Rutherford Laboratory

23 June - 7 July 1975

bulletin 13

BIRTHDAY HONOURS

We should like to offer our congratulations to the Chairman and Members of the Science Research Council who were awarded honours in this year's Queen's Birthday Honours List:

Knights Batchelor	Professor S F Edwards, FRS, Chairman, SRC
CBE	Dr A Hunter, Director, Royal Greenwich Observatory
MBE	Mr P S Laurie, S.S.O., Royal Greenwich Observatory
MBE	Mr J Wilby, Stores Manager, Daresbury Laboratory

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RETURN VISIT This year the Rutherford Laboratory received an invitation from the Royal Society to submit an exhibit for their annual soriee, held on the evening of 8 May. A report on the exhibit was given in Bulletin No 10.

A further invitation has been received for the exhibit to be shown again this Thursday evening, 26 June, to guests of the Fellows of the Royal Society.

Any member of the Laboratory will have a chance to see the exhibit as it will be on display in the foyer of Building R1 on Tuesday, 1 July.

S.T.D. ARRIVES At 7 a.m. on Thursday 26 June 1975, the Abingdon Telephone Exchange will change to the Subscriber Telephone Dialling System.

Staff are reminded that the Laboratory telephone numbers will be Abingdon 21900 and 21991 with effect from 26 June.

External readers - please note that the Abingdon STD Code is 0235.

SUPERCONDUCTING A.C. GENERATORS CONFERENCE. The Low Temperature Group of the Institute of Physics in collaboration with the Institution of Electrical Engineers is holding a two day conference on Super-conducting A.C. Generators on 3 - 4 July 1975 at St Catherine's College, Oxford. Further details including abstracts of papers, available from the Editor, Room 42, R20

FOUND A sum of money near R7; a key outside R25; an earring near the restaurant.
Enquiries to Mrs S A Fones, Personnel, Ext 495.

REDIRECTED MAIL Letters received in the Laboratory needing redirection should have the original address crossed out and the new address written along side. Then are then forwarded free by the P O provided the original postage is still correct for the new address and provided the letter is reposted not later than the day after delivery and not opened or tampered with. Letters needing redirection should not be put into a fresh envolope or a label affixed covering the original address as postage must then be repaid.

BULLETIN NOTICE - EXTERNAL READERS. From time to time we would like to review our distribution list for readers outside of the Science Research Council. In order to receive the Bulletin, please complete the form at the bottom of page 4 and return to the Editor as soon as possible. This is the third and final insertion of the form and after a suitable interval, bearing in mind this is the holiday, summer school and conference season, the distribution list will be amended.

PORTABLE EQUIPMENT TESTS The testing of portable equipment for the July period is now underway. Will all liason officers check the nearest notice board for dates and location. If in doubt, ring A Hipwell, Ext 573.

MISSING EQUIPMENT Borrowed from the Magnetization Rig Lab in the Heavy Duty Lab, Bldg. R25, one Texas Calculator, SR10, Ser. No. 048883 complete with case and charger. Will the person who borrowed this equipment please return it or ring Ext. 6634/6152.

INTERNAL EVENTS

NIMROD LECTURE SERIES
Monday 23 June
11.30
Lecture Theatre

Metal Bending and All That

Professor J G Taylor/King's College, London

NIMROD LECTURE SERIES
Monday 30 June
11.30
Lecture Theatre

Is there Ideal Mixing amongst the Baryons!

D Faiman/Weitzmann Institute and R.L.

FILM SHOW AND TALK
Tuesday 1 July
11.00
Lecture Theatre

The SPS Magnet System - a 32 minute film

R Billinge/CERN II

The film discusses the advanced technology required for this project, method of assembly, correction of errors, measurements - in fact the problems encountered and the stage by stage progress in building this advanced system. At the conclusion of the film Ray will give a brief talk on some aspects of the magnet system. This will be followed by a short question and answer session.

HEP SEMINAR
Wednesday 2 July
11.00
R61 Conference Room

Topics Presented at Palermo from the 14 GeV/c K^- Experiment

K Paler/RL

NIMROD LECTURE SERIES
Monday 7 July
11.30
Lecture Theatre

Two Photon Physics in the Resonance Region

H R Rubinstein/Weitzmann Institute and R.L.

EXTERNAL EVENTS

OXFORD UNIVERSITY

ELEMENTARY PARTICLE PHYSICS SIMINAR/N.P. DEPT - 14.30 hours.
26 June: Neutrino Results from the 15 foot Bubble Chamber at Fermilab - Dr F Nezerick/FNAL

NUCLEAR STRUCTURE GROUP SEMINAR/LECTURE THEATRE, NUCLEAR PHYSICS LAB - 14.30 hours
2 July: Level Structures of Neutron Deficient Au Nuclei - Prof. V. Lakshminarayana/ Andhra U. (Bonn & Gröningen)

SOUTHAMPTON UNIVERSITY

THEORETICAL & HIGH ENERGY PHYSICS SEMINAR/LECTURE THEATRE 'C' - 14.30 hours.
27 June: Some Polarization Studies in Two-Body Processes - Dr A Irvine/ DAMTP, Liverpool.

EVENT AT AERE

THEORETICAL PHYSICS SEMINAR/CONF.RM., HANGAR 8.9 - 14.00 hours.
1 July: Thermodynamically Consistent Approximation for the Pair Distribution Function - Dr P Hutchinson/AERE

NIMBUS 'F'

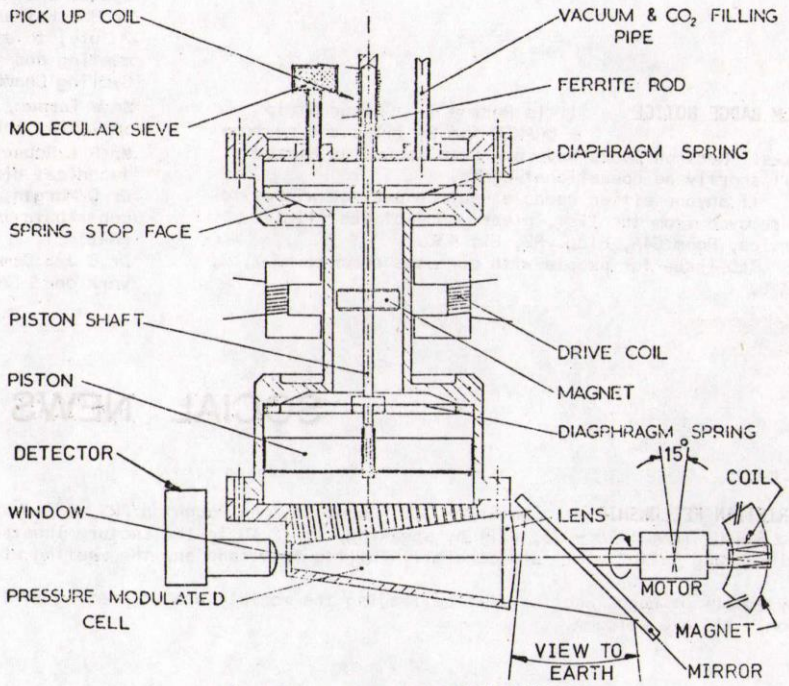
SUCCESSFUL LAUNCH & OPERATION OF EXPERIMENT

This research weather satellite was successfully launched into an 1100 Km circular orbit at 9.12 a.m on June 12th from Vandenberg Air Force Base, California. It is in a 103 minute polar orbit and it passes a given point on the earths surface once in daylight and once in darkness every 24 hours. It is now designated Nimbus 6.

The satellite carries an experiment from the Department of Atmospheric Physics, Oxford University called a pressure modulated radiometer (PMR). This extends the technique of the Nimbus 5 (E) instrument, (which is still performing faultlessly after 2½ years in orbit), enabling temperature measurements to be made of the atmosphere to even greater heights (85 Km) and still using CO_2 filled cells and radiation measurements in the infra red band. The experiment was switched on after 5 days in orbit and is operating successfully.

The pressure modulated cell is shown in Fig. 1 in which the piston diameter is 60 mm and the stroke is 10 mm and is driven electromagnetically at its natural frequency being supported by two flat beryllium copper springs each with 3 spirals. The natural frequency changes with the pressure of CO_2 in the cell which can be varied over a range of 6 to 1 on command. This is achieved by the molecular sieve containing Zeolites which absorb gases strongly as a function of temperature and ground commands need only change thermostat settings.

The radiometer looks vertically downwards to earth via a 45° mirror which can be rotated to view a black body to one side and deep space to the other side for calibration purposes. This mirror also moves 15° forward and backwards along the track to provide a Doppler scan. This is done by a moving coil/permanent magnet mechanism. This Doppler scan uses the spacecraft velocity to shift the modulated absorption lines relative to the atmospheric emission lines and this together with the broadening of the lines due to the large pressure change possible allows two similar PMRs to cover the full height range compared to 8 switched channels in Nimbus E covering a smaller range. The complete instrument containing two PMRs weighs 28 lbs, is 8" x 10" x 16" high and consumes 5 watts power.



PRESSURE MODULATED RADIOMETER

The work of the Rutherford Laboratory commenced with the design of the laboratory and development models and continued with development tests. It involved the space engineering section, the chemical technology and the vacuum technology groups in test gear, thermal vacuum chambers, simulation equipment for space craft services, bench check equipment, molecular sieve work, vacuum testing and gas filling. The Laboratory also provided the Project Management for the University. The manufacture of the flight hardware was performed by Marconi Space and Defence Systems Ltd.

Current space work in the Laboratory for Oxford University is on a smaller radiometer to be flown in a joint Oxford-JPL experiment to orbit Venus in 1977 and a larger radiometer containing 7 PMRs filled with various gases to be launched on the Nimbus 'G' space craft in 1978. This will monitor temperature and the concentrations of minor constituents of the atmosphere including nitrous oxide, methane, carbon monoxide and water vapour.

RUTHERFORD LABROATORY BULLETIN *Published by the Scientific Administration Group* *Editor:* H F NORRIS

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

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SALES TO EMPLOYEES The next sale of scrap metal/ plastics, as set out in RLN 12/73, will be made on 27 June.

FILM BADGE NOTICE It is Period 7. Colour Strip - ORANGE for βγ films and neutron packs. Neutron packs have now been issued as Nimrod will shortly be operational again.

If anyone either needs a neutron pack or wishes to be removed from the list, please contact the film service, Room G4A, Bldg. R2, Ext 430.

TLD issue for people with surnames commencing Y, Z, A & B.

OVERSEAS VISITS Dr G Manning, to Palermo, 23-25 June, to attend and give paper at the European Physical Society Conference.

The Director, to CERN, 23-26 June, to attend meetings of CERN Scientific Policy Committee, Committee of Council, and Council.

Dr J D Lawson, to CERN, 24-27 June, for discussions on general aspects of accelerator and beam theory.

Dr D J Crennell, Dr J Barlow, Dr A D Bryden and Dr J B Whittaker, to CERN, for varying periods between 25-28 June, to attend programming meeting on HYDRA system and to hold discussions.

Dr G E Kalmus, and Dr C M Fisher, to CERN, 29 June - 2 July, to attend T C Bureau. T.C.C. and S.P.S.C. open meeting and for discussions on K20 Beam Line and Rapid Cycling Chamber.

Mr W Turner, to CERN, 30 June - 1 July, for discussions on Rapid Cycling Bubble Chamber project.

Mr R L Roberts, to Copenhagen, 31 June - 3 July, for technical discussions on reactor cold source.

Dr D Morgan, to the U.S.A., 1 - 12 July, to attend and contribute to Z.G.S. Summer Symposium at ANL to visit FNAL.

Dr C J S Damerell, 6 - 11 July, to attend EEC Meetings, work on S 120 analysis and to hold discussions.

SOCIAL NEWS

CHRISTIAN FELLOWSHIP On Friday, 27 June, Dr John Houghton FRS, a member of the Astronomy, Space and Radio Board of the S.R.C. from 1970 - 73, will be speaking, at 12.40 in the Lecture Theatre on the subject "Language and Metaphor in Science and Faith". All are cordially invited to attend and the meeting will last for approximately 30 minutes.

Ray Powell of Wages Section will be leading the monthly prayer meeting at 12.30 on Friday 4 July in the R12 Conference Room. All are welcome.

To Mr H F Norris, Editor of the RL Bulletin, Rutherford Laboratory, Chilton, Didcot, Oxon, OX11 0QX
I wish to continue receiving copies of the Bulletin. Please put me on your revised mailing list:

Name.....

Postal Address.....