

## Professor Jocelyn Bell-Burnell

DRAL and SCI Thames & Kennet Section, RSC Thames Valley University, Institute of Physics and The Newbury Amateur Astronomical Society are delighted to present 'Chemistry and interstellar space', a lecture by Professor Jocelyn Bell-Burnell, Professor of Physics at the Open University on Friday 20 May 1994. There are two lectures; the first for schools and DRAL staff at 2.30pm and the second for the general public at 7.30pm, in The Pickavance Lecture Theatre.

## Noticeboard



### Christian Fellowship

- 19 May** Discussion 'Why do we go to church?'
- 26 May** Guest speaker: Tony Valente 'The Holy Spirit'
- 2 June** Prayer meeting
- All meetings will take place in CR6, R2 starting at 12.30pm.

### Acknowledgements

The lecture will be of interest to those active in astronomy and science but also to people from other backgrounds, schools (both teachers and students) and the general public. Professor Bell-Burnell is happy to answer questions on her discoveries and other issues such as getting more women into science and engineering, and the Open University.

A limited number of free tickets for the afternoon lecture are available to DRAL staff from Natalie Bealing, ext 5777. Tickets for both lectures are otherwise available at £2.50 (£1.50 for students) from Roger Stroud, 28 Nythe Road, Coleview, Swindon SN3 4AN (Tel 0793 825980; Fax 0793 487053). Cheques should be made payable to SCILink and please include a SAE.

### Lost

**Fuke hand-held multi-meter (Model JF23)** - From the vicinity of the laser control room. Last seen ~ 1992. Please contact Colin Danson on ext 5110.

## Diary

### RAL Lectures

**26 May 3:00pm** The Pickavance Lecture Theatre  
The origins of modern written English  
Mr C Upward (Aston)

**30 June 3:00pm** The Pickavance Lecture Theatre

The origins and diversification of languages  
Prof R Posner (Oxford)

### Nimrod seminars

**23 May 2:00pm** CR3, R61  
The hadronic final state in deep inelastic scattering at ZEUS  
N Brook (Glasgow)

**26 May 11:00am** The Pickavance Lecture Theatre  
Evidence for top quark production at CDF

Dr M Mangano (INFN, Pisa)

### HEP seminars

**18 May 11:00am** CR3, R61  
Search for the neutrino oscillations at the CERN SPS  
E Tesemelis (Dortmund)

**25 May 11:00am** CR3, R61  
Diamond detectors for the LHC  
W Trischuk

RAL Bulletin

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Articles and ideas are welcome!  
Deadline for publication is 15th of every month.

# Rutherford Appleton Laboratory

# Bulletin

A Monthly Newsletter for RAL Staff

May 1994

## A fond farewell

Twenty-nine years after it was established by Royal Charter, the Science and Engineering Research Council passed into history on 1 April 1994. RAL marked the event on 31 March with a farewell party for all its staff.

Floor space was at a premium as close to 600 guests squeezed into the R22 Restaurant to join in the celebration. Standing well back for their own safety, the crowd watched as the Director, Paul Williams, sliced through the commemorative cake, giant blue letters, spelling out 'SERC', with what bore more than a passing resemblance to a samurai sword!

Other highlights of the party included the presentation of long service awards to 33 members of staff, all of whom had passed the 25 year mark of service in the last year. Chris Lowe and Tom McMahon received prizes for their contributions to the caption and SERC epigraph competitions announced in the February and March issues of the Bulletin. Chris for his caption to the Sir Mark Richmond photo: 'Sir Mark misunderstands 'scrutiny study', and Tom for the epigraph: 'Obituary? The SERC is dead, with epitaphs here to be read. No, never necrosis but metamorphosis, we've PPARC and EPSRC instead!' Sue Gill won a set of SERC goblets in the first draw of the raffle.

Nostalgia buffs relived the past through hundreds of photographs of personalities and events which had over the the years, contributed to the success of the SERC. Exclamations of "Look at that!" and "So you did have hair once!", could be overheard as people scanned the exhibits for the photo which a few must have wished had been lost forever.

Thanks to all who contributed to such a memorable and happy event. In particular to the Restaurant, to Photographic Section, to General Admin Section, to Malcolm Atkins of AEA for the loan of the ceremonial sword and to Gale Gillett who baked the cake. ■



SERC gets the chop: Paul Williams cuts the first slice of the cake (94RC2655)

## Inside

Getting help with your conference.....	2
CERN magnets .....	3
Science on show .....	4/5
Young Engineers Forum ISO certification for Engineering Division .....	6
Library survey .....	6
Singing librarian IOP Congress.....	7
Noticeboard .....	8

## Can we help with your conference?

Did you know that RAL now has its own conference and meetings organiser? Her name is Susan Humphreys, Susan, who is a member of the Press and Public Relations team, can assist with the organisation and running of conferences, workshops and large-scale meetings, on and off site. This is a dedicated service which means that you can be sure that your event will be organised professionally and with care.

The service can provide:

- Full registration service including database entries and searches
- Production of reports including participants list
- Design and procurement of registration form, delegate badges and packs
- Distribution of registration forms/ call for papers
- Dealing with venues for conferences including conference receptions and dinner
- Arranging accommodation and transportation for delegates
- Handling of monies

Although this represents the 'basic' service, it is designed to be flexible. You may for instance wish to do your own mailshots to advertise the event, or wish to hold the event at a venue of your choice. For an additional fee, the service can be extended to cover arrangements of excursions for delegates and organisation of conference proceedings. To ensure that your requirements are met, Susan will meet



Susan Humphreys, the Laboratory's Conference and Meetings Organiser (94RC2954)

with you during the early stages of planning for your event. The service is designed to suit the customer's needs," explains Susan. "Early personal contact with the customer helps me to decide the level of service needed."

Susan has already helped to organise a number of conferences and workshops on and off site. She is currently involved in the organisation of EPAC94, the fourth European Particle Accelerator Conference to be held in June, involving some 800 delegates.

A recent beneficiary of the Conference and Meetings Service was Mike Johnson of ISIS Division. The third Workshop on Neutron Scattering Data Analysis, WONSDA '94, was organised by the Conference and Meetings Organisation Service in conjunction with the Institute of Physics and the Royal Society of Chemistry. "As scientific organiser, I can say that the local organisation provided by the Conference Service was excellent," says Mike. "Many delegates thanked us for the effi-

cient organisation."

Whether your event is a half day seminar or a prestigious international meeting, the same high level of personal service and attention to detail is guaranteed. You will find the cost of the service to be very reasonable. Our charges compare favourably with those of outside conference organisers.

If you are planning a conference or similar event for 70 or more delegates, why not contact Susan now on ext 6/750 or by e-mail, OV/VM id SH3. As a guide, a minimum of six months notice is required for events involving 70-100 participants. Six to twelve months notice is required for events involving 100 or more delegates. If in doubt, ask Susan as not all events require such advance planning. ■

## Work begins on giant magnets for CERN

Engineering Division at RAL has recently embarked on a research and development programme to design giant superconducting magnets for CMS and ATLAS, two major detector experiments for the Large Hadron Collider (LHC) at CERN, Europe's centre for high energy physics. The LHC will be the world's most powerful particle accelerator which will probe the basic properties of matter. The CMS and ATLAS experiments will require huge volumes of high magnetic field to measure the energy and momentum of particles created by LHC collisions.

The breadth and scope of the magnet programme for CMS and ATLAS pose enormous challenges not least because the size of the magnets is so great. Engineering Division has specific responsibility for the design of the End Cap Toroid magnets for ATLAS. At eleven metres in diameter and five

metres in length, these magnets far exceed the size of the superconducting solenoids built at RAL in the late 1980s for the DELPHI experiment at LEP, CERN, Geneva and the HI experiment at HERA, DESY, Hamburg, which were some of the largest superconducting magnets ever built. The diagram on the right shows the size of the LHC magnet system relative to the DELPHI solenoid and a three-bedroom house.

Although RAL engineers have the experience of building the DELPHI and HI magnets to guide them, the magnet systems for CMS and ATLAS require superconducting magnet engineering at a new scale.

This begins at the superconductor itself.

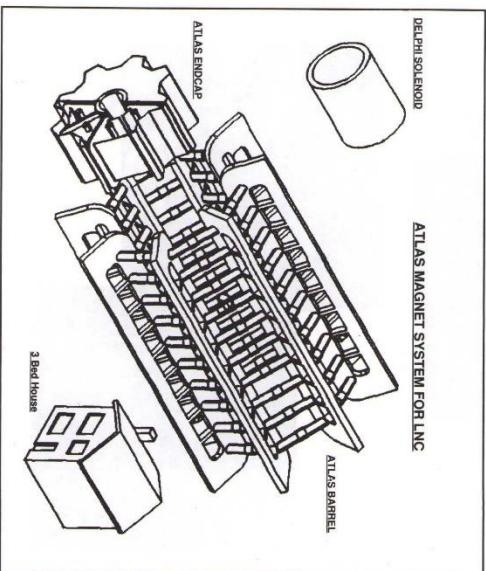
With DELPHI and HI, new aluminium stabilised superconductors were used to achieve high stability and protection of the superconductor. For CMS and ATLAS, this conductor technology must be extended to cope with the increased scale. A magnet conductor R&D programme has been started under the control of the LHC Magnet Advisory Group which consists of members from CERN, RAL, CEA Saclay, KfK (Karlsruhe), INFN Genova and ETH Zurich.

During the preliminary stages of the R&D programme, computer models are being developed at RAL, CEA and INFN to simulate conductor stability in the final operating environment. This part of the

project is being led by the Applied Science Group in Engineering Division, who are also providing the necessary experimental comparisons to validate these early theoretical models. Recent experiments using a DELPHI conductor test coil and the superconductor test facility in R12, have shown a promising correlation between the theoretical studies and the results of these tests.

The conductor R&D programme will last two to three years with the final magnet delivery scheduled for the 2002-2004 timescale to coincide with the completion of the LHC. ■

Elwyn Baynham  
Engineering Division



## Science on show

Twenty-four hydrogen-filled balloons exploding to the accompaniment of Tchaikovsky's 1812 Overture marked the climax to a lecture on the history and chemistry of explosions and explosives, one of 17 lecture-demonstrations in a dazzling 11-day programme of events held at RAL during the recent National Science Week.

Organised by the British Association for the Advancement of Sci-

ence, with Government backing, this first National Week of Science, Engineering and Technology was designed to improve public understanding of science; to entertain, educate and inspire young people to take up science as a career, while also showing the value of science in everyday life.

Over 2,000 people came to the Laboratory, attracted by the prospect of 'meeting' such scientific

worthies as Sir Isaac Newton, Florence Nightingale and Albert Einstein. Audiences of schoolchildren, teachers, families and other members of the public were enthralled by action-packed lectures on such topics as 'Throwing Light on Modern Medicine', 'The Magic of Chemistry', and 'Fireworks - Principles and Practices'.

The events attracted wide media coverage. The 'Magic of Science

Show' was featured on the BBC's Newround programme which included an interview with Dr Paul Williams.

The success of the campaign was measured by the response of the public who came in such high numbers, and by the Government's decision, announced after this year's event, to repeat the campaign next year. ■



(94RC2325)

*This page: top row left to right: Big bang; Dr Bob Allgeve of Chichester College of Technology sets off an explosion and the audience jumps; Visit of Sir Isaac Newton. Bottom row left to right: Albert Einstein and friends; The magic of chemistry - Dr Brian Iddon of Suffolk University demonstrates his Flash Bang, Whizz Show. A scientist talks about music - Professor Charles Taylor shows how to make music using everyday objects*



(94RC2319)



(94RC2459)



(94RC2441)



(94RC2379)



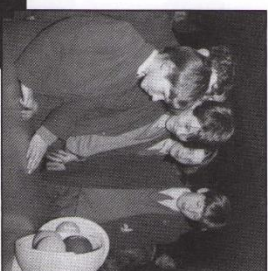
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(94RC2400)



(94RC2413)



(94RC2412)



(94RC2405)



(94RC2448)



(94RC2375)

*This page: top row left to right: Professor David Phillips of Imperial College throws light on modern medicine; Schoolchildren explore the comic union with Professor Frank Close of RAL. Bottom row left to right: Mike Dennis of the Oxford Trust and his Science of Magic Show; The Reverend Ronald Lancaster, MBE demonstrates the principles and practice of fireworks; Florence Nightingale*

## Young engineers meet to 'talk shop'

The annual meeting of the Young Engineers Forum was held at The Cosener's House on 20 April. This year's meeting was the first to be organised jointly by young engineers from Daresbury Laboratory and RAL, reflecting the closer organisational links between the two establishments.

The Forum gives the engineers, all of whom are under 30, the opportunity to discuss and to present their work to their peers and to invited guests, among them five sixth formers and their teachers from John Mason School, Abingdon and St Birinus School, Didcot. In addition to the presentations, the day included an engineering challenge. The groups were given 55 minutes in which to construct a craft to propel twenty-five nails a distance of three metres. The results ranged from total failure to complete success but it proved to be a great way to start the day and forge



Young Engineers and staff associated with engineering at DRAL line up for the group photo (94RCS2926)

relationships between the teams. The Daresbury Laboratory engineers took advantage of their trip south to tour RAL. It gave them an invaluable insight into the work carried out at RAL and the chance to compare working methods here

with those at Daresbury. The day was judged a success by all who took part. Everyone agreed on the importance of such joint activities in establishing closer working ties between the Laboratories. ■

*Andy Dickinson (DL), Paul Das & Neil Meadowcroft*

## Electronics Division obtains ISO 9001

After a very thorough examination of the procedures used within Electronics Division, auditors from the British Standards Institution have recommended that Electronics Division receives ISO 9001 certification.

This is a major achievement. ISO 9001 certification is held in very high esteem throughout the world. This level of Quality Assurance is only achieved by changing the whole management culture of the organisation and should not be confused with local schemes for quality control and product assurance.

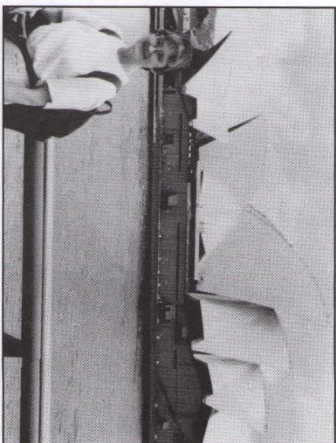
ISO 9001 is the most comprehensive level of the internationally recognised ISO 900 'family' and includes product design as well as production, test and support. Certification requires that the Division's management system is fully documented and is designed to monitor and control the quality of the work. The Division considers this to be the first important stage in a drive towards Total Quality Management. ■

*Peter Skarp*  
*Electronics Division*

## The singing librarian

Jessye Norman? Dame Kiri? We have our very own diva to rival the best in opera - Su Lockley, RAL's Senior Librarian. Surely not? Consider this: Su has sung with the Bach Choir in the Albert Hall, has recorded several classical records and has recently returned from a three-week tour of New Zealand and Australia, where the 250-strong choir performed Mozart's Requiem in the Sydney Opera House.

Su speaks modestly of her progression from singing in the school choir to being part of one of the largest and most respected amateur choral groups in the UK. "I don't regard my voice as anything out of the ordinary but I can sing in tune and I can sight-read. I love singing and I feel privileged to be part of such a prestigious choir."



Su with the Sydney Opera House in the background (94RBS090)

To achieve this level of success requires not only sight-reading skills and a good voice but practice and dedication of it. When not on tour, Su travels to London every week for rehearsals with the choir in Westminster Cathedral. Their success and popularity is reflected in the two dozen or so concerts which the choir give each year throughout the country. From Benjamin Britten's rousing War Requiem to Vivaldi's inspirational Gloria, all their performances are very well attended.

The choir, and Su, can be next seen in Westminster Cathedral on 25 May, performing a newly-commissioned work 'Magnificat' by Paul Patterson, followed by a performance of Elgar's 'The Dream of Gerontius' in Lincoln Cathedral on 11 June and at the Royal Festival Hall on 22 June. You can get more information about the choir and details of performances from Su on ext 6668. ■

*Garrett Deary*

## DRAL at IOP Congress '94



Daresbury and Rutherford Appleton Laboratories mounted a joint exhibition at this year's Institute of Physics Congress in Brighton. Lesley Gray and Mike Lockwood from Space Science Department and Stephen Rose from Science Department were among the DRAL staff who presented papers at the Congress and the Director of DRAL, Dr Paul Williams, was one of the plenary speakers. The DRAL exhibition stands, pictured left, received a steady stream of visitors during the three days of the exhibition. ■