Bulletin
of the Rutherford and Appleton Laboratories 12 August 1981 No.14

RAL~ New Look

JEAN BANFORD.

Hot on the heels of the news that our Director General Dr G H Stafford FRS was relinquishing his post to devote more time to St Cross College, Oxford (of which he is Master), comes the news of the change of name and management structure of the Laboratories. Perhaps therefore it is not inappropriate for a general introduction of the personalities involved and their roles in the revised organisational pattern, to appear in this issue.

New Titles

From 1 October the Laboratories will be known as the Rutherford Appleton Laboratory signifying the completion of their merger - a title we hope will be long-lived.
Dr Geoffrey Manning will become Director of the Laboratory, with Professor John Houghton as Deputy Director.

Who's Who

Dr Manning was born in 1929 and educated at Tottenham Grammar School and Imperial College where he obtained a first in Physics in 1952 and his PhD in 1955 on the measurement of lifetimes of nuclear states. In 1953 he became an Assistant Lecturer in the Physics Department of Imperial College and joined the English Electric Company in 1955 as a research worker. A year later he went to Canada where he did research work using reactors in Nuclear Structure Physics (nγ reactions) at the Canadian Atomic Energy Authority. He then moved in 1958 to the California Institute of Technology where he did further research on the measurement of magnetic moments of short-lived nuclear states.

Returning to the UK in 1960 he joined the Atomic Energy Research Establishment at Harwell researching in High Energy Physics, largely on the measurements of proton proton scattering and during this time spent two years working at CERN, Geneva.

In 1966 he joined the Science Research Council's Rutherford Laboratory as a Group Leader working both at Rutherford and CERN. His work at this stage was mainly on studies of CP violation. In 1969 he became Head of the High Energy Physics Division and Deputy Director of the Laboratory. He moved to head the Atlas Computing Division in 1975 and became Project Leader for the construction of the Spallation Neutron Source in 1977. At the merger of the two Laboratories in 1979 he became Director (Rutherford).

Professor John Houghton, FRS, Professor of Atmospheric Physics, Oxford University, took up his appointment as Director (Appleton) in the combined Rutherford and Appleton Laboratories also on 1 September 1979.

Aged 49, Professor Houghton was educated at Rhyl Grammar School and was a scholar at Jesus College, Oxford, where he took a double first in mathematics and physics. A Research Student in the Department of Meteorology, Clarendon Laboratory, from 1951-54, he took his D.Phil in 1955. He was a Research Fellow at the Royal Aircraft Establishment, Farnborough, before returning to Oxford in 1958 as Lecturer in Atmospheric Physics. In 1962 he was appointed Reader and became Professor in 1976. Official Fellow and Tutor in Physics at Jesus from 1960-73, he became Professorial Fellow in 1973. He spent a term in 1969 as Visiting Professor at the University of California, Los Angeles.

Well known internationally for his outstanding research in the upper atmosphere, his experiments have been carried on a number of space missions including NASA's Nimbus series and Venus Orbiter.

Professor Houghton, who is on a five-year secondment, maintains links with the work of his University Department.

New Structure

The Laboratory will also have a senior management group, modelled on the style of a board of directors. It will consist of the Director, Deputy Director and four Associate Directors each responsible for an area of the Science and Engineering Research Council's work. In addition

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INTERNAL Events

COMPUTING SEMINAR
R27 COLLOQUIUM - 1400 hrs

20 Aug. Prof R Zelazny/Institute of Nuclear Research, OTWOCK-SWIERK

'Computer Assistance in the Software Development Process'.

NIMROD LECTURES
LECTURE THEATRE - 1400 hrs

20 Aug Prof H Bingham/Berkeley
'Evidence for Gluon Radiation in Deep Inelastic Neutrino Interactions'

HEP SEMINARS
R61 CONF. ROOM - 1100 hrs

19 Aug Dr T Inami/Tokyo
'Higher Order Effects and Heavy Quark Masses in the Standard Weak Interaction Model'

RAL New Look

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there will be an Associate Director for technical services and the Laboratory Secretary.

Initially, Dr Manning will undertake responsibility for technical services, eg. the Council's computer service and also the duties of Associate Director (Science). Professor Houghton (who will continue with the title Director Appleton) will be responsible for Astronomy and Space Research Board work. Dr David B Thomas, Head of Technology Division will become Associate Director: Engineering and Dr John Thresher, Head of High Energy Physics Division becomes Associate Director: Nuclear Physics.

Dr Valentine remains, Laboratory Secretary and Head of Administration Division.

Our Thanks

We must not forget, in the upheaval, our debt to our departing Director General who has served the interest of the Laboratories in various guises, since he joined us at the formation of the Rutherford Laboratory in 1957 as the first laboratory of the National Institute for Research in Nuclear Science.

We wish him every success in his challenging new venture and extend our thanks for his leadership in the creation of a laboratory of great diversity of function and international repute.

In a future edition we hope to include thumbnail sketches introducing the other characters in this plot.

Presenting a Good Image

An application of the phenomena known as phase conjugation may have a potentially important role to play in the study of laser-induced fusion according to results obtained by a collaborative venture by the University of Oxford and RAL.

Phase conjugation is important in the way it can restore badly distorted images to their original shape.

Laser induced fusion studies are at present carried out with neodymium glass lasers. In such work the laser beam is directed onto a very minute target (at RAL a tiny glass gas-filled balloon). This requires very accurate alignment of the laser beam onto the target. Phase conjugation can automatically achieve the alignment required.

However, rare-gas halide lasers such as those using Krypton/Flouride promise higher efficiency than glass lasers. To observe phase conjugation of a KrF laser the group have built a rare-gas halide laser of good beam quality. To do this they used two lasers, the first of narrow line width and low power; the second acting as an injected unstable resonator oscillator. The wavelength of the light produced (248mm) is the shortest used so far in work on phase conjugation.

The phase conjugate mirror itself is a cell containing a liquid dye which absorbs light at the laser's wavelength. The dye acts as a mirror through a process called four-wave mixing, in which the beam of interest, the 'signal' beam, is mixed with two 'pump' beams to produce a fourth 'output beam'. The interference of the pump and signal beams sets up a periodic pattern or 'grating' in the dye, similar to the interference pattern set up when a hologram is made. The researchers believe that in absorbing the laser light a periodic change in temperature occurs in the dye which produces a periodic change in refractive index, and it is this that produces the phase conjugation observed.

So far they have found that the mirror reflects up to 300% of the incident light with the laser system they have built. For cases when the reflectivity is greater than 100% the output beam picks up light from the pump beams.

We thank Malcolm Gower for news of this interesting development.

Library Notice

If you have either of the following Atlas Library books in your possession please contact the Atlas Library, Ext 6226.

SCANLON, LJ '6502 Software Design'
GLYMOUR, C 'Theory and Evidence'

The whereabouts of these books is required for record purposes.

Trade Exhibition

There will be a one-day exhibition by ITT Electronic Services of

handtools, assembly aids, soldering equipment, weighing and counting equipment, wire-wrapping equipment, power tools, antistatic materials, etc.

on Tuesday 8 September in Conference Room No 5 in Building R20 from 10.00 to 16.00hrs.

Three Blades for the Aerogenerator

36312

The last few months have seen the rebuild of this machine with three blades in place of two. At the same time the opportunity was taken to refurbish the instrumentation. The purpose of the new build is to compare the performance of two blade and three blade configurations.

As a two blade machine, performance has been up to expectations. Data has been provided for a wind structure experiment and for preliminary studies into dynamic structural characteristics. Methods of control have been demonstrated with constant speed operation and with a means whereby output is maximised.

The new build has been instrumented to investigate structural dynamics and aeroelastic effects. Data thus produced will have relevance to the design of large vertical axis machines as part of the National Programme. A torquemeter has been built and will shortly be fitted, and a design is in hand whereby the top bearing assembly of the main torque shaft is strain gauged to give a measure of aerodynamic loads on a polar basis per revolution, and of momentum deficit, which is one way of estimating how much of the incident energy of the wind is captured by the machine.

A small computer is on order to help deal with the mass of data now produced. An induction generator is on order and provision is made to fit the low speed permanent magnet alternator made some years ago by the Laboratory for Imperial College.

Collaboration is continuing with Reading University and CERL in the study of performance, control, and structural dynamics. The facility is now well instrumented and, as a result, a number of universities are expressing interest in using it. The data produced by this machine, the control procedures, and the monitoring methods are all of interest to universities and firms engaged in this field. A close liaison is maintained with the rest of the Wind Energy fraternity.

Sales to Employees

The sale of scrap metal and plastics as set out in RLN 12/73 will be made on August 14 and 28, and September 11 and 25. Sales are now at the rear of R24 Store from 1200 - 1230 hours.

Film Badge Notice

It is PERIOD 9 colour strip GREEN. Please check that you are wearing the correct film badge and that all old ones are returned.

Next Film Change

Monday 7 September.

SERC Logo Competition

Prizes totalling £100 are on offer for a new Logo for the SERC. The competition is open to all Council staff and the closing date for entries is Friday 25 September 1981. So - to your drawing boards artistic members of RAL, let your creative talents run riot. But please, only submit the respectable versions.

The Logo will be used throughout the SERC for publicity, publications, advertising, exhibitions and stationery, so must be simple, flexible and distinctive. It must also be capable of easy reproduction. The rules of the competition are as follows:-

Designs should be drawn to scale to cover one side of A4 sized paper

Designs should incorporate the initials SERC

All entries must be done in black ink on white paper

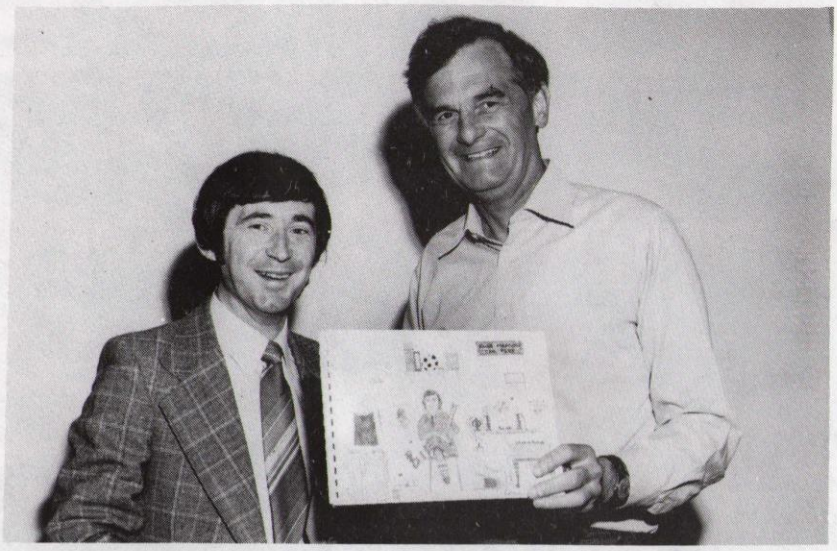
The originator should put his name and establishment on the reverse side of his entry

Explanatory notes, if necessary, should be submitted on a separate piece of paper

All entries should be sent direct to the Secretary of the Logo Competition Committee, H Wilkinson, Room 2287, Central Office.

The Logo Competition Committee will consider the entries and make recommendations to the Chairman SERC. The final decision will rest with the Chairman and the Director's Committee.

Transfer for Phil



RAL's 5-a-side football contests will never be the same again! With the departure of Phil Lewis for Aldermaston on 10 August we lose one of our most enthusiastic referees.

This information, together with many more sidelights on Phil's hobbies and foibles surfaced at the Farewell Presentation made on 31 July by David Thomas on behalf of all Phil's colleagues.

A delightful card, now a feature of Technology Division farewells, prepared by their resident artist Ray Roberts, provided hilarious material for David's 'Thank you' address. It featured many of Phil's experiences of the eleven years he has been with us.

Somewhere amongst the laughter it emerged that some of Phil's pet hates are wasps, Town Councils who charge footballers parking fees and cars which regularly break down outside pubs - at 9 o'clock in the morning! All of which he has dealt, with some panache. Replying, Phil expressed his thanks to all for their friendship and help, to David for making the presentation, to Ray for the card, and to all for the farewell gift. He was genuinely sad to be leaving, but promotion wasn't to be turned down lightly and his new job was nearer home. "I wish you all the best of luck" he concluded.

Drama Group

The echoes of the Oscar and Emmy awards to lucky members of cinema, television and professional theatre fame subside. Taking the stage now is our local amateur drama group, which has been awarded three certificates for its performances. The Harwell Drama Group has been in existence for 25 years and during that time has presented many plays. For the Group's presentation for June, three one act plays were chosen. It was decided that one of these would be selected for entry in the Festival of Drama which was taking place at theatres in the Berks/Oxon area. 'Ritual for Dolls', a Victorian drama by George MacEwan Green, was chosen. A well-rehearsed cast departed for Shinfield, Woodley and Chipping Norton. Receiving good advice and criticism from the adjudicators for their performances, the actors and actresses in 'Ritual for Dolls' gained commended and very highly commended certificates and best actor award. Returning home, the Group prepared to finalise all three plays for public viewing on 4, 5, and 6 June.

Within the Group are several members of RAL who have been bitten by the acting bug. They meet every Thursday at the Social Club and new members are always welcome, to either act or take part in the 'behind-the-scenes' work, such as lighting, make-up, costumes.

Music for Pleasure

Ex-Appleton colleagues will be familiar with a series of concerts presented by The London Philharmonic Orchestra at the Royal Albert Hall in the winter months.

Bookings for these concerts can now be made on the Chilton Site through Nigel Angold Ext 6509/6508, and the Bulletin will try to feature the programmes well in advance. The concerts are reasonably priced and if enough people wish to attend it may be possible to arrange transport. The programme for Fridays 16 and 23 October is given here as a sample of the kind of music performed.

SMETANA Suite from 'The Bartered Bride'

RACHMANINOV Piano concerto in C minor

TCHAIKOVSKY Symphony 5 in E minor

Enrique Batiz is the Conductor and the soloist will be Eva Maria Zuk.

RAL RecSoc

Club Representatives

Chairman	Eric Thomas	Ext 6219
Vice Chairman	Ian Forster	Ext 6300
Secretary	Mike Courthold	Ext 6462
Treasurer	Brian Wyborn	Ext 447
Minutes Sec	Ken Pavitt	Ext 6438
Members	Tudor Morgan	Ext 563
	Nigel Angold	Ext 6509/6508
	John Gilbert	Ext 6530
	Mike Hodges	Ext 6658
	Ray Smith	Ext 293
	Les Harding	Ext 420/6644
	Peter Craske	Ext 232
	Charlie Wrench	Ext 6427/6422
	Nick Whitehead	Ext 6522
	John Varley	Ext 6363/6681
	Roland Brandwood	Ext 345/6293

The Committee meets on the first Wednesday in every month whenever possible and items for the agenda should be submitted to the Secretary at least one week in advance.

Committee Members

ANGLING	Peter Craske	Ext 232
BOWLS	Les Harding	" 420/6644
CHESS	Peter Craske	" 232
CRIB	Tudor Morgan	" 563
CRICKET	Reg Jones	" 6178
CROCQUET	Nick Whitehead	" 6522
DARTS	Ian Forster	" 6300
FOLK CLUB	John Ellis	" 6369/494
FOOTBALL	Ron Lawes	" 6328/270
GOLF	Roy Bell	" 6137
MODEL RAILWAY	Ray Roberts	" 269
MUSIC	George Sandels	" 6373/331
MUSIC for PLEASURE	Nigel Angold	" 6509/6508
NETBALL	Sue Merrifield	" 585
RADIO	John Gilbert	" 6530
REMAP	Peter Hey	" 432
SAILING	Ken Pavitt	" 6438
SLIMMING	Gill Waters	" 6331/6671
TABLE TENNIS	John Varley	" 6363/6681
YOGA	Ken Paler	" 6108

Bulletin

Editor: Jean Banford
Building R20
Rutherford and Appleton Laboratories
Chilton, Didcot, Oxon OX11 0QX
Abingdon (0235) 21900 ext 484

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