Rutherford Appleton Laboratory

Press Release

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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.