

SCORPIO

Journal of the Astronomical Society of Frankston Inc

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JAN/FEB 1994

FUTURE EVENT

GENERAL MEETING

19th JANUARY 1994

General Meeting at The Briars Lecture Theatre. Slides & Films followed by Public Observing Night

16th FEBRUARY 1994

General Meeting back at Peninsula School.

Topic : To Be Announced

VIEWING NIGHTS

- 1) Every Wednesday thru January at The Briars - Public Viewing 8pm
- 2) Public Viewing 21/1/94 at Ballam Park 8pm
- 3) 12/2/94 Members Viewing Night Cranborne
- 4) 19/2/94 Public Viewing Night Cranbourne

COMMITTEE MEETING

The committee will be held at the Brown's residence on:-

27th January 1994

24th February 1994

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.

SKILTON SOLAR ECLIPSE

Eight days after the transit of Mercury, a partial Solar eclipse was also visible from Frankston. Early on Sunday morning, a 31% coverage of the solar disk by the Moon was predicted to occur. Fortunately the morning was warm and cloud free over our location.

Beginning to observe with eyepiece projection at 6:53 am AESuT with the 60 mm f11 refractor, we were somewhat disappointed to find out the predictions in the ASV Yearbook were about 15 minutes too late, meaning that a large chunk was already visible out of the SW quadrant of the Sun. Furthermore, the eclipse was unmistakably still in progress at 0811 AESuT prior to thick clouds gathering over the area, yet the Yearbook suggested it should end at 0759. I somehow think the ASV used the wrong latitude in their predictions.

There was also an unusual 'V' shaped sunspot group present, and the two large spots observed during the transit of Mercury were not observed.

I took several impressive slide shots during the eclipse, including formations of migrating birds moving across the partial solar disk. Unfortunately, I later found the film had slipped off the sprocket in the camera and did not wind past the first frame. Never done that before! Fortunately, Ros' brother was also up at that hour and was also taking one or two photos with us, which did turn out. One might appear in a later edition when reprints come back.

FOR SALE

AT GENERAL MEETINGS

Society Badges \$5

Planosphere \$8

ASF "T" Shirts \$30

Help your Society

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

Visitors are always welcome

Annual Membership Fees

Full Members	\$20
Concession Members	\$15
Family Members	\$30
Family Pensioners	\$25

Membership Fees due 1st January each year

President

Peter Lowe (03)775 9347

Vice President

Peter Skilton (03) 776 5898

Treasurer

Peter Brown (03)789 5679

Secretary

Don Leggett (059) 85 4927

Committee

Ros Skilton (03) 776 5898

Tony Hales (03) 781 3251

Laurie McIntyre (03) 786 6120

Steve Malone (03) 789 6239

Don't forget if you have any comments or contributions - please contact the Editor

SOCIETY NEWS

Well the New Year has got off to a good start. Father Christmas brought us a tent this year on account of my wife and I have decided to go to the 1994 South Pacific Star Party being held at Ilford, NSW. (see details page 4) The star party runs from 5th - 11th May and looks like being a fun event. Peter Skilton tells me it was rained out last year but I refuse to be swayed by such defeatism.

1994 is a big year for the ASF being the 25th anniversary of our formation and the year is already fairly heavily booked with activities. We get the year started well with a round of public viewing nights at The Brairs. Every Wednesday night throughout January, members of the public can book to view through the telescopes. Members are of course welcome and bring a scope if you can. The third Wednesday 19/1/94 will also be a general meeting held at The Briars Lecture Theatre. We don't normally hold January General Meetings but have decided to change our meeting schedules so that we have meetings through summer and astronomy lectures through winter. The January meeting will be a discussion session with slides and videos.

The Australia Day Parade will be held 26/1/94 and we are planning to enter an astronomy float. This Parade finishes at Ballam Park and we hope to set up an army tent (courtesy of the army) to show slides & videos. Help at these events is always welcome. A public viewing night will be held at Ballam Park prior to the parade on Friday 21/1/94. This seems like a lot for January but remember this is where we pick up most of our fundraising and hopefully new members. If you can help out please contact Tony Hales.

Whereas January is based around The Brairs, February is a little less booked and based around Cranbourne. The monthly social event is a BBQ lunch at The Cranbourne Botanic Gardens on 5/2/94. In addi-

tion a members viewing night will be held at the same gardens on 12/2/94. {still to be confirmed} This is the location where we hope to build a small observatory. The gardens management have kindly allowed us to view from the rear work compound and the site has proven to be excellent with reasonable dark skies. To finish the month a Cranbourne public viewing night is being organised for 19/2/94

Other events planned for the year are:-

- * The Winter Solstice Party
- * A Special 25th Anniversary Dinner
- * The Annual Society Dinner.
- * Winter Astronomy Lecture Course
- * NACAA in Canberra

As you can see 1994 is shaping up to be a big year for us and it can only be a successful year if members participate, so don't hold back come and enjoy.

Peter.Lowe.

COMMITTEE NEWS

The committee has a number of activities en train at present. Firstly The Briars submission to the council was accepted and an appropriate lease agreement is being prepared. This means we can move to the next phase and submit plans for an observatory. It is hoped in the mean time to upgrade the viewing platform for the Briar Summer Viewing Program.

Those members who came to the December General Meeting will have notice the "Trading Box" at the back of the meeting. This is a trading/selling area where members can purchase society paraphernalia and telescope making equipment. If you have anything you want to trade or sell bring it along and put it in the Trading Box.

A submission for an assistance grants from the Council is being prepared along the same lines as last years grant. This grant has gone a long way

toward establishing our instrument making section.

A letter has been received from the CSIRO asking for research submissions for a 6" Schmidt camera they have for use. An appropriate submission is being prepared for the Society but anyone wanting to submit a personal submission can get the details for a committee member.

The committee is concentrating its efforts on organising the 25th anniversary programs including our NACAA poster paper. We are always looking for ideas so help us make the society better by passing on any ideas you have.

ANNUAL FEES DUE.

At the Annual General Meeting it was agreed to change the payment of annual fees from July to January each year. This means fees are due by calender and not business year. To make the change in a fair and equitable manner, the committee proposes to collect fees in the following way:-

- 1) New members joining the Society from Jan 1994 will pay a normal fee.
- 2) Members who joined the Society prior to June 1993 will pay a further 1/2 year fee which covers membership until the end of 1994. This fee is due in January
- 3) New members who joined the Society after June 1993 will not be required to pay any further fees until Jan 1995.
- 4) After Jan 1995 everyone pays fees by calender year.

If this causes anyone any hardship please come and see a committee member. I'm sure we can work something out.

ODDSPOT

It's finally happened!! In the advertisement for the public viewing nights at The Brairs, we became The Frankston Astrological Society.

I wonder if there's any money in it?

WHAT'S NEWS IN ASTRONOMY

SOLAR ECLIPSE TIMINGS

WRONG !!!!!

What went wrong!! The partial solar eclipse in November occurred but not on schedule.

I got up early, cajoled my wife to get up at seven o'clock SUNDAY morning to help me set up the telescope and low and behold the eclipse had already started. I had checked the timing predictions on the computer a few nights before but could not confirm the predictions from the ASV. My response was "stupid computer".

Anyway the predicted times for the event seem to have been totally out. The weather for the event was great and I got a good sequence of photographs. A bit of cloud past through toward the end of the eclipse but I did get a second contact timing. A few photos are shown below with the instrument used, a 110mm refractor.

Our Old English Sheep dog Chloe decide to poke her nose in at every opportunity so we decide to name her the Principal Scientist for curiosity. My wife was Senior White Card Holder while I was of course photographer. I haven't heard why or how the predicted timing were so wrong. They were about 20 minutes out. If anyone has an explanation I'd like to hear about it.

When I re-checked the computer predictions, you guessed it, the computer was right. Lesson learnt!!

SPACE/ASTRONOMY RADIO

As heralded at previous meetings, "The Space Show" is a weekly 1 hour radio program heard every Wednesday night on Southern FM (88.3 MHz on your dial) between 7 to 8 pm.

Topics covered will certainly be of interest to all members of the Society and feature most current topics in space and astronomy, particularly with an Australian bent. In fact much information given is hot off the press, beating most publications into print.

It may not be of the same calibre as the AM Radio National's Science Show broadcast on 621 KHz every Saturday afternoon at 12:40 pm, but nevertheless worth a listen.

It is unfortunate that they choose to broadcast on the one night of the week that both the ASF and ASV have their monthly meetings, which would cut down their audience somewhat.

This community radio station apparently broadcasts with low power from the clock tower of the Moorabbin Town Hall, and covers the bayside suburbs. However, sometime in 1994 it will move to better premises and hopefully broadcast more widely. Nevertheless, it is easily picked up with the most basic of FM radios. If difficulties are encountered, you could attach a vertically pointing aerial to your radio to enhance the received signal. Worth a listen.

PUBLIC ASTRONOMY COURSES FOR BEGINNERS

The University of Melbourne is running three(3) short courses in early 1994 that any member of the public can attend. The courses are:

(1) The Wonders of Astronomy. Will cover details of types of telescopes, our Sun, planets, stars, star clusters, neutron stars, supernovae, pulsars, quasars, black holes, space travel and the search for extraterrestrial intelligence. Course notes will be provided. Mon 17 Jan to Wed 19 Jan 6:30 pm to 9 pm. Fee \$65 or \$55 concession.

(2) Sundials, Moondials, Stardials. Describes the various types of sundials, outlines a simple method to construct your own accurate sundials, and how they can be used to determine time at night, even under cloud cover. Course notes provided. Fri 21 Jan 1 pm to 5 pm. Fee \$30 or \$22 concession.

(3) Photography of the Night Sky. Discussion of photography of the Sun, Moon, eclipses, planets, comets, nebulae and galaxies, darkroom techniques, films and filters. Comprehensive course notes and exposure tables provided. Mon 24 Jan to Tue 25 Jan 6 pm to 9 pm. Fee \$50 or \$37 concession.

If interested, for further details or for enrolment phone the University Summer School on 344 4996.



A BOLT FROM THE BLUE

After giving a colourful explanation with slides of why the sky is blue at a meeting during the year, I was subsequently asked at a later meeting to find out the colour of lightning.

Well, according to Tufty's book "1001 Questions Answered About Storms" (yes there really is a book called that), most people see lightning as whitish or yellow-white. Under some conditions, such as when the humidity is high and there is a high moisture content in the air, it can appear pink. When contrasted against the yellowishness of artificial lights, it may even then appear blue.

The colour arises due to fluorescence of molecules in the air. A similar effect occurs in household fluorescent lighting tubes, though the gas inside these is not simply air.

The passage of current through the air during the lightning stroke causes some molecules (typically nitrogen and oxygen) to absorb energy and become excited. They stay in this excited unstable state for a fleeting fraction of a second, then return to their normal state by shedding the excess energy in the form of light. The colour of the light (a measure of its energy, with the blue end of the spectrum being the higher energy) is therefore an indication of the energy gap between the stable "ground" state of the molecules, and their temporary excited state.

In fact, an excellent sensitive test for determining when a vacuum system has achieved high vacuum conditions is to use what is known as a Tesla coil. This device essentially passes a small lightning bolt discharge through the vessel to be tested. If it glows pink or blue then there is still air present, even if only a few molecules.

Another well known example of fluorescence occurs when you wash your clothes. When most garments age, they typically turn yellow, though still appear white after being washed. This is an optical illusion caused by whitening compounds that are

purposefully placed in the washing powder. These leave a residue on the washed clothes. When light falls on these compounds, they become excited, then emit blue fluorescence. This adds to the natural yellow colour of the old garments, causing the eye to see the clothes as being white. Therefore whiteness does not mean cleanliness.

FIXING THE HUBBLE

As you are no doubt aware by the media coverage received, the mission orbiting telescope ended in apparent success in December. I say apparent, because all onboard systems will not be fully powered up and tested for several weeks yet, since the process to reactivate the telescope is painstakingly demanding.

Certainly a major success is needed for NASA, being bedeviled by the loss of the Mars Observer spacecraft, and the main antenna jamming on the Galileo probe to Jupiter earlier in the year.

Before allowing the team of astronauts to hop aboard the space shuttle and return to Earth on 13 December, ground control did do an "aliveness test" where they at least confirmed that all new electrical contacts had been successfully made by the astronauts.

Five spacewalks were necessary, totalling about 30 hours overall. The tasks performed by the crew of the space shuttle Endeavour are similar to those that might be performed on an orbiting space station if one finally gets the go ahead.

The repair mission to Hubble had several objectives. Clearly the flaw in the optics had to be corrected. This flaw saw the mirror ground too flat at the edges. Correction was not by refiguring the 2.5 metre primary mirror (though I'm sure Steve Malone would have offered his services and a 44 gallon drum if they had asked), but by placing 10 coin-sized small distorting mirrors into the path of the

incoming light in such a way that they reversed the effect of the mirror flaw, before passing the light into the detectors.

The device to achieve this "undistorting" was coined COSTAR (Corrective Optics Space Telescope Axial Replacement) and is about the size of a fridge, at a cost of more than \$50 million. Unfortunately, due to space limitations in the telescope, one of the instruments, a high speed photometer, had to be removed permanently to make room for COSTAR.

Further work exchanged the wide field planetary camera for another up-to-date version. The astronauts also tackled the problematic solar panels of the telescope which had caused the entire craft to vibrate badly every time it crossed into or out of the Earth's shadow every 45 minutes. This in turn had caused blurring of long term photographic exposures.

One of the solar panels was so badly distorted that the astronauts were unable to fold it up to place it in Endeavour's cargo bay for return to Earth. Therefore it was pushed off into space, adding to the collection of space junk orbiting the Earth.

Hubble's stabilising gyroscopes were also replaced, avoiding the possibility of losing control of the craft with any further failures, as were other electronics onboard.

In the next couple of weeks we should eventually see the long-awaited sharp images direct from orbit, without the necessity for computer sharpening. Fingers crossed.

DISTANT ASTEROIDS.

Four additional distant asteroids have been discovered beyond the orbits of Neptune & Pluto. These bodies are thought to belong to the Kuiper Belt - a region around the Solar System containing the remnants from the formation of the major planets. At magnitude 23-25 they are at the edge of detectability.

HUBBLE READY FOR ACT TWO.

I don't know about you but I get rather annoyed these days when the Hubble Telescope is mentioned in the media and is de-rided as a NASA failure, a big white elephant and a waste of money. Despite the instrument's lack of perfection, it has been a huge success and promises to be even more so now that the long awaited shuttle repair/upgrade mission has been completed. The treatment of the Hubble Telescope by the so called "news" media is to me more indicative of the shallowness, ignorance and priorities of our news industry. {i.e. Don't let the facts get in the way of a good story}

Anyway I've had my bitch. This week seven shuttle astronauts in an unprecedented number of space walks carried out a true space rescue mission. After capturing the Hubble Telescope they proceeded to replace its failing controls, damaged solar cell arrays and insert upgraded optics and instrumentation. While there is a

Ken Hedt's latest creation is the 8" Newtonian telescope at right. Ken is a new member and started his telescope when he joined the society.

While the mirror is yet to be aluminised, Ken has star tested the instrument and is pleased with the result.

Ken also made the rack & pinion focus which has a smooth action. Note the highly innovative stand.

If you would like to build a scope see Steve Malone about a mirror making kit.

period of commissioning for this new equipment, there is no reason now

that the telescope should not live up to its original high expectations.

BANG ON COURSE

Shoemaker-Levy-9 will run into the planet Jupiter next year. The comet passed too close to the gas giant on its previous orbit and fragmented into over 22 large chunks of rock, most several kilometres across. The comet debris known as "The String of Pearls" has stretched out in a line along the orbit of the parent body.

Accurate observations made just before the comet passed behind the Sun this year have pinned its orbit down well enough to predict the moments of impact. The objects will run into the cloud tops of Jupiter at a speed of over 60 k/second.

In Universal Time, 9 of the chunks will collide with Jupiter on 1994 July 18.7, 19.1, 19.6, 20.2, 20.9, 21.6, 22.1, 22.7 and 23.2. Who knows, you may have the chance to witness the birth of a second Red Spot.

Further analysis of Voyager photos of the Jovian moon's Callisto and Ganymede showed mysterious chains of craters in a row, aligned in impressively straight lines. This may be evidence of past cometary hits by

past "Chains of Pearls" and could go a long way to explain these previous mysterious crater alignments.

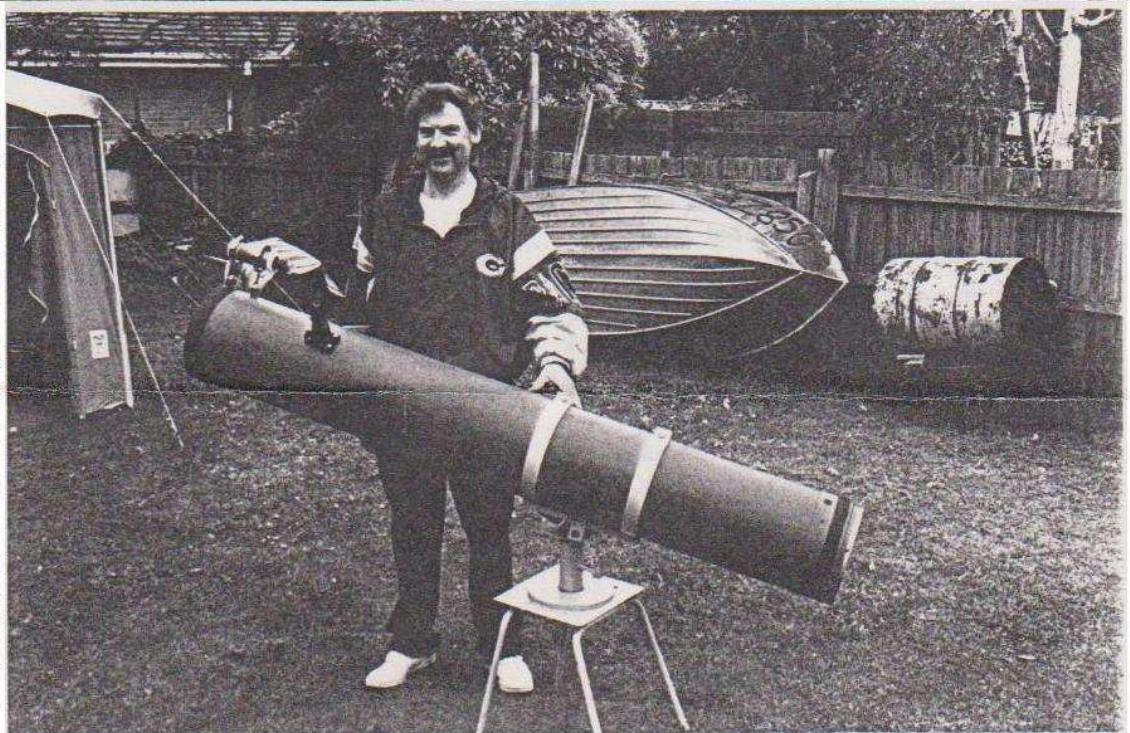
UNDER THE HAMMER AND SICKLE

In December, more than 200 artifacts from the Soviet space program over the years went to auction at Sotherby's, raising some 6.8 million dollars in the process.

The training spacesuit of Alexei Leonov, the first person to space walk, sold for over a quarter of a million dollars. The orange space suit of Yuri Gagarin, the first person in space, was also placed under the hammer.

Sydney Powerhouse Museum purchased two space suits, one inflight suit and one designed for space walks. The two suits cost \$60,000 and will be used in displays.

Of most interest though, were the title deeds for two Russian Moon buggies, still apparently on the lunar surface. The purchase agreement was, seriously, for cash on delivery. And they were only driven to church on Sundays also.



DISCUSSIONS - RE-CURRENT NOVA T-PYXIDIS

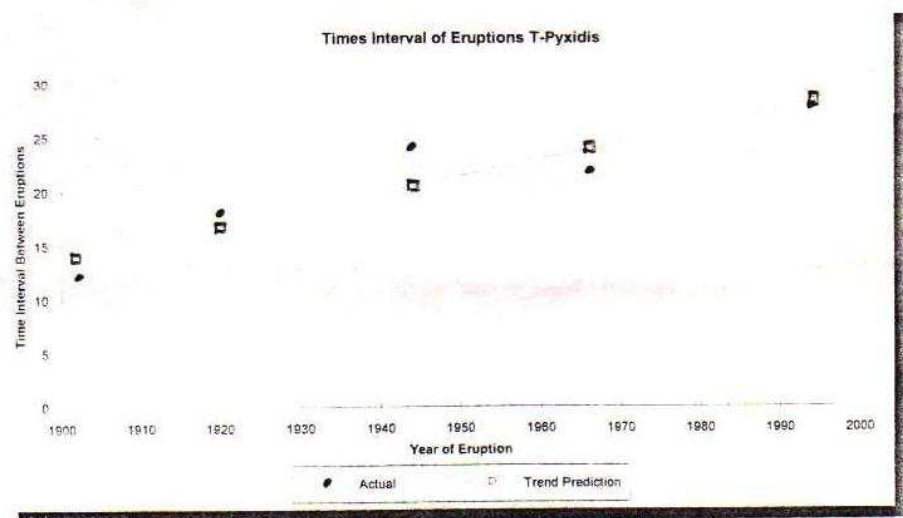
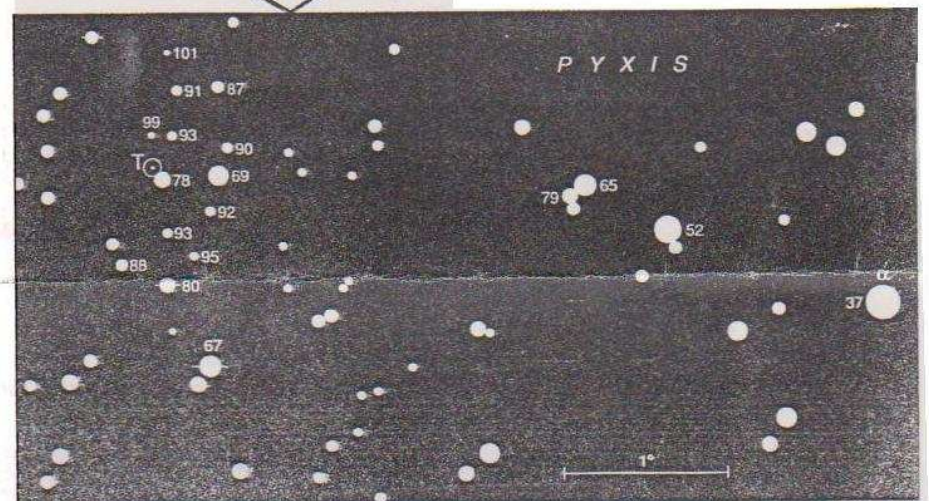
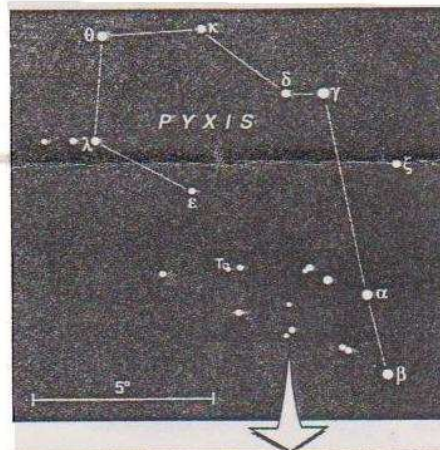
For those of you interested in a challenge how about monitoring the recurrent nova T-Pyxidis. This is a star that is not normally visible in anything but big instruments however on occasions bursts forth to around 6-7th magnitude, well within range of binoculars. T-Pyxidis is well past its last outburst and is just begging for some conscientious amateur to discover its latest eruption. From Frankston, it is rising around midnight but will be rising earlier and earlier as the summer months progress. I have been following this object for some time and the only observation to date has been "Not Visible" but you never know one of these days!!!

As the name suggests T-Pyxidis is in the constellation of Pyxis, the Mariner's Compass, a small constellation at about 9hr RA and -32 deg DEC. T-Pyxidis is one of the few recognised repeating nova and is known to have erupted at least five times since 1890. These outbursts occurred in 1890, 1902, 1920, 1944 and 1966. On each occasion the star brightened slowly over a few nights from its normal 14th magnitude to almost 6th magnitude. The star is a bit of a mystery because it does not fall into the normal nova categories which brighten very fast and fade quickly. T-Pyxidis brightens irregularly over several days to weeks and fades slowly around 1 magnitude per month. Interestingly the absolute luminosity of the star outburst is not known well because it has not been possible to correctly categorise the star or measure its distance from us. It appears to be at least several thousand lightyears away although if its maximum brightness matches known nova norms it could be well over 10,000 lightyears distant. Based on the past explosions, it appears the interval between each outbursts is increasing. It has been 27 years since the last outburst while the interval between the 1890 and 1902 nova was only 12 years. We do not know if this

interval is really increasing or just highly variable. It seems certain T-Pyxidis is a close and rapid binary in which matter is being transferred from one star to the other.

The visual outbursts are the result of a surface thermonuclear explosion on the one of the stars. To find the star I starhop from the Orion. Draw a line from the Great Orion nebula through Sirius until you find the stars A & B Pyxidis. From here you will need binoculars. I use 16X50 but the surrounding stars are also visible with 8X50's. My 16X50's have a field of view that just encompasses the two stars and so I can starhop easily to T-Pyxidis. The star chart below is a good guide. Remember T-Pyxidis is normally 14th magnitude so don't expect to see much. Give me a call if you find anything?? {Good Hunting}

Peter. Lowe



{ Assumes next eruption occurs in 1994 }

STELLAR MAGNITUDE SCALE

Astronomy is one of the oldest sciences and as such it is probably more prone to holding onto outdated and outmoded concepts long after their usefulness has past in the light of new instrumentation. One such concept is the use of stellar magnitudes. After all what is the magnitude of an X-ray burster or how would you compare the relative magnitude of a UV flare star seen by satellite and the visual flare seen by ground based observers. Astronomers have had to grapple with these types of advances since the early developments of photometric astronomy.

The stellar magnitude concept is reputed to date back to about 150BC when it is likely Hipparchus first produced a magnitude scale. The scale became known to 19th century astronomers through the translation of the books of Ptolemy from the third century AD. The Books VII and VIII of the Almagest contained a catalogue of 1022 stars with stellar magnitudes using a six-point scale. The use of numbers in the Ptolemy scale was not intended to convey a numerical basis for the classification scale. Unfortunately for 19th century science the rush to classify and numerate nature was a driving force and astronomers of the day transformed the classification scale into a continuous and quantitative scale of the eye's response to point light sources. Thus the bright, less bright, not so bright, dim, very dim and just barely visible scale of Hipparchus got converted into the accurate, numerate and computable scale of stellar magnitudes we are familiar with today.

The scale has three major eccentricities. Firstly it is an inverse scale. Bright stars have lower scale numbers. Magnitude -1.4 Sirius is much brighter to the eye than a magnitude +5 star. Secondly it is a logarithmic scale because of the erroneous belief that human visual

stimuli to point light sources is logarithmic in response. And thirdly it is not a base 10 logarithm scale but base 2.512(e), the base of natural logarithms, which did nothing more than help in some forms of stellar calculations.

Up until the start of the 20th century almost all stellar magnitudes were determined visually and checks on the various scales used by different astronomers have shown upto six magnitudes variation. This implies more than 100 times difference in apparent brightness between observers!!! To bring these observations into coincidence it became necessary to understand how the human eye responds to varying point source brightness. During the middle of the last century Gustav Fechner, the German founder of psychophysics, stated his law that the smallest perceivable intensity increment in any visual image is itself proportional to the intensity. Which means the human eye can see a difference between bright stars easier than dim stars. In astronomical terms this suggests a logarithmic magnitude-intensity relationship.

Thus was born the equation that $\text{mag} = -k \cdot \log(\text{Intensity}) + c$ where k and c are constants. To bring the observations from different observers into coincidence, it was only necessary to establish corresponding constants k and c for each observer and a consistent scale between observers could be formed. Magic!! Furthermore, when the value of k for different observers was determined and expressed as the light-intensity ratio, R , between consecutive magnitudes, all the differing values lay between 2.2 and 2.9 with 2.5 being close to the mean. Since the base of natural logarithms is $2.512=100^{1/5}$, the use of a value $R=2.512$ was chosen by convention to bring the whole scheme in line with the original Ptolemaic scheme. This became known as the Pogson scale who in 1856 proposed it

to bring observations from different observers and different telescope apertures into coincidence. Interestingly this concept was taken up with so much vigour that the correspondence between the logarithmic law, the Ptolemaic magnitude scale and other visual magnitude scales was not checked. Had such a check been made, the unsuitability of the logarithmic scale would have been evident. The Pogson scale was taken up by several major photometric surveys and by 1910 millions stellar magnitude determinations had been recorded. While the Ptolemaic magnitude scale was established by comparative checks between stars, visual photometry during the 19th century were based on physical measurements. Several methods were used. The meridian photometer altered the brightness of a star until it appeared equal to a known comparison star. The wedge photometer passed the star light through a variable absorbing filter and the observer adjusted the wedge filter until the star was just visible. The Zollner photometer allows the observer to see the star and adjust the brightness of a reference artificial star until both are visually equal. Each has its own advantages and disadvantages. In today's age of highly linear electronic detectors and high speed computers the need to match visual observations between observers has disappeared. The Pogson scale has become as obsolete as that of Ptolemy and nowadays its main use seems to be to stimulate argument about the size of star discs on star charts. While the Pogson scale is still used in many areas of visual astronomy, the progressively increasing use of CCD cameras and photometers in both professional and amateur astronomy will no doubt lead to its ultimate demise. I wonder what will be used to replace it.

FOR SALE

AT GENERAL MEETING

Society Badges \$5

Planospheres \$8

ASF "T" Shirts \$30

Telescope Making Equipment

Mirror Blanks, Grinding & Polishing
Compounds, Spherometers, Eye-
pieces, Secondary Mirrors, Spiders

1994 ASNSW STAR PARTY.

Details of the 2nd ASNSW Star Party have been received. The Star Party is at a property near Ilford NSW.

The party is a camping, observing week from 5-11th May. There are non-astronomical activities such as hiking and wineries in case of bad weather.

The week costs \$30 per person and needs to be booked soon.

See Peter Lowe for an application form.

TRANSIT OF MERCURY- Peter Skilton

On Saturday 6 November, members witnessed from Ballam Park in Frankston the slow passage of the planet Mercury across the face of the Sun. Eyepiece projection onto screens was used to show the event to a crowd of about 50 interested members of the public, though cloud cover provided a minor nuisance.

Noticing the ominous buildup of clouds in the hours leading up to the transit, the entire Skilton family of four (Ros, Cassandra, Rene and I) decided to pack up the car, abandon ship, and head over the other side of The Great Dividing Range, looking for clearer skies.

It was not to be. At Healesville it became apparent that conditions were worse over the other side of the mountains (100% cloud cover). This cover persisted, so we cut our losses and headed in the direction of the largest blue area of sky we could see.

Ending up at Wandin, near Lilydale, our expedition set up the trusty well-travelled 60 mm f11 refractor on the banks of the Woori-Yallock creek which was grossly flooding at the time (the provided wooden picnic table and chairs were submerged). By this time it was nearly mid-transit. Nevertheless we successfully projected with a 20 mm Kelner a good image about 200 mm across onto a white melamine board and proceeded to take photographs of the image to record the event. Clouds stayed away for the remainder of the event.

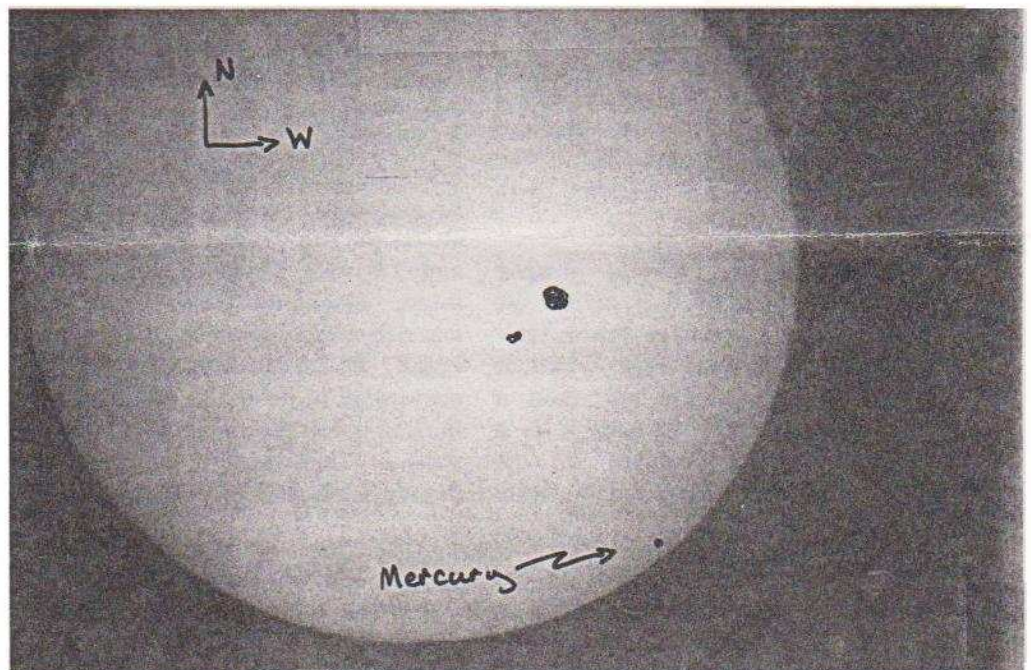
Two large sunspot groups were seen just West of the disk centre, each 3 or 4 times larger than the Earth. However, they were not visible to the protected eye. The sharp circular spot of Mercury (about 1 mm across) was easily picked up at the South West edge of the disk. This then duly moved across the limb as predicted over the next 45 minutes.

Third contact was very difficult to judge, but was estimated at 1543 AESuT. Final contact, when we were no longer able to resolve any part of the planet, was at 154608 AESuT, almost one minute before the predicted end of transit.

Photographs were taken during the transit with an ordinary Pentax SLR camera, though the contrast of Mercury was not as sharp as by eye since slight underexposure occurred.

The attached photo was taken at 1519 AESuT and, depending on the quality of the photocopying, the planet Mercury is visible in the lower right (SW) corner. I believe the observers at Ballam Park "forgot" to bring their cameras!

{ed: The photo below has been "contrast enhanced to highlight the planet]





Above - Australia Day Display at Ballam
Park on 26th January 1994

Photo - *By John Cleverdon*