



SCORPIUS



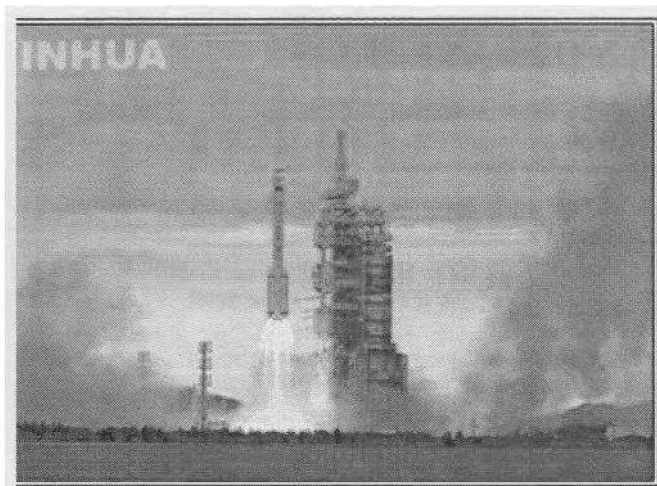
The Journal of the
Mornington Peninsula Astronomical Society Inc.

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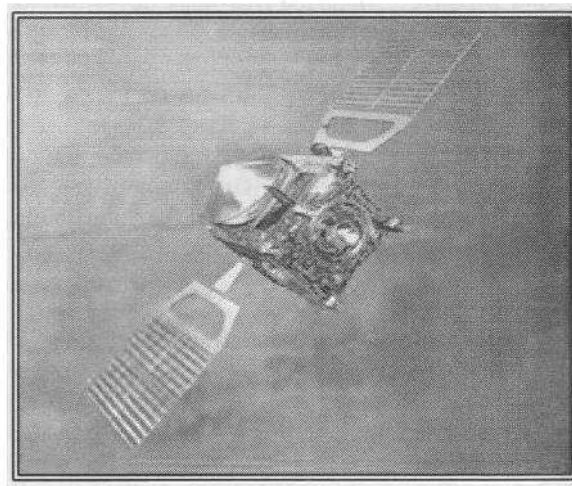
Volume XIV, No. 6 (November 2005)

The Mornington Peninsula Astronomical Society (formerly 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 and observing nights for schools and community groups exclusively in the Peninsula and surrounding regions to Moorabbin, Dandenong & Tooradin.

China reaches for the Stars



Venus Express launches for Venus



Plus :

New Moons for Pluto
Amateur observer discovers a double
Night skies for November and December

November / December field nights and events

4th November – Public viewing night at Briars
16th November – Annual General Meeting

2nd December - Public viewing night at Briars
10th December – Christmas BBQ at Briars

Wishing everyone a great Christmas and all the best in the New Year.





Society News

General Meetings

September

Thirty five people attended the September General Meeting which was chaired by Peter Lowe. Peter gave a quick run down on how the NACAA preparations were going and there were already some papers for the NACAA and bookings made. Also the MPAS has its name on a disc which is onboard the New Horizons mission to Pluto.

Our guest speakers were John Robinson and Arthur Coombes from the ASV, who spoke on the "Lunar 100". A list of a hundred of the most interesting objects to be viewed on the moon, that was first published in 'Sky & Telescope' magazine in 2004 and compiled by Charles Wood. John first went on to describe some lunar facts, lunar geology and surface features. John then described how he and Arthur had managed to photograph all one hundred objects on the list, most by using a Phillips Toucan Pro Web Camera. The webcam would take 5 shots a second for sixty seconds of an object, then the best frames would be chosen and stacked and processed to produce a really good image of the object. Arthur showed some final images of the objects that the pair had captured.

The tea break was followed by Bob Heale and 'Sky for the Month' and then the meeting was closed.

October

Peter Lowe chaired the October meeting, which was held on a pleasantly warm Spring night that eventually produced a few drops of rain. After opening the meeting, the forty-one people present watched Bob do his 'Sky for the Month' followed by Ian Sullivan giving a run down on the closest approach of Mars, which will be its brightest until 2018. Ian then went on to talk about an analemma of the Sun. After the raffle the meeting broke for tea.

After the break, Peter Lowe did a talk he called "From Astrology to Astronomy – a history of observing the skies". As humans changed from nomadic hunter-gatherers to stationary farmers, they began to notice how the night skies changed over time and that the sun didn't rise in the spot each day. It was about this time, 8,000 years ago, that circular structures began to appear, such as Stonehenge, that marked events in the sky. Time back then was not mark in seconds and minutes but in terms of when to sow and when to store food. People became aware of objects moving in the sky and affecting their environment.

Astrology developed as people felt their environments were also affecting them. The first Astrological items developed around 2000 BC. Mundane Astrology developed to give a person general advise while Horary astrology was used to seek the answer to a more specific question. Natal Astrology was based on the birthdate of a person for a personal future reading.

The Babylonians created the calender as dates were soon required to plan more accurate plant cropping. It was developed into a period of 360 days consisting of 12 months of 30 days with 6 days of festivity at the end of a year. The Egyptians also required specific dates, both for agricultural reasons and religious ceremonial reasons. They noticed certain stars rose with the Sun (helical rising) at the same time of year, and these events signalled certain events. For example, the helical rising of Sirius signified the Nile flooding was about to begin and so it was time to prepare the fields. Mankind gradually became more aware of the world and the transition from hominid to human lead to an inbuilt awareness of time.

The meeting closed after Peter's talk.

Bowling Night

The bowling night went ahead on Sunday 25th September at the AMF Karingal on Cranbourne Road. About ten people turned up (including myself) with seven having a go at the bowling. Peter Lowe, John Cleverdon, Kevin Rossiter and Marty Rudd were bowling on one lane and Heinz Rummel, Gerry Holt and Stephen Cleverdon bowling on the next lane. Over the two games that were played, there were pins and bowling balls flying in all directions; there were strikes, splits and gutter balls aplenty and in the end one thing became apparent, you either bettered your first game by about twenty points or went worse by about twenty points. Best improver was John Cleverdon who almost doubled his score from round one to round two to 91 points with an overall total of 144. The next four were neck and neck with Heinz and Kevin both with 171, Peter with 173 and Gerry with 174. The top guns on the day ended up being Stephen with 224 and Marty with a grand total of 259. After the bowling, some of the group went to one of the local restaurants for dinner.

Photo - By John Cleverdon



Astronomy 2006

It's that time of year again when the excellent annual Australian publication, **Astronomy 2006**, is available for purchase, and this time its in colour. The book shows what's in the night sky throughout 2006, and is aimed at all levels of amateur astronomer, from newcomer to expert.

Pricing is \$24 to the public, though society members can get it at the discounted rate of \$22.

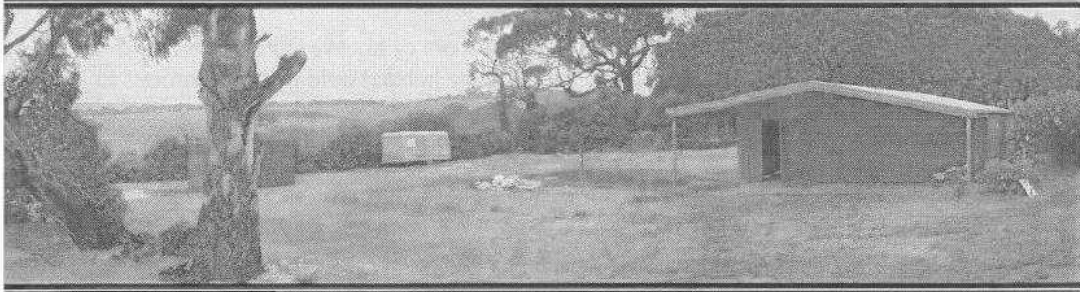
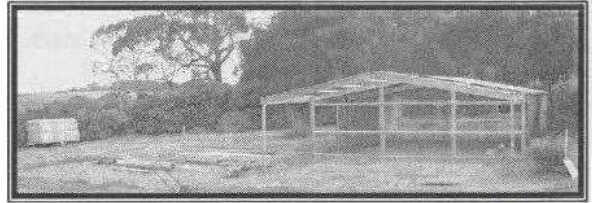
Orders and payments can be made in person at any MPAS gathering, by cheque to P.O. Box 596, Frankston 3199, or by phone by leaving a message on 0419 253 252.

These sky almanacs will be available at any society gathering.

Hurry. The society only orders in a specific quantity each year, and it's first come, first served.

The MPAS All Weather Facility

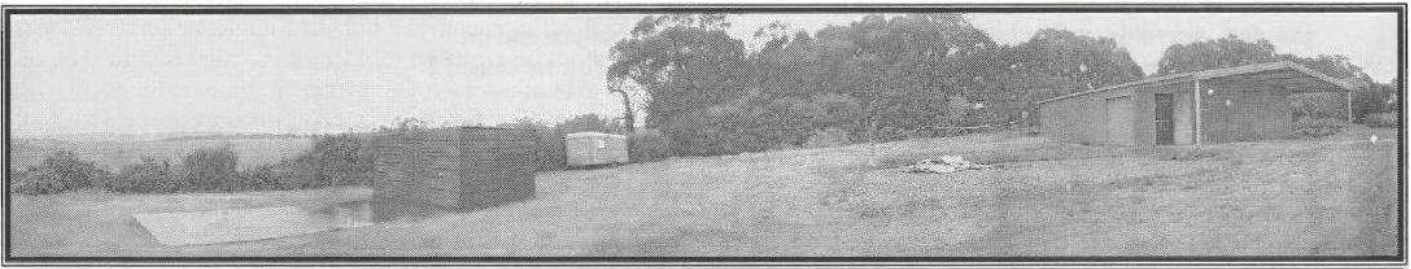
After a long period of slow progress, work on the All Weather Facility (AWF) has come ahead in leaps and bounds in the last month. After a couple of working bee's were organised where drainage trenches were dug, site clearing done and fourteen square metres of crushed rock delivered and spread, the level site was ready for the construction of the AWF. On Friday 4th November the team of three shed builders arrived and began erecting the AWF and by Saturday lunchtime it was complete.



A 2.5 metre roller door is located on the eastern side that leads out onto the observing slab closest to the AWF so as to allow for easy access to the observation area; and it is big enough to allow for the larger MPAS telescopes to be moved out of the AWF and onto the slab as well. A personal access door is located

at the northern end of the AWF under the garaport. This is the main entrance to the facility.

A couple of working bees are now required to help tidy the site up, so as to prepare for the pouring of the concrete. Drainage trenches around the AWF need to be completed and excess dirt that has been dug during the construction of the AWF needs to be cleared and spread. Some gardening (whipper-snipping and shrub trimming) is also required. These working bees will hopefully be organised some time between now and Christmas. Dates will be posted on E-Scorpius or if you do not have access to E-Scorpius and are interested in attending an upcoming working bee then call Marty Rudd.



Committee Elections

Have you considered joining the society committee?

The MPAS operates because we have a committee of management responsible for the general operation of the society. We're always on the look out for interested persons who can contribute to the society's success.

MPAS committee is structured under the constitution and has a number of specific officer positions together with a number of general committee members. Each committee member takes responsibility for handling some aspect of the society's business. The President and Vice President are responsible for the general planning and operation of the Society's business and represent the society to the members, other societies and the general public. The Secretary is the formal contact point of all formal society business and maintains the records of the society. The Treasurer monitors the society financial status and handles the various money transactions required. Other committee members provide logistical support for the various society activities & development programs. These include :

- Developing the forward society calendar of activities including speakers for the general meetings and special events both social and astronomical.
- The building sub-committee is responsible for the construction of the Briars shed.
- Handling and planning school viewing nights
- Preparing the "What's On" handouts for members.
- Publishing the Scorpius and managing the E-Scorpius internet chat room.
- Maintaining the publicity and public notices we require to keep the general public apprised of our activities.
- Developing and creating the library.

Without this group of dedicated supporters the society would definitely slow down.

If you feel you would like to get involved in the society business or have a particular skill you think would be useful to the society as a whole please give some thought to becoming a committee member.

The Annual General Meeting will be held in November 2005. In this edition of Scorpius, there is a 'Committee Election Form' that can be used for the submission of nominations for the next committee. Nominations can also be submitted electronically to the Secretary, Don Leggett, by stating which position on committee you would like to nominate for.

HOW THE MILKY WAY WAS MADE

By Jim R. Lawrence (The Old Codger)

DAD : Gee, it's so dark and there's so many stars. Isn't the Milky Way so bright ?

SON : Dad, how come there's a Milky Way ?

DAD : Well son, it's kinda like a lot of gas and many stars.

SON : But gas is not milk is it ?

DAD : Well, just a story really.

SON : Is this a real story or one of your pretend ones ?

DAD : Of course it's real, but different people have different stories to explain it.

SON : Whadya mean Dad ? Could you tell me ?

DAD : Well OK! I think it goes something like this. Firstly, when lots of people slept outdoors or in caves and some sailed in sailing ships, they always told stories about the stars. Traditional tales grew and were handed onto new generations to be retold. By joining up stars you can make u things like they did – maybe a ship, a horse or a warrior.

SON : I've heard that Aborigines have stories about the stars in their Dreamtime.

DAD : Exactly! Right on! You've got it. I suppose modern people would see a mobile phone, a motor bike or a guitar. It's always been about how you live at the time, that stories are made up and passed on.

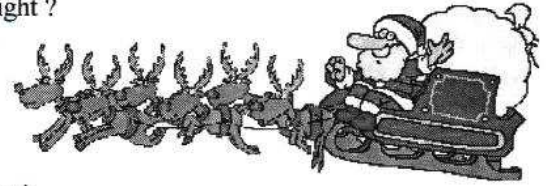
SON : You know, I'm sure I see my bike (he points). Do you see it ?

DAD : I think so. When you look up and see millions and millions of stars you are really seeing our own galaxy. The one we live in, it's called the Milky Way. It looks like a huge disc – a Frisbee or plated shaped. But it's also got some sweeping, curved tails. It all revolves. I've read it takes our Sun 220 million years to do one revolution or go round once. So, what do you think of that son ?

SON : Well, so far it's OK, but how did the Milky Way get there ?

DAD : I don't know all the answers, but it seems a lot of people are still trying to find out how things work. But it appears a large amount of gases bunched up many years ago and somehow ignited like a bomb. The gases spread out really fast, and very hot. Some gas turned into dust. The little bits joined together, bumped into others and formed or Earth, Sun and all the other planets. They pushed and pulled and circled each other and it's still happening. So the Milky Way is gas, dust, asteroids, stars, planets, ice, reflected light and of course you and me.

SON : Yeah, that seems to make sense. Do you think Mum will like the fish we caught ?

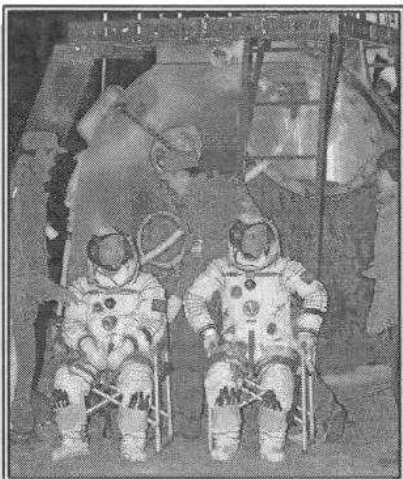


They packed up, threw left over bait into the water, picked up their rods & esky & made their way slowly along the pier towards the car. Maybe the magic moment between father & on will happen again some time in the future. The Moon just smiled.

Astro News

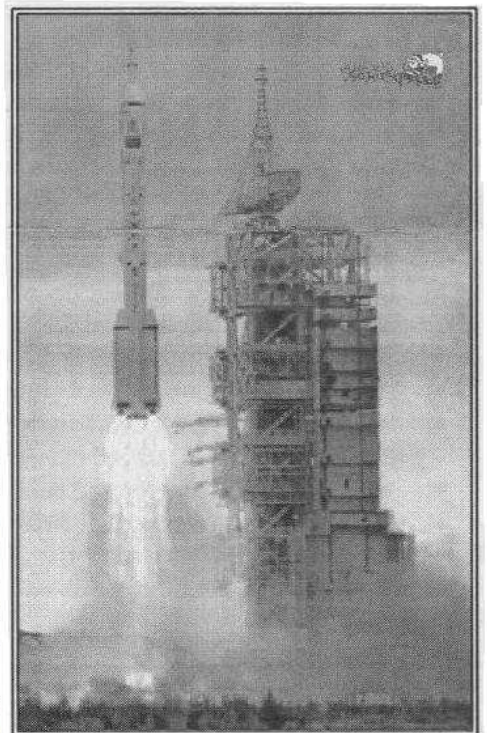
China launches into space

On Wednesday, October 12th, two years after launching its first manned space flight, China launched its second. A Long March 2F booster, improved to incorporate safety enhancements, lifted off from the Jiuquan Satellite Launch Center in northwestern China and placed the Shenzhou 6 spacecraft into low Earth orbit. The Long March 2F is a two-stage rocket equipped with four liquid-fueled strap-on boosters. An escape tower attached to the Shenzhou spacecraft topped off the launch vehicle. On board the spacecraft were two astronauts, Fei Junlong and Nie Haisheng, whose identities were not officially confirmed until a few hours before the launch. Shenzhou 6 remained in orbit for nearly five days, with Fei and Nie performing a number of experiments during the flight.



The return capsule landed safely back to Earth the following Sunday in the grasslands of Inner Mongolia. The capsule is reported to have landed by parachute only 1km (0.6 miles) from its target. China's second manned mission into space makes it only the third country to do so, following the United States and Russia. The astronauts underwent health checks upon landing and are both feeling well, enjoying their first meal back on Earth of noodles, tea and chocolate.

Beijing has attached great importance to its space programme, viewing it as a source of national pride and international prestige. China hopes to set up a space station within five years and eventually it wants to put an astronaut on the Moon.

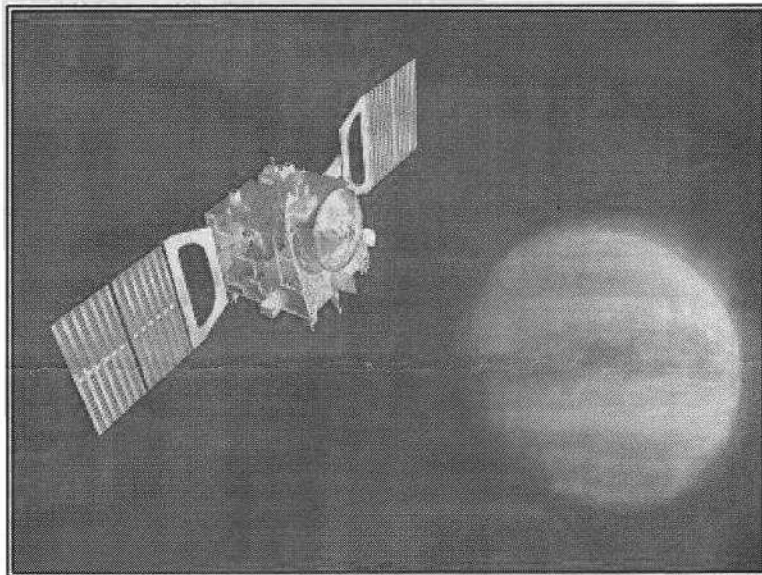


Europe's 'Venus Express' launches for Earth's sister planet

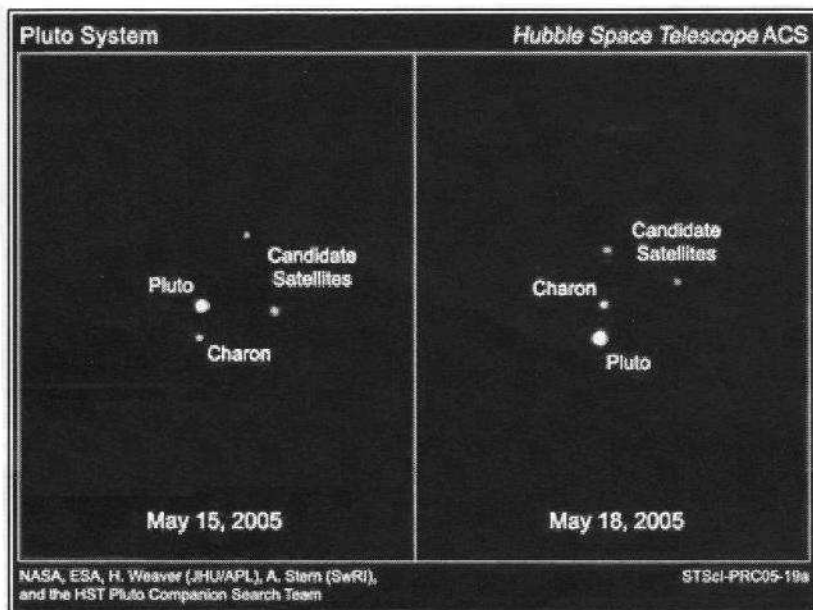
The European Space Agencies latest probe, the 'Venus Express' was recently launched upon a Russian-built Soyuz rocket into space, lifting off from Baikonur Cosmodrome in Kazakhstan on a 162-day trip to the second planet from the Sun. Venus Express had successfully fired the engine of its Fregat upper stage for a final time, sending the probe on a Venus-bound course. The probe later unfurled its solar arrays, ESA officials said. The \$260 million (220 million Euro) Venus Express probe is the ESA's fastest spacecraft to develop to date, taking less than four years to move from the concept phase to launch, and its first aimed at Venus. While several probes have swung past the planet on their way to other bodies in the Solar System, the ESA's Venus Express is the first dedicated probe to investigate the cloudy world since NASA's Magellan orbiter burned up in the planet's atmosphere in 1994.

Venus has such an alien environment when compared to the Earth's, yet it is almost the same size, the same materials basically and almost the same gravity but somewhere during the planet's life, Earth's neighbour clouded over with a thick atmosphere rich in carbon dioxide, and a surface temperature of averaging about 869 degrees Fahrenheit (465 degree Celsius). It is believed that Venus suffers from a greenhouse effect gone out of control.

The 2,733-pound (1240-kilogram) probe carries seven high fidelity instruments which will make a detailed study of the planet's atmosphere as well as search for signs of volcanic activity and surface features. ESA officials expect Venus Express to enter orbit around its target planet on April 11 of next year. After a series of passes to adjust its orbit, the probe should reach its final flight configuration by about May 7.



New Moons for Pluto ?



Pluto was discovered in 1930 by Clyde Tombaugh of the Lowell Observatory. Pluto's moon, Charon, was discovered in 1978 by James W. Christy. Now a team of scientists using the Hubble Space Telescope, and co-lead by Hal Weaver of the Johns Hopkins Applied Physics Laboratory, have discovered that Pluto may not only have one moon but three. If their discovery proves true, Pluto will be the first Kuiper Belt Object found to have multiple moons. The candidate moons have been provisionally named S/2005 P1 and S/2005 P2, and are approximately 44,000 km (27,000 miles) away from Pluto.

The Hubble telescope's Advanced Camera for Surveys observed the two new candidate moons on May 15, 2005. "The new satellite candidates are roughly 5,000 times fainter than Pluto, but they really stood out in these Hubble images," said Max Mutchler of the Space Telescope Science Institute and the first team member to identify the satellites. Three days later, Hubble looked at Pluto again. The

two objects were still there and appeared to be moving in orbit around Pluto.

The team searched for further potential moons but the most sensitive photographs taken of Pluto yet, revealed no more leading the team to believe that there are no more moons in the Pluto system that are greater than sixteen kilometres across. The result suggests that other bodies in the Kuiper Belt may have more than one moon. It also means that planetary scientists will have to take these new moons into account when modelling the formation of the Pluto system.

Amateur astronomer discovers previously unknown double star

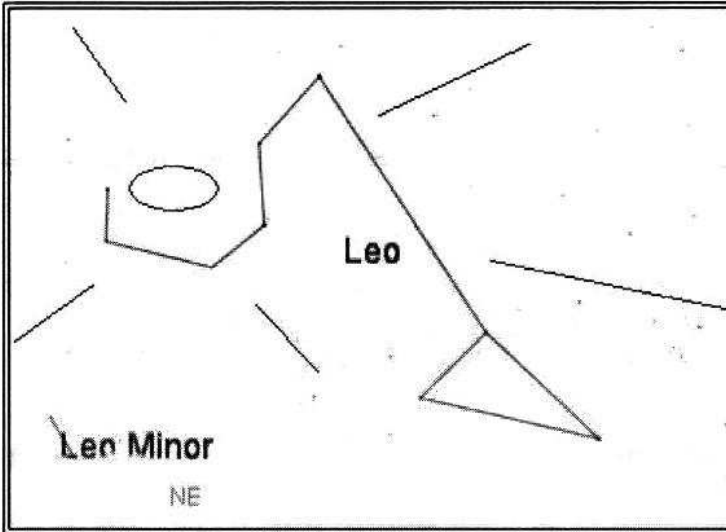
Amateur observer, Derek Breit of Fremont, California, was doing what he loved, videotaping grazing occultations using his 12" Meade SCT and a low lux video camera. After recording what was to be a standard occultation recording he reviewed the video tape frame by frame and noticed something a little odd about upsilon Geminorum, the star he had recorded. In 55 frames of the footage he had apparently captured the first look at an 11th magnitude companion to upsilon Geminorum, a slightly variable star not known to be a variable. His discovery was confirmed by the International Occultation Timing Association, as the same star was discovered on other recordings of the event. It's good to see new discoveries can still be made by amateur astronomers out in the field, doing what they love.

Skywatchers Events

November

- 2nd New Moon
- 5th South Taurids meteor maxima
- 9th First quarter Moon
- 12th North Taurids meteor maxima
- 15th Mars 3° South of Moon
- 16th Full Moon (occultation of Pleiades)
- 19th Leonids meteor maxima (am)
- 24th Last quarter Moon

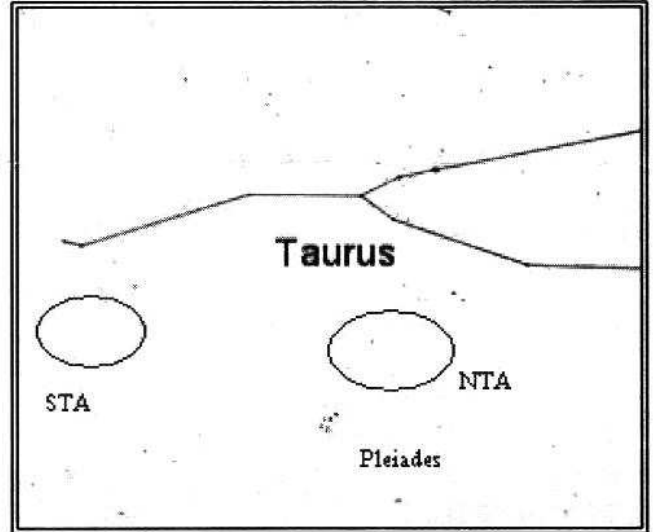
Radiant for the Leonids meteor shower



December

- 2nd New Moon
- 8th First quarter Moon
- 9th Venus greatest brilliancy at -4.7
- 14th Geminids meteor maxima
- 16th Full Moon
- 22nd Solstice
- 31st New Moon

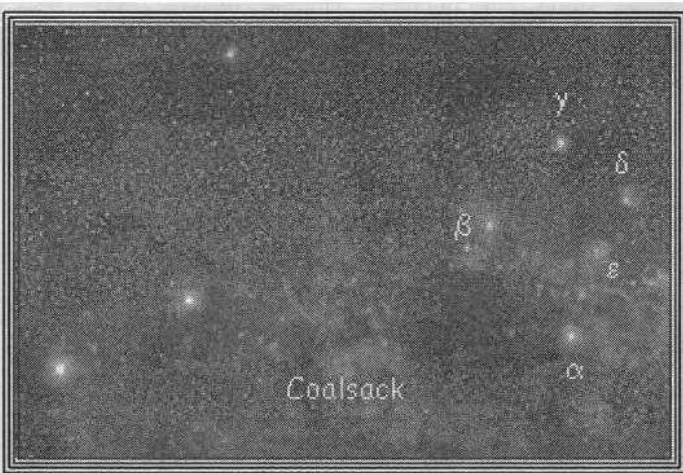
Radiant for the Taurids meteor showers



The Taurids meteor shower consists of two streams, the Northern Taurids (NTA) and the Southern Taurids (STA). Both showers are related to comet Encke and are active until approximately November 25th, with the STA reaching maximum on the 5th of November and the NTA reaching maximum on the 12th of November. ZHR for both is about 5 per hour. The Taurid meteors are quite slow and can produce some very nice bright meteors (eg : magnitude -2 or more) with orangy yellow heads and glowing green trains. The Leonids peak on the morning of November 19th this year, with higher rates than normal a possibility. The Geminids reaches maximum on December the 14th with the radiant almost directly over Castor in Gemini. ZHR for this shower is 120 meteors per hour but unfortunately the near full Moon will affect observing for the NTA, Leonids and Geminids this year.

CRUX The Southern Cross

Crux is one of the smallest constellations in the sky, and one of the most recognisable. It was formed in the late 16th century from stars that used to be incorporated in Centaurus. The long axis of Crux points towards the South Celestial Pole and lies within the Milky Way.



50 individual stars of various colours.

Four main stars make up the constellation. α Crucis appears as a 0.8 mag star but is in fact a double consisting of two components of mags 1.3 and 1.7. β Crucis at mag 1.2, δ Crucis at mag 2.8 and γ Crucis at mag 1.6. γ is a red giant while the other stars are all blue white stars. A fifth star ϵ also is a prominent star in the constellation and is a 3.6 magnitude orange giant.

The Coalsack is a dark nebulae which stands out dramatically against the starry background. The brightest star in the Coalsack is iota Crucis and is in fact a double of components 4.7 with a 9.5 mag companion.

One of the finest star clusters, NGC4755 (the Jewel Box) can be found just south west of beta-Crucis and is visible to the naked eye as a fuzzy 4th magnitude star. The Jewel Box is 7600 light years away and a small telescope will show at least

WEB SITES

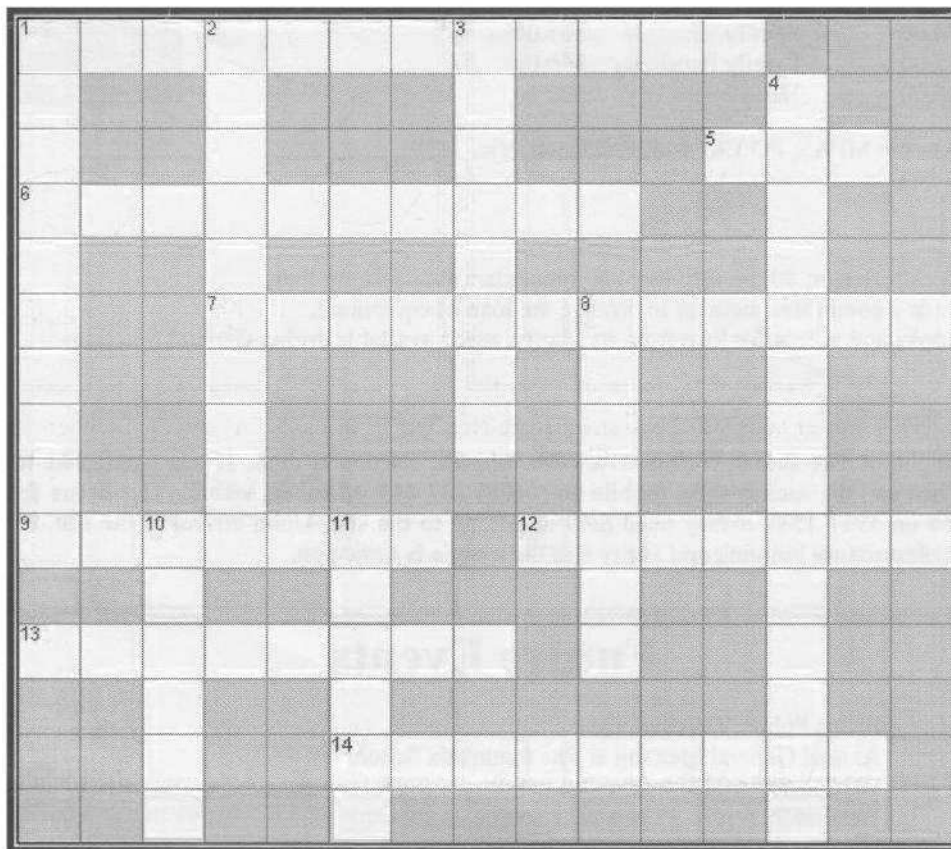
Further information on some of the stories in this edition of Scorpius can be found at the following web addresses :

International Astronomical Union : <http://www.iau.org/>
 NASA : <http://www.nasa.gov/home/index.html>
 NACAA : www.nacaa.org.au
 Universe Today : www.universetoday.com/
 Venus Express : http://www.esa.int/SPECIALS/Venus_Express/index.html

Join the E-scorpius newsgroup

The MPAS has an online newsgroup called E-Scorpius. Here you will be kept up to date with the latest MPAS news and event information as well as being able join in discussions and ask questions with other members. To join go to <http://groups.yahoo.com/> and sign up to Yahoo groups. You require to sign up to Yahoo groups to join E-Scorpius. Once you have signed up at Yahoo Groups, email skywatch@iprimus.com.au saying that you want to join E-Scorpius and you will be added to the E-Scorpius list. Come on, join up. The more people in the group the better.

ASTRO CROSSWORD



Across

1. Coldest temperature theoretically possible, but can never be attained in practice
5. At the center of our solar system, its hot
6. Movement of one body in orbit around another
7. Measure of a body's resistance to a change in its velocity or state of rest
9. Strong radio source located in the constellation of the Swan
12. Solar eclipse where the apparent diameter of the Moon is smaller than that of the sun, leaving a ring of Sun disc during mid eclipse
13. First visible rising of a celestial object in the morning sky after conjunction with the Sun
14. Flat mirror on an equatorial mounting driven to follow the Sun across the sky and reflect its light into a stationary telescope

Down

1. Lens consisting of two or more optical elements, intended to correct chromatic aberration
2. When a body in the Solar System lies opposite the Sun in the sky
3. Apparent path of the Sun against the star background over a period of a year
4. Form of calendar introduced in 46 BC by Julius Caesar
8. Publication listing predicted dates and times of forthcoming celestial phenomena and positions of celestial objects
10. A system of stars with interstellar gas and dust bound together by gravity
11. Angelo, Italian astronomer and priest, pioneer of astrophotography

Office bearers of the Mornington Peninsula Astronomical Society

President :	Peter Lowe – 0419 355 819	Secretary :	Don Leggett
Vice President :	Ian Sullivan	Treasurer :	Marty Rudd – 5977 8863
Editor :	Marty Rudd	Public Officer :	Rhonda Sawosz
Committee :	Peter Skilton		
	Terry Ryan		
Librarian :	Andrew Thornton	Web Master :	Richard Pollard
Phone Contact :	Peter Skilton		

Meetings

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

Phone: 0419 253 252

Mail: P.O. Box 596, Frankston 3199, Victoria, Australia

Internet: <http://www.mpas.websyte.com.au>

E-mail: skywatch@iprimus.com.au

Subscriptions

Full Member	\$50.00	Family	\$65.00
Pensioner	\$45.00	Family Pensioner	\$60.00
Student	\$35.00	Newsletter Only	\$22.00

(Please send payments to the MPAS, PO Box 596, Frankston, Vic, 3199)

Loan Equipment

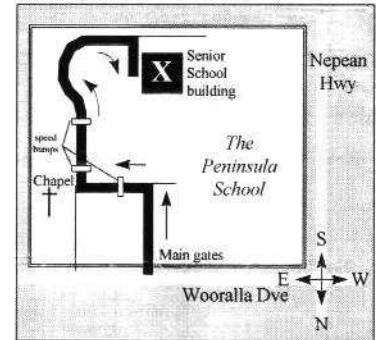
The Society has an 8-inch reflector, 80mm refractor and binoculars available for loan.

Contact Kevin Rossiter or a committee member to arrange the loan of equipment.

The Society also has books and videos for loan from its library, made available during General Meetings.

Viewing Nights

Members only: Any night, at The Briars, Nepean Hwy, Mt. Martha, starting at dusk. If you would like to know if others are observing at the site, then call the society's site mobile on (0408) 127 443. Members visiting The Briars for the first time must contact John Cleverdon on 5987 1535 if they need help in getting to the site. Upon arrival at the site, remember to sign the attendance book in the observatory building and verify that the mobile is turned on.

**Future Events**

4 th Nov, Friday	- Briars Public Viewing Night
16 th Nov, Wednesday	- Annual General Meeting at The Peninsula School
	- Session 1 : AGM
	Session 2 : Video "Christmas Star"
	Session 3 : Open forum and <i>Sky for the Month</i>
10 th Dec, Saturday	- X-mas BBQ at the Briars.

No General Meeting is held in December.

NACAA

The 2006 National Convention of Amateur Astronomers is being hosted by the MPAS on April 14th to 17th, 2006. For those planning to attend, the cost will be in the range of \$200.00 to \$250.00 (why not start saving now). Keep track of progress by frequent visits to the NACAA website at www.nacaa.org.au.

Contributions to Scorpius

If you would like to submit an article or written contribution to Scorpius then please send your submission to MPAS, PO BOX 596, Frankston, Vic, 3198

or email to quasar3671@aapt.net.au (Attn : Marty Rudd).

Any astronomical events that you have witnessed or tales you would like to tell, things you have for sale (eg : telescopes, eyepieces etc.) then please send them in. All contributions are welcome.

Mornington Peninsula Astronomical Society Inc. CALENDAR 2006 P is Public Holiday • New Moon • Full Moon

January	February	March	April	May	June	July	August	September	October	November	December
1 Su Scorpio deadline	1 Su Public Night	1 Su W Scorpio deadline	1 Su S South Pacific Star Party NSW	1 Su M Scorpio deadline	1 Su Th Public Night	1 Su S Scorpio deadline	1 Su T	1 Su F Scorpio deadline Public Night	1 Su Su	1 Su W Scorpio deadline	1 Su F Public Night
2 M Earth Perihelion Public Night	2 M F Public Night	2 M Th Public Night	2 M Su Star Party NSW	2 M T	2 M S	2 M Su	2 M Th	2 M S	2 M Th	2 M F Public Night	2 M S
3 T Earth Perihelion Public Night	3 T S	3 T Su	3 T W	3 T Th	3 T Su	3 T M	3 T Th	3 T Su	3 T W	3 T S	3 T Su
4 W Earth Perihelion Public Night	4 W Su	4 W M	4 W Th	4 W F	4 W Th	4 W T	4 W F	4 W M	4 W Th	4 W S	4 W M
5 Th Earth Perihelion Public Night	5 Th Su	5 Th M	5 Th W	5 Th Th	5 Th Su	5 Th T	5 Th F	5 Th M	5 Th Th	5 Th S	5 Th M
6 F Earth Perihelion Public Night	6 F M	6 F Th	6 F W	6 F Su	6 F Th	6 F T	6 F F	6 F M	6 F Th	6 F S	6 F M
7 S Earth Perihelion Public Night	7 S T	7 S W	7 S Th	7 S F	7 S Th	7 S T	7 S F	7 S M	7 S Th	7 S S	7 S M
8 Su Earth Perihelion Public Night	8 Su Th	8 Su M	8 Su W	8 Su Th	8 Su F	8 Su M	8 Su Th	8 Su S	8 Su Th	8 Su S	8 Su M
9 M Earth Perihelion Public Night	9 M F	9 M Th	9 M Su	9 M T	9 M F	9 M Su	9 M Th	9 M S	9 M Su	9 M W	9 M F
10 T Earth Perihelion Public Night	10 T Su	10 T M	10 T W	10 T Th	10 T F	10 T Su	10 T Th	10 T S	10 T Su	10 T W	10 T F
11 W Earth Perihelion Public Night	11 W Th	11 W M	11 W W	11 W Th	11 W F	11 W Su	11 W Th	11 W S	11 W Su	11 W W	11 W F
12 Th Earth Perihelion Public Night	12 Th F	12 Th Th	12 Th Su	12 Th T	12 Th F	12 Th Su	12 Th Th	12 Th S	12 Th Su	12 Th W	12 Th F
13 F Earth Perihelion Public Night	13 F Su	13 F M	13 F W	13 F Th	13 F F	13 F Su	13 F Th	13 F S	13 F Su	13 F W	13 F F
14 S Earth Perihelion Public Night	14 S Th	14 S M	14 S W	14 S Th	14 S F	14 S Su	14 S Th	14 S S	14 S Su	14 S W	14 S F
15 Su Earth Perihelion Public Night	15 Su F	15 Su Th	15 Su Su	15 Su T	15 Su F	15 Su Su	15 Su Th	15 Su S	15 Su Su	15 Su W	15 Su F
16 M Earth Perihelion Public Night	16 M Th	16 M M	16 M W	16 M Th	16 M F	16 M Su	16 M Th	16 M S	16 M Su	16 M W	16 M F
17 T Earth Perihelion Public Night	17 T Su	17 T M	17 T W	17 T Th	17 T F	17 T Su	17 T Th	17 T S	17 T Su	17 T W	17 T F
18 W Earth Perihelion Public Night	18 W F	18 W Th	18 W Su	18 W T	18 W F	18 W Su	18 W Th	18 W S	18 W Su	18 W W	18 W F
19 Th Earth Perihelion Public Night	19 Th Su	19 Th M	19 Th W	19 Th Th	19 Th F	19 Th Su	19 Th Th	19 Th S	19 Th Su	19 Th W	19 Th F
20 F Earth Perihelion Public Night	20 F M	20 F Th	20 F Su	20 F T	20 F F	20 F Su	20 F Th	20 F S	20 F Su	20 F W	20 F F
21 S Earth Perihelion Public Night	21 S T	21 S W	21 S Th	21 S F	21 S Th	21 S Su	21 S Th	21 S S	21 S Su	21 S W	21 S F
22 Su Earth Perihelion Public Night	22 Su F	22 Su Th	22 Su Su	22 Su T	22 Su F	22 Su Su	22 Su Th	22 Su S	22 Su Su	22 Su W	22 Su F
23 M Earth Perihelion Public Night	23 M Th	23 M M	23 M W	23 M Th	23 M F	23 M Su	23 M Th	23 M S	23 M Su	23 M W	23 M F
24 W Earth Perihelion Public Night	24 W F	24 W Th	24 W Su	24 W T	24 W F	24 W Su	24 W Th	24 W S	24 W Su	24 W W	24 W F
25 Th Earth Perihelion Public Night	25 Th Su	25 Th M	25 Th W	25 Th Th	25 Th F	25 Th Su	25 Th Th	25 Th S	25 Th Su	25 Th W	25 Th F
26 F Earth Perihelion Public Night	26 F M	26 F Th	26 F Su	26 F T	26 F F	26 F Su	26 F Th	26 F S	26 F Su	26 F W	26 F F
27 S Earth Perihelion Public Night	27 S T	27 S W	27 S Th	27 S F	27 S Th	27 S Su	27 S Th	27 S S	27 S Su	27 S W	27 S F
28 Su Earth Perihelion Public Night	28 Su F	28 Su Th	28 Su Su	28 Su T	28 Su F	28 Su Su	28 Su Th	28 Su S	28 Su Su	28 Su W	28 Su F
29 M Earth Perihelion Public Night	29 M Th	29 M M	29 M W	29 M Th	29 M F	29 M Su	29 M Th	29 M S	29 M Su	29 M W	29 M F
30 W Earth Perihelion Public Night	30 W F	30 W Th	30 W Su	30 W T	30 W F	30 W Su	30 W Th	30 W S	30 W Su	30 W W	30 W F
31 Th Earth Perihelion Public Night	31 Th Su	31 Th M	31 Th W	31 Th Th	31 Th F	31 Th Su	31 Th Th	31 Th S	31 Th Su	31 Th W	31 Th F

General Meetings are held at 8 pm at the Peninsula School, Wooralla Dr, Mt Eliza - Melway 105 F5 (drive to Senior School at rear). Library at Peninsula School is open on General Meeting nights for borrowing by members.

Members and Special nights, and any Fri & Sat, are for sky viewing at 'The Briars', Nepean Hwy, Mt Martha - Melway 145 F12.

Public Nights for sky viewing are held at 'The Briars' Visitors Centre (Melway 145 F12) at 8 pm all year. Booking is preferred, but not essential. **School and Community Group Nights** can be arranged as Society has telescopes and will travel. For all of the above - bookings and enquiries, phone 0419 253 252

State School Holidays

Prepared by Ian Sullivan

