SCORPIUS

The Journal of the Astronomical Society of Frankston Inc.

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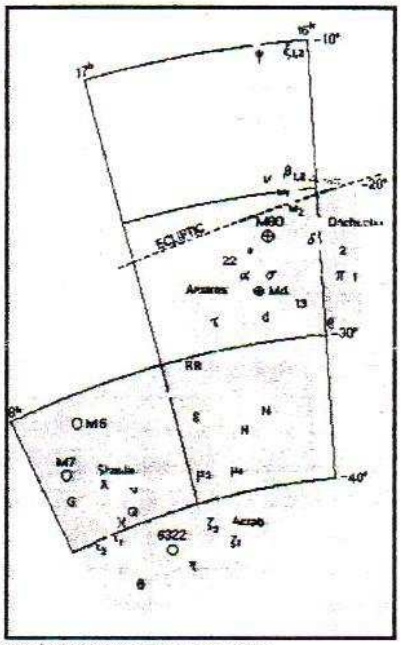
(Mar - Apr)

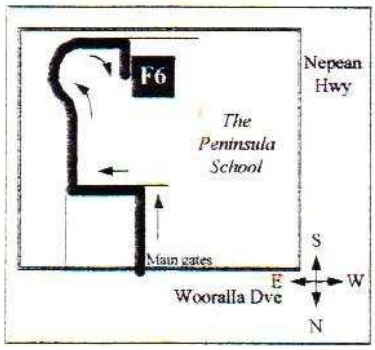


The Astronomical Society of Frankston was founded in 1969 with the aim of fostering the study of Astronomy by amateurs and promoting the hobby of amateur Astronomy to the general public. The Society holds a General Meeting each month for the exchange of ideas and information. Regular observing nights, both private and public are arranged to observe currently available celestial objects. For decades the Society has provided *Astronomy on the Move* educational presentations or observing nights for schools and community groups exclusively in the area bounded by Moorabbin, Dandenong and Tooradin.

Meeting Venue: *Peninsula School*, Wooralla Drive, Mt.Eliza (Melways map 105/F5) in room F6 at 8pm on the 3rd Wednesday of each month except December.

Internet: http://www.peninsula.starway.net.au/~aggro

Visitors are always welcome!



Annual Membership	
Full Member	$30
Pensioner	$25
Student	$20
Family	$40
Family Pensioners	$35
Newsletter Only	$10

DUE 1ST OF JANUARY EACH YEAR

FUTURE EVENTS

General Meetings:

Wed 18th March '98
Session 1: Peter Lowe tells all on the evolving status of *Life in Space*.
Session 2: Informal *Basic Astronomy* question and answer session.

Wed 15th April '98
Session 1: David Girling will give an illustrated talk on *Building His Backyard Observatory*.
Session 2: Informal *Basic Astronomy* question and answer session.

Wed 20th May '98
Session 1: Video on *Sputniks, Bleeps and Mr.Perry*, telling the true story of the Russian Sputnik craft in 1957 and the attempts of a teacher to find out the truth behind its clandestine purpose.
Session 2: Informal *Basic Astronomy* question and answer session.
Session 3: Informal chat session.

Viewing Nights:

Members Only:

Sat Mar 21 & 28, Apr 25, May 2 all at *The Briars*, Nepean Hwy, Mt.Martha (Melways 145/E12).

If weather forecast for the Saturday looks bad, the Friday before may be used instead. New attendees must always confirm with David Girling on (03) 5976 2806 before attending. Follow the signs at *The Briars* from the Visitor Centre. Remember for security reasons you can only attend on planned Members' Nights, unless by prior arrangement with David.

Public, School & Community Groups Viewing/slide nights:

If you can assist, please contact the Secretary.

- 1st Mornington Scout Group, Thur 5th March at 8pm, at the Scout Hall, Venice Reserve, Mornington, Melways 145/D2. 40 expected. Assistance required please.
- The monthly basic public viewing nights at *The Briars* will commence on the first Friday of every month from now on, starting on Fri 6th March at 8pm. These will be by pre-booking only, and will involve a very basic talk beforehand, followed by telescope & binocular viewing, with 2-3 scopes per night being the aim. Assistants to go on the roster are now required, and should contact Don Leggett on 0359 85 4927 who is co-ordinating the nights. If you can only assist with one night every few months or even once a year, then please still volunteer as every bit helps. If you can only point at the *Moon*, or the *Southern Cross*, or *Saucepan*, this is

fine, just read up a bit on some features from a library book and you'll be perfect, while learning at the same time.

- St. Francis Xavier College at Camp Manyung, Sunnyside Rd, Mt.Eliza, Thur 12th March at 8pm, Melways 105A6. 100 Year 7's expected so help is needed please.
- Woodland's Primary, Potts Rd, Langwarrin on Mon 6th April at 8pm. ~~CANCELLED~~
- Cranbourne Public Library is a possibility on Mon 4th May during Library week, with probable talk on the Cranbourne Meteorites. It is not planned to have telescopes at this stage.
- Langwarrin Park Primary school, Northgateway, Langwarrin, Melways 136/A4 at 8pm on Mon 11th May. About 90 Grade 6's expected.

Phenomenal Events:

- The *South Pacific Star Party*, is being held 27-30th Mar at Ilford, 230km West of Sydney. Info at meetings.
- The 18th *NACAA* (National Australian Convention of Amateur Astronomers) is being held over Easter 10-13th Apr in Sydney. Late enrolment fees now apply. Only 4 members are attending, primarily due to the costs involved. Our concerns in this regard will be communicated to the convenors at the Delegates meeting for the benefit of future NACAAs.
- *Ballarat Astron. Soc.* are having their 40th anniversary on 8-10th May and all are invited to this exciting event. Dinner & viewing of David Malin astrophotos on the Fri evening at 6:30pm (booking must be by 24th April). On Saturday - talks, BBQ lunch, evening talk by David Malin & supper. On Sunday - talks & lunch. $25/adult, $15/junior registration; extra $26/$15 if Friday night dinner; and extra $6/$4 if Sunday lunch. Registration forms and maps can be obtained from our next meeting, or from Bill Fiddian of the BAS (phone 0353 432316, email wfiddian@cbl.com.au).
- Predictions for seeing the spacestation *Mir* are available at meetings or on the Internet. Seen a curious moving object in the night sky, or worried if it is spying on you? Our satellite expert, Ian Porter, has the knowledge to identify it for you; just ask.

Social Events

- A Summer barbecue was held on Sat 24th Jan at *The Briars*, and saw about 20 attend on a warm afternoon.
- We will have a pre-Equinox dinner upstairs at *The Dava* hotel, Esplanade, Mornington on Thurs 19th Mar at 7pm. Melways map 145/C6. Basically you buy your meal according to your taste and budget at the servery counter.
- The *Astronomical Society of Victoria* will visit our *Briars* site on Sat 28th Mar (note the changed date). About 10-20 demonstrators are anticipated, BBQ'ing beforehand around 6 pm, and a 50cm Dobsonian might visit. This coincides with our members' night, but will be cancelled if weather is poor, so please phone David Girling as usual beforehand to check.
- Our Society will visit the Burwood Observatory, at 109 Parer Street, of the *Astron. Soc. Vic.* after April on a date yet to be confirmed. This will occur regardless of the weather. Melways 60/K4.

Sue Stoner demonstrating the Society's member loan telescope at The Briars.

YOUR SOCIETY

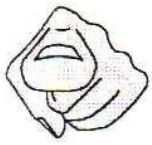
NEW MEMBERS

Welcome to the following new Society members:

Chris Edgeworth
Timothy Gassin
Gerard Martin
Matthew Van der Vlies
Anne Watson
Brad Williams

The ASF is one of the largest groups in Australasia. Membership is currently at 106. Please feel free to say hello at general meetings. Specialised badges, windcheaters, T-shirts, books & posters are available at meetings. Society name tags are free to new members who attend meetings. Members are able to borrow library books and are entitled to attend special viewing nights at *The Briars* where you can discover the secrets of the night sky.

HELP NEEDED



Articles, features, book reviews, member observations and points of general interest for this journal are always welcome. New contributors are encouraged. For example do a bit of reading and pass on some information, but remember not to plagiarise. Hand written material is fine; computer text files are perfect.

Does any member, or a friend or associate, have skills as an electrician, plumber or builder to help in the construction of our observatory at *The Briars*, and to connect it to available services that run nearby from the adjacent Education Centre? We are unable to find anyone, which is surprising in a Society as large as ours. Do we also have any bricklayer skills to build a BBQ from bricks kindly donated by Rene Skilton?

Can anyone provide a lift to and from meetings for Ronnie May, who has now moved from Frankston to Tootgarook? If so, please phone Ian Cuthbertson on 9782 3217.

SECRETARY'S JOTTINGS

The society's 20cm Meade Dobsonian is now available for full members to borrow for a month at a time. Further details about the waiting list (it's popular), and conditions of borrowing, can be obtained from Richard Pollard on 9793 5998. Richard is also prospecting two new Plossl eyepieces for the telescope, to complement its 25mm one already. The neighbouring Education Centre at *The Briars* will be opening to schools any day now, and it is

possible we will have ongoing viewing nights in the near future. Their power, water and sewerage lines are down, and we have permission to connect to these for our soon-to-be-progressed observatory facilities. Don has purchased a gas bottle and barbecue for use at social gatherings and viewing nights at *The Briars*. The society laser telescope collimator has been repaired, and users are reminded to treat it gently at *The Briars* lest its alignment be jarred. You are also reminded that it is a *Class 2 laser*, and hence you should never shine it into eyes, as there is potential for sight damage. The matter of well-overdue library books was discussed, with one member having a loan out for more than 6 months. Members are asked to respect the rights of other members by returning their borrowed library books after one month. Photographs and other items from the Society's history have been kindly donated by June Malone. All Victorian Societies have been written to asking for expressions of interest in running the next VASTROC. Ken Bryant has arranged a specialist at the Museum of Victoria to speak to us on the subject of *Meteorites* later this year, so stay tuned. We will also likely have a talk on *Astrophotography* by an authority in the area.

John Cleverdon (right) ably shows majestic planet Jupiter low on the Briars' horizon to visiting members of the public.

Trent Veitch at the Jan meeting.

RECENT MEETINGS

January's meeting saw 60 in attendance, and was kicked off by David Girling then chaired soon after by the Vice-President Peter Lowe upon arrival. Bob Heale presented *Sky for the Month*, indicating that comet Hale-Bopp was still showing an easily visible broad fan-like tail. Ian Porter summarised 1997 launchings in his *What Goes Up* segment and provided up-to-date info on the Mir spacestation. There was little new activity on the internet to report. Several members reported seeing the spectacular aurora mentioned in last edition. Photos were passed around about the observatory building competition currently involving David Girling and Peter Lowe. Any guesses on who will finish first? After the tea break, members divided into either a general chat session, or enjoyed the video of *An Astronaut's View of the Earth*. The evening finished at 10:30pm.

February's meeting was attended by 56, and was chaired by the President on a warm night. Bob Heale presented *Sky for the Month*, reporting that comet Hale-Bopp was still visible in hand-held binoculars, and reporting the whereabouts of several other current comets, including a new mag 11 one discovered in Japan. Bruce Tregaskis and Ian Cuthbertson reported a sunspot group on the West limb of the Sun. Ian Porter hosted his *What Goes Up* segment, reporting not as many launches this month due to the Wintery conditions in the northern hemisphere. A couple of top secret satellites were launched by USA, UK and Israel, the latter country having to launch in a restricted, narrow corridor over the Mediterranean (against the Earth's rotation direction), and hence it is unable to put cargo into very high orbits. The Mir spacestation crew currently totals six, with Australian Andy Thomas onboard (who apparently likes Russian Borsch - a beetroot & cabbage soup). Peter Lowe reported little new activity on the Internet, though the Hipparcus satellite had discovered copious new and suspected variable stars (that vary their brightness from night to night). Roger Giller provided notes from Committee meetings, and Peter Skilton relayed Hubble Space Telescope reports of supernova 1987A starting to brighten again after 10 years as its ejecta slam into nearby gas clouds. It may potentially reach visible levels again in the near future, so variable star observers may care to monitor it.

Some of the demonstrators at The Briars public nights. L-to-R: Bruce Tregaskis, Ian Porter, Don Leggett, David Girling, Bob Heale, Peter Lowe (who kindly provided the pictures).

There was also a report of a predicted occultation of Saturn by the Moon on 1st March at 8:06pm. After the tea break, the group split into 3 sessions: one was an excellent video on the hunt for planets elsewhere in the Galaxy, another was a basic question & answer session run by Don Leggett and Roger Giller, and the other was a general chat and catch-up session The meeting finished 10:20pm.

Thanks to the following members who participated in one or more of the viewing nights below: Ed Barber, Ken Bryant, Jan Brown, John Cleverdon, Sharron Fletcher, Roger Giller, David Girling, Bob Heale, Neil Hewson, Andrew Klopp, Don Leggett, Peter Lowe, Richard Pollard, Ian Porter, Peter Skilton, Sue Stoner, Bruce Tregaskis.

The first *Briars* public night saw 15 turn up on 2nd Jan. While cloud precluded any observing, all learned about one of the ASF telescopes and provided a cornucopia of questions about the Universe at large. The same number showed at the next night on 9th Jan, also under 100% cloud cover. On the 3rd night, there was no cloud whatsoever, with about 50 attending, and all were treated to a bright pass-over of the Mir spacestation, followed by viewing on the observatory slabs, where a very bright meteor was witnessed in the South-West about 10:20pm AESuT, and comet Hale-Bopp was also seen.

LIBRARY MATTERS

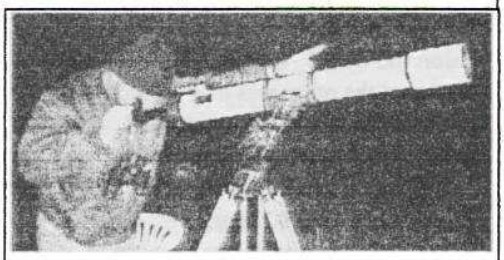
The library has acquired the following new books which are available for borrowing:

The Snows of Olympus; A Garden on Mars, by Arthur C. Clarke. This is an illustrated, fact-based and visionary story of mankind's likely colonisation strategy of the planet Mars.

Moon Shot: The Inside Story of America's Race to the Moon written by the astronauts Alan Shepard & Deke Slayton. This is the never-before-told story of the historic journeys, the human drama of dedication, teamwork & individual courage, and of the astronauts who risked their lives to lead the way to the Moon.

Special thanks to Peter Norman for donating his 8 years of past society newsletters to the Library that will eventually be bound for the society's bookshelves.

Kathy Stabb



Peter Lowe at The Briars January nights demonstrating his scope and digital pointer.

JUST FOR STARTERS

WHAT IS THE POINT?

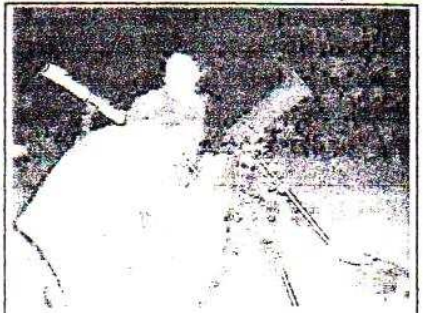
The Southern Cross, *Crux*, is the smallest of the sky's constellations, and lies almost fully in the Milky Way. Being bright in this region, the large, dark *Coal Sack* nebula is thereby rendered highly conspicuous. According to Hartung, within the darkness of the nebula, a small magnitude 6.5 star lurks, and may be seen on dark nights by the naked eye. Try seeing it yourself.

Adjacent to the Cross is the large constellation of Centaurus, the mythical centaur beast. He was supposedly wise and benevolent, in contrast to the wild predator centaur called Sagittarius, also a well-known constellation. Best known of the stars in Centaurus are undoubtedly the two brightest, alpha and beta Centauri, forming the "Pointers" to the Southern Cross. In fact, they really point somewhat North of it. However, due to their relative motion in space, the Pointers are slowly pointing further South until, in 2,000 years' time, they will truly point to the centre of the Cross. At this time, the two Pointers will be half their current distance apart in the sky. About the year 6200 AD, they will be separated at a minimum by less than the diameter of the Moon in the sky, forming a wonderful sight of two bright magnitude 1 stars in conjunction.

IN THE NEWS

DEMISE OF THE DINOSAURS

Last year it was reported that scientists who have drilled core samples from the Atlantic ocean bed, have finally found positive proof that a huge asteroid collided with the Earth 65 million years ago, almost certainly wiping out the unfortunate dinosaurs. If you



Ken Bryant (foreground) views through the 4 inch refractor of Ed Barber (background) at The Briars.

recall from an earlier edition, the impact site is near Belize, off South America, under the sea. The current team drilled three core samples from the Atlantic ocean floor, and discovered a thin, rusty brownish section that they call the "fireball layer" because it contains vaporised pieces of the asteroid itself. On either side of this brown layer, are layers of sediment. The lower sediment layers contain fossil remains of many creatures and came from a healthy, pre-impact ocean environment at the time. Immediately above this is a layer of green glass pebbles, thought to be ocean floor material that was instantly melted by the impact energy released on collision. Next up is the fireball layer, followed by 5 centimetres of grey clay showing evidence of a nearly sterile, dead world. This dead zone lasted about 5,000 years, after which life bounced back and new species' fossils appeared in the core samples. Very quick really.

LUNAR ASHES

A collection of scientific instruments, and a small capsule holding an ounce of the ashes of the late lunar geologist Gene Shoemaker (who died in a

car crash in the Outback last year) were aboard the Lunar Prospector spacecraft that began orbiting the Moon on 11th Jan. The craft is designed to make a detailed chemical, magnetic and gravitational map of the Moon, and search for evidence of water ice on the lunar surface and in deep craters. However, a group of Navajo Indians protested to NASA over the desecration of the Moon, which they consider sacred ground and should not be marred with human remains. NASA has apologised, but pointed out they are unable to stop the craft from eventually crashing on the lunar surface.

NEAR EARTH SWING-BY

NASA's Near Earth Asteroid Rendezvous (NEAR) spacecraft became the first interplanetary spacecraft to be seen with the naked eye, as a bright flash, in the USA when it swung past Earth at a speed of 46,000 km/hr on 22nd Jan. The spacecraft's solar panels reflected the Sun's rays onto the Earth over the USA and Pacific Ocean as it flew by for an adjustment of its trajectory to align it for a 10th Jan, 1999 rendezvous with asteroid *(433) Eros*. The closest approach to Earth was over Iran, at a height of about 300 km. The craft's camera is expected to catch its first glimpse of *Eros* on 13th Aug this year.

"GO" FOR GLENN

NASA has named 76 year old John Glenn as a payload specialist to the crew of the Space Shuttle Discovery, scheduled for an October launch. Glenn made history in 1962 when he flew for 5 hours aboard a 9ftx7ft capsule on top of an experimental rocket and became the first American to orbit the Earth. Recently he asked NASA if he could fly again to conduct research on aging in space. He is currently a US Senator.

Since aging and space flight share a number of similar physiological responses, the study of space flight may provide a model system to help scientists interested in understanding aging. Some of these similarities include bone and muscle loss, balance disorders and sleep disturbances. Space biomedical researchers and gerontologists believe more research in these areas could help older people live more productive and active lives, and could reduce the number of individuals requiring long-term medical care in their later years. The tests will also examine how stress influences protein metabolism in space, and how the hormone melatonin affects sleep. NASA has previously flown astronauts up to 61 years old. At least eight crew members over the age of 55 have flown multiple missions. Shannon Lucid was 54 when she spent six months aboard the Russian space station Mir.

SBIG PRESIDENT PASSES

Richard Schwartz, President and co-founder of the SBIG company since its inception (they manufacture CCD - charge couple device - cameras for telescope imaging), passed away recently from illness. The company will continue serving the amateur community.

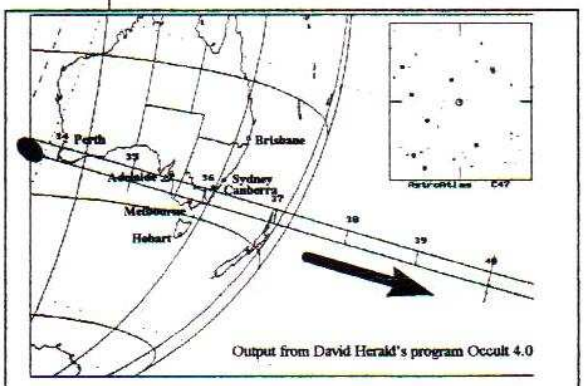
IN CLOSE PROXIMITY

Astronomers have just announced that the closest star to our Sun, the dim red dwarf *Proxima Centauri*, has a large planet around it. The amazing announcement came after the Hubble Space Telescope directly resolved a planetary body 10 times larger than Jupiter, or possibly a dim brown dwarf stellar companion, around the star, which is 4.2 light years away. The body was seen to move over a 3 month time span. A puzzle remains, however, in explaining why measurements of possible wobbles in the star's position in the sky have not suggested a planet long before now.

FEATURE

OPERATION IRIS

BACKGROUND



View from space, showing the predicted West-to-East path and position each minute of the shadow of asteroid (7) Iris across Australasia.

Early Friday evening, 1997 July 25, an insignificant magnitude 8.9 background star near Spica in Virgo was predicted to cast a weak shadow of minor planet *(7) Iris* onto the Earth's distant surface. As 200 km wide *Iris* silently moved around its orbit about the Sun, the shadow (stretched out by its local altitude of 40 degrees) swept correspondingly West to East across

our home planet, as shown in the diagrammatic view from space. The shadow's path was predicted to start near Madagascar, sweep across the Indian Ocean, graze south of Perth and cross the Great Australian Bight before reentering land near Adelaide. From there it was believed it would pass over most of Victoria before pacing across the Tasman Sea and clipping northern New Zealand prior to leaving the Earth's surface.

If a local observer, positioned in their backyard say, passed into the leading edge of the shadow, they would observe the magnitude 8.9 star disappear or "wink out" for the duration of the shadow passing overhead. This is called an *occultation*. As their site later emerged from the trailing edge of the shadow, the star suddenly reappears. Each observer therefore forms a single line across the shadow, and by combining the measured times of disappearance and reappearance of the star from many observer sites, it is possible to deduce the size and shape of the shadow overall, and hence of the asteroid that formed it.

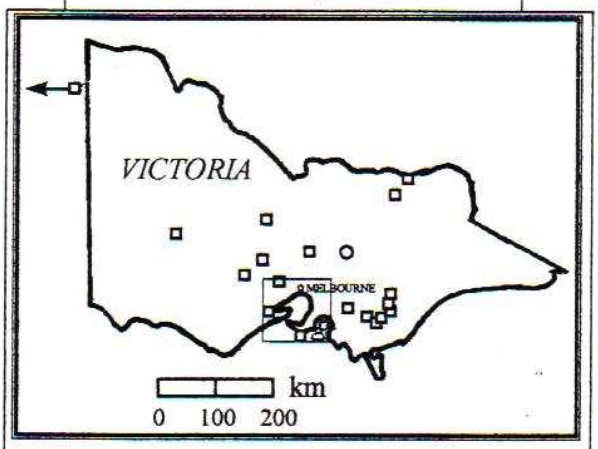
After studying Edwin Goffin's prediction sheet 11 days before the event, it was clear that this event was going to be exceedingly favourable, and possibly offer a remarkable opportunity for a detailed *fence*, or *net*, of observers to pin down accurately the size and shape of this denizen of interplanetary space. The aim was hopefully to form the largest observing fence the Southern hemisphere had seen to date, inspired by Paul Maley and David Dunham's amazingly successful Northern hemisphere Pallas fence of nearly 500 USA observers reported in 1983. ***Operation IRIS*** was organised in 3 phases. First, testing the water for commitment in our regional Society. If the observer numbers were good at the monthly meeting, then other members who had not attended would be approached in the next phase by mail. If this number were then sufficient, phase 3 would try to contact all other regional Victorian societies who may have been unaware of the prediction, and these would be supplemented by calling on informal networks of those I know own telescopes but do not belong to any astronomical body. At each phase, the hopefully growing number aroused in the preceding phase would inspire more observers.

THE KIT

Over the next couple of days, a suitable observing "kit" was assembled. It was somewhat basic, though sufficient in the time available. It had to be able to be used by an inexperienced telescope observer, having an unknown type or size of instrument.

Basically the "kit" contained:

(a) A cover letter explaining why the person was being approached, what were the minimum requirements and how they could assist, even if in a minimalist fashion, along with the reassurance that "*any observation of known certainty is better than none at all*".



Locations of organised observing stations around Victoria are shown as open squares. The successful positive observation (later in the article) is shown as an open circle. The boxed inset area near Melbourne is expanded in the next diagram.

(b) A *Voyager II* software alt-azimuth chart showing where Spica was to be on the evening in the sky relative to the North West horizon, the major points of the compass, the major constellations and the stars brighter than magnitude 6.

(c) An expanded view of the *Iris* prediction sheet (but with all unnecessary details whited out to avoid confusion). Directional arrows showing North and West were drawn onto the chart, and the azimuth and elevation given for those who might prefer this. Using a lead from Variable Star work, since the mind is very good at seeing shapes in an unfamiliar star field, suitable triangles and other outlines were hand-drawn onto the chart to help star hopping from Spica to the target star.

(d) A reversed view of the detailed star chart with the circled target star. This was produced for the benefit of those with a different number of internal telescope surfaces involved, such as a refractor with a diagonal. It was made by photocopying the prediction sheet onto a plastic overhead projector transparency, flipping it over, then photocopying this back onto paper.

(e) A 2 page sheet on *Procedures for Observing a Possible Occultation of an Asteroid*, of what to do and why, which assumed the reader knew next to nothing about observing an occultation, and who may or may not own a time signal device or even a tape recorder. These guidelines could no doubt be improved upon, and I later found they already exist elsewhere, but they were put together hastily to try to give confidence to those who may not have participated in an occultation before.

(f) A copy of the standard reporting form, for submission to the *Royal Astronomical Society of New Zealand* (RASNZ is the society of professional astronomers of New Zealand).

PHASE 1

Our ASF meeting saw around 50 in attendance. This number included seasoned occultation observers, new faces and many other experienced deep sky observers. After lobbying, the count of observers willing to form an observing fence was 12. Most had never tried an occultation before, including one who was having her first night in an astronomical society and undoubtedly must have wondered into what she had stumbled. Having realistically expected to round up about 6 or 7 observers at best, getting these many provided great inspiration. At this point Phase 2 became reality.

PHASE 2

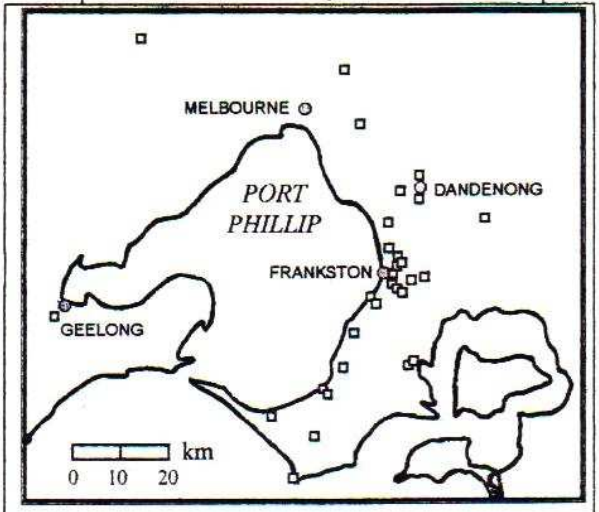
The ASF membership list was then analysed and about 25 others, known to have instruments and a past or present active bent, were singled out and the kit sent to them. After an agonising wait for mail to be delivered, this eventually

succeeded in growing the definite number of observers to around 30. Surprisingly most had some form of timing and/or recording gear. It was now 5 days before the event. Two observers subsequently reported receiving their kit late on the afternoon of the event as a charred, burned, but useable, assembly with an explanation from Australia Post that vandals had set fire to the post box!

PHASE 3

Next, the other regional societies were contacted and kits were sent to those specific observers for whom I knew an address. Peter Nelson rounded up for the *Latrobe Valley Astronomical Society (LVAS)*, Chris Wyatt for the *Bendigo District Astronomical Society (BDAS)*, and John Hastie for the *Ballaarat Astronomical Society (BAS)*. It was unfortunate that these societies were unable to have their monthly meetings in time and hence maximise local interest.
Informal networks were followed up, producing extra observers in Victoria and South Australia keen to join the party. And join the party they did, once they knew how many were participating. Not surprisingly, my telephone at home was ringing busily in the days before the event, but curiously not at all the night before. Maybe they were all cleaning their eyepieces as I did. Concurrently, Alfred Kruijshoop of the *Astronomical Society of Victoria (ASV)* was approaching societies in Western Australia and South Australia, as well as others around Victoria.

Our Frankston instruments ranged from 6 cm aperture, to 28 cm aperture with video camera link in one case, with the camera's operator, Peter Lowe, desperately rushing home from Sydney where he had been on business during the day. These telescopes were stretched in a line from farthest northern Victoria, south to Cape Schanck, though the line was unavoidably sparse in many regions. By plotting their home positions on a local Melways street directory, those few observers who were willing to be mobile agreed to fill gaps in the North-South observing fence as best as practicable.



Expanded view of Melbourne and Port Phillip region of Victoria, showing further organised observing stations, indicated by open squares.

ASF participants (North to South) were Ken Smit, Don Casserly, Roger Giller, John Morgan, Brent McColl, Ken Self, Andrew Klop, Renato Alessio, Richard Pollard, Ed Barber, Bob Parsons, Ron Barnes, Laurie McIntyre, Peter Elias, Ronnie May, Ian Cuthbertson, Karen Helweg, Darryl Moule, Peter Lowe, Ken Bryant, Gerry Holt, Chris Edgeworth, George Fowler, Ros Skilton, Trent Veitch, Bruce Tregaskis, Sharron Fletcher, David Girling, Bob Heale, Bill Newton, Rebecca Pidd, John Cleverdon, John Goodall, Ian Porter, Keith Rossiter, Gary Fowler and I. There were several others who would have keenly participated had they not been thwarted in some practical manner, such as by broken telescopes, sickness or unbreakable commitments. The numbers statewide were at least 57, though I have undoubtedly incomplete details of all those involved. However, Alfred Kruijshoop, Jim Blanksby, Jim Park and Patricia Larkin of *ASV* participated, as did Peter Nelson, Chris Stockdale, Geoff Thomas, Hilma Batza, Russell Hall, Midio Massini, John Price, Martin Swanson, Kath Teychenne, John Sunderland and Rod Stubbings of *LVAS*, Chris Wyatt, Rick Bath and Philip McCrohan from *BDAS*, Graham Sprott from *BAS*, and Robert Price from *Albury-Wodonga Astronomical Society*. Several of these observers went mobile to fill holes in the fence, or attempt to outpace any likely encroaching weather.

THE RESULTS OF THE DAY

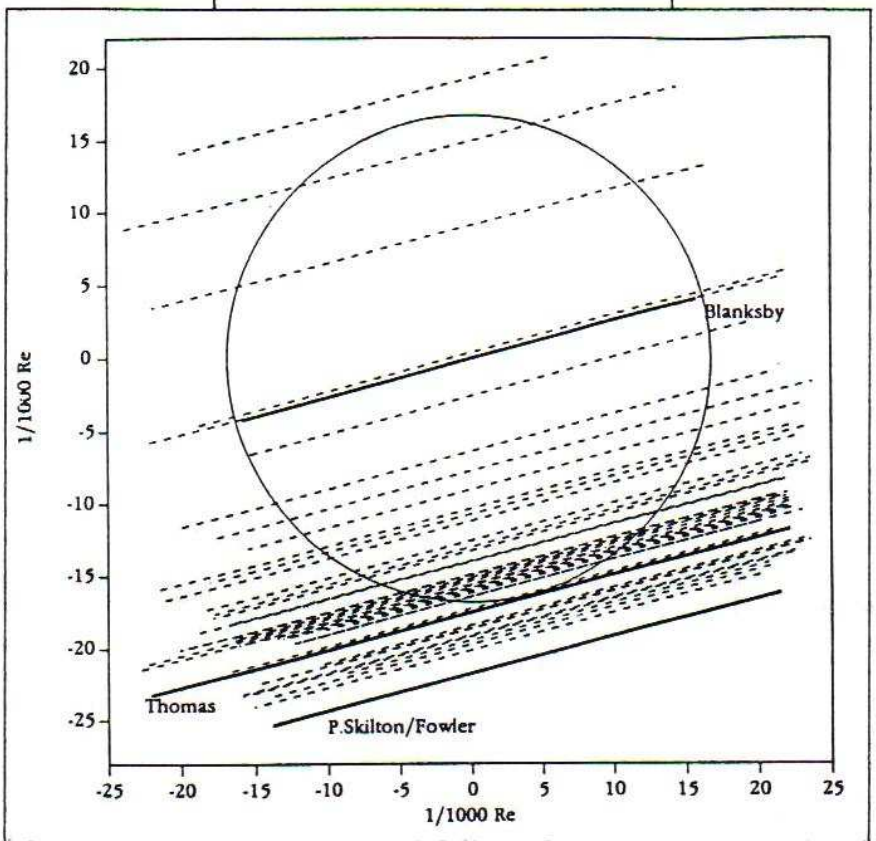
July 25 eventually rolled around, and the weather forecast was for fine conditions. It was cloudy locally in the morning, but by midday this had mostly cleared to beautiful blue skies. From my office well above Melbourne's streets I could see clearly across the bay from Frankston out almost to Geelong. This outstanding weather for Winter persisted into the afternoon rousing great expectations. The line of telescopes was ready. Now all we needed was the weather to hold. As late afternoon approached, the clouds began rolling in from the West, and it became apparent we were going to have meteorological problems. Alfred Kruijshoop was additionally receiving weather updates in advance from George Burk in Creswick, and Geoff Angus in Shepparton. Reports from each of the sites came in over the succeeding days and told the story. Nearly all were either under rain or frustrated by stubborn cloud. One of our newly motivated observers positioned near Geelong was clear until 15 minutes beforehand and had trouble containing his excitement before cloud dashed his hope.

I travelled for nearly an hour to the southern most position of the fence and, as such, ran the greatest risk of the shadow not reaching far enough south to pass over me. With the Cape Schanck lighthouse periodically beaming overhead, this location was fortunate enough to have cloud that was punctuated with open gaps long enough for me to positively find the target star. From what I saw, I do not believe the shadow passed over me; a negative observation, though nevertheless valuable in providing a constraint to where the shadow didn't pass.

August 1997's *RASNZ Occultation Section* circular additionally indicated that Martin George from Tasmania, Keith Lay from Queensland, and Brian Loader from New Zealand, similarly had negative observations. In a like manner, Geoff Thomas of *LVAS* later reported a negative observation.
On the other hand, Jim Blanksby reported that he'd seen a 10.7 second occultation near his chosen location at Alexandra, after relentlessly chasing holes in clouds with his car. It transpires he had the only reported positive success, and must have been near the middle of the shadow; a good reward for his perseverance, and

confirming the accuracy of the predicted path.

From our known observer locations, Graham Blow, Director of the RASNZ Occultation Section, kindly calculated a *"what might have been seen"* view of *Iris* as shown below. This diagram is not that of the shadow, but is further processed to be that of the asteroid body itself. The circle represents the fitted idealistic shape of the minor planet with a deduced diameter of 214 kilometres. Based on satellite infrared measurements, the predicted diameter was 203 km. The single positive observation is shown as the solid line across the middle of the asteroid; the length of this line is proportional to the length of time the star disappeared at this location. The negative observations are the two solid lines below the circle, since the shadow missed these sites. These results are in good agreement with the predicted size of *Iris*. The multitude of other prepared sites that could have observed had they not been clouded out, are shown as dashed lines. As can be seen, the shape of *Iris* could potentially have been very well characterised, particularly to the South, had sky conditions been different.



The "might have been" results showing an ideal, circular, 214 km wide profile of asteroid Iris. The solid lines are the definite observations made. Each dashed line represents where a clouded-out observer's results would have contributed. The diagram is plotted in size relative to the radius of the Earth, R_e. Diagram kindly prepared by Graham Blow, RASNZ, from information provided by the author, and reproduced with permission.

FINAL REFLECTIONS

Being a philosophical fellow, you realise the weather sometimes plays cruel tricks. Had it not on this particular night, I would be writing now about the mountains of *Iris* the inter-society team detected both visually and by video, and debating whether or not there was an accompanying moon around the asteroid. Maybe next time.

Nevertheless, the exercise in organising this observing fence was gratifying in that it drew together a significantly sized group with a common purpose and, if nothing else, helped foster cohesion and a sense of excitement in our society, if not between all the societies involved.

Why did so many participate? Clearly having a large shadow to maximise chances of success was important. People like to stand a reasonable chance of seeing something. A respectable hour of the evening was important for our older members, and having the bright star Spica in the field of view of the eyepiece was important for our newer members to find the target star easily by themselves. The target star itself could also be seen in even a small 6 cm aperture telescope - a resource we can all too easily overlook. The altitude of 40 degrees was neither too high to potentially make observing uncomfortable, nor too low to introduce interference from trees and buildings. Additionally, having the step-by-step instructions in front of them helped many non-occultation observers over the "humble factor", and spurred them on to have a go once they saw it was not as hard as what they might have perceived. Finally, I feel a key learning point was that many observers were more than happy to assist (indeed were flattered) *once* they had been directly approached, and probably would not have attempted the event otherwise.

We may never know the true number of observers who endeavoured to capture the shadow of *Iris* on July 25, but were foiled by cumulus. Would I do it again? Yes, but the cost involved in terms of time and, more tangibly, in phone calls, photocopying, postage and envelopes, really reserves it for a prediction with exceptional local circumstances, such as that presented to us one Winter in Victoria by *Iris*, messenger of the Gods.

Peter Skilton

CORRECTION FOR ASTRONOMY 1998

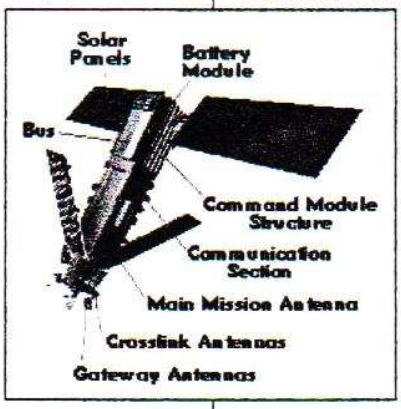
Glenn Dawes has advised that in the current almanac on page 78, the Sun **P°** values (table) should all be negative between 31st Jan and 13th Jun inclusive. Please correct your copies.

THE CROWDED SKY - THE IRIDIUM SYSTEM

Few of us can fail to be astounded when we look back at the fantastic growth in the communications industry in the past twenty years. The rapid

introduction of fax, satellite, cellular phone, Internet and pager technology has revolutionised the way we run our lives and our businesses. The pace of development is not slowing down but speeding up.

The commercial exploitation of space has moved into a higher gear with the introduction of the *Iridium* constellation of satellites. Unlike geosynchronous communication satellites, the *Iridiums* are in a low Earth orbit and so can communicate with hand held units the same size as mobile phones. 72 satellites will be launched into orbit and will provide global mobile phone, data and fax service. The system will be operational by the end of 1998, with over 40 of the satellites already in orbit at the time of writing.



One of the unexpected features of the *Iridium* satellites has been their optical behaviour. In early August 1997 a number of amateur satellite observers in the Northern Hemisphere reported seeing very bright flares from the first *Iridiums* launched in May. It was soon deduced that observers were seeing a direct reflection of the Sun from the main mission antennas of the *Iridiums*, which are silvered to protect them from wear. The antennas are offset from the flight path of the satellite and pointed at the ground. This means it is possible to see a direct reflection from the Sun under the right conditions.

Observers have developed a number of prediction programs and the flashes can be predicted with great accuracy. The flares can be brighter than Venus, the brightest object in the sky. Several members of the *ASF* have seen predicted flares from the society's site at *The Briars*. The path of the flare on the ground is narrow and is only about 30 km wide, and so predictions can only be made for specific points on the Earth's surface. From any particular location, 2 or 3 flares can be seen per week.

The *Iridiums* are only the first cab off the rank of the new, low orbit communication systems. The *OrbComm* global pager system has placed the first eight of twenty-four satellites in orbit. At the time of writing, the first four of 48 satellites of the *GlobalStar* system are about to launch. Some estimates place almost 1,000 low Earth communication satellites in orbit by 2010! This is particularly bad news for Radio astronomers who will have to deal with a huge source of interference from the new satellite constellations. The "space race" is starting again, only this time, the goal is profit.

Ian Porter

FROM AROUND THE PLANET!

Leading Astronomical Societies exchange each other's newsletters to assist in sharing items of interest. This column grabs some of the highlights of recent receipts. You can find out more in the library.

Bendigo District Astron. Soc. (Vic) - This is our first receipt from them. They have an astronomy library for members and a loan telescope. Charts are given for finding Uranus, Neptune, Hale-Bopp (which is now circumpolar), and for the constellation Horologium, the pendulum clock.

Astron. Soc. Alice Springs (NT) - Their impressive line-up of school viewing nights continued in 1997, and found it most successful to combine telescopes with someone to talk to the children, as well as having colourful astronomy books on hand. Article given on refracting telescopes and their different types of aberration.

Astron. Soc. Victoria (Vic) - Several photos of deep sky objects included. Their librarian is retiring. Members' nights are starting again at the Old Melbourne Observatory. The society is having difficulty finding a permanent hall for its monthly meetings. Several annual reports are given from each section group.

Astron. Assoc. Queensland (QLD) - They are undertaking a visit to the Bundaberg society soon, the first such visit made in the last 30 years. Articles on the Rockhampton meteorites fall of 1895, the Solar Eclipse of Sep 1922, and on building your own observatory.

FINAL PRONOUNCEMENT - ORRERY

A working model of the solar system that shows the planets (and sometimes their major moons) in their orbits around the Sun is called an Orrery (pronounced *"Awe-rer-ree", with an Irish accent*). Such a model can also demonstrate the phases of the planets, in addition to their orbital motion. I have even seen detailed plans several years ago that tell you how to build one from Meccano sets. The name was coined for such a working model in 1713, when the first one was created for the 4th Earl of Cork and Orrery (1676-1731).

If you have any Astronomical query that has been niggling you, drop it in the question box at a General Meeting and let us look into it for you.

AIR FORCE DENIES STORY OF UFO CRASH

Valles Marineris (MPI) - A spokesthing for *Mars Air Force* denounced as false rumours that an alien spacecraft crashed in the desert, outside of *Ares Vallis* on Friday.

Appearing at a press conference today, General Rgrmrmy The Lesser, stated *that "the object was, in fact, a harmless high-altitude weather balloon, not an alien spacecraft".*

The story broke late Friday night when a Major stationed at nearby *Ares Vallis* Air Force Base contacted the *Valles Marineris Daily Record* with a story about a strange, balloon-shaped object which allegedly came down in the nearby desert, "bouncing" several times before coming to a stop, "deflating in a sudden explosion of alien gases".

Minutes later, General Rgrmrmy The Lesser contacted the *Daily Record* telepathically to contradict the earlier report.

General Rgrmrmy The Lesser stated that hysterical stories of a detachable vehicle roaming across the Martian desert were blatant fiction, provoked by incidences involving swamp gas. But the general public has been slow to accept the Air Force's explanation of recent events, preferring to speculate on the "other-worldly" nature of the crash debris. Conspiracy theorists have condemned Rgrmrmy's statements as evidence *of "an obvious government cover-up"*, pointing out that Mars has no swamps.

Left - BBQ at the ASF Briars site on 28th March 1998

Photo - By John Cleverdon

From left - Peter Skilton & family, Bob Heale, Marg & Roger Cleverdon

☐ If this box is ticked then membership needs renewing and this may be your last edition of the newsletter, so please contact the Treasurer in this case. Newer members who join late in a calendar year will have this time taken fairly into account when renewing in January, and should remind the Treasurer of this.

The Mars Pathfinder craft, which bounced to a novel landing in the *Ares Vallis* region of the planet using airbags on 4th July, 1997, has now ceased its mission after all communications with both the *Sojourner* wheeled rover vehicle and its main lander mother craft were lost from the surface of the Red Planet. It is thought the batteries finally flattened due to repeated day-night hot-cold cycling, but the exact cause is uncertain (a Martian wielding a sledgehammer I hear you say). Nevertheless the mission lasted three times longer than was specified, and succeeded in returning 16,000 images from the lander, 550 images from the *Sojourner* rover, 15 chemical analyses of nearby rocks, and numerous weather data of temperature, pressure and wind speed. The landing site is now officially called the *Sagan Memorial Station*, in memory of the late astrobiologist Carl Sagan. The Martian dust was found to contain magnetic particles, and frequent "dust devils" were seen on the surface in the Martian morning.