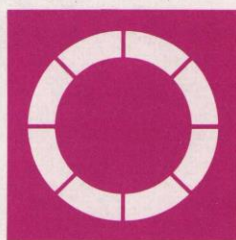


No. 16/67  
1 May 67



Rutherford Laboratory

# Bulletin

## General News

**EXTERNAL COURSES.** The Borough Polytechnic, London S.E.1 has recently announced the following:

- "Technical Writing", a course of eight lectures, to be given on Wednesday afternoons, beginning on 3 May, 2-4.30 p.m.
- "Information for Industry and Commerce" a course of six lectures, to be given on Thursday afternoons, beginning on 18 May, 2-4.30 p.m.
- "Communication in Committees and Working Groups", a course of six lectures on Friday afternoons, beginning on 26 May, 2-4.30 p.m.
- "Modern Control Theory", a one week Summer School, from Monday to Friday, 22-26 May, 10.30 a.m.-4.45 p.m.

Further details may be obtained from Mr. E.J.D. Newbold, Personnel Branch, Bldg R.20, Ext 585.

**RADIATION PROTECTION GROUP NOTICE.** Period 5 commenced Monday, 17 April Colour Strip - BLUE for  $\beta$  and fast neutron films. Please check that you are wearing the current film badge.

- Please ensure that:-
- (1) films are worn in the holder correctly with both the number and colour strip showing in the open window. This side of the badge to be worn facing forwards.
  - (2) all the metal filters in the holders are intact.

If a new holder is required please contact Miss J. Towers, R.20, Ext 430.

**BUBBLE CHAMBER NEWS.** The Saclay 82-centimetre Hydrogen Bubble Chamber, which has been at the Rutherford Laboratory since June 1964, is scheduled to complete its experimental programme on Monday, 1 May. During its stay at the Laboratory, nearly five million photographs have been taken. Six experiments have been completed involving various collaborations with British and French Universities and Research Laboratories. During the next few months the chamber will be dismantled and returned to Saclay.

## Machine Schedules

NIMROD, Cycle 4 (2.5.67.-23.5.67.)

1. Machine Physics (a) X1 Commissioning Tests  
(b) Beam Spill Servo System Tests
2. High Energy Physics.

Team	Beam	Experiments
AERE/QMC/RHEL	$\pi^+$ 4	Study of $\Sigma^- \rightarrow \pi^-$ decay
Bristol Univ.	$\pi^+$ 5	$\pi^+ p$ differential cross-section measurements
Westfield Coll/RHEL	$\pi^+$ 6	Measurement of the $\Sigma^+$ decay parameters
AERE/RHEL/Queen Mary College	K <sup>+</sup>	$\Sigma^-$ polarization measurements
P.L.A.		
Date	Team	Experiment
1-4 May	Manchester U.	Elastic Scattering of Protons on a range of Elements
5-9 May	RHEL & QMC 2	(p,n) Reactions by Time of Flight Method.

## Internal Events

Mon, 1 May, 11.15 a.m.	Nimrod Lecture Series	Dr. G. Giaconelli (Bologna)	New Structures in $K^{\pm}$ - Nucleon and $\bar{p}$ - Nucleon Total Cross-sections
Wed, 3 May, 11 a.m.	H.E.P. Discussion Group	Dr. R.J.N. Phillips (A.E.R.E.)	Is there a pion conspiracy?
Wed, 3 May 12.40 p.m.	Film	NIMROD: A Machine to Smash Atoms - Part 1, What is a Proton Synchrotron.	
Thurs, 4 May 1.15 p.m.	Lecture Theatre		

In early October last year a film unit from Granada Television spent 10 days at the Laboratory filming Nimrod and some of its associated experimental work for a series of four Programmes for Science Sixth Forms. These programmes were shown on I.T.V. in February and March of this year. We are now able to show these films at the Laboratory during the next four weeks. This series should of great interest to all staff, especially to those who are not directly concerned with NIMROD, as Dr. Pickavance, the Director explains why it is necessary to work on such a large scale and with such expensive instruments in one specialised branch of physics. He gives his own account of how Nimrod was designed and built and how the physicists go about using it in their research. In Part 1 he traces the history of research in elementary particles and considers the work of such eminent scientists of J.J. Thomson, Rutherford, Bohr, Chadwick, Yukawa and Powell etc.

The new projector, which was recently installed in the Lecture Theatre, full exploits the high standard of production achieved in this series.

Mon 8 May, 11.15 a.m.	Nimrod Lecture Series.	Prof. D.H. Perkins (Oxford)	Some Problems in Weak Interactions
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## External Events

Mon, 1 May, 4.45 p.m.	Physics & Geophysics Royal Fort, Bristol Univ. Colloq.	Dr. P.N.T. Wells (Bristol Gen. Hospital)	Ultrasonics in Medicine.
Mon, 1 May 6 p.m.	Inst. of Maths Lecture	Prof. H.B. Griffiths (Univ. of Southampton)	The Structure of Surfaces - an Application of Potential Theory.
Tues, 2 May, 7.30 p.m.	A.S.E.E. Branch Lecture	Mr. F.P. Thompson	An Introduction to Giro
Tues, 2 May, 2.30 p.m.	Nuclear Physics Seminar	Dr. B. Povh (Heidelberg)	Lifetime Measurements in the sd-shell Nuclei
Thurs, 4 May, 4.15 p.m.	Theor. Phys. Seminar	Prof. G.E. Brown (Nordita, Denmark)	The Nucleon-Nucleon Force and Effective Forces in Nuclei.

Thurs, 4 May, 4.15 p.m. Mathematical  
Birmingham Univ. Phys. Seminar

Fri, 5 May, 4.15 p.m. Colloq.  
Clarendon Lab. Oxford

Dr. S. Doniach  
(Imp. Coll.)

Prof. J. Reynolds  
(Univ. of California.)

Theory of Liquid Helium - 3 at Low  
Temperatures.

Extinct Radio Activities and the  
History of the Solar System and the  
Elements.

#### EVENT AT THE ATLAS LAB.

Mon. 1 May, 2.30 p.m. Talk  
Conf. Rm.

J.H. Matthewman  
(Camb. Univ.)

Some Syntax-Directed Compilers

#### EVENTS AT AERE

Tues, 2 May, 2 p.m. Theor. Phys.  
Conf. Rm, Bldg 8.9 Div. Seminar

Prof. G. Rickayzen  
(Univ. of Kent)

Superconductivity

Thurs. 4 May, 2 p.m. Joint Applied  
Conf. Rm. Bldg 8.9 Maths Gp Seminar

Dr. D.J. Evans  
(Sheffield)

On Preconditioning of Matrices

Thurs, 4 May, 3.30 p.m. Nuclear Phys.  
Conf. Rm H.8. Div. Colloq.

Dr. J.K. Perring

Report on the Gainesville Conference  
on Nucleon-Nucleon Interactions.

### Social News

RUTHERFORD AND ATLAS RECREATIONAL SOCIETY. Dont forget the meeting of the Darts Club on Tuesday, 2 May, at 12.30 p.m. sharp, in the Conference Room R.1 (See last week's bulletin for full details)

CHRISTIAN FELLOWSHIP. 12.30 p.m. Thurs, 4 May, in the P.L.A. Conf. Rm. R.12. The Reverend Dick Rees, Vicar of Macclesfield and notable Evangelist, will speak on the relevance of the Christian Faith Today.

RECORD SOCIETY 12.30 p.m. Tuesday, 2 May, Lecture Theatre.

Ray Charles - Live in Concert

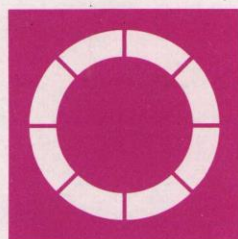
Recorded at the Shrine Civic Auditorium, Los Angeles California in 1964. Here is the real Ray Charles, singing, playing the piano and producing these unexpected and delightful personal comments that can only occur in a "live" performance. Sufficient to say - a must for all Ray Charles fans.

FILM SHOW. - See Internal Events for details

Rutherford Laboratory  
28.4.67.

H.F. Norris Ext 484  
Scientific Admin Group  
Building R.20

No. 17/67  
8 May 67



# Rutherford Laboratory Bulletin

## General News

**THE RUTHERFORD LABORATORY LECTURES** A new series of lectures will begin on Thursday on subjects, usually scientific, of general interest to the professional staff of the Laboratory. Lectures will be given at intervals of between four and eight weeks, and those on scientific subjects will be aimed at the non-specialist.

The first lecture is to be given by Professor P.T. Matthews on elementary particles (see Internal Events for details). The next will be given in the middle of June by Dr. L.C.W. Hobbs on the proposal for a 300 GeV accelerator in Europe.

**VISITORS** Thirty Students of the University of Utrecht, Netherlands, will visit the Laboratory on Monday, 8 May.

**EXTERNAL COURSES** The Borough Polytechnic, London S.3.1 has recently announced the following:

"Digital Circuit Techniques" a two week full-time course, from Monday, 19 June to Friday, 30 June, between 10 a.m. and 5 p.m.

"A Symposium on the Operation and Use of Low Energy Accelerators", beginning at 10.30 a.m. on 18 May and 10 a.m. on 19 May.

Further details may be obtained from Mr. E.J.D. Newbold, Personnel Branch, Bldg R.20, Ext 585.

**OVERSEAS VISITS** Mr. J. Foster and Mr. T. Perry to Saclay and CERN, 6-13 May for discussions on various aspects of bubble chamber work.

Dr. G.H. Stafford, to CERN, 9-10 May to attend the Second Discussion Meeting on H.E.P. and the N.P.R.C. meeting

Mr. I.C.G. Sewter, to CERN, 9-12 May for discussions on library and information services.

Dr. J.J. Thresher, to Saclay 10-11 May to give a lecture.

**CONFERENCES.** The Institute of Physics and the Physical Society have arranged the following conferences during the next five months:

8-10 May	:	"Static Electrification", at London
7-9 June	:	"1st Physics in Industry Conference", at Harrogate
3-5 July	:	"Electron Diffraction", at London
5-7 July	:	"Accuracy of Spectroscopic Methods", at Birmingham
10-12 July	:	"Astronomical Optics", at London
5-7 Sept	:	"Physics of Quasars", at Manchester
5-8 Sept	:	"Solid State Devices", at Manchester
11-12 Sept	:	"Waves in Plasmas", at Culham
13-14 Sept	:	"High Voltage Insulation in Vacuum", at London
20-22 Sept	:	"Stress Analysis in Bio-Engineering", at London
21-22 Sept	:	"Electrodeless Breakdown in Gases Including Laser Produced Breakdown", at Leatherhead
27-29 Sept	:	"Low Energy Nuclear Physics", at Manchester

Further details may be obtained from H.F. Norris R.20 Ext 484.

**LECTURE SERIES AT HARWELL** "The Interpretation of the Emission Spectra of Astrophysical Plasmas." The lectures to be given by Dr. A.G. Hearn from Culham Laboratory, will illustrate the use that is made of fundamental atomic data such as cross sections in the interpretation of spectra of astrophysical plasmas. The emphasis will be on recent and proposed observations and the atomic data that may be required. The approach will be illustrative and physical rather than mathematical. The lectures will include some discussions of the sun, gaseous and planetary nebulae, interstellar space and the effects of radiative transfer.

The lectures will take place at weekly intervals on Fridays at 10.45 a.m. in the lecture room in building 8.9 at Harwell. The first lecture is on 5 May. Admission to the site may be arranged through the D.A.O. of the Theoretical Physics Div. Ext 72-2996 (48 hours notice please).

## Machine Schedules

NIMROD Cycle 4 (2.5.67. - 23.5.67.)

Machine Physics (a) X1 Commissioning Tests (b) Beam Spill Servo System Tests

High Energy Physics ( $\pi^4$ ,  $\pi^5$ ,  $\pi^6$  and  $K^7$ )

Full details of Cycle 4 were given in Bulletin 16/67

P.L.A.

Date	Team	Experiment
8-9 May	RHEL & JMC 2	(p,n) Reactions by Time of Flight Method
10 May	RHEL Chemists	Isomer Ratio Experiment
11-14 May	King's College London	Reaction Studies on $Mg^{24}$ . Elastic and Inelastic Scattering from Zn Isotopes.

## Internal Events

Mon, 8 May, 11.15 a.m. Lecture Theatre	Nimrod Lecture Series	Prof. D.H. Perkins (Oxford)	Some Problems in Weak Interactions
Wed, 10 May, 12.40 p.m.	Film	NIMROD: Part 2.	
Thurs, 11 May, 1.15 p.m. Lecture Theatre			

In Part 2, Dr. Pickavance continues the story and deals with the design and construction of Nimrod up to the point of the actual commissioning of the machine.

Wed, 10 May, 2 p.m. R.12 Conf. Rm.	P.L.A. Div. Seminar	Mr. P.A. Reeve Mr. A. Carne	Proposed High Resolution Beam Line for the P.L.A. Reduction of the P.L.A. Beam Energy Spread
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## External Events

Tues, 9 May, 2.30 p.m.  
21 Banbury Rd, Oxford

Wed, 10 May 2.30 p.m.  
Univ. College, London

Wed, 10 May 3. p.m.  
Silver St. Cambridge

Wed, 10 May, 4.45 p.m.  
Royal Fort, Bristol U.

Thurs, 11 May, 2.30 p.m.  
Clarendon Lab, Oxford

Thurs, 11 May, 4.15 p.m.  
Univ. of Birmingham

Thurs, 11 May, 4.15 p.m.  
Clarendon Lab, Oxford

Fri, 12 May, 4.15 p.m.  
Clarendon Lab, Oxford.

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

Tues, 9 May, 2 p.m.  
Conf. Rm. Bldg 3.9.

Thurs, 11 May, 3.30 p.m.  
Conf. Rm. H.8.

### EVENT AT THE ATLAS LAB.

Thurs, 11 May, 2.30 p.m.  
2.30 p.m. Conf. Rm.

Nuclear Phys.  
Seminar

Particle Physics  
Seminar

Elementary Particle  
Physics Seminar

Physics & Geophysics  
Colloq.

Low Temp. & Solid  
State Phys. Sem.

Mathematical  
Physics Seminar

Theor. Phys.  
Seminar

Colloq.

Dr. D.K. Scott  
(Oxford)

Dr. P.K. Kabir  
(R.H.L.)

Dr. A. Pagnamenta  
(CBRN)

Dr. A.H. Cook  
(N.P.L.)

Prof. M.P. Jarfunkel  
(Univ. of Pittsburgh)

Dr. P.W. Higgs  
(Edinburgh)

Dr. A. Gal.  
(Weizmann Institute,  
Israel)

Prof. M. Goldhaber  
(Brookhaven Nat. Lab.)

Collective States in  $C^{12}$

CP - Noninvariance - Whence and Where?

Accurate Solution of Bethe Salpeter Equations  
in Momentum Space

Measurement of Gravity and Constant of  
Gravitation

The Effect of a Static Magnetic Field on  
Microwave Absorption in Superconductors

The Goldstone Theorem and How to Avoid it.

Three-body Forces in Hyper-nuclei.

Neutrinos.

Theories of Resonance Reactions

$(t, \alpha)$  and  $(\alpha, t)$  Reactions on Medium-mass  
Nuclides.

The Atlas Laboratory Information Retrieval  
Project.

## Social News

FILM SHOW - see Internal Events for details

RECORD SOCIETY 12.30 p.m. Tuesday, 9 May, Lecture Theatre

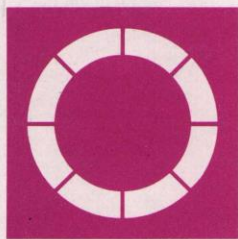
Sir Malcolm Sargent conducting The Royal Philharmonic Orchestra in a programme of popular string music, by Dvorak, Warlock and Holst. "The Serenade in E Major for Strings" by Antonin Dvorak written in the year 1874 is said to have been completed in eleven days. It is delightful in its freshness and has a most engaging air of spontaneity. The "Capricci Suite" by Peter Warlock, the assumed name of Phillip Heseltine, was completed in 1926. It is based on ancient dances quoted in a well known sixteenth century treatise on dancing, "Orchesographie". The final item is the St. Paul's Suite by Holst written in 1913 when he was master at St. Paul's Girls School. It is a very popular and well loved work, based on old English folk songs.

CHRISTIAN FELLOWSHIP 12.30 p.m. Thurs, 11 May, in the P.J.A. Conf. Rm. R.12 Bible Study, St. John's Gospel, Ch. 17: 9-19 led by Dr. L.J. Herbst. All are welcome.

Rutherford Laboratory  
5.5.67.

H.F. Norris Ext 484  
Scientific Admin Group  
Building R.20

Supplement  
to No. 17/67  
8 May 67



Rutherford Laboratory

# Bulletin

## THE RUTHERFORD LABORATORY LECTURES

It is regretted that the following details were omitted from the "Internal Events" section of Bulletin No. 17/67.

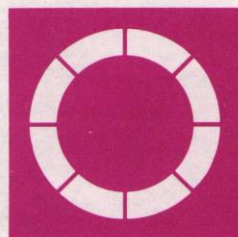
Thurs 11 May 11.30 a.m.	Rutherford Laboratory	Prof. P.J. Matthews FRS	Are "Elementary" Particles Elementary.
Lecture Theatre	Lecture	(Imp. Coll.)	

(See General News section for introductory article on a new series of Rutherford Laboratory Lectures, the first being a general talk, not aimed at specialists in high energy physics).

Rutherford Laboratory  
5.5.67.

H.F. Norris Ext 484  
Scientific Admin Group  
Building R.20

No. 18/67  
15 May 67



# Rutherford Laboratory Bulletin

## General News

**RADIATION SAFETY - LECTURE SERIES.** A series of lectures dealing with Radiation Safety problems, with particular emphasis on radiation hazards around proton accelerators, is starting this month. The aim will be to give, very approximately, one lecture per month on a variety of topics of interest to particular groups within the Laboratory.

The first lecture entitled "Radiation and Risk" will be given by Dr. G. Stevenson. It will compare risks of death and incidence of chronic disease due to radiation exposure with risks experienced by workers in other industries. The lecture is aimed at P.S.O., S.S.O., E.1, E.2, S.E.O. and equivalent grades, but all members of the Laboratory are welcome to attend.

Graham Stevenson previously worked for the Radiological Protection Service in Sutton, Surrey, where he took a leading part in the development of their neutron film badge service. He is now a member of the Radiation Protection Group at the Rutherford Laboratory. (See "Internal Events" for details of the first lecture.)

**"CURRENT" COMPETITION** Ask at your Local Admin Office for an entry form for the crossword competition which the Suggestions Award Committee are running in conjunction with the Fire Protection Association's "Play Safe with Electricity" campaign. There are four display units around the Laboratory advertising the competition. Prizes will be awarded for the best local entries and the winning entry will be submitted to the National competition. All entries must be returned to Mrs. H. Woodcock, Bldg R.1 (Sec. Suggestions Award Committee) by 24 May.

**RADIATION PROTECTION NOTICE.** Period 6 commences Monday, 15 May. Colour Strip - BROWN for  $\beta\gamma$  and fast neutron films. Users are requested to change their films promptly and return all old films immediately.

**MISSING EQUIPMENT.** During the recent move of Mr. Kandiah's group in Bldg R.36 back to AERE, certain items of equipment were reported missing. Mr. Kandiah and his staff had allowed fairly free access to instruments in R.36 to members of the Rutherford Laboratory. It is just possible that the following items may have been lent to members of our staff who are not aware of the present effort to locate them. Anyone with information on the present whereabouts of these items are asked to contact Mr. P. Wilda, Electronics Group, R.36 Ext 539 as soon as possible.

Stop Watch 1/5th second, Ser/No. 28668  
Avometer, Model 8, Ser. No. 2154-C-1151  
Fan Heater, AERE No. 842

**VISITORS.** Forty one members of the High Voltage Technology Course at AERE, will visit the Laboratory on Thursday, 18 May.

**OVERSEAS VISIT** Mr. G.H. Rees, to CERN, 15-19 May for discussions.

## Machine Schedules

NIMROD Cycle 4 (2.5.67.-23.5.67.)

Machine Physics (a) X1 Commissioning Tests (b) Beam Spill Servo System Tests

High Energy Physics ( $\pi^+$  4,  $\pi^+$  5,  $\pi^+$  6 and K7)

Full details of Cycle 4 were given in Bulletin 16/67

P.L.A.

Date	Team	Experiment
15 May		Maintenance
16-19 May	King's College London	Reaction Studies on $Mg^{24}$ . Elastic and Inelastic Scattering from Zn Isotopes
20-25 May	Queen's Univ. Belfast & Westfield Coll.	Proton Reaction Studies

## Internal Events

Mon, 15 May 11.15 a.m. Lecture Theatre	Nimrod Lecture Series	Dr. P.K. Kabir	CP - Noninvariance - Whence and Where?
Mon, 15 May, 2.15 p.m. Lecture Theatre	Nimrod Proposal Lecture	Dr. D.P. Jones	A Proposal to Study Polarization Effects in $\pi^+p$ Elastic Scattering using a Polarized Proton Target
Wed, 17 May, 12.40 p.m. Thurs, 18 May 1.15 p.m. Lecture Theatre	Film Show	NIMROD : Part 3	

How is the Research Done? The story so far has dealt with the reasons for building large accelerators and how Nimrod was designed and built. With the machine working, operational and maintenance procedures have to be learnt. A research programme has to be planned and experiments set up. Dr. Pickavance now tells how these problems were dealt with and Dr. Thresher continues the story with a description of the K7 experiment.

Wed, 17 May, 2.15 p.m. Lecture Theatre	Radiation Safety Group	Dr. G. Stevenson	Radiation and Risk
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**EXHIBITION:** An Exhibition of electronic equipment by Weir Electronics Ltd. will be held in the Conference Room, R.1. from 10 a.m. to 4 p.m. on Thursday, 18 May. Posters listing the items to be shown are displayed on most notice boards. Further details may be obtained from B.E. Kingdon, R.20 Ext 6297.

Wed, 17 May, 11 a.m. Conf. Rm. R.1.	HEP Discussion Group	Dr. G. Shaw	Sum Rules for Pion Hyperon Scattering
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## External Events

Mon, 15 May 4.45 p.m. Royal Fort, Bristol U.	Physics & Geophysics Colloq.	Prof. N. Brown (U. of Pennsylvania & Bristol)	A Microstrain Study of the Transition from Elastic to Plastic Deformation
Mon, 15 May, 5.30 p.m. Univ. Coll. London.	Inst. of Maths Lecture	Prof. H.E. Griffiths (Southampton)	Goedel's Theorem in Mathematical Logic as an Example of Applied Mathematics.
Wed's, 17, 24, and 31 May, 11 a.m. at Imp. Coll. London.	Three seminars on "Optimal Control of Linear Distributed Parameter Systems". Mr. K. Petrowsen (Control Group, Centre for Computing and Automation).		

Fri, 19 May, 4.15 p.m.  
Clarendon Lab, Oxford

Fri, 19 May, 5 p.m.  
Univ. of Reading

EVENTS AT A.E.R.C.

Tues, 16 May, 2 p.m.  
Conf. Rm. Bldg 8.9.

Thurs, 18 May, 4.30 p.m.  
Conf. Rm. Bldg 391/T

Cello.

Physics Discussion  
Meeting

Theor. Phys. Div.  
Seminar

Joint Applied Maths  
Group Seminar

Prof. W. Chinowsky  
(Lawrence Radiation Lab)

C.W. McCombie

Dr. A.H. Scholz

Prof. M.V. Wilkes FRS  
(Cambridge)

Nucleon-nucleon Interactions

Fluctuations in Laser Beams.

Methods for the Use of Computers for  
Lattice Energy Calculations

Multi-access Computer Systems

## Social News

FILM SHOW - See "Internal Events" for details

CHRISTIAN FELLOWSHIP. 12.30 p.m. Thurs, 18 May, P.L.A. Conf. Rm. R.12. Bible Study, St. John's Gospel, Ch. 17: 20-26  
All are welcome.

ANNUAL OPEN DARTS TOURNAMENT. The Rutherford and Atlas Recreational Society's Annual Open Darts Tournament (Inter-Section) will be held in the Coffee Lounge, R.22, at 7.30 p.m. sharp on 9 June. Any section wishing to enter teams or requiring further information should contact either B. Keen, R.2, Ext 6615 or R. Hazell, R.25, Ext 6116. Team names are required by 6 June at the latest.

RECORD SOCIETY 12.30 p.m. Thurs, 18 May, Lecture Theatre.

Symphony No.6 in F. Major (The "Pastoral") - Beethoven.

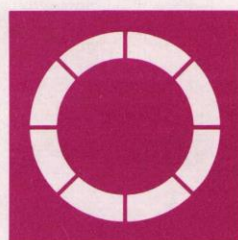
Herbert von Karajan conducts the Philharmonia Orchestra in what must surely be one of the most popular of all symphonies. Although classical in form it does present a picture in sound and is in fact the first truly great example of programme music. The symphony is in five movements entitled - (1) "Awakening of pleasant feelings upon arriving in the country; (2) Scene at the brook; (3) Peasant's merrymaking; (4) The storm and (5) Shepherd's Hymn after the storm". Beethoven, in his famous Sketch Books jotted down his own views as "The general intention (is) more a matter of feeling than of painting in sounds". Karajan who conducts this work, is regarded as probably the finest Beethoven interpreter at the present time.

Rutherford Laboratory

12.5.67.

H.F. Norris Ext 4.84  
Scientific Admin Group  
Building R.20

No. 19/67  
22 May, 1967



# Rutherford Laboratory Bulletin

## General News

**VISITORS.** A party of Sixth Form Students from Charterhouse School, Godalming, Surrey will visit the Laboratory on Wednesday, 24 May.

**SCIENTIFIC ADMIN. NOTICE.** The present Bulletin covers a period of two weeks. Items for inclusion in Bulletin No. 20/67 for the week commencing Monday, 5 June should be received by Mr. B.E. Kingdon, R.20, Ext. 6297, not later than Wednesday midday, 31 May.

**BRACKNELL NUCLEONIC STORES - TRANSFER TO HARWELL.** Due to the closure of the Bracknell Establishment in June, 1967 there will be a suspension of the Stores Services whilst the stock is transferred from Bracknell to Harwell.

No issues will be made from 5 - 16 June. Requests for issues will be accepted by the Rutherford Laboratory Stores for the Bracknell Unit up to 26 May. Thereafter all requests will be sent to Harwell for attention, after the Stores transfer has been completed.

**RADIATION PROTECTION NOTICE.** It is now Period 6. Colour Strip - BROWN for  $\beta\gamma$  and fast neutron films. Please check that you are wearing the current films and return all old films promptly.

**SAFETY CROSSWORD COMPETITION.** There is still time to enter for this competition. (See Bulletin No. 18/67 for full details). Closing date is 24 May. Entry forms from your Local Admin. Office.

**FILM SHOW - NIMROD.** Due to technical difficulties the second showing of Part 3 on Thurs. 18 May had to be cancelled. The showing of Part 4 on Wed. and Thurs. of this week has also had to be postponed.

## Machine Schedules

NIMROD Cycle 5 (23.5.67 - 13.6.67)

1. Machine Physics,
2. High Energy Physics.

Team	Beam	Experiment	
AERE/QMO/RHEL	$\pi^4$	A study of $\Sigma - \beta$ decay	Setting up
Bristol Univ.	$\pi^5$	$\pi^+p$ differential cross-section measurements	Setting up
Oxford Univ./ Liverpool Univ.	K1S	Coherent reactions in Helium at $\sim 2$ GeV/c	Setting up
P.L.A.			

Date	Team	Experiment
22 - 25 May	Queen's Univ. Belfast and Westfield Coll.	Proton Reaction Studies
26 May		Maintenance
27 May - 1 June	Oxford Univ.	(p,t) Reaction Studies
2 - 5 June		Nuclear Physics Tests

## Internal Events

Mon. 22 May 11.15 a.m. Lecture Theatre	Nimrod Lecture Series	Prof. L. Lederman (Imp. Coll. and Columbia Univ.)	High Energy Muon Scattering
Wed. 24 May 2 p.m. Conf. Room, Bldg. R.12	P.L.A. Seminar	Dr. J. Hardy (Oxford)	Two Nucleon Exchange Reactions and the Production of Analog States.
Thurs. 25 May 11.15 a.m. Lecture Theatre	Special Lecture	Prof. A.K. Mann (Univ. of Pennsylvania)	Analysis of $K_{L3}$ Form Factor Data

**DEMONSTRATION.** A demonstration will be given of the Hewlett-Packard Digital Computer Type HP 2116 in the P.L.A. Conf. Room from 10 a.m. to 3 p.m. on Thurs. 25 May.

## External Events

Mon. 22 May 4.45 p.m. Royal Fort, Bristol U.	Physics and Geophysics Colloq.	Dr. F. Garcia-Moliner (Instituto di Fisica, Madrid)	Group Velocity
Tues. 23 May 2.30 p.m. 21 Banbury Rd. Oxford	Nuclear Physics Seminar	Dr. J.A. Lopes (Oxford)	Gamma-ray Angular Distribution in Light Nuclei
Tues. 23 May - Fri. 26 May. Scientific Admin. Room 21, Bldg. R.20, Ext. 6297 or 484.	Radio and Electronic Component Show, at Olympia, London.	Tickets are now available from Scientific Admin. Room 21, Bldg. R.20, Ext. 6297 or 484. A Catalogue is available for inspection.	
Tues. 23 May 7.30 p.m. Univ. of Reading	I.E.R.E. District Meeting	Prof. P.B. Fellgett (U. of Reading)	Astronomical Instrumentation
Wed. 24 May 4.30 p.m. Univ. Coll. London	Particle Physics Seminar	Dr. R. Rand (Daresbury)	Experiments at Stanford on Electron Scattering from Light Nuclei
Thurs. 25 May 3 p.m. Cavendish Lab. Cambridge	Elementary Particle Physics Seminar	Dr. K.F. Riley	Meson-nucleon Total Cross Sections

Thurs. 25 May 4.15 p.m. Clarendon Lab. Oxford	Theor. Phys. Seminar	Dr. N. Dombey (U. of Sussex)	Analysis of Pion Photoproduction and the Magnetic Moment Sum Rules
Fri. 26 May 4.15 p.m. Clarendon Lab. Oxford	Colloq.	Prof. P.E. Wagner (John Hopkins Univ. U.S.A.)	Spin Temperature in the Laboratory and Reference Frames: Spin Resonance in Large Radio Frequency Fields.
Tues. 30 May 2.30 p.m. 21 Banbury Road, Oxford	Nuclear Physics Seminar	Dr. B.W. Allardyce (Oxford)	Pions and Complex Nuclei
Wed. 31 May 3 p.m. Cavendish Lab, Cambridge	Elementary Particle Physics Seminar	Dr. G. Trilling (U. of California)	K-Meson Interactions
Thurs. 1 June 4.15 p.m. Clarendon Lab. Oxford	Theor. Phys. Seminar	Prof. W. Brenig (Tech. High School, Munich)	Doorway States
Fri. 2 June 4.15 p.m. Clarendon Lab. Oxford	Colloq.	Dr. M. Sott (Nuclear Research Inst. Prague)	The Organisation of Science and Research in Physics in Czechoslovakia
EVENTS AT A.E.R.E.			
Tues. 23 May 2 p.m. Conf. Rm., Bldg. 8.9	Theor. Phys. Div. Seminar	Dr. F. Garcia-Moliner (Madrid)	Formal Theory of Equivalent Potentials in Solids
Thurs. 25 May 2 p.m. Conf. Rm. Bldg. 8.9	Joint Applied Maths Grp. Seminar	Mr. M.J.D. Powell	Least Squares Cubic Splines Demand Some Smoothing
Thurs. 25 May 3.30 p.m. Conf. Rm. H.8	Nuclear Phys. Div. Colloq.	Dr. W.M. Currie	On Making Measurements Especially on Neutron Scattering
Thurs. 1 June 2 p.m. Conf. Rm. Bldg. 8.9	Joint Applied Maths. Gp. Seminar	Mr. P. Jarratt (U. of Bradford)	A Least Squares Method for Solving Certain P.D.E.'s

## Social News

RUTHERFORD AND ATLAS RECREATIONAL SOCIETY. The Society is sponsoring the Annual Darts Tournament again this year. This event, which is to be held on Friday, 9 June, is open to all S.R.C. employees and their guests but the "Challenge Cups" will be played for by the S.R.C. teams only. However, matches will be arranged between the guests and the fourth member of the competing teams on a friendly basis.

In addition the Society will present a "Ladies Challenge Cup" if sufficient teams are entered by the ladies. This cup, as with the other cups, will be played for each year.

Any team of four players who are interested in entering the tournament should give their names to either Mr. B. Keen, R.2, Ext. 6615 or Mr. R. Hazell, R.25, Ext. 6116 by 6 June. Furthermore, the names of any guests should be notified to the organisers by the same date.

If anyone is interested in a game but is unable to get into a team please contact Mr. Keen who will do his best to make suitable arrangements.

C.S.M.A. - Oxford Group. Mr. Dawson, the Manager of the Travel Service will give a talk on what the Service offers and what advantages are available to members. The talk will be followed by an open discussion (requirements, new ideas, even complaints) and it is hoped some travel films will be shown. Just note the date - Friday, 2 June at 8 p.m. at the Old White House Inn (near the Oxford City Football Ground), Abingdon Road, Oxford.

RECORD SOCIETY 12.30 p.m. Tuesday 23 May, Lecture Theatre. Glenn Miller plays selections from "The Glenn Miller Story" and other hits.

The title of this recording alone is sufficient to conjure up memories of "Moonlight Serenade, American Patrol, Tuxedo Junction, String of Pearls" etc. for very many people. The popularity of this famous band is not confined to those with memories of the last war as a new generation of admirers has now sprung up. So here again is a chance to hear, from the original recordings, the unique Miller sound.

CHRISTIAN FELLOWSHIP. 12.30 p.m. Thurs. 25 May, R.25 Conf. Rm., First Floor - Prayer Meeting.

12.30 p.m. Thurs. 1 June, P.L.A. Conf. Rm., R.12 - Prayer Meeting.

All are welcome to both meetings.

H.F. Norris Ext. 484

Scientific Administration Group,  
Building R.20.