

15 August - 12 September 1977

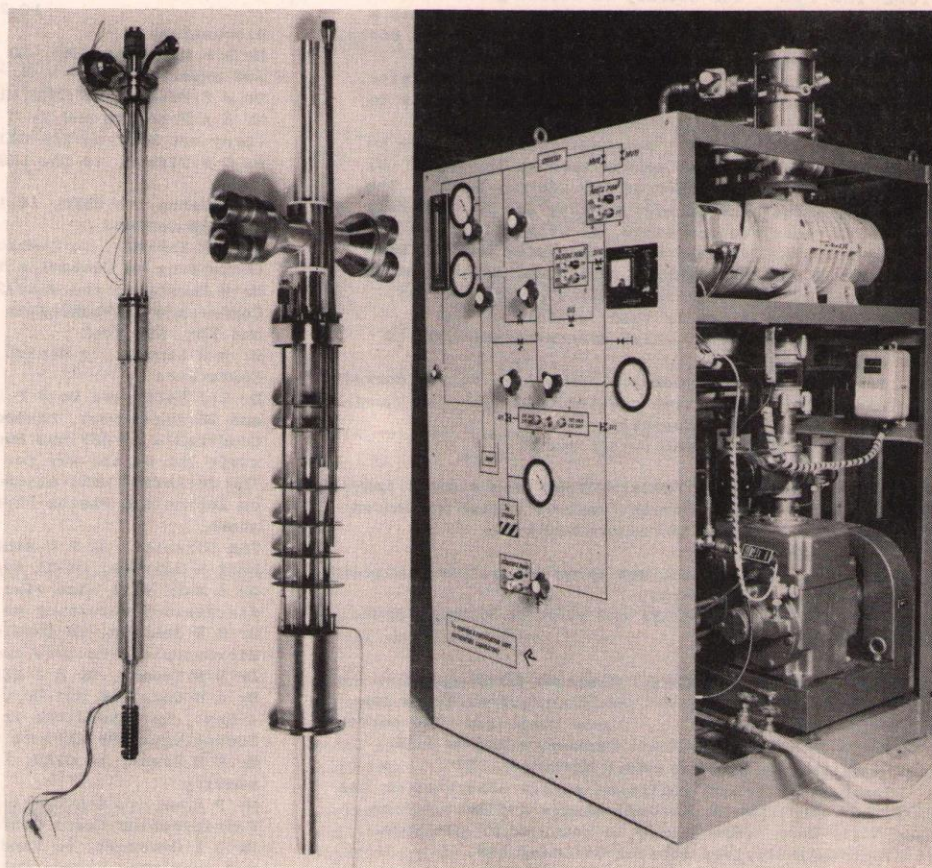
Technology Division Hits Target

It is not often (if ever) that we are able to report in the same issue, on the success of two highly sophisticated projects, produced in the same Division.

Projects like these often suffer a period of long drawn out teething troubles (the polite word being development) but as anyone associated with such projects will appreciate, perseverance nearly always pays dividends in the end. It is too often forgotten that many such projects approach, and sometimes are initiated at, and even beyond, the frontiers of current technology.

That they do succeed and in some cases, surpass their design criteria, is of considerable satisfaction to those concerned with such projects.

Photo: Components of the minitarget cryostat (about 1m long) and the helium-3 pumping and purification unit.



Polarised Minitarget for Grenoble

Something of a new venture for Technology Division's advanced apparatus development group has been the construction of a small but rather special target for the Neutron Beams Research Unit. The "minitarget" was successfully commissioned last week - just in time to be shipped to Grenoble to meet a September deadline at the Institut Laue-Langevin.

The target will be used by an experimental team which has been studying the application of dynamic polarization to neutron diffraction - the same process as is used to line up nuclear spins for High Energy scattering experiments. The work is aimed at simplifying a number of problems in determining complex crystal structures, especially those containing hydrogen. Neutron, unlike X-ray, diffraction is able to pinpoint the position of hydrogen nuclei in a structure. It so happens that the scattering of neutrons from protons is highly spin dependent, so there are a number of advantages in

orienting some or all of the proton spins by dynamic polarization.

The minitarget is designed to extend the temperature range of these experiments down to 8.5K, to achieve higher polarizations than was possible in the original apparatus. Its critical component is a powerful helium-3 fridge and integral microwave system, built in R9 workshops as an insert for the existing cryomagnet. It borrows a few ideas from Saclay cryogenic to achieve a remarkably compact construction, and a means of cooling both single crystal and powder samples which keeps liquid helium-3 out of the path of the neutron beam (helium-3 absorbs neutrons strongly). Other features include provision for accurately orienting crystalline samples within the microwave cavity, and for rotating sample or cryostat independently under computer control.

If the expected results are achieved in the next phase of the experiments, they will have important implications for the crystallography of biological materials.

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Successful Operation of PT-55

PT-55 - the axially polarized target supplied by the Advanced Apparatus Development Group for the I12 experiment in Hall 3, had its first successful data taking run in Cycle 10. Except for a short break it ran uninterrupted from "turn on time" and enabled the I12 team to complete data taking at one momentum during the cycle.

The polarized target is novel in that it is the first axially polarized target produced at the Rutherford Laboratory and has several features such as an on-line helium liquefaction plant and a high homogeneity superconducting magnet (± 5 parts in 10^5 over a region of 30mm, diameter and 50mm long) with a 60° semi-angle exit cone for secondary particle detection.

The design specification for the target was 75% proton

polarization at 0.5K. The team was very happy to receive 80% polarization throughout most of the run by achieving a temperature of 0.45K. (0.05K is a big improvement at these levels). The highest polarization seen was 86%, close to the practical limit, which was over a period of a few hours and there are reasons to believe that something close to this figure can be achieved for the next operating cycle.

The reliable and successful performance of the system was largely due to the use of a new clean up procedure for the helium liquefaction system, and to modifications to the target cryostat, which resulted in a lower heat leak and consequently in a lower base temperature.

FICHE-ING FOR INFORMATION

The Library in Building R61 is a most attractive place. It houses a very comprehensive selection of books, journals and reports, containing a vast amount of information ranging from the obscure to the indefinite. However for most of us there exists a problem - how to find a particular item of information.

The Library has up till now had a card catalogue so the alternatives were (a) search through the cards (b) enlist the help of a member of the Library Staff. The latter has certain advantages as they are 1. extremely helpful, 2. very knowledgeable, 3. very attractive.

I am reliably informed that the system has now been extended and that the Library catalogue has changed its format from cards, to fiche and line printer output.

The catalogue is now in three parts:-

1. The card catalogue, which covers material up to January 1976.
2. Fiche - covers all material from 1976 to the current month which is on line printer output.
There are three sequences:-
Report/Classification number order
Author Order
KWIC - Key Word in Context. This is a subject index.
3. Print-out for the current month - in two sequences:
Report/Classification number order
Author Order.

I am relieved to note that the basic information supplied to me ends with these words:-

PLEASE ASK THE LIBRARY STAFF FOR HELP OR FURTHER INFORMATION.

PERIODIC SAFETY TEST OF PORTABLE ELECTRICAL EQUIPMENT

The test carried out during June/July has now been completed. The current marker colour is BLUE

and is marked "Do not use after November 1977".

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 on Ext 573.

FORTHCOMING ANGLING EVENTS

Rutherford v British Rail (Didcot)

Saturday 24 September, at Didcot Pit, fishing from 8 am till 1 pm (we need as many as possible for this match).

RUTHERFORD CHAMPIONSHIP

Saturday 1 October, at Clifton Hampden, Fishing from 8 am till 1 pm - draw pegs at 7.30.

Civil Service National Championship

River Thames (Tilehurst to Sonning), Friday 7 October, fishing from 11 am till 4 pm.

CIVIL SERVICE (SOUTHERN AREA) CHAMPIONSHIP

River Stour, Throop Fisheries Christchurch, fishing from 10 am till 3 pm, individual and team event (4 per team). Sunday 6 November.

For more details of these events; contact P Craske, Ext 232.

OVERSEAS VISITS

Mr J Burren and Dr C Cooper, to CERN 10-25 and 10-23 Aug respectively. for

discussions.

Dr R P Hand, to CERN, 10 Aug-2 Sept, work on Hyperon - 300 experiment.

Dr J S Hutton, to CERN, 14-19 Aug, WA7 experiment
Mr K A Freeston and Mr H A James, to CERN, 14-20 Aug, to carry out work on WA3 Calorimeter

Dr C M Fisher, to the USSR, 14-25 Aug, for discussions at Dubna

Dr W Venus, to CERN, 16-19 Aug, WA24 Collaboration Meeting and discussions

Mr P P Haskell, to Czechoslovakia, 19-28 Aug, to attend conference on Computing Techniques in Physics

Mr H Hurst, to the USA, 20 Aug-3 Sept, to attend SHARE 49 Conference in Washington DC and hold discussions at ANL and IBM, New York

Dr N H Lipman, to Munich, 23-30 Aug, to attend 27th Pugwash Conference

Dr C J Batty and Dr S F Biagi, to Zurich, 23 Aug-3 Sept and 28 Aug-3 Sept, respectively to attend 7th International Conference on HEP and Nuclear Structure. Dr Batty will visit ILL on the way for discussions

The following will attend the 1977 International Symposium on Lepton and Photon Physics, at Hamburg on the dates shown:

The Director, Dr G A Ringland, Dr W Venus and

Prof S Matsuda, 23-31 Aug.

Dr A Maki will also visit the Conference and CERN for discussions returning on 3 Sept

Dr M W Johnson, to Corsica, 28 Aug-10 Sept, to attend Microscopic Structure and Dynamics of Liquids Conference

Dr D B Thomas, Dr R J Elliott, Mr P Clee, Mr N Cunliffe, Dr J H Coupland and Dr C Scott to Bratislava, 28 Aug-

4 Sept, to attend 6th International Conference on Magnet Technology. Dr Elliott will present a paper at Conference
Mr W M Evans, to CERN, 1-8 Sept, to attend ISR expt group meeting

Mr P Clee, to Stuttgart, 7-9 Sept, to attend Cryogenics Refrigeration Users Conference

Mr G S Grossart, to Vienna, 11-17 Sept, to attend 7th International Vacuum Conference

Mr R J Elsey, to Vienna, 11-18 Sept, to attend Vacuum Conference and 3rd International Conference on Solid Surfaces

Dr M W Johnson, to ILL, 13-21 Sept, to carry out experiment on D2.

HORTICULTURAL SOCIETY SHOW

The 35th Annual Show will be held on 8 and 9 September in the AERE Social Club upstairs hall. Schedules are

available from committee members on request and completed entry forms should be returned to Phil Crane R32.

This year there are 23 flower classes, 19 for vegetables, 6 for fruit and 8 in floral arts - two of which are for novices. (Novice Classes are open to those who have never before won a first prize in Floral Art).

There are other classes for preserves, cookery, needlecraft, handicraft and home made wine and beer.

Training 1977 - 78

Employees of the Rutherford Laboratory may now apply for training concessions for courses at local Colleges and application forms for this purpose are available from Local Admin Offices. Prospectuses and timetables for local Colleges are being distributed to Local Admin Offices and the Libraries as they become available. The Training Officer Mr T F Gubbins, will be available to advise prospective students and appointments may be made on Ext 266.

TEC Courses

ONC courses in science and engineering and City and Guilds Technicians courses are now being phased out and are being replaced by courses run under the auspices of the Technician Education Council. These changes will affect existing students only under exceptional circumstances, such as break in study or excessive number of repeats. New students will enter TEC Ordinary level courses this year, except that Reading College of Technology will not start their TEC Science scheme until 1979 and courses for computer staff will be delayed because they are to be run jointly by TEC and the Business Education Council. TEC courses will include "analytical" and "practical" groups of units which will be broadly equivalent to ONC and C and G courses respectively. TEC Higher Certificate courses will be introduced by colleges at the appropriate time.

Enrolment

Prospective students should note the following arrangements for enrolments:-

OXFORD POLYTECHNIC)
Department of Science)
NEWBURY COLLEGE OF FURTHER EDUCATION)
Department of Technical Studies)

Enrolment on first day of class.

ABINGDON COLLEGE OF FURTHER EDUCATION
All Departments

Students may enrol at the Harwell Education Centre, Bldg 455, AERE, 10 am-12 noon, on Thursday 8 September.

OXFORD POLYTECHNIC
Department of Engineering

It is hoped to have enrolment cards available in Training Section by the end of August and these must be completed by Friday 9 September.

READING COLLEGE OF TECHNOLOGY
Departments of Electrical and Mechanical
Engineering

Mr E Richards will take enrolments and discuss problems with students in Room 41, Building R20, at 9.30 am on Friday 2 September.

OXFORD COLLEGE OF FURTHER EDUCATION

No new prospectus will be issued for 1977-78.

Enrolment:

Engineering: Tuesday, 6 September at Cowley Road
1.30-4.00 pm or 5.30-7.45 pm.

Science: Tuesday, 13 September at Oxpen Road
2.00-4.30 pm (Day part time)
5.30-7.15 pm (Evening only)

The following students must enrol at the College in person at the times shown in the prospectus:-

Those who wish to attend other Colleges or other Departments of the above Colleges.

Those who wish to attend Oxford Polytechnic and Reading Engineering Departments but do not meet the above deadlines.

Those (other than prospective Reading Engineering students) who wish to discuss problems with College staff.

HARWELL EDUCATION CENTRE COURSES 1977/78

Copies of the 1977/78 supplement to the AERE Course booklet are expected about the end of August and they will be widely distributed in the Laboratory as well as being available in DAO's Offices, the Libraries and Training Section.

This supplement will consist mainly of a timetable and earlier booklets must be consulted for syllabuses of most courses. Applications from Rutherford Laboratory staff to attend AERE courses must be made on Form N552 (yellow) to Training Section, Building R20, and not direct to AERE, although enquiries may be made to the telephone extensions mentioned in the booklet.

SRC MANAGEMENT COURSE 1977/78

An SRC Training Notice is about to be published giving details of courses up to December 1977. A booklet covering calendar year 1978 is to be published during the autumn.

CIVIL SERVICE COLLEGE COURSES 1977/78

Civil Service College course booklets are being distributed to appropriate Group Leaders. The booklets can also be seen in the Libraries and Training Section.

A Foot in Both Camps

A large crowd of both AERE and RL people gathered in the R12 Conference Room on 29 July for the retirement presentation to an old colleague.

Professor Peter Wilde, Head of Electronics Group surprised most people by thanking everyone for attending the symposium at short notice. He continued by giving a brief survey of the electronics scene, commenting on the growth of specialised equipment, ranging from the early AERE 2000 series, the mid-fifties computer revolution, Nimrod electronics and then the new universally used CAMAC systems and units; he thought it timely for an informal discussion on electronics in the 80's.

Peter said he would like to start with speeches from the floor and invited Frank Field, who had had a lot of experience, to join him on the platform, greeting him - "Frank Field, this is your life". The laughter which greeted this unusual approach delayed proceedings for quite a while and set the scene for an hilarious farewell party.

Frank served in the RAF for some years and then in radio communications before joining AERE in 1953 to work on reactor instrumentation on GLEEP and BEPO. He then moved to PDS (Post Development Studies Group) which was to expand and become one of the most widely known groups in Electronic Division. The expanding group brought an increase in technical experience, added duties and responsibilities resulting in promotion in Tech II and later in Tech I. Frank continued to work in the PDS Group until 1971 although he had joined the RL in 1963.

As Peter Wilde remarked 'Frank joined NIRNS in 1963 but stayed at AERE as our goodwill gesture; his name was in the book but no one knew who he was. He became our secret weapon against high energy physics. We would quote - "Mr Field says ...", or we would threaten, 'I shall have to inform Mr Field', remarks which produced a great deal of amusement from both AERE and RL colleagues present.

A short time after Frank's arrival at the RL, he took charge of the electronics maintenance and built up a very strong organisation, a fact that Peter stressed very strongly, adding, 'Now he leaves us and it is up to us to maintain the standards he initiated', a comment which brought strong approval from the floor.

Having, presented Frank with his parting gift, a garden seat, Peter continued - 'As it is a joint present from AERE and RL, when you have installed it in your garden, I suggest a little fence across the middle and a little man with a flat cap' the rest of Peter's remarks being lost in a burst of laughter.

Frank's first comment in reply was 'How can I follow that! He calculated that he had been over Rowstock cross-roads some 20,000 times and that well over a month of his working life had been spent coming through Rowstock. He would miss the daily contact with colleagues and the chit-chat, however he had been asked back to make the Christmas coffee, 'not that it's good - it's cheap'. As he lives in Harwell village his travelling claim should also be cheap!

Frank will be remembered for many things although his own preference is as the man who made physicists sign '108's' for the electronic units they borrowed from him.

A Progressing Career

If experience counts for anything Mr R Wakeling's retirement activities ought to be planned to the nth degree. Ralph retired at the end of June and to celebrate the occasion many old friends and colleagues wended their way down to the R12 Conference Room to wish him a long and happy retirement and to show their appreciation of his efforts during his 15 years at the RL by the presentation of gifts.

Ralph joined Sperrys in 1935 and stayed with the firm for 25 years working at various levels on progress and planning. He eventually became manager of the progress department working on gun firing equipment, later turning to gunfire control by radar for the Navy, dealing mostly with destroyers of the 'Daring' class. His last project with the firm was on the Blue Streak rocket.

Talking to Ralph, he made a point that many forget and is certainly worth repeating here. Progress and planning management starts with the inception of any given project and continues right through to completion. It involves the placing of orders, making sure materials and components are available when required, checking of in-house supplies, dealing with awkward supply problems, searching for specialised materials and alternative sources and so on.

Ralph had built up a considerable store of knowledge and experience by the time he joined the RL some 15 years ago. This know-how was soon put to good use as Ralph became a member of Norman Venn's Supply Group. At the beginning of 1964 the Divisional structure was introduced and groups were renamed and reformed. Ralph continued in his specialised field, now in the HEP Engineering Group, Nimrod Division, and the last eight years in the Records Office. A final three enjoyable months were spent in the Health and Safety Group.

Barry Ward, on behalf of Division Head, Ron Russell, spoke of Ralph's valuable contributions and great experience in the field of supply and progress. On behalf of friends and colleagues, he wished Ralph a long and happy retirement and presented him with a quartz carriage clock. Ralph's wife, who is still working in the R18 Electronic's Section received a rather handsome Fuchsia plant - in a pot of course!

In reply Ralph spoke of his years at the Lab, it had been one of the most enjoyable periods of his life. He mentioned that he was a Cockney by birth and had lived in London so long that he had doubts as to whether he could exist in the country where life must be boring. After one year he moved house and neither Ralph or his wife have ever regretted their decision.

Having thanked everyone for his present he remarked that an apparent mystery had now been explained. He had been asked by his daughters to choose a birthday present - he had - a clock. However he had not been allowed to take it from the shop. There had been a lot of conniving behind the scenes with his wife but he appreciated the thought and trouble taken over his gift.

One cannot end without questioning the accuracy of the opening sentence in this story as it is now obvious that Ralph has planned HIS retirement very efficiently - think on it!

Ralph has written to say 'thank you all so much for the very happy day on which I retired'. He continues - 'I am catching up on outstanding jobs (listed by my wife) who was delighted with the Fuchsia she received, and I am able to see she gets off to work on time' (there's the answer to 'think on it').

MISSING EQUIPMENT The following item of equipment has been reported missing:-
Millivoltmeter, Loan Pool No 707, Ser No AD 21717.
Anyone with information of the present whereabouts of this item is asked to contact M W Dean, Bldg R20, Ext 257.

SALES TO EMPLOYEES Sales of scrap metal/plastics as set out in RLN 12/73 will be made on 9 and 23 September.

RUTHERFORD LABORATORY BULLETIN Published by the Scientific Administration Group

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