

# RUTHERFORD LABORATORY BULLETIN

No 1/64 for the week commencing Monday, 6th January, 1964.

VISITS ABROAD Mr. W. Walkinshaw (Head of Applied Physics Division) to C.E.R.N. and Germany from 6th to 9th January, for discussions on Bubble Chamber computing.

Mr. E.C. Sedman (Theoretical Studies Group) to C.E.R.N. on 5th January for one month for Bubble Chamber computing.

Mr. J.W. Burren (Theoretical Studies Group) to C.E.R.N. on 7th January for two weeks for discussions on computing.

P.L.A. The programme scheduled for the P.L.A. during the current week is as follows:

<u>Date</u>	<u>Team</u>	<u>Experiment</u>
6th January.	Queen's Univ. Belfast and Westfield College.	(p-d) Polarisation Measurement
8th-11th January.	Queen's Univ. Belfast and Westfield College	(p-d) Differential Cross-section Measurement
12th January.	Oxford University. . . R.H.E.L.	Counter Calibration Accelerator Physics

HEAVY LIQUID BUBBLE CHAMBER A notable stage in the Heavy Liquid Bubble Chamber project has been reached with the assembly of the magnet along with its three magnet coils in Building R.6B. The estimated weight of this assembly is 160 tons. A novel feature is the method by which the Bubble Chamber assembly can be moved by means of an air flotation system comprising four pads, each capable of carrying approximately 65 tons when pressurised to 65 lbs/in<sup>2</sup>(gauge). These pads are coupled together and controlled through control panels either in pairs, singly or a combination of both. After a period of initial experimentation, the final system has been designed, manufactured and assembled and the 160 ton mass has been successfully moved, on a specially prepared floor, with an average effort of 0.6 tons (1344 lbs), giving an average coefficient of friction of  $3.75 \times 10^{-3}$ . The pressure of air in the pads was 40 lbs/in<sup>2</sup>(gauge), and the quantity of air used, 20 standard cu.ft/min. When the Bubble Chamber has been completely assembled with all its components, the estimated total weight will be 240 tons, which can theoretically be moved with an effort of 0.9 tons (2016 lbs).

## INTERNAL EVENTS

Thurs, 9th Jan. 5.30 p.m. Conf. Rm., Bldg. R.1	Evening Lecture Series	Dr. W.S.C. Williams (Univ. of Oxford).	Elementary Particles
Mon, 13th Jan. 11.15 a.m. Conf. Rm., Bldg. R.1	Nimrod Lecture Series	Prof. J. Hamilton (Univ. Coll. London)	Structure of the Nucleon.

## EVENTS AT A.E.R.E.

Mon, 6th Jan., 2.15 p.m. Tues, 7th Jan., 11.30 a.m. Cockcroft Hall	Film	C.E.G.B. (17 mins)	"Nuclear Research". A Colour film about the C.E.G.B. Lab. at Berkeley.
(Outer gate open and inner gate manned)			
Tues, 7th Jan., 2 p.m. Conf. Rm., Bldg 8.9	Theor. Phys Div. Seminar	Prof. R.J. Eden (Univ. of Cambridge)	"Symmetries in the Strong Interactions of Elementary Particles".

Rutherford Laboratory  
3rd January, 1964.

H.F. Norris  
Scientific Administration.

# RUTHERFORD LABORATORY BULLETIN

No. 2/64 for the week commencing Monday, 13th January, 1964.

P.L.A. - The programme scheduled for the P.L.A. during the current week is as follows:

<u>Date</u>	<u>Team</u>	<u>Experiment</u>
13th-15th Jan.	Queen Mary College	Measurement of 'A' parameter at 30 MeV
16th Jan.	R.H.E.L. Nuclear Chemistry	Fission Studies at 30 MeV
17th-18th Jan.	Birmingham University	Silicon Cross-section Measurements

UNIVERSITY POSTS - There is a vacancy for a Lecturer or Assistant Lecturer in the Department of Physics, University of Southampton. Vacancies exist at the Computing Laboratory, University of Newcastle-on-Tyne for new posts of a Lecturer and a Research Assistant. Details of all the above vacancies from Mr. E.W. Young, Personnel Branch, Building R.20, Ext.510.

VACANCIES AT C.E.R.N. - Further vacancy notices (Nos. 412 to 415 inclusive) have been received from C.E.R.N., Geneva. Posts for Clerk Typist, Design Draughtsman, Technical Draughtsman and an Accountant are included. Details can be obtained from Mr. E.W. Young, Personnel Branch, Building R.20, Ext.510.

## INTERNAL EVENTS

Mon., 13th Jan., 11.15 a.m., Conf. Rm., Bldg. R.1	Nimrod Lecture Series	Prof. J. Hamilton (Univ. Coll. London)	Structure of the Nucleon
Mon., 20th Jan., 11.15 a.m., Conf. Rm., Bldg. R.1	Nimrod Lecture Series	Dr. A. Astbury	"Muon Capture in $O^{16}$ , and "Measurement of $\pi$ - mesic X-rays"

## EVENT AT A.E.R.E.

Tues., 14th Jan., 2.00 p.m., Cockcroft Hall	Talk and Demonstration	Mr. G.E. Littleford of Kerry's (Ultrasonics) Ltd.	Ultrasonics
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(Outer gate open and inner gate manned, 1.45-4.00 p.m.)

## EXTERNAL EVENTS

Wed., 15th Jan., 6.00 p.m., 1 Birdcage Walk, S.W.1	Inst. of Mech. Eng. Discussion	-	Engineering Problems encountered in Cryogenics
Thurs., 16th Jan., 5.30 p.m., Savoy Place, W.C.2	Inst. of Elect. Eng.	-	New Developments in Waveguide Transmission
Mon., 27th Jan., 2.30 p.m. and 5.30 p.m., Savoy Place, W.C.2	Colloquium	Joint Brit. I.R.E.-I.E.E. Computer Groups	The Interconnection of Peripheral Equipment
Feb. 26th-28th:	Ninth Scintillation and Semi-conductor Counter Symposium, Washington, D.C., U.S.A. - Enquiries to Mr. G.A. Morton, R.C.A. Laboratories, Princeton, N.J., U.S.A.		

Rutherford Laboratory  
10th January, 1964.

H.F. Norris  
Scientific Administration

# RUTHERFORD LABORATORY BULLETIN

No. 3/64 for the week commencing 20th January, 1964

VISITS ABROAD. Dr. W. A. Smith will visit Emile Haefely and Co., Basle, for discussions on Separator Power Supplies, and C.E.R.N., Geneva, for information concerning recent research into vacuum breakdown, from 20th-23rd January.

Dr. P. A. Chatterton to C.E.R.N., 20th-23rd January for discussions on R.F. Separators and recent research into vacuum breakdown.

P.L.A. The programme scheduled for the P.L.A. during the current week is as follows:

<u>Date</u>	<u>Team</u>	<u>Experiment</u>
23rd-27th Jan.	Univ. Coll. London	Spin Rotation in (p-He) Scattering

CONFERENCES. The Institute of Physics and the Physical Society will hold the following conferences on the dates indicated:-

8th-10th April: "The Mechanics of Inhomogeneous and Anisotropic Materials" at the Manchester College of Science and Technology.

15th-17th April: "High Energy Physics" at the Rutherford High Energy Laboratory.

15th-17th April: "Structural Studies Complementary to X-Ray Analysis" at the University of Keele.

16th-17th April: The use of Electron Microscopy, Diffraction and Probe Analysis in the Identification of Precipitates in Solids" at the National Physical Laboratory.

11-13th May: The Measurement of High Temperature" at the Institution of Electrical Engineers, London.

7th-11th September: "Magnetism" at the University of Nottingham.

9th-11th September: "Low and Medium Energy Nuclear Physics" at the University of Sussex.

15th-17th September: "Luminescence" at the University of Hull.

22nd-24th September: "Many Body Problems" at the University of Manchester.

Advance registration is necessary for these conferences. Further information may be obtained from H. F. Norris, Building R.32, Ext.484.

VACANCIES AT C.E.R.N. Further vacancy notices (Nos.416-425 inclusive) have been received from C.E.R.N., Geneva. Posts for Mechanics, Laboratory Technicians, Design Draughtsmen and Electronic Engineers are included. Details can be obtained from Mr. E. W. Young, Personnel Branch, Building R.20, Ext.510.

BURSARIES. Applications are invited for awards under the Royal Society and Nuffield Foundation Commonwealth Bursaries Scheme beginning during the period July-December, 1964. The closing date for applications is 15th March, 1964. Details may be obtained from Mr. A. G. Taylor, Personnel Branch, Building R.20, Ext.495.

EXTERNAL COURSE. A course of twelve lectures on "Advanced Mathematics" at the Oxford College of Technology on Wednesday evenings from 6.30 to 9.00 p.m. commencing 5th February. The fee is two pounds. Further information can be obtained from H. F. Norris, Building R.32, Ext.484, but intending students should inform the Secretary of the Department of Electrical Engineering, (Tel: Oxford 63434) as soon as possible.

MISSING EQUIPMENT. The following item of equipment has been reported missing:-

Stop Watch, Ser. No. 1045854

Will anyone in possession of this item, please contact Inventories Section, Ext.565.

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INTERNAL EVENTS. The Nimrod Lecture on Monday, 20th January, "Muon Capture in  $O^{16}$ " and "Measurement of  $\pi$ -mesic X-rays" has been cancelled and no lecture will be given on that date.

Thurs., 23rd Jan., 5.30 p.m., Conf. Rm., Bldg.R.1	Evening Lecture Series	Prof. B. H. P. Rivett (Univ. of Lancaster)	A Scientist looks at the Manager.
Mon., 27th Jan., 11.15 a.m., Conf. Rm., Bldg.R.1	Nimrod Lecture Series	Dr. H. Hereward (C.E.R.N.)	Operational Experience with, and the Development of, the CERN P-S.

EVENT AT CULHAM LABORATORY.

Fri., 24th Jan., 2.30 p.m., Main Lecture Hall, Culham	Culham Laboratory Lecture	Sir Edward Bullard  (No tickets necessary).	Continental Drift - Fraud or Fact.
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Building R.32  
17th January, 1964

H. F. NORRIS  
Scientific Administration

VDW

# RUTHERFORD LABORATORY BULLETIN

No. 4/64 for the week commencing Monday, 27th January, 1964

VISITS ABROAD. Mr. H. Hadley of the Engineering Division left for a two weeks visit to the U.S.A. on 22nd January, where he is visiting various laboratories.

Mr. J.M. Dickson and Mr. D.J. Warner of the P.L.A. Division will visit C.E.R.N. Geneva from 28th to 30th January for discussions on design problems associated with the 500 keV drift space of the P-S injector.

P.L.A. The programme scheduled for the P.L.A. during the current week is as follows:

Date	Team	Experiment
27th Jan-1st Feb	Univ. Coll. London.	Spin Rotation in (p-He) Scattering.

UNIVERSITY POST. A vacancy exists at the Computing Laboratory, University of Oxford, for a Senior Research Officer. Further details may be obtained from Mr. E.W. Young, Personnel Branch, Building R.20, Ext 510.

PARLEZ-VOUS FRANÇAIS? Would any member of the Rutherford Laboratory staff (particularly technical) who has some degree of proficiency in the spoken French language, please contact the Scientific Administration Office, Building R.32, as soon as possible.

ENDEAVOUR ESSAY. The British Assocn. for the Advancement of Science and Messrs I.C.I. Ltd., the publishers of "Endeavour", invite entries for the "Endeavour" Essay Competition, from persons under 25 on 31st May, 1964. Prizes total 100 guineas, with free attendance at the British Association annual meeting in Southampton. Details from Scientific Administration, Building R.32, Ext. 484.

## INTERNAL EVENTS

Mon, 27th Jan, 11.15 a.m., Conf. Rm., Bldg R.1.	Nimrod Lecture Series	Dr. H.G. Hereward (C.E.R.N.)	Operational Experience with, and the Development of, the CERN P-S.
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Demonstration-Lecture: Mr. P.D. Simmons of Solatron Ltd. will give a demonstration-lecture on the Digital D.C. Voltmeter, Type L.M. 1420, at 2.30-4.0 p.m. on Thursday, 30th January, in No.4 Conference Room, Bldg R.1. (This voltmeter is based on a new principle, giving very high input impedance and sensitivity characteristics from solid state circuitry).

Mon., 3rd Feb, 11.15 a.m., Conf. Rm., Bldg R.1.	Nimrod Lecture Series	Dr. J. Meyer (Saclay)	$\pi^+$ Deuterium Interactions in the Region of 600-900 MeV.
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POST-GRADUATE EDUCATION CENTRE, A.E.R.E. A series of 16 lectures on "Pulse Techniques for Nuclear Particle Counting" will be given by members of the Electronics Division and held in the Reactor School during March. Applications should be made through Group Leaders in the first place. Group Leaders are asked to pass approved applications through H.F. Norris, who will act as co-ordinating link with A.E.R.E. Accommodation is limited to 60, to be shared between Harwell, Culham, etc. and N.I.R.N.S.

Further information available from H.F. Norris, Building R.32, Ext 484.

## EVENTS AT A.E.R.E.

Tues., 28th Jan, 2 p.m., Conf. Rm., Bldg. 8.9.	Theo. Phys. Div. Seminar	Mr. M.J.D. Powell	To find the minimum of a function of several variables without calculating derivatives.
Fri., 31st Jan, 2.15 p.m., Cockcroft Hall.	Film (20 mins. duration)	Welwyn Electric Ltd.	Concept of "Total Excursion" as applied to resistor performance.

(Outer gate open, inner gate manned)

## EXTERNAL EVENTS

Fri., 31st Jan, 4.15 p.m., Clarendon Laboratory, Oxford.	Colloquium	Prof. R. Levi Sottì (C.E.R.N.)	Aspects of Hyper- nuclear Physics.
Thurs., 30th Jan, 4.15 p.m., Clarendon Laboratory, Oxford.	Theor. Phys. Seminar	Dr. R. Loudon (R.R.E. Malvern)	Spin waves and Resonance in Magnetic Materials.

# RUTHERFORD LABORATORY BULLETIN

No. 5/64 for the week commencing Monday, 3rd February, 1964

DARESBURY NUCLEAR PHYSICS LABORATORY - As from Monday, 27th January, 1964, this Laboratory will be established in temporary accommodation at the Daresbury site, and most of the staff will be there instead of at the Nuclear Physics Research Laboratory of Liverpool University. Only Dr. Holt's magnet group will remain in Liverpool for a few months longer. The new postal address is:

National Institute for Research in Nuclear Science,  
Daresbury Nuclear Physics Laboratory,  
Keckwick Lane, Daresbury,  
Nr. Warrington, Lancs. (Tel.No. Warrington 61341)

For visitors, Daresbury village will be found on the A.56 road from Warrington to Chester, about 4 miles from Warrington. Keckwick Lane is a turning to the right as you enter the village from Warrington.

P.L.A. - The programme scheduled for the P.L.A. during the current week is as follows:

<u>Date</u>	<u>Team</u>	<u>Experiment</u>
6th-10th Feb.	Queen Mary College	"A" and "R" Measurements at 30 MeV

HIGH ENERGY PHYSICS CONFERENCE - This conference, organised by the Institute of Physics and the Physical Society, is being held at the Rutherford Laboratory from 15th-17th April, 1964. Application forms will be available from Mr. J.B. Mellor, Building R.2, Ext.6615, early in February.

INTERNAL COURSE - Persons interested in attending a two-day course on introductory FORTRAN programming should send their names now to Mr. D.A. Harragan, Bldg. R.1. If sufficiently supported, the course would be held on Wednesday and Thursday mornings from 9 - 12 a.m.

POST GRADUATE EDUCATION CENTRE - Further to the announcement of the Lecture Series on "Pulse Techniques for Nuclear Particle Counting" made in last week's Bulletin (No. 4/64), please note that nominations should be received by Scientific Administration not later than 12th February. Early application is advised.

## INTERNAL EVENTS

Mon., 3rd Feb., 11.15 a.m., Conf. Rm., Bldg. R.1	Nimrod Lecture Series	Dr. J. Meyer (Saclay)	$\pi^+$ Deuterium Interactions in the Region of 600-900 MeV
Mon., 10th Feb., 11.15 a.m., Conf. Rm., Bldg. R.1	Nimrod Lecture Series	Prof. R. Oehme (Imp. Coll.)	High Energy Scattering

## EVENTS AT A.E.R.E.

Wed., 5th Feb., 11.00 a.m., Conf. Rm., Bldg. 8.9	Theor. Physics Seminar	Dr. D.W. Lang (Argonne)	Nuclear Level Densities and the Statistical Model
Thurs., 6th Feb., 11 a.m.-4 p.m., Social Club Games Room	A demonstration by Messrs. L. Oertling, Orpington, Kent, of their pre-weighing analytical balances, models R.10 and R.20		

## EXTERNAL EVENTS

Thurs., 6th Feb., 4.15 p.m., Clarendon Lab., Oxford	Theor. Physics Seminar	Dr. B.W. Downs	The Hyperon-nucleon Interaction
Fri., 7th Feb., 4.15 p.m., Clarendon Lab., Oxford	Colloq.	Dr. P.D. Traacy (Australian National University)	Nuclear Levels and Ghosts

H.F. Norris

Scientific Administration

Building R.32.

31st January, 1964.

GC

# RUTHERFORD LABORATORY BULLETIN

No. 6/64 for the week commencing Monday, 10th February, 1964

VISITORS. Sir Roger Makins will be visiting the Laboratory, to mark his retirement as Chairman of the A.E.A., on Monday 10th February 1964. He will arrive at 9.45 a.m. and, after coffee, will start a tour of the Laboratory at 10.15 a.m., visiting both the P.L.A. and Nimrod. Sir Roger will be entertained to lunch in the restaurant at 12.30 p.m. The Director has invited the Director of the Atlas Laboratory, members of the Division Heads Committee and Mr. Longstaff of A.E.R.E. to join Sir Roger for coffee and lunch.

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Twentyfive members of the Oxford University Scientific Society will visit the Laboratory on Tuesday afternoon, 11th February.

VISIT ABROAD. Mr. E. B. Fossey of the Atlas Laboratory, to C.E.R.N. Geneva, 10-12th February, for discussions on the FORTRAN compiler.

P.L.A. The programme scheduled for the P.L.A. during the current week is as follows:-

<u>Date</u>	<u>Team</u>	<u>Experiment</u>
10th-15th Feb.	Queen Mary College	"A" and "R" Measurements at 30 MeV

INTERNAL COURSE. Further to the announcement in Bulletin No. 5/64, the next FORTRAN course will be held in Conference Room No.1., Building R.1., from 9-12 a.m. on Wednesday, 12th February and Thursday 13th February.

## INTERNAL EVENTS

Mon., 10th Feb., 11.15 a.m., Conf. Rm., Bldg.R.1.	Nimrod Lecture Series	Prof. R. Oehme (Imp. Coll.)	High Energy Scattering
Wed., 12th Feb., 2 p.m., Conf. Rm., Bldg.R.12.	P.L.A. Seminar	Dr. R. J. Griffiths (Westfield Coll.)	Proposed Experiment to study alpha- clustering in the Surface of Nuclei.
Thurs., 13th Feb., 5.30 p.m., Conf. Rm., Bldg. R.1.	Evening Lecture Series	Prof. J. Rotblat	Nuclear Physics in Medicine.
Mon., 17th Feb., 11.15 a.m., Conf. Rm., Bldg.R.1.	Nimrod Lecture Series	Dr. L. van Rossum (Saclay & Berkeley)	Polarization in (p-p) Scattering at BeV Energies.

## EVENTS AT A.E.R.E.

Tues., 11th Feb., 2 p.m., Conf. Rm., Bldg.8.9.	Theo. Phys. Div. Seminar	Dr. J. M. Soper	Binding Energies of Hyper-nuclei
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Thurs., 13th Feb., 11 a.m. - 4 p.m., Cockcroft Hall Conf., Rm., Exhibition by Leybold Elliott Ltd., of Cryogenic Equipment.

Thurs., 13th Feb., 2.45 p.m., Cockcroft Hall.	Lecture (in association with exhibition)	Dr. Klipping (Fritz Haber Institute, Berlin)	Cryogenic Techniques
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(For both lecture and exhibition, outer gate open and inner gate manned from 11 a.m. - 4.30 p.m.)

Building R.32  
7th February, 1964

H.F. Norris  
Scientific Administration

# RUTHERFORD LABORATORY BULLETIN

No. 7/64 for the week commencing Monday, 17th February, 1964.

VISITORS. A party of members of the Royal Holloway College Physical Society will visit the Laboratory on Wednesday, 19th February.

VISITS ABROAD. Dr. J. Howlett, Director of the Atlas Laboratory, will visit Darmstadt, Western Germany, from 22nd to 25th February.

Dr. L. C. W. Hobbs, Head of the Nimrod Division, and Mr. P. Bowles, Head of the Engineering Division, will visit S.A.M.E.S. Grenoble and C.E.R.N. Geneva from 24th-28th February for discussion.

Mr. J. M. Dickson and Dr. R. C. Hanna of the P.L.A. Division will visit Instytut Badan Jadrowych, Warsaw, from 24th-28th February for discussions on accelerator and nuclear physics problems.

P.L.A. The programme scheduled for the P.L.A. during the current week is as follows :-

<u>Date</u>	<u>Team</u>	<u>Experiment</u>
20th-24th Feb.	Queen Mary College	"A" and "R" Measurements at 30 MeV

MISSING EQUIPMENT. The following items have been reported missing :-

Two PURETHA Respirators fitted with C.C.1. canisters and labelled R.B.B.2 and 8 respectively.

They were last seen in the Injector Control Room. Will anyone finding these items please return them to Safety Section, Building R.16.

EXTERNAL COURSE. A course of eight lectures on Radiological Protection will be held at the Borough Polytechnic, London, S.E.1. on Thursday evenings at 7.00 p.m. commencing 23rd April. Applications should be made to Personnel Branch, Building R.20, via Mr. W. Burrells, Building R.20.

## INTERNAL EVENTS.

Mon., 17th Feb., 11.15 a.m., Conf. Rm., Bldg.R.1.	Nimrod Lecture Series	Dr. L. van Rossum (Saclay & Berkeley)	Polarization in (p-p) Scattering at BeV Energies.
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Wed., 19th Feb., Mobile Exhibition of Electronic Test Equipment and Chemical Analysers by Servomex Controls Limited, Crowborough, Sussex. 10.30 a.m. onwards, adjacent to Building R.20.

Thurs., 20th Feb., 5.30 p.m., Conf. Rm., Bldg.R.1.	Evening Lecture Series	Lord Bowden (Principal of Manchester Coll. of Science & Tech.)	The Robbins Report and its Implications.
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Mon., 24th Feb., 11.15 a.m., Conf. Rm., Bldg. R.1.	Nimrod Lecture Series	Dr. A. Astbury	"Muon Capture in $O^{16}$ and "Measurement of $\pi$ -mesic X-rays".
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## EVENTS AT A.E.R.E.

Mon., & Tues, 17th & 18th Feb., 2.00 p.m., Conf. Room., H.8.	Nuclear Physics Div. Talk	I. L. Morgan, Esq., (Director of Research, Texas Nuclear Corp.)	Angular Distribution of Gamma Rays due to n, n' <sup>γ</sup> Reactions.
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Tues., 18th Feb., 2.00 p.m., Conf. Rm., Bldg. 8.9.	Theor. Phys. Div. Seminar	Dr. J.P. Elliott (Univ. of Sussex)	Pairing Forces with Neutrons and Protons.
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Wed., 19th Feb., 11 a.m., & 2.30 p.m., Cockroft Hall.	Talk.	Mr. P.G. Chapman P.I. Castings, (Altrincham), Ltd.	Centrifugal Precision Investment Castings by the Lost Wax Method.
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(Outer gate open, inner gate manned, 10.30-12.30 & 2-4.30).

(P.T.O.)



EVENTS AT CULHAM LABORATORY.

Mon., 17th Feb., 2.30 p.m., Lecture Hall, Bldg. E.3.	Scientific Colloq.	Mr. R. S. Pease	The ZETA Story.
Fri., 21st Feb., 2 p.m., Lecture Hall, Bldg. E.3.	Culham Lab. Lecture	Prof. R.F. Boyd (U.C.L.)	Some U.K. Space Research.

H. F. Norris  
Scientific Administration

Building R.32.

14th February, 1964.

IAF:

# RUTHERFORD LABORATORY BULLETIN

No. 8/64 for the week commencing Monday 24th February, 1964

**MEMBERSHIP OF THE GOVERNING BOARD** Sir William Penney, who was appointed to membership of the Governing Board in March, 1960, resigned from the Board on 15th February, 1964. Dr. F.A. Vick has been appointed in his place.

**VISITORS** A party of 30 members of the Southampton University Physical Society will visit the Laboratory on Wednesday, 26th February.

**VISITS ABROAD** Mr. A.R. Mortimer, Nimrod Engineering Group, to C.E.R.N. on 23rd-26th February, to discuss the remote handling of radioactive equipment and various mechanical engineering problems on proton synchrotrons.

Mr. P.D. Hey, High Energy Physics Engineering Group, to C.E.R.N. on 23rd-26th February, for discussions on liquid hydrogen target installations and image intensifier units.

Dr. A.M. Segar, Bubble Chamber Research Group, to C.E.R.N. on 24th February, for discussions on high energy physics and to attend a C.E.R.N. Track Chamber meeting.

Mr. K.W. Tarry and Dr. D.E. Poole, both of the Daresbury Nuclear Physics Laboratory and at present stationed at the Rutherford Laboratory, to R.C.A., Lancaster, U.S.A., on 24th-28th February, for discussions on R.F. equipment for NINA.

Mr. M. Snowden, Head of the Bubble Chamber Group, to C.E.R.N. on 26th-27th February, for discussions on the operation of the British National Hydrogen Bubble Chamber.

**P.L.A.** The programme scheduled for the P.L.A. during the current week is as follows:-

<u>Date</u>	<u>Team</u>	<u>Experiment</u>
23rd-25th Feb.	Queen Mary College	"A" and "R" Measurements at 30 MeV.
27th-28th Feb.	Oxford University	Studies of (p- $\alpha$ ) Reactions.
29th Feb-1st Mar.	R.H.E.L. and Q.M.C.	(p-n) Reaction Studies (Time-of-Flight).

**MISSING EQUIPMENT** The following item, which was loaned from R.1 Stores about seven weeks ago, has been reported missing:-

One "Dymo" Embossing Tool, type M5, Serial No. 3676.

Will the borrower, or anyone finding this item, please return it to R.1 Stores.

Will the person who took the print of the omega minus event, following Dr. van Rossum's talk, please return it to Dr. P.G. Murphy, Building R.1.

**POST-GRADUATE EDUCATION CENTRE, A.E.R.E.** A series of about ten lectures on "Numerical Methods in Applied Mathematics" will be given by Dr. A.R. Curtis, A.E.R.E., at the Reactor School on Monday mornings during March, April, May and June. Applications should be made through Group Leaders, who are asked to forward approved names to Mr. H.F. Norris, Scientific Administration, Building R.32, by 5th March. Early application is advised, as accommodation is limited. Further information is available from Mr. Norris, Ext 484.

## INTERNAL EVENTS

Mon., 24th Feb., 11.15 a.m., Conf. Rm., Bldg. R.1.	Nimrod Lecture Series	Dr. A. Astbury	"Muon Capture in $O^{16}$ " and "Measurement of $\pi$ -mesic X-rays".
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(There will be no lecture in the Thursday Evening Series during this week).

## EVENT AT A.E.R.E.

Tues., 25th Feb., 2 p.m., Conf. Rm., Bldg. 8.9.	Theor. Phys. Seminar	Dr. B.W. Downs (Oxford Univ.)	Aspects of the $\Delta$ Nuclear Interaction.
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## EXTERNAL EVENTS

Tues., 25th-Fri., 28th Feb: Marylebone, London W.1.	Insulation Exhib. and Convention at the Seymour Hall, (Thermal, acoustic and anti-vibration apparatus).		
Fri., 28th Feb., 2.30 p.m., Clarendon Lab., Oxford.	Theor. Physics Seminar	Prof. G.E. Brown (Copenhagen University)	Nuclear Matter and Nucleon-Nucleon Forces.
Fri., 28th Feb., 4.15 p.m., Oxford.	Clarendon Lab. Colloq.	Dr. H.M. Rosenberg (Clarendon Lab.)	Experiments with Spin Waves.

# RUTHERFORD LABORATORY BULLETIN

No. 9/64 for the week commencing Monday, 2nd March, 1964

DESY MACHINE - The following telegram has just been received from the German Electron Synchrotron Laboratory, Hamburg:

"Accelerator works 5 BeV with  $5 \times 10^{11}$  electrons per second".

The Director has forwarded a message of congratulation on behalf of the Rutherford Laboratory.

BRITISH NATIONAL HYDROGEN BUBBLE CHAMBER - The 1.5 metre hydrogen bubble chamber, which is now at C.E.R.N., has operated successfully with stable conditions at a two-second repetition rate. The optics appear satisfactory, and examination of the pictures on the scanning table shows no evidence of distortion for flash delays as long as 3 milliseconds. It is expected that the chamber will be used shortly for a physics run with a high energy  $K^-$  beam. The Rutherford Laboratory Bubble Chamber Groups are collaborating in all stages of this experiment, which may yield further information on the recently discovered omega-minus particle.

VISITORS - Dr. Victor Perez-Mendez of U.C.R.L., Berkeley, will visit the Laboratory on Thursday, 12th, and Friday, 13th March, for discussions on pion physics and spark chambers. Anyone wishing to see him should contact Mr. A.G. Parham, Lab.10, Building R.1, Ext.301.

A party of 30 members of the Reading University Physical Society will visit the Laboratory on Wednesday, 4th March.

VISITS ABROAD - Dr. A.M. Segar, Bubble Chamber Research Group, to C.E.R.N. on 2nd-7th March, for discussions on high energy physics.

Mr. A.P. Banford, P.L.A. Machine Group, to C.E.R.N. on 2nd-6th March, for discussions on superconducting accelerators.

Mr. D.J. Warner, P.L.A. Machine Group, to C.E.R.N. on 2nd-20th March, in connection with linear accelerators.

Mr. C.J. Collie, Dr. N.H. Lipman, Dr. G. Manning, Dr. A.E. Taylor, Dr. T.G. Walker and Dr. C. Whitehead will attend a conference on Filmless Spark Chamber Techniques, at C.E.R.N. on 3rd-7th March.

P.L.A. - The programme scheduled for the P.L.A. during the current week is as follows:

<u>Date</u>	<u>Team</u>	<u>Experiment</u>
6th March	R.H.E.L. Nuclear Chemistry	Fission Studies at 30 MeV
7th-11th March	Queen's University, Belfast and Westfield College	Shell Structure Studies (p, 2p)

## INTERNAL EVENTS

Mon., 2nd March, 11.15 a.m., Conf. Rm., Bldg. R.1	Nimrod Lecture Series	Prof. R.H. Dalitz	Unitary Symmetry
Thurs., 5th March, 2.30 p.m., Conf. Rm., Atlas Lab.	Informal Talk	Dr. D. Michie (Edinburgh Univ.)	Mechanisation of Concept Formation
Thurs., 5th March, 5.30 p.m., Conf. Rm., Bldg. R.1	Evening Lecture Series	Mr. John Maddox (Science Corresp., "The Guardian")	Is there too much Science?
Mon., 9th March, 11.15 a.m., Conf. Rm., Bldg. R.1	Nimrod Lecture Series	Dr. D.R.O. Morrison (C.E.R.N.)	Elastic, Inelastic Charge Exchange Scatterings and Annihilations of 3 to 4 GeV/c Anti-protons

..... Continued overleaf

EVENTS AT A.E.R.E.

Tues., 3rd March: Mobile Exhibition by Messrs. Richard Klinger. (Cocks, valves, liquid level gauges, packings and jointings). 11 a.m.-3.30 p.m., adjacent to the Social Club.

Wed., 4th March, 2 p.m., Rm. 1.12, Bldg. 7.21	Solid State Physics Colloq.	Dr. J.N. Mundy	Measurements at High Pressure
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EXTERNAL EVENTS

Mon., 2nd March, 5.30 p.m., Savoy Place, London, W.C.2	I.E.E. Meeting	(Discussion)	Merits and Demerits of Equivalent Circuits
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Tues., 3rd March, 7.15 p.m., Coll. of Tech., Oxford	Inst. of Metals Meeting	Mr. T.P. Hoar	Corrosion Theory Applied to Practice
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Wed., 4th March, 2.30 p.m., Univ. of Manchester	Theor. Physics Seminar	Prof. B.W. Downs (Oxford Univ.)	The Interaction of a $\Lambda$ -particle with Nuclear Matter
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Wed., 4th March, 4.30 p.m., Univ. College London	Physics Dept. Seminar	Dr. E.J. Burge & Dr. J.A.R. Griffith	Study of the $O^{16}(pn)F^{16}$ Reactor, using a Freely Falling Liquid Sheet as a Target
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Thurs., 5th March, 4.15 p.m., Clarendon Lab., Oxford	Theor. Physics Seminar	Dr. L. Spruch	Variation Principles and Minimum Principles in Scattering Theory
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Fri., 6th March, 4.15 p.m., Clarendon Lab., Oxford	Colloq.	Dr. T.G. Pickavance	The Work of the Rutherford Laboratory
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16th-19th March: Brit. I.R.E. Symposium on Cold Cathode Tubes and their Applications. At the Cavendish Laboratory, Cambridge.

17th-19th March: PERA Inspection, Testing and Measurement Conference and Exhibition, at Melton Mowbray, Leicestershire.

(Registration is necessary for the above two events. Details are available from Scientific Admin., Bldg. R.32, Ext.484).

B.E. Kingdon

Scientific Administration

Rutherford Laboratory.

28th February, 1964.

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