

SCORPIO

Journal of the Astronomical Society of Frankston Inc

Vol 2, No.2

P.O.Box 596, Frankston Victoria 3199

MARCH/APRIL 1993

FUTURE EVENT

GENERAL MEETING

17 March 1993

Special Topic: Telescope Making

21 April 1993

Special Topic: Astrophotography

VIEWING NIGHTS

7th March - Members Night BBQ
to be held at the Briars and followed
by general viewing. Members Only

20th March - Equinox Party

A Big Banger BBQ to be held at
Ballom Park followed by general
viewing. All Welcome.

Both events start at 5pm

The Briars is located off Nepean
Highway at Melways Map 145, E11

Ballom Park is located off
Cranbourne Road at Melways Map
103, B4

COMMITTEE MEETING

25 March 1993

29 April 1993

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. In addition the Society provides the services of its members for educational presentations or observing nights for schools and local community groups.

BRIAR'S VIEWING SUCCESS.

The Society held four viewing nights during January as part of The Briars Summer Programme. While we got off to our normal washed out start for the first night, the beautiful clear skies on the other three nights more than made up. On each night we had a good roll up of members and the general public. To assist the viewing, Briar's staff very kindly arranged to lay a compacted cement/stone viewing platform for the telescopes. This was a great help and provide a superb level platform for the general public visitors.

The observing site gives excellent views from the south to the north east. Light pollution from Frankston limits the use of the northern sky and trees to the west limit our views in that direction. These are not serious deficiencies however and the site produces clear, dark skies. On each clear night we were able to view deep sky objects with ease.

These activities are helping to establish our credentials with The Briar's management and it is hoped we can use the observing site on a more regular basis for members viewing nights. The deep sky group has expressed the desire to establish regular viewing nights from the site. Briars management have tentatively agreed but are still understandably concerned about the security.

I believe we have a great opportunity to establish a permanent viewing site here and look forward to many observing sessions this year from the Briars.

For those members interested in checking the site out (including the Nepeanoic memorabilia at the homestead plus the local wines of course), The Briars is located off Nepean Highway at Melways Map 145, E11

EDITORS MESSAGE

Don't forget if you have any comments about the magazine, its layout or its contents - please send comments to the Editor

Meeting Venue:

The Peninsula School

Wooralla Drive, Mt Eliza

(Melways Map 105, F5)

Room F6 at 8.00pm on the third
Wednesday of each Month except
December/January

Visitors are always welcome

Annual Membership Fees

Full Members \$20

Concession Members \$15

Family Members \$30

Family Pensioners \$25

Membership Fees due 1st July each
year

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SOCIETY NEWS

CRANBOURNE BBQ

The BBQ at the Cranbourne Botanical Gardens on the 17 January was a great success. The weather held to the Melbourne norms and we had all four seasons in one day, everyone however seemed to enjoy the event. After the BBQ lunch, some of us took to exploring the grounds looking for potential future viewing sites and ended up being driven round by the Park Ranger. Nothing like a guided tour by four wheel drive. It was a great social afternoon and everyone agreed we should do this more often.

ARTHUR HIGGINSON 1912-1993

The first general meeting for 1993 was marred by news of the sudden death of long serving member Arthur Higginson. Arthur joined the Society in the early 70's when he decided to get back into astronomy and build an observatory at his home. This he did, mounting a 250mm Springfield telescope inside the "Hame" domed observatory. Members of the society helped Arthur mount the instrument and enjoyed many observing night there. Arthur is survived by his wife Helen and we send her our deepest condolences.

COMMITTEE NOTES

The committee has been considering the longer term plans for our society and has agreed on some interim objectives.

- 1) Take a more positive approach toward establishing our observatory.
- 2) Develop a social program to encourage more general get togethers.
- 3) Appoint an Observations Officer to develop and support members viewing needs. Peter Skilton has agreed to handle this.
- 4) Appoint a Publicity Officer to handle general publicity of the Society events and various viewing nights. Tony Hales is handling this.
- 5) Increase our membership to broaden out our skills base and enhance the types of society activities possible.
- 6) Develop the general meeting structure to provide a more varied and dynamic type of meeting where members can more actively pursue their astronomical interests.

It is our Society Goal to establish an astronomical observatory containing a telescope capable of meeting all the members aspirations and operate a program of Society activities that supports all aspects of the members astronomical interests.

To this end we need your help to best formulate these plans and feedback on our performance. If you would like to contribute your ideas or views to help the committee in its planning role please stop a committee member and talk about it.

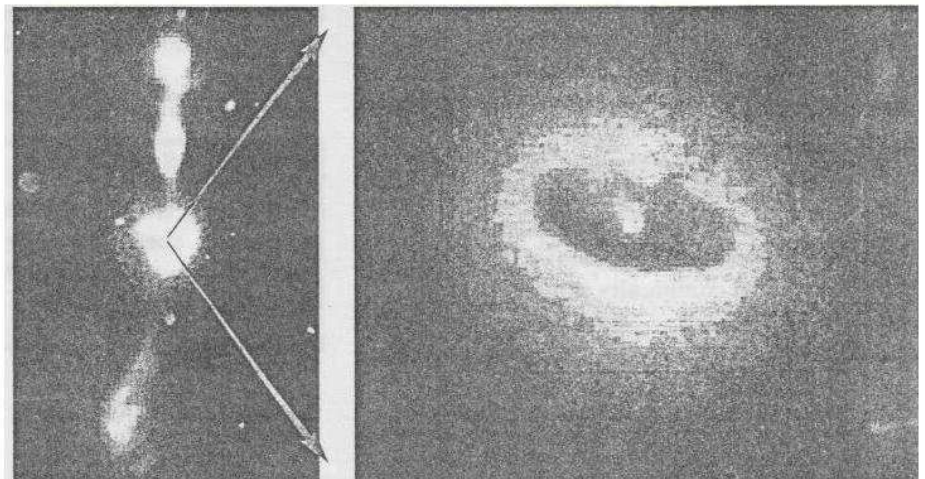
P.J.Lowe

HUBBLE SEES BLACK HOLE ?

The high resolving abilities of the Hubble telescope has begun to show the inner working at the cores of active galaxies. It has been long speculated that a central black hole exists at the centre of active galaxies. Ground based observations using speckle photography have been able to show single starlike objects at the centre of these galaxies but nothing of the inner structure. Recent photographs from the Hubble Space Telescope of the active galaxy NGC4261 in the Virgo cluster have revealed a dark doughnut of gas and dust surrounding the central bright object. {see photograph below}. The dark ring of material is about 400 lightyears across and is orientated in the plane of the galaxy. It is believed the bright object is produced from light emitted as gas and dust feeding into the central black hole. NGC4261 is known to have radio lobes or jets which originate from the same region. These jets are orientated at right angles to the plan of the doughnut. This picture of the central region has confirmed a long held belief that a single massive object dominates the activity at the centre of the galaxy. While the photograph does not in itself confirm the existence of a black hole, it does provide strong evidence. Measurements of the velocities of stars near the region will allow astronomers to "weigh" the central object which it is hope will confirm its blackhole status.

The Society has received a number of catalogs and price lists from ELKEN RIDGE Pty.Ltd. which is a company setup by Clive Garner, an early member of the ASF. The catalogs cover a vast array of telescopes, accessories and computer equipment. I have bound the catalogs up for the library.

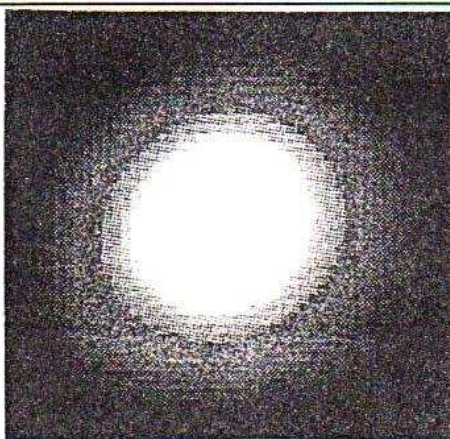
If you would like to speak to Clive direct his number is 03-751 2176.



DEMOLITION DERBY OR DEBRIS



In past issues we have reported meteorites falling close to people, hitting houses and in last issue even a ship at sea. Well it's happened again. This time a 27 pound stony meteorite has hit a young ladies car. Miss Michelle Knapp of Peekskill, New York heard a crash from the yard and upon investigation discovered the back of her car demolished. The rocky evidence from what she initially thought was an act of vandalism lay in a shallow depression nearby. The police called in the experts who quickly confirmed the celestial nature of the stone as a H-group chondrite, a fairly common variety meteorite. The fall of the meteorite was observed as a fireball seen across the region and it is thought to have entered the atmosphere at a shallow angle somewhere over Virginia. I don't know if the insurance company will pay up but collectors have been quick to bid for the stone. The highest offer is thought to be \$69,000. I wish a meteorite would fall on my car, I could use the money. (Photo from Feb '93 Sky & Telescope)



MIRA FOOTBALL SHAPED

Using a technique called speckle interferometry a group of astronomers from the Harvard-Smithsonian Centre for Astrophysics has monitored the shape and size of the variable star Mira. Mira (Omicron Ceti) has been monitored by amateurs for many years and is known to be a pulsating red giant which varies from 3rd to 10th magnitude over a period of about a year. Speckle interferometry allows the group to measure the angular size of the star. (about 0.07 arcsec) The group monitored the stars size and shape over a five year period and made the fascinating discover that Mira is not round. [see photograph above] The star shows a distinct oblong shape with one axis about 20% larger than the other. The reason for this oblong shape is unknown although it is speculated (pardon the pun) that the outer atmosphere is unstable in some way and is either throbbing or changing shape through fast rotation. More detailed monitoring is needed.

OCCULTATION OF VENUS

Those who attended the Sky for the month presentation at the last meeting, or who collected the handout, would have had the chance to see the occultation (eclipse) of the planet Venus by the thin crescent of the Moon on Thursday afternoon 25th February. Disappearing behind the Moon at 2:09pm, and re-emerging at 3:34pm, the phenomena was easily visible to the naked eye. It was even reported on the ABC television news service the night before so as to attract a good audience.

A colleague and I at work took a late lunch and set up under the canopy of elms in Treasury Gardens in the city. Unfortunately, the approaching cool change washed wave after wave of mackerel sky across the predicted position, we didn't have a chance of even finding the Moon until 3:40pm. However the cloud cleared at this time, revealing the slender crescent of a Moon only a couple of days old, with Venus brilliantly standing out west of its Southerly limb. We had missed the moment of emergence, but had been blessed with the glorious sight of this magnitude -4.6 planet in mid-afternoon. A magnificent spectacle after standing in the Melbourne summer sun at 28 degC and predicting we might miss even seeing the Moon due to the multiples cloud layers. I believe others in the Frankston area fared better, reporting clearer skies and being able to record times for the phenomena. If you missed out, you might like to try Mercury later in the year. At magnitude -1.5 it will be much more difficult to see in the daylight but should be accessible to simple binoculars. Give it a go, it's free and not to be missed.

WHAT'S NEWS IN ASTRONOMY

TUNGUSKA EXPLAINED?

In June 1908 a stupendous explosion occurred over Siberia's wastelands near the Tunguska river. It was some thirty years before anyone could mount an expedition to the area and what they found was thousands of square kilometres of flattened forests. While a giant meteorite was suspected, no crater or meteorite debris was found. The Tunguska blast was the equivalent of a 20 megaton nuclear explosion and the cause of the explosion has been a mystery that has tantalised scientists and pseudo-scientists alike. Possible explanations ranges from

:- a glancing blow meteor that bounced off the atmosphere and sent a shock wave down to the surface.

:- a matter/ anti-matter explosion when a lump of anti-matter left over from the Big Bang hit the Earth

:- a small black hole that passed right through the Earth

:- UFO crashed and exploded.

:- Message from "Aliens" to show how powerful they are as a precursor to contact.

:- Gas explosions from gas that seeped up from the ground and built up a explosive mixture.

:- a comet impact where the comet vaporised before it could hit the ground.

Recent work in the US on the structure of meteors and asteroids has suggested a more "down to Earth" explanation, namely the Earth was hit by a small stony asteroid that exploded at an altitude of ten(10) kilometres. The American scientists have modelled the aerodynamic forces experienced by objects hitting the atmosphere at between 15 - 30 kilometres per second. At these velocities the frictional forces encountered by the object are the equivalent of a enormous sledge hammer blow. If the meteor was made of light conglomerate matter similar to comets, its low mechanical strength causes it to fragment at high altitude. At lower altitude the same fate awaits the stony meteors. Large iron meteorites have the mass and

density to survive to the ground. Interestingly the model predicts a sufficiently large stony meteorite would have sufficient mass and momentum to penetrate deep into the atmosphere before exploding and that a 30 metre diameter stony meteorite entering the atmosphere at a high angle would fragment with several megatons of explosive energy at a altitude of about 10 kilometres. They concluded the Tunguska blast was caused by a small asteroid between 10 - 80 metres in diameter entering the atmosphere between 30-45 degrees and exploding at an altitude of about 10 kilometres. The resulting downward blast flattened the forests below. Recent Tunguska soil samples rich in meteoric dust seem to support this hypothesis.

VENUS PIONEER BURNS UP

The first spacecraft to orbit the planet Venus has finally plunged to a fiery death into the Venusian atmosphere. Pioneer Venus ran out of fuel last year while attempting to boost itself into a higher orbit. The spacecraft has been mapping the Venusian surface faithfully using radar altimetry since its arrival at Venus in 1978. Only expected to last two years, the craft has been money well spent.

LUNATIC PARTICLES.

People have often thought some of the scientists at CERN, the European Laboratory for particle physics were a bit loony and now it seems the scientists have gone out and proved it.

For years researchers at CERN have been trying to track down some mysterious variations in the energy of particle beams produced in the Large Electron Positron collider (LEP). The energy of a particle is a direct measure of its mass and researches need to produce particles whose energy is known as accurately as possible. Unfortunately there has always been a persistent uncertainty of about 10MeV in the energy of particles produced.

The answer appears to be lunatic in nature. As the moon orbits the Earth it raises tides in the land as well as

the oceans. When the moon passes overhead it raises the land by about 20cm. This distortion changes the length of the LEP accelerator and since the energy of the produced particles is determined by the length of path they accelerate along, any distortion affects the particle energy.

Over the 27km length of the accelerator, the lunar distortion changes the path length by only 1mm but this is more than enough to account for the 10MeV variations.

No doubt they all go mad at full moon.

THE WRONG STUFF.

One would have thought that a spacesuit designed to be airtight, withstand temperatures from -150 to +120 degC and to be tough enough to ward off micrometeorites, would be almost indestructible. Not so!!

NASA has discovered that its museum collection of 88 spacesuits from the Mercury, Gemini and Apollo missions are deteriorating rapidly. The suits were made from Nomex, teflon-coated fibreglass, aluminised Kapton and various rubbers. The elastomers are degrading, leaving the suits brittle and twisted, and the adhesive attaching the aluminium foil is causing metal to flake off. Each astronaut had three spacesuits tailormade for him: one for testing, one for the mission and one spare. Ironically, the test suits that never left the Earth are deteriorating the most. The astronauts did their weightlessness training in a swimming pool and the chlorine in the water has successfully attacked the suit.

(From "Chemistry in Britain Nov'92)

ODD SPOT The Age 25 Feb

NASA officials have been blasted for allowing the costs of the new space shuttle toilet to blow out to \$A23 million. They should have canned the project.

OBSERVATION NOTES

Well the year is still young and there are plenty of eclipses left for the moons of Jupiter. For those who attended the first meeting this year, I handed out simplified copies of these eclipse predictions showing the actual appearance of the moons around Jupiter at the time of disappearance or reappearance. These events are easily seen in even the smallest telescope and if your eyesight is spot on, even in binoculars. If you miss out on getting a copy, see me at the next meeting. Of course I am eager to receive any timings you can do of these eclipses to the nearest second or so. The time required is the last glimpse you have of the moon (if the eclipse is a disappearance into Jupiter's shadow) or your very first glimpse (if the moon is reappearing from the shadow). Just synchronize your watch with a standard time signal. This is easily done by phoning up the time. When the disappearance or reappearance occurs, record the time. It's that easy. If you don't own a telescope but are interested in contributing to the project, see me and I'll see about scrounging you a society scope on loan. Your timings will be sent to the Royal Astronomical Society of New Zealand initially and then on to the Jet Propulsion Laboratory in California, where they will be used to refine the orbits of Jupiter's moons. Who said you can't make an international contribution from your own backyard?

Anyway, back to the hand-out of predictions. I have shown the times already corrected for daylight savings (or lack thereof) For example, on April 6, Jupiter's second moon Europa will reappear from inside Jupiter's dark shadow at 19:31 hours Local time {ie. 7:31 pm in the evening}. You should start observing a few minutes beforehand because the predictions can be unreliable. If they weren't, we wouldn't need your help in getting timings.

You will also notice that there are no eclipses of Jupiter's 4th moon Callisto this year. This is because this moon is further out from the planet than the other three. { Io, Europa and Ganymede } and therefore more

likely to entirely miss the shadow of Jupiter because it is more sensitive to the position of the Earth, Sun and Jupiter. If Callisto doesn't go into the shadow, we do not see any disappearances, and it remains bright all the time. Maybe we'll see Callisto's eclipses next year. Ganymede, however has had about a half dozen eclipses this year. I've tried to view and time them all, but have been reliably foiled by Melbourne's weather, either by cloud, rain or both. Nevertheless there are more to come.

Of course, if you don't wish to participate in our simple project of timings, you might like to simply watch the eclipses unfurl before you. There's definitely something magical about seeing one of the moons slowly dim then wink out as it plunges into Jupiter's icy shadow, or it peeps into existence by emerging from the inky blackness of the shadow.

Happy hunting

{ ed. note. I have quickly check for eclipses for Callisto on my computer planetarium and there does not seem to be any until early 1996 }

Being on holidays the last month or so has offered me the chance to step up my observing. It certainly has been a challenging time as I tried to reach the 600 mark for my first year of variable star observations. As it turns out, I missed by 10, with the 590th taken in the very last minute of 1992. Never mind, like most things in life, it's the quality that counts, not the quantity. January saw a couple of dusk to dawn sessions in my backyard. Surprisingly enough I did not find this too tiring - until the next day - and managed to bag several Jovian moon eclipses and numerous lunar occultations in the process. Although no aurorae were seen, a couple of interesting phenomena were witnessed.

On January 1, an artificial satellite travelling South to North at about magnitude 5 flashed once while I was observing the Southern Cross with binoculars. Quite a change from the normal, slow featureless move of a

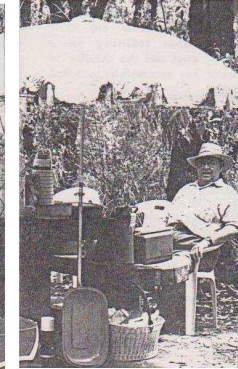
satellite before plunging into Earth's shadow. On February 6, there was another near T-Cen that flashed once every 3 seconds in binoculars. Since the flashes occur when presumably some panel on the manmade satellite positions itself at exactly the correct angle between myself and the latter objects were spinning about their own axis, or maybe tumbling out of control. {Did I hear someone say something about a missing Optus satellite recently?} Certainly at 10 revolutions or so per second, the second object was really drilling its way around its orbit, much like a rifle bullet's movement through air.

January 20 was an all night stint, where I filled in a couple of deep sky objects as best I could given the sky glow in Frankston and my telescope's notorious collimation problems. At 3:20am it was time to do a Limiting Magnitude Survey. Have you done yours yet - it's only 15 minutes and you really don't need to collimate your optics (eyeballs) for it. Details were given a couple of Scorpio's ago. Anyway, I made magnitude 5.4 as the faintest star visible in Crux. Then came an unusual opportunity, Frankston suffered (or more appropriately was blessed with) a complete power blackout at 4am. All house and street lighting was instantly extinguished. Much darker skies to say the least! Time for another Limiting Magnitude Survey, this time stars down to magnitude 6.0 near UW-Cen with the heavens impressively dark. It was good to get an exact gauge of how much light pollution can affect your viewing, and this was at a location in Frankston that mercifully is currently fairly dark. The effect of removing the unwanted glare from street lighting in other places in the city would surely be staggering. As twilight began interfering, I packed up to go inside for a sleep, sure of no more surprises to come. However to quote from my observing logbook: "You know when you've been observing for a long time when you find a snail up your leg at twilight!"

Peter Skilton



MEMBERS OF THE PUBLIC AT THE BRIARS	EX-SCOUT OR PYROMANIAC KEEPING THE COLD AWAY AT THE CHRISTMAS BBQ	DON LEGGETT PROVING HIS WORTH AS A WINDBREAK THERE'S NOTHING LIKE IMPROVISATION
BBQ AT THE CRANBOURNE BOTANICAL GARDENS	ASF ACTIVITIES	BRAVE SOULS ENDURING THE COLD FOR A HOT SNAG
PETER SKILTON IN FULL POINTING MODE	EARLY STARTERS AT CRANBOURNE	ATTENDEES AT MT MARTHA BBQ



Left - Society BBQ at Ballam Park on 20th March 1993
Photo - By John Cleverdon

Right - Society BBQ at the ASF Briars site on 20th March 1993
Photo - By John Cleverdon

