

The Orwell Park Observatory 10 inch Astronomical Telescope at Nacton near Ipswich

1. OPEN WEEKEND  
Help is still required in manning the observatory on the four nights of Sept. 28 to Oct. 1st. Members who can help please contact Eric Sims or any other committee member.
2. A limited number of F.A.S. newsletters have been received and will be distributed as far as numbers permit.
3. The Braintree Halstead and District A.S. will be holding the 2nd East Anglian Astronomical Society's Convention on Saturday 2nd February 1985. Speakers include Nigel Henbest, Heather Couper, Ian Nicolson and Patrick Moore. Tickets cost £1.50. Interested members please contact R. Gooding.

NIGHT SKY

Constellations (all times G.M.T.)

The autumn constellations of Pegasus, Triangulum, Persaus and Andromeda are well placed for observation.

Sun rises approx. between 6.10 - 7.10  
sets approx between 17.30 - 16.30

Moon ☾ 1st      ○ 9th      ☾ 17th      ● 24th

Occultations

2nd ZC 2848 Mag. 5.6 D 18h. 11.7m  
16th " 1062 " 6.3 R 23h. 39.7m

Mercury Superior conjunction on the 10th. Unobservable this month.

Venus Sets about 45 minutes after the sun in mid month.

Mars Sets at about 20h.30m during the month.

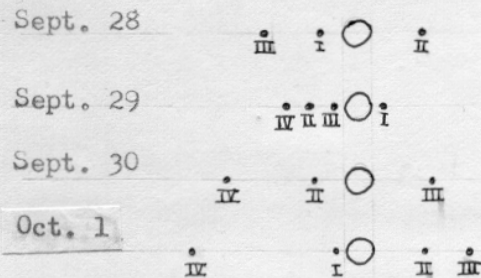
Jupiter In conjunction with Mars on the 13th  
Sets at about 20h. at end of month Mag. -1.7

Saturn Sets at about 1½ hours after sunset at beginning of the month Mag. +0.8

Uranus Sets about 19 hr. in mid month Mag. 5.8

Neptune Sets about 22 hr. in mid month Mag. 7.7

R. Gooding



The four largest moons of Jupiters can easily be found with a small telescope or a good pair of binoculars.

MOON	ORBITAL TIME	No.
IO	1.8 days	1
EUROPA	3.6 "	11
GANYMEDA	7.2 "	111
CALLISTO	16.7 "	1V

Their daily motion round Jupiter makes an interesting observing project. The diagram opposite gives the positions of of the moons with respect to Jupiter at 0 hours GMT for the evenings of our open weekend.

Mission To Search And Recover

America's space shuttle may make its second salvage run into space on November 2nd. Encouraged by the rescue and repair of the Solar Maximum Mission Satellite by shuttle astronauts on April 10th, NASA is planning a similar attempt. This time, astronauts would hook on to at least one of two malfunctioning communications satellites now drifting uselessly 1100 kilometres above the Earth.

The satellites are Palapa B-2, owned by the Indonesian government, and Westar 6, owned by Western Union. Last February, shortly after the two craft were released from the cargo bay of the shuttle, Challenger, both of their upper-stage rockets misfired. Neither satellite has worked since.

NASA has signed an agreement to rescue Palapa with the mission's major insurance underwriters, Merrett Syndicates of London and International Technology Underwriters of Washington DC. Should the rescue succeed in bringing back one satellite, the insurers will pay \$4.8 million for that satellite. If both satellites are brought back, and repaired, the payment drops to \$5.4 million-\$2.7 million for each satellite. The Palapa satellite alone is valued at about \$40 million.

According to a tentative flight plan for November, the shuttle Discovery will first launch two new communications satellites. It will then approach the marooned Palapa and Westar satellites. An astronaut will fly over to Palapa and attach a docking device. Then, Anna Fisher, working inside Discovery, will manipulate the shuttle's mechanical arm to snare each satellite and haul it aboard the shuttle.

(David Barnard)

Planetary nebulae is the name applied to a class of emission nebulae with a visual appearance that is generally round or slightly elliptical in shape. The resemblance to planets ends there. A planetary nebula is a shell of gas surrounding a very hot central star. The surface temperature of the star can be up to 100,000 degrees centigrade (the sun has a surface temperature of 5,000 degrees). This extremely hot surface temperature means that most of the radiation leaving the star is in the ultraviolet region of the spectrum. This intense radiation excites the atoms in the surrounding gas cloud causing it to glow in the visible region of the spectrum.

Planetary nebulae can be interesting objects for the amateur astronomer to track down and observe. As with all deep sky objects the larger the telescope used the greater the number of objects that can be seen. However there are many planetary nebulae in the range of small telescopes.

A good starting point for finding and observing planetary nebulae is to use 'Burnhams Celestial Handbook' (This handbook is in three volumes, if you do not own your own set then come up to the observatory and use the Society's copy). These books list the all the brighter and more interesting nebulae for each constellation. However they do list objects that are beyond the range of many amateur owned telescopes. So the first thing to know is the limiting magnitude of your telescope and only bother with those objects brighter than this. As a guide the following table is a list of limiting magnitudes for various aperture telescopes.

Aperture	magnitude
2" (50mm)	11.3
3" (75mm)	12.2
4" (100mm)	12.8
6" (150mm)	13.9
8" (200mm)	14.3
10" (250mm)	14.8

The limiting magnitude depends upon the eyesight of the individual observer, the quality of the optics, the local seeing conditions and for extended objects such as nebulae it also depends on the surface brightness of the object and the magnification used. The above figures should only be taken as a guide and don't be too suprised if you cannot find some of the objects listed as being brighter than these limits.

Having made a list of the objects of interest in a particular constellation, the next thing to do is to plot the positions on a good star map and then search the relevent area of sky with the telescope.

Planetary nebulae in the range of most amateur telescopes will lie in the magnitude range 8 to 14 and will have angular diameters from about 2 arc seconds up to about 120 arc seconds. For objects greater than 10 arc seconds in diameter observation with a telescope using moderate to low power (around 80 to 100 times) will show a disk like image clearly distinguishable from neighbouring stars. For these objects scanning the area of sky around the plotted position with the telescope will usually reveal the nebula (if bright enough) against the neighbouring stars.

For objects between 4 and 10 arc seconds higher magnifications (150 to 200 times) could be required. The reduced field of view produced by such magnifications can now make searching for the object more difficult particularly when the surrounding star patterns are unknown. Possibly the best method of searching under these circumstances is to use a moderate power (about 100 times) which gives a reasonable field of view, then search the area around the plotted position of the nebulae systematically and each time you see a suspicious object change to a higher power. If the object is magnified compared with the surrounding stars then you have found the nebula.

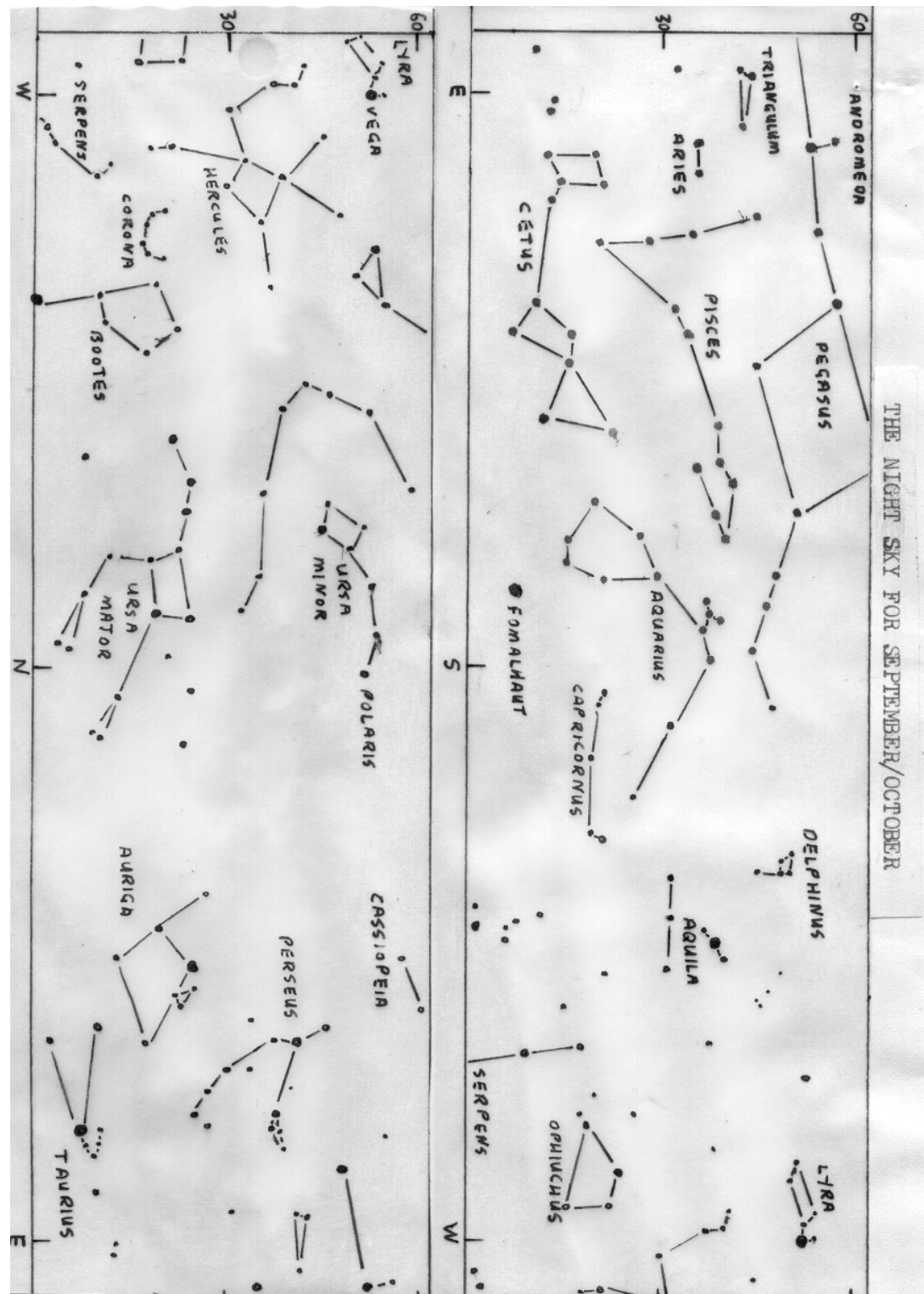
For objects less than 4 arc seconds in diameter the resolving power of small telescopes or poor seeing conditions for larger instruments can often make the visual appearance of the nebula indistinguishable from the surrounding stars. Under these circumstances the only sure way of identifying the nebula is to use a spectroscope of one form or another. Particularly useful is the direct view spectroscope. By using a spectroscope surrounding star images are spread out into their spectra but the image of planetary nebula will remain as small points. This is because the visible light from a planetary nebula is dominated by two very close lines in the green region of the spectrum. These two lines are not resolved by the low dispersive power of direct view spectroscopes and so appear as a single point of light. Spectroscopes are not readily available instruments for most amateurs but a similar effect can be obtained by placing a small prism between the eye and the eyepiece and observing the stars and nebulae through the prism.

As a quick starting point for a guide to the more prominent planetary nebulae there is a list on page 2120, volume three, of Burnhams Celestial Handbook. Good Printing!

### Visit Next Month

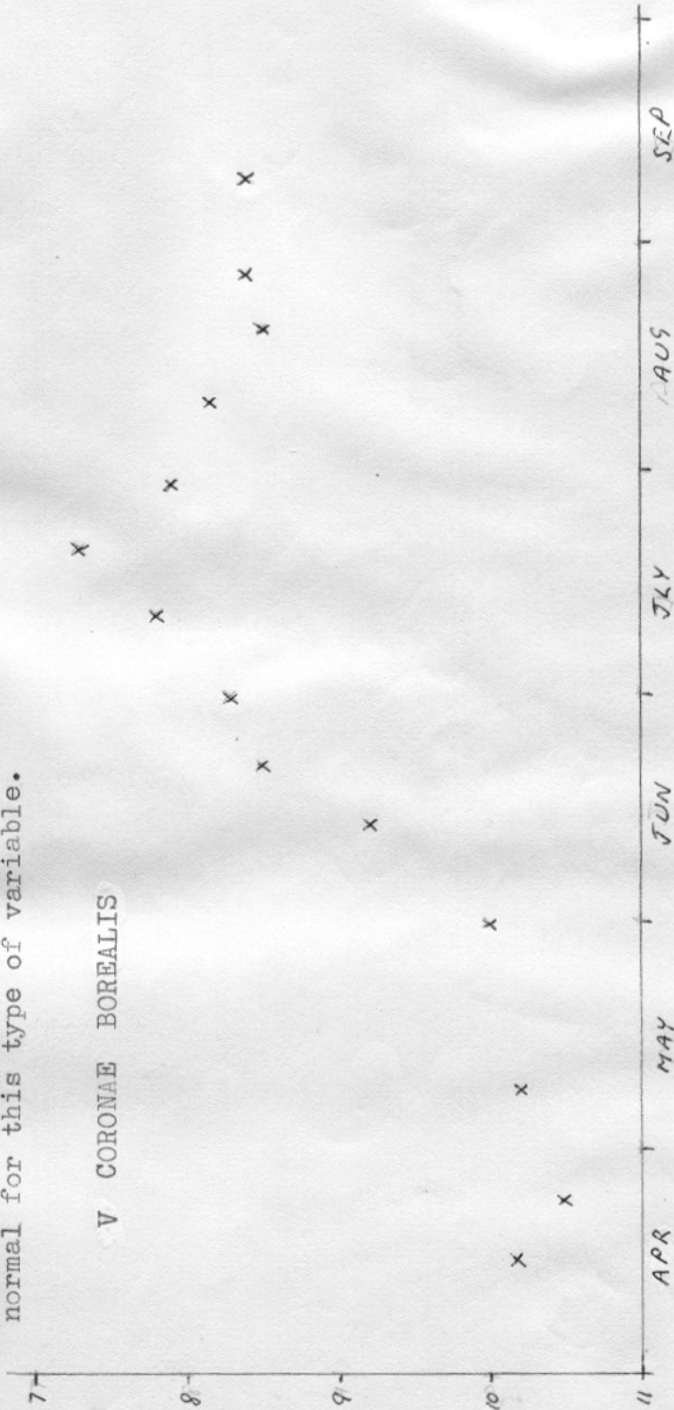
Tuesday November 6th.

Civil Service. Meeting outside gates of  
Orwell Park School at 7.45pm.



VARIABLE STAR OBSERVATIONS  
by Mike Nicholls

This light curve is that of V Coronae borealis from April to September this year. This star is a member of the class of long period variables. The magnitude range is from about 7.5 to 11.0 with a period of 358 days and it looks as if there may be both a maximum and minimum on the light curve shown. If so, then the fade from maximum to minimum will probably be much longer to account for the period of about a year. This behaviour is quite normal for this type of variable.



PROGRAMME FOR OCTOBER

MONDAYS from 8pm	DOUBLE STAR & PLANETS SECTION	
1, 8, 15, 22, 29	Mr N Taylor [redacted], Farmlands Trimley	Tel: Fel. [redacted] Tel: Fel. [redacted]
	Mr T Gillan [redacted], Felixstowe	Tel: Fel. [redacted]
TUESDAYS from 7pm	GENERAL OBSERVATION SECTION	
By Arrangement	Mr N Gage, [redacted], Trimley	Tel. Fel.: [redacted]
With Directors	Mr R Newman [redacted], Felixstowe	Tel: Fel [redacted]
WEDNESDAYS from 8pm	NEBULEA & FAINT OBJECTS SECTION	
3, 10, 17, 24, 31	Mr M Cook, [redacted], Ipswich	Tel: Ips. [redacted]
	Mr D Payne, [redacted], Wickham Market.	Tel: W.Mkt [redacted]
FRIDAYS from 8pm	VARIABLE STAR SECTION	
By Arrangement	Mr R Gooding, [redacted], Ipswich	Tel: Ips. [redacted]
With Directors	Mr M Nicholls, [redacted], Capel St. Mary.	Tel: Ips. [redacted]

1984 COMMITTEE

CHAIRMAN	D Payne [redacted], Wickham Market, IP13 OSD	Works: [redacted] Home: [redacted]
VICE CHAIRMAN	R Cheesman [redacted], Corringham, Essex SS17 9BU	Works: [redacted] Extn: [redacted]
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TREASURER	M Nicholls [redacted], Capel St. Mary, Ipswich, IP9 2EX	Works: [redacted] Home: [redacted]
MEMBERSHIP SEC.	M Barriskill [redacted], Ipswich IP1 2EZ	Home: [redacted]
P.R.O.	D Barnard [redacted], Ipswich, IP4 5PP	Home: [redacted] Works: [redacted]
MAINTENANCE	M Cook [redacted], Ipswich, IP4 5QA	Home: [redacted] Works: [redacted]
FUNCTIONS	E Sims [redacted], Ipswich, IP1 4HA	Home: [redacted]
LIBRARIAN	N Gage [redacted], Trimley St Mary,	Home: F [redacted] Works: [redacted]