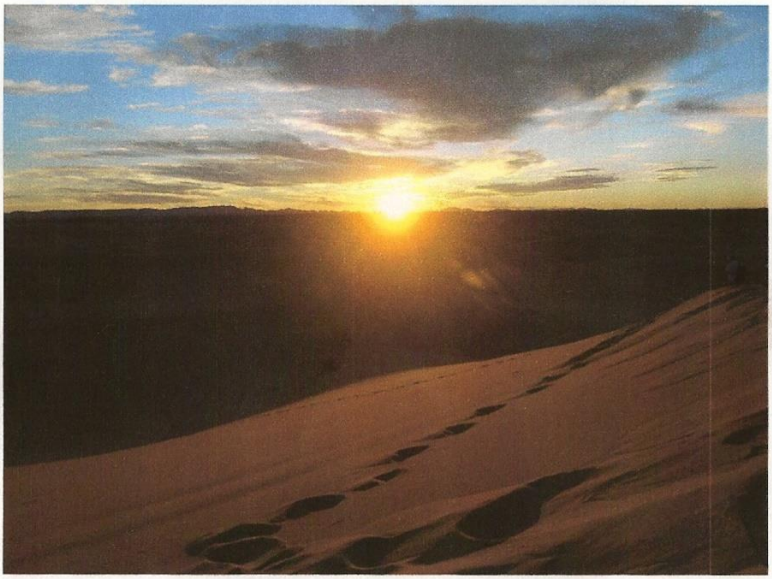
The Newsletter

of the

Orwell Astronomical Society (Ipswich)

2011 Registered charity no. 271313

JANUARY www.oasi.org.uk No 459



SUNSET OVER THE SAHARA DESERT, MAROCCO.
OCTOBER 2010

A nice warm picture picture to help you through the dark cold winter months. Sent in by Tina Hammond.

Society News (Roy Gooding)

1 AGM Saturday 29th January 2011

All members are invited to attend the 2011 AGM. The venue is at the Methodist Church Halls, in Blackhorse Lane. The meeting will start at 20:00

Please note changed date!

(The date had to be changed to accommodate the Star Party dates in Christchurch Park, and the Church Hall not being available on 22nd)

2 Access into the School Grounds and Observatory Tower

Please use the third gate into the school grounds, this is the gate behind the Gym. If the Black door entrance at the base of the observatory tower is locked, you will have to phone someone in the observatory to let you in. My mobile number is [redacted]. (Roy Gooding) alternatively the Observatory mobile is [redacted] during meeting hours. The gate code is on the back of your membership card

3 Welcome to New Members

Paddy Tibenham Sue & John Beech Dr. James Roberts Tom Crow

4 Events Programme for 2011

This provisional event list will be updated through out the year

Meeting	Venue	Date
Workshop Introduction to the Tomline Refractor Martin Cook & assistants	At the observatory	Wednesday 12th January 20:15
AGM	**Methodist Church Halls, in Blackhorse Lane**	**Saturday 29th January 20:00**
Workshop Measurung the speed of light Mike Whybray	Nacton Villlage Hall	Wednesday 2nd February 19:45
Astro Fest	Kensington Conference & Events Centre London	4th & 5th February
Workshop Topic TBA	Nacton Villlage Hall	Wednesday 2nd March 19:45
BAA one day meeting	UEA Norwich	Saturday 7th May

5 Observational Out Reach Meetings 2011

Winter Star Party: Christchurch Park

Meeting	Venue	Date
Astronomy in the Park "Star Party" 1st option	Christchurch Park On top of the hill	Saturday 8th January 19:00 to 21:00
Astronomy in the Park "Star Party" 2nd option if 1st is cloudy	Christchurch Park On top of the hill	Saturday 15th January 19:00 to 21:00
Astronomy in the Park "Star Party" 3rd option if 2nd is cloudy	Christchurch Park On top of the hill	Saturday 12th February 19:00 to 21:00

Astronomy in the Park "Star Party" 8th January

If the 8th is clouded out the event will roll over to the next date. The event will be marshalled by the Park Rangers and will be by invitation only. The Park staff will also be looking after the visitor arrangements. I have mentioned that we could easily accommodate 100 visitors. Last year we had 3 telescopes in use, but if there are more all the better.

Uranus transits the meridian	16:38
Jupiter transits the meridian	16:41
Moon transits the meridian	14:27
Moon sets	19:50
Uranus sets	22:32
Jupiter sets	22:33

What entrance should we use	Westerfield Road The park ranges will be at the entrance
Set up time.	If you plan to bring a telescope, please arrive at about 18:15. This will give about 45 minutes to set up. If you would like to come long and help, please do so. It may useful to have your member ship card to show the Park Rangers. The park gates will be closed at 19:30 and will not be re-opened until the end
Observing Location	On the hill
Start time	19:00
End time	21:00 May be earlier if visitors have all left

Event Cancellation

I will contact Sam Pollard in the afternoon to determine if the weather is suitable to run the event. If it is cancelled the answer phone in the visitors centre will have a message saying so. (Tel. 252435). Alternatively you can call me ([redacted] or [redacted]).
If you are able to help, please contact Roy Gooding for this event

Spring Star Party: Orwell Country Park

Meeting	Venue	Date
Orwell Country Park "Star Party" 1st Option	Orwell Country Park car park	Saturday 12th March 19:00 to 21:00
Orwell Country Park "Star Party" 2nd option if 1st is cloudy	Orwell Country Park car park	Saturday 9th April 20:00 to 22:00

The Orwell Country Park "Star Party" datails to be confirmed

Astronomy in the Park: Spring Event

Meeting	Venue	Date
Astronomy in the Park "Observing the sun" 1st option	Christchurch Park Reg Driver Centre	Saturday / Sunday 21st / 22nd May 11:00 to 16:00
Astronomy in the Park "Observing the sun" 2nd option if 1st is cloudy	Christchurch Park Reg Driver Centre	Saturday / Sunday 28th / 29th May 11:00 to 16:00

Night Sky (January)

All times GMT

Moon

New Moon	1st Quarter	Full Moon	3rd Quarter
4th	12th	19th	26th

Object	Date			Mag	Notes
		Rise	Set		
Sun	1	08:04	15:54		
	31	07:38	16:40		
Mercury	1	06:19	14:40	-0.1	Mercury is very low down on the predawn sky . Greatest western elongation is on the 9th
	31	07:04	14:59		
Venus	1	04:01	13:24	-4.2	Venus is a prominent object in the predawn sky
	31	04:47	13:04		
Mars	1	08:42	16:26	1.1	Mars is too close to the sun this month to observe
	31	07:50	16:39		
Jupiter	1	11:11	22:51	-2.2	Jupiter is now in Pisces. It is now rapidly disappearing in the western sky. A clear horizon to the west is a requirement.
	31	09:21	21:22		
Saturn	1	00:38	11:59	0.7	Saturn is in Virgo and is well placed to observe by midnight.
	31	22:38	10:03		
Uranus	1	11:08	22:55	5.7	Uranus is about half a degree above and to the right of Jupiter.
	31	09:12	21:02		
Neptune	1	10:14	20:02	7.8	Neptune remains in Capricornus
	31	08:18	18:10		

Partial Solar Eclipse

There is a partial solar eclipse on January 4th. The eclipse begins before sunrise. At sunrise the sun will about 67% obscured

Meteor Showers

Shower	Maximum	Limits	ZHR
Quandrantids	3rd January 18:00	1st to 6th January	80?

Source BAA Handbook

LUNAR OCCULTATIONS DURING 2011

2011 promises to be a good year for observers of lunar occultations! During the year, there are over 700 total lunar occultations which are potentially observable from East Anglia, although many involve faint stars. The track of a grazing occultation crosses the region, although it provides an opportunity only for the dedicated observer: it passes almost 45km distant from Ipswich at its closest point, the star involved is faint and the event takes place in the early hours of the morning! There are no good planetary occultations visible from the region during 2011.

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 ±6.75° of the ecliptic. This band defines the area within which to search for lunar occultations. I use a suite of computer software to undertake the search. 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 locations 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,* 2nd 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 to predicted event times.)

BRIGHT OCCULTATIONS

Table 1 lists the occultation events during the years of stars down to magnitude 6.0 where the circumstances of the event are favourable. These events should be readily visible in small telescopes or binoculars.

Date	UT	D / R	Lunar Phase	Sun Alt (deg)	Star Alt (deg)	Mag	Star
14 Jan	23:11:21	D	0.73+	-58	38	4.9	zeta Ari
15 Jan	02:13:54	D	0.74+	-50	12	5.3	tau Ari
17 Jan	20:33:44	D	0.95+	-39	56	4.2	1 Gem
17 Jan	23:37:10	D	0.95+	-58	57	5.8	3 Gem
18 Jan	02:14:03	D	0.96+	-50	37	3.3	eta Gem
	03:07:37	R		-43	29		
16 Feb	01:35:09	D	0.92+	-47	36	4.9	81 Gem
17 Feb	20:02:33	D	1.00+	-27	29	5.1	6 Leo
11 Mar	23:07:17	D	0.39+	-40	17	4.3	upsilon Tau
12 Mar	00:02:48	R		-42	9		
11 Mar	23:48:55	D	0.39+	-41	12	5.5	72 Tau
12 Mar	00:10:00	R		-42	9		
13 Mar	21:14:52	D	0.59+	-29	49	3.3	eta Gem
	22:14:31	R		-36	41		
18 Mar	19:17:37	D	0.99+	-12	20	5.9	55 Leo
18 Mar	23:05:35	D	0.99+	-37	38	5.9	62 Leo
07 Apr	19:13:08	D	0.15+	-6	33	4.4	37 Tau
	20:12:34	R		-14	24		
07 Apr	19:39:24	D	0.15+	-10	29	5.9	39 Tau
	20:24:39	R		-16	22		
15 Apr	21:14:01	D	0.93+	-19	34	4.8	87 Leo
11 May	00:06:25	D	0.51+	-20	8	5.4	omega Leo
11 Aug	20:50:07	D	0.96+	-11	16	5.9	57 Sgr
19 Sep	23:39:09	D	0.55-	-37	20	5.0	109 Tau
20 Sep	00:30:48	R		-36	28		
08 Oct	19:54:57	D	0.90+	-25	31	5.0	kappa Aqr
09 Oct	23:27:50	D	0.96+	-44	37	4.9	kappa Psc
24 Oct	05:19:58	D	0.10-	-12	16	4.8	87 Leo
30 Oct	17:55:44	D	0.20+	-13	8	5.7	ZC 2595
20 Nov	02:06:59	D	0.33-	-47	10	5.9	62 Leo
	02:46:54	R		-42	15		
03 Dec	16:39:52	D	0.62+	-8	34	5.7	16 Psc

Cont/

Date	UT	D / R	Lunar Phase	Sun Alt (deg)	Star Alt (deg)	Mag	Star
03 Dec	23:52:08	D	0.64+	-60	12	4.9	19 Psc
07 Dec	21:26:45	D	0.93+	-50	56	5.8	40 Ari
09 Dec	19:09:56	D	0.99+	-30	35	5.7	ZC 665
28 Dec	16:51:55	R	0.17+	-9	25	5.1	46 Cap

Table 1. Occultations of stars of magnitude 5.0 or brighter.

The first two columns of table 1 list 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 ('+' 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 (catalogue number and common name, where one exists).

OCCULTATION SEASONS

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.

During 2011, the Moon occults the magnitude 3.3 eta Gem twice, and occults the magnitude 5.8 star 40 Ari once and grazes it once. There are no other repeated occultations of prominent stars during the year.

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 more than 10 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 his or her skill and the sky conditions.

Date	No occs	Date	No occs	Date	No occs	Date	No occs
08 Jan	11	09 Jan	11	07 Feb	18	08 Feb	11
08 Mar	13	09 Mar	19	06 Apr	12	07 Apr	15
08 Apr	46	09 Apr	18	10 Apr	23	06 May	26
07 May	45	08 May	46	30 Oct	15	28 Nov	18
29 Nov	20	27 Dec	17	28 Dec	20	29 Dec	16

Table 2. Evenings with more than 10 occultations.

The evenings during 2011 with by far the largest numbers of occultations are as follows. On 08 April the Moon passes in front of rich stars fields in Taurus; on 07-08 May the Moon passes in front of rich star fields in Gemini; on all three evenings upwards of 40 occultations are potentially visible!

PLANETARY OCCULTATIONS

There are no good planetary occultations visible from East Anglia until 2012.

GRAZING OCCULTATIONS

There are no grazing occultations of bright stars with tracks passing close to Ipswich during 2011. However, the graze track of one star, potentially visible with a telescope, does pass across East Anglia during the year. The circumstances are as follows:

Star:	40 Ari
Mag:	5.8
Date:	17 Sep
Time:	02:31
Lunar phase:	0.81 waning
Sun alt:	-23 deg
Star Alt:	56 deg
Star azimuth:	176 deg
Lunar limb:	S

The graze track across East Anglia passes 6km N of the centre of Bury St Edmunds, through Stanton and Bressingham, 3km N of Diss, through Pulham Market, 2km N of the centre of Ditchingham, 7 km N of Beccles and out to sea at Gorlston-on-Sea. Figure 1 shows the graze track.

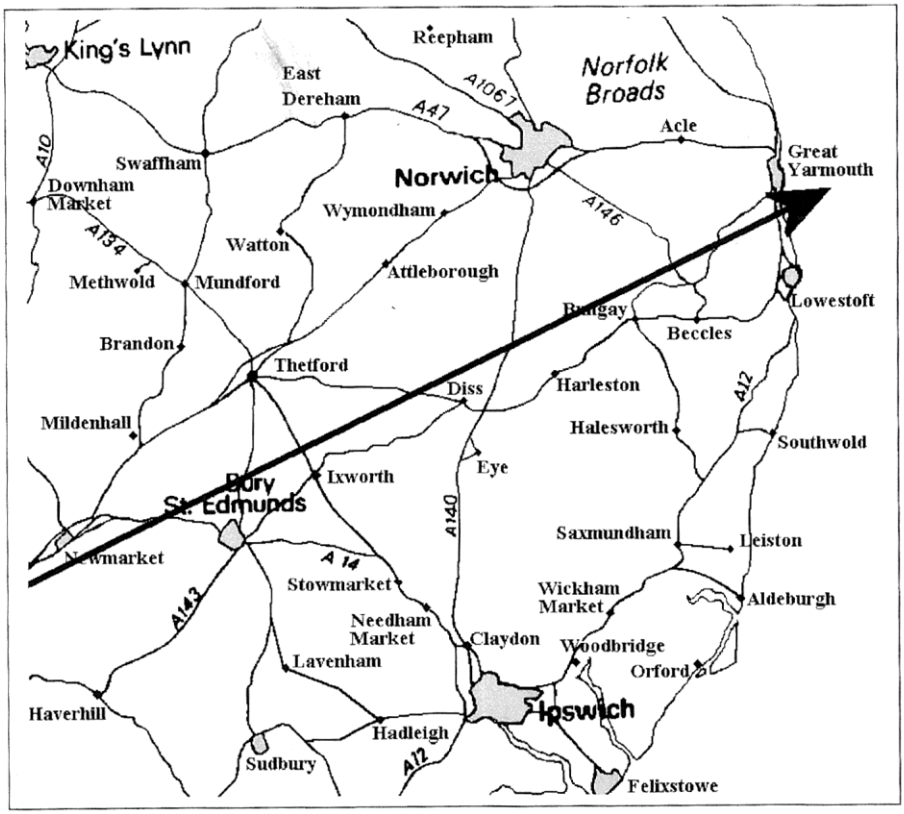


Figure 1. Graze track of 40 Ari, 17 Sep 2011.

Please contact me if you are interested in joining an observing party to travel to the graze track to observe the event.

James Appleton

OCCULTATIONS DURING JANUARY

The table lists lunar 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
10 Jan	18:40:25	D	0.34+	-23	36	6.9	ZC 3524
11 Jan	18:44:03	D	0.43+	-23	44	6.5	ZC 89
13 Jan	00:06:38	D	0.54+	-60	11	6.2	101 Psc
14 Jan	19:53:32	D	0.72+	-33	58	6.4	ZC 459
14 Jan	23:11:21	D	0.73+	-58	38	4.9	zeta Ari
15 Jan	02:13:54	D	0.74+	-50	12	5.3	tau Ari
15 Jan	22:27:37	D	0.81+	-54	53	6.9	ZC 612
16 Jan	21:15:16	D	0.89+	-45	62	7.3	1845-3943-1
17 Jan	20:33:44	D	0.95+	-39	56	4.2	1 Gem
17 Jan	23:37:10	D	0.95+	-58	57	5.8	3 Gem
18 Jan	02:14:03 03:07:37	D R	0.96+	-50 -43	37 29	3.3	eta Gem

James Appleton

Astronomy Workshops

Doors open at 7:30pm.
Workshops START at 7:45pm
Venue: NACTON VILLAGE HALL IP10 0EU (Apart from January workshop which is in the observatory)

If you are a new OASI member, or haven't been to one of these workshops before – they are a mixture of events of different characters including beginners talks, interactive workshops, hands-on observing sessions, films etc., suitable for all. They are also a chance to chat with other members over a cup of tea and a biscuit, in a venue rather warmer than the observatory dome on a winter's night!

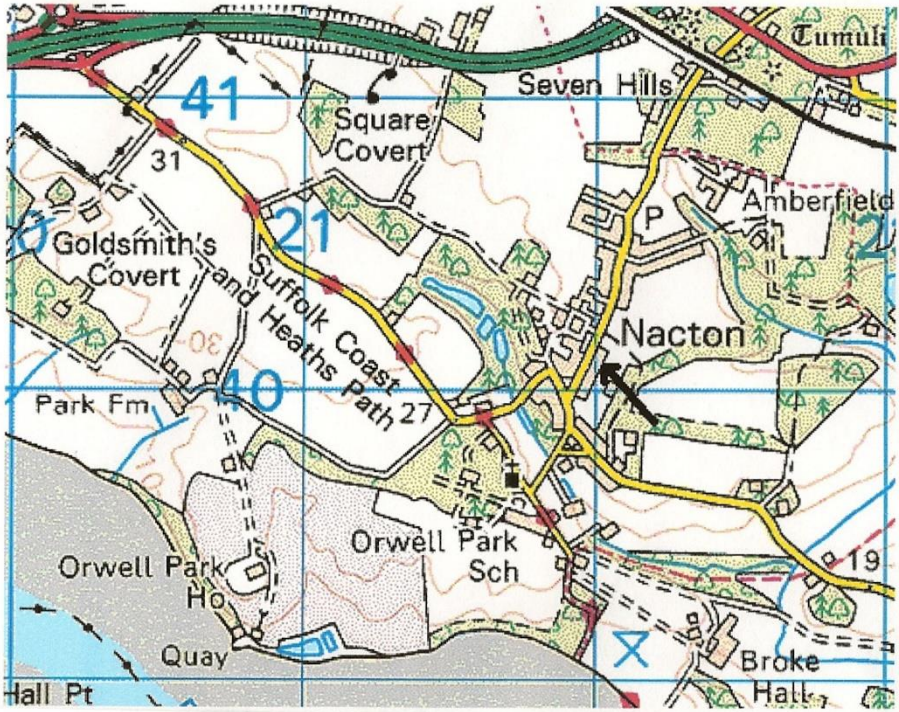
As ever, I need more volunteers to run these – you don't need to be an expert on your subject – just pick something interesting, read up about it, and come and run the event any way you like! Unless more people come forward, these will die out as an OASI activity.

Date	Event	Run by...
12th January 2011 for 8:15 Start – Orwell Park Observatory	**Introduction to using the Tomline Refractor** This will allow new members to familiarise themselves with the telescope and observatory	**Martin Cook and assistants**
2nd February 2011	**Measuring the Speed of Light** Historical methods including Ole Rømer's method, and more modern ones. Hoping to sort out some practical exercises!	**Mike Whybray**
9th March	Offers welcome!	**A Volunteer**

Mike Whybray Workshops organiser
[redacted] (Mobile)
(Home)

Workshops venue: NACTON VILLAGE HALL IP10 0EU (next to the small village school, just below and left of the N in Nacton on the map).

Please park on the same side of the road as the hall, but avoid parking on the white lines which mark clear spaces for various driveways and passing places.



The Society Committee for 2011

If you would like to stand for the committee for 2011 please return this form to Roy Gooding 2 weeks before the the AGM. There about 4 /5 committee meetings in the year. Every committee member is given responsibility.

All that is needed is your name, a proposer and a seconder.
Existing members who wish to remain on the committee for 2011 need not reapply

Name _____

Proposer _____

Seconder _____

WORD SEARCH

I	C	L	A	S	O	N	T	D	P
P	H	O	B	O	S	M	H	A	U
O	A	J	E	F	P	T	E	R	C
T	R	I	T	O	N	L	B	S	K
Q	O	R	S	A	P	M	E	U	X
H	N	T	I	L	W	X	K	M	J
M	B	L	S	B	I	A	N	C	A
O	D	E	F	O	X	T	I	R	N
O	Z	D	M	A	N	A	J	O	U
N	U	A	Z	W	A	T	L	A	S

Can you find ten satellites of these planets in the above square - and match the planet and moon!

1	Earth	6	Saturn
2	Pluto	7	Neptune
3	Uranus	8	Mars
4	Jupiter	9	Saturn
5	Uranus	10	Jupiter

OASI Committee Contacts & Responsibilities

Neil Morley	Chairman	☎ [redacted]	Chair committee meetings. Represent OASI to external bodies.
Roy Gooding	Secretary	☎ [redacted]	Respond to enquiries. Press & publicity. Observatory decoration. Open days.
Paul Whiting FRAS	Treasurer	☎ [redacted]	Finance. Visits by outside groups.
James Appleton	Committee	☎ [redacted]	Minutes of committee meetings. Web site.
Bill Barton FRAS	Committee	☎ [redacted]	Safety & security.
Martin Cook	Committee	☎ [redacted]	Membership. Tomline Refractor maintenance.
Tina Hammond	Committee	☎ [redacted]	Librarian.
Peter Richards	Committee	☎ [redacted]	Lecture meetings. Email distribution lists.
Eric Sims	Committee	☎ [redacted]	Newsletter.
John Wainwright	Committee	☎ [redacted]	Equipment curator.
Mike Whybray	Committee	☎ [redacted]	Workshops.

Trustees

Mr Roy Adams
Mr David Brown
Mr David Payne

Honorary President

Dr Allan Chapman D.Phil MA FRAS

DIARY for JANUARY

Monday 3rd - 17th STONs	**SMALL TELESCOPES OBSERVING NIGHTS AT THE OBSERVATORY** Main observing targets: M1, 34, 35, 37, 36, 38, 42, 43, 76, 78, & associated Constalations. ☎ Paddy O'Sullivan [redacted] ☎ Gerry Pilling [redacted]
Wednesdays From 8.00pm	**OBSERVATORY CLUB NIGHTS** Observing with the Tomline Refractor and other telescopes if skies are clear. ☎ Martin Cook [redacted], mobile [redacted] ☎ Roy Gooding [redacted], mobile [redacted]
Wednesday 12th 8.15pm **At Orwell Park Observatory**	**OASI WORKSHOP** INTRODUCTION TO USING THE TOMLIN REFRACTOR This will allow new members to familiarise themselves with the telescope and observatory. ☎ Mike Whybray [redacted]
Thursday 13th 8.00pm 20th 8.00pm 27th 7.30pm	**OBSERVATORY VISITS BY LOCAL COMMUNITY GROUP** AJS & Matchless Society East Ipswich Rotary Ipswich High School ☎ Paul Whiting FRAS [redacted]
Saturday 29th January 2011 **8:00pm**	**ANNUAL GENERAL MEETING** **Methodist Church Hall** **Black Horse Lane** **Ipswich**

Winter Star Party: Christchurch Park
Read inside for dates and conditions.

Society Contact Details

Observatory tel. no. (meeting nights only): [redacted]
Secretary: Roy Gooding [redacted] (day) [redacted] (evening)
E-mail queries: **ipswich@ast.cam.ac.uk**
Chairman: Neil Morley [redacted]