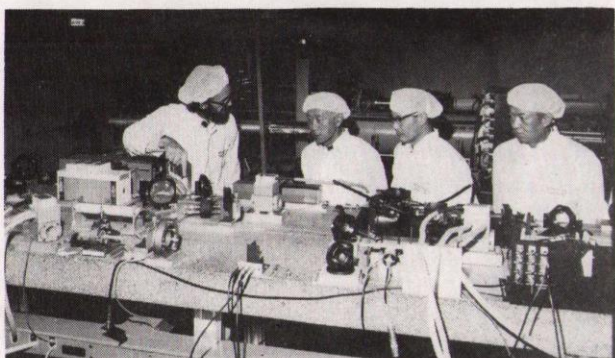


6-20 November 1978

## Chinese Delegation Visits

## Rutherford Laboratory



On Thursday 26 October the Rutherford Laboratory was host to a delegation from the Chinese Academy of Science. The delegation of distinguished Academicians is in Britain for three weeks as guests of The Royal Society studying the organisation of science, the training of scientists and the interaction between government departments, research councils, universities, other teaching and research establishments, and industrial enterprises. Naturally they also wished to see the work being done in establishments carrying out research in their own particular fields.

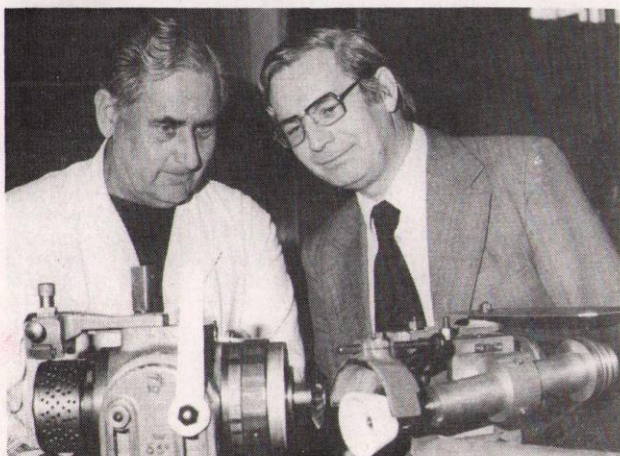
The visitors were welcomed to the Laboratory by Dr G Manning and two Chinese theoretical physicists working here, Dr H M Chan and Mr K T Chao. The Chinese

delegation led by a Vice-president of the Academy Mr Hu Ke-shih included Professor Huang Kun Director of Peking Institute of Semi-conductors, Mr Hao Ting Director of the Bureau of Foreign Affairs, Professor Yen Tung-sheng Vice-president of Shanghai Branch of the Chinese Academy and Director of the Institute of Silicate Material Science, Mr Ma Shih-tu Vice-president of Chingtu Branch of the Chinese Academy, Mr Teng Yu-ming Deputy director of the Science Research Planning Bureau, Professor Tsou Cheng-lu Director of Peking Institute of Bio-physics, Professor Hung Chao-sheng Peking Institute of Physics (low temperature physics and cryogenics) and Professor Hsu Kung-shih Peking Institute of Computer Science. They were escorted by Professor G Allen and Mr B W Oakley.

After a brief introductory talk on the work of the Rutherford Laboratory by Dr G Manning, the visitors were taken in small groups, on a tour of the Laboratory. They visited the High Power Laser facility and the Electron Beam Lithography facility. They also saw a demonstration of the work being done in conjunction with Oxford University on instrumentation for Atmospheric Physics research, an exhibition illustrating the design, construction and research facilities of the Spallation Neutron Source, and discussed the  $\pi$ 12 High Energy Physics experiment. Professor Hung Chao-sheng was taken to see the work on superconductivity and cryogenics being pursued at the Laboratory, and Professor Hsu-shih was shown the Atlas Computing Division, including Batch-processing and the Interactive Computing Facility.

Before leaving, the delegation was presented with photographs taken during the visit, and a framed aerial view of the Laboratory.

## Save and Prosper



Charlie Gascoigne received the fruits of his labours on Wednesday 16 October, when he was presented with a cheque for £240 for an idea submitted under the Science Research Council Suggestions Awards Scheme.

David Gray made the presentation and said that he was delighted to be able to do so. Charlie had won awards before but this time had excelled himself. He exhorted other members of staff to follow Charlie's example, and briefly explained the essence of the scheme, which is productivity based. The more money saved - the greater the reward.

This Award was made for the design and manufacture of a Tilting Wheel head for the angled grinding of cutters. R9 Workshop is responsible for the re-grinding of some 20 cutters per day. With a tilting-head the time taken to perform this task can be cut by 40 - 50%.

A commercially available tool would cost £2000 for the head itself, and the column of the existing machine would have to be modified to accommodate it. A new machine would cost about £4000. The Head designed by Charlie Gascoigne will also reclaim badly damaged cutters, and will facilitate the grinding of special Form tools for use on other machines.



## INTERNAL EVENTS

### NIMROD LECTURE SERIES

Monday 13 November  
1130 hrs  
Lecture Theatre

Monday 20 November  
1130 hrs  
Lecture Theatre

Monday 27 November  
1130 hrs  
Lecture Theatre

Deep Thoughts on Deep Inelastic Scattering

Dr D Duke/R.L.

Testing QCD in Lepton Scattering Experiments

Professor D H Perkins

Testing QCD

Dr E Reya/DESY

### HEP SEMINARS

Wednesday 8 November  
1100 hrs  
R61 Conference Room

Wednesday 22 November  
1100hrs  
R61 Conference Room

Scaling Predictions in QCD

G Ross/Oxford U.

The Spectrum of Baryonia

M Fukugita/R.L.

### RUTHERFORD LABORATORY LECTURE

Thursday 23 November  
1515hrs  
Lecture Theatre

How the Atlantic Grew.

Prof B Funnell/Univ of East Anglia

## EXTERNAL EVENTS

### NPD COLLOQUIUM/AERE. H.8. - 1530 hrs.

- 9 Nov: Dr L G Sanders/NPD - Current Research on Neutron Interrogation of Earth Media.  
16 Nov: Dr P Hodgson/Oxford U. - Aspects of Heavy Ion Physics.

### PART. PHYS. SEMINARS/BIRMINGHAM U. - 1615 hrs.

- 17 Nov: Dr D Olive/Imperial College - Supersymmetric Solitons.  
24 Nov: Dr Brookes/Sheffield U. - Photoproduction Results from the Omega Spectrometer. Part 2.

### HEP SEMINARS/CAVENDISH LAB CAMBRIDGE - 1500 hrs.

- 15 Nov: Dr D Bailin/Sussex U. - The Current Status of Unified Gauge Theories.  
22 Nov: N J Bee/Cavendish Lab. - 2-dimensional QCD.

### THEO. PHYS. SEMINARS/MANCHESTER U. - 1630 hrs.

- 15 Nov: Prof. N D Mermin/Cornell and Sussex - Topology and Superflow.

### ELEM. PART. PHYS SEMINARS/WESTFIELD COLL. LONDON U - 1400 hrs

- 16 Nov: Prof F Zachariasen/Cal.Tech and CERN - Confinement in QCD.  
22 Nov: Dr C H Llewellyn - Smith/Oxford - QCD Predictions for Processes Involving Real Photons.  
29 Nov: Dr M B Green/QMC - The Quantum Mechanics of the Lattice Gauge Theory.

### NP SEMINARS/L.TH. N.P.D. OXFORD - 1430 hrs.

- 13 Nov: Dr P B Treacy/Canberra and Sussex - Atomic Physics for Nuclear Physicists.  
20 Nov: Dr R Regge/Torino U. -  $K^- \rightarrow \pi^-$  Reactions on Nuclei at Intermediate Energies.  
27 Nov: Dr B A Brown/Oxford U. - Neutron and Proton Densities in Light Nuclei.

### ELEM. PART. PHYS. SEMINAR/L.TH.NPD. OXFORD - 1430 hrs

- 9 Nov: Dr R J N Phillips/Rutherford Lab - Multileptons and the Production of New Flavours.

### THEO. & HEP SEMINARS/SOUTHAMPTON U. - 1430 hrs.

- 10 Nov: Dr C H Llewellyn - Smith/Oxford - QCD Predictions for Processes Involving Real Photons.  
17 Nov: Prof. Sir Sam Edwards/Cambridge - The Excluded Volume Problem.

### DTP SEMINARS/CLARENDON LAB OXFORD - 1615 hrs.

- 16 Nov: Prof M F Thorpe/Michigan State - Two-dimensional Magnetic Alloys.  
23 Nov: Dr J Briggs/AERE - How Can an Electron be Picked Up?

### PHYS.COLLOQUIA/CLARENDON LAB.OXFORD - 1615 hrs.

- 10 Nov: Prof Sir Nevill Mott/Cambridge - The Metal-Insulator Transition.  
17 Nov: Dr J Alty/Liverpool - The Impact of the New Technology on Computing.

### OVERSEAS VISITS

P R Pitts to CERN 5 - 9 November to work on RMS experiment.

P J Litchfield and L Mapelli to CERN 5 - 7 November for meeting with Strasbourg - FRAMM collaboration and work on RMS experiment.

R W Newport, B W Edwards, T G Coleman and A W Edwards to CERN 6 - 8 November to attend European Hybrid Spectrometer meeting.

S C Broughton, J A Hirst and E G Sandels to CERN 7 - 10 November for meetings and discussions with MPS division.

B T Payne and J A Blissett to DESY 5 - 10 and 19 - 24 November to work on installation of TASSO experiment.

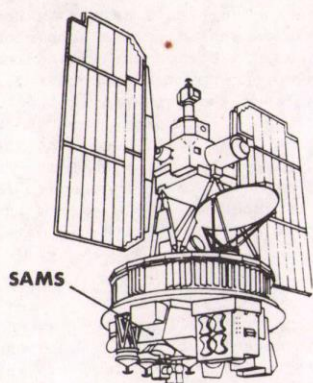
J R M Maidment to ROME 7 - 9 November to attend ECFA-LEP working group meeting.

### LIST OF WINNERS OF THE 1978 AERE HORTICULTURAL SOCIETY DRAW

1st	£15	Mrs O'Connor	B.543	D0063
2nd	£10	Mrs J Lovegrove	H7	A0823
3rd	£5	Mrs B M Cross	465.1	E0897
4th	whisky	Mrs P Bristow	Chilton	B0118
5th	gin	Mr T Tyler	B30	A0515
6th	whisky ½ bot.	Mrs L King	166	E0168
7th	drambuie	Mrs P Stevens	465.1	E0909
8th	cherry brandy	Mrs M Poucher	565T	C0022
9th	sherry	Mr V Hitchman	tank	B0548
10th	wine	Mr S Wreyford	farm	B0318
			7.12	
11th	wine	Mr F Greenaway	R32	A0137
12th	teddy bear	Mrs B King	404	B0557
13th	newberry fruits	Mrs Goodall	404	B0568
14th	toffees	Mrs B Yeldham	413	D0484



# NIMBUS-G



This observatory satellite was launched from the Western Test Range Vandenberg California on Tuesday 24 October and carries as one of its eight experiments the Stratospheric And Mesospheric Sounder (SAMS) devised by Professor J T Houghton's group at the Dept. of Atmospheric Physics, Oxford University.

The design of the SAMS instrument, the design and manufacture of the component parts, scan mirror and all mechanisms, pressure modulators, plus thermal vacuum tanks, calibration sources and automatic test equipment including spacecraft simulator using a PDP8 computer was done by the Rutherford Laboratory. The sensor housing and the electronics module were designed by Hawker Siddeley Dynamics who also built and aligned the complete instrument. The interference filters used were provided by the Applied Physical Sciences Department of Reading University. The scientific input and coordination, assembly of detectors, modulators and all testing were done by the Oxford group with the management and financial control of the project being provided by the Rutherford Laboratory at Oxford so welding the whole team together.

Two of the previous experiments designed by the Oxford/RL group, both of which measure temperature, are still operating continuously on NIMBUS-5 and NIMBUS-6 after five and three years respectively. Data from these experiments are being used to produce daily maps showing atmospheric temperature over the whole globe at heights between 15 km and 90 km.

The SAMS experiment on NIMBUS-G, which after launch into a near-Polar sun-synchronous circular orbit with an inclination of  $99^\circ$  at a height of 955 km will be known as NIMBUS-7, is designed to continue temperature mappings work and to extend this to measurements of the concentrations of gases found only in minute quantities (less than 10 parts per million) in the upper atmosphere.

These gases are important because they control the concentration of ozone, a gas which forms a protective shield around the earth at a height of about 50 km absorbing solar radiation at wavelengths much shorter than the visible. The energy absorbed is converted to heat, warming the atmosphere and thus affecting the climate at the surface. A secondary, but no less important function of the ozone layer, is in preventing the shortwave solar radiation from reaching the ground for such radiation can be dangerous to all forms of life on the surface. The thickness of the ozone shield is therefore of great practical importance. One of the long-term aims of this research is to find out what controls the thickness of the ozone shield and how to avoid weakening it.

Many of the gases which will be measured by SAMS, for instance nitric oxide and carbon monoxide, are formed in the upper atmosphere through the combined effects of chemical processes and the action of sunlight. They are also transported by large scale atmospheric motions. Measurements from SAMS of the variation of the distribution of these gases with latitude and season will provide important information about the circulation of the upper atmosphere and the ways in which the atmospheric circulations at different levels of the atmosphere are linked together.

Data from the UK experiment on NIMBUS-G, which will orbit the earth about fourteen times a day passing over the equator alternately at local dawn and midnight, will be relayed by NASA to Oxford every morning where it will be processed on a computer especially set up for the purpose and global maps of all the quantities being monitored will be produced less than twenty-four hours after the observations are made. This data will be available to all laboratories interested in the upper atmosphere. Co-ordinated with data from other instruments on NIMBUS-G it should provide a great deal of new information about the chemistry and dynamics of the ozone region.

The SAMS experiment was switched into operation on Thursday 26 October and is working well and on 15 November the door of its passive radiant cooler will be opened to cool its most sensitive detector to a working temperature of 120 K.

(We thank Bert Hadley for the information contained in this article).

## Bound for Plymouth Sound

'Twas Friday noon, on 20 October 1978 or thereabouts, that Frank Harden slipped anchor, heading for a more maritime location in the Plymouth area. Frank joined the Rutherford Laboratory in 1959, via AERE, after a distinguished Naval career, and was a member of the Nimrod design team in its early days, working on the R.F. cavity system. He stayed with Nimrod Division until joining Scientific Administration in 1969.

He will be both remembered and missed for his role in recent years in the organisation of many successful conferences, meetings, summer schools and visits to the Laboratory.

In his retirement, Frank will be returning to his first love, Neptune and (rumour has it) that in his diving activities in the Eddystone area, he will be on the lookout for a sunken Nimrod. Scientific Administration wish him all the best.

Frank sends his regards and thanks all old friends for their contributions to the cheque he received at his farewell celebration.

## Library Loss

As Geoff Stapleton remarked, Friday 20 October was a sad and happy day for friends and colleagues of Sue Totham. Sad, because she was leaving them, and happy because they were delighted for her in her new appointment. Geoff was making a presentation to Sue on the occasion of her departure from the Rutherford Laboratory where she has worked in the Library for the last five years. She will be greatly missed by all her friends and "customers".

When finally unwrapped, her presentation gifts included a soft-toy dog (with a lugubrious expression) and a beautiful glass dolphin.

Sue was obviously delighted with the gifts, thanked everyone sincerely and promised to 'keep in touch'.

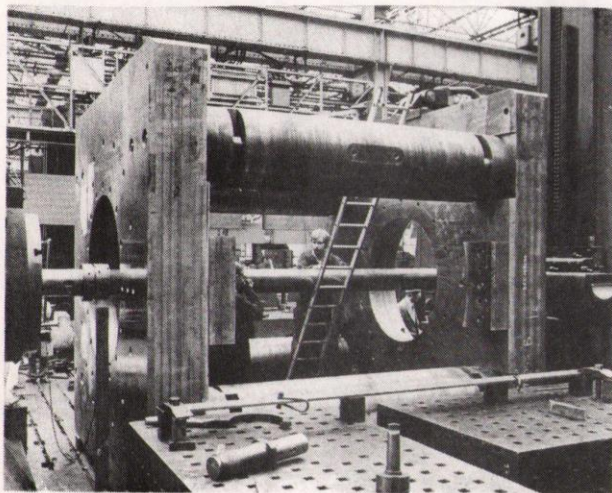
## CIVIL SERVICE MOTORING ASSN.

This is the time to take advantage of the offer of joining the C.S.M.A. Now, when your fee gives you membership right through to 31 December 1979. The same offer is available for the National Breakdown Recovery Club. Please apply to the Group Secretary at Culham Laboratory (by letter please) or Ron Hogan here at the Rutherford Ext 284, R9 workshop or Ext 6247 Laser Lab.



# Quick Start for Rapid Cycling Chamber

The first major component of the rapid cycling bubble chamber (RCBC) being constructed at the Laboratory for the European Hybrid Spectrometer, has left for CERN, more than a month ahead of schedule. This is the massive iron structure, weighing 120 tonnes, which supports the bubble chamber and also the superconducting coils which provide a magnetic field of 3.0 Tesla over the chamber volume. The coils for the magnet are being built at Saclay.



The completed structure being checked for alignment at the River Don Works of the British Steel Corporation, Sheffield. (Courtesy of the British Steel Corporation).

The structure not only acts as a support but provides inertia to minimise the movements caused by reaction to the hydraulic expansion system of the bubble chamber. Because of this dynamic function the cylindrical cross-pieces not only have to support a compressive force of 500 tonnes produced when the magnetic field is on but also have to be stiff enough to guarantee that the complete mass of the structure is effective over the frequency spectrum generated by the expansion system. The movements of the chamber are expected to be reduced to less than 100 microns which is important since events in the chamber have to be accurately correlated with the data obtained in the rest of the spectrometer.

At CERN the structure will be installed in the North Area (EHN 1) of the SPS where it will join the downstream spectrometer magnet, which is made from two magnets formerly used on Nimrod. It will be mounted on steel pedestals containing anti-vibration pads to avoid transmission of residual movements to the floor.

The structure consists of two 40 tonne cast steel end plates and four 10 tonne cylindrical forged steel cross pieces and is held together by hydraulically pre-stressed steel studs. It was manufactured at the River Don Works of the British Steel Corporation, Sheffield who have proved to be both efficient and extremely co-operative during the course of the contract. We were also pleased to have had the assistance of the Non-destructive Testing Group from AERE, Harwell in checking the quality of the materials.

(We thank Dr R W Newport for this latest news of the RCBC project)

## LUNCHTIME FILMS AND MUSIC

Wednesday 15 November

Wednesday 22 November

Wednesday 29 November

Film shows and concerts take place on Wednesdays at 1230hrs in the Lecture Theatre.

JOE VENUTI and 'ZOOT' SIMS

THE GEORGE SAXON ENGINE: MAGNET MILL.  
This classical steam engine powered an Oldham cotton mill for over 60 years.

HOW TO WIN HOLES BY INFLUENCING PEOPLE.  
John Cleese tries to beat the club's glamour girl at golf.

JOHN WILLIAMS - Spanish Guitar Music.

## SALES TO EMPLOYEES

made on November 17.

The sale of Scrap metal/plastics as set out in RLN 12/75 will be

## RUTHERFORD WIVES COFFEE MORNINGS

The November coffee morning will be held on Tuesday 14 November from 10.30 a.m. at the Cosener's House Abingdon. All wives are welcome. For further information contact Suzanne Litchfield Abingdon 21310, Julie McGeoch Oxford 722781 or Gillian Litt Abingdon 26009.

## TRAINING

### UNIVERSITY OF SOUTHAMPTON

"Theory and Practice of Microprocessors".  
11 and 12 December 1978

### BRITISH COMPUTER SOCIETY

'Fortran Forum' - one day conference.  
1 December 1978

Further details and application forms can be obtained from TRAINING SECTION R20 Ext 6285/226.

## CHRISTIAN FELLOWSHIP

The meeting on Friday 3 November will be held in the Conference Room, on the top floor of Building R2. All are welcome to join us in a half-hour of prayer and intercession. Requests for prayer can be passed on to any member of the Fellowship and we will be happy to include these during our meeting, which starts at 1230hrs.

## TEKTRONIX EXHIBITION

The Tektronix Mobile Demonstration Vehicle will be parked in the Cockcroft Hall car park, Harwell from 1000 hrs to 1600 hrs on Tuesday 28 November. On show will be Oscilloscopes, Spectrum Analysers, Logic Analysers, and general test and measurements equipment. Rutherford Laboratory staff are cordially invited to the exhibition.

## RUTHERFORD LABORATORY BULLETIN

Deadline for Insertions

1000 hrs Tuesday 14 November

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