# ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

## JANUARY 1984


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

1. The 1984 Annual General Meeting will be held on Saturday, 7th January, from 8.00 p.m. in the library of Orwell Park School.
2. Membership subscriptions are due on 1st January. Please pay promptly. The rates are: £3, £5, £6, for under 18's, adult, and family respectively.
3. If weather conditions are thought to be too severe in the winter months, occasionally section directors may decide to abandon their scheduled nights. If in any doubt, members should contact the directors involved before travelling to Nacton.
3. Two visits have been arranged for 1984.
   Saturday, 28th April, South East Essex A.S. 'April Day'.
   A limited number only of tickets costing £1, are available.
   Saturday, 5th May, Cambridge optical and radio observatories.
   Interested members should contact R. Gooding.

Constellations (all times G.M.T.)

The winter constellations are now at their best position for observation. The Spring constellations, Cancer and Leo, will be rising before 21.00 in mid month.

Sun Rises approx. between 08.06 - 07.44.
Sets approx. between 16.02 - 16.44

Moon ● 3rd ◐ 11th ○ 18th ◑ 25th

Occultations

| | | | | | |
|---|---|---|---|---|---|
| 9th | ZC | 18 | mag. 6.0 | D | 17hr. 51.9m |
| 11th | | 249 | " 4.7 | D | 20hr. 4.5m |
| 12th | | 354 | " 5.5 | D | 18hr. 30.7m |
| 14th | | 614 | " 5.7 | D | 19hr. 6.1m |
| 20th | | 1544 | " 5.7 | D | 23hr. 47.1m |

Mercury Rises about 1hr. 40m. before sunrise in mid month.
Greatest Western Elongation 22nd (24°)

Venus Rises about 2hr. 30m. before sunrise in mid month.

Mars Rises at 01.00 in mid month.

Jupiter Rises at 06.30 in mid month.

Saturn Rises at 02.30 in mid month.

Uranus Rises at 05.30 in mid month.

Neptune Rises at 06.30 in mid month.

R. Gooding.

## JOURNAL ARTICLES

Dear Member

It may come as a surprise to you, may be even a shock, to learn that the journal producers are NOT inundated each month with articles and other literary gems for publication in the Journal!

"Good Gracious No!" (or words to that effect) I hear you exclaim. But alas 'tis true.

So if you have ever had the slightest urge to put pen to paper or fingers to typewriter, or even if you haven't, have a go now. The smallest items will be welcome. They can be on any subject vaguely connected with astronomy: your own observations, general articles, astronomical news, questions you would like answering, poems etc.

In the mean time I would like to thank all those (too few to mention individually) for contributing to the 1983 journals. Keep up the good work!

Thanking you in anticipation
David Payne
On behalf of the Journal producers.

Did you miss it?
Miss what?
The lecture by Neal Taylor on 'Solar System Dynamics'.
Unfortunately most of you did. However the eight of us that didn't had a very interesting evening on the 9th December. Neal gave a review of the role of gravity in the solar system and of the history of the observations that culminated in Newtons Universal Law of Gravity. In the latter part of his talk he gave an account of some research he carried out on the orbits of the moons of Jupiter, when working for his degree. This work led to some interesting possibilities including the possible existance of a second highly depleted asteroid belt between the orbits of Jupiter and Saturn.

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A   A   G       M M M
AAAAA   G       M   M
A   A   G GGG   M   M
A   A   G  G    M   M
A   A    GG     M   M
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The O.A.S.I. Annual General Meeting
Will Be Held:
8:00pm SATURDAY JANUARY 7th
At
Orwell Park School
In
The Library

** PLEASE COME ALONG **

## Strange X-ray Source Discovered — D Barnard

Japanese and European astronomers have been investigating an X-ray source that appeared in mid-November. At first it was thought to be a black hole but is now considered to be a condensed neutron star - which is remarkable because the X-rays 'flicker' in a manner thought to be characteristic of a black hole.

The two X-ray satellites currently in orbit are the Japanese 'Tenma' and the Eupopean 'Exosat'. On November 15th, the Japanese were using Tenma when they discovered a totally unexpected source. After checking that the source was indeed real, Exosat was used and confirmed that it was flickering quite rapidly. The signals have now virtually disappeared. This puts the source in the class of 'X-ray transients'. These are double star systems comprising one normal star and the other a compact star - either a neutron star or a black hole - in an eccentric orbit, When the two stars are close to each other the compact star pulls off some of the gases from its companion. These emit X-rays as they fall towards the compact star and heat up.

In 1973 A Vela satellite launched to monitor X-rays from terrestial nuclear tests observed a similar outburst of X-rays from an object named V0332+53. The Exosat detectors have scince shown that that the flickering of V0332+53 is irregular and occurs on time scales as short as 0.03 seconds. Such rapid irregular variations have also been observed in the most promising black hole candidate Cygnus X-1.

Recent analysis of the observations of the new X-ray source have shown that the X-rays come a little more strongly every two seconds. These regular fluctuations in the X-ray flux indicate that the condensed object cannot be a black hole. The regular variations suggest that the condensed object is having some periodic influence on the in-falling gas. This is clearly impossible for a black hole as nothing including light could escape from it. The astronomers are now thinking that the condensed object must be a rapidly spinning neutron star but now must explain the flickering of the X-rays and why a mix of regular variation and rapid flickering together has only been obseved in this source.

A star is currently being observed in the exact position of the source. This is presumably the compact star's companion. It is a supergiant, some 20 times the size of the Sun. Astronomers using the UK infra-red telescope in Hawaii have also been observing it.

Other News:

1983TB, the asteroid that gives rise to the annual Geminid meteor shower seen last month, can come extremely close to the Earth. Apparently the close encounters will be ever closer until 2115 when it will pass closer than the moon. There is also a small chance that the Kilometre sized body will hit the Earth or the Moon!

IRAS the hugely successful infra-red satellite is dead. Its supply of liquid helium has run out. The helium kept its telescope and detectors so cold that their heat would not interfere with the IR signals from space. The helium was expected to run out last summer but it kept going. Towards the end of last year it was hoped that it may last until the end of December but it suddenly died a month early at the end of November. The satellite is not totally deceased however, it is still in very good condition and will probably be revived in a few years time by refilling the tanks with liquid helium using an unmanned 'space tug' to reach its orbit from a lower orbiting space shuttle.

## Meteor Notes January 1984 D Barnard

There is one major shower this month, the Quadrantids. Maximum occuring on January 4th at 1200 hrs. ZHR at maximum = 70. Normal limits January 1-6th. Radiant 15hrs 28mins +50degrees. Blue meteors with fine trains.

A minor shower also active from late January, is the Alpha Aurigids giving slow bright meteors. Some telescopic observations required.

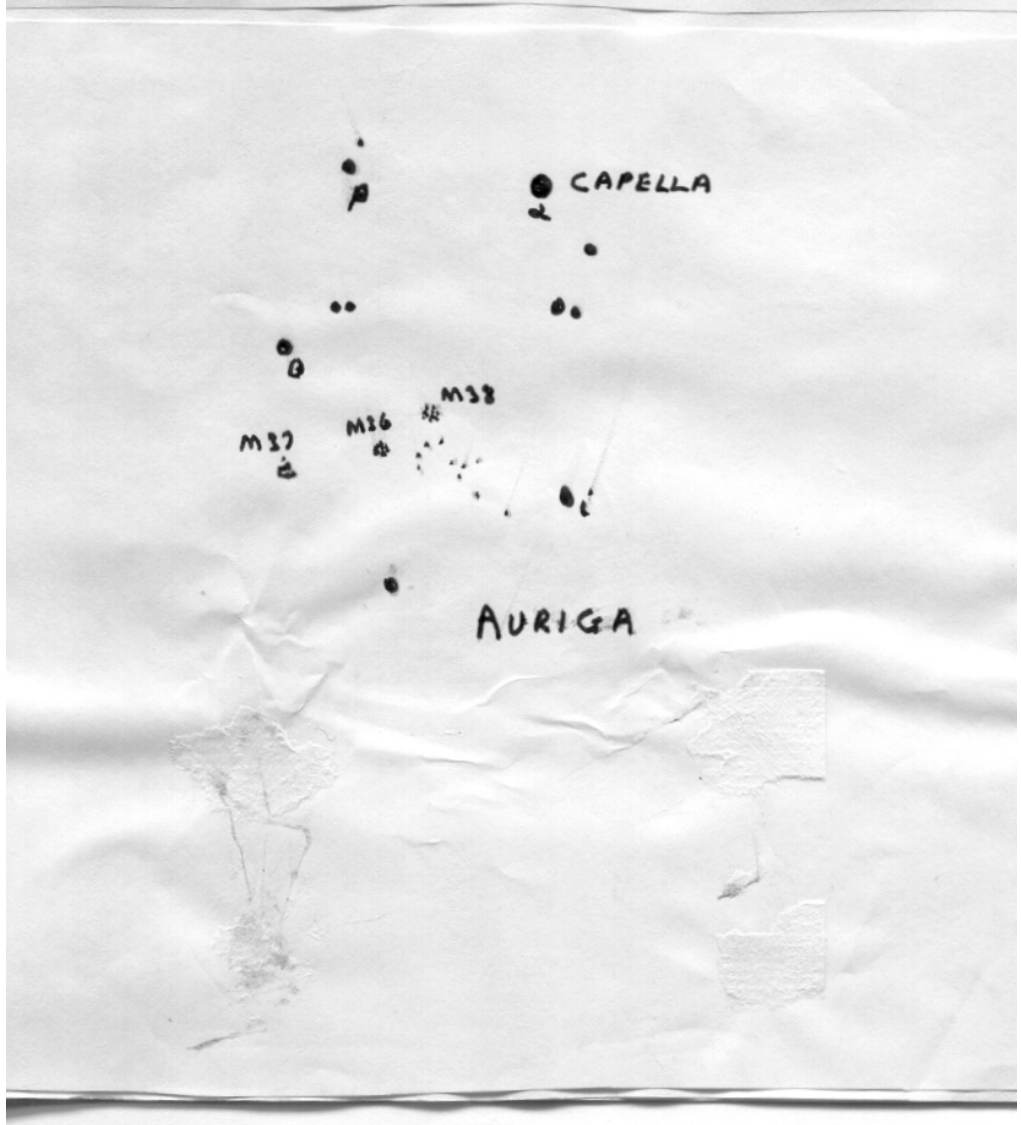
## Messier Objects in Auriga D Payne

The constellation Auriga is prominent in the night sky during January riding high on the meridian just below the zenith. This bright constellation containing the sixth brightest star in the sky, Capella, has several deep sky objects worthy of observation. The most prominant are the three Messier objects M36, M37 and M38. All three are galactic clusters easily found with binoculars (see map below for positions) and make good objects for small telescopes.

The first cluster M36 is the smallest of the three with an angular diameter of about 12' but is brigter and the easiest to see with binoculars. It contaians several bright stars easily resolveable in small telescopes. The cluster is estimated to be about 4100 light years away with a diameter of around 14 light years. As well as being visually the brigtest it is also intrinsically the brightest of the three clusters with a total luminosity of about 5000 suns.

The cluster M37 is a larger more diffuse object in binoculars than M36 and will require telescopes of three inches or greater inorder to resolve the individual stars. In a telescope, particularly with larger apertures, this cluster is undoubtably the finest of the three. It contains about 150 stars between magnitudes 10 to 12.5 with a bright red giant star of magnitude 9.5 near the centre of the cluster. In a 10 inch telescope this red giant shines out against the well condensed background of the fainter stars of the cluster, the red colour being very prominent. The cluster is the most distant of the three at 4700 light years. The diameter is around 25 light years with a total luminosity of about 2500 suns.

The last Messier object in Auriga M38 is a large cluster about 20' in diameter, again easily found in binoculars. It is more scattered than the other two clusters and requires low powers to be seen well. The cluster contains about 100 stars the brightest of which is a yellow giant star of magnitude 7.9. This cluster is about 4200 light years away with a diameter around 25 light years similar to that of M37. The total luminosity is around 1500 suns making this cluster intrinsically the faintest of the three.




R. Gooding.

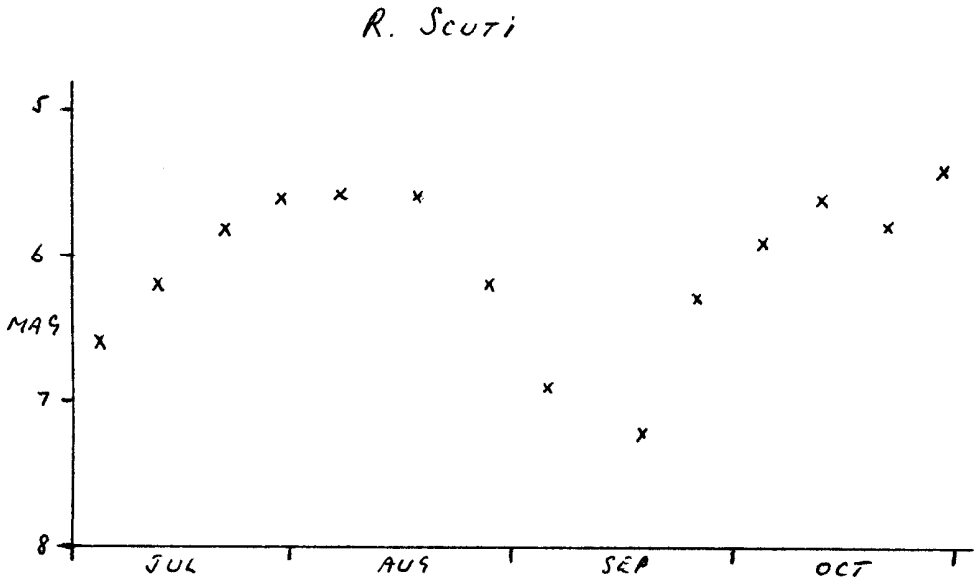
## VARIABLE STAR OBSERVATIONS

by Mike Nicholls

The light curve shown below is that of R Scuti from July to October this year. This star is a member of the RV Tauri type of variables, which are sometimes regarded as a sub class of the semi-regular type. Their main characteristic is alternate deep and shallow minima, although R Sct tends to have every 4th or 5th minima extra deep. The maxima, although not identical, have no regular pattern associated with them. It is thought that two or more pulsating oscillations are operating together.

This light curve shows two maxima and one minimum which may or may not be an extra deep one; it seems to fit in between the recognised magnitude of about 6.0 for normal minima and about 8.0 for the deep ones. Whether or not the slight dip in mid-October is real or not is impossible to say from only one persons results.

The period is quoted as about 144 days, which is probably the time between alternate minima rather than each one. Observations were made with 10x50 binoculars.




## PROGRAMME FOR JANUARY

| | | | |
|---|---|---|---|
| MONDAYS from 8pm<br>9, 16, 23, 30 | DOUBLE STAR & PLANETS SECTION<br>Mr N Taylor [redacted], Farmlands Trimley | | Tel:Fel. [redacted] |
| | Mr T Gillan [redacted], Felixstowe | | Tel:Fel. |
| TUESDAYS from 7pm<br>3, 10, 17, 24, 31 | GENERAL OBSERVATION SECTION<br>Mr N Gage, [redacted], Trimley | | Tel: Fel. [redacted] |
| | Mr R Newman [redacted], Felixstowe | | Tel: Fel. |
| WEDNESDAYS from 8pm<br>4, 11, 18, 25 | NEBULEA & FAINT OBJECTS SECTION<br>Mr M Cook, [redacted], Ipswich | | Tel: Ips. [redacted] |
| | Mr D Payne, [redacted], Wickham Market. | | Tel:W.Mkt |
| FRIDAYS from 8pm<br>13,27 | VARIABLE STAR SECTION<br>Mr R Gooding, [redacted], Ipswich | | Tel: Ips. [redacted] |
| | Mr M Nicholls, [redacted], Capel St. Mary. | | Tel: Ips. |
| SUNDAYS from 8pm<br>8, 18, 29 | GENERAL OBSERVATION SECTION<br>Mr R Adams, [redacted], Ipswich | | Tel: Ips. [redacted] |
| | Mr M Barriskill, [redacted], Ipswich | | |

## 1983 COMMITTEE

| | | | |
|---|---|---|---|
| CHAIRMAN | D Payne | [redacted], Wickham Market, IP13 0SD | Work: [redacted]<br>Home: |
| VICE CHAIRMAN | R Cheesman | [redacted], Corringham, Essex SS17 9BU | Work:<br>Extn |
| SECRETARY | R Gooding | [redacted], Ipswich IP1 6AE | Work:<br>Home: |
| TREASURER | M Nicholls | [redacted], Capel St. Mary, Ipswich, IP9 2EX | Work:<br>Home: |
| MEMBERSHIP SEC. | M Barriskill | [redacted], Ipswich IP1 2EZ | |
| P.R.O. | D Barnard | [redacted], Ipswich, IP4 5PP | Home:<br>Work: |
| MAINTENANCE | M Cook | [redacted], Ipswich, IP4 5QA | Home:<br>Work: |
| FUNCTIONS | E Sims | [redacted], Ipswich, IP1 4HA | Home: |
| LIBRARIAN | N Gage | [redacted], Trimley St Mary, IP11 9QY | Home:<br>Work: |