

Wadhurst Astronomical Society

Newsletter

December 2007

MEETINGS

NOVEMBER MEETING

The Society's Tenth Birthday!

The Chairman, John Vale-Taylor welcomed everyone to the Society's tenth anniversary meeting. The Society was formed 10 years ago and the first meeting had been held in November 1997 in the Drama Studio at Uplands College. He also welcomed Joan Grace who was one of the original members at that first meeting.

One of the highlights of the evening was the fabulous inscribed chocolate cake arranged by Michael Harte and to be enjoyed in the interval between the two videos to come.

Future visits by the Society

Phil Berry said that after the success of our visit to see the Belmont House clock collection near Faversham, our guide, Jonathan Betts would willingly lead us on a tour of the Time Gallery at Greenwich Observatory where he is the Curator of Horology but that it would not be possible until 2009 on Saturday 21st of March because of his commitments. So that is a date worth noting.

Phil went on to say that one of our recent speakers was Gilbert Satterthwaite, the last observer to take official readings using the Great Aries Transit Circle at Greenwich in March 1954 and he had offered to take us on a guided tour of this world famous telescope.

Phil has been in touch with him and confirms that Gilbert would be willing to make arrangements for such a visit for June 2008 although it would be advisable to make it a weekday.

Members will be invited to discuss arrangements at the December meeting. Such ideas as visiting the Greenwich Planetarium at the same time could also be considered.

Help List

Phil also produced a sheet on which members at the meeting were invited to list any information or help they required with anything astronomical. One member requested help with setting up a reflecting telescope on an equatorial mount. Later in the evening this promoted some discussion and Phil also offered to visit the member and help set up the equipment. There will be more news of this at our December meeting.

The idea of the "Help Sheet" was regarded as a good one and it might follow that problems experienced by other members could be addressed in a similar way at future meetings.

Phil continued the meeting by introducing two videos from a collection he has. They come from a course consisting of about a hundred half-hour lectures by professor Alex Fillipenko, covering very many subjects forming the course.

The videos were being shown using the Society's own digital projector and it is hoped to find out how useful members regard them for use on occasions.

"The Intrinsic Brightness of Stars"

Alex Fillipenko began by showing the Orion constellation where the main stars appear to have a similar brightness but we are looking at their apparent brightness or Apparent Magnitude as seen from the Solar System.

Hipparchus could see about 850 stars easily and gave the brightest star Magnitude 1 and the faintest. Magnitude 6 being 100th of the brightness. Because the human eye's response to light is logarithmic, each step turns out to be a fifth root of 100 = 2.512... generally regarded as 2.5, brighter than the next magnitude. On this scale Pluto has a magnitude of 14 and the Sun, an apparent magnitude of -26.

The true magnitude or Absolute Magnitude of a star is obtained by stating its magnitude as it would appear at a distance of 10 parsecs. One parsec is the distance from a parallax of one second of arc and is a distance about 3.262 light years.

On this scale our Sun would have an Absolute Magnitude of only 4.8.

It is usual to quote the magnitude of objects as Apparent Magnitude unless otherwise stated.

Professor Fillipenko introduced the Hertzsprung – Russell diagram that shows the relationship between Absolute, Luminosity and effective temperature of stars.

He pointed out the Main Sequence that stars follow including our own Sun and then referred to the stars that formed separate groups on the diagram. One group had lower luminosity but high temperature and followed their own sequence. These were the White Dwarfs.

Another group possessed high luminance but had a far less temperature. These were the Giants and Super Giants.

“The Structure of the Milky Way Galaxy”

In the second video, Alex Fillipenko described the structure of our own galaxy. In 1920 Harlow Shapley, an American Astronomer, argued that the Sun was not the centre of the Milky Way Galaxy as had been proposed and that a system of globular clusters formed spiral arms on the galaxy as seen in some other distant galaxies.

It was later established that the centre of the galaxy was somewhere in the Milky Way seen in Sagittarius when viewed from Earth.

Using radio astronomy, a very strong source had been detected at a point called Sagittarius A, thought to be the centre of the galaxy. Optical astronomers looked at this exact position but anything at this point was obscured by dust and gas.

The proper motion of stars is not easy to measure, but using modern techniques many star' proper motion can be determined. We were shown how the stars in the Plough will have changed after ten thousand years as seen from the Earth. The well known pattern was not recognisable in the least from how they appear today.

It has been found that our Sun is about two thirds of the way out from the centre at a distance of about 26,000 light years.

A cloud of dust and gas conceals the centre of the galaxy but by using modern techniques the proper motion of stars close to the centre has been monitored for the past twenty years or so and there appears to be quite a bit of differential rotation. Some of the stars very close appear to zoom round something that cannot be seen, indicating a tremendous source of energy. The suggestion is that this might be a black hole!

Alex Fillipenko's unusual description of energy measurement involved a fly doing press-ups. One fly press-up exerts one Erg and 10,000 ergs equals one Joule. On a very large scale, how many fly press-ups go to make a black hole?

Book: The Cosmos: Astronomy for the New Millennium

Phil mentioned a book written by Alex Fillipenko and Jay Pasachoff called the Cosmos: Astronomy for the New Millennium 3rd edition : ISBN 0-495-01303-X. I have found it on the Internet at Bookfellow.co.uk at £39.47 and available within ten days. Phil points out that if anyone is interested it is important to make sure it is the 3rd edition.

It is proposed to make tne of the videos available for download by Society members through a server on the Internet but more details will be made available later.

DECEMBER MEETING

Wednesday 12th December 2007_ NOTE: THIS IS THE SECOND WEDNESDAY OF DECEMBER. Society member, Paul Treadaway is giving a talk he calls “Why Are We Here (Still)?” – Food for thought...

Talking about food, - mince pies and coffee will be at the December meeting to help celebrate the season! The meeting begins at 1930 although members are invited to arrive anytime after 1900. this is a good time to exchange ideas and discuss problems.

The venue, as always is in the Upper Room of the Methodist Church at the east end of Wadhurst High Street, opposite Uplands College. The room downstairs is used by “Weight Watchers” so it is a good idea not to get roped in since we will be eating mince pies upstairs.

FUTURE MEETINGS & EVENTS

Wednesday 16th January 2008 – Phil Berry talks about “The Strasburg Astronomical Clock”. The talk will be followed by the Society's Annual General Meeting.

Wednesday 20th February 2008 – John Vale-Taylor will be talking to Tim Bance, an amateur astronomer with a host of experience in “The Tim Bance Interview”.

Wednesday 19th March 2008 – A welcome return of Konrad Malin-Smith with his talk “The Magellanic Clouds”. this takes us just outside our own galaxy to two of the Milky Way's closest neighbours in space.

Wednesday 16th April 2008 – Greg Smye-Rumsby gives a talk he has entitled “Bits and Bobs”.

OTHER NEWS AND INFORMATION

News fro SAGAS

To all SAGAS Societies:

All of us are involved to some extent with communicating astronomy to the [public, either as new members, guests or when we arrange public events. With IYA 2009 approaching, this will become even more important if we are to help the public become engaged with the wider Universe.

To assist in this, the IAU have published a new journal on Communicating Astronomy to the Public. This is called CAP journal and free copies are available either as a PDF or can be ordered for postal delivery from the URL: www.capjournal.org/

We wish to encourage attendance at the Isle of Wight Star Party being organised by Vectis AS. Information can be found at URL: www.iowstarparty.org/

Podcast websites

Angus Macdonald has provided some very interesting websites. I have visited most of them by just going through "Google" and they are well worth the visit although some of the videos take a little time to download even with broadband (*Ed*)

He writes:

Here are details of various podcast sites of what might be termed 'astronomical interest'.

These are:

1 **Astronomycast**

This is a weekly free podcast found quite easily on the podcast section of the iTunes store in the 'Science and Medicine' section or from the Astronomycast website:

www.astronomycast.com

It consists of a weekly 'conversation' hosted by Frazer Cain (Editor of Universe Today) & Dr Pamela Gaye (visiting professor at (SIUE) they have been covering topics ranging from the elementary telescope to the complex astrophysics for more than a year, (there are now over 60 podcasts available – all free!) which can be listened to directly on line or downloaded to your iPod.

Excellent and informative

2 **Hubblecast**

A monthly video-podcast with some fantastic images and graphic explanations of 'astro-phenomena'. It describes itself as 'featuring news and images from the NASA/ESA Hubble Space Telescope in amazing HD'

3 **Jobcast**

An English version of Astronomycast. A podcast covering all aspects of astronomy from The University of Manchester's Jodrell Bank Observatory. It includes the latest news and a lot of chat and media activity. Rather more 'performance' orientated than Astronomycast.

All three are easily found on the iTunes podcast shop.

I wonder if there are some members who do not realise how simple accessing these excellent sources of interest and information really is.

Broadband is of course almost essential but the podcasts themselves can all be enjoyed directly from one's computer, an iPod or similar being useful but most certainly not essential to enjoy the vast range of podcasts that are available.

Astronomy Picture of the Day

A website carrying "The Astronomy Picture of the Day" each day with an explanation, usually by a professional astronomer, is recommended by Joan Grace. The web address is:

<http://antwrp.gsfc.nasa.gov/apod/astropix.html>

The site also carries a comprehensive list of recent pictures and their relevant information.

SKY NOTES FOR DECEMBER

Planets

Mercury is not suitably placed for observation this month with superior conjunction occurring on December 17th.

Venus is a brilliant morning object as its phase becomes more gibbous, at magnitude -4.1. Around the middle of the month it rises three and a half hours before the Sun.

Mars at magnitude -1.6 lies in the constellation of Gemini (the twins) and makes its closest approach to Earth on December 18th. At this time Mars is rising as the Sun is setting.

Jupiter is not suitably placed for observation this month due to its solar conjunction on December 23rd.

Saturn at magnitude 0.7 is in the constellation of Leo (the lion). The ring system, as seen from Earth, continues to close up and presents a more "edge on" view.

Lunar Occultations

Below are the events involving reasonably bright stars (down to around 7.5) that occur before midnight. Times are all GMT. DD – Disappearance on the Dark limb. As you can see there are far more occultations this month than there are normally. This is because on December 21st the gibbous moon again encounters the Pleiades cluster in Taurus (the bull) giving rise to a large number of events, many of which are not listed here. All times are GMT.

December Date	Time	Star (SAO Cat)	Const.	Mag	Phase	PA°
17 th	2207	128524	Pisces	7.6	DD	16
19 th	1824	92556	Pisces	6.7	DD	60
20 th	1925	93033	Aries	7.2	DD	150
20 th	2150	75531	Cetus	7.7	DD	128
21 st	1601	75987	Taurus	7.2	DD	113
21 st	1602	75988	Taurus	7.6	DD	110

21 st	1628	75990	Taurus	7.5	DD	22
21 st	2122	76126	Taurus	5.4	DD	138
21 st	2122	76140	Taurus	4.3	DD	96
21 st	2143	76159	Taurus	5.8	DD	89
21 st	2148	76164	Taurus	6.4	DD	96
21 st	2151	76137	Taurus	5.7	DD	12
21 st	2151	76152	Taurus	7.2	DD	145
21 st	2252	76155	Taurus	3.9	DD	136
21 st	2219	76183	Taurus	6.8	DD	113
21 st	2230	76194	Taurus	7.7	DD	103
21 st	2212	76804	Taurus	6.4	DD	24
22 nd	2312	76841	Taurus	7.5	DD	149
22 nd	2313	77753	Taurus	7.3	DD	64
23 rd	2010	77819	Gemini	7.2	DD	93

Meteors

One of the year's most prolific showers is the Geminids which are active from December 7th until December 16th. Maximum occurs on the 14th with ZHR predictions of 100 to 120 although these meteors are generally more slow moving than say the much swifter Perseids. It may be worth making an effort to observe them this year, as this shower will be badly affected by moonlight in 2008.

The other regular December shower, the Ursids, is itself spoilt by moonlight. The shower lasts from 17th December to the 25th with maximum occurring on the 22nd and usually has a ZHR of around 10.

Comets

As I write this, Comet 17P/Holmes is still a naked eye object in the constellation of Perseus, although by the time you read this it may have disappeared from view. To find it start with the top left star in the square of Pegasus (the flying horse). From this star follow the line of stars to your left that make up the constellation of Andromeda until you reach a group that will be Perseus. The star you arrive at will be α Perseii also known as Mirfak (spelling seems to vary), and a small fuzzy patch close to it will be the comet. With a period of just under seven years it will be interesting to see if anything unusual happens on its next return.

ISS

Below is a list of the best passes of the ISS for this month. The information given is for the satellite's position at its maximum elevation although of course it will be visible shortly before and shortly after the times given. There are many more passes that are less favourable and these can be found at www.heavens-above.com All time are GMT.

December Date	Mag	Time	Max Alt.	Azimuth
8 th	-1.6	1740	38	SSE
9 th	-2.1	1801	61	SSW
10 th	-1.3	1648	36	SSE
10 th	-0.6	1822	33	W
11 th	-2.2	1709	67	SSE
12 th	-2.5	1731	86	N
13 th	-2.5	1752	79	N
14 th	-2.4	1638	87	N
14 th	-1.3	1813	44	W
15 th	-2.5	1700	79	N
16 th	-2.4	1721	86	WSW
17 th	-1.9	1742	56	SSW
18 th	-0.6	1803	29	SSW
19 th	-1.9	1649	59	SSW
20 th	-0.6	1710	31	SSW

Events for 2008

Eclipses

Although there are four eclipses in 2008 (Two of the Sun and two of the Moon) we will be able to see something of three of them.

- February 21st – A total eclipse in the early hours of the morning (01.43 to 05.09 GMT)
- August 1st – A partial eclipse of the Sun beginning at 09.33 and ending at 11.05 BST. 22% of the Sun will be obscured. (Total from Greenland/China)
- August 16th – Partial lunar eclipse starting at 20.35 and ending at 23.44 BST. The maximum amount of the moon obscured will be 81%.

Occlusions

14th March – There is a grazing occultation of a 6th magnitude star which is visible from our corner of Kent. This is a Friday evening at the very respectable time of 21.43. As I explained in the Sky Notes in the March 2007 Newsletter.

Brian Mills

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Any material for inclusion in the January 2007 Newsletter should be with the Editor by December 28th 2007