The Messenger

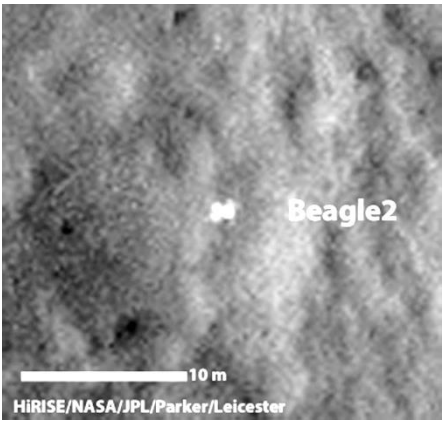
Mexborough & Swinton Astronomical Society

February 2015

Beagle 2 Found on Mars!

12 years after going AWOL, we've finally tracked down the Beagle lander. It seems to have made it relatively safely down to the surface, the parachute, and the landing bags seemed to have worked. From looking at the photograph taken by the Mars Reconnaissance Orbiter, operated by NASA, it seems that the lander did not fully deploy its "petal" arms. This meant that the crucial radio antennae was left covered by one of the undeployed solar panel petals.

"It means closure to me," Beagle 2's mission manager Mark Sims told the BBC at a press conference. "Christmas day 2003 was a real disappointment ... so I've always wondered every Christmas day since what happened to Beagle 2. We've now got very good evidence that it made it successfully to the surface of Mars, which is amazing."



Sims commentated further ""You can think of things like structural distortion, a heavy bounce — the first bounce in the air bags or the second bag in the air bags... Maybe an air bag had a leak, got a puncture, and didn't clear away from the lander. With the image resolution we've got we don't fully know — and perhaps we will never know — exactly what happened to Beagle 2."

The Beagle lander is located just 5km from the centre of its expected "landing zone". The images show the lander in what appears to be a partially deployed configuration, with only one, two or at most three of the four solar panels open, and with the main parachute and what is thought to be the rear cover with its pilot/drogue parachute still attached close by.



Colin Pillinger who led and brought the mission to fruition died last May.

The Thoughts of Chairman Les

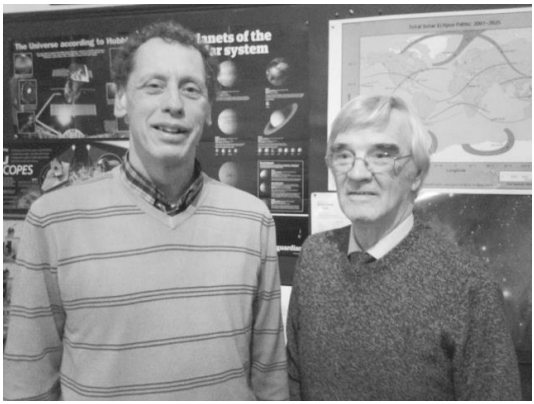


As I mentioned in the previous publication of this booklet the feasibility study is ongoing and I intend to keep everyone up to speed on the advancement of the Feasibility Study as and when it happens. The fourth meeting of the Feasibility Study Group took place Wednesday 7th January. We had an unofficial estimate of £30,000 for having mains water installed to the observatory. I'm sure that this statement will have shocked you as much as it did us at the meeting. We feel that this is a cost that we just can't afford and therefore that some items that we wanted to include in an extension such as full toilet system that we intended for the use of our wheelchair user visitors.

There is second reason to this and that is we cannot have any sewage facilities at the observatory either. To try and overcome these problems we have looked at using a cesspool which very costly to install and would need emptying on a regular basis which again has a cost for this. All this cost for what we felt was a necessity we will not be able to provide now. I, Les, feel that we have used the observatory as it stands with no toilet facilities for twenty years plus and it hasn't caused us any problems and therefore we can continue doing the same for the years to come.
The major thing that must be remembered is the running costs of an extension and is a major consideration that has to be considered in-depth. This item was discussed at length and all the major items such as any rent increase, insurance, council tax and a few more things and there wasn't anything left out.
We were shown sketches of a minimum modification of the existing building, with no extension, that cost very little with no extra running costs.
A 'Bill of Quantities' has been drawn up which covers most of the items needed for an extension to be added to the north of the existing building which is covered in the 'proposal' of some months ago. This document is proving very helpful particularly with the items that will be needed and there costs. I'm sure that it will be used as a reference point and guide throughout the period of building.
We haven't got the minutes from the meeting as yet and this is the best my memory can do for now, anything else that comes out of the minuets I will include in the next publication.

Mr Chairman
January 2015

Albert Zijlstra

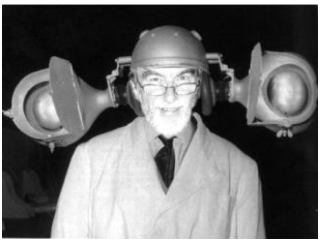


Professor in Astrophysics at the University of Manchester and Director of the Jodrell Bank Centre for Astrophysics gave the society a talk on Planetary Nebulae on Thursday 15th January.
Planetary nebulae are among the most beautiful objects in the night sky.

They are also the most deadly. The nebulae are ejected by stars at the end of their lives; so much mass is ejected that it is the beginning of the end for the star.

Our Sun will also once create a planetary nebula, in 5 billion years from now.

February Skynopsis



Diary

5th	Full Moon : Sunset 17.02, Sunrise 07.50
6th	Jupiter in opposition to the Sun in Cancer, Mag. -2.6
13th	Last Quarter Moon in conjunction with Saturn, Scorpio
15th	Sunset 17, 22, Sunrise 07.31
17th	Mercury with crescent Moon, half-hour before sunrise, approx. 07.25
20th	New Moon
21st	Mars together with Venus
24th	Mercury visible in the morning, Capricornus
25th	Sunset 17.42, sunrise 07.10
27th	Moon at First Quarter
16th	Moon lies below Regulus, late evening
17th	Crescent Moon close to Spica, morning
21st	Winter Solstice
22nd	New Moon, Ursids meteor shower peak
28th	Moon at First Quarter
31st	Venus and Mercury just 3deg. apart

Planets

Mercury	24th good viewing in the dawn sky at mag. -1.9, SE rising 56 min. before the Sun in Capricornus
Venus	Together with Mars on 21st Venus and Mercury are just 3deg. apart on the 31st
Mars	See above
Jupiter	6th at opposition in Cancer, magnitude -2.6
Saturn	Morning object moving above Beta and Nu Scorpio
Uranus	Lost in the Solar glare early in month.
Neptune	West in Pisces

Galactic Goodies

M3	Globular cluster, Mag. +6.2, RA: 13h 42m 12s, Dec: +28deg 22min 38sec
M81	Bode's Galaxy, Mag. +6.94, RA: 09h 55m 33s, Dec: +69deg 03m 55s
M51	Whirlpool Galaxy, Mag. +8.4, RA: 13h 29m 53s, Dec: +47deg 11m 43s

Mike Hall

Club Trip

Only sketchy details at present – I'm sure Paul D'Silva will update us soon.

Space Guard Centre, Knighton. 21st March 2015 4:00 pm tour

If the weather is good we can observe from their site.

They only have one 8 inch telescope for observing, everything else is tied in with the NEO project but we can take our own kit.

Looking at a coach – total cost up to £25.00, absolute maximum 25 allowed on visit.

Bath Chronicle and Weekly Gazette - Thursday 12 July 1787

The Lunar Diſcoveries of the celebrated Mr HERSCHEL have excited ſo much philoſophical attention, and are of ſo curious a kind, that we think our readers will be gratified in knowing the extent of the obſervations as communicated to the Royal Society, in the words of the author.

An account of the Three Volcanos in the Moon. By WILLIAM HERSCHEL, L. L. D. F. R. S. Read before the Royal Society, April 26. 1787.

It will be neceſſary to ſay a few words by way of introduction to the account I have to give of ſome appearances upon the moon, which I perceived the 19th and 20th of this month. The phœnomena of nature, eſpecially thoſe that fall under the inſpection of the aſtronomer, are to be viewed, not only with the uſual attention to facts as they occur, but with the eye of reaſon and experience. In this we are however not allowed to depart from plain appearances; though their origin and ſignification ſhould be indicated by the moſt characteriſing features. Thus when we ſee on the ſurface of the moon, a great number of elevations, from half a mile, to a mile and an half in height, we are ſtrictly entitled to call them mountains; but when we attend to their particular ſhape, in which many of them reſemble the craters of our volcanos, and thence argue, that they owe their origin to the ſame cauſe which has modelled many of theſe, we may be ſaid to ſee by analogy, or with the eye of reaſon. Now, in this latter caſe, though it may be convenient, in ſpeaking of phœnomena, to uſe expreſſions that can only be juſtified by reaſoning upon the facts themſelves, it will certainly be the ſafeſt way not to neglect a full deſcription of them, that it may appear to others how far we have been authoriſed to uſe the mental eye. This being premiſed, I may ſafely proceed to give my obſervations.

"April 19, 1787, 10h. 36'. ſidereal time.

"I perceive three volcanos in different places of the dark part of the new moon. Two of them are either nearly extinct, or otherwiſe in a ſtate of going to break out; which perhaps may be decided

ſtance of the crater from the northern limb of the moon, and found it 3' 57" 3. Its light is much brighter than the nucleus of the comet which M. MECHAIN diſcovered at Paris the 10th of this month.

"April 20, 1787, 10h 2' ſidereal time.

"The volcano burns with greater violence than laſt night. I believe its diameter cannot be leſs than 3", by comparing it with that of the Georgian planet; as Jupiter was near at hand, I turned the teleſcope to his third ſatellite, and eſtimated the diameter of the burning part of the volcano to be equal to at leaſt twice that of the ſatellite. Hence we may compute that the ſhining or burning matter muſt be above three miles in diameter. It is of an irregular round figure, and very ſharply defined on the edges. The other two volcanos are much farther towards the centre of the moon, and reſemble large pretty faint nebulæ that are gradually much brighter in the middle; but no well defined luminous ſpot can be diſcerned in them. Theſe three ſpots are plainly to be diſtinguiſhed from the reſt of the marks upon the moon; for the reflection of the

ſun's rays from the earth is, in its preſent ſituation, ſufficiently bright, with a ten feet reflector, to ſhew the moon's ſpots, even the darkeſt of them; nor did I perceive any ſimilar phœnomena laſt lunation, though I then viewed the ſame places with the ſame inſtrument.

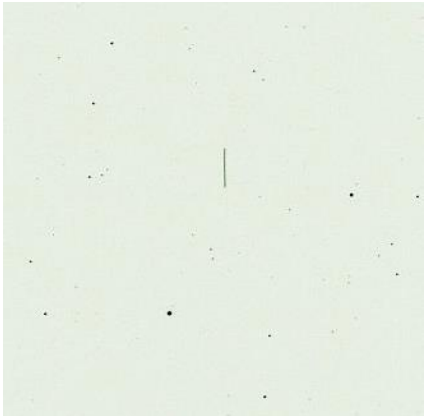
"The appearance of what I have called the actual fire or eruption of a volcano, exactly reſembled a ſmall piece of burning charcoal, when it is covered by a very thin coat of white aſhes, which frequently adhere to it when it has been ſome time ignited; and it had a degree of brightneſs, about as ſtrong with which ſuch a coal would be ſeen to glow in faint daylight.

"All the anjacent parts of the volcanic mountain ſeemed to be faintly illuminated by the erruption, and were gradually more obſcure as they lay at a greater diſtance from the crater.

"This erruption reſembled much that which I ſaw on the 4th of May, in the 1783; an account of which, with many particulars relating to the volcanic mountains in the moon, I ſhall take an opportunity of communicating to this Society. It differed, however, conſiderably in magnitude and brightneſs; for the volcano of the year 1783, though much brighter than that which is now burning, was not nearly ſo large in the dimenſions of its eruption; the former ſeen in the teleſcope reſembled a ſtar of the fourth magnitude as it appears to the natural eye; this, on the contrary, ſhews a viſible diſk of luminous matter, very different from the ſparkling brightneſs of ſtar light.

WILLIAM HERSCHEL,

Slough, near Windſor, April 21. 1787.



Trail of Asteroid 2004 BL86 taken by Gary Gawthorpe, Jan 27th 01:24am from Hoober Obs, Tak 130 Canon 500D. 60 secs @ ISO 1600. Shown in Negative

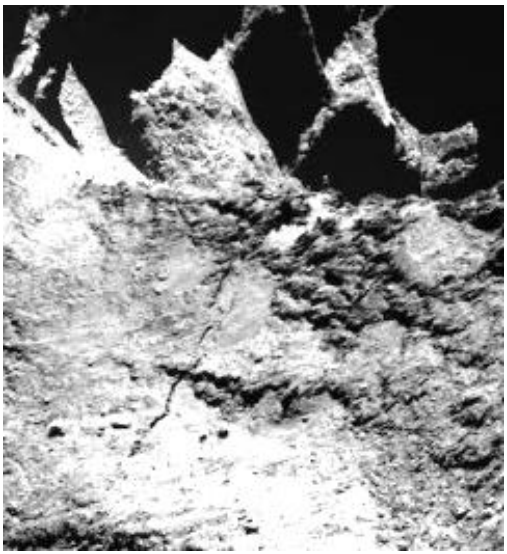


THE BACK SEAT IRREGULARS HOLD THEIR REGULAR PRAYER AND SPIRITUAL INCANTATION MEETING BEFORE HECKLING PHIL AND LES



CLUB MEMBERS ARE AMAZED AT THE DEMONSTRATION OF THE NEW "ELECTRICAL LIGHT" COMING SOON TO MEXBOROUGH – WHAT NEXT THEY ASK – INDOOR LAVATORIES – THAT'S JUST SCIENCE FICTION!

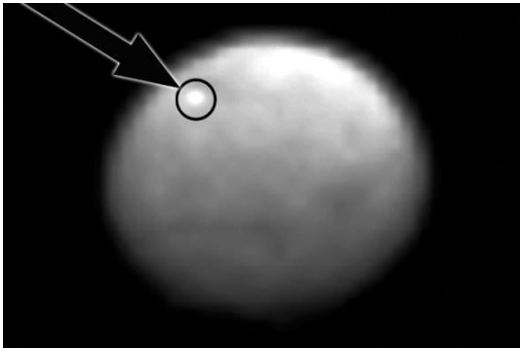
The Crack on Comet 67P



Scientists from the European Space Agency, (ESA) released information on January 23rd regarding a crack that has appeared in the "neck" region of the comet. The crack is reputed to be 500 meters long. The crack can be seen in the image on the left. It is well known that some comets break into two or more pieces as they get nearer the sun, probably due to tidal stress and the loss of material through outgassing. The comet was chosen originally for its orbit, and it not being a sun grazing comet (which get very close to the sun). However measurements by the Rosetta probe currently orbiting the comet show large temperature variations over its 12½ hour rotation period.
At perihelion the comet will still be 1.2AU from the sun – farther out than the Earth orbits, and at aphelion the comet recedes to about 6AU, just beyond the orbit of Jupiter. Scientists, however, are seeing jets of water and carbon dioxide coming from the neck region, the same region as the crack.

Dawn on Ceres

The Dawn spacecraft is getting steadily closer to the dwarf planet Ceres and is due to be placed into orbit around Ceres on March 6th this year. On the 13th January it was be approaching Ceres at about 450 miles per hour (which isn't fast in terms of orbital dynamics) and at a distance of 380,000 kilometers (the same distance as Earth to the Moon). . This will be the first time that a spacecraft has orbited two solar system targets.



Meanwhile a photograph taken by the Dawn spacecraft on the 13th January shows what looks like a bright white spot. Scientists have no idea what this might be.

Dawn left Earth in 2007 and in the summer of 2011, it made a 14 month stop over at the asteroid Vesta, the second largest object in the asteroid belt.

While Vesta shared many properties with our solar system's inner planets, scientists with the Dawn mission suspect that Ceres has more in common with the outer most planets. 25 percent of Ceres' mass is thought to be composed of water, which would mean the space rock contains even more fresh water than Earth. Scientists have observed water vapour plumes erupting off the surface of Ceres, which may erupt from volcano-like ice geysers.

The Sediment Laid Down by the Lake in Gale Crater



This evenly layered rock photographed by the Mast Camera (Mastcam) on NASA's Curiosity Mars Rover shows a pattern typical of a lake-floor sedimentary deposit not far from where flowing water entered a lake.

The scene combines multiple frames taken with Mastcam's right-eye camera on Aug. 7, 2014, during the 712th Martian day, or sol, of Curiosity's work on Mars. It shows an outcrop at the edge of "Hidden Valley," seen from the valley floor. This view spans about 5 feet (1.5 meters) across in the foreground. The colour has been approximately white-balanced to resemble how the scene would appear under daytime lighting conditions on Earth. Figure A is a version with a superimposed scale bar of 50 centimetres (about 20 inches).

This is an example of a thick-laminated, evenly-stratified rock type that forms stratigraphically beneath cross-bedded sandstones regarded as ancient river deposits. These rocks are interpreted to record sedimentation in a lake, as part of or in front of a delta, where plumes of river sediment settled out of the water column and onto the lake floor.

Programme for February & March 2015

Date	Time	Location	Subject & Speaker
Thu Feb 5th	19:45	Club Room	**"Colonies in Space"** *Mike Hall*
Wed Feb 11th	19:45	Club Room	**Executive Meeting**
Thu Feb 12th	19:45	Club Room	**"Double & Binary Stars"** *Roy Gunson*
Thu Feb 19th	15:00	Club Room	**Cosmology Wojtek Hellwing**
Thu Feb 26th	19:45	Club Room	**"Milton L Humason & The Mount Wilson Observatory"** *Steve Taylor*
Fri Feb 27th	19:45	Observatory	**PVE** *Les Marsden*
Sat Feb 28th	19:45	Observatory	**PVE** *Les Marsden*
Thu Mar 5th	19:45	Club Room	**"Spring Sky & Eclipse"** *Mike Hall*
Sat Mar 7th		Wentworth Castle	**Stargazing at Stainborough**
Wed Mar 11th	19:45	Club Room	**Executive Meeting**
Thu Mar 12th	19:45	Club Room	**"The Herschel Trilogy Part 2"** *Trevor Worrall*
Thu Mar 19th	19:45	Club Room	**"The History of Astronomy"** *Emily Winterburn*
Fri Mar 20th	07:30 – 12:30	Observatory	**Partial Solar Eclipse**
Sat Mar 21st	All Day	Club Trip	
Thu Mar 26th	19:45	Club Room	**TBC** *Pauline Hone*
Fri Mar 27th	19:45	Observatory	**PVE** *Les Marsden*
Sat Mar 28th	17:00 – 20:30	Old Moor RSPB	**Public Stargazing**

Old Moor RSPB – Manvers Way, Barnsley, S73 0YF
Wentworth Castle – Stainborough, Barnsley, S75 3ET
PVE – Public Viewing Event

Web site: http://msas.org.uk
Meeting room is at Swinton Working Men's Club, Station Street, Swinton, South Yorkshire, S64 8AU.
Observatory is at Lee Brook Lane, Hoober, S62 7SH
Mexborough & Swinton Astronomical Society is Registered Charity N^{o} 1064103 in England & Wales

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For submissions to The Messenger - Editor: Roy Gunson: royg@gmx.co.uk