

ORWELL ASTRONOMICAL SOCIETY, IPSWICH.

NIGHT SKY

(all times G.M.T.)

SUN Rises approximately 08.00
Sets approximately 15.50



6th



12th



20th



28th

MERCURY

Mercury is an evening object this month. Maximum eastern elongation is on the 23rd (20°). Mag. -0.6.

VENUS

Venus is still an evening sky object. It will be setting 3 hours after the sun in mid month. Mag. -4.5

MARS

Mars will be rising at about 05.30 through out the month. Mag. 1.5.

JUPITER

Jupiter rises at 2 hours after sunset. It is at opposition on the 27th. Mag. -2.7.

SATURN

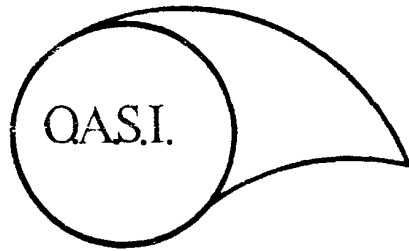
Saturn will be setting about 1 hour after sunset. Mag. 0.5.

URANUS

Uranus will be setting about 40 minutes before Saturn. It is in conjunction on 27th. Mag. 5.9

NEPTUNE

Neptune will be setting about the same time as Saturn. Mag. 7.7



R. Gooding

1 . ANNUAL GENERAL MEETING SATURDAY 13TH JANUARY

The Annual General Meeting will be held on Saturday 13th January 1990. All members are invited to attend. The meeting will start at 8.00 pm in the School. At the time of writing the meeting venue in the School had not been finalised. Please could all members report to the club room a little before 8.00 where the meeting room will be displayed.

CHOOSING A TELESCOPE

by Robin Scagell

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This article has been written as a very brief guideline to anyone buying a telescope for astronomy. It can do no more than give an outline - it would be possible to write a book on the subject. But anyone who wants to get started, or who wants to buy a telescope for a young person interested in astronomy, will find enough information here to understand most of the technical terms used, and to choose what sort of telescope they need.

Can I afford one....?? In summary, a really worthwhile astronomical telescope will cost rather more than £500.00. But you can get a useful instrument for less than £200.00; and for as little as £40.00, you can get an instrument which will give you plenty to observe. If you cannot afford more than a few pounds, you should not waste your money on something unsuitable; save up for something better.

Types of Instrument Telescopes divide into two basic types - refractors and reflectors. To these can be added at the one end of the scale binoculars, and at the other end the rather expensive catadioptric telescopes.

Refractors use lenses to collect the light from the stars. Most people automatically think of a refractor when telescopes are mentioned - they are the 'traditional' type of telescope. Incidentally, very few telescopes actually fold up (or, to use a common word, 'telescope'). These are intended for daytime use only, and are not particularly suitable for astronomy.

Reflectors use a curved mirror, like a very accurate shaving mirror, to collect the light. The light is focussed to the top of the tube, where a smaller flat mirror reflects it to one side for the observer to view. Most serious astronomers use this type of telescope, of which the commonest design is the Newtonian.

Binoculars are basically two refractors side by side, with prisms in the middle to fold up the light path. They are almost always low magnification (less than 20 times). A monocular is one half of a pair of binoculars.

Catadioptric telescopes use a combination of a mirror and a glass corrector plate to focus the light. This makes them quite compact, but they are expensive. You observe in the same direction that the object appears, as with a refractor.

Aperture and Magnification The most important optical feature of an astronomical telescope is not its magnification but its aperture - that is, the diameter of its main lens or mirror. The bigger the aperture, the more light it collects from a star or planet. The light is focussed to form an image which can be viewed at any magnification you choose, within reason. This is done by using different eyepieces. A low power eyepiece, for example, might give a magnification of about 40x, and

will allow you to see the whole Moon at once, or to examine a star cluster. A high power eyepiece on the same telescope might give a magnification of 250x, for looking at fine details on the Moon or planets, or close double stars.

Zoom eyepieces, giving a range of magnifications, are found on a few small telescopes and binoculars, and are best avoided.

Virtually every astronomical telescope gives an upside down image. This is because extra lenses are needed to bring the image the right way up, causing some light loss, and possibly distortion. You can buy erecting lenses or prisms which bring the image the right way up for daytime or terrestrial viewing, but these are generally suitable only for refractors. Reflectors are generally quite unsuited to daytime viewing, since you observe at right angles to the line of sight. Telescopes designed for daytime viewing often give rather poor images of astronomical objects. So anyone who wants a telescope for both purposes is probably best advised to buy an astronomical refractor and to adapt it using an erecting prism for daytime use. Catadioptric systems can also give upright, but reversed, images, and are fairly suitable for daytime use.

Mountings The best telescope is useless unless it is mounted firmly. Even with a fairly low magnification of about 75x, the slightest movement of the telescope becomes very disturbing. In general, portable telescopes have rather shaky mountings; and for good results you need a rather heavy, sturdy mounting. It is better to have a small telescope on a steady mount than an oversized one which cannot be kept still.

Mountings divide into two types - altazimuth and equatorial. The altazimuth is the more straightforward, and has two axes. One moves the telescope from side to side, while the other moves it up and down. This is suitable for daytime use and for simple stargazing, but for serious astronomical work the equatorial system is usually preferred. In this, one axis is inclined to the horizontal and is pointed towards the north, to make it parallel with the Earth's axis. Then just one movement is needed to follow a star through the sky as the Earth turns. This makes it possible to add a motor so that the telescope tracks continuously. The better quality equatorials also make it possible to take long exposure photographs of the stars, either by mounting the camera on top of the telescope or even looking through it. Successful photography requires a particularly steady and smooth mount, as well as a means of guiding the telescope to follow an object precisely.

An equatorial mounting can also be equipped with setting circles, which are calibrated scales used to find a celestial object from its coordinates.

What can you see....?? With a pair of 7 x 50 or 10 x 50 binoculars you can see a much larger number of stars than you can with the naked eye. You can see the larger star clusters and nebulae, though not small or faint objects such as planetary nebulae. You can see some craters on the Moon and the major satellites of Jupiter, though not markings on Jupiter or the rings of Saturn.

Binoculars are useful for helping you learn the sky, and can be used for observing variable stars - that is, stars whose brightness varies over a period of time. It is a mistake to get binoculars with a magnification of more than 12x.

Binoculars described as 7 x 50 have a magnification of seven, and lenses 50mm across. Also suitable are 8 x 30's with a magnification of eight and lenses 30mm across. These are smaller and lighter than 7 x 50's, so they are easier to hold up to the sky, though they do not show as much as the larger types. If the weight of binoculars becomes a problem, and you find that you are getting unsteady images through being unable to hold them steadily, it may be worth investing in a camera tripod together with a binocular clamp. This would mean that the binoculars remained steady while

observation is taking place. It also leaves your hands free, making it easier to use star atlases etc. Of course, the tripod would also be useful for daytime photography etc., thereby serving a dual purpose.

When buying binoculars, check that there is no false colour by observing an object such as a TV aerial against a bright sky. Check too that the object is still sharp, even when at the edge of the field of view. Avoid those with wide-angle lenses intended for bird watching - they may not give sharp images all the way across the field of view.

Refracting Telescopes A few cheap terrestrial telescopes will give reasonably good images for astronomy. A 30 x 40 (power 30) for example, shows a fair number of craters on the Moon, the boldest markings on Jupiter and a glimpse of Saturn's rings. You can just see some of the nebulae which are too small for binoculars. But if you are buying one of these, make quite sure that it has an achromatic lens - that is, one which avoids false colour. Huge numbers of small telescopes sold in camera shops, toyshops and by mail order have just one simple lens. This means that, to avoid very bad false colours, the lens must be stopped down to a smaller aperture by means of a disc with a hole in, some way down the tube. Even so, the images are very poor and dim. You can see the stop by looking down the end of the tube. Many such telescopes are described in terms which contravene the Trades Description Act, but little is done about it. Furthermore, sales staff in the places where these are sold rarely know anything about them, and may well assure you that they give excellent images. But, unless the telescope definitely has achromatic lenses, do not buy it.

Some larger, genuinely astronomical telescopes can be quite useful. A 50mm (2-inch) refractor, for example, will show a fair number of star clusters and nebulae (such as the Crab Nebula, visible as a faint blur of light), and will also allow magnifications up to 100x. A 60mm (2.4-inch) refractor has slightly greater power. These are often sold with convertors (called Barlow lenses) which double the power of any eyepiece. But there is a limit to the magnification a telescope will give - about twice the aperture in millimetres - so do not be taken in by such magnifications.

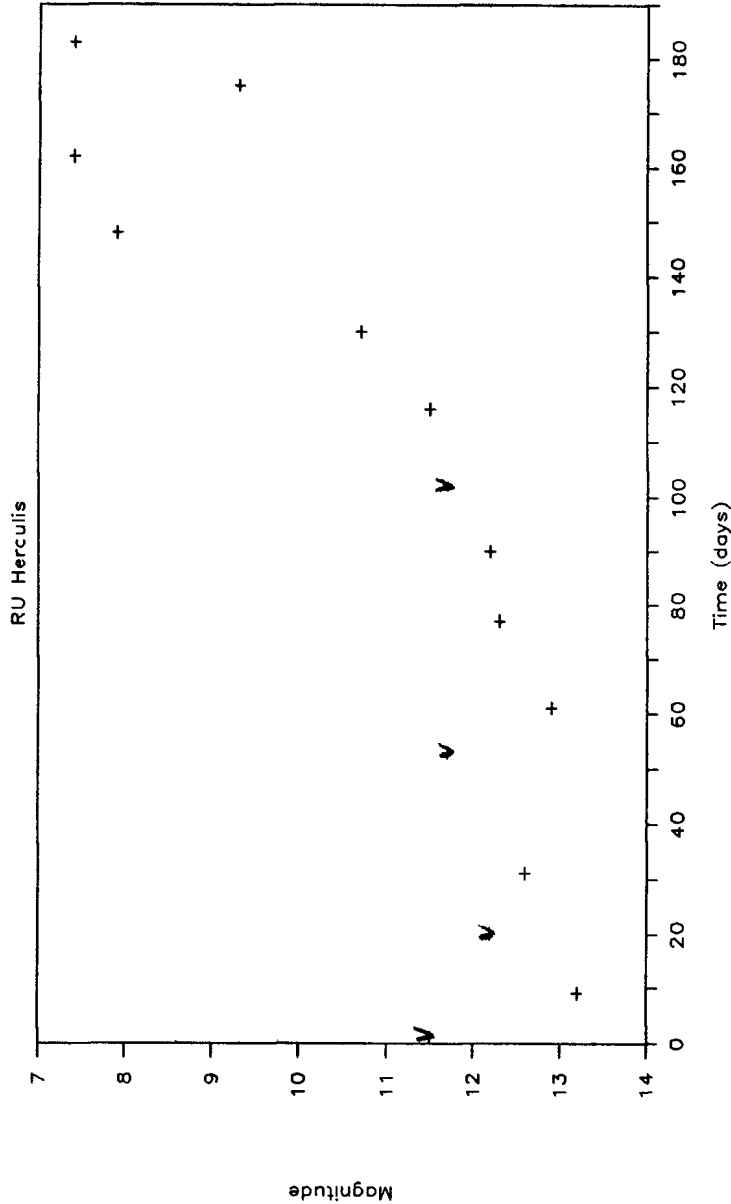
CLUB SWEATSHIRTS AND SWEATERS

By popular demand a repeat order will be made for OASI sweaters, sweatshirts and sports shirts. The order will be placed in January or February to allow time for orders to be finalised. The lambswool sweaters will cost £15 or less and the other items around £10 or less - the actual cost be dependant on the quantity. Contact me, Pete Richards, at the observatory, or at the address/phone number given on the back page as soon as possible if you are interested. It would also be a good time to place a provisional order for club ties if you haven't already done so (so far the numbers for ties have never been sufficient for placing an order).



MORE NEXT MONTH OR WHEN SPACE IS AVAILABE

VARIABLE STAR OBSERVATIONS



This light curve shows RU Herculis from June to October this year. Notice the steep rise to maximum.

Mike Nicholls

PROGRAMME FOR DECEMBER

Mondays from 8pm GENERAL OBSERVATION SECTION & SCHOOL GROUP A

4-11 Mr R Newman [Redacted] Felixstowe, IP11 9DY. Tel. Fel. [Redacted]
 18 Mr J King [Redacted] Felixstowe, IP11 9LQ. Tel. Fel. [Redacted]

Tuesdays from 8pm GENERAL OBSERVATION SECTION & SCHOOL GROUP B

5-12 Mr R Newman [Redacted] Felixstowe, IP11 9DY. Tel. Fel. [Redacted]
 19 Mr J King [Redacted] Felixstowe, IP11 9LQ. Tel. Fel. [Redacted]

Wednesdays from 8pm NEBULA AND FAINT OBJECTS SECTION

Mr M Cook [Redacted], Ipswich, IP4 5PZ. Tel. [Redacted]
 6-13 Mr D Payne [Redacted], Wickham Market, IP13 OSD. Tel. [Redacted]
 20-27

Fridays from 8pm GENERAL OBSERVATION SECTION

Mr P R Richards [Redacted], Ipswich, IP4 1QB. Tel. [Redacted]
 1-8 Mr M Harlow [Redacted], Trimley IP10 OXB. Tel. [Redacted]
 22-29 Mr R A Lobbett [Redacted], Felixstowe. Tel. [Redacted]

All nights are open to all members, but, on nights other than Wednesday ring directors to confirm dates. [Directors will also be able to inform you of whether a group visit is taking place that evening.] All numbers Ipswich (0473) unless otherwise indicated.

1989 COMMITTEE

CHAIRMAN	D Payne	(Address above)	Home: [Redacted] Work: [Redacted]
VICE CHAIRMAN	D Barnard	[Redacted], Ipswich, IP4 5PP	Home: [Redacted] Work: [Redacted]
SECRETARY	R Gooding	[Redacted], Ipswich, IP1 6AE.	Home: [Redacted]
TREASURER	M Nicholls	[Redacted], Capel St Mary, Ipswich, IP9 2EX.	Home: [Redacted] Work: [Redacted]
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LIBRARIAN	P Richards	(Address above)	Home: [Redacted] Work: [Redacted]
EQUIPMENT CURATOR	J King	(Address above)	Home: [Redacted]
SPECIAL EVENTS CO-ORD	A Smith	[Redacted], Ipswich IP2 9ES	Home: [Redacted]