Astronomical Society of Frankston Inc.

NEWSLETTER NOVEMBER 1985

CHRISTMAS BBQ AND OBSERVING NIGHT, DECEMBER 7th:

The Society's end of year BBQ and Star Party for 1985 is to be held at a new venue away from our own immediate area. The location is to be high in the Dandenongs, at the Picnic Area in Kalorama Park, Melway's reference 52 J9. The site is on Barbers Rd., a road leading off the Mt. Dandenong Tourist Road, just south of "Fiveways" Corner, and should provide a good viewing location for portable instruments. This function is to be catered for out of Society funds and meat and salads will be provided free of charge to members. However, liquid refreshment will be on a BYO basis. December 7th will be close to Last Quarter of the Moon and, weather permitting, should allow Deep Sky Observing, so please bring portable instruments of all types for a night out in the Hills.

N.B. PHONE John Palmer 7832598 if you intend joining in the fun. (i.e. phone 7832598)

SOCIETY MEETINGS FOR 1986:

As a result of difficulties associated with the use of Peninsula School classrooms in School Holiday periods, the Committee has decided to hold Society meetings in 1986 on the 2nd WEDNESDAY of the month NOT THE 4th WEDNESDAY and omitting a meeting for the month of January.

Consequently there will be no meeting at Peninsula School in January, 1986 and the Society's first meeting for the year will be held on Wednesday, 13th February, 1986, with a speaker to be announced.

VISIT TO MT. BURNETT OBSERVATORY:

It is hoped that an evening visit by Society members to Mt. Burnett Observatory near Gembrook may be arranged for a date in January, 1986. This Observatory, which is operated by Monash University, uses a 50 cm (20") aperture telescope and has an excellent location for observations. Further details regarding this visit may be available at

the Society's November meeting.

OBSERVING NIGHT, JANUARY 11th, 1986:

An Observing Night at the Peninsula School site is planned for Saturday, January 11th, 1986 commencing at 8.30 p.m. Should this night be cloudy then Sunday, January 12th will be substituted for the Observing Night.

The summer Milky Way constellations of Orion and Carina will then be high in the sky on a night close to New Moon, so please bring portable telescopes (the larger the better) for this night.

SOCIETY NEWS:

The talk at the Society's October meeting was given by Jim Park, Vice-President of Astronomical Society of Victoria, who spoke on the Crab Nebula, describing the development of knowledge of this remarkable object. The Crab Nebula, located in the Zodiacal constellation of Taurus, is now known to be the remnants of a supernova explosion observed in 1054 by Chinese astronomers and later recorded by Charles Messier in the 18th century as a misty patch of light, which he listed as the first object in his catalogue of nebulae and clusters. It is now known, therefore, as "M.1", the term Crab referring to a fancied resemblance to a Crab with claws, as seen by Lord Rosse through his large reflector in Ireland. From 1968 onwards the Crab became the object of intensive research following the discovery of a pulsar, or pulsating radio source, with a frequency of 33 milliseconds in the heart of the nebula. Later, the central star, recognised as being responsible for the radio pulses, was also found to be pulsating at optical and X-ray wavelengths, whilst theorising on the cause of such pulsations led to the concept of neutron stars where matter is compressed so tightly that the protons and electrons within normal atoms are compressed together into neutrons.

Although numerous other such bizarre objects are now known, Jim pointed out that the Crab Nebula provided the first optically identifiable stellar radio source, X-ray source, pulsar, neutron star and source of synchotron radiation.

SKY NOTES:

Comet Halley. Comet Halley is now accelerating rapidly westward towards closest approach, or perihelion, with the Sun in February, moving from a position close to the Pleiades, or Seven Sisters cluster in mid-November into Pisces and Aquarius by the end of the year.

Bob Heales' computer generated charts used with Nortons Star Atlas and the charts in "Astronomy" magazine for October provide means of locating Comet Halley, which should reach naked eye visibility during December.

A number of telescopic observations of Comet Halley have already been made by some members, including observations in the dark sky provided by the total lunar eclipse of the early morning of October 29th, when the comet was close by to the Crab Nebula. By mid-November the comet was seen as a nebulous haze with nuclear condensation and at approximately 7th magnitude.

During December the best observing period will be in the early part of the month, during last Quarter and New Moon; towards the end of the month the comet will be in evening twilight with further interference from moonlight.

In January, Comet Halley will be too close to the Sun for observation and will then become visible again in the morning sky in February, prior to the best viewing period in March and April, when Comet Halley will be a bright object high in the Southern skies over Australia.

Planets. Only Jupiter of the naked eye planets remains observable in the evening sky during December 1985 and by the end of the month it oo will be slipping into the western evening twilight. The other planets are all morning objects in December with Venus, Mercury and Saturn in morning twilight, and Mars rising at 2.30 a.m. D.S.T. by the end of December.

Constellations. The early summer skies of December show the bright constellations of Orion and Canis Major, the Large Dog, rising upward in the East during the evening, with the bright band of the Milky Way encircling the eastern half of the sky.

Sirius, the "Dog Star" in Canis Major is the brightest star in the heavens at 8 light years distance, and on exceptional nights with a large enough telescope may be seen to have a companion star, sometimes known as the "Pup". This star, although not much below naked eye magnetude, or brightness, at 7th magnitude is extremely difficult to observe due to the glare of brilliant Sirius, and was first detected in the 19th century by apparent wobbles in the position of Sirius. Sirius B, the "Pup", is a white dwarf star, a star in which internal collapse has led to the crushing of atoms together, producing enormous densities of many tons to the cubic inch.

Although Sirius B is far from an easy object for amateur telescopes, another white dwarf star, 40 Eridani B, well placed at this time of year, is readily observable. This star is in the long chain of stars known as Eridanus, the Celestial River, and is the fainter of a pair of stars known as Eridani, or Omicron 2 Eridani, located at R.A. 04h 13' Dec - 07° 44' and marked as such in Nortons Star Atlas. In the telescope this star is seen as a wide pair, or binary, and it is the fainter of the two, at magnitude 9.7, which is the white dwarf. Burnham's Celestial Handbook provides further information in this star system.

The Moon

New Moon	Dec 12
First Quarter	Dec 19
Full Moon	Dec 27
Last Quarter	Dec 5

NEWS NOTES:

Victoria's Largest Telescope. Until recently the largest telescope in Victoria was the Ballarat Observatory 26 inch reflector operated by the Ballarat Astronomical Society and providing visitors with fine views of deep sky objects from a high and precarious observing stand.

Now, however, developments pioneered in the United States by John Dobson and his followers on the use of large thin mirrors and specially constructed altazimuth mountings have resulted in the availability to the amateur of mirrors and telescopes up to nearly 30 inch diameter.

Frequent reports of these large telescopes occur in "Sky & Telescope" and "Astronomy" magazines, and now, in Victoria, Ron Springall of Shepparton has constructed a 29" aperture altazimuth reflector on these lines. He describes the construction of the tube assembly as being simply a scale up of his 12 inch reflector, with a total weight of less than 100 kg.

Views provided by this instrument are quite spectacular for planets, clusters, the Magellan Clouds and external galaxies, in which spiral structure and dust lanes are visible.

Ron is keen to share these sights with others and plans are underway for the construction of a Public Observatory in Shepparton to house the instrument and provide public observing demonstrations.

from Astronomical Society of Victoria Newsletter,
October, 1985.

An astronomical pioneer captures Halley's comet on film

By PETER ROBERTS,
technology reporter

Mr Mike Candy pulled on a pair of ropes and opened the dome of the elderly brass and steel astrographic telescope nestled in the bush near Perth.

"I know you would prefer it all to be controlled by computer," he said, "but that is just one more thing to go wrong. This way always works." In 1910 the telescope was used to observe Halley's comet, which is streaking its way towards the sun.

Early one morning, working in complete darkness, Mr Candy manhandled the 100-year-old instrument until it pointed almost horizontally towards the northern horizon.

"I think we are looking at a tree, that's the trouble," Mr Candy said after a few minutes. "We will have to wait until later."

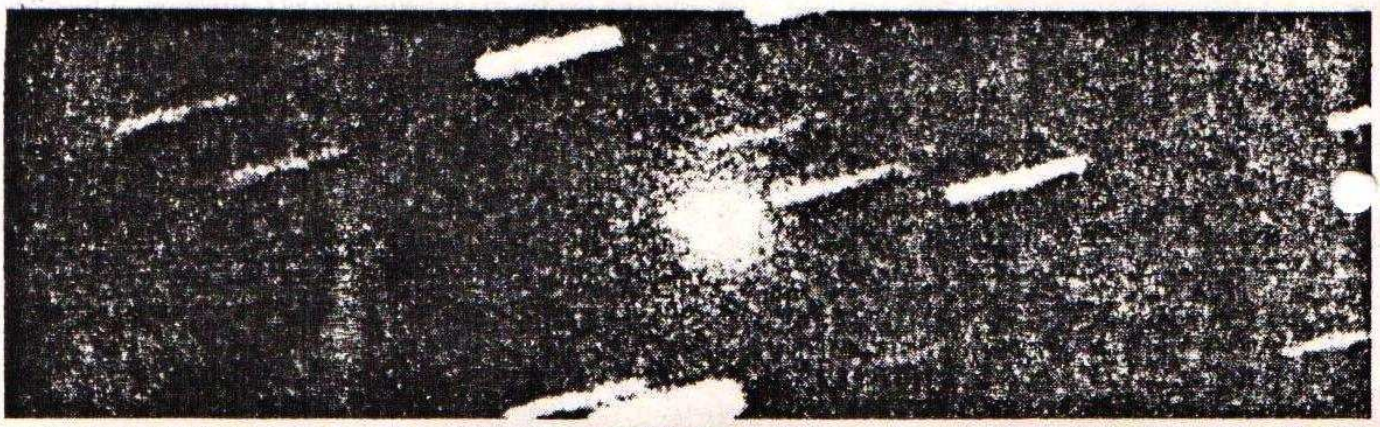
Halley's comet has been visible to astronomers for some time and should soon be visible to amateurs, in a position between the star Aldebaran and the cluster of stars known as the Pleiades.

Mr Candy, the head of the Perth Observatory, is the leading comet observer in Australia and has a key role to play in keeping the European Space Agency's Giotto satellite on target. In late February and early March the comet will not be visible from the Northern Hemisphere and Mr Candy's measurements of the comet's position will help guide Giotto past the nucleus.

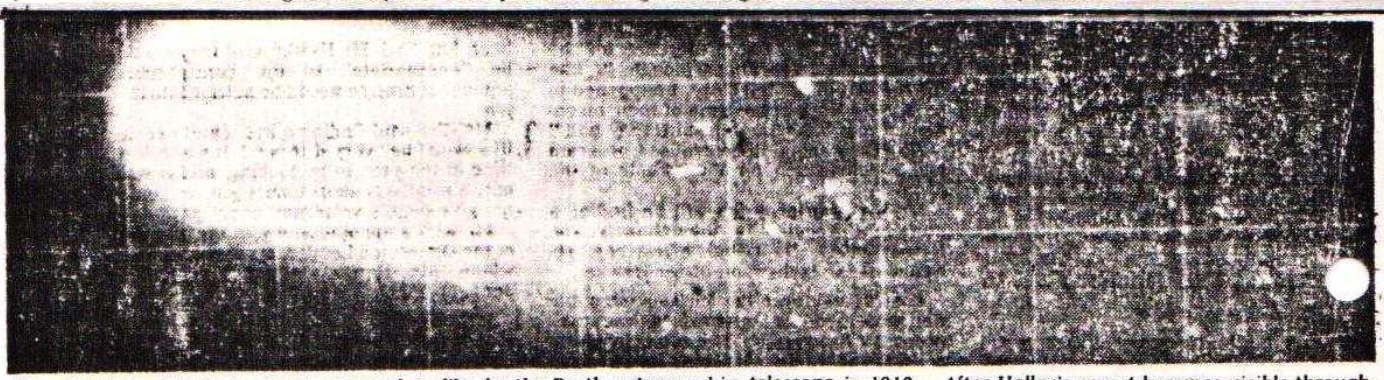
"People are working on an assumed orbit for the comet," Mr Candy said, shifting the telescope eyepiece around, still searching for the comet image. "But its actual position is out by three-and-a-half days. That is quite a lot in 76 years."

By defying Newton's laws of physics in this way, comets have thrown down a challenge to specialists in celestial mechanics — the relationships between the heavenly bodies.

"What astronomers have done is to insert into their calculations a fudge factor which they call non-gravitational forces. By introducing these mathematical concepts into the orbital calculations they can match the observations . . . but we really don't know for sure what it means," Mr Candy said.



In this, the first Australian photograph to be published of the approaching comet, Halley's is but a fuzzy blob of light. The Perth telescope tracked the moving comet to produce the picture, causing the background stars to "streak" as if in motion.



The giant tail of Halley's comet captured on film by the Perth astrographic telescope in 1910. After Halley's comet becomes visible through binoculars late this month, the tail will gradually develop until it reaches a size 20 times the diameter of the moon in February-March.

It is thought that Halley's nucleus is made of ice and dust left over from the time of the creation of the solar system. The five space probes on the way to the comet are designed to prove this theory, which, Mr Candy said, had "been knocking around for 30 years".

Mr Candy said that until he saw the Iras-Araki-Alcock comet in 1983 he believed that the nuclei of comets were not as solid as generally believed. "But I saw for the first time what looked to me like a hard little point right in the middle of the thing. It looked like it had a solid centre."

The night air was clear and little disturbed by the lights of Perth on the western horizon. Eventually the comet appeared in the eyepiece.

Surprisingly, it has no tail, although this will develop to a length equivalent to 20 times the size of the moon next year. The comet will be about as bright as the stars in the belt of Orion.

"It is not very exciting at the moment, but it has got potential," Mr Candy said.

Halley's appears as a fuzzy, dim blob in the cross-hairs of the telescope. Mr Candy uses the telescope to track the comet while exposing a glass photographic plate. Developed, it shows a stationary blob against a background of trailing stars.

In a lifetime of comet watching Mr Candy has developed techniques to detect faint comets using hyper-sensitised photographic plates. By tracking the movements of stars he knows are nearby he can photograph comets that are not visible normally.

In 1960 he discovered his own comet, the Candy comet, which moves round the sun once every 900 to 1000 years. In 1969 he came to Perth to put right a lack of cometary observation in the Southern Hemisphere.

"I knew I had this just-controllable obsession with comets, you might call it a total obsession," he said. "In astronmy you have to have a slightly obsessive attitude to your work."

Mr Candy in the dome of the Perth observatory that houses the old telescope