

CONFIDENTIAL ANNEX ENCLOSED

File No. ... U/N/3A ...

30th July, 1957

N.I.(57)3rd Meeting

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR
SCIENCE

Minutes of the Third Meeting of the Governing Board
held in the Board Room, Treasury Buildings, Whitehall,
S.W.1. at 3 p.m. on Friday, 19th July, 1957.

Present:- Rt. Hon. Lord Bridges - (In the Chair)
Professor P.M.S. Blackett
Sir David Brunt
Sir John Cockcroft
Professor J. Diamond
Professor H.S.W. Massey
Sir Philip Morris
Professor N.F. Mott
Sir James Mountford
Professor R.E. Peierls
Sir Donald Perrott

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

1. APOLOGIES
2. MINUTES OF THE LAST MEETING
3. REPORT ON PROGRESS OF NEW ACCELERATOR
4. USE OF HARWELL FACILITIES BY UNIVERSITY STAFF
5. ACTIVITIES OF THE INSTITUTE IN THE NEAR FUTURE
6. TERMS OF REFERENCE TO THE PHYSICS COMMITTEE
7. RESEARCH REACTOR COMMITTEE
8. PROPOSALS FOR FURTHER REACTOR FACILITIES
9. DATE OF NEXT MEETING

1. APOLOGIES

Apologies for absence were received from:-

Mr. John Gridley
Dr. H.W. Melville
Dr. B.F.J. Schonland
Sir George Thomson
Professor D.H. Wilkinson

2. MINUTES OF THE LAST MEETING

11/11/5
The Chairman reported that Sir George Thomson had written to the Secretary to make one comment on para.(c) of Item 5 of the Minutes of the last meeting. Sir George had pointed out that the reactor at Aldermaston Court was not yet in existence, that A.E.I. had had a reasonable number of enquiries and that several universities wished to send students. He therefore thought it would be misleading to suggest that experience with that reactor was any evidence against the demand from universities for reactors.

11/11/6
Professor Mott noted a slight discrepancy between the concluding sentence of the second paragraph of item 6 ("There was general agreement that the task of the Director was to provide services, not to control.") and the terms of the report of the Personnel Committee (N.I.(57)12) where it was suggested that it was the duty of the Director to see that facilities were used to the best advantage. It was agreed that this point would be discussed when the Personnel Committee's report was considered. Subject to these points the Board approved the Minutes.

3. REPORT ON PROGRESS OF NEW ACCELERATOR

including
11/11/4
Sir John Cockcroft reported that a Design Committee consisting of Professor Skinner, Mr. Moore and Professor Wilkinson had been set up under Mr. D.W. Fry at Harwell to control the design and construction of the machine. He said that tenders for the magnets were due in the first week of August. The contract for these was likely to be in the region of £2m. and he hoped that approval could be given to that contract by about the third week in August. A small contract for opening up the site had already been signed; a further large contract for civil engineering would be made in the autumn. The contract for the provision of the motor generator for the magnet current ought to be signed by about the end of the year.

Some
11/11/4
To complete the programme, the team working on the accelerator would be increased by an additional 20 engineers to be moved from other jobs at Harwell. The Authority's Industrial Group were being used to supervise the civil engineering and construction and to take charge of inspection, planning and progressing. It was hoped that the accelerator would be completed in accordance with the programme already laid down and would be under test before the end of 1961.

Sir John Cockcroft referred to the need to discuss the mechanism for the approval of the major contracts. The Chairman suggested, and the Board agreed, that the General Purposes Committee should be entrusted with this task. The papers relating to the accelerator would be circulated to all members of the Board so that any Member could comment on developments and, if he desired, attend meetings of the Committee. With regard to the

cc
11/11/4
smaller items, it was agreed that the Institute should follow the precedent of the Atomic Energy Authority and delegate power to sign contracts of less than £25,000 to the Harwell authorities. Harwell would provide quarterly statements on their expenditure, their commitments to date and an indication of the extent to which there was divergence from the estimate that had now been approved by the Board, the Authority and the Treasury.

cc
11/11/1
4. USE OF HARWELL FACILITIES BY UNIVERSITY STAFF
(N.I.(57)13)

Sir John Cockcroft said that he had prepared his paper in answer to the Board's request for an indication of the use now being made by universities of the facilities available at Harwell. The paper showed that a lot was already being done; 15 separate experiments were being undertaken by universities. As collaboration grew, there would be a need to do more to provide laboratories, offices etc. for university staff working at Harwell.

The Board took note of the paper.)

5. ACTIVITIES AND ORGANISATION OF THE INSTITUTE IN THE NEAR FUTURE

The report of the discussion on this item is being circulated as a Confidential Annex to these Minutes.

cc
11/11/48
6. TERMS OF REFERENCE TO THE PHYSICS COMMITTEE

The Board noted that the Physics Committee had recommended that their future terms of reference needed further study and that the relationship between that Committee and the D.S.I.R. Nuclear Physics Committee needed consideration. It was agreed that this was a matter which could be left for discussion at a future date and would be brought forward at the appropriate time.

cc
11/11/58
7. RESEARCH REACTOR COMMITTEE

Sir John Cockcroft reported that the Committee had held two meetings. They were assembling details of the possible uses by universities of research reactors and figures of capital and operating expenditure. The Committee proposed to meet again in October when they would hope to prepare a report for submission to the Board.

8. PROPOSALS FOR FURTHER REACTOR FACILITIES
(N.I.(57)10 & 11)

The Board took note of these papers which were being considered by the Research Reactor Committee.

9. DATE OF NEXT MEETING

The date of the next meeting of the Governing Board was discussed. /The provisional dates suggested then have not proved practicable. Members will be informed of the date of the next meeting as soon as possible./

CONFIDENTIAL

A. E. R. E.
DIRECTORS OFFICE
1 AUG 1957

STRICTLY CONFIDENTIAL

NAMED DISTRIBUTION ONLY

File No.

ANNEX

N.I.(57)3rd Meeting

5. ACTIVITIES AND ORGANISATION OF THE INSTITUTE IN THE
NEAR FUTURE

The Board had before them the report by the Physics Committee (N.I.(57)14). This report referred in particular to the proposal to transfer to the National Institute the 50 MeV proton linear accelerator and the 110-inch synchrocyclotron that had been offered by the A.E.A.; the Committee had recommended that those machines should not be transferred to the National Institute at present and that no decision as to their ultimate transfer should yet be made.

The Chairman said that the report raised very important issues to which the Board would wish to devote considerable attention. He had been surprised at the Committee's recommendation which had seemed to him to reverse in some ways the trend of the views expressed at the Board's first two meetings. He had thought that there was a general feeling that, although it would take 3 - 4 years for the large accelerator to be built, it was important that the Institute should start work early in order to "cut their teeth" on something. At their last meeting, the Board had expressed their appreciation at the Authority's offer.

The subsequent discussion on this paper covered not only the question of the transfer of these facilities to the Institute but also the scope of the Institute's activities for the next few years, the type of organisation that would be needed during the period, and the qualifications required by the first Director of the Institute.

(a) Transfer of Certain A.E.R.E. Facilities

In the discussion on the Physics Committee's recommendation the following points were made:-

(1) The Authority had thought that the offer of these facilities would help the National Institute to start effective work at a fairly early date. It had been apparent, however, that at the Physics Committee meeting, the views of the Authority representatives differed from the views of those representatives who were members of University Physics Departments.

(2) There were three main arguments put forward by the Physics Departments against the transfer of these facilities to the Institute:-

(i) University Physics Departments were anxious that the scope for individual effort by those Departments should not be curtailed unduly by the existence of the National Institute. The National Institute had been created with the specific purposes of providing large facilities beyond the scope of individual universities. The facilities in question, however, were not too large to be provided and used by an individual university and it was feared that the transfer of these facilities would set an undesirable precedent.

- (ii) It was also thought that since existing arrangements for co-operation between Harwell and universities worked extremely well, there would be no advantage in transferring any Harwell facilities to the Institute. There might indeed be disadvantages; the existence of another organisation with whom the universities would have to deal would not make administration any easier and there was always the danger that some of the best young students of the universities might wish to transfer their allegiance to the Institute. Certain A.E.R.E. facilities, e.g. reactors, could not be transferred to the Institute and direct Harwell/University arrangements would therefore continue to be necessary, whether the Institute took over other facilities or not.
- (iii) The view was expressed that the main task of the Institute should be to engage in work on high energy physics, since this was the field appropriate to the new accelerator which, because it was so large, could only be built by the Institute. The work that would be done with the proton linear accelerator and, for example, the Van der Graaf machine that it was also proposed to transfer later - both machines which could be within the scope of individual University Physics Departments - was in other fields e.g. solid state and low energy physics. The transfer of these latter facilities to the Institute would, therefore, mean that the Institute would consist not of a single group with common interests but of a lot of different teams engaged in different fields. If the subsidiary interests of the Institute (low energy work etc.) were to come first in time, this might alter the character of the proposed Institute. It was thought that it would be a sufficiently difficult task for the director to get things working smoothly in the high energy field and that it would complicate matters if he also had to concern himself with other fields of physics.
- (3) Some members suggested that if the views outlined in (2) above held substance then the creation of the National Institute was premature. It would create a very bad impression in public if the Institute were to do nothing for the first 3 or 4 years after being formed, except approve the construction of the 7 GeV machine. Others thought this was not the case since it had been vital to start work at the earliest moment in constructing the 7 GeV machine. There was also a considerable amount to be done in advance of completion of the accelerator in helping to build it and in organising the high energy work that would be done with it. A considerable amount of ancillary equipment would be needed; this took time to build and the type of experiments to be done on the machine would, therefore, have to be considered well in advance.
- (4) A number of members thought that the fear which University Physics Departments were said to have that the proposed transfer of facilities would set an undesirable precedent (para.(2)(i) above) was not justified.

The Chairman was confident that the Government attached sufficient importance to the need to avoid interfering with the university work that they would provide them with such

machines as were needed. Sir Philip Morris emphasised that the U.G.C. had stated categorically that the existence of the National Institute would in no way prejudice the position of University Physics Departments in the replacement of machines which already existed in Physics Departments. Sir Donald Perrott pointed out that it was important to distinguish between the existing facilities, transfer of which was under consideration, and any new facilities which might be built later. The construction of new facilities of this size by the National Institute was unlikely. The best safeguard that the universities had against the situation they feared was in fact the existence of the National Institute. If the Board of the Institute refused, and continued to refuse, to undertake construction of new facilities of this nature on the ground that this was a task for individual universities, this was the strongest possible argument to justify the universities' claim for grants to enable them to build such machines themselves.

(5) It was suggested, in answer to para. (2)(ii) above, that there were considerable advantages in transferring the facilities at once. No-one doubted in any way the efficiency of the existing arrangements worked out between Harwell and the universities and there was no question that, except insofar as the Institute were involved, there was any case for changing them. There would, however, have to be direct arrangements between the Institute and universities in relation to the 7 GeV machine and the Institute might ultimately find it essential to take over some of the arrangements now undertaken directly. Since a change would be needed at some time, it was desirable to start now to consider when and how these arrangements could best be made. The proposed transfer of facilities would give the Institute an immediate status and would permit the gradual building up of the necessary arrangements for close scientific and administrative collaboration between the Institute and the Universities.

(b) Interim Senior Staff Structure

Discussion then turned to consideration of the senior staff structure of the Institute in the early years. The following were the main points made:-

(1) The report of the Personnel Committee (N.I.(57)12) looked further ahead than the initial period. Its conclusions were not strictly appropriate to the transitional period during the construction of the accelerator. It was, therefore, agreed that discussion of that report should be deferred.

(2) With regard to the qualifications that the first Director of the Institute ought to have, it was suggested that the prime qualification needed in the immediate future was an understanding of the working of the 7 GeV machine. The Director should also have general knowledge of the physics problems that would be studied on the machine since he would need to assist the appropriate Scheduling Committee responsible for allocating time on the machine. It was also desirable, but of lesser importance, that he should have an intimate knowledge of particle physics. Other members pointed out that the Director would also have the important task of educating the universities and encouraging them to

participate in the activities of the Institute. For this a man with the right personality and adequate scientific standing was clearly necessary. Several members stressed the importance of appointing a man who was experienced in the construction and operation of machines; though he should be a physicist, his ability as an engineer was perhaps more important.

(3) It was suggested that the Board should not lose sight of the fact that the person being appointed would be concerned solely with activities at the Harwell site. There would probably, in future, be further sites which would need their own Directors; these Directors might, because of the machines under their charge, be engaged in different fields of nuclear science.

(4) The Chairman suggested that a possible form of organisation in the interim period might be to have a Director who would focus his main attention on the building and subsequent operation of the 7 GeV machine, with an Assistant Director who would take charge of the operation and administration of such other facilities as were transferred to the Institute. Though the universities might derive no immediate gain from this arrangement as compared with their existing arrangements with the A.E.A., his proposal would seem to have two advantages:-

- (i) the psychological advantage that the National Institute would be starting to do something fairly soon;
- (ii) it would be much easier to build up the necessary administrative machinery gradually than to create a complete organisation when the 7 GeV machine was built and ready for operation

Some members of the Board expressed approval of this form of organisation. They were not fully convinced by the arguments that had been put forward for transferring other facilities to the Institute at once, but saw no objection to such a transfer provided the fears of Physics Departments that had been referred to were indeed unfounded. Other members of the Board stressed the need for appointing a Director for a sufficient length of time to enable him to see the National Institute, including the 7 GeV machine, properly at work. For this, a term of appointment of at least 5 - 7 years seemed desirable. The Director ought, therefore, to be a man who could make the necessary preparations for the carrying out of the initial experiments with the 7 GeV machine and still be in charge of the machine when those experiments were being undertaken.

It was suggested that if a scheme on the lines proposed by the Chairman were adopted this would, to some extent, reverse previous views on the way the Institute should be set up, and had the danger that the Assistant Director, who would be responsible for the first experimental work done on the Institute's facilities, might not have a sufficiently high standing. Such a man ought to be at least of the status of a Physics Professor. It was suggested however that, if a first class (but youngish) man were appointed to this position, sufficient status would attach to the post.

Summing up both parts of the discussion the Chairman said that he did not wish the views expressed by members to be regarded as in any way final. A number of members of the Board had been unable to be present at the meeting and before coming to any firm conclusions, the Board would wish to hear their views. He hoped members would keep the discussion and particularly the individual names that had been mentioned, strictly confidential. He suggested that there were a number of problems that should be sorted out in the next few months. Although the Board themselves were fully satisfied that the fears of University Physics Departments regarding the precedent that might be set by the transfer of facilities to the Institute were quite unfounded, it might be desirable to prepare a statement in an attempt to remove those fears. With regard to the major problem, it seemed appropriate that the members of the Physics Committee should be invited to reconsider their report (N.I.(57)14) in the light of the Board's discussion.

The Board accordingly:

- (i) invited the Chairman and Sir Donald Perrott to prepare a statement regarding the attitude of the Government and the National Institute to the construction by individual University Physics Departments of facilities which were within the scope of a single university;
- (ii) requested Sir John Cockcroft to convene a meeting of the members of the Physics Committee. At this meeting they would be invited to reconsider the recommendations they had put forward in N.I.(57)14 and to set out their views on the procedure and the functions of the National Institute, in addition to the task of building the 7 GeV machine, that would be appropriate if the interim organisation proposed by the Chairman were adopted. This was that the first Director of the Institute should be concerned mainly with the construction and subsequent operation of the 7 GeV machine and should have the assistance of an Assistant Director, with the status equivalent to that of a Physics Professor, who would take responsibility for work in other fields. The Committee could assume that the take-over of additional work under the Assistant Director could, if they thought desirable, be gradual, but it was desirable for the Institute to start work as soon as possible and to avoid the delay of about 4 years that would be inevitable if the Institute had no facilities until the 7 GeV machines were ready.

30th July, 1957

Distribution:

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

N.B. In view of the nature of the discussions recorded in this Annex, members are asked to ensure particularly that this Annex is not made available to anyone outside the Governing Board.