

JOURNAL of the  
ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

January, 1976.

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WEATHER DEPT. The Solar System as seen from Ipswich, January, 1976.

SOLAR SECTION:

The Sun starts the new year in the constellation of Sagittarius. Sunrise being at around 08 hours and Sunset 1600 hours at the beginning of the month.

Synodic Rotation No. 1636 commenced December 15.95d.

" " No. 1637 commences Jan 12.29d.

HEMOCRAPHIC CO-ORDINATES AT NOON U.T.

	$\frac{P.}{\circ}$	$\frac{Bo.}{\circ}$	$\frac{Lo.}{\circ}$		$\frac{P.}{\circ}$	$\frac{Bo.}{\circ}$	$\frac{Lo.}{\circ}$
Jan 2	+3.9	-2.6	188.1	Jan 18	-5.7	-4.8	284.8
" 3	+1.5	-3.2	122.3	" 23	-8.0	-5.3	218.9
" 8	-1.0	-3.8	56.4	" 28	-10.2	-5.7	153.1
" 13	-3.4	-4.3	350.6				

EARTH.

Perihelion occurs on the 4th at 11hrs. U.T. when the Earth will be at its closest to the Sun.

MERCURY.

Will reach greatest Eastern elongation on the 7th at 05hrs (19°) magnitude -0.3 moving direct until the 13th when it will start retrograding. Inferior conjunction will occur on the 23rd at 06hrs U.T. Mercury will not set for 1½ hours approx after Sunset when at greatest elongation.

VENUS.

Is a morning star rising around 05hrs, magnitude -3.6. Venus will be in close proximity to the Moon on the 28th.

MARS.

Mars is visible throughout most of the night in the constellation of Taurus, magnitude -1.4 at the start of the month. Mars will be retrograding until the 20th when it will resume a direct motion. The Moon will be near Mars on the 13th.

JUPITER.

Jupiter is now setting around midnight and is still a prominent object in the evening sky, magnitude -2.0 in the constellation of Pisces. The Moon will be near Jupiter on the 9th.

SATURN.

Saturn rises in the early evening sky at about 17hrs 30m U.T. and is retrograding in Gemini. Saturn will be in opposition on the 20th, magnitude -0.1. The Moon will be near Saturn on the 17th.

ERUPTIONS ON JUPITER.

A J.A.S. report recently received indicates dramatic changes within the last few months in the South equatorial belt. An eruption has taken place which is ejecting material.

The Great Red Spot has been moving at an unprecedented rate in longitude of up to 8° per month and at the end of November was at 50° system II longitude. Dark material has been spewed out from the S.E.B. which has spread out along the previously invisible part of the S.E.B. Observations from New Mexico indicates two bright spots along the south edge of the north temperate belt at longitude 23½ their motion in longitude was very rapid.

COMET BRADFIELD, 1975p.

Geocentric co-ordinates:-

Date	R.A.	Time	Dec.	Mag
Dec 29th	"	18hrs 44.77m	-06°51.5'	3.7
Jan 3rd	"	19hrs 14.99m	+02°12.2'	5.0
" 8th	"	19hrs 46.11m	+10°25.8'	6.0
" 13th	"	20hrs 18.62m	+17°52.3'	6.8
" 18th	"	20hrs 52.32m	+24°23.7'	7.5
" 23rd	"	21hrs 26.65m	+29°52.2'	8.1
" 28th	"	22hrs 00.83m	+34°16.2'	8.7

COMET BRADFIELD 1975P.

Comet Bradfield came above the horizon on December 14th maximum brightness and perihelion distance was predicted at 2.218 A.U. The Comet was discovered in Adelaide on November 11th as a diffuse 10th magnitude object in Antlia. The Comet is now in Serpens at magnitude 4 gaining elongation and should now become visible to the naked eye low in the South West immediately after Sunset. Until now the Comet has been lost in the glare of the Sun due to the very narrow Separation.

COMET NEISE 1975n.

Discovered in August in photographic plates taken with the 1 meter Schmidt at La Silla. Perihelion date has been predicted for February 24th with a distance of 0.2A.U. from the Sun.

The Comet could be conveniently placed for Northern hemisphere observers in mid March when it could reach magnitude 5. At the moment it is magnitude 11.

LUNAR SECTION.

Moon Phases: Lunation 656

New Moon Jan 1st 14hrs 40m U.T.  
First quarter 9th 12hrs 40m U.T.  
Full Moon 17th 04hrs 47m U.T.  
Last quarter 23rd 23hrs 04m U.T.

Perigee Jan 20th 13hrs Apogee Jan 8th 17hrs.

Occultations.

Jan 5th	ZC 3259	D	Mag 7.4	16hrs 50m
" 10th	ZC 299	D	" 6.3	17hrs 29m
" 11th	ZC 325	D	" 7.4	00hrs 19m
" 11th	ZC 423	D	" 6.4	18hrs 26m
" 13th	ZC 691	D	" 6.6	17hrs 06m
" 18th	ZC 1397	R	" 5.5	22hrs 09m
" 21st	ZC 1662	R	" 6.3	3hrs 17m

\*\* Denotes star is a double

METEOR SECTION. Director Mr. D. Barnard.

The clear, frosty skies came on the night of the 13th December and turned out to be a very good night for meteors with a total of 63 meteors seen in just over 2 hours, 53 Geminid's and 10 sporadic. The meeting was marred by the lack of attendance, for only four people turned up, but they thoughghly enjoyed themselves and forgot about their frozen feet. The count on the 20th December was postponed because of the trip to Norwich.

METEORS IN JANUARY,

On the evening of the 3rd sees the Quantantids shower, transiting the meridian at 08hrs 35m on Jan 4th. This shower has a sharp maximum on the night of the meteor count - with a ZHR of 110! The radiant is in Ursa Major, the colours of the meteors are blue and have fine trains, lots of faint meteors are expected. No Moonlight this year. There are no other main showers this month.

METEOR COUNTS THIS MONTH.

Meet at the entrance to Foxhall Heath at 9p.m. on the following evenings.  
Saturday 3rd January, Quadrantids Meteor Count.  
Saturday 31st January Sporadic Meteor Count.

Director: Mr. D. Barnard, [redacted], Ipswich.  
'Phone Ipswich [redacted].

LECTURES BEING HELD BY NORWICH ASTRONOMICAL SOCIETY.

On Friday 20th December (Aposter was put in the Observatory for this meeting) nine members of our Society attended the lecture at Norwich on 'How a Star Dies' which was given by Dr. J. Miller of Oxford. This was a well attended meeting and proved to be well worth the trip to Norwich.

Norwich A.S. are holding lectures as under and anyone who would like to go should contact Mr. R.H. Cheesman, [redacted], Ipswich so that car transport can be arranged.

Friday January 17th X-RAY ASTRONOMY by Mr. E.N. Walker (R.G.O. Herstmonceux)

" February 21st MOLECULES IN SPACE by Prof. A.H. Cook (Cavendish Laboratory)

" March 20th TEACH IN - JUPITER, the latest colour slides

LECTURES HELD BY Orwell Astronomical Society (Ipswich)

On Friday 6th February at 8.p.m. Mr. R.W. Middleton, F.R.A.S. will be giving a talk on 'Observing Venus and Mercury with a small telescope'. Please make a note of this meeting in your diary. A full poster covering this meeting will be published in next month's Journal.

MEMBERSHIP SUBSCRIPTIONS.

Just a reminder to all those who have not paid their subs for 1976. All subs were due on 1st January and should be sent to Mr. M. Stow, Secretary, [REDACTED], Ipswich.

JANUARY JOURNAL 1976.

We regret that this month's Journal is a bit late coming out but our editor Mr. J. Deans and the chief typist and printer, Mr. R.M. Cheesman, have both been very busy at work and with other Society commitments during December. We hope that it will not be late out again.

COMMITTEE MEETING.

The new Committee for 1976 will hold their first meeting at Orwell Park in the Observatory on WEDNESDAY 28th JANUARY, at 8.p.m. sharp.

THIS SPACE TO LET:-

If you have any items of astronomical interest which you would like published in our Journal please send them to the Editor for insertion in next month's Journal.

## Programme for January, 1976.

MONDAYS: from 7p.m. General Observations Section.

Directors: Mr. N. Gage, [REDACTED], Felixstowe, 'Phone Felixstowe  
and Mr. S. Flory, [REDACTED] Close, Ipswich, 'Phone [REDACTED]

5th January  
12th "  
19th "  
26th "

TUESDAYS: from 7.30p.m. Variable Stars Section.

Director. Mr. T. Cardot, [REDACTED], Ipswich, 'Phone [REDACTED]  
and Mr. D. Barnard, [REDACTED], Ipswich, 'Phone [REDACTED]

6th January  
20th "

WEDNESDAYS: from 7p.m. Astronomy for Beginners. 7th January.

The fourth in a series of meetings to help those interested in astronomy. These meetings are open to all who would like to come along. The meeting will take place irrespective of weather conditions. Wrap up warm and bring along binoculars and small telescopes.

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

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

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

14th January  
21st "  
28th "

THURSDAYS: from 8p.m. Double Stars Sections.

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

1st January  
15th "  
29th "

FRIDAYS from 8.30p.m. Lunar & Planetary Section.

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

16th January  
30th "

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

Directors Mr. N. Stow, [REDACTED], Ipswich.  
and Mr. R. Hazelwood, [REDACTED], Ipswich, 'Phone [REDACTED]

9th January  
23rd "

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

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

QUADRANTIDS METEOR COUNT on Saturday 3rd January

SPORADIC METEOR COUNT on Saturday 31st January.

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. ANNUAL GENERAL MEETING at 8.p.m. in the library of Orwell Park School, Nacton.

GREEK ASTRONOMY (continued)

The system invented, that was accepted for over a thousand years, was the epicyclic system. This system was first invented by Hipparchus during the second century B.C. The epicyclic system even though incorrect, could represent the motions of the planets and moon to within an error of less than one minute of arc. This, and having the Earth at the centre of the system was one of the main reasons why this system was accepted for such a long time.

Ptolemy who was one of the greatest astronomers of ancient times lived in Alexandria during the time of the Roman Emperor Hadrian in the second century A.D. Ptolemy favoured the Hipparchus system to the Aristarchus system. He refined the epicycle system which has ever since been known by his name. Ptolemy was the first observational astronomer as it is understood in the modern way. He compiled the most accurate catalogue to this date.

THE ASTRONOMICAL REVOLUTION.

For over sixteen centuries the epicyclic system of Ptolemy was believed to be true. No one questioned that the earth was stationary and all other heavenly bodies revolved around it. During this period the Church had gained enough power and influence to condemn any person who went against the Ptolemaic system. Anyone believing that the earth was in a state of motion around the sun was liable to be burned at the stake for heresy.

NICHOLAS COPERNICUS.

Nicholas Copernicus was born on February 19th 1473, in the Polish town of Toran. He studied at many universities, the first being at Cracow for three years from 1491. At Cracow, Copernicus first became acquainted with astronomy through astrology. In 1496 he was sent to Italy to study law and again in 1501 to study medicine. During his stay at Ferrare University he met the famous professor of astronomy from that town, Domenico Maria Novara. Any information that passed between these two is unknown.

One of his studies involved Greek and Latin. This put him in a position to read the works of the Greek Philosophers. At the end of the 15th and beginning of the 16th centuries, there was a great quest for knowledge about the accuracy of the works of the Greek Philosophers. The result of this research was the discovery of many inaccuracies in the so-called Alfonsine Tables on the positions of the heavenly bodies, which were based on the geocentric view of the Universe.

Copernicus, on noticing the inaccuracies in the Alfonsine Tables began to formulate a new theory on the motions of the Moon, Sun and Planets. It took him some thirty-six years to finally work out a new theory to replace the Ptolemaic system. His work was first prompted by some ideas from various Greek Philosophers. Nicetas who according to Cicero perceived the motion of the earth, Philoleus perceived that the earth made a daily orbit around a central fire and Heracleides with Euphantus gave the earth a rotation about its axis once a day. Copernicus formulated several hypothesis:-

1. That all the objects in the Solar System have no single centre
2. The earth's centre is not the centre of the Universe but only the centre of the Moon's orbit and of the earth's mass.
3. All objects orbit the sun, with the centre of the sun being at the middle of each orbit.
4. The earth rotates once a day on its axis.
5. Retrogradation of the planet's orbit is due to the earth's motion around the sun.

After his University studies were completed Copernicus' profession was with the church. In this he was probably enticed by his uncle who was a bishop. He eventually became a Canon to Frauenberg Cathedral, staying there for about thirty years. Copernicus lived all of this time in a few rooms of one of the turrets in the wall that surrounded the Cathedral. This turret also served him as an observatory. From here he obtained numerous positions of the planets and stars. He tried to correlate them to Ptolemy's data. Ptolemy's epicyclic system did not satisfy him as a way to explain the variable motions of the planets. As all previous astronomers Copernicus was involved in compiling an accurate Calendar. Up to this date (early 16th century) the calendar introduced by Julius Caesar was still in use. Copernicus made the year have 365 days, with an extra day in February every four years. He was commissioned to do this work by the church, but refused to do it until the motions of the Sun and Moon were fully understood. It took him about thirty years to find the result, at the end of which time he wrote a book on the subject, hoping the Church would adopt it. The church finally adopted the system in 1582 under Pope Gregory XIII.

Continued next month.