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NI/63/Third Meeting

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR SCIENCE

GOVERNING BOARD

Minutes of the meeting held at No. 5, Old Palace Yard, Westminster, on 29th October, 1963

Present: Lord Bridges (Chairman)
Dr. J. B. Adams
Professor F. W. R. Brambell
Professor J. M. Cassels
Sir John Cockcroft
Professor B. H. Flowers
Sir Alan Hitchman
Professor C. F. Powell
Sir John Wolfenden
Dr. E. M. Wright
Professor A. W. Merrison
Dr. T. G. Pickavance
Dr. J. A. V. Willis (Secretary)

Apologies for absence were received from Sir Robert Aitken, Professor Dee, Sir William Hodge, Sir Harrie Massey, Sir Harry Melville and Sir William Penney.

The Chairman welcomed Dr. Wright, who had been appointed as a Member following the retirement of Sir Keith Murray.

1. MINUTES OF THE LAST MEETING

The Board approved the Minutes of the meeting on 15th July, 1963.

2. MATTERS ARISING FROM THE MINUTES

Minute 8: The proposed nuclear structure machine was referred to again later in the meeting (Minute 4.2 below).

3. REPORT ON THE INSTITUTE'S FINANCIAL SITUATION AND ESTIMATES (NI/63/14)

The Chairman said that paper NI/63/14 summarised the recent events concerning the Institute's finances. At his meeting with the Minister for Science and the Chief Secretary of the Treasury on 2nd August he had obtained approval for additional expenditure of £600,000 in 1963/64, and for placing the main building contract for the Electron Laboratory. He had made it quite clear at this meeting that the Institute could not run the two Laboratories properly within the "two per cent" formula, but questions of future expenditure had been left for later discussion. In the Directors' subsequent discussions with the Secretary of the Minister for Science's Office, it became clear that the Minister would be most unlikely to back proposals for Institute expenditure exceeding £8.2 million in 1964/65 (excluding Atlas). The Estimates now before the Board (paper NI/63/18) had therefore been cut down to £8.2 million although this would involve a restriction of work. The Chairman said that he thought that this had been the right course and the Board agreed.

Dr. Pickavance said that the Secretary of the Minister's Office had also asked Professor Merrison and him for estimates of "rock-bottom" and "rational" expenditure for the four years to 1964/65 to 1967/68. They had supplied figures which were consistent with the findings of Dr. Adams and Professor Cassels in paper NI/63/17.

4. ESTIMATES 1964/65 AND FORECAST ESTIMATES 1965/66 AND 1966/67 (NI/63/18)

4.1 In a general discussion of the Estimates presented in paper NI/63/18 the following points were made:-

(a) In future, the Estimates should be made easier to follow. Preferably, each table on the later pages should have its totals shown as a separate line of figures on the front page. Also, in future Estimates an analysis of expenditure on the different branches of work on the lines used by Dr. Adams and Professor Cassels in paper NI/63/17, should be included either in place of, or in addition to some part of the analysis given in paper NI/63/18. There was general agreement with these two proposals.

(b) (Page 1). The 1964/65 figure of £6.502 million for the Rutherford Laboratory was as agreed with the Minister for Science's Office.

(c) (Pages 1 and 13). The Board invited Dr. Adams and Professor Flowers to study the estimate for the Atlas Computer Laboratory, and if possible to compare it with the expected expenditure of the London University Atlas Computer unit.

(d) (Page 5). In reply to a question about the £5 million shown for future extension of the P.L.A., Dr. Pickavance said that such an extension had been on the Institute's long-range programme for a long time, but he thought that other future projects would now be given higher priority. It was suggested that the priority list for future projects should be reviewed (see Minute 4.2).

(e) (Page 8). The sudden increase in the cost of electricity in 1964/65 was due to the provision for fuller operation of Nimrod.

(f) (Page 8). Dr. Pickavance confirmed that the whole amount estimated for reactor work was for the support of university teams and for the hire of reactor space in Herald and other A.E.A. reactors for their use.

(g) (Page 9). Professor Merrison was asked if he would be able to spend £1.7 million capital at the Electron Laboratory in 1964/65. He replied that this was his present estimate, allowing for the delay in getting on to the site. Any consequential delays to the plant caused by the building delay had not been allowed for. There was of course uncertainty over the dates when bills would fall to be paid. He had assumed a steady rate of payment on all contracts. An element of the shadow cut was applicable to the Electron Laboratory, to take account of unforeseen delays.

(h) (Page 10). The Electron Laboratory main building contract had been placed at a price within the estimate. Professor Merrison expected tenders for the magnet contract to be rather above the estimate, but other plant items to be obtained at the estimated costs.

(i) (Page 12). The sums included in the Estimate for the proposed large electrostatic generator (if it were approved) would provide for completion by about 1967/68: a year later than had been contemplated in the report (NI/63/11) in which it was proposed.

(j) (Page 12). It would be helpful to list together all major new proposals including for example the proposed high flux beam reactor and the P.L.A. extension.

4.2 In connection with the points recorded at (d) and (j) above, the Board invited the Physics Committee to review the Institute's proposed future projects, and to recommend an order of priority among them.

4.3 After consideration also of paper NI/63/17 (reported below), the Board approved the Estimates contained in paper NI/63/18, subject to any necessary minor amendments.

5. COMMENTS ON THE EXPENDITURE OF THE RUTHERFORD LABORATORY AND COMPARISON WITH C.E.R.N. (NI/63/17)

5.1 Professor Cassels introduced paper NI/63/17 and summarised the main points (pages 6 and 7 of the paper). He said that he had found the analysis of expenditure on the different activities to be most revealing, and he hoped that analysis in a similar way would be made regularly. On investigation it did seem reasonable that the operation of the two Rutherford Laboratory machines should be as expensive as that of the two C.E.R.N. machines. The cost was more dependent on power requirements and the degree of complication of the accelerator than on the energy. As to expenditure on research, the investigation showed that this was already high in 1963/64, particularly on beam transport and on counter experiments. On bubble chambers, expenditure was low, but the potential expenditure on operating three large bubble chambers was high, and a policy for their use within available funds needed to be carefully considered. The investigation indicated (page 9) that the Rutherford Laboratory needed £6.45 million in 1964/65. The Estimates just discussed (Minute 4) provided £6.5 million less about £0.25 million of the shadow cut, so it did appear that the work of the Laboratory would be restricted. Turning to the later years, Professor Cassels emphasised that the 5% p.a. growth of staff numbers and non-capital expenditure which was assumed, allowed only for the natural increase in the sophistication and costliness of experiments and was not intended to provide for new major advances or for increased numbers of experimental teams. The C.E.R.N. forecast budgets provided for a faster rate of increase. He thought this was right, because major advances were more likely at the highest-energy accelerator.

5.2 Dr. Adams pointed out that the Rutherford Laboratory budget of £6.45 million in 1964/65 did not allow for any appreciable sum for new capital schemes, and so a back-log of schemes would build up, adding to the difficulties in the later years. He thought that the minimum budget for 1965/66 might be £7 million rather than £6.8 million as suggested on page 9 of the paper. He also drew particular attention to the point made in the last paragraph of the report, i.e. that the Director of the Laboratory would need support in keeping the numbers of users down to the figure of about 200 which the expected funds would support. Dr. Pickavance said that the number of people already known to want to use the Rutherford Laboratory was near 200.

5.3 The Chairman said that he would have expected the operation of C.E.R.N. to be more expensive than that of the Rutherford Laboratory because of high prices in Geneva. Dr. Adams replied that C.E.R.N. had undoubtedly secured very low prices in contracts. Professor Cassels said that he thought C.E.R.N. was outstandingly efficient in organising good research at a reasonable cost.

6. RECOMMENDATION BY THE RESEARCH REACTOR COMMITTEE CONCERNING A HIGH-FLUX BEAM REACTOR (NI/63/21)

Sir John Cockcroft introduced paper NI/63/21. He said that the reason for this preparation of the paper at this juncture was that a proposal for a European high-flux beam reactor had been made, and the Government would need advice on the scientific case for British

participation in any such reactor. The original capital cost of the project was estimated to be £10 million and the operating cost £2½ million per annum. It would be expected that the British contribution would be about 40% if the site was in this country or 15% if it was elsewhere in Europe. Sir John added that the proposal did not seem likely to be approved by European governments in the near future. The paper was not therefore intended to make an immediate case for money, but to state the scientific case. He thought that a strong case was made on the basis of solid state work and there were also applications to liquid state work. At present about 20 scientists in the A.E.A. and 10 in universities were using reactors in these fields, and the latter number was expected to rise to 40 or more in the next ten years.

In discussion of the paper, it was stated that there were further potential demands on a high-flux beam reactor, for example by more people including chemists, turning from x-ray spectroscopy to neutron spectroscopy, but that the use of existing reactors by university scientists in this country (and indeed in Europe) had been disappointing. The Institute's support of this work in existing reactors was now having an effect, and there was scope for more support when the Institute could afford it.

The Board invited Sir John Cockcroft to arrange for the Physics Committee's review of priorities to include consideration of the high flux beam reactor.

7. NAME FOR THE ELECTRON LABORATORY (NI/63/22)

The name "Daresbury Nuclear Physics Laboratory" was approved by the Board.

8. PROGRESS AT THE RUTHERFORD LABORATORY (NI/63/15)

On behalf of the Board the Chairman congratulated Dr. Pickavance and his staff on the successful first operation of Nimrod at full energy on 27th August, 1963.

There were no other particular comments on the report.

9. PROGRESS WITH THE DARESBURY NUCLEAR PHYSICS LABORATORY (NI/63/15)

Professor Merrison reported that access to the site at Daresbury had just been obtained, and preliminary work was starting immediately.

10. OFFICIAL OPENING OF NIMROD

The Chairman asked for views as to whether Members would wish their wives to be invited to the Opening Ceremony in April, 1964. It was agreed that this should not be done, but that appropriate members of the Laboratory staff should be invited to bring their wives.

11. THE REPORT OF THE TREND COMMITTEE

Advance copies of the Trend Committee's report were received during the meeting. The Chairman said that he had been assured by the Minister for Science that the bodies concerned would be consulted before the Government decided on action.

The Board invited a small committee, consisting of the Chairman, Dr. Adams, Professor Cassels, Professor Flowers and the two Directors to study the report, to take any immediate action which they thought desirable on behalf of the Board, and to make recommendations to the Board.

J. A. V. Willis,
Secretary.

Rutherford High Energy Laboratory,
Chilton, Didcot, Berks.