SNIPPETS

Denim day
On Friday 8 October CLRC staff will have the opportunity to participate in Jeans for Genes Day.

Everyone across the UK is being asked to support the appeal by simply wearing their jeans and donating £1. Proceeds help four charities, including Great Ormond Street Hospital Children's Charity, funding research into genetic disorders affecting children and provide valuable support services for families.

In the UK, one baby in every 30 is born with a genetic disorder or other birth defect. That's one born every 26 minutes whose life could be seriously affected. There are over 4,000 recognised genetic disorders including cystic fibrosis, haemophilia, sickle cell and 'baby in the bubble' syndrome. Many of these are life threatening and some have no current treatment.

Jeans for Genes collection boxes will be placed around the Daresbury site on Friday 8 October or hand your donation to Hazel Dale ext. 3468 Room A64 or General Administration. At RAL there will be a collection box in the R71 reception area.

NOTICES

RAL Notices

RAL lectures
All lectures are held in the Pickavance Lecture Theatre at 3pm.

28 October
Magnets and superconductors: chemistry in action
Professor P Day, Royal Institution

DL notices

DL public lecture
All lectures are held in the Merrison Lecture Theatre at 7pm.

12 November
Materials in the fast lane
Professor David Clark

Articles, ideas and letters are very welcome!
Articles to the Editor or Correspondent by 15th of the month.

LABNEWS is published by Press and Public Relations and printed by Photographic & Reprographic Services

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A Monthly Newsletter for Council Staff OCTOBER 1999

LABNEWS

INSIDE THIS ISSUE

Vulcan awarded petawatt upgrade grant

Vulcan, the high power neodymium glass laser facility at RAL, is to be upgraded with funding of £3.3M provided by EPSRC (Engineering and Physical Sciences Research Council).

The upgrade will increase the power available to 1 petawatt (10^{15}W) producing intensities in excess of 10^{21} Wcm^{-2} when the beam is focused. When completed, this upgrade will enable scientists to investigate new regimes of plasma physics including nuclear interactions with lasers, relativistic effects in ultra high fields and new schemes for the acceleration of charged particles.

Some of the large aperture optical components, laser amplifiers etc, were made available by the US Department of Energy when the NOVA laser at Lawrence Livermore National Laboratory was decommissioned this summer. The Vulcan development project is due for completion in 2002 and will position the CLF at the forefront of high power laser facilities.

The large-scale Nd:Glass Vulcan laser at RAL is already one of the leading high power laser facilities world-wide and is the focus of a very strong UK and international programme for the study of the interaction of intense laser radiation with matter. Vulcan provides both nanosecond duration pulses with a total energy of approximately 2 kilojoules and sub-picosecond pulses using chirped pulse amplification, which, when focused, can produce pulse powers of 100 terawatts and intensities up to 5x10^{19} Wcm^{-2}. The upgrade will ensure the growth of the UK's science programme in laser matter interactions over the next 5 years.

As a major part of the Vulcan petawatt upgrade components are being made available from the NOVA laser facility, Lawrence Livermore National Laboratory, USA. NOVA fired its final data shots at the end of May and the first components arrived at RAL in July.

The photos show the first components being unloaded, Andy Frackiewicz (CLF mechanical engineer) moving 208 mm diameter amplifier and Chris Edwards (project manager), Colin Danson (Vulcan group leader) and Brian Wyborn (CLF chief engineer) inspecting the goods on arrival

INSIDE: CAMPAIGN FOR DIAMOND AT DARESBURY. SEE PAGE 3

Aerospace quality assurance

Space Science and Technology Department (SSTD) at RAL are the latest recruits to the ISO9001 certification scheme. This is the culmination of several years' work by Geoff Douglas, the SSTD product assurance manager, to convert established practise into the internationally recognised system. SSTD have more than 30 years experience in the 'space' business; activities cover a wide range of topics related to the design, manufacture and testing of scientific instruments for use in space. These include electronics, mechanical structures and mechanisms, optical, infrared, red and ultra violet, spacecraft thermal system design, environmental testing, software both embedded in spacecraft for local control and ground based for spacecraft and instrument remote control and data processing. All of these activities support the work of SSTD scientists and UK universities and are included in the ISO9001 certification, which includes TickIT for the software activities. As an integral part of the UK Aerospace community SSTD have been assessed to the UK Aerospace Industry Sectored scheme in accordance with ASCS Technical Specification No.157.

For more information on the work of SSTD visit the web site on:
http://www.ssd.rl.ac.uk/news/

For information on Product Assurance:
http://www.ssd.rl.ac.uk/space_pa/

and the ISO9000 system:
http://www.ssd.rl.ac.uk/ISO9000/

Geoff Douglas (centre, front) with Trevor Wilmer and Glyn Woods of the Electricity Association Quality Assurance (EAQA), the certifying authority. Backed by many of the SSTD staff involved in introducing ISO9001 working practises into the Department, from left to right: Graham Toplis, Peter Allem, Trefor Edwards, David Corney, Mike Oliver, Sally Prydderch, Dave Kelsh, Mike Sandford, Trevor Dimbylow, Dave Giaretta, Richard Holdaway and Peter Vaughan (99RC4122)

Daresbury campaign

As the announcement date for the location of the new synchrotron light source approaches, the campaign to secure its future at Daresbury is hotting up. No one who has visited the site in the last eight weeks could have failed to notice the publicity and activity around the site. The campaign has united staff across the site behind this single aim.

The SRS at Daresbury Laboratory has been producing synchrotron radiation for thousands of scientists since 1981. It now needs to be replaced and scientists at DL, together with the user community, have fought and won the case for the investment in a new national X-ray light source. The DIAMOND facility is the basis of the proposal and will cost in excess of £175 million. All agree that the new light source is a vital strategic asset. Indeed so much so, the Wellcome Trust has donated £110 million and the French Government has also offered £30 million to buy into the project.

It had been presumed this new facility would be placed at Daresbury Laboratory, as it builds upon the existing centre of synchrotron radiation exploitation expertise (unique in the UK) and minimises costs, risks and the disruption of key teams and research programmes. It is also the case that without this source the future of the Laboratory looks uncertain, with the possible loss of 530 much needed hi-tech jobs from the North West.

Staff at Daresbury launched a campaign to secure this unique opportunity for the North West. The campaign, led by the Institute of Professionals Managers and Specialists (IPMS) and union representatives from the T & G and AEEU, has gained support from over 70 North West MPs. Local authorities in Warrington and Halton, regional development agencies and local industry are right behind the campaign.

The Minister for Science, Lord Sainsbury, and the Secretary of State for Trade and Industry, Rt. Hon Stephen Byers MP have been lobbied vigorously and a programme of visits including the BA festival in Sheffield, TU Conference and the Labour Party Conference has taken place. A joint Trade Unions delegation has met Lord Sainsbury twice and presented him with documentary evidence to support their case.

Nearly all members of staff, friends and families have contacted their own MP's and Councillors. Letters of support and press clippings fill poster boards in the coffee lounge.

The final decision will be made within the next couple of weeks. The staff at Daresbury are confident their case is the best for science and that the case for location in the North West is overwhelming.

Extracts from letters of support and much background information, including materials sent to the Minister, can be found on the campaign web site at *www.diamond.freewire.co.uk*.

Sue Smith

Dear Natalie
I was honoured to be included in the Induction Service for the new Vicar of Daresbury on 31 August. The Reverend David Felix will also act as an 'Industrial Missioner' for Halton, and I was asked to give a welcome on behalf of the employers of the parish. I think that Daresbury Laboratory is the biggest employer in the parish, and we are certainly one of the most visible! Our involvement in the service is another indication of the standing of the laboratory in the local community. David Felix told me that he is keen to establish links with the Laboratory and its entire staff. He has already indicated his interest by e-mailing message of support to the Guest Book of the 'DIAMOND at Daresbury' web page. He is due to make his first visit to the Laboratory on 17 November.

David Norman

Exploiting Micro-Measurement and Control Technology

CLRC is a partner in a new exciting three-year funded project known as EXXACT (Exploiting Micro-Measurement and Control Technology). Supported by the European Regional Development Fund, the project will be managed by Faraday Foresight North West (FFNW), located at Daresbury. In addition to FFNW, other partners include Unilever Research, ICI Technology, Laboratory of the Government Chemist (LGC) and seven leading UK universities active in the field. This strong partnership will generate a vibrant, academic-linked, business cluster of biosensor companies and their suppliers. Four CLRC departments are collaborating in the project: Engineering, Instrumentation, Computational Science and Engineering, and Synchrotron Radiation, working together with Marketing and Business Development.

The main objective of the project is to stimulate the growth of a market infrastructure for Micro-Systems Technology (MST) through the commercial exploitation of micro-analytical instrumentation particularly in the chemical, medical, biochemical, environmental and food sectors of industry. The rapid advances in genetics and bioscience, combined with the demands for both increased functionality and miniaturisation, are revealing the potential for new consumer measurement markets. These will be based on the increasing desire for personal health monitoring and environmental control. In an era when experts are distrusted, consumers are increasingly demanding more say and control over their lives.

EXXACT was launched at a workshop on 28 July at DL which included presentations by the corporate company partners to the representatives of over 50 companies and universities who attended. The project aims to benefit about 50 small and medium size companies (SMEs) in the region by giving them subsidised access to expertise, micro-measurement and control systems technology. Operating in parallel to the £3.3 million, Foresight LINK, 'Lab-on-a-chip' project, EXXACT will address the exploitation issues associated with the chemical analysis and measurement market, valued at about £7 billion, representing 1% of the GDP.

The combined expertise, knowledge and facilities offered by the four CLRC departments will bring unique benefits to both the providers and users. The unique capabilities offered by the application of synchrotron radiation techniques are of particular importance to the NorthWest companies participating in the project.

Dave Tolfree - FFNW Ltd

Chris Pickles - CLRC

EXXACT

Investors in People update

CLRC is continuing to make progress towards assessment, now planned for Spring 2000. At its meeting on 9 September the project team agreed a milestone plan for the months leading to assessment. During October our consultant Paul Temple will speak to a small number of staff to check that the processes developed by departments are being used effectively to improve communications and the management of training and development.

One major area for improvement which our last staff survey highlighted was the effectiveness of managers in developing their staff. One of the IiP indicators requires that 'Managers are effective in carrying out their responsibilities for training and developing employees'. This involves more than sending staff on courses. It means giving regular and effective feedback on performance, agreeing and regularly reviewing individual learning plans, and, where appropriate, coaching staff on-the-job to improve existing skills or develop new ones. All of this takes time, but techniques can be learned which help to ensure that the time is well spent. There are materials in the resource rooms which can help, and also regular courses in coaching skills. New initiatives which we hope to pilot later this year include a NEBS Introductory Management course for newly appointed managers, and a series of 'learning lunches', facilitated by members of HR.

For information about any of the above please contact Rosie Sherry at RAL on ext. 5892.

The Investors in People project team has recently welcomed new members to represent CSE, ITD, Finance and Marketing and Business Development.

Project team members:

Administration	Sue Gill
	Su Lockley
CLF	Graeme Hirst
CSE	Richard Blake
Engineering	Chris Densham
Finance	Petula Carter
Instrumentation	Steve Quinton
	Paul Seller
ISIS	Tim Broome
	John Tomkinson
ITD	Tony Conway
	Heather Weaver
MBD	Sarah Clements
PPD	Peter Norton
	Steve Fisher
SRD	Gareth Jones
SSTD	Ken Phillips
	Katie Hopgood
	Jane Porter

A day in the life of Bridget Murphy

Claire Lydon, a work experience student from Bridgewater High School, spent a day with SR's Bridget Murphy and found out exactly what she does on a 'typical' day. Here's her report.

I was shown to station 16.3 where Bridget was waiting for me and I was formally introduced. After expecting a serious scientist in a white lab coat, it was a bit of a shock to find her wearing jeans, tee shirt and trainers and armed with some pretty awful jokes! She has been on this particular station for a year and Steve Collins - her 'partner in crime' - has been there for a lot longer. He was there when they built the station and performed the first experiments.

After the first few minutes of introductions, I felt totally at ease with Bridget and Steve. Then it was time to start work. The first job of the day was to take apart the cryostat which had been used the previous day to cool down an experiment to 8 K. It took two tries to disassemble it and Bridget, not Steve, finally managed to unscrew it - that's one point for women's lib!

After that it was time to set up the next test which was for the beamline. There are regular safety checks and measurements taken on the beamline to make sure that it's working properly.

David Laundy was there to test some iron material and to find out more about the station. It was amazing to see how quickly they could make sure that the area was safe and then lock up the doors - I wonder if there's a record time?

When the testing had started Bridget explained to me why the machine had to be checked regularly (it's because they need to check the alignment of the beam). After making sure that it was working correctly, Bridget and I left Steve to supervise and went off for a drink in the coffee room. I was introduced to a lot of people, but had some trouble remembering everybody's name!

When we had finished our drinks, we went to see Barry Fell, an engineer working on developing a prototype focusing monochromator for station 16.3. This focuses X-rays to a higher intensity, i.e. more power onto a smaller spot, making the results more accurate and the scientists get better results which makes them look even more brilliant. It had been vacuum cleaned, so when Bridget was looking to see if she could help sort out a problem (it was making ringing noises when it got to a certain point and annoying everybody) she had to put on a pair of disposable gloves. It needs to work properly because the Lab is sending off for funding and it is being tested to make sure that it is precise.

We then went back in to see how Steve was doing, set up a remote scan and went up to Bridget's office to check her email and sign some orders for new equipment to make the beamline more efficient. Then it was time for lunch. I met up with my friends for a good gossip and, after they went back to their work, I found Bridget in the canteen. We went outside with some of her colleagues and spent a leisurely half an hour sat talking about Star Trek amongst other things and watching the ducks on the canal.

After this relaxed lunch, we went back to the station and found two peaks from the scan that was running over lunch. These peaks are used to orientate the sample and are necessary in finding out how the atoms are arranged in the material. This all included some pretty difficult sums, which I didn't care to ask about. Finding these peaks was the first step towards an experiment on the material, so everyone was very happy.

We went back to Bridget's office again and she explained how the beamline and the two peaks are necessary. It uses diffraction (X-rays bouncing off atoms) to find bright spots with the detector and from these you can work out how the atoms are arranged. After I had this explained to me, Bridget went back to her computer and showed me a couple of her emails and told me what she was doing. She had to ask for funding for a student that would be coming on work experience and she had to tell the person who sent the email which grant funds the beamline.

Bridget chats to HRH the Duke of Edinburgh on his visit to DL last year (DL98/88/18)

We then went for another cup of coffee and I was introduced to some more people. After a black coffee - there was no milk - we went back up to the office where Bridget tried to think of ways to make an article for the annual report more exciting. I had fun coming up with ideas (I don't know if they'll be used) and by then it was time to go home.

The key job of the day was to check the benchmark and alignment of the beamline in station 16.3. I enjoyed spending the day with Bridget and found that the stereotypical image of a scientist i.e. people in white coats, with crazy hair, blowing things up and talking nonsense that the rest of us don't understand, does not apply (all the time!)

Learning update

Learning open day

"Loads of information and excellent seminars" was typical of comments received back from staff who attended the Learning Open Day at RAL on 8 September. The event was a great success, with 31 exhibitors and well over 200 staff attending. African drumming, juggling and plate spinning helped to make the day an enjoyable learning experience for those who dared to have a go! Dr Peter Honey, expert in the psychology of learning, opened the event and ran workshops throughout the day. Sally Hooton ran lively 'taster' workshops on giving feedback and handling complaints and our own Richard Holdaway closed the event by awarding the prizes.

Many thanks to our colleagues in Press and PR, Photo Repro, the Heavy Gang, Health and Safety, ARAMARK, and of course the Little Stars Nursery - all of whom worked hard to make the day a success.

If anyone wants further information about any of the exhibitors please contact Mary, Kim or Rosie in the RAL Learning and Development Team.

Rosie Sherry

Learning has arrived...

..was the message from Peter Honey in his opening address to staff and exhibitors at the Learning Open Day. Dr Honey said that learning was now more important than it had ever been because of bigger, faster changes, more global competition, and fewer jobs for life. The importance of lifetime learning is reflected in a number of government initiatives including the University for Industry. He emphasised the need for each one of us to take responsibility of our own learning and development, and to move away from the assumption that leaning means going on a course. Training is an input - something someone does to you, whereas learning is an output - something you have to do for yourself. Courses and formal learning have their part to play but they are a fraction of the total story. Opportunities to learn are all around us, in fact life is one learning opportunity after another!

During his workshops Dr Honey explained the need to supplement what we learn intuitively with something more conscious and deliberate. This makes our learning more organised and planned, clearer, easier to share with other people, easier to check for quality, easier to transfer to other situations and, most importantly, capable of continuous improvement so that we can continue to learn and get better and better at it. The workshops also explored some of the assumptions and beliefs we hold about learning and development by debating some contentious issues. Richard Lawrence-Wilson, who attended one of the workshops, said that it had been "an interesting taster and illuminating to hear different people's views of learning".

Paul Hartley tries his hand at juggling (99RC4329)

In the 'handling complaints effectively' workshop Sally's main messages were:

Knowing the true value of accepting a genuine complaint is the most compelling reason for handling a complaint well.

Learning the art of complaint handling will provide you with a chance to win the customer back and to get it right next time.

Banging the drum (left to right) Rosie Sherry, Peter Honey, Mark Arnold and David Harrison (99RC4309)

Richard Lawrence-Wilson cuts the cake to celebrate the end of a great day (99RC4331)

The main message from Sally Hooton's feedback workshop was that feedback which is relevant, timely and specific helps to reinforce positive results and can reduce negative ones.

The 3 golden rules are:

Praise in public, criticise in private.

Separate the person from the behaviour/problem.

Give value to the appraisee, rather than release to the appraiser.

RAL Computing Training

Thank you to everyone who visited us during the RAL Learning Open Day in September. It was a very successful day and good to hear what you had to say about the courses we already provide and the additional provision needed to meet your objectives and those of your project. If you didn't have a chance to visit us and have any special training needs, please come along to RAL Computing Training in R1 and discuss them with us. We are keen to expand the programme we provide to meet the changing requirements of members of staff and the organisation.

MOUS

We are currently looking into ways to enable staff to take Microsoft Office User Specialist (MOUS) qualifications at RAL. MOUS is a Microsoft approved certification programme designed to measure and validate users' skills in Microsoft Office. To assess staff interest could you let me have your views regarding us so that we can decide whether to pursue this further.

Training requests on APRs

Over the next few weeks RAL Computing Training will be contacting those of you who have applied for computing training courses - through your APR - so that we can arrange dates. If you have any further requests for computing training then please contact us.

Programming courses

We are running a number of programming courses over the next few months:

Fortran90	Java++
C++	Visual Basic

Please contact us if you would like to attend any of these or if you have requirements for other programming courses.

Build your own database

We have run a number of very successful 'build your own database' courses which provide staff with the necessary techniques. Over a three day period (split one/two days) the course concentrates on building a database to meet your real work needs. Only two databases are built on the course so the tutor is able to give you plenty of attention. Staff who have attended this course have all been very happy with the database they have produced.

Computing Training Facility

The Computing Training Facility is being used by a number of departments to run specialist courses for their staff. If you have such a need, then contact us to discuss how this may be catered for - often the preferred option to going off-site for training.

Full information on our courses can be found on *http://admin-www.rl.ac.uk/admin/training/ral_computing/details.html*

Susan Hilton

New name and new faces

Marketing & Business Development (MDB) is the new name for the Commercial Office. "It reflects our proactive role in identifying opportunities for CCLRC, particularly with industrial and governmental partners and in raising the importance of marketing to all our partners, customers and collaborators", said Dr Allyson Reed, its Director. It is very much a team effort with MBD working to complement the increasing level of departmental activity and working with Finance, Sales Contracts and Press and PR. The approach to enterprise and innovation is based upon partnerships, making matches between the excellence of CCLRC's skills and those with needs. These can take many forms, from long term strategic partnerships, with real collaborative working, through R&D contracts, direct use of our facilities, value added services, licensing and forming start-up or spin out businesses.

MBD keep active contacts with groups who have the potential to help develop our business, such as the various biotechnology initiatives, 'post genome' requirements, other technology and research organisations, Foresight related programmes and the Regional Development Agencies. "But we need to keep marketing the organisation to more and more of its existing stakeholders and customers", Allyson said.

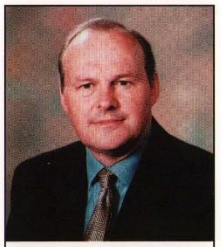
Current activity within CCLRC covers a new framework for prospect and bid management, protecting and exploiting CLRC's intellectual property (patents and know-how), planning an Enterprise Centre for business start-ups and entrepreneurship training and looking after the needs of CLRC's on site companies. With eight such start-up companies using CLRC's facilities, spread across both major sites, they provide a very visible demonstration of how CLRC can support UK industry. (Bookham Technology, which started life at RAL, was the chosen example of generating commercial success from research in the government's recent Competitiveness White Paper.) The team that makes this happen is a central group with representatives to spearhead activity in each department. Over the past year, three Business Development Managers have joined the team bringing extensive external experience and contacts. John Ellis focuses on Space and Defence, Dean Morris covers IT and instrumentation, Chris Pickles has a background in chemicals and automotive sectors: together they act as a team.

Delighting the customer

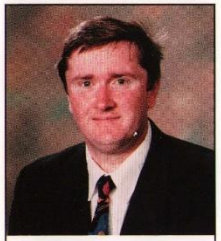
Recent lively 'Enterprise Forum' meetings, given by David Hall, focused on the importance of understanding customers' needs and providing that little bit of extra service to leave a feel-good factor. These challenging talks were well attended with 95 staff at RAL and 60 at DL. The audiences made many excellent, even provocative, suggestions for how CLRC could improve through a questionnaire. This was really good feedback, with some thoughtful points raised. Actions have and will continue to result. For example, look out for more lively conference rooms that convey something of the excitement of CLRC to our visitors. A full analysis will be available on the MBD internal web pages - they may inspire you to take action.

MBD staff at DL and Departmental representatives (left to right): Neil Marks (SR Rep), Anne Green and Chris Pickles (DL99/33/6). Missing from the photograph is Richard Blake (CSE)

MBD staff at RAL and Departmental representatives (left to right): Mike Johnson, Allyson Reed, Sonia Moon, Terry Mawby, Tom Bradshaw, Graeme Hirst, Jeremy Curtis, Ken Bell, John Kalmus. Inset: John McLean and Sarah Clements (99RC2050, 99RC1688 and 97RC2709)



John Ellis (99RC3590)



Dean Morris (99RC3589)

Business development at Daresbury

Ten years ago Neil Marks accepted the challenge of running the Commercial Office at Daresbury and created Daresbury Research Services - DRS. Under this banner, DL's facilities and expertise were opened up to non-academic paying customers. In 1996, a development of this approach led to the launch of DARTS (Daresbury Analytical Research and Technology Services), a turnkey materials characterisation operation in which Laboratory staff consult with the customer, carry out the work for them and report the results. In the early days, DARTS concentrated on four experimental techniques used on the SRS and the service is managed from within SRD.

Chris took over the Daresbury activities at the end of 1998 releasing Neil Marks to SRD operations. *LabNews* asked Chris how he had approached his new role at Daresbury and what the future opportunities might be…

The business development process has two primary dimensions, new markets and new products. In any programme of business development this terrain of opportunity can be mined with individual projects selected on a risk and return basis. The risk increases the further away from the origin the project is. An important first step in establishing such a programme is to understand the existing products and markets and then to build out into the areas of new opportunity. For a business such as CLRC this invariably means applying existing technology to new markets although at Daresbury we also have excellent product innovation.

Conventional business development starts with market research, identifies an unfulfilled need then develops a product to satisfy that need (Dyson vacuum cleaners would be a good example of this approach). This is known as market pull. At Daresbury we are involved in technology push, which is not only more difficult to target but also has a lower success rate. For example ICI developed defect free cement in the '70s. This is so strong it can function as a coil spring. It has found no major commercial application.

My first task in defining the business development programme at Daresbury was to get to know about the existing products and markets. I did this by carrying out a technology audit of all the departments resulting in an analysis of the potentially exploitable technology available. The evaluation of each project led to the establishment of a programme containing 12 new business ideas prioritised in order of risk, return and achievability. The action plan for the overall programme was published in April 1999.

In all of the priority projects we have technology leadership differentiation versus potential competition. The market approach strategy we are adopting at Daresbury is one of targeting likely users. This is a relatively slow process because it requires a market presence to be achieved and a matching of needs to products. To achieve this I am working hand in hand with DL scientists on each project to a defined project plan. The timescales for this type of development project range from one to three years depending on the product/need match.

High priority projects in the programme include:

Stopped flow cell
David ClarkeGareth Jones

Cancer screening
Rob Lewis

RUSTI via DARTS
Danny Law

Instrumentation
Barry Dobson/ Gareth Derbyshire

Simulation & modelling
Richard Blake

The information given for each item is limited in order to maintain the necessary degree of commercial confidence. There is no item on SRS access since this is essentially sales development and will continue to be led by the DARTS manager. However, it is noteworthy that our protein crystallography capability has been incorporated into the range of DARTS-branded products and was successfully launched within this increasingly important user community during the summer.

Chris Pickles

Cassini bids farewell to Earth

22 months ago, NASA's Cassini spacecraft left Earth to begin its seven-year odyssey to Saturn. On 18 August the spacecraft returned home for a third boost in speed, kicking it away from the Sun and towards Jupiter and Saturn. The Earth flyby gave the space probe a 5.5 km per second boost in speed, propelling it towards the ringed planet more than 1 billion kilometres away.

Although the primary purpose of this Earth flyby was to increase the spacecraft's speed by borrowing some energy from our planet - a manoeuvre known as a gravity assist - the encounter itself was of considerable interest to UK scientists. Nine of Cassini's 12 instruments made observations of the Earth-Moon system during the spacecraft's passage, including studies of Earth's magnetic environment and images of the Moon. RAL played a major role in building three of the instruments, the plasma spectrometer (CAPS), the dust analyser (CDA), and the surface science package on the Huygens lander. "Now we can't wait to get our hands on the results", said Manuel Grande from the Space Science and Technology Department. "The CDA is turned on and giving exciting results, which suggest that the composition of space dust in the Solar System is much more complicated than we thought."

While most of the spacecraft's instruments have been switched off since launch in October 1997, the Cosmic Dust Analyser (CDA) instrument has been operating continuously since March 1999 and it is expected to continue sending back data for nearly another decade. The instrument has already detected a number of dust impacts, some of which seem to have originated beyond our Solar System. It seems likely that CDA's chemical analyser, provided by the University of Kent, with a major CLRC contribution to the design and manufacture of the detectors and electronics, has returned the first data ever obtained on the composition of an interplanetary dust particle.

One of the most significant events prior to the flyby was the successful deployment of the 11 metre boom to which the two magnetometer sensors of Cassini's dual technique magnetometer instrument (MAG) are attached. The MAG instrument was turned on 44 hours before the closest approach to the Earth and scientists at Imperial College are already very excited about the data they received from the instrument whilst the spacecraft was making its way towards the Earth. The flyby was extremely important to them as an instrument calibration exercise.

The Cassini Plasma Spectrometer (CAPS) instrument, with its Ion Beam and Electron Spectrometers, was turned on about 16 hours before closest approach to Earth. Andrew Coates of Mullard Space Science Laboratory is the team leader for the Electron Spectrometer part of this instrument and RAL is also strongly involved. Manuel said, "The Electron instrument on CAPS is pretty much the same as the one on Cluster, which was lost. We've built a number of these now and it was great to see one working for the first time, and working so well. It's a big kick for the whole team. There was a shock when CAPS was not turned on at Venus, but relief when it sent back perfect data for the Earth flyby". CAPS is investigating how the electrically charged particles of the solar wind interact with our magnetic planet. "We know a lot about Earth's magnetic field, so this is an ideal opportunity to calibrate our instrument in preparation for arrival at Saturn," said Dr Coates.

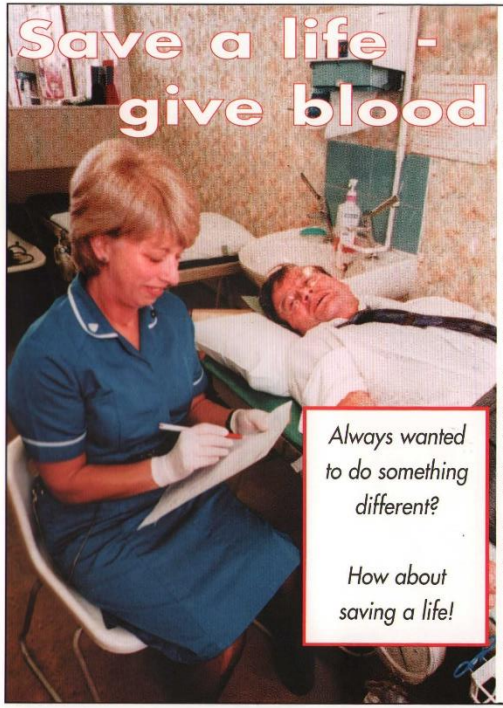
Next stop Jupiter

Saturn is so far away that it will take Cassini six years and nine months to get there. Only after completing a flyby of Jupiter will the bus-sized spacecraft have accelerated sufficiently to reach Saturn. The Earth flyby bent Cassini's flight path so that it headed towards Jupiter. Passing about 9.7 million km (6 million miles) from the gas giant on 30 December 2000, it will use Jupiter's gravity to change course and increase speed for its final destination of Saturn.

Saturn is ten times further from the Sun than the Earth - about 1,430 million km (900 million miles).Cassini's arrival is scheduled for 1 July 2004. Over the following four years, it will conduct 27 different scientific investigations of the giant planet's atmosphere and magnetosphere, its magnificent rings, and sixteen of the known moons. The largest of these, Titan, is particularly fascinating since it has a thick, cloudy atmosphere similar to the atmosphere of the early Earth but much colder.

Cassini will complete more than 60 orbits of Saturn, including about 45 close flybys of Titan and about 20 flybys of some of the smaller, icy moons. This tour is made possible by using planet-sized Titan's gravity to alter Cassini's orbit each time the craft swoops to within a few thousand kilometres of the moon's orange cloud tops.

73 students about to start PhDs in astronomy or planetary science visited RAL in September as part of a course organised by RAL based at St Peter's College, Oxford. The course, run by Dave Stickland in SSTD on behalf of PPARC, included a variety of lectures on astronomy and related matters. One of the two days spent at RAL included a talk on the organisation of astronomy by Paul Murdin (pictured right) and one about job opportunities by Dean Morris. They also used the R1 computer training suite and the library to work on some collaborative projects during the week's course.



As new treatments are developed and more operations carried out, hospitals throughout the country need more and more blood. For example, in Cheshire alone, 1300 people are needed to give blood every day in order to supply around 60 hospitals with blood and blood products. But currently only 5% of the UK's population give blood.

There are four main blood groups – O, A, B and AB. Group O is the most common (47% of the population) and therefore the most in demand.

At DL the National Blood Service is on site two or three times a year; employees are able to donate throughout the day at a time to suit them. The next session is on 2 November (in the coffee lounge) - numbers have slowly dwindled over the years so please come along and donate if you can.

If it's your first donation you will be asked to complete a short confidential medical questionnaire to ensure you are fit to give blood and that your blood will be safe for the patients that receive it. To make sure that giving blood won't make you anaemic, iron levels are checked at every session. A tiny drop of blood is taken from your finger to ensure this.

Never forget just how much you're doing when you give blood. You are literally saving lives. By becoming a regular donor, say two or three times a year, you'll be helping save lives everyday all over the country.

See you on 2 November.

Jane M Welborn

RAL dates are 10 and 11 November, CR8, R27 – Ed.

Pete stays on track at Tooting

A change from the usual Battersea venue and a red hot day greeted the competitors in the Civil Service veterans' athletics championships on 6 September 1999.

Daresbury's Pete Weatherhead completed three events at the Tooting Bec track with great success. After opening with second place in the 800 metres, he went on to win the 1500 metres, before ending the afternoon with another win in the final event, the 5000 metres.

Keep up the good work Pete!

Pete leads the 1500 metre race

Martin Hodges 1962 - 1999

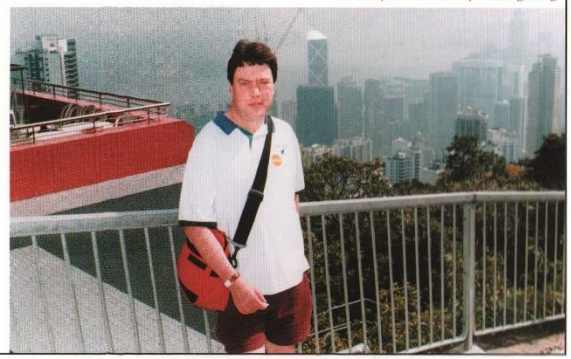
It is with much sadness that we report the death of Martin Hodges at his home in Wantage on 7 September.

Martin joined RAL on leaving school in 1980 and worked initially as a temp in the PAG packing section which prepared experimental apparatus for transport to international facilities such as CERN and DESY. His skills were soon recognised and within a year he transferred to the PAG workshops to undertake training as an electrical craftsman. Most of Martin's time at RAL was spent in the R34 electrical workshops where he made many friends and gained a reputation among the experimental community for sound work delivered on time. His dry sense of humour and talent for mimicry made him a popular member of the R34 team especially on site visits to CERN and DESY where he made a valuable contribution to the LEP and HERA experiments. In more recent times Martin was involved in the AATSR and MIPAS project work carried out by the ECD group in Space Science and Technology Department and he also helped build many of the development models for the CMS ECAL detector.

Martin had coped with difficult health problems from an early age but made light of them in pursuing his everyday activities. His humour and companionship will be greatly missed by his many colleagues and friends at RAL whose sympathies go out to his mother and father June and Alan and his brother Stephen.

John Connolly

Martin pictured on a trip to Hong Kong



Technical awareness seminars

ITD will be running a series of technical seminars over the next six months which are open to all staff. The series' objective is to focus on some of the most important issues in information technology. It will contribute towards informing the organisation on some of the IT challenges to be met in the future.

Because ITD recognises the importance of this series, it will be opened by ITD's Director, Professor Keith Jeffery, who will be presenting the first talk 'what's next in databases'. Database technology underpins all the commercial activity on the planet and most of the scientific work. The technique has been available since the 1960s and the current database systems are based on the theoretical work of Ted Codd. This talk explains the inadequacies of relational technology and reviews current trends in database research and development.

Some of the other topics to be included in the series are:

Challenges for the WWW in being the Global Information System of the Y2K by Professor Bob Hopgood.

New CLRC security policy by Andrew Sansum.

Unix security for decision makers by Andrew Sansum.

Business processes by Ken Robinson.

Use of SMS in supporting NT systems by Mike Waters.

Professor Jeffery's talk will be held in CR12 on 22 October at 2pm. Please contact Susan Hilton if you would like to attend <s.c.hilton@rl.ac.uk> ext. 6154.

Irene Foxton

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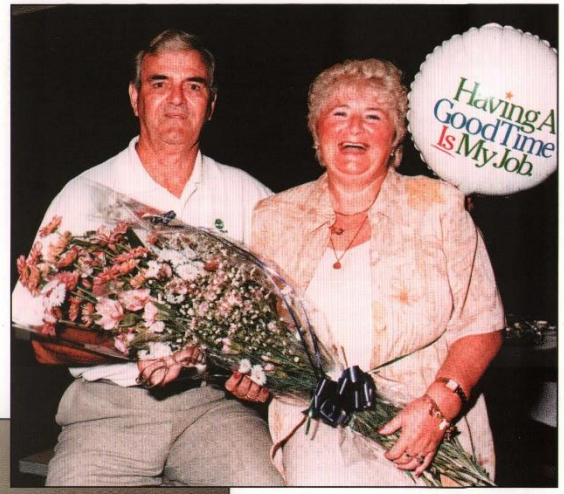

Retirements

Peter Vaughan

(99RC4181)

Dear Natalie

Amongst the staff who took redundancies when the NSF closed down in March 1998 were two individuals determined to use the time gained adventurously. Dave Cundy and I - within three weeks of leaving the lab - sailed out of the port of Liverpool on a forty-two foot powerboat bound for Fethiye in Turkey.

I, as skipper, had never been out of the UK before; my longest voyage had been to the Isle of Man on a ferry!

David, the navigator, had learned the theory of navigation in the couple of months prior to the voyage. Our passengers were the seventy-year-old millionaire owner and his (slightly) younger brother. The next nine weeks were destined, not suprisingly, to be filled with incidents, accidents and experiences.

The adventure has resulted in my book '7:60 Seven Seas in Sixty Days', to be published within the next month. The book will be launched with an illustrated talk in the Merrison lecture theatre at 7pm on 15 October. There are a small number of tickets left ñ please contact Marg Jacks if you would like to come.

Cheers

Jeff Meehan

Letters TO THE EDITOR

SNIPPETS

Alphagalileo launches bilingual site

The bilingual upgrade to the Alphagalileo internet site was launched on 14 September at the BA festival in Sheffield. In his launch speech, Dr Michel Bernier, Science Counsellor at the French Embassy in London, emphasised the value to all of European science from this Anglo-French initiative and looked forward to the time when other countries would join the campaign to promote European science and technology to the world.

AlphaGalileo is an Internet-based press centre providing news about the latest developments in European science to journalists world-wide, with the aim of ensuring that young people, industry and the general public appreciate the excitement and significance of European research. Launched a year ago the service now has almost a thousand registered journalists and over 600 registered contributors from almost all European countries and many others worldwide.

RAL is contracted by the British Association, the project co-ordinator, to provide the technical management and development for the site which is currently attracting around 8000 hits per week. Local business manager, Andrew Kurzfeld, believes that the key issue facing AlphaGalileo is to attract funding for the main operating phase of the project, due to start next year. "All users of AlphaGalileo think that it is a brilliant service and, with French and UK Government support, as well as funding from most of the UK research councils and from the Wellcome Trust, the site has come a long way. However, major sponsorship is now needed to take the project through to its final stage," he said.

http://www.alphagalileo.org

European Space Agency - XMM schools competition

ESA has launched a schools competition to mark the launch of the XMM (X-ray Multiple-Mirror Mission) satellite.

There are three competitions, for ages 8-12, 13-15 and 16-18. Schools in all of ESA's 14 member states are invited to enter.

Age 8-12. 'Draw me a telescope'

The winning entry will become the XMM mission logo. The picture will appear on the fairing of the Ariane-5 rocket which will launch the satellite in December 1999, and on stickers, press kits, T-shirts, etc. One pupil and an accompanying adult will be invited to Kourou to see the launch live, while the rest of the winning class will receive a T-shirt and lots of publicity. **Closing date** 8 October 1999.

Ages 13-15. 'What's new Mr Galileo?'

Classes are invited to map out a one-page (A4) vision on space and astronomy and its benefits for humanity. Entries must be written in English and should be no longer than 500 words. The winning classes, one class per member state, will be invited to Kourou to visit the Guiana Space Centre, Europe's spaceport, to witness first hand the final preparations for the XMM launch. **Closing date** 15 October 1999.

Ages 16-18. 'Stargazing'

For the first time ESA is providing young people with an opportunity to use one of its telescopes, namely the X-ray Multiple Mirror Mission. Details of this competition will be announced once the XMM satellite is in orbit.

Full details of these competitions are on the ESA website

http://sci.esa.int/xmm/competition

RSPCA

Many thanks to everyone at RAL who contributed to Maggie's RSPCA box. The Didcot collection came to over £200 and your donation was greatly appreciated.

SECIS

Last month's LabNews included a piece entitled "From the secret diary of a researcher" which should have included the copyright details. The SECIS team asked me to remind anyone wishing to use text from their website to observe their copyright procedures (which are available at the bottom of the SECIS homepage).