SNIPPETS

SETI@home
Not as zany as flying toasters and not as restful as tropical fish, but how about having a screen saver that uses your computer's idle moments for an international experiment? SETI is a scientific experiment that harnesses the power of hundreds of thousands of Internet-connected computers in the Search for Extraterrestrial Intelligence (SETI). You can participate by running a free program that downloads and analyses radio telescope data.

There's a small but captivating possibility that your computer will detect the faint murmur of a civilisation beyond Earth. Have a look at the website *http://setiathome.ssl.berkeley.edu/* and follow the instructions to download. It's well documented and easy to do, and there are versions for different computers. Then join the CLRC group and help keep CLRC in the top 100 large companies participating in the experiment.

Quiz
Congratulations to the 'Bods', winners of the recent Rec Soc quiz and barbeque evening with a score of 53/60 and to the 'Stick Insects' - gallant runners up losing by one point.

NOTICES

RAL Notices

Dr Jack Howlett CBE (1912-1999)

A CELEBRATION
of his life and work will be held at the
Pickavance Lecture Theatre
Rutherford Appleton Laboratory
5.30pm, 24 September

Light refreshments will be served in the coffee lounge, R22 from 4pm.
All friends and former colleagues are invited to share in this tribute to him.

Please contact:
Press and Public Relations, CLRC Rutherford Appleton Laboratory or telephone 01235 445789 if you would like to attend.

Articles, ideas and letters are very welcome!

Articles to the Editor or Correspondent by 15th of the month.

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LABNEWS

INSIDE THIS ISSUE

Euro money allows Daresbury to test new breast cancer detection technique

Researchers at DL are to test whether a new system can detect breast cancer at an earlier stage than current screening techniques as part of a 1.3 million euro project called PHASY (Phase Analyzer System for novel imaging modalities).

The new technique uses X-rays from the SRS in a new way, allowing objects to be imaged with extraordinary sensitivity and precision compared to ordinary techniques. Objects as small as 50 μm - five one-hundredths of a millimetre - can be seen with the technique, even when they are surrounded by an environment that behaves in a similar way. This makes the technique ideal for detecting very small tumours.

The new technique may also be useful in other areas too. Daresbury scientists will be extending the technique to allow full three-dimensional images to be recorded, and the extra resolution of such techniques means that the internal structure of bone can be studied. It is hoped that this will provide an insight into various bone diseases such as osteoporosis. Applications in non-destructive testing and structure analysis in material science are also anticipated.

DL's Rob Lewis said, "The potential of this new technique is enormous, but it needs development work before we can say whether it's really going to be of use. At present we're working with biopsy samples. In future, it's possible that we could open up a new, much more sensitive, way of screening for breast cancer, but there's a lot of work to do before that can happen. People won't be visiting the Lab for breast screening in the future though: the work at the Lab will aim to develop a new technique that can be used on all hospital X-ray machines and provide a gold standard for calibration."

Inside:
The Eclipse - see story on pages 4,5,6

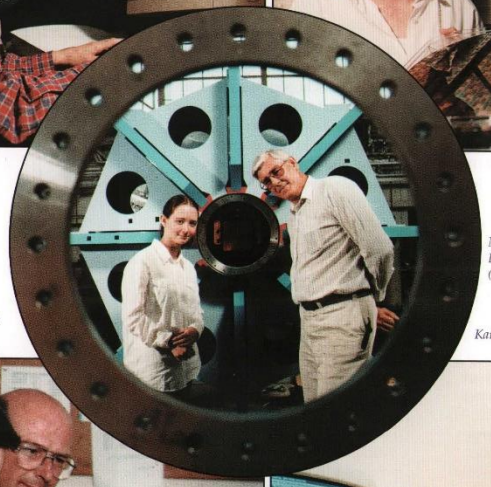
(99PMC4103)

'Tis the season of work experience

Work experience is an important part of modern schooling, and both laboratories provide student placements. Over the summer - thanks to many willing supervisors - RAL has been able to offer work experience to more than forty students. Most of them come from local schools and are at the end of Year 10 (fourth form, aged 15). They have all had a super time and have gained a lot from their time here. We are extremely grateful to everyone who has helped, especially those who have looked after a student and made the scheme run so successfully again this year. RAL has gained by sending a positive message about the laboratory and science to fellow students, parents, friends and family of all the students.

Ben Watkinson, Larkmead School, Abingdon with Mike Ellwood (99RC3487)

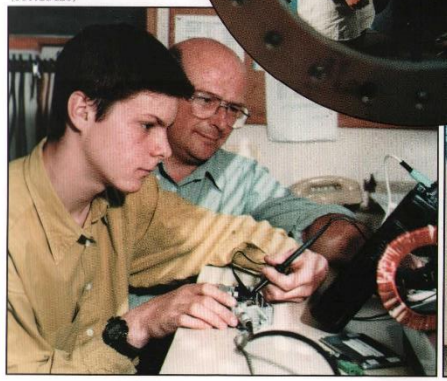
Charlotte Humphreys, Trinity School, Newbury with Debbie Worboys (99RC3493)

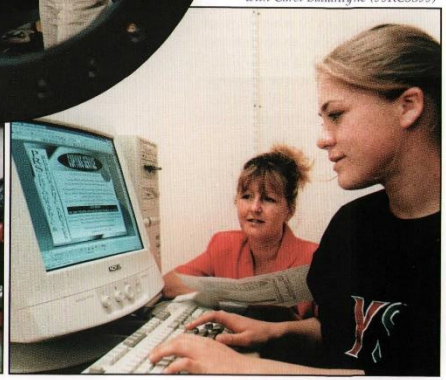


Naomi Parsons, Didcot Girls' School, Didcot with Eddie Towndrow (99RC3410)

Carl Durrant, Dorcan School, Swindon with Mike Perkins (99RC3420)

Katie Jones, Didcot Girls' School, Didcot with Carol Ballantyne (99RC3399)





One pupil, Naomi Greenough, spent some time in PPD and in CLF. This is her report on the experience:

During my two week work experience I saw a lot more of RAL than just the two departments I was based in. The summer student lecture series, although not always totally understood by the work experience students, gave me an insight into the work of other departments. I was also given the opportunity to go on tours of Isis and Space Science.

On my first day I was introduced to the other work experience students, told about site safety and given information packs about the lab. We all met once a week to talk about what we had been doing and arrange times to look round each other's departments. Through other students I visited the Central Microstructure Facility and other areas of Lasers.

I spent my first week in Particle Physics with Dr Bill Scott. With his help I wrote a computer program to investigate a special set of binary codes called the Golay code. This involved learning a new computer language that I had never used before. We spent a lot of time talking about neutrinos, as that was what he was working on just before I arrived. I enjoyed this more than the computing as I was able to get answers to the questions my teachers at school did not really have time to answer. He was asked to give the Particle Physics lecture during the summer student programme and I helped him prepare it to a level that more of the younger students would be able to understand.

In the second week I spent two days in the CLF where I helped to design the new posters for the main Laser display. I worked was with two students, Richard Williams, who was coming to the end of his year placement, and James Christian, his replacement.

I spent my last two days back in PPD with Dr John Thompson. I learnt a lot about LEP, how it worked and the experiments in progress. We went through the finer details of leptons, hadrons and virtuons. By the end of my two days I could spot a muon event compared with an electron-positron event in the results from LEP on the internet. Now I know more about W+, W- and Z^0 particles, I'm a lot more enthusiastic about particle physics. My next idea is to have a school trip to Geneva to visit LEP!

The two weeks have certainly been a beneficial experience. I can see how computers play an important part in any department and that computer skills are essential. It has confirmed my decision to study physics as a degree when I leave school. I know that I want to be involved in the practical side of science, as there is so much that we still don't know and needs to be discovered before we fully understand the world around us.

JASRI visit to the SRS

On May a delegation from the Japan Synchrotron Radiation Research Institute (JASRI), headed by their newly appointed President Mr Yoshinoro Ihara, visited the SRS. JASRI operate the world's most powerful and advanced X-ray synchrotron facility, Spring-8, which started operation in October 1997. David Norman, Gareth Jones and Bob Cernik gave talks on the SRS and highlights of the science programme, and on our plans for the new synchrotron source. Our visitors gave talks on the status of Spring-8, its beamlines and its world-leading developments in X-ray undulator technology.

For those uninitiated in the jargon of synchrotron radiation facilities, an undulator is an array of magnets (more than 100 in some cases) a few millimetres apart whose effect on the electron beam is to produce very intense, tuneable beams of synchrotron radiation. They are one of the two basic types of 'insertion device', the other being wigglers, that distinguish modern 'third generation' sources from older machines. The new synchrotron source could have 20 or more of these devices, so this is one of a number of Spring-8 developments of great interest to us. For their part, they are very interested in our advanced detector developments, and the possibility of an exchange collaboration was discussed.
The photo was taken at an informal dinner given for our guests by Samar Hasnain and his family

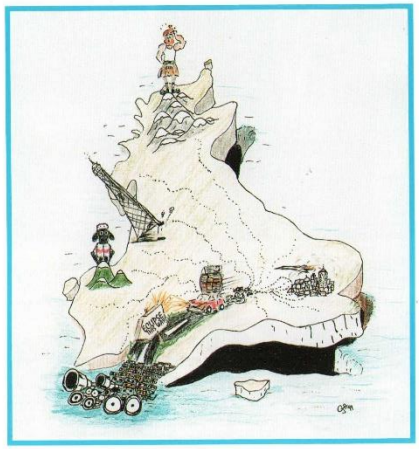
Pat Ridley

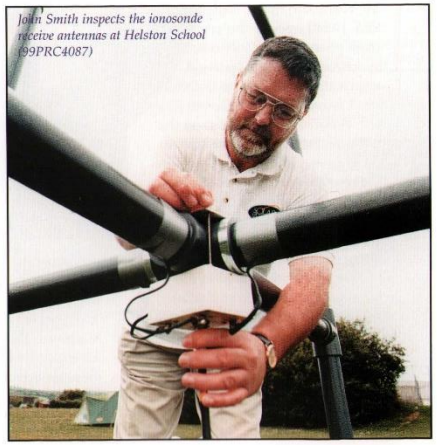
From the nanoscale to the astro scale – Eclipse fun at Daresbury Laboratory

The astronomical event of the decade was the recent solar eclipse. At Daresbury Laboratory the majority of site viewed the event. Most people were content to view the spectacular event through their filter glasses, kindly supplied by the Laboratory, but a few groups had slightly more ambitious plans. A six inch Newtonian telescope with a long focal length eyepiece was expertly cobbled together by Jim Cody in between his efforts in making recent modifications to the Daresbury nanomaterials machine. All work at the nanoscale stopped and the focus of attention shifted to the astro scale (an increase of about a thousand trillion in size) as the beast was trained on the eclipse. Although the tracking mechanism consisted of Derek Eastham lying back and nudging the mirror end to maintain the instrument in line with the Sun, it proved to be a very effective way to see the eclipse! A bright image more than a foot in diameter was produced and this was projected onto a white card.

Derek Eastham

The image of the Eclipse at 11.15am at Daresbury showing 90% occlusion. Work experience student Charlotte Bell is pictured next to the eclipse viewer.





John Smith inspects the ionosonde receive antennas at Helston School (99PRC4087)

Eclipse media mania

There were very few articles or broadcasts about the activities of scientists during the eclipse that didn't mention at least one member of CLRC. Chris Davis and Ruth Bamford with their radio experiments, Ken Phillips and his trip to Bulgaria with his SECIS experiment, Richard Harrison and Dave Pike with their Soho connection, Richard Wade in his capacity as the instigator of the UK eclipse co-ordinating group, Jeremy Curtis and Chris Davis with their eclipse web pages, and many more. Everyone rose to the occasion and was very patient with the demands of the media - and I know they can be very persistent in their efforts to fill column inches in newspapers and minutes in the broadcast media. I'd like to thank everyone who helped out during this hectic time.

Jacky Hutchinson (Press Officer)

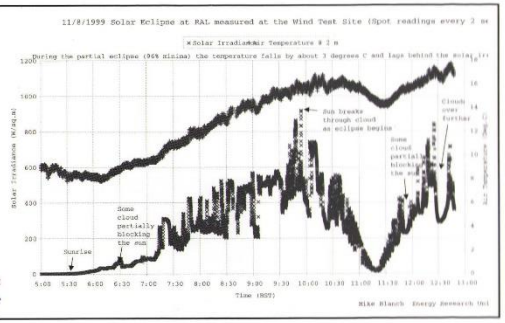
They won't believe us!

"What did you see?" was the question that everyone who trekked to Cornwall and South Devon for the eclipse was asking each other afterwards. Well, we were incredibly lucky - but I don't blame anyone for not believing that we just happened to be in the spot under a 5-minute gap in the clouds that afforded us the perfect view.

Right from the start I have felt strangely optimistic about seeing the eclipse. Through the failure to get our caravan fixed (a friend stepped in with two days notice offering us the loan of their caravan) to the weather forecasts which spread doom and gloom. My optimism did waver however when, at 10.30am on E-day on a caravan site near Newquay, the sky was completely overcast. But at 10.45am I spotted a break in the clouds and a small patch of blue sky - and it was heading towards the Sun. And it grew bigger. Then there were intermittent sightings of the Sun's crescent through the clouds as they thinned. The break in the clouds reached the Sun when there was the thinnest sliver of it visible. It lasted through the diamond ring, through the eerie gloominess and spectacular aurora images of totality, and past the diamond ring at the end. The whole experience was truly awe-inspiring and spectacular, and well up to all my expectations. I now know why eclipse groupies are prepared to travel long distances to see total eclipses. Our two dogs, and those of fellow campers, were totally non-plussed by the experience, though I heard the cockerel at the adjacent farm crowing as the moon moved away from the Sun and brightness returned.

Jacky Hutchinson

On the late morning of 11 August the weather around RAL consisted of light cloud with frequent breaks which meant that the 96% partial eclipse could be seen well. When looking at the trend of the solar irradiance please note that cloud does reflect light onto the meter (pyranometer) so sometimes when there is a break in the cloud, its reading is higher than if the sky was clear .

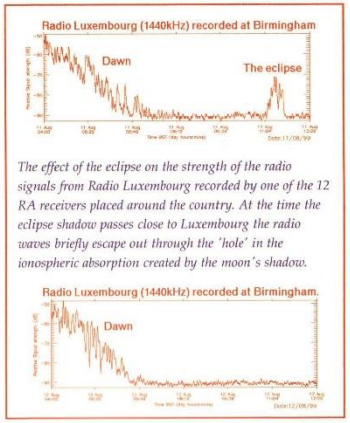


Measurements of solar irradiance and air temperature taken on the Wind Test Site during the eclipse

Behind the public radio experiments there was a whole collection of ionospheric and radio instruments, coordinated by Ruth Bamford of the Radio Communications Research Unit.

The Radiocommunications Agency (RA) funded 16 broadband radio scanners to monitor many different radio stations. Placed at RAL, Cornwall and in 12 of the RA's regional offices across England, Scotland and Wales, the scanners have shown that the most dramatic radio responses were obtained from broadcast stations where the shadow passed directly overhead.

It was over a year ago that the prospect of radio experiments was brought to the attention of radio amateurs. With their specialist knowledge and more sophisticated radio equipment they could monitor in greater detail the effect of the eclipse on radio propagation. Many have written in to say how surprised they were at the strength of the effect and how much they enjoyed listening to the eclipse on their radio. This feeling was echoed by the many visually impaired people who participated, having learnt about the radio experiments through the braille newsletter 'News for you'.



The effect of the eclipse on the strength of the radio signals from Radio Luxembourg recorded by one of the 12 RA receivers placed around the country. At the time the eclipse shadow passes close to Luxembourg the radio waves briefly escape out through the 'hole' in the ionospheric absorption created by the moon's shadow.

Whilst in Helston, Ruth worked with a group from the University of Lancaster who had a instrument called a riometer that monitors galactic radio sources to capture the changes in the absorption of the radio signal by the ionosphere - a measurement that is highly valuable to interpreting all the other radio experiments.

Ruth told me after her trip, "The eclipse was a great opportunity for the UK ionospheric community to work together and it brought me back to the reason I got interested in science in the first place".

For more info:
http://www.rcru.rl.ac.uk/~rab36/

From the secret diary of a researcher

A light-hearted view of some events from the SECIS expedition.

My first flight was delayed by three hours and the second was 5 hours late but such delays did not not appear to constitute a 'big deal'. In fact, the passengers still clapped when we landed. Given that we arrived considerably late and the flight had been an uneventful one, I found myself wondering what they would have done if the flight had been on time and the captain had heroically saved us from the jaws of menacing turbulence and certain disaster?

Picture the scene: at airport waiting to catch badly delayed domestic connection; due to give conference presentation same day. I pushed my luck and asked if there was a lounge where I could use my laptop computer. The helpful airport employee pointed at one of the airport's X-ray scanning machines (switched-off!) and a nearby power socket. I spent just over an hour happily working away on the laptop placed on top of the scanner. You may want to reflect on the fact that this entry was made under these glorious conditions. Still, at a time when some airlines may bicker over who has prettier tailfins or more aerodynamic cutlery, this was a refreshingly different experience. With this sort of ingenuity and equipment multi-tasking, you can begin to understand how the Mir space station carries on against all the odds!

Approached by a child recently after a presentation on SECIS in which the corona heating problem was explained, he now saw fit to accuse us of being lazy. Asked why he had such a low opinion of our efforts, he replied that we have known about the corona heating problem for fifty years but had not solved it. To add further insult, he added that his dad would have fixed the problem in a weekend and using their own garage! My reaction? I told him to go and ask his father if he wanted to join the SECIS team - if nothing else, we could certainly make use of the garage!

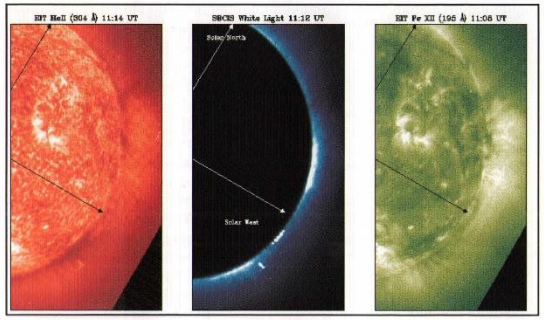


Image from one of the two channels of the SECIS instrument during the total eclipse taken from Shabla, Bulgaria (centre panel). It shows bright structures which are both coronal 'active regions' (associated with sunspot regions) and prominences (cool material in the corona, visible with the naked eye as bright red dots around the moon's limb). The left and right images are from SOHO - that on the left being the light in He atoms at about 20,000 degrees K (so showing prominences) and that on the right being light in highly ionized Fe atoms at 1,000,000 degrees K (so showing coronal structures).

Ken Phillips and team returned from Bulgaria at the end of August having successfully completed their Eclipse experiment using SECIS on the Black Sea Coast. The experiment should explain why the Sun's atmosphere is so much hotter than the Sun itself.

During the total eclipse the sophisticated digital imaging system captured over 12,000 high definition images of the Sun's corona. The data collected would fill 3,000 floppy disks (4 billion bytes).

Ken said "We couldn't have hoped for better; the skies were clear and the equipment worked perfectly. We nearly didn't have an experiment at all – it was held up in transit and didn't arrive until the last minute, giving us very little time to test and calibrate it. Despite this I really think that our data will hold the key to solving this mystery."

Early results from the analysis of the data confirms that there are very fast changes occurring in the solar corona. These were previously seen as 'brightenings' and happened too fast for scientists to record. By capturing 45 images each second, it should be possible to see exactly what changes the corona is undergoing. Detailed analysis over the coming weeks should reveal whether they are flashes of ultraviolet or X-ray energy exploding at the Corona, or whether they are caused by fast oscillations in the solar magnetic field. The results will be a big step forward in understanding the complex heating processes within the Sun and its atmosphere.

For more information on SECIS see *URL: http://ast.star.rl.ac.uk/secis*

Library service cuts

The Library has been asked to make significant savings on its budget for 1999/2000. In assessing where to make the cuts, the Library has endeavoured to reflect users' priorities wherever possible and to indicate alternative services where these are available.

The main effects of the cuts are shown below.

Service	Cuts	Alternatives offered
Journals	59 titles to be cancelled Jan 2000 (see clrc announce for a full list). Titles selected on the basis of low recorded usage during the June 1999 journals surveys.	Interlibrary loans will continue to be provided free of charge for material not held by the Library. Normal delivery is 3-4 days but can be quicker if urgent.
Books	Budget reduced by 25%.	Books may be borrowed on interlibrary loan. If you wish to purchase copies on your project code, send a completed and authorised CLRC requisition to the Library.
Recent additions list	Printed list ceases at end of August 1999.	A new electronic alerting service is available from September 1999. Contact the Library <library@dl.ac.uk> or <library@rl.ac.uk> for details.
Electronic Laboratory reports	Service ceases at end of September 1999.	Quarterly lists are posted on the web at *http://www.clrc.ac.uk/TechnicalPublications/SNC* and hard copies may be requested from here. Electronic full text for many CLRC reports is also available at *http://preprints.cern.ch/*

We regret that, in addition to the cuts already mentioned, Library users at RAL will experience a further deterioration in service as the RAL Library is currently two staff short. In particular there will be delays in processing new journal issues, ordering books and journals for departments, responding to enquiries and adding new material to the Library catalogue. We offer our most sincere apologies for the inconvenience caused.

Su Lockley

Death Valley cycle ride

The husband of a RAL cleaner is raising sponsorship on behalf of the Oxfordshire Deaf Children's Society to buy cordless, microchip radio receivers for children by doing a sponsored solo cycle ride across the USA's Death Valley.

Philip Middleton's wife, Keryn, who has worked at RAL for three years, and their youngest son, Matthew, were both born deaf. The new radio receivers cost £1,500 each and the revolutionary, miniaturised technology enables communication with the deaf person without need for a cumbersome, battery-operated receiver with wires, which Matthew has to use when he is at school.

Mrs Frances Simmons, of the Oxfordshire Deaf Children's Society, praised Philip's 'selfless courage' after it emerged that he is continuing with his plans for the bike ride even though he has sustained a fractured arm. He hopes to be back in time for an operation. ODCS hopes that there will be enough sponsorship from the ride to buy several of the receivers. Mrs Simmons said, "To prove how selfless Philip is, in doing the ride for us, there is a waiting list of priority cases for the radio receivers and his son may not necessarily be allocated one."

Philip expects to do the sponsored ride in October - travelling about 320 miles in four days through the mountainous desert region in south eastern California, where temperatures exceed 51.7C in the shade. If you would like to support Philip's efforts sponsorship forms are available in R71 reception at RAL or you can contact the Oxfordshire Deaf Children's Society c/o Mrs J Tolson, 16 Yarnells Road, Oxford, OX2 0JY

Retirements

John Craig

John Craig retired at the end of June. He joined NIRNS in 1964, after spending time as an apprentice turner. He spent most of his early career in the bubble chambers before working within the Inspection and Metrology area.

Gordon Walker presented John with a Ray Roberts card, a set of bowls for bowling and a bottle of malt whiskey. His wife was presented with a huge bouquet of flowers.

Malcolm Arnold, Keith Sinclair and Harry Jarvis are pictured with John (second from the left) (99RC3515)

Brian Fails retires

On Monday 16 July Brian Fail's colleagues gathered to say farewell to him.

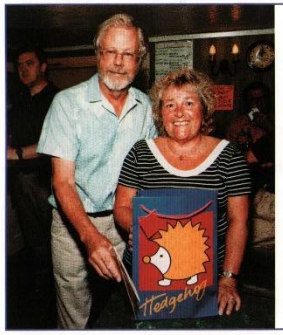
Brian and Mary display their gifts (99RC3693)

Brian joined RAL in 1964 working as a shift technician in the mechanical engineering group of Nimrod and went to work on the updating of the ancillary plant for ISIS.

During the 35 years Brian worked for RAL he was very successful in maintaining the equipment, some of which was very old. Whenever there were problems with the ISIS beam, Brian sprung into action to make sure things were back up and running in minimal time. He became head of the ancillary plant in 1993, which supplies ISIS with its coolant water and air conditioning. Brian's last job before he retired was to oversee the successful refurbishment of the initial pipework for the ISIS primary cooling system upgrade.

At his presentation Brian was presented with an electronic weather station, a gardening voucher and a Ray Roberts card, and his wife was presented with a bouquet of flowers.

Brian and his wife now plan to move back to the Northeast.



Dear Natalie

I retired at the end of July after forty six and a half years service.

I would like to thank all my colleagues for their help, kindness and friendship over the years. I would especially like to thank those who contributed to my leaving present – which I have aleady sampled! – and to everyone who came to my retirement 'do'.

I apologise to those whom I left off my invitation list but I would like to make amends. The next big event on my social calendar is my 100th birthday so I suggest we all meet up, same time, same place on 31/03/36 (wheel chair ramps will be provided – especially for the gentleman who fell over going IN to the pub for my do!).

Regards

Dick Carter

Dick and his wife, Maureen, look at his gifts (99RC3964)

ISIS says au revoir – but not good bye – to Colin

After working on ISIS from its conception to its present status as the world's most powerful neutron source Colin Carlile is off to the ILL in Grenoble for four years to work his magic there.

Even though Colin will be back, CR12, R68 was packed with well wishers on 29 July when Andrew Taylor summed up Colin's career so far and presented him with some gifts.

Early in his career at RAL Colin was seconded to the ILL. On returning to the UK he joined the Neutron Beam Research Unit at RAL who were busily exploiting the pulsed linac at Harwell as a prelude to turning ISIS from dream to reality.

Colin became a Division Head in 1993 - a post that exploited his organisational and personal skills as well as his scientific expertise.

Colin's friends and colleagues had contributed to his gifts which included a GPS device, a (rude) French phrase book, a tool kit and a card which as well as the usual signatures, contained a photographic history of Colin's career so far. Steve Bennington presented Colin with a 'shutter closed' indicator, made by the ISIS electronics group and the technicians - something Colin had been requesting for years.

Colin emphasised that it was the people who worked on ISIS that made it the huge success it has become. Colin's parting shot was an award which could be presented to people when Andrew is partially pleased with their efforts. Apparently, when Andrew is impressed with people he gives a (maximum) score of 2/10, so Colin had an award made. I wonder who will get it first…

Uschi Steigenberger takes over as Division Head for ISIS Spectroscopy and Support.

Colin presents Andrew with his award (99RC3914)

From left to right: Clare Wadley, Colin Carlile, Uschi Steigenberger, Andrew Taylor and Susan Bucknall (99RC3922)

Learning update

Learning & Development course programme
September 1999 – December 1999

SEPTEMBER

14	Customer care (RAL)
14	Effective selection update (RAL)
15	Mid-life planning (DL)
20-21	Effective selection (RAL)
22	Time management (RAL)
28	First Aid at work (DL)

OCTOBER

	Induction (DL)
	Coaching (DL)
1-4	Pre-retirement (RAL)
6-7	Safety management (DL)
	Access new user (DL)

NOVEMBER

	Time management (DL)
5	Induction (RAL)
17	Effective selection update (RAL)
22-23	Effective selection (RAL)
25	Time management (RAL)
26-29	Pre-retirement (RAL)

DECEMBER

9	Working with your manager
	Project Management
	-Introductory courses (DL)
9	Presentation skills
	Project management
	–Introductory courses (RAL)

Outdoor sports day fishing competition

The 1999 Outdoor Sports day fishing competition took place at Packington, Birmingham on Friday 9 July. This year was the 21st anniversary of the fishing competition with the first ever event being held on the River Thames at Runnymead in 1978. Taking part this year were teams representing Daresbury, Swindon and Rutherford. The team event was a very close run match with only one point separating the first three teams, and only 7 points separating all the remaining teams competing. The total weight of fish caught was just over 248lb, averaging 10lb per angler.

Daresbury blue team: Keith Rathbone (Captain) Bill Johnson, Alf Neild and Jack Payton. The winning team members all received a replica trophy that they can keep

Team event - the winners were Daresbury blue team, second were Daresbury gold team, third Daresbury red team, fourth RAL and the Swindon team finished fifth.

Individuals - the individual match was won by Daresbury's Greg Westbrook with a weight of 32lb 14oz - the best weight ever for the competition. Even more remarkable was the fact that Greg didn't catch anything for the first two hours of the five-hour match. Keith Rathbone came second with 24lb 12oz and third was Clive Hill 22lb 2oz. The individuals all received a trophy in recognition of their achievement.

Jim Kay presents the individual winner, Greg Westbrook, with his prize

The biggest fish caught was a carp weighing 7lb 2oz caught by Simon Appleton, an angler who must be regarded as the most improved Daresbury angler this year.

Colin Watson

Letters TO THE EDITOR

Dear Natalie

The article by Manolis Pantos on the birth of a new word *(August LabNews)* gives me a golden opportunity to highlight the extra dimension to the work of CLRC that seems to have been hidden from - rather than forgotten by - many staff.

I have always held the belief that the pursuit of scientific knowledge is a cultural activity of the very highest order. Indeed the anthropological definition of culture in my dictionary is *the sum total of the attainments and activities of any specific period, race, or people, including their implements, handicrafts, agriculture, economics, music, art, religious beliefs, traditions, language and story.*

Science in its own right is a deeply significant activity and I'm sure I don't need to be specific when I say that, without exception, all the other areas of human activity listed in the definition above have been deeply affected by its influence.

Firstly, to avoid unhelpful demarcation, let me define the title 'scientist' as anyone using scientific method to pursue a goal. Then, the development of our culture is very much part of the remit of any such person at any level who considers him or herself to be worthy of the title 'scientist'.

All genuine science is cultural but it might be said that science sponsored by government has a greater opportunity to expand our culture since it is not so directly attached to the need to make a profit, as is the case with industrial science. Expansion of our culture is therefore very much in the remit of CLRC, whether so stated or not.

On another, not unrelated tack, it is but a short step to make the connection between the field of scientific endeavour and that of entertainment but it is one that scientists might do well to appreciate. To take examples:

We can all be deeply involved when treated to great performances in our favorite art whether it is music, football or some other activity. Thus we are entertained and our culture grows by remembered experience.

More pertinently perhaps we are individually prepared to pay for such experiences so that resources - often large resources - are generated for further developments.

In this sense all scientists are involved in the entertainment industry. Those who can present their work in such a way that their audiences become deeply involved contribute most to our culture because they are remembered. They also potentially have greater access to funding.

Colin R Walters

SNIPPETS

Congratulations

Professor Keith Jeffery has been appointed as Director, Information Technology (99RC3819)

PPARC small awards scheme

PPARC announces the ninth round of its competitive small awards scheme. The deadline is 10 October 1999.

Awards can range from £250 to £10,000 (maximum) per project. The expenditure can go towards materials, salaries, travel & subsistence. Encouragement is given to projects involving young people and schools.

Projects must be relevant to publicising or teaching PPARC-funded science areas, namely: particle physics; space, ionospheric, solar and planetary science; astronomy, astrophysics and cosmology.

To apply please contact the PUST Office, Room 2232, PPARC, Polaris House, North Star Avenue, Swindon SN2 1SZ. Tel: 01793 442123 Fax: 01793 442002 <pr_pus@pparc.ac.uk> http://www.pparc.ac.uk/role/notes.html

Triathlon

Good luck to Chris Brew who will be taking part in the London Triathlon on Sunday 19 September. The Olympic-class event involves a 1500 m swim followed by a 40 km cycle and ends with a 10 km run. He tells me his training is well under way and he hopes to finish the event.

He is currently looking for sponsors. All the money raised will go to Mencap. If you would like to sponsor Chris, please contact him at RAL on ext. 6261 <c.a.brew@rl.ac.uk>.

Alan Leadbetter meeting

Science, Facilities and Facilitating Science is a meeting to mark the occasion of the retirement of Professor Alan Leadbetter CBE, Associate Director of the Institut Laue Langevin, and to celebrate his research career in physical chemistry and neutron scattering.

The meeting is being organised by the Neutron Scattering Group of the Institute of Physics and the Faraday Division of the Royal Society of Chemistry. It will focus upon recent progress in those areas of physical chemistry with which Professor Leadbetter has been most closely associated, and also upon the developments and future prospects at the major international research facilities that he has both used and managed during course of his scientific career. It will take place at The Cosener's House, Abingdon on 22 and 23 October.

Invited speakers include John Goodby, Neville Greaves, Robert Richardson, Takasuke Matsuo, Cesare Bucci, Bill Gelletly, Peter Lindley, Don Kearley and Dirk Dubbers, Andrew Taylor (ISIS) and Paul Williams (Chairman, OECD Working Group on Neutron Sources and former CEO, CLRC)

A small registration fee will be charged to cover the course's expenses. Accommodation and dinner will be charged separately. For further information contact Bob Cywinski at the University of St Andrews: Tel: +44 1334 463108 Fax: +44 1334 463104 <rc7@st-and.ac.uk>

A decade ago

After more than six years of preparation LEP - the large electron positron collider at CERN - was switched on in July 1989 and less than three weeks later the first Z^0 particles were seen by scientists working on all four experiments on LEP. PPD's Bob Brown said, "I remember the occasion well since my experiment, OPAL, detected the first Z^0 event at LEP. Indeed, by a statistical fluke, OPAL collected five events before any of the other experiments had seen one, causing some very worried faces for a few hours."

During the last week of August 1989 the SERC/DTI transputer initiative, co-ordinated through RAL, held its first international conference and exhibition at Liverpool University, attended by over 200 delegates. Ten years ago the Daresbury Laboratory sadly noted the death of Sir Alec Merrison, its first director, and a BBC news bulletin featuring DL highlighted the accumulation of many years' work in identifying the structure of the foot and mouth virus.