SCORPIUS

The Journal of the Astronomical Society of Frankston Inc.

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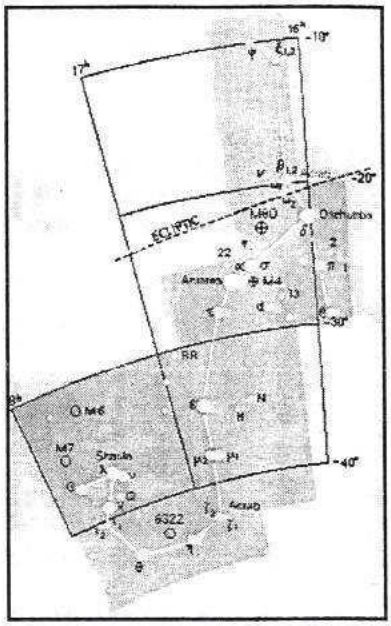
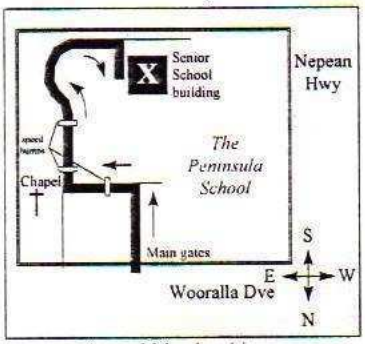
(May - Jun)



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.

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 253252**
Internet: http://www.peninsula.starway.net.au/~aggro/index.html
Email: aggro@peninsula.starway.net.au

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 & Acting Editor
Ian Porter (03) 59 854203

Vice President & Loan Instruments
Richard Pollard (0419) 100 802

Treasurer
Bob Heale (03) 9787 1748

Secretary
Roger Giller (03) 9702 2685

Committee of Management
John Cleverdon, Don Leggett, Peter Lowe, Peter Skilton, Sally Zetter

All phone calls before 8:30pm please.

FUTURE EVENTS

General Meetings:

Wed 19th July 2000 At the Peninsula School
Session 1: Beginners introduction session: **Telescopes**
Session 2: Loan telescope outside if weather is clear.
Session 3: Forum/chat/Video

Wed 16th August 2000 at the Peninsula school

Guest Speaker: Tanya Hill from the Melbourne Planetarium

Viewing Nights:

Members Only:

Sat Jul 29, Aug 5/26, Sept 2/30 all at *The Briars*, Nepean Hwy, Mt.Martha (Melways 151/E1).

If weather forecast for the Saturday looks bad, the Friday before may be used instead. New attendees must always confirm with **Ian Porter** on 5985 4203 before attending. 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 4th August and Fri 1st September, all at 8pm. Assistants are required.

Phenomenal Events:

- The Total Lunar eclipse on the 16th of July will be the best eclipse of its type this century! The eclipse commences at 9:57 pm AEST and continues until 1:53 am, with totality between 11:02 and 12:49.

Mornington Peninsula Astronomical Society

YOUR SOCIETY

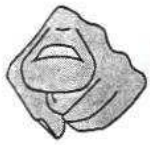
NEW MEMBERS

Welcome to the following new Society members:

Carol Anderson
Julien Beaumont
Jeremy Scott
John Watson
Tanya Wichmann
Rhonda Sawosz
Robyn Robertson
Debbie & Andy Spencer

The ASF is one of the largest astronomy groups in Australasia. Membership is currently at 162. 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 and glories 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.

RECENT MEETINGS

- Aprils Meeting was well attended, with many members keen to check out the new lecture theatre. The usual society business was carried out. Richard Pollard has outdone himself on the raffle prizes lately, with prizes that have been snapped up with "meteoric" speed! The second session saw members break up into groups, including a beginners group that covered some of the basics of sky motion
- Mays meeting had a slightly smaller turn out (perhaps due to the colder weather?). The usual "Sky for the Month" and "What goes up" were presented by Bob Heale and Ian Porter. There were many member contributions as usual. After the break, Bob Heale presented a talk on Galactic Distances and another group moved outside to see a demonstration of the clubs video telescope system.
- Junes meeting saw us move back into one of the classrooms, due to paying customers using the main lecture theatre. It was somewhat lucky the turnout was small! The library is finally back in action with the cupboards back in place and the collection complete. After the usual presentations, a video on the Tunguska impact was shown. The raffle went well again, with prizes all the way from Kennedy Space Centre in the U.S.
- Recent Public and school nights have fallen foul of the winter weather , with barely a glimpse of clear sky to be had. School and group nights we have done include: Langwarrin Park PS, Seaford North PS and the Young Scientists group at Rosebud scout Hall. Thanks to Richard Pollard,Bob Heale,Peter Skilton, David Huby, John and Roger Cleverdon , Ken Bryant and Bruce Tregaskis for their participation.

AURORA NETWORK

Recent auroral activity proved to be the first test of the societies network to alert members to aurora. Several members reported on their observations at the last meeting.

If you are interested in finding out more about this network for members, please contact Roger Giller on (03) 9702 2685 who is co-ordinating it.

SECRETARY'S JOTTINGS

- The society now has a mobile phone to act as the main contact number. This should alleviate the problems with the constant changing of numbers as members take on new positions or move on. The number is **0419 253252.**
- The number should be used for all contacts, unless you specifically wish to speak to someone. In particular, please give this number to people who wish to book for public nights, or have general enquires.
- The society has constructed a storage shed on one end of the observing slab at the Briars that will act as a shelter and storage for telescopes. Electricity will be connected to the shed during the year, allowing it to be used during observing nights.
- ***WORKING BEE July 22nd*** briars site at Noon. We will be doing a general site clean up and improving the security on the new shed.
- Donations of tables, chairs and shelves for the new building would be greatly appreciated.

LIBRARY MATTERS

The library has acquired some more material from the sale of Astronomy 2000 almanacs. These are available for borrowing by full members. Our librarian, Kathy Stabb, is more than willing to show you what is available. Members are reminded that borrowings are for a period of **one month** only, and can be reissued if necessary if you take the courtesy of phoning Kathy or any of the committee members who will relay the request.

The library has acquired the following new books:

Aurora: The Mysterious Northern Lights, by Candace Savage. Throughout the ages, the sheer magnificence and eerie grandeur of the aurora have evoked both fear and wonder. In this exquisitely colourful, informative and well researched book, the myths, history and the science behind these amazing lights in the sky are shared. Despite the title suggesting this is exclusively a northern hemisphere subject, the Aurora Australis which we experience locally is also covered in detail. This is a must-read for all those members who wish to gain an understanding of this beautiful phenomenon as we currently enter a solar maximum period of increased auroral activity, as it gives hints and tips on recurrent patterns in the phenomenon, for example that one auroral sighting

often follows 27 days after a previous observation.

Feature Article

THE NEW MELBOURNE PLANETARIUM

On the 30th March, Ros and I were fortunate enough to be invited to the opening night of the Melbourne Planetarium's new show, *Out of Darkness*, at Science Works in Spotswood (Melways map 56/B1). You get there either by car over the Westgate Bridge, by ferry from Southbank, or by a 10 minute walk from Spotswood railway station.

This was a spectacular gala opening event, with the Premier's wife in attendance, Robyn Williams from the ABC Science Show, University astronomers, more local councillors than you could poke a stick at, and of course members of the Museum itself from the board of directors down to volunteers. Hob nobbing aside, the show was well worth the effort of dressing up.

This was the first time we'd been to the new Planetarium facilities, so were pleasantly surprised to see the old black Goto planetarium projector proudly displayed there as a museum piece in the foyer, together with pieces from various meteorites from around Australia and a couple of orreries. The new Planetarium is the only one in the Southern hemisphere to employ digital technology rather than optical methods.

(1) **view of entrance foyer, showing, the former projector raised above the ground.**

Inside, the facilities are ultramodern, sporting a 16 metre diameter aluminium perforated alloy dome, about twice as large as the old dome in Swanston Street. The perforations cleverly allow noise from within the dome to escape and be absorbed by baffles behind the dome. Those who recall the former Planetarium in Swanston Street will be familiar with the ability to hear with crystal clarity anyone conducting a conversation on the exact opposite side of its solid dome. The room is specially sound-proofed and includes speakers both around and above the dome, delivering 6 channel stereo surround sound.

The projection area of the new American-built dome is over 400 square metres and we were told it had more than 30,000 rivets to hold it up. Of course, of the 146 reclining seats in the packed dome, I just happened to pick the only seat that was broken. Nevertheless, the view of the dome was fine.

Over 700 red, blue and green lights around the base of the dome are used for special effects and, when all are turned on together, create the white ambient light during entry and exit from the facility. For imaging, there are in fact 46 ancilliary slide projectors, as well as 3 video projectors and 2 zoom-slew special effects projectors peppered around the room.

Panoramic 360 degree scenes are created by 12 twin "dissolve" slide projectors equally spaced around the dome's circumference, and able to produce a seamless horizon. Each twin projector is in fact two projectors mounted one above the other so that one slide can fade (or dissolve) out as it is replaced by a second image. All-sky static images are created by using 6 dissolve projectors, pointing upwards. Five other sets of dissolve projectors face the front of the dome to enable single slides to be shown.

The special effects projectors enable accurate depiction of objects approaching and receding, and employ a motorised mirror, together with a large zoom lens. Special effects include correct sunrise/sunset colour changes, meteor paths, aurorae, lightning, snow and clouds. Video footage and animation are projected using standard video projectors. The Planetarium has a single fixed one, and two that are motorised to enable them to be pointed around the dome.

The heart of the Planetarium uses the latest American digital projection technology, a customised Digistar II computer graphics system, which at its heart is basically a powerful computer system driving a large computer screen that is positioned horizontally. A large fish-eye type lens then projects the screen up and onto the dome above. Definition at the extreme edges of the dome is therefore less clear than directly above the lens, however, it can provide excellent rendering of movement through space in 3 dimensions.

The Digistar's database contains 3D positions of 9,094 stars in the Milky Way, including all stars down to magnitude 7.96 and out to 200 parsecs from Earth. It can also travel forward or backward in time up to a million years and accurately depict the changed arrangement of stars in the sky with time due to their proper motions. Not being content with astronomical rendering alone, it can also potentially project a 3D model of a part of human DNA onto the dome to enable clear viewing of its molecular structure.

The shows currently on offer are about 45 minutes in duration and include the imported *Tycho Goes to the Moon*, a story aimed at young primary school level children, and telling a story of the supposed first (and mischievous) dog on the Moon who takes his owners on a quick tour of the inner solar system before returning to Earth. Cassandra (7) and Christopher (3) thoroughly enjoyed the story and considered this the highlight of a recent trip to the Museum, though this was a tough call.

Also showing is the imported *Journey to Jupiter*, that takes you on a guided tour through the outer solar system, as if organised through a futuristic tour company, and is aimed from 8 year olds to adults. The *Out of Darkness* production on the other hand is aimed at 12 year olds to adults, and commands more concentration than the other shows. It tells the story of how astronomers in the twentieth century sought to understand the universe. Together, these three productions use all of the technical capacities of the computing and projection systems.

The new *Out of Darkness* show was home grown and produced entirely in Melbourne over 6 elapsed months by a team of over a dozen animators, digital artists, graphic artists, musicians, computer programmers and science communicators (some drawn from well-known television productions), and combines animation, video footage and still photographs.

(2) **the production team for the current shows on offer.**

The story traces the knowledge gained by astronomers in the last century as they explored the stars and turned our understanding of the universe on its head. Space travel, astrophotography and radio astronomy have revolutionised our view of the universe and our place within it. Early 20th century astronomers, led by Edwin Hubble, discovered that our Milky Way galaxy was just one of a vast Universe of galaxies. What's more, these galaxies were not only incredibly distant but they were racing away from us. We began to realise that the Universe had a beginning - the Big Bang - and that space was vast and expanding. But we were only seeing with our eyes. The sky is full of radiation that we cannot see. Radio and microwave antennae, infrared telescopes, and space observatories gathering ultraviolet radiation and X-rays, show us what the sky looks like in these different types of radiation. Incredible new objects have been discovered - supermassive black holes, gigantic radio galaxies and quasars, the powerhouses of distant galaxies. Pulsars were found and the cause of supernovae revealed. Gamma ray bursts, amongst nature's greatest mysteries, were seen to unleash remarkable amounts of energy.

The 20th century brought mind-boggling discoveries and leaves us with many questions to ponder. Humanity's view of the Universe changed drastically. *Out of Darkness* takes the viewer on a spectacular journey through the big questions, revelations and unsolved mysteries of modern astronomy.

At the end of the show, Tanya Hill, the Museum's young astronomer, then concluded the presentation with a live walk through of what was in the sky that night, revolving around the more well-known constellations and the major planets, and demonstrating the motions of the stars in the night sky and some aboriginal skylore. The audience then gravitated outside with glass of wine in hand to view the jewelbox and a double star through the smaller telescopes outside on the Museum's oval, albeit under unavoidably strong light conditions from the Westgate Bridge and the city.

The production was unreservedly excellent, and I highly recommend it to you.

Multiple shows occur daily whenever the Museum is open (for times phone 9392 4800), cost is $13 for adults, $7 for children, $34 for family, which also includes full access to the Museum as well (pre-GST prices of course). For an extra special treat, you can take a special return ferry along the Yarra from Southbank Melbourne Exhibition Centre each Thursday night, going straight to the Planetarium's front door. The complete cost for the evening is $18 and shows begin sharply at 7:30pm and 8:30pm, with bookings on 9392 4819.

I have asked Tanya Hill to come and speak with us in Mt.Eliza, and she has kindly agreed in her busy schedule for our August meeting, so if you have further questions about the excellent facilities and production at the Planetarium, you'll get the opportunity to ask her at that meeting.

Peter Skilton

Scope Stuff

SHARPENING TELESCOPE OPTICS.

Early in 1999 I had the opportunity to view through my friend's 4 inch Vixen apochromatic refractor. The views at high power were exquisite – Mars was nice and crisp, and the stars were all little dot points with faint Airy discs around them. After this breathless experience of perfection, it was no fun to return to the blobs and astigmatic images that my telescopes were giving me. I felt that I should be getting better than what I had. Following is what I did to each of my telescopes to improve their images.

University Optics 80mm f6.25 Refractor – I had never been too happy with the astigmatic images in this telescope. Seeing a special for an 80mm f6.25 ED glass objective lens advertised at Apogee in the USA, I ordered it. On replacing my old doublet with the ED glass, the image was immediately improved at low and high powers. However, I noticed slight astigmatism in a different direction to what had previously been the case. I thought about it, and it occurred to me that maybe I had a collimation problem. Whereupon I took my cordless drill to the telescope, and lengthened the screw holes hold the focuser, thus enabling slight collimation adjustment. The ED glass objective's image was improved to the point where I had the nice Airy discs that I wanted.

The sad part of this story is that I then went back and put the old optics back in the refractor, and collimated them. The image was much better than it had been all the previous years, though not quite up to the level of the ED glass (but not all that far away from it either). Had I achieved these images earlier, I would never have felt the need to purchase the ED glass in the first place.

Celestron SP-C8 - The telescopes produced in the late 1980's, as was this one, were notorious for their poor quality. I always thought there was something wrong with this

C8, as I had consistently gotten better images through my K-mart 4.5 inch reflector. My numerous attempts at collimation did nothing to improve matters. When I thought I had the sharpest image, I would also have a spike to the side. Finally, I took the telescope to Roger Davis at the Binocular and Telescope Service Centre. Roger looked at it and determined that the baffle tube was slightly out of line, thus causing my problem. Roger fixed this problem for a modest price.

When I got the telescope home the low power images were obviously better, but the high power images left something to be desired. The telescope was slightly out of collimation, and it took me ten days before I achieved the much sharper images that I wanted at high power. My manual gives a method for collimation of C8s which turned out to be not good enough. It said to aim at a brightish star, and use its greatly defocused image for collimation. It later said that one could use a star's Airy disc for collimation.

Despite trying for several nights, I just could not get the recommended method to give me the sharpness I wanted. Finally, after ten nights, the night arrived when the atmosphere was settled and I could observe the out of shape Airy disc directly with a 5mm orthoscopic eyepiece. After a few attempts at collimation, I got the bouncing, blobby Airy disc centred on its star, and my high power images became the best they ever had been in that telescope.

14.5 inch Compact Starsplitter Dobsonian - Having improved the other two telescopes, I thought I would try to improve the dobsonian. I had noticed when using it that many of my low power eyepieces were distorted at the edges, and I figured that it was probably due to the problem of all these f4.5 instruments, namely coma. Hence I purchased a Televue Paracorr coma corrector. Following is my review of the gadget.

Televue Paracorr coma corrector. - The Paracorr now only comes in a 2 inch diameter with an insert for 1.25 inch eyepieces, and a thread for a camera T-ring. It has the effect of increasing the focal length of the telescope by about 15%, and hence each eyepiece gives 15% more magnification than what they used to. Following is what I found using my various eyepieces in the Paracorr.

40mm 2 inch Konig - Image improved in the centre, but worse at the edges.
40mm Meade 1.25inch SuperPlossl – Image improved across the entire field.
32mm 1.25 inch Plossl from York Optics – Image slightly improved in centre, but worse at edges.
26mm Celestron Plossl - Image slightly improved in centre, but worse at edges.
20mm Erfle - Image worse across the entire field, seemingly astigmatic.
16mm Widescan – Image pretty awful, but it was pretty awful without the Paracorr.
14mm Meade Ultrawide – Image amazingly sharper across 90% of the large field.
Higher power eyepieces - I couldn't really tell the difference in image quality.

Thus I found the most eye catching improvement to be in my 14mm Meade Ultrawide, an eyepiece which I previously had thought was brilliant anyway in that telescope. And the only other improvement of the type I expected was in the 40mm Meade Superwide. The only conclusion I can draw from this limited test is that the Paracorr does indeed work as advertised, but only with premium quality eyepieces. While I had not been expecting too much from the Konig and Erfle, I was surprised at the lack of improvement in the plain Plossls. However, I had previously read that most cheap Plossls sold are not of the real Plossl design, but are of the similar double symmetrical design. Perhaps this was the cause of what I observed.

If you are thinking of getting a big dob with premium quality eyepieces and with a Paracorr, it is important that you give careful consideration to eyepiece selection. According to Nagler, the ideal exit pupils for your telescope will be 2mm, 4mm and either 6 or 7mm. For an f/4.5 telescope this equates to 9mm, 18mm and 27 or 32mm eyepieces. But if you are using the Paracorr, it becomes an f/5.18 telescope system, and the ideal eyepieces become 10mm, 21mm and 31 or 36mm

Note also that a new version of the Paracorr is coming out, which allows more flexible distance placing of eyepieces within it.

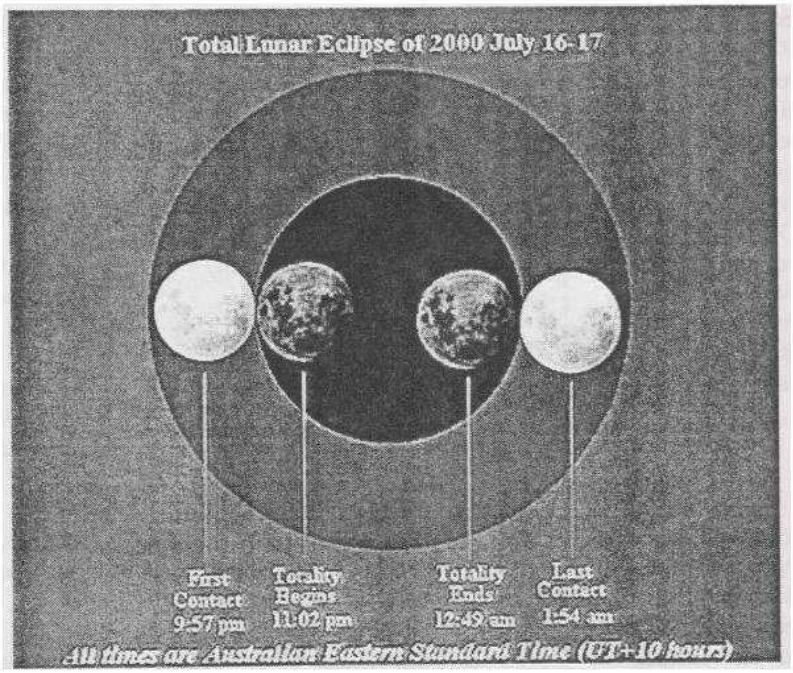
Renato Allesio

In the next edition:

Lunar Eclipse Reports
David Hubys "NSW Astro Odyssey"

Left -
Working Bee at the ASF Briars site. 20th May 2000

Photo - *By John Cleverdon*



Peter Skilton

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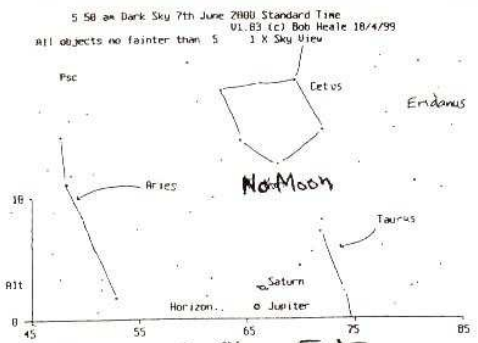
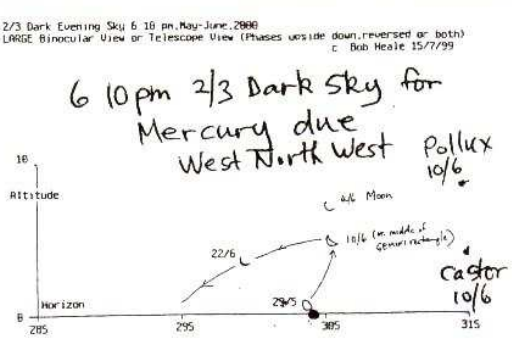
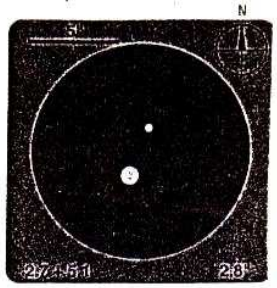
SKY FOR THE MONTH 18th MAY — 20th JUNE (inclusive)

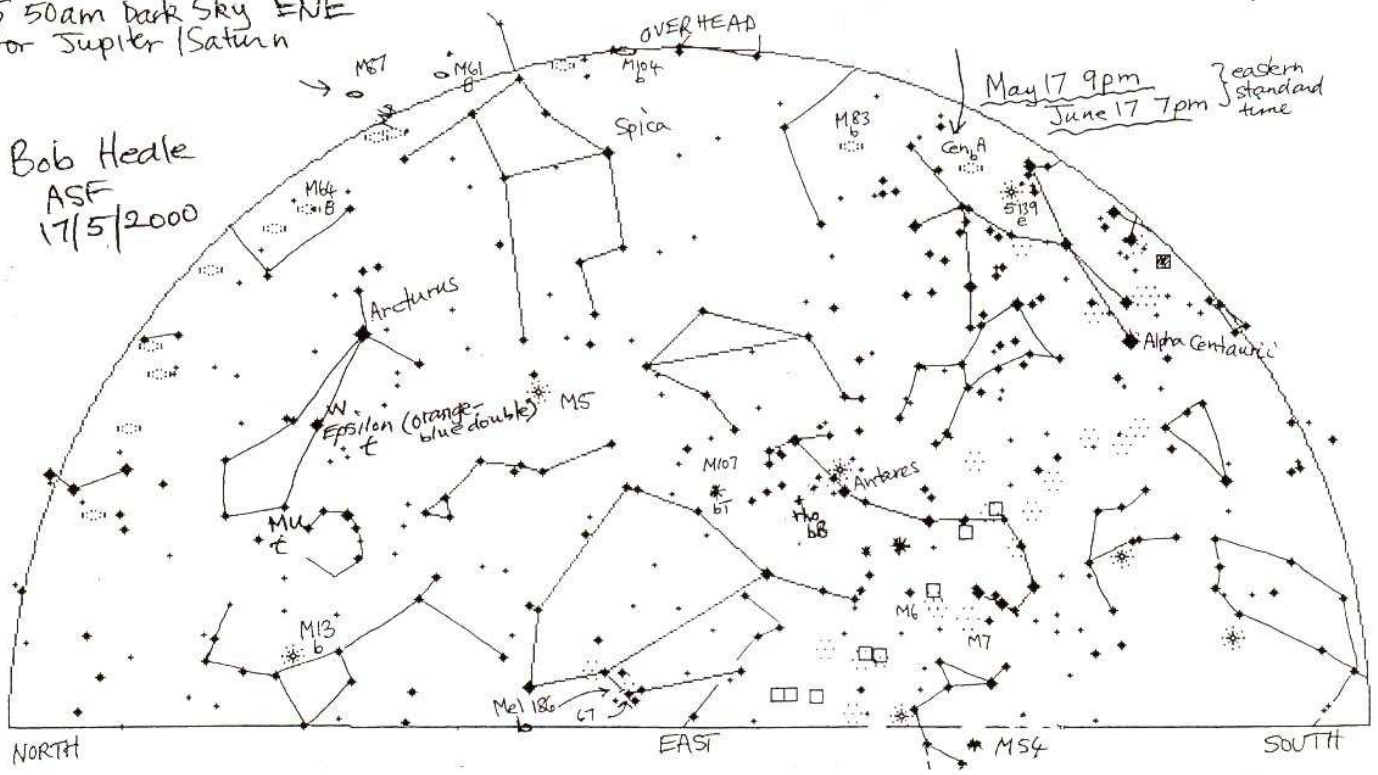




Epsilon Bootes needs small telescope



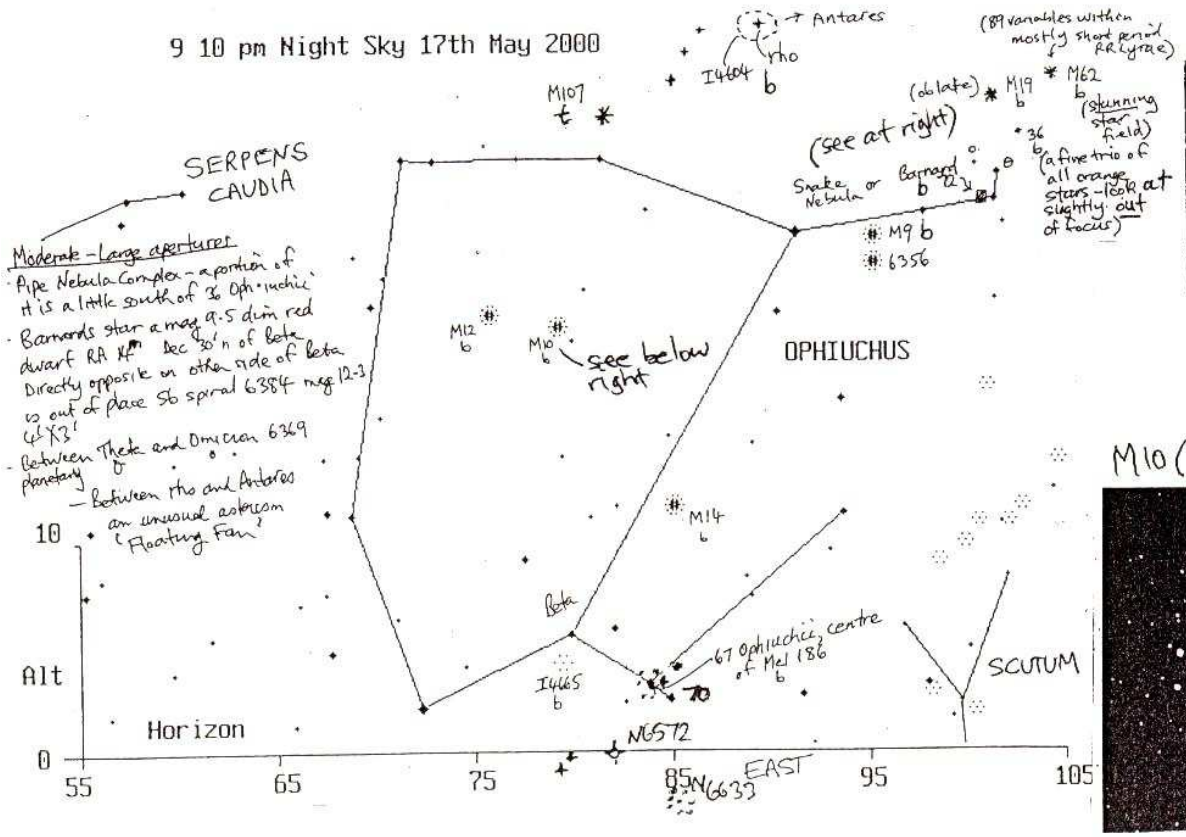
5 50am Dark Sky ENE for Jupiter/Saturn

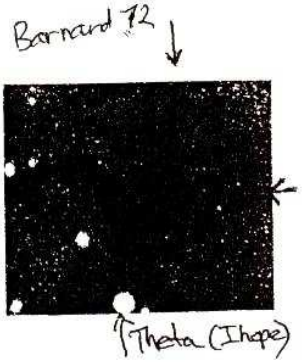


Bob Heale
ASF
17/5/2000

May 17 9pm
June 17 7pm
} eastern standard time

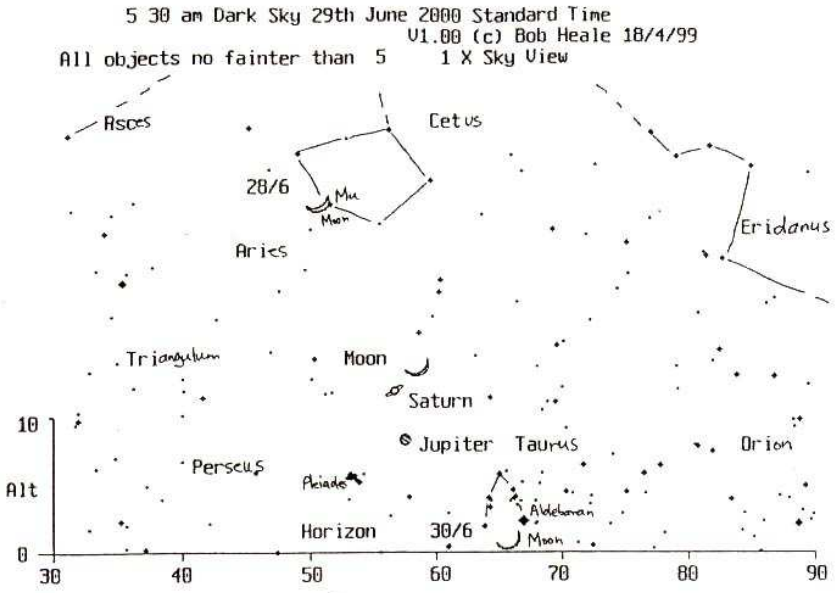
9 10 pm Night Sky 17th May 2000

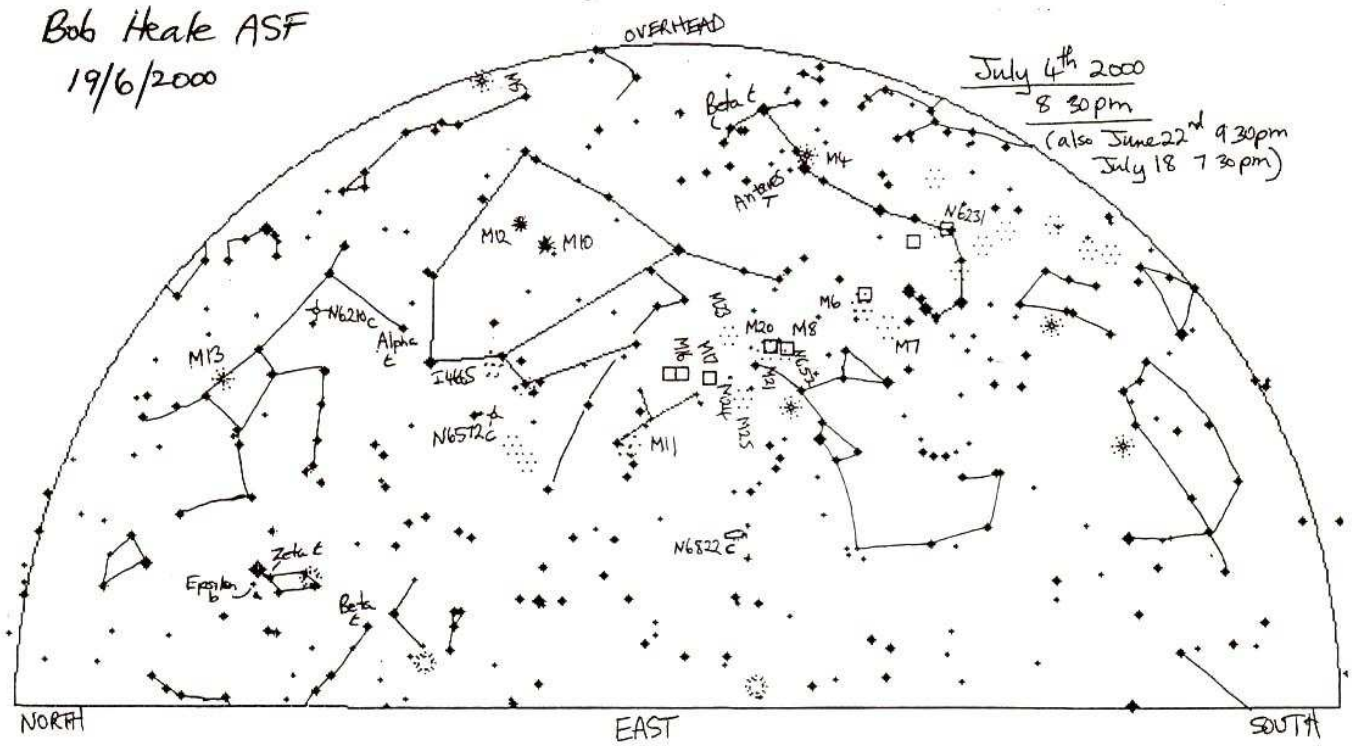




M10 (NGC 6254 mag 6.5 app. diam 12')

SKY FOR THE MONTH 21st JUNE — 18th JULY 2000 (inclusive)





Full eclipse of Moon 16/7/2000 11 56pm