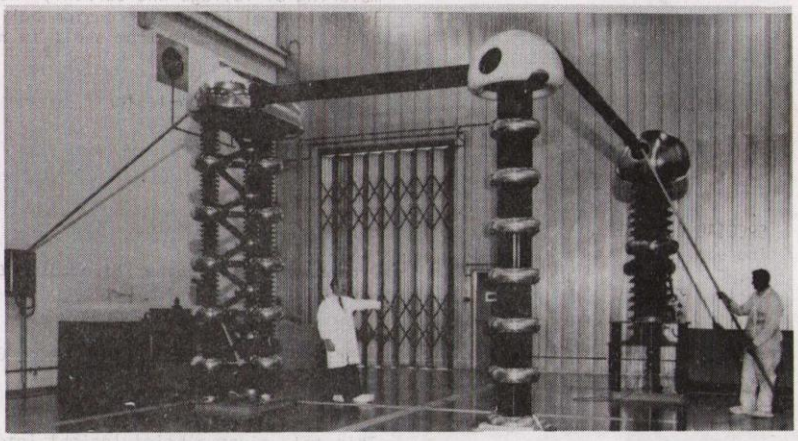
Rutherford Laboratory

21 October-4 November 1974

bulletin 21

PROGRESS ON NEW INJECTOR



Following our first report on the progress of the new injector, another significant step is the installation of the pre-injector EHV supply in the screened high voltage area shown in the photograph.

The pre-injector has been designed to operate with an EHV platform voltage of 665 kV to earth and to produce beam pulses of up to 200 mA amplitude and 500 μs duration.

The voltage source is a Haefely five stage Cockcroft-Walton cascade rectifier, seen together with its precision voltage measuring divider in the foreground of the photograph. This set is similar to the one in use with the 15 MeV injector and is capable of producing 4 mA at 750 kV.

Part of the output of the 750 kV generator will be used to charge a high voltage reservoir capacitor which will then provide a source for the relatively large current drawn from the EHV supply by the pre-injector during each beam pulse. The capacitor, on its insulated base plinth, can be seen in the background.

The stabiliser which compensates for the fast deviations which occur in the platform voltage during beam current loading is known as a "bouncer" and will be connected to the case of the reservoir capacitor. This "bouncer", which was designed and developed at the Rutherford Laboratory will be the subject of a future article.

A REWARDING SUGGESTION

An award of £75, approved by the Local Suggestions Awards Committee, was presented to Brian Smith, a skilled craftsman in the Nimrod Engineering Department by Ron Russell, the Department's Deputy Head on 11 October.

Brian's suggestion, a flip-up scintillator, has successfully completed its trials and is now in use on the X3 beam line. Scintillators are used to locate the position of the beam from NIMROD in relation to the target and also to check the tuning of the beam. As the scintillator is directly in front of the target and constantly in the path of the beam, it deteriorates with time making further beam detection difficult; overcoming this problem involves moving the mounting table and disturbing the set-up, or changing the scintillator which requires the beam being shut down and entry into a region at high radiation level.

The flip-up scintillator, remotely controlled from Nimrod's Main Control Room, is only in the beam path when required for lining up, thereby prolonging its life, reducing the radiation exposure to personnel and, saving money estimated at £300 in the first year. It is easily replaceable when old targets are renewed, (the removal of these old targets greatly reducing the radiation levels).

Like all good ideas, it is simple. Alec Goode, the Chairman of the Awards Committee in congratulating Brian on his achievement, spoke of the value of such awards in encouraging other people in their efforts.

Other awards approved -

Mr C W Smith	Admin	R59	£10	Mr C R Gascoigne	Eng	R9	£10	Mr N Goddard	Nimrod	R6	£5
Mr G Scott	Admin	R1	£5	Mr C D Abbley	Nimrod	R6	£5	Mr C A Grant	Nimrod	R8	£5
Mr C Lambert	Eng	R18	£5	Mr C R Brown	Nimrod	R6	£10	Mr E Hartley	Nimrod	R2	£5
Mr M Ryan	Eng	R18	£5	Mr J Conlin	Nimrod	R3	£10	Mr E G Starr	Nimrod	R3	£5

INTERNAL EVENTS

NIMROD LECTURE SERIES
Monday 21 October
11.30
Lecture Theatre

SPEAR Summer School

Dr G Manning and Dr W T Toner/RL

TRADE DEMONSTRATION
Tuesday, 22 October
10.00 - 16.00
Conference Room, Building R12

APLAB(UK)Ltd are holding an exhibition of their Laboratory Bench Power Supplies available in a wide range of precisely regulated single and dual units, operable in constant voltage or constant current mode with automatic cross-over switching for over voltage and short circuit protection. Remote programming and sensing is provided as standard on all models with all single output units having separate metering of voltage and current, independently set with coarse and fine controls. Two points of interest - custom built units a speciality and, all units (standard or custom) available from shelf to maximum of eight weeks delivery.

HEP SEMINAR
Wednesday 23 October
11.00
Lecture Theatre

The Question of Non-leptonic Interactions of Leptons.

D V Nanopoulas/CERN

SPECIAL LECTURE
Thursday 24 October
15.00
Lecture Theatre

Application of Anomalous Dispersion of X-rays, Neutrons and γ-rays in Crystallography
Professor R L Mössbauer/Director, ILL, Grenoble (see 'news' section)

SEMINAR IN COMPUTING
Friday 25 October
11.00
Conference Room, Building R12

A Brief Introduction to the Use of Computers in Air Traffic Control.

B G MacGowan/IBM(UK)Ltd

This talk gives a brief insight into the fascinating area of computing application to Air Traffic Control. Computer sizes run to 2 x 360/65 with 3½ Mbytes of memory, they can be duplex multi-processors; data transmission from long distances is involved as is interfacing own design and mixed manufacturers equipment to the computers; conventional radar displays are replaced by computer driven graphic displays. Towering over the hardware complexities are the software complexities which require hundreds of man hours to solve.

NIMROD LECTURE SERIES
Monday 28 October
11.30
Lecture Theatre

Correlation Measurements in Proton-Proton Interactions at ISR Energies

Dr A L Sessoms/CHLM - CERN

HEP SEMINAR
Tuesday 29 October
11.00
Lecture Theatre

The Use of Zeros in ππ Phase Shift Analysis

P Eatabrooks/Durham

TRADE DEMONSTRATION
Tuesday 29 October
10.00 - 16.00
Adjacent to R20

Mullard Ltd are paying their annual visit to the Laboratory and their Mobile Exhibition Vehicle will be parked in the layby outside R20. As usual their latest range of electronic components will be on show and a team of experts will be in attendance to answer questions.

TRADE DEMONSTRATION
Wednesday 30 October
10.00 - 16.00
Adjacent to R20

European Marketing, an organisation set up to enable British and European Manufacturers of Scientific Apparatus to expose their equipment to potential users paid their first visit to the Lab last Spring. They are making a return visit with a new range of equipment including - gas and liquid chromotography equipment; fine particle analysis including microsieving & pulverising; combined spectro-photometer, fluorometer, pH and oxygen analyser; thin film coating equipment and materials; scintillating & optical crystals; spectrometer gratings & special gases and many other specialised items.

SEMINAR IN COMPUTING
Friday 1 November
11.00
Conference Room, Building R1

Computing Facilities at High Energy Laboratories in the USA.

R Rosner/RL

Some impressions will be given of computing at various HEP Labs and Universities in the USA. Places that were visited included SLAC, FNAL, ANL and Brookhaven.

NIMROD LECTURE SERIES
Monday 4 November
11.30
Lecture Theatre

$SU(6)_W$ is Alive and Well.

Dr A J G Hey/Southampton

EXTERNAL EVENTS

THEORETICAL ELEMENTARY PARTICLE PHYSICS SEMINARS, NUCLEPT, OXFORD - 14.20 hrs
25 Oct: Dr R Delbourgo/Imp Coll - Superfluids
1 Nov: Dr J E Paton/Oxford - Method of Calculating the Pomeron.

COLLOQUIA AT CLARENDON LAB OXFORD - 16.15 hrs
25 Oct: Dr R S Jarwood/Oxford - Models for Climate Prediction.
1 Nov: Dr E H Cooke-Yarborough/AERE - The Thermal-Mechanical Oscillator.

THEORETICAL PHYSICS SEMINARS AT CLARENDON LAB - 16.15 hrs
24 Oct: Dr D ter Haar - Relativistic Salitons
31 Oct: Dr A B Lidiard/AERE - Modelling of Defects in Crystalline Solids.

DARESBURY LECTURE SERIES - 14.00 hrs
22 Oct: D H Saxon/RL - Lepton Production at High Transverse Momentum by 300 GeV/c Protons
29 Oct: C Michael/Liverpool - Resonance Production at High Energy.

DARESBURY THEORETICAL PHYSICS SEMINARS - 14.00 hrs
21 Oct: D Nanopoulos/CERN - Remarks on Neutral Current Phenomenology.
28 Oct: I G Halliday/Imp Coll - Production of Large Transverse Momentum Particles.

DARESBURY COMPUTER SYSTEMS & ELECTRONICS DIV SEMINARS - 14.30 hrs
23 Oct: Computing Forum, Panel - B Davies, H Kirkman, J Woulds, T Daniels, A Peatfield (a question and answer session)

THEORETICAL PHYSICS SEMINARS AT QMC - 16.15 hrs
21 Oct: Prof F A E Pirani/Kings Coll - The New Style in Analytical Dynamics.
28 Oct: Dr C H Llewellyn Smith/Oxford - A Unified Model for Weak and Electromagnetic Interactions.

PHYSICS COLLOQUIA AT READING - 17.00 hrs
21 Oct: D Redman/AWRE - Optical Filtering and its Applications.
28 Oct: S R Lewis/Reading - The Effect of Damage on the Electrical Properties of Ion Implanted Silicon.
4 Nov: Prof H Elliot/Imp Coll - Cosmic Rays and High Energy Astrophysics.

PHYSICS & GELPHYSICS COLLOQUIA, BRISTOL - 1700 hrs
21 Oct: Prof D Lynden - Bell/Cambridge - Solar Systems Forming Now.
28 Oct: Prof D H Martin/QMC - Submillimetre Waves - Spectroscopy and Astronomy.
4 Nov: Prof F C Frank/Bristol - Snow - Crystals.

THEORETICAL PHYSICS SEMINARS, MANCHESTER - 14.30 hrs
23 Oct: Prof K Smith/Leeds - A Computer Model of the CO_2 Laser including Dissociation and Variable Ambient Temperature.
30 Oct: Dr D Gough/Cambridge - Oscillations in the Sun.

THEORETICAL & HEP SEMINARS, SOUTHAMPTON - 14.30 hrs
25 Oct: Prof G Feldman/Imp Coll - Massive & Massless Spin-two Mesons.
1 Nov: Dr J M Kosterlitz/Birmingham - The Renormalisation Group and Critical Phenomena.

NP DIV SEMINARS IN CONF RM H8 AERE at 15.30 hrs
21 Oct: Prof R A Meyer/California - Nuclear Structure Research at the Lawrence Livermore Laboratory.
31 Oct: Dr S J Swithenby/Oxford - SQUIDS & Related Devices.

NIMROD SCHEDULE

CYCLE 10 22.10.74 - 12.11.74 MACHINE PHYSICS HIGH ENERGY PHYSICS

Team	Beam	Experiment	State
CERN/ORSAY/OXFORD	P8I	Hadron-Proton Spin	Data
RUTHERFORD LABORATORY	π11	Beam Measurements	Tests
IMPERIAL COLLEGE/RL	π8A	Experiments on Narrow Bosons X^0 (958) S^* and Cross-Section Measurements	Data
BEAM DETECTOR GROUP	K15A	Parasitic Running	Tests
COUNTER GROUP B/ CAMBRIDGE UNIVERSITY	π12	$\pi^- p \rightarrow K^0 \Lambda^0$ in the Range 1.4 - 2.0 GeV/c	Data
RUTHERFORD LABORATORY	π9	Polarisation in the $\pi^- p \rightarrow \pi^0 n$, nn	Data
BIRMINGHAM/SURREY/RL	K17	Study of X-rays from $K^- p$ Atoms	Setting up
	P17	Beam line being dismantled	

STOP PRESS

The Oxford and District Industrial Accident Prevention Group are holding a one-day seminar on Fire Precautions in Factories, Offices, Shops and Departmental Stores, on Wednesday, 30 October, in the Lecture Theatre. Admission by ticket only. The co-operation of staff is requested in taking lunch before 13.30 when the delegates will be lunching.

RUTHERFORD LABORATORY BULLETIN *Published by the Scientific Administration Group*

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Deadline for Insertions	GENERAL & SOCIAL NEWS	INTERNAL & EXTERNAL EVENTS
	Tuesday 1600	Wednesday 1200

VISIT BY THE DIRECTOR OF ILL Professor R L Mössbauer is visiting the UK for the purpose of attending an ILL Sub-Committee Meeting being held in Abingdon on Friday, 25 October. The venues for those meeting rotate amongst member countries. He has agreed to give a talk in the Lecture Theatre on Thursday, 24 October. For details see 'Internal Events' section.

Professor Mössbauer was awarded the Nobel Prize for Physics in 1961 for work done in the field of resonance absorption of gamma radiation. He is now the Director of the Institut Max von Laue - Paul Langevin, Grenoble. The SRC has been a de facto partner in the Institut since January 1973, formal ratification taking place on 15 July 1974.

FILM BADGE NOTICE It is Period 11. Colour Strip - BLUE for βγ films and neutron packs. Please check that you are wearing the correct dosimeters and that all old ones are returned.

Next film badge change - 4 November.

HELP! Can anyone help two laboratory lads in their search for copies, now out of print, of - Ordinary National Mathematics 2, by Dobinson, pub. by Penguin. If anyone can help would they please contact Garry Williams, Atlas Lab, Ext 511.

CONFERENCE ORGANISERS PLEASE NOTE When conferences are held on site can information be passed to the Switchboard Operators, this will enable them to direct visitors to the exact location.

MISSING EQUIPMENT The following item of equipment has been reported missing from Hall 1, P71 area between 9 - 15 October:-

Plastic Drawer Unit - containing electronic components.

Information on the present whereabouts of this unit (& contents) to Mr G Arnison, Building R1, Ext 6238.

OVERSEAS VISITS Dr J M Valentine, to ILL Grenoble and CERN, 18-27 Oct, for discussions.
Dr J J Thresher, to CERN, 20-22 Oct, for discussions.
Dr R M Brown, to CERN, 20-22 Oct, for discussions on analysis of $\pi 9$ experiment & planning of Hyperon 300 exp.
Dr S N Tovey, to CERN, 28 Oct - 1 Nov, for discussion on 14 GeV/c K^- experiment.
Miss K M Knight, to ILL, 28-31 Oct, to discuss Resistive Wire Proportional Counters.
Mr D Jones, to Brussels, 30-31 Oct, to attend CAMAC Symposium.

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SOCIAL NEWS

RUTHERFORD CUP FINAL Hardly a classic but for sheer entertainment value plus 100% honest endeavour this Rutherford Cup Final between C&A & R25 kept supporters neutral and otherwise very much on their toes throughout the whole of the game.

C&A who were without the services of their striker John Geddes were fortunate to hold R25 who played like a team inspired throughout the whole of the match, particularly in the second half when with C&A desperately holding on to a 2-1 interval lead. Their opponents really piled on the pressure and but for a brilliant display in goal by Malcolm Edwards plus a tireless performance by Jeff Bizzell held out until five minutes from the end, when the equaliser finally came through Dave Mathews.

R25 took a shock lead in the 10th min. when Edwards was penalised for carrying the ball outside his area, Mathews quick as a flash set the ball and hammered it home before the C&A defence had time to line up. The lead was shortlived however for within the space of 30 seconds Ron Lawes headed home a brilliant goal from an astutely placed centre from Jim Taylor.

Two minutes lates Taylor was brought down in the area and Referee Jack Seymour had no hesitation in pointing to the spot, Bizzell making no mistake with a hard low drive to put his side into the lead.

Half Time 2-1

On the resumption R25 really piled on the pressure, Edwards excelled himself when he dived full length to turn a goal-bound shot from Phil Lewis round the post for a corner and later in a goalmouth melee he had to receive attention from the trainer when he got a cut over his left eye for his efforts, still R25 could not score that elusive equaliser.

In a breakaway Taylor and Lawes got within range but Tom Blissett finally won possession to set R25 once more on the attack and only a brilliant tackle by Bizzell stopped John Mackerness from getting in a shot with only Edward to beat.

How badly C&A needed Geddes at this stage, but all credit to them that they never stopped trying to play football but having said that it was R25 who really stole the show and many of those who watched the game must have thought they were definitely unlucky not to have scored the equaliser long before they did.

At the time of writing this report the replay has not yet been fixed.

FAREWELL TO EUROF On Friday 27 September, Eurof Thomas left the Laboratory after some eight years service. He joined the HEPE Electrical Group as an electrical fitter after having previously worked for the NCB where he served his apprenticeship in colliery and workshop electrical work.

In '67 he became a technician on the Beamlines and in '70 he joined the PSAP Group on promotion, where he has since worked on the Nimrod Power Supplies and Ancillary Plant as a shift technician. His main pastime is, of course, rugger. He is rejoining the Coal Board, this time as an electrical engineer at a development mine at Ammonford.

At a gathering of colleagues and friends Mr Brooks thanked Eurof on behalf of the Laboratory and presented him with a cassette recorder to mark the occasion and to wish him every success in his new appointment.

CHRISTIAN FELLOWSHIP This meeting is a follow up to the talk by Dr John Savage entitled "How God Spoke to Early Man". It will take the form of a discussion and all are warmly invited to come along 12.30, R12 Conference Room, on Friday 25 October.

Friday 1 November. Ray Powell of Accounts Section will be leading the monthly prayer meeting. Requests for prayers may be forwarded to any member of the Fellowship and all are invited to come along at 12.30, Conference Room, R12.