ASTRONOMICAL SOCIETY OF FRANKSTON INC.

P.O. BOX 596 FRANKSTON 3199

NEWSLETTER SEPTEMBER 1988

MEETING WEDNESDAY SEPTEMBER 14th

This meeting will feature a "question and answer" night for which members are invited to ask questions on astronomical topics for which they would like more information or clarification.

An answering team of Society members, with personal experience in various areas of amateur astronomy, will then provide answers to these questions to the best of their collective abilities. Should you have a question you would like to ask of the team, then come along and test the members' knowledge.

The meeting, in Room F6 of the Upper School, Peninsula School, Mt. Eliza, will commence at 8 p.m.

OBSERVING NIGHT SATURDAY SEPTEMBER 17th

The Society Observing Night for September is scheduled for Saturday September 17th or, if clouded, for Sunday September 18th. This is a few days after New Moon and will provide an opportunity to observe some of the Moon's extra-ordinary scenery.

The main object of interest, however, will be the planet Mars at its closest point to Earth since 1971 and showing an apparent diameter of nearly 27 seconds of arc.

Saturn will also be well placed and elusive Mercury should be visible low in the western twilight.

Please bring portable instruments to the Peninsula School Observing site for a night of planetary observing.

SOCIETY NOTES

At the Society's August meeting Paul Butler, Head of Science at Mentone Girls' School described the remarkable range of satellite tracking and monitoring activities carried out by students and staff of the school, in association with the University of Surrey, England.

Monitoring of orbital data for artificial satellites, and measurements of Earth's magnetic field, radiation belts and solar flares by means of satellite transmissions is carried out on a regular basis. Monitoring of broadcasts by a joint Russian and American group of polar explorers, the broadcasts being used for determination of their position by means of an orbiting satellite which transmits back their calculated position, has also been carried out, and a tape of such broadcast was played to the meeting. Weather data can also be obtained directly from satellites and a weather pattern displayed on a TV monitor.

The school in Beach Rd., Mentone carries a steerable antenna on its roof, and is receiving funding for these activities from the Australian Bicentennial Satellites in Schools Project, which has as its aim the encouragement of space science in Australian schools. Projected future activities include possible monitoring of the

Pioneer and Voyager spacecraft, now in the far reaches of the solar system.

The 30 cm B. J. Smith telescope housed in the Peninsula School Observatory until that building was removed in April, may now hav a rebirth as an Observatory instrument at the Astronomical Society of Victoria's premises in Parer Avenue,Burwood. The telescope which was operated by our Society on loan from ASV, may now fill a gap in ASV instrumentation pending the completion of the 50 cm telescope scheduled for erection there.

Steve Malone, who now sees himself within sight of completing his 30 cm Dobsonian mounted telescope, has generously offered the use of the telescope, when completed, to our own Society for such period of time as may be necessary for completion of the Society's own 40 cm telescope. The highly portable Dobsonian mounting should allow its use in a variety of locations for public and Society Observing.

SKY NOTES

Partial Eclipse of the Sun - Sunday, September 11th. An annular eclipse of the Sun will occur on September 11th. This is an eclipse in which the Moon's diamter is slightly less than the Sun's, thereby leaving a ring of light around the Moon's rim. As seen from Australia a partial eclipse only will be seen during the afternoon hours. The eclipse may be watched safely by eyepiece projection of the Sun's image on a white card, or by using a small hole in a card to create a pinhole camera effect. DO NOT observe the Sun directly through any optical instruments even with a solar filter as instant and permanet damage to the eye can result.

Constellations. The month of September is also the month of the Southern Spring Equinix, the time when night and day are of equal length, 12 hours each at any point on Earth. This results from the situation that at this time at the corresponding Equinox in March the Earth's axis is momentarily tilted neither towards nor away from the Sun. This moment occurs in 1988 on September 22nd at 19h 29m Universal Time, or September 23rd 05h 29 m Eastern Australian Time.

From an observational point of view the equinox means that the point where the Ecliptic, or apparent path of the Sun in the sky, and the Equinoctial, or projection of the Earth's equator in space, intersect, is due north at midnight, This point is known as the "First Point of Aries" but is however located in the constellation Pisces, the Fishes, the reason being that as a result of the slow "precession" or wobbling of the Earth's axis in space over a time span of some 23,000 years, the Equinoctial, or projected Equator, likewise moves position along the Ecliptic.

Having moved from Aries into Pisces, the First Point of Aries will in the future move on into Aquarius, hence the term the "Age of Aquarius" which featured in the early 70's rock musical "Jesus Christ, Superstar".

Due north in September in the early evening is the constellation Hercules, with its central asterism of four stars known as the "keystone". In a direction to the east of the Keystone is located what is known as the "Solar Apex", this being the direction in space in which the Sun, Solar System and ourselves are heading in the Sun's long journey around the Galaxy, an identification which was first made by William Herschel from his studies of the "proper motions" or movements of the stars in our region of space.

Planets. The month of September sees Mars at its closest and brightest since 1971 and also for the rest of this century. Closest approach will be on Thursday, 22nd September when Mars will be at 59 million kilometres or about 36 million miles from Earth and the planet will have an apparent diameter of 23.8 seconds of arc. By comparison, the next opposition of Mars, in July 1990, will see Mars at 77 million kms and a diameter of 18 seconds only.

With a calm atmosphere and a medium sized telescope much detail should be visible on Mars with a view that continually changes as Mars itself rotates on its axis. The most conspicuous feature visible is generally Syrtis Major, a dark triangular marking at Martian longitude 280° approximately. Westward of this can be seen the arc of Sinus Sabaeus, leading to Sinus Meridiani located at 0° Martian longitude.

The great canyon Valles Marineris, photographed by spacecraft, may also be detected as a chain of dark markings to the west of another dark area. Aurorae Sinus, and Mars polar cap are usually conspicuous white patches to the South and North of the disc.

Saturn remains a bright object for easy observation in Ophiuchus, while Jupiter and Venus are conspicuous sights for early risers, with Jupiter rising by midnight in late September.

Mercury, usually difficult to observe because of its proximity to the Sun's brightness, has been easily visible in the August evening twilight and will remain so through September.

THE MOON

New Moon	Sept 11	Oct 11
First Quarter	Sept 19	Oct 18
Full Moon	Sept 26	Oct 25
Last Quarter	Sept 03	Oct 03

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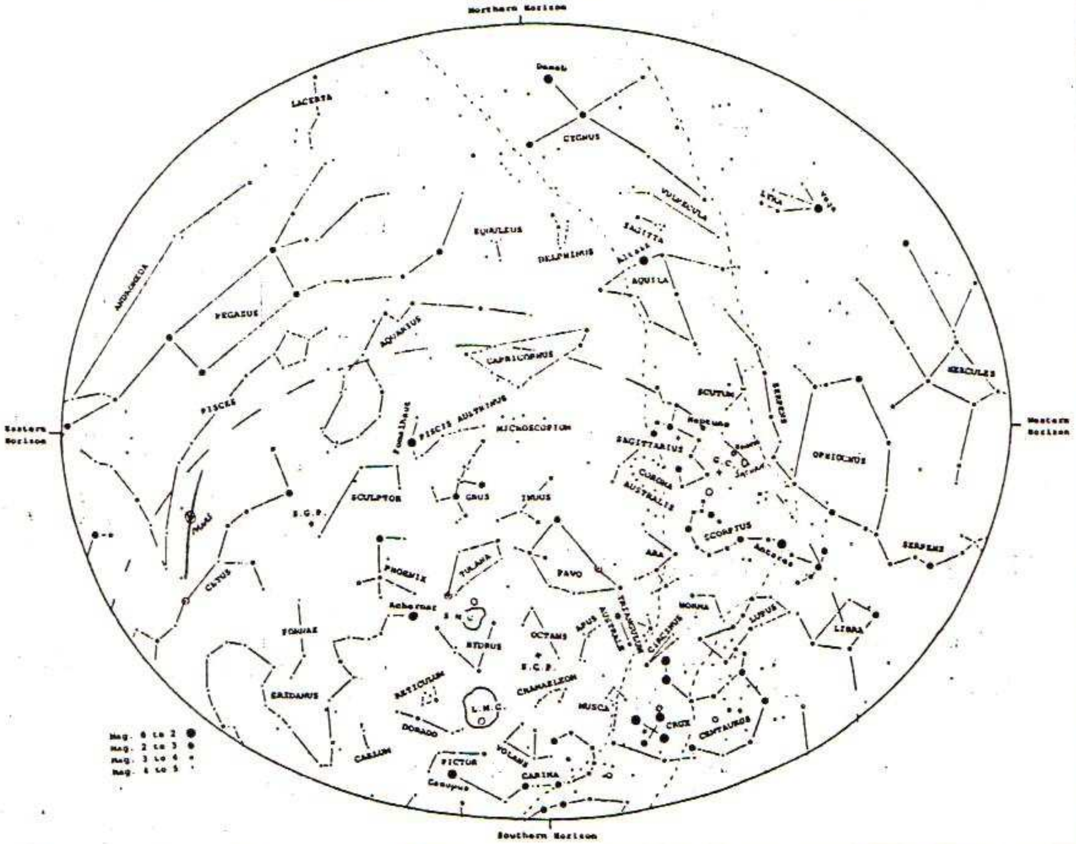
NEWS ITEM

The members of the ASF Committee decided unanimously to confer Honorary Membership of the Society on Mary and Brian Cabena in recognition of their generous work for the Society as typist of our Newsletter and as Public Officer for Incorporation. Unfortunately Brian has recently suffered a minor heart attack. He is now resting at home and we all wish him a speedy recovery.

Red planet steals the night spotlight



This is part of a continuing series prepared by Mr Vince Ford, research officer at the Mt Stromlo and Siding Spring observatories of the Australian National University

SEPTEMBER is the month for Mars-watchers.

Mars reaches its closest point to the Earth this decade on the 23rd, and is at opposition, or directly opposite the Sun and at its highest at midnight, on the 28th.

This means that Mars will be at its brightest and at its largest apparent size this month.

The size of the Martian disc will be 24 arc seconds. This is much larger than average apparent size, and will enable even small telescopes of a few inches aperture to see features such as the polar caps and the colour differences between various areas of the surface.

Not even the largest ground-based telescopes, used under perfect conditions, can see the details of volcanoes, craters and canyons that make Mars so spectacular when viewed from spacecraft in Mars orbit. Binoculars (except freakishly large sets) are not good enough.

Those who wish to see Mars at its best should contact their local amateur astronomical society. Societies around Australia will be making special efforts to observe the red planet during this opposition.

Three objects marked on the southern section of the chart are worth special mention as prime examples of their type. Near the SMC is the globular star cluster 47 Tucannae (or NGC 104). This is visible to the naked eye (under dark skies) as a fuzzy 5th magnitude star.

Binoculars reveal it as a glowing mottled patch of faint stars, and small telescopes resolve it into thousands of stars of 13th magnitude and fainter.

A fainter globular cluster, NGC 362, is visible in the same area, just above the pear-shaped body of the SMC. Beta Tucanae is one of the prettiest double stars, two 4.5 magnitude stars separated by 25 arc seconds.

Kappa Pavonis is a Cepheid variable, one of a class of stars which pulsate and change their light output in a regular fashion which can be used to measure the distance to the star. Kappa Pay changes in brightness from 4.0 to 5.5 mag, over a period of 9.1 days, easily seen through binoculars.

One of the greatest events for Australian astronomy was the opening of the new Australia Telescope yesterday.

This radio array closes the instrumentation gap that had opened between Australian and overseas radio astronomy.

This is particularly pleasing as the pioneering work in the theory and construction of aperture synthesis telescope arrays such as the Australian Telescope was done by groups in the CSIRO and Sydney University back in the 1950s and '60s, leading to telescopes like the Mills Cross and Chris Cross at Fleurs, NSW. These became prototypes for much larger instruments erected overseas.

Now if only we can close the rapidly widening optical gap.

Pinpointing objects of interest

OUR chart shows the southern Australian sky at 9pm local standard time on September 15 and 8pm on September 30. Constellations are named in upper case and bright stars in lower case. Thin dashed lines outline the Milky Way, the ecliptic is marked by thick dashes and open circles indicate the positions of objects of special interest.

Moon phases for September are: last quarter at 1.05pm on the 3rd, new 2.49pm on the 11th, first quarter at 1.18pm on the 19th and full at 5.07am on the 26th. The Moon will be at Apogee at 1am on the 11th and at Perigee at 2pm on the 25th. Since Perigee occurs practically at Full Moon, the apparent size of the Full Moon will be noticeably larger than average this month.

Spring equinox for the Southern Hemisphere is at 4.29am on the 23rd. This is the time at which the apparent path of the Sun crosses the Equator on the way south. Note that this apparent motion of the Sun is entirely due to the tilt of the Earth's axis of rotation, not to any real motion of the Sun.

Mercury is in the western evening sky, setting about an hour after the Sun. Mercury's magnitude drops from 0.2 to 0.7 during the month, and it may be difficult to see in the twilight. Best chance is around the 16th when it is at maximum eastern elongation. Venus (mag -3,8) and Jupiter (mag -2.1) are the brightest objects in the eastern dawn sky. Mars (mag -2.2), Saturn (mag 0.7), Uranus (mag 5.5) and Neptune (mag 7.9) are at the positions indicated on the chart.