

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR SCIENCE

GOVERNING BOARD

Minutes of the meeting held at the Royal Fine Art Commission at 2.45 p.m. on July 4th, 1961.

Present:-

Lord Bridges (Chairman)

Professor F. W. R. Brambell
Professor J. M. Cassels
Sir John Cockcroft
Professor P. I. Dee
Sir Alan Hitchman
Sir Harry Massey
Sir Harry Melville
Sir Keith Murray
Professor R. E. Peierls
Sir William Penney
Professor D. H. Wilkinson
Dr. T. G. Pickavance

Dr. J. A. V. Willis (Secretary)

Apologies for absence were received from Dr. J. B. Adams, Sir Robert Aitken, Sir William Hodge and Sir John Wolfenden.

1. Minutes of the last meeting

The minutes of the meeting on May 24th 1961 were approved.

2. Atlas Computer

Sir Alan Hitchman said that a proposed contract for the Atlas computer had now been negotiated with Ferranti's at a cost of £3.4 million, less a sum varying within a maximum of £700,000 according to the number of other Atlas Computers sold.

The Chairman said that the Atlas computer committee would be holding their first meeting on July 7th, and Sir William Penney said that they would review all aspects of the proposal, including for example the list of components to be ordered.

3. Committee Minutes

The Board authorised the increase of staff at the Rutherford Laboratory within a maximum of 826 as recommended by the Personnel Committee at their meeting on May 24th. They noted that recruitment is being deliberately restricted until there has been some discussion with the Treasury, as reported by Dr. Pickavance in paper NI/61/15.

4. Progress at the Rutherford Laboratory NI/61/15

In the discussion of the brief report on progress in the six weeks since the last meeting, Dr. Pickavance confirmed that from the technical aspect there had been a further improvement in the vacuum chamber position. The expected delay, however, on the vacuum chamber

and on the polepieces was very serious. He thought that it might be necessary to make up a simple vacuum chamber for use in testing the other parts of the machine. If so, this would be inexpensive and would be regarded on an item of research and development. In reply to further questions, Dr. Pickavance confirmed that it would not be possible to revise the construction programme for the machine until October, owing to the many uncertainties and complexities. He also gave the approximate number of graduate scientists included in the new staff complement of 826. The number was about 100. The total number of graduate scientists plus professional engineers would be about 200.

5. Relationship of the Glasgow 100 MeV accelerator project to NIRNS plans

The Chairman reminded the Board that when this matter had been raised at the last meeting, he had asked for discretion to consider how it should be treated. Institute projects such as the helium chamber were considered by the Institute, while the Glasgow proposal, as a University project was considered by other bodies. However, he had thought it right to pause and consider whether the two ought to be compared. He had consulted the Secretary of the Minister for Science's office, who in turn had thought it right to refer to the Minister, since he was responsible for the financing of both the Institute and the D.S.I.R. The Minister had called a special small meeting to consider the point. While it was clear that he appreciated the scientific value of the Glasgow proposal, he (the Minister) had concluded that it was right that the Institute should consider their schemes, such as the helium bubble chamber, and leave university schemes to be dealt with through their appropriate channels. Sir Keith Murray and other members who had been present at the Minister's meeting concurred in the Chairman's report.

Professor Dee said that he regarded it as the Institute's job to provide the basic resources for nuclear physics which were outside the scope of a university. There was at present no machine in the world which could produce homogeneous photons and the Glasgow proposal would give us a unique major facility for the first time since 1932. He felt that the Institute ought to put the machine on their programme, and asked how this should be done.

The Chairman said that it seemed to him that Professor Dee was suggesting something which would extend the functions of the Institute. Further, if the Glasgow 100 MeV accelerator was considered as a proposed NIRNS facility, it might in fact get less favourable consideration than when considered in its right context as a university facility. Sir Keith Murray said that the UGC would very much prefer to see the Glasgow accelerator as a university project rather than an Institute project. They attached very great importance to maintaining a strong nuclear physics school in Glasgow and must regard the accelerator proposal from that point of view.

Having regard to the Minister for Science's conclusions, as reported by the Chairman, the Board decided that they should proceed to deal with the hydrogen bubble chamber proposal. Professor Dee did not dissent from this decision, but re-emphasised his view that the Institute's task was to provide the basic resources for nuclear physics which were beyond the scope of universities, and that the 100 MeV electron linear accelerator would be a most important machine and that the Institute ought therefore to be concerned with it.

6. Proposed helium bubble chamber NI/61/10

In view of the conclusions recorded in minute 5 and the discussion of the helium bubble chamber proposal at the last meeting, the Board approved the proposal in paper NI/61/10 for the construction of a helium bubble chamber at an estimated cost of £444,300 with consequential capital expenditure roughly estimated at £30,000 on buildings and services and £150,000 on beam equipment and shielding.

7. Proposed 4 GeV electron synchrotron NI/61/16

7.1 Revised paper The Secretary said that paper 61/16 incorporated the amendments made at the last meeting. He apologised for a clerical error in three figures near the end of page 7, which should read:-

	£000
Salaries, wages etc:	280
Stores, materials and services	360
Other current expenditure	160

He also said that these figures were rough estimates scaled from Rutherford Laboratory experience on the basis of estimated total staff numbers.

The following points were made in further discussion of the paper:-

- (a) the non-capital annual expenditure at the Frascati electron synchrotron was understood to be only £200,000, although this was a smaller machine.
- (b) the contingency of £240,000 looked rather small. On the other hand the estimate had been greatly increased from the original figure and was based on figures for the Hamburg accelerator as revised at a fairly advanced state of construction. The costs at Hamburg were also inflated owing to a difficult building site.
- (c) the estimated building cost, at 50% of the total, seemed relatively too great. At the same time, building costs were at present increasing extremely rapidly. It was thought right to state that the estimate was based on building costs at a given date rather than to attempt to forecast future changes in these costs. Nevertheless, the uncertainty even at present rates was considerable. Bearing all these factors in mind, it was agreed to reduce the building estimate by £200,000, and to increase the contingency by the same amount.
- (d) Buildings should be planned with a target cost well below the estimate, if there was to be any hope of keeping within the latter.
- (e) It was reported that Liverpool University had received approval for a KDF 9 computer, and Manchester University would have excellent computer facilities. The assumption that the electron laboratory will not need a computer was therefore justified.

7.2 Siting

Sir John Cockcroft reported on the study of siting made by Sir Harry Massey, Professor Wilkinson and himself at the request of the Board. He had circulated a note recording their recommendation of a site in the Liverpool-Manchester area, with good communications including those to Glasgow and with the possibility of obtaining houses near the site.

(Secretary's note: The paper, dated 29th June 1961 has been given the number NI/61/18)

At Professor Dee's suggestion, the authors of the paper agreed that in paragraph 5 the words "will not completely solve the problem of providing national facilities for the Scottish region" should be changed to read "does little to solve the problem of providing national facilities for the Scottish region"

The following further points were made in discussion:-

- (a) A determined effort should be made to find a site relieving as far as possible the difficulty of access from Glasgow. The main considerations here were the access from Liverpool and Manchester station, and Ringway and Speke airports, but there would be some travel by car, and sites north of the Mersey would have an advantage in that respect.
- (b) The Lancashire County Council had not been able to be very helpful, as most of the land in South-east Lancashire was geologically unsuitable. Some enquiries had been made about sites at Burscough (which was no longer available) and Risley (which was not thought suitable). Much of Cheshire was also unsuitable geologically, but there were a few areas of excellent sandstone. The Liverpool university site at Wood Park was on one, and another was the Helsby-Frodsham area. Both were in the Green Belt, and the latter might be especially difficult as it was considered a beauty-spot. The Cheshire County Council recommended Stretton Airport, which however appeared to be doubtful geologically. The map showed the sub-soil as marl.
- (c) It was agreed that enquiries and geological testing, which had already been started on a very small scale, should be put in hand more seriously. Dr. Pickavance said that he could arrange this. It was agreed that a working party drawn from the Rutherford Laboratory and the Universities of Liverpool, Manchester and Glasgow should be set up to co-ordinate the work.

7.3 Management NI/61/17

Professor Cassels said that his suggestions in paper NI/61/17 attempted to apply some of the recommendations of the recent report of the U.S. President's Scientific Advisory Committee, with which he agreed, to the electron laboratory. He thought that it might be possible to work out an arrangement on the lines he suggested, to achieve close association with the universities particularly concerned, without giving them any exclusive or privileged position.

In discussion, the following points were made:-

- (a) Several members disagreed with the proposed limitation of the director's appointment to 3 or 4 years, although it was agreed that the director's work must be centred on meeting the universities' needs.
- (b) It was suggested that one or other of the most interested universities should offer a chair to the man chosen as director, rather than that the director should be necessarily chosen from one of the small number of professors without departmental responsibilities in the universities concerned.
- (c) The Visiting Committee for the laboratory should not be too much drawn from the universities most closely interested, but should include informed but disinterested members.

On the Chairman's suggestion it was agreed that he should set up a small group to consider the organisation and management of the proposed laboratory, and its relationship to the Universities. The Committee of Vice-Chancellors and Principals would also be consulted when progress had been made in drawing up recommendations.

8. Annual Report

The Chairman said that a draft of the fourth annual report had been prepared, and would be circulated to members by correspondence.

J. A. V. Willis
Secretary - NIRNS,
Rutherford High Energy Laboratory,
Harwell
6th July, 1961.