Rutherford Appleton Laboratory

Press Release

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RUTHERFORD REACHES 25 25 August 1982

Just 25 years ago, the National Institute for Research in Nuclear Science (NIRNS) set up the Rutherford High Energy Laboratory, Chilton, Didcot, Oxon (next door to Harwell) as its first research establishment. Today, much expanded and known as the Rutherford Appleton Laboratory, it is a virile experimental centre supporting university and polytechnic research, and the largest of the Science and Engineering Research Council's establishments with a complement of about 1600.

The same year that the Laboratory was established, NIRNS commissioned the design and construction of the 7 GeV proton synchrotron Nimrod. From then on the next seven years was a period of hectic activity in building and design. At the same time as the decision to build Nimrod was made, NIRNS took over a partly-built proton linear accelerator from the Atomic Energy Authority at Harwell, which was completed and commissioned for experiments in 1960. Three years later on 6 August 1963, protons were first injected into the completed Nimrod and acceleration to 7 GeV was attained about two weeks later.

Concomitant with the construction of the accelerator, a major programme was launched to build equipment for particle physics research, including three bubble chambers. All were funded by NIRNS and they were built as collaborative ventures between universities and the Laboratory. Here were the beginnings of perhaps the Laboratory's greatest achievement, according to its present director (Dr Geoffrey Manning): getting British university teams to work together on national projects. Collaboration today between universities and between universities and the Laboratory is of the highest order.

During the 1970s it became increasingly clear that there would be insufficient funds available to replace Nimrod or even, possibly, to continue running it. The Council had also made it clear that it wished

to support research on the more powerful CERN accelerators. The scene was therefore set for radical changes in the Laboratory's role. In 1975 the Council's Atlas computer laboratory merged with Rutherford: the Laboratory now has one of the most powerful computing facilities in Europe and is a leader in computer technology. In 1977, the central laser facility began operation, two-beam laser compression being achieved in the April. Two years later a second target was commissioned with a six-beam target chamber for compression studies, the six beams being derived by simple passive splitting of the original two. In addition a large electron beam generator was recently built for the excitation of gaseous lasers. The laser division today has an enviable international reputation. In 1979, yet another facility was inaugurated: the electron beam lithography facility which gives universities and polytechnics access to the most sophisticated techniques associated with microchip circuit design and fabrication.

A major event in 1978 was the closure of Nimrod after successfully operating for 14 years, providing 60,000 hours of beam time and completing more than 80 major experiments. The loss of Nimrod provided an opportunity to consider a new facility for scientific research at much reduced cost by replacing Nimrod with a new high-intensity source of pulsed neutrons (the Spallation Neutron Source). Work is well under way on this new facility which will be used in condensed matter research using neutron scattering techniques. Other countries are being actively encouraged to participate in exploiting the facility which is due to be in operation from 1984.

In summary, Rutherford Appleton Laboratory is at present actively involved in directly supporting or providing facilities for research in particle physics and particle accelerators, neutron beam scattering, high power lasers, computing, cryogenics, robotics, superconductivity, energy conservation, advanced engineering, astrophysics, geophysics, radio wave propagation and space research. It also co-ordinates UK research efforts at international research centres such as the CERN Particle Physics Centre in Geneva, the Institut Laue Langevin in Grenoble (high flux reactor) and at DESY in Hamburg (PETRA colliding beam machine).

The ebb and flow of different areas of the Laboratory's work are indicators of a dynamism that has characterised the establishment since its earliest days. It is likely that the next 25 years will be as exciting, innovative and eventful as the first 25 years of its life.

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Lancaster House,
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Extract from
Chartered Mechanical Engineer, London.

COPY TO HV

OCT

Quarter century of nuclear research

Just 25 years ago, what is now known as the Rutherford Appleton Laboratory was set up as the first research establishment in nuclear science. Today, it is the largest Science and Engineering Research Council establishment with a complement of about 1600.

Its first major project was the design and construction of the 7 GeV proton synchrotron, Nimrod, and at the same time the laboratory took over and completed a partly-built proton linear accelerator. A major programme to build equipment for particle physics research led to perhaps the laboratory's greatest achievement to date, according to its present director, Dr Geoffrey Manning — getting university teams to work together on national projects.

In 1975, SERC's Atlas computer laboratory merged with Rutherford and is now one of the most powerful computing facilities in Europe and a leader in computer technology. In 1977, the central laser facility began operation, two-beam laser compression being achieved soon after. Two years later, a second target was commissioned with a six-beam target chamber for compression studies, the six beams being derived by simple passive splitting of the original two. In addition, a large electron beam generator was recently built for the excitation of gaseous lasers.

The electron beam lithography facility, opened in 1979, gives universities and polytechnics access to the sophisticated techniques associated with microchip circuit design and fabrication.

Nimrod closed in 1978, after 14 years of successful operation. It is being replaced with a new high-intensity source of pulsed neutrons (the Spallation Neutron Source) which will be used in condensed matter research using neutron scattering techniques.

Circle 155

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Laboratory Practice, London

HV

-- OCT 1982

Rutherford reaches 25

This year the Rutherford Appleton Laboratory is celebrating its 25 birthday. Today, the laboratory is a virile experimental centre supporting university and polytechnic research, and is the largest of the Science and Engineering Research Council's establishments.

Just 25 years ago, the National Institute of Research in Nuclear Science (NIRNS) set up the Rutherford High Energy Laboratory, Chilton, Didcot, Oxon (next to Harwell) as its first research establishment.

The Laboratory was first involved with the design and construction of the 7 GeV proton accelerator, Nimrod. Also, a major programme was launched to build equipment for particle physics research, including three bubble chambers. All the projects were funded by NIRNS and were built as collaborative ventures between universities and the Laboratory. According to the present director, Dr Geoffrey Manning, this was the beginning of perhaps the Laboratory's greatest achievement, that of getting British university teams to work together on national projects.

Radical changes occured in the Laboratory's role during the 1970's. It became increasingly clear that there would be insufficient funds to replace or even continue running Nimrod. The council made it clear that it wished to support research on the more powerful CERN accelerators.

In 1975 the Council's Atlas computer laboratory merged with Rutherford; the Laboratory is now a leader in computer technology. In 1977, the central laser facility began operation — the laser division today has an international reputation.

In 1979, yet another facility was inaugurated, the electron beam lithography facility. This gives universities and polytechniques access to sophisticated techniques associated with microchip circuit design and fabrication.

A major event in 1978 was the closure of Nimrod and its replacement by a new high-intensity source of pulsed electrons (the Spallation Neutron Source). The new facility will be used in condensed matter research and is due to be in operation from 1984.

At the present, the Laboratory is actively involved in supporting or providing facilities for research in a diverse range of areas, and also co-ordinates UK research efforts at international research centres.

Round & About

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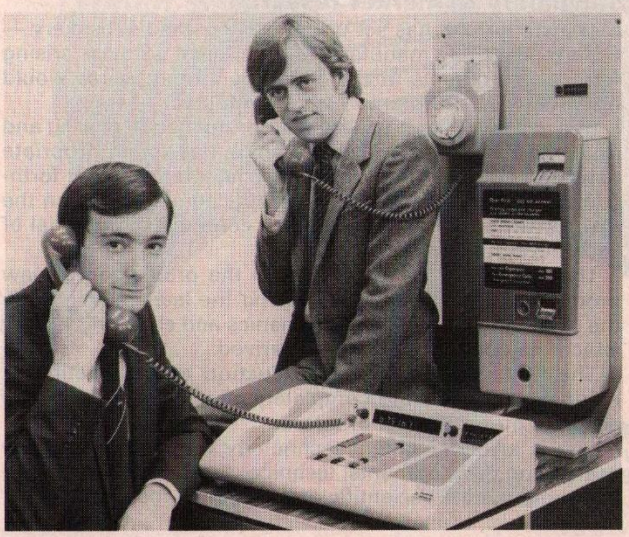
Classroom phone box

A telephone system simulator developed by Plessey Controls is being used to teach educationally sub-normal children how to make telephone calls. The simulator was developed in response to a request from Winchelsea Special School where teachers were having difficulty teaching the pupils to use the public pay-phone system. It was difficult to supervise them adequately — and anyone who has used a pay-phone will be familiar with all the other potential problems!

The simulator consists of a specially adapted pay-phone, standard handset and control unit and operates independently of the British Telecom network. The main control unit is operated by teaching staff and connected to a call box in another room. To the pupil the system appears to be a normal telephone installation, but it can be closely supervised. **Circle 156**



Ensuring safety devices are safe

Safety devices are useless if they malfunction at the critical point in time. It is important that such devices are regularly used or tested. Trevitest is a system of lifting safety and relief valves while the plant continues to operate at normal pressure. The Trevitest is mounted on the cover of the valve and a load is applied hydraulically to the valve stem. A load cell measures the force applied and a displacement transducer records the exact moment of lift and reseat. From this data, knowledge of the valve seat and the line pressure at the valve, the full sequence is traced by a multipen recorder thus giving a permanent record of the test.

Furmanite, in addition to introducing the Trevitest have also introduced a simple indicator for determining steam trap failure. It consists of a tape applied to the discharge outlet pipe. Carrying a white spot, which remains white while the trap is functioning correctly, it immediately turns black if the trap leaks. Tapes have to be correctly rated and full details are available from the company. **Circle 157**

Another London airport?

A feasibility study on the siting of an airport in Docklands has concluded that a STOLport is a realistic possibility, having rejected both airships and helicopters for technical and commercial reasons. The study, from the Economic and Planning Transport Group, goes on to consider in detail the impact a STOLport would make.

The report assesses that STOL aircraft are suitable for operation from a Docklands location because they require significantly shorter runways than conventional aircraft and have steeper approach and climb out paths and a relatively slower cruising speed.

Currently, the only fully-certified STOL aircraft available is a De-Haviland DHC-7 (known as the Dash 7) which is capable of 7.5° approaches, and was designed for low noise levels. Environmental impact of the proposed airport was assessed with data relevant to this aircraft and it is estimated noise nuisance in the area would be similar to that experienced in the West End, Westminster, Teddington and Esher areas from Heathrow traffic. The report also estimates that 1 m passengers/year will use the STOLport creating over 1000 on-site jobs and nearly 2000 jobs in 'induced' employment as a result of improved inner city access.

The London Docklands Development Corporation will now assess local opinion and consult interested parties before applying for planning permission. **Circle 158**

Language Courses for Industry

PERA are running a series of technical language courses this autumn, for directors, managers, sales and service engineers in exporting and importing firms.

The programme will begin with three courses in French and German, each of three days, devoted to grammar, comprehension and the spoken word; writing business letters, marketing, local customs and usage; understanding technical content, terminology and jargon. Additional courses in other languages will be run according to demand. **Circle 159**