



SCORPIUS

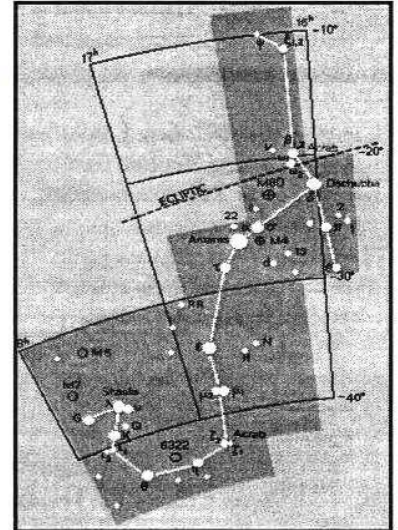
The Journal of the
Astronomical Society of Frankston Inc.

RegNo: A268 ABN: 34569548751 ISSN: 1445-7032

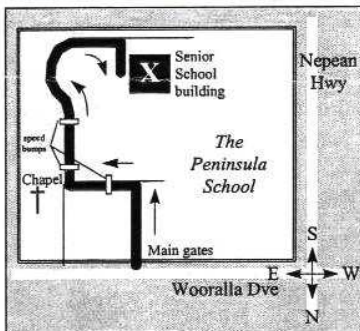
Volume XI, No. 1 (Jan 2002)

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 theatre, 8pm on 3rd Wednesday of each month except December.
Phone: 0419 253 252 **Mail:** P.O. Box 596, Frankston 3199, Victoria, Australia
Internet: <http://www.asfnet.20m.com>
E-mail: aggro@peninsula.starway.net.au



Visitors are always welcome!



Annual Membership

Full Member	\$35
Pensioner	\$30
Student	\$25
Family	\$45
Family Pensioners	\$40
Newsletter Only	\$16
Organisation	\$50

DUE 1ST OF JANUARY EACH YEAR

President
Peter Skilton 0414 645 077

Vice President
David Girling (03) 5975 6506

Treasurer
Neil Hewson (03) 5975 7710

Secretary
Sally Zetter (03) 5976 2679

Editor
Richard Pollard 0419 100 802

Committee of Management:

Jane McConnell, John Cleverdon, Marty Rudd,
Russell Thompson, Ian Sullivan

All phone calls before 8:30pm please.

FUTURE EVENTS

General Meetings:

Wed 16th Jan 2002

Session 1: Several members will speak on their Leonids Expeditions and experiences with the great storm of 2001.

Session 2: Video on *Miracle in Orbit: The Hubble Space Telescope*.

Session 3: Loan telescope and informal chat outside if weather is clear.

Wed 20th Feb 2002

Session 1: Ian Sullivan will speak on his *Great African Eclipse Safari*.

Session 2: Video on *Living With Dinosaurs* (relics from when the asteroid didn't pass us by, and a good overview of what happened to them).

Session 3: Loan telescope and informal chat outside if weather is clear.

Wed 20th Mar 2002

Session 1: Peter Skilton will speak on *The Natural Treasures of Cranbourne*

– *Hunting Number 13*. In the 1850's Victoria was famous worldwide not so much for its gold rush, but rather for the enormous nickel-iron meteorites that were discovered on the Mornington Peninsula and which were the largest in the world. Twelve are known to science, but perhaps there are more.
Session 2: Video on *Woomera – The Silent Partners*.
Session 3: Loan telescope and informal chat outside if weather is clear.

Viewing Nights:

Members Only:

NOTE: Members nights are also now held on Fridays!

Jan 11th/12th and 18th/19th, all at *The Briars*, Nepean Hwy, Mt. Martha.

Feb 8th/9th and 15th/16th, all at *The Briars*, Nepean Hwy, Mt. Martha.

New attendees must always confirm with **David Girling** on 0421 452 428 or 5975 6506 before attending. Remember for security reasons you can only attend on planned Members' Nights, unless by prior arrangement with **David** who will liaise with *The Briars* accordingly. Last person out must switch on the shed security light.

Working Bees: Feb 3rd and Mar 3rd

at *The Briars* site, starting at 11am, with bbq food provided. Society Directions discussions will follow after these for those interested in participating.

Public, School & Community Groups Viewing/slide nights:

If you can assist, please contact the Secretary. All events are at 8pm.

Fri 18th Jan, Public Viewing, *The Briars* Visitors Centre, Melways 145/F12. 60 expected. We need 4 telescopes.

Fri 25th Jan, Public Viewing, *The Briars* Visitors Centre, Melways 145/F12. 60 expected. We need 4 telescopes.

Mon 4th Feb at Camp Manyung – about 100 students.

Wed 6th Feb at Camp Manyung – about 100 students.

Mon 18th Feb at Woodleigh School (details to be confirmed).

- Assistants are required for all of the above viewing nights. New members are welcome to watch, and participate if desired – after all, we all started somewhere!

Social Events

The annual society breakup barbecue was held on Saturday December 9th at *The Briars*, and saw a good turnout of 31 members, whose children occupied themselves playing cricket for most of the afternoon. Although total cloud cover precluded any observation during the night, the members so assembled, ceremoniously buried the Time Capsule. This was no easy task as dry clay was encountered a metre down! Gerry Holt brought along his trusty Polaroid camera so that a couple of instant photographs of the assembly were taken and then deposited in the Time Capsule with autographs and DNA samples before it was sealed. There were some very interesting things placed in the time capsule indeed! If you'd like to know more, just stick around another 50 years or so.

There will be a Solar Day held after the working bee on Sunday, 3rd March at *The Briars* site. This successful event held last year by Ian Sullivan will

be repeated again this year by Ian, complete with his arcane instrumentation. New comers are more than welcome to attend.

YOUR SOCIETY

NEW MEMBERS

Welcome to the following new Society member(s):

Darren Ashdown
Jessica Henderson
Ken Marriott
Greg and Cassie Richards
Elizabeth Skringar and Perry Makris

The current number of members is 149. If you wish to join the ASF email information alert lists E-Scorpius or EAMN for meteors, please contact Richard Pollard. If you wish to go on the southern Australia Aurora Alert telephone network, then contact Roger Giller on (03) 9702 2685.

Apology from the Editor

It seems that the previous edition of Scorpius may have been less than satisfactory in printing quality. The reason is the photocopier we use at the Frankston Council offices was malfunctioning and if we'd waited for it to be fixed we would not have been able to get vital Leonids information out in time, so we decided to persevere with what we had. I apologise if your copy failed to meet expectations.

VALE AUBREY MATHER

Long time member Aubrey Mather passed away on December 17th after a lengthy illness this year. Although 90 years old, he still maintained an active interest in astronomy and belonged to the society since 1983, during which time he donated an 8 inch telescope. Aubrey spent his career in the fire brigade, from which he retired 30 years ago, and leaves behind his wife, Elaine, to whom he was married for over 50 years.



**FIRST
OBSERVATORY
INFORMATION
NEEDED**

At the November meeting, Peter Norman requested any information from members that might be of use to the author of a forthcoming book on the *Sesquicentenary of the University of Melbourne*. He was after information on Professor Parkinson-Wilson who was a former professor of Mathematics at the University of Melbourne and had a home in Mornington and an astronomical observatory at Snapper Point, this being the first one built on the Mornington Peninsula apparently. The problem is where was it built exactly? Prof. Parkinson-Wilson died while marking exam papers, and is buried in Mornington cemetery. If you have any leads, please contact Peter via phone/fax on 5975 3040.

ASTRONOMY 2002 Is Still Available

The 2002 edition of the excellent and highly popular annual sky almanac *Astronomy 2002* can be picked up at any society general meeting, or by leaving a message on the Society's phone number of 0419 253 252. Price is still \$18 to members, or \$20 to non-members. Ordered books can be collected at any society get-together, viewing night or monthly meeting, or by special arrangement.

As in all previous years, remember that proceeds made on the sale of these books supports your Library for purchase of all books, videos and other material. If you have any suggestions for new additions, then please pass them to the Librarian.

UPCOMING EVENT:

ASV 80th Birthday Star Party
 The Heathcote-based Astronomical Society of Victoria is holding a Star Party over the March long weekend. Cost is \$25/head with bbq, \$15 without, children are \$15/\$10 each respectively. Registration forms can be obtained from the Editor. These gatherings are an excellent way to interact with many other amateurs in a social atmosphere. I personally recommend them! See you there!

RECENT MEETINGS

November's meeting, chaired by the President, was attended by 53 and was also the annual general meeting, which was completed in 22 minutes. The entire proceedings were video taped (on standard VHS format) for inclusion in the library should you wish to borrow them. Following the preamble, David Girling reported on his trip north



of Woomera with Don Leggett to observe the Leonids meteor storm of the morning of November 19th. They set up about 100 metres off the main Stuart Highway and received an excellent display of meteors, peaking at about one per second. Other members reported some of their early observations. Heinz and Ilse Rummel observed from the Flinders Ranges and counted over 800 Leonid meteors. Peter Skilton observed from Woomera and tried about 250 photos and a video of the radiant, and reported a large number of head-on meteors and an abundance of medium to bright ones. Another member had excellent viewing at Broken Hill, while Roger Giller went to Nagambie and was getting about 40-50 meteors visible in a 5 minute span. Reports by Ros Skilton, George and Thurley Fowler in Frankston say about 15 very bright and spectacular fireballs with separations, through patches in thick cloud. Sue Stoner reported about 9 fireballs from Tootgarook. Richard Pollard and Phil Snelling from Alice Springs had relayed seeing about 2000 per hour. Alfred Kruijshoop with his wife, brother and his wife, observed visually at Swan Hill in four different directions and were seeing about 1 meteor per second for over an hour on the 19th. Similarly impressive meteor counts were reported by Neil Hewson at Lake Coleraine. This was followed by Roger Giller presenting on Aurorae in the Sky Lights segment. The northern hemisphere had enjoyed some impressive aurorae in the last month and, here in Victoria, there was one reported about 4:30am AEST by Jarrod Anderson on October 22, which rapidly swung our Aurora Alert Telephone Network into action. Bob Heale then presented two months' night sky info and handed out his sky charts. Ian Sullivan followed this with a quiz on identifying various astronomical

numbers and their significance. Following the raffle draw, with bumper prizes of an astronomical encyclopaedia and wine, the group paused for tea break, then reconvened in two sessions. The video shown was on *The Christmas Star* in the library room and, in the main theatre, guest speaker John Goodall presented on Astronomical Photography to an enthusiastic audience. John Goodall is a retired secondary school teacher of 35 years experience, with about this length of experience in astrophotography. He was a foundation member of the Ballarat Astronomical Society, and was also a member of the ASF in its early days, as well as having prepared a TAFE course on astrophotography in Frankston for the general public. Currently he consults in physics, electronics and scientific photography at Chisholm Frankston and Rosebud campuses. His Powerpoint slide presentation displayed examples of his exquisite photos over the last 30 years on all types of sky objects and phenomena, including recent images taken of the Leonids meteor shower from Dromana. John also demonstrated his ingenious camera tracking gear, composed of an old SEC hot water heater 24 hour clockwork time switch that he had obtained from the Tyabb Packing Shed some years ago (a mechanical timer used to ensure offpeak electricity was used to heat the water). He covered examples of the five types of astronomical photography, being untracked, tracked, focal plane, eyepiece projection and video CCD. Meeting closed at 11:15pm.

Schools and Community Groups:

Thomas Mitchell Primary school was visited at Endeavour Hills on November 9th, where an unexpectedly large turnout of 270 kids, siblings, parents and teachers listened to Richard Pollard and Peter Skilton talk for an hour and a half while it rained outside. Nevertheless, a reasonable turnout of telescopes was present just in case the skies cleared. There was an anticipated magnitude -7 Iridium satellite flare during the evening, but the clouds were not kind. Thanks in the field to Phil Snelling, Greg Walton, John Cleverdon, Ken Bryant, Don Leggett, Russell Thompson and Renato Alessio.

Seventy pupils and teachers from Resurrection Primary school in

Essendon had some Astronomy on the Move at the Briars Education Centre on November 14th. The talk was given by Peter Skilton and, unfortunately, cloud prevented viewing of all except a very orange Mars in the sky afterwards. Thanks in the field to Val and Greg Walton with their Leviathan telescope, Neil Hewson with his computer controlled instrument and Sally Zetter.

The Society visited 75 grade 5 and 6 pupils and teachers at Kingsley Park Primary school on November 22nd. Peter Skilton gave the talk and, despite heavily overcast weather, the assembly was able to see the lunar craters and get glimpses of Mars afterwards, ahead of approaching poor weather. Thanks in the field to Greg and Val Walton, David Huby, Ian Sullivan and Russell Thompson.

Kingsley Park Primary was again visited on November 26th, when the remaining 75 pupils in the grade 5 and 6 classes heard Peter Skilton give the talk on the solar system, and obtained glimpses of the moon afterwards through the heavy cloud. Thanks in the field to David Huby, Greg and Val Walton, Russell Thompson, Don Leggett and John Cleverdon.

The public night on December 7th was attended by 25 members of the public, despite very cloudy conditions. Peter Skilton gave the talk, and present in the field were Greg and Val Walton, Bob Heale, Neil Hewson, Don Leggett, John Cleverdon, David Huby, Ronald Ritchie, Ian Sullivan, Ken Bryant and (sadly sporting totally black photos of Leonids from Ayers Rock), Jane McConnell.

Ninety Derinya Primary grade 4 pupils and teachers were visited at the Briars Education Centre on December 12th. Ian Sullivan delivered the talk, before the group moved outside under a perfectly clear sky. Thanks in the field to Greg Walton, Neil Hewson, Ken Bryant, Bob Heale, David Huby, Bruce Tregaskis and John Cleverdon.

The public viewing night at The Briars on January 4th saw 30 in attendance on a pleasantly warm and clear evening, with good views of Saturn and Jupiter available under moonless skies. The talk was given by Peter Skilton as Richard Pollard unexpectedly found himself staying a few days in hospital. Thanks in the field to Greg Walton,

Bob Heale, David Huby, Ken Bryant, Bruce Tregaskis, David Girling, Ian Porter, John and Roger Cleverdon, Ron Ritchie and Don Leggett.

The working bee and free BBQ on November 4th was well attended and saw guttering added to the upper shed for connection to the water tank, and shelving installed around the observatory shed. The electrician has installed a 15 hour timer to the observatory building as a safeguard to ensure that power is automatically disconnected from all external sources if inadvertently left switched on after use. Thanks for helping to Mark Hillen, David and Caitlin Girling, Don Leggett, Roger Chandler, Russell Thompson, Peter and Christopher Skilton, John Cleverdon, Jane McConnell, Jeremy and Lucy Scott, Richard Pollard, Darren Baker and Phil Snelling.



The working bee at The Briars on January 6th was held under very hot conditions. Thanks to Mark Hillen, John Cleverdon, Jane McConnell and Greg Walton for their help. Thanks to Mark and Greg for supplying their vehicles so that all the rubbish could be removed from the site, and to John for loading the trucks, and to Jane for getting the gas bottle refilled so they attendees could have lunch. Thanks to David Girling for his usual sterling efforts with the snags.

NEWS

Kevlar vs. Comets: Bullet-Proof Craft to Get Closest Comet Views Ever

The CONTOUR (Cometary Nucleus Tour) spacecraft is being armoured with Kevlar and another tough material, Nextel. The probe will launch in July 2002 and is



designed to zoom within a hundred kilometres or so of the core of two and possibly three comets.

CONTOUR should deliver the most accurate measurements ever taken of comets. It is expected to reveal more about the still-mysterious insides of the icy objects than any other instrument, said Reynolds, an engineer on the mission.

In November 2003, CONTOUR will sneak to within 100km of comet Encke and take pictures as sharp as 4 metres per pixel. This is 10 times sharper than images produced by Deep Space 1, which passed within about 2,200km of comet Borrelly.

Getting close to a comet is a dangerous game, requiring tremendous precision. Mission planners say that if for some reason the spacecraft gets closer than 100km to its target, it may burn up in the roiling clouds surrounding comets Encke, or later, near comet Schwassmann-Wachmann 3. (Space.com)

The Sun's Dark Secret

Scientists now have the first clear picture of what lies beneath sunspots, enigmatic planet-sized dark areas on the Sun's surface, and have peered inside the Sun to see swirling flows of electrified gas or plasma that create a self-reinforcing cycle, which holds a sunspot together.

The new research was conducted using the Michelson Doppler Imager onboard the Solar and Heliospheric Observatory (SOHO) spacecraft.

Sunspots have fascinated people since Galileo's observations of them contradicted the common belief that heavenly objects were flawless. Sunspots remain mysterious because at first glance, it seems they should rapidly disappear. Instead, they persist for weeks or more.

Astronomers know sunspots are regions where magnetic fields become concentrated. Yet magnetic fields of like polarities repel each other. The strong solar magnetic fields should naturally repel each other also, causing the sunspot to dissipate. In fact, observations show that surface material clearly flows out of the spots.

What was discovered was that the outflowing material is just a surface

feature. If you look a bit deeper, you find material rushing inward, like a planet-sized whirlpool or hurricane. This inflow pulls the magnetic fields together. Solar astronomers have long known that the intense magnetic field below a sunspot strangles the normal up-flow of energy from the hot solar interior, leaving the spot cooler and therefore darker than its surroundings. The suppression of the bubbling convective motions forms a kind of plug that prevents some of the energy in the interior from reaching the surface.

The material above the plug cools and becomes denser, causing it to plunge downward at up to 5,000 km/hour. That draws the surrounding plasma and magnetic field inward toward the sunspot's centre. The concentrated field promotes further cooling, and as that cooling plasma sinks it draws in still more plasma, thereby setting up a self-perpetuating cycle. As long as the magnetic field remains strong, the cooling effect will maintain an inflow that makes the structure stable. The superficial outflows seen right at the surface are confined to a very narrow layer. Since the magnetic plug prevents heat from reaching the solar surface, the regions just beneath the plug should become hotter.

Using a technique like in medical ultrasound scans, the new methods explored beneath the surface of the Sun by analysing sound-generated ripples at its surface, and based on variations in the speed of sound detected, showed that conditions were indeed hotter immediately beneath the magnetic plug.

NASA Panel Endorses Scaling Back the ISS

By Marcia Dunne
Associated Press
December 2001

CAPE CANAVERAL, Fla. (AP) _ The NASA Advisory Council is endorsing the idea of scaling back the international space station programme, saying the huge cost overruns "cannot be excused and must not be ignored."

Despite the technical successes in orbit, "the viability of the entire international human spaceflight enterprise is being undermined by a loss of confidence in NASA's ability to exercise adequate management and cost discipline," the council's chairman,

Charles Kennel, wrote in a letter to NASA dated Wednesday.

The NASA Advisory Council is a standing body of experts that offers guidance to the space agency. Last month, an independent task force on the space station's budget problems suggested that NASA reduce the station work force and number of shuttle flights and reorganize station management to get costs under control. The overruns are in the billions; NASA has yet to determine exactly how many billions.

Kennel said the management deficiencies identified by the task force



must be resolved and will require major restructuring. The advisory council recommended

that NASA focus for the next two years on a reduced space station, big enough for just three residents. That is how many people are living up there now. No commitments to expand the space station should be made until NASA has regained public confidence, the council added.

A lifeboat and living quarters necessary to accommodate six or seven astronauts already have been shelved by NASA, at the Bush administration's insistence. (Space.com)

Japan Presents its Biggest Rocket, the H-2A

By Hans Greimel
Associated Press
December 2001

NAGOYA, Japan (AP) _ Japan's troubled space programme unveiled its biggest rocket Friday, a towering eight-engine craft seen as rejuvenating the country's bruised ambition to become a world leader in the aerospace business.

The newest H-2A rocket stands 188 feet, slightly taller than a simplified version launched for the first time in August. The agency hopes that its Jan 31 test launch will end any notion that the flawless liftoff of its sister model was a fluke.

"The success of the first launch builds a little confidence, but that is not enough," says Yoichi Fujita, spokesman for the National Space Development Agency of Japan, or

NASDA. "Launching a rocket is very risky."

The H-2A would be used commercially to launch satellites.

Japan scrapped an earlier series of rockets, the H-2, when one failed to get its payload into orbit and another had to be exploded by remote control so it wouldn't veer out of control.

At the Mitsubishi factory in the central city of Nagoya where the new black-and-orange rocket was laid out in a stadium-sized hangar, blue-suited engineers hustled Friday to make sure that doesn't happen again.

"From now until launch, we'll be double checking everything," said rocket scientist Atsushi Matsui, adding that technicians were on guard for any last minute glitch _ from microscopic welding fissures to dust in the engine valves.

Next month's space shot is a make-or-break moment for the \$69 million H-2A rocket. It will be the second and final test flight before Japan embarks on 11 "operational" flights scheduled through 2005. (Space.com)

New Signs of Water on Mars Create Hope of Great Discovery

By Leonard David
Senior Space Writer
and Robert Roy Britt
Senior Science Writer
14 December 2001

The Mars Odyssey spacecraft has uncovered preliminary yet tantalizing evidence for water near the surface of Mars.

Scientists already know there is water ice in the polar cap. But water ice near the surface in warmer regions of the planet would be a remarkable and long-sought finding that would have broad implications in the search for extraterrestrial life and for the possibility of human exploration of Mars.

The data, collected during tests of Odyssey's neutron spectrometer, show signs of hydrogen, which may or may not mean there is water. Hydrogen is one component of water but also exists alone and in other substances.

NASA researchers stressed that the findings are preliminary. They aren't sure exactly what the new data tell them, but they were optimistic enough to discuss the research recently at a

meeting of the American Geophysical Union in San Francisco.

The detection of hydrogen points to the possibility that there is water ice within 1 metre of the surface, said James Garvin, lead scientist for the Mars Exploration Programme at NASA Headquarters in Washington, D.C.

"Is this a real science result? Maybe," Garvin told SPACE.com. "But whatever it is, it bodes very well for finding hydrogen in the upper few feet of Mars, and the most likely culprit is water ice." Such ice might melt in summer months and would be reachable by robotic or human explorers. It might even support microbial life, as researchers have found on Earth that wherever there is water, there is life.

The quantity of hydrogen detected was so startling, suggesting a huge concentration relative to what Feldman saw with a similar instrument on Lunar Prospector, which surveyed the Moon - that researchers may task Odyssey to begin mapping crustal water ice during the first week of January, Garvin said.

Atmosphere on World Around Another Star

Astronomers using NASA's Hubble Space Telescope have made the first direct detection and chemical analysis of the atmosphere of a planet outside our solar system. Their unique observations demonstrate it is possible with Hubble and other telescopes to measure the chemical makeup of extrasolar planets' atmospheres and potentially to search for chemical markers of life beyond Earth.

The planet orbits a yellow, Sun-like star called HD 209458, a 7th magnitude star (visible in an amateur telescope) that lies 150 light-years away in the constellation of Pegasus. Its atmospheric composition was probed when the planet passed in front of its parent star, allowing astronomers for the first time ever to see light from the star filtered through the planet's atmosphere.

"This opens up an exciting new phase of extrasolar planet exploration, where we can begin to compare and contrast the atmospheres of planets around other stars," says Lead investigator David

Charbonneau of the California Institute of Technology, Pasadena, and the Harvard-Smithsonian Centre for Astrophysics, Cambridge, Mass.; The astronomers actually saw less sodium than predicted for the Jupiter-class planet, leading to one interpretation that high-altitude clouds in the alien atmosphere may have blocked some of the light. The team's findings are to be published in the *Astrophysical Journal*.



The Hubble observation was not tuned to look for

gases expected in a life-sustaining atmosphere (which is improbable for a planet as hot as the one observed). Nevertheless, this unique observing technique opens a new phase in the exploration of exoplanets, or extrasolar planets, say astronomers. Such observations could potentially provide the first direct evidence for life beyond Earth by measuring unusual abundances of atmospheric gases caused by the presence of living organisms.

The planet was discovered in 1999 through its slight gravitational tug on the star. The planet was estimated to be 70 percent the mass of the giant planet Jupiter, or 220 times more massive than Earth. Subsequently, astronomers discovered that the tilt of the planet's orbit makes it pass in front of the star - relative to our line-of-sight from Earth - making it unique among all the approximately 80 extrasolar planets discovered to date. As the planet passes in front of the star, it causes the star to dim very slightly for the duration of the transit. Transit observations by Hubble and ground-based telescopes confirmed that the planet is primarily gaseous, rather than liquid or solid, meaning that the planet is a gas giant, like Jupiter and Saturn.

Another Near Miss

On the morning of January 7, an asteroid about a quarter of a kilometre in diameter was observed passing close to Earth, at about twice the Earth-Moon separation. Newly discovered minor planet 2001 YB5 brightened to around magnitude 12 as it passed us by, fading back to below magnitude 15 within

hours. It appeared in southern skies near the constellation of Crux (southern cross), passing through the constellation at a rate of about 8 degrees per hour (that is about 16 moon widths in the sky).

There was little warning - this object was discovered on December 27th by the Near-Earth Asteroid Tracking survey under the direction of Caltech astronomer Eleanor F. Helin. Her team was using a 48-inch Schmidt Telescope on Palomar Mountain. The object is massive enough to cause catastrophic environmental impact if it ever were to crash into Earth, and 2001 YB5 is considered a potentially hazardous asteroid as its orbit crosses that of the Earth. However, projections 90 years into the future, based on observations so far, show that we are safe for the time being.

To Mars and Beyond

The largest exhibition on space exploration ever seen in Australia, *To Mars and Beyond: Search for the Origins of Life*, is now showing at the new National Museum of Australia in Canberra.

Take a 3D video journey over the surface of Mars, see Isaac Newton's telescope, touch a piece of Mars rock, see the largest rockets ever fired in Australia - plus much more.

And as part of the promotion of the exhibition, if you've ever wondered what your alien name is, simply click on the link:
<http://www.nma.gov.au/mars/promo.htm>.

To Mars and Beyond: Search for the Origins of Life will be on show at the National Museum of Australia until 26 May 2002.

Did Mankind Really Go To The Moon?

The European Southern Observatory's Very Large Telescope (VLT) is planned eventually to include four 8.2 metre diameter telescopes working together as an optical interferometer, enabling unprecedented measurement of ultrasmall angles. Two of the instruments have been constructed and tests were conducted on them recently

by measuring the diameter of the star Achernar. The telescopes easily achieved this, and showed it to be 0.00192 arc seconds, give or take 0.00005 arc seconds. This is the equivalent of being able to see clearly a volkswagon on the Moon. This therefore means that the instruments should be able to resolve easily the six 4-metre wide Apollo lunar landers that are sitting on the lunar surface (for example at the Sea of Tranquility), which would subtend an angle of about 0.00200 arc seconds, a little larger than Achernar. This would be able, once and for all, to lay to rest the conspiracy theorists who claim that mankind never set foot on the Moon, but rather staged the whole affair in a film studio in the USA!

Rocket Base in the Firing Line

Insurance liability concerns over plans to use Christmas Island as a rocket-launching base have been raised by the West Australian State Government and the oil and gas industry. Each fears rocket debris could land near WA's valuable oil and gas fields, causing a disaster that they would not be adequately compensated for. The Federal Government has capped insurance for any such disasters at \$3.75 billion. But the Australian Petroleum Production and Exploration Association has estimated that a single worst-case disaster could cost \$28 billion to cleanup! Construction for the planned Asia Pacific Space Centre is due to begin in March, with the first commercial launches in 2004. The Russian Aerospace Agency has entered a formal agreement to fire Aurora rockets from Christmas Island - seen as Russia's chance to take on France and the US in the global satellite market.

A Bit Hard to Swallow

New Scientist reports that Michael Lipschutz, who studied the first rocks brought back from the Moon in 1969, recalls the public concern about the possibility that the samples might harbour dangerous pathogens. So NASA spent millions of dollars on quarantine facilities. This was even after it was pointed out at the time that with the escape velocity of the Moon being only 2.4 kilometres per second and the Moon being only around 384,000 kilometres away, some Moon rocks were bound to have made their

way to Earth already from meteoroid impacts.

Nobody knew about lunar meteorites at the time, but nobody has this excuse for Martian meteorites now that several have been discovered on the Earth's surface already, and so similarly strict quarantine facilities may not be warranted when people return samples from the Martian surface. Lipschutz apparently has offered to eat the first returned gramme of Martian rock to check it's safe, but NASA has yet to take him up on the offer!

WEATHER ON THE WEB ... reposted!

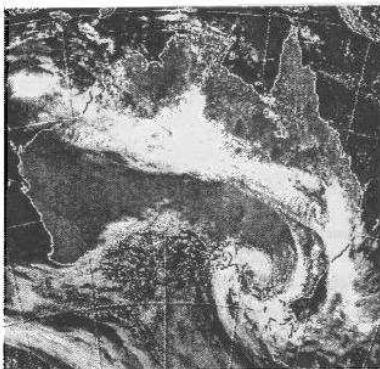
In the previous edition of *Scorpius*, John Cleverdon submitted an article on getting weather information on the Internet. I have reposted this article with the images included this time! Thanks John.

One of the most important things an astronomer needs to keep track of is the weather, and like so much else these days, there is plenty of information about the weather on the Internet. One of the more useful sites is that for the Bureau of Meteorology, and the part of their web site covering Victoria is at

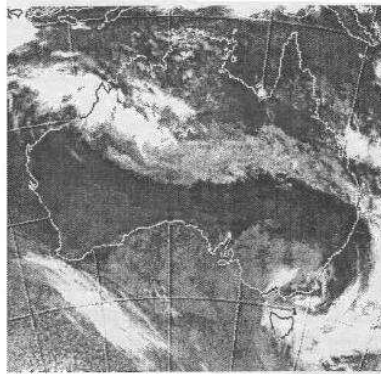
<http://www.bom.gov.au/weather/vic/>.

To begin with, there are regularly updated satellite images of Australia from the Japanese Geostationary Meteorological Satellite. Both visible and infra-red photographs are available, and examples of each are below.

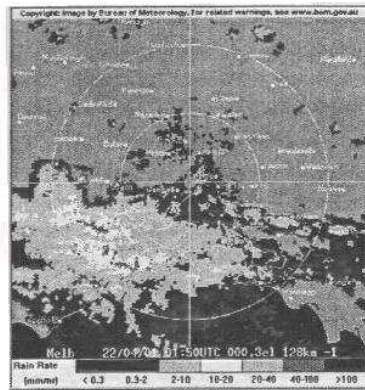
Visible – updated twice daily



Infra-red – updated every 6 hours



Another interesting feature available is the weather radar, at <http://mirror.bom.gov.au/products/IDR023.shtml>. A radar image of the Melbourne region is updated every 10 minutes, and shows bands of rain as they come across. Again, a sample is provided below. This is the day that the April working bee at the Briars was washed out.



I found out about the radar on a railway email list, from railway enthusiasts wanting to keep track of the weather for photographing trains!

Other information on the Bureau's web site includes:

- Current warnings (eg. wind, flood).
- Forecasts (for Melbourne, Victoria, regional Victoria, and the Bays).
- Observations (temperature, rainfall, cloud cover, wind, air pressure, and humidity), from a variety of locations around Melbourne and Victoria, at 9am and 3pm. There are also observations recorded hourly from automatic weather stations, and 3-hourly for Melbourne.
- Weather forecast charts.

John Cleverdon

Feature

2001: A LEONIDS ODYSSEY

By Richard Pollard

We'd been thinking about it for years.

As a member of the group from the combined meteor sections of the ASV and ASF, both Phil Snelling and myself took to the Red Centre to join many others for this year's Leonids display.

Alice Springs was chosen as the optimum viewing location, taking into account latitude, longitude, weather, sky condition and amenities. In previous years, the group had viewed from Woomera in 98, Coonabarabran in 99 and Heathcote in 2000, that year's display rather limited due to a near full moon. No such problem in 2001: a thin crescent moon and high predictions meant that such a long trip was justified. Phil and I had initially planned to fly, but the collapse of Ansett meant that another mode of transport would be needed, and we chose the train, the *Ghan*.

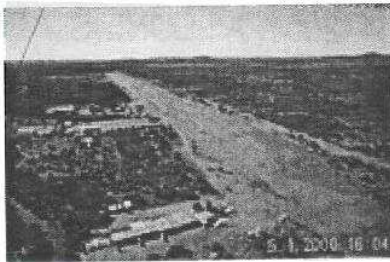
We departed Melbourne on Wednesday 14th at 10:30pm, travelling overnight to Adelaide, where we arrived at 10:30am local time.

After a brief jaunt into the city for such things that included pillows and earplugs, we headed back to the terminal for the 4pm departure, but it was soon clear we would be delayed due to 'servicing difficulties'. We finally got underway around 5pm, rolling through Adelaide's northern suburbs and on to a short stop at Port Augusta. Sunset followed soon after, and I retired to my seat to try and sleep. (A word to the wise: if possible, pay the extra and get a sleeper!)

Dawn broke over the red desert with perfectly clear skies somewhere near the Northern Territory border. Mercury was clear and bright in the still air. We rolled on, the scenery unchanged from what I had seen at sunset, and at about 9am NT-time we arrived in Alice Springs.

After picking up the rental car, Phil and I checked in to the MacDonnell Ranges Holiday Park and met up with others, including the ASF's Marty Rudd and his wife Leanne, who had driven their Subaru from Somerville! After settling

in, we went for basic supplies and to look around the town.



The Bond Springs Airstrip

Later, as the sun set, Phil and I set off for the Bond Springs Airstrip, which would be our viewing location for tonight and the peak. We set up scopes and cameras by torchlight and the insects were unbelievable. Once we were in darkness, however, they soon disappeared. Others turned up, but although there was some minor Leonid activity, all-in-all it was quiet. This seemed in line with the latest predictions, so we were happy with it.

The next day, we headed to Uluru or Ayers Rock. An 880km round trip from Alice, the Rock has to be one of the best known Australian icons. The Nissan Pulsar we were driving took it in its stride, the trip being a lot easier and more comfortable than in years past. The NT has no speed restrictions on the open road, and we sat on about 130km/h for most of the trip. Now, many of you may think this a little reckless but if you know your limits it's surprisingly safe. Traffic was minimal and the roads were well maintained.

We arrived in Yulara at about 4pm, and along with others we headed to the Rock to take some photos and if possible, climb it. But, due to the heat of the day, the climb was closed, so we settled for a brief walk around its western side. A thunderstorm was approaching from that direction and we wanted to keep an eye on it. When it struck, we were safely back at the cars. Other visitors weren't so lucky!

Back at Yulara, we made for the outdoor bistro for an evening of entertainment. Naturally the place was packed with tourists and the entertainment reflected this. After a couple of hours we gathered our stuff together to do some observing from a local lookout. Our presence attracted many interested by-standers, and while there was some light pollution from

Yulara itself, the skies were remarkably clear and still, despite the afternoon thunderstorms.

Once again, as predicted, rates were low with some Taurid activity and a few nice Leonids.

The following morning, Phil and myself drove most of the way to the Olgas, to take some photos and have a look around. On our return to the resort we packed the car and headed back to Alice Springs, stopping at the Mount Ebenezer road house for some much needed refreshments.

We left the Stuart Highway toward Henbury, to try and gain access to the meteorite craters. We had been told that the road was impassable due to recent flooding, and after 11km of dusty, bumpy, pot-holed road, we found the road blocked by a large body of water of indiscernible depth.

Oh well, nothing ventured, nothing gained.



Before long we were back at the holiday park and decided to go for a swim after our long hot journey. There was time for a BBQ, so we could get together and discuss our plans for the night. Phil and I decided to head for the strip early, so as to procure a suitable position. We noticed that there were some people already there, they were visitors from the USA associated with NASA and JPL. We set up our gear in the best position possible and waited for sunset. Adam, Shane and Caroline arrived shortly after us and Philip and Shane were given the task of directing any arrivals, so as not to affect those who were taking long exposure photographs. There was a moderate amount of sporadic meteors, and a few Taurids, which had also been visible over the past few nights. There was an air of anticipation as the radiant approached the horizon...

Then it started. At about 1:15am, a massive fireball came out of the eastern sky, passing directly overhead and finally burned out about 20 degrees

above the western horizon! Naturally, it was silent, but if it did make any noise, it would have been drowned out by the uproar of everyone present!

It was followed within minutes by a second, less spectacular meteor and another... these 'earthgrazers' seemed to herald the start of something truly spectacular, and they did. We were expecting two peaks, but the meteors were so prolific that it seemed like one constant barrage. Monitoring became increasingly difficult as the keenest resorted to simply trying to count them. Not being the most experienced of meteor observers, I abandoned my monitoring and concentrated, or at least tried to, on photographing them.

After an hour or so of almost constant meteors, beyond what many of us had hoped, we started to ponder the question 'where to from here?' Would we ever hope to see a show like this again? The predictions that had now proved accurate also said that there was little to look forward to in the coming years as far as the Leonids were concerned. We tried not to think of it, and to make the most of the spectacle at hand. Even as the sky lightened with the first hint of dawn, bright meteors were still visible, although a little less frequent. We started packing up in the early light, and still, some just watched. We drove back to Alice tired but completely satisfied that our efforts and expenses had paid off.

Monday was spent swimming, talking, watching Marty's video and contemplating. A strange effect of the nights viewing was your attention was instantly grabbed by any quick movement... particularly birds in the sky. We had another BBQ in the evening, but I was so tired I sat it out and just slept.

Tuesday we began the long train trip home, arriving, still tired late on Wednesday night.

In a word... unforgettable.

If you have something you'd like published in Scorpius, simply e-mail it in a document file to me at alphacent@iprimus.com.au, or, post it to me at 10 Stanhope Street, Dandenog 3175

Thanks, Richard Pollard (Editor)

Astronomical Society of Frankston Inc. CALENDAR 2002

P is Public Holiday ● New Moon ○ Full Moon

	January	February	March	April	May	June	July	August	September	October	November	December
1	T Scorp deadline	F Public Night	F Public Night	M NACAA	PW Scorpius deadline	S	M	Th	SU Working Bee	T	F Public Night	SU Working Bee
2	W	S	S	T	Th	SU Working Bee	T	F	M	W	S	M
3	Th	SU Working Bee	SU SOLAR DAY	Th	F Public Night	T	W	S	T	Th	SU	T
4	F	M	M	F	S	W	Th	SU Working Bee	W	F	M	W Solar Eclipse ●
5	S	T	T	F	SU Working Bee	Th	F	M	Th	S	T	Th
6	SU	W	W	S	T	Th	S	T	F	SU	W Working Bee ●	F Public Night
7	M	Th	Th	SU	T	F	SU Work Bcs	W	S	M	Th	S
8	T	F	F	M	W	S	M	Th	SU	T	F	SU
9	W	S	S	T	Th	SU	T	F	M	W	S	M
10	Th	SU	SU	W	F	M	PW	S	T	Th	SU	T
11	F	M	M	PTh	S	T	Th	SU	W	F	M	W
12	S	T	T	F	SU	W	F	M	Th	S	T	Th
13	SU	W	W	S	M	Th	S	T	F	SU	W	F
14	M	Th	Th	SU	T	F	SU	W	S	M	Th	S
15	T	F	F	M	W	S	M	Th	SU	T	F	SU
16	W	S	S	T	Th	SU	T	F	M	W	S	M
17	Th	SU	SU	W	F	M	W	S	T	Th	SU	T
18	F	M	M	Th	S	T	Th	SU	W	F	M	W
19	S	T	T	F	SU	W	F	M	Th	S	T	Th
20	SU	W	W	S	M	Th	S	T	F	SU	W	F
21	M	Th	Th	SU	T	F	SU	W	S	O	Th	S
22	T	F	F	M	W	S	M	Th	SU	T	F	SU
23	W	S	S	T	Th	SU	T	F	O	W	S	M
24	Th	SU	SU	W	F	M	W	S	T	Th	SU	T
25	F	M	M	Th	P	T	Th	SU	W	F	M	W
26	S	T	T	F	SU	W	F	M	Th	S	T	Th
27	SU	W	W	S	O	Th	S	T	F	SU	W	F
28	M	Th	Th	SU	T	F	SU	W	S	M	Th	S
29	T	O	F	M	W	S	M	Th	SU	T	F	SU
30	W	S	S	T	Th	SU	T	F	M	W	S	M
31	Th	SU	SU	SU	F	S	W	S	Th	Th	S	T

Working Bees are held at 'The Briers' in the morning, normally commencing at 11 am.
 General Meetings are held at 8 pm at the Peninsula School, Wooralla Dr, Mt Eliza - Melway 105 F5 (drive to Senior School at rear)
 Members Nights for sky viewing are at the 'The Briers' Nepean Hwy Mt Martha - Melway 151 E1
 and new attendees must confirm with David Gilling 0421 452 428 before attending
 ASF Library at Peninsula School is open on General Meeting nights for borrowing by members.



State School Term Breaks

Public Nights for sky viewing are held at 'The Briers' (see left) at 8 pm all year. Booking is preferred, but not essential. For bookings and enquiries, phone 0419 253 252

Prepared by Ian Sullivan

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Bob Heale
ASF
15/1/2002

7x50
binocular view
of ORION'S
(sourcepan)



Theophilus
found on north
west shore of
Mare Nectaris
and dominates
area. Strong
jagged walls of
72km wide cascade
down 6km to a rough floor
Aristillus →

Our Moon

Sifter is a large oval
crater that rides the
terminator at
waning last quarter
85X 43 km
its
south east
wall was
obliterated
millenia
ago
by
smaller
impact
crater
Faraday
(above it)

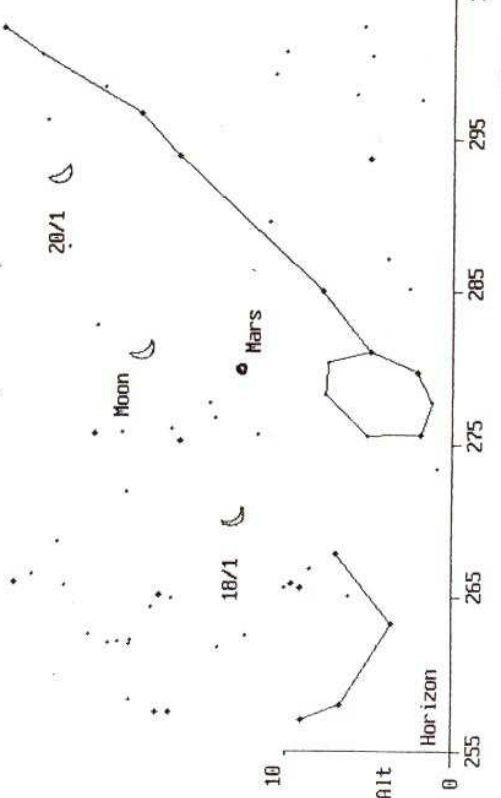


Aristillus -
south east of the 'Alps' in
Mare Imbrium 40km
across. A Sun rises high in
lunar sky, bright rays appear
to spray from crater into
surrounding plains, making
Aristillus easy to find

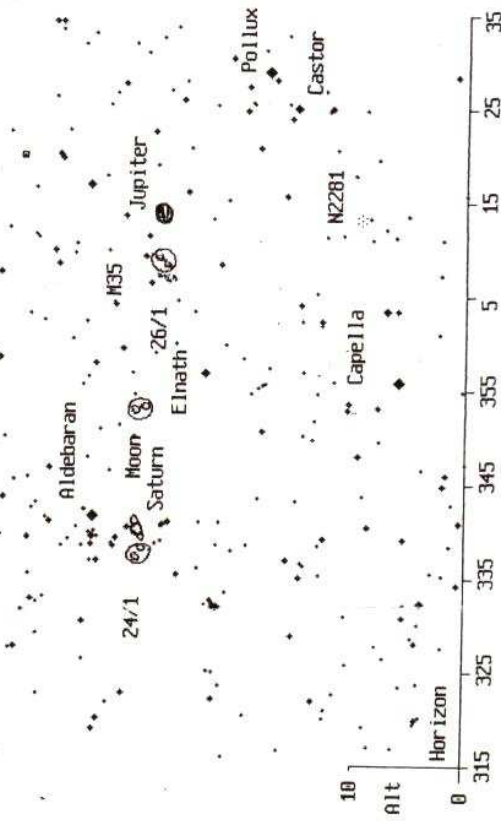
10 30 pm 2nd February South Night Sky 2002 Summer Time

SKY FOR THE MONTH 16 JANUARY TO 19 FEBRUARY 2002 MORNINGTON PENINSULA

10 21 pm Near West Night Sky 19th January 2002 Summer Time
 U1.00 (c) Bob Heale 18/4/99
 All objects no fainter than 5.5 1 X Sky View



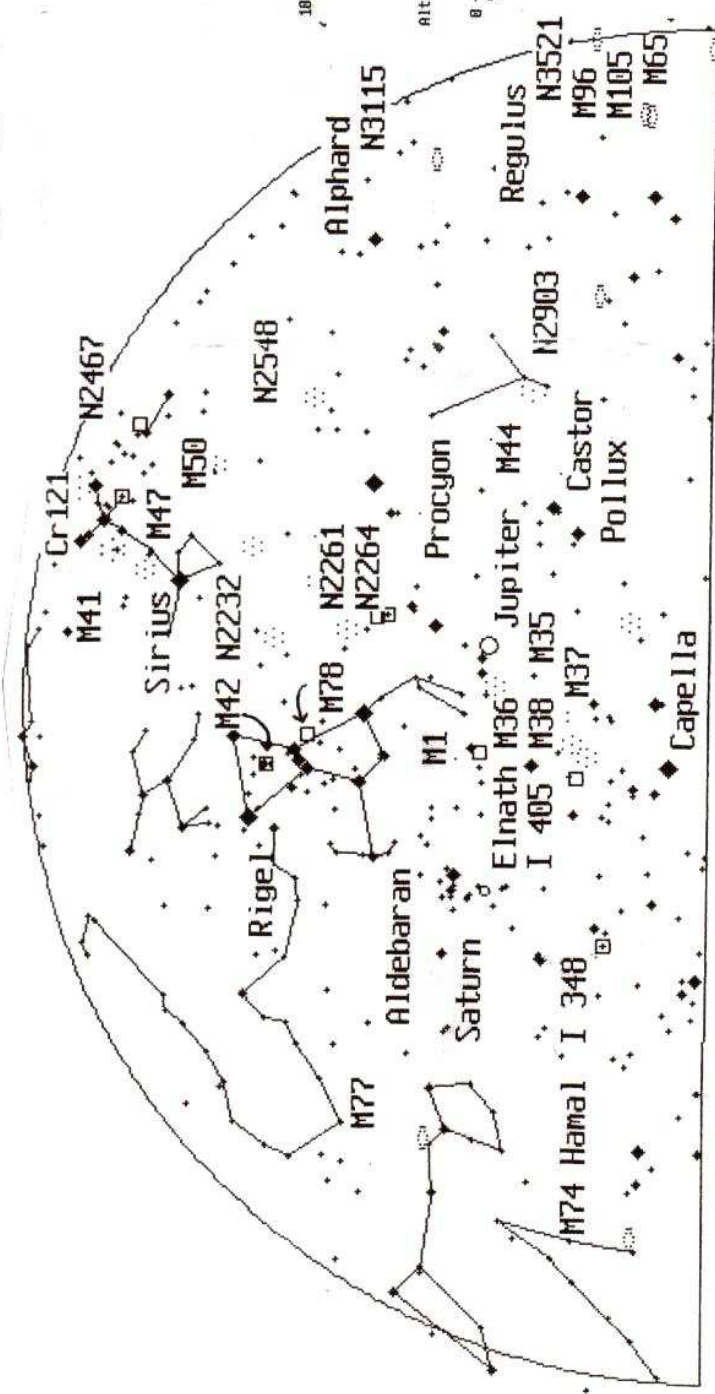
10 40 pm Near North Dark Sky 25th January 2002 Summer Time
 U1.00 (c) Bob Heale 18/4/99
 All objects no fainter than 5.5 1 X Sky View



Venus is not visible during this viewing period; it will be seven degrees from Sun near 19th February, so visible February - March

On 26th the Moon possibly occults northern edge of open star cluster M35 - closest at 7 40pm Summer Time

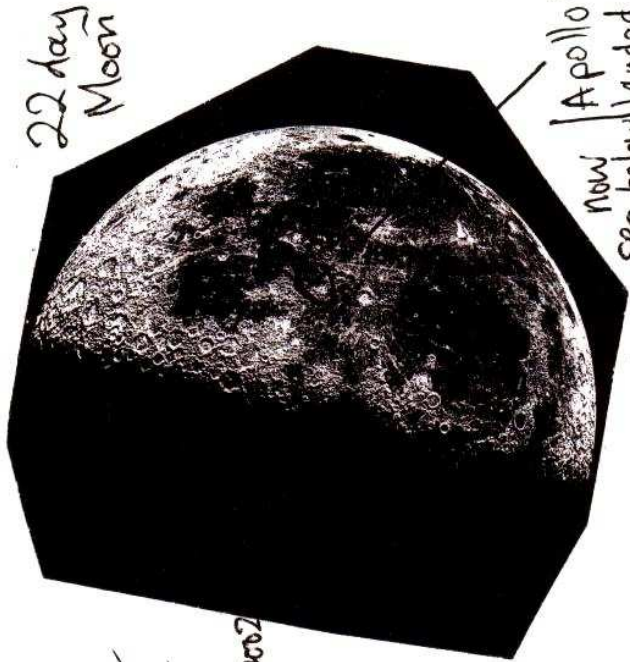
5 35 am Near East 2/3 Dark Sky 18th February 2002 Summer Time
 U1.00 (c) Bob Heale 18/4/99
 All objects no fainter than 4 1 X Sky View



Bob Heale ASF
 15/1/2002

10 30 pm 2nd February North Night Sky 2002 Summer Time

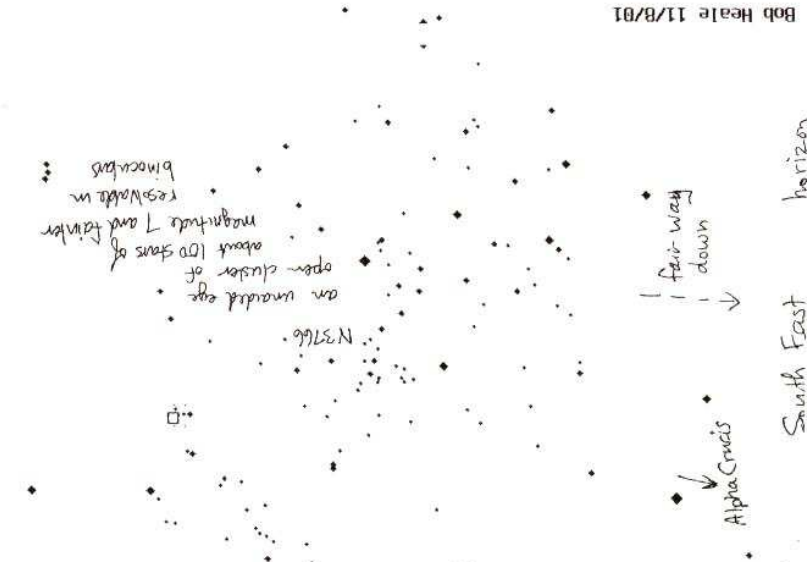
P70



Bob Heale ASF 19/12/2002

22 day Moon

Now see below left Apollo 12 landed about here



Bob Heale 11/8/81

Bob Heale 11/8/81

March 5 10 30pm horizon 5 lengths down Near South East horizon

horizon 5 lengths down

horizon

South East

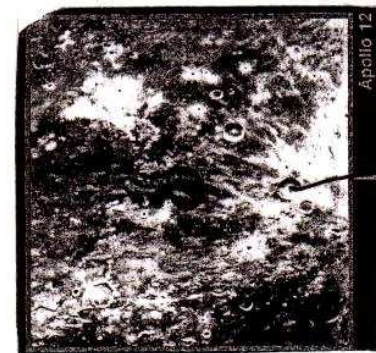
horizon

fair way down

down

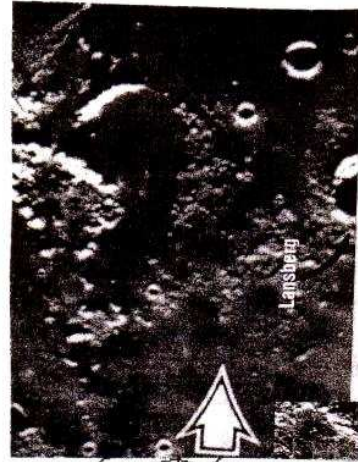
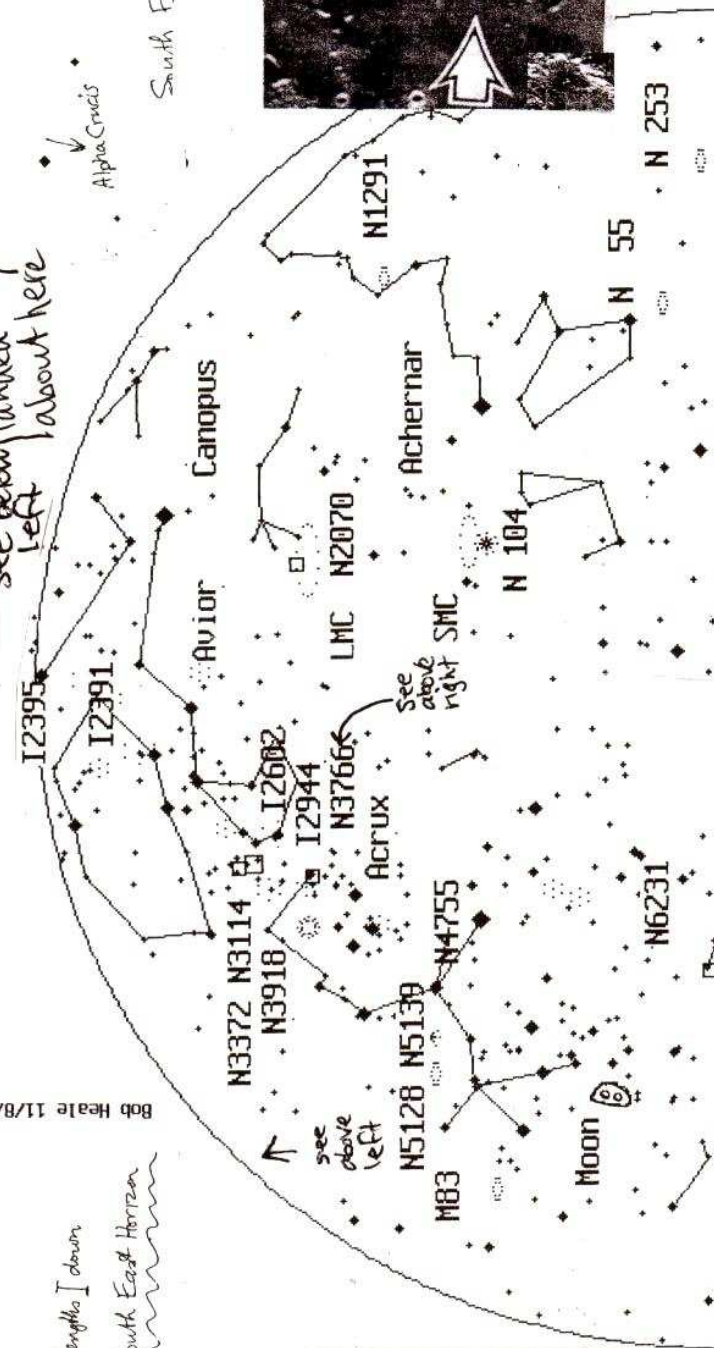
South East

horizon



Apollo 12

Lansberg Now see for right



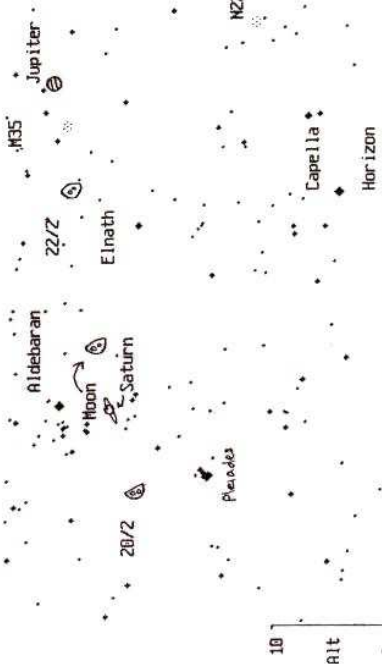
Lansberg

White arrow points to pinpoint landing on Apollo 11 site (I knew then world)

10 30 pm 5th March South Night Sky 2002 Summer Time @ Bob Heale 2002 Summer Time Also a 30 pm 19th March, 11 30 pm 19th February Summer Time

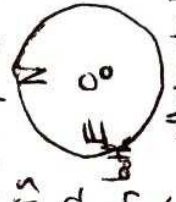
SKY FOR THE MONTH 20 FEBRUARY - 19 MARCH 2002 MORNINGTON PENINSULA

9 55 pm NNW Night Sky 21st February 2002 Summer Time
 U1.00 (c) Bob Heale 18/4/99
 All objects no fainter than 5.5 1 X Sky View



could be difficult!

Some multiple stars -

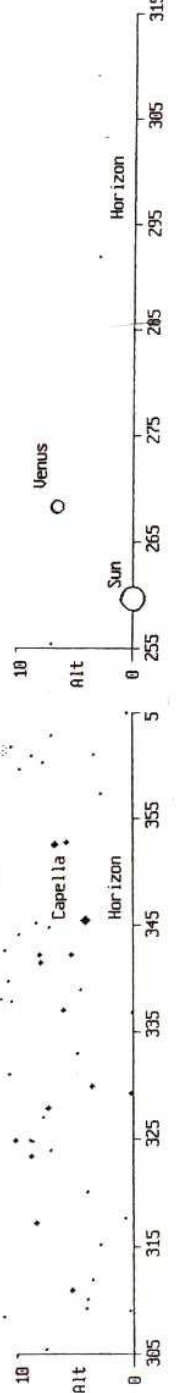


are golden orange separation 4''
 4" Newt 120X

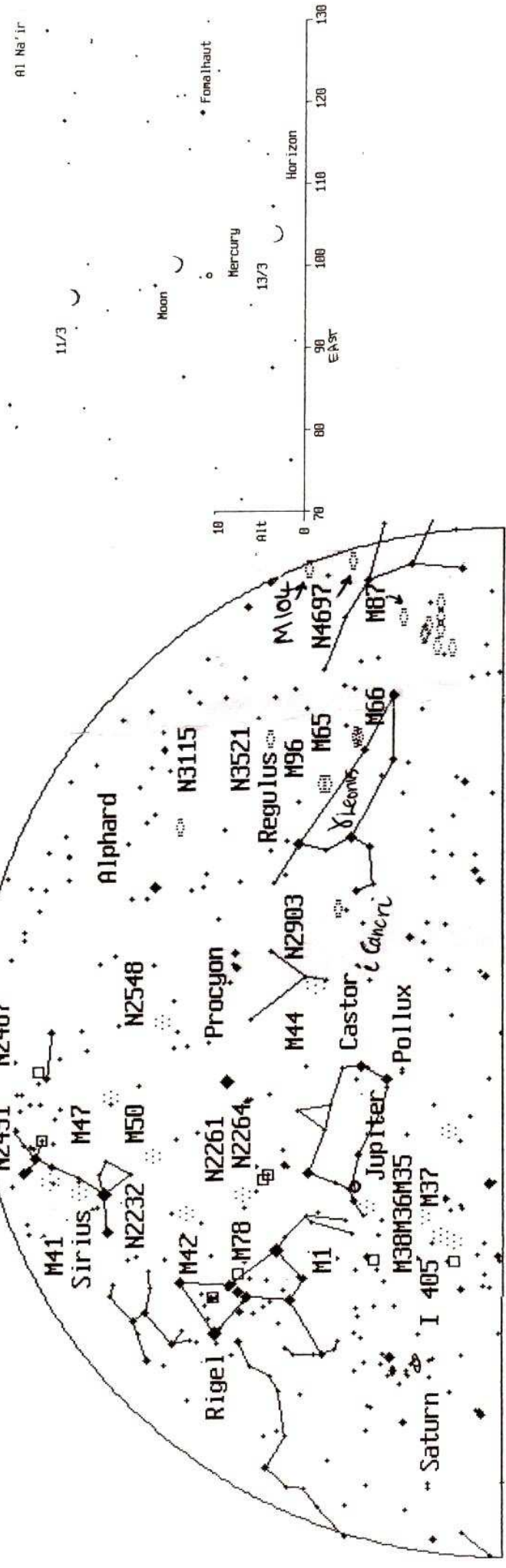


separation 30.5''
 4" Newt 30X
 Yellow Blue B

7 55 pm Near West Dusk Sky 28th February 2002 Summer Time
 U1.00 (c) Bob Heale 18/4/99
 All objects no fainter than 3.5 1 X Sky View



6 23 pm Near East 2/3 Dark Sky 12th March 2002 Summer Time
 U1.00 (c) Bob Heale 18/4/99
 All objects no fainter than 4.5 1 X Sky View



10 30 pm 5th March North Night Sky 2002 Summer Time © Bob Heale 2002
 Also 9 30 pm 19th March, 11 20pm 19 February Summer Time

Bob Heale ASIF
 19/2/2002