

THE NATIONAL INSTITUTE
FOR RESEARCH IN NUCLEAR SCIENCE

FIRST ANNUAL REPORT

1957-58

RUTHERFORD HIGH ENERGY LABORATORY
HARWELL, DIDCOT, BERKSHIRE
AUGUST, 1958

THE NATIONAL INSTITUTE
FOR RESEARCH IN NUCLEAR SCIENCE

First Annual Report

for the period 12th March, 1957
to 31st March, 1958

Presented to the United Kingdom Atomic Energy Authority
in pursuance of Article 13 of the Institute's Royal Charter

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NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR SCIENCE

REPORT FOR THE YEAR ENDING 31ST MARCH, 1958

1. The Government's decision to set up the National Institute for Research in Nuclear Science was announced in the House of Commons on 14 February, 1957, in a statement by the Financial Secretary to the Treasurer, from which the following is an extract:—

“The main object of the Institute will be to provide, for common use by universities and others, facilities and equipment which are beyond the scope of individual universities and institutions carrying out research in the nuclear field.”

2. On 12 March, 1957, the Chancellor of the Exchequer announced that the Institute had been constituted with the following membership:—

Chairman:—The Rt. Hon. Lord Bridges, G.C.B., G.C.V.O., F.R.S.

Representing the Universities

Professor J. Diamond.

Professor H. S. W. Massey, F.R.S.

Sir Philip Morris, C.B.E.

Professor N. F. Mott, F.R.S.

Sir James Mountford.

Professor R. E. Peierls, C.B.E.

Dr. D. H. Wilkinson, F.R.S.*

Representing the University Grants Committee

Mr. J. C. Gridley, C.B.E.

Sir George Thomson, F.R.S.

Representing the Royal Society

Sir David Brunt, F.R.S.

Representing the Atomic Energy Authority

Sir John Cockcroft, O.M., K.C.B., C.B.E., F.R.S.

Sir Donald Perrott, K.B.E.

Dr. B. F. J. Schonland, C.B.E., F.R.S.

Representing the Department of Scientific and Industrial Research

Professor P. M. S. Blackett, F.R.S.

Dr. H. W. Melville, F.R.S.†

Sir David Brunt retired from Membership on 20 January, 1958, and was succeeded as the member representing the Royal Society by Professor W. V. D. Hodge, F.R.S., who had succeeded him as Physical Secretary of the Royal Society.

3. The Institute held their first meeting on 12 March, 1957, and have met at approximately two-monthly intervals since then. They have set up a Physics Committee, a Research Reactor Committee and a Visiting Committee, each including some members of the Institute and additional senior scientists. They have also set up a General Purposes Committee including only members of the Institute.

*Now Professor D. H. Wilkinson, F.R.S.

†Now Sir Harry Melville, K.C.B., F.R.S.

4. The Institute have decided to establish their first laboratory, to be called the Rutherford High Energy Laboratory, on a site made available by the Atomic Energy Authority adjacent to the Atomic Energy Research Establishment. The principal feature of the laboratory will be a 7 GeV proton synchrotron. The general design for this machine was approved by the Institute. The Atomic Energy Authority were then invited to assume responsibility for detailed design and supervision of construction on behalf of the Institute, subject to general oversight by the Institute's General Purposes Committee, to whom has been given the responsibility for the approval of all major contracts. The laboratory will also contain a 50 MeV proton linear accelerator, now at an advanced stage of construction, which the Atomic Energy Authority have offered to transfer to the Institute in April, 1959.

The Institute have appointed Dr. T. G. Pickavance as Director of the Rutherford High Energy Laboratory.

5. The 7 GeV proton synchrotron will consist of a ring-shaped magnet 150 feet in diameter and 7,000 tons in weight, into which protons will be injected from a subsidiary accelerator of 15 million volts. The protons will be accelerated in a vacuum chamber by radio-frequency equipment on each circulation around the magnet ring. During the acceleration the magnetic field will be steadily increased by increasing the current from the magnet power supply, in order to confine the proton orbits to the magnet ring. The whole machine will be housed in a heavily shielded building.

A major contract was placed in October, 1957, for the magnet yoke and another in November, 1957, for the buildings. Detailed design work is proceeding on the components of the accelerator. Further contracts have been placed and others are being negotiated.

6. The arrangements for operating the proton linear accelerator have been decided in broad outline. The Institute have appointed a Group Leader who will have full responsibility, under the Director of the Rutherford Laboratory, for the operation and maintenance of the proton linear accelerator including the determination of the programme of experiments to be done. The Institute's Visiting Committee will advise both on the general policy and on the details of the programme. The Group Leader will have a small research team of his own. Apart from their own work, their presence and experience should be very helpful to the visiting teams. The Group Leader will have a certain amount of experimental equipment available for general use but visiting teams will be expected to provide their own special equipment. Universities will also be responsible for the salaries of their teams. No charge will be made to universities for the use of the machine or Institute laboratories. The actual operation and maintenance of the proton linear accelerator, to the requirements of the Group Leader, will be carried out by the Atomic Energy Research Establishment as a service to the Institute.

7. The Institute have only a very small staff at present. Besides the Director of the Rutherford Laboratory and the Group Leader for the linear accelerator, already mentioned, they have appointed a Secretary who is also accommodated at the Rutherford Laboratory.

8. The Institute is financed from the Treasury through the Atomic Energy Authority, under a separate sub-head of the Atomic Energy Vote. The full cost of services provided for the Institute by the Atomic Energy Authority, and expenditure incurred by the Authority on behalf of the Institute, are charged to this sub-head, so that it shall represent the true cost of the Institute.

9. Since they are not merely an advisory body will own property and must make decisions for which legal liability must be accepted, the Institute are seeking incorporation*

*The method of incorporation considered most appropriate was by Royal Charter, and by Order in Council dated 7th May, 1958, Her Majesty was graciously pleased to approve the grant of a Charter.