

28th May, 1957

N.I.(57) 2nd Meeting

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR  
SCIENCE

Minutes of the Second meeting of the Governing Board held  
in the Board Room, Treasury Buildings, Whitehall, S.W.1.  
at 11 a.m. on Friday, May 17th

Present:- Rt. Hon. Lord Bridges - (in the Chair)

Professor P.M.S. Blackett  
Sir David Brunt  
Sir John Cockcroft  
Professor J. Diamond  
Mr. John Gridley  
Professor H.S.W. Massey  
Dr. H.W. Melville  
Sir Philip Morris  
Professor N.F. Mott  
Sir James Mountford  
Professor R.E. Peierls  
Sir Donald Perrott  
Dr. B.F.J. Schonland  
Sir George Thomson  
Dr. D.H. Wilkinson

Mr. P.J. Searby - (Acting Secretary)

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1. MINUTES OF THE PREVIOUS MEETING

The Board approved the Minutes of their last meeting.

2. REPORT FROM PHYSICS COMMITTEE  
N.I.(57)5

Sir John Cockcroft said that the Physics Committee had examined and approved the proposed specifications of the 7 Gev Proton Synchrotron. He said that the type of machine that was required in this country had been under discussion for two years. The proposal now put forward had taken into account the type of machines in existence or under construction in other countries and for International organisations. The proposed machine had an energy region intermediate between that of some of the machines now operating and that of larger ones under construction, but the intensity of particles generated was expected to be about 100 times as much as that of some of the larger machines planned elsewhere. With regard to the cost, the estimate of £6.9m. given in the paper for the cost of construction of the accelerator was approximate only and did not include the cost of the experimental equipment required or of any design expenses. It would not be possible to make a more precise estimate until the tenders for the magnet which had been invited were received.

There was general agreement that the machine proposed was of the right type and that the great need now was to proceed rapidly with construction. It was thought that the machine would take about 4 years to build.

The Board:-

- (i) approved the proposal of the Physics Committee that the National Institute should build a machine with the specifications as set out in N.I.(57)5;
- (ii) invited the Chairman and the Atomic Energy Authority representatives to take the necessary steps to secure the approval in principle of the Atomic Energy Authority and the Treasury;
- (iii) agreed that the Atomic Energy Authority should be invited to continue to take responsibility for the design of the accelerator and the supervision of its construction.

3. A.E.R.E. FACILITIES TO BE MADE AVAILABLE TO THE INSTITUTE  
N.I.(57)4

Sir John Cockcroft said that there were two types of facility which the Atomic Energy Authority could make available to the National Institute:-

- (a) Certain major facilities could, if so desired and subject to the formal approval of the A.E.A., be transferred completely to the Institute. These were listed in para. 2 of N.I.(57)4;
- (b) Other facilities would remain the property of and under the control of the Authority, but opportunity to use these facilities would be made available to University research workers.



With regard to (a), the Board expressed their appreciation of the offer by the Authority to make over to the Institute the facilities listed. Since the National Institute would become responsible for owning and operating such facilities, it was thought desirable that the Physics Committee should examine the proposals and recommend to the Board for which facilities it would be appropriate for the Institute to accept responsibility. In this examination the Committee should also consider whether the conversion of the cyclotron suggested in para. 2(b) should be undertaken.

In the discussion regarding the use to be made of the facilities which would still remain under the control of the Authority, the following points were made:-

- (a) The immediate availability of these facilities would give the Institute an immediate interest in a wider field of nuclear physics research than was relevant to the large accelerator which the Institute had already decided to build. It was for consideration whether it was desirable to broaden the National Institute's interest in this way or whether initially the Institute should centre the attentions solely on the higher energy range appropriate to the accelerator;
- (b) Although at present the informal arrangements with A.E.R.E. for the use by universities of certain facilities were highly satisfactory, difficulties might emerge when the universities' demands on those facilities exceeded the machine time and capacity that the Authority were prepared to allot to university research. When such a time came, it might be preferable for the National Institute to allocate the available capacity between universities rather than that the Authority should have this somewhat invidious responsibility;
- (c) As far as possible any control covered by the National Institute should not prevent or discourage in any way a direct approach by the universities to the Authority where this was more appropriate;
- (d) The decision on whether the National Institute should become formally responsible for research workers using A.E.R.E. facilities might have financial implications. It was thought that at present the position was satisfactory thanks to D.S.I.R. grants for the purchase of apparatus needed when working with these facilities. In time, however, with the growth in the number of university workers using Harwell facilities, arrangements for accommodation, provision of conference room and lecture rooms etc. might be more conveniently handled by the National Institute.

Summing up the discussion the Chairman suggested that the detailed arrangements for fitting the use of Harwell facilities into the activities of the National Institute would present some difficulties. He suggested that there was no need at present to upset the direct arrangements which were now operating satisfactorily between Universities and the Authority. There would, as time went on, be a tendency for the Institute to become more closely associated with the work done at Harwell's own facilities. He suggested that it would be appropriate for a paper to be prepared on this question which would look into the points raised in discussion and make more precise proposals.



The Board:-

- (i) noted with appreciation the offer of facilities made in paper N.I.(57)4;
- (ii) invited the Physics Committee to examine the extent to which it would be appropriate for the National Institute to take over the facilities offered;
- (iii) agreed that the Chairman should arrange for a paper to be prepared on the lines suggested at X on page 3.

#### 4. SCOPE OF NATIONAL INSTITUTE'S FUNCTIONS

The Chairman said that he thought it desirable that the Board should have some discussion of the scope of the functions of the Institute. Should questions be asked (e.g. in Parliament) as to what the Institute regarded as their field of operation, the answer given could then incorporate the views of the whole Board. He admitted that he was not clear in his own mind as to the precise nature of these functions and had been interested in the wide range of activities that had been covered in the Appendix to the statement by the University of Liverpool on the case for a nuclear reactor - N.I.(57)6.

In discussion reference was made to the statement that had been submitted to Ministers proposing the setting up of the National Institute which the Board had taken as their expanded terms of reference (see Appendix to Minutes of first meeting), and in particular to the statement that the Institute was "to operate and when necessary provide facilities which are beyond the scope of individual Institutions". It was pointed out that only with such an Institute would it be possible to obtain and run large machines, but it was undesirable that the Institute should ever become responsible for the provision of funds for a machine which was within the capacity of an individual university. For such machines grants from, for example, D.S.I.R. or the Royal Society would be more appropriate. The Institute must not be regarded as an easy way of getting money that could only be obtained with much greater difficulty from elsewhere. It was generally recognised that it was not desirable prematurely to determine precisely the fields in which the National Institute would be operating: that would depend upon what was done on the facilities that the Institute would be called upon to provide and operate.

Summing up the discussion the Chairman said he thought that, initially at least, the Institute should work on the broad assumption that their functions were to operate and, when necessary, provide expensive facilities in the field of nuclear research.

#### 5. PROPOSALS FOR RESEARCH REACTORS N.I.(57)6 & 7

The Board considered the proposals put forward by Liverpool and Manchester Universities jointly and by the Department of Radiotherapeutics of Cambridge University for construction by the National Institute of research reactors.



Sir James Mountford said that some time ago Liverpool and Manchester Universities had felt that there was a need for research reactor facilities to be available to universities and had taken the initiative in finding out how this need could best be satisfied. The Universities did not wish to own a research reactor or to operate one, but did wish to have regular (non-exclusive) access to it.

In discussion the following points were made:-

- (a) The proposal was an important one and the Board's decision on it would play a major part in determining the general nature of the activities of the Institute, the organisation of the Institute and the relationship to universities. It would, therefore, need to be very carefully considered before a final decision was taken.
- (b) Doubt was expressed whether the case for the proposals had yet been sufficiently made out. In the case of Cambridge University, the proposal was no more than a preliminary enquiry. It was doubtful to what extent a research reactor with a flux considerably less than that available in the Harwell reactors would be of real value. Reference was made to the interest of chemists and biologists in research reactor facilities and to the fact that the Royal Cancer Hospital had considered whether it could justifiably seek permission to build a research reactor only to find that they considered the money could be used to better effect in some other field.
- (c) It was suggested that the existence of a research reactor would stimulate thought and that there would be a wide range of work which could be done on it. On the other hand, there was reason to believe that the reactor at the A.E.I. Research laboratories at Aldermaston Court was not being fully used.
- (d) An alternative possibility might be that a University or a group of universities would build the reactor with grants from D.S.I.R. or U.G.C. and with the A.E.A. or National Institute to operate it.
- (e) In any examination of proposals for research reactors careful attention would have to be paid to the case often made that the reactor must be conveniently situated in relation to the universities using it. Time spent in travelling could be regarded as a significant item in affecting a decision on the location of the facilities but the cost of travelling was of negligible importance in relation to the cost of the facilities themselves.

After further discussion the Board:-

- (i) agreed that it was desirable to set up a small committee of members of the Board to examine the whole question; they should study the proposals submitted, estimate costs, and examine the purposes for which such reactors might be used;
- (ii) the Committee's terms of reference should be "to enquire into proposals that the National Institute should provide nuclear reactor facilities and to make recommendations";



- (iii) invited Sir John Cockcroft to be Chairman of the Committee and Professors Blackett, Diamond and Mott and Dr. Melville to serve on it;
- (iv) agreed that the Committee should have power to invite experts in various fields to attend the Committee and give information and advice on the use to which research reactors would be put by University Scientific Departments.

6. POLICY ON STAFFING  
N.I.(57)3

The Board considered the note by the Chairman on staffing policy. The Chairman drew attention to the tentative nature of the proposals and sought the Board's general reaction to them.

Discussion centred mainly on the nature of the post of Director of the Institute. Sir George Thomson suggested there were two possibilities; that the Director would become in fact the head of nuclear research in Great Britain, or that he should be a man who regarded it as his duty to provide services for those wishing to do nuclear research. There was general agreement that the task of the Director was to provide services, not to control.

In discussion the following points were made:-

- (a) It would be necessary to decide at some time whether the Institute should have a single Director or a Director for each establishment that it might set up. It was agreed, however, that until such time as a second location for the Institute's facilities was settled it was unnecessary to resolve this point;
- (b) For the first four years the main task of the National Institute would be the building of the large accelerator. There was a strong case for the Director of the Institute being the man responsible for the supervision of the construction of the machine. On the other hand it was suggested that since this was such a large task it was undesirable that the man in charge of construction of the machine should have any other responsibilities which might distract him;
- (c) A possible alternative was that there should be both a Director and an Assistant Director, one of whom would be mainly responsible for construction of the accelerator, the other for the use of the other facilities. A further alternative might be that a highly powered Secretary should be appointed instead of an Assistant Director. This might, however, have the consequence that the administrative work attached to the post of Secretary would lead to the neglect of the scientific responsibilities of the Assistant Director. It was undesirable to link science and administration too closely but a single Director ought not to be expected to take charge of all the scientific work of the Institute during the period of construction of the accelerator.
- (d) The experience of C.E.R.N. in this matter might provide useful guidance to the Institute.



The Board:-

- (i) agreed that before it was possible to consider possible nominations to the post of Director, Assistant Director and/or Secretary, it was desirable that a note on the top staffing structure of the Institute should be prepared;
- (ii) decided to set up a Personnel Committee which would as their first task prepare a paper on the top staffing structure for consideration by the Board at their next meeting;
- (iii) invited the Chairman, Sir James Mountford, Professor Massey and Dr. Schonland to be members of that Committee.

In the course of discussion on N.I.(57)3 the Board expressed general agreement with the policy suggested there. A number of minor comments on the paper were made and recorded.

7. FINANCIAL ARRANGEMENTS  
N.I.(57)2

The Board took note of the paper by the Chairman and subject to a number of minor points, approved the general line of policy suggested there.

In discussion it was suggested that it would be more appropriate to set up a General Purposes Committee than a Committee nominally concerned solely with finance since the Committee, by whatever name it was known, would necessarily have considerable control over the day to day activities of the Institute.

The Board:-

- (i) agreed to set up a General Purposes Committee;
- (ii) invited the Chairman, Sir Donald Perrott, Sir Philip Morris, Dr. Wilkinson and Professor Peierls to be members of the Committee.

8. SUB-COMMITTEES  
N.I.(57)8

It was agreed that in view of the setting up of the Sub-Committee to examine the proposals for research reactors, it was not yet appropriate to set up any further committees. The Chairman said that the appointment of a member to a Sub-Committee did not necessarily entail that member's remaining on that Sub-Committee for the duration of his appointment to the Board.

9. LEGAL STATUS OF THE INSTITUTE  
N.I.(57)9

The Board:-

- (i) agreed that the Institute should seek incorporation by Royal Charter;
- (ii) agreed that the Personnel Committee should be invited to prepare a note on the scope of the Institute's activities. This would assist in the preparation of a draft of the Royal Charter.



10. DATE OF NEXT MEETING

It was agreed that the meeting provisionally fixed for June 19th should be cancelled. The next meeting of the Governing Board would therefore be held on July 19th.  
/The meeting will take place at 3 p.m. and be held in the Board Room, Treasury Buildings./