Rutherford Laboratory

bulletin 11

14 - 28 JUNE 1976

DIRECTOR AWARDED C.B.E

We congratulate Dr Stafford on the award of the CBE in the Queen's Birthday Honours List published on Saturday 12 June. Awarded the OBE in the same list was Mr R M Jenkins, former head of personnel at the Rutherford Laboratory to whom we also send our congratulations.

Three eminent scientists associated with the Science Research Council also received awards:-

Knights Bachelor - W J G Benyon, Professor of Physics, University College of Wales, Member of the Astronomy, Space and Radio Board, SRC.

Knights Bachelor - G Wilkinson, Professor of Inorganic Chemistry, Imperial College of Science and Technology, University of London, former Member of Chemistry Committee, SRC.

CBE - J C Gunn, Cargill Professor of Natural Philosophy, Glasgow University, former Member of Council and Chairman of Nuclear Physics Board, at present Member of University Grants Committee.

RUTHERFORD LABORATORY LECTURE

The speaker in the next lecture in this series is very familiar with the local landscape as he joined AERE in September 1947. He is Dr J K Dawson, Chartered Chemist and FRIC, Head of the Energy Technology Support Unit formed at Harwell in 1974.

Keith Dawson graduated at Birmingham University obtained Ph.D. in 1946 and eventually DSc (also Birmingham) based on work carried out subsequently at Harwell. He has long been interested in the energy field and his appointment as the first Head of Applied Chemistry Division in 1968 allowed this interest to broaden beyond the nuclear reactor field. The sodium/sulphur battery project for electric vehicles was a responsibility of this Division.

Dr Dawson's talk is on "The Work of the Energy Technology Support Unit" and he has kindly supplied the following brief abstract:-

"The role of ETSU, and how this has developed since its formation in 1974, will be reviewed, together with a brief outline of the Unit's views on renewable energy sources for the UK."

The lecture commences at 15.15 on Thursday, 17 June in the RL Lecture Theatre.

£100 PRIZE

The British Vacuum Society is offering a prize of £100 for a paper based on a post-graduate research thesis in vacuum or a related topic in which science and/or engineering is of major importance. The research in question must be carried out in a laboratory in the U.K.

Papers submitted must not have been published elsewhere and the deadlines for entries is 1 November 1976. Entries should be sent to "The Secretary, British Vacuum Council, 47 Belgrave Square, London SW1X 8QX.

FILM BADGE NOTICE

Period 7 commences Monday 14 June. Colour Strip - BROWN for βγ films and neutron packs.

Please change your films promptly and return all old ones.

Six monthly TLD change for people with surnames commencing Y, Z, A & B.

OVERSEAS VISITS

Dr J J Thresher, to CERN 13-16 June for discussions on the EHS and OMICRON projects.

Dr I N Ross & Mr C W Planner, to Amsterdam, 13-18 June, to attend Quantum Electronics Conference.

Dr P J Hunter, to Rapallo, Italy, 13-19 June, to attend conference on 'Finite Element Methods in Flow Problems.'

Messrs. L Phillips, W Pendry and J Spencer, to CERN, 13-25 June except J Spencer, returning 18 June, for assembly of beam line equipment for Hyperon Experiment.

Dr F J Wickens, to CERN, 14-16 June, for discussions on WA3 experiment.

The Director, to CERN, 14-18 June to attend meetings of CERN Scientific Policy Committee, CERN Finance Committee, CERN Committee of the Council, CERN Council.

Mr R Morgan & Mr L L S Coulter, to CERN, 14-18 June, to receive & prepare equipment for installation at CERN & check items for return to RL.

Messrs. H O Normington, W Russett, A Dobbs & J F Wells, to CERN, 14 June - 2 July for installation work on Hyperon 300.

Mr D A Gray, to CERN, 15-16 June, to attend ECFA meeting.

Drs. C M Fisher, R W Newport & W Turner, to CERN, 15-17 June, to attend EHS committee meeting.

Dr M Elder, to the USSR, 15-29 June, to visit the Institute of Crystallography at the invitation of the Academy of Sciences of the USSR.

Mr M N Wilson, to the USA, 20 June - 1 July, for discussions on Applied Superconductivity at BNL, M.I.T., Oak Ridge, ANL and Fermilab.

Dr C Comber, to CERN, 19-22 June, to attend BEBC meeting.

Dr M F Chiu, to the USA, 19 June - 9 July, to attend CODATA conference in Boulder and visit various establishments which deal with database and chemistry.

Dr R G Roberts, to Munich, 20-26 June, to attend International Conference on Multiparticle Reactions.

Dr R L Kingsley, to Sicily & Italy, 20 June - 6 July, to attend & give seminar at Erice, & to give seminars at Rome Univ.

Dr Margaret M Curtis, to Amsterdam, 24-25 June, to attend SEAS Executive Board Meeting.

Dr R Newport, to the USA, 25 June - 14 July, for discussions on RCBC's and polarised targets at SLAC, NBS, ANL and NAL.

INTERNAL EVENTS

NIMROD LECTURE SERIES
Monday 14 June
11.30
Lecture Theatre

Pathological Science

Dr D R O Morrison/CERN

Examples are given of results that turned out to be wrong (David-Barnes Effect, N-Rays, Mitogenetic Rays). Langmuir's Syndrome of Pathological Science is presented. The Allison Effect, Cargo-Cult Science, Extrasensory Perception, the Loch Ness Monster and Uri Geller are discussed.

HEP SEMINAR
Wednesday 16 June
11.00
R61 Conference Room

Experiments on Weal Neutral Currents in Atomic Physics

P Sandars/Clarenden Lab

HEP DATA HANDLING SEMINAR
Wednesday 16 June
13.30
R61 Conference Room

Serial CAMAC

A Peatfield/Daresbury

RUTHERFORD LABORATORY LECTURE
Thursday 17 June
15.15
Lecture Theatre

The Work of the Energy Technology Support Unit.

Dr J K Dawson/ETSU, AERE (see 'News Section for details).

SEMINAR IN COMPUTING
Friday, 18 June
11.00
R61 Conference Room

The Rutherford ICL 1906A Computer - its Facilities and Usage.

E B Fossey/C & A Division

A brief description of the ICL 1906A computer configuration is given, both from a central standpoint and a remote terminal viewpoint. Reference will be made to the GEORGE4 Operating System and its facilities, including the file store, whose structure is reflected in user name design, and in the way resources are allocated and controlled. An outline of the main fields and application of the computer facility is given accompanied by some detail of the software available for general use.

HEP SEMINAR
Friday 18 June
14.00
R61 Conference Room

Systematics of Zweig Rule Violation

D P Roy/Tata Institute & Wisconsin Univ.

NIMROD LECTURE SERIES
Monday 21 June
11.30
Lecture Theatre

The Search for Mesons

Dr A R Martin/Daresbury

TRADE SEMINAR
Tuesday 22 June
10.30
R61 Conference Room

Technograph & Telegraph Ltd of Bracknell are presenting a seminar on Multiwire, the fastest growing high density interconnection technique in the electronics industry. Multiwire gives considerable advantages over current printed circuit and other interconnection techniques in that design preparation time and costs, circuit modification time and costs and finished circuit costs are drastically reduced. To manufacture a Multiwire circuit all that is needed is a layout drawing or sketch and a wiring list. The system is ideally suited to applications where packing densities are high and design times are costs are the larger part of the overall expense of the project.

HEP SEMINAR
Wednesday 23 June
11.00
R61 Conference Room

To be announced

HEP DATA HANDLING SEMINAR
Wednesday 23 June
13.30
R61 Conference Room

Data Acquisition and Assessment at ILL

B Forsyth/RL

NIMROD LECTURE SERIES
Monday 28 June
11.30
Lecture Theatre

Infra-red Aspects of Gauge Theories

Dr T Applequist/Yale

EXTERNAL EVENTS

THEORETICAL PHYSICS SEMINAR/CLARENDON LAB - 1615 hrs.
17 June: Prof D Robson/Florida - Isospin - a Quantum Number for all Nuclei.

ELEMT. PART. THEORY SEMINAR/NP. DEPT. OXFORD - 1430 hrs.
18 June: Mr D Dodd/Oxf. - A Model of Associated Production.

ELEMT. PART. PHYS. SEMINAR/NP. LAB. OXFORD - 1430 hrs.
17 June: Prof E I Rosenberg/Chicago - Inclusive Dimuon Production by $\pi^{\pm}$ and Protons on Nuclear Targets.

DARESBURY LECTURE SERIES/L.TH. - 1400 hrs.
15 June: A Donnachie/Manchester - Hadronic Production of J/Psi and Charm.
22 June: T Sloan/Lancaster - Evidence Against the Presence of A2 Exchange in Omega Zero Photoproduction.

DARESBURY THEORY SEMINAR/CONF. RM. 3 - 1400 hrs.
21 June: Dr J P Svenne/Oxf. - Hartree-Fook Calculations with a Density-Dependent Interaction.

THEOR. PHYS. SEMINAR/MANCHESTER U. - 1430 hrs.
23 June: Prof M J Moravcsik/Sx & Oregon - What is Wrong with High Energy Physics.

THEORY & HEP SEMINARS/SOUTHAMPTON U. - 1430 hrs.
18 June: Prof R H Dalitz/Oxf. - A New Baryon Spectroscopy.
25 June: Dr T Applequist/Yale & Camb. - To be confirmed.

NP DIV. COLLOQUIUM/CONF. RM., HANGAR 8, AERE - 1530 hrs.
24 June: Dr P H Rebut/Culham - The JET Project - Aims and Scientific Problems.

THEOR. PHYS. SEMINAR/CONF. RM., BLDG 8.9, AERE - 1415 hrs.
18 June: Prof J Page/Arizona - Perturbed Phonous at Zero Frequency - Static Distortions and Resonances.

PLEASE NOTE: The Special Seminar on "Radiative Decays of ψ and ψ' at SPEAR" at the Cavendish Lab on 18 June, has now been cancelled.

Polarised Deuteron Target

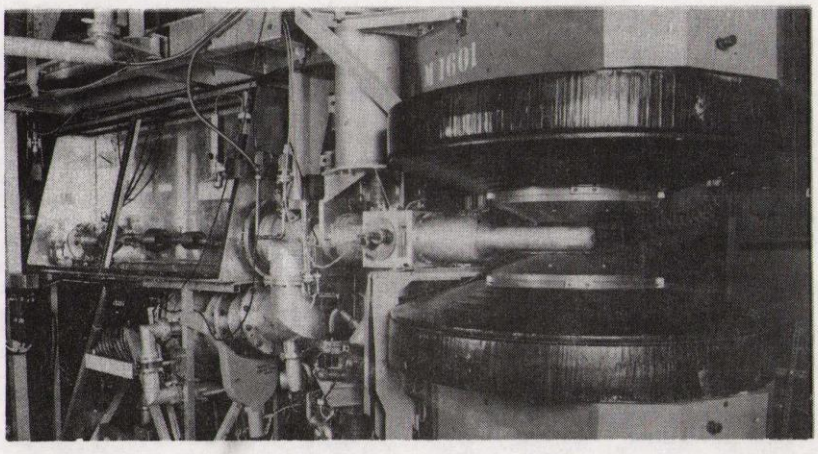

Photo - The new polarised deuteron target equipment showing the cryostat and the helium-3 pumping line to the oil booster pump. The internal part of the cryostat including the target cavity is shown withdrawn into its glove box.

Just commissioned and shortly to begin operation at Nimrod is a new target for use in particle physics experiments. It produces polarised deuterons to enable the interactions of K-mesons with polarised neutrons, to be studied and will break new ground in the experimental study of this important interaction. In a recent run, 28 per cent deuteron polarisation was achieved - comfortably above the design figure of 25 per cent.

Free neutron targets can't be made, so details of interactions with neutron targets have to be inferred by looking at the scattering of particle beams by deuterons - the proton-neutron pairs of heavy hydrogen nuclei - and in a polarised target the deuterons are themselves embedded in a complex organic molecule. So in practice the experimental data from a polarised deuteron target is mixed with a 'background' of spurious counts from other neutrons in the material of the target. All these counts have to be removed before meaningful information can be obtained for particle physicists. Experiments using ordinary proton targets have to be run so that the correct subtractions can be made and the neutron data obtained from the deuteron data. This means that the target material has to be changed quite often and the apparatus has been designed to make this operation go smoothly.

A particular feature of this polarised target is an oil booster pump which is used to maintain the lowest possible pressure in the liquid helium-3 bath which cools the target material. This keeps the temperature as low as possible (0.43° above absolute zero), so ensuring that a high degree of polarisation can be maintained.

Although it is vital to the interpretation of the data, it is never straight forward to measure the polarisation in polarised targets, and in this case the job is even more difficult than usual - the target is quite large (50cc) and there are special problems arising from the use of deuterons rather than protons. Nuclear magnetic resonance (NMR) techniques are used and several coils are mounted within the target to give continuous monitoring of the polarisation.

A high magnetic field is required for polarising and in this case it is provided by an iron-cored magnet which has already given valuable service in several polarised target experiments over the last 10 years. For this experiment a hole has been made in the return yoke to allow beam to enter the target, leaving maximum available space for detection equipment.

The apparatus is set up in the K20 beam line and will be used by a collaboration between Queen Mary College, London, and Rutherford Laboratory on a two-year data-taking programme.

RUTHERFORD LABORATORY BULLETIN *Published by the Scientific Administration Group* *Editor:* H F NORRIS

Deadline for Insertions: 1000 hours Wednesday 23 June

Room 42 Building R20
Rutherford Laboratory
Chilton Didcot Oxon
Abingdon 21900 Ext 484

Mid Summer Sports Special

Rutherford Laboratory 'sportspeople' are rising to the challenge of Olympic year. Our golfers have won the 'Sir Brian Flowers' trophy (we shall be reporting on this event in the next issue) and RL cricketers are contributing to the continuing success of the SRC team in the Curtis Bennet Shield Competition. But the versatility of some of our sportspeople (the term competence seems inappropriate) is highlighted in this first report by our special rowing corespondent, Bro. Ken Oar, of a rather unusual sporting event which took place recently at Oxford.

Cherwell Punt Race "Epic"

"Mrs Hunt's Boys" Win in Dubious Decision

Even during the first stage of the Rutherford Laboratory Punt Race, held on the Cherwell at Oxford on Friday 4 June some lack of training by the crews was evident. During this stage of the race, a leisurely paddle upstream to the 'Victoria Arms', one team was even overtaken by an enthusiastic duck - giving a foretaste of the thrilling sport yet to come.

It now becomes necessary to explain two of the many rules and regulations governing this event which should help to confuse readers even more as the story unfolds. Rule 1. During the race each punt was allowed to make 4 calls of 'CHANGE' whereupon the remaining teams were required to change the man on the punt pole - no mean effort following stage II, the stop at the Victoria Arms. Rule 2. One call of 'ROTATE' was allowed for each punt. This call required the other teams to complete a 360° rotation of their punts before proceeding - a call being allowed at anytime to the last team.

After the refuelling session (stage II) at the Victoria Arms and a discussion period regarding the rules, largely considered to be in favour of 'Donaldo's Angels' (since they suggested them), crews proceeded to the somewhat nebulous start line for the final gruelling stage of the race.

Three punts went one way and one went the other but eventually 'Mrs Hunt's Boys' raced ahead so fast that by about halfway were so far ahead that in true sporting tradition, being unable to hear any calls, deliberately abondoned their pole in midstream and continued with paddles only. The team's accountant however pointed out that there was a £5 charge for the loss of a pole and an attempt was made to retrieve it.

Meanwhile the 'Donaldo's Angels' team caught up and gave assistance. This was considered to be very sporting until it was realised that due to some slick palming, "Mrs Hunt's Boys" had been presented with 'Donaldo's Angels' broken pole, only 6ft long. The race leaders were thus knobbled and quickly overtaken by all other crews.

The 'Old Baldersonians' claimed the need of hearing aids while 'Donaldo's Angels' ignored the change engines rule presumably due to the incapacity of their other engines. Two of 'Mrs Hunt's Boys' fell into the river owing to strenuous efforts to overcome the 'Rees' Handicap ie Main engine Mike Yates with 6ft pole. Result: Owing to other crews flagrantly ignoring the rules and failing the breathalyser, 'Mrs Hunt's Boys' claimed the race on disqualification of all other teams.

(From information received from a very dubious source - R1 Coffee Lounge - it appears that all teams were eventually disqualified and a further contest will have to be arranged: in which country is not known).

TEAMS

'Donaldo's Angels'	: Martin Donald (Skipper), Graham Rees, Francis Atchison, (Alan Armstrong*).
'Old Baldersonians'	: Cyril Balderson (Skip.), Chris Osland, Chris Cooper.
'Mrs Hunt's Boys'	: Fred Gilbert (Skip.), John Gill, Mike Yates, (Tony Eastwood*).
'MacPherson's Struts'	: Andy MacPherson (Skip.), Fred Hart.

*Crew members who did not get past fuelling stage.
(A vacancy now exists for a rowing correspondent - Ed.).

SRC Cricketers March On

Having nobbled the cops from New Scotland Yard in the first round of the Civil Service Curtis-Bennet Shield Competition the SRC team were drawn against OPCS Titchfield in the next round.

The match was played on 27 May at the Fareham Cricket Club ground and although both teams found the wicket a little unpredictable the SRC team notched up another fine win.

SRC batting first, found runs hard to get but slowly the score mounted until after the completion of the allocated 40 overs it had reached a very respectable figure of 174 for 8 wickets.

A fine innings by Dave Daniels from the Lab contributed 99 of the runs and Barry Martin from Appleton added a very useful 20, this being the second highest score. Dave who batted throughout the innings was run out trying to reach his 100 with the last ball of the final over.

OPCS never looked like getting the required number of runs to win. They had no answer to the fast bowling of Steve Hancock who took 4 for 22 and Ian Midson with 3 for 35. The SRC fielders accounted for the other three wickets as they hit the stumps 3 times to run players out and OPCS were all out for 60.

In the third round to be played on Wednesday 16 June, the SRC opponents will be the Ministry of Defence (Procurement & Executive Branch) at Greenwich.

The SRC eleven against OPCS (plus twelfth man) was:- Barry Martin/Appleton; Mike Jeffries & Ian Midson/Swindon; with Ray Smith, Dave Daniels, Ben Patel, Bob Blowfield, Martin Donald, Bob Witty, Steve Hancock, Doug House and Peter Craske from the Chilton campus. Peter Craske was twelfth man.

SRC SPORTS DAY The ninth annual 'Sports Day' will be held at Chiswick on Tuesday 13 July 1976. Anyone interested in taking part should contact the appropriate person in the following list:-

Netball	-	Mrs P Coulthard, Ext 6622
Football	-	R Lawes, Ext 527
Bowls	-	C Grindrod, Ext 6137
Cricket	-	S Hancock, Ext 254
Tennis) Chess)	-	P Craske, Ext 232.

For any other enquiries please contact the Rec. Soc. Secretary, G Howard on Ext. 6115.

Names of entrants should be sent in as soon as possible - entries close on 30 June.

CHRISTIAN FELLOWSHIP All are welcome to a study on the Book of Colossians led by Denis Williams on Friday 18 June. The venue is the R12 Conference Room at 1230.

The monthly meeting on Friday 25 June, will be led by a visiting speaker. R12 Conference Room at 1230. As usual all members of staff are cordially invited to attend.

APOLOGIES Owing to lack of space, stories on retirements, chess news and the raft race report are being held over for the next issue.

CHECKING AGAIN! Would any person at present in possession of any audio equipment on loan from the Office Services Section please inform the Assets and Inventories Section, Ext. 570.

MISSING EQUIPMENT A 55mm Pentax camera lens, serial number 792161, has been removed from π12 experimental apparatus by a person or persons unknown. Will anyone with information to offer please contact B T Payne, Ext. 6118/301/6343.