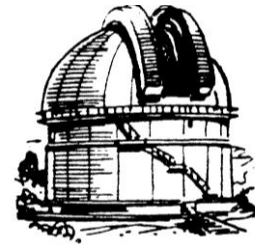

Journal

of the



Nottingham Astronomical Society

September 2004

Thursday 2nd September

at the Djanogly City Technology College
Doors open from 7.30pm

Tonight we welcome

Professor Ken Pounds

of

the Department of Physics & Astronomy,
University of Leicester

who will be giving an

**Update on European/UK Space
Science Programmes**

Inside this issue

- **Sky Notes for September**
- **Diary Dates**
- **Invitations from other societies**
- **Feature on the HST by Carl Brennan**
- **Advertisements**
- **E-Services**

STILL EXPLORING – THE MARS ROVERS

Spirit and Opportunity continue to explore the surface of Mars more than seven months after touching down. They currently have funding to continue work through September. However, this month corresponds to mid-winter for the rovers, and engineers have been preparing them to cope with the low temperatures and weakened sunlight.

Spirit has had problems with its right-hand front wheel, which has been sticking and therefore requiring extra power to move. Mission controllers are now driving Spirit backwards with the problematic wheel being dragged along with its power disabled. Meanwhile, Opportunity is moving deeper into Endurance Crater. After further exploration here, the controllers are hoping to move the vehicle out of the crater to explore other features of the locality.

Sky Notes

2004 September

Compiled by Roy Gretton

All times quoted are U.T.



THE MOON

Last Quarter	6d 15h 10m
New Moon	14d 14h 29m
First Quarter	21d 15h 54m
Full Moon	28d 13h 09m

THE PLANETS

Mercury is at greatest western elongation (18°) on the 9th, and will therefore be visible in the morning twilight for about two weeks after this date. On the morning of September 10th Mercury will be very close to Alpha Leonis (Regulus), and on the 13th will be 3° south of the crescent Moon.

Venus is a brilliant object in the pre-dawn sky, magnitude about -4. It will be 44° from the Sun in mid-month. On September 10th it will be 6° south of the crescent Moon.

Mars reaches conjunction with the Sun on September 15th, and is thus unobservable this month.

Jupiter, too, is unobservable in September, being at conjunction on the 22nd.

Saturn has returned to visibility, being low in the south-east before dawn. Its magnitude is 0.2.

Uranus and **Neptune** are best observed in the evening, as they both passed opposition last month. Uranus, magnitude 5.7, is about one degree west of sigma Aquarii. Neptune, magnitude 7.8, is a similar distance west of theta Capricorni.

ASTEROIDS

Vesta, 6th magnitude, is at opposition on September 13th. It will be close to omega Aquarii, and (theoretically) visible to the naked eye.

Toutatis, a near-Earth object 5 km across, will pass within a million miles of Earth on September 29th. Nothing larger is currently expected to come as close as this in the next two centuries. However, you won't be able to see it from the U.K.

DIARY DATES

Meetings of the Nottingham Astronomical Society

Thursday 7th October
From 7.30pm

Meeting at the NAS Observatory Site

An opportunity to use our large telescope, weather permitting!

Thursday 4th November
Djanogly CTC
Doors open from 7.30pm

NAS Annual General Meeting

Thursday 2nd December
Djanogly CTC
Doors open 7.30pm

X-Planes and Lifting Bodies

James Ince
Bassetlaw Astronomical Society

DIARY DATES continued

Other events

From the Jodrell Bank website: <http://www.jb.man.ac.uk/scicen/>

Saturday 18th and Sun 19th September 2004
Jodrell Bank Observatory Visitor Centre

“Meet an Astronomer”

for guided walks of all the radio telescopes at Jodrell Bank

The event is free from any additional charge.
Normal car park charges of £3.00 per car apply,
entrance to the 3D Theatre is £1.00 per person per show.

The new Observational Pathway, which stretches 180 degrees around the base of the Lovell Telescope is now open. The pathway allows visitors to get closer to the radio telescope than ever before. There is also a 3D Theatre, small exhibition area, 35 acre Arboretum, an award winning Environmental Discovery Centre which houses the Tree Planet exhibition, Space Cafe and Shop.

Please note that there is no longer a Planetarium or extensive exhibitions open while the Visitor Centre undergoes a 3 year redevelopment programme.

For further information, please call Jodrell Bank Visitor Centre on 01477 571339
or email: visitorcentre@jb.man.ac.uk

AN INVITATION FROM MACCLESFIELD ASTRONOMICAL SOCIETY

Dear fellow astronomer

I would like to take this opportunity to invite the members of your society to attend a lecture given by one of the most popular figures in the field of astronomy today - Stephen James O'Meara.

Macclesfield Astronomical Society has been fortunate enough to exclusively secure the services of Mr. O'Meara for one night only in the North West of England (Tuesday 14th September 2004). We would like to provide regional societies with the opportunity to share what promises to be a wonderful evening being entertained by such a renowned speaker.

Stephen is known world-wide for his legendary eyesight and observing prowess. Among his many astronomical achievements he was the first to sight Halley's Comet visually on its 1985 return; he noticed the dark 'spokes' in Saturn's B ring before the Voyager 1 spacecraft imaged them; and he was the first person to correctly determine the rotation period of the distant planet Uranus. His remarkable skills (including seeing 8th-magnitude stars with his unaided eyes) continually reset the standard of quality for other observers.

For further information, please visit www.maccastro.com and follow the highlighted link.

As I previously mentioned, this is a one-off event with only four astronomical societies in the whole of the UK being selected to form part of his short tour. The lecture will be held on Tuesday, September 14th 2004 at 19:45 at the world famous Jodrell Bank observatory in Cheshire. There will be ample free parking on site.

Tickets are priced at £5.00 each and numbers are strictly limited, so book, or make reservations early to avoid disappointment - seats are selling fast. Please do not hesitate to contact myself, or any of the members of the

Macclesfield Astronomical Society Committee listed below for further information or ticket reservations:

Andrew Greenwood - chairman@maccastro.com

Chris Hall - vice.chairman@maccastro.com

John Thomson - secretary@maccastro.com

Malcolm Beesley - treasurer@maccastro.com

Dave Ogden - editor@maccastro.com

We very much look forward to seeing you on September 14th!

Best regards, and clear skies

Andrew Greenwood

Chairman, Macclesfield Astronomical Society

AND, SIMILARLY...

AN INVITATION FROM WEST YORKSHIRE ASTRONOMICAL SOCIETY

**FRIDAY SEPTEMBER 10TH.
THE TRIALS AND TRIBULATIONS OF A 19TH CENTURY ASTRONOMER LIVING
IN THE 20TH. CENTURY!**

by
STEPHEN JAMES O'MEARA

Stephen James O'Meara, an award-winning visual observer, has been honored by the International Astronomical Union by having asteroid 3637 O'Meara named after him. The Texas Star Party gave him its prestigious Lone Stargazer Award (2001) and the Omega Centauri Award (1994) for "his efforts in advancing astronomy through observation, writing, and promotion, and for sharing his love of the sky." He has also been awarded with the Caroline Herschel Award for his pre-Voyager visual discovery of the spokes in Saturn's B-ring and for being the first to determine visually the rotation period of Uranus. His remarkable skills continually reset the standard of quality for other visual observers. Steve was the first to sight Halley's Comet on its return in 1985, which was featured in the December 1986 issue of National Geographic magazine. In 2001 The National Geographic Expeditions Council awarded Steve and his wife Donna with a research grant to pursue their studies of volcanic eruptions. Other grant recipients include Bob Ballard and Jane Goodall. The O'Mearas' life story has recently been made into a National Geographic Explorer Movie that won the Best of 2001. A more intimate look at the lives and adventures of Steve and Donna appears in their latest National Geographic film: "Inside Base Camp," produced live in the studios at National Geographic in Washington, D.C. Steve is a contributing editor for Sky & Telescope magazine, for whom he has worked for the last quarter century. He is also a contributing editor and consultant for Odyssey—a children's science magazine. Steve is the author of five books; his latest, The Caldwell Objects, is the second part of his popular Deep-Sky Companions series.

The meeting will be held in the Large Ballroom of the Carleton Community Centre next to the 'Rosse Observatory' on Carleton Road, Pontefract (Seating capacity 200. Free car park.) Meeting starts at 8:00pm, doors open at 7:00pm.

ADMISSION: ADULTS £5 CONCESSIONS £3
Trade stands. Bar open @ 7:00pm.

REFLECTION

by **CARL J. BRENNAN**

I imagine by the time you read this our own telescope will have seen first light. I would like to take a few minutes just to reflect on the history of another telescope, the Hubble Space Telescope (HST).

The concept of the HST probably started in 1950s science fiction. I remember growing up in the 60s and seeing the cover of I think Astounding Stories with observatories on the Moon! The idea of a real space telescope certainly started to form in the 60s, and the HST was a designed and built in the late 70s early 80s. As the shuttle programme went through its birth pains, and mission delays began to build up, the HST went in to storage (doesn't this start to 'mirror' some of the problems encountered by the NAS?)

Space Shuttle Discovery mission STS-31, 25th April 1990 finally saw the HST deployed in to low Earth orbit (just 600km). Almost straight away it became clear that something was seriously wrong with Hubble's optics. This was corrected by the Endeavour mission (STS-61 (SM1) December 1993) the first HST maintenance mission. HST had already proved that even with the spherical aberration problem in its optics it could still do useful astronomical observations, and it must be remembered that the HST is a platform for other instruments as well as the main telescope. The benefits of SM1's corrections to the optics jumped out at us and we saw a new 'first light' for the HST. SM1 was followed by SM2 in February 1997, SM3A in December 1999, and lastly by SMA3B in February/March 2002. HST is currently awaiting a NASA decision on a possible robotic service mission following the ruling that future Shuttle missions can only be ISS mission. It is to be hoped that this is approved. On all of these service missions new experimental packages were added to HST, and old ones brought back. One of the most amazing service missions involved the upgrading of the HST computer hardware, memory, and software packages. I think we were all surprised to learn the HST had been functions with a computer that was little better than an old Spectrum!

Although the HST missed Supernova SN1987A, (23rd February 1987), and even with faulty optics we were soon given surprising images of this object and its Equatorial Ring using ESA's Faint Object Camera (FOC). Photographs over August/September 1990 provided observers with the first measured expansion of a supernova remnant. These observations have been followed up over many years and recent images from continue to show this debris expansion from the central event. A recent series of photographs from May 2002 to February 2004 spectacularly show the formation of this supernova remain.

The December 1995 12day Hubble Deep Field (HDF) image marks a new 'milestone' in astronomical history. For 12 days the telescope was pointed at an empty area of space in Ursa Major – selected because it was devoid of “nearby objects” and most likely to contain a few very distant objects from the early Universe. Images in four spectral bands ranging from near ultraviolet to near infrared using the Wide Field and Planetary Camera 2 (WFPC2) were taken. The resulting composite image proved that this empty area of space was full of distant galaxies. The image also proved that collisions between early galaxies were far more common than expected.

A growth in astronomical research and knowledge from the HST is something we have all become familiar with. But even the general public has been inspired by the HST images. Those of the Eagle Nebula and the “stellar nursery” made every major newspaper around the world. I recall the exhibition of HST images at Wollaton Hall and the interest this generated locally, (especially amongst local schools).

In 1997 things looked good for the HST, NASA secured funding to extend the planned 15 year mission and even scheduled a routine maintenance mission (SM4) for mid 2006. It was hoped the HST would continue to function until 2010 when hopefully the James Webb Space Telescope will be available to the astronomical community. The launch of the JWST is now planned for August 2011 on boards an Ariane-5 launch vehicle. However the tragic loss of Columbia in February 2003, Shuttle commitment to completing the ISS, and the now limited life of the Shuttle programme itself force NASA to publicly announce on January 16th of this year that SM4 was scrubbed. HST now has a limited life as the gyroscopes and other parts have finite lifetimes. In the not too distant future HST will only be operating in two-gyroscope mode, which will limit HST's sky coverage. The orbit itself will continue to decay and it will be necessary to employ a robotic mission to de-orbit the HST. This de-orbit mission maybe the only thing that extends the life of the instrument. The possibility of "parking" HST in a safe re-entry orbit could extend the mission by up to seven years, when the only remaining limiting factor will be the lifetime of hardware items on HST itself until re-entry.

Finally the first objective of the HST Mission has (well almost) been achieved. HST has given us the data for the most accurate value yet for the Hubble Constant.

Small Advertisements

For Sale

Maksutov 6-inch by Drew. 2x2-inch finderscopes, equatorial tripod mount with circles, eyepiece tray, carry box. Selection of eyepieces, Barlow lens, star diagonals.

Buyer collects. **£495** for prompt sale.

**Telephone Peter Davison
on 0115 923 0040**

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You are always made welcome at our shop or a telephone call to Lynda will bring you our latest catalogue

The Nottingham Astronomical Society: E – SERVICES

The Journal

To register for your FREE Journal, just E-mail Carl Brennan at carl.stella@virgin.net - You don't have to be a Society member to take advantage of this service.

Observatory Group

A web group page and message service has been set up at

<http://uk.groups.yahoo.com/group/nottinghamastronomicalsociety/>

It will be used for circulating information about the observatory construction and projects, large telescope up-dates, and use of the site by members of the Observatory Group. Please visit the web site and E-mail on line if you wish to join (NAS Members only)

Nottingham Astronomical Society

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APPLICATION FOR MEMBERSHIP

If you would like to join the Nottingham Astronomical Society, please complete and tear off this slip. Make your cheque/postal order payable to:

THE NOTTINGHAM ASTRONOMICAL SOCIETY

Then send the slip and payment to Paul Stocks, Hon. Secretary, **Nottingham Astronomical Society**, 22 Killerton Park Drive, West Bridgford, Nottingham, NG2 7SB

Alternatively you may hand the slip and payment to the Secretary or Treasurer at one of the Society's regular meetings.

Your name _____

Full address _____

_____ Postcode _____

I wish to join the Nottingham Astronomical Society and enclose the membership fee for

(please tick appropriate box)

- Full Adult £23
- Junior (17 years or under) £11.50
- Concession (*full time student, UB40, Senior Citizen*) £11.50

Nottingham Astronomical Society

Affiliated to the **British Astronomical Association**
Member of the **Federation of Astronomical Societies**
Member of the **Society for Popular Astronomy**
Supporters of the **Campaign for Dark Skies**
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ORDINARY COMMITTEE MEMBERS:

Joe Sowerby

Dorothy Sowerby

Meetings

Formal monthly meetings, with speakers, are held on the first Thursday of each month (except August, and occasionally other months as announced) at

Djanogly City Technology College
Sherwood Rise, Nottingham NG7

Doors open	7.30pm
Meetings Start	7.45pm
Meetings end	10.00pm

Non-members are very welcome at our meetings and there is no charge for the first meeting. We make a small charge of £2.50 adults, £1.25 juniors to non-members after their first attendance. Invited guests are admitted free of charge.

Annual Subscriptions, 2003-04

Full Adult:	£23
Junior (<i>17 years or under</i>)	£11.50
Concessions	£11.50

(*Full time student, UB40, Senior Citizens*)

Subscriptions become due on 1 October. Half-price subscription is charged if joining after 1st April. Please make cheques payable to:
Nottingham Astronomical Society.

If you would like further information about the **Nottingham Astronomical Society**, or would like to become a member, please contact the Honorary Secretary, Paul Stocks, at the address given above, or speak to any NAS committee member at one of the regular monthly meetings. A membership application form appears inside this issue of the Journal.
