
Rutherford Appleton Laboratory

Bulletin

A Monthly Newsletter for RAL Staff

November 1994

DRAL: A new future

A statement by Dr Paul Williams

On Wednesday 26 October, the Chancellor of the Duchy of Lancaster, Mr David Hunt, announced to Parliament that on 1 April 1995 the Daresbury and Rutherford Appleton Laboratories will be established as a single independent body under the provisions of the 1965 Science and Technology Act. This announcement brought to an end a period of uncertainty that started in May 1993 with the publication of the Government's Science and Technology White Paper 'Realising our potential'. How did this come about and what does it mean for the future?

'Realising our potential' was the first major reorganisation of arrangements for funding and managing science and technology in the UK since the 1965 Act which created new Research Councils including the Science Research Council (SRC). With the 1965 Act, SRC became responsible for the Rutherford High Energy Laboratory, the Daresbury Laboratory, the Atlas Computer Laboratory and the Appleton Laboratory which over the intervening years have been incorporated into the DRAL we have today. Programmes of the Laboratories were commissioned and funded by

SRC, more recently SERC, to meet the requirements of its Boards and Committees. Apart from some funding by AFRC and MRC at Daresbury and a growing income from non Research Council sources, the Labs were wholly dependent on SERC funds and were, of course, owned and operated by SERC.

One of the major results of 'Realising our Potential' was the announcement of the Government's decision to wind up SERC and create two new Research Councils, the Engineering and Physical Sciences Research Council and the Particle Physics and Astronomy Research Council in its place. From the moment the White Paper became public, it was clear that something had to be done to look after Daresbury and Rutherford Appleton Laboratories. Sir David, now Lord Phillips, was commissioned by the Chancellor of the Duchy of Lancaster to advise him on where the boundaries of responsibilities of the new Research Councils should be set and how SERC's programmes and funding should be distributed to the new Research Councils. Lord Phillips did this remarkably quickly and by July 1993 his recommendations

were known. For the two Labs, he recommended that this interim measure should be for a limited length of time and that the final outcome should be that the joint Laboratories should be established as an independent body reporting to the Office of Science and Technology. It may seem surprising that it has taken 15 months for this relatively simple recommendation to be agreed. Let me try and explain why there has been this delay.

It is Government policy that, where practical and appropriate, public sector organisations should be moved in the direction of the private sector. This can be seen in any number of so-called 'privatisations'. Before a new body could be created as recommended by Lord Phillips, every avenue needed to be explored to confirm that public ownership was the right solution. To conduct this analysis there is a standard set of questions, the so-called 'Prior Options' questions which need to be asked and answered. These questions include the obvious, 'Is the organisation needed at all?' 'Could all or parts of the functions be carried out in the private sector?' ... and so on. The Chancellor of the Duchy of Lancas-

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ter initiated a widespread consultation process in which a number of individuals and organisations were written to for their views on these questions and responses were invited from the public at large through an advertisement in the Government's 'Market Testing Bulletin'.

Unfortunately for us, just at the time when our future status was being discussed in this way, the Government was carrying out a review of its publicly funded research establishments, the so-called Scrutiny exercise. Not only was DRAL caught up in the 'Prior Options' process, it also became the subject of the attentions of the Scrutiny team. To add a little more interest, these exercises followed hard on the heels of an efficiency scrutiny of RAL conducted by the National Audit Office. Further analysis of the possible options for DRAL's independent status was carried out by the consultants KPMG Peat Marwick in a study that we commissioned.

It is very reassuring that all these independent analyses came to the same conclusion and supported the recommendations that were made by Lord Phillips in July 1993. As a

result, the Chancellor of the Duchy of Lancaster decided that we would become the independent body proposed in Lord Phillips' report at the beginning of the 1995/96 financial year. The new body will be created by an 'Order in Council' and will receive a Royal Charter. There will be a Council to order its affairs and a Chairman and Chief Executive responsible to the Chancellor of the Duchy of Lancaster.

Under these new arrangements, the Laboratories will carry out programmes determined and funded by five of the new Research Councils alongside the non-Research Council programmes which now account for about 20% of our funding. I do not expect that this will result in any sudden changes in the programme, in fact I hope that the transition from EPSRC to independence will be smooth and undetectable on 1 April 1995. There will be new relationships with the Research Councils which are more like those between a contractor and a customer than is currently the case. I expect Research Councils to be even more conscious about cost and deliverables than they have been in the past and we will need to make sure that we deliver value for money.

I am confident that the new independent status will bring with it many advantages. We will be freer to determine our own future and priorities and it should be possible to broaden our activities. Our success will be in our own hands. If we maintain the high standards that have been our hallmark throughout our existence I am confident that the future is a bright one. We must never, however, take our 'customers' for granted. There must be a constant striving for excellence and cost effectiveness. We must deliver what we promise to deliver and be imaginative and entrepreneurial in looking for new opportunities and new customers. The underlying metric for Science and Technology set out in the 1993 White Paper was that it should be relevant to improving industrial competitiveness and the quality of life. We will need to show that our activities measure up to this metric and that the Daresbury and Rutherford Appleton Laboratories are playing an effective part in delivering the Government's objectives. I have no doubt that this is well within our grasp and that for this reason alone, the future for an independent DRAL is a very bright one. Let's see!

Paul R Williams

ISIS applauds Nobel Prize winners in physics

Scientists working on ISIS were delighted by the news last month, that this year's Nobel Prize for physics had been awarded to an American and Canadian scientist for their pioneering contributions to the development of neutron scattering techniques, for studies of condensed matter.

Professor Bertram Brockhouse of McMaster University in Hamilton, Ontario and Professor Clifford

Shull of the Massachusetts Institute of Technology in Cambridge, Massachusetts, won the prize for research which used neutron beams from early nuclear reactors to probe the atomic structure of solids and liquids. "In simple terms, Shull has helped answer the question of where atoms 'are' and Brockhouse the question of what atoms 'do'," the Royal Swedish Academy of Sciences said.

Successive developments of their work have led to today's large installations specially built for studies of condensed matter such as ISIS, the world's most intense pulsed neutron source. Researchers at ISIS are using neutron scattering techniques to gain a better understanding of the structure and dynamics of materials in fields ranging from biology and chemistry to physics and engineering.

A unique event in the Cluster project

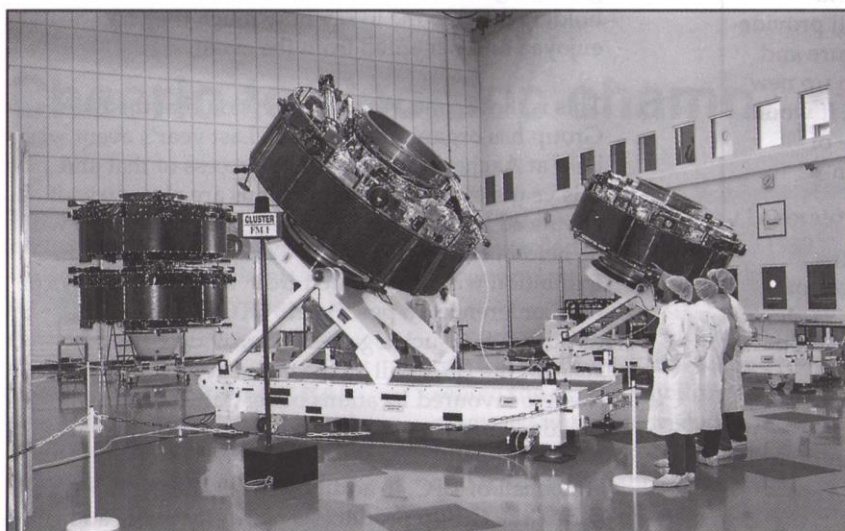
On 11 October a press conference was held at IABG to mark a unique event in scientific satellite manufacture. SSD's Eric Dunford, Trefor Edwards and Mike Sandford were there to witness the one and only time in the manufacturing programme that all four spacecraft of the Cluster mission, now close to their flight configuration, were together in the assembly area.

Cluster forms part of the two joint ESA/NASA space projects, SOHO and Cluster. RAL's Space Science Department is actively involved in both missions.

SOHO involves launching a spacecraft which will take up position 1.5 million km from the Sun from where it will study the Sun's structure, its corona and the formation of the solar wind. Cluster is the associated ambitious mission in which four spacecraft will be launched together into a high elliptical orbit around the Earth to investigate the plasmas in space and how the solar wind interacts with the Earth's magnetosphere, the energetic charged particles that are trapped by the Earth's magnetic field. A manifestation of these charged particles is the Aurora which, when particularly intense, has



From left, Trefor Edwards, Eric Dunford and Mike Sandford and behind them, the Cluster spacecraft (94RC5835)



The satellites on display in the integration area. They carry instruments from several UK universities (Birmingham, ICSTM, Sheffield, Sussex and UCL-MSSL) and RAL, each of which have many international collaborators (94RC5798)

been known to disturb electrical power distribution on Earth. During the mission, it is expected that unique data resolving the three-dimensional dynamics of plasmas and fields in space will be obtained.

Both SOHO and Cluster are to be launched next year (in September and December respectively) and the project teams are now engaged in final tests on the instruments and preparation for operations. After launch, RAL will be the centre for Cluster data handling and will play a major role in the science operations. ■

Daresbury News

DRAL collaboration produces first microstructures

The first DRAL LIGA microstructures have recently been produced on SRS station 8.4. These microstructures, with features smaller than one thousandth of a millimetre, will help UK companies tap new markets worth billions of pounds.

Although microstructures have been produced on the SRS before, these were made by a company who used synchrotron radiation as a key step in their own manufacturing process. Now, however, DRAL has shown that it can take microstructures from the "wouldn't it be nice if ..." design stage through to actual prototype structures. The key stages of CAD design, mask making (at RAL's Central Microstructure Facility), lithography and materials processing, can all now be handled by DRAL staff.

The growing industrial interest in this important future technology was reflected in the sixth meeting of the LIGA interest group in early October. The group now has over 40 member companies and universities. Companies have been invited to join a LIGA club, which will give them cost-effective access to DRAL's LIGA equipment, services and expertise. Their membership fees will provide support for the necessary infrastructure and equipment. This activity would open up new markets for the companies involved. It would also further extend the industrial use of synchrotron radiation and strengthen DRAL's industrial links.

A DRS stand featuring some of the first DRAL microstructures won a magnum of champagne at the recent Innovation '94 show in Manchester. The award was for showing an example of one of the most innovative and potentially important microfabrication processes. The Innovation '94 show was sponsored by Innovation North West (DTI), NIMTECH, Granada TV and British Aerospace.

Dave Tolfree
Daresbury Laboratory

World Transputing Congress '94

The Villa Erba Conference and Exhibition Centre on the shores of Lake Como in northern Italy was the glorious setting for this year's World Transputer Congress on 3 - 6 September. The WTC series of annual conferences and exhibitions is run under the banner of The Transputer Consortium, a group of five European and UK businesses; INMOS (SGS-THOMSON Microelectronics) Ltd, ACE, Parsys Ltd, Parsytec and Transtech Parallel Systems Ltd. WTC '94 was run by the TTC secretariat, part of the Education & Awareness (E&A) Group in Informatics Department; Pat Athawes, Rachel Miles and myself, with Mike Jane as co-ordinator.

Transputers are a form of microprocessor developed by INMOS. Each transputer is a complete computer on a single integrated circuit specially adapted to operate with others in a parallel processing arrangement.

The WTC is the leading international transputer conference and exhibition, and attracts participants from all over the world. Thanks to a CEC (Commission of the European Communities) grant award under its Human Capital and Mobility Programme, 32 young researchers from all over the European Union were able to attend WTC '94. It was very gratifying when at the close, several of the award-holders came to me to say how much they had enjoyed and benefited from the event.

This is the second year in succession that the E&A Group has organised the WTC. Last year's event was held at Aachen, Germany. The success of that and this year's event is such that plans are already well advanced for the organisation of WTC '95 which will be held in Harrogate, North Yorkshire. In 1995, the Exhibition will be extended from two to three days of the Conference, so positive do TTC feel about the opportunities such a gathering provides. The east coast of the USA will be the venue for WTC '96 with the two favoured locations being Baltimore and Boston.

On behalf of TTC, in addition to organising the WTC series, the Group produces a quarterly publication, *transputing*, which includes articles from the sponsors, the user group WoTUG, advertisements and information on the forthcoming WTC. It is free of charge and anyone wishing to receive a copy should contact me. ■

Susan Hilton

Problem-solving software book wins international acclaim

Nick Gould of the Advanced Research Computing Division in CCD, has been awarded this year's Beale/Orchard-Hays prize for his book 'LANCELOT: A Fortran Package for Large-Scale Nonlinear Optimization'. The prize of \$1500 was shared by Nick with his fellow authors, Andy Conn of IBM Yorktown Heights in the USA and Philippe Toint of the Facultés Universitaires Notre-

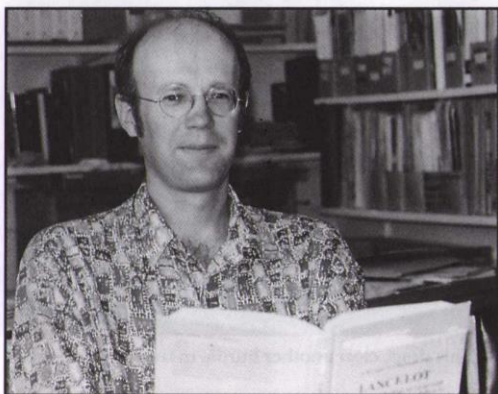
Dame de la Paix, Namur in Belgium.

The prize is awarded by the Mathematical Programming Society every three years for excellence in computational mathematical programming. The LANCELOT package is the product of at least 10 years of collaboration between the three researchers. In awarding the prize, the prize committee cited "the courage, determination and ability" of the group "to undertake a major research effort spread over several years and nations."

LANCELOT (an acronym for Large And Nonlinearly Constrained Extended Lagrangian Optimization Technique!) was created out of the necessity for accurate modelling of physical, scientific, statistical and economic phenomena. As Nick explains "Almost all optimiza-

tion software is designed to solve nonlinear problems involving a modest number, say 100, of unknowns. The realistic modelling of many problems which arise in science, engineering, economics and operations research require algorithms which are capable of solving problems with a much larger number, say 10,000, of unknowns. It is essential that the physical structure of a problem is exploited if the solution to large problems is to be found, and this is one of the strengths of LANCELOT."

Nick and his co-researchers have a database of some 600 problems from a wide variety of sources almost all of which they have been able to solve using the package. They are now working on a successor to LANCELOT. ■



Nick and his award-winning book

Cheerio to Rec Soc champ

Tudor Morgan, a mechanical craftsman in Engineering and Building Works Division, retired on 28 October after 34 years at RAL.

The majority of his time at RAL was spent in the shift system where it is a requirement to be resourceful, reliable and be able to act quickly on one's initiative. Tudor, a keen sportsman, has championed the development of the Rec Soc over many years and this, and his

long and loyal service to the Laboratory was awarded by a BEM in the 1989 Honours List.

Tudor's official send-off was in the Rec Soc bar, naturely. Rick Mason presented the prized Ray Roberts' card, crammed with best wishes, a mower, a timepiece model from the workshop, and to his wife Pam, a bouquet of flowers. Gordon Walker expressed the gratitude of the Rec Soc committee with the presentation of a planer.

All Tudor's colleagues and many friends at the Laboratory, wish him well in his retirement. ■

Barrie Bridgeman

A walk on the wild side

Congratulations to Jed Brown, Office Systems Manager in CCD, who recently completed an eight-mile sponsored walk in aid of the MR/JR Adolescent Unit Appeal. Jed takes up the story:

"I walked, or rather was tugged by, my two dogs over eight miles of the Marlborough Downs and about Barbury Castle, the Ridgeway and ploughed fields for about two hours. For company, I had cows and their pats, sheep, deer, rabbits and of course, hundreds of horses and riders, many of whom seemed to be less agile than me, though I was almost as tired as the dogs when I finished.

I jumped ALL 43 of the jumps and only slipped at one of them, (sorry Rowland, not into a cow-pat) and gained maximum points (100/100). Thanks to the generosity of RAL and SO staff, my round was worth a respectable £200 plus."

Jed has been round collecting the sponsorship which was so kindly promised, with the pictorial and documentary evidence as proof of his endeavours.

The MR/JR Adolescent Unit Appeal is raising money towards the foundation of a dedicated unit at the John Radcliffe Hospital for teenagers with serious long-term illnesses. Well done Jed and thank you to all who contributed. ■



Jed and his dogs, clear another hurdle in their eight-mile run

Gordon measures up to retirement

Superconductors and Gordon Tuck, the two are so closely associated in the minds of many in Technology Department that it's difficult to imagine them apart. Well, superconductors must learn to get along without Gordon who retired at the end of last month after 30 years at RAL, many of them working with superconductors.

In his farewell speech to Gordon, Engineering Division Head, Elwyn Baynham, thanked Gordon for all his efforts and contributions to the work of the Department and to current technology. "The measurements which Gordon recorded

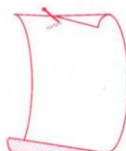
have contributed enormously to the construction of today's powerful superconductors," said Elwyn "and Gordon has probably taken more measurements of superconductors in bonding magnets than anyone else in the country!"

For his dedicated service, Gordon was rewarded by his friends and colleagues with some very practical presents: a multimeter, toolbox, hose-reel and an enormous tub of adhesive with applicator for his 'big bathroom project'. Gordon assured everyone that the gifts would all be put to good use. With wife Clare alongside him, Gordon was saying the right thing! ■



Gordon and his wife, Clare with just a few of Gordon's many gifts (94RC6061)

Noticeboard



Diary

Condensed matter seminars

The following seminars will be held in the Small Lecture Theatre of the Clarendon Laboratory, Parks Road, Oxford on Thursdays at 4.15 pm.

24 November Nitrogen and its aggregation in diamond
Dr Alison Mainwood, Kings College, London

1 December Fractions, fractals and composite fermions - The new picture of the fractional quantum hall effect
Dr R J Nicholas, Clarendon Laboratory

Nimrod seminars

21 November 2pm CR3, R61
Chiral perturbation theory
D Wyler (Zurich)

28 November 2pm CR3, R61
New results from the spin muon collaboration
J P Nassalski (CERN)

HEP seminars

23 November 11am CR3, R61
Quark - Lepton symmetry
R R Volkas (University of Melbourne and DAMPT Cambridge)

30 November 11am CR3, R61
Zeros, coupling constants and unitarity in elastic pi-pi scattering
J Portoles (DRAL)

Acknowledgements

Tudor Morgan would like to thank everybody for the great send-off he was given on his retirement from DRAL, for the presents he received and for the flowers presented to his wife. He also thanks the Rec Soc for the gift presented to him by Dr Walker on their behalf. Tudor says "Cheerio" to all his friends on site and sends his good wishes to them all for the future.

Mike Morris - "I would like to take this opportunity to thank those of my friends and colleagues who made my retirement such a memorable event. I shall miss working with so many enthusiastic and pleasant people. Both Ann and I send our best wishes to you all in the future particularly in these changing times. "

Wanted:

BRIO, trains, track, signals, sheds, houses, etc. Contact Rose Simpson on ext 6743.

Didcot Toy Library

The RAL messengers are organising a Christmas raffle to help raise money for the Didcot Toy Library. The Didcot Toy Library has a wide range of toys for use or loan to handicapped children in Didcot and the surrounding area. These include various specialised toys which create stimulation for the children. The Toy Library is affiliated to Play Matters, a national organisation but they receive no financial help from Play Matters. Tickets will be on sale from the messengers from 1 December. The draw will be held on 21 December in the R1 Post Room.

Children in Need

If you're doing anything for Children in Need later this month, Press & Public Relations would like to hear from you. Whether it's on or off site, in a group or on your own, daring or just plain daft, let us know. We might include it in the Bulletin or contact the local press. Contact Natalie Bealing, ext 5777, OV/VM NDB, Monica Brown, ext 5484, OV/VM MB, or Jacky Hutchinson, ext 6482, OV/VM JJCH.

Noticeboard



Rec Soc news

Xmas dance

The Rec Soc is holding a Christmas dance on Saturday 3 December in the Restaurant. Tickets are on sale at £7 each, including entrance, buffet and where necessary, transport. Tickets are available now, from:

Stuart Greenall R34, ext 6198
Andy Napper R56, ext 5412
Tony Peters R9, ext 6203
Diane Rabbetts R71, ext 6817
Geoff Thomas R18, ext 5116

When purchasing tickets, please indicate if you require transport and your pick-up point. Coaches will follow the AEA bus route.

Video recorder

For all your family functions, don't forget the Rec Soc video recorder is available for rent to members. Details from Ray Roberts, R66, ext 6280.

Bridge

Calling all bridge players! RAL Bridge Club welcomes new members to join us lunchtimes from 12.30pm to 1.30pm in CR3, R25 on Tuesdays and Wednesdays. Ring Rose Simpson on ext 6743.

Crib

Are there any budding crib players out there? If so, why not join the RAL Crib Club who are looking for new members. Call Robin Wastle on ext 5278 for further details.

Training courses and conference bookings

Several members of staff have recently withdrawn from training at short notice. Payments had already been made and the Laboratory was unable to obtain full refunds. A booking for a training event represents a firm commitment by the individual and their line manager to pay the full cost of the event and also that the individual will have time to attend. Such a commitment should be treated seriously and the training should be regarded as part of a carefully considered plan to assist the individual in gaining appropriate knowledge and skills. ***Late withdrawal should therefore only be considered in exceptional cases.*** Please note that this also applies to JTS courses since these courses are not free and a charge is made to the Laboratory if an individual withdraws at late notice and their place cannot be filled. The cost of a one week JTS management course is approximately £700. Your co-operation would be appreciated. Thank you.

Sue Gill

Christmas lunch at Cosener's

From 1 to 22 December, The Cosener's House will be available for Christmas lunch bookings. The price of a three-course lunch is £12.75 per head. If you would like to make a booking or would like a copy of the menu, please contact Suzanne Fisher on ext 5729. Bookings will be on a first come first served basis.

Health & fitness club

Further to August's issue of the Bulletin, RAL now has corporate membership of Images, the health and fitness club at the Old Gaol, Abingdon. If you have not already joined, don't despair. You can now apply for membership at a cost of £125, a saving of £150 for non-corporate membership. Interested? Then write to Faiz Mahmud, R63, Rm 1.13 for further information.

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