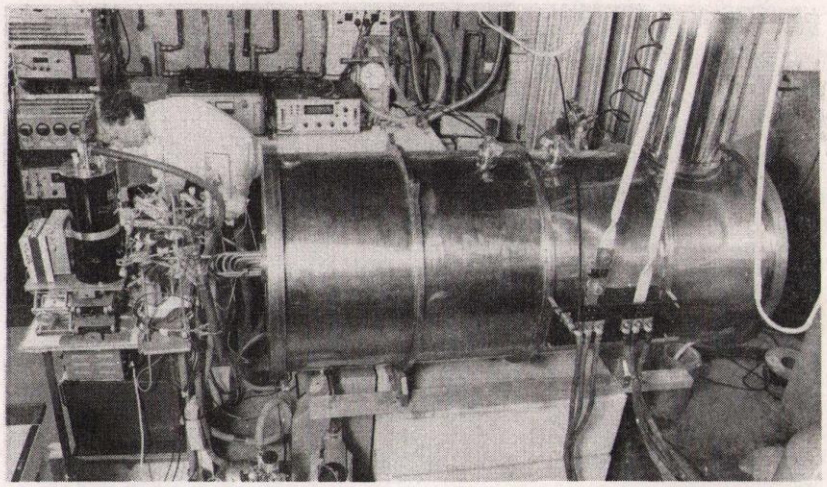
Rutherford Laboratory

bulletin 12

28 JUNE - 19 JULY 1976

RL MAGNET FOR ARGONNE



The RL superconducting dipole magnet in Building R25. where it was used by the Appleton Laboratory researchers.

After being used in a two-week experiment by Appleton Laboratory researchers in their investigations of molecular absorbtion in the two-millimetre wavelength region as part of their research programme into atmospheric propagation, a superconducting dipole magnet designed and built at RL is being shipped to Argonne Laboratory in the US for use by an Imperial College Group in ultra-violet spectroscopy work on the diamagnetic Zeeman Effect.

With the help of the RL magnet, the Appleton team has been able to look at Zeeman splitting, and now hopes to be able to continue its work in this area now that the necessary magnets are available.

Some of the effects being studied in the Appleton experiment are so weak that very long path lengths are required - much longer than the metre or so of the magnet itself. This problem has been solved by using copper tube folded backwards and forwards along the aperture of the magnet - giving a path length of 30 metres. The apparatus uses the harmonic power generated by an IMPATT diode oscillator and has an infra-red bolometer detector operating at liquid helium temperatures.

The magnet itself has an operating field of 5 Tesla at 700 Amperes and was designed as a model of the type of superconducting magnet which would be used to transport the charged particle beams from proton synchrotrons operating at energies in excess of 200 GeV.

Although it is initially being used for experiments outside the particle physics area, the uniform field requirements of particle physics experiments were borne in mind in the design of the magnet. The windings are arranged in rectangular blocks separated by aluminium alloy spacers, the positions of which were calculated using the RL GFUN magnet design computer program. The end turn spacers are of the constant perimeter type and the horizontal cryostat enclosing the magnet has a static heat leak of 3W.

RUTHERFORD LABORATORY LECTURE

For many years the Clarendon Laboratory Oxford has been mentioned in the Bulletin. It is therefore with considerable interest that we welcome Dr J H Sanders to give the next talk in the RL series on this famous laboratory. Dr Sanders has spent most of his career at the Clarendon Lab. He was an undergraduate at Oxford during the last war and is a University Lecturer in physics and a Fellow of Oriel College. His research field is lasers and he has kindly supplied the following abstract for his talk which is at 15.15 on Thursday, 15 July in the Lecture Theatre and entitled "The Clarendon Laboratory".

Physics in Oxford began with the building of the Clarendon Laboratory a little more than a century ago. The history of the foundation of the laboratory, its pre-first world war doldrums and its progress under Lord Cherwell and his successors are traced to its present position as a centre of thriving low temperature solid state and spectroscropic research.

MISSING EQUIPMENT

The following item of equipment has been reported missing from either Lab 5, R1 or R2 Prop Area:-

Marconi Plug-in Oscillator, Type 6623, Ser. No. 108

This oscillator can only be used with Marconi Sweep Oscillator 6600 Series and has a plastic scale marked 2-4 GHz screwed to one side. Anyone with information on the present whereabouts of this unit should contact B C Brady, R2, Ext. 294/494.

The following vehicle has been reported missing from R18 Electronic Workshop:-

SRC Bicycle, Ref. No. RL 189.

Will finder ride it back to R18 Electronic Workshop or contact M L Moore, R18, Ext 6633.

The following item of equipment has been reported missing from R20.

Wold Electric Drill No. 947A, AERE No. 26917 (blue colour).

Information on the present whereabouts to F Freeman, R20 Ext. 6396.

INTERNAL EVENTS

NIMROD LECTURE SERIES
Monday 28 June
11.30
Lecture Theatre

Infra-Red Aspects of Gauge Theories

Dr T Applequist/Yale

HEP SEMINAR
Wednesday 30 June
11.00
R61 Conference Room

$\bar{p}p$ Annihilation Physics at 100 GeV/C

J Rushbrooke/Cambridge

HEP DATA HANDLING SEMINAR
Wednesday 30 June
13.30
R61 Conference Room

The Design of the CERN Network

Dr H Davies/CERN

NIMROD LECTURE SERIES
Friday 2 July
11.30
R22 Lecture Theatre

Review of Bubble Chamber Neutrino Results from E45 and E180.

Dr W G Scott/Fermilab

SPECIAL NIMROD LECTURE
Monday 5 July
11.30
R22 Lecture Theatre

Universality of Hadron Multiplicities in Color Gauge Models

Dr J Gunion/U.C. DAVIS

TRADE EXHIBITION
Tuesday 6 July
10.00 - 16.00
Adjacent to R20

A Mobile Exhibition unit from A I Industrial, will exhibit their range of leak detection equipment, including several recently announced items. Instruments being demonstrated are:-
Leakseeker TC & TCS; Leakmeter (leak detection down to 10^{-11} cc/sec); Leakfinder; Vac-Leakfinder (10^{-6} cc/sec at pressures down to 10^{-5} torr); Leakgun and, SF6 Detector Chromatograph.

HEP DATA HANDLING SEMINAR
Wednesday 7 July
13.30
R61 Conference Room

New Methods for Image Processing Using LSI Arrays - ***Dr M J B Duff/Univ. College London.***

Parallel processing techniques for image analysis and image processing have been proposed and simulated for many years. The guiding principle that each resolvable point in an image has associated with it one dedicated processor has made it expensive and difficult to reach the stage of actual construction and operation.

The comparatively recent advent of large scale integrated circuit technology (LSI) has pointed the way to the design of reasonable cost cellular logic arrays. In the Department of Physics & Astronomy, University College London, the Image Processing Group has been carrying out a research programme to optimise the design of cellular logic image processor (CLIP), and has been studying a range of potential applications in automatic inspection and other similar activities. The group has already constructed five arrays which have served as design studies for CLIP 4, a custom built LSI array in which each chip comprises eight processors. CLIP 4 is scheduled for operation in the autumn of this year.

The design of CLIP 4 and proposals for its application to real-time automatic inspection (metal stampings, chromosomes etc.) will be discussed.

NIMROD LECTURE SERIES
Monday 12 July
11.30
R22 Lecture Theatre

Diquarks and the Structure of Exotic Mesons and Baryons.

Dr Rosenzweig/Pittsburgh

HEP DATA HANDLING SEMINAR
Wednesday 14 July
13.30
R61 Conference Room

Do-it-Yourself Operating Systems. - ***Prof. D J Howarth/Imperial College***

An operating system has a broad range of functions from providing mechanisms for driving real rescurces to providing an operational framework at a particular installation. This talk will discuss some architectural features of computing systems which are desirable in order to allow installation staff to provide their own operational features, and will outline an example of a system designed to meet one particular operational requirement.

SEMINAR IN COMPUTING
Friday 16 July
11.00
R61 Conference Room

The Berkeley Data Management System (BDMS) - an introduction - ***D Richards (LBL)***

This is an introduction to BDMS, a program which allows the user to define any database with a logical structure. BDMS manages the input, editing and searching of the database. There will be discussion of the High Energy Physics application in the UK being undertaken by Durham University and the Rutherford Laboratory.

SEMINAR IN COMPUTING
Tuesday 20 July
11.00
Atlas Colloquium

"DISPLA - an Interactive Graphics Package" - ***P Preuss/Integrated Software Systems Corp. San Diego.***

This seminar will feature an outline demonstration of a graphics package which claims to offer 'sophisticated computer graphics output without tedious programming and with the full power of FORTRAN".

EXTERNAL EVENTS

ELEMT. PART. THEORY SEMINAR/NP DEPT, OXFORD - 1430 hrs.
28 June: Dr R N Mohapatra - Massive Gluons.
2 July: Dr P Scharbach/Oxf - Static Properties of Hadrons in Lattice Gauge Theories

COMPUTATION SEMINAR/NP DEPT OXFORD - 1630 hrs.
1 July: Dr W Olle/Consultant - Databases - Where are they going?

DARESBURY THEORY SEMINAR/CONF. RM. 3 - 1400 hrs.
28 June: Dr H R J Walters/Belfast - The Second Born Approximation in Electron - Atom Scattering.

DARESBURY LECTURE SERIES/L.TH. 1 1400 hrs
1 July: J C Polkinghorne/Camb - Correlations at Large Transverse Momentum (lecture to be confirmed).
6 July: P R Norton/Daresbury - Shadowing in Low Q^2 Electroproduction on Nuclei.

THE RETIREMENT SCENE

More old friends have left during the past six weeks, some having reached normal retirement age, others under the early retirement scheme. Apologies for not being able to accept all the invitations to farewell parties although in some cases, a message or a letter has brought the first news of a colleague already indulging in a life of ease, no doubt sitting under a shady tree with a cool beer or watching Wimbledon. However I will try and cover as many departures as possible and as before, ladies first. To avoid unnecessary phone calls, in some early recollections free use is made of the name Nimrod and the RL. The accelerator's name, NIMROD, was first announced in the second Bulletin to be issued dated June 1959 and the RL was in those early days, part of the Accelerator Group of the General Physics Division at AERE.

Miss L A Harrison, Lyla to all her friends, joined AERE in June 1958. After 10 days she was sent across to RL to work on a temporary basis for 3½ months for Mr Bowles - and stayed at the Lab for eighteen years. Lyla claims to have been the second lady to arrive on site and at a time when Nimrod was a large hole in the ground. Her time at the Lab was divided equally between working for Mr Louth and then Mr Venn. On Thursday 27 May, Norman Venn, on behalf of Lyla's many friends & colleagues presented her with parting gifts including a silver plated dressing table set. Before wishing her a long & happy retirement, he spoke of her work as his personal secretary during which time he had never heard her say a harsh word about anyone. Lyla sends her thanks to everyone who contributed to her presents and says cheerio to all she was unable to see before leaving.

Earlier the same day, Norman had been at the receiving end when the Director had presented him with a set of golf clubs (six irons), a gift from friends & colleagues on his early retirement. Dr Stafford in wishing Norman a long and happy future spoke of his career which started in 1930 as an apprentice to the Austin Motor Company. For six years after the war he taught at Battersea, and following five years as chief engineer at NRDC, arrived at AERE in 1956 to work in the Reactor Engineering Group. Norman came over to join the Nimrod project in 1958 and most people will know of his career since then culminating in his appointment as NIMROD Division Head in 1974. A letter has been received from Norman in which he expresses the immense pleasure and satisfaction he had in working at the Lab. He continued, "To all those to whom I was unable to speak during my last week I send greetings, best wishes for the future and thanks for their generosity"

Earlier in the month Bob Roberts, lately of Safety Section returned to receive a farewell present. His departure in early April had been so sudden after obtaining early retirement that there had been no opportunity for his friends to express their appreciation. Bob joined the Lab in 1961 and moved into the Safety Section some 10 years ago. John Dickson, Head of the recently formed Health & Safety Group, presented Bob with a Teas-made and a bouquet of flowers to Mrs Roberts who was present. In a letter received shortly afterwards Bob thanks everyone who were present who so kindly gave to his retirement present, continuing - "I cannot express the gratitude that I and my wife feel for the efforts of all who made such a pleasant afternoon".

One of the characters who has enlivened the Nimrod scene for many years has retired early. Alf Armstrong joined UKAEA Capenhurst in 1952 and was one of a small team who came down from the North in the late 50's to carry out vacuum testing on Nimrod components. Alf liked the place so much that he decided to stay and joined the Lab in 1960. Since that time, as Norman Venn pointed out at the farewell presentation, Alf has contributed a great deal around Nimrod both on vacuum work and radiation control. He wished him long years of health and happiness and on behalf of Alf's many friends and colleagues, presented him with a portable cassette recorder. Probably for the first time ever, Alf was lost for words but he did ask me later if I would, through the Bulletin, convey his thanks to all concerned and to say cheerio to all he missed seeing.

"How use doth breed a habit in a man" - an apt quotation (from Shakespeare you ignorant lot) to have engraved on a tankard which with a pair of sterio headphones was presented to Bert Ashburn on the occassion of his early retirement. Bert's working life commenced 45 years ago as an apprentice at Woolwich Arsenal where apart from Army service in the last war he stayed for many years. He joined AERE in June 1948 and like many others came over to the Lab in the early days and worked on three bubble chambers, later turning his attention to many other projects. Bert is well known locally for his interest in Scouting to which he has contributed a great deal of time and effort. Ron Russell who presented the parting gifts wished Bert a long and happy retirement. After a number of amusing stories Bert said that his time at the Lab had been very enjoyable and he thanked everyone for the gifts and good wishes.

"Jim Nicholls would like to thank all his friends and colleagues for the unique gift and cheque, and also the splendid 'do' and send off from staff and workshop alike. All the best to all". This letter arrived out of the blue as I wasn't aware that Jim had retired. If you didn't know the man most of you will have seen his work as for the last 14-15 years he had been engraving everything in sight, well almost, and the gift, a scale working model of his engraving table was made by a colleague. By all accounts the model is most beautifully made and is an example of the model-makers art. It is also visible evidence of the esteem and respect Jim had earned from his colleagues not only in the Electrical Manufacturing section where he worked but from all over the Lab.

George Simmonds who officially retired over a year ago, and had been by the Lab as a Consultant for the past 14 months also left in May. George started his career in 1926 as an apprentice at Thorneycrofts for 5 years. He joined AERE from Farnborough in Sept 1947 as Chief Draughtsman in a drawing office of 50 people, eventually rising to Design Office Manager. He came over to the RL in Sept 1957 as Head of the Nimrod Design Office and was responsible under the Chief Engineer for the machine itself. But to return to George & his final departure - his colleagues decided that he would not be allowed to slip away quietly so a small group of people gathered together to wish him well and to present him with a parting gift. Alec Goode, long since retired, was invited

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...development as well as being called in on many other design problems. Bert on behalf of Jim's friends and colleagues presented him with a wall calendar clock and wished him a long and successful retirement suggesting that no doubt Jim could be contacted at various Caravan Club sites.

The last spot in this particular write up is about a close colleague and friend for a good many years. Chris Heming retired over a year ago but stayed at the Lab on a part time basis to assist with the large amount of correspondence which seems inevitable in the organisation of a large international conference. In this case, it was the first Compumag Conference held in Oxford at the beginning of April this year. Unfortunately, Chris was taken ill just before the conference and it was several months before we were able to welcome him back for a farewell 'do'. Chris joined AERE in 1946 at which time he thinks there were about 200 people on the strength. He recalls walking into Harwell and asking for a job - he started the next week. A month later he was informed by his boss that approval for his appointment had just come through. Those were the early days! Chris joined the EMR Division working on mechanical engineering projects and came over to the RL in 1959 where he started to deal with university agreements. He soon became a founder member of a very small group called Scientific Administration, the Group Leader being Geoff Cooper long since departed to London Office and Ben Kingdon who has just left the Lab. For many years Chris dealt with agreements by the score and such was the efficiency of his filing system that whatever the query, an 'instant' answer was the rule. A keen motorist, music lover and an interest in many things will, I am certain, ensure a full life for Chris in his retirement.

Finally, I should like to add personal best wishes to all my old colleagues at the Lab who have been part of the scene for so many years. Good health and good luck.

back to make the presentation, a very nice thought, and as someone remarked at the time - "George, you started work in a drawing office and you are leaving from a drawing office". The occasion was a tribute to a man who had earned the respect of all who dealt with him; his standards were very high but as everyone agrees, George was always fair.

Having spent a lifetime in the engineering world Ernie Alcock decided to take early retirement & left at the end of May. Ernie joined AERE in 1957 & moved over to the RL in 1960 where he was engaged along with so many of those now leaving, in the building of Nimrod. For the last 9-10 years he has been concerned with vacuum work. Ron Russell spoke of the valuable contributions Ernie had made to the work of the Lab and on behalf of friends and colleagues presented him with a car radio wishing him a long and happy retirement. Ernie is a keen gardener and has in the past contributed a great deal to his local society. There is however one field in which he has for many years helped anonamously so many people. Before leaving he achieved a very personal ambition which was to mark up the 50th donation of blood to the National Blood Transfusion Service for which he deservedly received a silver medal.

Early retirement for Jim Prowse means a lot more opportunity to indulge in his favourite pastime of fell walking in the Highlands and Islands. He joined the Lab in 1960 and has worked for the past 15 years in the Design Office as a main grade engineer, later PTO I. Jim, described by Bert Hadley as a very quiet chap, had accumulated a wide range of knowledge and experience in electrical as well as mechanical engineering, covering such diverse subjects as the design of electric and hydraulic actuators, governors and fuel control for gas turbines, induction furnaces etc before joining the Lab. During the last 15 years Jim worked on a variety of jobs including production problems on the Nimrod vacuum vessel, target mechanisms and HPD

OVERSEAS VISITS

Dr A R Gillman, to CERN, 27 June - 2 July, to attend WA3 collaboration meeting and to work on WA3 experiment.
Dr W A Sivers, to Frankfurt, 28-30 June, to give seminar and hold discussions at University of Kaiserslantern.
Mr D A Gray, to DESY, 28-29 June, for discussions.
Dr C J S Damerell, to CERN, 29 June - 22 July, to work on WA3.
Dr B Alper, to CERN, 2 July - 31 August, to work on WA3.
Dr J B Forsyth, to ILL, 5-8 July, to carry out experimen
Dr R Maybury, to CERN, 5 July - 1 October, to assist on Omega experiment.
Dr M J Hotchkiss, to CERN, 6-29 July, to work on WA3.
Dr D Maden, to CERN, 11 July - 30 October, to work on computer software for Omega experiments.
The Director and Dr T G Walker, to the USSR, 13-23 July, to attend 18th International Conference on HEP, at Tbilisi. The Director is attending as member of organising committee.
Mr H Hurst, to CERN, 15 July - 9 August, for discussions regarding IBM 168 project and, regarding Workstations and Networks.

OUTGOING OVERSEAS TELEPHONE CALLS

Requests for outgoing overseas telephone calls must be made before 16.30 hours, Monday to Thursday, and before 15.50 hours on Fridays. The restriction has to be imposed in order to allow the Laboratory telephone operators to complete all registered calls before the system is switched over to night service and handled by the Main Gate Security Wardens.

FILM BADGE NOTICE

It is Period 7. Colour Strip - BROWN for $\beta\gamma$ films and neutron packs. Please check that you are wearing the correct film and that all old ones are returned.

Any person needing a new $\beta\gamma$ film holder, please contact Mrs J Coates, Ext 430.

SALES TO EMPLOYEES

Sales of scrap metal/plastics as set out in RLN 12/73 will be made on 2, 16 and 30 July.

CHESS NEWS

In a match played in the AERE Social Club on Monday 24 May the Rutherford team were again unable to beat the AERE team losing by one point. A good evening and a very close match, individual scores being:-

Board	R.L.		A.E.R.E.	
1	P Craske	- 1	J Hastie	- 0
2	J Riddle	- ½	M Duck	- ½
3	R Maybury	- 0	N Hepworth	- 1
4	P Kent	- 1	C Wilmot	- 0
5	V Saunders	- 0	S Trehearne	- 1
6	A Oxley	- 0	D Lang	- 1
		2½		3½

RAFT RACE

Outright winners of this year's Christian Aid Raft Race on the Thames at Abingdon were the Rutherford/Oxford Diving Club Team on their raft 'Doby Mick'. Some idea of the decisive nature of their victory may be gained by comparing Doby Mick's Time of only 9min 35 secs with the 45 mins taken by the eighth and final raft to finish 'John the Baptist'. Indeed Doby Mick had already finished before most of the other rafts had rounded the half way mark. Although some credit for this triumph must certainly go to the endurance and determination of a team which included John Magraw and Colin Walters, it was clear that the major reason for success was the highly streamlined low drag hull, (designed over many tea and lunch breaks). No doubt many of the other competing teams will be developing new interests in the science of hydrodynamics before next years event.

SPORT

We are still waiting for a report on the golf match. The story of the 3rd round cricket match will be given in the next issue. The result was a win by the opposition - by 10 wickets!!

BULLETIN NOTICE

Owing to Baryon Conference commitments this issue of the Bulletin covers a period of three weeks.