

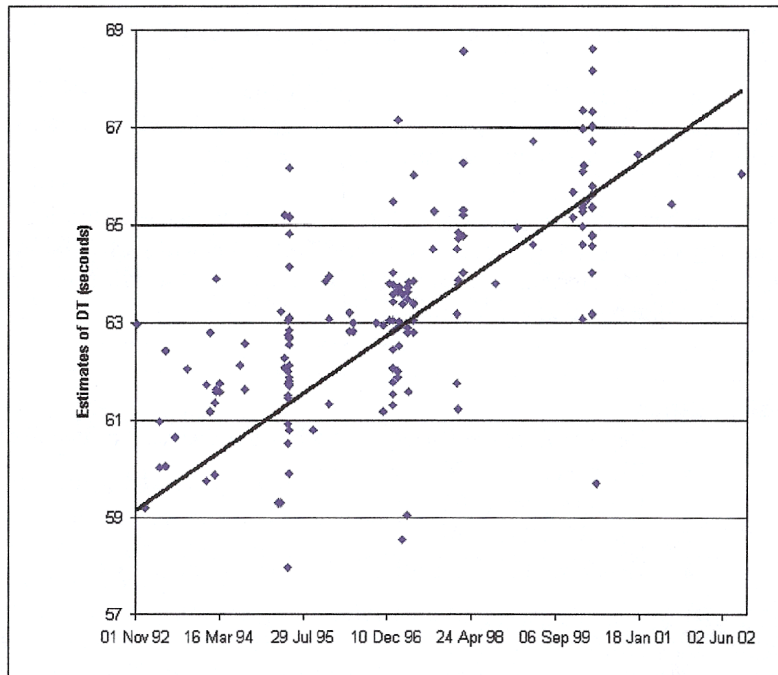


# ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

Registered Charity No 271313  
www.oasi.org.uk

## NEWSLETTER 2006 JANUARY

No 404



Graph based on analysis of occultation timings by OASI members 1992 - 2002 illustrating the slow down in the Earth's rotation over the period by 2.41ms per day. The figure is in agreement with the official figure produced by the BAA.

Produced by James Appleton

## SOCIETY NEWS FROM THE SECRETARY

### *Roy Gooding*

#### 1           **2006 AGM Saturday 14<sup>th</sup> January at 20:00** **Note New Venue**

This year's AGM will be at the new Lecture venue. It will be at the Methodist Church Hall in Blackhorse Lane. This will be the first time we have held the AGM away from Orwell Park.

**All members are invited to attend this meeting, with a start at 20:00**

The church has a car park, bigger enough to take about 30 cars in Black Horse Lane. Alternatively there is a Park & Display car park at the top of Black Horse Lane, next too the Town Council Offices. This is about 100 yards form the church.

Black Horse Lane has only one entrance, which is from Elm Street. This is just past the Police Station, if you are arriving from Civic Drive. The church car park is on the right, just past the Black Horse pub. Access to the hall will be at 19:30. This will give time to set up tables and chairs for the meeting

#### **Brief Meeting Agenda**

- Reports form the society Officers and other Committee members
- Election of the 2006 committee
- Proposals for 2006.
- Any other Business
- Break for Tea and Coffee if there is sufficient time

#### **2   Subscription Renewal for 2006**

If you not already paid for 2006, please return the renewal form enclosed to Martin Cook, together with monies

#### **3   Society Equipment Inventory**

I would like to compile an inventory of society member's astronomical equipment. If you would like to participate please supply me with a list of what observational equipment you have. This inventory list with the relevant names will remain with in the society. Though the total numbers of each class of instrument maybe added to the Society Web site.

#### **4   Welcome to New Members**

## 5 Events for 2006

Meeting	Venue	Date
AGM	Methodist Church Hall Blackhorse Lane	Saturday 14 <sup>th</sup> January 20:00
Lecture meeting An Introduction to Radio Astronomy in the BAA	Methodist Church Hall Blackhorse Lane	Friday 27 <sup>th</sup> January 20:00
Astronomy Workshop Elementary Imaging Processing ( No hard sums) Presented by Nigel Stubbington	Venue: the class room under the fire escape in the small car park area ( School side entrance )	Wednesday 8 <sup>th</sup> February 19:45
Astronomy Workshop	Additional meetings are still in the planning stage	
AstroFest	Kensington Town Hall Hornton Street London	Friday 3 <sup>rd</sup> and Saturday 4 <sup>th</sup> February
Society Excursion	Herstmonceux	May
Summer Barbecue	No venue yet	No date yet
BAA Exhibition Meeting		June
FAS Convention	Institute of Astronomy Cambridge	October

This event list will be updated through out next year

## 6 New Lecture Meeting Venue

The last lecture meeting we held in Ipswich was in a room at Methodist Church in Blackhorse Lane. Every one who attended this meeting agreed that it was a better venue than the Friends Meeting House

The church has a car park, bigger enough to take about 30 cars in Black Horse Lane Alternatively there is a Park & Display car park at the top of Black Horse Lane, next too the Town Council Offices. This is about 100 yards form the church.

Black Horse Lane has only one entrance, which is from Elm Street. This is just past the Police Station, if you are arriving from Civic Drive. The church car park is on the right, just past the Black Horse pub.

Meeting starts at 20:00, doors open at 19:30

## 7 Astronomy Workshops 2005 / 2006 Season

The new season of workshop meetings is in the planning stage. Ted Sampson has handed over the co-ordination of these meetings to Mick Whybray. Any questions you may have about the new season please contact Mick. If you would like to volunteer to be a principle speaker for any of these meetings please also contact Mike

3

## 8 New Session of Night Sky Section Meetings

If there is sufficient interest again I will restart meetings of the Night Sky Section this autumn. These will follow the same format as last year. The venue will again be on Nacton shores. No formal dates will be set, as meetings will take place on an ad hoc basis on Wednesdays. All you have to do is to ask me, and we can go down to Nacton shores for an observing session.



I would recommend bringing along a pair of binoculars, a torch and suitable footwear for walking down a potentially muddy lane.

For those who are new to the society, here is a little background for the reason I implemented these meetings last year.

New members have often mentioned that they are interested in Astronomy, but being beginners, they have only limited knowledge. One of their reasons to join us was to find like-minded people, with a greater knowledge than they have. Finding their way around the night sky held a high priority.

At our public Open Weekends I usually take visitors outside to show them the night sky, and identifying the principle constellations. All that is required for this is the naked eye and binoculars.

If any one is interested in doing this, please contact me (Roy Gooding)

## 9 Access into the School Grounds

If the Gym Gate into the School grounds is locked, you will have to phone someone in the observatory to let you in. My mobile number is [REDACTED]. (Roy Gooding) Please see the hand out.

## 10 Society Email Distribution list

If you have an email addresses and would like to be included on the society email distribution list. Please forward your name and email address to [oasiliist-1@btopenworld.com](mailto:oasiliist-1@btopenworld.com)

## Night Sky (January)

All times GMT

### Sun

The sun will be rising approximately between 08:10 to 07:50  
The sun will be setting approximately between 16:00 to 16:40

### Moon

1 <sup>st</sup> Quarter	Full Moon	3 <sup>rd</sup> Quarter	New Moon
6 <sup>th</sup>	14 <sup>th</sup>	22 <sup>nd</sup>	29 <sup>th</sup>

4

# LUNAR OCCULTATIONS DURING 2006

by James Appleton

- Mercury** Mercury will be too close to the sun this month to be easily seen.
- Venus** Venus will be low down in the south western sky before sunset at the beginning . It will be at inferior conjunction on the 13<sup>th</sup>.
- Mars** Mars will be visible until the early hours of the morning, setting at about 02:20 at the end of the month. Magnitude 0.2
- Jupiter** Jupiter will be rising at about 03:20 by the beginning of the month. Magnitude -1.9
- Saturn** Saturn will be rising at about 18:30 by the beginning of the month. Magnitude -0.2
- Uranus** Uranus is presently in Aquarius. It will be setting at about 20:00 in mid month Magnitude 5.7
- Neptune** Neptune it will be too close to the sun this month to be seen.

## Meteor Showers

Name	Limits	Max	ZHR
Quadrantids	January 1 <sup>st</sup> to 6 <sup>th</sup>	January 3 <sup>rd</sup> 22:00	100?

Meteor source is the BAA Handbook

## OCCULTATIONS DURING JANUARY

The table lists stellar occultations which occur during the month under favourable circumstances. The data relates to Orwell Park Observatory, but will be similar at nearby locations.

Date	Time (UT)	D /R	Lunar Phase	Sun Alt (d)	Star Alt (d)	Mag	Star
03 Jan	16:31:13	D	0.17+	-5	22	7.8	KT Aqr
03 Jan	17:29:48	D	0.17+	-13	19	8.3	Hip 110507
03 Jan	18:32:04	D	0.18+	-23	13	5.8	50 Aqr
04 Jan	18:00:53	D	0.27+	-18	27	6.7	ZC 3422
04 Jan	18:30:35	D	0.27+	-22	24	8.4	5249-0975-1
04 Jan	20:06:41	D	0.28+	-37	14	8.1	Hip 115260
06 Jan	19:25:01	D	0.50+	-30	41	6.1	WW Psc
07 Jan	23:41:51	D	0.62+	-60	20	8.4	Hip 9074
09 Jan	01:06:25	D	0.73+	-58	19	6.6	ZC 421
10 Jan	02:10:32	D	0.82+	-51	20	6.8	Hip 17572
10 Jan	03:04:30	D	0.82+	-44	13	5.4	ZC 556

This article provides a summary of lunar occultations visible from East Anglia during 2006. There is a comprehensive listing at Orwell Park Observatory, containing full observational details.

There are approximately 560 total lunar occultations which are potentially observable from East Anglia during the year, although many involve faint stars. There are no good grazing occultations visible from East Anglia. The Moon does not occult any planets during the year as seen from the region.

The remainder of this article summarises the circumstances of the best occultations during the year. It provides details for the location of Orwell Park Observatory; however, differences will in general be negligible for locations throughout East Anglia.

## OCCULTATION PREDICTIONS

The Moon occupies a band through the sky lying within  $\pm 6.75^\circ$  of the ecliptic. This band therefore defines the area of the sky within which to search for lunar occultations. I use a complex suite of computer software to search for occultations. The software models the motion of the Moon and planets in detail, and by comparing the position of the Moon at each instant with the co-ordinates of planets and stars, it evaluates the precise time at which lunar occultation events occur. Once the time of an event is known, the software runs additional algorithms to calculate other observational details.

The software is based on the algorithm *Occult* in *Astronomy On The Personal Computer*, 2<sup>nd</sup> edition by O.Montenbruck and T.Pfleger, Springer-Verlag, 1994. I have added numerous enhancements to improve accuracy and to filter out predictions occurring under unfavourable circumstances. The software uses the NASA Jet Propulsion Laboratories' ephemeris DE-405 to provide the position of the Moon and planets and the Hipparcos, Tycho2, PPM and XZ94F star catalogues to provide stellar positions. DE-405 and Hipparcos/Tycho2 represent the latest and most accurate sources of astrometric data currently available. The PPM and XZ94F catalogues provide coverage in areas of the sky that Hipparcos/Tycho2 do not cover in depth. The software uses IOTA's electronic Watts charts to correct predicted timings for the local lunar limb profile. (This typically makes a difference of several seconds.)

## BRIGHT OCCULTATIONS

There are 13 occultations during the year involving stars of magnitude 5.5 or brighter, and these should be readily visible in binoculars or small telescopes. Table 1 lists the circumstances of these occultations.

Date	Time UT	D / R	Lunar Phase	Sun Alt (d)	Star Alt (d)	Star Mag	Star
10 Jan	03:04:30	D	0.82+	-44	13	5.4	ZC 556
06 Feb	23:34:02	D	0.67+	-53	35	5.4	59 Tau
09 Mar	19:56:42	D	0.78+	-20	63	5.3	76 Gem
04 Apr	21:36:47	D	0.44+	-25	40	5.3	49 Aur
	22:33:43	R		-29	31		
14 Oct	05:14:52	D	0.48-	-10	62	5.3	76 Gem
03 Nov	19:41:36	D	0.96+	-31	37	4.3	71 Psc
04 Dec	02:55:24	D	0.99+	-43	36	3.7	17 Tau, Electra
	03:56:29	R		-34	27		
04 Dec	03:05:33	D	0.99+	-42	35	5.4	16 Tau, Celaeno
04 Dec	03:37:48	D	0.99+	-37	30	3.9	20 Tau, Maia
	04:11:01	R		-32	25		
04 Dec	03:40:21	D	0.99+	-36	29	4.1	23 Tau, Merope
04 Dec	04:02:55	D	0.99+	-33	26	2.8	25 Tau, eta Tau, Alcyone
	04:56:25	R		-25	18		
04 Dec	04:45:00	D	0.99+	-26	20	5.1	28 Tau, BU Tau, Pleione
04 Dec	04:49:28	D	0.99+	-26	19	3.6	27 Tau, Atlas
	05:26:38	R		-20	14		

**Table 1. Occultations of stars brighter than magnitude 5.5.**

The first two columns of table 1 give the date and time (UT) of the occultation. Column three gives the phenomenon: 'D' denotes a disappearance and 'R' a reappearance. The table lists circumstances of D and/or R as dictated by the visibility of each phenomenon (determined by altitude, lunar phase, etc.) Column four details the lunar phase as a fraction of unity ('+' denoting waxing and '-' denoting waning). Columns five and six give the altitude of the Sun and the star, both in degrees. (A negative solar altitude implies that the sun is below the horizon.) Columns seven and eight provide the star's magnitude and identifier (common name or catalogue number).

Note that during the period 02:55 – 05:30 UT (approximately) on 04 December, the Moon passes through the Pleiades star cluster. Although the Moon is nearly full (and conditions are therefore not ideal), providing skies are clear, this sequence of occultations should be spectacular to observe and well worth staying up for!

## OCCULTATION SEASONS FOR 1<sup>ST</sup> MAGNITUDE STARS

The Moon's orbit is defined by a range of periodicities, both short and long term. The short term periodicities mean that the Moon's path through the sky follows a pattern whereby it almost repeats itself every month. However, the longer term periodicities gradually shift the orbit so that no particular pattern of approximate repetition can last more than a few years. This results in so called "occultation seasons", lasting for some years, during which particular stars are repeatedly occulted, or repeatedly not occulted.

The effect is most pronounced for the four first magnitude stars that the Moon can occult, namely Aldebaran, Spica, Antares and Regulus. We are currently in an occultation season lasting until 2007 when none of these stars are occulted.

## NIGHTS WITH MANY OCCULTATION EVENTS

During the year, the Moon traverses some rich star fields. When this happens, a large number of occultations can occur during a single evening. Table 2 lists all evenings throughout the year when the Moon occults 12 or more stars. The precise number of occultations which an observer will record during any of the evenings listed in table 2 will depend in large part on their skill and observing conditions.

Date	No. occs.	Date	No. occs.	Date	No. occs.
03 Jan	14	04 Jan	18	02 Feb	24
02 Mar	12	03 Mar	18	31 Mar	14
01 Apr	13	03 Apr	18	04 Apr	20
01 May	37	02 May	46	03 May	16
30 May	15				

**Table 2. Evenings with 10 or more occultations.**

Many of the nights listed in table 2 are associated with the passage of the Moon through the rich star fields from east Taurus to central Gemini.

# MORE ASTRONOMY WORKSHOPS!

My thanks to four members for volunteering (really!) to run a further four workshops this season.

Workshops will be held in the usual location - except that access to the classroom is now somewhat more complicated because of the new security arrangements. Park in the area outside the sport hall, entering this by means of the second set of gates about 100 metres along the narrow road to the left as you face the main Orwell Park School gates. Open the gates using pass code 4570 on the keypad (if this number is still active by the time of the next workshop!), or using an access key fob if you have one. Or wait for someone else, or phone my mobile or any other number issued by then! Walk along the path at the back right of the parking area, past the sports hall, and there is a door into the school, which should be signposted on workshop nights. Follow further signs to the classroom.

I'm sure further access details will be also published in the newsletter, as we get used to the new arrangements. If in doubt, please phone me or any committee member for advice.

Normal workshop start time is 7:45pm, and they typically last 1 to 1.5 hours.

Date	Title	Presenter
11 <sup>th</sup> Jan 2006	<b>Getting Started – and Keeping Going in Astronomy</b> Ted has kindly offered to run this in response to several new members' requests for a basic introduction to astronomy. All welcome though – the more experienced members can lend their advice, in what will be a more interactive than usual event.	Ted Sampson
8th February	<b>Elementary Image Processing</b> (No hard sums!)	Nigel Stubbington
22nd March	<b>Sights and Sounds of the Aurora</b>	Paul Whiting
12th April	<b>Origin of the Solar System</b>	Paddy O'Sullivan

Mike Whybray. [redacted] (work hours) or [redacted] (evenings) or [redacted] (Mobile)

## OASI COMMITTEE CONTACTS & RESPONSIBILITIES

Kenneth J Goward FRAS	Chairman	☎	Press Publicity with the Secretary. Open Weekend.
Roy Gooding	Secretary	☎	<b>Main point of Society Contact.</b> Press Publicity with the Chairman. Observatory Decoration. Visits by potential new members.
Garry Coleman	Treasurer	☎	Finance. Supervision of Grant Applications.
James Appleton	Committee	☎	Committee Meeting Minutes. Web site.
Martin Cook	Committee	☎	Membership. Tomline Refractor Maintenance.
Neil Morley	Committee	☎	Equipment Curator.
Ted Sampson	Committee	☎	Tomline Refractor tutoring.
Eric Sims	Committee	☎	Newsletter
Mike Whybray	Committee	☎	Librarian. Workshops
Paul Whiting FRAS	Committee	☎	Visits by outside groups.
Bill Barton FRAS	Committee	☎	Safety & Security
Peter Richards	Co-opted	☎	Lecture Meetings Email Distribution Lists

# HAPPY NEW YEAR!!

## Annual General Meeting Saturday

### 14<sup>th</sup> from 8pm...

\*\*\* NOTE\*\*\*

**This year's AGM will not be held at the school – meeting venue now moved to the Methodist Church Hall, Blackhorse Lane, Ipswich.**

## DIARY FOR JANUARY

<b>MONDAY</b>	<b>SMALL TELESCOPES OBSERVING NIGHTS</b> 2 <sup>nd</sup> , 16 <sup>th</sup> Orion ☎ Paddy O'Sullivan
<b>WEDNESDAY</b>	<b>OBSERVATORY CLUB NIGHTS</b> 4 <sup>th</sup> , 11 <sup>th</sup> , 18 <sup>th</sup> , 25 <sup>th</sup> ☎ Martin Cook 01473 711511 OR Roy Gooding 01473 462977 (mobile)
<b>WEDNESDAY</b> 11 <sup>th</sup> <b>Science Classroom</b> from 7.45pm	<b>OASI WORKSHOP</b> <i>'Getting Started - and Keeping going in Astronomy'</i> Presented By Ted Sampson ☎ Mike Whybray
<b>FRIDAY</b> 27 <sup>th</sup> 8pm <b>Methodist Church</b> <b>Hall, Black Horse</b> <b>Lane, Ipswich</b>	<b>***LECTURE MEETING***</b> <i>'An Introduction to Radio Astronomy in the BAA'</i> Presented by Laurence Neville BAA Radio Astronomy Section Director ☎ Peter Richards
<b>SATURDAY</b> 14 <sup>th</sup> 8pm <b>Methodist Church</b> <b>Hall, Black Horse</b> <b>Lane, Ipswich</b>	<b>ANNUAL GENERAL MEETING</b>  Please note the new venue – Just by the Police Station in the town centre - parking directly outside <b>AND an adjacent Public House!</b> ☎ Ken Goward

### SOCIETY PRIMARY CONTACTS

CHAIRMAN Kenneth J Goward FRAS ☎ (daytime & evenings)  
SECRETARY Roy Gooding ☎ (daytime) (evenings)  
E-MAIL QUERIES ipswich@ast.cam.ac.uk  
Contact details for the full Committee may be found on the inside back page

#### Society Trustees

Roy Adams David Brown David Payne  
Hon President  
Professor Allan Chapman D.Phil MA FRAS