Journal of the

ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

April, 1976.

Editor: Mr. J. Deans,
[redacted],
Capel St. Mary,
Ipswich.
'Phone GT. WENHAM [redacted]

Assistant Editor: Mr. M. Howe,
[redacted],
BURY ST. EDMUNDS,
Suffolk.
'Phone Bury St. Edmunds [redacted]

What's Up - the Solar system as seen from Ipswich, April, 1976.

SOLAR SECTION.

The Sun's motion this month will be in the constellations of Pisces and Aries with sunrise occuring at 05hrs 40m U.T. Sunset 18hrs 30m U.T. at the start of the month - don't forget to add one hour to correct for B.S.T.

Synodic rotation number 1639 commenced March 6.96d
" " " 1640 commences Apr. 3.27d
" " " 1641 " Apr.30.53d

Heliographic Co-ordinates as at noon U.T.

	P	Bo	Lo		P	Bo	Lo
April 2nd	26.3°	-6.5°	16.7°	April 17th	-25.9°	-5.4°	178.7°
" 7th	26.3°	-6.2°	310.7°	" 22nd	-25.5°	-5.0°	112.7°
" 12th	26.2°	-5.8°	244.7°	" 27th	-24.8°	-4.5°	46.6°

MERCURY

Mercury will be in superior conjuction on the 1st at 18hrs U.T., greatest eastern elongation 21° will occur on the evening of the 28th when Mercury will be setting 2hours after the Sun.

VENUS

is now lost in the glow of Sunrise.

MARS

is still visible until after mid-night mag. 1.2 now in the constellation of Gemini. The Moon will be near the planet on the evening of the 6th.

JUPITER

Jupiter is now being lost into daylight and after the first few days of the month it will be unlikely that you will see the planet. Conjuction occurs on the 27th at 20hrs U.T.

SATURN

is a prominent object close by Mars and the star Pollux forming one of the heads in Gemini, mag 0.3. The Moon will be near Saturn on the 8th.

LUNAR SECTION.

Moon Phases for Lunation 659:-

New Moon	March	30th	17hrs 08m U.T.
First Quarter	April	7th	19hrs 02m "
Full Moon	"	14th	11hrs 49m "
Last Quarter	"	21st	07hrs 14m "

Perigee April 14th 07hrs U.T. Apogee April 27th 12hrs U.T.

Watch out for T.L.P.s

As described in last month's Journal perigee and full Moon occur within hours of one another again this month, in fact a lesser seperation in actual hours, though the sky will not be so dark. Still if at all possible make an observation during the morning of the 14th. Sunrise will be about 04hrs 45m U.T.

Occultations.

April	7th	ZC 1106d	mag 3.6	D	19hrs 57.3m U.T.
"	10th	ZC 1482	" 6.3	D	22hrs 00.7m "
"	11th	ZC 1495	" 5.9	D	01hrs 35.9m "
"	17th	ZC 2302d	" 2.9	R	00hrs 38.7m "
"	17th	ZC 2303d	" 5.1	R	00hrs 38.7m "

d denotes star is a double.

METEOR NOTES director Mr. D. Barnard.

This month sees the April Lyrids shower active. These are fast moving brilliant meteors with multiple centres associated with Comet 1861I. Maxima occurs on the 21st, the normal limits from April 19th to 24th, Z.H.R. about 15. The radiant is in Lyra (R.A. 18hrs 08m, Dec +32) rising at 2000hours U.T. transiting the meridian at 0430 hrs U.T.

A Meteor Watch will be held specially to observe this shower on Saturday April 24th at 9p.m. This will be the last meteor count starting at 9p.m. because of the daylight hours increasing. Next month the counts will resume at 10p.m. N.B. Lyra is just circumpolar from lat. 52°N.

There are some minor showers this month also:-

1. The theta Virginids
   Maximum on April 9th. Normal limits April 3 -11. Radiant R.A. 196° Dec. -2°
2. The Tau Herculis
   Maximum on April 15th, Normal limits April 11th to 19th. R.A.248° Dec.+46°.

Both these two streams are very weak giving a Z.H.R. at maximum of only 1 meteor ever one or two hours,

The sporadic watch held on March 27th will be reported in May's Journal.

ONE DATE TO REMEMBER:

Saturday April 24th April Lyrids Shower.

Meet at the entrance to Foxhall Stadium at 9p.n. irrespective of weather conditions.

Mr. K. Dye and Mr. T. Cardot

Mr Kevin Dye (assistant director Lunar & Planetary Section) and Mr. T. Cardot (director of the Variable Stars Section and also a committee member) are moving home from the immediate area of Ipswich and I feel sure that we all wish them well with their move and hope that they will settle into their new homes comfortable. We shall miss their very active participation in our Society which has been seen over the last few years but it is hoped that they will still keep in contact with us. We do have quite a few members living well away from Ipswich.

We now have two vacancies in running our nights at the Observatory and anyone who would like to fill these post should either contact me or Mr. R.M. Cheesman.

J. DEANS.

JUPITER TEACH IN organised by Norwich Astro Soc.

On Saturday 20th March six of our members travelled to Norwich to attend this meeting (the skies are always clear when we go to Norwich!) . This meeting was very informal as not only did the main spea ker not turn up but the films from Pioneer 10 also did not arrive in time for this meeting. Nevertheless this meeting proved to be a very interesting one with Mr. C. Blout F.R.A.S. doing most of the talking. We learnt a great deal about the Planet from the latest information available, and the meeting was well worth travelling from Ipswich to attend.

Also from Ipswich, apart from our members there were about eight boys from the Northgate Astro Soc.

'The Sun' illustrated lecture by Mr. P. Gill, F.R.A.S. held on 12th March.

This illustrated lecture was attended by about fourty people and although Mr. Gill does not give many lectures, this lecture proved to be a very interesting one for those interested in studying the Sun

'The Observatories at Cambridge' is the subject of a talk given by Dr. D. Dewhirst organised by the Norwich Astro. Soc. on Saturday 17th April. We are hoping again to go to Norwich again to hear this lecture and if anyone is interested in going please contact Mr. R.M. Cheesman, [redacted], Ipswich who is organising transport.

'The Contribution of the Amateur to Astronomical Research' article by Mr. C. Radley will be completed in full in next month's Journal.

Photography and its application in Astronomy Part 2.

by Mark Howe Assistant Editor O.A.S.I.

The simplest way to use a camera in astronomy is to take photographs directly with the camera using no other optical instruments. I shall deal with this branch of astrophotography in two parts, photography of star fields and meteor photography,

It goes without saying that to take such photographs necessitates the use of a camera having provision to leave the shutter open for indefinite lengths of time ('B' or 'T' setting on shutter-speed scales). For photographs of star fields such as the Milky Way in Cygnus or Ursa Major we must be able to drive the camera in some way to compensate for the Earth's rotation, otherwise you will just end up with star-trails (these are interesting enough in themselves, but if you confine your activities to photographing star-trails you will some become bored with astrophotography!) The simplest way to do this is to attach your camera to a telescope (how you achieve this depends entirely on your own ingenuity) and then follow the motions of an extra- or intra-focal star image through the eyepiece (at a fairly high power of say X150 to X200). Of course, if you have a motor-driven telescope you will be able to avoid boredom of doing this, but nevertheless you should check first that the drive is running smoothly, and you would be advised to keep an eye on the telescope during the exposure.

The other way to follow the apparent sidereal motion is to mount your camera on its own little stand and attach a motor drive to the assembly. Camera tripods can be purchased from any photographic dealer, and no doubt the mechanically-minded among us would be able to rig up some sort of clock or electric drive on one. However, it would be much cheaper to make one's own: it need be nothing more than a few pieces of wood screwed together with a drive attached, but D.G. Daniels has built amore complicated one which he describes in the B.A.A. Journal (vol84 No.3 available for persual at the Society Library, I think)

Having dealt with the driving, it only remains for me to say that an average exposure would last, say 10 - 20 minutes, but the best way to find the optimum exposure for your own conditions (seeing etc.) and favoured film is by experimentation. I would suggest that you use the largest aperture possible to reduce exposure times. The list of possible subjects could be endless, but photographs of any part of the Milky Way will probably turn out splendidly.

By all means try experimenting with different type of film. A set of photographs of the same area taken with blye-sensitive (ordinary) film, orthochromatic film and infra-red (red sensitive) film would certainly prove very interesting, especially in the case of high colour contrast between two different coloured stars in the same area (such as Betelgeuse contrasting with Rigel)

The requirements for meteor photography are much less exacting. The easiest way to take meteor photographs is to point the camera at the sky in the region of a meteor shower radiant (the Perseid, Taurid and Orionid showers are excellant for meteor photography) and leave the shutter open for about fifteen minutes. This does mean however, that you will have to record the passage of any meteor as it actually happens, otherwise you will not be able to pinpoint the exact time and position of a meteor well to make the photograph useful to other astronomers. On the other hand, the need to do this will be obviated if the camera is driven in some manner to follow the apparent sidereal motion.

as Meteors are usually of a faily low magnitude, and their motion is so quick, to record as many as possible of them it is necessary to use emulsions of a fast speed and as large an aperture as possible. Agfapan 1000 and Kodak Royal X have speeds of 1000 ASA (31Din) amd 1250 ASA (32 Din) respectively, and are both satisfactory (the increased graininess in using these fast speed films matters little.

If you would like to try you hand at meteor photography, why not go along to one of the Society's meteor nights on Foxhall Stadium? Next one on Sat 24th April!

An interesting devise which can be attached to your camera has been invented to enable astronomers to measure with a fair amount of accuracy the length of time for which meteors are visible. A disc, half-moon in shape, is placed to one side of the lens mount and is made to rotate once in every two seconds, This means that the film is exposed to light for one second and then covered for the next second. Thus a meteor will be recorded as a dashed line, the number of lines being equal to half the number of seconds for which it passed. The faster the apparatus rotates, the more accurate the measurement can be made. The big drawbacks to this meathod are that the exposure time has to be doubled and that the apparatus might cause a camera on an unsteady mount to make a blurred exposure.

Isaac Newton.

Isaac Newton was born in 1642, the year of Galileo's death. He was the son of a Lincolnshire farmer. He attended Cambridge University in 1661 and studied mathematics. Newton's main contribution to astronomy was a mathematical answer to the gravitational force that attracted all objects to each other.

The idea that there must be some form of attractive force between the planets and the sun was introduced much earlier. Copernicus had spoken of a mutual attraction between parts of the Earth as the cause of its spherical shape. A similar force was also assumed to be present on the other astronomical bodies, according to Copernicus. Kepler had spoken of gravity as a force that tended to attract bodies to each other. He relised that the moon exerted an attractive force upon the Earth which produced the tides. To him this was proof that an attraction between bodies did exist.

On leaving University, Newton returned to his home village of Woolsthorpe, in 1665 and started work on the laws governing the motion of objects. He eventually turned his attention to the moon's motion round the earth. The word 'gravity' had been in use for some time, meaning a mutual 'affection' between bodies that tended to draw them together. Newton wanted to be able to define gravity in an exact manner by mathematics. He needed to know how gravity was reduced w ith increasing distance between bodies. His ultimate aim was to make the observational facts of the moon's or planets' motion predictable by making gravity the sole force acting upon them.

Around this time, other people were trying to account for lunar and planetary motions by a force of gravity. The mathematics involved proved to be the main stumbling block. Robert Hooke was one of Newton's main rivals. Hooke, as Newton, had suggested that gravity diminishes inversely to the square of the distances between two or more objects. Hooke and Newton exchanged much correspondence on the subject until Newton realised that Hooke was getting near to the solu tion. Due to this competition, Newton continued to work on the problem which he solved during the next five years.

Hooke often met with Christopher Wren and Edmond Halley to speak on astronomy. After discussing gravitation, Wren offered a valuable book as a prize to whoever found the solution. Hooke declared that he had a solution but was very slow in producing it. Meanwhile Halley visited Newton in Cambridge and discovered that Newton had already worked out the solution.

Halley persuaded Newton to present his findings to the Royal Society. Newton presented his first paper in December 1684. Through the efforts of Halley, Newton's complete works were published as a book in July 1687 after much haggling with Hooke before it finally appeared in print.

Newton also contributed two other important innovations to astronomy. He discovered that white light was made up of seven colours that could be observed when passed through a glass prism. Early refracting telescopes were hampered with c hromatic aberration; Newton invented a reflecting telescope that had no lenses, but used a metal mirror to collect the light.

ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

Programme for April, 1976

MONDAYS. from 7p.m. General Observations Section.
Director. Mr. N. Gage, [redacted], Felixstowe, 'Phone Felixstowe [redacted]

and Mr. S. Flory, [redacted], Ipswich, 'Phone Ipswich [redacted]

5th April
12th "
26th "

WEDNESDAYS from 7p.m. Solar, Lunar & Planetary Section.
Director. Mr. R.M. Cheesman, [redacted], Ipswich

7th April
21st "

THURSDAYS from 8p.m. Double Stars Section
Director Mr. D. Bearcroft, [redacted], Ipswich, 'Phone Ipswich [redacted]

22nd April

FRIDAYS from 8.30p.m. Lunar & Planetary Section.
Director Mr. J. Deans, [redacted], Capel St. Mary 'Phone GT. WENHAM [redacted]

9th April
23rd "

FRIDAYS from 8p.m. Nebula & Faint Objects Section.
Directors Mr. N. Stow, [redacted], Ipswich.
and Mr. R. Hazelwood, [redacted], Ipswich 'Phone [redacted]

2nd April
30th "

SATURDAY from 9pm. Meteor Section
Director Mr. D. Barnard, [redacted], Ipswich 'Phone [redacted]

APRIL LYRIDS METEOR SHOWER COUNT. 24th April.

meet at entrance to Foxhall Stadium at 9p.m. irrespective of weather conditions

THURSDAYS 8th and 15th April from 8p.m.
Visit to Observatory by Rushmere Q Club
arranged by R.M. Cheesman.

SATURDAY 10th April from 7p.m.
Visit to Observatory by All Saints Church Youth Club, Kesgrave.
arranged by R.M. Cheesman.