

Rutherford Laboratory Bulletin

No.41/65
1 Nov 65

OBITUARY NOTICE. We deeply regret to announce the death of Mr. C.E. Webb, Storeman, on Tuesday, 26 October, Charles Webb, who was aged 57, had been on the site for nearly five years. Our deepest sympathy is extended to his wife and family.

Machine Schedules

<u>PLA</u>	<u>Date</u>	<u>Team</u>	<u>Experiment</u>
	31 Oct	Imperial College	Sattelite Counter Testing
	1-4 Nov	Maintenance	
	5 Nov	RHEL & Queen Mary Coll.	Liquid Helium Counter Testing
	6-13 Nov	AERE	(p,d),(p,p) and (p,p') Cross-Section Measurements on Tin Isotopes at 30 MeV

Internal Events

Mon., 1 Nov., 11.15 a.m. Lecture Theatre	Nimrod Lecture Series	Prof. D. Stork (Oxford Univ.)	K ⁻ p Interactions at 1.8 and 1.95 GeV/c.
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EXHIBITION. A display of electronic components by Waycom Limited will be held in Conference Room No.1, Bldg. R.1, on Wednesday, 3 Nov., 10.30 a.m.-4.30 p.m. (Details are given on notice-boards. A catalogue is available for inspection).

FILM SHOW: Wed., 3 Nov., 12.45 p.m. and Thurs., 4 Nov., 1.15 p.m., Lecture Theatre: "HANDLE WITH CARE", a prize-winning 30 minute colour film by the Decca Record Co. on the manufacture of gramophone records, from the recording studio to the despatch department.

Mon., 8 Nov., 11.15 a.m., Lecture Theatre	Nimrod Lecture Series	Dr. H. Burkhardt (Birmingham Univ)	On the Validity of the Glauber Correction?
Wed., 3 Nov., 3.30 p.m., Lecture Theatre	Popular Lecture Series	Dr. F.F. Heymann (University College London)	Pion-Proton Elastic Scattering Measurements near 2 GeV. (π 2 Experiment)

Advance Notice: **SAFETY FILM:** "Suspects All", a 20 minute British Insurance Association film showing how loss of life and property can result from carelessness or thoughtlessness, will be shown in the Lecture Theatre at 2.30 p.m. on 9 and 11 Nov., and 10.30 on 10 and 12 Nov.

External Events

Tues., 2 Nov., 7.30 p.m. Great Western Hotel Reading.	ASEE, District Lecture	Mr. H. Goddard (Exeter Tech Coll)	An Introduction to Computers and Computer Logic
Wed., 3 Nov 2.15 p.m. Univ. Coll. London	Inst. of Maths Symposium	The Mathematics of Structural Engineering	
Fri., 5 Nov., 4.15 p.m. Clarendon Lab. Oxford.	Colloq.	Prof. S.K. Rancorn FRS (Univ. Newcastle- upon-Tyne)	The History of the Earth's Rotation

Social News

FILM SHOWS: See "Internal Events" for details

RECORD PROGRAMME. 12.30 p.m., Tuesday 2 Nov., Lecture Theatre: Symphonic Poem "Les Préludes" by Liszt, and Symphony No.7 in C by Sibelius. All are welcome. (N.B.: Anyone who is willing to loan records of symphonies for these concerts is asked to contact Mr. P. Starling, R.1 Ext 413).

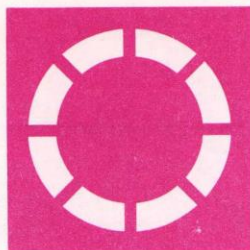
Rutherford and Atlas Recreational Society GRAND AUTUMN DANCE, Friday 19 Nov., from 8.30 p.m. to 2 a.m. in the Rutherford Restaurant. Dancing to the professional sound of Sid Wagstaff and His Music. Spot prizes, dress informal, fully licensed Buffet Lounge. Tickets 7/6 each, from L.A.O.'s or Committee Members. This is the first dance to be held under the auspices of the Recreational Society. It is hoped that there will be a really good attendance as all proceeds will go towards expanding the facilities of the Society.

Friday, 5 Nov., AERE Recreational Association presents a fireworks display at 7 p.m., South Games Field - free, followed by dancing in the Social Club, tickets 5/-

Rutherford Laboratory
29 October, 1965.

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

No. 42/65
8 Nov 65



Rutherford Laboratory Bulletin

General News

OVERSEAS VISITS. Dr. M.A.R. Kemp, to CERN, 6 Nov, for one week, for discussions on current experiments.

Mr. M. Snowden and Dr. D. Thomas to CERN, 9-10 Nov., to make final settlement of 1.5m Hydrogen Bubble Chamber arrangements with CERN.

Mr. M. Donald and Dr. J. Bittner, to CERN, 14-18 Nov, to discuss accelerator research work on the CERN PS injector and the PLA.

EXTERNAL COURSE. "Technical Writing", at the North Berks College of Further Education. Information regarding commencement of this course was received too late for inclusion in the previous Bulletin. The course is held on Thursday evenings, 7-9 p.m. at the Main College, Northcourt Rd, Abingdon and the first class was held on 4 Nov. Further details from H.F. Norris, R.20, Ext 484.

NATIONAL SAVINGS. For the attention of monthly paid staff. The current National Savings Cycle, No.70 ends in November and certificates will be available for collection from the Cash Office, R.20, from Monday, 6 December.

The next cycle for salaried staff commences in December. Membership forms can be obtained from the Cash Office and must be returned completed before 30 November.

Machine Schedules

P.L.A.

Date	Team	Experiment
8-13 Nov.	AERE	(p,d), (p,p) and (p,p') Cross-Section Measurements on Tin Isotopes at 30 MeV.

14-15 Nov.		Maintenance
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NIMROD 2 GeV operation - Cycle 8 (8.11.65.-22.11.65.)

Extraction Studies
Machine Physics
High Energy Physics.

Team	Beam	Experiment	
Hydrogen Bubble Chamber Collaboration	K1	π^+ -d scattering	Data
Imp. College	ϕ 1	A study of the $\phi \rightarrow e^+e^-$ decay	Setting up.
UCL/Bristol	P3X	Heavy Liquid bubble chamber tests	
AERE/Southampton Univ./Univ. College London	P3	Study of $\pi^- + p \rightarrow$ processes $n + X$ $p + X$	Setting up
Oxford Univ.	K4	A study of the decay modes of the K^+	Setting up
Birmingham Univ./Cambridge Univ./RHEL	K6	K^- -nucleon total cross-section measurements	Setting up

Internal Events

Mon., 8 Nov., 11.15 a.m., Lecture Theatre	Nimrod Lecture Series	Dr. H. Burkhardt (Birmingham Univ.)	K^-p Interactions at 1.8 and 1.95 GeV/c.
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FIRE SAFETY FILM: "Suspects All", a 20 minute British Insurance Association film showing how loss of life and property can result from carelessness or thoughtlessness, will be shown in the Lecture Theatre at 2.30 p.m. on 9 and 11 Nov, and 10.30 a.m. on 10 and 12 Nov.

Wed., 10 Nov., 2 p.m., PLA Conf. Rm, R.12.	PLA Division Seminar	Dr. N.K. Ganguly (RHEL)	Investigation of Scattering and Reaction Channels for Mg^{24} .
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Wed., 10 Nov, 12.45 p.m. Thurs., 11 Nov., 1.15 p.m. Lecture Theatre	Film	History of Motor Racing - Part 1: "The Heroic Days". 32 minutes, black and white, sound.
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This film covers the period 1902-1914, beginning with the 1902 Paris-Vienna race, the first Grand Prix at Le Mans, and ending with the sensational 1914 French Grand Prix. Many people will have seen snippets of this film on TV and will know what to expect but for those who have'nt this is the chance to see what motoring - and drivers, were like at the beginning of this century.

External Events

Mon., 8 Nov., 4.45 p.m., Univ. of Bristol	Phys and Geo-Phys Colloq.	Dr. R. Hillier (Bristol)	X-ray and γ -ray Astronomy
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Mon., 8 Nov., 5 p.m., Univ. of Reading	Phys. Dept Colloq	Prof. P.B. Fellgett (Reading)	Astronomical Instrumentation
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Mon., 8 Nov., 6 p.m., Savoy Place, London	I.E.E. Discussion	Opened by: Dr. K.R. Sturley (B.B.C.)	Is Laboratory Work Really Necessary?
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Tues., 9 Nov., 2.30 p.m., 21 Banbury Rd Oxford.	Nuclear Physics Seminar	Dr. D.M. Brink (Oxford)	Parity Doublets
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Wed., 10 Nov., 7 p.m., SEB George St. Oxford	I.E.E. Oxford District Meeting	Mr. L. Thomas (G.P.O.)	Development in Modern International Communications
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A.E.R.E.

Tues., 9 Nov., 2 p.m., Conf. Rm., Bldg 8.9	Theo. Phys Div. Seminar	Dr. I.C. Pyle	A Proposed Computer Time-Sharing System, HUW
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Thurs., 11 Nov., 2 p.m., Conf. Rm., Bldg 8.9	Applied Maths Grp Seminar	Dr. R.F. Churchhouse (Atlas Lab).	The use of Computers to Obtain Results in the Theory of Numbers.
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Social News

FILM SHOW: See "Internal Events" for details of next week's lunch time film.

RECORD PROGRAMME: 12.30 p.m., Tues., 9 Nov., Lecture Theatre. The programme will be devoted to recordings made by Billie Holiday.

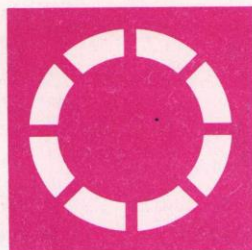
CHRISTIAN FELLOWSHIP. The third talk in the new series "Man in the Light of the Bible", will be given by the Rev. Alfred Waller of Tilehurst Free Church, on Thursday, 11 Nov. at 12.30 p.m. in the PLA Conference Rm, R.12, and will be entitled "Man and the Hope of a Saviour". All are welcome. Further details from B.E. Kingdon, R.20, Ext 6297.

STOP PRESS: Wed., 10 Nov., 7.15 p.m. Reading Tech. Coll., IERE Thames Valley Section Meeting. "Parity Doublets" by H.V. Beck (Marconi Inst.)

Rutherford Laboratory
5 Nov 65

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

No. 43/65
15 Nov 65



Rutherford Laboratory Bulletin

General News

BANK FACILITIES. Staff are reminded that Lloyds Bank provide normal counter services in the Cash Office, Building R.20 on Wednesdays from 12.15 to 1.45 p.m.

BUILDING R.1 - COMMON ROOM and READING ROOM. Both these rooms are now available for use. The common room is intended as a convenient place where staff and visitors can meet. The reading room, also available for staff and visitors, contains current issues of journals such as:- Physical Review, Physical Review Letters, Scientific American, Nuclear Instruments and Methods etc. It is provided with writing tables and as a "quiet room", is ideal for use by those wishing to escape from a noisy office.

OVERSEAS VISITS. Dr. L. J. Herbst, to Milan, 15 - 18, Nov. for discussions at the Laben Laboratories and at the Physics Department Milan University.

EXTERNAL COURSE. City of Liverpool, College of Technology have announced a Post Graduate Diploma in Nuclear Science and Radiation Safety, commencing January, 1966. Further information may be obtained from Mrs. S. Fones, Personnel Branch, Bldg. R.20, Ext. 585.

Machine Schedules

P.L.A.

<u>Date</u>	<u>Team</u>	<u>Experiment</u>
16 - 18 Nov.	R.H.E.L. and Q.M.C.II	(p,n) Reactions by Time of Flight Method
19 - 22 Nov.	Oxford	Al^{27} (p,T) Al^{25} and Al^{27} (p,He ³) Mg^{25} Reaction Studies

Internal Events

Mon., 15 Nov., 11.15 a.m. Lecture Theatre	Nimrod Lecture Series	Dr. R. Hofstadter (Imp. Coll.)	Recent Results in Electron Scattering Work at Stanford
Mon., 15 Nov., 2 p.m. Lecture Theatre	Nimrod Users Meeting	Discussion	Provisional Schedule for the first 6 months running at 7 GeV
Wed., 17 Nov., 3.30 p.m. Lecture Theatre	Popular Lecture Series	Dr. N. Middlemas (Oxford)	Charge Exchange Scattering Measurements with Negative Pions (π^- Experiment)
Wed., 17 Nov., 12.40 p.m. Thurs., 18 Nov., 1.15 p.m. Lecture Theatre		Film	"Eye for Isotopes" a 20 minute, U.K.A.E.A. colour film.

This film shows the well-established techniques in the use of radioisotopes for measuring, tracing and control. After describing the properties of radioisotopes which make them useful, the film shows how they are made in a reactor.

Examples of their uses are then shown in detail.

Mon., 22 Nov., 11.15 a.m. Lecture Theatre	Nimrod Lecture Series	Dr. P. K. Kabir (R.H.E.L.)	Molecules and mu-capture
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External Events

Tues., 16 Nov., 6 p.m. Univ. of Bristol	Inst. of Maths lecture (Bristol Branch)	Prof. J. M. Ziman (Bristol)	Mathematical Models and Physical Toys
Fri., 19 Nov., 2.30 p.m., 21, Banbury Rd. Oxford	Nuclear Physics Seminar	J. J. Simpson (Oxford)	Measurements of Nuclear Quadrupole Moments by the Reorientation Effect

15-20 Nov., 10.00-6.00 daily: "Industrial Photographic and Television Exhibition"
at Earls Court, London. Tickets available from H. F. Norris, Bldg. R.20, Ext. 484.

A.E.R.E.

Thurs., 18 Nov., 2 p.m. Conf. Room, Bldg. 8.9	Applied Maths Group Seminar	Dr. K. I. McKenzie	An Outline of the I.B.M. 360 Assembly Language
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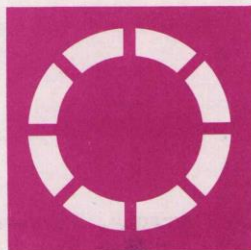
Social News

FILM SHOW: See "Internal Events" for details of next week's lunch time film.

RECORD PROGRAMME: 12.30 p.m., Tues., 16 Nov., Lecture Theatre.
Mozart: Overture "Marriage of Figaro" and the "Sinfonia Concertante for Violin,
Viola and Orchestra".

Rutherford Laboratory
12 Nov 65

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



OVERSEAS VISITS. Mr. J.M. Dickson, to CERN, 28 Nov - 2 Dec, for discussions on the performance of linear accelerators.

Machine Schedules

P.L.A.

<u>Date</u>	<u>Team</u>	<u>Experiment</u>
23-27 Nov.	U.C.L.	Measurement of p-p Differential Scattering Cross-section at 50 MeV.

Internal Events

Mon., 22 Nov., 11.15 a.m., Lecture Theatre.	Nimrod Lecture Series	Dr. P.K. Kabir (R.H.E.L.)	Molecules and mu-capture
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EXHIBITION. A demonstration of Electronic Calculating Equipment by Muldivo Ltd., will be held in Conference Room No.1, Bldg R.1, on Monday, 22 November, from 10 a.m. to 4 p.m. Units from the new IME 84 range will be on show, including desk calculators, satellite keyboards, input programme units, output units and multiple constant stores. (Anyone interested who is not able to attend should contact B.E. Kingdon, R.20 Ext 6297 from whom further details may be obtained).

Wed., 24 Nov., 2.45 p.m., Lecture Theatre.	Special Series	Dr. A. Martin (C.E.R.N.)	Unitarity and Large Angle Scattering.
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Wed., 24 Nov., 12.40 p.m. Thurs., 25 Nov., 1.15 p.m. Lecture Theatre	Film	"The Quartz Clock", 22 min colour film "The Conquest of Time", 10 min, colour film. (see over page for details)
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Wed., 24 Nov., 2 p.m., Conf. Rm. Bldg. R.12	P.L.A. Div. Seminar	Dr. R.C. Hanna (R.H.E.L.)	A Visit to North American Laboratories.
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Mon., 29 Nov., 11.15 a.m. Lecture Theatre	Nimrod Lecture Series	Prof. E.J. Squires (Durham)	The Quark Model of Hadrons
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External Events

Tues., 23 Nov., 2.30 p.m., 21 Banbury Rd, Oxford	Nuclear Phys. Seminar	B.W. Allardyce (Oxford)	Fluctuations in Nuclear Reaction Cross-sections
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Thurs., 25 Nov., 4.15 p.m., Clarendon Lab., Oxford.	Theor. Phys. Seminar	Dr. E. Leader (Cambridge)	The Present Phenomenological Status of the Regge Pole Theory
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A.E.R.E.

Thurs., 25 Nov., 10.45 a.m. Conf. Rm. Bldg 8.9.	Applied Maths Gp Seminar	Mr. M.J.D. Powell	A Comparison of Least Squares and Minimax Polynomial Approximations
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Social News

FILM SHOW: See "Internal Events" for details of next weeks' lunch time film.

RECORD PROGRAMME. 12.30 p.m., Tuesday, 23 November, in the Lecture Theatre: Highlights from "The White Horse Inn", the famous musical of the 1920's, which was one of the first shows to use a large revolving stage. The music by Robert Stolz contains many old favourites (and some not so well-known) and makes a delightful change from the heavier type of programme.

CHRISTIAN FELLOWSHIP. The next meeting will be on Thursday, 25 November, at 12.30 p.m. in the PLA Conference Room R.12, when the discussion on "The First Man" will be continued under the chairmanship of Dr. John Savage of MRC. All are welcome, and we can promise an interesting time. Further details from B.E. Kingdon, R.20 Ext 6297.

Fri., 19, Grand Autumn Dance in the Rutherford Restaurant 8.30 p.m. to 2 a.m. Last chance to buy your tickets, 7/6d each from LAO's or Committee Members of the Recreational Society.

Rutherford Laboratory

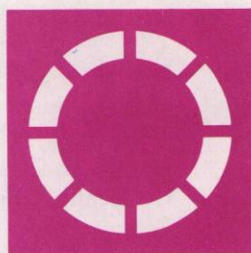
19 Nov 65

H.F. Norris Ext 484

Scientific Admin Group. R.20

FILM: Both the films (see Internal Events) are shown by courtesy of the Swiss Federation of Watch Manufacturers, and are of both technical and general interest. The film on the Quartz Clock has been shown in this country only once before. It deals e.g. with the cutting of quartz, industrial and laboratory uses of this type of clock the link with other clocks all over the world and, associated equipment. The Conquest of Time deals with the future of the industry and shows modern methods of watch manufacture.

No.45/65
29 Nov 65



Rutherford Laboratory Bulletin

General News

VACUUM DISCUSSION GROUP. The next discussion arranged by the Research Group Vacuum Panel will be held on Friday, 17 Dec 1965, in the large Conference Room, Bldg 220, commencing at 9.00 a.m.

The theme will be "Permanent Joints", and the chairman will be Dr. J.C. Riviere.

This discussion should also be of interest to people working in the cryogenic field. Further information can be obtained from Mr. G.S. Grossart, Bldg R.2. Admission will be by ticket, obtainable from Mr. F.P. Moran, Rm G.39, Bldg 424, Ext 72-2723.

OVERSEAS VISITS. Dr. R.F. Churchhouse and Dr. P.E. Bryant, Atlas Laboratory, to Pittsburg, U.S.A. on 29 Nov. for three weeks at the invitation of the Carnegie Institute of Technology. They will take part in preliminary discussions on a time sharing system for the IBM 360 Model 67 computer which is to be installed at the Carnegie Institute towards the end of next year.

POPULAR LECTURE SERIES. Owing to the death of the lecturer Mr. J.A. Newth the next lecture in the series, arranged for 1 Dec. has been postponed.

ATTACHMENT. Dr. P.J. Duke who has been attached to the Institution of Theoretical Experimental Studies, Moscow for the past six months, returned to the Laboratory on 16 Nov. His office is now in Room 1.44, Bldg R.1, Ext 562.

Machine Schedules

NIMROD - Cycle9((29.11.65.-22.12.65)

Extracted Beam Studies (7 GeV)
Machine Physics (3.7 and 7 GeV)
High Energy G Physics (3.7 and 7 GeV)

<u>Team</u>	<u>Beam</u>	<u>Experiment</u>	
AERE/Queen Mary College	P6	p-p inelastic scattering	Data
Imp. College	$\phi 1$	Study of the S^0 resonance Study of the $\phi \rightarrow e^+ + e^-$ decay	Data Setting Up
Hydrogen Bubble Chamber Collaboration	K1	$\pi^+ d$ scattering	Data
UCL/Bristol	P3X	Heavy Liquid Bubble Chamber tests	
AERE/Southampton Univ./UCL	P3	Study of $\pi^- + p \rightarrow \begin{smallmatrix} n + x \\ p + x \end{smallmatrix}$ processes	Setting up
Oxford Univ.	K4	A study of the decay modes of the K^+	Setting up
Birmingham/ Cambridge Univ./ RHEL	K6	K^- -nucleon total cross-section measurements.	Setting up
RHEL/Oxford Univ.	K7	$\pi^- p$ polarisation measurements	Setting up
UCL/Westfield College	$\pi 2$	$\pi^- p$ differential cross-section measurements	Setting up

P.L.A.

<u>Date</u>	<u>Team</u>	<u>Experiment</u>
28 Nov-1 Dec	Maintenance	
2-6 Dec	UCL	Measurement of p-p Differential Scattering Cross-section at 50 MeV.

Internal Events

Mon., 29 Nov.,	Nimrod	Prof. E.J. Squires	The Quark Model of Hadrons
11.15 a.m. Lecture	Lecture	(Durham)	
Theatre	Series		

Proposals for Experiments on Nimrod. The following lectures will be held in the Lecture Theatre:

- (a) Monday 29 Nov: "A proposal to measure the electromagnetic differences between members of the $N^*(1238)$ " - Dr. D.V. Bugg (RHEL)
 $\pi^- p$ differential cross-sections from 1.5 to 3.3 GeV/c" - Dr. M.A.R. Kemp (RHEL)
 The first lecture will start at 2 p.m.
- (b) Tuesday, 30 Nov.: "A proposal for experiments with the 80cm Helium Bubble Chamber" - Prof. D.H. Perkins (Oxford Univ.)
 "A study of $\pi^+ p$ and $\pi^- n$ interactions in the British National Bubble Chamber" - Dr. D.C. Colley and Dr. B. Musgrave (Birmingham Univ.)

These lectures will follow the Nimrod Operations II Meeting which will start at 2 p.m. Tea will be served on both days at 3.30 p.m. in the Lounge.

Wed., 1 Dec.,	Special	Mr. J.W. Burren and	Future Computing Facilities at
2 p.m., Lecture	Lecture	Dr. R. Taylor (RHEL)	RHEL (followed by discussion)
Theatre			

Wed., 1 Dec., 12.40 p.m.	Film.	"Fabrication of the Accelerator Structure",
Thurs., 2 Dec., 1.15 p.m.		a 45 minute, USAEC Colour film.
Lecture Theatre.		

In April of this year a film "The Worlds Within" was shown, describing in a non-technical way the design and construction of the new Stanford Linear Accelerator. The film this week deals in great detail with the construction of one forty foot section of the 2 mile long copper tube. Although this is a technical film of special interest to engineers it is of great general interest. We are indebted to the U.S. Embassy for lending us the film before it is generally released.

U.S.S.R. - U.K. Exchange Visit on Accelerators and Nuclear Physics

A party of eight Russian Scientists will be visiting the Laboratory on Thursday 2nd December. The programme will include tours of the NIMROD and PLA Areas.

Mon., 6 Dec.,	Nimrod	Dr. P.J. Duke	High Energy Physics in the Soviet
11.15 a.m. Lecture	Lecture	(RHEL)	Union.
Theatre	Series		

EXHIBITION: A demonstration of Radio Frequency Connectors and Cables by Transradio Ltd., will be held in Conf. Room No.4, Bldg R.1, on Wed., 1 Dec., from 9.30 a.m. to 4.30 p.m. Further details are available from B.E. Kingdon, Bldg. R.20 Ext 6297.

External Events

Thurs., 2 Dec.,	Theor.	Dr. J.B. Elliott	Charge-Independent Pairing Forces
4.15 p.m., Clarendon	Phys.	(Sussex)	in Nuclei
Lab., Oxford.	Seminar		
A.E.R.E.			

Tues., 30 Nov.,	Theor. Phys.	Dr. T.P. McLean	Lasers and their Radiation
2 p.m., Conf. Rm.,	Div.	(R.R.E. Malvern)	
Bldg. 8.9.	Seminar		

Social News

FILM SHOW: See "Internal Events" for details of next weeks' lunch time film which although technical is of great interest to everyone.

RECORD PROGRAMME: 12.30 p.m., Tuesday, 30 Nov., Lecture Theatre. A Schubert and Schumann Recital by Kathleen Ferrier accompanied by Phyllis Spurr (piano). This programme should have a particular appeal for admirers of the late Kathleen Ferrier. In particular the four Schubert songs are amongst the composers greatest masterpieces, including the famous "Gretchen at the Spinning Wheel" written when he was only seventeen.

Rutherford Laboratory
26 Nov. 65

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