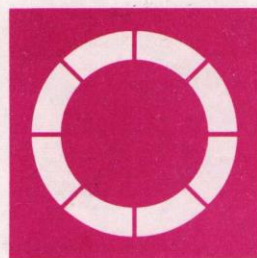


No 31/71  
6 Sept 71



# Rutherford Laboratory Bulletin

## General News

### EX CRANWELLIAN RETIRES

"A mixture of pleasure and sadness" - the opening remarks of the Director on Friday 27 August when presenting a farewell gift to Mr A H Roberts on the occasion of his retirement.

Arthur Roberts, a finance officer for the past 21 years, has spent most of his working life on one airfield or another. In September 1923 Arthur joined the Royal Air Force as a boy entrant and went to Cranwell as an apprentice in the engineering trades. After an interesting career, during which time he spent a year in 1939 at RAF Harwell, he left in 1950 with the rank of Warrant Officer. In May 1950 he joined the Ministry of Supply and returned to Harwell as a member of the Finance Group in the Atomic Energy Research Establishment. Arthur moved over to the Rutherford Laboratory in November 1957 to look after the finance of the Nimrod project. During the last six years he has been in charge of the Bill Authorisation Section.

On the last Friday in August, Arthur surrounded by many friends and colleagues, took his farewell of the Laboratory. The Director spoke of the long service Arthur had given but expressed surprise on learning of his coming retirement as he had thought that Arthur was well below sixty. On behalf of his friends and colleagues the Director presented him with a well known make of alarm clock/tea maker after having been assured by the Chief Engineer that it had not been made at the Laboratory.

In his reply Arthur spoke of his mixed feelings; it had been for long a secret wish for the day to arrive when he would retire and then suddenly, it had arrived. He considered himself extraordinary lucky to have been able to watch such an enterprise as the Rutherford Laboratory arise on the Berkshire Downs and to have been part of it, and felt sure the best was still to come. He would look back on grand memories of the many achievements of the Laboratory, of the difficulties and accidents, and, the way they had been overcome. He concluded by thanking everyone for the present and their good wishes. One thing he forgot to mention was his intention of using his new present on the morning of Wednesday 1 September, setting the alarm at 20 to 8 and standing by the window drinking a cup of tea as the Harwell bus passed his home. We would like to join in wishing Arthur a long and happy retirement.

**SUGGESTION AWARDS** At a recent meeting of the Suggestion Awards Committee twenty eight suggestions were considered and the following awards made:-

H E Clark NED R8	£5	C Worthing Admin R56	(£1
	(£2		(£1
R E Johnson ESD R48	(£5	C Thornber NED R2	£20
	(£10	P Titterton NED R3	£5
J Morris NED R3	£3	A Smith NED R43	£2
B May NED R3	£5	J Flynn ESD R34	£1.50
D E Target ESD R9	£2	R Hollins HEP EL R36	£10
H Webb ESD R9	£5		

**NATIONAL SAVING CERTIFICATES - WEEKLY CYCLE ENDING 17 9 71** Certificates can be collected from the Cash Office, R20 from 20 September onwards. New members wishing to join the Scheme can obtain enrolment forms from the Cash Office. Forms must be returned not later than 22 September 1971.

**LIBRARY NOTICE** The Library proposes to discontinue subscriptions to the undermentioned journals. Anyone who would be inconvenienced is asked to contact the Librarian Ext 6668.

Experimental Mechanics  
Experimental Technik der Physik  
IEEE Transactions on Communications Technology  
Management Abstracts  
Management in Action  
Management Today

Microtechnic  
Nuclear Fusion  
Surface Science  
Ultrasonics  
Physics of Thin Films

**BULLETIN NOTICE** The current issue of the Bulletin will again cover two weeks after which it will revert to weekly publication.

**NATIONAL SAVINGS CERTIFICATES - MONTHLY CYCLE ENDING 31 8 71** Certificates can be collected from the Cash Office, R20 from 1 September onwards. New members wishing to join the Scheme can obtain enrolment forms from the Cash Office. Forms must be returned not later than 30 September 1971.

**CENTRAL COMPUTER SHUTDOWN** The 360/75 Central Computer will be switched off for the period 8 am Saturday 4 September to 8 pm Sunday 5 September so that essential building alterations can be completed.

During the last three weeks in September major reorganisation of the office accommodation in the computer ancillary



areas is to be carried out. It is regretted that users may be subject to some inconvenience but as far as possible this will be kept to a minimum.

**METRIC EXHIBITION** A Metric Exhibition will be staged in the RI Entrance from 6 - 10 September 1971. The date has been arranged to coincide with the introduction of metric screwed fasteners to the Laboratory as announced in Metrication Notice No 3 dated 16 8 71. The Exhibition has been kindly loaned by Daresbury Laboratory with additional material by the Metrication Board.

**WINSTON CHURCHILL TRAVELLING FELLOWSHIPS** The awards are given to candidates who can convince the selectors of the worth of their chosen project and that they have the knowledge and initiative to make full use of the Fellowship both while they are abroad and when they come back. There are no age limits and academic qualifications are not essential. Further details from Training Section, R20, Ext 555.

**FILM NOTICE** Period 10 commences Monday 6 September. Colour Strip - YELLOW for 8y films and fast neutron packs. Six monthly TLD change for people with surnames commencing KLMN. Please change all dosimeters promptly and ensure all old ones are returned.

**WEA WANTAGE BRANCH** The following classes will commence this month at Icknield School, Springfield Road, Wantage (except \*). No pre enrolment is necessary. All classes begin at 7.30 pm.

Advanced Geology - Mon, 27 Sept. Looking at Antiques - Tues, 21 Sept.  
World Poverty, WEA/OXFAM Course - Wed 22 Sept. China Revisited - Mon 1 Nov.  
\*Modern European Literature - Thurs 30 Sept (at St Marys Convent, Denchworth Road).  
Further details from Mrs M Richold, AERE, Ext 72-4510.

**BRITISH VACATION SCHOOL IN THEORETICAL ELEMENTARY PARTICLE PHYSICS 1971** The School is held at the Rutherford Laboratory this year from 6 - 24 September inclusive. The School is already fully subscribed. Please note that the Lecture Theatre will be in use daily Mon - Fri, from 9.45 am to 3.15 pm.

**CENTRAL COMPUTER AREA - NO SMOKING** Commencing Monday 6 September, all areas adjacent to the Central Computer will be covered by the GENT fire detection equipment. Smoking is therefore prohibited in these areas.

**OVERSEAS VISITS** The Director to Geneva, 7 - 8 Sept, to attend meeting of Nuclear Physics Research Committee.

The following will attend the ECFA Study Week at Pisa, Italy:-  
Dr C J S Damerell 10-19 Sept, Mr M N Wilson 10-20 Sept, Dr C M Fisher 11-19 Sept, Dr T G Walker, Dr N H Lipman, Dr J J Thresher 12-18 Sept, Dr I Butterworth 12-19 Sept, Mr A Carne 12-25 Sept, Mr Carne will also attend the VIII International Conference on High Energy Accelerators at CERN as will the following:- Mr W Walkinshaw 19-23 Sept, Dr J H Coupland, Mr N M King, Mr J M Dickson and Dr D B Thomas 19-24 Sept, Dr P F Smith 19-25 Sept.

## Machine Schedules

NIMROD Cycle 11 (31 8 71 - 21 9 71)  
Machine Physics  
High Energy Physics

Team	Beam	Experiment	
Westfield Coll/RHEL	$\pi^8$	Measurement of Assymetry In Eta Decay	Data
Bristol U/Soton U/RHEL	K15	$K^+p$ and $\pi^+p$ Differential Cross-Sections	Data
RHEL	$\pi^{11}$	Irradiation Experiments	Data
Glasgow U/RHEL	$\pi^9, N^4$	Polarisation Measurements in $\pi^-p$ Charge Exchange Reactions	Setting Up
Cambridge U/RHEL	K13C	Associated Production Measurements	Setting Up
Oxford U	K10S	Study of Neutral States in $K^+p$ Reactions	Data
Imp Coll/Soton U	$\pi^7$	Studies of the $n, w$ and $A_2$	Setting Up

## Internal Events

Wed 8 Sept 11 am Conf Rm RI	HEP Disc Group	Dr W H M Allison (Oxford)	Problems in $\bar{p}$ Annihilation
Fri 10 Sept 1130 am Conf Rm RI	Nimrod Lecture Series	Dr W Busza (DESY)	$p, w$ Interference in Photoproduction
Mon 13 Sept 1130 am	Conf Rm RI.	Nimrod Lecture Series. To be arranged.	

## Social News

**REC SOC DANCE** Note for your diary -next dance is on 8 October. More details later.

**RUTHERFORD AND ATLAS CHESS TOURNAMENT** This lunch-time tournament is due to start on 4 October 1971. Players wishing to take part should submit their names to P Craske, Ext 232.

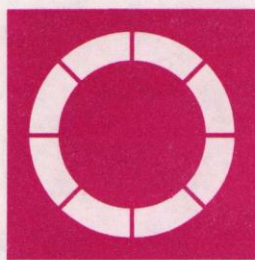
**AERE HORTICULTURAL SOCIETY** - 28th Show in the Social Club 16 Sept - 12.30 to 9.0 pm and 17 Sept - 12 noon to 1.30 pm. Further details from Mrs W M Dance RI Ext 418 or the Editor.

Rutherford Laboratory  
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Scientific Admin Group  
Building R20



No 32/71  
20 Sept 71



# Rutherford Laboratory Bulletin

## General News

### SUCCESSFUL OPERATION OF PULSED SUPERCONDUCTING DIPOLE

The Superconducting Applications Group has carried out a successful first series of tests on the pulsed superconducting dipole model known as AC3. This magnet is capable of cycling continuously with rise times as short as 1-2 sec, and is designed to produce a magnetic field of about 40 KG in a 10 cm bore, or (with an additional insert now under construction) about 45KG in an 8 cm bore. It is believed to be the first pulsed dipole which has an aperture, field, and operating current comparable to the requirements of a high energy superconducting synchrotron (such as a conversion of the European 300 GeV machine to 1000 GeV, or an uprating of the Nimrod facility).

In its first tests it was pulsed at about 90% of its 5400A critical current, with rise times down to 1 second. The measured ac loss was approximately 10 Watts at a 4 sec cycle time - close to the predicted value for the conductor used. The magnet was quenched many times without affecting its performance. Some 'training' was observed - a characteristic feature of the 'running in' period of a pulsed magnet - the maximum central field reached in this first cooldown being 38 kG (without the assistance of an iron shield which would increase the field by 20-40% in an actual synchrotron).

The conductor used was made from a 1045 filament 0.4 mm diameter composite supplied by IMI, formed into a 90 strand transposed cable and subsequently compacted to a 5mm square section. The coil was of the 'sector geometry' type, wound in six concentric layers, and fully impregnated with epoxy resin. Mats of copper wire, sandwiched between the winding layers, are used to conduct the ac heat out of the coil to the liquid helium.

In addition to the immediate programme of work on AC3, further dipole models, AC4 and AC5, are planned for 1972-73, incorporating improved types of cable, iron shielding and higher winding precision.

The successful testing of this latest magnet represents another significant milestone in demonstrating the feasibility of superconducting synchrotrons.

**WINTER COLLEGE ON ELECTRONS IN CRYSTALLINE SOLIDS.** The International Centre for Theoretical Physics, Trieste will conduct a third International Course on the Theory of Condensed Matter from 10 January to 15 April 1972. Further information from the Editor.

**CRYOGENICS COURSE.** The University of Southampton have organised once again post graduate courses in Cryogenics and its Applications. The "Short Course in Cryogenics" as does the course in "Cryogenics and its Applications" commences in October 1971. Details can be obtained from the Editor.

**MISSING EQUIPMENT.** The following item of equipment has been reported missing from Building R36:- Embossing Tool. Anyone with information on the present whereabouts of this item is asked to contact Mr S C Maskell, Building R36, Ext 534/308.

**FILM NOTICE.** It is Period 10. Colour Strip - YELLOW for  $\beta\gamma$  and fast neutron packs. Please check that you are wearing the correct dosimeters and that all old ones are returned.

**VISITORS.** Eighteen people attending the Low Temperature Technology Course at AERE will visit the Laboratory on Thursday 23 September.

**OVERSEAS VISITS.** The following will attend the VIIIth International Conference on High Energy Accelerators at CERN:- Mr G N Venn, 19-25 September, Mr R G Russell, 19-24 September, Mr G Stapleton, 19-24 September, Dr J T Hyman, 19-24 September, Dr Hyman will be presenting an invited paper on "Computer Controls. Mr E J D Newbold to CERN 24 September-6 October to check Rutherford Laboratory equipment (assets and inventories).

## Machine Schedules

NIMROD Cycle 12 (21 9 71 - 12 10 71)  
This is a provisional schedule.

Team	Beam	Experiment	
Westfield Coll/RHEL	$\pi^8$	Measurement of Assymetry in $\eta$ Decay	Data
Bristol U/Soton U/RHEL	K15	$K^+p$ and $\pi^+p$ Differential Cross-Sections	Data
RHEL	$\pi^{11}$	Irradiation Experiments	Data
Glasgow U/RHEL	$\pi^9, N_4$	Polarisation Measurements in $\pi^-p$ Charge Exchange Reactions	Setting up
Cambridge U/RHEL	K13C	Associated Production Measurements	Setting up
Oxford U	K10S	Study of Neutral States in $K^+p$ Reactions	Data



# MACHINE SCHEDULES CONTD

Team	Beam	Experiment	
Imp Coll/Soton U	$\pi^7$	Studies of the $n$ w and $A_2$	Setting up
B'ham U/RHEL	X2/K12A	$K_n^+$ Elastic Scattering and $K^+$ Charge Exchanger from 0.45 - 0.95 GeV/c	Data
Surrey U/B'ham U/RHEL	$\pi^{10}$	Total Reaction Cross-Sections for Pions on Nuclei	Data
RHEL	K9	HBC/Target Development Tests	

## Internal Events

Wed 22 Sept 10 am-4 pm  
Conf Rm R12

Demonstration by Radial Microwave Components Ltd of their range coaxial connectors, low-frequency connectors, precision coaxial devices, coaxial switching devices etc. Further Information from the Editor.

Mon 27 Sept 11.30am  
Lecture Theatre

Nimrod Lecture Series

Dr A Donnachie (DNPL)

Report on Cornell Conference

## External Events

Tues 21 Sept 2.30pm  
Daresbury Laboratory

Lecture Series

P S L Booth (Liverpool) & R Marshall (Daresbury)

Cornell Conference - Photoproduction Experiments

Tues 21 Sept 8.15pm  
Oxford Univ Maths Inst

British Computer Society Branch Meeting

Computer People Get Together

A Survey of Computing in the Oxford Region (Open to non-members)

### EVENT AT AERE

Tues 21 Sept 2 pm  
Conf Room Bldg 8.9

Theor Phys Seminar

Dr J Sarfatti (San Diego State College, California)

Topology and Physics

## Social News

DARTS TOURNAMENT. The Lunch Time Darts Tournament is due to start on Monday 27 September. Closing date for entries is 22 September. Names and details please to John Rice or Alan Slater, Ext 232.

RUTHERFORD LABORATORY ANGLING CHAMPIONSHIP. It is hoped to hold the angling championship on Saturday 16 October, waters to be decided later. Anglers interested in taking part are asked to contact Peter Craske Ext 232 or Bill Rousie, R2 Mechanical Workshop, Ext 6223.

SUPPER DANCE 8 OCTOBER. Dancing from 8 pm to 1 am to the "Rhytham Aces", licensed bar etc. Price still only 50p - great value. Tickets from:- Mrs V Goodwin (R1), Mrs T Batchellier (R34), Mr J Rice (R2), Mrs M Stoker (R20), Mr R Hecken (R2), Mr J Hoskins (R58), Mr A B Jones (R50).

CHRISTIAN FELLOWSHIP. Friday 17 September, 12.30pm. Conf. Room R12. John Matthews will lead a discussion on the "National Festival of Light" which is being held this month in London. This "Festival" is concerned with the moral pollution and spiritual decline in this country at the present time. All welcome.

Friday 24 September, 12.30 Conf Room, R12. Everyone welcome to a meeting led by the Rev John Williams, vicar of Cholsey Parish Church.

CSMA. Mr J Dawson is the new local representative. He is in Room 2.31, R25, Ext 492.

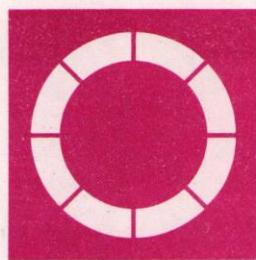
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Building R20



No 33/71  
27 Sept 71



# Rutherford Laboratory Bulletin

## General News

### 360/75 COMPUTER PROGRAM CONSULTANTS

Program consultants are now available daily in a temporary office in the computer reception area at the following times:- Mon-Thurs, 9 am-12 noon and 2-4.30 pm; Fri, 9 am-12 noon and 2-3.30 pm. In future, please address all your programming/JCL queries to these consultants and not to the operations staff. The telephone extension is 343.

**LIBRARY NOTICE** The following bound volumes have been removed from the Library without a record being made  
Physical Review, v 110, 1958  
Nuclear Physics, v 81, 1966.

To avoid inconvenience to other staff, please return these volumes and note that bound periodicals may not be borrowed from the Library without permission from the Library staff.

**FILM NOTICE** It is Period 10. Colour Strip - YELLOW for  $\beta\gamma$  films and fast neutron packs. Please make sure you are wearing the correct dosimeter.  
Next film change - Monday, 4 October.

**MISSING EQUIPMENT** The following item of equipment has been reported missing from the K12 Local Control Room, Building R6:-

Avometer, Model 8, Ser No 53099-167

Anyone with information on the present whereabouts of this item is asked to contact Mr M J Hotchkiss, Building R1, Ext 493/6308.

The following item of equipment has been reported missing from Lab 6, Building R1:-

Avometer, Model 8, Ser No 120224, RHEL No 03215

Anyone with information on the present whereabouts of this item is asked to contact Mr C E Halliday, Building R1, Ext 389/473.

**IEE FORTHCOMING ACTIVITIES** Session 1971/72. First Half (September-January). A list of meetings of Centres, Sub-Centres, Specialised and Graduate and Student Sections, Circles and Irish Branch, London District Meetings and London Graduate and Student Section can be seen in Room 42, R20. Local meetings where appropriate will still be published in the External Events Section.

**EXTERNAL COURSES** The Oxford Polytechnic have announced that the Department of Engineering are offering the following specialist short courses during the 1971-72 session beginning in October 1971.

- |  |  |
|--|--|
| 1 Control System Theory                      | 6 Planned Maintenance                              |
| 2 Sampled Data Systems: Stochastic Processes | 7 Digital Computers                                |
| 3 Integrated Circuit Applications            | 8 Industrial Electronics                           |
| 4 Modern Semiconductor Devices               | 9 Automobile Petrol Injection and Ignition Systems |
| 5 Instrumentation for Mechanical Engineers   |  |

Further details from the Tutor for Short Courses, Dept of Engineering, Oxford Polytechnic, Headington, Oxford OX3 0BP  
Tel Oxford 63434.

**OVERSEAS VISITS** Mr P R Pitts, to CERN, 28 Sept for a minimum of one year's attachment to work on the ISR/RHEL collaboration programme. Mr J Burren, Mr R Lawes, Mr A Bryden and Mr P Hallowell, to CERN, 26-29 Sept, to attend collaboration meeting on HPD for BEBC film and meeting on CRT Devices for BEBC. Dr T C Bacon, to CERN, 27-30 Sept, for discussions.

Mr W Walkinshaw, Dr R Taylor, Mr H Hurst, Mr A R Mayhook and Mr G H Adamson, to Pisa, 26 Sept-1 Oct (Mr Walkinshaw will depart on 28 Sept), to attend the SEAS Annual Conference.

Mr M J Hotchkiss and Dr Tso Thomas, to CERN, 27 Sept-1 Oct, for discussions and work on spark chambers.

Mr B J Jackson, to CERN, 4-6 Oct, to carry out asset and inventory check.

**FILM SHOWS** The 1971-72 film season commences this week with the showing of an engineering film called 'Power from Precision'. For the next 34 weeks, an interesting and varied selection of films will be shown including such new releases as 'Night Driving' and 'Standards Mean Business', the story of the British Standards Institute, released this summer. Showing times will be as last winter, ie 1.15 pm on Wednesdays and 12.40 on Thursdays. However, due to other requirements, showing dates and times may have to be changed from time to time. Therefore to avoid interrupting other events please check the notice board in the coffee lounge before entering the Lecture Theatre for any film show.

## Machine Schedules

**NIMROD Cycle 12** (21 9 71-12 10 71) Provisional Schedule. High Energy Physics: ( $\pi$ 8, K15,  $\pi$ 11,  $\pi$ 9 N4, K13C, K10S,  $\pi$ 7, X2/K12A,  $\pi$ 10 and K9). Full details of Cycle 12 were given in Bulletin No 32/71.



## Internal Events

Mon, 27 Sept, 11.30 am, Lecture Theatre	Nimrod Lecture Series	Dr A Donnachie (DNPL)	Report on Cornell Conference
Wed, 29 Sept, 11 am, Conf Rm, Building R1	HEP Disc Group	Prof W A Wenzel (Lawrence Berkeley Lab)	Experimental Limits on the Decays $K_L^0 \rightarrow \mu^+ \mu^-$ , $e^+ e^-$ and $\mu^+ e^-$
Wed, 29 Sept, 1.15 pm Thurs, 30 Sept, 12.40 pm Lecture Theatre	Film Show	Power from Precision, 22 min, colour	

Sponsored by the Associated Engineering Group this film shows a cross section of the group's activities which covers a wide field from marine to civil engineering. An impressive film from the technical side it is also of interest to more general audiences.

Thurs, 30 Sept, 11 am Lecture Theatre	Special Nimrod Lecture	Dr V Perez Mendez (LRL) (To be confirmed)	Multiwire Proportional Chambers: Readouts and Application
Fri, 1 Oct, 11.30 am Lecture Theatre	Special Lecture	Prof John B Warren (British Columbia) (To be confirmed)	The Triumf Accelerator
Mon, 4 Oct, 11.30 am Lecture Theatre	Nimrod Lecture Series	Madame M Fidecaro (CERN)	Title to be announced

## External Events

Mon-Wed, 27-29 Sept. Loughborough University, Conference on "Teaching Mathematics to Non-Specialists", further details from the Editor.

Tues, 28 Sept 2.30 pm Daresbury Laboratory	Lecture Series	D W Braben (Daresbury) and F Foster (Lancaster)	Cornell Conference - Electron Scattering Experiments
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### EVENT AT AERE

Tues, 28 Sept 2 pm Conf Room, Building 8.9	Theor Phys Seminar	Dr A M Lane (AERE)	Non-Statistical Developments of the Bohr Compound Nucleus Picture
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## Social News

CHRISTIAN FELLOWSHIP Fri, 1 Oct. All welcome to attend a prayer meeting led by Dennis Williams. The meeting commences at 12.30 pm in the R12 Conference Room.

RUTHERFORD LABORATORY ANGLING CHAMPIONSHIP Anglers, if you are interested in entering this championship which is to be held on 16 October, contact Peter Craske Ext 232 or Bill Rouse (R2 Mech/Workshop) Ext 6223 as soon as possible.

SUPPER DANCE Tickets still available at only 50p for the supper dance to be held on 8 Oct. Dancing to the "Rhythm Aces" from 8 pm to 1 am. Licensed bar etc. Tickets from:- Mrs V Goodwin (R1), Mrs T Batchellier (R34), Mr J Rice (R2), Mrs M Stoker (R20), Mr R Hecken (R2), Mr J Hoskins (R58) and Mr A B Jones (R50).

HARWELL DANCE Friday, 22 October, 8.30 pm to 2 am, Harwell Restaurant. Tickets are on sale in Room 2-50, Building R1 at £1 each.

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