

February 1995

DRAL News

• A Monthly Newsletter for DRAL Staff •

Inside...

LHC project, IEE at DL, Radio communication award, News in Brief, Social News and Notices.

Dr Paul Williams to head CCLRC

As was widely anticipated, Dr Paul Williams has been named as the first Chief Executive of the Council for the Central Laboratory of the Research Councils (CCLRC). The official announcement of the appointment was made on 31 January by David Hunt, Cabinet Minister for Science. Dr Williams will take up the appointment on 1 April 1995.

Welcoming the appointment, Mr Hunt said: "I am delighted that Dr Williams will be the first Chief Executive of the new Council. His academic knowledge, managerial skill, and high international standing, together with his intimate knowledge of the UK science and engineering scene, make him admirably suited to lead the Council. He inherits two excellent laboratories, with a skilled and dedicated team of scientists and engineers. I am sure they will all play their part in making the new body a success."

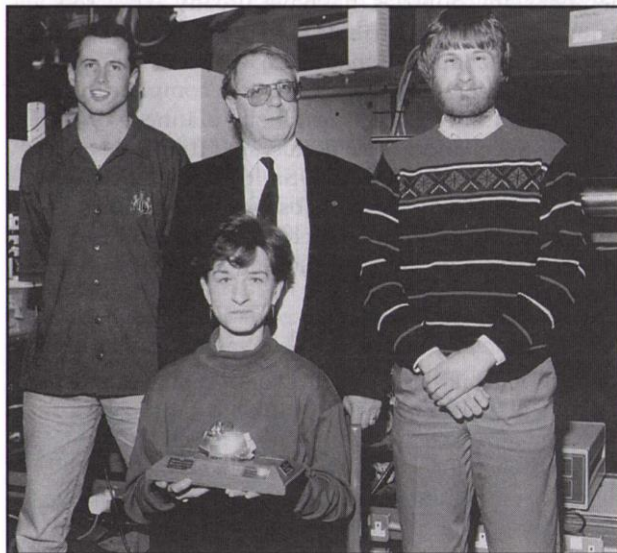
Dr Williams said of his new role: "I am looking forward to the challenge of leading these laboratories into an important new phase in their development. As components of the Council, their world-leading capabilities will be more accessible to all the UK's Research Councils, and to UK industry. I am confident that the Council is well-equipped to play its part in responding to the aims of the White Paper 'Realising our Potential'."

DL team awarded Royal Society of Chemistry prize

A team from Daresbury Laboratory has been awarded the 1993 prize of the Inorganic Biochemistry Discussion Group of the Royal Society of Chemistry, at an annual general meeting held at the University of North London.

The prize, a display of iron pyrites, 'fool's gold', was awarded for the team's lecture and poster outlining the structure of human ceruloplasmin. This protein structure has recently been solved through use of stations 9.5 and

9.6 on the SRS and local crystallographic facilities. Human ceruloplasmin directly translated means 'sky-blue plasma protein' due to its blue colour. It is one of many proteins which circulate in the bloodstream, but for which precise functions are not yet known. Low, or non-existent levels of ceruloplasmin are associated with Wilson's disease where deposits of copper in the brain and liver eventually cause death. The molecule may also be structurally similar to part of the blood-clotting Factor VIII, which is associated with the commonest type of haemophilia.



(95/757/1).

The protein has a molecular weight of some 132 kDa (1046 amino acid residues), making it one of the largest problems solved to date using data collected on the SRS. The structure has shown that there are six bound copper atoms, three of which give rise to the blue colour. Now that the structure of the protein has been determined, its functions may become clearer. There are certainly structural relationships with ascorbic oxidase, an enzyme which oxidises vitamin C, and other copper-binding proteins.

Pictured here with the trophy in the environment of station 9.6, are Irina Zaitseva, Graeme Card, Dr Adam Ralph and Professor Peter Lindley. Missing from the photograph are Dr Slava Zaitsev and Dr Ben Bax (Birkbeck College, London).

Peter Lindley (DL)

Large Hadron Collider project gets go-ahead

On 16 December 1994 the UK and the other 18 member states of the European Laboratory for Particle Physics (CERN) gave their approval for the construction of the Large Hadron Collider (LHC), one of the largest basic science projects ever undertaken. The total cost of the accelerator will be £1.3billion.

In order to keep the cost within available resources it is proposed to build the collider in two phases. For the initial phase of its operation, starting in 2004, the machine will be constructed to run at an energy level of 9.3 TeV by omitting one-third of the accelerator's planned 1,200 magnets. During a one-year shutdown from 2007 to 2008, the remaining magnets will be installed to allow the LHC to achieve its design energy of 14 TeV. These plans will be reviewed in 1997. If CERN receives firm offers before the review from non-member state countries that have already expressed serious interest in contributing to the project - the United States, Japan, Canada, the Russian Federation, India and Israel - it will be possible to complete the 14 TeV accelerator by 2004 as originally planned. "I would estimate the chances of an accelerated timescale to be strong," said Chris Llewellyn-Smith, Director General of CERN, who is on leave of absence from Oxford University. He was due to fly to Washington this month to begin formal negotiations with the United States.

The LHC will take scientists on a journey backwards in time to within the first million millionth of a second following the creation. It will recreate the conditions of the Universe when the temperature was 10,000 million million degrees hotter than it is now, and it will answer the question of how matter actually has mass.

The LHC, a particle accelerator built from high-powered superconducting magnets each 14 metres long, will be installed in CERN's existing 27-kilometre circular tunnel constructed for the LEP electron-positron collider on the Franco-Swiss border near Geneva. These powerful magnets will hold counter-rotating beams of protons on a steady course around the ring, as superconducting accelerating cavities 'kick' them almost to the speed of light at energies higher than have ever been reached in accelerators. When these proton beams collide, at fixed crossing points, their combined energy of motion will produce an intense micro-fireball which will shoot out hundreds of new particles. These flashes of energy will probe the interactions between the tiny quark constituents hidden deep inside the colliding protons and reveal how Nature works at the most fundamental levels.

The United Kingdom has expressed satisfaction with the financial agreement made with the other member states to fund LHC, which follows prolonged negotiations. The Particle Physics and Astronomy Research Council (PPARC) is the UK Government-funded body which provides support for university researchers in its areas of interest covering research into elementary particles and the forces of Nature; planetary and solar research including space physics; astronomy, astrophysics and cosmology. Professor Ken Pounds, Chief Executive of PPARC welcomed the go-ahead for LHC and said - "The PPARC Council has identified the LHC as the obvious next step for particle physics world-wide with full involvement of UK scientists and industry as our top priority in this field of research. It is important to recognise that the agreement reached in Geneva is based on a financial plan that is realistic and affordable. In particular, the reduction in our annual subscriptions to CERN will be of great assistance to PPARC in making the resources available to ensure the desired level of scientific and technical exploitation."

Chris Llewellyn-Smith said after the approval of the LHC that "The decision has assured a great future for world particle physics and for CERN." This statement is equally true for UK particle physics and particle physics at CCLRC. Members of RAL are already playing important roles in the preparations which are underway to build the two experiments ATLAS and CMS.

Over the next 10 years, approaching one-half of the experimental effort in the Particle Physics department and more than two-thirds of PPARC-supported effort for Particle Physics in Technology and Applied Science departments will be devoted to building and commissioning the LHC experiments. Furthermore, the LHC construction will provide the opportunity for British industry to win sizeable contracts in areas of high technology.

*Paul Jeffreys
Particle Physics Department (RAL)*

IEE at DL

On Thursday 19 January Daresbury Laboratory played host to a group of retirees from the Institution of Electrical Engineers (IEE).

The 45 members, all ex-practising professional engineers, visited the Lab as part of their very active programme of events, and took great interest in the facilities they were shown. IEE members from DL were recruited to act as hosts and guides - Tom Hinde gave



SRS Operation Manager Paul Quinn guides a party of IEE members through the Booster Synchrotron (95/740/6).

an introduction to the site and its history. Light-hearted presentations were also given by Paul Quinn and Dave Poole, who described operations and controls respectively. Steve Griffiths was also 'volunteered' to act as guide!

Having been thoroughly briefed, the group was escorted around the SRS. Fortunate timing of their visit during machine shut-down meant that no magnet or power supply went uninspected. After a sprightly hop around the experimental areas, the group, ranging in age from 55 to 80, returned to the NSF seminar room, where they had wisely provided themselves with a buffet lunch. This had the desired effect of causing the hosts to linger a while longer for questions, discussion and a couple of chicken legs! The IEE later expressed their appreciation in a letter from the chairman, thanking all DL staff involved in the visit.

Pioneering work in radio communication wins award

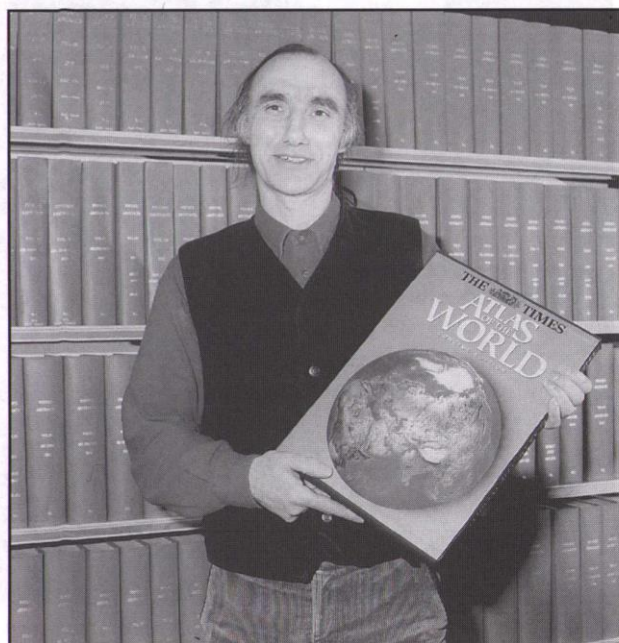
Colin Horrabin, DL, has been awarded the 1994 Bennett Trophy by the Radio Society of Great Britain, for his work in radio communication. The trophy, in memory of the late Wing Commander Bennett, is awarded annually to a member of the Society who has made a significant technical advance in the area of radio communication. The award, an inscribed Times Atlas of

the World, was presented to Colin "For his fine work on receiver-mixers, crystal filters and low noise oscillators."

Colin (call sign G3SBI), has been a keen amateur radio enthusiast for many years, having held an amateur transmitting licence since 1962. "In those days", Colin said, "most people used to make their own gear, whereas today most amateurs use modern Japanese-built solid state transceivers."

Colin identified a limitation in the current technology; modern radio receivers fail to pick up small signals in the presence of large, much stronger signals, simply because of the way in which they are constructed. He applied a 'figure of merit' for how well a receiver can pinpoint the small signal, and then worked to improve this figure of merit. The component of the receiver that Colin first developed was a new configuration of mixer (for the technically-minded, DMOS FET mixer connected in H mode!), and this pushed the figure of merit to a significantly better value.

Once this was done however, inadequacies in other parts of the radio receiver-detector became apparent. Colin made more improvements to the local oscillator and crystal (signal) filter. The performance of the new mixer could then be assessed properly, and was reported in the monthly journal 'Radio Communications'. Colin said "I am now quite certain that I could build a short wave receiver significantly superior to anything that could be bought at the moment and I suspect professional manufacturers may make use of these developments."



Colin proudly displays his award (95/738/3).

Repro veteran swops work for ... hard work at home!

Imagine Gordon Scott's surprise when on 31 January, the day of his retirement, he received a letter about pre-redundancy measures. After 43 years in Reprographics at RAL, Gordon decided that he had earned his retirement and that the letter was probably an administrative error!

Gordon began work as a baker's assistant at the tender age of 14. After National Service he diversified into plumbing and then driving as an ambulance and car service driver. He didn't actually start working in reprographics until he was 27. In his last job as Assistant Chief Reprographics Officer, Gordon was responsible for maintaining the self-use copiers in working order. Looking back at his career at RAL, Gordon recalled the early machines that he worked with; the first litho press into which paper had to be hand-fed and which in the first few hours of operation, produced nothing more than black sheets, one after the other.

In his presentation speech Bill Turner remarked upon Gordon's reputation for helpfulness and friendliness and upon the excellence of his service to customers, right up to the last.



Not an ACR shredder as first thought but the top of a compost shredder! Gordon gets to grips with his retirement gifts (95RC1290).

If Gordon had thought retirement to be an easy option, his gifts suggested otherwise. A large box which looked alarmingly like the old litho press, revealed a Black & Decker Workmate and what Gordon mistook for an ACR shredder, turned out to be a compost shredder. Thankfully the final item, a water store for his caravan, promised some relief from the hard work that lay ahead!

A fond farewell

On Friday 20 January, Daresbury Laboratory witnessed a most memorable occasion - the retirement of Percy Lawrinson. Percy's involvement with DL goes back over 30 years.

A local 'Warrington lad', Percy went to Boteler Grammar School and then to Warrington and St Helen's Technical Colleges, obtaining qualifications in engineering subjects. After a five-year apprenticeship with ICI, work at UKAEA and National Service, Percy joined 'Daresbury Nuclear Physics Laboratory' in 1963. DL then was no more than a 'potato field' and it is to the credit of Percy and his colleagues that out of that field rose the Lab as we know it.

After a spell away in the 1960s, Percy returned to DL in 1968 as a Project Engineer. Since then, Percy has seen considerable changes at DL. He has contributed to the birth and death of NINA and the NSF, the development of the SRS and many peripheral activities. He has been actively involved in both Programme and Service functions, bringing a wealth of knowledge to their operation. Percy rose to Grade 7 in 1979 and more recently, has done an excellent job of managing the combined B&C, Mechanical and Electrical Engineering Services.

Percy has many outside interests, including caravanning and fishing and is renowned for his golfing prowess. He is a member of the Warrington Golf Club and the Daresbury Golf Society, where he has been Captain on a number of occasions. Being in Percy's team doesn't mean you will automatically win but it does guarantee that you will enjoy yourself!

Percy's last year at DL has been memorable, both in and out of work. A most notable occasion was an invitation to a Royal Garden Party where Percy and his wife met the Queen. On the home front, the news that he is to become a 'Grandad' has put him on 'cloud nine'.



Percy and his wife receive a fond farewell from Neville Snodgrass (95/739/3).

The tremendous send-off Percy received was of a scale to match his popularity; over 200 people packed the Merrison Lecture Theatre. His typical generosity was finally appreciated when he invited everyone to lunch and a farewell drink in the coffee lounge. For my part, I considered it an honour and a privilege to make the retirement presentation to such a clearly admired and respected friend and colleague. We all wish Percy and his wife, Jean, a very long and happy retirement.

Neville Snodgrass (DL)

Staff news

Arrivals...

Welcome to:

Dr S L Bennett who joined DL on 23.1.95 as an HSO in SRR Division

Dr R Kobayashi who joined DL on 9.1.95 as an HSO in TCS Division

Mr R Metcalf who joined RAL on 3.1.95 as an AA in Admin Department

Mr C W Mullineaux who joined DL on 3.1.95 as an HSO in SRR Division

Mr T C Noakes who joined DL on 3.1.95 as an HSO in SRR Division

Miss T Richards who joined RAL on 3.1.95 as an AO in Admin Department

Mrs K Whittenbury who joined RAL from SO on 3.1.95 as an EO in Admin Department

Departures...

Goodbye and good luck to:

Dr M Behan-Martin who left DL on 4.1.95

Mr N Downie who left RAL on 6.1.95

Mr S Fisher who left DL on 13.1.95

Mr M Froggatt who left RAL on 6.1.95

Dr A S Holmes who left RAL on 6.1.95

Dr S H Kilcoyne who left RAL on 11.1.95

Mr P Lawrinson who retired from DL on 31.1.95

Mr J Sultan who left DL on 23.1.95

Miss H Wainwright who left RAL on 13.1.95

Mr P White who retired from RAL on 2.1.95

Dr R Witty who left RAL on 1.1.95

Mrs P Woodward who retired from RAL on 20.1.95

Promotions...

Congratulations to:

Dr L Duke who was regraded from JRA to HSO in SRR Division at DL from 1.1.95

Dr B Helsby who was promoted to SPTO in C&E Division at DL from 1.1.95

Mr M Heron who was promoted to SPTO in C&E Division at DL from 1.1.95

Mr A Jones who was promoted to SPTO in C&E Division at DL from 1.1.95

Mr A Moss who was promoted to HPTO in SRA Division at DL from 1.1.95

Mr A Oates who was promoted to HPTO in C&E Division at DL from 1.1.95

Mr K Rathbone who was promoted to HPTO in Engineering Division at DL from 1.1.95

News in brief

Horizon 2000 plus

ESA presented their 'Horizon 2000 plus' programme at a town meeting this month. Professor Bonnet, Director of ESA's science programme, cited the Cluster data handling facilities as being an excellent example for future collaborative projects. RAL is playing a major role in the Cluster operations; the Cluster Joint Science Operations Centre is based at RAL.

Public speaking

This month, Mike Cruise, Head of Space Science at RAL, is chairing a session at the Royal Astronomical Society Meeting on gravitational waves, and Tim Broome, ISIS, is giving two talks at the 'Materials for acceleration-driven nuclear sources' workshop at the Los Alamos National Laboratory, USA.

RS Appointment

Sir Aaron Klug, Director of the MRC's Molecular Biology Laboratory, has been nominated the next president of the Royal Society, to succeed Sir Michael Atiyah next November. He was awarded the Nobel prize for chemistry in 1982. Like his predecessor, Sir Aaron will hold the post for five years.

Science Budget

Mr David Hunt, Cabinet Minister for Science, announced the distribution of the £1281.7 million science budget for 1995/96. CCLRC gets £1.5 million of this as a direct vote. The complete list is as follows:

	£m	(change over 94/95)
EPSRC	365.702	(increase of £6.8m)
MRC	277.809	(increase of £8.5m)
PPARC	196.367	(increase of £8.9m)
NERC	155.483	(increase of £3.8m)
BBSRC	161.631	(increase of £4.5m)
ESRC	61.232	(increase of £1.4m)
Royal Society	20.786	(increase of £0.7m)
RC pension scheme	33.298	
OST & LINK schemes	5.250	
Royal Academy Engineering	2.617	(increase of £0.4m)
CCLRC	1.500	(new - direct vote)

This year, Mr Hunt has earmarked £67 million (5%) from the research councils' budgets to 'increase interaction with industry, to enhance basic and strategic science and improve people-related programmes'. This includes expanding the ROPA (realising our potential) scheme (£14m) and using £12m to extend the LINK programme (collaboration between research and industry).

Joint appointment

Tom Hinde, DL, recently took up a joint appointment with John Moore's University, Liverpool. From 1 January, 40% of his time will be dedicated to teaching Power Electrical Engineering.

Moira Behan-Martin leaves

Moira Behan-Martin first appeared at Daresbury Laboratory in 1984 as an SRS user from Liverpool University. As part of her PhD programme she used the ultra-violet light from station 12.1 to stimulate fluorescence which allowed her to determine how deep-sea fish adapt to the high pressures of their environments. Flushed with success in the UV, Moira moved to the other end of the SR spectrum by taking a

post-doctoral research assistantship, again based at Daresbury, but this time for Strathclyde University. Her work involved investigating the structure of pharmaceutical creams with X-ray diffraction techniques. After discovering that these creams had enormously interesting structures and were highly useful as drug delivery systems, she concluded that in reality they were a bit of a rip-off, as they consisted mostly of water. In 1988 she spent a short spell as an RA in the Biology Support Lab before replacing Maggie Martin as station scientist on 12.1 in 1989. In this role she has been very popular amongst Daresbury staff and users alike. Moira worked tirelessly for the Biological Spectroscopy Group and Daresbury Laboratory as a whole, particularly as secretary of the Chemistry SESS. Most people at DL will remember Moira as a frequent winner of the 'Daresbury Dash' Ladies Competition. Moira began her new career in teaching at a fee-paying school in Worsley on 7 January.

Gareth Jones (DL)

Giftaid your proceedings

Conference proceedings are expensive - the proceedings of the 1994 European Particle Accelerator Conference (EPAC) for example, are priced at £281. Each year the library spends up to £10,000 on conference proceedings, and even so there are many more it cannot afford to buy.

But conference delegates usually receive a copy of the proceedings *FREE* as part of their registration. Has this happened to you? If so, would you consider GIFTAID to the library? By doing this you could:

- Save space in your office
- Borrow it back whenever you needed it
- Enable colleagues to borrow it too
- Release some of the library bookfund to spend on other materials

Please contact your Librarian if you can help in this way.

The RAL librarian is Su Lockley, ext RAL 6668 (e-mail U.K.Lockley@rl.ac.uk)

The DL librarian is Debbie Franks, ext DL 3189 (e-mail D. Franks@dl.ac.uk).

Thank you.

Su Lockley (RAL)

Engineering Apprentice Scheme

Recruitment time for apprentices is here again. As you read this, advertisements are being prepared for both RAL and DL. Both Laboratories will be recruiting for the mechanical and electrical trades this year.

Aptitude testing will take place at RAL on 29, 30 and 31 March and at DL during the end of March/early April. Interviews for successful candidates will be held in May at DL and late April/early May at RAL.

Staff wishing to obtain application forms should contact:

RAL Recruitment Office, R71, ext RAL 5510
DL Personnel Officer, ext DL 3467.

Training? We can help

If you are organising an in-house course remember that the Training Sections at both sites are here to help you. We can offer advice and help in the organisation and running

of courses in any subject area including those presented by external consultants.

At RAL, the Training Room in R71 is suitable for courses for up to 12 participants and should be booked through the Training Section. At DL, a range of training facilities are available and may be booked through the General Administration Office, Room A61a, ext DL 3224.

Please remember that the Training Sections need to keep full and accurate records for all staff. You can assist us by ensuring that we receive all relevant information about any training activity taking place.

If you would like more information about these or any other training matters please contact:

At RAL, Sue Gill on ext RAL 5266, OV / VM SMG or Miriam Walters, who has taken over from Dawn Wood, on ext RAL 5361, OV / VM MRW1.

At DL, Hazel Dale on ext DL 3600, OV / VM HAD or Carol Livesey on ext DL 3600, OV / VM CAL2.

RAL Notices

RAL lectures

30 March 3pm
Pickavance Lecture Theatre
The vine sets the rules
Dr Jane Jakeman (Bodleian Library)

27 April 3pm
Pickavance Lecture Theatre
Soap and serendipity: Recent discoveries in the physics of foams
Prof D L Weaire (Trinity College, Dublin)

Acknowledgement

Gordon Scott would like to thank everyone who so kindly contributed to the wonderful presents given to him on the occasion of his retirement and for the basket of flowers presented to his wife Marina. Gordon would also like to say "Goodbye" to all those he was unable to see and to wish everyone at the Lab "Good Luck and Good Fortune" for the future.



DL Notices

Daresbury lecture series

6 March
2pm
Merrison Lecture Theatre
Process Tomography - What's the picture?
(including a working demonstration)
Dr Roger C Waterfall (Dept of Electrical Engineering & Electronics, UMIST)

27 March
2pm
Merrison Lecture Theatre
Paper chains
Professor N Wiseman (Paper Science Dept., UMIST)

24 April
2pm
Merrison Lecture Theatre
The Universe - From the Big Bang to the present
Professor R D Davies (Jodrell Bank)

Continued over

RAL Notices

Sales to staff

Sales to staff of scrap metals and plastics will take place on Monday 6 March in the R24 Scrap Compound between 12pm and 12.30pm. Please see DRAL Notice 10/94 dated October 1994 for details.

Charity appeal

Barry Brett's got his running shoes back on and has been accepted for the 1995 London Marathon on 2 April. He has started a rigorous training programme to get himself fit for the challenge but wants a local charity to run for. This is where you can help. Please suggest a charity Barry could run for and let him know. Send your suggestions to Barry, R51, G02 and he'll pick one.

A dip for charity

Fran Childs will be swimming for charity on 3 March in the BT Swimathon 95. Sponsorship money raised through the Swimathon will be distributed to six registered charities, including the British Heart Foundation, the Imperial Cancer Research Fund and the British Sports Association for the Disabled. Fran is now on the lookout for sponsors. If you have not already pledged your money, why not give Fran a call on ext RAL 5430 and make all her efforts worthwhile.



DL Notices

Structural Biology Seminar Series

The programme of the Winter/Spring Structural Biology Seminar Series is now available. Contact Pierre Rizkallah for a full list. Meanwhile coming up in the near future:

- 1 March: Calculating protein potentials
Jim Warwicker (IFR Reading)
- 15 March: Structural studies of G6PD
Margaret Adams (Oxford University)

Pierre Rizkallah, Liz Towns-Andrews or Peter Lindley, would welcome any suggestions for future speakers.

Daresbury Dash

The fourth Daresbury Dash two-mile race will take place at the Lab at lunchtime on Tuesday 9 May. The race is open to runners at DL and RAL, of all standards, so start running now! More details will be given nearer the date. Tony Bell - Daresbury Accelerators Running Club

DL Climbing & Fellwalking Club

This month's expedition will be on 18 March to Langollen, N Wales. The coach will depart from the Lab car park at 8.30am and return by 9.30pm. For further details about any of the walks or any other information about the Club and its activities, contact either Gary Jones or Andy Smith.

DRAL Notices

Indoor Sports Day

This year's event will take place on Friday 3 March at the Link Leisure Centre in Swindon.

Competitions will be held in the following sports: Badminton Ladies' Pairs, Badminton Men's Pairs, Volley Ball, Table Tennis, Squash, 10 pin bowling, chess, darts, cribbage, snooker and bridge.

Please check Circular SERC 1/93 regarding Special Paid Leave to attend Sports Days.

Name your newsletter

DRAL News will be replaced by a new newsletter from April, but what to call this new publication? Have you any suggestions? Polite ones only! If you have, the DRAL News editor would like to hear from you. If there are no alternatives, we may have to resort to CCLRC News! Send your ideas please to Monica Brown at the address at the foot of this page, by Friday 3 March. No prizes for the winning name, just a nice warm feeling if we use your suggestion!

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Articles, ideas and letters are very welcome!

Deadline for publication is the 15th of month preceding the cover date.