

JOURNAL of the
ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

December, 1975.

Editor: Mr. J. Deans,
[REDACTED],
CAPEL ST. MARY.
'Phone GT. WENHAM [REDACTED]

██████████,
IPSWICH,
Suffolk.
IP4 3NH

29th November, 1975.

Dear Member,

You are cordially invited to attend the Annual General Meeting of the Society which will be held in the Library of Orwell Park School on Friday 2nd January, 1976 at 8.p.m.

AGENDA.

1. Apologies for absence
2. Minutes of the last Annual General Meeting and matters arising.
3. Introductory remarks - Chairman.
4. Secretary's Report.
5. Treasurer's Report
6. Election of Officers and Committee for 1976 (see below)
7. Future plans of the Society
8. Any other business.

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The present Committee is:-

Mr. R.H. Cheesman (Chairman)
Mr. H.W. Stow (Secretary)
Mr. G. Collier (Treasurer)
Mr. J. Deans (Editor)
Mr. T. Cardot
Mr. D. Bearcroft
Mr. V. Wilkes.

All the present Committee members are willing to stand for re-election but Mr. G. Collier would like to stand down if a replacement Treasurer can be nominated to the Committee.

Please send nominations for Officers and Committee to me not later than 20th December, 1975. Nominations should be accompanied by an assurance that the nominee is willing to stand and the nomination form should be signed by Two members of the Society.

Please make every effort to attend at this important meeting in the Society's calendar.

Yours faithfully,

(Signed) H.W. STOW

Secretary.

IPSWICH,
Suffolk.
IP4 3 NH

29th November, 1975.

Dear Member,

All membership subscriptions become due on 1st January, 1976 and are at the new rates as proposed at the last A.G.M. and passed by the Committee on Friday 17th October, 1975.

Subscription Rates are:-

Family Membership	£2.50p.
Full Membership	£1.75p.
Junior Membership and those still in full time education	£1.00p.

Cheques, postal orders, should be made out to 'Orwell Astronomical Society (Ipswich) and sent to me at the above address.

Yours faithfully,

(signed) M.W. STOW

Secretary.

SOLAR SECTION:

The Sun will move through the constellations of Ophiuchus and Sagittarius this month. Sunrise will be about 08hrs U.T. at the beginning of the month and sunset around 1600hrs U.T.

Synodic Rotation No 1635 commenced November 18.64d

" " No 1636 commences December 15.55d

Heliographic Co-ordinates at noon U.T.

	<u>P</u>	<u>Bo</u>	<u>Lo</u>		<u>P.</u>	<u>Bo</u>	<u>Lo</u>
Dec. 2nd	+15.8°	+0.7°	177.3°	Dec 18th	+8.9°	-1.3°	326.4°
" 6th	+14.2°	+0.2°	124.6°	" 22nd	+7.0°	-1.8°	273.8°
" 10th	+12.3°	-0.3°	71.8°	" 26th	+5.1°	-2.3°	221.1°
" 14th	=10.7°	-0.8°	19.2°	" 30th	=3.2°	-2.8°	168.4°

EARTH The Winter Solstice will occur on December 22nd at 11hrs 46m U.T. when we experience the shortest daylight and longest night of the year and the Earth is tilting at maximum inclination with respect to the Sun.

MERCURY. is an evening star but will be too close to the Sun for observation this month.

VENUS. is still visible in the morning sky though drawing closer to the Sun decreasing to 41° western elongation by the end of the month and is situated in the constellation of Virgo. The Moon will be in the vicinity of Venus on the morning of the 29th.

MARS. is a splendid sight in the evening sky found in the constellation of Taurus, visible throughout most of the night and is easily distinguishable by its reddish texture. Several members have commented upon the visibility of the polar ice cap, an excellent opportunity to produce some sketches exists here. Mars will be in opposition on the 15th at 14hrs U.T. when it will be at mag -1.6 and is predicted to be of 16.5 seconds of arc in diameter. The next time Mars will appear anything as sizeable in diameter will be in 1984 so make the most of this opportunity. On December 23rd Mars will occult the star SAO 77081, visual mag 8.9. Immersion will occur at 05.10hrs U.T. and emersion at 05.26hrs U.T. Mars will be retrograding and immersion will occur at P.A. 239°, emersion being at P.A. 117°, the planet will be at an altitude of 20° above the western horizon. Unlike lunar events both phenomena will occur at the bright limb the faint star may well be lost in glare as it nears the limb and for these reasonings the timings may be unreliable. Mars will be at its closest to Earth on the 9th at 00hrs U.T. and on the morning of the 18th a nearly full Moon will be seen near the planet.

JUPITER: prominent in the evening sky, mag -2.2 in the constellation of Pisces. Jupiter reaches a stationary point of its orbit on the 11th at 03hrs U.T. On the night of the 12th - 13th a gibbous Moon will be seen near Jupiter.

SATURN: rises around 2000hrs U.T. at the start of the month and is retrograding in Cancer, the moon will be near Saturn on the 20th.

JUPITER - SATELLITE NUMBER 14.

Soon after last month's Journal had gone to press a report was received indicating that a possible 14th satellite of Jupiter had been discovered by C. Kowal at the beginning of October. The 21st magnitude object is very close to Jupiter and was reported as being most likely a previous undiscovered satellite although it is not clear whether its orbit is direct or retrograde.

LUNAR SECTION:

How many people saw or photographed the total eclipse last month? Spode was good enough to wait until practically the finish before clouding over the sky. The next total eclipse will not be until March 1978 although there will be a partial eclipse next May.

Moon Phases: Lunation 655

New Moon	December 3rd	00hrs 50m U.T.
First Quarter	" 10th	14hrs 39m U.T.
Full Moon	" 18th	14hrs 40m U.T.
Last Quarter	" 25th	14hrs 52m U.T.

Perigee 26th 04hrs U.T. Apogee 11th 1900hrs U.T.

Occultations:

December 10th	ZC 34444	Mag 6.5	D	22hrs 58.7m U.T.
" 13th	ZC 240	" 5.6	D	21hrs 11.6m U.T.
" 13th	ZC 241	" 6.9	D	21hrs 18.3m U.T.
" 22nd	ZC 132	" 5.7	R	00hrs 25.9m U.T.
" 24th	ZC 1582	" 6.3	R	05hrs 51.1m U.T.
" 27th	ZC 1949	" 5.8	R	05hrs 46.5m U.T.

FILM SHOW held last month.

Last month saw the first in our current series of evenings and lectures to be held in the town over the coming months.

The evening got off to a hilarious start with David Bearcroft, who was our projectionist for the evening as our regular man could not make it, frantically reading the instruction book whilst the audience watched the first film projected in slow motion and half speed sound until the appropriate switch had been found to rectify matters. It was rumoured that David's cinematographic experience was connected with his great, great grandfather who once used to light the candles at the 'Windmill' in the good olde days, Joking aside, the evening was very enjoyable.

The next meeting to be held at the Friends Meeting House in Fonnereau Road, Ipswich will be on Friday December 5th at 8p.m. when one of our members, Mr. R. Markham, B.Sc. who is a member of the Ipswich Museum's staff will be giving an illustrated talk on the 'Geology of the Solar System'.

Astronomy for Beginners.

On the 12th November we held our second meeting on Foxhall Heath to help all members, and any body who wished to come along, in the study of astronomy. This night, unlike the meeting held in October, was very cold and the clouds were quite heavy with small areas of clear skies. Nevertheless about 16 people, some members and some non members, turned up and the sky, stars, planets etc. were discussed by Mr. Cheesman as they became visible. About 8.30p.m. it began to get very cold and although we were prepared for the cold a high cold wind came up and at about 8.45 p.m. with the sky beginning to get completely overcast the meeting was closed.

The next meeting starting at 7p.m. at the entrance to Foxhall Stadium will be on Wednesday 3rd December. Please come along but dress up well to keep the cold out and although there will be telescopes set up on the Heath bring your own telescope or binoculars with you. If you think that these meetings are well below your own knowledge of astronomy then more is the reason for you to come as you can help others to appreciate the delights of amateur astronomy.

NOTE FOR YOUR DIARY:

The A.G.M. of our Society will be held on Friday 2nd January, 1976 starting at 8p.m. and will be held in the Library of Orwell Park School.

LIBRARY BOOKS.

The librarian, Mr. T. Cardot, [redacted], Ipswich, requests that all Society Library books be returned to the Library by December 20th so that an up to date catalogue can be made of the books.

The weather has certainly not been favourable with the Meteor Section during November. The Orionid shower was seriously affected by moonlight, but a count was held and only eight meteors were recorded. The Taurids were clouded out on November 8th, and the Leonids on the following Saturday were washed out by torrential rain. But there are still three more showers this year so there is still hope for clear, frosty skies.

This month sees the culmination of the Geminids and December Ursids streams and there will be organised watches on December 13th and on December 20th for the observations of these two streams which are:-

The Geminids Shower producing white meteors with a ZHR of 60 maxima occurring on the night of the meteor count on December 13th. The speed of the Geminid meteors is about 35km/sec, and the radiant rises in mid-evening. Normal limits December 7th to 14th.

The December Ursids is a shower that badly needs observation. Associated with the Comet 1939x, the maximum may be around one-hundred, but a ZHR of about 50 - 60 is generally accepted. Maxima occurs on the 22nd December, speed of comets is about 35km/sec. The Radiant is in Ursa Minor. Unfortunately, this shower is usually affected by moonlight, as it is this year, by a waning Moon. Normal limits 17th - 24th December.

There are no minor showers this month visible in the Northern Hemisphere.

METEOR COUNT PROGRAMME FOR DECEMBER.

Saturday 13th December, Geminid Meteor Count

Saturday 20th December, Ursids Meteor Count.

For these meetings meet at 9p.m. irrespective of weather conditions at the entrance to Foxhall Stadium.

The December Sky as at 2000hrs. by D. Barnard.

As already mentioned in the Planetary Section, Jupiter, Saturn and Mars are all bright objects dominating the eastern sky in the evenings.

The winter stars are now rising in the early evening and are the constellations of Orion, Canis Major, Canis Minor, Gemini and Auriga.

The 'Great Hexagon', formed by seven 1st magnitude stars is now visible in the east, Capella, Pollux, Procyon, Sirius, Rigel, Aldebaren at the corner and Betelgeuse inside. This is the region that gives the winter skies its splendour.

The southern half of the sky is dominated by the so-called 'Wet Region', and include the constellations of Cetus, Eridanus, Aquarius and Pisces. As Cetus is at its highest the variable (Mira) will be well placed for observation. In the west is Aquila, Capricornus, Sagittarius and Delphinus and are all setting, while in the north Vega and Deneb, both circumpolar are now very low. Ursa Major is partly visible now with only the Plough to be seen well.

In the zenith the sky is dominated by Lacerta, Andromeda, Perceus Cassiopeia, Pegasus, Cepheus and Camelopardalis. The Milky Way is very well placed at the present for observation.

Taurus, with the open cluster, the Pliades, is quite well placed especially for observation of the Crab Nebular (M1). But it is true to say that the majority of the fine objects observable on December evenings are unfortunately overhead, thus being in an awkward position to observe with refractors, especially with the 10" O.G. at Orwell Park.

Well, dear Fan, here is another of my thrilling series of Double Star Notes! We have been plessed with ideal viewing conditions of late and have started the season off well with a stupendous collection of doubles in areas of all sky visible.

We have scoured the sky from horizon to horizon, and we would welcome ANYBODY in the Society for the astronomical feast spread before their very eyes every alternat Thursday. We also make regular drawings of Jupiter and it's attendant moons and have spotted 'the spot' on two occassions recently. We have been known to clutch at clusters, go swan hunting and looked right into the eye of the Bull, distinguished by it's fine bloodshot eye (Aldebaran). We have probed into the saucepan and have come up with a fine set of doubles, we have seen 'the thing' in Andromeda (that is the Great Nebular) and the other Thursday the Great Nebular in Orion.

Looking forward to seeing you on my Thursday night, when the sky is always clear,

D. Bearcroft.

FOR SALE:

4 $\frac{1}{2}$ " Newtonian reflecting telescope complete with R.A. and Declination setting circles. 2 eyepieces (6mm and 20mm). Wooden equatorial stand. The mirror has recently been re-collaminated.

This instrument is in excellant condition

Price £40 o.n.o.

Please contact Mr. D. Barnard, [redacted], Ipswich.
'Phone Ipswich [redacted] (evenings)

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ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

Nomination form for Officers

1976.

We would like to nominate..... to stand on the council of our Society for 1976.

Signed..... Seconded.....

* The nominee must agree to their nomination.

Please return this form to Mr. E.W. Stow, (Secretary) [redacted], Ipswich, IP4 3NH by 20th December, 1975.

Programme for December, 1975

MONDAYS from 7.p.m. General Observations Sections.

Directors. Mr. N. Gage, [REDACTED], Felixstowe, 'Phone Felixstowe [REDACTED]

Mr. S. Flory, [REDACTED], Ipswich, 'Phone [REDACTED]

1st December
8th "
15th "
22nd "

TUESDAYS. from 7.30p.m. Variable Stars Sections.

Director. Mr. T. Cardot, [REDACTED], Ipswich, Phone [REDACTED]

Mr. D. Barnard, [REDACTED], Ipswich 'Phone [REDACTED]

2nd December
16th "

WEDNESDAYS:- Astronomy for Beginners from 7.p.m. 3rd December.

The third in a series of meetings to help those interested in gaining a better understanding of astronomy. These meetings are open to all who would like to come along (no charge) The meetings will take irrespective of weather conditions. For these meetings wrap up warm and bring along small telescopes and binoculars.

Meet at the entrance to Foxhall Stadium at 7p.m.
Meetings organised by Mr. R.M. Cheesman.

WEDNESDAYS, from 7p.m. Solar, Lunar & Planetary Section.

Director Mr. R.M. Cheesman, [REDACTED], Ipswich.

10th December
17th "
31st "

THURSDAYS. from 8p.m. Double Stars Section

Director Mr. D. Bearcroft, [REDACTED], Ipswich, 'Phone [REDACTED]

4th December
18th "

***** FRIDAYS: 5th December:-

from 8p.m. at the Friends Meeting House, Fonnereau Road, Ipswich an illustrated talk on 'The Geology of the Solar System' given by Mr. R. Markham B.Sc. Admission Free (See poster in back of Journal)

FRIDAYS from 8.30p.m. Lunar & Planetary Section

Directors Mr. J. Deans, [REDACTED], Capel St. Mary, 'Phone [REDACTED]
GT. WENHAM [REDACTED]

and Mr. K. Dye, [REDACTED], Ipswich 'Phone [REDACTED]

19th December

FRIDAYS: from 7.30p.m. Nebular & Faint Objects Section.

Director Mr. M. Stow, [REDACTED], Ipswich

Mr. R. Hazelwood, [REDACTED], Ipswich 'Phone [REDACTED]

12th December

SATURDAYS: from 9.p.m. Meteor Section.

Director Mr. D. Barnard, [REDACTED], Ipswich, 'Phone [REDACTED]

GEMINID METEOR COUNT on Saturday 13th December.

URSIDS METEOR COUNT on Saturday 20th December.

Meet at entrance to Foxhall Stadium at 9p.m. irrespective of weather conditions and remember to wrap up warm and bring a chair along.

FRIDAY 2nd January, 1976. at 8p.m. we will hold our A.G.M. in the Library of Orwell Park School Nacton.

ASTRONOMY IN ANCIENT & CLASSICAL TIMES.

ASTRONOMY IN CHINA Continued.

Even though the Chinese astronomers did achieve a high standard of knowledge, over a period of many centuries their calendars started to become inaccurate. This problem was not solved for them until the Jesuits came to China in the 16th century and were commissioned to make a more accurate calendar.

Much of the data compiled by the Chinese is of great value as no other records of around this time exist. They recorded the appearance of comets in the years 989, 1066, 1145 and 1301. There are now known to be early appearances of Halley's comet, though the Chinese did not know that it was the same comet each time.

The most important discovery the Chinese made was the appearance of a super nova which they observed in 1054. During June it was visible in the day-time. The result from this nova is one of the most interesting objects in the sky in the constellation Taurus. More will be written about this object (known as the Crab Nebular) in a later chapter.

GREEK ASTRONOMY.

Greek astronomy originated as with previous cultures from the need for time-reckoning. Even though fragmentary reports and writings of the Greeks now exist, it is possible to gain the main ideas they held on the subject. The Greeks developed a high standard of mathematics, particularly in the field of geometry. They developed an accurate calendar and, as the Babylonians, discovered an inequality in the four seasons. The sun moves at different speeds at different times of the year. This results in the periods between the solstices and equinoxes being different numbers of days.

From the writings on Greek astronomy the names of all their philosophers appear at some stage or other. Each had their own idea on what they believed to be true motions of the planets and stars. Many of them tried to have their ideas accepted by trying either to refute or adapt previous writings on the subject by other philosophers. This resulted in the ideas and opinions of many philosophers being either scanty or often contradictory. The works of Plato and Aristotle have been preserved quite well, as they were often highly esteemed in subsequent centuries.

The Greeks were one of the most mathematically orientated cultures of ancient times. This fact overshadowed their observational astronomy to the extent that their astronomers were much better mathematicians than astronomers. The Greeks were the first to try to fit the motions of the planets with mathematics. Eudoxus was a famous mathematician and the first person to formulate a model of planetary motions. In simple terms Eudoxus, in agreement with the current ideas of the time, fixed every planet to a sphere which rotated round the Earth. In order to explain the irregular motions of the planets he proposed the use of more spheres, all of which rotated in a regular manner around a common centre. This theory was reasonably accurate for Jupiter and Saturn, but not for Mars or Venus. There were insufficient accurate observations of the motions of the planets available to Eudoxus at this time for him to have realised this fact. Even though the Greeks had a high standard of mathematics, their ideas of actual planetary motions were quite primitive. This theory is known as the homocentric spheres of Eudoxus. Eudoxus' model was modified by Calippus by adding another sphere for the planet Mercury, Venus and Mars. Two more spheres each for the Moon and Sun were added.

There were many conflicting ideas about the interpretation of the planetary motions. The most original ideas came from Heraclides and Aristarchus. With previous models the diurnal motion of the Earth and its revolution about the Sun were unknown. Using the Greek mathematics of geometry Aristarchus attempted to find the distance of the Sun from the Earth (though this was very inaccurate). He found the distance of the Sun to be 19 times the distance of the Moon. The discovery that the Sun has a diameter of about $\frac{1}{2}^{\circ}$ led him to calculate the approximate volumes of the Sun to Earth. The result was that the Sun proved to be somewhere between 254 and 368 times the volume of the Earth. Aristarchus along with Heraclides proposed a heliocentric system with all the planets going round the Sun in circular orbits. This system was abandoned for another seventeen centuries before being reinstated. The minds of other astronomers and philosophers of this period were unable to see that this system would solve many of the anomalies of the planetary motions.

(to be continued next month)



ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

IN ASSOCIATION WITH
THE IPSWICH GEOLOGICAL GROUP

PRESENTS

AN ILLUSTRATED TALK ON THE

GEOLOGY OF THE SOLAR SYSTEM.

BY

MR. R. MARKHAM B.Sc.

ON

FRIDAY 5th. DECEMBER 1975

AT 8 P.M.

AT THE

FRIENDS MEETING HOUSE

FONNEREAU ROAD

IPSWICH

ADMISSION FREE.

REFRESHMENTS.

SECRETARY

MR. M. STOW,
13, LADYWOOD ROAD,
IPSWICH.