

FIFTH REPORT 1
FROM THE
SELECT COMMITTEE ON
ESTIMATES

TOGETHER WITH THE MINUTES OF EVIDENCE
TAKEN BEFORE SUB-COMMITTEE C ON
15TH AND 22ND FEBRUARY, 9TH MARCH AND
SUBSEQUENT DATES AND APPENDICES

Session 1953—1954

AGRICULTURAL RESEARCH

*Ordered by The House of Commons to be Printed
14th July 1954*

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Thursday, 12th November, 1953

Ordered, That a Select Committee be appointed to examine such of the Estimates presented to this House as may seem fit to the Committee, and to suggest the form in which the Estimates shall be presented for examination, and to report what, if any, economies consistent with the policy implied in those Estimates may be effected therein:—

Ordered, That the Committee do consist of Thirty-six Members.

The Committee was accordingly nominated of:—Mr. *Albu*, Mr. *Blackburn*, Sir *Alfred Bossom*, Mr. *Dryden Brook*, Miss *Burton*, Mr. *Norman Cole*, Viscountess *Davidson*, Sir *Patrick Donner*, Sir *Fergus Graham*, Mr. *Hobson*, Mr. *Holt*, Mr. *Horobin*, Mr. *H. Hynd*, Mr. *A. J. Irvine*, Mr. *T. W. Jones*, Mr. *MacColl*, Mr. *Malcolm MacPherson*, Major Sir *Frank Markham*, Mr. *Mulley*, Mr. *Godfrey Nicholson*, Mr. *Nigel Nicolson*, Mr. *Ormsby-Gore*, Sir *Ian Orr-Ewing*, Mr. *Peyton*, Sir *Leslie Plummer*, Mr. *J. T. Price*, Mr. *William Ross*, Mr. *William Shepherd*, Mr. *G. P. Stevens*, Mr. *Storey*, Mr. *Summers*, Mr. *Tomney*, Miss *Ward*, Captain *Waterhouse*, Mr. *Ian Winterbottom* and Mr. *Yates*.

Ordered, That Seven be the Quorum of the Committee.

Ordered, That the Minutes of Evidence taken before Sub-Committee C of the Select Committee on Estimates in the last Session of Parliament on 23rd March, 1953, and subsequent dates, and Appendices, be referred to the Committee.

Ordered, That the Committee have power to send for persons, papers and records; to sit notwithstanding any Adjournment of the House; to adjourn from place to place; and to report from time to time.

Ordered, That the Committee have power to appoint Sub-Committees and to refer to such Sub-Committees any of the matters referred to the Committee.

Ordered, That Three be the Quorum of every such Sub-Committee.

Ordered, That every such Sub-Committee have power to send for persons, papers and records; to sit notwithstanding any Adjournment of the House; and to adjourn from place to place.

Ordered, That the Committee have power to report from time to time Minutes of Evidence taken before Sub-Committees.—(Mr. *Wills*.)

The cost of preparing for publication the Shorthand Minutes of Evidence taken before Sub-Committee C was £127 7s. 1d.

The cost of printing and publishing this Report is estimated by H.M. Stationery Office at £570 0s. 0d.

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FIFTH REPORT

THE SELECT COMMITTEE appointed to examine such of the ESTIMATES presented to this House as may seem fit to the Committee, and to suggest the form in which the Estimates shall be presented for examination, and to report what, if any, economies consistent with the policy implied in those Estimates may be effected therein;—HAVE made further progress in the matters to them referred and have agreed to the following REPORT:—

AGRICULTURAL RESEARCH

INTRODUCTION

1. Your Committee have examined the Estimates of the following Departments so far as they relate to agricultural research:—

Civil Estimates, 1954-55:

- Class I, Vote 4, Treasury and Subordinate Departments,
- Class VIII, Vote 1, Ministry of Agriculture and Fisheries,
- Class VIII, Vote 3, Services to Agriculture,
- Class VIII, Vote 7, Agricultural Research Council and Nature Conservancy,
- Class VIII, Vote 12, Department of Agriculture for Scotland,
- Class IX, Vote 8, Department of Scientific and Industrial Research.

These Estimates were referred to Sub-Committee C who received memoranda from the following Departments and organisations:—

- The Ministry of Agriculture and Fisheries⁽¹⁾,
- The Department of Agriculture for Scotland⁽²⁾,
- The Treasury⁽³⁾,
- The Agricultural Research Council⁽⁴⁾,
- The Department of Scientific and Industrial Research⁽⁵⁾,
- The National Union of Agricultural Workers⁽⁵⁾.

Evidence was heard from all these bodies, except the National Union of Agricultural Workers, and also from:—

- The Office of the Lord President of the Council,
- The President of the National Farmers' Union,
- The Director of the Rothamsted Experimental Station,
- The Director of the National Institute for Research in Dairying.

The Sub-Committee also heard evidence from the Directors of the following research institutes which they visited:—

- The National Institute of Agricultural Engineering, Silsoe, Bedfordshire.
- The East Malling Research Station, Nr. Maidstone, Kent.
- The Institute of Animal Physiology, Babraham, Cambridge,
- The A.R.C. Field Station, Compton, Berkshire, and
- The Veterinary Laboratory, Weybridge.

⁽¹⁾ M. 1, p. 1; M. 6, p. 89; A. 1, p. 137;
A. 2, p. 137; A. 4, p. 143; A. 5, p. 144.

⁽²⁾ M. 2, p. 7.

⁽³⁾ M. 4, p. 24; A. 2, p. 139.

⁽⁴⁾ M. 5, p. 54; A. 3, p. 140; A. 5, p. 144.

⁽⁵⁾ Not printed.

2. The enquiry was directed to the administration of, and expenditure incurred on, agricultural research by the various Departments and organisations involved, but did not extend to the organisations concerned with the practical application of the results, except that some evidence was heard about the methods used to get the results of research adopted by farmers, principally through the National Agricultural Advisory Service.⁽⁶⁾ Your Committee consider that that may well be a proper subject for further enquiry. It would have been outside Your Committee's order of reference to attempt to assess the scientific or practical value of the work being done.

3. This enquiry into agricultural research arose from Your Committee's Second Report of this Session⁽⁷⁾ on Grants in Aid and it is for this reason that certain evidence is attached to this Report on the grants in aid administered by the agricultural Departments and the Scottish Home Department, for agricultural education, for the marketing funds and for fisheries.⁽⁸⁾ Your Committee's recommendations on grants in aid in general apply equally to these particular grants in aid, and they have only two further observations to make. They consider that the Ministry of Agriculture and Fisheries should make it clear to the agricultural colleges that any losses they incur will not necessarily be made up by increasing the grant in aid paid for their maintenance expenses and that every encouragement should be given to them to cover their expenses out of fees and farm profits.⁽⁹⁾ Your Committee also wish to point out that an extra-statutory payment of £5,000 was made out of the Agricultural Marketing Fund in 1953 to cover the cost of a poll under the Apple and Pear Marketing Scheme, 1952.⁽¹⁰⁾ This was because the provisional board failed to apply to the Minister for a loan. However, as the poll was against the scheme, such a loan would not have been repayable. Your Committee hope that in any future poll of this nature the application for a loan will be made before the poll so that a limit on the cost of the poll can be fixed in advance.

DEVELOPMENT OF AGRICULTURAL RESEARCH

Independent Grant-aided Institutes

4. ⁽¹¹⁾When the Development Fund was established in 1910, among its purposes was the promotion of scientific research and instruction and experiments in the science, methods and practice of agriculture, including the provision of farm-institutes. However, since that time the amount spent on research has greatly increased, and in 1946 the Development Commissioners considered that research had reached a stage of development where it had become a normal and recognised activity and should therefore no longer be financed from the Development Fund but instead be borne on the Votes of the agricultural Departments. The Development Commissioners had been allocating funds on an increasing scale to a number of independent institutes which had grown up in various ways, sometimes as units in universities and sometimes through the sponsorship of sections of the agricultural or horticultural community who desired specific scientific knowledge on subjects with which they were particularly interested. Support has since been given to these institutes by means of grants in aid, and, with one or two exceptions they have practically no other sources of research income. In addition the National Institute of Agricultural Engineering, which was started as a branch

⁽⁶⁾ Qs. 1050-2, 1220-3, 1702-8, 1782-5, 1811-22.

⁽⁷⁾ H.C. 1953-54, No. 143.

⁽⁸⁾ M. 1, p. 1; M. 2, p. 7; M. 3, p. 9;

Qs. 471-515, 590-628, 639-43, 651-5.

⁽⁹⁾ A. 1, p. 137; Qs. 475-7, 507-13.

⁽¹⁰⁾ Qs. 590-617.

⁽¹¹⁾ M. 1, p. 1; Q. 535.

of the Ministry of Agriculture and Fisheries, was hived off and is separately grant-aided; one or two other institutes have a similar history⁽¹²⁾. These were set up as companies, under the Companies Act, 1948, with independent governing bodies; they are limited by guarantee, have no share capital and are financed entirely by grants in aid from the Votes of the agricultural Departments. A number of grants are also made to universities and other bodies for specific investigations of a short-term character.⁽¹³⁾ In reply to some criticism of this use of grants in aid by the Committee of Public Accounts of Session 1950-51,⁽¹⁴⁾ the Treasury stated that the arrangements were necessary in view of the greater freedom of administration required for scientific research.⁽¹⁵⁾ This system of supporting independent institutes is still in force and the provision made in Subheads H.5 and H.6 of Class VIII, Vote 3, Services to Agriculture, amounts in 1954-55 to £2,490,000 for England and Wales, and the corresponding figure for Scotland in Subheads K.4 and K.5 of Class VIII, Vote 12, is £553,440. A list of the independent and university institutes receiving assistance is given in appendices to these two Votes.

Agricultural Research Council

5. ⁽¹⁶⁾The other principal contribution made to agricultural research is the provision in Class VIII, Vote 7, for the Agricultural Research Council which amounts in the current year to £1,199,500. The Council was created by Royal Charter in 1931 and is appointed by the Committee of Privy Council for Agricultural Research and Nature Conservation and therefore, like the Department of Scientific and Industrial Research and the Medical Research Council, is answerable through the Lord President of the Council to Parliament.⁽¹⁷⁾ There already existed the large number of research institutes referred to in the previous paragraph, but, since private funds were no longer forthcoming to support the increasing cost of developing research on an adequate scale, the Council was appointed to administer a grant in aid for research essential to the needs of agriculture and not already covered by the institutes grant-aided by the Ministry of Agriculture and Fisheries and the Department of Agriculture for Scotland.

6. ⁽¹⁸⁾The Council has set up a number of research stations and research units under its own control with the object either of filling important gaps in applied research not covered by any of the institutes grant-aided from the Votes of the agricultural Departments, or of stimulating fundamental research, particularly concerning animals,⁽¹⁹⁾ and so providing new scientific knowledge from which further advances in applied research may be made. The Agricultural Research Council has seventeen research institutes and units under its administration, a list of which is published in its booklet, "The Agricultural Research Service". This describes the work done not only at these institutes but also at those grant-aided by the agricultural Departments. Your Committee recommend that a list of the Agricultural Research Council's institutes and units should be included as an appendix to its Vote, distinguishing, as in the similar appendices to the Votes of the Ministry of Agriculture and Fisheries and the Department of Agriculture for Scotland, between capital and maintenance costs; the Treasury should then consider the amalgamation of the three lists to show the total cost incurred.

⁽¹²⁾ Qs. 517-9, 984-7, 1128, 1130-2.

⁽¹³⁾ M. 6, p. 89; Q. 1609.

⁽¹⁴⁾ H.C. 1950-51, No. 241-I, p. lxvii.

⁽¹⁵⁾ Qs. 520-2.

⁽¹⁶⁾ M. 4, p. 24; M. 5, p. 54; Q. 535.

⁽¹⁷⁾ Qs. 657-62.

⁽¹⁸⁾ M. 4, p. 24; M. 5, p. 54; Q. 535.

⁽¹⁹⁾ Q. 665.

7. ⁽²⁰⁾The Agricultural Research Council, however, was not established primarily to develop and administer research institutes, for its Charter charges it with the general organisation and development of all agricultural research in Great Britain. Its principal function, therefore, is the co-ordination of all agricultural research work whether financed by itself or not and it is the Council's duty to advise both the Ministry of Agriculture and Fisheries and the Department of Agriculture for Scotland on all scientific matters and on the size of the financial support to be given by the Departments to their own grant-aided institutes.⁽²¹⁾ The Vote for the Agricultural Research Council is accounted for by the Treasury, which cannot be expected to be informed about the relevant factors involved in assessing its size. ⁽²²⁾Co-ordination is provided, in theory, by the fact that the Minister of Agriculture and Fisheries and the Secretary of State for Scotland are members of the Committee of Privy Council for Agricultural Research and Nature Conservation. The two Agricultural Improvement Councils for England and Wales and for Scotland, which offer advice to the Agricultural Research Council on work needing to be done and receive the fruits of its work, are departmental bodies of whom the Permanent Secretaries of the Departments concerned are Chairmen. Parliamentary control over agricultural research, however, has to be exercised through the two agricultural Departments, the Office of the Lord President and the Treasury.

Research directly controlled by Agricultural Departments

8. ⁽²³⁾There remains the research financed directly from departmental Votes. This comprises the Veterinary Laboratories at Weybridge and Lasswade, the Plant Pathology Laboratory at Harpenden and the Seed Testing and Plant Registration and Plant Pathology Service in Scotland as well as the work done at the National Agricultural Advisory Service experimental centres and provincial laboratories and the experiments carried out by the provincial and county staff of the National Agricultural Advisory Service to throw light on local problems. ⁽²⁴⁾Most of the work done is concerned with specific problems arising out of the statutory responsibilities of the Departments in respect of plant diseases, pest control and contagious diseases of animals or out of services, such as artificial insemination, provided by the Departments. The Veterinary Laboratories are under the control of the Chief Veterinary Officer and are responsible for the preparation of biological materials such as tuberculin, contagious abortion vaccine and swine fever vaccine⁽²⁵⁾. It appears to be an anomaly that the Chief Scientific and Agricultural Adviser to the Minister has no responsibility for this work⁽¹⁾.

TOTAL EXPENDITURE AND ESTIMATING PROCEDURE

9. The total gross sum voted in the financial year 1954-55 for all agricultural research, including the work done in the National Agricultural Advisory Service experimental centres and provincial laboratories and the cost of administration, is made up as follows:—

⁽²⁰⁾ M. 4, p. 24; M. 5, p. 54.

⁽²¹⁾ Qs. 574-7, 629.

⁽²²⁾ A. 2, p. 137; Qs. 690, 1284-9, 1610, 1674, 1701-5, 1800.

⁽²³⁾ M. 6, p. 89.

⁽²⁴⁾ Qs. 667-8, 1619-22, 1630-46, 1650-62, 1690-3, 1803, 1911-3.

⁽²⁵⁾ Q. 1928.

⁽¹⁾ Qs. 1670-3.

	Capital Works	Maintenance and Salaries	Total
	£	£	£
Ministry of Agriculture and Fisheries ...	1,427,625	2,715,100	4,142,725
Department of Agriculture for Scotland...	82,670	547,770	630,440
Agricultural Research Council	332,000	867,500	1,199,500
	£ 1,842,295	4,130,370	5,972,665

This total of nearly £6 million may be compared with the estimated net output of agriculture in the United Kingdom in 1953-54 of £936,700,000. The figures printed in the appendix entitled "Research and Development" which appears in the Estimates after Class IV, Vote 10, do not, however, include the expenditure in the National Agricultural Advisory Service establishments engaged on research, nor the expenditure on infestation control research. It does not appear to be the responsibility of the Departments to interest themselves in the total amount of money voted annually for agricultural research nor are they aware of the total commitments involved in the programme of capital expenditure⁽²⁾.

10. ⁽³⁾The procedure adopted for deciding the Estimate for the Agricultural Research Council is that normal to a research organisation financed entirely by means of a grant in aid and the Council negotiates direct with the Treasury with the general approval of the Office of the Lord President of the Council. But the procedure adopted for the grant-aided institutes of the Departments is different, for the size of the grant in aid for each institute is decided by a departmental estimates committee, of which the chairman is the Secretary of the Agricultural Research Council, and is then put to the Treasury by the agricultural Departments⁽⁴⁾. The Agricultural Research Council has no official knowledge of the proposed expenditure by the Departments on research to be undertaken by their own establishments⁽⁵⁾. Thus the only Department able to exercise financial co-ordination of all agricultural research is the Treasury⁽⁶⁾.

CONTROL AND ADMINISTRATION OF RESEARCH

11. ⁽⁷⁾The scientific programmes of both the independent grant-aided institutes and the institutes under the direct control of the Agricultural Research Council are co-ordinated and supervised by the Council. ⁽⁸⁾Co-ordination with the work done in the Departments themselves is, however, only informal and as the result of the exchange of information by members of various committees of the Agricultural Research Council.

12. ⁽⁹⁾Both the scientific and non-scientific staffs of the Agricultural Research Council's institutes are appointed by the Council itself which is responsible for seeing that their conditions of service and those of the staffs of the independent institutes are kept in step. The scientific staff of the independent institutes are appointed by their governing bodies on the basis of recommendations from the Agricultural Research Council, but the non-

⁽²⁾ Qs. 1333-4, 1678-82.

⁽³⁾ M. 4, p. 24; M. 5, p. 59; Qs. 582-3, 1328.

⁽⁴⁾ Qs. 524-8, 1088-90.

⁽⁵⁾ Qs. 1269, 1664.

⁽⁶⁾ Qs. 1678-89.

⁽⁷⁾ M. 1, p. 1.

⁽⁸⁾ M. 5, p. 54; A. 2, p. 137; Qs. 1269-70, 1664.

⁽⁹⁾ M. 5, p. 54; Qs. 1244-8.

scientific staff⁽¹⁰⁾ are controlled by the Departments which relate their conditions of service to comparable grades in the Civil Service. Evidence⁽¹¹⁾ was heard from the Directors of three of the largest independent institutes, who were unanimous in voicing the opinion that the Departments showed less appreciation and less understanding than the Council, particularly over the appointment of staff to the institutes. Examples were given about the difficulties experienced in appointing such staff as librarians, farm managers and typists⁽¹²⁾, and it was stressed that the Departments' rules and regulations concerning such staff were often not appropriate to research institutes⁽¹³⁾.

13. It was perhaps natural that these Directors should regret the loss of independence⁽¹⁴⁾ entailed in their increasing reliance on government funds and there was obvious anxiety lest there should be too great a concentration of control in a single body. Nevertheless, the evidence was clear that the system of direct administration by the Agricultural Research Council promoted greater flexibility both of administration and of the research programmes⁽¹⁵⁾.

14. ⁽¹⁶⁾The advantages of a grant in aid to a body such as the Agricultural Research Council are similar to those enjoyed by the Medical Research Council as described in paragraph 10 of Your Committee's Second Report. They enable it not only to exercise freedom in all matters of scientific policy but also to retain some flexibility in deciding how the grant shall be spent. ⁽¹⁷⁾For instance, the Agricultural Research Council can transfer funds from one institute to another as long as they do not transfer from expenditure on capital to expenditure on maintenance, which includes all running expenses. They are also allowed to carry a small central contingency fund which enables them to finance urgent projects arising during the year. Such a central contingency fund can be much smaller than the total of a number of separate funds granted to each independent institute for a similar purpose.

CAPITAL WORKS PROGRAMME

15. ⁽¹⁸⁾In 1946 the Government approved a post-war programme for agricultural research which involved a considerable capital expansion⁽¹⁹⁾. About half of this programme remains to be completed and some of it has not yet reached the planning stage. The figures provided by the Agricultural Research Council show that £232,500 will be needed after the end of this financial year to complete work at present in hand, and about £542,000 may be needed thereafter for work which has not already reached the planning stage. Similar figures for the programme of the Ministry of Agriculture and Fisheries at the independent institutes are £444,771 and about £1,325,500. It is expected, however, to complete the programme in the next four to six years, and no further programme is at present envisaged. As the greater part of the building programme at both the Departments' and the Council's grant-aided institutes is done by private builders and architects, no mention is made of these capital works in Class VII, Vote 3, Public Buildings, United Kingdom. Your Committee recommend, therefore, that an appendix should be provided in the Estimates, in conjunction with that recommended in paragraph 6, showing the progress being made

⁽¹⁰⁾ A. 2, p. 137.

⁽¹¹⁾ Qs. 1837, 1841-3, 1866, 1869.

⁽¹²⁾ Qs. 1842, 1870, 1900, 1908.

⁽¹³⁾ Qs. 1837, 1899-1901.

⁽¹⁴⁾ Qs. 1838-47, 1851-5, 1871.

⁽¹⁵⁾ Qs. 1298-1301, 1311-4, 1416-20, 1504, 1792-4.

⁽¹⁶⁾ M. 4, p. 24; M. 5, p. 59.

⁽¹⁷⁾ Qs. 1340, 1391-1404.

⁽¹⁸⁾ A. 5, p. 144.

⁽¹⁹⁾ M. 5, p. 54; Qs. 1359-64.

on capital works, on the same lines as the details of New Works, etc., which are given in Part III of the Estimate for Public Buildings in the United Kingdom.

16. In getting building work done the Agricultural Research Council has some advantages over the independent institutes. The latter are strictly limited in their building programmes to the amounts of the grants voted for them annually, any unexpended balances of which have to be surrendered at the end of the financial year, because they are not grants in aid. ⁽²⁰⁾The Agricultural Research Council, however, has been allowed to carry over part of its funds if it has fallen behind in its building work in a particular year. This has been of special value during a period of inevitable building delays. It appears, however, that the amount permitted by the Treasury to be carried over has been getting smaller⁽²¹⁾. This may have serious effects on the economy of building if it causes delay in placing contracts⁽²²⁾. So far the reverse difficulty, that is to say of shortage of funds causing work to be stopped during the year, has not been experienced⁽²³⁾; but if building conditions become easier it might well be so. The only way to deal with the inevitable fluctuations in the rate of building is to allow some carry-over of funds⁽²⁴⁾ and it is obviously more economical for this to be done in the case of the Agricultural Research Council than for the independent institutes, as the rates of growth of the different institutes of the Council tend to balance each other out.

17. The Government programme approved in 1946 was not for a fixed amount of money⁽²⁵⁾. Capital projects are sanctioned annually. It appears that there would be economies in having a quinquennial grant⁽¹⁾ such as that made to the University Grants Committee or recently announced for the Department of Scientific and Industrial Research, so that contracts could be placed ahead with confidence; although it must always be remembered that such a quinquennial grant is no more than a Government promise to pay a certain sum over a period of years and the required sums have still to be voted annually.

DESIGN OF BUILDINGS

18. Your Committee sought information about the control exercised over the design of laboratories and other research buildings⁽²⁾. Private architects and contractors are now used for the greater part of the building work required by both the Agricultural Research Council and the independent institutes. In one or two cases the design of laboratories did not appear the most economical for the purpose and Your Committee were pleased to be informed that the Nuffield Foundation is at present carrying out an investigation on behalf of the Council into the problem⁽³⁾. In particular, Your Committee hope that consideration will be given to the advantages of laboratories constructed from standard elements, such as those being erected at Babraham, rather than in more permanent and less adaptable brick buildings.

⁽²⁰⁾ Qs. 1367-72.

⁽²¹⁾ Q. 1417.

⁽²²⁾ Qs. 1371-2.

⁽²³⁾ Q. 1423.

⁽²⁴⁾ Qs. 1416-20.

⁽²⁵⁾ Q. 1359.

⁽¹⁾ Qs. 1371-2, 1416-20, 1469-70.

⁽²⁾ Qs. 1347-9, 1357-8, 1462-4, 1496-7, 1767-9.

⁽³⁾ Qs. 1375-6, 1380-1, 1419-20.

ACCOUNTING YEARS OF INSTITUTES

19. (4) The accounts of the Ministry of Agriculture and Fisheries' grant-aided institutes are made up for the period from October to September, but the accounts of the Scottish sub-stations of the same institutes cover the ordinary financial year. Evidence was given that this difference in accounting dates complicated the accounts and financial supervision by the Agricultural Research Council which keeps for its own institutes the normal financial year. Your Committee, in trying to ascertain the total expenditure on each institute and on all agricultural research in any one year, also found this dual system an unnecessary complication. It was stated in evidence that the only reason for this variation in the accounting years was that some of the institutes in question were historically part of certain universities and therefore kept accounts for the academic year. Your Committee see no advantage in continuing this system, and they therefore recommend that, subject to there being no objection by the Committee of Public Accounts, the accounts of all research institutes should in future be made up for the financial year.

INSTITUTE FARMS

20. Most institutes have farms or gardens attached to them, which are used for experimental purposes or to breed animals required for research. The surplus produce of these farms is sold and the proceeds provide part of the income of the institutes. In all of them farm accounts are kept in some form. As far as Your Committee were able to judge, the farms were well managed, but obviously a farm which is part of a research institute cannot be expected to show the same profit as a commercial concern. Your Committee hope that, as far as possible, separate farm accounts will be kept as a check on farm management. They also wish to draw attention to the need to maintain full cultivation of all farms and the use of all farm resources, even when, as appeared in one case, the research requirements are not yet fully developed(5).

NATIONAL AGRICULTURAL ADVISORY SERVICE EXPERIMENTAL CENTRES

21. (6) After the war, a plan was approved for the establishment of seventeen experimental husbandry farms and five horticultural stations to provide facilities for the application of research in the field and on a commercial scale in different parts of the country. These centres attract much interest among farmers in their areas as demonstrations of how the new scientific advances can be applied. At the present time only nine of the farms have been established and there are no immediate plans for the remainder.

PRIVATE CONTRIBUTIONS TO AGRICULTURAL RESEARCH

22. (7) As has already been explained, many of the independent grant-aided institutes were started privately by interested farmers or growers or as departments of universities or colleges. To-day the proportion of their revenue which still comes from non-government sources is negligible. In paragraph 35 of their Second Report Your Committee drew attention to the view that "there

(4) Qs. 1064-7, 1388-90, 1414-5.

(5) Qs. 1522-43.

(6) M. 6, p. 89; Qs. 1567-98, 1813-4.

(7) A. 2, p. 137; Qs. 663-4, 667-85, 1030, 1134-8, 1155-6, 1228, 1825-33.

is a tendency for Government assistance to result in drying up rather than in stimulating voluntary financial effort". Your Committee, therefore, made enquiries into the possibility of financing some of the institutes on a similar co-operative basis to that used by the Department of Scientific and Industrial Research for the Industrial Research Associations⁽⁸⁾. Evidence received from the Department of Scientific and Industrial Research showed that several methods were used to obtain the industrial contributions to these associations. While in most cases the contributions were voluntary subscriptions paid directly by member firms, about one-third were collected by a trade association or paid out of the funds of a trade association. In four cases they were paid by means of statutory levies.

23. ⁽⁹⁾Witnesses drew attention to the very large number of farmers, most of them in a small way, and compared this situation with that in the building industry where the Department of Scientific and Industrial Research had not found it possible to start an Industrial Research Association on a co-operative basis. Attention was also drawn to the danger, if farmers and manufacturers contributed to the institutes, of pressure being brought by special interests which would throw the research programmes out of balance⁽¹⁰⁾. The institutes are sometimes required to provide an independent judgment on new development or make independent tests on new equipment⁽¹¹⁾. Your Committee realise the force of these arguments and wish to point out that they underline the importance of not undertaking work which is likely to be undertaken by commercial firms⁽¹²⁾. They also hope that the question of non-governmental contributions will be kept under continual review.

PATENTS AND ROYALTIES

24. ⁽¹³⁾The work of the institutes gives rise to a number of potentially valuable inventions or discoveries, many of which are patentable. In the case of patents by civil servants there is a long established rule governing their assignment and exploitation. Some departmental institutes have recently been transformed into independent grant-aided companies and in these cases new rules have not yet been made. In general, the procedure for patenting discoveries made by the agricultural research service has not been regularised, but it is proposed to make it a condition of service of every research worker to assign his discovery to his institute and to make every institute re-assign it to the National Research Development Corporation for exploitation. The institutes would then receive at least fifty per cent. of any royalty revenue earned by the Corporation. Your Committee consider that, in view of the great increase in governmental contributions to agricultural research in the last few years, this matter has been unduly delayed and recommend that the rules governing assignment of inventions and discoveries should be introduced at once.

CONCLUSIONS

25. The present arrangements for agricultural research are the result not of conscious policy, but of historical accident⁽¹⁴⁾. It is doubtful if the method of control and co-ordination is suitable for the present conditions by which almost the whole of the very greatly increased funds required have to be

⁽⁸⁾ Qs. 1427-61.

⁽⁹⁾ Qs. 1437, 1826.

⁽¹⁰⁾ Qs. 990, 1320-6, 1825-33.

⁽¹¹⁾ Q. 992.

⁽¹²⁾ Qs. 980, 1278-80.

⁽¹³⁾ A. 2, p. 137; Qs. 548-9, 553-9, 584-9, 1008-22, 1278-81.

⁽¹⁴⁾ Qs. 529, 663-6, 672-3, 1693.

voted by Parliament. As long ago as 1951 the Treasury reported to the Committee of Public Accounts that the subject was under review.⁽¹⁵⁾ Evidence was given that the matter is still under review between Ministers and it would not, therefore, be appropriate for Your Committee to make firm recommendations⁽¹⁶⁾.

26. The anomalies arising out of the present arrangements have already been described and, in particular, the lack of any Department responsible for overseeing the whole of the expenditure on agricultural research. Under the present arrangements, in addition to their regular grants in aid or grants, for maintenance and capital expenditure, some organisations receive separate grants from one of the Departments or from the Agricultural Research Council for special investigations and researches⁽¹⁷⁾. For example, the institute at Long Ashton receives regular grants in aid for maintenance expenditure from both the Ministry of Agriculture and Fisheries and the Agricultural Research Council, and grants for capital works from both sources as well; it is also at present in receipt of one special grant from the Ministry and no doubt could also receive grants for special purposes from the Council⁽¹⁸⁾. As this institute is part of Bristol University it is also indirectly grant-aided by public funds received from the University Grants Committee.

27. Even within the Departments themselves the responsibility for advice and administration of research appears to be divided. In the Ministry of Agriculture and Fisheries, for instance, responsibility is divided right at the top⁽¹⁹⁾; the veterinary laboratories being ultimately responsible for administration to a different Deputy Secretary from other research services and not being subject to the advice of the Chief Scientific Officer. A separate responsibility rests in the Department of Agriculture for Scotland. On the other hand, Your Committee found no evidence of waste or inefficiency in the running of the individual institutes they examined. They have drawn attention to matters in which they think that overall economies might be effected, especially if the present independent institutes were brought under the administration of the Agricultural Research Council. They believe that this could be done without interfering with the supervision at present exercised by their governing bodies. Your Committee would particularly emphasise the lack at the present time of any general control over the whole capital programme, except by the Treasury⁽²⁰⁾.

28. Your Committee conclude by expressing the hope that the review of the administration of agricultural research at present being undertaken by Ministers will be brought to a speedy conclusion and that due consideration will be given to the views expressed in this Report.

(15) H.C. 1951-52, No. 85-1, pp. xxv-xxvi.

(16) Qs. 532-3, 536, 671, 1674.

(17) Qs. 529-30, 1609.

(18) A. 3, p. 140; Qs. 1864-9.

(19) Qs. 1670-6.

(20) Qs. 1678-87.

MINUTES OF EVIDENCE TAKEN BEFORE
SUB-COMMITTEE C

17

MONDAY, 15TH FEBRUARY, 1954.

Members present:

Mr. Albu in the Chair.

Mr. Blackburn.
Sir Alfred Bossom.
Mr. Hobson.
Mr. MacColl.

Mr. Ormsby-Gore.
Mr. Summers.
Captain Waterhouse.

Mr. G. M. WILSON, an Assistant Secretary, Treasury; Mr. A. R. MANKTELOW, C.B., an Under Secretary, Mr. A. B. BARTLETT, an Assistant Secretary, and Mr. J. A. K. CHRISTIE, an Assistant Secretary, Ministry of Agriculture and Fisheries; Mr. J. R. MCCALLUM, M.C., an Assistant Secretary, and Mr. W. M. RAMSAY, Finance Officer and Accountant, Department of Agriculture for Scotland; and Mr. A. J. AGLIN, an Under Secretary, and Mr. W. L. WALKER, an Assistant Secretary, Scottish Home Department, called in and examined.

The witnesses submitted the following Memoranda:

(MEMORANDUM) 1

ADMINISTRATION OF GRANTS IN AID

Memorandum by the Ministry of Agriculture and Fisheries

The grants in aid administered by the Department are made under the following heads:—

- (1) Agricultural Education (Subhead G.6 of Class VIII, 1. 1953-54).
- (2) Agricultural Research (Subhead G.9 of Class VIII, 1. 1953-54).
- (3) Agricultural Marketing Fund (Subhead M.2 of Class VIII, 1. 1953-54).
- (4) White Fish Authority—Provision of Boats and Engines (Subhead D of Class VIII, 3, 1953-54).
- (5) White Fish Authority—Loans (Subhead E of Class VIII, 3. 1953-54).
- (6) White Fish Marketing Fund (Subhead F of Class VIII, 3. 1953-54).

I. Agricultural Education

1. The grants in aid under this head are paid, according to need, to four Colleges providing mainly two-year diploma courses in agriculture and related subjects,* the Ministry's powers to give financial assistance being derived from Section 2 (2) of the Board of Agriculture Act, 1889. The Agricultural Colleges are largely independent institutions, the Ministry's grants in aid being small maintenance grants in respect of their annual estimated deficits, i.e. where the amounts received from fees, etc. are insufficient to cover their annual maintenance expenditure. Grants in respect of approved capital expenditure are made under Subhead G.4 (a) which is not a grant in aid subhead.

2. Prior to the second world war the grants in aid to the agricultural colleges were assessed at intervals of five years after an examination and inspection of the work of the colleges by a special Committee appointed by the Ministry. Since 1940, however, the grants have been assessed each year after receipt of the Colleges' statements of estimated payments and receipts during the coming year, and Treasury authority is obtained for each individual grant.

* *Note.* Responsibility for the agricultural faculties of *Universities* providing degree courses, and for veterinary education at Universities was handed over to the University Grants Committee in 1947; responsibility for the Royal Veterinary College, which became a school of the University of London on 1 October, 1949, was handed over to the U.G.C. in 1950. Education in agricultural subjects at *Farm Institutes* providing one-year courses is undertaken by Local Education Authorities and is grant aided by the Ministry under a separate Subhead (Class VIII, 1, Subhead G.5—not grant in aid) at 60 per cent. of the actual approved net expenditure up to a given maximum for each county.

15 February, 1954.] Mr. G. M. WILSON, [Continued.
 Mr. A. R. MANKTELOW, C.B., Mr. A. B. BARTLETT, Mr. J. A. K. CHRISTIE,
 Mr. J. R. MCCALLUM, M.C., Mr. W. M. RAMSAY, Mr. A. J. AGLÉN and
 Mr. W. L. WALKER.

3. The four agricultural colleges receiving grants in aid from the Ministry are:—

	1953-54 <i>Vote Provision*</i> <i>Subhead G.6</i>
	£
The Royal Agricultural College, Cirencester, Glos.	2,000
Harper Adams Agricultural College, Newport, Salop	6,000
Seale Hayne Agricultural College, Newton Abbot, Devon	3,500
Studley Agricultural College, Warwickshire	3,500

The Royal Agricultural College has however received no grant at all during the past two years owing to its favourable financial position.

4. The following notes are applicable to each of the four colleges:—

- (a) Each college is required to submit, before the commencement of the academic year, a detailed statement under specified headings of its estimated payments and receipts during the year (the latter would include students' fees, income from investments, contributions from counties, etc.) and to show the expected profit or deficit on maintenance for the year. These figures are examined in detail by the Ministry and comparisons made with the previous year's estimate and the last available audited accounts, including the Balance Sheet. Any unusual variations or omissions are taken up with the College and eventually a grant is assessed which it is considered would be reasonable for the year in the light of the College's general financial position. Regard is had in this assessment to any profits or losses on the College farms. Application is then made to the Treasury for authority to pay a grant in aid of a given sum and when the approval has been received from the Treasury the College is informed accordingly. The grant for the academic year is paid to the College in one sum, usually in about May or June, i.e. towards the end of the academic year. The College is required to submit, after the close of each year, a copy of the audited accounts and they also submit a full statement of the work carried out during the year.
- (b) The object of the grant in aid is to enable a College to maintain its courses—usually extending over two academic years and leading to the College's own diploma or to a national diploma—at a satisfactory standard and for a suitable number of students. Each College has a farm attached to it and each specialises to some extent on a particular aspect of agricultural practice. The Royal Agricultural College pays special attention to farm and estate management with diploma courses in agriculture, specialising in this subject and in agricultural science. Harper Adams has a diploma course in poultry husbandry as well as in agriculture and farm management and has special facilities for pig husbandry. The courses at Seale Hayne are in agriculture and dairying and at Studley in horticulture and dairy husbandry.
- (c) The policy for controlling the expenditure of a grant in aid is to ensure that no surpluses are accumulated as the result of a lower net expenditure or higher receipts than were envisaged when the estimates were submitted. If surpluses are accumulated, either as the result of lower expenditure or greater receipts, the College is expected to allocate at least a part of the surplus to future maintenance expenditure, thereby reducing the amount of a grant in aid in a subsequent year. It is, however, necessary for a College to have a moderate surplus in reserve in order to meet its share of any future capital expenditure (the capital grants given by the Ministry are on a percentage basis and meet only part of the cost of any approved capital project).
- (d) As the expenditure for which a grant in aid is given is not specified and not confined to one special part of a College's activities, the expenditure cannot be shown separately in the College's audited accounts.
- (e) In accordance with the established rule that a grant in aid is exempted from the condition that the money must be expended within the financial year, any surpluses arising from the year's working are not recovered; but, as explained in (c) above,

* Note. Up to 1953-54 provision has also been made under this Subhead for a grant of some £1,300 to Nottingham University in respect of work on fruit and potato demonstration plots, but this grant is paid on a deficiency basis and in 1954-55 provision is being made under a separate Subhead for Miscellaneous Grants and Contributions (*not* grant in aid).

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Mr. G. M. WILSON, [Continued.
 Mr. A. R. MANKTELOW, C.B., Mr. A. B. BARTLETT, Mr. J. A. K. CHRISTIE,
 Mr. J. R. MCCALLUM, M.C., Mr. W. M. RAMSAY, Mr. A. J. AGLIN and
 Mr. W. L. WALKER.

any surpluses are usually taken into account in determining the amount of the following year's grant in aid.

- (f) Any money that a grant aided body may earn during a year, whether by fees, income from investment, contributions or donations is, unless given for a specific purpose, brought into the annual maintenance account and, if not budgetted for, goes to reduce the annual net expenditure, thereby increasing the College's surplus for the year (or, as is sometimes the case, reducing the deficit). This improved financial position would probably result in a lower grant-in-aid in the succeeding year.

II. Agricultural Research

5. The present system of grants in aid to institutions undertaking agricultural research dates back in essentials to the establishment of the Development Fund under the Act of 1909. The scope and amount of research have steadily expanded and since 1931 the Agricultural Research Council has exercised co-ordinating and supervisory functions over the whole field and has advised the Ministry on scientific matters arising in the administration of the grant-aided institutes.

6. The Research Institutes (some of which are attached to Universities) grant aided by the Ministry are as follows:—

	1953-54 Vote Provision Subhead G.9
	£
University of Bristol: Long Ashton Research Station	82,000
University of Cambridge: Poultry Genetics Station	9,000
Cheshunt Experimental and Research Station, Waltham Cross and Glasshouse Crops Research Station, Littlehampton	36,000
East Malling Research Station, Kent	150,000
Foot and Mouth Disease Research Institute, Pirbright	107,000
Grassland Research Station, Hurley	76,000
John Innes Horticultural Institution, Bayfordbury	51,000
University of London: Institute for Research in Plant Physiology	22,000
National Institute of Agricultural Engineering, Silsoe, Beds.	229,000
National Vegetable Research Station, Wellesbourne	44,000
Plant Breeding Institute, Cambridge	28,000
University of Reading: National Institute for Research in Dairying	207,000
Rothamsted Experimental Station, Harpenden	265,000
University of Wales: Welsh Plant Breeding Station, Aberystwyth	63,000

7. Grants in aid are also made to the University of London (Wye College) for hops research (£10,000) and to the National Institute of Agricultural Botany (£106,000). The latter is primarily concerned with crop improvement and development including seed production and official seed testing and is not a research institute, although during the last two years it has undertaken a strictly limited programme of research on certain *ad hoc* problems related to its main programme.

8. These institutes are self-governing but, unlike the agricultural colleges, they are almost entirely dependent upon the Ministry's grant in aid to meet the annual cost of maintaining the institutes. The grants in aid made by the Ministry to the institutes are, as noted above, given on the recommendation of the Agricultural Research Council who supervise the scientific programme and control the appointment of the scientific staff; the Ministry controls the appointment of other staff.

9. The following notes are applicable to all the institutes:—

- (a) As in the case of the agricultural colleges, each research institute is required to submit, before the commencement of the academic year, a detailed statement under specified headings of its estimated payments and receipts during the year, together with additional statements showing the various items of new apparatus and equipment, repairs and renewals required. These statements are examined in detail by the Ministry and the Agricultural Research Council and the latter supply the Ministry with statements showing the details of staff,

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Mr. G. M. WILSON,

[Continued.]

Mr. A. R. MANKTELOW, C.B., Mr. A. B. BARTLETT, Mr. J. A. K. CHRISTIE,
Mr. J. R. MCCALLUM, M.C., Mr. W. M. RAMSAY, Mr. A. J. AGLIN and
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vacancies in staff and proposed new appointments and promotions. The estimates are then considered in detail at meetings between officers of the Ministry and the Agricultural Research Council and subsequently the Director of each Institute is called to a meeting at the Agricultural Research Council's Office (attended by officers of the Ministry) at which he is questioned about any doubtful or expensive items in the estimates. Subsequently an appropriate block grant is assessed, having regard to the institute's general requirements, and the Ministry applies to the Treasury for the necessary approval of each proposed grant. The grants to the institutes are mostly paid in four equal quarterly instalments in advance. The institutes are required to submit, after the close of each year, a copy of their audited accounts.

- (b) With one exception (John Innes) the institutes have virtually no resources other than those provided from public funds. The object of the grant in aid is to enable the institutes to carry out the annual programmes of research approved by the Ministry and the Agricultural Research Council.
- (c) The policy for controlling the expenditure of a grant in aid is to ensure that no large surpluses are accumulated as the result of a lower net expenditure than was envisaged when the estimates were submitted. If substantial surpluses occur, a reduction in the grant in aid in the following year is considered. In November, 1951, the Treasury, acting on a recommendation made by the Committee of Public Accounts (Session 1950-51), instructed that the books and accounts of bodies which receive the greater part of their income from public funds should normally be open to inspection by the Comptroller and Auditor General. The Ministry has therefore arranged for the books and accounts of the institutes falling in this category to be open to such inspection; these arrangements have not yet been finalised so far as concerns the Long Ashton Research Station and the Poultry Genetics Station attached to Bristol University and Cambridge University respectively.
- (d) As in the case of the agricultural colleges, the expenditure for which a grant in aid is given is not specified and not confined to one special part of an institute's activities; the expenditure cannot therefore be shown separately in the institute's audited accounts. The instalments of grant in aid paid to the institute are treated as a final charge in the Ministry's account.
- (e) In accordance with the established rule that a grant in aid is exempted from the condition that the money must be expended within the financial year, any surpluses arising from the year's working are not recovered, but as previously explained they are taken into account in determining the amount of the following year's grant in aid.
- (f) As in the case of agricultural colleges, any money that an institute may earn during the year is brought into the annual maintenance account and goes to reduce the annual net expenditure, thereby increasing the institute's surplus, or reducing the deficit, for the year.

III. Agricultural Marketing Fund

10. The Agricultural Marketing Fund was established under Section 11 of the Agricultural Marketing Act, 1931, for the purpose of making loans to boards administering agricultural marketing schemes under the Act. Payments from the Exchequer into the Fund are made, as necessary, by means of grants in aid from the Ministry's Main Vote, the aggregate amount which may be paid into the Fund being fixed by the Act at £500,000.

The following amounts have been paid into the Fund, viz.:—

							£
1932	...	...	...	...	...	...	3,000
1933	...	...	...	...	...	...	22,500
1934	...	...	...	...	...	...	130,000
							£155,500

11. Token provision only has been made in the Ministry's Estimates since 1934 and no payments from monies provided by Parliament have been made into the Fund since 1934.

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Mr. G. M. WILSON,
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[Continued.]

Loans of two kinds may be made, namely:—

- (a) *Short-term loans* under Section 13 of the Act for the purpose of providing for expenses incurred in connection with the initial working of a scheme. Apart from loans in respect of the expenses of the initial poll which are made at the discretion of the Minister, such loans are made on the recommendation of the Agricultural Marketing Facilities Committee set up under the Act, subject to the Minister's approval. All loans require Treasury approval. The loans are repayable within two years, unless renewed, and may be free of interest. If as the result of the initial poll a scheme ceases to have effect, repayment of the loan is waived to the amount of expenses or liabilities incurred by the Board under the Scheme.
- (b) *Long-term loans* under Section 14 of the Act for the provision of working capital. Such loans are made on the recommendation of the Agricultural Marketing Facilities Committee and are repayable with interest at the minimum rate fixed by the Treasury in respect of loans made from Local Loans Fund under the Public Works Loans Act, 1897. The amount outstanding of the loans made under Section 14 is not at any time to exceed in the aggregate the sum of £100,000.

In terms of Section 11 (4) of the Act, sums received by way of repayment of the principal of loans advanced from the Fund are paid back into the Fund, while sums received by way of interest are paid to the Treasury.

12. Since the establishment of the Fund, loans totalling £195,664 have been made to various Marketing Boards to meet expenses in connection with the initial working of schemes. Interest was payable on all the loans at a rate approved by the Treasury. Loans amounting to £195,400 were repaid within two years and one loan of £264 is outstanding.

13. In addition to the loans made from the Fund, an extra-statutory payment of £5,000 has recently been made, from the Fund, with the approval of the Treasury, in respect of the initial poll expenses of the Apple and Pear Marketing Scheme, 1952. The Scheme failed at the initial poll in April, 1953, and the provisional Board had not made application for the short-term loan for which it would have been eligible under Section 13 of the Act; under that Section the amount repayable to the Fund in respect of the loan would have been reduced by the amount of the expenses incurred by the Board in respect of the initial poll.

IV. White Fish Authority—Provision of boats and engines (Great Britain)

14. Grants in aid are made to the White Fish Authority under the provisions of Section 1 of the White Fish and Herring Industries Act, 1953, to enable the Authority to make grants, to persons engaged or proposing to become engaged in the White Fish Industry, in respect of expenditure incurred in the acquisition of new fishing vessels not exceeding 140 feet in length; or in the acquisition of new engines for fishing vessels not exceeding 140 feet in length.

15. The aggregate amount of grants is limited to £9 million in the ten years ending 19th May, 1963. The terms and conditions on which grants may be made by the Authority are laid down in the White Fish Industry (Grants for Fishing Vessels and Engines) Scheme, 1953 (S.I. 1953 No. 1163).

16. Advances are made by the Ministry to the Authority as and when required to meet maturing commitments on approved grant applications.

17. Section 12 of the 1953 Act requires the Authority to keep separate accounts relating to the grants and makes special provision for their audit by the auditors appointed by the Ministers, and for the furnishing of annual statements, their examination and certification by the Comptroller and Auditor General and their submission to Parliament.

18. Expenditure by the Ministry is accounted for in 1953-54 under the White Fish Authority Vote (Class VIII, 3—Subhead (D)). Grants totalling £350,000 are expected to be made by the Authority by 31st March, 1954.

19. In 1954-55 advances to the Authority for the purpose of making grants to fishermen will be made from Subhead A.3 of the Fishery Grants and Services Vote (Class VIII, 4) which is not a grant in aid subhead.

15 February, 1954.]

Mr. G. M. WILSON,

[Continued.]

Mr. A. R. MANKTELOW, C.B., Mr. A. B. BARTLETT, Mr. J. A. K. CHRISTIE,

Mr. J. R. MCCALLUM, M.C., Mr. W. M. RAMSAY, Mr. A. J. AGLIN and

Mr. W. L. WALKER.

V. White Fish Authority—Loans (United Kingdom)

20. Under the Sea Fish Industry Act, 1951, and the White Fish and Herring Industries Act, 1953, the Authority has power to borrow for the purpose of financing the discharge of its functions. The Authority may borrow up to an amount and on terms approved by the Treasury, provided that the amount outstanding at any one time does not exceed £25 million, of which not more than £20 million may be outstanding from advances from the Exchequer. Interest on, and repayments of, loans from the Exchequer are paid into the Exchequer. The purpose for which loans are required is subject to the approval of Ministers and the Treasury. The period during which advances may be made from the Exchequer is limited to ten years from the date of the passing of the 1953 Act.

21. A loan of £20,000 was made to the Authority in June, 1951, by way of an advance for working expenses. The loan, with accrued interest, was repaid into the Exchequer in March, 1952. No other loan proposals have been submitted by the Authority, but it is expected that the Authority will apply for an advance from the Exchequer before 31st March, 1954, for the purpose of making loans to fishermen for the provision of boats, gear and engines; these loans are made in conjunction with the White Fish Industry (Grants for Fishing Vessels and Engines) Scheme, 1953; see IV above. Provision of £475,000 is made under Subhead E of the White Fish Authority Vote for advances from the Exchequer to the Authority in 1953-54.

22. Loans from the Exchequer to the Authority are secured by a Deed of Charge providing a floating charge on all the assets of the Authority.

23. In 1954-55 loans from the Exchequer to the Authority will be made from Subheads A.4 and B.6 of the Fishery Grants and Services Vote (Class VIII, 4) which are not grant in aid Subheads.

VI. White Fish Marketing Fund—(United Kingdom)

24. Section 4 of the White Fish and Herring Industries Act, 1953, provides for the setting up of a White Fish Marketing Fund, to finance by way of loan those operations of the White Fish Authority which involve the outlay of working capital. Under Section 4 of the Sea Fish Industry Act, 1951, the Authority has powers to engage in certain types of trading. These powers include acting as agents for the first sale of white fish, or as principals in the buying and selling of gear, fuel and stores; the setting up and operation of processing plants; and the promotion of exports of white fish by establishing selling agencies and storage facilities abroad. The Authority can also obtain powers to reorganise, develop or regulate the White Fish Industry by submitting schemes under Section 6 of the 1951 Act; such schemes are subject to the approval of Ministers and Parliament. The Fund was created to enable money to be readily available for loan to the Authority when working capital is required for any of these projects.

25. As the White Fish Authority does not now anticipate any commitments, under Section 4 of the 1953 Act, before 31st March, 1954, the Fund Account has not yet been established, although a provision of £250,000 was made in the Ministry's Estimate for the financial year 1953-54. It is expected however that advances from the Fund will be required in 1954-55 by the Authority. Provision of £100,000 is therefore proposed in the Ministry's draft Estimate for the financial year 1954-55 and payments into the Fund will be made, as necessary, by grants in aid from the Ministry's Fishery Grants and Services Vote (Class VIII, 4). Repayments of principal by the Authority fall to be paid back into the Fund. Ministers may repay into the Exchequer any sums so paid into the Fund. Interest on advances from the Fund falls to be paid direct into the Exchequer.

26. Under Section 4 of the 1953 Act the Minister is required to prepare, in such form and at such times as the Treasury may direct, an account of sums received and paid into the Fund in each financial year and to transmit it to the Comptroller and Auditor General for examination, certification and laying before Parliament. Section 4 of the 1953 Act also provides that as soon as may be after the period of ten years from the passing of the Act, the White Fish Marketing Fund shall be wound up in accordance with directions given by the Treasury and any sums then standing to the credit thereof shall be paid into the Exchequer.

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Mr. G. M. WILSON,

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Mr. A. R. MANKTELOW, C.B., Mr. A. B. BARTLETT, Mr. J. A. K. CHRISTIE,

Mr. J. R. MCCALLUM, M.C., Mr. W. M. RAMSAY, Mr. A. J. AGLIN and

Mr. W. L. WALKER.

MEMORANDUM 2

ADMINISTRATION OF GRANTS IN AID

Memorandum by the Department of Agriculture for Scotland

1. In 1953-54 provision was made in the Department's Main Vote (Class VIII, 11) for the following grants in aid:—

(a) Grants in aid of the annual expenditure of Agricultural Colleges (Subhead K2).	£	£
(i) Edinburgh and East of Scotland College of Agriculture ...	111,180	
(ii) West of Scotland Agricultural College	126,920	
(iii) North of Scotland College of Agriculture	140,100	
		378,200
(b) Grants in aid of the annual expenditure of Agricultural Research Institutes (Subhead L2).	£	£
(i) Animal Diseases Research Association	41,778	
(ii) Rowett Research Institute (Animal Nutrition)	136,242	
(iii) Hannah Dairy Research Institute	60,446	
(iv) Scottish Society for Research in Plant Breeding	27,419	
(v) Macaulay Institute for Soil Research	89,956	
(vi) National Institute of Agricultural Engineering (Scottish sub-Station)	29,937	
(vii) Scottish Horticultural Research Institute	35,720	
		421,498
(c) Grant in aid of Agricultural Marketing (Scotland) Fund (Sub-head M2)		10

Agricultural Colleges and Research Institutes

2. The grants in aid of the annual expenditure of the three Scottish Agricultural Colleges are made to meet the net expenditure (i.e. after taking into account income from all other sources) of the Colleges on the maintenance of the central teaching classes and of the county Advisory Services. The grants in aid to the seven Research Institutes listed at 1 (b) above are made to cover their research and administrative expenditure. Departmental administrative control of the grants is exercised in four ways:—

- (a) in the examination and criticism of the detailed proposals for expenditure submitted by the Colleges and Institutes each year in support of their request for grant-aid;
- (b) in the appointment and grading of staff, their conditions of service, promotions and upgradings, all of which require to be approved by the Department;
- (c) in the critical examination of the incidence of expenditure as disclosed in the audited accounts of the Colleges and Institutes; and
- (d) in consultation between officers of the Department and the College Principals or Directors of the Institutes.

In addition, the Department consult the Agricultural Research Council on each year's programme of research work at the Institutes and the Council advise the Department on all questions relating to appointments, promotions and pay of the scientific staffs of the Institutes. The Institutes are also required to submit annually to the Department reports on their grant aided work.

3. The object of the grants in aid to the Agricultural Colleges is to enable each College to undertake the teaching and training of students in central classes in agricultural science and to conduct advisory, educational and demonstrational work among the farming community. All three Colleges provide educational facilities leading to diplomas in various subjects, e.g., agriculture, dairy husbandry, poultry keeping, dairy technology and horticulture. The East and West of Scotland Colleges are centres for agricultural education leading to the degree in agriculture (in collaboration with the adjoining University). Each College has attached to it a large experimental husbandry farm which is used for demonstrations, experiments and teaching purposes. On the advisory side, the Colleges are responsible for the provision of free advice to farmers.

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Mr. G. M. WILSON,

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Mr. A. R. MANKTELOW, C.B., Mr. A. B. BARTLETT, Mr. J. A. K. CHRISTIE,

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Mr. W. L. WALKER.

The object of the grants in aid to the Research Institutes is to enable these establishments to undertake research in various sciences bearing on agriculture in order to increase the efficiency of food production in this country. The Research Institutes situated in Scotland in receipt of grant aid through the Department are listed at 1 (b) above. The name of each Institute indicates the type of research carried on. The grants in aid to these Institutes cover the salaries of the scientific, technical and administrative staffs, the laboratory expenses and the day-to-day running costs of the Institutes.

4. The size of the grant in aid is settled (subject to Treasury and Parliamentary approval) having regard to the nature of the services the Colleges and Institutes are required to perform and with due regard to the need for economy. The grants to the Research Institutes are based on their minimum requirements consistent with the efficient execution of the research programme approved by the Department and the Agricultural Research Council.

The amount of grant aid is fixed following a critical examination of the annual estimates of expenditure and income submitted by the Colleges and Institutes by a Departmental Committee whose Chairman is the Assistant Secretary in charge of the Education and Research Division of the Department and whose members include the Finance Officer and Accountant and the Technical Development Officer.

College officers, including the Principals, are called to a meeting with the Departmental Committee to give oral evidence and explanations on the material already submitted in writing in support of the College proposals for expenditure. Similar procedure is followed with the Research Institutes whose Directors are examined on their estimates at a meeting with officers of the Department and representatives of the Agricultural Research Council.

5. The policy of controlling the expenditure by the Colleges and Institutes of the grant in aid is to ensure that the money is spent to the best advantage on the various heads of expenditure in the estimates on which the amount of grant in aid required was assessed.

6. The expenditure by each College and Institute of the money paid by the Department by way of grant in aid is accounted for to the Department by the submission of the annual audited accounts of the College or Institute. These accounts, which are audited by private chartered accountants, show in detail expenditure and income relating to the various items corresponding to those on which the amount of the grant in aid was assessed. The accounts are examined by the Department and, where necessary, explanations are required regarding the incidence of expenditure.

A 100 per cent. check is made on the salaries paid to the individual members of staff and test checks are made on the travelling expenses claims to ensure that the charges are proper and comply with the rules.

The books and accounts of the Colleges and Institutes are open to inspection by officers of the Department and of the Comptroller and Auditor General.

Once the Department are satisfied as to the amount of expenditure which should rank for grant-earning purposes, they send a letter to the College or Institute intimating the amount so ranking and, in the case where the amount of the grant in aid paid to the College or Institute during the year in question is in excess of the approved expenditure, stating that the surplus in the hands of the College or Institute is not surrenderable but will be taken into account in assessing the amount of grant in aid required in the succeeding year.

7. Where the Department for any reason have not paid over to the College or Institute the whole amount of grant in aid voted, e.g. where expenditure on items under "contingencies" has not been incurred, the amount under-advanced by the Department is in fact surrendered to the Exchequer.

The amount of any surplus of grant in aid money in College or Institute hands is noted and taken into account by the Department in assessing the amount of future grant in aid.

8. The money earned by the Colleges and Institutes, whether by way of fees, donations or as returns for expenditure incurred, e.g. receipts from farming operations, is taken into account in assessing the amount of the grant in aid. The grant in aid is for the purpose of enabling the College or Institute to meet net expenditure only.

Agricultural Marketing (Scotland) Fund.

9. The Agricultural Marketing (Scotland) Fund was established under Section 11 of the Agricultural Marketing Act, 1931, for the purpose of making loans to boards administering

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Mr. G. M. WILSON,

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Mr. A. R. MANKTELOW, C.B., Mr. A. B. BARTLETT, Mr. J. A. K. CHRISTIE,

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agricultural marketing schemes under the Act. The Act provides that there shall be paid out of monies provided by Parliament into the Scottish fund such sums not exceeding in the aggregate £125,000 as Parliament may from time to time determine.

10. The following amounts have been paid into the Fund, viz. :—

	£
1932	1,000
1933	6,000
1934	20,000
1935	5
1936	5
	£27,010

While a token provision has been made in the Department's estimates in recent years, no payments from monies provided by Parliament have been made into the Fund since 1936.

11. Loans of two kinds may be made, viz. :—

(a) *Short-term loans* under Section 13 of the Act for the purpose of providing for expenses incurred in connection with the initial working of a scheme. Apart from loans in respect of the expenses of the initial poll which are made at the discretion of the Secretary of State, such loans are made on the recommendations of the Agricultural Marketing Facilities Committee set up under the Act, subject to the Secretary of State's approval. The loans are repayable within two years, unless renewed, and may be made free of interest.

(b) *Long-term loans* under Section 14 of the Act for the provision of working capital. Such loans are made on the recommendation of the Agricultural Marketing Facilities Committee and are repayable with interest at the minimum rate fixed by the Treasury in respect of loans made from Local Loan Funds under the Public Works Loans Act, 1897. The amount outstanding of the loans made under Section 14 is not at any time to exceed in the aggregate the sum of £50,000.

In terms of Section 11 (4) of the Act, any sums received by way of interest on loans are paid to the Treasury and any sums received by way of repayment of the principal loans are paid into the Fund.

12. Since the establishment of the Fund loans totalling £21,460 3s. 4d. have been made to various Marketing Boards to meet expenses incurred in connection with the initial working of schemes. Interest was payable on all the loans at a rate approved by the Treasury. Loans amounting to £20,700 were repaid within two years, loans amounting to £716 3s. 4d. have been written off with the sanction of the Treasury, and one loan of £44 is outstanding.

13. The balance in the Fund amounts to £26,249 16s. 8d. and remains with the Queen's and Lord Treasurer's Remembrancer.

MEMORANDUM 3

GRANTS IN AID TO THE HERRING INDUSTRY BOARD

Memorandum by the Scottish Home Department

1. Introduction

The Herring Industry Estimates for 1953-54 contain provision for the following grants in aid to the Herring Industry Board.

Subhead D : Provision of Boats and Engines (Great Britain).

Subhead E : Loans (United Kingdom).

Subhead F : Herring Marketing Fund (United Kingdom).

2. Administration of the Grants in Aid

As explained below, the grants in aid are made either to enable the Herring Industry Board to meet commitments already incurred by them on grants and loans for boats and engines or loans to processors; or to provide them with working capital for

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commercial operations through the Herring Marketing Fund. While the day-to-day administration of the expenditure rests with the Board, they are, in the case of grants for boats and engines, under a statutory obligation to see that applicants comply with the conditions laid down in the statutory scheme (see para. 5 below). Loans are made in accordance with general arrangements approved by Ministers and the Treasury, but the decision whether a loan should be made in an individual case rests with the Board.

3. *The objects of the Grants in Aid*

(1) *Provision of Boats and Engines*

The object of the grant in aid is to enable the Board to make grants to persons engaged or proposing to become engaged in the herring industry in respect of expenditure incurred in the acquisition of new fishing vessels not exceeding 140 feet in length or in the acquisition of new engines for fishing vessels not exceeding 140 feet in length.

(2) *Loans*

The object of the grant in aid is to enable the Board to make loans for any purpose approved by the Ministers and the Treasury, out of sums borrowed from the Exchequer. The purposes at present approved include the acquisition of boats and engines and the provision of facilities for herring processing.

(3) *Herring Marketing Fund*

The object of the grant in aid is to increase the amount in the Fund from which the Board obtain advances for the purpose of meeting expenses incurred or to be incurred by them on—(a) loans in connection with export, and (b), undertaking operations involving the outlay of working capital.

4. *Procedure for determining the size of the Grants in Aid and for estimating the amount of the Grants in Aid*

Before the beginning of each financial year, the Board submit to the Department full details of their proposals under each of the heads mentioned in paragraph 3 above and estimates of the expenditure likely to be incurred on each project, in the following financial year. In the case of the Herring Marketing Fund the amount of the grant in aid depends on the likelihood of the Board requiring at any one time more than the total already available in the Fund. These proposals and estimates are examined by the Department and the sum to be provided in the Herring Industry Estimates is finally determined after consultation with the Board's Officials and the Department's technical staff.

5. *Procedure for the control and accounting of the Grants in Aid*

(1) *Provision of Boats and Engines*

The terms and conditions on which grants may be made by the Board are laid down in the Herring Industry (Grants for Fishing Vessels and Engines) Scheme, 1953 (S.I. 1953 No. 1187) which has been made by the Ministers with the approval of the Treasury and confirmed by Parliament under Section 6 of the White Fish and Herring Industries Act, 1953.

Section 12 of the Act requires the Board inter alia, to keep separate accounts relating to the grants and makes provision (a) for the audit of the accounts in accordance with a scheme of audit approved by the Ministers, by the persons appointed to audit the other accounts of the Board, (b) for the submission of annual statements of the accounts to the auditors for examination, report and certification, and (c) for the transmission of the statement to the Comptroller and Auditor General for examination, certification and presentation to Parliament.

The provision in the 1953-54 Herring Industry Estimates for these grants amounting to £75,000 will be inadequate and a supplementary estimate has been submitted to the Treasury. This was a new service authorised by the White Fish and Herring Industries Act, 1953. The extent of the demand for grants could not be accurately gauged.

It is the Board's normal practice not to apply to the Department for money to enable them to make grants until after the grants have been made. Applications for reimbursement are made at monthly intervals.

(In 1954-55, payments to the Board for the purpose of enabling them to make grants to fishermen are not to be regarded as grants in aid of the Board.)

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Mr. G. M. WILSON,

[Continued.]

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Mr. J. R. MCCALLUM, M.C., Mr. W. M. RAMSAY, Mr. A. J. AGLIN and

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(2) Loans

The form of the statement with respect to the application of moneys advanced to the Board out of the Herring Industry Vote to enable the Board to make loans has been laid down by the Ministers. The statements are audited and certified by the persons appointed to audit the other accounts of the Board and they are thereafter submitted by the Board to the Ministers who transmit them to the Comptroller and Auditor General for presentation to Parliament.

The provision in the 1953-54 Herring Industry Estimates for loans amounts to £120,000. This will be inadequate and a supplementary estimate has been submitted to the Treasury. The present provision relates to loans for boats and is related to the new scheme for grants authorised by the White Fish and Herring Industry Act, 1953. The demand could not therefore be accurately gauged.

Up to the close of the financial year 1952-53, advances from the Exchequer to the Board amounted to £779,999 mainly for loans under the Herring Industry Act, 1944, and repayments by the Board amounted to £235,812. The total amount of the loans made by the Board to fishermen in connection with the acquisition and reconditioning of boats and the acquisition of nets and gear, amounted to £778,567.

It is the Board's normal practice not to apply to the Department for advances to cover the loans until after they have decided to make loans in specific cases.

The Exchequer advances to the Board are secured by Minutes of Agreement and Bonds of Cash Credit under which the Board undertake not to mortgage or charge or grant any bond and disposition in security or issue any debenture on any of their assets or property or the proceeds of any levy made under the Herring Industry Scheme, 1951, without the consent of the Ministers.

(In 1954-55 advances to the Board to enable the Board to make loans are not to be regarded as grants in aid.)

(3) Herring Marketing Fund

The Herring Marketing Fund is under the control and management of the Ministers. The Fund is fed by advances from the Exchequer and the principal of sums advanced from it is repaid to the Fund and not to the Exchequer. An account of the Fund is prepared annually by the Ministers and is, thereafter, referred to the Comptroller and Auditor General for examination, certification and presentation to Parliament.

The form of the statement with respect to the application of moneys paid out of the Herring Marketing Fund has been laid down by the Ministers. The statements are audited and certified by the persons appointed to audit the other accounts of the Board and are thereafter submitted by the Board to the Ministers who transmit them to the Comptroller and Auditor General for presentation to Parliament.

The provision in the 1953-54 Herring Industry Estimates for the Herring Marketing Fund amounts to £100,000. This sum has been paid into the Fund the total of which now stands at £350,000.

The Board apply to the Department for advances from the Fund as and when required and repay the Fund whenever they are in a position to do so. The transactions during any year are very numerous—almost weekly during the peak herring fishing periods. During the current year the total sum available in the Fund (£350,000) has been on loan to the Board on two occasions.

6. Unexpended Surpluses

The Board do not surrender to the Exchequer any sums advanced to them under sub-heads D and E which are unexpended at the end of the financial year but, as has already been stated, the Board do not call upon the Exchequer for advances until after they have paid over the grants or loans. The advances, may, accordingly, be said to represent reimbursements of expenditure met by the Board out of their own funds. In the case of subhead F, grants in aid paid into the Herring Marketing Fund remain in the Fund; but they are not paid until it is clear that the Board will require more than is already in the Fund.

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Mr. J. R. MCCALLUM, M.C., Mr. W. M. RAMSAY, Mr. A. J. AGLIN and

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7. Comparison of the Grants in Aid with other income of the Board

The grants in aid in 1953-54, excluding the provision proposed in the supplementary estimate, amount to £295,000 made up of:—

	£
Grants for the provision of boats and engines	75,000
Loans	120,000
Herring Marketing Fund	100,000

The Board estimate their income, other than grants from the Exchequer, at £156,000 representing receipts from levies and licences.

As has already been stated, it has been decided that the grants and loans are not to be regarded as grants in aid from the beginning of the financial year 1954-55. The Herring Marketing Fund is, however, to continue to be so regarded but, bearing in mind the manner in which the Fund is financed, it is not thought that any effective comparison of the grants in aid with the other income of the Board can be made.

Chairman.

471. Gentlemen, thank you for your memoranda and for coming to give evidence. I think you all know our terms of reference as a Sub-Committee of the Estimates Committee. We are of course not very concerned with the control of expenditure as are the Public Accounts Committee, but with the control of the Estimates and the manner in which they are arrived at. This Sub-Committee is examining grants in aid in general, really to try to find the principles by which the estimates are determined. I think I will start by asking the English representatives a few questions, because there are some differences in the Scottish ones with which we might deal afterwards. What interests the Sub-Committee most at the moment is the general control in the Department or in the Treasury, or wherever it is, of the estimates as a whole. That is to say, how do you arrive at the total, and how do you distribute it among this large number of small grants?—(Mr. Manktelow.) Are you thinking of research in particular, or education?

472. Let us take education first?—There, as you will notice, the grants which we make are very small sums. The colleges do send up to the Department their budgets for the year ahead. The figures are gone into very carefully in the Department in discussion with the college authorities, and as a result of the examination of those figures provided by the colleges we arrive at what we think is a reasonable amount for the Department to pay by way of grant in aid for that particular year.

473. Do the colleges get grants from any other public funds?—Some of them, I think, do get some grants from local education authorities.

474. They are central departments; not from the Agricultural Research Council?—

Not these four educational institutions here, no.

475. It is interesting to note that you say that these grants are "to cover their annual maintenance expenditure." What exactly does the word "maintenance" mean?—The general running of the college as an educational institution.

476. They just let you know each year what their loss is, and you make it up?—Well, yes. I should say that the amount involved is quite small. The fees which are paid by the students do very largely cover the expenses.

477. They are mostly small, but there are one or two rather larger?—I am talking of the four colleges in the first part of our memorandum. £6,000 is the highest figure for the current year, on page two.

Mr. Blackburn.

478. You say that in England, the Ministry's powers to give financial assistance are derived from the Board of Agriculture Act, 1889. How long have these grants in aid been paid to these particular colleges?—I could not tell you offhand, but for a very considerable period of years.

Mr. Summers.

479. In connection with these four colleges I notice in paragraph 4 (b) on page two that reference is made to the fact that farming activities are carried on in connection with each of them?—Yes.

480. Could you give us any broad idea as to the financial outcome of the farming activities?—In the last year or two I think I am right in saying that in all these cases the farms have managed to show a small balance on the right side. Once or twice there have been balances on the wrong side but, generally speaking, they have been on the right side.

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Mr. G. M. WILSON,

[Continued.]

Mr. A. R. MANKTELOW, C.B., Mr. A. B. BARTLETT, Mr. J. A. K. CHRISTIE,
Mr. J. R. MCCALLUM, M.C., Mr. W. M. RAMSAY, Mr. A. J. AGLLEN and
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481. What size farms are attached to these colleges?—In the case of the Royal Agricultural College at Cirencester it is a farm of three or four hundred acres, if I remember rightly. I have not got the actual details of the farms with me.

482. Are they run with the normal complement of paid labour as any other farm is run?—Yes, they are. They are run for the benefit of the students, of course. The students see the actual farming operations, and help in carrying them out.

483. Would it be fair to infer from your earlier comments that this example of farming in the best way for the benefit of students can do little better than make both ends meet?—(Mr. Bartlett.) It is more favourable than that. Some of the balances have been quite substantial. The farms of the colleges are all quite substantial. They are run as quite large scale enterprises, and although, as Mr. Manktelow has said, fortunes have varied they have been quite appreciably on the right side. If I might reply to your question and give the acreages of the farms, they are as follows: Harper Adams—340 acres; Seale Hayne—408 acres; Royal—680 acres; and Studley—340 acres.

484. Bearing on the same point I have in mind, do the fees charged for the students cover their board and lodging?—They do not cover the complete expenses of running the college.

485. I was not asking that. The students, I take it, are residential?—They are residential.

486. Do the fees cover board and lodging, irrespective of tuition?—Yes, I think that is so.

487. Are you sure?—In view of the fact that normally the accounts are not far from balancing for the college as a whole, I think it can be said that the board and lodging is covered.

488. What I am really driving at is this. Would it not seem reasonable to suppose that, if the fees charged for students there covered their board and lodging and you had a thriving farm alongside making profits, any grant in aid would be unnecessary?—(Mr. Manktelow.) I think one has got to bear in mind that a farm which has been doing well in the last few years may run into a bad patch. We must allow the colleges to build up certain reserves on the farm accounts, but over and above that I would agree with you, if I may, that where the farm and the college between them are showing a substantial balance on the right side then there is no need for a grant in aid. In fact that is

what has happened this year with the college at Cirencester. There is no grant in aid being paid to the Royal Agricultural College there.

[Mr. Summers.] Could I ask, Mr. Chairman, whether we could be furnished with the total results of the farming operations at each of the colleges?

Chairman.

489. I suppose there is no reason why we should not have the accounts of these colleges?—I can see no reason why you should not, if you would like them.

490. Perhaps you would let the Subcommittee have those?—Over a period?

491. For the last accounting year?—Certainly.*

Captain Waterhouse.

492. Does the fact that you make a grant in aid give you the right to appoint a governor?—No, Sir, but the Minister does in fact appoint two governors under the charters of the various colleges.

493. To each one of them?—Yes.

Mr. MacColl.

494. I suppose the primary object of the farm is teaching?—Yes, it is run as part of the educational establishment.

495. It is not strictly on all fours with a commercial farm?—Not strictly.

Mr. Summers.

496. If I might raise a supplemental point on the question which has been raised, could you say whether the existence of the students alongside prejudices the financial results of the farms? They are taken to watch the operations, I take it?—(Mr. Bartlett.) Yes, Sir. I think it does to some extent, because in order that all the students may have the necessary facilities a certain amount of extra equipment may be required which a normal farm would not need.

Captain Waterhouse.

497. On the other hand, surely the students provide free labour for the farm, to a very large extent?—I think the general conception is that the students are supernumeraries. They are not regarded as part of the farm's labour force. Normally the farm engages a paid labour force like any other farm.

Chairman.

498. The students work in the lecture theatres and laboratories as well as on the farm?—Certainly.

* Not printed.

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Mr. G. M. WILSON,

[Continued.

Mr. A. R. MANKTELOW, C.B., Mr. A. B. BARTLETT, Mr. J. A. K. CHRISTIE,

Mr. J. R. MCCALLUM, M.C., Mr. W. M. RAMSAY, Mr. A. J. AGLIN and

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Mr. Hobson.

499. Have the boards of governors complete control over these colleges?—Yes, Sir. The colleges are run by boards of governors.

500. Complete control?—There is no other authority in the picture.

Chairman.

501. In reply to my request for the accounts you said you could provide them, but I think I am right in saying that the Comptroller and Auditor General has not the right even to see them?—(Mr. Manktelow.) No. We have not made it a condition in the case of the colleges that the Comptroller and Auditor General should inspect their books and accounts, I think the reason being that the grants are so small.

502. I agree the grants are small, but if the Comptroller and Auditor General cannot see the accounts do you see them?—Yes, we do.

Chairman.] I really cannot see why the Comptroller and Auditor General cannot see them, if you can.

Captain Waterhouse.

503. Do you compare the board and lodging costs of the various colleges, and if one is very much higher than another do you draw the attention of the board of governors to it?—(Mr. Bartlett.) We have done that, but the conditions at the colleges do vary.

Chairman.

504. Who determines the salary scales?—(Mr. Manktelow.) The governors of the colleges.

505. Do they correspond to the University salary scales or something of that sort, or to any other negotiated scales?—(Mr. Bartlett.) Nothing very regular is laid down.

506. Does the Department satisfy itself that the salary scales are commensurate with those paid elsewhere in similar instances?—We have not exercised any detailed control over the salaries.

Sir Alfred Bossom.] If you think they are not commensurate with the duties they are performing, why should they be given grants in aid?

Mr. Summers.

507. If the financial results of the college, due partly to its farming activities, are good, would the college lose the virtue of having earned that surplus by losing its grant in aid? Does one balance out the other, in other words, and therefore there is no incentive?—The practice has been to look at

the operations of the college as a whole, including its farming operations. We have not neglected the possibility of having the farming profit applied to reduce the grant.

508. I think you miss my point. If in fact by earning a surplus you forfeit the grant in aid, there is no incentive for those running the farm to make a surplus. Does the system work that way?—I do not think it does.

509. If not, how does it work?—One college is not receiving a grant this year, and it has certainly bent all its efforts to make its operations efficient. Its farm has become more and more profitable lately. Its farming profits have in fact led to this situation, that it is not having a grant.

Mr. Hobson.] Could I put the question in a slightly different way? Would a grant in aid be paid before the previous year's accounts were known?

Chairman.

510. You mean the grant in aid determined for the succeeding year?—We pay the grant in aid, having looked at the accounts for the preceding year.

Mr. Hobson.

511. It is not based on the previous year?—Not entirely.

Captain Waterhouse.

512. Do the grants in aid vary materially from year to year? Could you give us the variations for the last two years, if they do vary so much?—I am afraid I cannot.

Chairman.

513. Perhaps we could have a memorandum on that, giving the grants in aid over the last three or four years?—(Mr. Manktelow.) Certainly.* Could I just add a point on what was said about the lack of incentive? I think it is true to say that these colleges, where they are making profits, do take a pride in the fact that they are making profits, and they would go on and try to increase those profits rather than just rely on the fact that if they make a loss they can get a grant in aid. That is our experience.

Mr. MacColl.

514. Was the stopping of the quinquennial assessment or the going over to the annual assessment the result of a change in policy?—No, Sir. The quinquennial arrangement came to an end with the interruption caused by the war, and it has not been started again. We are beginning to think whether it would be desirable to revert again to the quinquennial assessment.

* Appendix 1 on page 137.

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Mr. G. M. WILSON,

[Continued.]

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515. There is now no inspection of the work of the colleges by the committee which you mention in your memorandum?—There is no inspection at the moment, no.

Chairman.

516. Can we go on to the rather more substantial sums for agricultural research? The first question I really want to ask is this: do these bodies get any grants from other public funds, for instance, the Agricultural Research Council?—No. Those listed are grant aided solely by the Ministry.

517. Most of these bodies were in fact Ministry experimental stations before, were they not?—Only one or two, I think. For example, the Foot and Mouth Disease Research Institute, Pirbright, was originally run under a committee directly responsible to the Ministry.

518. The Grassland Research Station too, I think?—That was another.

519. These bodies get practically the whole of their funds from the Ministry?—With one exception which I think we have mentioned in the memorandum, that is the John Innes Institution. With that exception these bodies get practically the whole of their income from the Ministry.

520. You are probably very well aware that the Public Accounts Committee some years ago expressed itself rather strongly on this, that some of these bodies were entirely Ministry creations, that they were getting the whole of their income from public funds, and they did not see much reason why they should be treated as independent and self-governing bodies instead of being part of the Ministry?—I do remember that.

521. Nothing has been done about that. They still continue to get grants in aid?—Yes. I do not think you can very well alter the status of the organisations and the governing bodies. They have been set up as independent governing bodies.

522. I understand that it really would require legislation to do that to some of these bodies. That has never been done. In the Reports from the Committee of Public Accounts, Session 1951-52, on page xxv under the heading "Paragraphs 84 to 85—Ministry of Agriculture and Fisheries: Establishment of self-governing research institutes," The Treasury Minute says this in relation to the Fourth Report for 1950-51: "My Lords consider that it would be appropriate for the Agricultural Departments to ask for legislation making suitable provision for setting up statutory bodies in order to secure greater freedom

of administration, which is important in matters of research, without relaxing control of the expenditure of public monies." That has never been done. I do not know why. These bodies were in fact Government Departments, and now they are apparently operating under grants in aid without any legislation setting up independent bodies. Is that not right?—We have the point very much in mind. We still propose, when the opportunity arises, to promote legislation to give this power.

523. Those are the Foot and Mouth Disease Research Station and the Grassland Research Station. What others come under this category? Does the National Vegetable Research Station?—No. That is an entirely new body set up fairly recently.

524. What the Sub-Committee is interested in is the enormous number of separate bodies which gets grants in aid. Who is responsible? Where does the control of the estimate take place? Is there some research committee in the Department which allocates the available funds between these different bodies, or is it left to the Treasury to control the expenditure? Surely the Department must have some machinery for controlling the money spent on research and allocating it between one establishment and another?—Yes. We have a division in the Department which is responsible for the administrative work on agricultural research and education. The research institutes send in their estimates to the Department, and also at the same time to the Agricultural Research Council. Those estimates are in very great detail. They are examined by the Department and the Research Council in consultation, and subsequently they are examined with the directors of the institutes present.

525. The Research Council in fact exercises the co-ordinating and supervisory functions. Does the Research Council exercise a supervisory function over the Department's estimates, or is it the other way round?—No.

526. This must be very difficult because the Research Council, where it is spending its money, is quite independent?—Its own money, yes.

527. It is under the Lord President?—Yes.

528. Does not this lead to frightful confusion in allocating whatever money is available for agricultural research? One cannot help thinking that it must be very difficult to arrive at the best way to spend what the Treasury allows you to spend for the year when you have this complicated system of the Agricultural Research Council as a separate body

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Mr. G. M. WILSON,

[Continued.]

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directly under the Treasury and this number of other bodies which have more or less independence and to which you give grants in aid separately?—The Agricultural Research Council co-ordinates the whole of the scientific work of these research institutes, whether they are grant aided by the Ministry, by the Department of Agriculture for Scotland or by the Research Council's own Vote.

529. Is there any criterion by which a body receives its grant in aid from you or from the Agricultural Research Council?—(Mr. Wilson.) That is very largely a matter of historical accident. I think, depending on where the organisation happened to have started in the first place and whether it continued under the Ministry. The Agricultural Research Council, since it became an independent organisation, has started some of its own. The Agricultural Research Council has enlarged that side of it, and it also co-ordinates all the scientific aspects of research. So it is well aware of what is going on, and is able to advise the Ministry on the research policy at the various stations which are in this list.

530. The Agricultural Research Council has its own stations, and makes grants to universities as well, does it not?—It does make grants to universities.*

531. It has its own?—Yes.

Mr. Blackburn.

532. Mr. Manktelow used the phrase "as and when the opportunity occurs". What exactly does that phrase mean?—(Mr. Manktelow.) For promoting legislation?

533. Yes?—The main point here is that the whole question of the administrative responsibility for agricultural research is under discussion at the present time between Ministers, and if, as is quite possible, a greater measure of responsibility passes to the Research Council and away from the Ministry then there may not be the same need for making legislative provision for setting up new governing bodies for new research stations.

* The witness subsequently amplified his answer as follows:—

"The Agricultural Research Council does in fact make grants to some of the institutes and University Departments getting their main grant in aid from the Ministry. These A.R.C. grants are for a particular line of research conducted by one or two scientists outside the usual run of work at the station, but it is convenient to get such work done at these stations."

Chairman.

534. This Sub-Committee must not go into questions of policy. If you tell us this is now being considered by Ministers, then it is not a matter into which we can enquire?—It is.

535. It would be helpful if we knew a little of the historical background. How is it that all these separate bodies seem to have sprung into existence, some under the Agricultural Research Council and some under the Ministry?—I think perhaps Mr. Bartlett may be able to help you on that. (Mr. Bartlett.) Agricultural research has been developing for about a hundred years. A number of people interested in different branches of research developed their own particular lines, such as the investigations which led to the formation of Rothamsted. Then towards the end of the nineteenth century, people interested in certain aspects of agriculture, like cider making or glasshouse crops, developed their own experimental stations. Those stations received an impetus when the Development Act was passed, and grants could be made to such bodies. Since that time the list of such bodies, each rather concentrating on a particular line of research, has developed, like East Malling on fruit, about 1920, which was formed by the growers, so that by the time we got to 1930 there were approximately a dozen institutions receiving grants from the Development Fund. Then the Agricultural Research Council was set up with general scientific co-ordinating functions, and they have thought it desirable, in order to complete the field of research, to grant-aid particular enquiries at universities and elsewhere and to set up two or three institutions of their own. Then during the war there was further consideration of the future needs of agricultural research, and it was decided a considerable extension was necessary. A number of fresh institutions have been set up since the war under the Companies Act, grant aided by the Ministry, but with their scientific programmes supervised by the Agricultural Research Council. As Mr. Wilson said it is really a historical process. The Agricultural Research Council has come in to co-ordinate what was already there, and to develop new lines where the existing fields seemed rather inadequate.

536. I understand from Mr. Manktelow that the whole of this is now under ministerial review?—Yes, Sir.

Mr. Hobson.

537. Under Subhead G.9 provision of nearly £250,000 is made for the National Institute of Agricultural Engineering. Is

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[Continued.]

that Institute in receipt of any other monies?—(Mr. Manktelow.) No, Sir.

538. There is no contribution from the manufacturers of agricultural machinery?—No, Sir. It does get some money by way of fees for the tests it carries out on machinery, but that is comparatively small.

Chairman.

539. Why was it set up in this way instead of as an industrial research association through the Department of Scientific and Industrial Research, in which case it would have received part of its money from industry apart from D.S.I.R.?—This is another of the research stations which started off as an integral part of the Department. It is one I should have mentioned before when we were talking about the grassland and foot and mouth disease stations.

540. I can understand that with farm research stations it may not be possible to follow exactly the principle of the industrial research association, but I do see Mr. Hobson's point and I cannot understand why they could not have been set up in the same way as you have set up industrial research associations to which industry contributes in the D.S.I.R. They are about forty of them now. I should have thought they could have been set up in the same way as the automobile, the iron and steel, the non-ferrous metals, the one for the cotton industry and all those other bodies were set up. Was that considered?—I do not think it was. This institution was in the agricultural field, so to speak, and we adopted for this the same pattern as we had for the others under the Companies Act.

541. I suppose the Sub-Committee could go and see these bodies, if they wanted to?—Certainly.

Sir Alfred Bossom.

542. Is there supervision exercised to see that agricultural points which need investigation are covered?—Yes, Sir, through the Agricultural Research Council.

543. They really do look after that. Would there not be duplication or absences?—No. There are probably some gaps which have got to be filled. The Agricultural Research Council is the body which looks over the whole field of agricultural research.

544. How often do they do that?—It is continually in front of them, and they have a system now by which a panel of members of the Council goes to each of the stations in turn—I think they get round every two or three years—and they examine each station very, very closely on the spot

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to see what work is being done, how it is being done and so forth.

Mr. Blackburn.

545. On page 6, in Paragraph 9 (c), you say: "In November, 1951, the Treasury, acting on a recommendation made by the Committee of Public Accounts (Session 1950-51), instructed that the books and accounts of bodies which receive the greater part of their income from public funds should normally be open to inspection by the Comptroller and Auditor General". That has not yet been completed, has it? Why has there been such a long delay—it is now 1954?—There are two stations, Long Ashton at Bristol and the Poultry Genetics Station at Cambridge where those arrangements have not yet been made. The Poultry Genetics Station is a small unit which was hitherto part of the School of Agriculture, Cambridge. It has now been made into a separate unit. The School of Agriculture is going to be responsible for administering it on behalf of the Ministry. The process of setting up that unit has now been completed, and I expect very shortly we shall get the agreement of the School of Agriculture to the books of the station being open to inspection. In the case of Long Ashton we took the matter up with the University. This research station is linked very closely with Bristol University, and the University authorities were a little bit dubious—I think we can understand what was in their minds—and they said they were afraid that inspection of the books of the research station might easily lead to an inspection of some of the University's books because the station was part of the University.

Chairman.

546. You are now taking steps to separate them?—We are still considering that with the Bristol people to see what is the best arrangement to satisfy their doubts on the subject.

Mr. Hobson.

547. Is there any revenue accruing to the National Institute of Agricultural Engineering?—Not that I am aware. I mentioned just now the fees for testing.

548. Is there any revenue accruing to the National Institute of Agricultural Engineering on the sale of patents or patent rights which may have been brought out by the Institute?—No.

Chairman.] Has it not developed any machines since it has been in existence?

Mr. Hobson.

549. Who gets the rights of the machines which are developed there?—I understand

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that they have not themselves developed any new machines yet, but they have been encouraging private manufacturers to develop new machines and helping them to do so.

Captain Waterhouse.

550. They have spent nearly £250,000 and have really got no concrete results?—I would not say that, not by a long way. We have got some very useful results.

Mr. Hobson.

551. How long has the Institute been in existence?—As a separate body it has been in existence four or five years. It was started, I think, during the war as a part of the Ministry when the development of agricultural machinery was of such vital importance.

552. Has there been any contact with the Post Office Research Station at Dollis Hill as to the methods they follow in regard to patents and the development of machinery, and the sale of rights and so forth?—Yes.

Chairman.

553. What you are saying is that they have not produced any patents?—So far as I know, that is the position.* (Mr. McCallum.) There is contact with the National Research Development Corporation.

554. Was this potato machine one of theirs or private?—It is one of the N.I.A.E. They are working on it at the present time.

555. The licence fees for making that would accrue to the National Development Research Corporation?—I am not quite sure to which machine you are referring.

556. The potato harvester?—They are developing a potato harvester at the Institute.

557. With the N.D.R.C.?—I think they are in close touch with the Research Corporation.

Sir Alfred Bossom.

558. Which industrial company is developing it for them?—I am not quite sure.

559. There is a private company doing it, and they are working with that private company?—I think they have been encouraging some of the private companies,

* The witness subsequently amplified his answer as follows:—

“The Treasury are submitting a Memorandum (not printed) which gives a list of the patents assigned to the N.R.D.C. and of those which are in hand.”

and they have also been developing a machine of their own. I am not quite sure what the arrangements are.

Chairman.

560. I think the National Institute of Agricultural Engineering publish a report?—(Mr. Manktelow.) They publish a number of reports.

561. Do they publish an annual report?—(Mr. Bartlett.) I could get a copy for you.

562. It is not one published for Members normally. The D.S.I.R. publishes an annual report, with the reports of each industrial research association as part of its annual report. Are there any annual reports?—Most of them are.

563. You do not in fact know whether the National Institute for Agricultural Engineering does?—I am not quite sure whether it is actually published. It is certainly produced, and can be made available.

Chairman.] We will get our Clerk to look into that matter.†

Captain Waterhouse.

564. How many activities of these associations overlap? They are doing the same work—Grassland research, Rothamsted, the National Vegetable Research Station and the London University on plant physiology. They must overlap tremendously?—(Mr. Manktelow.) I would not say so much overlapping; they certainly touch at a number of points, but the Agricultural Research Council which co-ordinates all this work I think would be quick to prevent any actual overlapping.

565. Rothamsted is one of the finest institutions in the world, and covers almost the whole field. It covers a very, very wide field—fruit, trees, plants and so on?—A very wide field.

Sir Alfred Bossom.

566. When you see one of these institutions starting on a new form of investigation which you know is being investigated already by some other organisation or institution, do you stop them?—The Agricultural Research Council would stop them.

567. Do they, not would they?—(Mr. McCallum.) Their programme of work has to be approved by the Agricultural Department and by the Agricultural Research Council before they can go ahead with it.

Chairman.

568. There is co-ordination of the research programme?—There is co-ordination of the research programme. The

† Report supplied; not printed.

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programmes of research are put up at the beginning of each financial year, and they have to be approved. The Research Council may suggest alterations or they may invite an institute to take on some additional job which they want placed. They ensure there is no overlapping, and that the work is properly directed and co-ordinated.

569. In Paragraph 7 of the memorandum it is said that the Research Council control the scientific staff and that the Ministry controls the other staff. Are those on negotiated and agreed rates of salary?—(Mr. Manktelow.) Yes, the scientific civil service rates for scientists.

570. They apply to these institutions?—Yes, they do.

Mr. Summers.

571. Might I ask if an arrangement exists whereby the results of research in one centre are put at the disposal of others doing analogous research in similar fields?—In this country?

572. Yes?—The workers at the research stations themselves are in close touch with one another, but quite apart from that the Agricultural Research Council gets the results and it follows the research to see that those results are circulated to others who may be interested.

Chairman.

573. I presume that significant research results are published?—Yes. (Mr. McCallum.) Agricultural Departments each have an Agricultural Improvement Council which acts as a means of putting forward requirements for research. It is a two-way traffic. On the other hand, it transmits from the research stations and from the Research Council the information which ought to come down to the Agricultural Departments and the Advisory Services. (Mr. Manktelow.) That is down to the farmers. The earlier question was between one research station and another.

Mr. Ormsby-Gore.

574. There is a chain of command. The Agricultural Research Council may decide that a particular line of investigation should be pursued. Does that then go to the Ministry, and does the Ministry then have to approve the decision of the Agricultural Research Council?—No. The decision is reached jointly by the Research Council and the Ministry. There is no passing from one to the other.

575. The Minister presumably has the over-riding power, and in considering which particular lines of research ought to be pursued he decides the priority?—I think the Agricultural Research Council have the final say on the actual programme.

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Chairman.

576. Even on the money which you provide directly?—Yes.

577. I can understand that for grants in aid which are provided through the Lord President for specific purposes the Agricultural Research Council have full control over their expenditure, but this is rather a peculiar system by which they also determine what is done with the grants in aid which you make directly?—The position, I think, is that the Minister acts on the advice of the Agricultural Research Council on the scientific side. (Mr. Wilson.) The Agricultural Research Council advise on any proposal before the grant in aid is requested. It is not as though the grant in aid has been given, and the Agricultural Research Council then in some way alters the purpose for which it should be used. The Agricultural Research Council and the Ministry work in the closest consultation in drawing up the programmes which result in the requests for grants in aid.

578. The grants in aid for these individual bodies?—The grants in aid for these individual bodies, yes.

Sir Alfred Bossom.

579. Who appoints the Council?—It is appointed by the Lord President.

580. He appoints it?—(Mr. Manktelow.) A committee of the Privy Council does.

Chairman.

581. The Privy Council, I think I am right in saying, has agricultural research, medical research and so on connected with it, but a global sum is voted as a grant in aid every year. They can do what they like with it. The idea is that they should spend it as they think best. That is the object of making a grant in aid. Who determines the global sum which is allocated to all these bodies? It is all very well for a global sum to be allocated to agricultural research?—The sum for industrial research goes to numerous bodies, but none finds its way into any of these institutes here.

Captain Waterhouse.

582. Do you start off by giving the Agricultural Research Council an idea of what they can spend in the year, and then do they try to allocate it; or do they think what they would like to spend and come to you for the cash? Are they given more or less carte blanche to produce anything they like to you?—They would not produce anything they liked. They would take the initiative in suggesting what

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research ought to be done and the cost of that research.

583. You do not go to them in the first place and say "You may this year disburse £2,500,000. How do you think it should be spent?"—No. The initiative would come from them for the programme which they thought ought to be carried out.

Mr. Hobson.

584. Is there any undertaking given by the staff of these research stations, particularly the engineering research stations, that any discovery or any invention is the right of the research association, in other words, the Ministry, or would it become the right of the person who made the discovery or the invention?—(Mr. McCallum.) That is all being tied up at the moment with the research institutes.

Chairman.

585. While they were civil servants they would have come under the civil servant regulations?—It is being tied up at the present time, so that the State gets—

586. There is a bit of a gap. They have stopped being civil servants; they are now these independent bodies. They have no terms of contract which ensure that the institutions are entitled to them?—I am sorry, I cannot give you details of it at the moment, but it is in fact being tied up at the present time.

587. Are you speaking for Scotland?—Scotland, but I think it is general. We have exactly the same arrangements in Scotland as in England.

Mr. Hobson.

588. Could we have a memorandum on what has already been done in that connection?—It is a very important point.

Chairman.

588A. I think the situation is clear because the point is that these people were civil servants and therefore they came under the civil service regulations. I think I am right in saying that the people at all these institutions were civil servants?—(Mr. Manktelow.) The ones which were part of the Ministry? (Mr. McCallum.) They are not strictly civil servants.

589. Perhaps you would let us have a note on the terms of contract of the scientific staff attached to these institutions at the present time, particularly in relation

to the development of engineering?—(Mr. Manktelow.) Yes.*

590. I think we can now go on to the Agricultural Marketing Fund. I see this is practically dead. I do not think we need take up much time on this. Paragraph 13 on page eight is a little surprising. Why had an extra-statutory payment to be made? In the Apple and Pear Marketing Scheme was there no provision for a loan? What has happened in previous schemes of this sort?—In this particular case the scheme was promoted by, I think I am right in saying, the National Farmers' Union, and the Minister approved the scheme. It went to the poll, and a provisional marketing board had to make arrangements for the poll. They raised the money from the National Farmers' Union. It is not a very large sum. The poll went against the scheme. The provisional board failed to do what they might have done; that was to apply to the Minister for a short term loan to cover the costs of this initial poll. Had they made that application they would have been granted the funds, and as the poll was against the scheme they would not have been asked to repay the money to the Minister.

591. The loan is guaranteed by the Treasury?—Where the poll goes against the scheme, then the scheme drops.

592. It is not necessary to repay the money?—It does not have to repay. In this case the board failed to apply to the Minister for a loan; it could have applied for a loan; and later it discovered it had made this mistake. The case was put to us, and by us to the Treasury.

593. It was really only a technical mistake?—It was really only a technical mistake. They were out of time; they were legally entitled to it.

Sir Alfred Bossom.

594. Did not the National Farmers' Union institute this apple and pear scheme?—They were behind it.

595. They instituted it as a matter of fact; I know; I am on the Executive of the National Farmers' Union. I represent the members in Kent on the Executive of the National Farmers' Union. To whom was this £5,000 paid—the National Farmers' Union?—So I understand, for the arrangements in carrying out the poll.

596. Where was it paid? Who received it?—The body which provided the money for running the poll.

* Not printed.

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597. The National Farmers' Union?—
 Yes.†

598. None of these institutions which are listed here, but the National Farmers' Union itself. Is that the idea?—Yes. They paid out the money in the first place.

Mr. Hobson.

599. Therefore the sum of £5,000 presumably would have to find its way into the Supplementary Estimates at some stage when they were before the House?—No. This is paid out of the Agricultural Marketing Fund.

600. Following on that, does it mean there was paid out of this Fund £5,000 to the National Farmers' Union for running the poll?—The unsuccessful poll did in fact cost that sum, and the money was paid out of the Fund to cover that cost.

Mr. Blackburn.

601. I am not sure that I follow. Who were the people in it?—When a scheme has been promoted, as this one was by the National Farmers' Union in this case, and when it has been approved by the Minister, then all the farmers in the country who grow the particular commodities covered by the scheme have to vote whether they want the scheme to come into operation or not.

602. The scheme was promoted by the National Farmers' Union, and then the individual members of the National Farmers' Union voted against it?—The apple and pear growers.

603. And it cost £5,000?—The apple and pear growers voted it down. In other words, there was not a sufficient majority for the scheme. The majority has to be 66½ per cent.

Chairman.

604. This is all under legislation?—Yes. (Mr. Wilson.) I hope I shall not add to the confusion by saying this. I think what happens is this. When a scheme is being promoted a provisional board comes into existence in order to promote the scheme and to organise the taking of the poll. This incurs expenses, and it is entitled under the legislation to recover the amount involved in promoting the poll. This particular

† The witness subsequently amplified his answer as follows:—

"The payment of £5,000 in respect of the Apple and Pear Scheme was actually made to the provisional Apple and Pear Marketing Board to enable the Board to make payment to the National Farmers' Union for the work carried out on behalf of the Board."

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board could have applied for that money at any time; the particular poll it promoted failed; and from a strict legal point of view it meant that when the poll failed the board ceased to exist.

605. It is an interesting point?—If the Board had asked five minutes before that it would have got the money. It is a technical error, and therefore it was met.

606. Who takes the initiative? Does the Ministry take the initiative, or do some members of the National Farmers' Union or the members in a particular section of the industry take the initiative in holding the poll?—(Mr. Manktelow.) The provisional marketing board.

607. Those are only words. Who are the provisional marketing board?—They are the people who are named in the scheme when it is approved by the Minister.

608. Who makes the scheme?—The promoters in this case.

609. In this case who were the promoters?—The National Farmers' Union.

Chairman.] As a whole?

Sir Alfred Bossom.] The executive.

Chairman.

610. Not a section of the National Farmers' Union, but the National Farmers' Union?—It was put forward by the Union.

611. It is not the apple and pear members of the National Farmers' Union, but the National Farmers' Union which takes the initiative?—Yes. It was done on behalf of their horticultural section, of course.

612. The point which comes out of this, in view of the fact that there is a liability on the Exchequer if a poll is taken, is does the Ministry in any case make certain that the poll is not a frivolous one?—Most certainly. A scheme is not likely to be promoted and discussed with the Department without the support of a substantial proportion, at any rate, of that part of the industry.

613. For instance, it is usual in matters of this sort that a proportion at any rate of those who are entitled to vote shall have indicated that they wish a poll to be taken. Does the Minister satisfy himself that a sufficient number of those engaged in the industry do want a poll to be taken?—Yes.

614. If so, how?—He does that by discussion with the promoters, and the scheme has to be advertised and objections invited.

615. Before the poll is taken?—Yes. That is before the Minister approves the scheme.

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Mr. G. M. WILSON,

[Continued.]

Mr. A. R. MANKTELOW, C.B., Mr. A. B. BARTLETT, Mr. J. A. K. CHRISTIE,

Mr. J. R. MCCALLUM, M.C., Mr. W. M. RAMSAY, Mr. A. J. AGLIN and

Mr. W. L. WALKER.

Sir Alfred Bossom.

616. Is it not a fact that not enough of the apple and pear growers responded to that invitation, and that is why they did not have a majority?—On the poll there was not enough to get a two-thirds majority.

617. The research of which you talk means that the Minister has to find out if the individual growers are going to back it in sufficient numbers. He was not right in his guess here?—As it turned out, the scheme was voted down; that is true. You were saying, Sir, when you first came on to this Fund that it was more or less dead. May I just say that of course marketing schemes are now beginning to appear again? There may be some more promoted in the next few months.

Chairman.

618. You have a Fund which is, as it were, an amount which you may or may not spend during the year. Last year there was nothing. The Vote was £10?—But there is £150,000 in the Fund which has been built up in earlier days.

619. That is for the purpose of establishing schemes of this sort?—Yes, for making loans to marketing boards, short term or long term.

620. Not only for this purpose but for the general purposes of the marketing boards?—Yes. We can make short term loans not only for the cost of the initial poll but also for the initial working expenses of the new board. We can also make long term loans out of this Fund for other purposes, although no long term loans have yet been made.

621. This amount of £5,000 did not in fact involve a Supplementary Estimate; it merely meant a reduction?—A reduction of the amount in the Fund.

622. Parliament is not generally enamoured with the idea of funds of that sort. Now we come to the White Fish Authority. In regard to fishing vessels what control is exercised by the Ministry over the prices paid for the vessels and over the standard of construction?—(Mr. Christie.) That is exercised by the Authority who have to approve plans and specifications before a grant is made. It is not exercised direct by the Minister.

623. They have to satisfy themselves that competitive tenders have been received?—Yes.

624. You are sure they do that?—We do not exercise direct control. They settle it in their own way.

625. You are certain the Authority does make sure that the fisherman gets competi-

tive tenders and is not having a standard of construction which is extravagant?—Yes. We do not attempt to regulate the Authority in this matter.

626. I can understand the Authority being given an independent status, but I should have thought that, where the purpose of the grants or loans is so very largely or almost entirely for ship construction or engine renewal, it was very important to see that both standards of constructions were not extravagant and that the prices being paid for the vessels were competitive. You leave that entirely to the authority?—Yes, subject to audit, of course, of the grant.

627. I was thinking very largely of the standard of construction and so on, although I do not pretend to be an expert?—They do get competitive tenders in fact.

628. Then on page 9 of your memorandum you deal with the White Fish Authority—Loans (United Kingdom); and then on page 10 you deal with the White Fish Marketing Fund. There you say at the end of paragraph 25, "Ministers may repay into the Exchequer any sums so paid into the Fund". Again it is one of those questions, how large the fund is allowed to grow. Do you decide when the Minister starts to pay back to the Exchequer, or does the Treasury watch that?—(Mr. Wilson.) I think it will watch it anxiously. I do not think the Fund has yet been established. (Mr. Manktelow.) It has not been established. I think this provision was put in to correct a mistake, shall I say, which was made in the case of the Agricultural Marketing Fund which has been built up to £155,000, but there is no provision for paying back any of that money into the Exchequer.

629. I take it that the Treasury will watch the size of this Fund, although I doubt if it will ever pay anything back to the Exchequer. Now can we turn to the memorandum sent in by the Department of Agriculture for Scotland?—I think the same sort of questions apply. How do you control particularly the grants to these institutions? Does the Agricultural Research Council operate over Scotland as well?—(Mr. Wilson.) It does.

630. Were any of these bodies previously bodies under the Department of Agriculture for Scotland?—(Mr. McCallum.) They always have been under the administration of the Department of Agriculture for Scotland.

631. Again is there any reason why they should not be purely departmental bodies, subject to estimate and audit in the normal

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Mr. G. M. WILSON,

[Continued.]

Mr. A. R. MANKTELOW, C.B., Mr. A. B. BARTLETT, Mr. J. A. K. CHRISTIE,

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way?—Their books are open to the Comptroller and Auditor General.

632. All their money is received from public funds?—Yes.

633. Is there any reason why they should not be purely departmental bodies?—There is a certain amount of historical interest. A number of these bodies were started on a basis of contribution by industry, on a £ for £ basis, or certain private donations. I think there is a certain advantage from our point of view in having them as independent bodies, from the point of view of maintaining the interest of the industry.

634. But the industry does not contribute?—It still contributes to a very small extent in one or two instances—plant breeding and animal disease. It is a very small amount, but they still have a private membership and receive £100 or £200—a very small amount.

Sir Alfred Bossom.

635. Did you say someone else contributes £ for £?—They did originally.

636. But not any more?—Not now. The main contribution, practically all the money, is by grant in aid.

Mr. Hobson.

637. Is there any co-ordination between the National Institute of Agricultural Engineering in Scotland and the one in Bedfordshire?—The one in Scotland is a sub-station of the National Institute.

638. What we do to get the total expenditure is to add the two sums of money together. Over £250,000 is spent on agricultural engineering research?—Yes

Chairman.

639. You say in the memorandum that a 100 per cent. check is made on the salaries paid to the staff and so on. That would not apply to the colleges?—Yes, Sir. The same control is applied to college salaries.

640. The salaries correspond to the appropriate corresponding salaries in other bodies?—They are on the same lines as those in the National Advisory Services in England and Wales.

641. I see that the books of the Scottish educational colleges are open to inspection by the Comptroller and Auditor General?—Yes, Sir. We arranged that, as we do for the research institutes

642. If they are willing to do that why are not the colleges in England?—(Mr. Manktelow.) I think the difference there is that the Scottish colleges do receive a large proportion of their income from grant. In

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the case of the English colleges, as we have seen, the figures are very different; it is only a thousand or two.

643. Is it the case that they are receiving the great bulk of their income by grant?—(Mr. McCallum.) Yes. It is rather difficult to compare the two because the Scottish colleges include the agricultural advisory services which are carried by the National Advisory Services as part of the Ministry in England and Wales. They also do take the place to some extent of the farm institutes in England; we have not any in Scotland so that it is rather difficult to make any direct comparison between the two. There is a certain amount of teaching for degree students as well.

Chairman.] Does anybody want to raise anything else?

Mr. Ormsby-Gore.

644. Are you satisfied that there is no overlapping with the equivalent English research institutes? I see that most of these Scottish institutes do almost exactly correspond with the English ones. If the Scottish Institute wanted to go ahead with a particular line of research, say in dairy farming, would it be ruled out if Reading was doing the same work?—It would be for the Agricultural Research Council to allocate the research between the two institutes to see that there was no overlapping.

645. I suppose that in certain cases you might suggest that in Scotland the conditions were so different that you could carry on a parallel line of research?—In those cases there may be justification for duplication, but it would only be in such cases.

Sir Alfred Bossom.

646. Do you go into the universities and rather dictate to them what they shall investigate?—(Mr. Manktelow.) In the research field?

647. Do you go into the universities and tell them what they shall investigate?—No, we do not dictate at all.

648. Then what prevents overlapping?—The Agricultural Research Council.

649. Can they go into the universities and stop them?—They discuss the programmes.

650. Can they stop them, if they want to stop them? You have got the Institute for Research in Plant Physiology at the University of London, and you have got the Welsh Plant Breeding Station at the University of Wales?—(Mr. Bartlett.) The universities carry on research on their own account, and the Agricultural Research Council will have no part in that formally,

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Mr. G. M. WILSON, [Continued.
 (Mr. A. R. MANKTELOW, C.B., Mr. A. B. BARTLETT, Mr. J. A. K. CHRISTIE,
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although they might discuss the programme. In the case of these institutions which are grant aided by the Ministry they have a semi-independence from the universities, and in those cases the Agricultural Research Council is in control of the scientific programme. I wish to try to distinguish between research carried on in these grant-aided institutions, where attached to a university, like the Welsh Plant Breeding Station, and certain other research which may be carried out by a university on its own account with which the Agricultural Research Council would not be directly concerned.

Chairman.

651. With regard to the Herring Marketing Fund, first of all why is it under the Scottish Home Department and not under the Department of Agriculture?—(Mr. Aglen.) That is a matter of history. Until 1939 there was a Fishery Board for Scotland, separate from the Department of Agriculture. There was a reorganisation in 1939. The functions of the Fishery Board were transferred to the Secretary of State, and as the old Scottish Office had had a supervisory function over the Fishery Board and the functions of the Scottish Office were transferred to the Scottish Home Department fisheries also went to the Home Department.

652. I suppose it is quite a different function from agriculture really. This applies not only to this fund but to others. It is not quite clear why the Fund has to be fed by advances from the Exchequer. If it is a fund for loan purposes, why cannot it be fed by loans?—It is in effect a loan from the Exchequer to the Fund from which short term loans are made to the Herring Industry Board for export and working capital. They are liable to repay the loans to the Fund and the money in the Fund will be repaid to the Exchequer when it is wound up or earlier. For other purposes loans are made to the Board from the Exchequer direct. They in turn make loans to the fishermen, who are under an obligation to repay the Board and the Board in turn repay the Exchequer.

653. There is no other way in which the money could be raised?—Not on the terms.

Sir Alfred Bossom.

654. Do many of these loans get repaid?—A great many.

655. What proportion?—(Mr. Walker.) There is an obligation to repay. No loans have been written off by the Exchequer.

The witnesses withdrew.

Adjourned till Monday next, at 4 p.m.

MONDAY, 22ND FEBRUARY, 1954.

Members present:

Mr. Albu in the Chair.

Mr. Blackburn.
 Sir Alfred Bossom.
 Mr. Ormsby-Gore.

Mr. Summers.
 Captain Waterhouse.

Mr. G. M. WILSON called in and further examined.

Mr. N. P. THOMAS, a Higher Executive Officer, Treasury, called in and examined.

The witnesses submitted the following Memorandum:

MEMORANDUM 4

AGRICULTURAL RESEARCH COUNCIL

Memorandum by the Treasury

Origin of the Council

1. The Agricultural Research Council, created by Royal Charter in 1931, consists of 15 members appointed by the Committee of Privy Council for a term of five years. Not less than 10 of the members are appointed, after consultation with the President of the Royal Society, on account of their eminence in one of the basic sciences, and the remaining members are selected by reason of their knowledge of, and interest in, agriculture.

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[Continued.]

2. In the last few decades the allocation of public money for agricultural research has gradually increased until today this research is almost wholly financed by the State. When the Council was formed there already existed a large number of research institutes which had grown up in various ways, in many instances through the sponsorship of sections of the agricultural community who desired to obtain scientific knowledge in relation to the section of the industry, be it horticulture or sheep farming, with which they were concerned. Private funds had gradually ceased to be able to support the increasing cost of developing research on an adequate scale in relation to the many problems to be solved and the State had already, before the Council was set up, come to the help of these institutes by making to them substantial grants in aid. These grants were first made through the Development Commission; later the Development Commission made the funds available to the Ministry of Agriculture and Fisheries and the Department of Agriculture for Scotland and finally it was arranged that the finance should be provided on the Votes of either the Ministry of Agriculture and Fisheries or the Department of Agriculture for Scotland, depending on whether the institute concerned is in England and Wales or Scotland.

3. The coming into being of the Council did not affect this arrangement whereby these State-aided institutes receive the greater part of their funds, in most cases more than 95 per cent., in the form of grants in aid from one or other of the two Agricultural Departments. But the Council, by the terms of its Charter, is charged with the general organisation and development of agricultural research in Great Britain, and, in addition to the control and administration of the very extensive research activities which it finances directly, it plays a large part in the administration of the 20 or so research institutes supported by grants in aid from the two Agricultural Departments.

Functions of the Council

4. The principal functions of the Council can therefore briefly be described as follows:—

- (a) to co-ordinate the programmes of the different parts of the agricultural research work financed by the State that the maximum effort is directed to the solution of the long-term and short-term problems of British agriculture;
- (b) to advise the Ministry of Agriculture and the Department of Agriculture for Scotland on all scientific matters and on the size of the grants in aid made by the Departments to research institutes;
- (c) to use its own grant in aid to support research essential to the completion of the overall programme not covered by the Institutes financed by the Ministry of Agriculture and Fisheries and the Department of Agriculture for Scotland.

5. The Council has set up a number of research stations and "units" under its own management and control with the object either of filling important gaps in applied research not covered by any of the State-aided institutes or of stimulating fundamental research and so providing new scientific "capital" from which further advances in applied research may be derived. The Units are almost all small entities, often with a staff of only two or three scientists, and are usually built round some outstanding research worker, who, with the extra facilities and assistance afforded by the Unit, can be expected to produce new knowledge of importance and open the way to fresh fields of research for others. The more important of the Stations are described below. The following is a full list of the Council's own research stations and Units:

A.R.C. Field Station, Compton
 Animal Breeding Research Organisation, Edinburgh
 Institute of Animal Physiology, Babraham
 Poultry Research Centre, Edinburgh
 Unit of Experimental Agronomy, Oxford
 Unit of Insect Physiology, Cambridge
 Unit of Animal Reproduction, Cambridge
 Plant Virus Research Unit, Cambridge
 Unit of Plant Nutrition (Micro-Nutrients), Bristol
 Unit of Biometrical Genetics, Birmingham
 Unit of Microbiology, Sheffield
 Unit of Soil Physics, Cambridge
 Potato Genetics Station, Cambridge
 Potato Storage Investigation, Sutton Bonington
 Unit of Embryology, Bangor, North Wales
 Unit of Plant Cell Physiology, Oxford
 Plant Growth Substance and Systemic Fungicide Unit, Wye College.

The Experimental Field Station, Compton

6. In order to intensify research on contagious abortion of cattle and on certain other diseases of cattle, sheep, pigs and poultry, the Council in 1937 acquired the

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[Continued.]

Compton Estate, covering about 1,500 acres on the Berkshire Downs. There were two main objects in view. The first was to provide accommodation in strict isolation where large scale experiments under conditions of complete control could be carried out over long periods on cattle or other farm animals in a way that was not (and is not) possible at any other research station in this country. The second object was the breeding of both farm animals and laboratory animals (rats, guinea pigs, etc.), of known health history, for experimental use at Compton and other research stations. Since the war there has been added to the facilities at Compton a large new isolation compound, within which 528 cattle under experiment can be accommodated at one time in groups of 12, 24, etc., and it is believed that these facilities for housing large animals under experiment are unique. Initially this new compound has been devoted to a large scale experiment on vaccination of cattle against brucellosis (contagious abortion) with a view to determining whether vaccination (whether by one injection or by two or three injections in calfhood) can confer immunity against this disease for the duration of a cow's milking life. The farm is fully mechanised and managed so as to produce the maximum yields of animal foodstuffs.

The Animal Breeding Research Organisation

7. An examination of the problems of the stock breeding industry in this country revealed a lack of any adequate provision for research on the breeding of farm animals and in order to remedy this lack, a new research organisation was set up by the Council at the end of the war. The organisation has now acquired seven sub-stations in different parts of Great Britain at which research is being undertaken on different classes of farm livestock. One sub-station, for example (at Cold Norton, Staffordshire), is concerned with a long-term experiment on the breeding of dairy cattle; at another (at Stanhope, Peeblesshire, Scotland), an investigation has begun on the breeding problems of Scottish Blackface sheep; a third (at Rhydyglafes in North Wales), provides facilities for work on Welsh hill sheep; another, near Edinburgh, is concerned with pig breeding. The aim of the Organisation is to obtain knowledge which will lead to the production of stock which are not only superior in respect of such characters as meat, milk and wool production, but also as regards fertility, suitability for particular environments and longevity.

Institute of Animal Physiology

8. It was becoming increasingly apparent a number of years ago in investigations on various animal diseases and disorders that our ability to deal with aberrations in health was being hampered by a basic lack of knowledge of the functioning of the normal healthy animal. In order to remedy this the creation of an Institute of Animal Physiology was included in the Council's post-war programme. This new institute has been set up at Babraham, near Cambridge, but is still in the process of being developed, both as regards accommodation and staff. During the initial years of the institute's existence much time will unavoidably be spent in learning how farm animals react under experiment, and surgical methods will also have to be developed. The number of scientists eventually to be employed will be about 50, together with rather more than that number of technicians. The institute will be a self-contained unit with facilities for feeding and grazing the animals.

Special Research Grants

9. The Council also devote a substantial part of their funds to making special research grants to other bodies—mostly University Departments. These are made for a limited period—usually not more than three years—and are intended to supplement the normal resources of the recipient body in such a way as to stimulate and co-ordinate attack on new problems or the development of new methods that may at a later stage pass into the general long-term activities of one or other of the Institutes. The elasticity which this method permits has been found very valuable in directing work into new channels, in combining and extending promising lines of research, and in closing down other lines of work which have proved unfruitful or have given useful but limited results. In 1952-53 a total of £179,372 was spent in this way.

10. The Council also make a number of awards annually—usually about 30—of studentships and training grants to specially selected Honours graduates to enable them to obtain post-graduate training to fit them for a research career.

Relations with Departments

11. The relations between the Council and the Agricultural Departments are far from being confined to advice from the former on the programmes and estimates of the institutes grant-aided by the Departments. The latter as part of their general responsibility for agricultural policy within their respective territories are concerned both with the application of scientific methods in agricultural practice and with ascertaining the problems of the industry requiring investigation. The Council therefore look to these

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[Continued.]

two Departments to advise them upon the problems on which research is needed and the priority to be given to the work. The Departments are assisted in this matter by Agricultural Improvement Councils (which include farmers and scientists) which each Department has set up, whose purpose is to ensure that the latest findings of research workers are applied to farming practice and that problems needing investigation receive speedy attention at research centres.

Financial Arrangements

The Grant in aid

12. The Council derives almost all of its income from the grant in aid. There are receipts from sales of animals and crops at the research institutes and units, a small income from sale of publications and repayments from Government Departments for work specifically undertaken for them.

13. Prior to 1953-54 the grant in aid, which is accounted for by the Treasury, was included in the Vote for grants for Science and the Arts (formerly entitled Scientific Investigations, etc.). In 1953-54, together with the grant in aid to the Nature Conservancy, it became a new Vote and was allocated to Class VIII of the Civil Estimates, which deals with Agriculture and Food. An appendix was added giving details of the proposed expenditure on the General Expenses Account and the Capital Expenditure Account.

Control of Expenditure

General

14. The Parliamentary control is effected by the normal supply procedure of Estimate, Vote and Account. The Treasury is consulted before any steps are taken to establish any major research institute but it does not seek to control within the Grant the way in which the Council furthers its work. There is frequent consultation between the Council and the Treasury, generally directed to ensuring that the Council's standards and conditions are in line with those of the Government Service generally. General control is effected by the annual scrutiny of estimates although capital expenditure is subject to separate specific approval. The estimate is looked at in relation to the provision made for research in departmental Estimates and a conclusion arrived at on the amounts that can be recommended for approval in the light of total expenditure on agriculture and of Government financial policy.

15. The appendix to the Estimate is divided into two sections dealing with current and capital expenditure. The section relating to General Expenses Account sets out in detail the division of the grant in aid between the items to which it is devoted and to it are credited the repayments by Government Departments and sales of farm produce. The Capital Expenditure Account sets out the total estimated cost of major works with the expenditure to date, past and present estimates and an indication of the amounts required to complete the schemes.

Current Expenditure

16. The annual estimate submitted by the Council to the Treasury is supported by Statements showing in detail the proposed expenditure on administration at the Council's headquarters, on its main Research institutes, its Research units and external Scientific staffs, on special Research grants and on training awards and fellowships. The estimates for the major institutes are scrutinised in the light of the progress expected to be made towards the gradual implementation of a post-war programme of Agricultural Research which was evolved by the Council in 1946. The provision for the units and external staffs and for special research grants is examined in relation to expected expenditure under these heads in the year just ending.

Capital Expenditure

17. All capital works expected to cost more than £2,500 are specifically submitted for Treasury approval quite apart from any provision made for them in the annual estimates. Each project is submitted for approval in principle with an indication of the approximate cost and specific approval is again sought when the tenders have been received and the contract cost is thus known. Treasury approval is required to any variations involving an increase in contract prices.

18. In 1952-53 more than 95 per cent. of the capital grant went towards the building up of the three major institutes of the Council described more fully in paragraphs 6-8. In the case of the Animal Breeding Research Organisation proposals for each station have been scrutinised separately. In the case of the Field Station at Compton and the Institute of Animal Physiology the cost of each kind of building such as the various types of laboratory, farm and administrative buildings, services and housing for scientific and farm workers, is scrutinised.

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[Continued.]

Establishments

19. The Council makes detailed provision in its annual Estimate for staff at its Headquarters and at the Research Institutes which it administers, and this is subject to Treasury scrutiny in determining the amount of the grant in aid. Further Treasury control in establishment matters is exercised as follows:—

- (a) *Headquarters staff.* The Headquarters of the Agricultural Research Council is treated by the Treasury as a Government Department for establishment purposes. The staff have Civil Service salaries and conditions and are interchangeable with the staff of Government Departments. A man-power limit is approved at six-monthly intervals by the Chancellor, and complements and grading are subject to detailed Treasury control.
- (b) *Scientific staff* in the Research Institutes supervised or administered by the Council are graded and paid in the same way as the Scientific Civil Service. Within this general framework the Agricultural Research Council is free to settle appointments and promotions up to the level of Senior Principal Scientific Officer. Treasury authority is sought for appointments above this level and for the salaries of Directors of Institutes. A six-monthly statement is sent to the Treasury giving, for each Institute, the number employed in each grade and this provides a basis for Treasury consideration of general staffing questions.
- (c) *Non-scientific staff at Research Institutes.* Administrative, clerical and typing staff at Institutes are paid on analogy with Civil Service scales. The Council obtains Treasury authority for all appointments above Executive Officer level and seeks Treasury advice on complements of non-scientific staff.

Accounts and Audit

20. Under the charter of the Agricultural Research Council the accounts of the Council are to be audited in such manner as the Treasury may direct. The direction is that they shall be audited by the Comptroller and Auditor-General. They are published in the annual volume of Civil Appropriation Accounts.

Chairman.

656. You are going to deal with the Agricultural Research Council?—(Mr. Wilson.) Yes.

657. Thank you for the memorandum. We will try to keep strictly to the matters of which you have cognisance, and not go into the actual operation of the Agricultural Research Council. I should like to start off with some general questions. First, why is the Agricultural Research Council set up in the way that it is? That is to say, why was it set up as a grant-aided body instead of like the Department of Scientific and Industrial Research having almost a normal Vote?—It was set up about 1930, which was of course after the time the Department of Scientific and Industrial Research was set up.

Mr. Summers.

658. After the time?—Yes, the Department of Scientific and Industrial Research was set up in 1919 or thereabouts. The Council was set up at a time when there was a certain amount of agricultural research being done by Departments and being financed out of the Development Fund, and the intention at that time, 1930, I understand, was that the Agricultural Research Council should fill in the holes in research and also to some extent co-ordinate the research which was being done by the two Agricultural Departments.

Chairman.

659. I think what we are really trying to get at today is why a body which, I think, receives all its funds from a Parliamentary Vote and whose accounts, I believe, are audited by the Comptroller and Auditor General—?—That is right.

660.—should be a grant in aid and not in fact a Vote?—I think it might have been anomalous at that stage for it to have been a Vote as some agricultural research was being done by departments. I am not sure whether you are suggesting there should have been a new body set up like D.S.I.R. or whether you are suggesting all the research should have been done in the agricultural ministries.

661. We will come in a minute to where the research is done. It is done in a large number of places. If a body was needed at all to co-ordinate research, which is the main object of the Agricultural Research Council, partly to co-ordinate the institutions on it and partly to control and stimulate in fact its own research—?—Yes.

662.—why could not that have been a body like D.S.I.R., that is to say a body whose various estimates are subject to the normal Parliamentary Vote, with an advisory body like the advisory council of the Department of Scientific and Industrial Research?—I think that might have been appropriate, but I think it would have

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[Continued.]

meant removing the research from the agricultural departments into the new department which you would have created in that sort of way; otherwise you would have a department which was responsible for agricultural research, and agricultural research also being done in the two agricultural departments which I think would perhaps have been untidier than things are at the moment.

663. All right. Then we come rightaway to the next question: why does the Department have any research? You have not got it tidy at the present time. You have got the Departments responsible for some research, and you have the Agricultural Research Council directly responsible for some. It is neither one thing nor the other?—No.

664. Is there any reason why the research at present done by the Departments should not come under the Agricultural Research Council, without prejudice to the way that it is controlled, in the same way as the research which is already directly under the Agricultural Research Council?—I think the only compelling reason against it is that it happens to have grown up in the present way. I do not think there is any reason beyond that.

665. There are no functional differences or specific differences in the type of research work done by the Agricultural Research Council and the Departments?—None at all. (Mr. Thomas.) The Agricultural Research Council has tended towards research on animals, rather.

666. You say animals, but from our point of view that is hardly a functional difference. I think I am right in saying that the Department of Agriculture for Scotland is responsible for its own research?—(Mr. Wilson.) They are in exactly the same position as the Ministry of Agriculture here.

667. They are responsible for some research direct?—They are directly responsible for one anyway. I do not know whether you have seen this document called "The Agricultural Research Service".

668. I do not know that I have?—It is extremely useful. It has an organisation chart, by which you will see that the Ministry of Agriculture has two research organisations for which it is directly responsible. I forget the name of one, but the other is for veterinary research. The Department of Agriculture for Scotland has one on seed testing. I think the reason for that is that those are subjects where Departments have specific statutory responsibilities.

669. I was not thinking so much of that. When I talk of direct control of departmental bodies I mean the institutions

which receive their grants in aid direct from the Department?—Yes.

670. We have had examples of a large number of institutions in England and Wales which receive their grants direct from the Ministry of Agriculture, and I think I am right in saying some do in Scotland too?—Yes.

671. The question I am really asking is this. Is there any reason why these bodies should not be transferred to the Agricultural Research Council, on whose advice the Departments already apparently act, to your knowledge?—It is a matter which has been under consideration for some time.

672. There is no reason of which you know; there may be reasons of policy?—There may be reasons of policy, but no other reasons.

673. No reasons of which you know?—No.

674. Have you any evidence of overlapping in the work which is done between these bodies because of the present arrangement, or does the Agricultural Research Council have sufficient overriding authority?—It has sufficient overriding authority so far as the scientific research programme is concerned, certainly. We have no evidence of overlapping—not beyond the overlapping which is an essential part of scientific research.

675. It may be difficult for you to answer this, but has the Agricultural Research Council as much authority in its advisory capacity on the institutes which get direct grants in aid as it has over those to which it gives grants in aid?—That is a very difficult one for us to answer, but I think the directors and scientific staff at Ministry grant-aided institutes do look to the Council.

676. They do?—Yes.

677. If there are no questions of a general nature from other Members, I would like to go through the memorandum, paragraph by paragraph. Paragraph 1? Paragraph 2? One of the matters which strikes the Sub-Committee rather forcibly is the lack of any private contributions towards agricultural research. Again, if one compares that with the Department of Scientific and Industrial Research, the principle of D.S.I.R., except for Government Departments, is a 50/50 basis. Are any attempts made to get a 50/50 basis for agricultural research, or is that impossible?—A good many of the Ministry financed institutes did originate with the industry, and they do still draw funds to some extent from the industry. I am not aware of any efforts being made to get money from the industry for the Agricultural Research Council's institutes.

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[Continued.]

Sir Alfred Bossom.

678. Is it not a fact that some of the manufacturers themselves, for instance, those making spraying machinery, finance entirely all their own research. They do not get any help from the Government or anybody?—No, they would not get help for their own research.

679. They do the research work entirely on their own; they exhibit their machinery and all that sort of thing, and export it?—You mean normal commercial research work done by commercial firms?

680. Take the example I mentioned, spraying machinery. There is none done by anybody else?—That I do not know.

Sir Alfred Bossom.] I think it is a fact. I was sitting at lunch time beside a man who actually does that very thing.

Chairman.

681. With regard to these institutions, there are no bodies like the Department of Scientific and Industrial Research which work on the 50/50 basis?—I do not think there are any.

Mr. Summers.

682. On the question of such money as does come from the commercial world, can you say from what bodies or through what bodies it is collected?—I do not think it comes to the Agricultural Research Council at all. It does come to some of the institutes which are financed through the Agricultural Departments. A number of those were started by various sections of the agricultural industry before they became mainly grant-aided bodies, and I think there are certain endowments still persisting. How far there are current contributions I do not know.

Chairman.

682A. Very little?—I think, very little.

683. We are not really on that at the moment; we are on the Agricultural Research Council?—As far as the Agricultural Research Council is concerned I think I am right in saying there is no money coming from the industry at all.

684. The Agricultural Research Council set up a number of bodies like the Animal Breeding Research Organisation, the Institute of Animal Physiology and so on. One wondered whether any farming bodies, or cattle breeding bodies made any contribution towards those?—No.

Chairman.] That has never been considered.

Captain Waterhouse.

685. Have you asked?—Not that I know of.

Chairman.

686. We might go on to Paragraph 3, Paragraph 4? Paragraph 5? Paragraph 6? We will come later to the question of control of these bodies?—Yes, this is purely descriptive.

Captain Waterhouse.] In regard to the Experimental Field Station mentioned in paragraph 6, has it ever been envisaged that they would finish their functions? They have been dealing with this question of abortion, to my knowledge, for thirty-five years. They have got a tremendous lot of knowledge about it. They have dealt with abortion fairly adequately. Do you suppose they will go on, as far as you can see, for ever, delving into fresh means of dealing with this matter?

Chairman.] I think you were not here when I was explaining that we were proposing to restrict this part of the inquiry to the Treasury control and the general methods of control of grants in aid, and did intend to conduct a separate inquiry into the Agricultural Research Council.

Captain Waterhouse.] We will be going into this later?

Chairman.

687. In detail, yes.—I am grateful to be relieved of that one.

Chairman.] Paragraph 7? Paragraph 8? Paragraph 9?

Mr. Ormsby-Gore.

688. You say "mostly University Departments". In addition to the University Departments are there a number of other bodies which receive research grants?—Could we look that up and give you the answer in a moment?

Chairman.

689. Perhaps you will let us have a note afterwards?—I think we can give it to you in a moment. We have the information here.

Chairman.] We will come back to that. Paragraph 10? Paragraph 11?

Mr. Summers.

690. Could you elaborate somewhat on these Agricultural Improvement Councils? Are they geographical or sectional from the industry?—There is one for Scotland and one for England and Wales. I think they are a mixture of scientists and farmers. Their function really is to find out what are the things upon which the farming industry would like to have research, and to channel them into the various research organisations in order that the research work can be done, and, vice versa, to advise on how the results which come from research can be applied in practice to farming.

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[Continued.]

Mr. *Summers*.] I should like to ask, Mr. Chairman, whether it is possible to have a note covering the operations of the, say, last twelve months showing whether in fact they have thrown up any fresh problems to put into the research machine.*

Chairman.] I think that again is something which we might ask the Agricultural Research Council when we take evidence from them.

Mr. *Summers*.

691. In the second part of our inquiry, very well. I think that is something we would like to know?—Either the Agricultural Research Council or the Departments.

Mr. *Summers*.] I am quite happy to take it in the second part of the inquiry.

Sir *Alfred Bossom*.

692. You say these are matters which are put up to you. What body puts them to you?—Which matters?

693. For subject of research?—They are not put up to us.

694. They do not come to you?—They do not come from these agricultural improvement councils in England and Wales, and Scotland, to us. The people who put things up to us are either the Agricultural Research Council or the Agricultural Departments.

Chairman.

695. Paragraph 12? Paragraph 13? I presume there is some reason for the present form of the Estimates where all the figures for research of all types are put under Grants for Science and the Arts. Is that just for convenience?—They have changed now. They are separate Votes of their own.

696. There is a sort of appendix?—There is an appendix which breaks down the total figure.

697. Is there any particular reason why they should appear here? Very few of them are actually in Class IV; they are all in other classes?—This is all Class VIII, Vote 6.

698. I am thinking really of Class IV, page 55?—What year is that?

699. 1953-54?—I have got Class VIII which is "Agriculture and Food".

700. That just shows the confusion. All these research and development grants are put into the appendix of Class IV, Vote 10. That does include all the agricultural research, does it?—Yes, it does.

701. Paragraph 14? Paragraph 15? Where we get the Vote for the grant in aid for the Agricultural Research Council I think I am right in saying there is no, as there is in

other cases, list of institutes which are supported by the Agricultural Research Council. Is there any reason why that should not be done?—There are some on the capital expenditure account, on page 75. The rest is not itemised.

702. Is there any reason why that should not be done, again in the same way as is done in the case of the Department of Scientific and Industrial Research, I think?—I think that probably is one of the differences between something which is in the nature of the Department of Scientific and Industrial Research and something which is in the nature of the Agricultural Research Council.

703. In view of the fact that the grant to the Agricultural Research Council is controlled by the Comptroller and Auditor General, is there any reason why in fact we should not have rather more detailed estimates or a breakdown, as an appendix, of how the money is going to be spent? In fact all we get is a breakdown of its general expenses account, is it not, not of the research institutes?—No, it is broken down by types of grant. Appendix A (page 73) gives the General Expenses Account broken down into five headings: "Administration; Research Institutes of the Council; Research Units and External Scientific Staff . . ." and so on. It gives the expenses under those without actually naming what the institutes are or precisely what the lines of inquiry are, except in so far as they are given under the fourth heading, "Special Research Grants to Universities, etc.".

704. You do see my point?—I see your point.

705. In the case of direct grants by Departments we have got the institutes itemised. Is there any reason why we should not have the names of the institutes which are supported by the Agricultural Research Council? Otherwise Parliament is getting only half the picture. You have already told us that there is no difference in type, function or anything else between the institutes which are supported in these two ways?—I do not know of any reason why that should not be done.

706. Paragraph 16? Paragraph 17? Paragraph 18? Paragraph 19? There is rather a peculiar thing here. Apparently this control which the Treasury is able to exercise in establishment matters in the case of the Agricultural Research Council is a control also over the establishment of the separate research institutes which the Council administers?—Yes.

707. I think I am right in saying that the Treasury does not exercise the same control over the institutes which get grants direct from the Departments. Is that right?—(Mr. *Thomas*.) We see each grant in aid.

* Information supplied, not printed.

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[Continued.]

708. But here you are saying you have very considerable control over the establishments of the institutes; in the other case you do not, or is there a difference? I am thinking now of places like East Malling or the National Institute of Agricultural Engineering?—Yes.

709. I should have thought the control would have been the same in both cases?—It is difficult to equate the elements in it.

710. Is it?—The Treasury are only concerned on the scientific side with promotions and appointments at senior principal scientific officer level. That is not very many posts. The directors of some of the stations are senior principal scientific officers.

711. Yes, but in this Paragraph 19 you say, "The Council makes detailed provision in its annual estimate for staff at its headquarters and at the research institutes which it administers, and this is subject to Treasury scrutiny in determining the amount of the grant in aid". Then you say that the Treasury has control of other establishment matters, the headquarters staff, the scientific staff in the research institutes and the non-scientific staff of research institutes. The question I am asking is have you the same control over establishments at the institutes directly grant aided by the Ministry of Agriculture?—We do not see them in quite so much detail in the estimate for each station.

712. I find it rather peculiar because in a way I would have expected the control over bodies supported by the Agricultural Research Council to be rather less direct; otherwise I cannot see the point of having an Agricultural Research Council. The arguments frequently used are that a body like the Agricultural Research Council is set up where you do not want to have such rigid Treasury control, but here it seems we have it the other way round?—(Mr. Wilson.) We do not have such rigid control over their research programme. There are two different forms it can take. I think the argument, as far as concerns a grant in aid, is that the control of its research programme is more in its own hands, but if it would help we could let you have a note on this other side. I confess I do not know what the answer is to that one.

Chairman.] It would help.*

Mr. Ormsby-Gore.

713. The Treasury only controls the actual establishment of that particular post. The appointment of a particular person does not

have to be referred to the Treasury, does it? It is just the original establishment of that one grade?—(Mr. Thomas.) Yes.

Chairman.

714. I suppose the Treasury does not control the actual numbers, except by controlling the grant as a whole?—It knows about the numbers. (Mr. Wilson.) A point was raised earlier on Paragraph 9, about the phrase "mostly University Departments". There are some made to research establishments attached to universities, without being directly part of the university. I think that is the answer.

Mr. Ormsby-Gore.

715. It does not apply to research, for example, undertaken by Imperial Chemical Industries Ltd?—No, not at all.

716. Or firms?—No.

717. None of the research is farmed out to industrial research organisation?—I do not think so. I see a note here about the Dunn Nutrition Laboratory. Whether that is an industrial one or not I just do not know, but none of the others is industrial.

Chairman.

718. Paragraph 20? Does the Comptroller and Auditor General audit the accounts of the separate institutes set up by the Agricultural Research Council, or is it only the accounts of the Research Council itself?—(Mr. Thomas.) The whole of the accounts represented by this Vote.

719. Including, in detail, the bodies which it controls?—Their own institutes, like the Institute of Animal Physiology, yes.

720. The Comptroller and Auditor General audits their separate, detailed accounts?—Yes. (Mr. Wilson.) He would not, I imagine, audit the detailed accounts of the special research grants to the universities.

721. No, but the accounts of the actual institutes set up by the Agricultural Research Council?—Yes.

722. What happens in regard to patents and discoveries? I suppose they are dealt with by the National Research and Development Corporation?—I imagine they would be. I am just wondering—

723. For instance, have there so far been any patents which have been profitable, either by outright sale or by fees?—That is what I am wondering, whether there would have been any. Perhaps I had better find out about that, and let you know.†

* Not printed.

† Appendix 2 on page 139.

The witnesses withdrew.

Adjourned till Monday next at 4 p.m.

TUESDAY, 9TH MARCH, 1954.

Members present:

Mr. Albu in the Chair.

Mr. Blackburn.
Mr. Hobson.
Mr. Ormsby-Gore.

Mr. Summers.
Captain Waterhouse.

Evidence taken at the National Institute of Agricultural Engineering, Silsoe, Bedfordshire.

Sir WILLIAM K. SLATER, K.B.E., Secretary, Agricultural Research Council; Mr. W. H. CASHMORE, Director, and Mr. J. W. ANDREWS, Secretary, National Institute of Agricultural Engineering, called in and examined.

Mr. A. B. BARTLETT called in and further examined.

Chairman.

977. First of all, Mr. Cashmore, thank you very much for showing us round and also for your kind hospitality. We have all been extremely interested in what we have seen. I must apologise for the fact that some Members of the Sub-Committee will have to leave early, but we shall try to complete our inquiry this afternoon. There are a number of questions we would like to ask you, to get them on the record. I think you understand the terms of reference of the Sub-Committee. We are a Sub-Committee of the Estimates Committee. We are therefore concerned to see that the money voted by Parliament is used in the most economical way. We are concerned with the control of expenditure, and with the way in which the estimates are arrived at. This Sub-Committee is examining grants in aid for agricultural research. We have taken a certain amount of evidence, and we are visiting one or two research establishments. I think our questions can be divided up into two parts—first, general questions about the organisation of the institute and, secondly, some questions about your accounts and finance. I would like to start by asking what is the policy in regard to the proportion of work between what I will call fundamental research work and the work which is development work leading to the final product?—(Mr. Cashmore.) It is sometimes a bit difficult to separate the two. I should emphasise that the fundamental work at this stage is very necessary because very little has been done, but that does lead on to the development work. Our development work is mainly to take on the problems which are giving the most difficulty, the things for which the farmers are asking the manufacturers but which they do not seem to take up. We do not often carry anything to the manufacturing prototype stage. Development work often leads out from our fundamental work, and we carry it to the experimental stage. Generally speaking, I should say two-thirds

is fundamental work and one-third development work leading to an advanced experimental machine but not always a prototype.

978. Would it be right to say that the development work leading to prototypes is rather growing, because we did see a number of examples?—Very definitely, but before we can do very much development work we must have the fundamental work. The order is usually an investigation to see what the demand and the need are. We would make sure there was good scope for the work, and then, if that kind of research has not been done up to date, we have to do some of the fundamental work before getting down to the development work which can be applied to it.

979. From whom does the initiative come for development of the types of prototype machines and plant which we saw in the workshops?—Generally from the Agricultural Research Council through the Agricultural Improvement Council. There is, as a rule, a waiting list. We have a number of things which we have been told ought to be tackled as soon as we can accommodate them, and equally we have to drop things which appear not to be so essential and put in something else. If these subjects come from any other body or person I always refer them to the Agricultural Research Council. I must have a buffer because we are told by scores of people what we ought to be doing—the Farmers' Union, other people outside, individual farmers, manufacturers and so on. I use the Agricultural Research Council as a sort of buffer and filter for all new proposals received from outside.

980. How do you make sure that the developments are not being carried out by industrial concerns, or that they could not be or would not be carried out by them before you start to undertaking them at all?—We work fairly closely with the industrial concerns. We do not pretend that

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[Continued.]

they tell us all that they are doing, but many firms tell us individually what they have in mind. So we have a fair idea of what is going on. We are not always sure, but, generally speaking, we do know what they are planning for the next two or three years. Most of the leading firms anyway do tell us what they are doing.

981. Sir William, do please add anything that you want to add?—(Sir William Slater.) I have nothing to add at the moment.

982. So many of the projects seem of the type which would normally be developed by the manufacturer in his own line of business, if there was likely to be a commercial demand for them. Is there any reason why the agricultural industry itself does not develop these things?—(Mr. Cashmore.) One of the reasons, I think, is that a good many of the agricultural industrial concerns are very small individual firms, and they have very little in the way of facilities for development work and certainly none for experimental work. What we have found is this, that when sales are going well they are not frightfully keen to look at something new. Their answer is "We are not doing too badly; we do not want to risk going into anything new now". When things are not going so well, they say they cannot afford it. As we see it, they are so seldom on an even keel; they are either well or not so well. I think the real reason is that the backbone of our agricultural engineering seems to be the very small firms making about one or two lines. Quite often our work does stimulate other firms to have a shot. At the start it is not being done, but with the very fact that we are doing it we end up by finding individual firms are doing it.

983. Most things in industrial research are being dealt with by the industrial research associations of the Department of Scientific and Industrial Research?—Yes.*

984. Was any attempt ever made to set up this Institute in that way? I think it has got a fairly old history, has it not?—It started in 1924 as a branch of the Ministry of Agriculture.

985. How long was it directly under the Ministry of Agriculture?—From 1924—we

* The witness subsequently amplified his answer as follows:—

"But firms and farmers are making indirect contributions valued at several thousand pounds per year. Firms give or lend machines, equipment and components, and farmers allow experimental work to take place on their land without asking for compensation when losses are caused by the experiments."

were at Oxford until 1942, under the University, and then directly under the Ministry of Agriculture from 1942 to 1949.

986. Why was it separated from the Ministry of Agriculture?—I think the main idea was to bring it directly in line with other research stations.

987. Many other agricultural research stations are directly under the Agricultural Research Council; this is not. You do not get your grant from the Agricultural Research Council?—We are in a way; others are. (Sir William Slater.) I think the position is that this Institute is a grant aided institute whereas the institutes under the Agricultural Research Council are directly controlled by the Council. This Institute used to be directly controlled by the Ministry, but it was decided it would be easier to run a research institute of this kind if it had a governing body supported by a grant in aid. I think I am right in saying that. (Mr. Bartlett.) That was the policy, yes.

988. You have a number of bodies in the Agricultural Research Council. I think almost the largest of those bodies did receive its grant directly from you and indirectly from Parliament?—(Sir William Slater.) That is so.

989. Therefore there is no real reason why this should be different, is there?—Correct me if I am wrong, Mr. Bartlett, because I do not want to speak for the Ministry. The Council has its own technical staff which controls the institutes centrally. I think the Ministry find it easier to devolve the authority on to the governing body with the Agricultural Research Council acting as a sort of co-ordinator of programmes.

990. Has any attempt ever been made to obtain contributions towards the work of the Institute from the industry which it serves, or is there any policy reason why that should not be done? Can Mr. Cashmore answer that?—(Mr. Bartlett.) I think it is rather for the Ministry to answer that. No actual approach has been made, although it has been considered. (Mr. Cashmore.) We feel that we would be more handicapped. With the work here we feel that we are leading agriculture and the industry rather than going along with them. So often the agricultural policy might not coincide with the trade policy, and so we like to be a little way ahead and not tied to anything. I think at once I should say that, from our knowledge now, what the trade would ask us to do and what we do would certainly be different.

991. By "the trade" you mean the plant and equipment trade, and therefore you think of yourself more as serving the farmer and the agricultural industry rather than

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[Continued.]

the implement industry?—Definitely. We tell them what we believe should be done.

992. Does that mean you can be critical of existing equipment?—Definitely. We feel we must be really, to be effective.

993. How is that criticism expressed, through the agricultural advisory committees?—In various ways—sometimes direct, sometimes through advisory committees and sometimes in reports which are semi-critical.

994. You told us that part of your work was the testing of manufacturers' plant and so on. Do they pay for that?—They pay for that. That is only a fraction of our work. It is probably about one-sixth roughly, or rather less.

995. If I could interrupt you, one-sixth would be a fairly substantial income. After all, one sixth is about £40,000. You have no income in any way comparable with that sort of figure outside the grant?—In giving that figure I had not separated the tests. A good deal of the testing is not done for manufacturers. We do quite a lot for our own benefit, for general information and so on. We carry out about sixty tests a year now for the trade. We started off by going up into the hundreds. The fees were put up, and that has had, I think, quite a desirable effect. The number has dropped down. We get now the worthwhile ones; the frivolous ones we do not get. They pay for this by arrangement, from £50 to £100 a test. Quite a bit of the testing is done either for our own purposes or some information is wanted in N.R.D.C. or in the Colonial Office and so on. Quite a lot of the testing is not for manufacturers.

996. Even the fundamental research and the development which follows from it is going to contribute substantially to the development of the machinery and plant which are produced by the manufacturers. The relationship of the customer is no different from that of other research stations who are on research work in order to improve the product from the customer's point of view. To a large extent the benefit goes in the first place to the manufacturer. That does not apply in your case? The sort of development we saw, for instance, on soil work and the consequent design of plough shares, ditch diggers and things of that sort, the fundamental work leading to the development work, and presumably, therefore, substantial improvement in machinery?—That indirectly quite quickly does get to the farmer because at the moment 95 per cent. of the equipment he is buying is made in this country, and so we feel that is getting very quickly to the farm. He is getting better machinery; it lasts longer; and it should be materially

helping him to keep down farm costs of production.

997. The only point I am getting at is this. We are Members of Parliament, and a Sub-Committee of the Estimates Committee. Why should the whole of this work be paid for by the taxpayer and not, as in the case of the industrial research associations, at least 50 per cent. by the industry itself? I realise—I think I am right in saying—that many of these firms are very small?—Very small indeed. Their turnover and profits are quite small, too.

[Mr. Ormsby-Gore.] What proportion of machinery is made by small firms compared with the big companies like Massey-Harris, International, and Ford? I thought the bulk came from those very large companies.

Chairman.

998. And Fergusons?—Actually there are several hundreds of individual firms, but all of them add up to quite an amount. There are the rather large firms—Ferguson, Ford, Massey, International. All the tractors are in the hands of the large firms, but the implements actually cover hundreds of firms. (Sir William Slater.) I think the position really is very similar to that which we have in the insecticide trade, in that there are perhaps two firms who have very large research organisations of their own and they are not concerned to join in any kind of co-operative research. There are very large numbers of small firms which have no research organisations. We tried as a Council to bring those two groups together, but failed completely. The large firms said, "We are not interested because we have already got our own research organisations", and the little firms said, "We will not come in unless the big firms do, because the cost is going to be so high".

Mr. Blackburn.

999. There would be nothing to prevent the small firms from making some contribution?—No, except that they take the line that, if the big firms do not contribute, why should they.

1000. I thought you said the big firms were already doing research of their own?—Yes. We had a meeting, and they just would not play together.

1001. How many firms are there that are capable of undertaking the sort of research work which you are doing here and which carry out some investigations of this kind?—(Mr. Cashmore.) I should say the number of firms which actually do anything in the way of development work is very few, something like half a dozen.

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[Continued.]

1002. Unless you did the work here, the work would not be done?—That is what I feel, very definitely. I feel quite definitely that the work which has been done here has raised the standard tremendously. Machines are breaking down far less now.

Mr. Blackburn.] The point I am getting at is that these firms are reaping the advantage of the work you are doing here. It is being done for them, and they are not making any contribution towards it. To come to another point, what sort of income are you expecting to get from these inventions?

Chairman.] Could I just lead up to that point? I was going to ask that.

Mr. Summers.

1003. There is one aspect about which I want to ask. Are there any criteria which a project has to pass before being undertaken? What I have in mind is the difference between the hydraulic tractor we saw and the ditching machine which seem to be quite different fundamentally. It is quite easy to understand why a ditching machine should be developed if nobody else is doing it, but the system of hydraulics may just as well be applied to a motor car as to a tractor. How is it that seemingly unlike projects are both suitable for development here?—The reason for developing the ditching machine, I think, is obvious. That came as a very great request from farmers. The other is much longer-term, but we have had repeated requests for a different type of tractor. In other words, there have been complaints about the existing designs as certainly not being suitable for horticulture. There is trouble about forward speeds, and the tendency to go from three to four to six speed gear boxes. That led us to believe there was something fundamentally wrong.

Mr. Blackburn.

1004. Did the request come from the Agricultural Research Council, from the manufacturers or from the farmers?—The nearest answer to that is from the farmers, but they did not say, "We would like a hydraulic tractor; but we are not satisfied with this, and when is it going to be improved?". We translated that into one version of curing that by a hydraulically driven tractor. The request from the farmers was for something different.

Chairman.

1005. There are three or four mass production agricultural farm tractor manufacturers in this country. Was this discussed with them?—It has been discussed with hydraulic experts and with the tractor manufacturers.

1006. None of them is willing to undertake this; they do not think it is a commercial proposition?—I think it means they will not take a very big step in design. All their—

1007. If I may interrupt you, the obvious thing which strikes anybody at once is that Mr. Ferguson took a great step in design anyway?—Yes.

1008. He was willing to take that risk, but he, Ford, or anyone else is not willing to take this risk?—Not at this stage. They are prepared to keep in very close touch to see what happens. The whole thing is covered by patents with N.R.D.C. Ferguson, International and so on, are interested, but they are not prepared at this stage to carry on. In regard to the motor car industry point, I know this was considered by the car industry but there is a fundamental difference; the fact that they require very high speeds makes it more difficult. We think this might apply to agriculture but not to ordinary road transport.

Mr. Summers.

1009. How do you judge whether your resources are worth spending on overseas applications as opposed to applications in this country?—That is extremely difficult. Generally speaking, our experience has a direct bearing on overseas work. You may have heard from Mr. Hawkins about the groundnut development. That started in this way. We had done a lot of fundamental work leading up to the design of a potato harvester, and we actually at their cost shipped out three experimental potato machines which might have some bearing on the groundnut harvest. Up to that point it was a modified machine which became their machine. Generally speaking, there again manufacturers will not put a large sum of money into the design of a machine for overseas for what might be a very limited market.

Chairman.

1010. Does your charter or whatever it is, instruct you to do that work?—No. At the moment it is under debate, but it does, strictly speaking— (Sir William Slater.) If I could answer that in a more general way, the Colonial Office, from time to time, apply to us for help where they have not got the necessary facilities. We help them if we can, quite obviously, but generally we try to collect from them at least some contribution towards the work which is done. Often it is difficult to decide exactly how much the contribution should be because the work may be handled partly for the colonial service and partly for our own.

Mr. Summers.

1011. Has much been collected from that source?—Without looking at the figures I

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[Continued.]

cannot say. I am speaking in general. We have contributions from the colonial service.

Mr. *Blackburn.*] There are contributions from the colonial service, but not from our own farmers and manufacturers. You are going to come to that, are you?

Chairman.

1012. Yes. I really wanted to clear this first. We saw a number of very interesting developments in various stages of progress. First of all, I would like to know when the Institute first started development work on this scale, that is to say of a nature which leads to prototypes. I think we must have seen very nearly a dozen projects which were either at or near the prototype stage. When did the Institute start doing that sort of thing?—(Mr. *Cashmore.*) Not seriously until 1947-48.

1013. In other words, six years ago?—Yes.

1014. So far, I think I am right in saying that none of those has reached commercial production?—One or two things have. Pneumatic conveyors for grain have reached production.

1015. Who makes those?—The Farmiloe Engineering Company and Messrs. Steels of Sunderland.

1016. Does the Ministry of Agriculture get royalties on those?—Not on those.

1017. They are not getting royalties on those?—No. When the sugar beet top harvester went into production there were some royalties on those, but they ceased after a time.

1018. They stopped making them?—They made another version which got round the patent.

1019. Did you say the first one was a conveyor?—Grain conveyors. (Mr. *Bartlett.*) I can obtain details.

1020. Would you let us have a note about that?—Yes.*

1021. So far no others have reached the actual development stage. I take it that any future ones will go through the National Research Development Corporation?—(Mr. *Cashmore.*) Yes. One example of development which has got into production but has not brought in any royalties is the platform grain dryer. That was really started towards the end of the war, and it was a means of getting something to help the farmer. There was nothing patentable about that design. At the present time there are half a dozen machines

(some of which you saw) which are now just getting to that stage, but it has really taken a time to get there.

1022. I am not concerned with patented designs because I think I am right in saying that some of the things we saw might not be patentable although a considerable amount of work has gone into their design?—That is true.

1023. In what way can we expect a return on them?—That is extremely difficult. One or two things—

1024. I am not talking of fundamental research. I am thinking particularly of the hydraulic tractor. I understand there are a number of patents on it, but that is simply the application of well-known principles to a design development and nothing else?—Yes. The patented parts are details in the construction.

1025. If no commercial firm is willing to do that and if you have nothing basically original about the design or about the elements of the design, then really you are in fact undertaking the risk of designing a prototype which will eventually be taken over by private companies and used quite freely by them?—But the object is to give the farmer better tools with which to do the job, and I feel that in a case like that several firms might take it up. I do not think that any one individual firm would make a terrific amount out of the work which was done here; I think the benefit does get to the farmer.

1026. In the case of the patentable designs of prototypes and so on, at the present time all those go through the National Research Development Corporation?—Yes.

1027. So far none has actually produced royalties through the N.R.D.C.?—Nothing seriously.

1028. You are expecting something of the potato harvester?—Yes, the potato harvester. We also have a root harvester and a grain dresser which you may not have had time to see. There are several designs going through.

1029. Have you any idea or estimate of what you might expect in the way of income?—We have tried to estimate it but it is extremely difficult. In agriculture things start in rather a small way, and it takes time to build up.

Mr. *Hobson.*

1030. Has there been any contribution from the National Farmers' Union towards this?—Not direct.

1031. Has there ever been any approach made to them?—As far as I know, not.

* Not printed.

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One thing which has been extremely valuable in all this has been the fact that we have been free from being tied to any body. The National Farmers' Union from time to time have stated that they would like to co-operate in the tests, but we made it quite clear that our work was our work, and that it would be rather difficult if we were tied to any one organisation. I think that helps enormously in our work. It has cost more money possibly, but it has been worth it.

Chairman.

1032. I can understand that for your fundamental work where you do want very considerable independence, but I am not quite sure that I understand its relevance to development work. May I ask another question which perhaps is slightly wide of the mark, but Sir William might have opinions on it? That is whether the combination of fundamental work and development work in one institute is the best thing—I do not know—though I can well see that in some of the things I saw there is a very close connection between the two?—(Sir William Slater.) I think it is really quite essential that you should have the fundamental work and the development work in one institute. We have been moved during the last six years to look at these problems, and as a rule the criterion we put forward in looking at anything to be developed is this: is this something which is essentially needed for increased agricultural production in this country because of labour changes or various other reasons, and is not being attacked by the manufacturers and is not likely to be attacked unless we do it? I think that is the formula which is gradually being evolved and applied. It does not apply to all the things which are going through the Institute now because we have in fact been evolving this formula over the last five or six years. You do not arrive at something of that kind out of the blue. Does that answer your question?

Chairman.] Yes.

Captain Waterhouse.

1033. Pursuing that, it does seem to me that you specialise more on your scientific and fundamental sides than you do on your experimental side. Have you got in your mind any particular division, either of cost or of personnel, between your purely experimental engineering side and your scientific and fundamental sides?—(Mr. Cashmore.) My idea is that at the moment and for some time the fundamental side will have to be certainly rather larger than the others because there is very little information on which to base anything. In other branches of engineering there are

basic facts which can be used, but when we started there was virtually nothing in agricultural engineering. For quite a while I feel that more than half at least will have to be on the fundamental and scientific sides.

1034. You may find it difficult to justify your existence as a body spending £250,000 on what you are doing on the agricultural engineering experimental side. What we saw to-day, the potato digger, the trench digger and the drier are really your three practical projects; the tractor is not a practical project?—The tractor is not a practical project at this stage I agree, but there are other things. In grain, for instance, there are conveyors and seed dressers. In every branch there is something coming along. One side which we did not get time to show you was the investigation side. For instance, the combine harvester is being thoroughly investigated to discover why grain is damaged through combining, and that may easily lead to changes of design and it may also lead to changes in the way we use the combine harvester.

Chairman.

1035. You mean changes in operation rather than changes in the actual machine?—Yes. Again hay making is going ahead, grass conservation, and that will end up by better ways of using the machine rather than having new machines. In the case of hay making that will definitely be so. We have tried out eight or nine different machines and they all seem to be very much the same in what they do, so that the point there is that we do not need just another new hay making machine but we need a better technique in hay making. That is equally important I think, but it does not end up with a new machine. A good deal of our work is like that.

Captain Waterhouse.

1036. Under the Ministry of Agriculture you have got many other places dealing with the horticultural side. Do you feel there is a good deal of overlapping between what is being done at those places and what you are doing here?—(Sir William Slater.) No. We have taken careful note of that. We raised the question whether the horticultural side was tending to overlap the work which was being done on the glass-house research side at other institutes, and we settled all that by having a conference at the offices of the Council between the horticulturists from the different institutes so that we divided up the work between the institutes in order that there should be no overlapping. If I might give you an instance, on spraying the work here is concerned with the design of equipment for spraying, nozzle design, pumps, pipe lines

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and all the things required for irrigation or other forms of spraying. At Rothamsted they are working on the physics of the amount of water you have to put on, the rate of evaporation and so on. Then you come to the horticultural research stations where they are working on the effects of irrigation on the growing of crops. You get the three stages. They meet; they decide on which part they will work; and the work is divided up in that way.

1037. Surely, from what you have just said about the experiments at Rothamsted on the amount of water required, you cannot put aside completely the most interesting study of the tomato plants we saw this morning?—No. The work at Rothamsted is very fundamental physics mixed with meteorology, dealing with the rate of evaporation, the movement of air over the soil, which is supplying even more basic information which Mr. Hoare is using for the design of his spraying and his watering equipment here.

1038. Was not the whole basis of the tomato plant experiment we saw how much evaporation took place on various days?—(Mr. *Cashmore*.) It goes further than that. We started with basic information. We then had a particular crop, and in that particular case it is very closely linked up with the peculiar characteristics of glasshouse where you have greater light intensity and greater heat concentration.

1039. What about this special experiment of getting proteins out of crushed grass?—(Sir *William Slater*.) That was a co-operative experiment. That was started by one of our people at Rothamsted who got the idea that you could get protein out of grass by pressing it, and he started making some rather elementary engineering equipment to do it himself. Then we brought in the grassland research station for growing the crop at the right time, and at the same time we brought in the National Institute of Agricultural Engineering to design the machinery. The grassland people were concerned with the right time to cut and the right crop to grow; we had the feeding trials at another institute. About three or four institutes closely collaborated on this. We got the people together in the Council's offices; they worked it out and decided which share they would take in the general problem.

1040. You are looking at the whole picture, and you are satisfied that there is no overlapping?—I think there is no overlapping. You may have occasions when institutes appear to be doing the same experiment, but that is merely being done because they wish to get a check of one against the other. We decide it is worth

while duplicating in order to make more rapid progress.

Mr. *Hobson*.

1041. Following up the question of overlapping which Captain Waterhouse has been developing, there is also an agricultural engineering research station in Scotland. If my memory is correct they spend in the region of £80,000. Is it correct to assume that they are doing similar work, and do you have frequent meetings and engage in correspondence to ensure that there is no overlapping between the Scottish station and your Institute?—(Mr. *Cashmore*.) The Scottish one is a sub-station of this, and the director of that is answerable to me. The whole programme is co-ordinated. Sometimes the work here is developed in Scotland where they get a different set of conditions, what we regard as hill-land conditions.

Captain *Waterhouse*.

1042. Are you envisaging a material extension of your engineering section, and, if so, will that necessitate new buildings?—We are not thinking of any great extension. The place is just about as large as can be run efficiently. We are still short of buildings with decent concrete floors and with services laid on, and we are still a little short of laboratory space. As far as the workshops go we are satisfied. As far as the staff is concerned we do not want any great additions because the place would become unwieldy if it got much larger. There are one or two additions we want. We have got more work than we can cope with, but I think that is a healthy sign. We are very much in need of better laboratory space, a few sheds with concrete floors, but that is all we have in mind.

1043. You have got a vast number of laboratories, but they are rather small and pokey?—Yes. We do not want large laboratories because with the nature of our work we can divide it up quite nicely, but we are, as you say, quite a bit cramped for laboratory space. We would like a little more laboratory space. We have not enough space where all the work can be done.

1044. Are you wanting more laboratory space or better laboratory space?—More laboratory space. What we have is not entirely satisfactory. We are getting by quite nicely, but we would like it to be a little better.

1045. It is obviously far from ideal, but you do want to extend it. I am rather nervous about further extension on the laboratory side in view of the fact that it

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does appear to me that you are rather over-balanced on that side already as opposed to the practical engineering side?—A lot of our work depends on very accurate measurements because our work is used as a basis for extended application. We must be sure our work is dead accurate. That does mean designing instruments which does take up laboratory space. We have to do a lot of designing our recording measurement instruments ourselves because they do not exist, and it is the right way to do it.

Chairman.

1046. Would I not be right in saying that the actual physical knowledge has to be prepared in the laboratory because it does not exist?—That is so.

Mr. Summers.

1047. In relation to the efficiency of the establishment, are you very nearly up to the most effective size?—From a personal point of view it is now about up to capacity. I think that if the place becomes very much larger it would mean sub-dividing it. For example, you might as well remove the work on drying or horticulture and set up separate institutes. At the moment it is possible to get good co-ordination and co-operation and make the best use of equipment and common services, but if it became much larger, it would become less co-ordinated.

1048. How far does this kind of work create its own demand for expansion by acquiring knowledge and throwing up fresh problems which were not revealed formerly? Is there a growing appetite for solving problems arising out of your own efficiency?—Very definitely so. Each problem we have does tend to expand and require more work and more effort, and of course there is this increasing demand from the colonies and dominions in particular.

1049. Are you aware of increasing demands made upon you for the solution of problems?—Very definitely. As regards the hydraulic wheel it is possible that does not look like becoming a practical proposition, and we might reach a stage when we might have to drop it. We do from time to time drop a scheme of work and put in something which is more vital. I think we will have more requests than we can deal with, certainly they are growing, but I feel that if we extend very much more then the workshops would not be large enough and so it would go on. (Sir William Slater.) My Council is at present looking into what it considers to be the optimum size of an institute. We are concerned about the point which was raised about the continued appetite. These things grow of themselves. My Council is concerned to see how far

institutes can grow, and how it can eliminate certain parts of the programme from the work of the institute in order to make room for others without increasing the size of the institute. That is one of the problems which is at the present time the concern of my Council.

Chairman.

1050. Arising out of the question in regard to the demand for work to be undertaken, how far is there a tendency for the demand and the result creating an appetite for more demands, and thus go round in circles? One of the problems which most certainly exists industrially is the lack of communication, to see that the work which is done is as quickly as possible used either by manufacturers or in this case by farmers. I can see that specialists in the Agricultural Research Council or in the scientific staffs and agricultural staffs in the colonies and dominions might all throw up ideas, and then the work on all those ideas will throw up new ideas; and then this will go round in a continually closed circle. How far do you feel that enough effort is put into getting those ideas into the hands of the people who are going to have a use for them, and not just throw up new ideas?—(Mr. Cashmore.) That is definitely a problem. We have the N.A.A.S. Liaison Unit here, and they are quite active. We throw out our ideas to them, and they put them out to the farmers. We are now getting well ahead of farm practice. I feel ideally we should be about four or five years ahead. I think it could not go out very much faster than it is going out. It does take time to put new ideas over. That again, I think, rather limits it. I think that at the moment the colonies and in some cases the Dominions could take a good deal of what we have done already. They are making more demands; they have not enough for their needs; but as far as England is concerned, I think we are on top of it at the moment. Demands are coming in all the time, but the results could not go out much faster than they are going out at present.

1051. It really depends on the Agricultural Advisory Service how quickly the result goes out?—It does take time to get over a new idea. They must demonstrate it several times, and then go back to see what the troubles are.

1052. Does the Institute do any educational work?—No. Colonial officers and other people come here, but we do no educational work at all.

Mr. Summers.

1053. Have you had to consider the establishment of what might be called field demonstrations?—No, we do not do that.

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All that is carried out by the advisory service, other than on our open days which we put on every two years. We do not put over any demonstration work; we leave that to the advisory service.

Chairman.

1054. Now, if I may turn to the accounts, I understand that the 1953 accounts are not yet completed?—(Mr. Andrews.) That is right.

1055. This document* is merely a statement showing the expenditure for the 12 months to 30th September, 1953?—Yes. This is merely a statement because the accounts have not yet been produced by the accountants. They are being done this week, it so happens.

Captain Waterhouse.

1056. This document purports to be a statement showing the expenditure to 30th September, 1954?—That is obviously a typing error; it should be 1953.

Chairman.

1057. I see that you have spent £224,000 of your grant for 1953-54. The grant in aid for 1953-54 was £229,000, was it not?—In 1952-53 the total grant to the 30th September, 1953, was £224,172.

1058. This is not the financial year; this is your year?—This is our year. We only work to that, of course.

1059. What is your estimate for the coming year?—I am estimating for the year starting 1st October, 1954. I ought to say this, that the general headings will probably be about the same as for the present year.

Mr. Summers.

1060. May I interrupt? A year has been missed out in this conversation. These are the figures to September, 1953. What are the figures to September, 1954?—I beg your pardon. We are now talking about the current year, that is the year to 30th September, 1954. I misunderstood that. I was thinking about 1954-55, because I am preparing the estimate for that year.

Chairman.

1061. We are talking about 1953-54?—I can only give an indication that we are spending in accordance with the approved estimate. I have got a statement showing the expenditure for five months to 28th February, 1954. I have not got the actual approved grant.

1062. Could you let us know what that was?—Yes.

* Not printed.

1063. The grant for the Government's financial year 1953-54 was £229,000, and the grant for the year 1952-53 is a figure we have not got. Would you know that?—I would not know that. All I know is what I receive in the grant letter, showing what was approved.

1064. Is not that a bit of a nuisance, or does it not matter?—It does not make any difference to us at all. (Sir William Slater.) I think it is a nuisance.

1065. I understand that for the Scottish Institute it is a different year still?—(Mr. Andrews.) That is the fiscal year. (Sir William Slater.) That applies to the Council's institutes as well.

Mr. Summers.

1066. Would it not simplify the work of everybody if the financial year of the institutes corresponded with the financial year of the Treasury?—I think it is historical. Many of these institutes came into being as part of a university, and therefore the grants were given to them on the basis of the academic year. That has never been put right.

1067. Would it not simplify matters if it did correspond with the Treasury year?—That would be my thought. There is so much guesswork involved in this type of estimating.

Captain Waterhouse.

1068. Are you allowed to switch about in your accounts? One of your subheads is overspent by £8,000 and one is underspent by £5,000? Are you allowed to do that?—(Mr. Andrews.) No, Sir. When the accounts are sent to the Ministry of Agriculture I always prepare a statement showing why certain headings have been exceeded. It is not always absolutely clear from this. For instance, in connection with industrial staff wages, the amount estimated for any particular year is based on facts, that is on the staff at present in post, but nearly always at the estimates committee a reduction is made on the assumption that we shall lose people. In the event we always spend what I have put in my original estimate because those bodies are there. That has happened in the current year.

1069. Are you allowed to switch or not?—There is a wages contingency item.

1070. If you want to make changes in the provision under the various headings, do you have to ask the Treasury?—(Mr. Cashmore.) In the materials and apparatus it is sometimes quite difficult to distinguish there because we might use materials for making our own apparatus rather than purchase it. A switch there would be justified. (Sir William Slater.) Am I not

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right in saying that out of the block grant you can change between headings?—(Mr. Andrews.) Yes, we do change. It has not actually been necessary normally, but we have always been told that. (Sir William Slater.) I was not suggesting that it may be necessary. (Mr. Andrews.) We are not allowed to overspend.

1071. Would you not get into trouble with the Treasury if you did it extensively?—(Sir William Slater.) I think undoubtedly we should. There is not much likelihood of that because the estimating is too detailed.

Chairman.

1072. The only accounts I have got to work on are those for the year ended September, 1952. There are a number of items I do not understand there, and which I suppose are still shown in the accounts. For instance, on the income side there is amount received from contingencies. Is that an amount you are allowed in the grant for contingencies?—(Mr. Andrews.) Yes, Sir. A detailed grant letter is received showing the amount of the grant made up under certain headings, and then there are these words: "In addition to the grant approved above, provision is made under 'Contingencies' for the following", and they are salaries, apparatus and equipment, new vehicles, and chemicals and materials.

1073. How do you receive the contingencies?—If I find the spending is so going that I am bound to require to draw on the contingencies, I write and ask for an amount on account subject to the final accounts being investigated by the Ministry. (Sir William Slater.) Might I explain how the contingency item is assessed in our estimates discussion? Take salaries, for instance. We know there are certain numbers of people in post, and we know the number of people who are certain to be appointed. We also know that there are certain vacancies which probably will only be filled for part of the year. We put in a sum for salary contingencies, and that may be drawn upon if people are in fact found to fill the posts. It is on that, when those people are appointed, that Mr. Andrews asks for the release of a contingency item.

Captain Waterhouse.

1074. It is a peculiar figure in this statement of accounts—£9,045. That is a very nice calculation for contingencies, is it not?—I do not know how that is arrived at. (Mr. Andrews.) Neither do I. (Sir William Slater.) Probably there was bitter argument over that between Mr. Cashmore and me and we compromised.

Chairman.

1075. There is an item here which is headed "Capital expenditure, the subject

of capital grants"?—(Mr. Andrews.) Yes, Sir.

1076. Are those amounts not included in the grant in aid?—No, Sir. The grant in aid is a maintenance grant, an annually recurring grant. Capital grants are *ad hoc* grants for building work, and I would instance a case at the moment although it is not related to the scientific work of the Institute—Wrest Park Lodge is being converted into a hostel for the staff, and that is the subject of a £40,000 capital grant.

1077. Are you doing that, or the Ministry of Works?—All the work is approved by the Ministry of Agriculture. The architect is an architect employed by the British Society for Research in Agricultural Engineering. The architect's plans are vetted by the Architects' Department of the Ministry of Agriculture, and when they are satisfied and have made the necessary economies in the plans and so on, I receive an approval letter which sets out in detail the contract which is accepted. I send three tenders. The lowest tender is accepted. The architect's fees are detailed, and the amount allowed for furniture and so on.

1078. You do not happen to know where those capital grants appear. They do not appear in the grants in aid; they appear on the Vote of the Ministry of Agriculture, I assume?—They must do. I understand there is a sum for all research institutes. The Ministry of Agriculture has a total figure for all grant-aided agricultural research institutes. (Sir William Slater.) They get a capital grant in the nature of a total vote for research institutes.

1079. The Agricultural Research Council does?—No, the Ministry. We get a capital grant in our Vote for the institutes we finance; the Ministry's Vote is quite separate and for the institutes they grant-aid. The Ministry decides on the advice of the Council to which institutes it should go.

Captain Waterhouse.

1080. Why was that not used for building your new big workshop?—(Mr. Andrews.) The position then was this, that the National Institute of Agricultural Engineering formed part of the Machinery Division of the Ministry of Agriculture, and being a Government Department the property was bought by the Ministry of Works on behalf of the Ministry of Agriculture. The alterations were carried out entirely by the Ministry of Works—labour, architects and specialists. It was a property bought by the Ministry of Works in the normal way.

Chairman.

1081. This grant is for buildings?—The capital grant, yes, Sir.

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1082. But other capital equipment and apparatus are bought during the year. They are bought out of what?—That is bought out of the maintenance grant. It is added each year to the fixed assets.

1083. I suppose the capital grants are, too?—Yes. The capital expenditures on building and equipment are noted. The value of those capital grants appears in the balance sheet.

Mr. *Summers*.

1084. Does it mean that in fact the grant in aid of the order of £250,000 is partly a capital grant?—Not strictly because the apparatus and equipment have a certain length of life. Some of them may be taken as having a life of 20 years.

1085. Some of this money has bought stock which in industrial language would be called capital?—Yes.

Chairman.

1086. Could you give me any idea of the proportion in the last two years coming under that heading?—Apparatus and equipment will run about an average figure of—(Sir *William Slater*.) Have you got the figure for items over £50? (Mr. *Andrews*.) The total of items over £50 would be round about £15,000. (Sir *William Slater*.) Those items are specially set out, and generally speaking I think that in industrial concerns most of them would be regarded as capital.

1087. Those have to be approved by the Treasury and the Ministry?—They are approved by the Council, first of all from the technical point of view and then the Ministry accepts our approval. If any changes are required during the year, Mr. *Cashmore* gets in touch with me.

1088. You told us the Institute got a direct grant in aid from the Ministry. Is the estimate in detail of the Institute approved by the Council or by the Ministry?—(Mr. *Andrews*.) I can only speak within my knowledge. I think that from a practical point of view the Director and myself appear before the estimates committee over which Sir *William Slater* presides. Mr. *Bartlett* is present, and also members of the staffs of the Agricultural Research Council and the Ministry. The grant letter comes from the Research Branch of the Ministry. The actual approval is formally given by the Ministry of Agriculture who receive—(Sir *William Slater*.) It is in terms approved by us. In fact the Ministry accept our advice, and put the figure to the Treasury on our advice.

1089. The figure or figures?—The figures.

1090. The Treasury do approve in detail?—Yes.

1091. The figures have been rising rather rapidly. The figure for wages and salaries was £47,000 in 1950-51, nearly £56,000 in 1951-52, and here, in the document you have just given us, the figure for salaries has now gone up to—I am talking of the first figure for the item “Scientific and Experimental Staff”—£61,564 sanctioned and £69,850 actual expenditure. Other salaries have not gone up quite so much I think I am right in saying. I do not know what your explanation of that is?—(Mr. *Andrews*.) The chief increase in our estimates has definitely been caused by awards made in connection with salaries.

1092. To scientific workers?—To scientific workers.

1093. From £41,000 to £69,000 in three years?—There is this, that these awards have been retrospective, in some cases to nearly 18 months, which means very large sums being paid because there have been very long and protracted negotiations ending in arbitration at times. The salary increases between 1952 and 1953 of £13,000 is almost entirely accounted for by a considerable increase in staff—about 18 months ago we were able to get more staff to build up to the level at which we are now—plus the fact that there have been a number of awards. (Sir *William Slater*.) I am hoping, when I come to give evidence before you, to submit some calculations we have been doing as to the actual expansion of the Institute. We have tried to get back to the prices of about five years ago both for salaries and for other expenditure. It is not an easy calculation, but we have done our best. I was hoping to let you see some of those figures.

1094. Certainly?—You will be able to form an estimate of the actual expansion as distinct from expansion mixed with increased costs. The cost of apparatus has been going up. Coal, gas and all the various other commodities have been rising. It is difficult to say what the actual expansion has been unless you do such a calculation.

Captain Waterhouse.

1095. Is Mr. *Cashmore* empowered to take on extra staff without reference to higher authority?—(Mr. *Cashmore*.) A supplementary estimate is put up for consideration of any additions to staff I may wish to have. That is discussed very thoroughly, and at that point either I am told “Yes” or “No”. Outside that, no.

1096. Mr. *Andrews* said that a number of staff were taken on about 18 months ago, and that rather gave me the impression that as people applied you engaged them.—(Mr. *Andrews*.) No, Sir. We get an amount allowed for that in our salary contingencies. We cannot appoint anybody.

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Briefly, we nominate the people we have interviewed to the Agricultural Research Council who can turn down those particular candidates if it thinks they are not, as qualified as they ought to be. (Sir *William Slater*.) We agree the appointment on behalf of the Ministry, and we also fix the salary at which he can be appointed.

Chairman.

1097. Is the establishment determined each year, and that total cannot be exceeded?—What has frequently happened in the last few years is that posts have been vacant for two or three years. A figure appears in the estimates under contingencies. No one has come along. The next year passes, and it is unspent again. If you can find someone you say "We will have him", and then perhaps, as Mr. Andrews said, all at once several people come along and a number of these posts get filled fairly quickly.

1098. Mr. Andrews said that some of these increases in salaries were made retrospective. Does that mean you had to take account of those in this one year, 1953, and that salaries will go down in the subsequent year?—I am not sure of that. We are entirely a straw on the stream because as these increases in salaries are national awards someone finds the money—I do not know whom, but we are told that we are to pay.

1099. What I mean is that if they are retrospective I can understand that you would have to pay two years' increases in one year?—Yes.

1100. Therefore should there not be a reduction in the following year?—Yes, I think it should mean that normally. (Mr. *Cashmore*.) It is adjusting itself now. A few years back we were relatively under staffed because agricultural engineering was quite new, and there have been promotions which will settle down and get better balanced. But for quite a while the average age was very young, and it has meant that promotions have come along rather more than they would have done.

1101. There is a figure for "Rent, rates, taxes and insurance". Has that always been in there?—(Mr. *Andrews*.) Yes, Sir. We had to pay that. The rent was shown as over £10,000 I think because we had to pay rent back to the 1st October, 1949.

1102. You pay it to the Ministry of Works?—Yes, Sir.

1103. You maintain this building?—Yes, Sir.

1104. Including what I will call the cultural maintenance?—Yes.

1105. That is to say, the park and the buildings?—Yes.

1106. What do you reckon that costs you?—I think the actual park—when I say "park" I mean from the terrace here down to the boundary—is surprisingly cheap in regard to material. I would say that about £1,500 a year covers that because, although we do not split it consciously, we have about a total of five staff maintaining the lawns and the woods, but they are in an emergency taken off that and put on experimental work. Maybe they are all out on the preparation of plots. They are all double-handed people, able to drive machines and so on.

1107. You are doing substantial repair work in the hall?—Yes.

1108. That is as regards the pictures and so on. What is that going to cost you?—The actual firm estimate I received was about £1,500, but it is bound to be rather more because they found some dangerous plaster.

1109. Would it be fair to say that a proportion of the rent and a proportion of the maintenance cannot really be debited to agricultural research?—Yes, Sir. We have got the consequences of occupying this type of building, and we have to accept responsibility.

1110. That is not made clear anywhere in the estimate?—No, Sir.

Captain Waterhouse.

1111. Do you receive anything in respect of the people who visit the park?—We are not allowed credit by the Ministry. It is a very small amount, about £25 a year. We think it is not worth while. It costs more for the custodians' pay than is received from the visitors.

1112. Is it very frequently visited in the summer?—It always gets a Press notice.

1113. It is being run at a loss?—Yes.

1114. Not more than about 2,500 people come here?—Not that. I have not the exact figure, but it is a very small number.

1115. In your case it is hardly worth keeping open?—It is not. We do try to resist it from the technical aspect, that it would be very unfortunate to have people wandering about where we might be experimenting.

Chairman.

1116. Do you think anything more could be made of the grounds, if facilities were provided?—(Mr. *Cashmore*.) Quite a bit of it is used for experimental work. If teas were provided I think they would get more people, but I feel I would much rather

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let people go round by permission, if they wish to, without charge. That would be better than the present system where the custodians definitely cost more than the amount received from visitors.

1117. Apart from the desirability of maintaining a park which may be beautiful, do you need it?—We use a good deal of that space down there. We are short of field space. We only have 120 acres as such, which is hardly sufficient for experimental purposes. I am very glad of the actual space.

1118. Can it be cultivated?—We have got some cultivated.

Mr. *Summers*.

1119. Is any attempt made to segregate the income and expenditure of your farming operations side?—(Mr. *Andrews*.) It is actually accounted for. This is not a farm. The proceeds of sale of crops, etc., amounted to £3,260. Those are agricultural crops—potatoes, sugar beet.

1120. What I am asking is whether—it is impossible from the figures I have seen—to identify the cost in wages, etc., of producing the crops?—It would be difficult. (Mr. *Cashmore*.) Some of this experimental work in connection with fertilisers, for instance, may take a much longer time than the normal type of farming operation.

1121. There is no livestock here?—No. (Mr. *Andrews*.) We are exempt from producing farm accounts. We could have a shot at separate accounts, I would say, for the labour costs in relation to the cost of potatoes, but we work all this as part of the experimental plots and not as a farm. If we can produce good crops, well, it is quite incidental that we will do that. (Mr. *Cashmore*.) There is quite a good return. It is well above the agricultural average.

Chairman.

1122. Have you got a figure for what I would call the non-essential maintenance? Do you reckon it is always going to be £5,000—this is the special expenditure?—(Mr. *Andrews*.) The non-recurring work on the main hall does come out of our repairs and renewals grant for this year. I put it up as a separate item for which I got a contingency sum of £1,000.

1123. What might the non-essential maintenance figure be annually?—I doubt if it would be more than £2,000 a year. May I just add, in connection with the increase over last year's, that the main headings are pretty well pegged, that is for things which we regard as factual. There is a tendency with increased staff for electricity costs to increase, but nearly all the administrative costs are pretty well pegged and have been for the last three years.

Captain *Waterhouse*.

1124. You have a very high expenditure on power, light, heat and water; in fact, you have overspent there?—Yes.

1125. Whereas for stationery, postage, telephone and telegrams you have under-spent?—That has always been spent, but we have reduced it to about £3,400. That includes all the technical material, tracing linen at 5s. a yard, all the graph paper and all the special purpose stuff. It includes all the stuff for the drawing office. The telephone bill is a big one. I have a monthly return of telephone calls, because there again we are doing work all over the country and quite a lot of telephoning is done. There is a very strict check on that.

1126. The telephone does become just the lazy man's job. It is so much easier to spend 1s. 6d. or 2s. on a telephone call than to write a letter?—Every month my finance officer has a note of the highest call. We know the department which has had it, and if there is anything wrong it is pointed out to the person concerned by sending a note saying he should not have incurred that expense.

Chairman.

1127. May I ask what is the British Society for Research in Agricultural Engineering?—I think you will want a copy of the Memorandum and Articles of Association.*

1128. Has it any other function than running this Institute?—To run the Institute. It has power in its Memorandum to run institutes and research stations in any part of the world. This is a public company because it is a very flexible instrument. It is not like a trust where, if an individual trustee dies, there is all the business of appointing a new trustee. Here the Ministers, that is to say the Minister of Agriculture and Fisheries and the Secretary of State for Scotland, appoint the governing members, who are the governing body, and the chairman. The National Institute of Agricultural Engineering has no legal entity at all. It is merely the registered office of the British Society and the Scottish Machinery Testing Station. That is a station specially named in the Articles. The British Society does not provide any funds for that station. Those funds are provided by the Department of Agriculture for Scotland, and they have a separate financial year, but their accounts must be brought into ours under the Companies Act. (Sir *William Slater*.) The short answer is that the British Society for Research in Agricultural Engineering was formed in order to carry on this Institute. The Articles of Association would allow

* Not printed.

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it to do almost anything it wanted, but in fact it is very unlikely to do anything but run this Institute.

1129. Because it has no funds except those which are provided by the Ministry of Agriculture and the Department of Agriculture for Scotland, and its governors

are appointed by the Government?—It was widely drawn so that, if at any time the Minister wished to use it for another purpose, it could be so used.

Chairman.] Thank you very much. We have found this has taken rather longer than we thought.

The witnesses withdrew.

Adjourned till Tuesday next, at East Malling.

TUESDAY, 16TH MARCH, 1954.

Members present:

Mr. Albu in the Chair.

Mr. Blackburn.
Mr. Hobson.

Mr. Summers.

Evidence taken at the East Malling Research Station, near Maidstone, Kent.

Mr. W. G. ALEXANDER, O.B.E., Deputy Secretary, Agricultural Research Council; and Dr. F. R. TUBBS, Director, East Malling Research Station, called in and examined.

Mr. A. B. BARTLETT called in and further examined.

Chairman.

1130. Dr. Tubbs, first of all I would like to thank you very much for your kindness in showing us round the Station. We have been very interested. I am sorry we could not spend more time to go into things in more detail, as we would have liked to have done so. Also I would thank you for your hospitality. I do not know if you are aware of the terms of reference of the Sub-Committee. We are a Sub-Committee of the Select Committee on Estimates, and, very roughly, our duty is to see that money voted by Parliament is economically spent. We are not concerned with questions of policy but only of administration. There are a number of things about which the Sub-Committee would like to ask questions, some on the background and administration of the Station and some on the accounts. As I understand it, the Station is still officially run by the Kent Incorporated Society?—(Dr. Tubbs.) Yes, Sir. That is a Society which consists of some thirty-eight governing members, from which its executive committee is elected.

1131. The Station was originally founded by them, was it?—It was originally founded as the fruit experimental station of Wye College, and when it became an independent research station, between 1918 and 1921, it became the Kent Incorporated Society.

1132. When did the Ministry of Agriculture first start supporting it financially?—I must confess my detailed knowledge of those early days is rather fragmentary. I think small grants may have been received before 1918, but I think it was only as the Station became an independent research station that it began to receive support. The support at that time was very small in quantity; its main income came from the sale of fruit and other activities.

1133. Do I understand that there are grower members of the Society?—There is a separate association of growers which has no part in the official governing of the Society, save that it elects two of the thirty-eight governing members. That Association comprises some 1,800 members, as we call them, who are interested in supporting our research and maintaining contact with East Malling Research Station.

1134. What is the association called?—It is called the East Malling Research Station Association. Its constitution was revised in the post-war years, and its purposes now are to support the Station in all those matters which do not form a normal basis of support by the Ministry or other sources.

Mr. Blackburn.

1135. How do they become members?—By application for membership. They are enrolled, and pay an annual subscription.

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Such membership gives them no power in the station except through their elected representatives.

Chairman.

1136. Does that Association contribute towards the work of the Station?—Yes, by agreement with the Ministry of Agriculture, reached I believe at the same time as the Ministry undertook for repeated five year periods to meet deficits on the farm. When I say “deficits on the farm”, I mean the cost of running experiments on the farm; that will be understood. It was also agreed that one-third of the income from subscriptions to the East Malling Research Station Association should be contributed to the Station for the purpose of reducing the block grant requirement.

1137. That is the figure given in your Administrative Report to 30th September, 1952, on page 16—“Research Grant—£1,472”?—Yes, Sir. That will be one-third of the receipts for the previous year.

1138. Otherwise the trade, if I may put it that way, does not contribute towards the cost of running the Station?—No, Sir.

1139. On the other hand I thought you told us, in going round, that in a way the Station does rather more than a normal research station by way of research and information because it in fact supplies what I think you called “mother plants”. Is that right?—Yes, Sir. It is a little more than just the supply of mother trees for propagation purposes. It dates from the very beginning of the Station when East Malling was the only source of vegetatively produced root stocks for the horticultural industry, and with the active encouragement of the Ministry and as part of the agreed policy of many years that material has been released to the industry, either directly to our members or by sale, by arrangement, to members of the Horticultural Trades Association representing the nursery trade. That has on occasions assumed very large proportions. For example, in the latter years of the war the Ministry foresaw a very great shortage of fruit tree root stocks in England and asked East Malling to propagate the requisite material in advance. That it did, and it provided a very substantial source of revenue towards the cost of research in the post-war years, but one which has unfortunately died away a little now.

1140. In the accounts which I have got in front of me, which are the accounts for the year ended 30th September, 1953, are the receipts from those sales included in the plantation account under “Produce and crops”?—Yes, Sir.

1141. Have you any idea what proportion of the receipts from sales of produce and crops is represented by sales of mother trees?—I would rather not use the term “mother trees” because that is restricted to about sixty trees which were sold last

year for the first time. I would rather speak of sales of plant material, root stocks and fruit trees.

1142. What proportion of the income, which I see was £22,797 from produce and crops, could be considered income from sales of that type?—I am here speaking from memory. I think about 1948 we got a revenue of £11,000 from the sale of root stocks and fruit trees. I think that by 1953 it was about £2,500. It is likely to rise again because we are now coming to the stage when we shall be releasing our new Malling-Merton root stocks.

Mr. Summers.

1143. Is there any scope for the export of this material?—That is engaging our interest at the moment, but one of the great difficulties are the quarantine and health regulations of the countries concerned which, for example, require every root stock to be scrubbed before it is exported. There have, however, been considerable enquiries for Malling root stocks from Canada lately, and we are in contact with the Canadian Office scientific liaison officer who is ensuring that all such enquiries do come to us in future.

1144. Are you taking any active steps to develop that side of sales in so much that, when it was available to you at home during the war, it was of appreciable assistance to the finances of the farm?—Not beyond the fact that we are the acknowledged centre of information on root stocks, and any research worker or Government official who is sufficiently interested in the importation would get in contact with us from the Commonwealth.

1145. Will not sales to Canada lead to industrial enquiries?—Yes. In that case we should probably, unless we could supply them, refer them to some reputable nurseryman who could supply the material they wanted and which we thought would be correctly named.

Chairman.

1146. I think you did tell us when we were going round that Commonwealth countries have received considerable benefit from the research work done here. I am just wondering whether any attempt has been made to get contributions from the Commonwealth countries, or whether you feel on the whole the exchange of information is a sufficient balance?—I think there have been actual contributions in the exchange of research workers and in the exchange of ideas. I know our work here has been much influenced by visits overseas. I do not know to what extent the monies which came from the Empire Marketing Board may have arisen from overseas sources. Apart from that I am not aware of financial contributions from overseas in the past.

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1147. The root stock sales are rather more than the normal sales of plants by nurserymen. They are, of course, in fact the sale of almost new material, something which is re-establishing the grower's whole crop, is it not? I am just wondering whether an attempt has ever been made to get a rather higher return on those and thus getting a larger contribution from the industry itself towards the Station which is now almost 100 per cent. supported by Government funds?—I should like to make the point that that aspect has been given very great consideration, and I should perhaps emphasise that in the case of the supply of root stocks it is not a question of continuous replacement but, of course, of propagation. There we are growing those root stocks for profit, to the extent that it has paid us to do it. Once the post-war need, which was foreseen by the Ministry of Agriculture, fell away we reduced our acreage of root stocks accordingly. It falls into the same category as selling our fruit. When it comes down to the sale of any special material the policy has been to consult with our own executive committee and with representatives of the Horticultural Trades Association with a view to charging the maximum sum which is compatible with ensuring that this material does in fact get out and that full use is made of it.

1148. The Society was built up, I believe, to quite a large extent by growers' and supporters' contributions?—Yes, Sir.

1149. As I understand it, at a certain time when a capital sum was needed to build up the Station, that was on a fifty-fifty basis. I do not know when that started. Perhaps Mr. Bartlett can tell us that?—(Mr. Bartlett.) I think the fifty-fifty basis was the general policy before the 1939 war.

1150. From the early 'thirties?—That sort of time, yes. (Dr. Tubbs.) I think the fifty-fifty basis only applied to the extent that the Society was able to demonstrate that it had not got a penny with which to provide more for itself. It was running on a very tight margin indeed at that time.

1151. At that time, to some extent you even had to run the place at a commercial profit partly at the expense of research?—Yes. The actual lands of the Station were security for a very considerable time to carry the bank overdraft.

1152. Have you any idea of the figure the industry was contributing in those days, either towards capital or towards revenue?—No, Sir. I think that in general the position has been that there have been specific appeals for special needs, which have been supported by the industry. When land has been acquired then the profits from that land have been ploughed back into research. It was as we were required in consultation with and very often by the

advice of the Ministry in those days, later by the Ministry and the Agricultural Research Council, to undertake work involving additional staff that the financial responsibilities of the Station far exceeded what could be borne on the profits.

1153. It has grown enormously since the war?—Yes.

1154. It is really on a completely different scale?—Yes.

1155. The point is that, as long as the industry knows that the Government is going to provide all the funds, there is not a great deal of encouragement to the industry to provide the funds very much. If there is no *quid pro quo* basis at all then there is no incentive to anybody to contribute at the moment, is there?—Put in that way, no. I would, however, like to make the point that I do feel that the relationships of the Station with the growers and particularly its members have a very special part in the efficiency of our research work and the daily life of the Station. I personally would not wish to suggest or agree with anything which might militate against that sort of relationship with our progressive growers, which has a real part in applied research.

1156. You mean a two-way part?—Yes.

Mr. Blackburn.

1157. I have got in front of me the Administrative Report to the 30th September, 1952. On page 15, under the Research Account, there is an item "Sundry Receipts—£568". What is that?—Without looking it up I do not think I could state exactly from what that arises, save that very probably in that amount is the rent from the Commonwealth Bureau of Horticulture and Plantation Crops and also the sum paid by the Imperial College for facilities it receives here.

1158. Within the experimental farm account, on the next page, would the amount you are receiving for the stock come under "Sale of Produce and Crops" or under "Sundry Receipts"?—Under "Sale of Produce and Crops".

1159. Then what would come under "Sundry Receipts" of the experimental farm account?—That would be rents for the farm cottages, wayleaves and all sorts of things like that.

1160. Then there is an item, "Sale of Livestock". What livestock have you sold to the extent of £1,411?—That is the livestock, somewhat appreciated in value, shown on the opposite side of the account. We buy in bullocks in the autumn for treading straw for the orchards, to make not dung but a useful mulch, and sell them off in May. The purchase price is shown on the left hand side, and the sale price on the right.

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1161. On this next question I do not want to be misunderstood. I am not suggesting for one moment that an experimental farm could be run on the same lines as an ordinary farm or that we should expect that there would be a profit, but it seems to me that the last sentence before the experimental farm account is rather lighthearted: "The resulting excess of expenditure over income was foreseen and will be met by the Ministry." Am I to understand that whatever your loss it would have been met by the Ministry, or was it an agreed statement?—I have no doubt that, had the Ministry reason to believe that the deficit had arisen by culpable neglect or inefficiency, it would have been protected from meeting it. The agreement with the Ministry is that these deficits, properly arising out of the efficient running of research, will be met by the Ministry.

1162. I do not want to be misunderstood; I agree that it is not possible to run an experimental farm—?—I would like, if I may, to rise a little to your suggestion of "lighthearted", because I must say that the question of the farming deficit has been the subject of very considerable anxiety to my finance, farming, and executive sub-committees, and every year it is scrutinised in very great detail. The farm manager has for four years running, in spite of whatever comments or views might be raised on the accounts, received the expressed approbation of my executive committee for his economical and efficient running of the farm. I do feel that it will stand the most detailed examination.

Chairman.

1163. May I just follow that up on the accounts I have, which I am afraid the rest of the members of the Sub-Committee have not got, the duplicated balance sheet and accounts for the year ending 30th September, 1953?—Research accounts or farm accounts?

1164. This is headed "The Kent Incorporated Society for promoting experiments in horticulture". I think it is the whole lot. The first thing is that the income and expenditure accounts seem to be on a different basis from those in the Administrative Report, because in the Report you have the research account and the experimental farm accounts whereas in these latest accounts it is divided into salaries account and laboratory account. There is a plantation account as well?—Yes. May I explain that?

1165. Please?—The position is that the accounts as published in the Administrative Report are always a simplified version of the full audited accounts which are supplied to the Ministry.

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1166. The Ministry want them divided into salaries, laboratory and maintenance accounts?—They did not specifically ask that, but the matter arose in this way. It was made clear, I think eighteen months or two years ago, that the salaries portion of the block grant was a deficit grant, where the Ministry met all those costs on salaries properly incurred. The block grant remained as a block grant; i.e., once its composition, the grant under the various headings and so forth, had been agreed, then the block grant made to the Station was at the disposal of the Station for the prosecution of research as it saw fit.

1167. There is a salary grant, and there is a block grant?—I might say that does not mean by any means that the block grant, the second part of the grant, is merely handed over to the Station, because in fact my next year's estimates will be reviewed in the light of the expenditure under the various headings of my previous estimates.

1168. In actual fact the second half of the block grant is also examined by the Ministry really?—Yes, in detail, and by the Agricultural Research Council.

1169. Is it an inconvenience that your financial year differs from that of the fiscal year?—I have not myself found it so, but that is possibly not a matter which would affect me.

1170. We can deal with that later on. In the plantation account it seems—I do not suppose you are intending to mislead—to include livestock on the expenditure side but not to include the balance of stocks and nursery stock on the income side. That seems to me to give a slightly misleading impression. There is a note about saleable produce, I agree?—You have got livestock on both sides, surely, the top line.

1171. Yes, but it says saleable produce has not been taken into account, presumably I suppose because it is equal at both the beginning and the end of the year; there is no room for fluctuation?—Yes. The real fact of the matter is that any valuation produced at that time is completely worthless; it is not worth the paper on which it is written, and would involve the whole of my staff at a time when they are working—

1172. It does not vary from year to year?—It may vary from year to year, but we have always produced accounts on this basis. This is really a cash account. Our accounts have always been produced with that proviso.

1173. I am only thinking that the larger the figure of income and expenditure which you show on this account the larger the grant you will get from the Ministry?—No, Sir. It would certainly all come out "in the wash" next year.

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[Continued.

1174. Yes, unless the value of your saleable produce was going up every year which I assume it is not?—No.

1175. I find these accounts slightly confusing. There is the balance of expenditure over income in the plantation account, to which must be added the net deficit, I presume, on the laboratory account, less I suppose the balance due from the Ministry. That does not seem to tally in any way with the figure in the balance sheet. I cannot find where this occurs in the balance sheet, which is rather peculiar. Then I do not understand what "East Malling Research Station Association" means in the balance sheet on both sides. Can you explain those figures?—The explanation there is that we have always shown the position of the Association on both sides of our balance sheet. It may be regarded as unnecessary to do so, as a contra entry.

1176. What is that amount? Is that the balance of the income and expenditure account?—No, Sir. That is the total of the property of the Association which is mainly housing property bought to house our staff, and offset against that is the overdraft at the bank.

1177. These are capital assets of the Association?—In part, yes.

1178. Where in the balance sheet does the excess of expenditure over income for the year occur, or does it not occur?—On page one, on the right hand side, you will see the deficit for 1952-53, £19,984, which is the figure carried forward from page four. Then above that is a statement showing that there is no adjustment necessary on the previous farm deficit.

Chairman.] I had not noticed that. I was looking for it on the other side.

Mr. Summers.] Can I raise a question on the farm accounts, if you have finished?

Chairman.] Yes.

Mr. Summers.

1179. In the Administrative Report at which we have been looking, in the experimental farm account you show for the year in question an amount of £16,000-odd for general farm expenses, implements and repairs. Can you give us any idea of the stock of implements which you carry, the number of tractors and that sort of thing?—No, Sir, I could not tell you that offhand. I can give you the breakdown of that £16,000.

1180. How much would be expenditure on implements?—The items were: hire of machinery and sundry expenses—£638; replacements of heavy implements and equipment, less sales of old equipment—£1,800; maintenance of implements and machinery—£1,500; and then there will be

a sum for petrol, oil, water, etc.—£1,900, which is complicated by the inclusion of electricity.

1181. Have you any figures to show the implements which cost £1,500 to repair for the year?—No, Sir, but they can be produced. That is part of the normal maintenance work of the farm. I would like to say that in the post-war period there has been a tremendous effort to hold as constant as possible, or not to allow it to increase more than could be prevented, the actual cost of running the experimental farm. For something like nearly three years the cost of running the experimental farm was held constant—it rose by a few thousand pounds last year—in spite of increases in costs of materials and in costs of labour over the period. That achievement was done by mechanisation, wherever possible, to get round the land with a smaller number of men.

1182. Would you say that you require a larger force of machines than would be the case if you were not an experimental farm?—Undoubtedly, and a wider variety.

1183. I understand that 120 people are employed here. What proportion are field workers?—There are 59 farm workers, 133 research and 23 administrative staff.

1184. And the acreage cultivated?—Three hundred and sixty-three acres.

1185. Is that cultivated?—Practically the whole of it is cultivated.

1186. I thought a lot of it consisted of roads and buildings?—Forty acres is the total for buildings, roads, paths and other things. We have 128 acres arable in preparation; 110 acres of top fruit; 13 acres of soft fruit; 29 acres of nursery; 4½ acres of hops; and 35 acres of miscellaneous experimental plots. I would like to draw attention to the matter which we did discuss going round this morning, that we have a very high proportion of young fruit which is costly to maintain because it has been necessary to start a programme, which has been only too long delayed owing to the war, that of grubbing old areas of fruit and reconstituting that land to enable it to be in a fit condition for future experiments. We have our arable land in preparation for experiments of 128 acres which I mentioned before; top fruit in bearing—57½ acres; top fruit coming into bearing—29½ acres; newly planted top fruit—23½ acres. That shows you the very high proportion of young fruit.

1187. If you project the present plans over the next, shall I say, five years, will more trees go out than come in, or reverse, to fruit bearing maturity?—I think that by the end of five years we will be seeing a distinct increase in the number of trees coming into bearing, but not until then.

1188. That would then increase your potential sales?—Yes.

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[Continued.]

Mr. Blackburn.

1189. Would it? Would you not at the end of that period be getting rid of some fruit bearing trees in order to make way for new experiments?—I think the position is that we have had a backlog with which to catch up. There had been no grubbing of old trees, and when I came that was one of the first and rather distasteful things which had to be undertaken. The programme was very carefully worked out. It necessarily involved grubbing rather large areas in the first few years.

Mr. Summers.

1190. To what extent do you find it necessary to pay overtime?—I cannot define that precisely. We do quite a lot of overtime. There are usually four or five men working each Sunday, as soon as the weather is good.

1191. Is that seasonal?—Yes. We do not keep it on during the winter. I look into the overtime question periodically, and I am satisfied that we are holding a proper balance between giving our men a little bit extra above the agricultural wage, which is essential if you are to retain your men where you do not pay bonuses, and also working economically.

1192. Are the majority of these men on the minimum agricultural wage?—No, but they are quite close to it.

1193. You might lose your labour if as much overtime as you do was not done?—No, Sir, because that suggests I am doing overtime just to keep them. I do not think that is the case. I would say this, that I am satisfied the overtime which is being done is economical overtime rather than employing extra people. There is an accompanying advantage to that, that in a Station where you cannot pay bonuses for mass work they have to buy what they need sometime during the year and it is a great advantage if they are able to do it that way. It is a very human point, but one which we have to consider in a small community which this is.

Chairman.

1194. To come back to the accounts, I think I see why I was misled about the deficit because I never expected to find it under "Sundry Debtors". It is only under sundry debtors because it is a debt owed to you by the Ministry of Agriculture. There are a number of items—some on the balance sheet and some on the income and expenditure accounts—where I note that you receive income for research from other sources. For instance, there is the Pettar Ace Red Spider investigation. Apparently you received a special grant from the Agricultural Research Council?—Yes, Sir.

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1195. How much was that?—We do not only receive income on occasion through the block grant. There may be special investigations which the Agricultural Research Council either propose or agree are desirable for a particular period to see how the work turns out or to achieve a specific end. In such cases they do on occasions, and after scrutiny of the whole position, make a research grant which is normally limited to a maximum period of three years. There is also this special and exceptional case of A.R.C. Pettar Ace Red Spider investigation, which was a joint effort started 10 years ago and which was designed to enable co-operative research to be carried out in Essex. It has recently been carried through to a successful conclusion, and is now ended.

1196. In the balance sheet there is a figure under "Sundry Creditors" of £9,697, and that is simply named as research. That I presume is a sum which you expect to get back from someone. That is one particular piece of research, is it? What is the total amount to which it will eventually amount—on page one?—I am sorry, I cannot answer that.

1197. Would you let us have a note on what that item on the balance sheet represents? If it represents the balance of a grant for a particular purpose, we would like to know from whom and for what purpose?—(Mr. Alexander.) I do not think it can possibly represent that. (Dr. Tubbs.) I can probably find the answer in a few moments.

1198. There is no hurry. Then the Imperial College makes some contribution, does it?—No, Sir. That is a partial payment to cover the costs of services which it enjoys here. The position is that the Research Institute of Plant Physiology, Imperial College, has workers stationed not only at its headquarters in London but also at, I believe, Rothamsted and at East Malling. Those workers live a life entirely integrated with our research. They live in our physiology section, but the Imperial College makes the payment.

1199. Post-graduate work?—Yes, established members of the staff of that Institute.

1200. Turning to the staff houses rental account, who built these houses?—They comprise 10 houses, I think I am correct in saying. There is the Park Farmhouse, which was bought in common with the rest of the Bradbourne Estate on a £ for £ basis between the Station and the Ministry in 1938, and which I occupy. The rental of the Park Farmhouse goes into the account. There are eight staff houses which were built at a cost of approximately £20,000,

* Not printed.

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Mr. A. B. BARTLETT,
Mr. W. G. ALEXANDER, O.B.E., and Dr. F. R. TUBBS.

[Continued.]

of which the Ministry contributed £15,000 and the East Malling Research Station Association £5,000. There is Court Lodge, which is one of the houses of the farm, and that is divided into three flats.

1201. The balance sheet does not seem to take any credit for the houses, and the income and expenditure account does not seem to take into account any depreciation or interest charges. I do not quite understand how the rents are fixed?—The rents are fixed by agreement with the Ministry who, on completion of the houses, stated in discussion with us the rents which they considered equitable. Those are the rents charged for those houses. I think I should explain this is an account which was started by direct agreement with the Ministry to allow funds being available for the maintenance of this housing property.

1202. It is a rather peculiar account?—I think not because there are, after all, these 10 properties, the rents of which go into the account. The outgoings from it on the maintenance and repair of these buildings are shown, and at any time we are accountable to the Ministry for the balance in the account.

1203. Could Mr. Bartlett tell us whether the item "Repairs and Expenses" includes some sort of depreciation charge or interest charges?—No, Sir, I cannot.

1204. The rent is fixed without any consideration of interest charges at all?—(Mr. Bartlett.) I am afraid I cannot say.

1205. Would you look into that? It may not be a very important matter but I think we should know, because the account balances. There are rents on one side and expenses on the other, but under the expenditure there are no interest or depreciation charges?—I will let you have a note on that.* (Dr. Tubbs.) This is merely accounting for the rents received.

1206. The question I am getting at is whether the rents cover all the costs. It does not seem to me that they do, but it may be it has been dealt with in this way as an alternative to a subsidy. However, I think we ought to know about that?—(Mr. Bartlett.) Yes. I will let you know about that.

1207. The annual grant in aid which covers the expenditure in these accounts does not, of course, include the capital grant. The capital grant is separate?—(Dr. Tubbs.) Yes, Sir.

1208. I am not quite sure what that is annually?—(Mr. Bartlett.) There is no regular annual capital grant. It depends on

the particular project which the Station has to submit.

1209. What is it at the present time?—The cost of the scheme which is now in operation is about £160,000.

1210. The annual grant is, roughly, how much?—(Mr. Alexander.) About £50,000. (Mr. Bartlett.) Over the period of construction.

1211. That includes the building of the new laboratories which we have seen?—(Dr. Tubbs.) Yes, that is the building of the new laboratories.

Mr. Blackburn.

1212. For what does "E.M.B." stand?—Empire Marketing Board.

Chairman.

1213. I also understand there is some difficulty about the water supply which is going to involve you in capital expenditure?—Yes. There is a problem concerning the supply of water which may be required for spraying purposes, for which we are building tanks.

1214. Is that going to be a heavy capital expenditure?—No, Sir, about £900 odd.

1215. That is something to do with this housing estate which has been built, is it?—Yes. What has happened is that the demands for water are expanding in the district faster than the water company can replace the mains, and they are unable to maintain the pressures in the mains.

1216. In regard to salaries are they fixed in conjunction with the Ministry's normal scales?—For whom?

1217. The scientific staff?—With the Agricultural Research Council.

1218. Roughly on the normal scientific civil service scales?—(Mr. Alexander.) They are entirely within the framework of the White Paper governing scientific civil servants.

1219. And their conditions of superannuation?—F.S.S.U. (Dr. Tubbs.) Experimental Officers and Assistants (Scientific) are superannuated under the Ministry's Superannuation Scheme.

1220. Are you satisfied with the use which is made of the results of research? I think the difficulty problem for research stations is that of communication with the industry itself. Have you anything to say about that?—Quite obviously no one could ever be satisfied with that, I would say that there still is very real room for wider application of the results of research, particularly outside the established fruit growing districts where the examples of the leading growers and the acknowledged experts in the National Agricultural Advisory Service have materially

* Not printed.

16 March, 1954.]

Mr. A. B. BARTLETT,
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[Continued.]

raised the standards. The problem is one of getting at the poor small or backward growers, and is one of education. I would say that in my experience over the last four years the Station's contacts with the National Agricultural Advisory Service in its work have expanded out of all proportion, and the relations with that Service are extremely good. I would not say that the task of that Service has been completed, or that the task of research in putting over its own work has been completed.

1221. You have a liaison officer here?—Yes, Sir, a scientific liaison section.

1222. What is the staff?—A staff of one principal scientific officer and three experimental officers.

1223. Is that a sort of dual process?—Yes. They have duties both inside the Station and outside. Dr. Montgomery is responsible for attending N.A.A.S. provincial experimental committees and other such activities by invitation; for organising all contacts with the National Agricultural Advisory Service, the transfer of enquiries, answering their enquiries and giving them information and so forth. He is also responsible not only for his own duties within the Station but for conveying to me and to the research workers concerned the types of interesting enquiries or interesting facts which are brought in by the N.A.A.S. and which are of value to research. That is not our only contact with N.A.A.S. because the statistics section has perforce to accept very considerable responsibilities for looking after the design of fruit experiments on N.A.A.S. experimental horticulture stations, and of N.A.A.S. outstation experiments.

Mr. Blackburn.

1224. Are any of the large scale growers carrying out any research or experiments themselves?—No, Sir. Many of them provide us with land and facilities, as we need them, for experiments.

1225. They rely entirely upon you?—I do not think they are in a position to carry out the sort of experiments which today are necessary.

Chairman.

1226. Not even the more empirical ones. I can quite understand the position in regard to the fundamental ones?—I think there is a possible field for the simple experiment repeated in very many centres, but such a system could only be developed under the most skilled statistical advice and is beyond the capacity of individual growers.

Mr. Hobson.

1227. Does the same apply to the manufacturers of chemical sprays for the killing of insects?—The bigger ones have their own stations where they carry out their own tests. They tend to keep in very close contact with developments, and their staff frequently visit this Research Station. I am personally against the use of research facilities merely for the testing of proprietary preparations under whatever guise that arises.

Chairman.

1228. Thank you very much?—I think I did possibly omit to make one point. You were raising that very interesting problem about the industry making some contribution. I think that any such attempt to get some form of contribution would be very difficult to devise without it bearing on the efficient growers and leaving the inefficient and backward man to escape the costs of research.

Chairman.] It is a universal problem whichever way you look at it.

Mr. Blackburn.

1229. Unless you made it a levy per acre?—Perhaps I might say that, when your Parliamentary duties allow and you are passing East Malling, we shall be very pleased to welcome you here.

Chairman.] Thank you very much.

The witnesses withdrew.

Adjourned till Monday, 12th April, at 4 p.m.

MONDAY, 12TH APRIL, 1954.

Members present:

Mr. Albu in the Chair.

Sir Alfred Bossom.
Mr. Blackburn.
Mr. Hobson.

Mr. MacColl.
Mr. Summers.
Captain Waterhouse.

Sir WILLIAM K. SLATER, K.B.E., called in and further examined.

Mr. W. NESS, an Assistant Secretary, Agricultural Research Council and Mr. R. N. QUIRK, Secretary, Office of the Lord President of the Council, called in and examined.

The witnesses submitted the following Memorandum:

MEMORANDUM 5

AGRICULTURAL RESEARCH COUNCIL

Memorandum by the Agricultural Research Council

1. The Memorandum on the Agricultural Research Council submitted to the Select Committee on Estimates by the Treasury* gave in broad outline the origin and present membership of the Council, its functions, organisation and how its expenditure is controlled. The memorandum now submitted is designed to give a more detailed account of the Council's work, and in particular of the way in which expenditure on agricultural research as a whole is directed in order to ensure that the funds available are spent to the best advantage.

The activities of the Council described in paragraphs 3-12 apply to all state-financed agricultural research, with the exception of that directly controlled by the Ministry of Agriculture and the Department of Agriculture for Scotland; this includes the Ministry of Agriculture's Veterinary and Plant Pathology Laboratories, the Experimental Husbandry Farms and Horticultural Stations of the National Agricultural Advisory Service and corresponding institutions under the Department of Agriculture for Scotland. Paragraphs 16-29 deal with the administration of research financed directly by the Council, paragraphs 30-39 with the Council's functions and responsibilities for Research Institutes supported by grants in aid from the Ministry of Agriculture and the Department of Agriculture for Scotland.

2. The estimated expenditure of the Council on Headquarters Administration in 1954-55 is £85,000 of which £19,000 is for accommodation. In addition to the Secretary there is a scientific staff of four and an office staff (administrative, executive and clerical, etc.) of sixty-four. The Council's estimated gross expenditure on General Expenses for 1954-55 is £1,056,000 less receipts of £188,500, and on Capital Account £332,000. For the same period the Ministry of Agriculture estimates its grants in aid to Research Institutes to be £1,443,000 for General Expenses and £940,000 for Capital; the Department of Agriculture for Scotland estimates £475,920 for grants in aid of General Expenses and £77,520 for capital.

The General Co-ordination and Direction of Agricultural Research.

3. This account of the co-ordination and direction of agricultural research is inevitably an over-simplification of the necessarily complicated procedure involved in supervising the scientific work of 700 workers in the Scientific Officer Classes with all the ancillary staff and equipment.

There are two main objectives in agricultural research; the one is the solution of the practical problems of the industry; the other the accumulation of the basic scientific knowledge on which the solution of these practical problems depends.

The Council, in co-ordinating and guiding research, must ensure that the existing facilities are directed to the solution of as many of these problems as possible and that they are given priority in order of their importance to the industry. On the quantity and quality of the work carried out depends to a large measure the efficiency with which the funds available for agricultural research are expended.

* Memorandum 4 on page 24.

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[Continued.]

4. Research goes on continuously; it is in active progress in 25 Research Institutes, in 11 Council Units, and in almost every University in the U.K. work is supported by research grants amounting in total to £200,000 per annum, made from the Council's funds. The Council's co-ordination of research must, therefore, be like the pruning of a fruit tree; the gradual shaping year by year of a living organism to the desired form by encouraging the fruit-bearing branches and cutting out the useless growth.

The Council receives programmes from all centres where agricultural research work is supported by Government funds. These are analysed by the Headquarters staff and a card index is kept up to date. From this it is possible to obtain a quick assessment of the work in progress, either in a particular scientific field, e.g. soil physics, or on any form of stock or crop. The "Index of Agricultural Research in Progress" published at intervals of approximately two years by H.M.S.O., is based on the card index.

5. The work in progress cannot, however, be judged entirely from a programme submitted by the Director of an Institute. It is essential also to know the workers involved and the facilities at their disposal. This information can only be got by an expert visiting the laboratory and talking with the individual workers. The Council, therefore, apart from visits by its own technical staff, arranges a quinquennial visit to each Institute by a group of scientists distinguished in the fields of work covered by the Institute. This Visiting Group usually spends two to three days in the Institute discussing with the individual workers the general programme they propose to follow in the next five years, assessing their ability to carry out the work and deciding whether they have available the necessary facilities to do so. As the result of such a visit a realistic programme of work which the institute can attempt is agreed in broad outline, together with proposals for additional staff, buildings and equipment which may be required to render the institute fully efficient.

Against this background, the Council, its Standing Committees and the Headquarters staff can judge the annual programmes submitted, taking into account work which has either been published or reported as completed since the quinquennial visit. The Council has three Standing Committees, one for problems concerning plants and soils, one for problems concerning animals and a third for agricultural engineering.

6. The work in progress must next be examined in relation to the problems to be solved. In deciding on the practical problems to be investigated and on their importance, the Council is advised by the Agricultural Improvement Councils set up by the Agricultural Departments. This in itself is not enough, since many of the most striking advances in agricultural practice are suggested by the research workers. Again, a practical problem of high priority may have to be left for a time because part of the basic knowledge required for its solution is not available; until it is, work on the problem would only be a waste of men and materials. Information about potential developments coming directly from the laboratories and about the possibility of reaching the solution to any problem must be provided by the Agricultural Research Council *et seq.* from the knowledge of the research work in progress. To examine the evidence from the Improvement Councils and the Agricultural Research Council, and to decide on priorities for problems of immediate practical importance to the industry, a Joint Committee of the three Councils was set up during the war. This body is now being reconstituted and further strengthened. As an interim measure the Agricultural Research Council *et seq.* has been carrying out a number of enquiries into the problems of the different branches of farming requiring solution. The findings of these enquiries will be made available to the reconstituted Joint Committee.

7. Few of the problems for which the farmer requires a solution call for only one scientific investigation; nearly all are complex and must be attacked from a number of different points. The analysis of a practical problem into the different scientific problems of which it is made up, often a complex and difficult task, is the responsibility of the Council. Sometimes it is difficult to find a loose end which will enable a start to be made on unravelling the tangle of scientific threads, or again it may be necessary to seek a more precise definition of the original problem before any scientific investigation can be planned. The solution of a practical problem is inevitably untidy; one scientific investigation is started and goes ahead quickly; another is held up because there is no one qualified to undertake it; a third makes a start and then is checked for want of some fundamental knowledge; yet until all are completed we cannot give the farmer the help for which he has asked.

The Headquarters staff of the Council, with the help of research workers who are consulted either individually or in groups, break down the practical problems into their scientific elements. The programme of existing work is then examined to see how far the different parts of each problem are already being investigated.

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[Continued.]

8. The Council call a large number of conferences and ad hoc groups composed of the research workers, which cover as far as possible all parts of the field of agricultural research. Each of these conferences and groups surveys its own particular branch of research work; to these bodies are put any proposals for additional investigations arising from the examination of practical problems. It is hoped to interest one or more of the workers present, who have the requisite training and facilities, in the new problem. Where this can be done the additional work is incorporated in the next programme of the appropriate Institute, and any expenditure involved over and above the normal amount allotted for the department concerned can be provided in the estimates of the institute.

If no member of the conference or group, which with few exceptions contains representatives of all the organisations receiving Government funds for work in the particular field under consideration, can undertake the new problem, the Council tries to find a member of a University staff who is prepared to do so with the aid of a research grant. Some problems, however, must be left because no suitable worker is available. The Council has, for example, been seeking for over a year, without any success, for someone to study fowl coryza, a disease which causes heavy losses to poultry keepers. A highly skilled virologist is needed and none of those approached have been able to take on an additional problem.

9. These conferences and ad hoc groups also survey the basic research in progress and draw attention to subjects where the work is inadequate. Here again, a member of the group frequently expresses his willingness to expand his research to include the neglected work. If, however, no worker at an institute can take on the investigation, and it is considered by the Standing Committee which receives the report of the particular conference to be sufficiently important, an attempt is made, as with practical problems, to interest a member of the staff of a University in the work, if necessary by the offer of a research grant.

10. So far the means used for keeping a record of the work in progress, for selecting the problems for investigation, and for starting new projects have been discussed. The most difficult function of examining and advising on the overall programmes of research at the institutes remains.

These programmes are submitted annually a short time before the estimates are considered. They are carefully examined by the Council's staff to make sure that the items form part of the five-year programme agreed with the last Visiting Group. Where new work appears which has not been suggested by a conference or ad hoc group the Director is asked for an explanation. Changes are noted in the card index of projects and compared with work elsewhere to avoid unnecessary duplication. The Programme, with any amendments and notes provided by the Headquarters staff, is submitted to the appropriate Standing Committee of Council for examination. If the Standing Committee have criticisms of the work, these are discussed with the Director and when agreement is reached the necessary changes are incorporated in the programme, which is finally submitted to the Council for approval.

11. Every new project must mean an increase in the total expenditure unless some other work is abandoned. Within an institute the size and importance of the different departments must change over the years. One department will have to be pruned to provide additional staff for the other if the total staff is not to be increased.

12. With the general expansion of research which was approved in 1946 this difficulty was not so apparent. It was possible to develop research at the most productive points, while the less productive continued useful work at the existing level. We are now, however, approaching a phase where, although there are a number of major developments to be carried out, e.g. a new institute for poultry research, the continued expansion of existing institutes must be critically examined. The expenditure on agricultural research has been growing rapidly but this has not been a true measure of the expansion of the research itself. Salaries and wages have been rising, as also have almost every other form of expenditure, so that the total rise in expenditure has been partly due to real growth and partly to increased costs. The Council have recently asked for an examination of the costs in a number of the larger institutes, and the attached graphs* show the actual expenditure as compared with the expenditure adjusted as far as possible to eliminate the effects of rises in costs since 1948-49. It will be seen that, even after making this adjustment, there has been a large growth in expenditure, but despite this the Council believes that the effort expended on agricultural research is still not commensurate with the number of important problems to be solved for so large and varied

* Not printed.

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[Continued.]

an industry. The present yearly expenditure on agricultural research is roughly 0·3 per cent. of the annual agricultural output as compared with 5 per cent. for the chemical industry. For this reason the Council are particularly anxious that any requests for future expansion can be examined with complete confidence that there are not in any existing institute ill-used or under-used facilities for the same type of work.

The Council is therefore examining research programmes with increasingly exacting standards, not only with a view to deciding whether any particular project can be justifiably expanded, but equally as to whether it should continue at the present level. The more general problem of the optimum size for any one research institute is also a question which the Council proposes to examine.

Training of Scientists

13. The Honours graduate in one of the basic sciences is rarely qualified to undertake research without additional training. Some may require a further period of systematic study in another science, e.g. a botanist proposing to work in plant physiology may require training in biochemistry; all will need training in the methods of research. University scholarships are not in general extended beyond the first degree; hence the young graduate finds himself without means of support and still unfitted for a research post. To fill this gap the Council offers some 30 scholarships and training grants each year, details of which are given in a published pamphlet "Careers in Agricultural Research".

14. Included in these awards are a number which permit the science graduate to follow the necessary course of study to qualify as a veterinarian, or the veterinarian to undertake further study and training in research.

The Council also awards Junior Agricultural Research Fellowships and Veterinary Clinical Fellowships to enable outstanding men to continue research work in a University after they have taken a Ph.D. degree.

15. These Scholarships, Training Grants and Fellowships, which together cost approximately £40,000 per annum, are used by the Council to direct suitable candidates to forms of training which will equip them to fill foreseeable vacancies in the Agricultural Research Service. Only in this way could the services of men with the double qualifications so often necessary be obtained. There is no obligation on the part of the scholar or fellow to join the Service at the end of his award and, equally, the Council has no obligation to employ him. It is noteworthy, however, that of the 179 who have completed the course of study under these awards 92 are in the Research or Advisory Services and 41 are in University.

Organisation of Research Financed through the Agricultural Research Council

16. The list of the Research Institutes and Units financed by the Agricultural Research Council is given in paragraph 5 of the memorandum prepared by the Treasury on the Council's work.* Of these, four are large research institutes, viz. Agricultural Research Council Field Station, Compton; the Animal Breeding and Research Organisation, Edinburgh; the Institute of Animal Physiology, Babraham; and the Poultry Research Centre, Edinburgh. A description of the purpose of these institutes is given on pages 31, 29, 36 and 41 of the pamphlet "The Agricultural Research Service" which is published.†

Each of the Council's Units is built around a distinguished scientist; in some the Director of the Unit holds a University post and receives no payment from the Council; in others the Council pays either part or the whole of the salary of the Director. The object of these Units is to increase the output of work of importance to agriculture by providing staff and equipment not normally available in a University.

17. All the research activities under the Council are entirely financed by the State. The only other income is derived from sales of agricultural produce and publications, rents and hostel receipts, and a few small contributions from the Colonial Office and other bodies for specific investigations or services.

18. The Council received a legacy under the Will of the late Miss D. Underwood, the income from which has been set aside in a separate fund to provide Fellowships to enable senior scientists from overseas, primarily from the Commonwealth, to work for a year or more in the U.K.

The Kellogg Foundation also makes available to the Council up to six Fellowships each year to enable young scientists in the Agricultural Research Service to spend periods up to

* Memorandum 4 on page 24.

† H.M.S.O.



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a year in the United States, and a small fund of approximately \$3,000 per annum for the purchase of any equipment and materials in the U.S.A. which may be urgently necessary for research work.

Relationship of the Agricultural Research Council to the Lord President and the Treasury

19. The Council is responsible to the Committee of Privy Council for Agricultural Research and Nature Conservation. This Committee consists of the Lord President, as Chairman, the Minister of Agriculture (Vice-Chairman), the Secretary of State for the Home Department, the Secretary of State for Scotland, the Minister of Education, the Secretary of State for the Colonies and the Minister of Housing and Local Government.

The members of this Privy Council Committee receive copies of the minutes of Council meetings and of publications, and they approve all appointments to Council. It is, however, to the Lord President, as Chairman of this Committee, that the Agricultural Research Council is responsible in practice. Questions of major policy and finance are referred to him formally, but it is through his informal conversations with the Chairman and Secretary that the work of the Council is guided to conform with Government policy.

20. The Office of the Lord President (a small secretariat in the charge of an Under-Secretary) is available for advice to the Lord President on all questions affecting his responsibilities in the field of civil science. The Office assists him, for instance, on questions jointly affecting the three Research Councils (the Agricultural Research Council, the Medical Research Council and the Department of Scientific and Industrial Research) and also on matters of general policy on which he may need advice. The office deals with all Parliamentary questions and other Parliamentary work affecting the Lord President's scientific responsibilities. The Office provides the secretariat of the Advisory Council on Scientific Policy and of the Natural Resources (Technical) Committee which, on occasion, tender advice on agricultural matters within their fields.

There is continuous consultation at the administrative level between the Office of the Lord President and the Secretariat of the Council.

21. Whilst the relationship between the Council and the Lord President closely resembles that between an Administrative Division of a major Government Department and the Minister, that between the Council and the Treasury may be compared to the Administrative Division's relationship with Divisions of Establishment and Finance. Thus no major expenditure is incurred without prior consent of the Treasury; but the Treasury does not direct the Council's policy. There is continuous consultation on the numbers and grades of staff employed and on salaries and other conditions of employment to ensure that the Agricultural Research Service keeps in line in these matters with other Government organisations; the Treasury also approves all major capital expenditure and the acceptance of tenders for individual projects.

The Preparation and Submission of the Council's Estimates

22. The Lord President instructs the Secretary each year on the general policy to be followed in preparing the Council's estimates. The Secretary passes the relevant part of these instructions to the Directors of the Institutes and Units, who then prepare on the basis of the proposed programme of work an estimate of their requirements. These are checked by the Council's Headquarters staff. The Secretary then holds a meeting with the Director at which the estimate is examined in detail, the Director being called upon to substantiate the different items.

In one respect the large institutes present a major difficulty in estimating, viz. the income from agricultural sales. It is the Council's policy to insist that, subject to the overriding needs of the research programme, the land and stock shall be managed at the highest level of efficiency. As a result, it is necessary to forecast income which may be influenced by changing prices and by the yields of crops and stock. Where the income is small in relation to the expenditure the effect of such fluctuations is negligible; but where, as at the Council's Field Station, the income approaches £100,000 as compared with an expenditure of approximately £200,000, the variations in income may influence the estimating to a major degree. The estimate of such income tends to be conservative, and as a result surpluses may arise. In 1952-53, for example, the estimated income of all the institutes from these sources was £125,960 and the actual sales £159,863.

23. Each year the Council's capital requirements for new buildings and the purchase of land are estimated for its different activities in the same way. These estimates are based on the forecasts of building progress supplied either by the Ministry of Works or a private architect.

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[Continued.]

When all the individual estimates, both for general and capital expenditure for the institutes and units have been agreed, the other items for Research Grants, Scholarships and Administrative and General Expenses are prepared in the Head Office. The completed estimates are submitted to the full Council for approval and then to the Lord President. Finally, the estimates as approved by the Lord President, are submitted to the Treasury as an application for the Council's grant in aid (Civil Estimates, Class VIII, Vote 6). In order to avoid major changes at this stage, informal consultations with the Treasury take place during the framing of the estimates.

Initiation of New Capital Projects by the Council

24. In June, 1946, the Government approved a Post-War Programme for Agricultural Research. Of the Council's four large institutes one, the Field Station at Compton, was authorised in 1937 and the remaining three are in fulfilment of parts of the Post-War Programme of 1946.

The establishment of further units and the encouragement of work in the Universities by research grants is following a long-accepted policy of the Council. The work of the Council has, therefore, during the last seven years been that of putting into effect a policy agreed in broad principle at Ministerial level.

25. Most of these developments have involved the purchase of land and the provision of buildings and equipment. The original proposal for such an expenditure is put forward by the Director. If a building is involved, he submits rough plans or descriptions of what he considers necessary for the work of his institute. These proposals are then considered by the Council's technical staff and any scientific experts they may wish to call in for consultation. The only questions to be considered at this stage are whether the buildings are needed and, if so, whether they are suitable for the proposed work. If this is agreed, a rough estimate is made of the cost on the basis of that of other similar buildings and an approximate time schedule for building is prepared. Approval in principle is then sought from the Treasury who require to be satisfied that the work is part of the agreed programme and that the timing of the expenditure is such that it will not unduly swell the Council's grant in aid in any year. The Treasury leaves entirely to the Council decisions on the actual technical needs.

If approval in principle is obtained, an architect is instructed and plans are prepared. These are submitted to the Council and discussions take place between the Council's staff, the Director, and the architect until the plans have been reduced to the functional minimum. The Council is then in a position to put to the Treasury a quantity surveyor's estimate of cost and a more accurate time schedule. If the Treasury agree, the work then goes out to tender.

Control of the Council's Expenditure

26. The institutes and similar smaller organisations financed by the Council are directly controlled. The Scientific and Experimental Officers and the monthly paid non-scientific staff are appointed by the Council on the recommendation of the Director. All accounts for £50 and over are paid from Head Office. The Director has to seek permission before placing an order for an item of equipment costing more than £50.

27. Weekly wages and bills of under £50 are paid by the institute from an imprest account. A monthly account of expenditure for each institute is prepared in the Council's office, embodying the vouched payments made by the institute and the direct payments made by the Council. These accounts show expenditure under the same headings as the estimates and a summary is submitted to the Secretary within a month and his attention drawn to any material deviations from the estimates. The monthly accounts are submitted to the Comptroller and Auditor General within three to four months. Members of the Headquarters staff and also the Comptroller and Auditor General's staff visit the institutes periodically to inspect the local records.

28. The units attached to Universities are treated in a different manner. The Scientific and Experimental Officers are employed and paid directly from the Council, as with the institutes, but the weekly paid staff are employed and paid by the University at the rates of other similar University employees. The Director has to obtain sanction before placing orders for items of £50 and over, and the bills are normally paid by the Council. Smaller expenditures are met by the University. The Council receives a certified statement from the University of the expense incurred and refunds this amount.

29. When a research grant is sought by a member of a University staff, an estimate of the total cost for the period of the grant (usually 12 months) is submitted, together

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with a programme of work. These are considered by the appropriate Standing Committee and a recommendation is made to Council. If the grant is approved, payment is made to the University up to the amount of the grant against a certified account. Any worker whose salary is covered by the grant is engaged by the University on a temporary basis; the amount of the salary is a matter for the University, provided it does not exceed what the Council would be prepared to pay if the worker were on its staff. Any items of equipment over £50 are listed in the application and can be bought by the University without further sanction; all items and equipment of permanent value remain the property of the Council.

If an application for renewal is made, an estimate and programme for the further period has to be submitted and approved. Recipients of grants are required to send in a report at the end of each year. The total duration of a research grant is in general limited to three years.

The functions of the Council in relation to Institutes receiving Grants in Aid from the Ministry of Agriculture

30. These institutes (fourteen in number) form a large part of the group, the co-ordination of whose work is described in paragraphs 3-12. For each institute, therefore, a programme of research is agreed and is available before the estimates for General Expenditure are examined.

The estimates are prepared by the Director, in most instances for the academic year 1st October to 30th September, and submitted to the Ministry. They then undergo a preliminary examination jointly by the staffs of the Ministry and the Council.

31. A meeting, under the Chairmanship of the Secretary of the Council, is then held at the Council offices, attended by the Director and Secretary of the Institute, one or more members of the Ministry staff and representatives of administrative and technical staff of the Council; the Director is taken through the items and is required to explain and substantiate each. Any expansion proposed is considered in relation to the agreed programme of work.

The estimates contain details of proposals for the appointment of additional staff and of any promotions of the existing staff. All items of equipment costing over £50 are listed.

32. In examining the estimates, the Council's representatives take responsibility for all scientific staff, equipment, materials and ancillary services; the Ministry deal with clerical and maintenance staffs and farm workers, with the farming operations of the institute and with the cost of power, light and fuel.

The sums required under the different heads are agreed at the meeting and the Ministry then puts the estimates, institute by institute, to the Treasury. If questions are raised by the Treasury on any of the estimates, the Ministry may call on the Council to provide a reasoned case in support as a reply to the Treasury.

When the Treasury has approved the estimates of an institute, the Ministry makes the necessary financial arrangements to pay the grant in aid in quarterly instalments and to hold in reserve funds to meet any calls on contingencies which have been included.

Contingency items are provided in order to meet the probable cost during the year of filling existing vacancies in the staff, of making appointments to new posts for the creation of which the Director hopes to secure the Council's approval, and of promotions of scientific staff that are under consideration. Contingency provision may also be made to cover the possible acceptance by the Council at a later date of additional items of equipment not approved at the time of the estimates meeting or for some other eventuality that is under consideration but has not yet been accepted as a definite commitment.

This method of providing for some of the likely expenditure as contingency items is particularly important in dealing with a grant in aid, since monies paid to an institute as a block grant can be retained by the institute if unspent and the position can be corrected only by a reduction in the estimates in later years; moreover, as the institutes can transfer between sub-heads, other than those concerned with salaries and wages, an over-estimate on one item may be used to meet a deficit on another. This danger is largely offset by very tight estimating in the main grant and the provision of contingencies that are released only as and when there is a proved necessity.

33. When the estimates have been approved by the Treasury, the institute and the Council are informed. The Council has the delegated authority to deal with all scientific matters in accordance with the agreed provisions.

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Thus when a Director wishes to fill a vacant post approved in the estimates, or to replace a man who has resigned, he consults the Council, giving details of the candidate or candidates he has in mind. The Council being satisfied that a candidate is suitable, informs the Director in what grade he may be appointed and at what point on the scale. The Director also submits to the Council his recommendations for promotion and these, after suitable examination, are either agreed or rejected.

These arrangements ensure that there is uniformity of treatment in respect of grading and salary throughout all the Agricultural Research Institutes, whether the workers are employed by the Council, or by the independent governing body of an institute receiving grant in aid.

The Council has not only a responsibility to the Treasury for keeping this balance within the Agricultural Research Service, but also for ensuring that salaries and conditions in the Service are comparable to those obtaining in the Scientific Civil Service. The Council makes a six monthly return to the Treasury of the numbers in post in each grade.

These arrangements apply to all grades of Scientific and Experimental Officers and to the Scientific Assistants. Salaries of other classes of staff employed by the grant-aided institutes are controlled by the Ministry.

34. The Directors of the grant-aided institutes consult the Council on all other scientific matters concerned with the institutes. These include any changes in programme necessitated by the outcome of the work, the planning of future programmes, conditions of employment for the scientific staff, publications, co-operative work with outside organisations and negotiations with Government Departments. As a result, the Directors are in very frequent communication with the Council's office.

35. The Council also advises the Ministry on new buildings for scientific purposes. The Directors of the grant-aided institutes discuss their needs in the first place with the Council, which then advises the Ministry whether or not the proposals made are no more than is required to carry out the future programme of work. The Ministry then seeks Treasury approval in principle on the basis of the Council's advice, and if this is obtained gives the institute permission to employ an architect and proceed with the planning.

When the plans have been prepared the Council is again consulted as to whether they conform with the original proposals made by the Director and are suitable and economical in relation to the work to be done.

Provision of finance for the new research buildings rests with the Ministry, but the Council is consulted on the allocation of the available funds between projects at the different institutes.

The functions of the Council in relation to Institutes receiving Grants in Aid from the Department of Agriculture for Scotland

36. The seven institutes in this group are subject to the same arrangements with regard to the co-ordination and approval of programmes of research as those financed directly by the Council and through grant in aid by the Ministry of Agriculture.

37. The estimates are prepared in the same way as those for the institutes grant-aided by the Ministry of Agriculture, but the meeting with the Director takes place in Scotland, and if possible, a Scottish member of Council takes the Chair rather than the Council's Secretary. The Scottish Institutes' Estimates are based on the Government financial year, not the academic.

The Department of Agriculture for Scotland submits the agreed estimates to the Treasury, calling on the Council if advice on scientific matters is wanted. The Council is informed when the estimates have been approved.

38. The Directors of the Scottish institutes do not deal directly with the Council on questions of promotion and appointment of scientific staff; they put their requests to the Department of Agriculture for Scotland, who then seek the Council's agreement to the proposed appointment or promotion. In order to save time the Directors, with the agreement of the Department of Agriculture for Scotland, discuss the details of the proposals with the Council direct before submitting them to the Department of Agriculture for Scotland, who have been kept fully informed of the negotiations.

The Council has the same responsibility to the Treasury for the staffing of the Scottish Institutes as for its own and those financed by the Ministry; their staffs are included in the six-monthly return.

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39. The Directors of the Scottish institutes also deal on other administrative questions with the Department of Agriculture for Scotland. They come, however, direct to the Council on matters of general scientific policy.

As for the institutes receiving grant in aid from the Ministry of Agriculture, the Department of Agriculture for Scotland is responsible for the non-scientific staff of the Scottish institutes and their farming operations.

The procedure where new buildings are required is parallel with that for the institutes under the Ministry of Agriculture.

Chairman.

1230. Sir William, may I thank you for the memorandum which you have submitted, together with the appendices, which are of considerable interest, and for coming here to give evidence. We are a Sub-Committee of the Estimates Committee. I think you probably understand our terms of reference. We are not concerned with matters of policy, but with the economy of expenditure from the point of view of the Estimates. This Sub-Committee is now considering expenditure in the whole field of agricultural research over which you have surveillance very largely, I understand. Before we come to your memorandum, there are one or two general questions I would like to put. We would be much obliged if you would let us have a list of the grants which you made last year and those which you are proposing to make this year to the various institutes and units and other bodies which are directly responsible to you, as the Agricultural Research Council, together with the total income of those bodies and the proportion they receive from you as a grant. Is that information published?—(Sir William Slater.) Yes. It does not divide it up here, but it does in the appropriation accounts for past years.

1231. Could you let us have last year's figures, the comparative proposals for this year for the whole of the grants, together with, in each case, the total income of the particular body to which you are making the grant?—Should we include in that total income the sales from the farms?

1232. Yes?—Because there is no income other than that which we provide.

1233. I think you mentioned that Rothamsted has a small income?—They receive their grant from the Ministry of Agriculture.

1234. I am sorry. If there is no other income, that is all right; but I thought there were some bodies which have a small income as well?—Not under the Council.

1235. Then perhaps you will make that clear?—Yes. How far down to the units would you like it? You do not wish to know the grants given to universities, do you?

1236. No. I would also like to have, if possible, a list of the capital programmes outstanding and their cost—the total value and the balance outstanding. Then there is one matter (I am not sure whether I should put this to you or to the Ministry of Agriculture) and that is the Cheshunt Station, which does not appear in the Ministry of Agriculture Vote on page 55. That is not one of your bodies?—May I look at that? I know the body is one over which we have scientific control.

1237. For some reason it does not appear on page 55 in the Appendix, Statement I, the grants to various bodies. These are the Ministry grants, and I cannot find Cheshunt. Perhaps we had better ask the Ministry of Agriculture about that?—The Research Station, Littlehampton, in Sussex; the station is moving.

1238. Oh. Thank you. That answers that. Another matter which would interest us also would be to have a complete list of all votes and grants made for agricultural research to all bodies which are responsible to the Ministry of Agriculture and the Department of Agriculture for Scotland or grants to this small Advisory Service. Perhaps the Treasury would be able to supply that?—Yes, I think probably the Treasury would. We could supply it, I think. (Mr. Ness.) Yes, we could.

1239. Do you have that figure yourself? Is it a figure you would normally have?—Yes, indeed.

1240. And you would take account of the various proportions?—Yes.

1241. Perhaps you would let us have it?—Yes, Sir.*

1242. May I ask a general point about institutes: have the independent institutes, that is, those bodies which receive a grant direct from the Ministry, in fact got really different powers from the institutes which are under your control?—(Sir William Slater.) Could you explain what you mean by "powers"?

1243. Can they in fact act in any different way, either in regard to their expenditure or their policy or staff or anything else?—No, I do not think they have any different power.

* Appendix 3 on page 140.

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1244. One of the matters (I shall be referring to this later) which you mention in your memorandum is the question of transfers between subheads of their Estimates, but they have not really any greater powers of transfer than your bodies, have they?—(Mr. Ness.) No. They do appoint their own staff, of course. In the Agricultural Research Institutes we only appoint the staff from Headquarters; in these bodies the governing body appoints the staff.

1245. But you have a "say" in it; they consult you?—Yes.

1246. But you have no final control?—No.

1247. In that case the governing body has the final control, and in the case of your institutes you have the final control?—Yes. (Sir William Slater.) Yes. Although technically they have the final control, since they are the people who make the appointment, in fact they have to make the appointment on the basis of recommendations from the Council.

1248. I see?—If they exceeded that, I think we should have to put the matter to the Ministry of Agriculture or the Department for Scotland for them to take action, because we are responsible to the Treasury for keeping the appointments between the different institutes in step.

1249. We shall be dealing with these matters in more detail as we go through the memorandum, and perhaps we might now turn to the memorandum. I do not think there is anything on paragraph 1. On paragraph 2, I would like to ask what are the receipts? The receipts are only for the sale of produce? That is the second line on page 2 of the memorandum?—Largely for sale of produce. There are some small receipts for rents of houses occupied by members of the staff and for hostel accommodation, but they are very small compared with the sale of produce.

Mr. Hobson.] I do not understand what we are doing. I have in front of me M 31.*

Chairman.

1250. I think we ought to take this memorandum first; we must deal with it first. We shall have evidence from the Ministry of Agriculture and from the Treasury later on. Then, if we can take paragraph 3, do the 700 scientific workers include the scientific workers in the Institute?—Yes.

1251. And in the units?—And in the units, yes, and a certain number of men employed in the universities on research grants.

* Not printed.

Mr. Summers.

1252. I want to raise a point as to how you judge, when asked to consider agricultural projects of research, whether it is more appropriate for one of these Institutes to do it, or whether it is something which ought to be let to manufacturers of, say, implements? What are the governing principles which determine whether you should leave it to the commercial world or whether you do it yourself?—If it is something which the commercial world would like to do, and do it in the interests of agriculture, we should leave it to them; if, on the other hand, we felt that no one was going to carry out the work with the interests of agriculture at heart, then we should attempt to do it.

Chairman.

1253. Do you know what work is being done by commercial undertakings?—We only know what they are prepared to disclose. The Council has very happy relationships with a large number of commercial organisations, and we exchange information with them, so far as they are prepared to do so, having in mind the commercial interests which they have to serve.

Mr. Summers.] Could you say, for example, whether—I am not sure whether I am describing this rightly—an oil-driven tractor we saw was one which would *prima facie* normally fall to manufacturers of tractors to promote? How come that it was in your organisation?

Chairman.] As a matter of fact, it was one of the independent Research Associations—direct grant.

Mr. Summers.

1254. But even so, this Council is responsible for what all the others do; so it would come within your purview?—That work was in progress when this Institute was turned into one of the grant-aided institutes, and therefore when it came under the eye of the Council. I am not aware of why it was decided to undertake that work.

Chairman.

1255. It was not a matter which was referred to you, and with which you had anything to do?—No.

Chairman.] I think we cannot pursue that.

Mr. Summers.

1256. Except that it could have been stopped, had it been thought proper?—It might have been, yes.

1257. It would be within your jurisdiction to say that there are better ways of

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deploying the resources of this Institute?—Yes; in fact, that matter was carefully considered a short time ago.

1258. Would it be right to infer from the answer you have given that it was largely the fact that it had already been started which weighed, and that if it had come *de novo* it might very well had had a different answer?—I think our decision might have been different if it had been put up *de novo*.

Mr. Summers.] Thank you.

Chairman.

1259. Paragraph 4? Paragraph 5? Just a word about Directors. I am not sure whether the Directors are appointed as scientists or as administrators. I do not know whether you have any views on that?—I have quite strong views on that. It is a very difficult problem, but we are trying to get the best of both worlds—a man of scientific distinction and at the same time a man who is a capable administrator. Very rarely can we do that. My own view is that, provided the Director is a man who has done good research work and is a good judge of research work, it is better to have a really sound administrator than a brilliant scientist who is a bad administrator.

1260. Can you tell me whether the practice differs between the independent Research Institutes and the Agricultural Research Council Institutes?—There is a difference in the method of appointment. In the Agricultural Research Council Institutes the Directors are appointed by the Council; in the grant-aided Institutes the Directors are appointed by the governing body; but we have an unofficial arrangement whereby the governing body nearly always puts two members of the Council on the Selection Committee.

1261. The governing body?—The governing body, which has the power to appoint.

1262. Two members of your Council?—Two members of our Council. The reason for that is that the Council has the right of veto, inasmuch as we can advise the Ministry or the Department for Scotland that a man selected by the governing body is unsuitable, but we cannot propose a man to the governing body.

1263. Do you think that the existence of the Agricultural Research Council, in the case of the bodies which it controls, provides a better administrative element, that the administrative qualities of a Director may not be so important as you have an administrative staff yourself, which I take it enables you to keep greater supervision than you can over the independent institutes?—I think, on the whole, I would

say that the arrangement we have does enable us to keep a better control over the Institutes, and therefore perhaps it is not so essential to have a good administrator, although in the handling of scientific staff a man must have tact and judgment.

1264. I do not know if Mr. Quirk wishes to add anything on that?—(Mr. Quirk.) Not at the moment, Sir, but I will interject if I feel the need to.

Mr. MacColl.

1265. I would like to ask whether this procedure of reports and visits by experts applies to all Institutes, whether they are maintained or aided?—(Sir William Slater.) Yes; the visits are exactly the same.

1266. And the work is dovetailed between the different Institutes?—As far as we can do that, yes.

Mr. Blackburn.

1267. Is there any report of your visits published?—The reports are not published. They are confidential reports, which it would be very difficult to publish.

1268. Do you submit a report to the Institute with any recommendations, after the visits have taken place?—Certainly. We send a report in the first place to the Director and ask him for his comments; after that it is considered by the Council, and the final report is approved and submitted to the Institute; if it has a governing body, it goes to the governing body.

Chairman.

1269. When you are judging proposals for expansion—the additional staff, buildings, equipment, and so forth.—are you in a position to take into account all other proposals for expansion for agricultural research, including those being undertaken directly by the Ministry itself on its own Vote, not on grants-in-aid?—We should not be in a position officially to take notice of expansions to be made on the Ministry's own Vote or the Department for Scotland's own Vote.

1270. I see, for example, that there are a number of Votes for research, for example in animal pathology, which is undertaken in direct Ministry laboratories. Would you not be aware of any proposal in that field?—We should be aware of those, I use the word "officially", inasmuch as we should be told probably by the Director of the Institute who sits on a number of our committees, or by the Ministry itself if they were proposing a major expansion.

1271. There seems to me to be a slight conflict—which I can perhaps well understand—between the views which you express in this paragraph and the succeeding

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one, about your responsibilities for co-ordinating, and on page 5 of your booklet, "The Agricultural Research Service", where you say that there is no central direction of research. How far is it true that there is no central direction of research?—There is no direction in the sense that people are instructed to carry out a particular piece of research, we could not do that in the grant-aided Institutes.

1272. "A particular piece", but you do direct that there shall be an Institute for research into particular fields?—Yes, that is true, but the words were used in the booklet with the idea that they would be read by research workers, and we wished to make it quite clear that we were not proposing to go to a particular Institute and say "You must do this", or "You must do that". It was direction in that sense which was intended here.

1273. I fully understand that you cannot force a man to undertake research into a particular problem if he is busy, or has too much work to do, or cannot do it, but is this not a small point compared with the main question of direction of research towards solving a specific branch or field of work? I know you do that by providing the money?—Yes.

Sir Alfred Bossom.

1274. You have the power to recommend?—We have the power to recommend.

1275. You ask for that money to be available, you also ask the Institute's workers to make a certain form of research; you can recommend, but you cannot compel them?—Except that if they do not get the money for other sorts of research they could not do it. There is, in a sense, direction as there must be when the finance is controlled.

1276. In other words, all the money given is given for a specific purpose?—It is given against a broad programme of work, but we try, as far as we can, to get people to undertake the work voluntarily. It makes an enormous difference with research people if they are undertaking something they want to do.

Chairman.

1277. So you shop around among the various research Directors to find a suitable man?—Yes, and you persuade him to do it.

Mr. Summers.

1278. To what extent do you try to get problems taken over by the commercial world, knowing that the problems interest them, or their ability to solve them, as you do? How far is it the practice to go and

say to people: "Will you undertake this or that?"—I do not think we should go to any commercial firm and say: "Will you undertake a particular piece of work?" What we are more likely to do is to discuss what they are already doing and say to them: "Will you continue with this particular work, and we in turn will do something else?" For example, some of the big chemical firms screen a large number of compounds for their insecticidal activity. That is a task we could not do, because the compounds are not available to us as they are to them. So we do not enter into that field; we leave it to them. If they discover something of importance they will tell us as soon as it becomes available. On the other hand, as regards the relationship of the chemical composition of a substance to its insecticidal properties, we study that; that is the sort of split between us; and we exchange information quite freely.

1279. For example, would it be quicker for you to seek out some branch of the commercial world to manufacture ditching machines?—We should, I think, first try to find whether anyone was interested in designing a ditching machine. Having found that no one was interested in designing a ditching machine, we should then try to produce a prototype, and at that stage we should try, through the National Research Development Corporation, to get a commercial firm to do the development work on that machine; that would be what we should try to do.

1280. And how far do you find, in practice, that firms which are potentially capable of that sort of collaboration help you?—We have had some difficulties in getting machines developed. On the other hand, we have had some very useful co-operation. It is very difficult to answer your question precisely, because I have been surprised myself that some machines have not been taken up more easily, and equally surprised that others have been taken up as quickly as they are.

Chairman.

1281. Do any of these agricultural engineering concerns, apart from the big tractor manufacturers, have any research and development departments?—Very few.

1282. Now we come to paragraph 6. I would like to ask you a little more about the Agricultural Improvement Councils. It seems to me that we are getting a very large number of bodies and a large number of co-ordinating bodies on top of them. For example, there are two Departments, the English and Scottish Departments, and there are two Agricultural Improvement Councils who are presumably advisory bodies both to the Departments and to

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you?—No, they are advisory to the Departments.

1283. You also are advisory to the Departments, and I suppose you have direct contact with the National Agricultural Advisory Service?—We have direct contact at a number of levels. The present Director-General, Sir James Scott Watson, is on my Council; they have assessors on a large number of our committees and conferences, and we have other numerous contacts with them at different levels.

Mr. Summers.

1284. Might I ask: what are the Agricultural Improvement Councils, before you relate them to anything else?—The Agricultural Improvement Council for England and Wales, which is advisory to the Ministry, consists of roughly half agriculturalists, who are selected because of their interest in science, and the other half scientists who have a direct interest in agriculture. The Chairman is the Permanent Secretary of the Ministry. It meets every two months, and it has two major functions. One is to advise the Ministry as to what problems in agriculture require examination by research and to give some idea of priorities; its other function is to take information provided from the research laboratories and to recommend that it should be put into practice.

Chairman.

1285. Is not the latter half the business of the National Advisory Service?—They actually put the information into practice, but it is supposed to pass to them through the Agricultural Improvement Council.

Mr. Summers.

1286. And who appoints them?—They are appointed by the Minister.

1287. From any panel recommended by anybody?—Not as far as I know.

Sir Alfred Bossom.

1288. Do the N.F.U. have anything to say about it?—No, I do not think so. The Chairman of the National Farmers' Union Education Committee attends as an assessor.

1289. As an observer?—As an observer, yes.

Chairman.

1290. We are only concerned here with research and advising on research, and it looks as if the main body advising on research is the Agricultural Research Council. You have had to set up a Joint Committee with the Agricultural Improvement Council. Is there not some overlapping here between the advisory func-

tions of the Improvement Councils, the Agricultural Advisory Committees and the National Advisory Service and yourselves, apart from the fact that the Ministry have their own people who are capable of making contacts, though if take it they are very largely the National Advisory Service?—Yes.

1291. They are Ministry people?—Yes, I think there is a very definite use for this Joint Committee. It is a small body on which Scotland, England and Wales—

1292. I did not doubt the use of the Joint Committee, granted the existence of the Improvement Councils, but are all three needed; and would there be a need for the Joint Committee if in fact the Agricultural Research Council itself carried out this function in conjunction with the National Advisory Service? You have scientists and farmers on your Council?—We have ten scientists and about five agriculturalists.

1293. The agriculturalists are represented on the Agricultural Advisory Committees, and I think on the National Advisory Service, are they not?—Yes. Well, there is no real committee for the National Agricultural Advisory Service; that is another function, a third function, of the Improvement Council, to advise the Ministry on the work of the National Advisory Service.

1294. I see?—I am sorry. I think—

1295. We were just trying to get the picture of these various bodies—especially because agricultural research is already divided up between so many different bodies—to see whether these three separate bodies advising on agricultural research are not rather overlapping?—May I put it in this way. There are really two levels at which we should be working, the strategic and the tactical, and in a sense the Joint Committee should be working at the strategic level, trying to overlook the whole picture and saying what is important for research; whereas the Agricultural Research Council, apart from contributing to the work of the Joint Committee, is in fact working at the tactical level in running the research.

1296. I fully understand the Agricultural Advisory Committees and the National Advisory Service; it is just the Improvement Councils that I do not quite follow, in between these other bodies. Are they older bodies than the Advisory Committees?—No. They were set up during the war for the purpose of increasing food production, the idea being to encourage the application of research and the development of research in agriculture.

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Sir Alfred Bossom.

1297. Do they serve any useful purpose?—I think that is a question you ought to address to the Ministry; I would prefer not to answer it myself.

Chairman.

1298. Paragraph 7? Paragraph 8? Paragraph 9? Paragraph 10: I think we might take this with Paragraphs 11 and 12, which deal with the same subject. I think I have already asked you a question about the difference between the independent Institutes and the Agricultural Research Council Institutes. Is the influence of the Agricultural Research Council on programmes greater for its own Institutes and units than it is for the independent bodies and those who are directly responsible to the Ministry, that is, the Ministry laboratories?—I do not think it is greater in our Institutes than it is in the others, under normal circumstances. The only time when there would be a major difference would be if an instruction had to be given; if it is our own Institute, we would give it direct: if it is the Ministry or the Scottish Department, we should ask them to take action on our behalf.

1299. You feel that you have sufficient power of co-ordination of the research work of both the Ministry's own laboratories and the independent Institutes?—I think at the stage where we are doing the co-ordinating, yes. Sometimes putting it into effect is not quite so simple because, for example, we ask a Director to undertake some additional work in an Institute: he would almost invariably say: "Can I have some more money on my next Vote?" If it is our Institute, we can say "Yes, we will get you that money", or apply to the Treasury and put it high on our priority list. If it is the Ministry or the Department, then we must say to the Director: "We shall have to consult the Ministry to see whether they would agree to an increase in your Vote to undertake this work."

1300. In any case, in the case of your own Institutes, even if your total grant in aid does not go up, you can increase the amount of one Institute at the expense of another?—Yes.

1301. And you cannot do that in the case of the independent Institutes?—The Ministry or the Department meet us very well on this, but we cannot do that. You are giving away their money, and therefore you must consult them first.

Mr. Summers.

1302. What is the proportion in terms of expenditure between your own Institutes and the Ministry Institutes?—The total?

1303. Yes?—I gave you the figures, I think, in paragraph 2. Our estimate at present is £1,056,000 less £188,500 receipts. The Ministry of Agriculture figure is £1,443,000, which is a net figure. The Department for Scotland figure is £475,920. So we are giving about one-third.

Chairman.

1304. Could you say what the present annual value of agricultural output is? You say research is 0.3 per cent?—The figure has been stated recently at £1,000,000,000. Several figures have been given, but they are all round about that.

Mr. Summers.

1305. On the point about discrepancies, if any, between the techniques of the two types, would you welcome the whole lot coming under your jurisdiction?—Financially?

1306. In other words, would you welcome those you describe as research Institutes under the Ministry turning themselves into "children" of your Council?—Yes. In fact, I have made recommendations on those lines, which are being considered at present.

Chairman.

1307. I do understand that this matter is being considered by Ministers at the present time?—Yes.

Mr. Hobson.

1308. Arising out of paragraph 8, regarding the study of fowl coryza, how is it there is nothing done about that? Could not instructions be given to get on with the job, or is it left to the other research organisations to do it?—We have no one on our staff at present who could really take on this task, and we have been trying to find someone who could. It is not a question of giving directions to anyone whom we already employ; there is no one who could take this work on, with the possible exception of the people at Pirbright, who are doing foot and mouth disease work, and it would mean taking them off that work; and I would not feel justified in doing that.

Mr. Summers.

1309. Would any steps be taken to obtain scientific knowledge from other countries?—Yes. We have made special inquiries in the United States, where they have the same trouble, and we have found out what they are doing there. We were trying to get a very distinguished medical virologist to take the work on, and for a time he agreed to do so if we provided him with the necessary assistance, and then that fell

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through because he had some extra work put on him. Then we got a university professor to promise to do it, and he again then said that he could not do it. We are at present just looking for a man of sufficient distinction in the field of virology to take this problem on. It is very similar to the common cold in the human, and I need not say any more to indicate to you what a complicated problem it is.

1310. Is the fact that this cannot be done immediately made known to the Minister?—Oh, yes.

Chairman.

1311. You say, on page 8, paragraph 12, that you "are particularly anxious that any requests for future expansion can be examined with complete confidence." I take it that sometimes there is doubt about the work of some Institutes and that there might sometimes be a case for amalgamation. For example, as an alternative to reduction, or because some Institutes are too small and could be amalgamated? I would like to know whether you have any power in this matter, and whether the fact that the Institutes and Research Laboratories are not under unified supervision makes this more difficult. Has the question of reduction, amalgamation, and so on, ever arisen?—The question of amalgamation has never arisen, but undoubtedly it would be easier for us to place some particular piece of work that amounted to an amalgamation in one of our own Institutes because we could do it without consulting anyone else. With a grant-aided Institute, it is necessary to consult first of all the Ministry under which the grant-aided Institute comes, and then the governing body, to see whether they will be prepared to agree to an amalgamation.

1312. I am thinking of the fairly substantial sums now being voted for capital expansion. You quoted some figures just now, but you did not quote the capital figures, and they are substantial in both cases; they are very substantial in the case of the direct grant-aided Institutes. I should have thought even more than the current maintenance grant, there is need for careful co-ordination of capital expenditure?—Both the Ministry of Agriculture and the Department of Agriculture for Scotland consult us on any capital development, so I do not think any capital development is likely to occur without it being co-ordinated.

1313. With regard to the interlocking of expansion programmes between Institutes sometimes doing similar but slightly overlapping research, the closer the interlocking the more economy in capital expenditure, because otherwise one tends to do a lot of things with a good deal of overlapping at the edges?—I agree, but it is

more likely to take place by deciding that one Institute does one part of the work and another Institute does another part of it; that is to say, separation between the two Institutes, rather than that they should be amalgamated, because there is the question of buildings and so on which has to be tackled.

1314. You think that, on the whole, the control over capital expenditure is relatively satisfactory, do you?—On the whole, yes. There is always the difficulty that if you wish to place a particular line of work in an Institute which is financed by one of the Departments, then you have to persuade the Department that the capital expenditure for that additional line of work should be made, even though it may not be one of their own first interests.

Mr. Summers.

1315. What is the sort of general time-lag between embarking on some really major project of research and the final answer in terms of increased output or reduced cost which emerges?—That is a very difficult question to answer.

Mr. Blackburn.

1316. I suppose it varies with every item you deal with?—It varies with every single item we deal with. If we happen to have the basic knowledge available, we may be able to give the answer quite quickly.

[*Mr. Summers.*] I was including in it the application. That, of course, is a question for the Advisory Service as to how far they can persuade farmers to take up a new idea.

Chairman.

1317. It means that the Ministry depend on the education of the farmer?—Yes, and the time varies enormously. One thing you get very often is this. If it is a simple preparation that the farmer can buy and use, he is more likely to take it up than if it is a new method which requires a certain amount of education.

1318. That leads to the question whether you consider that the amount we are now spending on agricultural research is running ahead of the education of the farmer?—I do not think it is in this sense. The best 5 per cent. of farmers are sitting on our doorstep clamouring for more results. If you once fail them and cease to give them new ideas, they will not progress; and the rate at which you get it through to the others, I think, depends normally on the 5 or 10 per cent. who are really keen and who will try out new methods. There is little lag in getting it to them; in fact we sometimes have to stop them trying to apply half-finished work.

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[Continued.]

Mr. Blackburn.

1319. Are the Archers sitting on your doorstep?—They probably would be—some members of the family, perhaps!

Chairman.

1320. Paragraph 13? Paragraph 14? Paragraph 15? Paragraph 16? Paragraph 17? I would like to ask Sir William and Mr. Quirk whether they have any views on the possibility of getting contributions from the industry or industries which are concerned. I am thinking of what is done by D.S.I.R., where the problem of scale and size—small firms and so on, is similar, though not quite the same, I admit?—I think it is extremely difficult to get contributions from agriculture. I see no reason why contributions should not be paid by agriculture if they could be a levy on the whole of the industry. The tendency in the past has been for contributions to be from one particular section of the community, and that involves forming pressure groups and throwing the whole programme of research out of balance.

1321. I can well understand that in an industry which has a relatively large number of separate firms, but what about the producers of machinery, chemicals, equipment and so on?—The problem there is that the big firms are already spending very large sums of money on research and the small firms are doing practically nothing.

1322. Surely that is exactly what the D.S.I.R. discovered. Have you consulted the D.S.I.R. about it?—I have, and in the building trade the D.S.I.R. are in exactly the same position that we are in. The Building Research Institute is run by the D.S.I.R. because of this enormous difference between the very big firm of contractors and the little man who has got one man working for him, and so on. I had a discussion with Sir Ben Lockspeiser about this, and it did appear that we were very much in that position, and quite different from the Shirley Textile Research Institute in Manchester, where you can get a united industry giving you a levy per loom or spindle.

Mr. Blackburn.

1323. Do you not think, if there was a levy on the industry, that they would be more interested in the work you are doing if they had to contribute towards it?—It might. We try to get farmers as interested as possible in the work we are doing. It might make them more interested if there were a levy.

Mr. Blackburn.] Is it more difficult to get a levy in the farming industry than in an industry like the textile industry?

Chairman.] We are now talking about the levy—

Mr. Blackburn.] I am taking up the point you raised about the sources of their income, and you are only concerned with the industry—

Chairman.

1324. I see that the Shirley Institute gets its money from the Cotton Board, which has power to make a levy, but the D.S.I.R. Research Associations do not?—I do not know the systems in the other associations.

1325. They are voluntary members of the Research Association?—Yes.

Chairman.] And in that case the results are only available to the members.

Mr. Summers.

1326. But if any levy were compulsorily made, they would look upon it like tax; in other words, the sooner they get rid of it the better?—(Mr. Quirk.) I feel that it is difficult to draw a close parallel with the ordinary D.S.I.R. Research Association. A parallel would be a segment of agriculture, but it would be difficult, in my experience, to work it with a small segment. You would then have to turn to a flat rate for the whole industry. (Sir William Slater.) The sugar beet industry has already a levy, because the factories are the only buyers, and that has in the past given us quite a considerable amount of trouble, because they are prepared to give money to different Research Institutes to carry out work on sugar beet, sometimes in a way which we think is not sound. For example, there was a great deal of work done on the manuring of the individual sugar beet crop instead of on the rotation of which it formed a part, and there is always a danger if you get segmentation, that the work will not be done properly or thoroughly.

Chairman.

1327. Paragraph 18? Paragraph 19? Paragraph 20? Mr. Quirk, there is no difficulty about overlapping here between the Ministry of Agriculture and the Lord President's Office?—(Mr. Quirk.) No, I cannot say that there has been any serious overlapping that I have seen.

1328. Paragraph 21? Paragraph 22? Here is really the crux of the matter, is it not? I am comparing this with paragraph 30 where the similar functions of the direct grant-aided Institutes are dealt with. You put your Estimates to the Lord President, who puts them to the Treasury; you discuss the independent Institutes' Estimates and they are put to the Treasury by the Ministry of Agriculture or the Department of Agriculture for Scotland?—(Sir William Slater.) Yes.

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[Continued.]

1329. Have you any authority over the Estimates for the independent Institutes, or only an advisory control?—Only an advisory one.

1330. Can you say to the Department: "We do not agree with the Institute's views", and do they then resolve it and put it to the Treasury, or can you go to the Treasury?—We can say that we do not agree with the Institute's views. I think, generally speaking, of course, the interests of the Department are in keeping their costs down. It is more probable that we should be helping the case of the Institute in trying to explain to the Department that scientifically it was essential to have a little more money.

1331. Do you not ever hold the view that the Institute might perhaps be reduced?—Yes, but if we held the view that the Institute's funds should be reduced, neither the Ministry nor the Department would object.

1332. They would support you?—Definitely. I think it would be the other way.

1333. Who does the final co-ordination of all this research expenditure—the Ministry, the Lord President, or you?—The Treasury are the only body who have it all.

1334. The Treasury are not interested in agricultural research; they are only interested in saving money?—I am sorry, but I think that is the answer.

1335. I take it that, as far as you are concerned, Mr. Quirk, with most of these Research Councils, like the Agricultural Research Council, you do not really intervene between them and the Treasury?—(Mr. Quirk.) No. We are in fairly close touch with the Treasury, but I cannot remember any occasions where we have had to disagree with them.

1336. Unlike the Departments, which would have some particular knowledge of the subject, you do not profess to have any?—We do not profess to be experts, no.

1337. I always consider that it is the Treasury which is really almost directly responsible for the Research Councils?—Yes. The Lord President, of course, might wish to intervene on some general question of policy. It is obviously on matters of policy where he would come in.

1338. Apart from the rather burdensome business of having to do things two different ways—I take it it is a bit burdensome?—(Sir William Slater.) Yes.

1339. That is to say, it is an unnecessarily prolonged procedure?—Yes.

1340. The result in the end is all right, is it—or is it not? Would we get more value for money if the whole thing were controlled as well as co-ordinated by one responsible Research Organisation for Agriculture?—I should think yes, in that it is always much more difficult to control anything which is in three different pockets. You sometimes find that the pocket from which you wish to spend money is empty when another has got something left in it.

1341. That is exactly the point I was thinking about a short time ago, particularly about capital expenditure?—Yes. Well, that has happened on capital expenditure.

1342. It has happened? You have had difficulties there?—Yes, but we have been met quite well on it. But as the position gets tighter, the danger becomes greater.

1343. Thank you very much, gentlemen. I am sorry that we have to leave now. We will ask you to come here on another occasion after Easter, and we would suggest probably 3rd May, if that is convenient to you?—I think so.

1344. Because I would like to go right through the memorandum and complete the whole of it?—Yes, that is convenient, Sir.

Chairman.] If we meet at the same time, I think we could probably finish in one hour. Thank you very much.

The witnesses withdrew.

Adjourned till Monday, 3rd May, at 4 p.m.

MONDAY, 3RD MAY, 1954.

Members present:

Mr. Albu in the Chair.

Mr. Blackburn.
Sir Alfred Bossom.
Mr. Hobson.

Mr. MacColl.
Mr. Summers.
Capt. Waterhouse.

Sir William K. SLATER, K.B.E., (Mr. W. NESS and Mr. R. N. QUIRK, called in and further examined.

Chairman.

1345. We are on paragraph 23 of your memorandum?—(Sir William Slater.) Yes.

1346. Thank you for coming back, and thank you Sir William for your very useful statement on the "Funds provided for research institutes and units".* That details exactly what we wanted. I am sorry you have not been able to provide us with an entirely complete document, as I understand we shall have to get from the Ministry details of their expenditure?†—I think you will have to get that from them. I do not know whether Mr. Ness would like to add something here. (Mr. Ness.) We had hoped to get that information from the printed Estimates, but it was quite impossible. It is mixed up with salaries and services.

1347. No doubt the Ministry will be coming to give evidence, and we shall have to ask them for it so as to get the total expenditure. On Paragraph 23 which deals with buildings, I would just like to ask whether the buildings are mostly undertaken by Ministry of Works or by private architects and builders?—(Sir William Slater.) It was originally all by Ministry of Works, but in the last few years we have had permission to use private architects and we have done so rather extensively.

1348. Has that led to economies? What was the reason for the change?—We felt we could perhaps get better conditions from private architects and builders, in so much that we can control the position rather more closely.

Sir Alfred Bossom.

1349. Did you find that there was any advantage after you had experience, by having private architects?—We found it had advantages.

1350. Did you find you were getting better, cheaper or more efficient results, or how did you benefit?—I would put it this way. We feel that the private architects

* Appendix 3 on page 140.

† Memorandum 6 on page 89 and Appendix 4 on page 143. The figures provided by both the Ministry and the A.R.C. for Capital Works have been consolidated in Appendix 5 on page 144.

are entirely our servants and will take instructions from us, whereas the Ministry of Works tended to take the view that they were providing something, and that they knew probably better than we did what was needed. I think that is as near as I can put it.

Chairman.

1351. Are you receiving any assistance from Ministry of Works' services still?—Yes. At Compton we are still receiving some.

1352. In that case I do not think we have those figures, or were they not shown?—I am sorry, I misunderstood you. We get services from the Ministry of Works, but we pay for all of them. We always have paid as a grant aided body. They do not provide services for us and charge them to their Vote. We pay for everything.

1353. Are there any buildings at all being erected by the Ministry of Works?—A little at Compton, and some at one of the animal breeding stations, Cold Norton.

1354. Is the Ministry of Works' civil appropriation already taken into account for that?—They already do in exactly the same way as an ordinary contractor's account.

1355. Therefore the figures you have given us of capital expenditure at various stations include figures for Ministry of Works' expenditure?—Yes. (Mr. Ness.) It is a complete repayment service.

Sir Alfred Bossom.

1356. That includes architects' fees, quantity surveyors' fees and the entire building contract?—(Sir William Slater.) Yes. The whole of the cost is paid to the Ministry of Works

1357. Have you had a chance of comparing whether they are cheaper or more expensive than the ordinary private architect?—It is difficult to answer that.

1358. I know; I appreciate that?—One has not had a direct comparison which makes it simple. The reason we changed to private architects was because we felt we could get the work done at least, if not cheaper, more to our own requirements.

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[Continued.]

Chairman.

1359. Paragraph 24? May I ask about the post-war programme? Was that for a fixed sum of expenditure?—No. Indications were given in the programme as to what it might cost, but it was realised it would take ten years or more to complete and therefore there was no fixed sum.

1360. I see, because the cost must have gone up very considerably since then?—It has gone up a great deal.

1361. I think you have given us the figures for the balance of the programme. They are contained in the statement you have just given us, are they not?—That is virtually the whole of the balance. There are one or two projects which so far have not been started at all.

1362. Are they mentioned here or not? I am referring to the Memorandum which was circulated to the Sub-Committee last week. We will not bother now, but if there are any which are not included perhaps you will let us have a list of those which have not been started?—Yes.*

1363. Is it proposed now to put forward another plan for Government approval?—Not in the immediate future. The Council would, I think, wish the present developments to settle down and to get fully working before they attempted any other major programme.

1364. The general expansion of agricultural research has pretty well reached a sort of plateau?—It will in the next three or four years, if these works get completed.

1365. Paragraph 25? I would just like to ask about the control of suitability of buildings. I take it that you, the Council, have some control over the design of buildings put up by your research institutes?—Yes.

1366. Have you such control over the independent institutes?—We advise on the design there. The director of an independent institute generally comes to the Council with his suggestions for an expansion. That may take the form of just a statement of his requirements or of a rough plan which he himself has prepared. We go through that plan with him, and if we are satisfied that what he has put forward represents reasonable requirements we then recommend to the Ministry or the Department for Scotland that this extension is scientifically desirable and does not appear to be unduly excessive. It then passes into the hands of the Ministry or the Department for further execution. We should only come into it again if at a later date some question was raised, say, by the

Treasury, and the Ministry or the Department asked us for advice in answering the question.

Sir Alfred Bossom.

1367. Do you encounter much delay, after you have got your project settled and approved, before you get the buildings available for use? Your contract is based on a certain time. Do you have much delay, usually, as a result?—You are speaking now of the Council's own buildings?

1368. Of yours, and these various other institutions?—That is rather different. As far as the Council's institutes are concerned we have experienced delay, but I do not think more than anyone else trying to put up a building during the last four years. On the whole we have worked fairly well to plan. There were delays with the buildings put up by the Ministry for the grant-aided institutes because of difficulty over funds and getting the work done within the year on which the Estimate was based.

Chairman.

1369. That does not apply to you?—We have been allowed a certain amount of carry over, which helped a great deal in getting smooth development of buildings.

Sir Alfred Bossom.

1370. That was the point behind my question. How do you manage to do the job? Do you get a section of the work completed within your grant?—We have done that by agreeing with the Treasury to place a tender. We get an estimate from the architect as to how much work will be done in the year. The amount done has tended to be less than the estimate, but the Treasury have agreed that we should have a certain carry over into the next year to make up for what we have been behind in the work in the current year.

1371. Would you recommend that a system of carry over should be more or less universal in your work so that you could get your jobs done and not have the need for appropriations year by year?—It is extremely useful. That or a grant of a quinquennial amount such as has recently been announced for the Department of Scientific and Industrial Research enables one to place a contract with confidence. The Ministry have had difficulty where there has been delay in beginning work on a contract; the work done has fallen short of the estimate and a re-vote has been necessary in the next financial year. It makes the whole procedure cumbersome and difficult.

Chairman.

1372. It puts up the cost?—I think it must, inevitably.

* Statement B of Appendix 5 on page 144.

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[Continued.]

Sir Alfred Bossom.] It always does.

Chairman.

1373. Have you got your own architects?
—No. We use firms of professional architects.

1374. Are not the requirements of laboratories in many of the institutes very similar?—There is great similarity between them.

1375. Is there not something to be said for having your own specialised architects rather than employ others who may not know much about laboratories?—I think there is a good deal to be said for getting architects to investigate the requirements of the various types of institutes to, if I may put it this way, interpret the clients' requirements. One of the major difficulties, if an architect has not already built a large number of laboratories, is that he finds it difficult to follow always what the director of the institute wants, and to interpret it into bricks and mortar. I think it would be a great help if one had some sort of specialised service that would enable the director to put his requirements into proper form, but I think at the same time one must then employ a professional architect to do the building and, of course, to supervise it.

1376. What are you doing on this at the moment?—We have joined forces with the Nuffield Foundation, who have an architectural section. They have been investigating the design of hospitals, and they have agreed to look into the design of laboratories. They are working in close co-operation with the Royal Institute of British Architects with the idea of producing a specification of the kind of which I am speaking.

Sir Alfred Bossom.

1377. You do not do enough work yourself to employ a regular architects' department; it would be a waste of time to start an architects' department of your own?—We have not got enough work for such a department.

1378. It would not be worth while, but when you find some architect who is satisfactory to you, you would try to get him to do as much of your work as you could?—I think we undoubtedly should do that.

1379. Is that the arrangement you usually follow?—That is the plan we should follow.

Chairman.

1380. The one or two laboratories we have seen did not strike me as having been designed necessarily by architects who knew all about laboratories, and I wondered whether you could not employ people who had investigated the design of laboratories not only in this country but in the United

States and elsewhere, before building them?—I think that is so. I think some of the laboratories are unnecessarily wasteful in their form of construction, and possibly also not as efficient as they might be.

1381. You hope to get something very valuable out of this Nuffield investigation?—I hope we shall get something really valuable. The work they have done on hospitals appears to me to be extremely valuable, and I hope something of the same kind will come out for laboratory design. That will apply not only to my Council; it will be available for anyone designing laboratories.

Chairman.] Are there any questions on Paragraph 26?

Mr. Summers.

1382. I see there is a limit of £50 left to the discretion of the director?—Yes.

1383. Is it found in practice that that which might have been acceptable some time back is in need of revision upwards?—We have been considering revising it upwards, but for the moment we have left it at £50. We recently wrote to directors about it. None of them seemed to be particularly worried by this limit because they can get a very quick response from the head office if they wish to place an order for a greater amount.

1384. How far does that apply to the Ministry's institutes?—In the Ministry's institutes the sums over £50 are listed in the estimates when they come up for consideration, but if during the year further expenditure of that kind is required, and the money is available for it under some heading, then the director gets on to my office in exactly the same way, possibly by telephone or certainly by letter; and he can get a fairly quick reply.

Chairman.

1385. Do you have to give permission?—No, no permission unless the estimate is being varied.

1386. Being a Ministry institute?—Yes, where it is allocated to the purchase of equipment and apparatus.

Mr. Blackburn.

1387. When was this limit first fixed?—I have been at the Council over four years, and it has been that during my time. (Mr. Ness.) About 1949.

Chairman.

1388. Paragraph 27? Paragraph 28? Paragraph 29? Paragraph 30? Do you find the difference between the accounting year and the financial year a nuisance?—(Sir William Slater.) I think it is a nuisance. You have got to do a lot of guessing to get your accounts right, because you are estimating for half a year which has been

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estimated for by the institute six months before and for half a year which it will not estimate for until six months later. I always find it confusing.

1389. There is no reason, is there, for running on the basis of the academic year because the amount of the payment to academic services is very small, is it not?—It is historic in that a number of institutes came into being as part of a university, and therefore they received a block grant for the academic year. The institutes which are associated with the universities would not mind, and the universities would not mind in the least so far as I know, receiving it for the financial year rather than for the academic year.

1390. Has Mr. Quirk any view on that?—(Mr. Quirk.) No, I have not. On the face of it it seems a rather untidy arrangement.

1391. Paragraph 31? Paragraph 32? There was a point here. I see that the independent institutes in their estimates show a contingency provision, but yours do not. Is that right?—(Mr. Ness.) We carry a central contingency ourselves.

1392. That is partly also this carry over?—Yes.

1393. That really is an advantage for the Agricultural Research Council's institutes?—It is a central pool. It is a great advantage, I think.

1394. Your estimate of the money voted is on the basis of a detailed estimate for each institute?—Yes.

1395. Plus a central contingency?—Yes.

Sir Alfred Bossom.

1396. You are not allowed to transfer a fund from one institute to another?—We could. If there was a saving we could apply it to another, but we cannot transfer capital to maintenance. It has got to be either one or the other.

Chairman.] With no limit?

Mr. Hobson.

1397. Are stores regarded as maintenance or capital?—Maintenance.

Chairman.

1398. I understood you were not allowed to transfer between the heads for your Council. By "heads" you mean what?—Capital and general accounting.

1399. You can transfer between institutes?—Yes.

1400. Can the independent institutes transfer between subheads?—(Sir William Slater.) They can transfer between subheads, except that they cannot transfer between salaries and wages and the other expenses of the institute.

1401. What does it mean when you say in the memorandum "as the institutes can transfer between sub-heads . . ."? What other subheads are there—between different items of stores?—Well, if they have a saving, say, on power, heat and light, they can transfer that to purchase equipment, or if they had a saving on—

1402. They cannot transfer salaries and capital?—Salaries, capital and the rest of the expenses are the three main headings.

1403. You have the advantage of being able to transfer objectively. You can transfer between objects, but the independent institutes cannot because they are independent?—That is so. If we are interested in getting a particular piece of work done in one institute we can transfer a little money to it if we do not require that amount at another.

1404. I think we did ask you about that last time?—Yes.

1405. Paragraph 33? Paragraph 34? Paragraph 35? Paragraph 36, and the other paragraphs relating to Scotland?—I take it those arrangements are all under consideration by the Royal Commission on Scottish Affairs?—I have submitted a memorandum to the Royal Commission on Scottish Affairs.

1406. I take it that it is necessary to have some bodies in Scotland. Perhaps it would embarrass you to answer these questions?—It is rather difficult to deal with the matter. I think I would say this, that we must have some Scottish organisation helping us, and the Department for Scotland has been very helpful throughout. That is due to the differences in law, procedure and other questions in Scotland. We must have guidance, particularly when we are farming, buying land and dealing with matters of that kind.

1407. If this matter is one of those which are under investigation by the Royal Commission, I do not think we really ought to go into it. It is, is it not?—Yes.

Sir Alfred Bossom.

1408. Have you ever had a case where a building has finished its usefulness? What do you do with it in such a case, or have you not that experience?—We have not had that experience yet.

1409. You have not any anticipation of what action you would take in such an event?—It is very difficult to answer a hypothetical case. If the building were really a good one, we might try to find another use for it.

1410. You would try to find a use for it, but if it was obsolete what would you do? The Chairman has just said that some of the buildings he has seen did not seem to be as perfect as they might be for their

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[Continued.]

purpose. Have you come across any case where the building is literally obsolete and you would be better to abandon it?—No. We have not yet reached the stage where we can afford to abandon any building. In fact some we have been using, until quite recently, from necessity have been very old buildings, but the new ones have not been ready. When they are ready we shall have alternative uses for the old ones, for example, using them as offices instead of laboratories where you do not require the same lighting and so on.

1411. You would find a use for the building so as to keep it in use?—We should not do it deliberately, but so far I cannot imagine any building which is going free for which we should not have quite a number of claimants.

Captain Waterhouse

1412. The limiting factor is the buildings; you can get the staff to fill the buildings?—I can give an assurance on that.

Mr. Blackburn.

1413. We were discussing some of the British institutes, and I thought you said the academic year was a tidy arrangement?—(Mr. Quirk.) I said it was an untidy arrangement to have two different periods.

1414. I thought you said it was a tidy arrangement, and I wondered why at the time. I notice that the Scottish institutes are based on the financial year?—That is so.

Mr. Blackburn.] Is that historic?

Chairman.

1415. Scottish good sense, perhaps?—Yes.

1416. Sir William, would you like to say anything more about the idea of a quinquennial grant? I do not think it will be any surprise to you to know that on the whole the Estimates Committee does not look favourably on leaving the normal procedure of annual vote unless a very good case can be put up for it?—(Sir William Slater.) In the case of buildings I think there is a very strong case for either a carry over such as we have or some arrangement over a longer period than one year.

1417. You know we have just issued a Report on Grants in Aid,* and we understood that the carry overs were very small and always taken into account in the following year?—That is so, but they have become progressively smaller in the last few years. If we work on the annual vote then we let contracts which we think will

use up the annual amount voted. Nearly always the amount spent falls short. If we have to be limited to the amount we are allowed to spend in each year, which has been the position for the last few years, and if we have to be re-voted in the next year what we have underspent, then we cannot let a new contract in the next year because we then overspend; but if we are allowed to carry over into the next year all underspent monies—

1418. You would carry over an amount which is not taken into account in the next year's Vote?—Not fully taken into account. May I ask Mr. Ness to correct me if that is not the position? Is that correct?—(Mr. Ness.) Yes.

1419. Unlike the independent institutes it is an advantage in that with the Agricultural Research Council, having its central pool of capital expenditure, the amount of carry over is smaller than it would be if each independent institute had a carry over itself?—That is certainly so because, although one institute may grow a little faster than another, they tend to balance out.

1420. If Parliament were to approve a system of carry over and if the Government were to bring in a quinquennial grant as the most economic way of doing it, if it were made a grant to a body representing a number of institutes like the Agricultural Research Council rather than each separate one, that would be an advantage?—That would be a definite advantage because they would cancel out then.

Sir Alfred Bossom.

1421. Would it not be more practical, as a building is normally not finished exactly on time, to give you the total grant for the building when you start? It would be better to allow it to you then and to allow you to get the building done as quickly as possible, rather than attempt to go and get several estimates for several sections. That is a very impracticable way of doing it. No ordinary organisation would ever dream of getting a building completed like that. Would it not be more practical to work like every other commercial concern in the country?—It would be much better. In fact we get from the Treasury the permission which you suggest, to put the building up and to let the contract. Then we have to guess how much will be spent in the next year. If our guess is wrong, well, we are committed to the contract in the later year.

Sir Alfred Bossom.] That is really the most practicable way of doing it. It undoubtedly adds to the cost of the building by re-estimating and re-contracting.

Mr. Blackburn.] If you had spent up to the amount of that particular year, surely

* Second Report from the Select Committee on Estimates, H.C. 1953-54, No. 143.

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[Continued.]

you would not suspend the contract in the middle of the year until you got the money for the next year.

Sir Alfred Bossom.] You would.

Mr. Blackburn.

1422. Has that position ever arisen?—It has never arisen because we have always been behind, but I presume that if the builder got in front we should have to hold him up because we should have no right to make payments. (Mr. Ness.) We should have no money.

Sir Alfred Bossom.

1423. Are there any cases existing where at the end of ten months you have spent all the money which has been appropriated, and you have had to wait and start again next year when it has been more expensive?—It has not arisen.

Sir Alfred Bossom.] Not in your department, but in other departments.

The witnesses withdrew.

Mr. R. N. QUIRK recalled and further examined.

Dr. B. K. BLOUNT, a Deputy Secretary, and Mr. G. R. D. HOGG, C.B.E., an Under Secretary, Department of Scientific and Industrial Research, called in and examined.

Chairman.

1427. Gentlemen, thank you very much for coming along today. This Sub-Committee of the Estimates Committee is investigating agricultural research, and naturally we are interested in the form in which Parliament votes monies for research for different purposes, the differences in form between the Agricultural Council, the Department of Scientific and Industrial Research and the Medical Research Council, and also the relations between the research sponsored directly by Departments, grant aided through an institute and grant aided through a council. The first question to which I think we would like to direct our attention is that of contributions by private industry to research associations, to see if you can throw any light on the reason why you have been successful in building up industrial research associations as genuinely grant aided bodies whereas in the case of agricultural research there is no question of aid; the whole funds, or practically the whole, are provided by money voted by Parliament?—(Dr. Blount.) I expect it is to do with the amount people think they can make out of research. The return is probably quicker in industry than it is in agriculture. Although, shall we say, a new variety of apple tree may in the long run bring returns to agriculture, some new process in industry may bring returns next year.

Chairman.

1424. Do you think there are any powers which the independent institutes have got (and which you have not got) which would be valuable? Is there any advantage in the powers of the independent institutes?—No, I do not think so. The value of the grant aided system to the institutes, I think, only exists where there is a considerable contribution from an outside body, as there was with a number of these institutes when the grant in aid was first started.

1425. Now in fact there is very little difference, except in so far as you have told us, from your institutes?—Yes.

1426. Are there any other questions? Thank you very much. We are going to visit two of the institutes, Babraham and Compton?—I am hoping to accompany the party to both institutes.

1428. I should have thought that hardly applied to quite a lot of the work done by the Agricultural Research Council?—No doubt it is all helpful, but perhaps ours is not on quite such a long term basis.

1429. Would you say it is anything to do with the size of the units in the industries?—The size of the firms in the industry or the research association?

1430. Do you find it is easier to get a research association going on the usual co-operative basis if the units are fairly large than if they are small?—Yes, on the whole, though if the industry concerns only a few large units it may be highly competitive, so competitive in fact that it is not prepared to co-operate for purposes of research.

1431. Do you find larger firms tend to join more than smaller ones?—Usually the larger firms are public spirited, more public spirited or more prepared to make a gesture, yes.

1432. Does the proportion of firms in an industry who subscribe to a research association vary from industry to industry?—Yes, considerably.

1433. Is there any significant factor which appears to affect that?—I should have thought the factors were mainly personal.

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[Continued.]

It depends on the way the research association is formed in the first instance. I expect it depends to some extent on the degree of competition within the industry. That must deter people at times. They feel that, if they come in, the research association will have their secrets, and their secrets will be shared around.

1434. That is hardly a factor which would apply to agriculture?—No. At least, I should think not.

1435. Would you commit yourself whether or not it ought to be possible to do something similar in agriculture?—I do not think I know enough about agriculture for that.

1436. We are told that you failed to do this in the building industry?—Well,—Mr. Hogg will correct me because his memory goes back farther than mine—we really did not originally try with the building industry. The building research station was set up as a D.S.I.R. establishment in the first instance, and of course, once you have set up an establishment, it is not easy to convert it into a research association. But there are other quite, I think, good reasons why building would be a very difficult industry to induce to support a research association. It is not like some other industries. I can enlarge on that, if desired.

1437. Would you?—First there is a big national interest in building, in the actual operations of building, much more so than there is in some operations of industry. The Government is a big builder, or possibly the biggest builder, and therefore it would probably seem appropriate to the industry that the Government should pay a considerable share in financing research. I think it is probably true to say that the Government is far and away the biggest gainer from the work of the building research station in designing better buildings: better schools, better houses, and cheaper schools, cheaper houses. A good deal of the work is directed towards greater economy. Secondly, the structure of the industry can roughly be divided up into manufacture of materials, the design side, the work of the architects and the civil engineers, and the final construction work; and usually it is divided up in that way horizontally. If we take them in turn, the manufacturers of materials are already supporting a good deal of research because they support half a dozen research associations. I have a list of them if you are interested in them later. For example, there is ceramic research, iron and steel and so on. Then there are the architects. They tend to make money out of the actual building operations. They work for a fee. If by the work of the building research station you can design cheaper buildings for the same purpose, that works to the

financial detriment of the architect who gets a fee based on the total cost. A cheaper building means a smaller fee. When you get down to the actual construction work the man on the job is not concerned with any improvements which the building research station might bring about because he is simply told what he has to build by the man who designed the work. That I think is the main difficulty. To whom does one go for financial support? Who benefits from research? When you analyse the position it does seem to be correct to say it is the public who benefit rather than any section of the industry. That is different from, shall I say, the lace and cotton industries where, for example, if substantial improvement can be made in a process, that may mean higher profits straightaway or expanded markets abroad. There are other difficulties. It is true that there is a multiplicity of small firms on the construction side. Architects often work as individuals rather than as firms although there are big firms too. There is much technical co-operation between the building research station and the building industry, and firms will often carry out full scale trials of developments put forward by the building research station. So there is an indirect contribution sometimes there. I think those are the main points.

Sir Alfred Bossom.

1438. You made a statement that where a building costs less it is to the disadvantage of the architect?—I think it could be argued—

1439. Have you got any example where that has occurred, where the employment of an architect has deliberately led to a building costing more so as to increase his own fee?—No.

1440. I think that point should be corrected because it would give a very wrong impression if it came to be published in our report?—I do not suggest that has ever happened, but I think it is true that architects are paid a fee based on the cost of the building. Therefore a cheaper building would mean a smaller fee.

[Sir Alfred Bossom.] I think that statement ought to be very carefully considered before it is said to be a fact, because if it appears in our published report it might be very much resented by the Royal Institute of British Architects. They are professional people.

Mr. Hobson.] The point is this—

Chairman.] Just a moment.

Sir Alfred Bossom.

1441. The Royal Institute of British Architects are a professional body, and they are recognised by this House. They do not try to push up the cost of a building in order to get a larger fee; they try to

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give a client what the client wants. I think that principle is well recognised?—Yes.

1442. That is the point which ought to be emphasised?—I am sure architects are in fact great supporters of building research station work which is designed very largely to reduce costs, but the point I am making is that one could scarcely expect architects themselves to pay out money to get costs reduced when that in fact results in a lower fee for the architect.

Sir Alfred Bossom.] I am afraid you are wrong there. I should rather like to follow that up because I think—

Chairman.] I do not think we can have a discussion on architects' fees. I am sorry, but we cannot argue one—

Sir Alfred Bossom.

1443. I do think the witness said something just then, "an architect is not likely to reduce costs". Those were your words, were they not?—No, would not be likely to contribute to the work of a building research association out of his own money in order to reduce costs. I think you could not expect him to do that.

Sir Alfred Bossom.] I am afraid they do.

Chairman.] Do they contribute?

Sir Alfred Bossom.] They certainly do.

Chairman.

1444. Does the witness know whether they contribute?—I do not think architects as an organisation pay a contribution.

Chairman.] Could you find out and let us know whether architects, either individually or collectively, do contribute towards the building research station?*

* The witness subsequently amplified his answer as follows:—"Architects, either individually or collectively, have made no financial contribution to the Building Research Station's programme of research for the last fifteen years; though the Royal Institute of British Architects contributed about £40 per annum to the Station for some years up to 1939. This does not imply any lack of interest on their part in the work of the Station. On the contrary, there is the closest co-operation with architects, particularly with those of public bodies, on the research programme. Some examples are the work which has been done with the Hertfordshire County Council and the Ministry of Education on school development, with the London County Council on the development of flats, and the Nuffield Provincial Hospitals Trust on their investigation into the design and function of hospitals. These—and many others—have provided valuable opportunities for developing in practice the results of the Station's research.

Mr. Hobson.] I think the position is perfectly obvious. I am one of the ordinary people, but I do not think there is any different code between professional people and trade unionists. I have never found it in all my experience. A certain statement has been made to the effect that with professional people there is a higher code. I do not accept that at all. There is no higher code whatsoever. The fact is that there is an economic urge by everybody against higher costs. The fact is that the higher the cost the greater the fee; there is no escaping that.

Mr. Summers.

1445. I want to ask a separate question, but to follow up this particular subject. Would you not regard it as an incentive to an architect to contribute to this work if the result was to get costs down in order to enlarge the public who could make use of his services?—Yes, he might. It is rather a long process.

1446. For the same reason that the Ford Motor Company would go to great trouble to reduce the cost in order that more people could buy motor cars. Would it not be a reasonable assumption that, if an architect could reduce his cost to certain types of people, there would be an incentive because of the enlarged public who could make use of his services?—Would it in fact work out like that? It might.

1447. I am asking you?—I would rather doubt it, because there is only a certain sum to be spent on building in this country.

Chairman.] I think these are very hypothetical questions. We have asked the question whether in fact the architects do contribute to the research station.

Sir Alfred Bossom.

1448. I am President of the Modular Society which is deliberately supported now by various bodies to try to reduce the cost of building. That is the very thing about which you are talking. I know all about it?—I was replying to the question asked, which was why we did not run our establishment as a research association, where the industry would contribute to the cost. I was trying to expand that point. I think it is because in industry there are obvious financial gains to be got from the support of a research association, but in this case there are not obvious gains to be got on the part of the three types of activity in the building industry.

Chairman.

1449. The gains are so divided between the three sections of the industry and the

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[Continued.]

public that it is not possible to see the direct connection between them?—The gains are very largely for the public.

1450. We are concerned with seeing why it is that we do not get a contribution in agriculture?—Yes.

Chairman.] That is what we are trying to find out.

Mr. Summers.

1451. From your experience of those industries which contribute to the research process, would you say there is any different result between those industries subjected to foreign competition and those which are isolated from that and therefore do not stand in need of the benefits of research to the extent that an industry affected by foreign competition does?—I would not say that was a significant factor.

Chairman.] Did you not say almost the opposite, that where there is competition they do not contribute?

Mr. Summers.

1452. I was referring to foreign competition?—Where you can share your results in a really progressive and active industry a strong National position results, but where firms are competing vigorously they are sometimes at war with one another and they are not prepared to share in research.

1453. You would say that an industry suffering from severe foreign competition is not for that reason driven to take more interest in research and contribute to it as a result?—I do not think I have seen that. Have you, Mr. Hogg? (*Mr. Hogg.*) I am afraid I do not know definitely, but I should have thought ability to compete in the export market was quite a considerable incentive to some industries to maintain a research association. (*Dr. Blount.*) It should be.

1454. And selling at home in face of imports?—Yes.

Chairman.

1455. Do you know whether in fact there are greater contributions to or more research associations in exporting industries or in industries subjected to severe competition from imports than in other industries not so affected?—No. I would have to do an analysis to try to answer that. My impression is that it is not a factor. (*Mr. Hogg.*) May I say this? I do remember that the cotton industry research association was, I believe, the first of all the research associations. I believe it is equally true that the cotton industry is a very large exporter.

1456. When was the cotton industry research association formed?—About 1918. At that date it was the first one.

Mr. Summers.

1457. To take the steel industry, would it not to some extent depend on whether the things made from steel are subject to intense foreign competition?—I must confess I am not very familiar with those factors. Shall I say the research association is quite a flourishing one? (*Dr. Blount.*) Fairly new, post-war. (*Mr. Hogg.*) There was a predecessor in the Iron and Steel Federation Research Council.

Chairman.

1458. Can you tell me in what year the cotton industry research association was entitled to make a levy on the industry?—I could not tell you offhand.

1459. That is a very important point. You said there was a research association in 1918. It is not a voluntary association, is it?—I believe it is financed by a levy now.

1460. You do not know in what year that started?—I could not tell you the year offhand.

1461. Perhaps you will let us know that?—Yes.*

1462. Have you any information about building laboratories? You very largely use the Ministry of Works for your own laboratories, do you not?—(*Dr. Blount.*) Yes.

* The witness subsequently amplified his answer as follows:—"The research activities of the British Cotton Industry Research Association in respect of the cotton industry have been financed by a levy since April, 1953, when the Cotton Industry Development Council (Amendment No. 2) Order, 1953, came into effect. From 1940 to April, 1953, the Research Association received from the Cotton Board a grant in aid which was considered by the Department as grant-earning industrial money. It was not obligatory for the Board to pay this grant to the Research Association. The Cotton Board was financed by a levy on raw cotton which was authorised by the Cotton Industry (Reorganisation) Act, 1939, and the Cotton Industry Act, 1940, and later by the Cotton Industry Development Council Order, 1948, which changed the basis of the levy. Some firms ceased paying individual subscriptions when this levy was imposed in 1940 but a considerable number continued to pay subscriptions until April, 1953. The rayon-using members of the Association still pay individual subscriptions."

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[Continued.]

1463. What is the position in regard to industrial research associations? Do you in any way control the nature of their laboratories, or the design or the standard? Is there any central advisory body?—No. The research association division is always available to give advice, if our research association councils asked for it. Sometimes there are informal talks with the director. Sometimes one can suggest that the director of some other research association has recently put up a building, and his experience might be useful; but there is nothing more than that.

1464. You have never considered whether there would be any economy from research into laboratory design? Sometimes laboratories are designed by people who do not know much about laboratories?—There are so many types of laboratories. I think it is the diversity, really. In our own case we have on the laboratory side very different needs, anything from organic chemistry to high tension electrical work, ship tanks and so on. They are completely different: there is no "standard laboratory".

1465. Have you any views on the form of your charter and your body compared with that of other research councils?—(Mr. Hogg.) I do not think we have any positive views. I should draw attention to a difference between our constitution and that of the Agricultural Research Council. We are effectively a Government Department in the true sense of the word. We have a ministerial body as our controlling authority, but in practice the powers of that body are exercised by the Lord President as their president; and our advisory council, which corresponds in many ways to the Agricultural Research Council, is in fact an advisory body, not an executive body. It has not got a charter. It was appointed under the original Order in Council which also appointed the Committee of the Privy Council, and it has to be consulted on all major questions by the Lord President. The terms of the Order, I think, are that questions "stand referred" to it. That may mean in practice that the Advisory Council exercises very much the same functions as the Agricultural Research Council, but it does it in the capacity of an adviser and not an executive body. It does not own the funds in the way that the Agricultural Research Council does as trustees under its charter. But I should have said that these differences are not really very material to the way in which it is financed in practice. I should think that the effective control of the work is very much the same in the two establishments in practice. The Lord President relies on the advice of the Advisory Council in D.S.I.R., in much the same way as he gives permission under the

terms of the charter to the Agricultural Research Council to exercise its powers. The Order in Council, which set up D.S.I.R., contains this phrase. May I read it? The Committee of the Council is "to direct, subject to such conditions as the Treasury may from time to time prescribe, the application of any sums of money . . ." etc. The charter of the Agricultural Research Council has a paragraph, reading: "The Agricultural Research Council may also appoint such other officers and servants as they think fit, but the number of such officers and servants and their remuneration shall be subject to the approval of the said Committee of our Privy Council and of the Lords Commissioners of Our Treasury". One gets much the same ultimate control, it seems to me. That is the way I would reply to the question of the different constitution. Do you want me to pass on now to the question of Vote versus Grant in aid?

1466. If you have anything to say. Has Mr. Quirk anything to add to what you have just said?—(Mr. Quirk.) I do not think I have really anything to add to what Mr. Hogg has said.

1467. From your experience is the control not very different?—It is rather similar. What Mr. Hogg may be going to say may lead to a slight difference, but up to now I quite agree. (Mr. Hogg.) in regard to the question of Vote versus grant in aid, it may be I am not sufficiently familiar with, shall I say, the details of constitutional law to know, but it may be it is somewhat difficult to finance a chartered body like the Agricultural Research Council except through a grant in aid. I hope anything I say in that respect will be read subject to that qualification, and also subject to the further qualification that the D.S.I.R. has no experience of operating under a grant in aid and therefore it is rather difficult to say what are its advantages or disadvantages over the method by which it has been financed. If I may make those qualifying remarks to start with, from that point I would rather say that since everybody believes in freedom and since in carrying out research work a measure, a rather wide measure, of freedom to vary expenditure between object and object is essential, to be able to commit oneself to a fairly long project without having to be tied down to spend so much in this year, so much in the next year and so much in the year after, which often proves to be impossible, there are theoretical advantages in a grant in aid which gives, or may give, that greater elasticity. But it seems to me it does not follow that any grant in aid would give that greater elasticity. I have already referred to the clause in the Charter of the Agricultural Research Council about

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[Continued.]

the powers of the Treasury, and the corresponding clause in our own Order in Council. It seems to me that the issue depends much more on the way in which the Lords Commissioners of Her Majesty's Treasury and the Ministers in charge of the respective Departments—in this case the same Minister—exercise the powers they have and the extent to which they give the spending bodies under them freedom than on the form of the Vote.

1468. Would we not vote money to D.S.I.R. under specific heads of its grant?—No, Sir. We have a Vote like any other Department, divided into a number of subheads. It is perfectly true that the House of Commons control the overall vote of money, but the Treasury has powers of virement; that is to say the Treasury can authorise us to transfer money from one subhead to another if we make out a good enough case in the course of the year, but we cannot do it of our own volition.

1469. As in the case of normal virement, does that have to be approved eventually by Parliament?—I am afraid I am not certain. I know we act on Treasury authority, when necessary. I do not think it does have to come to the House. I think I was rather making the point that everything to me seems to depend upon the way these powers are exercised rather than on the actual form of the grant, whether it is in the form of a Vote by the House of Commons or through the Treasury. The grant to the Agricultural Research Council, I believe, is made by Parliament to the Treasury which accounts for it. I do not know in detail what conditions the Treasury may lay down in authorising or paying over the money to the Agricultural Research Council, but I have some reason to believe that they do apply quite a number of conditions. I have not very great reason to believe that they have a great deal more freedom than we have. There may be more in certain respects. I think I ought to refer to one other matter, and it is this. I do not think my Department would argue that being under a Vote has materially added to the difficulties of

administration. It is probably known to you that in recent years we have felt—and our Advisory Council has been fairly vocal on the subject—we have not had enough money. I do not think that was due to the form of the Vote; I think that was due to the general circumstances of the country and the decisions of Governments. I think perhaps I ought to add that there is some evidence that vote procedure can be adapted to give flexibility in the commonly called five year plan which has recently been agreed between our Minister and the Treasury for anticipating in a broad sense the expenditure of the Department for the next five years.

1470. On the other hand, you cannot carry forward any funds?—Not formally, no, Sir. Part of our understanding with the Treasury is that they will be willing to consider asking the House to make extra provision in a subsequent year if we fall short in an earlier year. In other words—they cannot promise it to us, of course—there is an understanding, broadly speaking, that all parties concerned will do their best to give us a global figure over the five years.

1471. Is it your experience that the Lord President seems to exercise any stronger influence or control over D.S.I.R. than the Agricultural Research Council does—?—(Mr. Quirk.) I would not say there was any really noticeable difference, perhaps mainly for the reason that the Lord President is essentially concerned with policy, broad questions. The broad control in the financial sphere is in effect the same.

1472. Would you say that whether he gets advice, from the purely administrative point of view, from the Agricultural Research Council and the D.S.I.R. Advisory Council angle, it is not very different?—I should say there was no difference reflecting the constitutional difference about which you have been talking.

Chairman.] Thank you very much, Gentlemen. I do not think we shall need to bother you again. You have been very helpful. Thank you for coming along.

The witnesses withdrew.

Adjourned till Thursday, at Babraham.

THURSDAY, 6TH MAY, 1954.

Members present:

Mr. Albu in the Chair.

Mr. Summers.

| Captain Waterhouse.

Evidence taken at the Institute of Animal Physiology, Babraham Hall, Cambridge.

Sir WILLIAM K. SLATER, K.B.E., called in and further examined.

Dr. I. DE BURGH DALY, Director of the Institute of Animal Physiology, called in and examined.

Chairman.

1473. Dr. Daly, thank you very much for your hospitality which we have enjoyed, and for the very interesting visit we have been paying to the Institute. There are a few questions we would like to ask you, for the record. Incidentally, I need not explain our terms of reference; you probably understand that our business is to see that the taxpayers' money is economically spent?—(Dr. Daly.) Yes.

1474. Perhaps you would like to start—we have not got a great deal of time—by telling us very briefly the background, the history, of this Institute and its particular function in relation to other agricultural research?—Yes. Somewhere about, I think it was, 1946, when I was a member of the Agricultural Research Council, there was a committee, of which I think Sir Joseph Barcroft was chairman, which was assessing the needs of the Agricultural Research Council and the needs for knowledge of farm animals, and that committee rather felt that nutrition of farm animals was perhaps the most important thing to explore at that time. I think the Council felt that, although it was important to explore nutrition in respect of farm animals, there was another aspect, and that was the fundamental physiology of farm animals of which we were quite ignorant. I might say that was rather a come-back on myself who was the expert physiologist on the Council at that time. I often had to try to answer questions about the physiology of farm animals, and more often than not I had to say "I do not know" or "We do not know"; in other words, the knowledge was not there. It was decided at that time probably what was wanted was an institute of animal physiology to investigate the physiology of all animal species, with special reference to farm animals, and that is how it started. The matter lay fallow for quite a while until Sir Joseph Barcroft died, and then the Council were in rather a difficulty. Sir Joseph had a unit of physiology with a number of staff there, and the Council did not quite know what to do with them. They thought it would be a very good time to start this new institute of animal physiology which they had explored a few years

previously. They asked me if I would take it over; I said "Yes", and I took over on 1st January, 1948, with a reference to set up an institute in the region of Oxford, Cambridge or London. I took up headquarters in Cambridge at Harvey Road, near the cricket ground, and went around the place, to Oxford, and round North London to try to find the right sort of place for setting up this institute. Oxford seemed a very good place with the exception that they were not going to start a veterinary school there; they had no intention of starting one. Cambridge were just developing their veterinary school. I thought it very important that the institute should go to a place where there was already some interest in veterinary physiology. There were three places—Cambridge which was developing a veterinary school, London which had been going some time, and Bristol which was in the process of developing. The outcome of that exploration was that the Babraham Estate of 450 acres was bought, and after about a year in Cambridge town I came out here, and we started building the initial hatted laboratories, which are the ones which have been completed now and in which you have seen people working. At the end of 1949 and the beginning of 1950 was when research was actually started.

1475. I suppose the estate was bought by the Agricultural Research Council?—The cost was £28,000. £23,000 for the land, 450 acres, and £5,000 was estimated for the hall.

Captain Waterhouse.

1476. On your advice?—No. The estate was bought on my advice, but the price was a negotiated price between Mr. Fitch, who used to be the Chief Land Commissioner, and the local District Valuer. The vendors asked £34,000 to £35,000; they spent a few weeks beating about until Mr. Fitch said he thought he had done jolly well to take £28,000.

Chairman.

1477. Do you expect to complete the capital expenditure this year?—No, we are behind schedule. I expect all buildings to be completed by October, 1955.

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[Continued.]

1478. What is the total capital expenditure, roughly?—I could not give you that without consulting my papers. If you take all the salaries which have been paid since 1948 and add to what we are committed, as near as anything it is £1,000,000.

1479. Salaries plus capital expenditure, but excluding other expenditure?—No, everything which has been sunk in Babraham so far. I have got accounts for that from your office. (Sir William Slater.) Yes. (Dr. Daly.) I have added on salaries.

Captain Waterhouse.

1480. When you say "so far", that is when your present projects are completed?—That includes our commitments, all the present projects which you have seen and the buildings in use which you have also seen.

1481. By 1955 you will have spent £1,000,000?—That is to what it really comes.

Chairman.

1482. What will the total number of people be then?—I should think we should be somewhere about 90 to 100 now?

1483. In total?—Total of 21 scientists now. I think 50 scientists is the absolute limit for any director to try to tackle. In fact I think it may be too large. Having Sir Alan Drury as head of the experimental department—and Sir Rudolf Peters is coming along—lessens the burden enormously. They are both experienced administrators.

1484. It is a matter of 50 scientists plus 100?—Plus 150.

1485. Including farm workers?—Yes. Fifty scientists in any normal department will want 70 technicians, and because of our high animal accommodation I think we would want a few extra, ten to twenty technicians.

Captain Waterhouse.

1486. What do you envisage the annual cost to be?—Taking a guess, when we are up to 200—

1487. In 1955?—Something between £100,000 and £150,000 a year.

Chairman.

1488. For this year it is £99,600?—Yes.

1489. That is net, after taking account of any farm income?—Well, I would like that to be answered by someone else. We have quite a lot of credits, of which we never seem to see the result.

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Captain Waterhouse.

1490. Such as?—If we sell farm stock we never see the money, but I think it is a book credit. Are we credited with that? (Sir William Slater.) Yes.

Chairman.

1491. I am sorry, I have got a statement with the A.R.C.'s list of their units.* The receipts are to come off that; they are separate. The general expenses of the research institutes and the research units are shown. The receipts are shown separately and taken off the gross expenses of the institutes of the Agricultural Research Council, so that you have something to come off that?—(Dr. Daly.) Yes. I could give you the figure in a moment.

1492. We have the figure here. Your figure for 1954-55 is put at £8,400?—I did not think it was quite as much as that.

Captain Waterhouse.

1493. By 1955 the cost will be about £150,000 a year?—I should think that is what we shall be spending. I can only estimate that in comparison with the expenses of a comparable establishment, like that of the Medical Research Council at Mill Hill. I have talked to Sir Charles Harrington about these things, and I was a little optimistic about the start. I thought we might be able to do it round about £100,000, but things have gone up since then and I think we shall be running nearer £200,000 than £100,000.

1494. Before we leave the general history, would you just like to discuss the desirability of buying a place like this with a large house already on it, compared with buying 500 acres of barren land closer to Cambridge?—Very largely, the psychological. I doubt whether you would collect a lot of good men to come to a place when they only see a few huts. This was anticipated by myself in advising the Council in 1947 to buy something, whether I came here as director or not, which gave the place a foundation, and one might even say an appearance. Although this building is not much of an appearance, it has quite a big effect, especially the library being in existence as a library although it may not have many books. They can say, "This is going to be the library; it is not going to be a hut which we have not seen yet". I think that with the younger people, perhaps the less experienced they are, the larger does that sort of feeling loom. Young scientists are apt to be pickers and choosers nowadays. They want to see into what they are going. I think in my day, at any rate, we were only too glad to be in a research department; we did not enquire about our

* Appendix 3 on page 140.

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[Continued.]

salary; we did not worry about it; and then we left everything, including our wives to fend for themselves. But that is not the situation today. The first thing a scientist says to you is, "Is there a house?" Then he says, "Is there a bus service. Are there schools? What is my salary?" The last thing he says to you is, "What is the lab. accommodation?", but when he finds there is a library then he is really interested. That may sound far-fetched, but it is 90 per cent. true. Sir William will bear me out on that. That is the outlook of your present day scientist, is it not? (Sir William Slater.) Yes.

Chairman.

1495. Competition for scientists is rather greater?—Very great, for the good men. (Dr. Daly.) The other people do not ask anything, and I do not ask them anything.

1496. While on the question of buildings, may I ask this about the prefabricated laboratories you are building? Do you think they will be quite satisfactory for a long period?—You mean these—

1497. The ones you are putting up now, compared with the hatted laboratories?—I think that, if they are well looked after, they will stand probably 30 years. The roofing is the trouble. It expands and contracts rather a lot with temperature changes, and then scientists are no respecters of buildings. As you know, they are apt to knock holes in the walls, and are surprised when the whole thing collapses on them. Provided they are not allowed to do that sort of thing, I think they will last 30 years.

Captain Waterhouse.

1498. Are there considerable overheads? Have you got to keep several gardeners?—We have a whole time gardener for amenities.

1499. Just one?—Yes. Actually we have two who are each doing half time on amenities, but their job is to keep up the appearance of the surrounds of the hall. We have three others who look after the verges around the houses, the cottages and the laboratories, do hedge clipping, mow the grass and so forth. I have a total of four.

1500. Three are necessary for the ordinary work?—Three will be necessary, yes.

Mr. Summers.

1501. Do they do any maintenance work in the winter?—They do all the hedge trimming, and they do a bit on the roads. They have been clearing the river banks in order to give the catchment board a clear way into the river. We have been making up

a cinder road; they will do that, and a cinder pathway. They are willing, I hope—I think it is right, they are willing—to do pretty well anything to which they can turn their hand, except one of them who is a real gardener with green fingers. The others are not; they are more or less gardeners/handymen.

Chairman.

1502. You told us you were yourself a member of the Agricultural Research Council?—I was, but of course not now. I am now a servant.

1503. I understand that. Previously you were on the Medical Research Council?—I was never on the Medical Research Council. I was a director of one of their laboratories during the war.

1504. One of the things in which Subcommittee is interested is the way in which the Government today, and Parliament therefore, finances research, which it does to a very considerable extent; and the different ways by which it does it for different industrial or field sciences. Could you from your experience give us any comments about that, or would you find it embarrassing?—Not a bit. Sir William and I see eye to eye on most things, and when we do not there is generally good reason and we generally sort it out. I think there are two things. From time to time there has been the possibility, not in this Institute—I am speaking not only as director here but of my knowledge as an ex-member of the Council—of divided responsibility, shall we say, between the Agricultural Research Council and the Ministry of Agriculture and Fisheries. Speaking as a director, a director is interested in getting rid of his office work and looking after his scientists. He wants to deal with a single parent body. That is a personal outlook. The more time he can save in his office work and the more he can delegate his work to other people, then I think the better off is the institute in which the director is free to look after the scientific interests. Now he can only do that if he can get a quick response from his parent body. My parent body fortunately is the Agricultural Research Council, but suppose I had been mixed up with a variety of parent bodies or even with one more like the Ministry of Agriculture, it would mean that the wages of my agricultural workers would be under the control of the Ministry of Agriculture and my scientists' salaries would be under the control of the Agricultural Research Council. I think the first thing I would do would be to ask for an increase in office staff; and I should find it very difficult to cope with any such divided responsibility.

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[Continued.]

1505. Has anybody got that divided responsibility—it does not exist in your case?—No, fortunately; I hope it never will.

1506. Does it exist, therefore, with the independent institutes?—There are some institutes, yes. You know more about that, Sir William. There are some with three responsibilities—the University, the Ministry and the Agricultural Research Council. Is that not so?—(Sir William Slater.) Yes.

1507. In your experience—we know about the others—you prefer a system by which you are entirely responsible to the Agricultural Research Council?—(Dr. Daly.) Yes. I was never happier than when I was director of the laboratories of the Medical Research Council, because I had there even a freer hand than I do with the Agricultural Research Council. That is because the set up of the Medical Research Council differs in some respects from the Agricultural Research Council, and it is not possible for the Agricultural Research Council always to give directors the free hand which they would like. May I volunteer one matter which is quite close to the interests of Babraham? I do not think I have talked to Sir William about this before, but my feeling is that, and was when I was on the Council, the Agricultural Research Council would benefit very greatly if their headquarters' staff were in such a position that they could regard their appointment as being one in which they could make a career.

1508. Their appointment on the staff of the Agricultural Research Council or in the institutes?—No, on the headquarters' staff. Sir William I know will correct me over this, but I was under the impression that the Secretary of the Council cannot select his own staff and promote them from year to year in their respective grades at his discretion. He cannot say to a particular man "This agricultural interest is going to be your career", just like the Medical Research Council do. Am I right about that? (Sir William Slater.) Yes, in this sense, whereas the staff of the Medical Research Council is entirely appointed by the Medical Research Council, I have only certain members of my staff who are appointed by the Agricultural Research Council; the rest are civil servants who, so to speak, are on loan.

1509. Seconded?—Seconded, yes. If I lose a member of my staff, then I have to select a replacement from the civil service list and he may have no knowledge—

1510. From any Department?—He can come from any other Department.

1511. Not necessarily from the Ministry of Agriculture?—Not necessarily from the Ministry of Agriculture. My establishment
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officer who attended with me, Mr. Ness, came from the Scottish Office, but he had had experience in the Agricultural Department.

1512. Mr. Ness is not permanently with you; he is seconded from the Scottish civil service?—He is with me as he would be posted to any other Government Department, but after all he had had experience in the Agricultural Department of the Scottish Office, and it made him very useful because he started with that knowledge.

1513. The Scottish Office can take him away again?—Not the Scottish Office, but the Treasury could say "Here is promotion for you to another Department".

1514. On that point, would it be an advantage? Do you not think perhaps you get better men this way? Would not the opportunity of promotion within the Agricultural Research Council be rather limited, and therefore would you not get rather better men this way?—It is a difficult question to answer because, unless we were in the market to try to get someone, I cannot say what field I could have from which to choose.

1515. We are concerned with the economy of the administration. Are you saying that you think, if the appointments were entirely within your own hands like the Medical Research Council and this proportion of your staff were not seconded civil servants, there would be an economy in administration? May I put two alternatives? There would be an economy in administration within your headquarters, or would it assist the control of expenditure and the administration of your institutes?—I would answer "Yes" to the second, in so much that one would seek people who wished to make a career with the Council and who if possible had some qualification which would assist in that, a man with some background knowledge of agriculture or of scientific work.

Captain Waterhouse

1516. When you say "make a career", what career is there in front of Mr. Ness as long as he is with the Agricultural Research Council?—There is no career really for him now.

1517. You really have not got a ladder; you have got a series of stages?—Not at the assistant secretary level. Although it is interesting I think in many ways it is academic because we have all this staff, which is a seconded civil service staff. I do not think, as far as I know, there is a possibility of altering the arrangement.

Chairman.

1518. Looking around these institutes as we have begun to do, apart from judging whether the work being done is necessarily

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[Continued.]

well done which is quite beyond the province of this Sub-Committee, it struck me there were a lot of things where expenditure might go astray. One is in the scale and cost of buildings, capital equipment, and the other is the question of overlapping (which we have discussed before) by one institute being overworked and another not having enough to do. In relation to this I am just wondering whether—I do not know—this is what Dr. Daly really meant, that if one had more permanent staff on the Agricultural Research Council one could build up a better knowledge of the sort of laboratories required and so on, which would lead to economies when it came to approving designs?—(Dr. Daly.) In part, but I was thinking more on general lines.

1519. I do not think the Medical Research Council has been very successful with that, if I remember rightly?—No. They use hospitals as ready-made laboratories, in addition to the laboratories at Mill Hill.

1520. There was some trouble, I believe?—Yes, that is true. No, I was thinking of general knowledge. At the Agricultural Research Council's headquarters, apart from the Secretary and I think two others, there is nobody with any scientific training?—(Sir William Slater.) Three others. The position I think is this, that when I first went to the Agricultural Research Council in 1949 I had one half-time scientific assistant. It was perfectly obvious to me at the beginning that I must have more scientific staff if I was to give the rapid sort of service which Dr. Daly has mentioned. (Dr. Daly.) That is the operative word, "rapid."

1521. You mean in getting decisions?—Getting decisions, and understanding what I wanted. They could not be expected to understand because they had no knowledge of this kind of scientific set up. (Sir William Slater.) I have now got three full-time assistants. One is responsible for the work on botany and soils; there is another who does entomology, the study of fungi, and insecticides and fungicides; and a third whom I have only just recently been permitted to appoint and have appointed at the beginning of this year, and who will do all the animal side of the work. I have three technical people. Also I am very fortunate in my Deputy Secretary who is on the Council's staff and is not a seconded civil servant. Although he is not a technical man he has a great facility for absorbing technical detail. He is an ex-Indian civil servant. (Dr. Daly.) This is no criticism of the set up. They will be a help, but I think it is in your middle and junior appointments where the difficulty arises. You have got some very good top notchers,

but it is frightfully irritating sometimes to a director to have to explain the A.B.C., which to us is common sense, because it is a little bit of engineering and a little of science, and so is not entirely understood by the ordinary civil servant. I felt you wanted more scientists.

Mr. Summers.

1522. Could I ask one or two questions on a different aspect—the farm? What is the size of it?—The total estate is 450 acres; 50 acres of woodlands and, say, another 80 acres we are in the process of cultivating together with 320 acres of arable and grazing land.

1523. That includes grazing?—Yes.

1524. What is the labour force?—A farm manager plus six.

1525. What proportion of the 300 odd acres is arable?—I could not tell you that offhand. I should think a smaller proportion than is consistent with economic farming because we as experimentalists require more permanent pasture for our experiments on animals than the ordinary farmer wants for his animals.

1526. When were the buildings we saw this morning finished and available?—They are not entirely finished. All are finished except the granary. The remainder were finished six months ago. I think we took over part of the buildings.

1527. How near to a complete livestock complement have you reached so far?—Very near. We are hoping to keep 60 head of cattle and 150 to 200 head of sheep.

1528. Cattle or milking cows?—No, cattle as store beasts as well, because for experimental purposes we can just as well use steers and calves. We are utilising some of the followers and selling those we do not want. The calculation was that we could easily support 60 head of cattle and 150 head of sheep.

1529. Of your 60 cattle how many would be milking cows?—A couple of dozen, not more, unless we started a milking project, and then of course we would gradually collect milking cows.

1530. Would you not agree that the buildings already completed could cope with more livestock than there are in them at this moment?—Yes.

1531. What is delaying their further use?—Simply that we are not using cattle for experiments. Unless the farm manager wants to have more cattle to turn over on a farming basis, there is no necessity for them.

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[Continued.]

1532. Who would take the decision whether you should turn over more cattle to make use of the fixed capital already there? Would it be the farm bailiff or you?—On the farm, you mean, just on the farm?

1533. In the absence of the laboratories?—It would be Mr. Fitch, the adviser, in consultation with the farm manager who then, as a matter of form, would ask my permission as the director. I would not know, of course.

Chairman.

1534. Who is the adviser?—Mr. S. Fitch.

Mr. Summers.

1535. What is his rôle?—His rôle is that of estate adviser, and advising on the amount of stock which the estate could carry.

Chairman.

1536. A local Ministry of Agriculture official?—No, he is the adviser to the—(Sir William Slater.) He was one of the Ministry's Senior Land Commissioners.

1537. He is on your staff?—Yes, as a half time man.

Mr. Summers.

1538. Would you not agree with the fact that as a lot of these buildings are not fully utilised, as you said was the case just now, some more use could be made of them, irrespective of the experimental position, to the advantage of the general economy of the place?—(Dr. Daly.) All the horse-boxes are being turned over to Sir Alan Drury. He will have them full in about three months with cattle for testing blood groups.

1539. I was thinking more of the sheds which were empty near the calves?—The covered yard, yes. I would not like to answer that question. I have not the knowledge.

1540. May I just summarise it in this way? The rate at which you are utilising those buildings at the moment is governed by the demands of the scientific world?—Yes.

1541. Rather than the financial incentive of a farm qua farm?—Yes, that is perfectly correct, and I see at what you are getting. We have no demands scientifically for cattle, and so they could be temporarily utilised by the farm.* Whether they are being utilised to the best of their ability I cannot answer.

* The witness subsequently amplified his answer as follows:—"At the moment, we have 32 store cattle and sell those sheep which we do not use experimentally".

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Chairman.

1542. There is no reason, is there, in scientific administration why you should not utilise the farm commercially to the full?—None at all. We hope to do so.

1543. Provided it does not interfere with your work?—No reason at all.

Chairman.] The whole of the 325 cultivated acres, plus the buildings.

Mr. Summers.

1544. Just to carry the farm matter a little further, if I might, do you make your financial results of the farming enterprise by the current year?—Yes.

1545. What were the results for 1953?—We broke even, did we not? (Sir William Slater.) About that. I have not got the figure in my head. (Dr. Daly.) That did not take into account the enormous amount of capital we had to sink into the old commons. We had to hire a gyro tiller to reclaim the whole of the commons land.

1546. As part of your 350 acres?—Four fields chock-a-block with thorns. We had to uproot them, and hire a gyro tiller to go over them. We did not debit the farm with that, but on the farming side I am told, according to Mr. Fitch who should know how these things should be assessed, we broke about even. But I have no detailed knowledge of these things.

1547. There are separate farm accounts?—Entirely.

Mr. Summers.

1548. Could we ask for a copy of them?—(Sir William Slater.) Yes. They are not audited accounts in the sense that they are not supplied to the Department. (Dr. Daly.) They could be audited.

Mr. Summers.] I think it is a piece of information in which we might be interested. It is not amongst our papers.

Chairman.

1549. Perhaps you will let us have a copy of them?—Yes.†

Captain Waterhouse.

1550. Why did you choose fifty as your optimum staff? Why not 25, 75 or 100?—I suppose that was the personal limitation of my capacity to look after fifty people, which I find is now over-estimated.

1551. Were you given any cash limit?—Yes, very much so. When we started off with the laboratories we had quite long negotiations with the Ministry of Works, who incidentally put up those laboratories,

† Not printed.

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[Continued.]

not private architects. I mean the ones which are in operation.

1552. No, you have not got my point right?—I was going on to say that I had a set sum given for those. I cannot remember the details at the moment, but I do not think the Council agreed. Sir William, I think, criticised the expense which—

Chairman.

1553. I think Captain Waterhouse's point is this. Were you given a figure of annual expenditure at which to aim, which would limit your numbers?—Not finally, no.

Captain Waterhouse.

1554. Were you in the first place told (a) you may not spend more than £1,000,000 and (b) you may not spend more than £X a year?—No.

1555. You were given *carte blanche*?—I was not given that, but I was given a set sum for what the buildings should cost. For instance, you asked about the farm buildings. The estimate given for the farm buildings was £110,000, and the Council would not accept it.

1556. You really could, if you liked, have spent £500,000 or £2,000,000 on this place?—I doubt that.

1557. Why not?—I am always controlled by my Council.

Chairman.

1558. How did you arrive at the size and how much work should be done?—I think the size—if you leave out the cost—was entirely my estimate. I said, if you are going to have fifty scientists which I think we should do—

1559. Why fifty?—Because that is the limit with which I think any director can cope.

1560. Why not twenty-five?—Because that gives the maximum limit which any single man could control, which I find is, I think, over-estimated. In my view—and these views were stated long before I ever thought of becoming the director when I was a professor in Edinburgh—it should be a comparable set up to that of the Medical Research Council at Mill Hill which has a staff of about 250, or more now I think. I said, limit it to fifty at the start; we can always grow. We had to get people into this sort

of work which at that time was not very popular; veterinary work still is not very popular. If you start with fifty scientists it means you have got to have seventy technicians. Then I had to have a farm supply of animals, library facilities, and houses and cottages because there was no accommodation. That is how the basic cost of the place was assessed.

Captain Waterhouse.

1561. Really this amount of money has been spent because it was your assessment that it was the maximum that one capable man could control?—Could control with the reference which he had given to him by the Agricultural Research Council. (Sir William Slater.) I think it is only fair to say that Dr. Daly's proposals were extremely carefully examined at every step by the Council itself.

1562. You knew where you were going?—(Dr. Daly.) Yes. (Sir William Slater.) Yes. In the Council's files there is one memo. after another by Dr. Daly setting out the work he proposed to do, the staff he proposed to have, and how it was to be divided up. Members of the Council and a specially appointed sub-committee went into that with great care, and agreed that his estimate was a reasonable one.

1563. With a clear objective in the mind of your Council?—With the clear objective in the mind of the Council to set up an institute to do this basic work, the study of physiology.

Mr. Summers.

1564. We were told earlier of certain gaps in the knowledge, gaps which Babraham was intended to fill eventually. We are told there is a limit of fifty people for the reasons you have put forward. Are there likely to be gaps in the knowledge still remaining after Babraham has grown to that size, because with the restriction to fifty scientists will it cover the whole ground which was originally planned?—(Dr. Daly.) If you had fifty Babrahams there would still be gaps. There is no limit to the work which you could do. There would be enough for twenty Rutherfords in Physics. There is no limit; once you start a problem you can put twenty Rutherfords on it. As Sherrington once remarked when he wanted to compliment someone on a piece of work, "This is interesting. You have done enough work to occupy a hundred scientists for a hundred years".

Chairman.] Thank you very much for your very interesting evidence.

The witnesses withdrew

Adjourned till Monday next, at 4 p.m.

MONDAY, 10TH MAY, 1954.

Members present:

Mr. Albu in the Chair.

Mr. Blackburn.
Mr. Hobson.
Mr. MacColl.

Mr. Summers.
Captain Waterhouse.

Mr. C. H. M. WILCOX, an Under Secretary, Principal Finance Officer, Mr. H. GARDNER, C.B.E., an Under Secretary, Mr. C. P. QUICK, an Assistant Secretary, and Mr. A. C. SPARKS, an Assistant Secretary, Ministry of Agriculture and Fisheries; and Professor R. RAE, C.B., Director, National Agricultural Advisory Service, called in and examined.

Mr. A. B. BARTLETT called in and further examined.

The witnesses submitted the following Memorandum:

MEMORANDUM 6

EXPENDITURE ON AGRICULTURAL RESEARCH AND RELATED MATTERS

Memorandum by the Ministry of Agriculture and Fisheries

- I. National Agricultural Advisory Service Experimental Centres.
- II. National Agricultural Advisory Service Provincial Laboratories.
- III. Provincial and County Experimental Work.
- IV. Special Investigations and Research.
- V. Plant Pathology Laboratory.
- VI. Infestation Control Research.
- VII. Veterinary Laboratory and Investigation Services of the Animal Health Division.
- VIII. Artificial Insemination Centres.

A table showing the total expenditure on the above services is printed as Appendix 4 on page 143.

I. N.A.A.S. Experimental Centres

1. Estimates (Vote 1 and Vote 3 (Subheads H.9 and H.10 (a)))

	1953-54	1954-55
	£	£
(i) Salaries and wages	239,000	268,000
(ii) Travelling and subsistence	3,000	4,000
(iii) Maintenance, including equipment, repairs and miscellaneous expenses	270,000	280,000
Receipts	280,000	294,000
NET TOTAL	232,000	258,000
Capital Expenditure	200,000	300,000

The technical staff at the Centres at the present time numbers 58 with 18 Recorders in addition.

2. The object of these Centres is to fill the gap between the research station and farm practice by providing facilities for the application of research on the field and commercial scale under the varying conditions in different parts of the country. The original plan was considered during the war and approved soon after its end. In all, 17 Farms and 5 Horticulture Stations (with 4 Sub-Stations) were planned together with a National Fruit Variety Testing Station. So far 9 Farms and 4 Horticultural Stations (with 2 Sub-Stations) have been established. The National Fruit Variety Testing Station has been established and in association with the plan, 3 Horticultural Demonstration Stations have been set up in Wales. The following is a list of the various Centres:—

Experimental Husbandry Farms Bridgets, Martyr Worthy, Winchester; Cuckoo Pastures, Boxworth, Cambridge; Gleadthorpe, Mansfield, Notts.; Great House, Rossendale, Lancs.; High Mowthorpe, Malton, Yorks.; Kirton, Boston, Lincs.; Rosemaund, Preston Wynne, Hereford; Terrington, King's Lynn, Norfolk; Trawscoed, Aberystwyth.

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Experimental Horticulture Stations:

Stations	Efford, Lymington, Hants.; Luddington, Stratford-on-Avon, Warwick; Rosewarne, Camborne, Cornwall; Stockbridge, Selby, Yorks.
Sub-Stations	Fairfield, Kirkham, Lancs. (sub-station of Stockbridge); Ellbridge, Saltash, Cornwall (sub-station of Rosewarne).
Horticultural Demonstration Stations ...	Brynn Adda, Bangor, Caernarvonshire; Cleppa Park, Newport, Mon.; Trawscoed, Aberystwyth.
National Fruit Variety Testing Station ...	Brogdale, Faversham, Kent.

3. (Most of the Centres which have been acquired are still being developed. The Farms in the main have been acquired unequipped and the Horticultural Stations are having to be built up *de novo*. It is, therefore, taking some time to put the Centres in a position to fulfil their experimental function. Because of the expense, and of staff shortages, new Centres are being acquired only exceptionally.)

4. The Experimental Centres are under the control of the N.A.A.S. and each has an N.A.A.S. officer as Director. The work of the Centres is planned on the advice of the Agricultural Improvement Council working through its Experimental Husbandry and Experimental Horticulture Committees. The Centres perform a different function from the Research Stations but the work of the two is necessarily inter-related and the representation of the Agricultural Research Council on the Agricultural Improvement Council and its Committees and Sub-Committees ensures that the research interests are taken into account in the planning of experimental programmes. The Research Stations are represented on the Advisory Committees which have been set up at each Centre and the technical staff at the Centres maintain contact individually with their research colleagues. It is the aim by these arrangements to ensure that research results are available in the planning of work at the experimental stage and that experimental progress is reported back to the research worker.

5. A wide range of experiments has been started. On the Farms, these cover (among other things) crop variety trials; cereal seed rates, time of sowing and manuring; potato manuring and blight control; grassland and cultivation experiments; long-term soil fertility studies; the rearing of dairy heifers on different planes of nutrition; breeds and crosses for beef production; sheep breeds; use of anti-biotics in pig feeding; poultry feeding and management. On the Horticulture Stations, some examples of the experimental work are:—construction and design of glasshouses, their heating and ventilation; vegetable variety trials; planting, spacing and manuring of fruit and vegetable crops; nutrition of bulbs; pest and disease control, protected cropping. It will inevitably be some time before the results of many of the experiments are available, but useful results are already being obtained, and the Centres are attracting much interest among farmers in their areas. Some 6,000 farmers visited the Farms last year, and farmers seeking advice frequently refer to their work.

6. The Centres are primarily experimental establishments and experimental considerations have to come first. It is, however, the Ministry's policy that the Centres should be well farmed and as profitably farmed as the experimental programmes allow. As indicated above, a good deal of basic capital development has yet to be carried out before the Centres can be farmed with full efficiency and the full experimental programme set in motion.

II. N.A.A.S. Provincial Laboratories

1. Estimates (Vote 1 and Vote 3 (Subhead H.10 (b)))

	1953-54	1954-55
	£	£
(i) Salaries and wages	216,000	228,000
(ii) Travelling and subsistence	15,250	15,250
(iii) Maintenance	34,000	34,000
Receipts	Nil	Nil
TOTAL	265,250	277,750

The salaries and wages are those of the Provincial Science Specialists of the N.A.A.S. and ancillary staff. They are primarily advisory, not research officers. The staff connected with the laboratories number 462.

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2. The National Agricultural Advisory Service maintains 8 Provincial Centres and 4 Sub-Centres, as follows:—

Northern Province	...	...	...	...	...	Newcastle
Yorks. and Lancs. Province	...	...	...	...	...	Leeds
East Midland Province	...	...	...	...	...	Shardlow, Derby
West Midland Province	...	...	...	...	...	Wolverhampton
Eastern Province	...	...	...	...	...	Cambridge
South Eastern Province	...	...	...	...	...	Reading
South Western Province	...	...	...	...	...	Bristol
Wales	...	...	...	...	...	Trawscoed, Aberystwyth
Wye Sub-Centre	...	...	...	...	...	S.E. Province
Starcross Sub-Centre	...	...	...	...	...	S.W. Province
Bangor Sub-Centre	}	...	...	...	...	Welsh Province
Cardiff Sub-Centre						

These Centres are the regional Headquarters of the Service, and at them are housed its specialist advisers qualified in agricultural sciences—Soil Chemists, Nutrition Chemists, Analysts, Plant Pathologists, Entomologists, and Bacteriologists—These officers are provided with laboratory and field plot facilities.

3. The primary function of the Provincial Specialist Adviser is advice and not research. The advice is mainly given to the county advisers of the Service who are in direct contact with the farmer. But the work in large measure presents itself in the form of problems which call, in varying degree, for investigation by practical scientific investigators. While basic research is the province of the research stations, the local application of research often calls for particular enquiry. It is in this way that the N.A.A.S. science specialists come to undertake work of a research character. There is in fact a two-way movement of work at the Provincial Centres. On the one hand local problems come to the Centres which can usefully be investigated locally and if they seem important, or general, enough they are passed to the Agricultural Research Council and the research stations. On the other hand, it is useful to the research stations themselves for investigations to be carried out at different Centres.

4. Some examples of the investigations undertaken at the Provincial Centres are:—

Wheat bulb fly

The N.A.A.S. Entomologists and workers from research institutes are investigating this problem together in the field.

Bloat in cattle

Here the studies of the advisory workers have indicated the need for studies in animal physiology directed to finding the root cause of bloat.

Manurial systems

The Soil Chemists are studying the long term effects of new fertilisers and different manurial systems on soil and cropping capacity by means of reference plots at the Provincial Centres.

Effects of flooding. The 1953 floods threw up novel and difficult advisory problems. Long term investigations are being undertaken by the Soil Chemists in the Eastern counties in association with Rothamsted.

5. It will be appreciated that since these activities arise in the course of advisory work, no formal national programme of research can be laid down. The various investigations are kept under review by the individual groups of provincial Advisers and N.A.A.S. Headquarters and the research stations and the A.R.C. are associated with the meetings of these groups.

III. Provincial and County Experimental Work

1. Estimates (Vote 1 and Vote 3 (Subhead H.10 (c)))

							1953-54	1954-55
							£	£
(iii) Maintenance	...	...	...	...	...	...	23,000	23,000
Receipts	...	...	...	...	...	...	5,000	4,000
							18,000	19,000
							NET TOTAL	

Provincial and county experimental work is carried on incidentally to advisory work by a large number of N.A.A.S. officers. It is therefore not possible to give details of salaries, etc.

2. These are experiments carried out by the Provincial and County Staff of the N.A.A.S. to throw light on local problems. They are carried out on plots attached to

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provincial centres or on farms (by arrangement with the farmer). Experiments of this kind form a valuable adjunct to local advisory work and are necessitated by the extreme diversity of English farming conditions. The experiments within each province are co-ordinated by a Provincial Experiments Committee and the working of the Committees is reviewed and co-ordinated nationally.

3. In the main those experiments are more simple and more short-term in character than those undertaken at the Experimental Centres. Often they have to go where the problem exists, e.g. trace element deficiencies in Romney March. The willing co-operation of farmers in these experiments allows the Centres to concentrate on necessary long-term, complex and more costly experiments.

IV. Special Investigations and Research

1. Estimates

1953-54	£28,000	} Subhead H.7 (b) (Vote 3).
1954-55	£33,000	

Details of the amounts are shown in column 8 of the Appendix to the Estimate for Services to Agriculture (Class VIII, Vote 3).

2. This expenditure is in respect of grants to Universities and Colleges, Research Associations, etc., for specific research and investigations of a small or comparatively small-scale and short-term character and of a practical rather than fundamental kind. A score or so projects are being financed at the present time. A number of the grants are made on the advice of the Agricultural Improvement Council. The general policy is to arrange for the work to be transferred to a Research Institute if it develops in such a way as to require long-term or fundamental investigation. Grants are being continued, however, to certain educational institutions which have built up particular facilities and staff; examples are the grants to Harper Adams Agricultural College for pigs and poultry investigations and to Wye College (London University) for work on pigs. Examples of other grants are those made to the Electrical Research Association; to the Royal Horticultural Society (for fruit trials, until the Ministry's Fruit Variety Testing Station is fully established); and to the Mushroom Research Association until the new Glasshouse Crops Research Station is established.

3. Another group of grants is given for investigations in estate management. It has been decided that more attention should be given to this subject. The Agricultural Improvement Council has been strengthened on the estate management side and is considering what further investigations should be undertaken. The increase in the Estimate for 1954-55 reflects the additional work envisaged.

4. The Agricultural Research Council is consulted specifically on these projects wherever there is any material research interest.

V. Plant Pathology Laboratory, Harpenden

1. Estimates (Vote 1 and Vote 3 (Subhead H.8 (c)))

	1953-54	1954-55
	£	£
(i) Salaries and wages	18,315	25,530
(ii) Travelling and subsistence	21,200	1,600
(iii) Maintenance	1,450	725
Receipts	50	50
NET TOTAL	20,915	27,905

2. The Laboratory is under the charge of a Deputy Chief Scientific Officer (Director) aided by a Deputy Director (S.P.S.O.). There are 23 officers in Scientific Officer and ancillary grades and 7 clerical, typing and industrial staff.

3. The Laboratory is not primarily a research establishment, its function is to provide the Ministry with advice on the scientific and technical questions which arise in connection with measures for the control of pests and diseases of plants. Its work may be outlined as follows:—

- (a) Scientific and technical questions arising out of the administration of the Destructive Insects and Pests Acts and of the regulations governing the import, export or sales of plants. A small amount of *ad hoc* research arises from this work; in particular the question of fumigation of plants for export and import is becoming increasingly important. As facilities are for the time being lacking at Harpenden, much is being done for the Laboratory at the Imperial College Field Station, Silwood Park. The Ministry makes a financial contribution under Subhead H.7 (b).

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- (b) Technical advice in connection with the Crop Certification Schemes administered by the Ministry's Horticulture Division. A Scientific Officer (now a Senior Scientific Officer) was appointed in July, 1950, for research in connection with crop certification problems. He is engaged on the study of the areas in England and Wales suitable for seed potato production and on *ad hoc* research on virus diseases of chrysanthemums so as to facilitate diagnosis.
- (c) The preparation of periodical reports on the incidence of pests and diseases (much of the material for which comes from the N.A.A.S.) and of leaflets and other publications. In 1952 the Laboratory started a new quarterly scientific publication, *Plant Pathology*.
- (d) The accurate assessment of damage caused by pests and diseases. This work might be called "field research". Two scientific officers were appointed to take charge of it in 1950. Two Assistant Experimental Officer posts have recently been sanctioned for assisting the work.
- (e) Questions relating to insecticides, fungicides and weedkillers, their composition, standardisation and uses including technical responsibilities for the Ministry's scheme for the official approval of proprietary plant protection products. This aspect of the work of the Laboratory has until recently entailed only a very small amount of analytical work but with the increased use of poisonous chemicals in agriculture, much more analytical work will be necessary. An Interdepartmental Advisory Committee has been set up following the Government's acceptance of the recent report of Professor Zuckerman's Working Party on Toxic Chemicals in Agriculture (Residues in Food). One of the Secretaries of the Committee will be stationed at the Laboratory and some of the investigations arising from the problems brought to the notice of the Committee will be done there.
- (f) Research in connection with the systematics of diseases and pests of economic importance. A Senior Scientific Officer was appointed for work on aphids of economic importance in 1952; he is at present stationed at Cambridge.
- (g) Two Scientific Officers were appointed in 1951, one for bacteriological work and one for helminthological work.

4. The Laboratory maintains very close liaison with the National Agricultural Advisory Service. It is a clearing house for the collection of information from the Service and the discussion of problems arising in advisory work; and in general acts as a consultant to the Service on matters relating to plant pests and diseases. The Director and Deputy Director respectively act as Chairmen of the regular meetings which the N.A.A.S. Provincial Plant Pathologists and Entomologists hold (together with the research workers concerned) to consider questions of common interest.

5. In so far as the Laboratory undertakes research, close liaison is maintained with the Agricultural Research Council and the research institutes concerned, e.g. Rothamsted and the Institute for Research in Plant Physiology (Imperial College of Science). The Director of the Laboratory is a member of the Agricultural Research Council's standing Committee on Research affecting Plants and Soils. The Ministry has had the advice of the Council in considering the development of the work of the Laboratory and the scientific staff required.

VI. Infestation Control Research

1. Estimates (Vote 1 and Vote 3 (Subhead G.1 (b)))

	1953-54	1954-55
	£	£
(i) Salaries and Wages	14,554	18,000
(ii) Travelling and Subsistence	2,562	3,000
(iii) Annual Expenditure	3,000	4,000
(iv) Special non-recurring expenditure	Nil	835
Receipts	Nil	Nil
TOTAL	20,116	25,835

2. The Infestation Control Division of the Ministry is responsible for the implementation of various Acts of Parliament, in particular the Prevention of Damage by Pests Act, 1949, under which local authorities are under obligation to ensure that so far as practicable their areas are kept free from rats and mice. In addition owners and occupiers of food premises, warehouses etc. are responsible for notifying the Ministry of insect, mite and rodent infestation in stored commodities. The Division is also responsible for those sections of the Agriculture Act, 1947, relating to the control of injurious mammals and birds.

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3. The executive work in relation to the Prevention of Damage by Pests Act is carried out by Divisional Rodent Officers and Inspectors, and by Insect Inspectors (Experimental Officer class). The executive work arising under the Agriculture Act, 1947, is carried out by Pests Officers attached to County Agricultural Executive Committees acting under the advice and guidance of Provincial Pests Officers of the Ministry.

4. The research activities of the Division are organised in four sections, namely, the Mammals and Birds Research Section, the Entomological Section, the Chemical Section and the Rodent Field and Instructional Section. Only the first-named is wholly occupied with research, the other three being engaged mainly on pest control activities although research investigations of a limited nature are conducted also by them. Each section is in charge of a Principal Scientific Officer and includes 2 or 3 Scientific Officer staff together with Experimental Officers. The Mammals and Birds Research Section is augmented at present by 1 temporary P.S.O. and 1 temporary Scientific Officer for particular work on myxomatosis and grey squirrel investigations respectively. In addition to these staffs at Tolworth certain of the sections include small Scientific Officer and Experimental Officer staffs stationed in the provinces.

5. The work of the Mammals and Birds Research Section comprises:—

- (a) Studies of the behaviour of both the ship and brown rat, with particular reference to the control of rats in sewers.
- (b) Investigations involving the fundamental behaviour and ecological studies of mice in relation to stored grain.
- (c) Research into the methods of controlling rabbits and the collection of quantitative information about the damage caused to crops and pasture. In connection with the former a power-driven gassing machine has been developed. Present rabbit research is almost solely concerned with different aspects of myxomatosis. Research, aimed at determining the methods by which the disease is spread, is being conducted in co-operation with the Animal Health Division of the Ministry.
- (d) Investigation of the possibilities of measuring squirrel populations to assess the value of different control measures. In addition an enquiry is in progress regarding the type of damage caused by squirrels in different environments.
- (e) Research, involving studies in bird behaviour and ecology, in relation to the damage done to agricultural crops by rooks and wood pigeons.

6. The Entomological Section determines the methods to be used by the Insect Inspectors for the discovery and measurement of insect infestation of stored food and grain and for the assessment of the results of control. It also organises and conducts training courses in stored products entomology both for new recruits and for grain storage officers and others from overseas territories, and collects and analyses information relating to the insect and mite infestation of imported and stored goods.

7. The Chemical Section decides the techniques to be used for the control of insects and mites and in regard to other pests it provides advice on and, where necessary, inspects the properties or action of rodenticides and fumigants. The staff of the section takes part in the instructional courses provided by the Division and in co-operation with Insect Inspectors it reviews the insect and mite control methods and determines requirements for other research.

8. Both the Entomological and Chemical Sections work in liaison with the Pest Infestation Laboratory of the D.S.I.R. The Deputy Chief Scientific Officer in charge of the Scientific staff of the Division is an assessor on the Pest Infestation Research Board. Meetings of Senior Officers of the Scientific staffs of the two organisations are held every six months. At these meetings the Pest Infestation Laboratory reports on work in progress and Infestation Control Division presents problems for solution and describes the results of field work in progress. The Heads of Sections and members of the Division also keep in direct touch by individual visits to discuss particular problems. Broadly speaking, the Pest Infestation Laboratory deals with the fundamental research in the laboratory whilst the Division applies the results of this work in the field.

9. The rodent field and instructional staff is responsible for the provision of training courses on Ministry approved methods of rodent control. These are given to people such as Medical Officers of Health and Sanitary Inspectors, Divisional Rodent Officers and Inspectors, Rodent Operatives, and on occasion, to Government-employed personnel from overseas. It also undertakes field experimental work in the development of new rodent control techniques, provides special advisory services on rodent control matters generally and, on request, investigates and reports on particularly difficult infestations.

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VII. The Veterinary Laboratory and Investigation Services of the Animal Health Division

1. The Veterinary Laboratory and Investigation Services of the Ministry are based on the main laboratory situated near Weybridge, a subsidiary laboratory at Lasswade, Midlothian, and 16 Veterinary Investigation Centres or Provincial Laboratories.

2. Their main functions are:—

- (a) To assist in the diagnosis of diseases of farm livestock.
- (b) To investigate the nature, cause and method of spread of disease conditions; to find means for the diagnosis of new diseases; and to control disease by eradication, vaccination, etc. Most of the Professional and Senior Scientific staff and over half of the other staff are mainly engaged on this experimental and investigation work.
- (c) To prepare such biological materials, e.g., tuberculin, contagious abortion vaccine, swine fever vaccine, as may be required for Government controlled schemes and to test biological products made elsewhere and maintain national standards. Preparation of biological materials is only undertaken by the laboratories at Weybridge and Lasswade.

3. Estimates (Vote 1 and Vote 3 (Subheads D.1, D.2 and H.8 (a)))

	1953-54	1954-55
	£	£
A. Veterinary Laboratory, Weybridge		
(i) Salaries and Wages	89,813	92,118
(ii) Travelling and Subsistence	8,000	7,000
(iii) Annual Expenditure	76,001	84,910
Receipts	6,500	8,500
NET TOTAL	167,314	175,528
B. Lasswade Laboratory		
(i) Salaries and Wages	4,028	4,133
(ii) Travelling and Subsistence	1,000	1,000
(iii) Annual Expenditure	3,381	3,675
Receipts	Nil	Nil
TOTAL	8,409	8,808
C. Investigation Centres		
(i) Salaries and Wages	21,305	21,849
(ii) Travelling and Subsistence	9,000	8,000
(iii) Annual Expenditure	17,618	19,425
Receipts	Nil	Nil
TOTAL	47,923	49,274
D. Production of Therapeutic Substances, Disease Diagnosis, &c. Weybridge, Lasswade and Veterinary Investigation Centres		
(i) Salaries and Wages	127,850	131,900
(ii) Travelling and Subsistence	2,000	2,000
(iii) Annual Expenditure	154,130	171,060
Receipts	103,950	176,400
NET TOTAL	180,030	128,560

The great bulk of the receipts in Section D is in respect of crystal violet vaccine (swine fever) but a number of products are used under the Ministry's own schemes for diagnosis or control of disease. The great bulk of the tuberculin and anti-abortion vaccine is used in this way. The selling value of these products distributed without charge for Ministry-sponsored schemes in 1953-54 was over £100,000.

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4. *Weybridge*.—The main laboratory is organised into departments, each under the control of a Senior Research Officer Grade I, viz.:—Bacteriology, Virology, Vaccines, etc., Pathology, Parasitology, Biochemistry, and Poultry Diseases.

Professional—Director, Deputy Director, 6 Senior Research Officers Grade I, 12 Senior Research Officers Grade II, 2 Divisional Veterinary Officers, 29 Research Officers, 1 Temporary Veterinary Officer, 3 Research Assistants.

Experimental Officers—3 Senior Experimental Officers, 16 Experimental Officers, 9 Assistant Experimental Officers.

Assistants (Scientific) etc.—2 Senior Scientific Assistants, 62 Scientific Assistants, 81 Laboratory Attendants, 1 Store Keeper.

Farm Staff—1 Farm Manager, 94 Animal Attendants and Farm Workers.

Lasswade, Professional—1 senior Research Officer Grade I, 1 Senior Research Officer Grade II, 4 Research Officers.

Experimental Officers—2 Experimental Officers, 1 Assistant Experimental Officer.

Assistants (Scientific), etc.—7 Scientific Assistants, 13 Laboratory Attendants.

Farm Staff—8 Animal Attendants.

Veterinary Investigation Centres

Professional—1 S.V.I.O., 16 V.I.Os., 23 A.V.I.Os.

Experimental Officers—4 Experimental Officers, 1 Assistant Experimental Officer.

Assistants (Scientific) etc.—3 Senior Scientific Assistants, 39 Scientific Assistants, 20 (including 5 part-time) Laboratory Attendants.

Farm Staff—9 Animal Attendants.

5. Research in progress at Weybridge includes:—

- (i) *Diseases due to Bacteria*—tuberculosis (biochemical studies on tuberculin, avian infection in cattle), brucellosis (freeze drying of S. 19 vaccine, new tests for infection in milk) vibriosis (diagnostic tests, therapy in the female), Johne's disease (vaccination, and serological diagnosis and control), bovine mastitis (control, cow-shed hygiene and therapy), anthrax and Q-fever studies.
- (ii) *Diseases due to Viruses*—swine fever (new vaccines and better methods of diagnosis), fundamental studies on virus diseases of dogs (distemper and hard pad), new virus diseases of bovine and swine, myxomatosis in rabbits.
- (iii) *Diseases due to other Parasites*—studies concerned with parasitic gastritis, parasitic bronchitis and other diseases due to helminths, on sheep blowfly problems, on liver fluke in sheep and on coccidiosis in chickens and other species.
- (iv) *Diseases due to Deficiencies or Excesses or Physiological Upset*—trace element deficiencies and excesses, toxicological studies and sheep dips.
- (v) *Poultry Diseases*—fowl pest, pullorum disease (B.W.D.), and other salmonella infections and diseases of ducks.

6. The research at Lasswade covers work on tuberculosis, mastitis, brucellosis and infertility in cattle, but is mainly concentrated on poultry diseases, e.g. coccidiosis, fowl pest.

7. *The Veterinary Investigation Centres*.—There are 16 Veterinary Investigation Centres at:—

Aberystwyth	Newcastle-on-Tyne
Bangor	Penrith
Bristol	Ravenglass (Sub-Centre of Penrith)
Cambridge	Reading
Cardiff	Starcross
Chester	Tettenhall
Leeds	Weybridge
Liverpool	Wye
Loughborough	

The primary task of these centres is to assist in the diagnosis of disease of farm animals by means of laboratory examinations, but the veterinary staff spend a large part of their time in field investigation of local problems and special investigations in collaboration with the central laboratory at Weybridge. Important subjects of investigation at present are control of mastitis, vibriosis, infertility, Johne's disease and bracken poisoning in cattle, diseases caused by anaerobic bacteria, metabolic disorders in sheep, neonatal diseases in pigs, fowl typhoid, and parasitic infestation in all these species.

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8. The programme of research and experiments at the Laboratories and Centres at any given time is made up of

- (a) short *ad hoc* work to solve an important but limited problem which has arisen,
- (b) longer term studies often covering a period of years in order to find an effective method of diagnosing and controlling a particular disease, e.g. studies at present running on John's disease, or to discover the causes of serious losses of a particular kind, and
- (c) more fundamental studies necessitated by general lack of knowledge in a particular field.

The exact programme for each year depends therefore on existing commitments and the directions in which development has been shown likely to be profitable, and on the nature and urgency of new problems. These are presented through various channels of which the most important are:—the staff of the Veterinary Investigation Centres or provincial laboratories and the field staff of the Animal Health Division who are in constant touch with veterinary surgeons and farmers in their areas, representative bodies such as the British Veterinary Association, and National Farmers' Union, and finally by way of the Agricultural Research Council or Agricultural Improvement Council.

9. The Director of the Ministry's Laboratory and Investigation Service is a member of the A.R.C. Standing Committee on Research Affecting Animals and is a member or chairman of several of its sub-committees. Many other members of his staff are also members of various sub-committees. In addition to monthly meetings of the Senior Scientific and Professional staff, co-operation and direction of effort is provided by a conference of laboratory staff held each year. Annual reports are prepared for this conference by each Department and Centre. Invitations to the conferences are extended to the Secretary of the Agricultural Research Council, the Chief Scientific Adviser to the Ministry, the Director and Deputy Director of the Commonwealth Bureau of Animal Health and the Heads of other Veterinary Research Institutes and the Veterinary Colleges, as well as the Chief Veterinary Officer and his senior staff.

VIII. Artificial Insemination Research Centres

1. The Ministry has two cattle breeding centres which carry out research connected with the artificial insemination of cattle while providing a normal commercial service in the localities in which they are situated. The current programme includes work on diluters, methods for storing semen at low temperatures, methods of estimating the number of live sperms in semen samples, the effects of various collection procedures on the quality of the semen, investigations into the metabolism of bull spermatozoa and work on infertility in bovine females.

2. The general lines on which research was to be carried out by these centres were laid down by a Joint Standing Committee on Artificial Insemination (Research) set up by the Agricultural Improvement Council and the Central Advisory Committee on Artificial Insemination. The director of the Ministry's Veterinary Laboratory at Weybridge is responsible for supervising and co-ordinating the experimental work at the centres and acts as a link with the Agricultural Research Council through his membership of various committees.

3. The centres are at Reading and Ruthin. There are three sub-centres at Guildford, Banbury and Faringdon which are distribution points for semen collected at Reading but no bulls are kept at these sub-centres and no research is carried out at them.

Staff (other than Clerical and Typing)

- 2 Veterinary Investigation Officers.
- 3 Assistant V.I.Os.
- 1 Research Officer.
- 1 Temporary Technical Assistant.
- 2 Laboratory Attendants.
- 5 Senior Lay Inseminators.
- 29 Lay Inseminators.
- 5 Stockmen.

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4. Cost:

	1954-55	1953-54
	£	£
Subhead H.8 (b) (i) Capital	4,000	6,000
(ii) Maintenance	9,000	10,000
Subhead A.1 (Vote 1) Salaries and Wages (excluding salaries of Veterinary Investigation Officers and Assistant V.I.Os. included in Section VII (3) above)	20,000	17,500
Subhead A.3 (Vote 1) Travelling expenses of inseminators ...	18,000	18,500

Appropriations-in-Aid

Z.15 Fees for insemination services	54,000	47,000
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Chairman.

1565. Mr. Wilcox, perhaps you would introduce your people to us?—(Mr. Wilcox.) Yes. Perhaps I should say that when the Sub-Committee last heard evidence from the Ministry and others away back in February, Mr. A. R. Manktelow was the leading representative of the Ministry as principal finance officer. Mr. Manktelow since then has been promoted to Deputy Secretary, and I have succeeded him as principal finance officer but I come here this afternoon chiefly in my old capacity as the Under Secretary responsible, amongst other things, for the research, education and advisory services division. On my right I have Professor Rae, Director of the National Agricultural Advisory Service, and between us we shall be dealing with questions on the first five sections of our memorandum. On my left is Mr. Bartlett, responsible for the education and advisory services division. On my extreme left is Mr. Gardner, the Under Secretary responsible, amongst other things, for the infestation control division; and he will be primarily responsible for answering any questions on Section VI—Infestation Control Research. When the Sub-Committee come to ask questions on Sections VII and VIII it will be convenient then I think for Mr. Gardner to move back and for Mr. Quick to come into the front line, as he is in charge of the animal health division and will be primarily responsible for answering questions on those sections, although I myself know something about artificial insemination centres and their work. Finally, there is Mr. Sparks who is in charge of the finance division.

1566. We propose to start by going through your memorandum for which I should like to thank you, and I think we will go through it not so much by paragraphs but the main sections with Roman numeral headings, and then after that there may be some general questions we would like to ask about the general responsibility for agricultural research over the whole field?—Yes.

1567. Therefore, if we start with Section I—National Agricultural Advisory Service Experimental Centres, do I understand from this description of them that they are really in the nature of pilot experimental farms?—No, Sir, it is not what we understand by pilot farms. Perhaps it would make it clearer if I said what we understand by a pilot farm. It is a system which we in various parts of the country have developed through the National Agricultural Advisory Service. We understand a pilot farm to be a commercial farm run by an ordinary farmer who agrees to be guided by the advice of the National Agricultural Advisory Service. He is the recipient, if you like, of intensive advice, and we hope—in fact experience has so proved—it gives a practical demonstration of how to run a farm successfully. That has proved a very successful method in certain parts of the country including Wales. Experimental centres are nothing like that. I can go on to explain what they are.

1568. But they are places in which results of work done in research institutes and so on are, as it were, put to practical test?—Yes, but I think I should emphasise that they are put to practical test under controlled and experimental conditions. We are, if you like, essentially concerned in carrying out experiments here and not demonstrations.

1569. I notice that the capital expenditure on these centres is going up very considerably?—Yes.

1570. From £200,000 to £300,000?—Yes.

1571. What is the explanation of that?—Perhaps I can explain the history of these experimental centres. They are, I think, a new idea. They were started since the war. A plan was drawn up for establishing these centres in different parts of the country. The Ministry was then faced with the problem of acquiring, and, as necessary, equipping, suitable farms for this purpose. This was at a time when well equipped farms, with good equipment, had a very considerable scarcity value. If we

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had gone out to purchase fully equipped farms, we should have had to pay very large prices, rather scarcity prices, prices which it is unlikely the District Valuer of the Inland Revenue would have been prepared to sanction. It was part of the Ministry's policy not to use compulsory powers for the acquisition of those farms, and therefore it was a question of obtaining by agreement suitable farms at prices which would be endorsed by the District Valuer of the Inland Revenue. So really the only practical course proved to be to buy farms where most of them were in a pretty poor state and needing quite a considerable amount of spending on them in the way of farm cottages, farm buildings and the like to get them into good order. We believe that this in the long run will prove the most economical course for the Exchequer, but it will mean offsetting comparatively low initial expenditure in buying the farms by correspondingly higher expenditure over a period of years in getting them properly equipped.

Mr. Summers.

1572. I see that in paragraph two reference is made to seventeen farms, and again to nine farms. Would you say why that number was purchased? Why not five or forty?—It was the subject of considerable thought at the time. The aim was to have a chain of farms which between them would cover first of all the main soil types—chalk, heavy clay, loam and the like; also geographical distribution—altitude and the like. The aim was a reasonable number of farms which between them would be reasonably representative of the very wide variety of farming conditions you experience in this country. You will appreciate that a form of treatment, shall we say manurial treatment, which would be all right on good lowland might not be nearly so good on an upland farm. Therefore these seventeen farms were chosen, as I say, to cover, as far as could be done in a reasonable number, these main types of farming conditions.

1573. Would it be right to infer from that answer that any work which a research centre tries out under different conditions is always spread around the whole seventeen?—No, Sir. One has to be reasonable in these matters. It would depend essentially on the nature of the work. May I just take one example? One bit of work we are doing is a long term ley experiment, that is the effect of various treatment in ley farming. That has to be done to grass for a period of three years; then it is ploughed up, and its effect on the result of arable crops tried out. Mr. Rae, you can tell us this: first of all, how many of them carry out all

the experiments, and, second, when is an experiment carried out only by certain centres? (Professor Rae.) It depends on the kind of work or the particular experiment which is required. The farms are not all equipped with the same classes of livestock. For example, some have cattle; some have sheep; some have dairy stock; some have beef. If we take the other part of your question, the position as it applies to certain of the experiments, investigations into the residual value of phosphates are done by all of them. If it was one which could fit in or could apply to them all, yes; if it is one for which there are no facilities for that particular work, then, of course, no.

1574. Would you say that the tasks assigned to these farms entail a material increase in the labour force to do them?—Yes, particularly on livestock experiments; on land experiments, yes, but to a lesser extent. (Mr. Wilcox.) You will appreciate one of the difficulties is that so much of the work has to be done in what I might call penny packets, that is to say comparatively small plots. Whereas the ordinary commercial farmer would have a field which he would crop in one way, on our long term ley experiments the field will be divided up into say a dozen plots, each of which has to be separately harvested so that the results can be compared.

1575. These farms on the whole lose money, I understand?—(Professor Rae.) Any experimental station is bound to lose money; if it does not, I do not think it is doing its job.

1576. I am speaking of what are called the seventeen farms, not the horticultural stations?—There are only nine farms, actually.

Chairman.] These are the experimental farms.

Mr. Summers.

1577. Seventeen planned, nine working?—There are nine in operation.

1578. I am not quite sure that from the table given I can get at the amount of money lost in the operation of these farms?—Many of these have not been going long enough. All of them started from scratch. The easiest example is the establishment of a dairy herd. Two or three farms are fairly large, and so they will carry quite large dairy herds. It will be some time before any of them are producing anything like their full income. As regards the second point of your question, I think it can be taken that in so far as ordinary farming production was concerned, if you had no other limitations to

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them, they would show a profit; but if you add to them the cost of the experimental work—

Mr. Blackburn.

1579. Is there not some confusion here? You are talking of them as farms, instead of experimental farms?—Yes.

Mr. Summers.

1580. Do all the figures in the table on the front page relate solely to the nine farms, or to other things as well?—(Mr. Wilcox.) The nine experimental farms, plus the horticultural centres which correspond to the farms but which are engaged on horticultural crops. These figures relate solely to the farm centres plus the horticultural centres, and therefore I suppose you can say that they afford a rough measure of the current losses. For example, in the current year we estimate the revenue from sales produce at £298,000 as against a current expenditure of £280,000, plus the salaries of the industrial staff, farm labourers and the like, £161,500.

Chairman.

1581. Plus the cost of the technical staff?—Together with the cost of the technical staff, and there is also the capital expenditure.

Captain Waterhouse.

1582. Is it your intention ever to go up to your seventeen farms, or are you now content with your nine?—You will appreciate that in the modern climate of finance, with this as with many other desirable activities, one has to go slower than one might otherwise wish. At the moment we have got nine farms. I think I can say it is still the ultimate plan to build up to something like seventeen, but when we shall get there I would not like to say.

1583. You speak of doing useful research work on various kinds of fertilisers. A great deal of that work is done by I.C.I. and by Fison's. Are you in touch with them? Do you utilise their experiments?—Yes. I think Mr. Rae is in a better position than I am to answer that in detail, but we certainly are in very close touch with I.C.I. and the work they are doing, and with Fison's.

1584. What are you doing that they are not?—(Professor Rae.) I can give you one example which I have referred to already. We are doing on all of these farms and all these stations an investigation into the residual value of phosphates and potash, to which at the moment I do not think anyone knows the answer. It has not even been done fully by research stations, and certainly it is unlikely to be done by com-

mercial firms unless they have facilities to lay down long term plots on farms of their own. That is work which will not produce the answer for ten, twelve or whatever number of years it may be. In trials with new fertilisers or the placement of fertilisers they may find something with which we can co-operate, or, on the other hand, we may find something on which we invite their co-operation. There is quite close contact.

Mr. Blackburn.

1585. Do you think the success of these nine farms is such as to justify you extending to the seventeen which were originally planned?—I think so, if we could get them with the same characters. The seventeen were based on approximately the main geophysical characters of this country. We have quite a number of gaps—certain areas of land, climatic and soil—which are not covered. They are still very young, but the common consensus of view, as far as I know, is that these are doing very good work. You will find in a later part of the memorandum that last year we had something in the order of 6,000 farmers over them. Furthermore, they do provide, and will provide in an increasing extent, further information and answers to some of the questions to which today we do not know the answers, and which we in the ordinary run of the advisory service, in our direct contact with the farms, will be able to feed over. In other words, they will be feeders to the ordinary advisory officer.

Mr. Summers.

1586. How long have the farms been going since they were taken over?—The oldest of them cannot be more than about 1946 or something like that. One horticultural station is only in its second year. Some of the farms are only in their third year.

1587. They run from three to eight years?—That is so. (Mr. Wilcox.) And in their initial years practically nothing in the way of experiments would be done. The actual experimental work in the oldest would not have been going for more than five years.

1588. The purpose of my question was this. When do you foresee from your experience so far that they will have reached that standard of financial economy which may be regarded as having reached the plateau? They are climbing up towards the plateau because you say they have been going from three to eight years. How soon do you expect they will reach maturity from the financial angle?—(Professor Rae.) It is rather difficult to say, unless I take each farm. If I take the oldest of them—

1589. Has no examination been made as yet into when a farm which has been running two or three years is likely to reach

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the maturity of financial economy?—It depends exactly what you mean by “maturity”. Most of these farms will have to be built up in inherent fertility. That will not be achieved on any farm within two or three years. In other words, the potential output of all these farms will rise, or I expect it to rise, over quite a period of years. As that does increase then the stock will also increase, but I should have to take them one by one; I should find it very difficult to guess.

1590. Do you foresee a time when any of them will make both ends meet?—You are asking me a question with which I have been concerned all my life. My retort to that would be this. If an experimental station in this sense is able to make both ends meet, then my vote would be to close it down because it is not doing its work.

1591. You do not believe that the burden will ever be carried. In other words, the burden of research will, in your judgment, always entail a financial loss in the operation?—It is bound to, because of the staff which you require. You require a technical staff over and above the farm staff, and so forth. That would be my view.

Chairman.] Can we get on to the next section, if you have finished?

Mr. Summers.] This is public expenditure. Yes, I have finished.

Chairman.

1592. Section III—National Agricultural Advisory Service Provincial Laboratories. I may be very ignorant, but I have never heard of a province as a unit of local government in this country?—(Mr. Wilcox.) It is a unit peculiar to the Ministry of Agriculture. They correspond broadly to the standard regions (which perhaps is a term more familiar to you) of other Departments.

1593. Not entirely?—But not entirely. There is a historical reason for that. It grew up from the pre-war system, where you had the provinces for advisory work centred on university departments and agricultural colleges. In the post-war set up, with the establishment of the National Agricultural Advisory Service, there was this provincial organisation. I think I can say that the deviations from the standard regions are small. For example, the North Riding of Yorkshire comes in with the rest of Yorkshire and Lancashire instead of being in the northern province with Durham; but there are only about four counties where there is a difference.

Chairman.] I see there is no figure for the staff salaries.

Mr. Summers.

1594. I thought you meant had I finished my questions on paragraph two of Section I. I have one other question on that section. Who determines the nature of the tests which will be carried out on these farms?—In the main the experimental husbandry committee and the experimental horticultural committee respectively of the Agricultural Improvement Council. The Agricultural Improvement Council is a body appointed by the Ministry, under the chairmanship of the permanent secretary. It contains practical farmers, representatives of the workers and representatives from the various universities and research centres, and is a body to which the Ministry looks for advice on questions—

Chairman.] I think we did have evidence on this before.

Mr. Summers.

1595. Does the Improvement Council give out the particular tasks to be done by the farms?—In practice it is done by the two committees of the Council, the experimental husbandry committee and the experimental horticultural committee, who consider and determine each year the programme of work to be done at each of the centres. I think that is right, Mr. Rae. (Professor Rae.) Yes.

Chairman.

1596. To revert to Section II, I was asking about the cost of the salaries of the scientific and technical staff which are not given?—(Mr. Wilcox.) I have no doubt, if you wish, they could be obtained. I think I ought to explain that the investigations undertaken by the provincial laboratories only form a part of the total work done there. The primary work the laboratories are doing is soil analyses and all sorts of tests for the workers in the National Agricultural Advisory Service in that province.

1597. It is routine analysis?—It is routine analysis.

1598. Is the staff qualified to do research as well as routine analysis?—Yes. (Professor Rae.) Definitely. The requirement of these science specialists, as we call them, the soil chemists and the nutrition chemists, are exactly the same. They are people who would be recruited either by us or by a research institute, but they are people with a preference for being out in the field, in contact with the farmer, rather than confined exclusively to laboratories.

1599. Section III—Provincial and County Experimental Work. Is it really possible to separate this estimate from the previous one, that is the work which is done as

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experimental work and work which is done as routine analysis?—(Mr. Wilcox.) I think that, from the point of view of control of the expenditure, it is convenient. I think I should explain that this work in Section III is for the most part done on commercial farms which are willing to co-operate. They are I need hardly say farmers—we call them “A” farmers—who are keen to see the results of research applied to agriculture. The local officer of the National Agricultural Advisory Service will get their co-operation in agreeing to the laying down on one particular field of a number of experimental plots and the like. Work of this nature is, I think, different from the work done at the provincial centres, which is for the most part work done, as I say, either in the laboratories or by the N.A.A.S. staff situated at provincial headquarters.

1600. On what is this amount of £23,000 spent exactly?—For the greater part I think it is reimbursing the farmers for the extra expenses they incur in having these experiments laid down on their land. I think I should say that in fact these farmers generally do not claim, on the whole, nearly as much as they really would be entitled to claim. I understand, for example, that in 1953-54, although we made provision for £23,000, the actual expenditure was some £11,000.

1601. These are experiments arising out of local problems?—Yes.

1602. Surely the experimental centres with their experimental farms could also throw light to some extent on the local problems?—(Professor Rae.) So far as the farms and the horticultural stations are concerned, in the main they are either on long term experiments which are going to require a number of years to complete, or on livestock which would require facilities which would so interfere with the ordinary farmer's own that he could not contemplate taking them on. Most of the headings we are considering are almost entirely, not exclusively, on the crops side rather than on the animal side, and most of them only last one or two years. (Mr. Wilcox.) One could say this work under Section III does prevent the experimental husbandry farm from getting hopelessly overloaded. I think there is value in this being done locally by local people. As has been said, an increasing number of farmers are visiting the experimental husbandry farms but there is still a greater number who, although not prepared to journey into another county, will come along and see work done locally.

1603. By local colleagues?—By local colleagues.

1604. I notice that in Vote H.10 there is another small subhead which you have not mentioned, and which I should have thought came under this heading. That is technical development work. That is Sub-head H.10 (d). I do not believe that is in this memorandum?—(Mr. Bartlett.) That is not research. It represents the activities of the National Agricultural Advisory Service in various forms of public and group activity, demonstrations, farm walks and all that sort of thing.

1605. That is really instructional?—Yes.

Captain Waterhouse.

1606. Are the activities in the provincial centres confined to those set out in sections two and three of this memorandum?—(Professor Rae.) I am not quite clear.

1607. In the East Midland Province it is at Shardlow. That is Shardlow Hall, is it not, which looks like a big country club? What goes on there besides laboratory work?—It is the headquarters of our provincial centre which is headed by the provincial director and his deputy. Then it provides laboratories for the various people who are considered under this heading—chemists, bacteriologists and so on. It is also the headquarters for other officers concerned with husbandry, crops, livestock and so on.

1608. It is by no means confined to those two?—No.

Chairman.

1609. Section IV—Special Investigations and Research. I see that this is mostly grants to universities, colleges and so on. Surely the Agricultural Research Council also makes grants to universities and so on. It seems a little peculiar to the Sub-Committee that this should be done by two separate bodies. Perhaps you can explain that?—(Mr. Wilcox.) Yes, Sir. I think one could say, quite frankly, that some of the work might equally be aided by the Agricultural Research Council. I should not claim there was any sort of very rigid line of demarcation between the two. It depends, I think, a lot on the nature of the work, and whether it is fundamental research or more a sort of applied research. For example, one small item aided by grant from us is the so-called atomiser sprayer for the spraying of fruit trees, carried out at Long Ashton. That is a work of very direct practical application, the design of the best type of sprayer for the commercial horticulturist, to enable him to apply his sprays to his fruit trees with the minimum of labour and expense. That is a matter in which certain members of the Agricultural Improvement Council have taken a very great interest. I may say in passing that—

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1610. Long Ashton is an Agricultural Research Council institute, is it not?—It is grant aided by the Ministry of Agriculture, but the general programme of work is controlled by the Agricultural Research Council in the way described by representatives of the Department when they gave evidence in February. I should perhaps mention that the Agricultural Research Council are represented on the Agricultural Improvement Council. Sir William Slater, Secretary of the Agricultural Research Council, is a member of the Agricultural Improvement Council, and so in that way we have this tie-up. He is fully aware of this experimental work at the Long Ashton institute, so that it does not overlap with any activities directly controlled by the Agricultural Research Council.

Mr. Blackburn.

1611. It is surely three sources from which they receive money from public funds, not two, because surely they also get something from the Universities Grants Committee?—Although Long Ashton is a department of the University of Bristol, their accounts are kept quite separately from the University.

Chairman.

1612. We were not discussing Long Ashton; we were discussing grants to universities, colleges and so on?—I was just taking Long Ashton as an example.

Chairman.] That is not quite the best example because grants are made to individual research workers; they are not for universities and colleges. As Mr. Blackburn says, the universities and colleges are already supported by the University Grants Committee. Perhaps at the end we might deal with the question of co-ordination.

Captain Waterhouse.

1613. One of the things mentioned was spraying as the particular work of this particular section. At the first place we visited, Silsoe, Mr. Chairman, do you remember, they too imagined they were specialising on that? I remember asking them whether there was not a good deal of overlapping, and they assured me there was not, that they were the principal counters of spots in the whole country. Is that your point?—The National Institute of Agricultural Engineering are fully aware of what is going on at Long Ashton, and this aspect of the work is not covered by anything which is being done at Silsoe.

1614. I am asking because the impression is forming in my mind that there is a great deal of overlapping. I am seeking guidance

about it?—We are conscious of this risk of overlap. I think it is a risk whatever system of control is used, when you have this very large number of different institutions, research stations, experimental centres and the like. We do endeavour by interlocking committees and so on, and consultation, to ensure that there is in fact not an overlap. (Mr. Bartlett.) It is the direct responsibility of the Agricultural Research Council to approve the work programmes of the different institutes, to try to eliminate any kind of—

Chairman.

1615. We are not talking about institutes; we are talking of grants made by the Ministry to universities?—I was trying to answer the question about the possible overlap between—

1616. Captain Waterhouse was referring to Long Ashton. That is an institute, yes, I see the point. That does not necessarily apply to grants made by the Department to universities, does it?—(Mr. Wilcox.) Again I think the Agricultural Research Council would be consulted on any grant we make to an university which would impinge on them. I see we are making a grant to the University of Oxford for an experiment in deep ploughing, but perhaps that is not a good example because the Agricultural Research Council does not make a grant there, I think. (Mr. Bartlett.) It does, for other purposes.

Mr. Hobson.

1617. Are these grants made to universities irrespective of what they are doing, provided it is for agriculture?—(Mr. Wilcox.) The universities do get grants from the University Grants Committee for their general work, but these are what one might call earmarked grants for a particular piece of work which is over and above their general activities.

1618. In other words, that being so, to put it in the negative form, you would be able not to make a grant to a university which was contemplating carrying out research you yourselves were doing?—Yes. (Professor Rae.) It is *ad hoc* for a piece of specific work, such as those which are enumerated here.

Chairman.

1619. We propose to deal with this question of co-ordination afterwards. Section V—Plant Pathology Laboratory, Harpenden. First of all, is this a research service or an information service?—(Mr. Wilcox.) It is not an information service, except, incidentally, it publishes the publication called "Plant Pathology"; and it is not primarily a research service. Perhaps I could add that its main function is providing the

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necessary technical background to enable the Ministry to discharge its responsibilities under the Destruction of Pests Act and also, more generally, for the control of insects and pests of economic importance in agriculture.

1620. Is the research work for that not being done in any other body?—Yes. There is, for example, at Rothamsted a lot of fundamental work on the habits of aphids, plant physiology and the like.

1621. Is it necessary to have a laboratory for what is really an advisory service to the Minister, an organisation for preparing technical reports and so on?—I think perhaps the term “laboratory” is a misnomer. The laboratory work in fact is only, I think I am right in saying, a small portion of the work done at this institution at Harpenden. (Mr. Bartlett.) There must be a laboratory provided for their chemical work and their work in identification, just as the provincial laboratories of the National Agricultural Advisory Service have to have facilities.

Mr. Hobson.

1622. Surely, as far as mammal pests are concerned, part of this duty is the responsibility of local authorities, is it not?—(Mr. Wilcox.) No. This is only concerned with insects, viruses and the like which affect plants.

Chairman.

1623. Why is the estimate up this year?—(Mr. Bartlett.) Because of the general expansion of the work.

1624. Which field of work is expanding?—I think it is true to say the whole of the work on the chemical, entomological and plant pathological sides is expanding. The increasingly high standards which are being applied by different countries to the international trade in plants are a factor which has thrown more work on the laboratory. A convention has been entered into governing the trade in plants which requires the participating countries to raise their standards of scrutiny. (Mr. Wilcox.) Another item is that mentioned, for example, at the bottom of page seven, the work arising from the various reports of Professor Zuckerman’s Working Party on Toxic Chemicals, and more particularly those investigations as to the possible effects on human health from any residual traces of these poisonous insecticides which are used.

Mr. Blackburn.

1625. Is this new publication “Plant Pathology” paying for itself?—(Mr. Bartlett.) I am afraid I cannot answer that. (Mr. Wilcox.) We will make enquiries.*

* Information supplied; not printed.

Captain Waterhouse.

1626. In the Index of Agricultural Research 1953-54,† copies of which have been handed to Members of the Sub-Committee for their information, on pages 38, 39, 40 and 41 there are long lists of the various research stations dealing with various forms of pathology, insecticides, fungicides and the like. Can you really be at all sure that there is not a tremendous amount of overlapping between East Malling, Glasshouse, Long Ashton, Leeds University and all the other places which are enumerated?—We hope there is no appreciable overlapping. I think the prevention of overlap is primarily the duty of the Agricultural Research Council’s standing committee on research affecting plants and soils, of which the Director of the Plant Pathological Laboratory, Mr. Moore, is a member, as is mentioned. (Mr. Bartlett.) And I would say that each of these institutes does submit a detailed programme to the appropriate standing committee of the Agricultural Research Council, showing what each worker is going to do in the coming year.

1627. If competition arises and two people want to do the same thing, is one of them told, “No, do not do that because other people are doing it”?—(Mr. Wilcox.) Yes, it is the function of the Council—

1628. I am sure it is, but is it done?—(Mr. Bartlett.) From my own observation I have seen it done, because I do sit as an assessor on the standing committees. The Council tries to see that a man whose work seems to be overlapping another’s is steered off on to something equally useful but not cutting across the latter’s.

Chairman.

1629. Now we come to Section VI?—(Mr. Wilcox.) Yes.

1630. I take it that this infestation control research is really research incidental to operation and training?—Yes, Sir.

Mr. Hobson.

1631. There is no penal clause on local authorities for failing to carry out their duties under the Prevention of Damage by Pests Act, 1949. Have you any reports on how it is working?—(Mr. Gardner.) I think it is working fairly well. We get returns from the local authorities regularly. I think the Estimate shows that our grants towards their expenditure is £450,000.

Mr. Hobson.] Before you make a grant, are you sure the local authorities are actually carrying out this work because there is nothing obligatory on them to do it? In point of fact, quite a number of local authorities are not doing it.

† Published by H.M.S.O.

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Chairman.] Is this relevant?

Mr. Hobson.] I think it is quite relevant. Just let me put my question in my own way.

Chairman.] I do not think it is relevant to our inquiry.

Mr. Hobson.] There is a grant being made.

Chairman.] That grant is not the subject of this inquiry.

Mr. Hobson.] It is on paragraph two. I would like to know why it is not relevant.

Chairman.] This is infestation control research, not grants to local authorities. We are not investigating grants to local authorities.

Mr. Hobson.] But we are investigating the actual research of this division, and it is the duty of local authorities to act in accordance with the advice of this division of the Ministry.

Chairman.

1632. I do not know if Mr. Gardner can answer that?—I think the answer is that we are satisfied generally. We have many contacts with them; the local authorities are exercising these functions; and the rat population, if you are thinking of that, in the countryside has probably come down to a lower level than it has reached at any time in modern history. We have got powers under Section 12 of the Prevention of Damage by Pests Act, 1949, which do enable the Minister to give general directions to local authorities, and in the last resort to appoint someone to exercise their functions, but we have not in any case thought it necessary to exercise those powers. We have a fairly strong inspectorate all round the country, which is referred to in paragraph three of this memorandum. They are in regular contact with local authorities regarding this work.

1633. What proportion of this Vote is actual research?—A very small proportion. Do you mean this particular Vote of £12,000?

1634. Yes?—That is for research work.

1635. That is only research work?—Yes.

Captain Waterhouse.

1636. I cannot forbear asking this on paragraph 5 (a). What really happens with studies of the behaviour of both the ship and brown rat? What do you mean by their "behaviour"?—I think the main object of these investigations is to discover what the habits of the animals are so that you can lay bait where they are likely to take it. It is connected with getting efficient

operation of this control service. There are certain laboratories in the Ministry's Infestation Control Division at Tolworth where these animals are, as far as possible, studied—so far as you can get them in their natural surroundings. We also have arrangements with some local authorities to make practical studies in sewers.

1637. Are you maintaining that these are of practical value in their extermination?—Definitely so. It does help to find out where the creatures are likely to live, where they are likely to go, and whether they are likely to respond to the laying of bait in particular places.

Mr. Hobson.

1638. To what extent is their research into the destruction of the rat bacteriologically?—There is no bacteriological research. As you know, there are certain companies which do use bacteriological preparations, but our main research into different types of poison has been into anti-coagulants, and particularly a certain anti-coagulant which has to some degree developed out of the research we have been doing.

1639. What is the objection to using bacteriological methods for the destruction of the rat in view of the fact that many carcasses are innocuous after death?—There are certain medical views against the use of bacteriological poisons. The Government has not at this moment decided that any action should be taken to prevent their use, but it certainly would not at the present time wish to foster their use. I think that in some continental countries the use of bacteriological rodenticides is in fact banned. Professor Zuckerman's Working Party gave a lot of thought to this problem, and it has made a recommendation that the Department should consider whether, in view of the possible risk to human beings, the use of these rodenticides should be banned. It has recommended certain restrictions on their use in food kitchens and places like that so as to avoid any risk.

Mr. Summers.

1640. Has the work on the rat and the squirrel been going on at about this scale ever since the war?—Just about. There was little work being done before the war. During the war the research was undertaken by the Bureau of Animal Population, but when they went nobody was available to do it. After the war it came over first to the Ministry of Food and then to the Ministry of Agriculture. This is about the scale at which it has been going. The extension of this research work in the past year or two has been more on the side of other animals—rabbits, birds and so on.

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Mr. MacColl.

1641. What is ecology?—I always have to look up a dictionary myself. I think the study of an animal in its natural environment is the definition given. (Mr. Wilcox.) The effect of environment on an animal.

Mr. Blackburn.

1642. How can it be natural environment in relation to stored grain? Is stored grain its normal environment?—For certain insects, undoubtedly. If there was no stored grain, there would be no insects.

Chairman.

1643. The fundamental research work in this is not done under your auspices at all, but by D.S.I.R.?—(Mr. Gardner.) There are two sides to this. There is an insect side where that is so. The fundamental work is done at the Slough D.S.I.R. station; a number of operational research jobs are done by our own people who are responsible for control. But then there is the mammal and bird side—rats where the control tasks are given mainly to local authority personnel; rabbits and birds; and in so far as fundamental work is being done on rats, rabbits and birds, that is being done at Tolworth.

1644. Is the pest infestation laboratory of D.S.I.R. to be considered mainly for agriculture?—That is right, they are dealing with stored grain.

1645. It is another form of Government support of research into this type of problem?—Yes.

1646. It does not come on any of the Votes we are now discussing?—Yes, that is so.

Mr. Blackburn.

1647. What do you mean by "fundamental behaviour" as distinct from ordinary behaviour?—Which paragraph is this—5 (b)?

Mr. Blackburn.] "Fundamental behaviour".

Mr. Hobson.

1648. Natural behaviour would probably be a more correct description?—It is a scientist's description. I imagine it is fundamental behaviour rather than just what I might say, watching the rat through a glass cage, "What a jolly little chap he is". I am not sure if that really is—

Chairman.

1649. Can Professor Rae help us?—(Professor Rae.) It is a misuse of the word.

* Paragraph VII of Memorandum 6 has now been corrected.

I think "fundamental" is used much too often. I think it really is its habits, how it behaves, what it does, and this and that.

1650. Section VIII — The Veterinary Laboratory and Investigation Services of the Animal Health Division. There is one point of detail about the figures. The figure you give us here for the total capital plus maintenance estimate for the year is £105,000, but the figure I notice in Class VIII, 3, Subhead H.8 (a), on page 48 of the Estimates for 1954-55, is £108,010. I just wondered if the difference was Ministry of Works' services?—(Mr. Sparks.) No, Sir. This figure is in error because it excludes the experiments in connection with fluorine at Fenton Manor Farm, which is at Stoke-on-Trent.

1651. That is part of the research on animal pathology?—Yes, it should have been included.

1652. Would you let us have the correct figure, together with a note about the work which is being done there?—(Mr. Wilcox.) Yes.†

Mr. Hobson.

1653. Is that sodium chloride?—It is work really on the effects on animals of atmospheric contamination, more particularly from fluorine compounds, which is a problem in certain areas. The Rotherham area of Yorkshire is one, and this area of Stoke-on-Trent another.

Chairman.

1654. Why is this laboratory under the direct control of the Department instead of being either an independent grant aided research institute or a research institute supported by the Agricultural Research Council?—(Mr. Quick.) The chief veterinary officer has a responsibility here, but I will take first the official attitude. Expressing the Division's point of view, we believe that by having research under the same general direction we can more effectively direct it and control it, and also it is a more direct link with the chief veterinary officer's field staff.

1655. We will come back to that in a moment because I have some questions to ask about these relations. I would like to ask about a point of detail, but I am not sure that you have not answered it. Cannot the work of diagnosis and control of disease, which is part of this work, be separated from research work? I can understand that a man wants to be responsible for the diagnosis and control of disease, but is it necessary to have that associated with an organisation which is

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doing research of this nature, in a way fundamental research I think?—I would not care to say it is absolutely necessary, but it is most convenient which is rather different.

1656. Why is it convenient?—Because of this direct connecting link between research, the chief veterinary officer, the field staff and diagnosis.

1657. I agree there are far less animal research organisations than there are plant and other research organisations in agriculture, but there are increasing numbers of animal research organisations. In fact some are being built up at the present time outside the Ministry?—Yes.

1658. Are these veterinary investigation centres situated at the same place as the N.A.A.S. laboratories? Although I realise there are more of them, are they under one control or are they quite separate?—They are a mixed bag. In some cases, they are housed in the same place although the control is separate.

1659. The N.A.A.S. laboratories and the veterinary investigation centres are quite separate and quite separately controlled?—Yes. Occasionally they are housed in the same set of buildings.

1660. That is just for convenience?—That is just for convenience.

1661. I suppose there is no overlap. They are quite separate jobs, are they?—Entirely separate.

1662. There is no connection between the veterinary investigation centres and the work done by the N.A.A.S. laboratories?—(Professor *Rae*.) Where the laboratories are close together it may be that the veterinary investigation officer will want some chemical analysis done for which he is not necessarily geared. Then I am quite certain he would pass that over to be done by the N.A.A.S. chemists' department. In other words, I think there is quite close co-operation in their work in so far as they need helping that way, although the work in the field is quite separate.

Captain Waterhouse.

1663. One of the activities specified in paragraph 2 (c) is contagious abortion vaccine. We are told in one of these interesting books that the station at Compton was set up primarily to investigate contagious abortion, and to know how to deal with it. Is that not a fairly clear case of overlapping? Compton are dealing with contagious abortion and certain other diseases, and yet you have mentioned the very same thing here; you have picked it out?—(Mr. *Wilcox*.) We have made a reference to the

preparation of vaccine at Weybridge. I do not know how much actual research on contagious abortion is done at Weybridge. My impression, subject to anything my colleagues may say, is that Weybridge is preparing this vaccine, but the research work on contagious abortion must be centred on Compton.

Chairman.

1664. Is the Agricultural Research Council advised by the Ministry about the work which is done at Weybridge?—No, although I think I should say that they are aware of what is going on at Weybridge. For example, our present chief veterinary officer, Mr. Ritchie, is now a member of the Agricultural Research Council; and Dr. Stapleforth, director of the veterinary laboratory, is a member of the Agricultural Research Council's standing committee on research affecting animals. The director and members of his staff are members of various other A.R.C. committees, and although the Agricultural Research Council has no formal control over what is done at Weybridge, if they thought that anything being done at Weybridge overlapped what was being done at Compton, they would I am certain not hesitate to bring it to the notice of the Ministry and would expect the Ministry to co-operate with them, the Agricultural Research Council, in preventing any overlapping.

1665. Your first answer was "No". That seems to be the right one because, as I understand it, the Agricultural Research Council do not in fact have control over the independent grant aided institutes but, as we have been informed, they do have powers to advise the Minister and therefore exercise some control over those institutes in regard to the research work which is done, as equally they have on what is done in their own institutes. Your answer to Captain Waterhouse on whether they had similar powers in this case was "No," but through a complicated system of cross-committee representation you hoped that the Minister might get to hear of the work which was being duplicated?—I am sure he would if there was duplication.

1666. It is not the same as it is in the case of an independent grant aided institute?—No.

Mr. Blackburn.

1667. Why is there this deduction in the receipts from the disposal of produce, at the top of page twelve, from £11,000 to £6,500? I know they are estimated, but why estimate such a reduction?—(Mr. *Sparks*.) The receipts are very miscellaneous, and it depends considerably on the nature of the research whether there is a large quantity of eggs and the like available for sale.

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1668. How do you know that in 1954-55 you are going to receive so much less? According to the actual figures for 1953-54 it was £11,780; now it is going to be about half that. How do you know beforehand that you are going to receive so much less?—Because the laboratory know the nature of the research work they will be doing, and the number of carcasses and so on there will be for disposal, roughly.

Mr. Blackburn.] Could we have figures for the earlier years to see how they compare?

Chairman.

1669. Could we have the figures for the last few years?—Yes.*

1670. Section VIII—Artificial Insemination Research Centres. Could we just turn to the general question of control? I am sorry Members of the Sub-Committee will not have this, but I have obtained from another Sub-Committee a copy of the organisation chart of the Department.* I have tried to find where research comes in this, and I do not find it at all which is rather surprising?—(Mr. Wilcox.) I think that arises from the fact that we generally call the division the Education and Advisory Services Division, but its full title should be Research, Education and Advisory Services Division.

1671. That might be perfectly all right if it was not that the plant pathology laboratory is responsible through Mr. Bartlett, is it not, and through you to Sir Reginald Franklin, one of the deputy secretaries, whereas the veterinary laboratory is responsible through Mr. Quick, and then through Mr. Tame, is it not, to Sir George Dunnett who is another deputy secretary, so that right at the very top, under the permanent secretary, I find that the two directly responsible research laboratories are in completely separate departments. Is there any explanation for that?—In allocating the work of the Ministry's different divisions between different under secretaries and between the two deputy secretaries it is impossible to get a completely logical system. I would agree that, purely from the point of view of research, there would be a lot to be said for having the Animal Health Division and the Education and Advisory Services Division under the same deputy secretary and possibly, if it could be managed, under the same under-secretary; but if you did that then there would have to be other consequential changes, to even out the load of work on different individuals, which might as a whole be less convenient than the present distribution of work.

1672. May I just interrupt again? I notice another point. Whereas the plant

pathology laboratory, in this little chain called the line of attachment, passes through the chief scientific and agricultural adviser, the veterinary laboratory does not. Does that mean the chief scientific and agricultural adviser is responsible for advising the Minister on plant pathology research but not on veterinary research?—(Mr. Quick.) I suppose that would be broadly correct. (Mr. Wilcox.) Yes, although I think the chief scientific and agricultural adviser, if something arose, would not feel inhibited, if he felt the same kind of problem in veterinary research would arise too, from advising the Minister what action he ought to take. (Mr. Quick.) In practice the chief veterinary officer would have such contact with the chief scientific and agricultural adviser as seemed necessary, but strictly speaking the chief scientific and agricultural adviser does not cover veterinary matters.

1673. Although it is research work?—Yes.

1674. Who is responsible for advising the Minister on grants in aid (i) to independent research institutes and (ii) to the Agricultural Research Council which is the responsibility of the Lord President?—(Mr. Wilcox.) The Council is the responsibility of the Lord President. Perhaps, more correctly it is the responsibility of the Committee of the Privy Council for Agricultural Research and Nature Conservation, of which the Minister of Agriculture is a member but the Lord President is the chairman and, if you like, the operative Minister.

1675. Who is responsible for advising the Minister on grants in aid to the independent research institutes?—The chain would be through Mr. Bartlett, myself in my old capacity, and then through Sir Reginald Franklin, as he then was, up to the Permanent Secretary.

1676. That is done on the advice of the Agricultural Research Council?—(Mr. Bartlett.) As regards scientific matters.

1677. Is there any real reason why the independent institutes should not be put under the same "hat" as the other institutes, and all be under the Agricultural Research Council?—(Mr. Wilcox.) That is one question which was mentioned at the previous meeting. It is part of a general complex of questions which is under consideration by Ministers.

1678. That rather rules us out to some extent, I suppose. I think the matter which really worries the Sub-Committee is that, if you take the Lord President's responsibility, obviously the Lord President does not know anything about agriculture. The final control of the grant rests presumably with the Treasury; I think that is pretty clear. You

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are most interested in agricultural research. Is there any way by which these various sums are all brought together and all the work brought together so that, as it were, a common plan is put to the Treasury, or do you leave it to the Treasury to look at each of them separately and to deal with them in that way? Is there no common oversight of the whole of agricultural research? Do you in the Department know the total amount of money which is being paid for agricultural research this year?—We can get it through the Estimates.

1679. I know, but have you so far got it together and put it down on a piece of paper?—(Mr. Bartlett.) We do not do a regular sum.

1680. We shall do it for you?—(Mr. Wilcox.) On this question I think you can say this. It is the responsibility of the Ministry to put before the Treasury each year proposals for what the Ministry proposes to spend by way of grants to institutes. We in doing that are in close touch with the Agricultural Research Council who are aware of what we are proposing, and who do in fact make representations that we are not asking enough for this, that and the other possibly. The Agricultural Research Council would know what is being put in on behalf of the Ministry, and also of course by the Department of Agriculture for Scotland who grant aid various research institutes in Scotland, and take those into account presumably when they are going direct to the Treasury for their grant in regard to the institutes controlled directly by them.

1681. A good deal of the expenditure at the present time is capital expenditure. I do not believe anyone has a quinquennial grant although the Agricultural Research Council is allowed to carry forward, but in fact once you have started something you have got to finish it or it is wasteful. Has the Ministry any idea of the total amount to which Parliament is virtually committed for capital expenditure on agricultural research?—We are drawing towards the end of the programme which was drawn up after the war. We could put in a note on what is involved in the present programme in regard to virtual commitments.

1682. That would cover both your own, the independent institutes and those of the Agricultural Research Council?—We should not know about those of the Agricultural Research Council. We can tell you the position in regard to the Ministry. There is also the Department of Agriculture for Scotland, but as regards their institutes you would have to go to them for information.

1683. You would not know about the Agricultural Research Council but they would know about yours?—(Mr. Bartlett.)

We know about their capital programme from their papers, but we are not consulted about it.

1684. Are you not, but the Treasury is?—The Treasury is, certainly.

Captain Waterhouse.

1685. Opposite page six of this brochure headed "The Agricultural Research Service" you give an extremely interesting pedigree chart of all your ramifications, from which it appears that you have got, as we have just been discussing, two stations under your direct control, and fourteen which you share with the Agricultural Research Council. The Agricultural Research Council have got fourteen under their direct control, and they share seven with the Department of Agriculture for Scotland. The Department of Agriculture for Scotland have got one under their direct control. That makes a total of thirty-eight stations. I am just putting in a different way the question the Chairman has asked. What controlling eye, what co-ordinating eye, is there reviewing this vast and varied field?—(Mr. Wilcox.) You can say ultimately the Treasury, as the Treasury reviews—

1686. The Treasury are not supposed to know a horse from a goat; they know nothing about agriculture; they certainly do not weigh them comparatively?—The Agricultural Research Council controls the programme of work at all the research institutes apart from veterinary laboratory and the plant pathology laboratory, and in fact knows what is going on at those two institutes. There is this link I have mentioned through the directors of those institutes being members of the appropriate committees of the A.R.C., and I imagine that there is a similar link with the Seed Testing and Plant Registration and Plant Pathology Service in the Department of Agriculture for Scotland. Do we know how much actual research is done there?—(Mr. Bartlett.) It is similar in function to the Ministry's Laboratory.

1687. Really your answer would be the Agricultural Research Council, if anybody?—(Mr. Wilcox.) Yes.

1688. There is no real organiser, so far as I can see, on the Agricultural Research Council. They are all eminent men of science; they are all specialists. There is no business brain who could really judge between what is necessary and what is not necessary. Everyone of them is a professor except Lord Rothschild, and he himself is an enthusiast?—There is Sir James Turner.

1689. Yes. Even Sir William Slater, whom we know to be a man of great competence and enthusiasm, is an expert professor himself. Do you not think that

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in the nation's interest it would be better run if we had a lay mind or two at the head of this great organisation?—I think it would be impertinent for me to express any opinion as to the constitution of the Agricultural Research Council.

Captain *Waterhouse*.] Perhaps I have embarrassed you. On the other hand it does seem to me, Mr. Chairman, that it is very, very relevant to the general set up and very relevant to the financial side of our inquiry.

Mr. *Summers*.

1690. As regards the two which are directly controlled, from the Ministry's point of view do you think there would be any disadvantage in putting them in the category of the next line, that is under the supervision of the Agricultural Research Council in respect of what they do?—I think there certainly would be practical disadvantages if the Ministry lost its present direct control. At the plant pathology laboratory the actual amount of research work done there is comparatively small. Its primary job is servicing the officers of the Department who are concerned with destructive insects and so on and with carrying out the obligations laid on the Department under this convention to which Mr. Bartlett has referred, for example, the certification of plants and the like which are exported. Then, as Mr. Quick has explained, it has certainly proved to be a great practical convenience to have the work of the veterinary laboratory directly under the control of the Ministry's chief veterinary officer. Animal diseases which can spread with alarming quickness are such that all along I think the Department has felt that the question of research into those diseases is something which it should have directly under its control.

1691. Why is foot and mouth not in that category?—(Mr. *Quick*.) Foot and mouth is one of the animal diseases which could not be catered for at Weybridge anyway because the equipment is not there. You could not carry on research into other diseases at the same place. It has to be kept quite separate. It is such a deadly disease and so contagious that it cannot be mixed with other diseases.

1692. As I understand it, it is not thought necessary for the investigation into foot and mouth disease to be under the sole control of the Ministry of Agriculture?—I think that is so. (Mr. *Bartlett*.) It was under the control of a committee appointed by the Ministry until a few years ago. (Mr. *Wilcox*.) I think it is right to say that the Ministry are closely concerned with the working of the foot and mouth research station and that our chief veterinary officer

is a member of the governing body. (Mr. *Quick*.) That is so. There is the same link. The chief veterinary officer sits on the governing body, as does the chief scientific and agricultural adviser on the Agricultural Research Council.

1693. Do you think that if this thing was started again the result would look anything like the chart you have got now?—(Mr. *Wilcox*.) No, Sir. This chart is the product of historical events. If we started again, I do not quite know what the result would be.

Chairman.

1694. I have discovered another institute which we have not mentioned so far. It does not appear anywhere, except that it is mentioned in Memorandum 1 and that is the National Institute of Agricultural Botany. I see that you give the figure of £106,000 for that. That is last year's estimate; this year it is £94,000. What is that body? Is that a body for which the grant in aid is only a small part of its total income?—(Mr. *Bartlett*.) That is not a research institute. Although it is grant aided by the Ministry's Education and Advisory Services Division it is mainly concerned with seed testing, the Minister's function under the Seeds Act having been delegated to it. It is also concerned with the testing of crop varieties. It is not primary research; it is at the next stage.

1695. Is this its sole income?—Practically all its income comes from the Ministry.

1696. I think we had better have a short memorandum about it?—Certainly.* It is not a primary research institute, but it is related.

Captain *Waterhouse*.

1697. Is that the same as the Seed Testing and Plant Registration and Plant Pathology Service for Scotland?—(Mr. *Wilcox*.) No, Sir. That is the Scottish counterpart of our plant pathology laboratory.

Captain *Waterhouse*.] Why is this on the pedigree chart, and yours is not?

Chairman.] It is not quite the same thing.

Captain *Waterhouse*.] What is yours called?

Chairman.

1698. You have got the Plant Pathology Laboratory at Harpenden, have you not?—(Mr. *Bartlett*.) The Scottish institution is a mixture of the functions. It has a seed testing function which in England is done

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by the National Institute of Agricultural Botany. It does plant pathology work which we do at Harpenden. (Mr. Quick.) It is not my line now, but I was at one time connected with it. That is perfectly correct.

Mr. Summers.

1699. What link is there between the activities of this institution on research in Scotland and comparable activities in England?—(Mr. Wilcox.) Are you thinking of plant pathology, or are you thinking generally?

1700. To what extent is the knowledge gained in one then available in the other?—That would be the responsibility, I think, of the Agricultural Research Council. (Mr. Bartlett.) The A.R.C. covers both England and Scotland, and I should also mention that there is a joint committee of the Agricultural Research Council, the English Agricultural Improvement Council and the Scottish Agricultural Improvement Council for the exchange of work between the research stage and the stage for passing the information on to the farmers. I think there is co-ordinating machinery there.

1701. I am not quite clear in my mind as to the relationship between the Agricultural Improvement Council and the Agricultural Research Council?—(Mr. Wilcox.) I think the theory, and I think also the practice, is that the Agricultural Improvement Council acts as a two-way link between the farmers and the agricultural departments on the one hand and the research institutes and the agricultural research council on the other. That is to say, it brings to the notice of the Agricultural Research Council problems which in the opinion of farmers and the like require investigation; and it is also concerned in seeing that the results of research at the various research institutes are applied as soon as may be in farming practice after possible further trial under different conditions at the experimental husbandry farms and experimental horticultural centres.

1702. Are you satisfied that the right methods have been devised for ensuring that the results of research work are being applied by the farmers?—Yes, I think so, broadly. First of all they are tested out as necessary at the experimental husbandry farms. Then the Ministry also has control of the National Agricultural Advisory Service which is an integral part of the Department. Sir James Scott Watson, Professor Rae and their chief officers at-

tend meetings of the Agricultural Improvement Council, and they and their chief officers see to it that as results from research become available they are incorporated in the advice which N.A.A.S. give farmers. Would you agree with that?—(Professor Rae.) Yes.

1703. No doubt it is incorporated in the advice given, but are you satisfied that the knowledge is in fact used?—I think that the *raison d'être* of the Advisory Service is first of all to try to put into practice the existing knowledge, which is our ordinary bread and butter everyday job, which we do by way of individual visits to farms, group visits, farm walks, discussions, lectures, conferences, films, shows and so on; and, secondly, to do our part in finding out the answers to and contributing a little to the acquisition of new knowledge; and to make sure that the results of research work, as they become applicable, are put into practice.

1704. I appreciate that is your function, but what I am asking is are you satisfied with the results?—I am satisfied with the results within the capacity of the staff which we have to do it, yes, but it is a growing demand all the time.

1705. A greater demand from the farmers is being put upon the knowledge of your advisory service in respect of research?—Yes. (Mr. Wilcox.) We can fairly say the result is shown in the increased production and productivity of British agriculture.

Mr. Summers.] That is an assumption which might be right and it might be wrong.

Chairman.

1706. Professor Rae, I think you are the chief scientific officer as well as the Director of the National Agricultural Advisory Service?—(Professor Rae.) No, Sir James Scott Watson.

1707. It is not very clear on this chart, I am afraid. You are the Director of N.A.A.S., and he acts as Director General of the Service?—That is right.

1708. I am not sure; does he sit on all these various bodies?—(Mr. Wilcox.) He is a member of the Agricultural Research Council, and he attends meetings of the Agricultural Improvement Council. (Mr. Quick.) May I just add that the Ministry is responsible for veterinary matters in England, Wales and Scotland, including research except for the veterinary investigations service in Scotland.

Chairman.] Thank you very much.

The witnesses withdrew.

Adjourned till Wednesday, 26th May, at Compton.

WEDNESDAY, 26TH MAY, 1954.

Members present:

Mr. Albu in the Chair.

Mr. Hobson.

Mr. Summers.

Evidence taken at the A.R.C. Field Station, Compton, Berkshire.

Sir WILLIAM SLATER, K.B.E., called in and further examined.

Dr. W. S. GORDON, C.B.E., Director of the A.R.C. Field Station, called in and examined.

Chairman.

1709. First of all, Dr. Gordon, may I thank you on behalf of the Sub-Committee for your very kind hospitality, and say that we were very interested in everything we saw. Would you apologise to those of your staff whose laboratories we were unable to visit? We appeared to be rather discourteous in rushing round at the end, but it is our general experience that we find so much of interest on these visits that we could spend so much longer on them. The terms of reference of the Sub-Committee do not instruct us to go into questions of policy of the Institute or the Council, or to decide whether what you are doing is the right thing or not. In fact I doubt whether we are qualified to do so. We are concerned entirely with whether the money Parliament votes is being economically spent. Just for the record I would like to ask one or two questions about the total cost of the establishment. I see that for this year the approved provision is £231,000 for what I can generally call maintenance. What I would like to ask is what is the gross expenditure on the establishment because, as I understand it, the grant made by the Council is only the difference between the gross expenditure and your farm receipts?—(Dr. Gordon.) Yes. For the year now started, the maintenance expenditure is £228,070, estimated. It will be corrected six months later according to the way the first six months have gone. The estimated receipts are £90,000.

1710. So that the gross expenditure is, roughly, £320,000?—No. (Sir William Slater.) The gross expenditure is £228,100, and the £90,000 must be subtracted from that to give the net figure.

1711. I am sorry, yes, because the figure for receipts is given in total for all institutes, is it not?—Yes.

1712. So that the net provision, therefore, is £138,000?—Yes.

1713. That is the cost of maintaining the experimental farms, the equipment, the workers' wages, salaries and so on?—Yes.

1714. It is the cost of research?—Yes.

1715. The £90,000 is income entirely from what?—(Dr. Gordon.) From the by-products of that work.

1716. What is that? Is that the normal farming income from the cultivated part of your farm, the surplus?—Yes.

1717. Plus the sale of the small animals and so on?—The sale of the small animals, and the sale of carcasses which are suitable for human consumption after our experiments.

Mr. Summers.

1718. What sort of proportion of the livestock, which has served its purpose from the scientific point of view, is unfit for human consumption?—That would vary according to the nature of the experimentation. If we are dealing with a disease which is communicable to man, all these carcasses would be destroyed. If we are dealing with a disease which is not communicable to man or an experiment which does not involve infective agents, then all these carcasses would be sold. At the present time I would put the number sold at about 75 per cent. of all the animals emanating from the compound are going for human food consumption.

Chairman.

1719. I suppose, knowing the nature of the experiments you are going to do during the course of the year, you can make a fair estimate of the livestock which will be saleable after the experiments?—Yes.

1720. Although the receipts must obviously vary?—They fluctuate greatly according to the nature of the work we are asked to do or that we may initiate ourselves.

1721. The kind of harvest and so on?—That is another feature. If it is a bad harvest, the more food we have to purchase.

1722. How do you take account of that? When you prepare your Estimate you have to make some estimate of what you are going to earn?—(Sir William Slater.) We have to rely on the director's estimate, which we check against previous returns, taking into account questions such as the

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nature of the work which is to be carried out and allowing for the average harvest. On the whole, we take a conservative figure because it is better to have a surplus due to that at the end of the year than a deficit. So we are conservative in our estimate.

1723. If the earnings are going up, does the Treasury see these figures?—Certainly.

1724. They take some account of them in the following year, I suppose?—Certainly; if they rise one year we must have good reason if the increase is not to be maintained in the next year, but up-to-date receipts have increased each year. (Dr. Gordon.) In the year just ended our approved provision for maintenance was £220,000, and what we actually spent was £214,000, in round figures.

1725. And your income last year was what?—Estimated receipts were £88,000, and what we actually took was £101,000. The reason for that increase is very largely due to more animals becoming available for killing, and therefore we increased our receipts.

1726. The number of scientists on the staff is what?—Ten.

1727. And then is there a number of technicians, or are they mostly farm people?—Associated with each of the members of the scientific staff there may be experimental officers who have grown into this by experience, in some cases, together with laboratory assistants.

1728. How many are there of those? Have we got those figures?—I think you have.

1729. What is the number of acres under cultivation?—Five hundred acres growing grain. In fact the whole acreage is under cultivation in sequence. In other words, there is no part of the land which is available for cultivation which is not at some time cultivated.

1730. How much is that?—There are about 1,450 effective acres for production.

1731. What are they this year?—How are they divided up?

1732. Yes, roughly?—Five hundred acres, grain; 100 acres, green crop; 250 acres, lucerne; and the remainder grass for hay, grazing, and silage making.

Mr. Summers.

1733. Taking the farms which are productive as opposed to the compound which is primarily for scientific purposes, to what extent do the farms make "both ends meet"?—If you are going to measure the exact cost of any one of these farms, you have got to keep a record for each.

1734. Taking them all together?—If you take them all together, then the arable farm makes a profit because we know the arable farms' cost of production and the

materials which they produce are transferred amongst the various departments at the cost of production; the cost of production is below the market value for the crop, and therefore they would make a profit if the products were all sold.

1735. Does the same apply to pigs?—The same applies to pigs.

Chairman.

1736. You are not at the moment keeping farm accounts in the full sort of sense, are you?—Yes, we are reaching the stage of producing a balance sheet and an annual statement of accounts over the whole place, and on the farm side we are getting down to the cost of production which enables us to know what it costs us to produce any farm crop, a ton of oats, for example. We know that our cost per ton is well below the market price of that article.

1737. In order to deal with the point raised by Mr. Summers of trying to ascertain how economic the farming operations are, could you not put in a notional market price figure of the sales on the receipts side, even if the products were being transferred within the Institute?—I do not know if it is really necessary to do that. If we transfer them to these other departments at the cost of production, then we can measure the cost of production against the market price. For instance, even in that bad year, with £17 for barley, we know that the market price in that year was somewhere in the region of £30.

1738. Even if you add on that which I believe is not included, rent and capital charges?—We would still be making a profit.

Mr. Summers.

1739. Is there any item which is cost accounted now, which taken by itself is "in the red"?—Not on the farming side.

1740. It would be that by an allocation of overhead charges or time sheets of one thing or another some came out rather too favourably at the expense of some other product which was unfavourable. If you took the whole lot they could come out—?—All the items which we cost account here are farming items, like various types of grain and silage.

1741. What about livestock?—Livestock are not sold in the market, therefore we do not obtain the competitive prices that may be expected for pedigree animals. All surplus animals from the farms are transferred to the isolation compounds for experiments. After they have fulfilled this function they are killed and sold for human consumption where suitable. Some carcasses may make up to £70 whereas others may have to be incinerated.

1742. May I put this different aspect of the subject? Would you consider it worth doing to keep the compound as one set

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of figures and the farm with all its ramifications as a separate set of figures, the latter being the productive element which could sell to the compound at market prices?—Yes.

1743. Is it your intention to do that?—That is actually what we are in the process of doing.

1744. Will that include livestock when you reach that stage?—It will include livestock at killing prices, not at market prices as productive animals.

Chairman.

1745. I cannot find the figures for the total number of staff. Have you got them in your head?—About 220.

1746. That includes the farm workers?—Everybody.

1747. Looking into the future I notice that there are possible capital schemes ahead. You have pretty well finished the existing plans, have you not, the ones for which sanction has already been given?—The big things have been done—the isolation compound and the cottages to accommodate the staff. We have to extend our laboratory accommodation because the scientific staff is too small to cope with the too big demand now being made on them.

1748. On the other hand, it is a little difficult to follow. It seems that a good deal of the work is in the nature of controlled experiments really rather than research work in the laboratory sense?—That is a view from the very short period you have had to spend in the laboratories.

1749. I agree. It was unfair, because we did the outside part first?—You did that piece which is all the practical application side, but if you want to do the other piece you would have to spend time in each laboratory to obtain the fundamentals of the work you saw being applied in the compound.

1750. The work being done out in the compound is based on the work being done in the laboratory?—It all comes from here. The scientists in here are preparing the way for the extension of their work to practical trials in the isolation compound.

1751. Really, is not the work done here being done at other institutes, such as Babraham?—Babraham is concentrating on animal physiology; we are concentrating on animal disease.

1752. Surely there is a connection—I am rather ignorant on this?—Babraham is studying physiology, the mechanism of function of the various systems of normal farm animals; the digestive system, etc. It is necessary to know normal body functions in order to measure the abnormali-

ties of function which occur in disease. Compton is engaged in the study of the causes, methods of prevention and treatment of certain diseases. We hope to get much help from Babraham as the work progresses.

1753. Sir William, do you have an annual conference of directors within the Council or a conference of those concerned with animal biology, plant pathology and so on?—(Sir William Slater.) We have our standing committee on research affecting animals in general. We have a number of conferences under that standing committee which consider special aspects of the work on animals, either pathological or physiological or genetics, or any other part of the work. I think it is only fair to say for Doctor Gordon that this Institute was established essentially as a place where large numbers of farm animals can be kept under experimentation, particularly sick animals, and that Doctor Gordon has submitted suggestions to us and we are in the process of considering the best way of using the facilities which he has built up over the last ten years. It is only within the last two or three years that they have been completed, and even then they were fully occupied in connection with large experiments on brucellosis. He has submitted two memoranda to the Council, and the Council is at present considering the next steps for making full use of all the facilities here.

1754. The brucellosis experiment is coming to an end?—(Dr. Gordon.) It is running down annually and ends in 1956.

1755. It dominated the place at one time?—It dominated the place at one time. That isolation compound was necessary to get it carried through, but when it was built it was foreseen that that particular investigation, when it came to an end, would be replaced by others which are more or less in a queue waiting to be dealt with.

1756. What do you reckon the total value of the whole place is to-day?—About £600,000.

1757. That is including what?—Everything—the purchase of the land, the erection of the buildings, and livestock.

1758. I notice among the possible future capital schemes there is one for the production of feeding stuffs. I think you did mention that to us as we went round. Perhaps you would like to enlarge on that?—At the moment we have an expenditure of approximately £60,000 a year on the purchase of feeding stuffs, and if those feedings stuffs were home produced we believe that we could cut about £20,000 a year off that expenditure.

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1759. Is the land available?—It is not immediately available, but it might become available over the next few years; and it is preferable that we should have that land adjoining us. If it is possible to make a saving of £20,000 a year, which we have calculated fairly closely and which we believe is possible, then it is worth while spending a bit of capital to get the extra land. Another feature about this is that in the purchase of this large quantity of hay and straw which we have to-day—we have got to buy up to about 1,500 tons of hay per annum—what we are buying in addition to the hay is the weed seeds which every other producer of hay has got on his farm, and after having cleaned this farm free of weeds at quite considerable cost what we are purchasing now is infesting the land with weeds which we never saw here before. We will have to consider some way in which to overcome that difficulty. The easiest way of overcoming that difficulty would be to have land (which we can keep clean) to produce our own hay, and then we would not be introducing weed seeds which will eventually depress production seriously.

1760. It would not need much more capital equipment?—It is estimated at £13,000, as far as machinery is concerned.

1761. Extra?—Yes.

Mr. *Summers*.

1762. What extra acreage of land would you need for this?—One thousand acres. We have worked it all out. We know what we can get off our existing land and the cost of production on our existing land, and with another 1,000 acres of land we can make a saving of about £19,000. (Sir *William Slater*.) Perhaps I should explain that we have discussed this question with the Treasury. We have not put it in our Estimates because we never know when the land may become available. It seems foolish to put it in each year on the chance that the farm becomes available, but the Treasury have agreed that, if a property became available, they would consider it as an independent item.

Chairman.

1763. Would you like to say something about the condition of this land when you took over? How long have you been here?—(Dr. *Gordon*.) I have been here since 1942. The farms were taken over in 1939.

1764. The farms were existing?—Yes. In the period from 1939 to 1942 the yields of grain were not very accurately recorded, but those available ranged from about 5 cwt. to 17 cwt. per acre. Now the average is approximating 30 cwt. per acre, so that the rise is very considerable. You have seen how the production is rising in these graphs here.

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1765. What soil is this?—Chalk soil, regarded as being poor grain growing country as far as yield is concerned. Production is well above the county average. Our minimum yields on any field are above the county average.

1766. Do you have a difficulty in getting staff?—We had difficulty until we were able to build sufficient cottages to attract people into this village.

1767. Who is doing your building now? You told us that the Ministry of Works built the first blocks, but that you are not using them any longer?—We are probably using the Ministry of Works in connection with the building of a new small animal house as they have done all the previous work at Compton. On any large new project the Council would, however, almost certainly use a private firm of architects. The existing small animal house in which we were this morning is not particularly suitable for breeding small animals. We hope to build a new animal house. Then the old building can be converted to laboratory accommodation.

1768. You estimate the cost of the adaptation of the small animal house to laboratories at £10,000?—Yes, that is so.

1769. Is that going to be in addition to the additional laboratories which you may later require?—No.

1770. It is alternative?—It is £10,000 to adapt and equip a building already there.

1771. Then there is a figure for additional laboratories. Is that conjectural?—(Sir *William Slater*.) It is very conjectural. It is a figure which I put in because I was asked to give an idea of what might be the total cost, and I feel that sooner or later Doctor *Gordon* might come back with a further request for laboratories. So I put in that figure.

Mr. *Summers*.

1772. On a question of staff, are you paying any farm workers the minimum wage?—(Dr. *Gordon*.) Yes. There are quite a number of farm workers who start at the minimum wage, but when they reach a certain degree of proficiency at special jobs then their wage may be more than the minimum wage.

1773. What proportion would you think would be still on the minimum wage at the moment?—About forty per cent.

1774. Have you any output bonuses in any shape or form on the farms?—Yes. We have a bonus which we pay on the output of milk from the dairy farms. That is on the normal farms. We do not have bonuses in the isolation compound because it just leads to a whole heap of trouble there as sometimes a man may have cows and then at another time he has got pigs. It is just impossible to work it there by any amicable arrangement.

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[Continued.]

1775. Have you found it practicable in any other department than the dairy to put in any kind of production incentive?—We have not. Other than in the isolation compound itself a man starts at the minimum wage, and when he reaches a certain degree of proficiency he can be paid extra over the minimum wage, up to eleven shillings as proficiency pay. Proficiency pay is flexible, and if a man commits any misdemeanour then we may deduct pay until such time as he improves himself, or else he has got to go and we replace him.

Chairman.

1776. Is there a relationship between this Institute, Babraham and the Ministry of Agriculture laboratory at Weybridge which is animal physiology?—(Dr. Gordon.) The Ministry of Agriculture laboratories are doing investigational work into animal disease, but the bias in their case is mainly towards a study of the scheduled diseases under the Diseases of Animals Act, the notifiable diseases. Here we are dealing with diseases which are not scheduled diseases—like contagious abortion infection, virus pneumonia in pigs, the effect of supplementing the diet of pigs with anti-biotics, and the treatment of mastitis. Weybridge is doing a study of a number of these diseases as well, and we work in very close co-operation. If they did a piece of work at Weybridge which needed to be extended in a large number of cattle before it was put into practical use, it could be done here. If it proved satisfactory it would then pass into general use.

1777. There is no difference in the methods of the two places?—There is very little difference in the method.

1778. It is just that they are dealing —?—They have a very large problem in diagnosis. Masses of material are sent in to Weybridge for diagnosis of various diseases.

1779. Both of you are operating like a clinical research hospital really?—That is about it. (Sir William Slater.) There is the difference Doctor Gordon has mentioned, that at Weybridge they are responsible for the identification of any notifiable disease.

1780. Such as what?—Swine fever, foot and mouth.

1781. They do not deal in foot and mouth?—Only the diagnosis. Then it passes to Pirbright. (Dr. Gordon.) Weybridge was responsible at one time. (Sir William Slater.) They do swine fever, Newcastle disease in poultry and various diseases of that kind. (Dr. Gordon.) Another disease in which the Ministry of Agriculture is particularly interested is myxomatosis, and we might at some stage get an offshoot of

the myxomatosis work. For instance, we might have to study methods of preventing that disease in rabbits.

1782. I want to ask some questions about a matter which we have discussed before but which perhaps is particularly applicable to this place, and that is the method by which the use of the work done here gets applied, or demonstrated and applied, by farmers. Have you anything to say on that? What is the actual procedure? I do not think we have ever had it made quite clear?—(Sir William Slater.) The actual procedure as distinct from perhaps the academic steps which are supposed to be taken is that a number of Ministry veterinary officers are members of the various Council conferences to which an Institute like this would report. They would hear of the work which Doctor Gordon or any one of his staff is doing before it is published. The next step would be for the Ministry's veterinary officers to study how the results of the work here could be best applied in the field. That side of the work falls to them. The procedure laid down is that my Council, the Agricultural Research Council, should report to the Improvement Council. That is nearly always short-circuited by the actual workers in the research institute making the knowledge available to the veterinary officers of the Ministry. There is often quite a lot of work to be done, after the research is finished, in deciding how the work can best be applied in the field.

1783. Where is that done?—That is done by the Ministry's veterinary officers. I do not know whether Doctor Gordon would like to amplify that.

1784. Is it done on these husbandry farms?—(Dr. Gordon.) That is one of the places where it could be done. If co-ordinated trials of a particular advancement of knowledge in the control of disease are required, these can be arranged through the Ministry's Veterinary Investigation Officers or Veterinary practitioners, and in this way the advancement is rapidly tested, applied and publicised.

1785. Is it working out like that? We have seen some pretty large establishments now on the research side, and a lot of public money is being spent on them. We would like to know whether the channels of communication are free to pass on the results of this research work and its development on the husbandry farms, or is the thing in balance?—(Sir William Slater.) I would say a great deal depends on the nature of the work. In general I would say that on the veterinary side the channels are working reasonably well because the Ministry has a large veterinary investigation service, a veterinary service which covers the country and is available for a good deal of this work. I do not think they

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are working so well on some of the other parts of the work where field trials are necessary, for example in connection with crop experiments. There the Ministry's limitation of staff has in the past prevented the development, in my view, going as fast as it might have done.

1786. If this is embarrassing please do not answer it, but it is rather important. This is not work which you think could be better done under the Agricultural Research Council. I take it that this work on the husbandry farms, the experimental centres and demonstration stations must be associated with the Ministry's Agricultural Advisory Service and with its regional officers?—I think it is very important that it should be associated with the Ministry's Advisory Service because they would be the people who would carry it on to the farmers. Therefore they should be closely concerned with the trials on the husbandry farms.

1787. Do you get full co-operation from them on this? Are they, within the limits of the money voted to them and their ceiling of staff, willing to undertake the necessary trials?—We get very good co-operation within the limits of staff available, and having regard to the duties which that staff has to perform.

Mr. Summers.

1788. Would you think that very necessary co-operation could equally well apply whether or not the field trials were carried out by projects directly responsible to the Ministry of Agriculture? Could not that equally well be done by those projects responsible to the Research Council?—It could be done if the projects were responsible to the Research Council, but I should be very anxious to see that it was done in close association with the Advisory Service. (Dr. Gordon.) An example on the animal disease side would be, say, in the treatment of mastitis. When it was found that chemo-therapeutic treatment would cure this disease in a large proportion of cases, arrangements were made that the veterinary investigation officers of the Ministry of Agriculture should all meet here. We described the method to them, and they went to the field and treated alternate animals on farms where the disease was prevalent. Thus they were able to measure in practice the fact that the treatment was effective. That is the best method of introducing a new treatment or a method of prevention to the farmer because he can see the effect of a controlled experiment carried out on his own farm. He has got alternative animals dealt with, and so he can measure for himself the fact that this one is either prevented from taking the disease or it is cured of the disease; if that is the particular study, and that is the best propaganda for

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explaining a method in the field. If the farmer is convinced by the result of treatment carried out on his own farm, he can convince the farmers next door that it is worth while doing. They are very conservative, and it is difficult to convince them. It is easier if they are doing the propaganda themselves, because they say "This thing works. There is not any doubt about it". I had a lot of experience of that in dealing with sheep diseases in Scotland. I found that, even although I knew the product would work, it was advisable to take it on to the farms of the big farmers in the area who would help to convince other farmers to treat half of their sheep and to leave the other half untreated, to mark the animals, and to count up the deaths.

1789. On the whole it is going fairly well on the veterinary side?—On the animal disease side there is not any difficulty in getting ideas over.

Chairman.

1790. One final matter. We are interested in a comparison between three methods of control of agricultural research—those bodies directly under the Department; those bodies which are grant aided by the Department as independent institutes, and those bodies which are grant aided by the Agricultural Research Council. Have you had any experience of working in an institute other than under the Agricultural Research Council?—I have no experience of administering an institute except under the Agricultural Research Council. The impression which I have formed in the course of my work here is that it is the least "red tape" organisation with which so far I have had anything to do, and my associates at our head office are helpful and make the running of the institute as easy as they can for the director.

1791. With, I hope, adequate control of expenditure?—There is very adequate control of expenditure, and also as a Scotsman with a rather economic turn of mind and as one who dislikes the wrongful expenditure of money I really do like to try to account for everything which we have. That is why I am so keen on the accounts side. I really do want to be able to explain why we have to spend the sum which we have got to spend, because this is a very expensive type of research. These large farm animals cost a lot of money, and what I am trying to do is to get the maximum return out of the by-products of our experiments.

1792. I think you did give us an example where you had to buy some sheep rather hurriedly?—Yes. I bought these sheep at £3 10s. 0d. each, and two which you saw hanging up are going to make—I have got the weights of them—somewhere between £7 and £8.

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[Continued.]

1793. How long did it take you to get a decision, when you discovered you needed them?—By return, I discussed it on the telephone, and got a decision straightaway. I was able to say, however, that although I had not provided for the purchase of the sheep in my estimates, there was a saving on other items that would permit the purchase and if they were found to be unsuitable for our experiments, the animals were being bought at a price which would enable me to turn them over without loss or to make a profit if they were kept for several months.

1794. You were able to do that because you have this overall grant which enables you to make up on the swings what you lose on the roundabouts?—(Sir William Slater.) Yes.

1795. Thank you very much indeed. Will you please again apologise to your scientific staff? We were unable to spend as much time as we would have liked here. We have been extremely impressed with what we have seen?—(Dr. Gordon.) I will, indeed.

The witnesses withdrew.

Adjourned till Monday next, at 4 p.m.

MONDAY, 31st MAY, 1954.

Members present:

Mr. Albu in the Chair.

Mr. Blackburn.
Sir Alfred Bossom.
Mr. Hobson.
Mr. MacColl.

Mr. Ormsby-Gore.
Mr. Summers.
Capt. Waterhouse.

Sir JAMES TURNER, President of the National Farmers' Union, called in and examined.

Chairman.

1796. First of all, Sir James, I would like to thank you very much for coming along to give evidence. I do not know if you are aware of our terms of reference. Have you ever done this before?—Not with this committee.

1797. We are a Sub-Committee of the Estimates Committee. The Estimates Committee is not concerned with matters of policy. It is concerned really only with seeing that the money is economically spent. We are not supposed to deal with matters of policy. We are of course, in theory, dealing with the Estimates for next year, but what we do in fact is to see whether the money voted is economically spent. The evidence is being taken down in shorthand. You will get a copy of the verbatim report, and if you wish you can make corrections of fact afterwards?—Yes.

1798. The subject which this Sub-Committee is examining, as I expect you have been told, is agricultural research. We have taken evidence, so far, of course from the Ministry and from the Agricultural Research Council. In addition we have visited some of the Agricultural Research Council's stations and also two of the independent stations, which are directly grant-aided by the Ministry. We also propose to visit Weybridge which is a direct Ministry establishment. I believe you are a member of the Agricultural Research

Council?—Yes. I think this is my third term.

1799. I believe you are also a member of the Agricultural Improvement Council?—Yes.

1800. What is your view of the relationship between those bodies, first of all between the Agricultural Improvement Council and agricultural research in general?—The Agricultural Improvement Council expresses opinions into what matters there should be research—is that right?—I think it would be fair to say that on paper the machine in toto is irreproachable. In other words, if you view the problem as a whole, which is fundamental research, then applied research, then the sifting of the information before it is applied, then the experimental demonstration aspect, and then the dissemination of information down to the farmer the machine, as I say, appears on paper just about as perfect as ever you could conceive. However there are certain defects in it, and whilst you say your remit has nothing to do with policy it is extremely hard to stand by such a keen division. When you are talking about finance, inevitably I think you have to touch on policy. I sit, as you say, rightly, on both of these bodies. Primarily the function of the Agricultural Improvement Council was to act as the two-way channel both to the Agricultural Research Council and back from it, in appraising the magnitude of the problem which ought to have research done upon

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it, then the sifting of the findings in research as to their practical application, and their subsequent dissemination through the Agricultural Advisory Service. A little while ago the Agricultural Research Council felt that there was some defect in that machine. That the proper appraisal of the problems which required research work was not sufficiently exhaustive, and therefore the Agricultural Research Council started commodity studies. In order to further commodity studies, they recruited commodity study groups. There was at one time a feeling that that was encroaching on the province of the Agricultural Improvement Council, but I think both bodies were far-seeing enough to realise that anything which was going the better to give a true appraisal of the relative merits, or shall I say the relative priorities of the research problem, was worth while. The dissemination of information, of course, is now solely through the Agricultural Advisory Service, and in that field, without getting round too far into policy issues, I have opinions as to its effectiveness.

Mr. *Summers*.

1801. I am sorry, but would you just repeat the last part?—I have opinions on the efficacy of the Agricultural Advisory Service in disseminating information to the farmers.

Chairman.

1802. That is a subject into which we are not enquiring, and perhaps we had better be careful not to deal with it. What is your view about the three methods of control of research? There is no theoretical reason why the Ministry should not do some, the Agricultural Research Council do some and the independent research institutes do some, but it does seem a little unco-ordinated?—Yes, on the face of it, of course it does. There are historical reasons for it in the development of the research units throughout the country. In point of fact, the actual scientific aspects of research are pretty well co-ordinated by the Agricultural Research Council.

1803. May I just interrupt you? That does not include the research work done by the Ministry itself at Weybridge?—No, except that even there the Agricultural Research Council as such is kept fully informed of all the developments which are taking place. There is a reason for Weybridge being segregated because it is so intimately wrapped up with disease control and the legislative provisions for disease control, but apart from that there is no fundamental reason why they should not all be under one umbrella. Scientifically they virtually are.

1804. Would it be too big a job for all to be under one umbrella, and also would it cut down the number of co-ordinating

committees and so on?—Well, there is a certain limit to what the administration of the Agricultural Research Council can do. No one individual as director, or the Secretary of the Agricultural Research Council for instance, could properly keep control over the whole machine. In any case agricultural research is such a diverse subject that you need to recruit the expert panels of technicians to scrutinise almost every research project, each one differently, and yet co-ordinate the field centrally of the whole project of research. I should think it is extremely difficult to contemplate the telescoping of all of those functions under the Agricultural Research Council with any serious achievement at any rate of economy.

1805. As you are on this issue an independent voice I would rather like to know, and I think the Sub-Committee would, what you think about the relative degree both of the necessary control and at the same time the scientific independence of the directors of the Agricultural Research Council's institutes and the directors of grant aided institutes. That seems to be a relevant question?—Yes. Almost every programme of work which is contemplated by either a grant aided institute under the aegis of the Ministry of Agriculture or indeed a unit of the Agricultural Research Council has to be submitted to and is scrutinised by technical people selected for their special knowledge of the field covered.

1806. By the Agricultural Research Council?—By the Agricultural Research Council, or joint committees. There are in some cases joint committees of nominees of the Ministry of Agriculture and nominees of the Agricultural Research Council who scrutinise the programme of work. Attempts made to avoid overlapping have been considerable in the past but not necessarily successful because scientists, whatever else they are, have their own independent line of thinking. They resent being pushed off what they think is a line which offers scope because it is being prosecuted by someone else, and yet perhaps with that slight difference which may make all the difference to the result. There have been occasions when the Agricultural Research Council have quite adamantly instructed a director to amend his programme of research because we believed that enough money had been spent on a particular project without any substantial results coming from it. We had such a case quite recently, much to the resentment of the director of the institute concerned. Knowing all the people who were actually doing the work, as members of the Agricultural Research Council we quite frankly felt it had gone on long enough without producing any result which we thought could have any positive bearing on the industry's problems.

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1807. As far as I can see there is no real difference in this control between the Agricultural Research Council's institute and the direct grant aided institute?—Not really.

1808. But does that apply to the Ministry's institutes, although Weybridge is almost the only one of any size?—Weybridge you must really regard as involved in peculiar circumstances because it is dealing with diseases which are notifiable, for which very stringent veterinary rules have to be followed. Take a thing like swine fever.

1809. It is your view that it is necessary for that to remain under the Ministry for that reason?—We have always felt that where they were dealing with notifiable diseases, and work in the preparation of cultures and that sort of thing, it was a matter apart. We have always considered that it was justifiable to maintain Weybridge as a separate entity, because they are also producing serum and vaccines for disposal to the industry.

1810. I expect you know that in the Ministry Weybridge is responsible to the chief veterinary officer, and really comes under a completely separate control from agricultural research?—Yes. That is because, I would imagine, of all these elements in it that involve notifiable disease.

1811. On the question of the use of research, although I do not think we can go into the Agricultural Advisory Service, at any rate are the channels for the results of research reaching the Advisory Service, irrespective of whether the Advisory Service is efficient or not, all right?—Well, usually the procedure is that the Agricultural Research Council report back to the Agricultural Improvement Council the results of fundamental and applied research in a particular field where they think it has practical applications. The Agricultural Improvement Council, which consists of the scientists, the Ministry people and the agriculturists, then sifts it and virtually authorises the dissemination through the advisory machine down to the farmers; but before doing that, of course there is such a lot of research that may appear to have agricultural significance in the laboratory or in the plot but which requires further development on applied experimental bases and field bases before it can with confidence be let loose, so to speak, to the poor farmers or the lucky farmers.

1812. Whose job is that?—That is the job of the experimental husbandry farms. They are administered by a sub-committee of the Agricultural Improvement Council which consists of members of the Agricultural Advisory Service, the Agricultural Improvement Council and the Agricultural Research Council.

1813. Do you consider that they are doing the job effectively?—I often have a conflict of opinion with some of the people who regulate the machinery of the experimental husbandry farms. Our own concept of experimental husbandry farms was where the word "husbandry" was underlined rather than the word "experimental". We believe that their true function is to demonstrate methods of husbandry which in the local circumstances are a pattern to be followed by the farmers, having due regard to the application of the new scientific advancement which has taken place and applied in husbandry practice. The Agricultural Advisory Service and, indeed, the scientific members of the Agricultural Improvement Council are more apt to lay emphasis on the word "experimental" rather than on "husbandry", and therefore there is a tendency to make them experimental farms rather than experimental husbandry farms.

1814. Are there not two functions? Is it not the business of the husbandry farm to experiment with or try out new techniques in the particular local soil and climatic conditions?—Yes, but there is no difference with that reservation from what I have been describing. No, it is a keen distinction between the emphasis on experimental or on husbandry.

1815. But given this conflict of view as to what they should be doing, which I do not think we are really competent to discuss, they get on with the job?—Yes. The original programme for the experimental husbandry farms, which we as an industry were very anxious to see completed, was something like eighteen experimental husbandry farms. There are now, well, eight or nine, something like that. We believe them to be a very necessary link in the chain.

Mr. Ormsby-Gore.

1816. Do those experimental husbandry farms run courses of their own?—No, there is no question of courses. They are merely farms which, the findings of research having been sifted through the Agricultural Improvement Council, on the advice of a panel of experts, apply this scientific knowledge on a farm under farming conditions. Then they are freely acceptable to the farmer through the introduction of the Agricultural Advisory Service officers.

Mr. Summers.

1817. Would you comment on the extent to which the Agricultural Advisory Service make use of the knowledge gained on the husbandry farms?—First of all the limit of numbers rather prevents that being universal, of course. Where an experimental husbandry farm does exist in the locality there is no doubt that the Advisory Service seek at any rate to make all the use they

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can of it, especially by mustering groups of farmers to go and visit the place. But they have got to get under way first, and command shall I say more than the interest but the respect of farmers before they really can make the impression which is necessary. Therefore this whole machine really would be judged harshly if it were judged now. It is the sort of thing which must evolve really to give the full benefit of which we believe it is capable.

1818. If I may follow that up, would it be right to infer from what you said that the whole machine, as you put it, on agricultural research, culminating in the agricultural committees, does not as yet command the confidence of the farmer?—I think it is fair to say that at this stage, although it has improved considerably. There is a reason for that—because the Agricultural Advisory Service was too intimately connected with the judicial and executive functions of the agricultural executive committees which succeeded the war agricultural executive committees, and that sort of suspicion with the average farmer dies hard. That is why the farming community are so anxious to see it completely divested of any of the functions, judicial and executive, which used to be looked on with suspicion. Then it would not be fair not to mention this, even though it may be digressing a little. One of the big difficulties about the Agricultural Advisory Service is that, according to, shall I say, the schedule of salaries, the least experienced and the youngest are those who have the most intimate contact with the farmers, and that is the sort of problem which only time will cure. In other words, it is the young graduate who has not sufficient capital to farm on his own, without any experience of administration or management, who is required to advise farmers who probably have been in the job all their lives, and they do not take kindly to advice from that type of man, whereas the more mature man with more experience in management would be definitely more likely to inspire the confidence of the farming community. I repeat, time alone will cure that.

Chairman.

1819. The channel between the research bodies and the Advisory Service is all right?—It will be when the experimental husbandry farm programme is completed.

1820. That is a vital part of it?—Very definitely, because the difficulty so often with research is that what may be sound advice in one sort of condition is completely wrong advice in others. The only way effectively to ensure that the advice of applying scientific results in practice is sound is to have as diverse as possible experimental husbandry farm range.

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1821. Which is both a method of trying out a new technique and giving demonstrations of the new technique to farmers in the district?—Certainly.

Mr. MacColl.

1822. Would the completion of the husbandry farm scheme involve any extension of the research facilities which are now available?—Not necessarily, because the experimental husbandry farms are so diverse in their nature that it is largely a question of making sure that the results of research as applied to varying conditions are capable of application on a more universal basis.

Mr. Summers.

1823. Could I ask a question rather going the other way? To what extent are you satisfied that the problems to be tackled by the research machine are in fact done in the right priority, and that they are thrown up by the farmers in action and are not merely brainwaves of a limited number of people?—That is an extremely difficult question to answer really because I have given you already evidence of the fact that we were not, shall I say, wholly satisfied with the channelling through the Agricultural Improvement Council, and therefore the Agricultural Research Council set up its own commodity studies. The National Farmers' Union have got an arrangement with the Agricultural Improvement Council that any problem raised in our county development and education machine, that is through our county committees, is channelled through our headquarters committee, and then through to the Agricultural Improvement Council. At the same time anything which appears in the eyes of the Agricultural Advisory Service in the field to require research is examined by the provincial directors and by headquarters, and again channelled through the Agricultural Improvement Council. One of the most difficult problems is properly to appraise, shall I say, the economic significance of the problem which is thrown up for research. I personally was not too happy about the position, say, two and a half years ago, and as a result of that we instituted an immediate survey as to (1) the problem which was under research and (2) what had been achieved in that field of research. Then we in parallel put up a survey of the problems, as we knew them, which require research, and only when we got those thrown up and compared one with the other did we come to the conclusion that a very definite list of priority rating ought to be applied. Take, for instance, a thing like potato eel worm which has devastated the traditional potato growing areas where they can get a high yield and therefore a low unit cost of production; but because of the persistence of eel worm we have had to

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farm out our potato acreage to land which has a much lower yield potential. That can cost the country a tremendous lot of money. So we lifted up the emphasis on potato eel worm research. Up to the moment a practical solution of the problem has eluded us. It requires an intensification of the progress of research which is now in being, and that instruction has in fact been given; but the relative priorities are extremely hard to evaluate.

1824. You are satisfied that the adjustments made since these surveys you have described were carried out have given you a better appraisal?—Certainly a better one.

Chairman.

1825. In industry, as you probably know, research associations are self-supported by the industry. I do not believe the farming community supports agricultural research at all. Has consideration ever been given to any way by which the National Farmers' Union or any other body could do it? I think that at the present moment practically all research is paid for by the Government?—You qualified your first statement by your later statement. It is not true that we do not do anything, but it would take me a little time to expand it.

Chairman.

1826. Would you please?—Yes. The first thing one has to remember in this is that you must have a vehicle for collecting such monies. The only organisation of farmers actually is my own in this country, and we are constitutionally debarred from doing that sort of thing unless we make a grant, which would be extremely difficult because our budget is too tight on the economic side anyway. But there are more fundamental objections to this collection of money, in my view. One is the temptation to demand results from money expended which would probably mean the deployment of the very scarce type of personnel in research in specific applied research fields, demanding results quicker than the normal scientific routine would really justify. The tremendous diversity of the field of research is such that, as often as not, when you prosecute a particular line to solve a particular problem you do not find the results that way; you find them rather often incidentally or accidentally. It would be, I think, extremely deleterious if we were to resort to a means of finance which in fact directed the skill in the research field personally down that sort of specified narrow field of research because I am sure it would be a waste of the asset which we have got in the shape of skilled trained personnel.

1827. To some extent that applies in all applied research. It applies in industry, does it not? The industrial research associations are grant aided by D.S.I.R.?—Yes,

except that in that sort of case they are producing a specific commodity by pursuing a specific line of research. I do not know, but, for instance, the chemical industry may make a contribution, but they do a tremendous lot of research of their own as big composite firms. We are a multiplicity of small farmers. There are some 360,000 in the United Kingdom. Most of them—a very substantial proportion—eighty per cent.—are farming 100 acres or less. First hand tapping for funds is no easy matter, although it has been done in the case of sugar beet research, but even there, with the money which has been contributed by the British Sugar Corporation and the sugar beet growers in this country, the tendency is to use skilled personnel down the narrow field and probably create more duplication than exists at present.

Mr. MacColl.

1828. When you said that the Chairman was only partially right in his statement, that you did help, were you referring particularly to sugar beet?—Sugar beet, and we have made some attempt at supporting the Animal Health Trust.

Mr. Bläckburn.

1829. When you say you have made some attempt to help how has that been subscribed?—That is purely on a voluntary basis, by soliciting voluntary subscriptions from the farming community. The tragedy about the Animal Health Trust is that in order to inspire support it has to be ambitious in its claims, and so often requires, shall I say, a hotter pace from its research workers than scientifically is justified.

1830. Apart from the voluntary contributions in that case and the contributions from the sugar beet growers, there is no financial contribution made by the industry to research?—We have made certain contributions, say, through the machinery of the Milk Marketing Board on occasions, but even there the demand for results has been such that it embarrassed the scientific research workers. They are a lot happier without a contribution if there are strings tied to it.

1831. How was that collected?—It was purely voluntary, given by the Milk Marketing Board out of its accumulated funds, but it was only a small amount of money.

1832. I do not quite follow you exactly in this restriction which would be placed upon research if there were a contribution from the industry, because that does not seem to apply in other industries. Take the cotton industry where there is a levy on firms. I do not think it places restrictions upon the research which is carried out by the scientific workers?—May I suggest you are trying to compare a firm with substantial resources—

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1833. I said the cotton industry?—You are trying to compare a multiplicity of firms with substantial resources with the small farmer, farming eighty acres or less, who through his own organisation, if he had money deducted would demand results. In fact, if you like to use the comparison of the Animal Health Trust, it is a case in point where voluntary subscriptions from the farming community have not been forthcoming sufficiently to enable the Animal Health Trust almost to survive.

Chairman.

1834. Thank you very much?—There was just one other point, if I may mention it.

1835. Certainly?—I omitted to mention it when you asked me the question, did I feel that the machine as such on the research side and on the improvement side was all that it could be. One other general comment I would make is that, when we are appraising what has to be regarded as

priority in the research field, I confess sometimes on the Agricultural Research Council I feel I am playing a lone hand, that there are proportionately more scientists than practical people. It really does require, in my view, a supplementation by a more practical appraisal. Also I have had a chance to think of the reply to the other question which I think you asked Mr. Chairman, whether the Agricultural Research Council could not competently take over the whole organisation and thereby effect economies. My own view on that is that I should be a little chary before ever I supported that approach because the worst thing really is to have too cumbersome an overall machine. I think two or three approaches to a problem are not without their benefit; otherwise it could become too unwieldy and too bureaucratic.

Chairman.] That is the sort of opinion we wanted to hear. Thank you very much for coming along.

The witness withdrew.

Sir WILLIAM OGG, Director of the Rothamsted Experimental Station, called in and examined.

Chairman.

1836. Sir William, thank you very much for coming along to see us. I am sorry to bring you up to London for rather a short time. This Sub-Committee of the Estimates Committee has been set the question of agricultural research. We have had a good deal of evidence. We have visited some research stations, not yours unfortunately. We have visited two independent grant-aided stations, and we have also visited some of the Agricultural Research Council's stations. We are also going to the Ministry's place at Weybridge. We are rather anxious to get views, particularly from directors, on the three different methods of administration. You no doubt understand our terms of reference. We are not concerned with policy; we are only concerned with economic administration?—Yes.

1837. As a Sub-Committee of the Estimates Committee we are only concerned to see that the money is being spent effectively. I think we would particularly like to ask you for your views on these three different methods of the Government financing of agricultural research. As I understand it, independent Ministry grant-aided bodies like your own are subject to policy guidance and co-ordination by the Agricultural Research Council but are administered by the Department whereas in the case of Agricultural Research Council grant-aided bodies they are administered by the Agricultural Research Council. Have you any views on those three methods, whether there is an advantage in having

different types, and whether you have greater or less independence as a director because you are a very old and experienced institute?—Well, in the last few years there has been a change in the administrative set up since the Agricultural Research Council took over the detailed administration of the scientific staff including scientific assistants, so that we now deal with the Agricultural Research Council on everything connected with scientific staff and also scientific equipment. We still have to deal with the Ministry for the secretary, office staff, library staff and farm staff. The Agricultural Research Council now deal with the grading of, I would say, nine-tenths of the station, and the Ministry with one-tenth. My personal experience since that was done has been that the Ministry is probably less understanding. It has less appreciation of the special problems of research. It is more inclined to work according to rules which may be suitable for Government Departments in London but which do not apply to the individual needs of places such as ours. From that point of view I think that in some ways it would be better if the Agricultural Research Council dealt with the bits and pieces which it does not deal with now.

1838. They already have a very considerable control over scientific policy?—As regards scientific policy I am a little apprehensive of control even by the Agricultural Research Council. I see that in their booklet "The Agricultural Research Service" they talk of supervision of the grant-aided institutes. There is much more detailed administration than when I first became a

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director twenty-four years ago. There has been a gradual tightening of the administrative control from headquarters which I do not altogether like; I think some of it is unnecessary, irksome, and does not promote efficiency. But what I am more afraid of is that that will extend to scientific direction, which I think would be fatal.

1839. Of course the change has come about because of the increase in the proportion of funds of institutes, including I think I am right in saying Rothamsted, from Government sources?—I grant you that, but the University Grants Committee does not try to administer the universities, and if some measure of freedom is necessary for the universities to function properly I think the same measure of freedom is necessary for us. Besides, we have governing bodies. My governing body, the Lawes Trust Committee, is at least as distinguished as the Agricultural Research Council.

1840. Now you are saying that on the whole you do not like control by the Agricultural Research Council either?—I think there should be as little central control as possible but I appreciate co-ordination and advice. I feel, however, that it would be undesirable for agricultural research to become the monopoly of one organisation—and monopolies are always somewhat dangerous.

1841. And yet you feel that they are less burdensome as a controlling body than the Ministry itself?—They are more understanding. They understand our problems better. They are concerned with research, and very few people at the Ministry are concerned with research.

1842. From the administrative point of view do you think there would be any advantage, from what you know of the institutes which are aided by the Agricultural Research Council, in being under them? May I put this sort of thing which has been brought to our notice? First, you sometimes get a quicker decision out of the Agricultural Research Council than out of the Department, and, secondly, the Agricultural Research Council, having itself a grant in aid, can sometimes during the course of the year use it rather more flexibly between one institute and another than the Department can. Do you think there is anything in those points?—I think there is something, especially from the point of view of capital grants for buildings. For other purposes we put in an annual estimate, and from that estimate I think the Agricultural Research Council persuades the Ministry to set aside something for contingencies so that the machinery is not too inflexible as it stands. But I find it irksome to have to deal with the Agricultural Research Council for all scientific staff, and then, when it comes to a farm manager who after all in our place has to be a scientist as well, I have to

haggle with the Ministry about his grading. The Ministry do not seem to appreciate the position. It is the same with our librarian. We have an agricultural library which is unique in the world, and the Ministry think that because we are a research institute we must have a librarian paid about £900 a year whereas other institutions pay far more to keep a competent man. It is the same with our secretary. I depend on the secretary at Rothamsted to do much of the administration except the scientific administration, but the Ministry apparently do not appreciate that he is more than an accountant. The man is a chartered accountant, but we may lose his services—he is in his early forties—because of the rigidity of the salary scales.

1843. Would it be less under the Agricultural Research Council?—I would not like to swear to that, but I think the Agricultural Research Council would probably appreciate the problems a little more than the Ministry appears to do.

Mr. Summers.

1844. On the question of control of the Agricultural Research Council on scientific policy, did I get the impression rightly that you wanted greater freedom to pursue certain scientific objectives which were precluded because of the new scheme of co-ordination?—No, I cannot say that has happened. They have not interfered in scientific direction up to now, but they have tightened up the administration. They do a great deal of general administration from headquarters which could I feel be left a bit more flexible.

1845. If it were so left, would the annual bill be greater or smaller?—I do not think so for a second. We are bound by scales to pay the less efficient laboratory assistants as much as the more efficient ones. There is no chance of paying according to merit. The thing is too rigid.

Chairman.

1846. In fact what you are saying is that, although you are directly grant aided from the Ministry and in a way more independent, you are really less independent probably than an institute grant aided by the Agricultural Research Council?—We are grant aided by the Ministry but all our scientific administration is done by the Agricultural Research Council. It is the Agricultural Research Council as much as the Ministry which does this detailed administration.

1847. There is not much in it either way?—There is not a great deal in it. I think both bodies are inclined to over-organise us.

1848. Who does your building—the Ministry of Works or private architects?—Private architects, but there have been great delays in getting schemes approved

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after we have had plans prepared and obtained estimates. In the past there have been interminable delays in getting a scheme started.

1849. It would be the capital cost I suppose, the restriction on building and so on?—Yes. I suppose our last big delay was at the time the Korean war started. We had plans prepared but delays in official approval meant that the crisis was on us before building had started.

Mr. MacColl.

1850. You mentioned your governing body. Are they consulted on research?—I have regular meetings with my governing body, and they visit the station regularly. I would not like to say that the Agricultural Research Council tries to take away the direction of research from us now, but it might happen I feel if they had complete control of us.

Chairman.

1851. Your fears on this point are much more in the field of scientific policy than administration. What you are saying is that from the administrative point of view it is more convenient to be under one hat and not two, but that from the point of view of scientific policy you are not terribly anxious to have it all under the Agricultural Research Council?—I do not want scientific direction from outside. Research is not something which can be directed from a central headquarters; it must be left to the governing body and the director of the institute.

Mr. MacColl.

1852. Do you in fact consult the governing body on matters such as the value of a particular piece of research or its wider implications, or are they mainly a body making decisions on administration?—No, we discuss research. My governing body is a very powerful one. There are four representatives of the Royal Society, one from the Chemical Society, one from the Linnean Society and two

from the Royal Agricultural Society. Six of them are amongst the most eminent scientists in the country. Two of them are very eminent agriculturists. I am in a very fortunate position.

Mr. Summers.

1853. Are they linked in any way with the Agricultural Research Council on the policy planning for scientific research?—No. Sometimes a member of my governing body happens to have been on the Agricultural Research Council, but that is not inherent in it. I would like to make clear that the Agricultural Research Council up to the present has not tried to direct our research at Rothamsted.

Chairman.

1854. That would be almost an imperitence?—I think it would, and I do not like this word "supervision" in this booklet. With our competent governing body we do not need other supervision.

Mr. Summers.

1855. Would it be fair to say that if this had been written differently you would not have felt quite the same way?—I do not feel so strongly about it. We work harmoniously together but I do feel that any tendency towards increased supervision would be undesirable. We have to consult too much on matter of detail.

Chairman.

1856. Your feeling is that the history and reputation of Rothamsted are quite old, and this is rather new?—Yes.

1857. You do understand the problem, that these bodies are almost entirely Government financed and there has to be some control of expenditure?—I happen to be on the agricultural sub-committee of the University Grants Committee, and we do not attach any strings there. I think it is a fairly happy way to work.

1858. Thank you very much. I am sorry to have brought you here for such a short time, but your evidence has been very helpful?—I have been very happy to come.

The witness withdrew.

Professor H. D. KAY, C.B.E., Director of the National Institute for Research in Dairying, called in and examined.

Chairman.

1859. Thank you very much for coming along. I am sorry to bring you here to give evidence. This is a Sub-Committee of the Estimates Committee. I do not know if you have ever given evidence before a committee of the House?—Not before such a committee, I think.

1860. We are not concerned with policy; we are only concerned with the way the money is spent?—Yes.

1861. This Sub-Committee is looking into agricultural research in general. We have taken evidence from the Ministry, from the Agricultural Research Council, from the National Farmers' Union and from other bodies. We have visited a number of institutes. I am sorry we have not been able to see your institute; we would have liked to have done but we have not had the time. We have visited two institutes directly grant aided and two under the Agricultural Research Council,

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[Continued.]

and we are going to visit one of the Ministry's establishments at Weybridge?—Yes.

1862. I think what the Sub-Committee would be most interested to hear from you is about the relationship between these various institutes and the comparative advantages of the different methods of control. As we understand it, the Agricultural Research Council is responsible for the general oversight of scientific policy?—Yes.

1863. You are more directly responsible for administration to the Ministry than one of the Agricultural Research Council's institutes?—Yes.

1864. Have you any views on those two methods? You probably have only experience of one?—It is rather a difficult problem. There is a certain duality from the fact that the Agricultural Research Council control the scientific programme, and the Ministry, or at least I suppose the Treasury through the Ministry, control the allocation of money to us. We have also a small income which is not under Ministry control. The problems of the dairy industry are very considerable, some of them urgent. Occasionally, if we have a particularly urgent problem which is not down on our estimates, we can get a grant from the Agricultural Research Council for that specific problem at short notice, but normally most of our money comes from the Treasury through the Ministry in the shape of a Parliamentary grant.

1865. I do not think we knew that. In addition to your grant direct from the Ministry you can sometimes for a specific project get a special grant from the Agricultural Research Council?—We have done in the past, yes, usually for an urgent project which has not been put down in our programme.

Mr. Summers.

1866. Why would it be to the Agricultural Research Council you would go for this emergency help rather than the source from which the main amount comes?—I think that is probably tied up with the speed of action and with the fact that a case has got to be made for a specific piece of scientific work which the Ministry cannot deal with as quickly as can the Agricultural Research Council with its specialist wisdom.

Mr. Blackburn.

1867. I was going to ask whether this particular piece of scientific investigation was suggested to you by the Agricultural Research Council, or whether you suggested it and then made application to the Agricultural Research Council for financial help?—Either can happen.

1868. If the Agricultural Research Council suggested it I can understand you get-

ting a grant from them?—Either can happen, and has happened.

Chairman.

1869. Are you implying that in some ways it is probably easier to get assistance or to get things done quicker through the Agricultural Research Council, than if you made application to the Ministry direct?—Yes, I think so.

1870. Is there any inconvenience in the fact that your scientific staff, their grading and so on, are controlled by the Agricultural Research Council, and your other staff by the Ministry?—Yes. The majority of our staff come under the scientific heading. The people who are controlled by the Ministry are the administrative staff, the secretary and two assistants of his and the librarian. We are having a difficulty there because the Ministry's scales are not really applicable to people doing the jobs which these people are doing. The librarian, for example, is on the Ministry scale, which is a poor one when you consider the job she has to do, that is to say, to look after not a simple library but a specialised departmental library which is used by many people outside the institute, a library dealing with scientific subjects requiring a great deal of library experience and technical knowledge.

1871. Do you find that the control of scientific policy by the Agricultural Research Council is in any way inhibiting or onerous?—No, on the whole I think it is not onerous. I think we ought to get back to first principles here. I have had a fair amount of experience of research. I do think myself that you get the best research done when there is no endeavour to control it in detail from above, where the research man realises that he has freedom to work out his own methods and has not got to turn in his research by a certain date or anything of that kind. There is a tendency, nevertheless for a central organisation to go rather far in the way of a control which is not as light nor as valuable from the research angle as that, for example, of the University Grants Committee. I think something of that kind—a light control only—is desirable for a research station.

1872. Practically all your finance is now voted by Parliament?—Yes.

1873. Naturally Parliament wants to ensure that, when money is voted for a specific purpose, it is used for that purpose?—Yes.

1874. The whole of the grant for agricultural research is granted for that purpose, whether it is fundamental or applied?—Yes.

1875. Therefore there is bound to be some control?—Oh, yes, I am not suggesting there should not be control, but

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Professor H. D. KAY, C.B.E.

[Continued.]

I think it has got to be exercised very carefully.

1876. Do you think there is any difference frankly in the ease of administration of an institute which is direct grant aided by the Ministry and that of an institute which is grant aided by the Agricultural Research Council, because many of them, as far as we can see, are very similar bodies?—I think in my own case, the National Institute for Research in Dairying, we should probably have received some of our money for new buildings rather more rapidly through the Agricultural Research Council than through the Ministry. The Ministry has been a little slow in dealing with some of our applications.

1877. Not because the money was not there?—No, not because the money was not there.

1878. But they are slower in handling the matter?—They are slower in handling the matter. You ask for a frank opinion; that is it.

1879. I think I am right in saying that your institute was originally part of the University of Reading?—It was, and still is.

1880. Therefore does it get some of its funds from the University?—It does get a small subsidy from the University of Reading, and the senior members of the staff are members of the University of Reading.

1881. Teaching members?—Not all of them teaching members, no. I am a Professor of the University, and on the Senate and the Council of the University. I have certain university duties to carry out as have some of my senior colleagues. We are on university committees, examine for the university and teach post-graduate students.

1882. Are the funds provided by the University absolutely fixed?—They have been for some years. It is a nominal sum.

1883. Because they started this?—Yes. They also have members on our governing body. We have a governing body which works under a trust of the university. The university council really is the final arbiter, but they have delegated most of their powers to the board of the institute. The council of the university have five members on the board of the institute. They are legally in a position to veto anything they do not like.

1884. They can veto even if the Agricultural Research Council thought it was desirable to proceed with something?—It has never got to that stage, but ultimately they could.

1885. Even though all the money is coming from Government sources; it seems a little odd?—Not from Agricultural Research Council sources.

1886. But the Agricultural Research Council is the body which advises the Government on scientific policy, is it not?—Yes. It would raise a constitutional question.

1887. It has never happened?—No.

Mr. *Summers*.

1888. In practice would it be likely to make any difference if, instead of your non-scientific supervision coming from the Ministry as now, it came from the University, so that you would then have the University and the Agricultural Research Council instead of the Ministry, the Agricultural Research Council and a little University thrown in on the side?—I have never really contemplated that as a possibility, the main reason being I think that the university has already got more to do with its money than it has money to cover.

1889. For the purpose of my question would you regard it as the man from the Ministry going to the University to act as indirect supervisor, if you like, rather than a direct supervisor from London? The financial position would not alter. It would be the machinery by which the supervision, grading and the like of staff took place. I wondered whether you would welcome being put in closer touch with the University, a position which that change would bring about?—I think it would in effect merely mean another stage, so to speak, in the control, unless the university had the whole of the grant. Is that what you had in mind?

1890. Yes?—It might help with the speed of the thing.

Chairman.

1891. Would the university be willing to accept money for a specific purpose?—I should doubt whether they would, though I could not say without consulting the vice-chancellor. It would be a pretty big additional burden for the university since the university is only a small one, and we are the biggest section of it.

Mr. *Ormsby-Gore*.

1892. Could I go back to the cases where you have occasionally got an extra fund out of the Agricultural Research Council?—Yes.

1893. That presumes the Agricultural Research Council have a certain amount of floating money which they can on occasions throw into the breach. What size of projects have these been?—I ought to make it clear that as regards many of these I was referring to periods during the war and just after the war. We have not had many since then, although we have got one at present. They are usually rather small special projects. The sort of thing would cost about £1,000 or £1,500 a year for three

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Dr. F. R. TUBBS.

[Continued.]

years. It usually covers the salary of one or two research workers, the cost of their apparatus, travelling and so on.

Chairman.] Thank you very much for coming.

The witness withdrew.

Dr. F. R. TUBBS called in and further examined.

Chairman.

1894. Dr. Tubbs, since we saw you last we have been to another of the independent grant aided institutes. We have also visited two institutes grant aided by the Agricultural Research Council, and we are going to the Ministry's veterinary establishment at Weybridge. What we are now interested in are the various methods by which research is paid for by the Government, directly in the Department itself, by grants in aid to independent institutes or through the Agricultural Research Council. We have no preconceived idea whether it ought to be all under one hat or separately. We would rather like your opinion. As we understand it, the Agricultural Research Council has the job of co-ordinating scientific policy. It is also responsible for the grading of scientific staff whereas the Department is responsible for the non-scientific staff and does not, as we understand it, interfere in scientific policy. Would there be any advantage if all these institutes were under one hat?—I can only speak from my experience of five years at East Malling. The system as it stands has worked very well indeed. I think that is a matter very dependent upon personal contact, and very dependent upon the Agricultural Research Council and the Ministry personnel concerned being sufficiently few in number to know something about the station and its individual problems.

1895. If there were too many institutes under the Agricultural Research Council the personal touch would be lost?—I think that, if the Agricultural Research Council were to lose personal contact with research personalities even though maintaining its close contact with the research programme of a station, a great deal would be lost.

1896. They already are responsible, are they not, for co-ordinating research within all their institutes and the independent institutes?—For guiding and co-ordinating. A research programme is drawn up, and is of course very thoroughly considered inside the station. It is agreed by my committee, and is submitted every year with my estimate to the Ministry and to the Agricultural Research Council. The Agricultural Research Council discuss all questions of research policy, and will know when we want to develop one line or slow down on another. They do not attempt, and I do not think should attempt, in any

way to direct the research because only those concerned with the research can see the best leads coming out of it.

1897. You know the directors of many of the other institutes. Do you think the Agricultural Research Council exercise any different measure of control in scientific policy over the institutes which are grant aided by them from those institutes which are grant aided by the Ministry?—No, Sir, I am afraid I have no detailed knowledge of that.

1898. You do not know whether there is any difference?—No.

1899. What about the administrative side? Did you find that you could get decisions quickly enough out of the Ministry?—It has worked very well indeed over matters of buildings, land purchase, the cost of running the experimental farm and things like that. The cost of running an experimental farm is a matter of mutual interest, both to the Agricultural Research Council as affecting research and administratively to the Ministry. The only hold-ups which have occurred have been when the Ministry personnel in the research department have been forced to attempt to apply staff regulations or other rules which, although perfectly proper and efficient inside a Ministry, are utterly unsuitable for, and inapplicable to, the particular circumstances inside research stations where generally we have very small staffs each member doing diverse duties.

1900. Could you give an example of the type of non-scientific staff you mean?—The type of thing which can come up is where you have a typist who, although carrying out normal typing duties, is also quite an expert on the receipt of orders, and the distribution of root stocks. Another case is where you have your internal telephone system which it is essential should be confidential, like all others, and you want to have a good type of girl manning the exchange and also looking after your filing system. The question comes up how to pay her adequately. So far all those have been resolved quite well, but sometimes they have led to lengthy discussions before they were. It has, in fact, worked out well.

1901. So far as you know do the directors of the Agricultural Research Council's institutes find it easier to deal with that sort of case? Have they a greater independence in non-scientific staff?—I cannot

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[Continued.]

say from direct knowledge, but I think they probably do find it in some ways easier because the Agricultural Research Council are not bound by the general civil service regulations in quite the same way.

1902. Your institute was fully operating before it became entirely grant aided by the Ministry?—Yes. It does remain an entirely independent body, grant-aided.

1903. Your experience is not that of an institute which has had no previous independent line. It had, and now it is under the Ministry?—We like to feel it is an independent station being assisted jointly by the Ministry and the Agricultural Research Council, and, as we have not mentioned it in our previous discussion, having a relationship with London University.

1904. I think you told us with the Imperial College?—We have members of the Imperial College as an integral part of our staff. We have very close relations with that college, and with Wye College. We are a recognised institution of the University, having recognised teachers on the staff. That means a good deal in the way of attracting the right type of man to work on your staff.

1905. You do not find that the Ministry's control of your estimate is inhibiting; that is quite all right; I think you explained that to us before?—All scientific matters are dealt with by the Agricultural Research Council. Borderline cases are discussed between the Agricultural Research Council and the Ministry, as I understand it, and purely farm and administrative staff matters are dealt with by the Ministry.

1906. Your estimates are closely scrutinised by the Ministry?—By the Ministry in conjunction with the Agricultural Research Council. They go through them in detail. I then attend a meeting at which I have to justify the increases, and on occasions explain why I have not spent money.

Mr. Blackburn.

1907. That will not be often?—That does happen. You have a grant of money for a particular piece of research and you do it not that year but the year after. That is naturally not in the laboratory itself; it is when you get into the field and you may find that the trees are not suitable that year for the particular piece of work involved.

Chairman.

1908. You can get day to day decisions, and you can get decisions on buildings and other things quickly enough?—Yes, except in those cases where you get tricky questions of grading. A matter of very grave importance to agricultural research stations as a whole, and particularly to East Malling, is the ability to pay adequately a farm supervisor. There one comes up against difficulties. People confuse that with a farm bailiff or something like that, whereas a farm supervisor on a research station is as important as are the most senior members of the research staff.

1909. I have forgotten about your building extensions. Were they put up by the Ministry of Works?—No, Sir. The general scope of the requirement for extra space was agreed with the Agricultural Research Council. Sketch plans were provided, and agreed on the scientific basis with the Agricultural Research Council and with the Ministry as well. Detailed plans were then provided by independent architects; tenders were called for under the rules of the Ministry; my committee selected a tender, and recommended it for acceptance to the Ministry and to the Agricultural Research Council. That was agreed. Building is being done by direct tender in that way. The general procedure has worked most expeditiously and very well.

Chairman.] Thank you very much. I am sorry to bring you to London for such a short time, but we wanted just to get this further information from you.

The witness withdrew.

Adjourned till Wednesday, at Weybridge.

WEDNESDAY, 2ND JUNE, 1954.

Members present:

Mr. Albu in the Chair.

Mr. Blackburn.
Sir Alfred Bossom.

Mr. MacColl.
Mr. Summers.

Evidence taken at the Ministry of Agriculture and Fisheries' Veterinary Laboratory, Weybridge.

Mr. J. N. RITCHIE, Chief Veterinary Officer, Ministry of Agriculture and Fisheries and Dr. A. W. STABLEFORTH, Director, Ministry of Agriculture and Fisheries' Veterinary Laboratories, called in and examined.

Mr. C. P. QUICK called in and further examined.

Chairman.

1910. I am not quite sure who is going to reply to some of our questions, whether it will be Mr. Ritchie or Dr. Stableforth, but I leave that to you to decide. I would like, first of all, to thank you gentlemen for showing us round the laboratories. We have been very interested. I am sorry we were not able to spend more time, but I think you understand why. I do not profess to be an agricultural expert, and I do not think any of us are veterinary experts. We are more concerned with the administrative aspects. I think you understand our terms of reference. We are only concerned with the economy of public expenditure, and not with policy?—(Dr. Stableforth.) Yes.

1911. This Sub-Committee has been examining agricultural research in general. We have visited a number of stations, independent grant-aided stations and stations of the Agricultural Research Council. This is the only direct Ministry establishment we have visited. I think the matter to which the Sub-Committee would like to direct its attention most is the relationship between the work done here and the work done in other animal experimental stations. I think the first question I would like to ask on that is this. What is the relationship between the work done here and at Compton, and to some extent at Babraham? Is there a specific difference between the research work done here and the research work done at these other places? I understand the veterinary work in the field is clinical work, and therefore is that the real reason for this establishment being a Ministry establishment rather than an Agricultural Research Council's establishment?—This arose in the first place from the necessity to help with the diagnosis of animal disease, and from that flowed the necessity to look into other diseases which cropped up when we were looking for a specific disease and therefore research on those diseases which are obviously costing the country a lot of money.

1912. Would it be right to say that the work done here really preceded most of the experimental work done on animals anywhere else?—Yes, that would be true, very definitely.

1913. The other animal research stations are relatively new?—(Mr. Ritchie.) Comparatively. I think there is another point, that the work originally here dealt with mainly the notifiable diseases, diseases which we control statutorily. We still do more work on those than any other unit does, except for foot and mouth disease because that was concentrated all in one institute some years ago, for obvious reasons. One has to be so extraordinarily careful in working with that particular disease, so that there is no escape of the virus from the unit which is dealing with it. At one time there was work done here, and at one time at the Lister Institute, on foot and mouth disease, but it was concentrated in one place when Pirbright was set up.

1914. Now that there has been this really enormous expansion of Government supported agricultural research, much of which has taken place during and since the war, does not the question arise whether the division of this work is now quite as good as it could be? For instance, is not some of the research work which is done here on brucellosis overlapping work which is done at Compton?—In fact it is not, I think, in this sense that work which has been done here led up to some of the experiments which have been done at Compton, for instance the large experiment which was started five years ago at Compton which involved using about 500 animals. That was transferred to Compton because of the accommodation which was available there for it. (Dr. Stableforth.) Each knows what the other is doing. I was on the original sub-committee of three which planned this experiment. We have an Agricultural Research Council committee on brucellosis, of which I am the chairman for the time being, at which this is discussed. So there is full knowledge

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[Continued.]

of what each is doing. There is no large amount of overlapping. In fact there is practically no serious overlapping as far as large animals are concerned. We were doing a lot of work on killed vaccine and on an extract of brucella, but when we came to the stage of a big experiment which we could not undertake here we then asked Compton to do it for us.

1915. Your work is the sort of clinical work in a hospital?—No. Clinical work in a hospital deals with an individual patient, as a rule, whereas we deal with diseases which affect herds. We deal with them on a herd or flock basis much more.

1916. You deal with new diseases brought to your attention by veterinary surgeons or by the Agricultural Advisory Service staff in the field?—Yes, and our own field people as well.

1917. When it gets to a certain point, then they pass it on to you?—No. (Mr. Ritchie.) Not necessarily, but we have had to pass on the brucellosis work to Compton.

1918. Who decides whether the work on a particular disease is done by you or by Compton?—That I think was done by the brucellosis committee which the Agricultural Research Council set up.

1919. What about these other diseases? Who decided that you should do this work on rhinitis?—I think clearly what happened there was that we had to pick up the evidence that there was infection. It was a disease which we considered we would have to control by statutory authority, and this was the obvious place to do the first investigations which were originally diagnostic to cope with a disease which we were making notifiable.

1920. I have no preconceived ideas on this. It is just that it is a little difficult to see how the work is co-ordinated. As I understand it, the Agricultural Research Council is responsible for scientific policy, research policy, both for its own institutes and for the grant-aided independent institutes, but it has no authority for scientific policy with regard to Ministry establishments?—That is so.

1921. Although I noticed Dr. Stableforth said he was the chairman of the Agricultural Research Council committee on brucellosis, and I believe, Mr. Ritchie, you are a member of the Agricultural Research Council itself?—Yes, Sir, very recently, but we are both members of the standing committee on research affecting animals of the Agricultural Research Council.

1922. Do you feel that ensures sufficient co-ordination?—It goes a very long way towards it. For instance, one of the very serious problems, as you will have gathered on your way round, we have now is this John's disease. Work on that is going on at

different places. Similarly, the Agricultural Research Council has a committee on that disease, of which I am the chairman, and we endeavour to correlate the work which is going on.

1923. I believe I did ask Mr. Quick before a question about the advantage of combining the work of production of vaccines and other therapeutic substances with the work of research. I am not quite clear why that is necessary?—(Dr. Stableforth.) It has a tremendous advantage. We tried at one period, when the new blocks A, B, and C were being built, to put the production of large amounts of biological products into separate units under medium seniority officers instead of under the heads of departments, but after a time we came to the conclusion that there was so much research which flowed out of the actual production side and that so much needed to be tried out on the production side from something which had been developed on the research side that it was much better to keep the two together.

1924. It would be fair to say that the independent institutes of the Agricultural Research Council are perhaps more concerned with fundamental work, and that you are more concerned with research work directed towards the viruses of disease, curing disease and diagnosing it?—(Mr. Ritchie.) I think that is reasonable, except that we cannot be completely divorced from fundamental work in certain circumstances. (Dr. Stableforth.) Part of our work is very definitely applied, but we do a lot of fundamental work, which we just have to do to understand our own diseases.

1925. You understand your own diseases, but these other people are also examining diseases?—Yes. I do not think there ought to be a very sharp distinction here. We do both. The others do not do very much on the applied side.

Sir Alfred Bossom.

1926. Who divides them? Who settles what shall flow from whom?—There is a flow from one to another. We tell each other what we are doing. If we know that Compton is doing something that we are doing, we put our heads together. In a way it is duplication, but it is intentional duplication. Although I see the point you are making, in a research laboratory I do not know that it is quite so important as it is in other fields. (Mr. Ritchie.) An example is possibly the occasion when we have got to deal with problems of tuberculosis. We do have a body among ourselves which discusses the forward work on that.

Chairman.

1927. In the Department?—In the Department. Three members of the staff here,

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[Continued.]

myself and one of my colleagues in the field. We probably see something in the field which wants an answer or an improvement. We discuss it here with those who are producing the tuberculin and doing work on tuberculin testing.

1928. Would there be an advantage from the point of view of this research institute if it were under the Agricultural Research Council? That may be difficult for you to answer?—There would be certain functions of this place which could not reasonably come under the Agricultural Research Council. We have our statutory obligations over the diagnosis of various notifiable diseases, and it is almost axiomatic that we must do research and that sort of thing. Equally the production for our scheme which do here—tuberculin, 519 vaccine, vaccine for swine fever and various other smaller things like antigen for testing birds for pullorum and so on—gives rise in turn to problems in the improvement of the materials used for that work and in the side issues which come from that production.

Mr. Summers.

1929. As regards the production side of the viruses is there any export trade?—(Dr. Stableforth.) Some, but not very much, in tuberculin.

1930. Is that because the countries which want to use it have their own facilities, or is it because they have not woken up?—Usually because they have not got the facilities to do it, and our usual attitude is "We will help you in the first place. Will you send someone over to learn how to do it?" That does not apply to the colonies. There we do a little more than that. We do go on supplying the material there, but otherwise that is our general attitude.

1931. Why is it desired not to get involved too much in overseas requirements?—We are a research institute; we are not a producing unit. We only produce where we need to do it either because there is a State scheme or because, like the swine fever vaccine, we can produce it more cheaply than anyone else. Two firms have fallen down on it, in the sense that one tried it, found it too costly and did not continue, whilst another ran into difficulties of various kinds and was not willing to expand production unless we gave them a seven years guarantee or a large capital sum for buildings. One foreign vaccine also failed to pass our tests.

Chairman.

1932. Your research worker is not an earner. It was just coming into my mind that the research is in fact almost entirely to support the production of therapeutical substances. Is any research done here which is not to support the production of

therapeutical substances or for diagnostic reasons?—Yes. A very large proportion of it is for diagnostic reasons, if you include in that finding out the cause of a new disease which has come into the country. We are doing that, but that is what we would call research; in fact it is. As far as the therapeutical substances are concerned we are trying to improve them.

1933. Do you get any royalty to cover the production of substances which you have developed here, when you hand them over to firms?—No. (Mr. Quick.) No, Sir. (Dr. Stableforth.) We may reserve some of it. (Mr. Ritchie.) We do produce a colossal amount of tuberculin. If it was sold at the normal price our production would be something like £200,000 a year.

1934. That is all part of the service which the Ministry gives to farmers; it is given away?—Yes. A certain amount is sold, probably something in the region of £12,000 to £13,000.

1935. It is used in testing?—It is used in testing.

1936. By the veterinary officers?—Yes. In the tuberculosis scheme a certain amount of testing at the early stages has to be done by private arrangement between the farmer and his own veterinary surgeon, and for that purpose tuberculin is sold.

Mr. Blackburn.

1937. Do you ever hand over to manufacturers your discoveries of vaccine?—(Dr. Stableforth.) Yes.

1938. I am just trying to follow up the Chairman's question on royalties?—That is our usual method. Take myxomatosis at which you have just been looking. We developed a vaccine for that. In that case we just told the manufacturers everything about it and how to do it. That is our general policy. (Mr. Ritchie.) We had not developed that *de novo*. (Dr. Stableforth.) No, but if we had done so the policy would have been the same. (Mr. Quick.) I think the short answer is this. To the best of my knowledge it is freely laid on. There are no royalties for anything which might be discovered or developed here.

Chairman.

1939. Is there any reason why there should not be? Presumably these are all quite substantial commercial earners?—No. (Mr. Ritchie.) Not necessarily. (Mr. Quick.) Indeed, in some instances it is extremely difficult to persuade commercial firms to go into production, as we found in the case of the crystal violet vaccine. They just will not do it; it is too difficult.

Mr. Blackburn.

1940. In many cases you supply a free service. What is the position when you hand over manufacture to a commercial

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firm? Has the Ministry then got to buy back from the manufacturers in order to supply it?—(Mr. Ritchie.) No. In our free services we produce everything except for a small proportion of the crystal violet vaccine. (Dr. Stableforth.) That was because the demand increased so rapidly that we could not cope with it. (Mr. Quick.) There would never be any question of passing proprietary rights to a firm, and then having to buy from them.

Chairman.

1941. As regards the £80,000 capital for these scientific laboratories and the further sum of £119,000 which will be subsequently required, is that for the production laboratory about which you were telling us?—(Dr. Stableforth.) That is for the new production laboratory, to release the pressure on those you have seen.

1942. That will not be for research work?—That is essentially production.

1943. I think you were saying that the production aspect was growing at an accelerated rate?—Did I say that? The amount of swine fever vaccine required was accelerated, and still is a bit. (Mr. Quick.) The greater measure of success our policies have the greater the production of vaccine which will be necessary.

1944. What about tuberculin?—(Mr. Ritchie.) That is still steadily rising. (Dr. Stableforth.) That is nearly right back. (Mr. Quick.) If there were not these rises, our policies would not be successful. (Dr. Stableforth.) With both those things, and with anything of that nature, as soon as it has left the research side we hand it over to fully trained technicians, experimental officers, and then they run the production under the supervision of the professional officers.

1945. Professional officers are the heads both on the research and production sides, but the production side is under an experimental officer?—Yes, they are quite trained people.

Sir Alfred Bossom.

1946. In two or three of the buildings we saw the congestion was very great?—You did not see the others.

1947. We saw some very badly congested buildings?—Yes, there are some.

1948. Naturally you want more space; that is logical; but in your judgment would you save money by having more space?—Literally that is true, because, as in the last laboratory you saw they just have to wait for space. They cannot be efficient without it. It is true in some other respects, but on the whole people just get jammed up. They know they have got to do the job, and they do the job under the worst possible conditions until we get more space.

1949. Do you consider you could create economy if you had a little more space. For instance, where you had those very fine instruments and you were using the room for packing, that was straight inefficiency?—Yes. (Mr. Quick.) If economy includes the efficiency of the individual, the answer is, unquestionably, yes. Each worker would be more efficient if there were more space. (Mr. Ritchie.) I think this new building will relieve that very considerably, because we could then transfer the production, which has spread to these other rooms, back to where it was. (Dr. Stableforth.) There is one point I would like to make here. The staff has increased quite a bit in the last few years. Building was held up during the war, and we are just now catching up.

Mr. Summers.

1950. Coming back to my point about fresh outlets abroad for your products on some commercial basis, is there a demand which for good reasons you have decided not to seek or does that demand not exist elsewhere?—I do not think we know the extent of the demand, but I should think one very important point would be this, that if a country has a large demand it is obviously going to be cheaper for it to make its own products. So I do not think there will be a very extensive demand abroad for our products, or for anybody's products for that matter. Take tuberculin; we may help another country to start with it.

1951. Would not that other country lack the scientific knowledge and research workers to produce the answer which only you here can produce?—In that case we help it first with a little material. We sometimes have long arguments whether we shall hand them more material. We usually tell them, "Send someone to be trained". We have done that for many countries. In fact we do quite a lot of it.

1952. Where is the decision taken to continue as now as opposed to building up an export trade in some of these things?—(Mr. Quick.) The frank answer is that I do not think it has ever been seriously considered, that is to say, regarding Weybridge primarily as a large production unit of the substances. It has certainly not been considered in my comparatively short time here; I doubt whether it has ever been.

Chairman.

1953. Would it be possible to train people in relatively undeveloped countries in the technique of production?—You have put your finger exactly on the difficulty. In many of the undeveloped countries like Indonesia or Pakistan they have not got the half trained personnel in sufficient numbers.

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[Continued.]

1954. For the production of this material?—Yes. All we can do is, if they send a man over here, to train him through the whole process—perhaps it is a technician occasionally—and then he must go back and train his own people. Internationally the sooner that happens the better, and I have raised that point with F.A.O.

Sir Alfred Bossom.

1955. Would you fear any detrimental effect on your own service to the British farming community in regard to any development along those lines which might be started?—On the training side. My point with F.A.O.—

1956. In the production of various vaccines?—No. (Mr. Ritchie.) The only thing we could ever have sold in sizeable quantities would have been tuberculin. We have never been at the stage of production with enough slack for any of the other materials. I think that is correct. (Dr. Stableforth.) Yes.

Mr. Blackburn.

1957. You still need qualified people to handle it over on the other side?—(Mr. Ritchie.) Yes, and use it in the field.

Mr. Summers.

1958. Would you fear any detrimental effect on the service you can render here if development along those lines started?—The only one is tuberculin where we are not at full production. We are always having difficulty in producing enough of the other materials. As far as tuberculin is concerned, as you have seen demonstrated to-day, some of it is not being produced at the moment because we have enough in stock, and part of that building is being used now for one of the processes in the production of crystal violet vaccine. I should have thought that, if there was a decision to develop the export trade by the sale of tuberculin, physically it was possible to do it without detriment to our own service here; but that would be the only trade. (Dr. Stableforth.) I agree with you entirely, but I would not personally like to see this place developed to take a large amount of commercial production because it would then become more difficult for me as director, even with extremely good heads of departments and deputies, to give what I should to the research side in the way of attention.

1959. That was the aspect I was thinking of primarily?—We would want a senior officer in charge of production.

Sir Alfred Bossom.

1960. Another branch of activity entirely?—I think it would be unfortunate.

Chairman.

1961. As I think you said, the fact is that the only market likely to exist is a market which could not afford to pay for it and probably would not be able to do it?—(Mr. Quick.) Yes.

Sir Alfred Bossom.

1962. A Nigerian student is working here. Is any research work on similar subjects done in the Empire, and if it is do you send information out to the Empire?—(Mr. Ritchie.) It is freely available. (Dr. Stableforth.) It is freely available for anyone who writes for it. The Commonwealth Bureau of Animal Health, which is located here, provides also a monthly bulletin (The Veterinary Bulletin) of the more important publications all over the world. We do personally send advice when we are so asked.

1963. There is a wider scope than just the British Isles alone?—Yes. (Mr. Quick.) There is quite an amount of training of these overseas students at Weybridge. (Dr. Stableforth.) We also attend international conferences and give freely of our knowledge. (Mr. Ritchie.) I think, if I can make the point, there is a great deal of training of our own staff.

Chairman.

1964. The staff of the Agricultural Advisory Service?—The veterinary field staff. For instance, we have technical assistants testing poultry. We are getting more technical assistants, and they will all come through Weybridge for training.

1965. Is there any relationship with the universities?—(Dr. Stableforth.) We have very good relations with all our colleagues in the universities. We meet at scientific meetings, and we meet in the same way at veterinary medical research meetings.

1966. You do not have any university post-graduate students working here?—Not as such. We have people sitting here and taking degrees on the results of their work here. We do not have internal students; we are not a school of the university.

1967. I just wondered if any university post-graduate students worked here at all; that is not done?—I do not think it is done that way. Not being an affiliated school, they cannot do it. It is the other way round. People get degrees on the result of their work here.

Sir Alfred Bossom.

1968. Is there any central agency where all research bodies in England exchange information, or is it rather haphazard and you do it through friendship?—(Mr. Ritchie.) Yes, and through publication.

1969. Purely through friendship among yourselves?—(Dr. Stableforth.) I suppose the committees of the Agricultural Research

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[Continued.]

Council do pretty well bring everybody together. We have got a veterinary research club and a medical research club as well where we meet specifically for the purpose. (Mr. Ritchie.) And at our periodical conferences. We have a biggish conference every year of the veterinary investigation service.

1970. There is a certain amount of system about it, but largely it is done through friendship?—(Dr. Stableforth.) It is a typical British system. (Mr. Ritchie.) We do bring other people to it—Agricultural Research Council people and university people. (Dr. Stableforth.) We have the principal of each veterinary school here for our annual two-day conference.

Mr. Summers.

1971. Do you find difficulty in getting the number and quality of staff which you need?—Yes, we do a little. At the present moment we are having great difficulty in recruiting the quality we want.

Chairman.

1972. Scientific or experimental officers, or what?—Scientific officers, chiefly.

1973. Is that because of the civil service rates of pay?—That is one of them undoubtedly. There is a variety of things.

1974. They are on the same scales of pay as given by the other bodies, the independent institutes and those of the Agricultural Research Council?—Yes, almost comparable.

1975. There is some competition from industry?—There is some competition from industry, and from veterinary practice. That is the main competition. Everybody there pays so much more.

1976. What proportions of your scientific staff are veterinary surgeons, biologists or other scientists?—The total is sixty to seventy, of which nine to ten are other than veterinary.

1977. And the rest are veterinary surgeons?—The rest are veterinary. Most of the jobs we do have a veterinary background. Where we have got a specific problem we say what it is, and it is passed to these specialists.

1978. You are responsible for Lasswade. What is the size of the staff employed there?—Four professional staff, one medium seniority and three juniors. There is also the Officer-in-Charge. The total laboratory staff is thirty to forty. I have not got the exact figures in front of me.

1979. About that sort of size?—Yes.

1980. What is the relationship between their work and here?—They are essentially a poultry laboratory. I suppose their primary job was to carry out work in connection with the Ministry's control schemes and the

research work developing out of them. Therefore they largely do research on poultry production. In recent years we have expanded it to deal with a variety of other things, and to act as a sister or ancillary laboratory of this. We control their programme entirely.

1981. Is there any rational reason for its existence?—As far as poultry is concerned it is convenient to have a diagnostic and investigation laboratory in the South of Scotland which can most easily deal with Scotland and the North of England. (Mr. Ritchie.) It originated in 1938 when the Animal Health Division was set up and the work of poultry diagnosis was concentrated at one of the veterinary schools. The Ministry then took over the diagnostic service, and the service to the accredited poultry scheme in Scotland which was a Department of Agriculture for Scotland scheme. We do the veterinary side of that for them.

1982. It is more a diagnostic laboratory?—It was originally more a diagnostic laboratory.

1983. But is now doing research as well?—If I may explain the change which has taken place in the testing of poultry, at that date the testing of poultry was done by submitting blood to a central laboratory. That was done here, and it was done by Lasswade from 1938 onwards. Before 1938 it was done at one of the veterinary schools. We now do that testing in the field by a rapid test on the spot, on the farm, so that a good deal of that sort of routine which was going on at Lasswade is no longer necessary.

Mr. Blackburn.

1984. Lasswade is not entirely fowl?—Not entirely.

1985. There is swine fever as well?—Yes.

Sir Alfred Bossom.

1986. When you discover something which is of great value how is that information passed on to the agricultural industry? Do you turn it over to the Department, and does the Department do that?—(Dr. Stableforth.) It depends what it is. If it was something calling for immediate control the chief veterinary officer would be told, although he would usually know about it well beforehand. Then it would be eventually circulated to our own staff, and possibly to other departments of the Ministry. We publish information. (Mr. Ritchie.) We publish a lot of advice through a series of animal health leaflets.

Chairman.

1987. I understand you are also responsible for the veterinary investigation laboratories throughout the country?—(Dr. Stableforth.) They are provincial laboratories.

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[Continued.]

1988. Who is in charge of them?—He is called a veterinary investigation officer; he is an intermediate senior.

1989. A professional officer?—A professional officer. In fact there are two professional officers, one veterinary man in charge and an assistant.

1990. Their business is investigation on the spot?—That is right. They do the local diagnosis of material to help the diagnosis of disease. They investigate local disease on which the practitioner cannot help the farmer. They may be called in directly by the farmer sometimes. If they can deal with it and say what it is, good enough. They may send the material here for confirmation; they may use their own laboratories in the first place. If it is something new they start an investigation to find out what it is, and when they get to that stage we know about it. We have monthly reports.

1991. They do not really do research?—It depends what you mean by research. It is such a wide word. When they find a new disease they investigate and find out the cause. They do research into it in that way. That is the nature of the work. They will not settle down to intensive research the whole time on an experimental basis. They do quite a bit of very good research. They make some of the best contributions. We must encourage them. You cannot keep good men if you do not. You cannot have a man just as a pure diagnostic officer. (Mr. Ritchie.) I was going to give an example of this problem, Johne's disease, which does not lend itself to very close experimentation. Doctor Stableforth did I think say earlier, as we were going round, that we are trying to use these diagnostic methods which have been developed here in a few herds. That sort of work can solely be done by the veterinary officer in the field who is close to the farmer and can get co-operation. He can produce the evidence which is necessary at this end to assess the situation about that sort of system. It is not like setting up a controlled experiment. (Dr. Stableforth.) Then you may, on the other hand, set up a controlled experiment, e.g. on a sheep farm to try out a new vaccine, one-third not done and a third on two different vaccines.

1992. Sometimes at your request?—Yes. Certainly with our support or direction, but it could actually be started from here.

1993. Just one final question on the co-ordination of the work in Scotland. The Agricultural Research Council does not operate in Scotland?—(Mr. Ritchie.) Yes.

1994. It co-ordinates the work in both countries?—Yes. As far as we are concerned, we do not deal with the veterinary investigation service in Scotland.

1995. Because that is dealt with by whom?—The agricultural colleges. That flows from the fact that the advisory service in Scotland is still in the colleges, whereas it is the National Agricultural Advisory Service here. At that stage the veterinary investigation officers came over to the Animal Health Division.

1996. It would be embarrassing for you to express an opinion on which would be the better method?—I do not know.

1997. A conflict of loyalties might arise?—(Dr. Stableforth.) The individual ran his own show in a university. The man who is doing his own job, not being a servant of the Government, has some advantages, I have no doubt. For that reason we encourage our own people to have ideas in the field.

1998. Why do you not change over in England?—Because I think the co-ordination is advantageous, on the whole. We know the state of the national herds in respect of disease. They can get help from here, with very big central laboratories with all sorts of facilities. If we want to get a thing tried out in the field, we can do it. On the whole, I think it is advantageous.

1999. There is a complete flow. There is no difficulty about co-ordinating the work done here with the veterinary colleges in Scotland?—(Mr. Quick.) There is a complete flow of information. It is just that Scotland has a separate organisation. (Dr. Stableforth.) We invite them to our annual conference. (Mr. Ritchie.) All the official staff in Scotland co-operate with them just as much as our staff here.

Chairman.] Thank you very much indeed.

The witnesses withdrew.

Adjourned till Wednesday, 16th June, at 2.30 p.m.

APPENDIX 1

AGRICULTURAL COLLEGES—MAINTENANCE GRANTS IN AID FOR THE
ACADEMIC YEARS 1949-50—1954-55*Memorandum by the Ministry of Agriculture and Fisheries*

	1949-50	1950-51	1951-52	1952-53	1953-54	1954-55
	£	£	£	£	£	£
Royal Agricultural College, Cirencester	1,000	1,500	Nil	Nil	2,000 (not paid)	Nil
Seale-Hayne Agricultural College, Newton Abbot ...	3,500	3,500	3,000	2,500	3,500	5,000
Studley Agricultural College...	3,500	3,500	2,500	2,500	3,500	4,000
Harper Adams Agricultural College, Newport	6,000	7,000	5,000	4,500	6,000	9,500
University College of Wales, Aberystwyth—Dairy Dip- loma Course	—	—	—	—	—	1,500
TOTALS	£14,000	£15,500	£10,500	£9,500	£15,000	£20,000

APPENDIX 2

AGRICULTURAL RESEARCH

*Additional Memorandum by the Ministry of Agriculture and Fisheries*A. RELATIONS AND WORKING ARRANGEMENTS BETWEEN THE MINISTRY OF AGRICULTURE
AND FISHERIES AND THE AGRICULTURAL RESEARCH COUNCIL

1. This memorandum supplements that supplied to the Sub-Committee by the Ministry on Grants in Aid* and the two memoranda supplied on the Agricultural Research Council.† As the Sub-Committee has been informed, the organisation of agricultural research in Great Britain is being considered by Ministers, who are, however, not expecting to reach decisions until after they have had the result of the Royal Commission on Scottish Affairs.

2. The functions of the Ministry in agricultural research are:—

- (a) To finance the independent research institutes, in the light of the advice of the Agricultural Research Council in regard to scientific matters (research programmes, scientific staff, equipment, etc.).
- (b) To appoint, where appropriate, members of the Governing Bodies of the institutes and to give general guidance on the conduct of their affairs. The majority of the institutes were set up by private individuals and associations or by Universities. In most of these cases—but not all—the Ministry nominates a representative on the Governing Body. Most of the institutes set up since the war have Governing Bodies entirely appointed by the Agricultural Ministers.
- (c) To acquire land, where necessary, for the purposes of the institutes under Section 85 of the Agriculture Act, 1947. The pre-war institutes own their land; it was sometimes acquired with the aid of capital grants from the Development Commission or the Ministry. The post-war institutes occupy land bought by the Ministry and leased to them.
- (d) To supervise the farming operations of the institutes. These operations are necessarily very closely linked with the scientific work of the institutes. There is little straightforward farming.
- (e) To supervise the appointment and conditions of service of the non-scientific staff of the institutes. Administrative and clerical staff are, in general, employed on Civil Service conditions. Industrial and agricultural staffs follow prevailing agreements and conditions.
- (f) To inform the Agricultural Research Council, whether through the Agricultural Improvement Council or otherwise, of the agricultural problems which require research.

* Memorandum 1 on page 1.

† Memorandum 4 on page 24 and Memorandum 5 on page 54.

3. The arrangements necessarily call for close contact between the A.R.C. and the Ministry. This is secured in various ways:—

- (a) The Ministry supplies assessors to the Council and to its Standing Committees, and papers for the meetings of these bodies are consequently available to the Ministry.
- (b) Although technical officers of the Department are not *ex officio* Members of the Council or its Committees, in practice such officers are at any one time normally among the members of these bodies.
- (c) Representatives of the Ministry sit on the various Technical Conferences which are constituted under the Council's auspices.
- (d) The Council receives information and suggestions from, and conveys information and suggestions to, the Agricultural Improvement Council and there is a joint Committee of the two bodies and the Scottish Agricultural Improvement Council. A member of the A.R.C. sits on the A.I.C., and the Secretary of the A.R.C. is also a member of the A.I.C.
- (e) The assessment of the annual maintenance grants to the grant-aided research institutes is made after examination by the Ministry and the A.R.C. of the estimates of each institute and a subsequent joint meeting with the Director.
- (f) When an application for a capital grant is made by an institute, the Ministry obtains the advice of the Council on the scientific aspects (i.e. the needs of the institute in relation to its approved research programme, and the suitability of the proposal to meet those needs). There is joint consideration of building plans for the research institutes for some years ahead in order to determine needs and priorities, and to estimate likely expenditure. At present, the Council and the Ministry are working on a ten-year programme approved at the end of the war.
- (g) The selection of members of Governing Bodies of Research Institutes (where they are appointed by the Ministers) is an important matter and there is full consultation with the A.R.C.

4. In general, there is constant consultation between the Ministry and officers of the Council on matters of common interest. Although the arrangements for the administration of research may look somewhat complex, in practice they work reasonably well.

B. PRIVATE CONTRIBUTIONS TOWARDS THE COST OF AGRICULTURAL RESEARCH

5. The establishment of the first agricultural research stations in this country came from the initiative of private persons or associations, or of educational institutions. At an early stage Exchequer help was given, particularly after the Development Commission was set up. During the inter-war years, new grant-aided centres were established and the scale of agricultural research generally increased steadily. Since the war a number of fresh stations have been founded and a further large increase has taken place in total expenditure.

6. Contributions towards research expenditure from associations within the agricultural industry have come, mainly, on the horticultural side. The East Malling and Cheshunt Stations were formed by associations of growers which acquired and developed property (aided by Exchequer grants) for research purposes and continue to provide some income to the Stations. The Long Ashton Research Station developed from an association between the National Fruit and Cider Institute and the University of Bristol. The John Innes Horticultural Institution owes its existence to private benefaction, as does Rothamsted, the largest of the agricultural research stations. The remainder of the Stations (as they now exist) were set up by Universities (National Institute for Research in Dairying, Welsh Plant Breeding Station, Poultry Genetics Station, Research Institute in Plant Physiology (Imperial College) and Hop Research Unit at Wye) or by the Agricultural Ministers direct (National Institute of Agricultural Engineering, Foot and Mouth Disease Research Institute, Plant Breeding Institute, Grassland Research Institute, National Vegetable Research Station, Glasshouse Crops Research Station). The National Institute of Agricultural Botany which, although not primarily a research institute, is grant-aided in the same way as the research institutes, was established as a charity. Its property was acquired and developed mainly without the aid of Exchequer grants, and there is a small income from membership fees.

7. The Ministry has from time to time considered the possibility of securing contributions from the industry towards the cost of agricultural research, and whilst it would welcome such means of reducing the cost to the Exchequer the practical obstacles are very great. There are several hundred thousand farms in the country varying considerably in size and character. A general statutory levy would seem to be the only means of securing a substantial and assured income; but any such scheme presents great difficulties. With a voluntary scheme, it is hard

to see how any means could be found of collecting the contributions from farmers generally or of relating contributions to the work of the particular institutes. A large proportion of commercial producers are members of the National Farmers' Union but it is understood that the Rules of Association of that body would not allow it to undertake the collection of contributions like this.

8. Certain other considerations are relevant. The cost of research has increased so much that it is difficult for private associations to do what they did in the past. The Animal Health Trust is an example of effort by private interests to conduct research and other work into a matter of great agricultural importance; but the Trust has been experiencing considerable difficulty in securing the necessary financial support for its work. Public policy in a related field—that of advisory work in agriculture—has favoured a free service: the Agriculture (Miscellaneous Provisions) Act of 1944, in providing for the establishment of the National Agricultural Advisory Service, explicitly laid it down that advice should be given free of charge. Yet another consideration is that much agricultural research is of a very long-term character and more appropriate for State sponsoring; indeed, there would be a risk of harming agricultural research if industrial contributions led to over-emphasis on short-term problems or to a lack of balance in the general research programme.

9. The Ministry's conclusion has been that the hope of securing contributions towards research lies mainly in the development of organisation within the industry, which would provide machinery for the development of contributions for specific purposes. The establishment—or re-establishment—of agricultural marketing boards may well assist in this process. It has done so already in a few instances. The annual cost of hop research at Wye is met as to 60 per cent by the Hops Marketing Board and the Brewers' Society, the Ministry bearing 40 per cent. The whole cost of capital expenditure on this research is borne by the industry. Again, the Tomato Marketing Board has made a grant to the new Glasshouse Crops Research Station for the erection of certain glasshouses. The statutory levy on growers and the British Sugar Corporation for sugar beet research and education may also be mentioned. This arrangement is possible because of the position of the Corporation as sole buyer of sugar beet.

10. The National Institute of Agricultural Engineering requires special mention, in view of its relations with the manufacturers of agricultural machinery. The Ministry has been considering an approach to the manufacturers, but has not so far made one. It will be appreciated that the main purpose of the Institute's work is to benefit farmers rather than the manufacturers. So far as the latter are concerned, the Ministry's experience suggests that the larger firms, possessing their own research and development units, would not be likely to be interested in the making of contributions, while the smaller ones would not be likely to show willingness to contribute. Difficulty might, moreover, be found in pressing the manufacturers to contribute without making efforts to get contributions from farming interests at the same time; but there is no way of making effective contact with the farmers using agricultural machinery as a body. The Ministry is, however, giving further consideration to this matter.

11. In general, the Ministry's view is that only limited help is likely to be obtained from industry towards the cost of research; that progress in securing this will necessarily be slow; and that the form which it should take needs careful consideration. Where possible, however, the opportunity of obtaining contributions should be taken.

Additional Memorandum by the Treasury

C. INVENTIONS AND PATENTS

Until now the procedure for patenting discoveries made by the agricultural research service has not been regularised, assignment to the National Research Development Corporation being effected in most cases but direct application for patent being made in one or two instances. The position has been under consideration for some time and it is proposed to regularise the procedure by incorporating an obligation to assign any invention or discovery to his institute into the conditions of service of every research worker, and making it universal for the institute to re-assign to the Research Corporation. The terms under which the institutes should assign inventions to the Corporation—"direct assignment", giving the corporation the whole of any revenue or "revenue sharing", giving the institute 50 per cent of any royalty revenue—is under consideration by Departments and the Treasury.

APPENDIX 3

GRANTS IN AID FOR AGRICULTURAL RESEARCH
IN 1953-54 AND 1954-55

Additional Memorandum by the Agricultural Research Council

I. STATEMENT OF FUNDS PROVIDED FOR RESEARCH INSTITUTES AND UNITS
BY THE AGRICULTURAL RESEARCH COUNCIL

	1953-54 Approved Provision	1954-55 Approved Provision
	£	£
A. MAINTENANCE EXPENSES		
<i>Research Institutes:</i>		
(a) Institutes of the Council:—		
Field Station, Compton	209,500	231,100
Animal Breeding Research Organisation	149,650	169,300
Institute of Animal Physiology	80,425	99,600
Poultry Research Centre	33,225	35,000
Contingency provision (unallocated)	1,700	1,000
	474,500	536,000
(b) Grants towards maintenance expenditure at other Institutes:—		
Southern Poultry Research Station	—	15,000
Total, Institutes	474,500	551,000
<i>Research Units:</i>		
Unit of Insect Physiology	13,900	14,700
Plant Virus Research Unit	12,100	16,400
Unit of Animal Reproduction	25,500	29,050
Potato Storage Investigation	6,900	8,550
Unit of Experimental Agronomy	22,600	26,100
Unit of Biometrical Genetics	3,500	4,600
Potato Genetics Station	11,300	10,550
Unit of Soil Physics	3,900	4,500
Unit of Microbiology	3,200	3,100
Unit of Plant Nutrition (Micro-nutrients)	16,400	18,100
Unit of Plant Cell Physiology	} 5,000 {	4,300
Unit of Embryology		4,300
Systemic Fungicides Unit		4,400
Fungicide and Insecticide Research Co-ordination Service	16,500	1,600
Scientific Staff attached to Universities	17,700	18,750
New Units	Incl. above	5,000
Contingency provision (unallocated)	1,500	2,000
Total, Units	160,000	176,000
TOTAL, INSTITUTES AND UNITS	634,500	727,000
B. RECEIPTS		
Field Station, Compton	81,500	90,000
Animal Breeding Research Organisation	41,160	67,600
Institute of Animal Physiology	7,050	8,400
Poultry Research Centre	1,550	2,550
Unit of Animal Reproduction	1,000	3,200
Unit of Experimental Agronomy (Colonial Office contribution)	4,500	5,100
Other Units	40	50
TOTAL, RECEIPTS	136,800	176,900
NET TOTAL, INSTITUTES AND UNITS	497,700	550,100

	1953-54 Approved Provision	1954-55 Approved Provision
	£	£
C. CAPITAL EXPENDITURE		
<i>Research Institutes of the Council:</i>		
Field Station, Compton	43,000	29,500
Animal Breeding Research Organisation	128,000	112,000
Institute of Animal Physiology	147,000	145,000
	318,000	286,500
<i>Research Units:</i>		
Plant Virus Research Unit	7,000	300
Potato Genetics Station	1,500	2,500
Fungicide and Insecticide Research Co-ordination Service	3,400	—
Other Units	100	700
	12,000	3,500
<i>Grants to other Research Institutes for Capital Expendi- ture:</i>		
Southern Poultry Research Station	—	25,000
Hannah Dairy Research Institute	—	6,000
Long Ashton Research Station	—	5,000
National Institute for Research in Dairying	—	6,000
TOTAL, CAPITAL	330,000	332,000
D. GENERAL EXPENDITURE		
Administrative expenses	85,000	85,000
Special research grants to Universities, etc.	194,000	200,000
Training awards and fellowships	44,000	44,000
	323,000	329,000
<i>Less Receipts from sale of publications, recoveries from Government Departments, etc.</i>	<i>11,700</i>	<i>11,600</i>
TOTAL, GENERAL	311,300	317,400

GRANTS IN AID FOR AGRICULTURAL RESEARCH—*continued*II. STATEMENT OF FUNDS PROVIDED FOR RESEARCH INSTITUTES
BY THE AGRICULTURAL DEPARTMENTS

	1953-54			1954-55		
	Capital	Main- tenance	Total	Capital	Main- tenance	Total
	£	£	£	£	£	£
A. Research Institutes grant-aided from Vote of the Ministry of Agriculture and Fisheries						
Long Ashton Research Station ...	—	82,000	82,000	25,000	88,000	113,000
Poultry Genetics Station, Cambridge	10,000	9,000	19,000	—	11,000	11,000
Cheshunt Experimental and Research Station	35,000	36,000	71,000	—	—	—
Glasshouse Crops Research Station, Littlehampton	—	—	—	73,000	44,000	117,000
East Malling Research Station ...	35,000	150,000	185,000	30,000	146,000	176,000
Foot-and-Mouth Disease Research Institute, Pirbright	125,000	107,000	232,000	440,000	108,000	548,000
Grassland Research Station, Hurley ...	43,500	76,000	119,500	97,000	81,000	178,000
John Innes Horticultural Institution ...	—	51,000	51,000	5,000	50,000	55,000
Research Institute of Plant Physiology, Imperial College of Science and Technology	—	22,000	22,000	—	25,000	25,000
Hop Research Centre, Wye College ...	—	10,000	10,000	—	13,000	13,000
National Institute of Agricultural Engi- neering	25,000	229,000	254,000	20,000	241,000	261,000
National Vegetable Research Station	59,000	44,000	103,000	50,000	49,000	99,000
Plant Breeding Institute, Cambridge ...	53,000	28,000	81,000	40,000	32,000	72,000
National Institute for Research in Dairying	20,000	207,000	227,000	70,000	218,000	288,000
Rothamsted Experimental Station ...	35,000	265,000	300,000	60,000	275,000	335,000
Welsh Plant Breeding Station, Aber- ystwyth	34,500	63,000	97,500	30,000	75,000	105,000
National Institute of Agricultural Botany	—	106,000	106,000	—	94,000	94,000
TOTAL	£475,000	1,485,000	1,960,000	940,000	1,550,000	2,490,000
B. Research Institutes grant-aided from Vote of the Department of Agri- culture for Scotland						
Animal Diseases Research Association	12,400	41,778	54,178	11,400	40,290	51,690
Rowett Research Institute	10,463	136,242	146,705	16,150	145,920	162,070
Hannah Dairy Research Institute ...	16,933	60,446	77,379	7,200	61,450	68,650
Scottish Society for Research in Plant Breeding	26,600	27,419	54,019	18,070	33,310	51,380
Macaulay Institute for Soil Research	4,000	89,956	93,956	200	99,470	99,670
Scottish Machinery Testing Station ...	4,500	29,937	34,437	250	32,250	32,500
Scottish Horticultural Research Institute	33,050	35,720	68,770	13,150	40,800	53,950
Hill Farming Research Organisation	—	—	—	11,100	22,430	33,530
TOTAL	£107,946	421,498	529,444	77,520	475,920	553,440

III. SUMMARY OF TOTAL FUNDS PROVIDED FOR GRANT-AIDED RESEARCH INSTITUTES AND UNITS

	1953-54			1954-55		
	Capital	Main-tenance	Total	Capital	Main-tenance	Total
	£	£	£	£	£	£
M.A.F. Grant-aided Institutes	590,000	1,485,000	2,075,000	940,000	1,550,000	2,490,000
D.A.S. Grant-aided Institutes	107,946	421,498	529,444	77,520	475,920	553,440
A.R.C.:						
Directly controlled Institutes and Units	330,000	497,700	827,700	290,000	535,100	825,100
Grants for special research in Universities and Institutes, etc... ..	—	194,000	194,000	42,000	215,000	257,000
TOTAL	£1,027,946	2,598,198	3,626,144	1,349,520	2,776,020	4,125,540

Note A: The above statement does not include the funds provided for Stations under the direct control of the Ministry of Agriculture and Fisheries (see Appendix 4 below) nor of the Department of Agriculture for Scotland.

Note B: The above figures in the Summary do not cover expenditure incurred in administration.

APPENDIX 4

EXPENDITURE ON AGRICULTURAL RESEARCH AND RELATED MATTERS DIRECTLY CONTROLLED BY THE MINISTRY OF AGRICULTURE AND FISHERIES

Additional Memorandum by the Ministry of Agriculture and Fisheries

	1953-54			1954-55		
	Capital	Mainten-ance (net)	Total	Capital	Mainten-ance (net)	Total
	£	£	£	£	£	£
N.A.A.S. Experimental Centres	200,000	232,000	432,000	300,000	258,000	558,000
N.A.A.S. Provincial Laboratories	—	265,250	265,250	—	277,750	277,750
Provincial and County Experimental Work	—	18,000	18,000	—	19,000	19,000
Special Investigation and Research... ..	—	28,000	28,000	—	33,000	33,000
Plant Pathology Laboratory	—	20,915	20,915	—	27,905	27,905
Infestation Control Research	1,815	20,116	21,931	1,220*	25,835	27,055
Veterinary Research	62,025†	403,676	465,701	186,405†	362,170	548,575
Artificial Insemination Research	7,500	—1,000	6,500	6,400	—7,000	—600
TOTAL	£271,340	986,957	1,258,297	494,025	996,660	1,490,685

* £385 borne on Ministry of Works vote.

† Borne on Ministry of Works vote.

Note: Details of the above figures are given in Memorandum 6 on page 89.

APPENDIX 5

CAPITAL WORKS PROGRAMME

A. AGRICULTURAL RESEARCH INSTITUTES GRANT-AIDED BY THE MINISTRY OF AGRICULTURE AND FISHERIES

Additional Memorandum by the Ministry of Agriculture and Fisheries

1. The attached tables give:—

- I. particulars of capital schemes entailing expenditure in 1954–55 which are virtually completed;
- II. particulars of capital schemes in progress other than those in (I);
- III. information on other schemes which at this date have been put forward, however tentatively.

From II. it will be seen to what extent commitments extending beyond the financial year 1954–55 have been entered into. It will be appreciated that a number of these schemes inevitably take several years to complete, and although where practicable the schemes have been broken down into self-contained phases, this can be done to a limited extent only.

2. The further schemes in III. include all proposals other than schemes which have been authorised to proceed. They therefore cover at one end proposals which are being actively considered and are expected shortly to be approved (e.g. the more urgent developments at N.I.R.D.) and at the other end tentative plans which have not yet been worked out and which could not in any case start for some years (e.g. fruit buildings at Long Ashton). In between, there are schemes at various stages, some of which are necessary and should go forward fairly soon if circumstances permit, e.g. Long Ashton Laboratories. The estimates of cost are necessarily very rough in many cases. In general, the Ministry has it in mind that these schemes might be considered for execution over the next six years but the progress made will naturally depend on the funds available. Nearly all these schemes—as well as those now in progress—figured in the development plan for agricultural research which was drawn up at the end of the war and which it was thought might be carried out over the succeeding ten years or so.

I. SCHEMES VIRTUALLY COMPLETED

Institute	Total Estimated Cost	Expenditure to 31.3.54	Estimated Expenditure in 1954–55
	£	£	£
Glasshouse Crops Research Institute ...	83,770	56,872	26,898
Grassland Research Station	100,700	89,973	10,727
National Institute of Agricultural Botany ...	2,110	675	1,435
National Institute for Research in Dairying	40,890	26,626	14,264
National Vegetable Research Station ...	61,150	53,350	7,800
Plant Breeding Institute	17,300	11,498	5,802
Poultry Genetics Station	21,190	17,595	3,595
Rothamsted Experimental Station ...	48,000	34,286	13,714
Welsh Plant Breeding Station	43,000	33,225	9,775
TOTAL	£ 418,110	324,100	94,010

II. SCHEMES IN PROGRESS

Institute	Total Estimated Cost	Expenditure up to 31.3.54	Estimated Expenditure in 1954-55	Estimated Expenditure after 31.3.55
	£	£	£	£
East Malling Research Station ...	175,000	132,027	40,000	2,973
Foot-and-Mouth Disease Research Institute ...	805,000	195,185	440,000	169,815
Glasshouse Crops Research Institute	63,200	3,466	44,000	15,734
Grassland Research Station ...	211,500	22,437	71,500	117,563
John Innes Horticultural Institution	7,500	—	5,000	2,500
Long Ashton Research Station ...	60,000	—	24,000	36,000
National Institute of Agricultural Engineering ...	46,000	22,338	17,000	6,662
National Institute for Research in Dairying ...	92,800	10,221	54,800	27,779
National Vegetable Research Station	108,500	35,838	49,000	23,662
Plant Breeding Institute ...	152,000	108,818	38,000	5,182
Rothamsted Experimental Station	100,000	42,099	44,000	13,901
Welsh Plant Breeding Station ...	35,000	—	12,000	23,000
TOTAL£	1,856,500	572,429	839,300	444,771

III. PROJECTS NOT YET STARTED

Institute	Possible Amount
	£
Glasshouse Crops Research Institute ...	76,000
Grassland Research Station ...	55,000
John Innes Horticultural Institution ...	17,500
Long Ashton Research Station ...	188,000
National Institute of Agricultural Botany ...	194,000
National Institute of Agricultural Engineering ...	80,000
National Institute for Research in Dairying ...	389,000
National Vegetable Research Station ...	150,000
Rothamsted Experimental Station ...	146,000
Welsh Plant Breeding Station ...	30,000
TOTAL	£1,325,500

B. AGRICULTURAL RESEARCH INSTITUTES FINANCED AND DIRECTLY CONTROLLED BY THE AGRICULTURAL RESEARCH COUNCIL

Additional Memorandum by the Agricultural Research Council

I. SCHEMES VIRTUALLY COMPLETED

Institute	Total Estimated Cost	Expenditure to 31.3.54	Estimated Expenditure in 1954-55
	£	£	£
Field Station, Compton ...	493,500	483,623	10,000
Animal Breeding Research Organisation:— First Pig Research Station, Mountmarle, near Edinburgh ...	100,000	98,566	1,500
TOTAL£	593,500	582,189	11,500

CAPITAL WORKS PROGRAMME—*continued*B. AGRICULTURAL RESEARCH INSTITUTES FINANCED AND DIRECTLY CONTROLLED
BY THE AGRICULTURAL RESEARCH COUNCIL—*continued*

II. SCHEMES IN PROGRESS

Institute	Total Estimated Cost	Expenditure to 31.3.54	Estimated Expenditure in 1954-55	Estimated Expenditure after 31.3.55
	£	£	£	£
Animal Breeding Research Organisation:—				
(i) Dairy Cattle Station, Cold Norton, Staffs.	174,000	130,972	34,000	9,500
(ii) Twin Cattle Station, Blythbank, Peeblesshire	79,000	33,226	25,000	21,000
(iii) Welsh Mountain Sheep Station, Rhydyglafes, Merionethshire	41,000	39,158	2,000	—
(iv) Blackface Sheep Station, Stanhope, Peeblesshire	65,500	41,976	14,000	9,500
(v) Second Pig Research Station, Skedsbush, East Lothian	46,000	12,910	12,000	21,000
(vi) Field Laboratory, Dryden, near Edinburgh	23,500	3,376	12,000	8,500
(vii) Headquarters Laboratory, Edinburgh	18,000	510	11,000	6,500
Institute of Animal Physiology, Babraham, Cambridge	658,500	364,820	137,500	156,500
TOTAL	1,105,500	626,948	247,500	232,500

III. PROJECTS NOT YET STARTED

Institute	Possible Amount	Estimated Expenditure in 1954-55	Estimated Expenditure after 31.3.55
	£	£	£
Field Station, Compton	179,000	12,000	167,000
Unit of Plant Nutrition	6,000	3,500	2,500
Animal Breeding Research Organisation	130,000	—	130,000
Institute of Animal Physiology, Babraham	100,000	—	100,000
Animal Metabolism	20,000	—	20,000
Grants to other Research Institutes for Capital Expenditure on Special Projects	107,000	42,000	65,000
TOTAL	542,000	57,500	484,500

List III includes all items of capital expenditure which have been discussed however tentatively. Some of the figures are no more than preliminary guesses at the cost.

C. AGRICULTURAL RESEARCH DIRECTLY CONTROLLED BY THE
MINISTRY OF AGRICULTURE AND FISHERIES*Additional Memorandum by the Ministry of Agriculture and Fisheries*

I. SCHEMES VIRTUALLY COMPLETED

Service	Total Estimated Cost	Expenditure to 31.3.54	Estimated Expenditure in 1954-55	Estimated Expenditure after 31.3.55
	£	£	£	£
N.A.A.S. Experimental Centres ...	602,350	596,078	6,272	—
Veterinary Research:—				
(i) Veterinary Laboratory, Wey-bridge ...	16,140	10,500	5,100	540
(ii) Veterinary Investigation Centres	40,085	30,255	9,455	375
Artificial Insemination Research ...	350	—	350	—
Infestation Control Research ...	—	—	—	—
TOTAL£	658,925	636,833	21,177	915

II. SCHEMES IN PROGRESS

Service	Total Estimated Cost	Expenditure to 31.3.54	Estimated Expenditure in 1954-55	Estimated Expenditure after 31.3.55
	£	£	£	£
N.A.A.S. Experimental Centres ...	592,948	63,527	321,538	207,883
Veterinary Research:—				
(i) Veterinary Laboratory, Wey-bridge ...	350,050	27,740	165,000	157,310
(ii) Veterinary Investigation Centres	16,655	2,630	6,850	7,175
Artificial Insemination Research ...	9,400	5,750	3,650	—
Infestation Control Research ...	3,035	1,815	1,220	—
TOTAL£	972,088	101,462	498,258	372,368

III. PROJECTS NOT YET STARTED

Service	Possible Amount
	£
N.A.A.S. Experimental Centres	245,100
Veterinary Investigation Centres	28,000
TOTAL	£273,100

CAPITAL WORKS PROGRAMME—*continued*

D. SUMMARY

	Total Estimated Cost	Expenditure up to 31.3.54	Estimated Expenditure in 1954-55	Estimated Expenditure after 31.3.55
	£	£	£	£
A. Agricultural Research Institutes Grant-Aided by the Ministry of Agriculture and Fisheries	3,600,110	896,529	933,310	1,770,271
B. Agricultural Research Institutes Financed by the Agricultural Research Council	2,241,000	1,209,137	316,500	717,000
C. Agricultural Research Directly Controlled by the Ministry of Agriculture and Fisheries ...	1,904,113	738,295	519,435	646,383
GRAND TOTAL£	7,745,223	2,843,961	1,769,245	3,133,654

- Notes:—(i) The figures provided in these tables do not attempt to show the total capital expenditure since the war, nor necessarily the total capital cost of acquiring or extending any particular institute or service. The figures given only cover schemes or proposed schemes on which work has not yet been completed and has not necessarily even started.
- (ii) The figures given of actual and probable expenditure do not necessarily add up exactly to the total estimated cost since the sums shown for 1954-55 and after are estimates only.