



The Newsletter

of the
Orwell Astronomical Society (Ipswich)



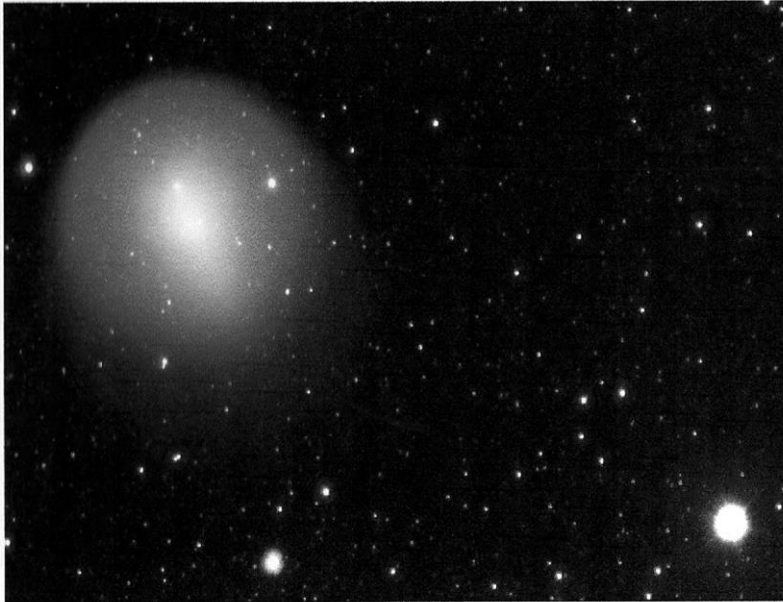
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2008 January

No 426

THE OUTBURST OF COMET P/HOLMES (17P)

In common with many members, OASI Treasurer Mike Harlow has been observing the above object since it was reported in outburst 2007 October 24. Normally around Magnitude 17, estimates vary between Mag 2.6 and 2.8 for this latest outburst. Reproduced below is an image obtained by Mike from his home in Bucklesham 15.11.07 between bands of cloud, when in the same field of view as Mirphak (Alpha Persei @ Mag 1.8) lower right.



See inside for more of Mike's excellent images

Society News (Roy Gooding)

1 2008 AGM Saturday 12th January

The 2008 AGM will be held on Saturday 12th January. The venue is at the Methodist Church Hall, starting at 20:00. All members are invited to attend this meeting. As usual this will be a review of the society activities in 2007, plans for 2008 and the election for the 2008 committee.

2 Events for 2008

This event list will be updated through out the year

Meeting	Venue	Date
Workshop Meeting His Lordship's Monster Ken Goward	Nacton Village Hall	Wednesday 9 th January 19:30
2008 AGM	Methodist Church Hall Blackhorse Lane	Saturday 12 th 20:00
Workshop Meeting The Lifecycle of a Star Paul Whiting	Nacton Village Hall	Wednesday 6 th February 19:30
Christmas Meal		Wednesday 11 th December?

3 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.

4 Welcome to New Members

Anthony Conway

5 Lecture Meeting Venue

Our town lecture venue is now at the Methodist Church, in Blackhorse Lane. The Church has a car park, can 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 former 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

6 New Session of Night Sky Section Meetings

If there is sufficient interest again I will restart meetings of the Night Sky Section. 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

Night Sky (January)

All times GMT

Moon	New Moon	1st Quarter	Full Moon	3rd Quarter
	8 th	15 th	22 nd	30 th

Object	Date	Times		Mag.	Notes
		Rise	Set		
Sun	1	08:13	16:03		
	31	07:47	16:49		
Mercury	1	09:02	16:32	-0.8	Mercury is close to the sun this month, and will not be easily observed
	31	08:01	18:05		
Venus	1	05:02	13:46	-3.9	Venus remains a prominent object the pre-drawn sky
	31	06:05	14:00		
Mars	1	14:30	08:10	-1.1	Mars is very well placed for observations, in Gemini.
	31	12:12	05:45		
Jupiter	1	07:45	15:27	-1.8	Jupiter is now in Sagittarius
	31	06:14	14:00		
Saturn	1	21:08	11:01	0.5	Saturn remains in Leo
	31	19:01	09:02		
Uranus	1	11:00	21:59	5.8	Uranus is in Aquarius
	31	09:04	20:08		
Neptune	1	10:10	19:36	7.8	Uranus is in Aquarius
	31	08:14	17:44		

Meteor Showers

Shower	Maximum	Limits	ZHR
Quadrantids	4 th 6:00 January	1 st to 6 th January	100?

LUNAR OCCULTATIONS DURING 2008

By James Appleton

This article provides a summary of lunar occultations visible from East Anglia during 2008. There is a comprehensive listing at Orwell Park Observatory, containing full observational details.

2008 promises to be a good year for occultation observers! There are approximately 660 total lunar occultations which are potentially observable from East Anglia during the year, although many involve faint stars. In 2008 the Moon occults the Pleiades three times, although the circumstances of the three occultations are not favourable. Also during the year two grazing occultations and two planetary occultations are visible 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 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.)

BRIGHT OCCULTATIONS

There are 12 occultations during the year of stars down to magnitude 5.0 where other circumstances of the event are favourable. Table 1 lists the occultations.

Date	Time (UT)	D R	Lunar Phase	Sun Alt (d)	Star Alt (d)	Mag	Star
17 Feb	23:54:37	D	88% +	-50	52	5.0	57 Gem
29 Feb	04:43:39	D	49% -	-19	8	2.8	tau Sco
	05:52:51	R		-8	10		
14 Mar	18:50:58	R	54% +	-9	65	4.6	136 Tau
12 May	20:13:38	R	57% +	-5	44	4.4	31 Leo
13 May	22:55:35	D	68% +	-18	25	4.8	58 Leo
	23:35:41	R		-19	20		
20 Sep	02:26:26	D	73% -	-27	59	3.9	Maia
	03:19:40	R		-21	62		
22 Oct	04:53:18	D	42% -	-16	51	3.9	delta Cnc
13 Nov	18:26:23	D	99% -	-21	22	3.7	Electra
	19:06:58	R		-28	28		
13 Nov	19:14:15	D	99% -	-29	29	2.8	Alcyone
	20:11:21	R		-37	37		
13 Nov	19:55:53	D	99% -	-35	35	3.6	Atlas
	20:41:31	R		-42	42		
06 Dec	21:46:06	D	60% +	-53	26	4.5	lambda Psc
	22:31:27	R		-57	20		
13 Dec	21:08:21	D	98% -	-48	38	3.1	epsilon Gem
	22:11:21	R		-56	47		

Table 1. Occultations of stars of magnitude 5.5 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).

All of the occultations of table 1 should be readily visible in binoculars or small telescopes.

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.

The Moon can occult four first magnitude stars, namely Aldebaran, Spica, Antares and Regulus. During recent years, there has been only one occultation season of a first magnitude star, namely Regulus during 2007. During 2008, no occultations of first magnitude stars are visible from East Anglia.

A season of occultations of the Pleiades began in 2007; during that year the Moon occulted the Pleiades on four occasions visible from East Anglia. In 2008, the Moon will occult the Pleiades three times. However, none of the opportunities presents a particularly favourable observing opportunity. Brief details are as follows:

- Evening of 12 March – Sun sets during the occultation.
- Morning of 20 September – bright waning Moon (phase 73%).
- Evening of 13 November – full Moon.

The occultation season of the Pleiades continues through to 2009.

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 his or her skill and the sky conditions.

Date	No. occs.	Date	No. occs.	Date	No. occs.
11 Jan	12	13 Jan	19	10 Feb	14
21 Feb	13	11 Mar	27	12 Mar	15
14 Mar	17	08 Apr	14	10 Apr	83
11 Apr	25	13 Apr	13	08 May	45
09 May	46	02 Dec	14		

Table 2. Evenings with 12 or more occultations.

The large numbers of occultations on the evenings of 08-13 April are associated with the passage of the Moon in front of the rich star fields of Taurus and Cancer. On 08 April, the Moon passes within 2° of the Pleiades. Its apparent motion eastwards then carries it into the Milky Way, close to the galactic equator in Taurus on 10 April and in front of the Beehive Cluster (M44) in Cancer on 13 April. On 08-09 May the Moon appears to pass through the rich star fields of the Milky Way into western Gemini.

There are two lunar eclipses during 2008, with details as follows:

21 Feb: total lunar eclipse. Times of umbral contact are (UT): U1 01:43, U2 03:01, U3 03:51, U4 05:09.

16 Aug: partial (umbral) lunar eclipse. Times of umbral contact are (UT): U1 19:36, U4 22:44.

When the Moon is in umbral eclipse the glare which it produces is markedly reduced enabling observation of occultations of much fainter stars than would normally be possible.

PLANETARY OCCULTATIONS

Both Venus and Mars are occulted during 2008. Table 3 provides details for Venus. The interpretation of the columns of table 3 is the same as those of table 1. The occultation of Mars takes place shortly after midday on 10 May and will be very difficult to observe.

In addition, there is a close approach of the Moon to Neptune: the Moon will appear within one tenth of a lunar radius of the planet on 06 November. However, the Moon's phase will be 56% and Neptune will be shining at magnitude 7.9 and so difficult to discern in the vicinity of the Moon.

Date	Time (UT)	Phen	Lunar Phase	Sun Alt (d)	Planet Alt (d)	Planet Mag	Planet
01 Dec	15:49:02	D	0.13+	-1	13	-4.1	Venus
	17:18:07	R		-13	8		

Table 3. Planetary occultation.

GRAZING OCCULTATIONS

The tracks of two grazing occultations pass through East Anglia during 2008. Unusually, the events occur on consecutive evenings! Table 4 summarises the circumstances.

Date	Time (UT)	Lunar Phase	Sun Alt (deg)	Star Alt (deg)	Star Azi (deg)	Limb	Mag	Star
12 Mar	18:25	31%+	-5	54	231	S	6.4	Asterope
13 Mar	23:07	44%+	-39	24	282	N	6.9	ZC746

Table 4. Grazing occultations.

The first and second columns of table 4 give the date of the graze and the approximate time of closest approach to Orwell Park. Column three gives the lunar phase ('+' for waxing and '-' for waning), while column four gives the altitude of the Sun (below the horizon). Columns five and six give the position of the star. Column seven specifies the lunar limb which grazes the star, while the final two columns detail the star and its visual magnitude.

Figure 1 illustrates the graze tracks over East Anglia.

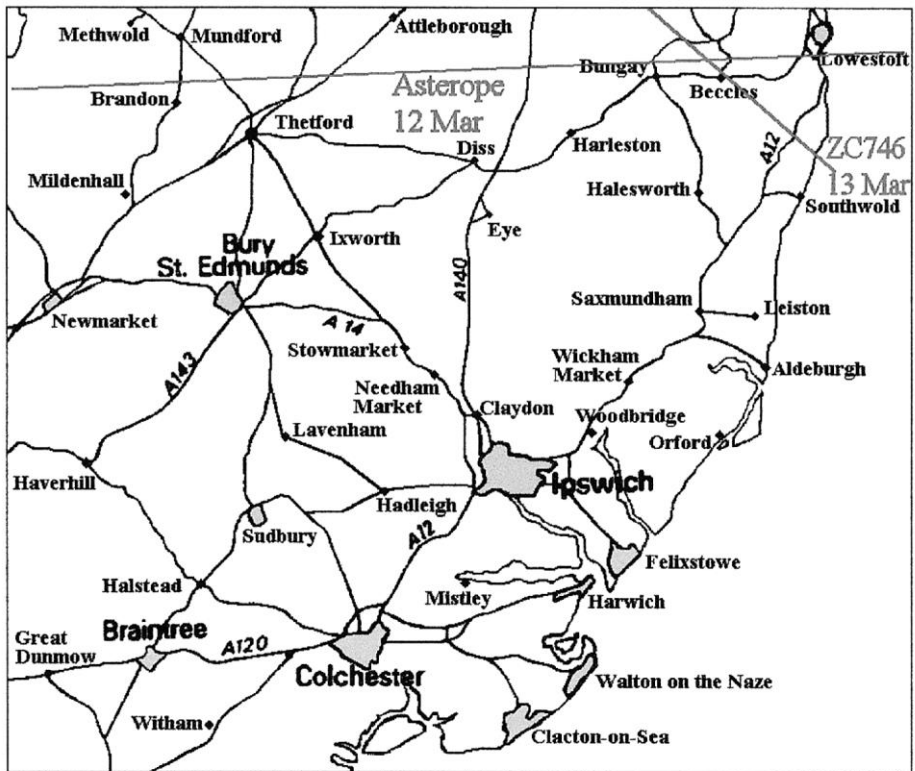


Figure 1. Graze tracks for 2008.

The graze tracks over East Anglia are as follows:

Asterope, 12 Mar: Track at approximately constant latitude. N of Brandon, N of Thetford, S of Attleborough, N of Bungay, N of Beccles and out to sea at Lowestoft.

ZC746, 13 Mar: The Wash, Fakenham, South Norwich, Beccles and out to sea N of Southwold.

I will calculate and print more detailed maps if there is interest from members of OASI in mounting graze observing expeditions.

James Appleton

25 Nov 2007

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.

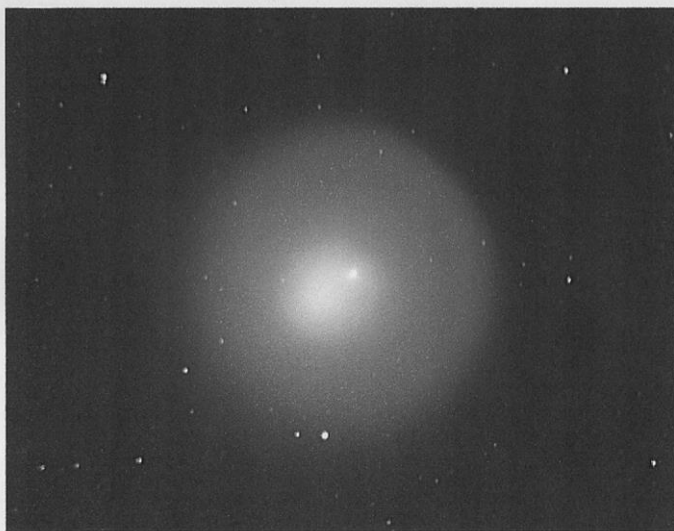
Date	Time (UT)	D R	Lunar Phase	Sun Alt (d)	Star Alt (d)	Mag	Star
12 Jan	18:19:16	D	0.18+	-19	21	6.9	ZC 3357
12 Jan	19:25:39	D	0.18+	-29	13	7.2	Hip 113192
14 Jan	19:00:31	D	0.38+	-25	38	5.7	51 Psc
	19:58:57	R		-34	31		
15 Jan	17:28:17	D	0.49+	-11	51	7.0	ZC 197
16 Jan	18:15:32	D	0.61+	-18	56	7.4	AD Ari
17 Jan	17:16:35	D	0.71+	-9	52	6.8	ZC 470
17 Jan	18:31:55	D	0.72+	-20	59	7.3	Hip 15267
18 Jan	01:49:07	D	0.74+	-53	17	7.4	ZC 513

James Appleton

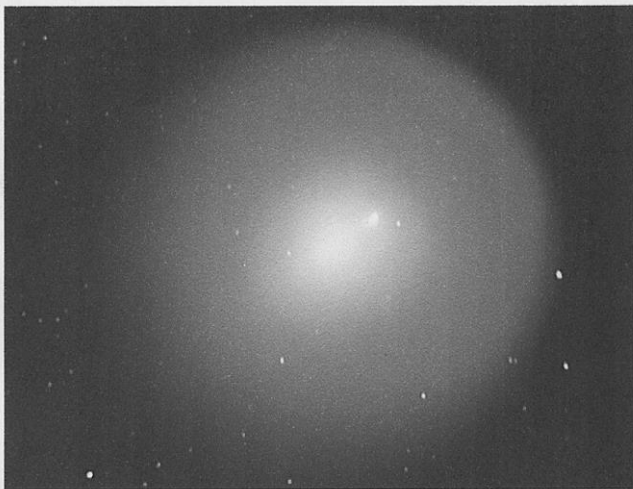
MORE COMET HOLMES IMAGES BY MIKE HARLOW



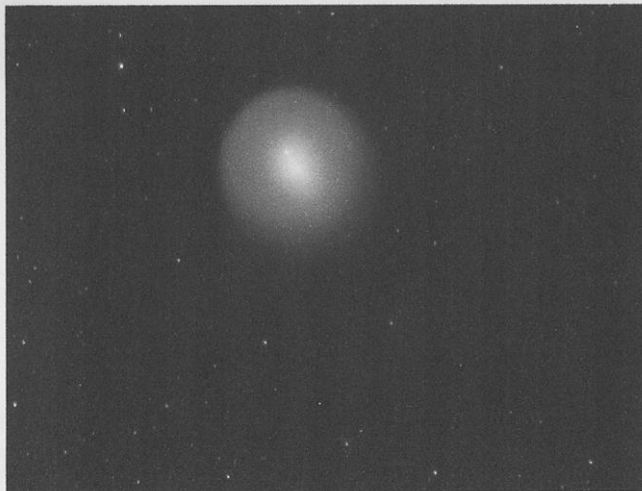
29.10.07 just after midnight with between 5 and 40 second exposures on my 34cm F/4 Newtonian using Starlight Xpress MX916 CCD. The outer halo is now 6 arcmin across. Two background stars are visible close to the comet nucleus which is the one on the right in the group of three. The brightest of the two stars is SAO 24247.



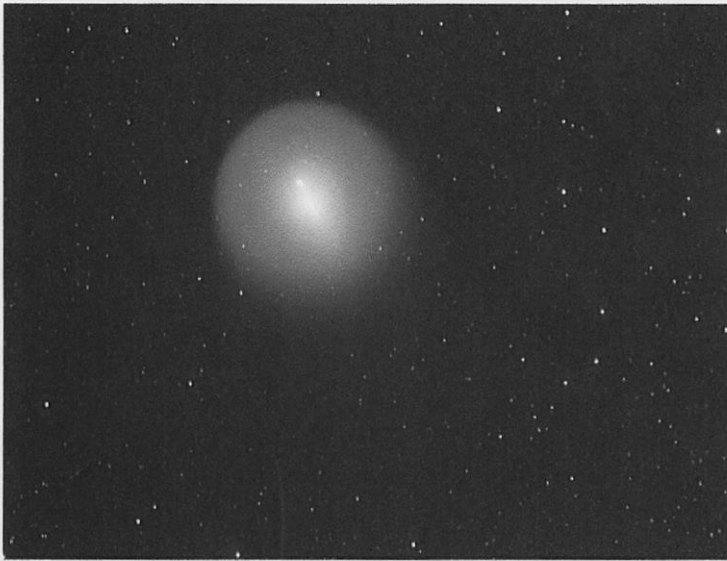
01.11.07 20.11UT. 30 seconds with Starlight Xpress MX916 CCD on a 34cm F/4.0 Newtonian. Field of view 23' x 17'. North to the right.



04.11.07. Holmes continues to expand and is now close to filling the field of view of my CCD on the 34cm Newtonian. I estimate from the latest image taken at 23.31UT that it was approximately 15 arc min across. Exposure time 30 seconds.



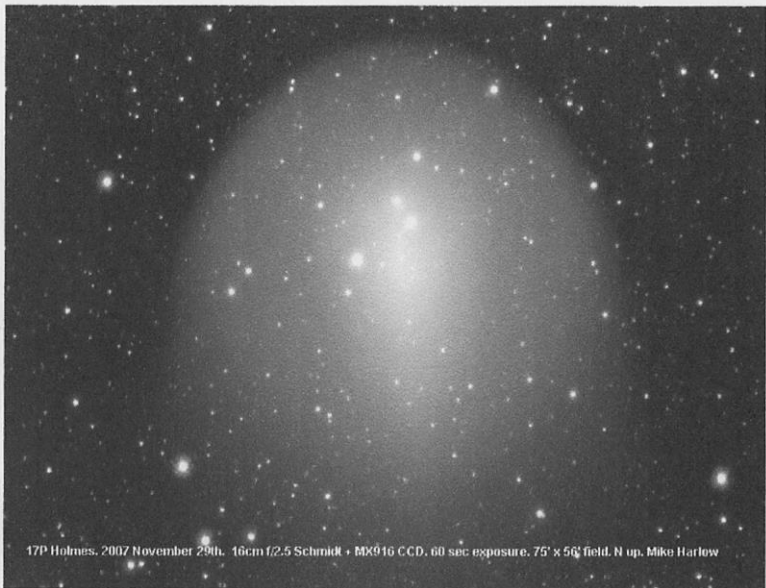
06.11.07. Now that Holmes is bigger than the field of view of my telescope I've switched to imaging with the Schmidt camera to give a 72' x 56' field. After a nice clear day the clouds rolled in as it got dark so the only images I got were a bit washed out. A 1 minute exposure reaching mag 14 through to murk showing Holmes to be about 18' across.



09.11.07. Despite strong winds last night I managed to get yet more Holmes images. Measured across the extended coma, perpendicular to the 'tail', it is now ~ 21 arc min across. $72' \times 56'$ field of view, 1 minute with 16cm F/2.5 Schmidt + MX916 CCD.



11.11.07. Estimated size across the extended coma is ~ 26 arc min. 60sec 16cm F/2.5 Schmidt + MX916 CCD. 21.19UT



29.11.07. Holmes is now significantly fuzzier, and bigger, than when last imaged.



05.12.07. Holmes continues to get bigger and fainter but is still well worth observing.

A Long Time To Wait

Having been involved in the committee decision to build a Millennium telescope back in 1998, and then spending several hours helping in the early grinding of the mirror, it is hard to explain why it was only at the last Workshop on Nov 7th 2007 that I had my first look through the eye piece at an astronomical target – comet Holmes in fact – when the telescope has been functioning for some time. The reason was not lack of interest, and certainly not lack of confidence that our members were capable of building it, but that there were more able and technically inclined members than I who took the lead in its design and construction. True the building process had its delays, simply due to the time needed to move from concept to reality – astronomers have other things to do, and lives to live – and there were some design difficulties to overcome. Great credit is due to the members who began, and after a period of uncertainty, continued the process which led to the reality.

But the main point of writing this article is to say that it was worth the wait! I arrived at the workshop venue – Nacton village hall – in time to help unload the disassembled telescope from Mike's vehicle. The base with mirror was the heaviest section and safest for two to carry, and the 'rocker', poles and top section with eye piece mounting were taken through the hall to a back room, and with Paddy's previous experience to guide us, re-assembled. Once we knew which were the short/long poles, and the long/short ones, it was not difficult. It was then carried (perhaps the most precarious part of the process) outside to a small but dark grassy area, which the play group uses. There were sufficiently long gaps in the cloud to get good views of the comet. Other optical aids had been brought by members, including large binoculars. The consensus was that the Telescope performed well, and gave a good view of the nucleus and extended area of the comet, which was by then nearing half a degree. About fifteen members were present, and with Pete and Nicky giving their usual welcomed tea and biscuit service – this time with even more welcomed hot soup - it was an enjoyable nights astronomy. The down side was that the telescope, after disassembly, had to be re-loaded into Mike's vehicle, and taken back to the observatory. But it was designed as a portable telescope. Ted Sampson.

OASI Committee Contacts & Responsibilities

Kenneth J. Goward FRAS	Chairman	☎		Press & Publicity with Secretary.
Roy Gooding	Secretary	☎		MAIN POINT OF SOCIETY CONTACT Press Publicity with Chairman. Observatory Decoration. Visits by potential new members.
Mike Harlow	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.
Peter Richards	Committee	☎		Lecture Meetings. School Lighting liaison. Email Distribution Lists.
Eric Sims	Committee	☎		Newsletter.
Mike Whybray	Committee	☎		Librarian & Workshops.
Paul Whiting FRAS	Committee	☎		Visits by outside groups. IYA 2009 Coordinator
Bill Barton FRAS	Committee	☎		Safety & Security.

*****NOTE*****

2008 OASI AGM
Saturday 12th January at the Methodist
Halls, Blackhorse Lane, Ipswich. 8PM

Diary for January

Monday 7 th & 21 st FROM 8PM	<u>SMALL TELESCOPE OBSERVING SESSIONS</u> (STONS) Observing Target: Orion & Monoceros ☎ Paddy O'Sullivan [redacted] ☎ Gerry Pilling [redacted]
Wednesdays FROM 8PM	<u>MAIN OBSERVATORY CLUB NIGHTS</u> Primary Observational targets: Nebulae and faint objects. ☎ Martin Cook [redacted] (mobile) [redacted] ☎ Roy Gooding [redacted] (mobile) [redacted]
Wednesday 9 th FROM 7.30PM Nacton village Hall	<u>MONTHLY WORKSHOP</u> <i>'His Lordship's Monster'</i> Presented by Ken Goward FRAS <i>A look at the contributions to astronomy by the Parsons family – the Earls of Rosse.</i> ☎ Mike Whybray [redacted]
Saturday 12 th 8PM Methodist Halls Blackhorse Lane Ipswich	<u>OASI ANNUAL GENERAL MEETING</u> <i>Seconded Nominations or Proposals to Roy Gooding ASP please.</i> ☎ Ken Goward FRAS [redacted]

Society Primary Contacts

Chairman: Kenneth J. Goward FRAS ☎ [redacted] (daytime & evenings)
Secretary: Roy Gooding ☎ [redacted] (daytime) [redacted] (evenings)
E-Mail queries: ipswich@ast.cam.ac.uk

Society Trustees

Mr Roy Adams Mr David Brown Mr David Payne

Society Honorary President

Professor Allan Chapman D.Phil MA FRAS

Observatory Telephone Number

Meeting nights only

[redacted]



Happy New Year!