



16 December 1974 - 6 January 1975

ALEC

Joined HM Dockyard Devonport as an Apprentice in 1926, retired from the Rutherford Laboratory December 1974 as Head of Technical Services Group Engineering Division, a working life of 48 years. Within these two extremes is a story of a working lifetime of achievement. It is the story of Alec Goode who on Tuesday last said his farewells to a very large audience who gathered together in the Lecture Theatre to wish him a long and happy retirement.

Alec joined the Admiralty as a Dockyard 'Matey' (the service man's term for a civilian employee) working as an engineering apprentice. From 1933-5 he became a draughtsman, Marine Engine and Boiler Design, HM Dockyard Devonport having obtained first class honours, BSc. Eng, London University in 1933. Alec's next spell of duty took him overseas to HM Dockyard Singapore where he spent the years between 1935-38 on inspection of plant, pumping machinery and electrical generating machinery. Promotion followed to Admiralty Overseer concerned with the inspection of machinery and boilers for HM Ships. During the period 1941-48 Alec continued in this field both at Devonport and at HM Dockyard Alexandria until his retirement from the Naval side of Government Service.

In 1948 he moved into the nuclear energy field as a Pile Maintenance Engineer at the MOS factory Windscale. In 1951 his next move took him to the MOS factory at Capenhurst as an Engineer 1 Plant Engineer, finally moving South in late 1957 to Harwell to join the team to build NIMROD, taking up residence in the ancient borough of Wallingford in January 1958, where he still lives. His final move was more of a formality as Alec transferred, like many other AERE employees, to NIRNS in 1961.

His work at the Lab, (to well known to give in great detail) covers, in the early days, the responsibility for building up the Central Workshops and the maintenance organisation of the Lab, the development of the Building and Civil Engineering Group, and more recently the Integration of various technical services with the central workshop to provide a comprehensive Technical Service for the Lab.

His many years of managerial experience has earned him the respect normally attributed to an 'elder statesman', this being reflected in the extent to which he has been consulted on staffing and Personnel problems and in his service on a number of committees.

Less well known is Alec's public service in the district, this can only be described as quite staggering culminating in his becoming Mayor of Wallingford 1970-71.



tray of memories

With such a background it is hardly surprising that so many people made their way to the Lecture Theatre where the Director, Dr G H Stafford, on behalf of Alec's numerous friends and colleagues, made the farewell presentation. Dr Stafford spoke of Alec Goode's arrival on the Chilton site when Nimrod was just a large hole in the ground. He had been in at the very start of things and had given great service to the Laboratory and to Public Service in the District. It was an occasion when many emotions came welling up but of all these was one true emotion, "we should have pleasure to have had him so long as a colleague".

Dr Stafford presented Alec with a Wedgewood Mantel Clock and a silver vase and mentioned that over 270 people had contributed to the farewell gift.

Bill Burniston then presented Alec with a tray (a Phil Crane special) on which was engraved over 270 signatures. A bouquet of flowers was also presented to Mrs Goode.

Alec thanked everyone for their generosity and after some amusing comments on Laboratory life and people ended by speaking of the most memorable period of his working life. This was in September 1926 when as a young lad he started work in the Boiler Shop, Devonport. He spoke with feeling of the hard conditions existing at that time, and how in the following 48 years of his working life he had seen "the great progress of man in understanding man".

Alec, everyone will join in wishing you a long and happy retirement from your working life and continuing success in the field of Public Service, to which you have freely given so much and have so much still to give.

INTERNAL EVENTS

NIMROD LECTURE SERIES

Monday 16 December
11.30
Lecture Theatre

* Spectroscopy

Dr A Van Horn/RL

STAFF MEETING

Monday 16 December
15.00
Lecture Theatre

The Director will preside. Full details, including eligibility to attend, are given in Circular No 26/74.

HEP SEMINAR

Wednesday 18 December
11.00
Lecture Theatre

Asymptotically Scale-free Theory of Large Transverse Momentum Processes

F T Ezawa/DAMPT Cambridge.

SPECIAL LECTURE

Wednesday 18 December
15.15
Lecture Theatre

What Are These Particles and Why The Fuss?

Dr G Manning

Two new particles have recently been discovered in high energy physics experiments in the USA. The excitement caused has rippled around the world and matches that following the discovery of parity violation in 1957. The lecture will attempt to give the facts and explain the excitement. No guarantee is offered that a correct explanation will be given as experimental facts and theoretical ideas are changing rapidly - it will be a "progress report". The lecture is meant for the non-scientist and experts who know more than the lecturer will not be welcome.

RUTHERFORD LABORATORY LECTURE

Thursday 19 December
15.15
Lecture Theatre

Thermo-Mechanical Oscillators

Mr E H Cooke - Yarborough/AERE (see 'news' section for details)

SEMINAR IN COMPUTING

Friday 20 December
11.00
Conference Room, Building R12.

Small Computers in Data-acquisition at CERN

D M Sendall/CERN

There are many groups in the NP Division with different data-handling problems, ranging from simple test setups to complex experiments. The aim of the data-handling group is to provide a set of standard hardware and software modules which can quickly be adapted to build up data-acquisition systems for these various situations. This service is based on CAMAC and the Hewlett-Packard 2100 Computer; a description will be given of how it works, with some comments on success so far and future plans.

INFORMAL THEORETICAL PHYSICS MEETING

6 - 8 January, Lecture Theatre

Full details of this three-day meeting will be given in the next issue of the Bulletin.



PERIODICAL SAFETY TEST OF PORTABLE ELECTRICAL EQUIPMENT

marked 'Do not use after March 1975'.

The test carried out during November 1974 has not been completed. The current marker colour is BLUE and

Portable electrical equipment marked otherwise, or has no marker should be considered unsafe and MUST NOT BE USED. All such items should be returned if possible to Electrical Services Section, Building R18. Alternatively ring A Hipwell, Ext 573.

OVERSEAS VISITS

The Director, to Geneva, 17-19 December, to attend meeting of CERN Committee of Council and CERN Council.

The following will be visiting CERN to dismantle the Muon experiment on ISR - Messrs H O Normington, R Morgan and C Page - 2-17 January; L Phillips - 5-7 January; K Miles and R Blatchford - 5-10 January. Mr G J Alner, to Eindhoven, Holland, 5-10 January to attend course.

In the middle of November Graham Rees visited the USSR to attend the Russian National Accelerator Conference and to visit the Nuclear Research Centre at Novosibirsk. The Editor is grateful to Graham for the following account of his visit to this Russian Research Centre.

Novosibirsk is a city of one million people, situated in the southern part of Siberia at a distance of two and a half thousand kilometers from Moscow. Previous visitors from the laboratory will remember well, no doubt, their overnight flight from Moscow in a large, crowded, continuously vibrating turbo-prop plane. In mid-November, the inland sea nearby, is frozen over, there are a few inches of snow on the ground and it is cold enough that you wish you had arrived four months earlier.

The Nuclear Research Centre is one of a number of research institutes established in a so-called Academic Town, well away from the main city. There are four operating storage rings within the one building of the Nuclear Research Centre, and a fifth under construction, so it is clearly like no other storage ring laboratory.

There is a staff of two thousand, of which seven hundred are involved in the workshops. The centre develops accelerators for industrial application, and fifteen electron machines, of energy 700 kV, 20 kW beam power, have already been produced. In the entrance hall are amateur photographs of all and sundry with one of the director, Professor Budker, complete with flowing beard and looking the image of an ancient prophet.

Three of the operating storage rings are for colliding beams of electrons and positrons. VEPP-2 has operated successfully for many years at energies around 500 MeV. As in common with all early storage rings it has no special insertions in the magnet ring and so has a relatively low luminosity. To overcome this defect VEPP-2 is now used as an injector for VEPP-2 (PRIME), a 660 MeV machine with special focussing insertions to give an increased luminosity. The vertical apertures in the dipoles of this new machine are just 2.4 cms.

The third e^+e^- ring, VEPP-3, has a peak energy of 3 GeV and appears to be working well apart from the crucial fact that there are inadequate stored beams of positrons. A 450 MeV beam of electrons is used to create the positrons in a tungsten target, but there is no linac to accelerate the positrons between the target and VEPP-3. This results in a low yield of positrons at the required injection energy of 250 MeV. In an attempt to improve the yield, a special focussing

device has been developed for the incident 450 MeV electron beam. The electron beam passes through a small cylinder of lithium, during the transit of a three hundred thousand amp current pulse. The lithium becomes liquid for many microseconds. The unit acts as a highly powerful magnetic lens and brings the incident electron beam to a spot size of approximately 0.3 mm at the tungsten target. Even with this device, there is still a shortage of positrons.

VEPP-4, originally designed as a 20 GeV proton-antiproton storage ring, has been completely redesigned. It will now be developed as a 6 GeV electron-positron storage ring with a completion date of 1978. Injection schemes have not been settled, but after the experience with VEPP-3 there will almost certainly be a high energy linac for the positrons.

The most noteworthy recent development at the laboratory is the storage ring that has been built specifically to prove the feasibility of electron cooling. Electrons and positrons behave quite differently in storage rings than protons. Synchrotron radiation leads to damping of all transverse and phase oscillations until the electrons and positrons approach equilibrium states. Protons, on the other hand, at the energies currently of interest, have no equivalent damping mechanism and the long-term effects of noise and random disturbances are much more serious. For this reason Budker proposed, in 1966, to damp the transverse motion of an antiproton beam by energy interchange of the transverse motion with an associated electron beam of lower transverse 'temperature'. This principle has been shown to work on a new storage ring NAPP-M, in which a 65 MeV proton beam has been satisfactorily cooled by a high current 35 kV electron beam. Electrons are injected and ejected from one long straight section of the machine, but while in this section they travel side by side with the protons at the same mean velocity. A few electrons combine with protons to form neutral hydrogen and the machine is tuned-up by optimising this production of neutral atoms. Prior to the injection of the electron beam, the size of the 65 MeV proton beam slowly increases due to gas scattering effect. After injection of the electron beam, and successful adjustment of the mean electron energy, the proton beam size damps to reach an equilibrium beam size. At present it is not clear what implications electron cooling will have on future storage ring designs. There is a very strong energy dependence, which makes it progressively more difficult to achieve at higher energies. However, the proof of electron cooling is bound to stimulate the future progress of storage ring design.

* * * * *

RUTHERFORD LABORATORY LECTURE

The final lecture in 1974 is to be given by Mr E H Cooke-Yarborough, Head of Electronics and Applied Physics Division at AERE, at 15.15 hours on Thursday, 19 December in the Lecture Theatre.

Mr Cook-Yarborough was educated at Oxford and during the years 1940-48 worked at the Telecommunications Research Establishment at Malvern. During the war period he was concerned with airborne radar, radar counter measures and guided weapons. At the end of the war he joined a small group working on nuclear instrumentation. This group moved in 1948 to AERE joining the Electronics Division under the late Denis Taylor where he continued his work on advanced nuclear instrumentation. He also had the responsibility for the development of two early digital computers.

In 1957 Mr Cooke-Yarborough became Head of the

Electronics Division. After spending a year, 1964-65, at the Bell Laboratories in New Jersey he returned to Head an enlarged Division embracing the Electronics and Applied Physics activities of Harwell. Lately his interests have included work on energy conversion. This interest is reflected in the title of his lecture - "Thermo-Mechanical Oscillation" and he has kindly supplied the following summary.

Use of the Stirling cycle allows mechanical systems to be maintained in oscillation by the continuous application of heat, without need for rotating or sliding parts or for valve gear. Systems for efficient conversion of heat to electricity using this principle have been developed. These will be described, together with some other potential applications of the principle.

RUTHERFORD LABORATORY BULLETIN

Published by the Scientific Administration Group

Editor: H F NORRIS

Deadline
for
Insertions

GENERAL & SOCIAL NEWS
Tuesday 1600

INTERNAL & EXTERNAL EVENTS
Wednesday 1200

Room 42 Building R20
Rutherford Laboratory
Chilton Didcot Berks
Abingdon 1900 Ext 484

FILM BADGE NOTICE It is now Period 13. Colour Strip-YELLOW for B_y films and neutron packs. Please check that you are wearing the correct dosimeters and that all old ones are returned.
Next film issue - Monday 30 December 1974.

CHRISTMAS MAIL ARRANGEMENTS The last delivery of Atlas and Rutherford Mail to the Post Office will leave the Post Room, Atlas Laboratory at 11.00 hours on Tuesday 24 December. Mail reaching the Post Room after this time will not be taken to the Post Office until Monday, 30 December.

FOUND A sum of money has been found. Claimants should apply to Mrs S A Fones, Personnel Group Building R20.

A ring, possibly gentlemen's, has been found on the first floor corridor of Building R1. Owner should contact Mr J Marshall.

RUTHERFORD LABORATORY CAROL SERVICE This year's Carol Service will take place on Friday, 20 December in the Lecture Theatre. As usual the carols will be accompanied by an electronic organ and this year will be led by the Rector of Didcot, the Rev B Whitehead. All are welcome to come along and join in.

CHRISTIAN FELLOWSHIP Friday 3 January. What will 1975 bring forth on the national and international scenes and even on our own 'doorsteps'. You are invited to join the Fellowship for a time of prayer on this, the first Friday of the New Year at 12.30 in the R12 Conference Room.

ABINGDON CHRISTMAS FESTIVAL See the Christmas Story enacted by local school-children, with Carol Singing led by the Abingdon Band, on Wednesday evening, 18 December from 6.45 to 8 pm, in the Market Square. (If wet in the Abbey Hall).

FROM THE EDITOR

Another twelve months has passed, Christmas is once more upon us and the Bulletin is well into its 16th year of publication.

Someone recently, whilst searching through one of the Bulletin files, remarked that an awful lot of the Lab's history was recorded in the pages of the Bulletin. On reflection I was reminded that there are now a lot of people working at the Lab who were not involved in the early pioneering days. So for these people and as a reminder to some of the 'old sweats' the following extracts from early Bulletins may surprise some - and amuse others.

RUTHERFORD LABORATORY BULLETIN NO. 1 March 1959
"This short Bulletin will appear at approximately monthly intervals, in response to requests by members of the staff. It is intended to include brief items of news concerning the Rutherford Laboratory and the National Institute".

"A competition was recently held ... to attempt to find a name for the 7 GeV proton synchrotron 47 names were submitted of which HEPTATRON was adjudged the best".

This first ever edition was dated 11 March 1959, and the Editor? T G Pickavance, Building 412.10. One should add - for the first and last time.

Bulletin No. 2 appeared on 5 June 1959 and the first item announced the following -

"The Board of the Institute have agreed to the proposed name of NIMROD. This has been chosen in preference to HEPTATRON the name (Nimrod) was proposed by Dr W Galbraith after the closing date of the competition".

Further down the page we read that "Magnet sectors are arriving at the rate of approximately one a day. After testing, they are to be stored at Grove Airfield". The last item strikes an ominous note - "The number of books on the shelves of the local library has dwindled to a very low number. Many books have been out on loan for considerable periods". Makes one wonder!

Bulletin No. 3, dated 17 November 1959 recorded the arrival of the first nuclear physicists recruited

directly by the Institute - Dr C J Batty and Dr P J Duke. This edition carried an appendix entitled Accelerator News Bulletin No. 1 - and the first item?

"Congress Fails to Authorise Stanford Accelerator".

The second edition clarified the situation a little as it appeared that Congress had said - you can't have \$107 million but here is \$3 million to cover the cost of design studies only.

Bulletin No. 4 appeared in May 1960 - the life of the Editor must have been hectic with deadlines rushing up suddenly every six months or so. However, with the arrival of Bulletin No. 5 in October 1960 it was announced "that further issues of the Bulletin will be issued weekly".

The average number of words per issue in those early weekly editions was about 400 - present editions average at about 2500. The first photograph appeared in a supplement dated 2 September 1966 but the first to be printed in the Bulletin itself did not appear until 7 October 1968.

Enough of the past - its Xmas 1974 and the last issue of the year. The time when it is my privilege and pleasure to thank all those concerned with the production of the Bulletin during the past year. So a big thank you - to the Messengers who deliver the copies to your in-trays - to Jean, Bill and Gordon who make the plates and roll off the 1200 copies per issue; to the photographers who at short notice produce prints of many sizes, and last but, not least, to the girls of the typing centre. In particular I wish to thank Doris Russell and Jean Thornber who have coped with the vast majority of the Bulletin typing this past twelve months.

My final thanks go to Peter Oliver, Tony Keefe and the merry men of the Printing, Copying and Photographic Section, Culham Laboratory for twice coming to my rescue and printing the Bulletin for me. Everyone I am sure, will agree that their efforts have been much appreciated.

May I conclude by wishing readers everywhere a Merry Xmas and a Very Happy New Year.