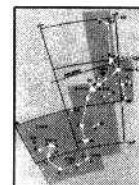




# SCORPIUS



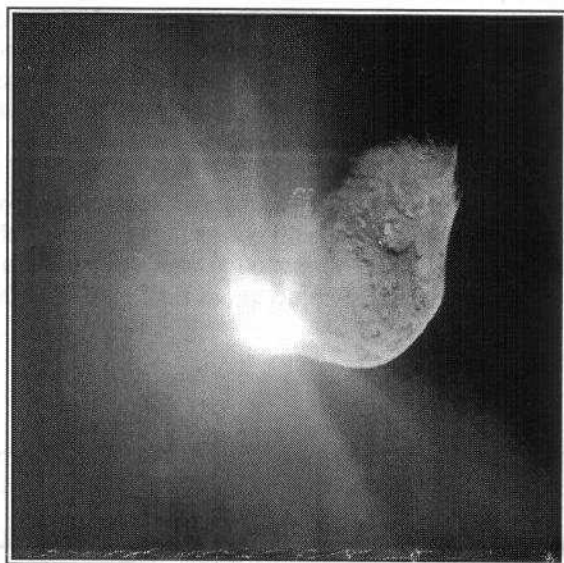
The Journal of the  
Mornington Peninsula Astronomical Society Inc.

Reg No: A268 ABN: 34569548751 ISSN: 1445-7032

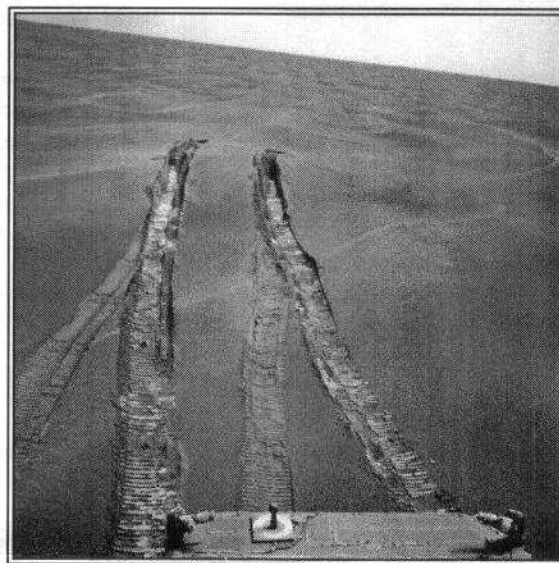
**Volume XIV, No. 4 (July 2005)**

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.

## Deep Impact A Hit



## Opportunity Freed From The Sand



Plus :

**Plans to land the Shuttle in Australia**  
**Extrastellar planet search update**  
**Space Shuttle launch delay**  
**Hubble future looking bright**

## July / August field nights and events

1<sup>st</sup> July – Public viewing night at Briars  
20<sup>th</sup> July – General Meeting

5<sup>th</sup> August - Public viewing night at Briars  
17<sup>th</sup> August – General Meeting



# Society News

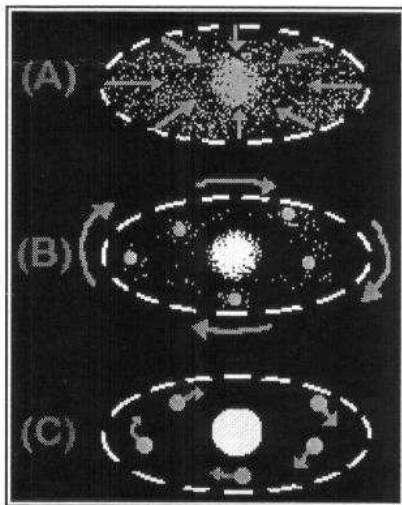
## General Meetings

The May general meeting at the Peninsula School was held in the theatrette. Forty attended, with the President chairing the meeting. It was reported that the recent Messier night had four attend and continued on until 2:00 am when it was clouded out. Bob eventually managed to do his 'Sky for the Month' session after tackling and overcoming some amusing lighting and technical problems. After the raffle was drawn the meeting stopped for a coffee break.

The speaker for the evening was the Societies President, Peter Lowe, who did a talk on 'Comparative Planetology' discussing the different way planets form and the processes that shape them. Starting with the early laws of planetary formation and the recent better understanding on how the processes work.

Planet formation was first discussed by Immanuel Kant in 1755. Kant proposed that a **nebulae**, which is a huge cloud of dust and gas, was pulled together by gravity so that it collapsed into a flat, rotating disk. The disk eventually coalesced into the Sun and planets. Kant also stated that because a similar process occurs around other stars, our Solar System is not alone in the universe.

Pierre Laplace expanded on Kant's theory in 1796 when it became known as the nebular hypothesis. Laplace proposed that the planets were formed by rings of matter split off a rotating nebulae by centrifugal force. After the matter split off, it coalesced into a planet. The process repeated itself, resulting in a planet each time. The matter left over was the Sun. Planet types formed include gas giants (Jupiter), rocky planets (Earth), Ice planets (comets) and reprocessed planets (others).



After faults were found with the nebular hypothesis, other explanations of planet formation were sought. After many failures, astronomers returned to the nebular hypothesis to find improvements during the mid 1900s. A modern version of the nebular hypothesis, called the **protoplanet hypothesis**, was formed independently by Carl von Weizsacker and Gerard Kuiper. The steps in planet formation theorized by the protoplanet hypothesis are shown in the diagram on the left. (A) The solar system begins to form as a rotating cloud, or nebulae, collapses. (B) Instabilities in the nebulae cause dust particles to stick together. The dust particles accrete into billions of **planetesimals** with diameters of about 10 meters. The planetesimals then collide and form protoplanets. Meanwhile, the protosun in the center of the nebular disk becomes massive and hot enough to "turn on" by fusing hydrogen. (C) The Sun begins to radiate energy and vaporize dust in the inner part of the Solar System. The remaining gas is blown away by solar winds.

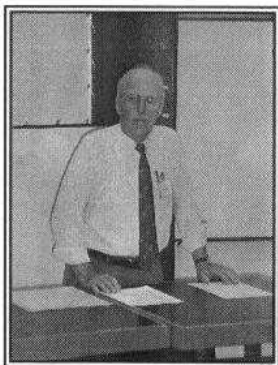
Different parts of the solar system have different types planet formation processes. Electrostatic aggregation, which occurred and still occurs in the Kuiper Belt, in comet formation and in ice planet formation. Gravitational collapse in gas giant formation (outer solar system), gravitational accretion in rocky planet formation (inner solar system) and Reprocessing which occurs as tidal orbital on the moon Io and collisional, which occurred for our own Moon formation.

The meeting closed at 10:15 pm.

## NACAA update

Communications officer for NACAA, Richard Pollard, reported that the venue for the 2006 NACAA, which is to be held in April from Friday 14<sup>th</sup> to Monday 17<sup>th</sup> has been booked and will be held at the Ambassador Hotel, 325 Nepean Highway, Frankston, 3199, Victoria.

A NACAA website has also been established which will have all the latest updates and details about the convention. The web address is <http://www.nacaa.org.au/main.htm>



It is with much regret that I inform that John Perdrix passed away on June 26 in Dubai, while returning from a trip to Russia with his son. His passing was not entirely unexpected for those who knew him well from his regular attendances at NACAA conferences. His ashes will be returned to Melbourne where a memorial service will be held, with no further details yet available. He moved to Western Australia nearly 30 years ago, and kept busy with editing publications such as the earlier *Astronomical Journal of Australia*, and was instrumental in bringing the NACAA conference to WA in recent years. (Peter Skilton)

The NACAA Committee is saddened to hear of the death of NACAA legend John Perdrix and wishes to acknowledge his long history of contribution and drive in NACAA history. He will be sadly missed by his friends at NACAA 2006

## All Weather Facility

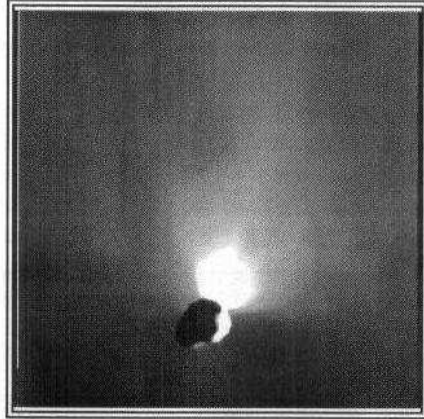
Final site preparations have been occurring recently at the Briar's on the site for the All Weather Facility. Drainage channels have been dug and the area cleared of debris in preparation for the delivery and construction of the AWF. Red tape is unfortunately delaying a few final details before construction can begin but as soon as this is overcome, the AWF will be up in no time at all.



# Astro News

## Deep Impact Hits Target

Launched in January this year and travelling 431 million kilometres, Deep Impact reached its target, the 7km by 5km comet Tempel 1. Upon arrival Deep Impact released its washing machine sized probe, which successfully slammed into Tempel 1 at more than 37,000 km/h. The goal of the Deep Impact mission is to provide a glimpse beneath the surface of a comet, where material from the solar system's formation remains relatively unchanged. Mission scientists expect the project will answer basic questions about the formation of the solar system, by offering a better look at the nature and composition of the frozen celestial travellers known as comets.



Once released from the mother ship, the probe headed for its collision with Tempel 1. It snapped images of the comet's surface, including craters, up until 3.7 seconds before impact. It was destroyed in the blast and its mother ship Deep Impact took over, sending hundreds of images of the aftermath of the collision. These images were received at the Canberra Deep Space Communication complex in Tidbinbilla. The signal sent from Deep Impact to Tidbinbilla's 70m antenna dish was only a billionth of a watch battery's power.



Seventeen days after its encounter with comet Tempel 1, NASA's Deep Impact flyby spacecraft successfully executed a trajectory correction manoeuvre that places the spacecraft on a path to fly past Earth on Dec. 31, 2007. The 900-second

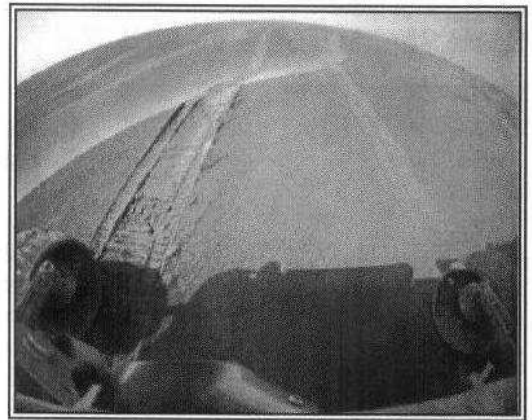
burn, which changed the spacecraft's velocity by 216 miles per hour, preserves the space agency's options for future use of the comet hunter.

## Opportunity On The Move

For nearly five weeks, the rover team at NASA's Jet Propulsion Laboratory had worked on freeing Opportunity from its Martian sand trap. The latest images from the rover have delighted NASA scientists, showing now that the rover is finally back on solid ground. In the weeks following the rover getting stuck, the rover churned over 192 metres in wheel rotation before gaining just 1 metre in distance. The rover team directed the drives in cautious increments from May 13 through June 4.



The wheels of NASA's Mars Exploration Rover Opportunity dug more than 10 centimeters (4 inches) deep into the soft, sandy material of a wind-shaped ripple in Mars' Meridiani Planum region during the rover's 446th martian day, or sol (April 26, 2005). Getting the rover out of the ripple, dubbed "Purgatory Dune," required more



than five weeks of planning, testing, and carefully monitored driving. Opportunity used its navigation camera to capture this look back (right) at the ripple during sol 491 (June 11, 2005), a week after the rover drove safely onto firmer ground. The ripple that became a sand trap is about one-third meter (one foot) tall and 2.5 meters (8 feet) wide.

Opportunity's examined the dune that trapped it to find out how it differed from all the other dunes the probe has crossed with no problems. Once the dune study was complete the rover was carefully directed south where it is has successfully travelled over 100 metres on its way to the crater 'Erebus'.

## Plans to land the Shuttle in Australia

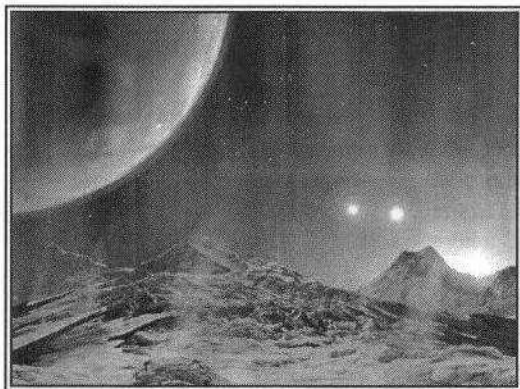
As NASA waits to launch its first shuttle mission since the Columbia tragedy in 2003, Top-secret plans for Australia's involvement in the event of a mishap have been revealed. An Australian Defence Force spokeswoman has confirmed "suitable arrangements" are in place to allow the 100-tonne spacecraft to land at Amberley, outside Ipswich, home of Australia's F111 fighter bombers, but the spokeswoman said security reasons prevented the release of further details.

A NASA spokesman said an emergency landing in Australia would be "very last-minute" and would only be in an extreme emergency, or some drastic situation in which it was de-orbiting and couldn't make it back to the US. The spokesman also said it is better to come down on a military runway than a highway or a field as military bases are set up to handle heavier aircraft and have longer runways for huge transport planes.

The latest shuttle launch from Florida's Cape Canaveral was postponed indefinitely as engineers worked to repair a faulty fuel sensor.



## The latest on extrasolar planets



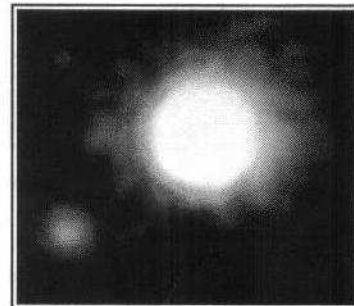
To date, 155 extrasolar planets have been discovered and the last few months have produced some of the most exciting of them all. An observer on the latest discovered exoplanet, slightly larger than Jupiter, would see three bright suns in the sky with the larger yellow star that the exoplanet orbits every 3.5 days dominating the sky.

Planetary scientists are excited about this discovery because it raises questions about planet formation and planet-sun relationships. Maciej Konacki, a planetary scientist from the California Institute of Technology, discovered the exoplanet orbiting the main body of the triple-star system HD 188753. The 3 stars are located approximately 149 light-years from Earth in the constellation Cygnus. "If we believe that the same basic processes lead to the formation of planets around single stars and components of multiple stellar systems, then such processes should be

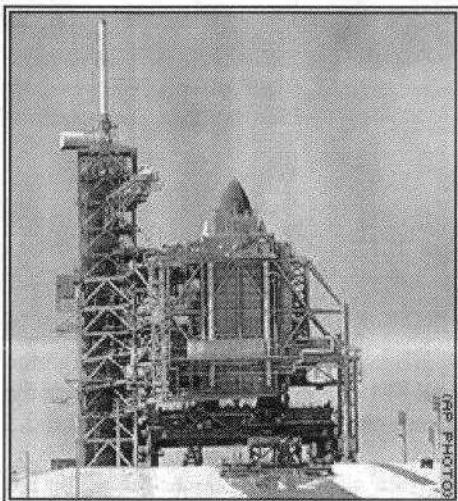
equally feasible, regardless of the presence of stellar companions," explains Konacki. "Planets from complicated stellar systems will put our theories of planet formation to a strict test."

The 155<sup>th</sup> exoplanet discovered also happens to be the smallest. While carefully examining two Jupiter-size planets with the Keck Telescope in Hawaii, a team of scientists noticed a wobble that could not be accounted for by the two-planet model they used. Doppler measurements revealed an inner planet. It orbits Gliese 876, an M dwarf star about one-third of the Sun's mass. Although it is classified as an 'Earth like' planet, this planet is 6-9 times more massive than the Earth and has a surface temperature of 240° to 400° Celsius. The exoplanet's orbit around its star is much shorter than Earth's orbit around the Sun. The body makes one trip around Gliese 876 in only 1.94 days. It is located about 2 million miles (3.2 million kilometers) from its star, compared to Earth's position about 93 million miles (150 million km) away.

A giant planet orbiting the brown dwarf 2M1207A has become the first extrasolar planet to be imaged. Last September, a small red dot was discovered on an image taken of the brown dwarf with the NACO adaptive optics system on the European Southern Observatory's Very Large Telescope (VLT) in Chile. The object, now called 2M1207b, displayed a spectrum showing the presence of water vapor, indicating cool temperatures. This and other measures suggested the mass of the "giant planet candidate" was at most 5 times that of Jupiter. Observations done with the Hubble Space Telescope confirmed the discovery.



## Space Shuttle launch delayed



The first Space Shuttle launch in 2 ½ years has been delayed. Discovery's crew was onboard and strapped in on July 13 when one of four redundant engine cutoff or "ECO" sensors malfunctioned.

The faulty sensor indicated the shuttle's external fuel tank, which had been filled just hours before, was running dangerously low on liquid hydrogen propellant. Though the three other sensors were functioning normally, and only two are needed to achieve orbit, NASA scrubbed the launch because procedures require all of the ECO sensors to be operational for liftoff.

A subsequent engineering investigation found that wiring grounding issues led to the July 13 failed countdown. The problem has since been repaired, NASA officials said.

The clock has now begun ticking down toward Discovery's rescheduled July 26 launch. "Discovery is in excellent shape," said NASA test director Pete Nickolenko during a pre-launch status briefing here at Kennedy Space Center (KSC). "We are all very confident that all of the engine cut-off sensors will work as they're designed to in this next launch attempt."

## The Hubble Space Telescope's future looking up

The House overwhelmingly endorsed President Bush's plans to go to the moon and Mars but put its own imprint on the future of NASA yesterday, insisting that the space agency also concentrate on research programs and repairing the Hubble telescope. The Hubble, along with science programs and aeronautics research, is popular in Congress partly because the contracts generate thousands of jobs, injecting millions into the economies of many lawmakers' districts. The first blueprint for NASA's future in five years passed 383-15.

Congress has pushed hard for a mission to repair the Hubble Space Telescope, which has been popular with lawmakers and the public for the pictures it has beamed back to Earth. The White House had resisted the repair mission, which would cost an additional \$270 million.

Earlier this week, the White House said it was concerned that the House had added \$500 million to next year's NASA budget and proposed \$760 million extra for the following year. The total House bill approved yesterday sets aside \$33.43 billion for NASA over two years.



# Skywatchers Events

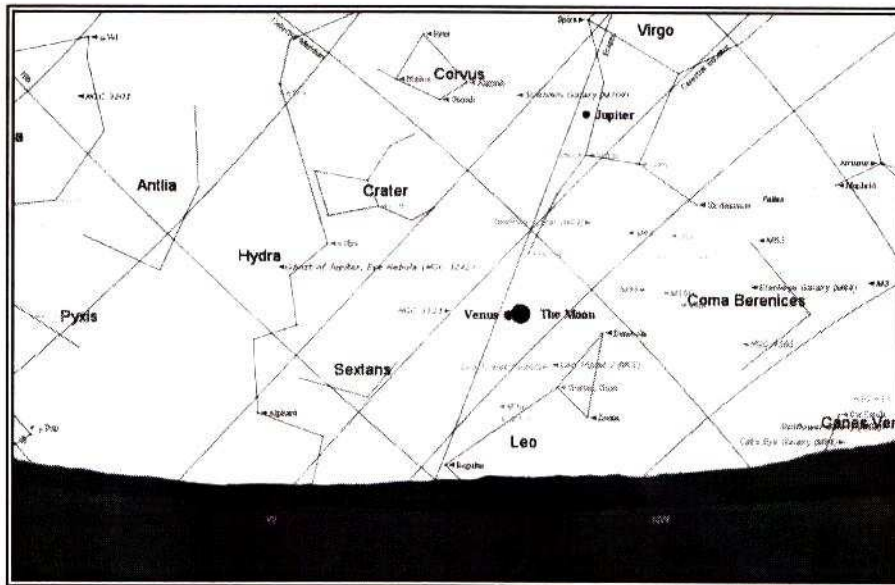
## July

- 6<sup>th</sup> New Moon
- 15<sup>th</sup> First quarter Moon
- 21<sup>st</sup> Full Moon
- 23<sup>rd</sup> Neptune 1.2° north of Moon
- 27<sup>th</sup> Sth Delta Aquarids meteor shower peaks (am)
- 28<sup>th</sup> Last quarter Moon

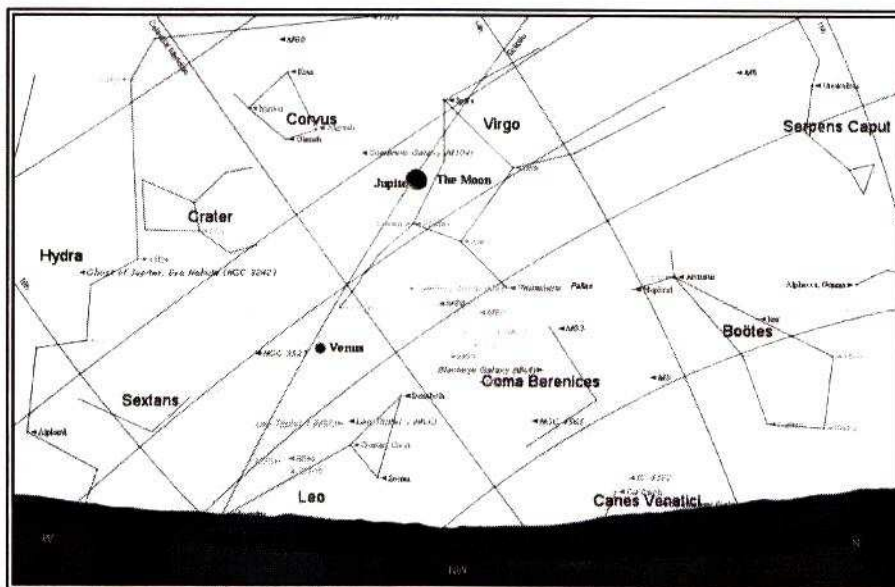
## August

- 5<sup>th</sup> New Moon
- 8<sup>th</sup> Venus 1.2° south of Moon (pm)
- 10<sup>th</sup> Jupiter 1.3° north of Moon
- 13<sup>th</sup> First quarter Moon
- 20<sup>th</sup> Full Moon
- 27<sup>th</sup> Last quarter Moon

Venus and the Moon on August 8<sup>th</sup> looking West at 6:00 PM



Jupiter, Venus and the Moon on August 10<sup>th</sup> looking North / West at 6:00 PM



## South Delta Aquarids Meteor Shower

A meteor stream that can be observed is the South Delta Aquarids. This stream produces a ZHR of around 20 and is fairly consistent. This year the moon has little interference with this stream and it should be easy to observe. The South Delta Aquarids are closely related to another stream the North Delta Aquarids which appears around 10° north in declination. This stream produces lower rates (ZHR around 5) and reaches maximum about a week later. The South Delta Aquarids have a RA of 22h 30m and a Dec of -16°. The North Delta Aquarids have a RA of 22h 20m and a Dec of -5°. Their period of activity is from July 12th to Aug 19th with a maximum on July 28th. Both Sth and Nth Delta Aquarid meteors are of a medium speed. Because of the close proximity of the radiants care should be taken when identifying which stream meteors come from when seen emanating from this area.







### Office bearers of the Morningson Peninsula Astronomical Society

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

## Meetings

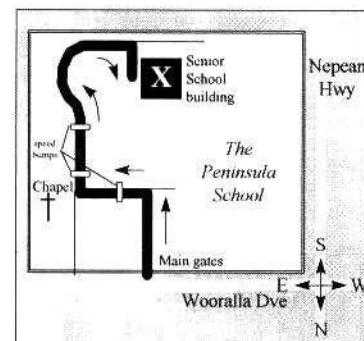
Meeting Venue: *Peninsula School*, Wooralla Drive, Mt. Eliza (Melways map 105/F5) in the Senior School at 8pm on the 3<sup>rd</sup> Wednesday of each month except December.

Phone: 0419 253 252

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

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

E-mail: [skywatch@iprimus.com.au](mailto: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

## Loan Equipment

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

Contact a committee member to arrange the loan of equipment.

**Members are invited to borrow books or videos** before Gen Meetings or at interval.

On most nights Andrew Thornton will be in attendance and you need to sign for books both IN and OUT. You are responsible for any loans until you are signed off. You can extend a loan by phoning Andrew on 9787 8464 and return books to his home, 35 Warana Way, Mt Eliza if you can't make it to a meeting. Leave a note also with your name & phone no.

We will also advertise new acquisitions and invite you to donate items we can all enjoy. We have an enormous number of observing handbooks going unused. Your suggestions for additional items are welcome.

We have almost a complete set of ASV Yearbooks but 1984 -8 and 1992 -5 are MISSING. **Does anyone have copies of these to complete our set**

## 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

- |                                    |   |
|------------------------------------|---|
| 20 <sup>th</sup> July, Wednesday   | <ul style="list-style-type: none"> <li>- General Meeting at The Peninsula School</li> <li>- Session 1 : Speaker</li> <li style="padding-left: 20px;">Session 2 : Open forum</li> <li style="padding-left: 20px;">Session 3 : <i>Sky for the Month</i>, Ian Sullivan in Equador</li> </ul>   |
| 30 <sup>th</sup> July, Saturday    | <ul style="list-style-type: none"> <li>- Astronomy Class with Ian Sullivan</li> </ul>   |
| 5 <sup>th</sup> August, Friday     | <ul style="list-style-type: none"> <li>- Briars Public Viewing Night</li> </ul>   |
| 17 <sup>th</sup> August, Wednesday | <ul style="list-style-type: none"> <li>- General Meeting at The Peninsula School</li> <li>- Session 1 : Speaker: Barry Adcock – ‘Jupiter in the 21st Century’</li> <li style="padding-left: 20px;">Session 2 : Video: “Parallel Universes”.</li> <li style="padding-left: 20px;">Session 3 : Open forum and <i>Sky for the Month</i></li> </ul> |

## 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@aol.com](mailto:quasar3671@aol.com) (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.

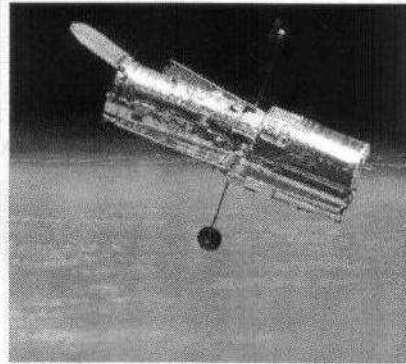


SOLUTION TO THE CROSSWORD



Above - Working Bee at the MPAS Briars site on 16th October 2005

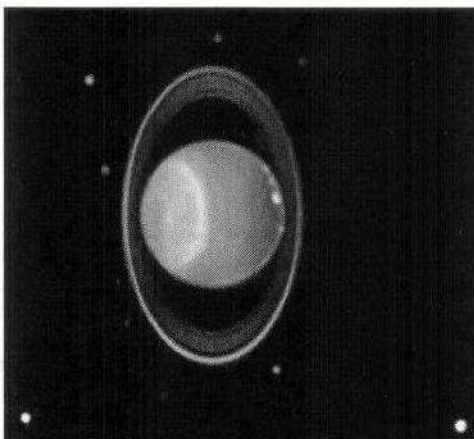
Photo - By John Cleverdon



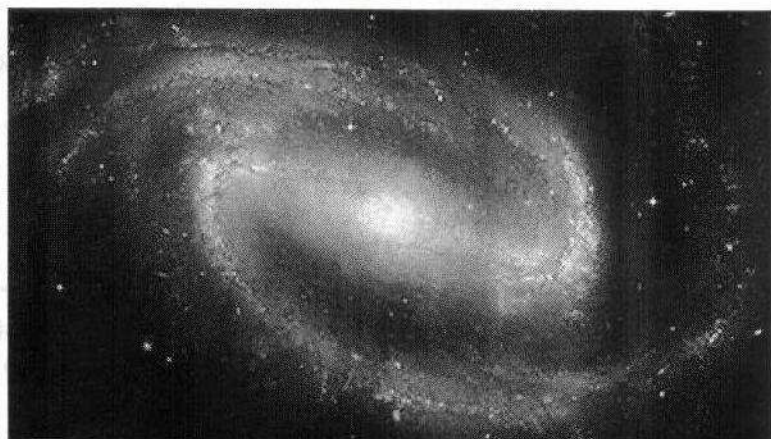
The Hubble Space Telescope (HST)

The first large orbital optical observatory. Built from 1978 to 1990 at a cost of \$1.5 billion, the HST (named for astronomer E. P. Hubble) was expected to provide the clearest view yet obtained of the universe. The telescope can observe 24 hours a day in a sky that is always clear and always has perfect seeing. Among the instruments are two high-resolution cameras and two spectrographs. The HST was launched from shuttle Atlantis in 1990. The telescope was repaired by astronauts of the space shuttle Endeavour in Dec., 1993, who replaced critical instruments and added corrective optics while in orbit. Orbits the earth at an average altitude of 550 km. Hubble has a 2.4-m (7.9-ft) primary mirror, is 13.3 m (43.5 feet) long - the length of a large school bus. Hubble weighs 11,110 kg (24,500 pounds) - as much as two full-grown elephants. Its solar arrays cover 36 square meters (384 square feet) - equal to the area of a highway billboard.

Some recent Hubble photographs.



Uranus

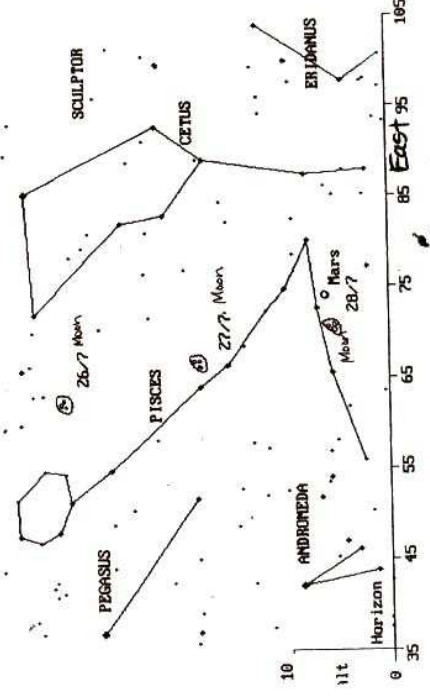


Barred Spiral Galaxy NGC 1300

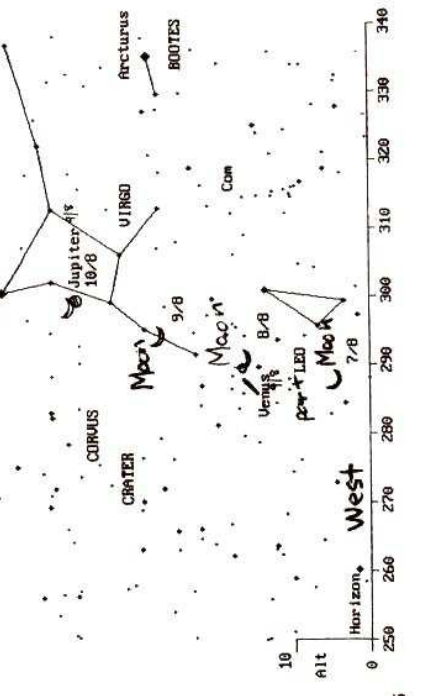


SKY FOR THE MONTH JULY 20<sup>TH</sup> TO AUGUST 16<sup>TH</sup> 2005 MORNINGTON PENINSULA

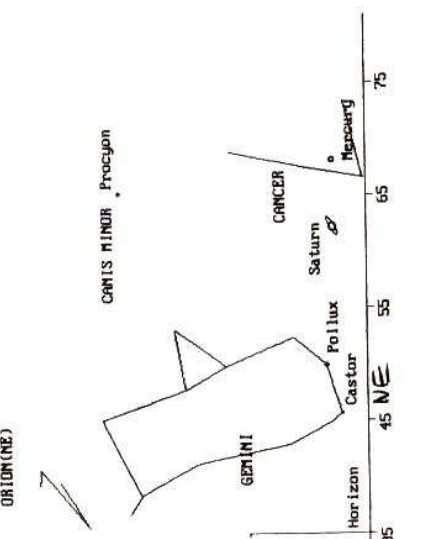
12:52 am Dark Sky 27th July 2005 Standard Time  
Faintest object is mag 5.5 U1.00 (c) Bob Heale 13/1/03



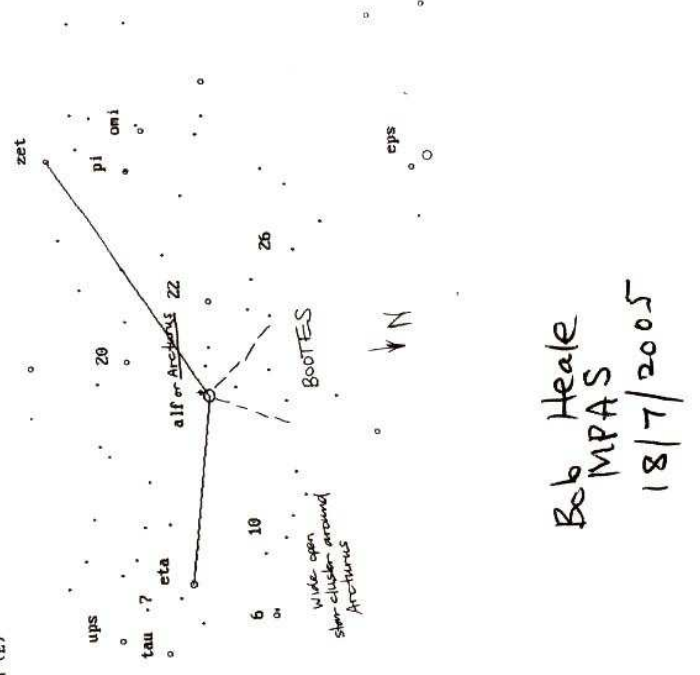
6:54pm Dark Sky 9th August 2005 Standard Time  
Faintest object is mag 5.5 U1.00 (c) Bob Heale 13/1/03



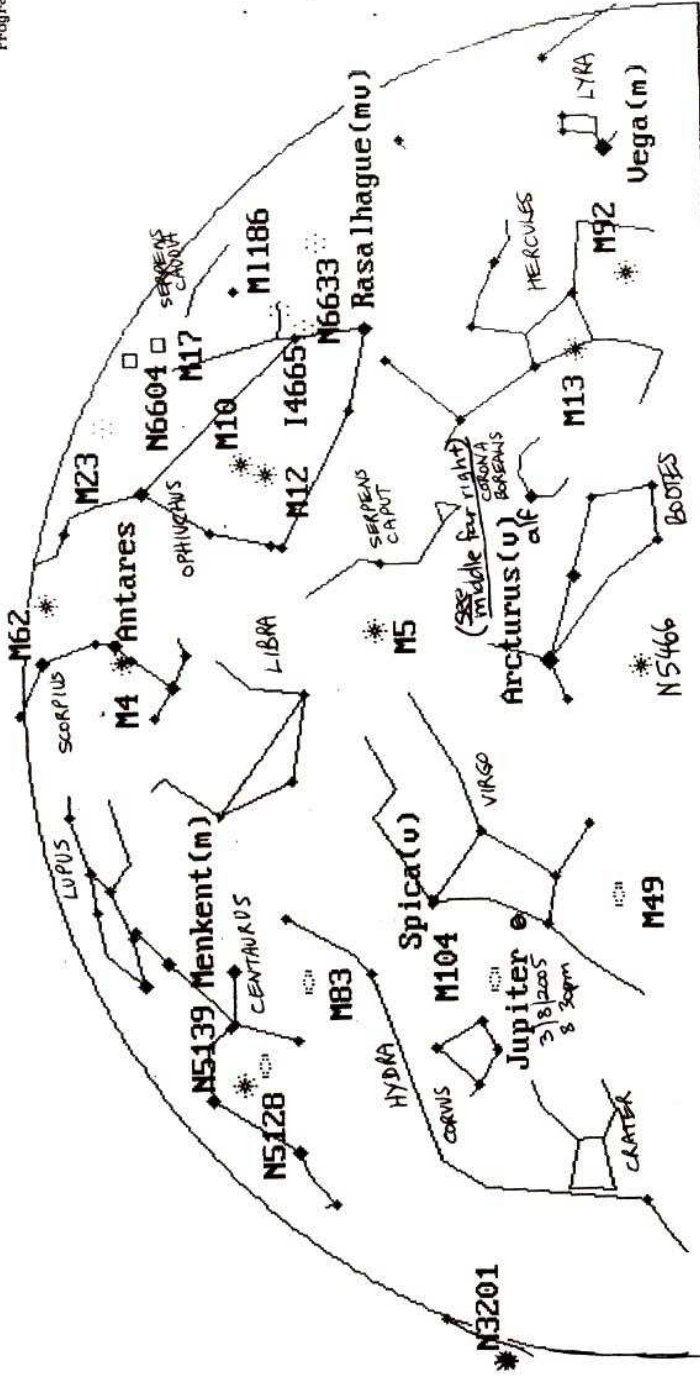
6:25 am 1/2 Dark Sky 16th August 2005 Standard Time  
Faintest object is mag 2.5 U1.00 (c) Bob Heale 13/1/03



Binocs or Scope (B) or Change Sky (T) or Graphic Screen Mode Change (M) or Exit Program (E)

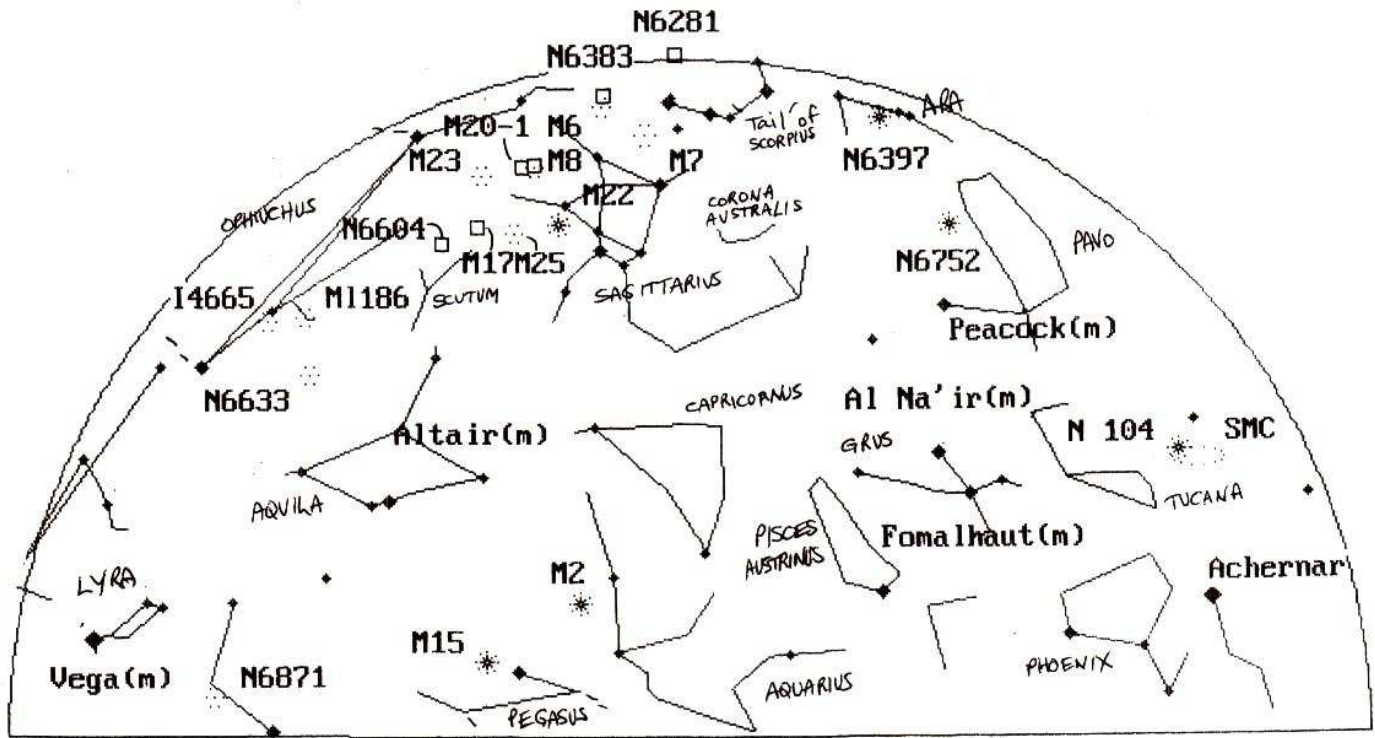


Bob Heale  
MPAS  
18/7/2005



Denebola (m)  
8:30 pm 3rd August NW Dark Sky 2005 Standard Time, also 9:30pm  
20th July 2005 and 7:30pm 17 August 2005

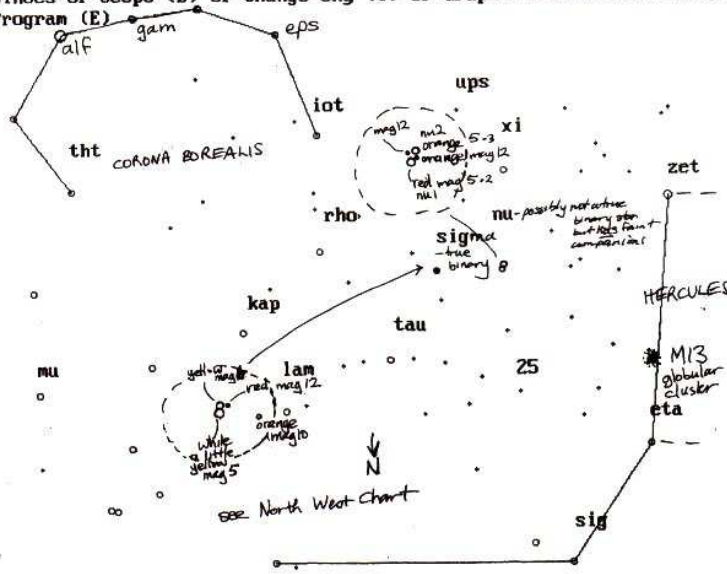




8 30 pm 3rd August East Dark Sky 2005 Standard Time, also 9 30pm  
 20th July 2005 and 7 30pm 17 August 2005

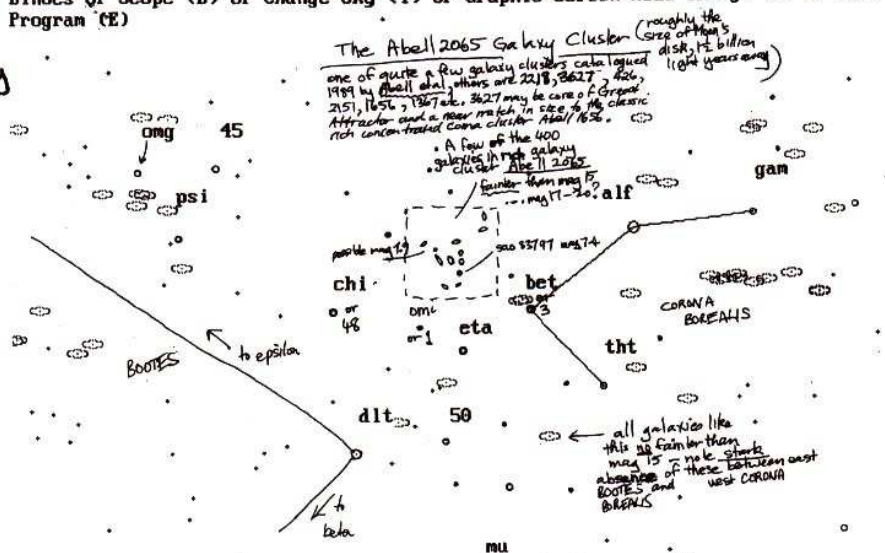
Binocs or Scope (B) or Change Sky (T) or Graphic Screen Mode Change (M) or Exit Program (E)

For these two multiple stars, sigma and nu Corona Borealis, refer NW chart over for general location.



Binocs or Scope (B) or Change Sky (T) or Graphic Screen Mode Change (M) or Exit Program (E)

For this extremely difficult galaxy cluster, refer BOOTES / CORONA BOREALIS area NW chart over

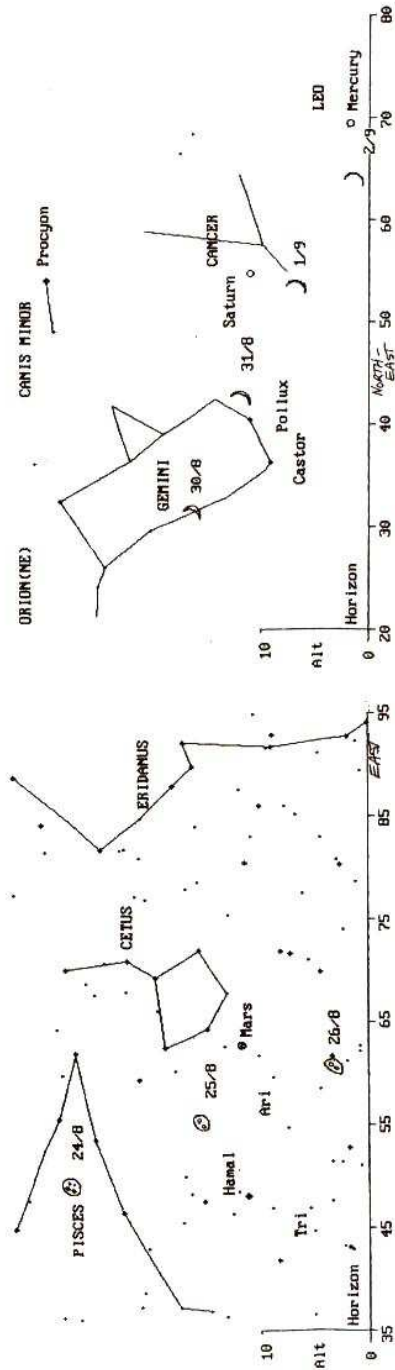


Bob Heale  
 MPAS  
 18/7/2005

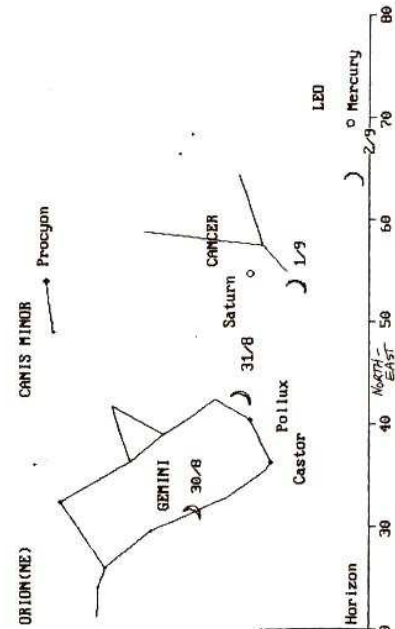


# SKY FOR THE MONTH 17TH AUGUST TO 20TH SEPTEMBER 2005 MORNINGTON PENINSULA

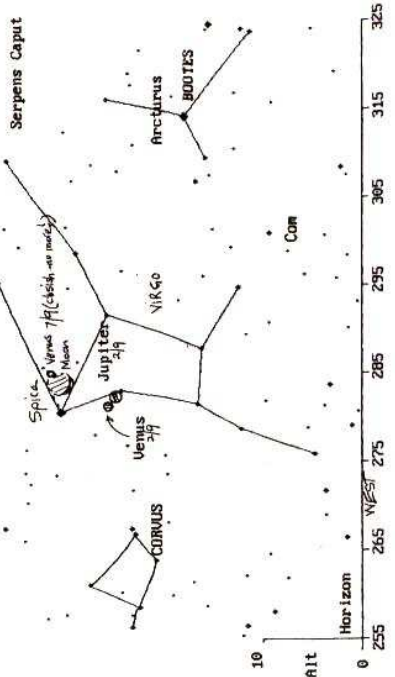
12:42 am Dark Sky 25th August 2005 Standard Time  
Faintest object is mag 5.5 VI.00 (c) Bob Heale 13/1/03



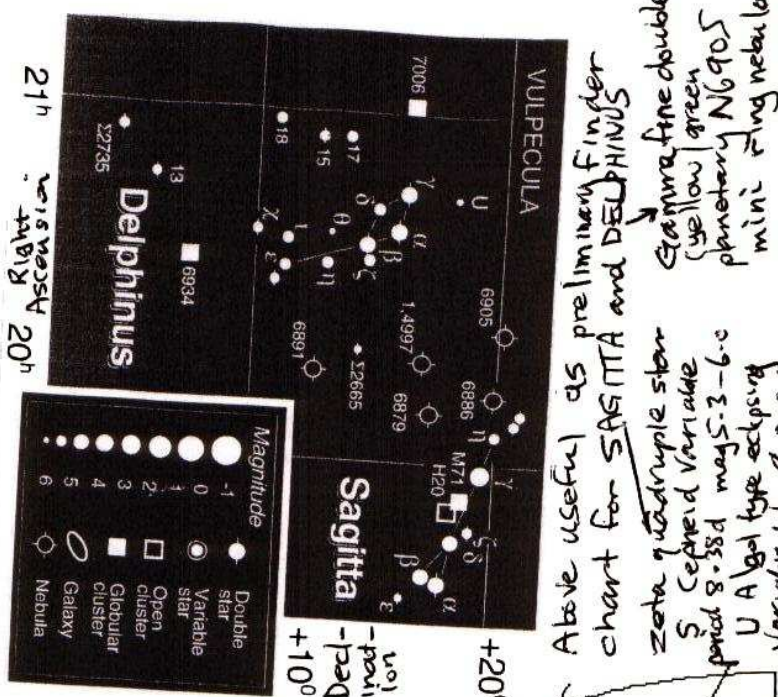
6:17 am 1/2 Dark Sky 1st September 2005 Standard Time  
Faintest object is mag 3 VI.00 (c) Bob Heale 13/1/03



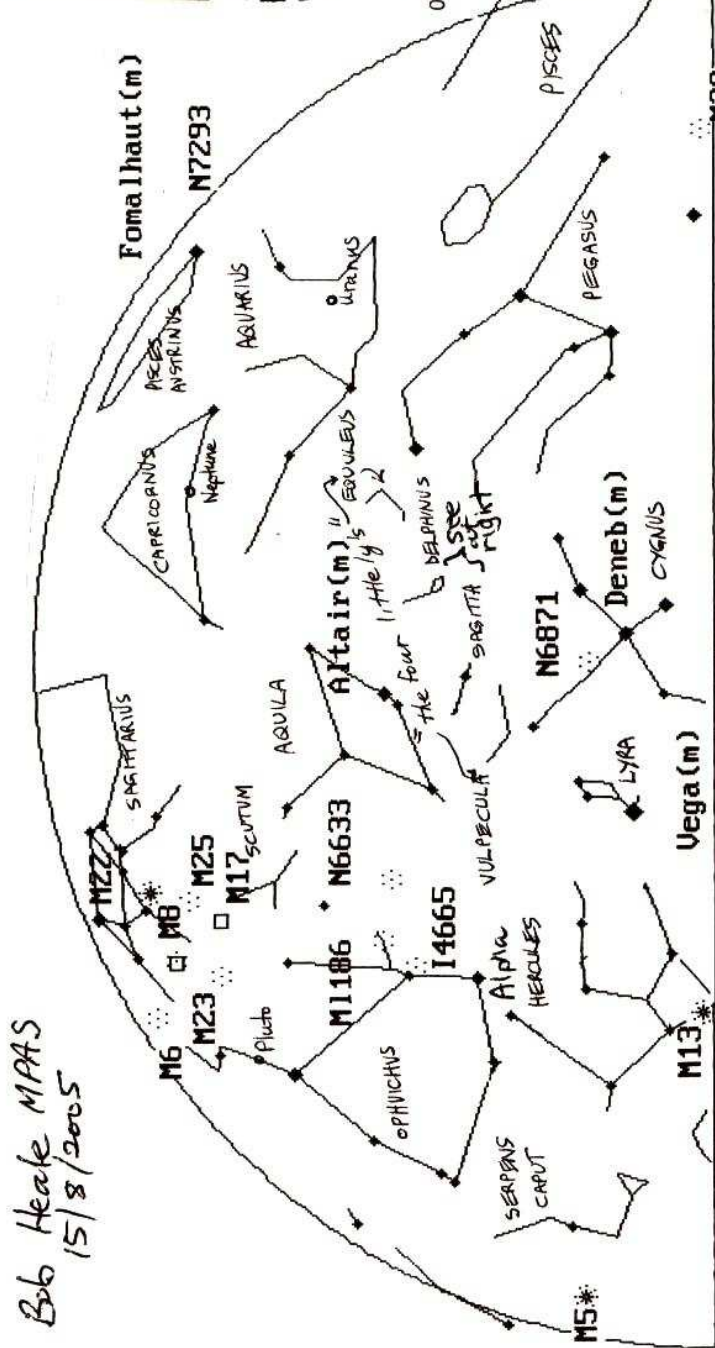
6:53 pm 7/9 Dark Sky 2nd September 2005 Standard Time  
Faintest object is mag 5.5 VI.00 (c) Bob Heale 13/1/03



Bob Heale MPAS  
15/8/2005

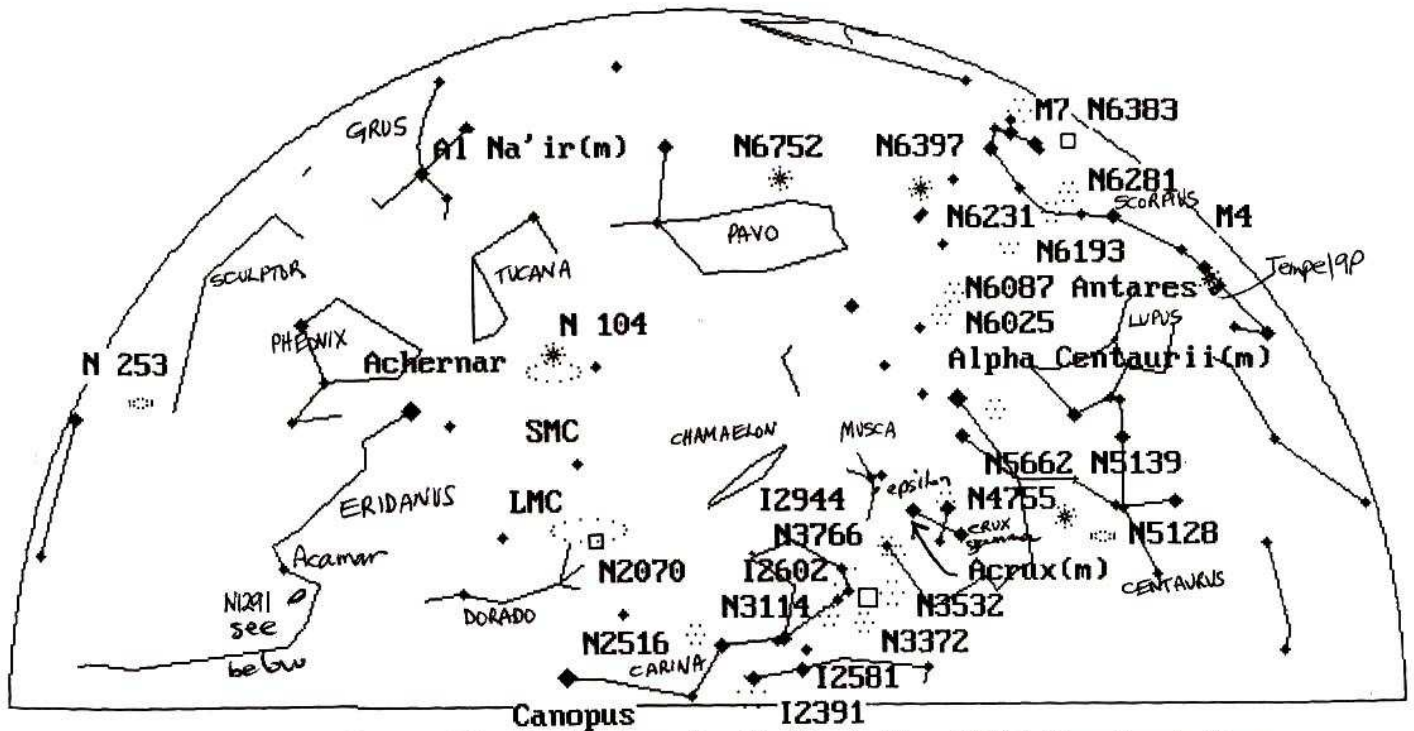


Above useful as preliminary finder chart for SAGITTA and DELPHINUS  
 zeta quadruple star  
 S Cepheid Variable  
 period 8-38d mag 5.3-6.0  
 U A G0 type eclipsing  
 Variable b6-b9-9.2 mag  
 3-38d  
 Delta Red Giant with  
 stragglers / Many planetaries between them



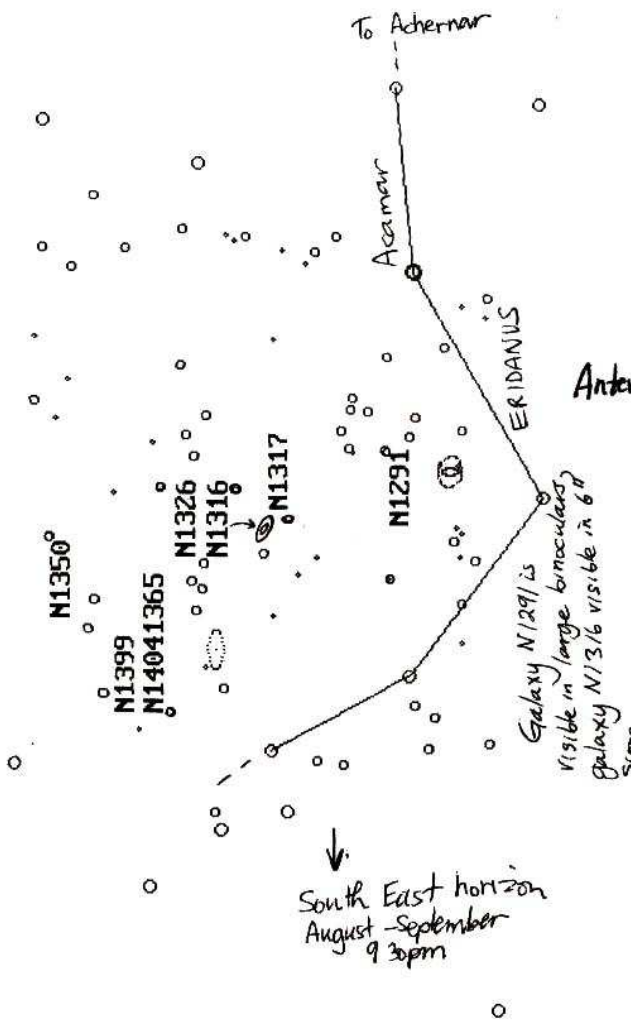
Also 21st August 9:30 pm 4th September North Dark Sky 2005 Standard Times  
 10:30 pm and 18th September 8:30 pm





Also 21st August 10 30 pm and 18th September 8 30pm  
 9 30 pm 4th September South Dark Sky 2005 Standard Time

There is much seeing red in our August - September night sky, and not, from amateurs troubled by neighbouring lights, rather than the state of play with a range of mini red light regions over the sky. The bright red giants Gamma Crucis, Antares (Alpha Scorpio) and Alpha Herculis, all reluctantly yield their blue, blue and yellow/blue companions respectively. Epsilon Muscae and Delta Sagitta yield no companions - all fire having reasons.



Bob Heale MPAS  
 15/8/2005