet. The eyeguards can be purchased from the Telescope and Binocular Centre in California, whose ads appear in every issue of Sky and Telescope and of Astronomy magazines. The details are: *Item No - 7412, Set of 3, Contoured Eyeguards, US$6.95 for each set of three.*

The other type of eyeguard is the longer type, whose eye end looks a bit bellows-like, and which goes entirely round the eyepiece. These need a bit of trial and error when fitting them, to set them at exactly the right height. If the eyeguard protrudes too much, then you

wind up shaking the scope as you press your eye against the eyeguard to see the image. If they do not protrude far enough, then the pitch black effect around the image is missing. While these eyeguards work well on all eyepieces, I find them ideal for the longer eye relief 26mm to 40mm eyepieces. They do stretch to fit on the wide 32mm and 40mm 1.25 inch eyepieces.

If you want to use this type of eyeguard on short eye relief eyepieces, you can cut it into two to make two adequate eyeguards for those eyepieces. This type of eyeguard can be purchased locally from the *Binocular and Telescope Shop* in Sydney, or from *the Telescope and Binocular Centre* in California.

Renato Alessio

ASTRONOMY 1999 COPIES STILL AVAILABLE

This year's edition of the highly popular annual sky almanac *Astronomy 1999* is still available from the editor for $16 to members, or $18 to non-members. This is the best Australian publication produced each year on what is expected in the skies during the year. There will be ample spare copies available at meetings. Remember that all money made on the sale of these books goes to the library for purchase of books and videos, so please don't buy these elsewhere - support your Society instead.

FOR SALE

Bill Newton has an 8 inch diameter equatorially mounted Newtonian telescope for sale, complete with a 10x30 finder scope. Enquiries to Bill can be made by phoning 597 93228.

NEW ASTRONOMY COURSE AVAILABLE

If you would like to do a tertiary level Bachelor of Astronomy degree, Graduate Diploma or Masters degree by correspondence, you might like to consider one on offer from the University of Western Sydney. You do not need to have had formal training in astronomy before to enrol. It is the first year this option has been offered, and the course is spread over 6 semesters. For more information, either see the editor, check out the internet at http://www.nepean.uws .edu.au/astronomy/, or phone 02 9678 7524.

TRINKET BOX FOUND

In a recent edition (Vol VII, No.5) a member asked if anyone knew of an asterism of 5 stars called the *Trinket box* which is shaped like a house with a triangular roof, and which was thought to be smaller than the Southern Cross. After a good deal of searching it was discovered that the *Trinket Box*, which is more commonly called *The House*, is apparently a group of stars which Northern hemisphere school children learn about in their astronomy school curricula. Southern observers may not have heard of it. It is composed of the stars gamma, beta, alpha, delta and iota Cephei. It is in fact somewhat larger than the Southern Cross, but does indeed look just like a house.

ANOTHER WAY BACK?

The space shuttle returning to Earth plunges into Earth's atmosphere at high speed and as a result is subject to intense frictional heat from its passage through the atmosphere. Why doesn't it just use an opposite thrusting rocket to slow down in orbit, whilst remaining aloft, and gently drop down to land in a more controlled manner?

Well, this option is quite possible ... fire large retrorockets in orbit to slow the forward momentum of the spacecraft down sufficiently and it would indeed be able to drop from the sky. However, this would require a large amount of fuel to achieve, comparable to that used to lift the craft from the launch pad in the first place.

This fuel to be used for braking would need to be carried into space (requiring more lift-off fuel). In addition, large braking rocket engines would be needed which would add to the weight of the spacecraft. The larger mass of spacecraft would make it harder to manoeuvre in orbit and require more fuel to make course adjustments. It has been calculated that the fuel needed for this gentler method of re-entry is about 3-4 times that of the traditional aero-braking method. However, it would eliminate the need for heat shields.

ON THE LIGHTER SIDE...

Sherlock Holmes and Dr.Watson went on a camping trip. After a good meal and a bottle of wine they lay down for the night and went to sleep.

Some hours later, Holmes awoke and nudged his faithful friend, "Watson, look up at the sky and tell me what you see."

Watson replied, "I see millions and millions of stars."

"What does that tell you?"

Watson pondered for a minute.....

Astronomically - It tells me that there are millions of galaxies and potentially billions of planets.
Astrologically - I observe that Saturn is in Leo.
Horologically - I deduce that the time is approximately a quarter past three.
Theologically - I can see that God is all powerful and that we are small and insignificant.
Meteorologically - I suspect that we will have a beautiful day tomorrow.

But what does it tell *you*, Holmes old chap?"

Holmes was silent for a minute ..... then spoke.

"Watson, you dunce, some mongrel has stolen our tent".

Renato Alessio

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. Soc. Tasmania (Tas) - Several ghostly, glowing aurorae have been reported. Planning to mount an expedition to Darwin Crater, an ancient impact site on Tasmania's West coast. Article on laser remote sensing of other planets' atmospheres, including a full background to the physics involved. A history of past Leonid meteor showers is given. Report from local members who observed the 1998 partial solar eclipse with a variety of instruments.

Latrobe Valley Astron. Soc. (Vic)

- Ian Porter travelled to the Latrobe Valley to speak on Near Earth Objects. Membership is 41, with 1998 providing much progress for the society in many areas. Article on the Andromeda galaxy, M31, and its companions M32 and M110, and a brief review of some astronomy internet sites.

Astron. Soc. South West (WA) - Internet site given for making 1/45th scale models of the Galileo and Cassini spacecraft http://www.nasa.gov /galileo/. They have a Messier hunt effort with issued badges. How to find the *giant emu* in the Milky Way, a West Australian aboriginal view of a dark nebula. A telescope has been donated to them by the Astronomical Society of WA, which will be used as a member loan telescope. A local school donated astronomy slides to the them. Work continues on the Kebble Heights Observatory, with the ablution block now up and running, and landscaping progressing with member-grown plants. Observatory viewing nights are held twice a month.

Astron. Assoc. Queensland (Qld) - Strange lights seen in the sky turn out to be a science teacher demonstrating hot air balloons. Meetings are now held on Saturdays. Ran a TAFE course of 7 lessons over 7 weeks. History of exceptionally long fireball processions and slow fireballs observed around the world in the last century or two. Some members appeared on the ABC's Science programme Quantum on the subject of Near Earth Asteroids. Their clubhouse was attacked with graffiti recently. Article on the *Hyginus Rille* on the Moon and on exactly what does happen to the dust from comet tails.

Astron. Soc. South Australia (SA) - Membership is 450 now, and fees have been increased. Many astronomy updates from the internet are reproduced. Reports on the 22/8/98 annular eclipse as observed from Vanuatu. Meeting venues have now changed to be in the University of Adelaide's grounds, as almost 100 attend these meetings, and the costs of the previous venue became prohibitive. A history of the society is shared.

Astron. Soc. New South Wales (NSW) - Article on very large professional telescopes. Seedlings have been planted at their Wiruna site, and a similar effort is occurring at their Crago site, though there have been related problems with their local Council and Department of Lands & Water Conservation on their developments in a bush location, but all is now resolved. A public night at a local hall drew 350 people for the 10 telescopes present. The Neat Southern Planetaries series of articles is now available at http://blackskies.com.au. Much ado about the Leonids meteor shower, but summed up by the comment "*any prediction as to what the Leonids will do in a given year cannot be much more than an intelligent guess*". Series continues on what can be observed on the Sun. Report from a member who visited in his family many of Australia's well-known craters, as well as Woomera. Report given of the 22/8/98 solar eclipse from Crago. Article on the history of Greek letter designations of southern stars. The society is now paying to advertise their activities and services in *Sky and Space* magazine. A rundown is given of lunar eclipses for the next decade, and a report tabled from a member who did an astronomy tour in the A.C.T. Their Astrocard service now has 200 subscribers. The society has discussed reasons for lower meeting attendances this year. Their Wiruna site is visited by 25 people per month typically, while their Crago site is visited by about 10 on public viewing nights. A solar panel has been installed to charge batteries, and electrical wiring is underway in their buildings. There is some concern that their lease may be handed to the National Parks & Wildlife Service, which may have ramifications for site access. Membership is now 271. A computer has been bought for their editor's use, and another for maintaining their web site.

Astron. Soc. Victoria (Vic) - Series started on double stars. Notes on M72 and M73 in Aquarius, and auroral activity has been reported by members at Portland. The Royal Botanic Gardens' plans for the Old Melbourne Observatory are outlined and hopefully the facilities will re-open to the public in the near future. A media-advertised field trip was run at their Heathcote viewing site for the Leonids meteor shower. Review given of Starry Night Deluxe software for Macintosh or IBM computers, which can control an LX200 Meade scope if you have one. They are still unable to settle at a single meeting venue due to room availability and asking prices.

Sutherland Astron. Soc. (NSW) - Stage 3 of their Green Point Observatory is completed and features a 15cm refractor on an Anssen mount. Announcement of the discovery of comet *Williams* by one of their variable star observers, and the details of this accidental discovery. Detailed report given on the Queensland Astrofest at Linville by members who attended. Their fees have just increased. Article on bandpass filters and deciding what to view. Membership is 136 with an annual loss of 24.

FINAL PRONOUNCEMENT - CAELUM

The unremarkable constellation of *Caelum*, pronounced *"See-lum"* is located in the Southern skies. It is bordered by the constellations of Columba, Dorado, Eridanus, Horologium, Lepus and Pictor.

Caelum is meant to represent a chisel that is used by a sculptor, and was invented by the astronomer Nicolas Louis de Lacaille during his mappings of the Southern skies at the Cape of Good Hope in 1751 to 1752 where he measured the positions of over ten thousand stars. He actually invented 14 constellations during this stay, and Caelum is one of them. Lacaille's original name was *Caela Sculptoris*, though only *Caelum* is used today.

The chisel shape is formed from the stars delta, alpha, beta and gamma Caeli. The constellation contains no asterisms of note and no particular celestial objects of note, having only four faint naked eye stars. It covers about 0.3% of the sky and is a small constellation, ranking 81st in size.

For a while it was called *Scalptorium* instead of *Caelum* (these both meaning Chisel), and in the 19th century the American astronomer Elijah Burritt tried to rename it *Praxiteles* after a Greek sculptor from the 4th century BC in an attempt to bring Lacaille's naming back into line with classical norms.

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.

Left - ASF BBQ at Ballam Park, on the 21st February 1999

Photo - *By John Cleverdon*

☐ If this box is ticked then membership needs immediate renewing and this may be your last edition, so please contact the Treasurer. 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.

Can you tell the difference between a sunrise and a sunset in a photograph of a landscape?

At sunset the air is warm and there is more dust, water aerosols, pollution and insects in the air than at sunrise. The particles in the air arise from smog and dust generated from human activities during the day, and in country regions the vegetation and plant life produce fragrant haze type aerosols that waft into the air and shift the colour of scattered light slightly to the red end of the spectrum. These have an effect on the perceived colour of the visible sunlight at the end of the day. However, the main noticeable difference between the light of dawn and that of dusk is the overall distribution of the light across the sky. Artists and photographers are well aware of this. For example, a scene of a landscape at sunrise shows definite contrast, with shadows much bluer, slightly darker and sharper than at sunset. The Eastern sky will be quite cyan at dawn. However, at the time of sunset, the scene is "warmer", redder and softer because light from the West is originating from a broader area of sky where the light is scattering diffusely from the particles ejected into the atmosphere during the day. Therefore there is a very slight difference between the appearance of sunrise and sunset, however, other weather factors would have to be equal when trying to compare two such scenes from the same location.