



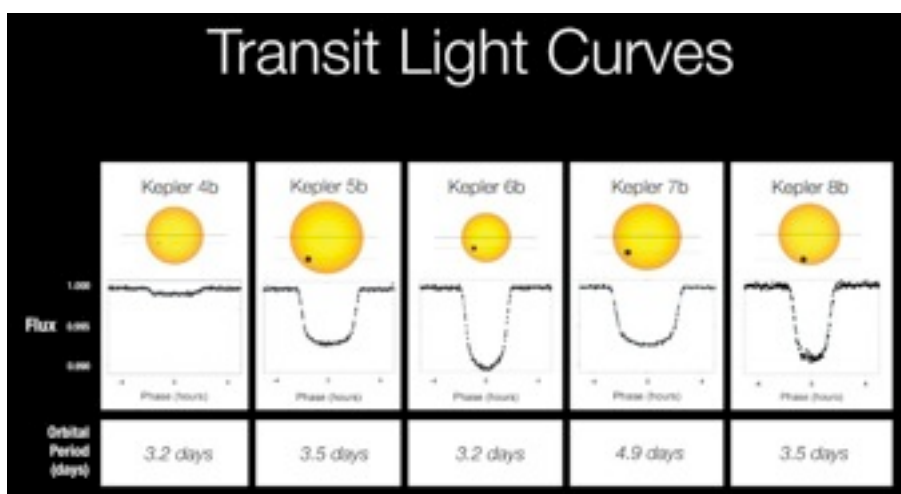
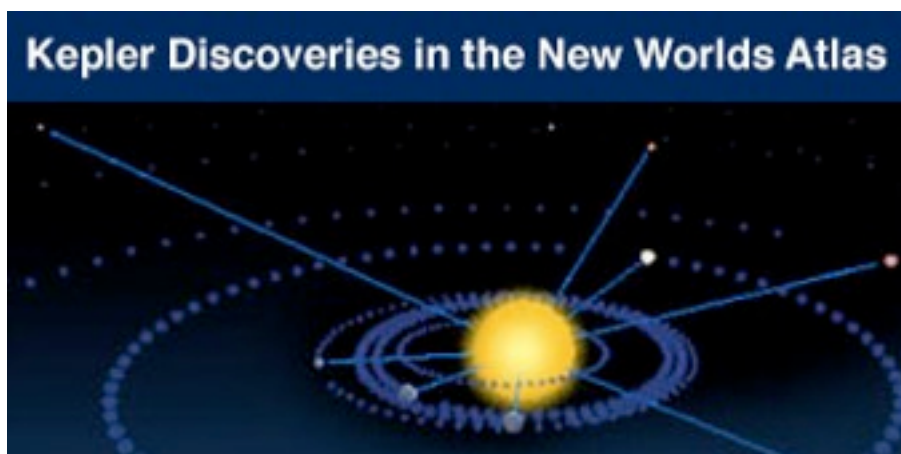
Happy New Year!..

New

Reading Astronomical Society is now on [Twitter](#). Follow us to catch up on the latest news, heads up alerts, meeting reminders etc.

Kepler's first discoveries announced!

...at the American Astronomical Society in " DC, 2010 January 4.



The centuries-old quest for other worlds like our Earth has been rejuvenated by the intense excitement and popular interest surrounding the discovery of hundreds of planets orbiting other stars. There is now clear evidence for substantial numbers of three types of exoplanets; gas giants, hot-super-Earths in short period orbits, and ice giants. The following websites are tracking the day-by-day increase in new discoveries and are providing information on the characteristics of the planets as well as those of the stars they orbit: [Extrasolar Planets Encyclopedia](#), [New Worlds Atlas](#), and [Current Planet Count Widget](#).

The challenge now is to find terrestrial planets (i.e., those one half to twice the size of the Earth), especially those in the habitable zone of their stars where liquid water and possibly life might exist.

The Kepler Mission, [NASA Discovery mission #10](#), is specifically designed to survey our region of the Milky Way galaxy to discover hundreds of Earth-size and smaller planets in or near the habitable zone and determine how many of the billions of stars in our galaxy have such planets.

Results from this mission will allow us to place our solar system within the continuum of planetary systems in the Galaxy.

(c) NASA

This Month's Talk:

January 16th

THE LUNAR '100'

Dr Lilian Hobbs (Southampton AS)

Discover how to observe Charles Wood's 100 lunar objects using a small telescope. Lilian is author of the ETX & LX90-AF guides.

From Lilian's website.. "I am the founder of [Database Evolution Ltd](#), a company which specialises in providing the right database solution. Today my focus is on the new generation column store databases and I am pleased to be representing [Vertica](#) here in Europe.

Prior to setting up my company I was a Product Manager for the [Oracle Corporation](#) for over 13 years. During that time I was responsible for a number of features in the Oracle Database which were developed either at Oracle's headquarters in San Francisco, or at the New England Development Centre in New Hampshire in the USA, although I was located on the south coast of the UK. I also developed Oracle's ILM strategy which pioneered using the database as the platform for ILM rather than a storage device.

Previously I also specialised in designing and tuning the Oracle [Rdb](#) database, formerly Digital Rdb and was a consultant in the Database Development Group. In that role I was fortunate to have worked on many systems that you probably use daily and take for granted. It can be very interesting seeing what goes on behind the scenes.

My Phd was awarded by [Southampton University](#) in the UK for research into a software tool which automated the process of creating a CODASYL database from the conceptual stage through to physical design. My first days with databases involved building the largest CODASYL database in Europe. So you can see that I have experience of all different types of database systems.

I have been interested in Astronomy for many years. My first telescope was purchased from Dixons and served me very well. Since then I have purchased several telescopes and I currently like [Meade](#) , [Takahashi](#) & [TMB](#) Telescopes.

The Meade ETX/EC-90 , is ideal for travelling and I have taken mine on several business trips which enabled me to see the transit of Mercury. Under clear skies, the views in the ETX are great and I highly recommend it.

My other telescopes include a [TMB 7"](#) and an Astro-Physics 4.75" refractor on a [Paramount ME](#) mount which is housed in a dome and is being used to observe deep-sky objects. For wide-field imaging I use a Takahashi FS60, a 70mm Borg and a 6" Takahashi Astrograph. I also have a [Coronado](#) Nearstar and a Solarmax 90 filter to observe solar prominences.

For visual use I have a 12" LX90 GPS"

Last Month's Talk:

Meeting Report 19th Dec 2009

Nick Howes of Wessex AS "Three Sides of The Sun"

Nick presented an interesting talk on the sun – covering a history of observing and imaging our nearest star.

Nick has an impressive list of credits to his name, being a contributor to many astronomy publications and books, and a collaborating partner with the Mt Palomar observatory. He is also co-holder of the Guinness World Record for largest ground based lunar image. Nick's own astronomical interests lie in solar, deep sky and lunar imaging.

Man has been observing the sun since the start of time, there are many ancient records of early man, and particularly the Egyptians and Chinese observing. The first known sunspot drawing dates from 1128, which was done from naked eye observation (whilst it is possible to see larger spots through a misty sky this is NOT recommended – we now know what damage this will do to the eye).

Thomas Harriott observed the sun 400 yrs before Galileo, but never published his works. Newton was experimenting with the sun's spectrum. Herschel was observing sunspots using a glass of claret as a filter (maybe he drank too much as he believed people lived inside the sun spots!).

1845 saw the first photograph of the sun, taken by Louis Fizeau.

1859 Richard Carrington recorded a solar flare seen in white light

1860 saw the first detailed observations of a solar eclipse from the point of the corona and flares, and established that this phenomenon was definitely part of the sun, and not the moon.

As interest in the sun and its structure grew they needed to devise safe and visually comfortable ways to observe the star, and in the early 1900s Fabry and Perot, 2 French physicists, invented the etalon and interferometer; a pair of finely ground glass plates with reflective surfaces which are accurately separated and only allow passage of specific wavelengths – hence allowing small parts of the sun's spectrum to be observed safely in detail. These are still used in quality solar observing instruments today.

Following the 1970s space age and imaging from space, amateur solar imaging really began to take off in the mid 70s when hydrogen alpha filters became available to the public.

Today we have the options of observing the sun in 3 modes;

White Light,

Hydrogen Alpha,

Calcium K (or H).

Nick then gave us a break down of the type of detail available in each mode, the equipment to use, and samples of images.

White Light Observing

In this mode we are able to see surface granules of 500-1000Km across, sunspots, pores and transits. Flares have been reported but this is very rare, and should not be expected. This is probably the simplest and cheapest method to start observing the sun. An open tube reflecting scope can be used via projection of image (but do not use a Schmidt cassegrain or similar glass covered closed tube as it may overheat internally and damage).

A refractor is ideal, but protectors must be used. This can be a cover of Baader Film over the scope, or a commercial white light filter designed to fit your scope. It is important to check for damage and

Last Month's Talk:

any gaps before every use to avoid stray light in the eye. Always protect yourself from lenses in finder scopes and other equipment as well as the main viewing lens.

Another option is the Herschel wedge – a prism which fits before eyepiece and deflects most of the light – BUT only use a good quality one, and make sure you know exactly how to use it before you start or eye damage is a serious risk.

Tips from Nick include trying a green filter in addition to the white light filter, and trying a broad band hydrogen alpha type filter in addition to improve the granularity. A well collimated scope and good optics will help. Stacking of images improves detail, so well lined up and good tracking is a must for that.

Hydrogen Alpha Observing

This will show greater surface details and also flares, filaments, prominences, and the chromosphere. A commercial Hydrogen alpha filter is needed, and must fit your scope. These come in various wavelengths, and the smaller the angstrom number the better and more detailed the view, but the more expensive the filter, the general range is 0.8A - 0.2 A, with Solar Scope having a good reputation here and making kits for adapting existing scopes which have front end filters and eyepiece back end blockers.

Some types of filter (cheaper end) will naturally degrade and need to be recoated every 10yrs or so, the more expensive will probably not. Again this can be a risk to eyesight, and if buying a second-hand filter you need to be sure of its history and effectiveness, never risk using a damaged or rusted filter.

Tips to improve the images are to try a lower band pass filter, a bigger aperture, a polarising filter, observing through fine cloud, observing very early or very late in the day, using black and white imaging rather than colour. A Philips web cam can be very effective for this role. The well known PST makes a good introduction to this mode, but some of the older models had problems with rusted filters and internal overheating melting the glues – so be careful on 2nd hand options. Many experienced observers have managed to “redesign” their PST filters into home-brew equipment.

Calcium K and H

This is observing in the ultra violet end of the sun's spectrum, showing different surface structure and flares and needs a specialist (and expensive) Calcium K (Ca-k) or calcium H (Ca-H) filter. Unfortunately this wavelength is difficult to see for older eyes, and by the time you can afford the filter you probably can't see its dim image very well! The best way to use this mode is by indirect viewing onto a screen. The filter wavelengths are 8A - 2.2A, and again the lower numbers show more fine detail, but cost more. Lunt makes good filters for this range. There were a few Ca-k PST s made which, if you can find one, are ideal.

Thanks to Nick for an interesting talk, and some detailed and impressive images.

From the Forum

<http://tech.groups.yahoo.com/group/readingastro/>



Chairperson John imaged a partial lunar eclipse!!



Peter captures Mars on 4/5th January.....



Stacked ToUcam II images x685 w 2.5 Powermate + 12" LX200

Astronomy Basics:

23rd January 2010 at 7.00pm

All About Mars

The opposition of Mars is due in one week. What exactly is it and how Mars became such an iconic planet.

All meetings start at 7.00pm in the [Loddon room, Dinton Pastures](#).

Also visit Reading Astronomical Society website at:

www.readingastro.org.uk

Geminids

From Gerry...

“Here are two pictures of Geminids taken from location 26°36'15"N, 13°11'23"E in the Ubari Sand Sea, Libya. If you put that into Google Earth there is nothing but sand but the camp currently looks like this.....”



A meteor is a bright streak of light that appears briefly in the sky. Observers often call meteors shooting stars or falling stars because they look like stars falling from the sky. People sometimes call the brightest meteors fireballs. A meteor appears when a particle or chunk of metallic or stony matter called a meteoroid enters the earth's atmosphere from outer space. Air friction heats the meteoroid so that it glows and creates a shining trail of gases and melted meteoroid particles. The gases include vaporized meteoroid material and atmospheric gases that heat up when the meteoroid passes through the atmosphere. Most meteors glow for about a second. Most meteoroids disintegrate before reaching the earth. But some leave a trail that lasts several minutes. Meteoroids that reach the earth are called meteorites. Millions of meteors occur in the earth's atmosphere every day. Most meteoroids that cause meteors are about the size of a pebble. They become visible between about 40 and 75 miles (65 and 120 kilometers) above the earth. They disintegrate at altitudes of 30 to 60 miles (50 to 95 kilometers). Meteoroids travel around the sun in a variety of orbits and at various velocities. The fastest ones move at about 26 miles per second (42 kilometers per second).

Geminids



READING ASTRONOMICAL SOCIETY

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Committee first_name.last_name@readingastro.org.uk John Talbot, Anne Chadwick, Jillian Ullersperger, Chris Menmuir, Nick Cryer, Gerry Bond, Kenelm England, Malcolm Brown, Peter Tickner, Patrick Josephs-Franks

Main Meetings (Programme is given on next page)

2009 - 2010 Session

These are held on the third Saturday of each month between September and June. The venue is St Peter's Church Hall, Church Road, Earley, just off the A329 Wokingham Road. Parking is available in the hall car park and the adjacent school playground. Meetings start at 7pm with a few short announcements, followed by the main speaker and breaking for refreshments around 8:30. The second half runs from 9pm to approx 9:45pm and consists of members' contributions.

Society Website Webmaster – John Talbot john.talbot@readingastro.org.uk

Discussion Groups

<http://www.readingastro.org.uk>

<http://tech.groups.yahoo.com/group/readingastro/>

RAST AR

The Society's magazine. Please send in articles for publication to the editor at rastar@readingastro.org.uk

Library – Kenelm England Books, DVDs, videos and telescopes are available for loan to members at meetings.

Basic Astronomy Section

Meeting at Dinton Pastures Country Park on the fourth Saturday of each month between September and June (December is the third Saturday), from 7.00pm until 9.00pm. All ages are welcome. Talks are aimed at a level that non-astronomers will understand. Please contact us before attending any meeting for the first time as the programme dates are subject to change:

Organiser: Gerry Bond gerry.bond@readingastro.org.uk

Public Observing Weekends - Dinton Pastures Country Park

Public observing sessions will be held at Dinton Pastures Country Park from 7pm onwards on 23rd/24th October 2009 and 12th/13th March 2010. Details from Gerry Bond gerry.bond@readingastro.org.uk

Society Observing Sessions

Society observing sessions will be held on selected dates, which are announced at meetings and via the discussion groups. Contact the observing co-ordinator, Alun Halsey, for more details.

Advice on Observing and Telescopes

Alun Halsey

Honorary members

G.W.Amery, A Elliott, D.M.Ratcliffe, A.Thomas, J.Trott, J.Wrigley, M.Wrigley

Registered Charity no 1076390. Trustees: A.Chadwick, V.Coney, C.Menmuir, J.Talbot

2009/10 Meeting Calendar

September 19th**SOPHISTICATED SMALL SATELLITES FROM SURREY**

Dr Stuart Eves (Surrey Satellite Technology Ltd)

A light-hearted look at current and future missions using small satellites, activities at SSTL and space sciences.

October 17th**END IN FIRE – THE ULTIMATE FATE OF THE EARTH**

Dr Robert Smith (Sussex University)

Millions of years into the future, what will happen to the Solar System and our Earth?

October 23rd/24th**PUBLIC OBSERVING WEEKEND AT DINTON PASTURES****November 21st****ASTRONOMY FROM NEW ZEALAND – OR WHAT I DID ON MY HOLIDAYS**

Bob Dryden (Abingdon AS)

Bob recounts his experiences of observing in New Zealand

December 19th (NOTE 3rd Saturday)**SOLAR IMAGING**

Nick Howes (Wessex AS)

Three sides to the sun – Practical aspects of imaging our nearest Star.

Followed by the RAS “Christmas Special”

January 16th**THE LUNAR ‘100’**

Dr Lilian Hobbs(Southampton AS)

Discover how to observe Charles Wood’s 100 lunar objects using a small telescope. Lilian is author of the ETX & LX90-AF guides.

February 20th**THE SUN KINGS**

Stuart Clark (University of Hertfordshire)

“The Unexpected Tragedy of Richard Carrington, and the Tale of How Modern Astronomy Began”.

March 12th/13th**PUBLIC OBSERVING WEEKEND AT DINTON PASTURES****March 20th****CATAclysmic VARIABLES**

Darren Baskill (University of Sussex)

Understanding how, every few months, some stars dramatically increase in brightness within just a few hours.

April 17th**POINTING A TELESCOPE**

Pat Wallace (Rutherford Appleton Laboratory)

What a telescope control computer is doing when it points the telescope accurately at an astronomical target

May 15th**IMAGING THE MOON**

Bruce Kingsley (BAA Lunar Photographic Section)

An overview of imaging techniques, including many images and video, encouraging observation of our Moon.

June 19th

Kenelm England (reading AS) Continuing the theme celebrating important and interesting astronomical centenaries.

Followed by 39th Annual General Meeting