Meeting with the Minister for Science : report with evidence / Select Committee on Science and Technology.

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HOUSE OF LORDS

SESSION 1998–99
1st REPORT

SELECT COMMITTEE ON SCIENCE AND TECHNOLOGY

MEETING WITH THE MINISTER FOR SCIENCE

REPORT WITH EVIDENCE

Ordered to be printed 26th January 1999

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CONTENTS

FIRST REPORT

26th January 1999

By the Select Committee appointed to consider Science and Technology.

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MEETING WITH THE MINISTER FOR SCIENCE

On Tuesday 26 January 1999 the Select Committee received evidence from Lord Sainsbury of Turville, Under-Secretary of State for Trade and Industry and Minister for Science; Dr John Taylor, Director-General of the Research Councils; Mr Tony Quigley, Director of the Science and Engineering Base Directorate of the Office of Science and Technology; and Ms Jo Durning, Director of the Transdepartmental Science and Technology Directorate.

The Minister and his colleagues answered questions on science and the public; science and industry; the Research Councils; and science and Government.

A transcript of these exchanges is appended to this Report, for the information of the House.

APPENDIX

Members of the Select Committee

Lord Birdwood
Lord Haskel
Baroness Hogg
Lord Howie of Troon
Lord Jenkin of Roding
Lord Kirkwood
Lord Nathan
Lord Perry of Walton
Baroness Platt of Writtle
Lord Ponsonby of Shulbrede
Lord Porter of Luddenham
Lord Quirk
Lord Rea
Lord Soulsby of Swaffham Prior
Lord Tombs
Lord Walton of Detchant
Lord Winston (Chairman)

MINUTES OF EVIDENCE

TAKEN BEFORE THE SELECT COMMITTEE ON SCIENCE AND TECHNOLOGY

TUESDAY 26 JANUARY 1999

Present:

Birdwood, L.
Haskel, L.
Hogg, B.
Howie of Troon, L.
Jenkin of Roding, L.
Kirkwood, L.
Nathan, L.
Perry of Walton, L.
Platt of Writtle, B.
Ponsonby of Shulbrede, L.
Porter of Luddenham, L.
Quirk, L.
Rea, L.
Soulsby of Swaffham Prior, L.
Winston, L. (Chairman)

Examination of witnesses

LORD SAINSBURY OF TURVILLE, Under-Secretary of State for Trade and Industry and Minister for Science, a member of the House, was examined.

DR JOHN TAYLOR, Director-General of the Research Councils, MR TONY QUIGLEY, Director of the Science and Engineering Base Directorate of the Office of Science and Technology, and MS JO DURNING, Director of the Transdepartmental Science and Technology Directorate, were called in and examined.

Chairman

1. Minister, thank you very much for coming here this morning to answer our questions. Perhaps you would introduce your team.

(Lord Sainsbury of Turville) My Lord Chairman, thank you for that welcome. I offer my congratulations on your new job. I extend my best wishes to you as chairman and to your newly-appointed colleagues. Sir Robert May, Chief Scientific Adviser, very much regrets being unable to accompany me today. He is fulfilling a very long-standing engagement in the US where he is speaking at the annual general meeting of the American Association for the Advancement of Science. On my immediate left is John Taylor who started work as the new Director-General of the Research Councils at the beginning of the month. On my right is Tony Quigley, Director of the Science and Engineering Base Directorate which supports John. On my far left is Jo Durning, Director of the Transdepartmental Science and Technology Directorate which supports Sir Robert May. They all work closely with me as Minister for Science in supporting Stephen Byers in his work as the new Cabinet Minister responsible for science and technology. We occupy our jobs at a very interesting time for science when an enormous number of exciting discoveries are being made. Those discoveries provide us with great opportunities to solve some of the world's most challenging problems, such as population growth, climate change, sustainable development, food supply, biodiversity and wealth creation. At the same time, some of these discoveries raise important safety, social, environmental and ethical issues. It is vitally important that we apply a great deal of careful thought to the proper regulation of them so that we maximise their value to society. To succeed and prosper in the twenty-first century we must have a strong world-class science base as the bedrock of our economy, public services and government policies. In addition to having first-class scientists, we need a top rate research infrastructure with centres of excellence in teaching research. Further, we need dynamic systems and structures to ensure the diffusion of people and knowledge from our science base into our businesses. We will also need enterprising and innovative firms with the capability to compete and win business by exploiting scientific and technological advances. In saying that however I do not overlook the implications for scientific advances in our open and democratic society. As Minister for Science I attach particular priority to working with my ministerial colleagues to promote the public's understanding of science. Similarly, as Stephen Byers made clear last week in his first major speech as Secretary of State we are working very hard together to secure and retain the public's confidence in the ways and means by which we in government address and deal with issues raised as scientific advances occur. The comprehensive spending review, the competition White Paper and a number of other key actions are clear evidence of the Government's firm commitment to tackling these issues. Thank you for allowing me the opportunity to cover them briefly by way of these opening remarks. I look forward to your questions.

Lord Porter of Luddenham

2. Like you, the Committee is concerned about the attitude of the public to science. We are contemplating an inquiry in this area. Therefore, we would particularly welcome your views on this matter. Speaking at the BAAS Science Festival in Cardiff in September, you said, "The public's faith in government's and the scientific community's handling of advances in science and technology has eroded. This is a trend we have got to reverse." First, what evidence is there of a decline, in the public's faith in the scientific community itself as well as government? Secondly, if there is such a decline how can we reverse it?

(Lord Sainsbury of Turville) I would be hard pressed to give you public opinion survey evidence to support that. If one took a quick poll of the committee

[Lord Porter of Luddenham *Contd*]

members probably their impression would be that the public's confidence had been eroded. In seeking to discover how to reverse it it is important to be clear why it has eroded. First, some extremely difficult issues emerge from advances in the biological sciences, whether they be genetically modified organisms or cloning. These raise very serious safety and ethical issues. Secondly, I believe that the handling of the BSE crisis raised concerns in people's minds on two bases. They did not believe that the Government were in control of the situation but continually reacted to events, and they did not feel that the information was transparent and they were being given all the facts. This has seriously eroded the confidence in the total system of a large number of people. That gives one therefore some of the answers to reversing the situation. First, we need clear guidelines as Sir Robert May has produced for scientific advice in government. Secondly, we are looking at the whole regulatory framework for biotechnology. We have a vast array of committees to deal with different parts of the problem. We need to be certain that there are no gaps or overlaps in that area. Thirdly, we are consulting on people's attitudes to regulation of the biosciences to give us information on the public's views and whether they feel that their concerns have been taken care of. I hope that in the short and medium terms these are the sorts of things that we can sensibly do. In the long term there is the major issue of giving people a greater understanding of science.

3. The public understand that there is a problem, but many of the opinion polls which are concerned with the public's faith in various professions have put the scientific and medical professions pretty high apart from one or two outstanding cases, for example some recent medical mistakes which I do not believe lead to general discontent or lack of faith. If there is a lack of faith in the scientists themselves and the way that they treat their responsibilities we need to know about it, but most of the polls do not indicate that there is such a problem.

(Lord Sainsbury of Turville) I can give you only what I believe to be the common experience of a good number of members of the committee or the public generally; namely, that when faced with questions about the safety of GMOs or some other kind of scientific advice - for example, if the Royal Society today states that something is safe - that will not be sufficient to convince the public at large, and certainly not the national newspapers, that therefore it is safe. Today it is no longer a sufficient argument to say that the highest and best scientific opinion in the country is of that view. If it were so my life would be a great deal easier.

4. There will be very great differences even at the highest level?

(Lord Sainsbury of Turville) Yes. I do not say that there is a clear distinction between the handling of scientific issues and the personal integrity of scientists, which is not being doubted. The question is really the handling of scientific issues by government and to an extent by the scientific community.

Baroness Hogg

5. Given that you said clearly at the beginning of September that the public's confidence had been eroded and that trend had to be reversed - which appeared to be a statement of intended activity - should not your first task be to find out rather more from opinion poll evidence or whatever about the present public confidence in the scientific community? Is that not your task as Minister for Science?

(Lord Sainsbury of Turville) I agree that that is so the more we have clear evidence of how people view science.

6. What do you intend to do about it?

(Lord Sainsbury of Turville) There is a survey of public attitudes generally carried out by Social and Community Planning Research. I believe that it intends to include questions on science. That will provide very good background. It is important to look at trends.

7. When will those questions be included?

(Lord Sainsbury of Turville) I believe that they will be included in the next survey, but I shall write to the Committee and let it know what is happening. I agree that a good basis for making statements such as that is helpful.

Lord Nathan

8. My questions relate very much to what you have already said with regard to public acceptance of what government are doing about these problems. There has been increasing activity and protest in particular about GMOs and animal welfare. This is very newsworthy and thus hits the headlines. For example, people go on hunger strike and so forth. Yet I recall that when I served on the Royal Commission on Environmental Pollution the study of GMOs was undertaken precisely because there was then a moratorium in Germany on such research which we thought was undesirable. We believed that if an effective regulatory regime which had public acceptance was introduced it would avoid in the field of GMOs the sorts of problems that had arisen, and still arise, in relation to the nuclear industry. Likewise, in relation to animal welfare there is the Animals (Scientific Procedures) Act 1986 and the Animal Procedures Committee that considers the question of experiments on animals and imposes very close control. However, as far as one can see government do not make clear to the public that every application for the release of GMOs is considered by the Advisory Committee on Releases to the Environment chaired by Professor John Beringer and that experiments on animals are subject to the Animal Procedures Committee. The public generally are unaware of either body and yet one would have thought it was one of the functions of government to ensure greater public awareness. I would be grateful if you could address that area.

[Lord Nathan *Contd*]

(Lord Sainsbury of Turville) I see that as part of my role. It is an extremely difficult message to get across, not least because there are people who are philosophically opposed to any activity in this area. But we try to get across that there is a very good regulatory system in place. The problem is that it is quite a complicated system to understand from the outside. We have a whole range of committees. We have the Novel Foods Committee and a body concerned with the release of organisms into the environment. These have been set up to an extent in response to particular problems that have arisen. It is therefore very important for us to look at that regulatory system and ensure that there are no overlaps or gaps and also, hopefully, to simplify it so that people can see what is being done in a clearer manner. I believe that all of the advisory committees do extremely good work. Without commenting on the work that they do, which is excellent, it is quite complicated. There may well be gaps or overlaps as the Royal Society indicated. Therefore, the first thing to do is to ensure that that system is good and then make another attempt at getting people to understand that the system is in place.

9. Is it a good idea if the committee chaired by Professor Beringer, which I know more about than the others, vouchsafes to the public that it exists? It would be almost impossible to ascertain that it existed if one was an ordinary member of the public. I telephoned the secretary of that body to suggest that it publicise its existence every time it sanctioned a release. It has the power to prevent it. I have not seen a single thing in the public domain to indicate that it exists, let alone what it does. I agree that simplification would be enormously helpful, but if it is not known that these bodies exist at all there is no answer to the protagonists of the campaigns to which I have referred.

(Lord Sainsbury of Turville) I can comment only in general terms. I believe that as a whole the committees now do a lot of work in having websites, public consultation and publishing their minutes. For example, the Novel Foods Committee publishes its minutes on the Web. As part of the general review we may want to lay down at least best practice in terms of public consultation and information being put on the Web and publication of the scientific advice given. The more these subjects are transparent the better. It may be that we need to lay down some general principles of best practice.

Lord Jenkin of Roding

10. In a very interesting article in The Times this morning you are reported as having asserted, "I am no monster." I am sure that the Committee has no difficulty in accepting that! You referred to the divided accountability of all these various bodies to different parts of the Government: the Health and Safety Executive, MAFF, your own department and so on. First, how far does your writ run in trying to pull together the threads in the way you have described, or do you have merely a persuasive role? Secondly, does any of this come within the competence of the Cabinet committee to which you referred in the interview which covers the whole of biotechnology and has met only once and not discussed GMOs? What is the role of that committee and who is on it?

(Lord Sainsbury of Turville) It has met only once because it has been set up very recently to deal with precisely the issue that you highlight. Biotechnology is an issue that goes across a whole series of departments in government. We therefore felt it necessary to have one Cabinet committee to bring all this together. Although it has met only once its decision at that meeting is to do with a review of the biotechnology committees. It is that committee which has initiated the review. It is really for that committee to try to pull together these issues and make sure that we have a more complete and transparent system.

11. Who chairs it?

(Lord Sainsbury of Turville) Jack Cunningham.

12. On one occasion you referred to GMOs. I believe that I would be failing in my duty to the public interest outside if I did not put the following question. Do you sense any personal embarrassment in becoming involved in an official capacity as a member of that committee when it will be examining the question of the credibility of the regulation of GMOs? Your personal position in that is well known and greatly respected.

(Lord Sainsbury of Turville) Two issues arise. One relates to my personal shareholding in Sainsburys. That has been put into a blind trust. In my original statement as Minister I accepted it was rather unlikely that that shareholding would be sold. Obviously, there was a clear issue as to that. I made it clear in the original ministerial statement that if any issues arose that specifically involved Sainsburys I would stand aside from them. I believe that to be the right and proper course of action, and that is what I shall do. The second issue is the suggestion, which I believe to be completely ridiculous, that because my charitable foundation supports research at the University of East Anglia, which is involved in the extremely important issue of fundamental research on disease resistance of plants that is not in any way directly related to the development of products of food, therefore I am in some way biased on that issue. I simply draw attention to the fact that it is a charity that gives money away and therefore it is difficult to see a conflict of interest. It is also doing fundamental work on disease resistance in plants which I believe to be an extremely important scientific subject that has enormous ramifications and benefits to agriculture across the world.

13. With that I concur. I have no criticism on either count. I am very much in favour of businessmen being in government. What has aroused anxiety outside is that in your present role as Minister for Science you bring to it a well established enthusiasm for scientific research in the field of GMOs and yet you are here, as it were, supervising the regulatory bodies which you have rightly said the public need to know much more about in order to have faith in science. Do you see any potential conflict there, quite apart from the question of personal interests?

[Lord Jenkin of Roding *Contd*]

(Lord Sainsbury of Turville) If the question is whether we should have Ministers who have no views on any subject then that is neither realistic nor desirable. As a whole, I believe it is a good thing that I have an enthusiasm for scientific research. I am very proud that I have views on those subjects. I am quite explicit in my views on these matters, and I believe that that is a benefit rather than a hindrance to sensible decision-making. I am by no means of the view that there are not issues that are raised by the research. Scientific research is extremely important, interesting and exciting, but clearly it raises important issues of safety. I am thinking particularly of issues such as biodiversity. It is therefore extremely important that we get the best scientific and ethical advice to get the regulatory system right.

14. Do you accept that given the disquiet particularly among some environmental groups which has been aroused you have a particular task to reassure?

(Lord Sainsbury of Turville) I hope that when people read the various statements that I have made as Minister they will see that I have a rather carefully thought out position which is by no means that we should not pursue this research. To make it clear, scientific research is one issue. The use of that research is another issue. In no way do I associate myself with the view that for example this research should be stopped. When it comes to the use of research very careful decisions must be made. I hope people will see that on those issues I have a thought out view about the need for careful consideration in controlling these matters, as I hope I made clear in my original statement.

Baroness Platt of Writtle

15. Do you see it as part of your role to encourage young people into careers in science and engineering, girls and boys - perhaps I should declare an interest as unpaid patron of Women In Science and Engineering (WISE) - as technicians as well as graduates?

(Lord Sainsbury of Turville) As to my responsibilities in the context of your question, in the main I am concerned with the public understanding of science and the Promoting Women in SET Unit. I also have formal responsibility for the supply of postgraduate and post-doctoral scientists and engineers. The main area of your question is the public's understanding of science and particularly the Promoting Women in SET Unit. That is a very important activity. We have done a poster campaign targeted at teenage schoolgirls, and we support the Engineering Council's WISE campaign. In addition, SET Week comes within my responsibilities. I believe that that is a good method of getting the messages across. The most important aspect is education in schools. I am very pleased that the Council for Science and Technology has taken as one of its first areas of consideration the critical issue of science teaching for 11 to 14 year-olds. To get the science teaching right and to inspire young people is as much to do with this question as any other.

16. Do you therefore have an opportunity to make teacher training more exciting? One of the problems in encouraging young people to learn about science, technology and maths is to make the teaching interesting and inspiring so that they feel that it is something that they may want to go into themselves.

(Lord Sainsbury of Turville) Obviously, that is the responsibility of DfEE, but it is encouraging that the Council for Science and Technology is to look at the whole area with that particular point in mind.

17. One also needs to have an industrial input if one is thinking about wealth creation to which you referred earlier.

(Lord Sainsbury of Turville) Yes. The most important aspect is to have teachers who know their subjects very well and can inspire their pupils.

Lord Howie of Troon

18. I should like to ask a question about the funding of the Engineering Council. The Minister will be aware that the Design Council, which is somewhat but not wholly different, is funded largely by government. The Royal Academy of Engineering has a certain amount of direct funding from government, whereas the Engineering Council which is a very important body has none. It had a start-up fund covering three years about 20 years ago but since then the only government help that it has received is by way of contracts. Do you have any views on the possibility of direct government funding for the Engineering Council?

(Lord Sainsbury of Turville) I do not believe that we provide funds directly but we certainly carry out projects with that body. I am very keen that we do everything that we possibly can to raise the status of engineers and their training. If there were particular areas in which I felt government could take action I would be extremely keen to look at it. I do not believe that that is the particular issue in relation to the Engineering Council which after all has the support and backing of the engineering profession and all the bodies that support it, some of which have considerable sums of money. But if it was felt that government could take action to help spread the word about the importance of engineering and what it could do we would be very keen to look at it.

Lord Jenkin of Roding

19. The Association for Science Education strikes me as a body of enormous value and influence. Do you feel that that might get a little more overt government support?

(Lord Sainsbury of Turville) I need to look at that and will come back to the Committee.

Lord Soulsby of Swaffham Prior

20. I turn to science and industry and in particular to the White Paper *Our Competitive Future* and the creation of regional development agencies and research clusters. There has been quite a bit of regional

[Lord Soulsby of Swaffham Prior *Contd*]

development over the years with the creation of science parks and matters of that kind. It seems to me that a greater development on a regional basis somewhat like the Research Triangle in North Carolina and Silicon Valley in California should be the kind of development to bring together not only science in universities but industry and all the ancillary matters that go to make up those big clusters. What are your thoughts on that kind of development?

(Lord Sainsbury of Turville) As I hope the White Paper made clear, we are very supportive of the idea that clusters should be encouraged. Government cannot make them happen but can encourage and support them. I am leading a group to look at how we can support biotechnology clusters. I see that very much as a preliminary to this being a role which is taken over by the regional development agencies. It seems to me that these things are best handled on a regional basis, but in the Department of Trade and Industry we hope to encourage that process by looking at what is happening in clusters at the moment and perhaps considering how to produce a model which shows people how to do it.

21. One of the reasons for my question is that the science park concept, which is a good one, has often not worked terribly well up and down the country. Some have worked and one can learn from them what needs to be done to get the regional clusters working much more effectively.

(Lord Sainsbury of Turville) I believe that in a number of cases science parks have not worked as they should. Unless they establish very close links between the science park and the university, they become, if you like, simply property developers. Everything that can be done to encourage greater synergy between universities and science parks is very important. For that reason I believe that the initiatives we have taken such as the University Challenge are particularly important. They give a greater incentive to universities to consider how they can spin off pieces of technology or science that they have developed. I believe that that is the route by which to encourage science parks to grow in the most productive way, as we see them grow in America in places like MIT or Stanford.

Lord Quirk

22. I am very interested in your comment about the importance of schools. Clearly, if young people are to enter science and engineering careers and there is to be greater public understanding of science the whole matter depends crucially on school education. You will be aware that the moratorium on the national curriculum imposed by the Dearing Committee comes to an end this year. In these days of joined-up government will the DTI be putting in its oar to ensure that the national curriculum keeps a high profile for basic science and mathematics teaching?

(Lord Sainsbury of Turville) We can assure you that we shall do that. It is extremely important. This is a key area that will encourage children to adopt a scientific or engineering career or not. If by the age of 14 they do not have any interest and enthusiasm for science and engineering one has real problems in trying to persuade them to take it up. We would be very keen to put effort into that.

Lord Haskel

23. In your opening remarks you said that if we were to succeed and prosper in the twenty-first century we would need firms that created wealth with the output of British science. Nobody can disagree with that. How do you intend to implement it?

(Lord Sainsbury of Turville) There are two ways of looking at it. One is the demand side and the other is the supply side. I concentrate on the supply side which is perhaps the easier of the two. We have taken a good deal of action which is related to encouraging universities in particular to do more work with companies. University Challenge is an example of that. There is the new third leg funding within the DfEE for encouraging universities to work with industry. We are expanding the innovation budget of the DTI by 20 per cent. We also have the ?25 million Science Enterprise Fund. All of those operate on the supply side. It is more difficult to think of ways in which to encourage businesses to take up research and see it as part of their strategy. I believe that to be more important than the encouragement of the supply side. One of the ways to do that is by means of the Foresight Scheme which brings together in a very productive way businesses, large and SMEs, and the science base. That is a way of creating a demand for science and getting people to see how that relates to competitiveness within those businesses. We are also looking at R&D incentives for SMEs but I confess that that is more difficult. Again, it relates to the number of people in top management in businesses who have a real understanding and knowledge of science and technology.

24. You did not mention the University of Industry for which I believe you have responsibility. Obviously, that plays an important role particularly with SMEs in preparing people for a more scientific outlook in working in those companies. What are your plans as to that?

(Lord Sainsbury of Turville) First, perhaps I should explain my position. As a Minister I am not chairman of the transition board of the University of Industry. I act purely in a private capacity. I was doing that before I became a Minister. While that has remained within government I have continued to do that so as to complete the process of putting together a corporate plan and getting it agreed by Ministers. That has now been done and the University of Industry will in due course cease to be a government body and will become independent with a new board and chairman. We now have an agreed corporate plan which is steaming ahead very fast. I am glad to say that the DTI made very strong representations, quite rightly, to highlight the importance of SMEs. We have built that into the corporate plan in terms of both the commissioning of material which is suitable for SMEs and also the marketing the University of Industry. A special group will be concerned largely with communication with SMEs as opposed to groups to

[Lord Haskel *Contd*]

look after big business or individuals. We have that as a very clear target for the University of Industry. I believe that potentially it can do extremely important work in this area.

25. Recently one has read about one or two companies starting up their own groups, for example British Telecom. Do you see that as being a duplication of the work of the University of Industry, other universities or FE colleges, or do you view it as being "let many flowers blossom"?

(Lord Sainsbury of Turville) I tend to the view that one should let many flowers blossom. The more competition in this area the healthier it is. As far as the University of Industry is concerned we are very keen to work with these new groups because most of them will have very good facilities. If we can use some of those facilities which are not being fully used by businesses that is another way to increase the training of people. Based on market research people are very receptive to this kind of training. They believe that if it is done by businesses it is very relevant to what they need to know.

Baroness Hogg

26. I should record the fact that I am on the board of 3i and also chairman of an investment trust which specialises in investments in small quoted companies. You have touched on two areas that have already been covered by our report nearly two years ago on the *Innovation-Exploitation Barrier*. We suggested then to government that they might want to carry out a little more analysis of the qualitative aspects of science parks rather than the pure use of names to determine the characteristics which were important to their success. We also emphasised the need for more information and analysis of business angels. It is a perennial weakness of government that they do not draw on the information that is potentially available to them. The various tax schemes in place to provide support for such investment activity yield sources of information that are now available to the Government. We suggested that the Government might want to draw on that to inform themselves about the role of business angels in this country and how it could be encouraged. The DTI's response to our report though encouraging was somewhat bland. Therefore, is any concrete action being taken by the Government in this area?

(Lord Sainsbury of Turville) I can tell the committee a little about business angels. There are about 40 networks of business angels. We have been working with them in the light of your report. What is important is that given the nature of business angels we do not try to have a single national network. We already have 40 networks. To try to impose one system on everyone is incompatible with what business angels are about, which is a very personal relationship between the business angel and business that brings to it both money and business experience. What we seek to do is enable a situation where regional networks can feed into the national database and thus increase the capacity of individual businesses to tap into a wider sources of funds. But that will in no way exclude or downplay the role of the local business network. I believe that to be the way forward. I hope that in about a month I shall be able to announce progress in that particular area.

27. I suppose that it depends on the definition of "network". One of the weaknesses in this area that we identified was the failure of information. An information network is very much what one is looking for.

(Lord Sainsbury of Turville) It is a network rather than any sense of formality about how these things are developed. As to science parks, I am not aware of any particular work. I shall follow it up and inform the Committee about it.

Lord Soulsby of Swaffham Prior

28. I turn to the BBSRC and the relationship between its funding and MAFF or agricultural funding. A large proportion of BBSRC funding now is on the genomic and biotechnology side. There is no doubt that agriculture feels somewhat hard done by with the decreasing amount that can be identified for agriculture. Do you have any thoughts about that? If so, what is the long-term outlook for agricultural research funding?

(Lord Sainsbury of Turville) Obviously, it is for MAFF to take decisions on priorities in this area. MAFF has taken a lot of care to get the strategy right. It will publish its research strategy in draft for 2000 to 2004 fairly soon. It will consult stakeholders widely on that. It shows a slight decline in MAFF funding over the period, but equally BBSRC will have a significant increase over the period. The question is one of getting the right priorities in this funding. MAFF is also exploring its 50-50 LINK funding schemes which can prove to be very important. But the important point is that there is good communication between the agricultural industry and MAFF in terms of setting priorities for the agricultural industry which I believe is under way.

Lord Birdwood

29. Do the Government have a policy on big science? I have in mind things like super-collider collaboration, astronomy and space. Is there a policy on further collaboration or will it be left on one side?

(Lord Sainsbury of Turville) I do not believe that we have a specific strategy for big science. Each of these areas is rather different. For example, particle physics, astronomy and space give rise to different issues. My view is that it is likely and desirable that there should be increasing amounts of international co-operation in these areas. All countries including the USA now find that "go it alone" policies in these areas are almost impossible. One sees increasing co-operation on astronomy and the development of telescopes. In some ways CERN is becoming essentially a world facility. That is a movement in the right direction and is sensible given the increasing

[Lord Birdwood *Contd*]

expense of these facilities and the inability of individual nations to fund them separately.

Chairman

30. Perhaps I may ask for your view on the general issue of selectivity in research funding which is relevant to what we have been discussing.

(Lord Sainsbury of Turville) Of course it is driven by the dynamics of the system, in the sense that the grant funding of research councils and the peer review system makes judgments out of which the degree of selectivity will flow. To some extent that is reinforced by HEFCE funding. Obviously, there is a policy decision within HEFCE funding as to the amount of money that is put behind grade 5 or grade 3 departments. The end result is that we have a situation in which about 70 per cent of funding goes to 30 higher education institutes. We believe that that is pretty much in line with the situation in America. To the extent it is possible to be clear about this, it appears to be about right. Clearly, it is something to which we want to give constant attention to ensure that we have the right balance between putting money into world-class facilities on the one hand and leaving room for new initiatives or research groups to spring up and be properly funded on the other. That process is driven largely by the research council grants but one needs to see that as part of the overall picture.

31. Is the selectivity pretty well even across all the sciences at the moment, or is there greater selectivity in the biological sciences for example?

(Lord Sainsbury of Turville) I am not aware of any bias.

(Dr Taylor) One size does not fit all across the different fields but each is working constantly on a good system of top down decision making which says that we should allocate approximately so much to such and such major fields and bottom up peer review which seeks to find the very best scientists and science in each of those areas. That is pretty common across the whole field. The degree of selectivity as between topics and quality is pretty well applied right across the councils.

32. Of course research is only one side of that pendulum swing. Will we see the pendulum swing away from the research assessment exercise?

(Dr Taylor) There are two kinds of assessment going on. One is the research assessment exercise that is essentially a funding council activity and the other is research council grant-awarding which is peer review against budgets in major fields. The Minister said earlier that in effect these broadly came to the same conclusions in terms of where the really excellent work was taking place and should take place. We are watching how that process develops as between research assessment in the funding councils and the grant-awarding process in the research councils. Indeed, that will be an important part of what comes out of the transparency review that we are just beginning. We believe that that will give us a clearer picture of where the funds are going.

Baroness Hogg

33. My next question flows naturally from the response to Lord Soulsby's question. In discussing one area of research you said that it was for MAFF to set its own priorities. Of course, that is the way that our system tends to work. The funding emerges from a battle between the Treasury and the department. The Treasury is interested in the total sum and is happy to leave it to the department to set its own priorities. How do you as Minister for Science ensure that across government there is a level distribution of funding that fits with science policy priorities? This question has given rise to some concern, dating back to before the present Government, about the location of this activity in a single department rather than the centre of government. I focus the question on the PES and CSR process because that is one area in which leverage at a critical moment in funding can be applied to ensure that there is central interest in the spending across departments in terms of science. Is there a similar structure in place at the moment? If not, what is in its place?

(Lord Sainsbury of Turville) This is the clear responsibility of the Chief Scientific Adviser who reports to the Prime Minister. He is located in the DTI but has an office in the Cabinet Office. During the comprehensive spending review he produced a paper on cross-government involvement in this. He continues to take a very great interest in the whole area. Over the years I have wavered as to the right place in which to put science. I do not believe that it is a bad solution to put it within the DTI. Probably the country which does science policy best is America where the comparable situation is that it is within the competence of the Technological Division of the Commerce Department. But as with our system it operates through a national science foundation as we do it through the research councils. Any idea that one can bring all science together within one ministry is a bad one. The important thing is that for example defence has responsibility for its research and MAFF has its own responsibility. No one really tries to run one single ministry to deal with this subject. But one must have the ability to look at the whole system, which in this country is done by the Chief Scientific Adviser. In America it is done by the adviser to the President. Therefore, it is a fairly comparable situation. I believe that the balance is about right. However, based on business experience I am inclined to think that to shuffle the pieces around is a pretty useless exercise. It is important to keep it in one place but to be very clear about managing the interfaces between different areas.

34. That is fine provided there is sufficient access to the Prime Minister and he is willing to stand behind this area of activity. Are you comfortable with those sources of access?

(Lord Sainsbury of Turville) Yes. The comprehensive spending review shows that the

[Baroness Hogg *Contd*]

Government give science a high priority. The very major settlement for the science budget shows the commitment that is made at the highest levels to science in our community.

Lord Porter of Luddenham

35. Are you concerned about the apparent tendency to support large groups and to give five-year grants to centres and so forth to the extent that that squeezes out one of our most important assets: young individual researchers? This tendency has been supported recently by the MRC with its five-year grants for centres, and even - bless it! - the Royal Society. That is rather surprising when it has done so much to support young scientists with government grants and so on. Do you have any concern about that tendency which makes it more difficult for the individual young scientist with talent and promise to get a grant unless he is attached to a big group of some kind?

(Lord Sainsbury of Turville) The MRC has a whole range of grants. It has career establishment grants, development grants and so on. They tend to put greater emphasis on co-operative groups in particular. It is a very interesting development that should be watched very carefully. The more general question is how to get right the balance between short-term three-year grants and long-term funding. Essentially, that is an issue of balance. If everything becomes three-year grants it introduces a degree of uncertainty in the system which does not necessarily encourage risk-taking or new inter-disciplinary advances. For example, the Royal Society with its University Research Fellowships is extremely good at funding people for eight years which encourages them to take risks and to do more innovative science. Equally, if you go too far that way it will squeeze out the person who just needs money for a short-term project or to get started. That is also undesirable. The three-year grant-funding system with very tough peer review stands us in good stead in keeping up the very high quality of science in this country, especially in terms of achieving a balance between making certain that there is long-term funding so that people can take risks and having the flexibility to give three-year grants.

36. One of the difficulties that the Royal Society had in mind was the shortage of technical support; namely, technicians. A young individual research worker, however good he may be, will not get grants for technical support and so forth. That is why the Royal Society tends to go for groups because they will have the necessary technical support.

(Lord Sainsbury of Turville) One of the problems is that if everything is subject to short-term grants it encourages universities to be more and more flexible and that tends to squeeze out the emphasis on a proper infrastructure, including technicians. There are pluses and minuses.

Chairman

37. But one of the possible problems in the route currently pursued by the MRC is that it does not encourage innovation. There is real concern in the medical community that we may lose innovative research because of these grants. I have an interest in this in that I am involved in work funded by the Medical Research Council.

(Lord Sainsbury of Turville) I take that on board.

Lord Jenkin of Roding

38. I return to the question of government machinery. There is a new dimension now upon us: devolution. I am Chairman of the Foundation for Science and Technology. Last autumn I chaired a seminar in Edinburgh in which the problems for science arising from devolution received an extremely good if somewhat disturbing airing. The problem is that university funded research is devolved but research council funding is not. What thought are you and your colleagues giving to how that new situation will be dealt with in the next round?

(Dr Taylor) While I am very new to this job, it is immediately obvious that this is one of the matters that will become an important issue for us in the next 12 months or so. My impression so far from the soundings and reports that I have received is that there is a pretty strong will among the research community to see what can be done to ensure that the research council funding and core research funding remains a UK-wide activity. One of the items on my list of priorities is to understand from the point of view of machinery the implications of that and how the funding council in the different countries will operate in that mode. This matter has very much come to the fore in launching the transparency review that is looking at joint accountability for funding between funding council and research council money. We are looking at this matter very closely. However, I think that the starting point is to say that the balance of advantage from the point of view of the research base and science base is that research council funding should be made a UK-wide responsibility.

39. The joker in the pack is what view the new Scottish Parliament will take. It may in the event have significantly different priorities which would make the allocation of research council money a great deal more difficult. To what extent do you see that there is a need for new machinery to try to resolve differences in this area?

(Lord Sainsbury of Turville) The two systems operate in parallel at the moment. One operates on the research assessment exercise and the other is concerned with research council funding. To an extent that will not change although the policy may be different on the HEFCE funding side which may be devolved. The most important thing is to be clear about how the money is being allocated and therefore overheads is a significant issue. But to the extent that the Scottish Parliament takes a different view about higher education funding there should be scope to allocate that differently.

(Dr Taylor) From the point of view of what we need to do next, the first step is consultation in order to understand more clearly the views of the different groups involved as the Scottish Parliament comes into

[Lord Jenkin of Roding *Contd*]

being. I am merely reporting at this stage that the inputs so far are to the effect that we should be very mindful of the strengths resulting from keeping the UK science base as an entity rather than to create additional machinery. But we will need to consult upon that and understand the position in the course of the next few months.

40. You may find that you are not master in your own house?

(Dr Taylor) Absolutely.

41. There is concern within the research community in Scotland that it is in for a considerable period of uncertainty. Are you seeking to address that?

(Dr Taylor) The first step on my list is consultation to understand the views of the community and the kind of steps that must be taken.

42. It is good that you are doing this, but I suggest that it has perhaps been left a little late. The Act to set up the Scottish Parliament has been on the statute book for a good many months.

(Ms Durning) There has been a lot of communication between officials within the OST and the Scottish Office about the issues that arise from devolution. I believe that Dr Taylor points to the difficulty of prejudging what the Scottish Executive will do.

(Dr Taylor) That is exactly right. We must prepare ourselves for discussion with the Executive.

Lord Jenkin of Roding: You must wait for the Scottish Parliament to begin to formulate policy.

Chairman

43. What is the main thing that you hope to achieve during your time as Minister?

(Lord Sainsbury of Turville) After the first couple of months of coming into the job and reading myself into it I set myself and my team three targets. The first is to maintain and hopefully improve the excellence of the UK science base. We have an outstanding science base in this country but we do not always say it loudly enough. We must maintain and improve it. Obviously, in that task it is hugely helpful to have an extra £1.4 billion over the next three years under the comprehensive spending review. The second target is to improve knowledge transfer in particular the flow of people and technology into industry. The third object is to look at the whole area of scientific advice to government which encompasses many of the issues that we have referred to this morning: its transparency and the ability to give confidence to the public about the handling of scientific issues. Those appear to be the three major issues on which I need to concentrate. A fourth smaller issue is the communication abroad in particular of the excellence of the UK science base. From the trips that I have made abroad to meet people on science issues I do not believe that we communicate well enough through the different bodies that have international contact about our excellent science base. That is very important in a number of respects: first, in communicating to British industry that we have an excellent science base in this country; and, secondly, the key point that in terms of inward investment potential investors realise that there is an excellent science base here. We give a lot of support to Sir Robert May who has an interdepartmental committee that is concerned with this. Communication about the excellence of the UK science base is not as important as the other three objects but still significant.

44. How does one communicate that internationally? I travel around quite a bit and it seems that there is extraordinary ignorance about it, for example in the United States.

(Lord Sainsbury of Turville) There is a problem here. Obviously, different bodies do that. The Foreign Office and British Council have a role to play in this. The Royal Society has very strong international links. We are trying to ensure that we give a co-ordinated message. The most important point is that the message is about modern British science. It does not do a great deal to our image abroad if we constantly refer back to the industrial revolution. We need to emphasise that we are a world leader today in many of the new sciences and place emphasis on that. On a recent visit to Japan I constantly met elderly Japanese gentlemen who said that their visit to the Natural Sciences Museum which included Stephenson's Rocket had been a wonderful experience.

Baroness Platt of Writtle

45. You began by referring to wealth creation. We can have an excellent science base of which we are proud, but the most important thing is to get the products of that science base into development and the market. Very often that is the most expensive and difficult thing to do. Do you not feel that that is a vital part of your role?

(Lord Sainsbury of Turville) That is absolutely right. That is why I put knowledge transfer particularly of people as my second role. One does not achieve that goal necessarily by changing the balance between fundamental and applied research. One has to look only at America to see that the areas in which most of the spin-offs occur are often the universities that do high-class, fundamental research. One has only to consider MIT, Stanford or Berkeley to realise that one can have excellent fundamental research and also spin-off companies. For example, in biotechnology in the US some of the best companies are linked to the scientists who have done the most fundamental work. It turns out that those scientists are also very productive while in those companies. One wants to encourage scientists and engineers in universities to feel that they can do great science and engineering but also work in industry in spin-off companies.

46. It is probably also the duty of the engineer to apply the new science so that it is practical and serves the market. It is the big gap between serving the market and the excellence of the science that perhaps requires bridging most?

(Lord Sainsbury of Turville) There is a major issue here, and as to that Foresight is important. To return to earlier comments about the Engineering Council anything we can do to improve the training and

[Baroness Platt of Writtle *Contd*]

increase the status of engineers is a vitally important issue. It is there that we need to do much more to underpin the scientific discoveries with the real ability to translate that into products for the market place.

47. Do you agree that you should look also at the entrepreneurial attitude to ensure that in the marketing of these products the customer counts?
(Lord Sainsbury of Turville) Yes.

Chairman

48. As to big science, do you see Europe as our major partner in future or should we be spreading the net wider?
(Lord Sainsbury of Turville) I believe that there will be more European products. In particular areas one must look at different alliances. Obviously, CERN has become pretty much a world facility. We have different relationships with various groups, for example on telescopes. But there will probably be more European facilities. One must take each subject and look at particular issues. I do not think that there is a single strategy.
(Dr Taylor) If one looks at the way in which the US has become an investor and partner in CERN that is a real underpinning of the facility. If one considers global climatology and oceanography, they tend to involve partners in many different parts of the world. Certainly, in astronomy we find ourselves working with people from Europe and the US. Increasingly, the big projects will be collaborative and involve many different nations. One thinks of Internet and web technology to reinforce the ability of scientists all over the world to work together. An example of that is the genome project. The trend will be to form partnerships that involve many different countries.
(Lord Sainsbury of Turville) The key issue here is to keep a very clear focus on the main endeavour which is to give British scientists access to the best facilities and work back from that rather than say that a particular geographical strategy is right. The focus should be on the best world-class facilities.

Lord Ponsonby of Shulbrede

49. In the former Soviet Union there is a huge scientific community which more and more lies idle. It has neither the money nor support to do the kind of traditional research that it has undertaken in the past. Are you looking at any initiatives to try to help that scientific community further enhance ours by way of exchanges and using Russia's own science facilities? That appears to be a huge resource that can be utilised.
(Ms Durning) There are programmes for that purpose, and we can provide the Committee with details.

Lord Porter of Luddenham

50. We have just been talking about big science being global. Do you have any difficulty in financing that from the British purse? Let us take astronomy and particle physics. There may be a bit of spin-off but not much. If the whole thing is global why not let someone else do it? I am not of that view but I should like to hear how you put the case on that matter.
(Lord Sainsbury of Turville) Wealth creation is not the only objective of government. There are questions about supporting fundamental work. We as a country should play our part in that. Even with CERN it is interesting that there are probably rather more spin-offs than is sometimes believed to be the case. Recently I was at CERN. I was struck by the fact that it involved the most fundamental theoretical work but the experiments required had to be combined with extraordinary engineering skills. I have no doubt that the development of those particular skills is right at the leading edge of engineering. There are plenty of opportunities for spin-offs. Even at that end of it there are spin-offs for wealth creation. One never knows where the applied research comes from. If one went back to the late 1940s and early 1950s people would then have been talking about molecular biology as quite remote fundamental science and yet today wholly new industries based on that have sprung up.

51. And if we had left it to the rest of the world we would be way behind?
(Lord Sainsbury of Turville) Yes.

Lord Jenkin of Roding

52. I too have recently been to CERN. What impressed me was the high proportion of excellent British postgraduate fellows working there. That cannot but be to the advantage of this country's science base.
(Lord Sainsbury of Turville) Yes. Those people then go into all kinds of other areas, whether it be trading in derivatives in the City or other activities. They are very impressive people. Like you, I believe that one of the most important bits of the science base is the production of very high calibre and highly trained people who can then go into industry. That can come from CERN or any other fundamental research institute.
Chairman: Thank you very much for coming and answering our questions so well.

Further evidence from the Minister for Science

Question 7: *When will questions on science be included in the general survey of public attitudes carried out by Social and Community Planning Research?*

Understanding public awareness of, and attitudes towards, science is a crucial precursor to developing effective science communication activities. The Office of Science and Technology (OST) part sponsored a section in the 1996 British Social Attitudes Survey which was reported in December 1997. It was this survey which revealed the very low confidence in Government scientists when ranked against Academic, Industrial or Non-Government Organisation scientists.

As part of an examination, for the Better Regulation Task Force, of how governments handle risk a recent poll ("Public Attitudes to Risk", 8 February 1999) again showed that Government scientists are trusted far less than "independent" scientists. It is these figures that concern me. While it is encouraging that independent scientists appear to still be held in high regard, a key issue for Government is ensuring that its use of science is trusted. Ministers will meet in March to consider the findings of the Task Force and look at ways of further improving the handling of risk.

The OST is currently probing some of the issues surrounding trust and the provision of information as part of the Public Consultation on Developments in the Biosciences. This project is due to be completed in May, after which work will start on a wider evaluation of science communication activities. A vital underpinning part of this work will be exploring levels of public understanding, awareness and appreciation of science and engineering as well as trust and confidence in the providers and users of information.

Question 19: *The Association for Science Education strikes me as a body of enormous value and influence. Do you feel that that might get a little more overt government support?*

The Association for Science Education (ASE) is one of the strongest "Subject Associations", and Charles Clarke (DfEE Parliamentary Under-Secretary of State for School Standards) is keen to encourage close links with them. This is especially so in the field of information and communications technology materials for science teachers, as well as providing information for parents, and building on their work on the professional development of teachers.

The main thrust of the ASE's work recently has been the development of a programme of continuing professional development for teachers. The Teacher Training Agency have welcomed this work, and DfEE strongly encourages it.

The DTI also has a good working relationship with the ASE, for instance one of the secondees to its Innovation Unit has worked closely with the ASE for many years and sits on its Advisory Council. The Innovation Unit was a co-sponsor of a major "Making Sense of Science" project between 1995 and 1998 to raise the quality of primary school science teachers and to encourage their continuous professional development. ASE acted as advisers to this project. The OST has in the past helped the ASE in their development of the Science and Technology in Society (SATIS) material.

Question 26: *We suggested then to government [in our report on the Innovation-Exploitation Barrier] that they might want to carry out a little more analysis of the qualitative aspects of science parks rather than the pure use of names to determine the characteristics which were important to their success. We also emphasised the need for more information and analysis of business angels. . . . The DTI's response to our report though encouraging was somewhat bland. Therefore, is any concrete action being taken by the Government in this area?*

Paragraph 5.30 of the Committee's report on *The Innovation-Exploitation Barrier* recommended that " . . . a study of science parks should be undertaken by the Government to determine the elements critical to success, whether these be a matter of size, focus or the framework of collaboration with one or more universities".

The Government of the day took the view that in actual practice, the development of science parks was more dependent on local factors—such as investment by universities, local authorities and financial institutions—than on "macro" factors that might be controllable by Government. It was therefore more appropriate for any studies of this type to be carried out locally or regionally.

DTI is contributing to a revisit to the earlier "Cambridge Phenomenon" study which looks at the whole business dynamic around the Cambridge area, including the Science Park. The Science Park has had an important role but one can't properly understand this devoid of the context in which it sits and the current report takes this into account. An as yet unpublished report by Segal Quince Wicksteed looks in more detail at the Science Park and Innovation Centre to understand how they can best complement one another. Although this work is

only looking at one of the exemplar areas in the UK, it should nevertheless have some important lessons for all areas.

Additionally, there are, in the international literature, a number of academic studies that have benchmarked science park success and, to a large measure, answer the sort of questions on science parks that the Committee was raising.

Question 49: *Are you looking at any initiatives to try to help that scientific community [in the former Soviet Union] further enhance ours by way of exchanges and using Russia's own science facilities?*

The UK is supporting Russian research scientists through several programmes.

The Government has signed a *Joint S&T Commission* with Russia to help the Russian authorities restructure their science system. The Commission meets annually to consider issues such as science funding, IPR, copyright and other policy matters.

The International Science and Technology Centre (ISTC) in Moscow is an inter-governmental organisation with members from the USA, Japan, the European Union and other major industrialised countries.

The objectives of the centre are to provide the New Independent States of the Former Soviet Union (NIS) scientists, especially those with expertise in developing weapons of mass destruction, the opportunity to redirect their skills into civilian scientific and technical activities.

There are 600 projects involving Russian scientists under this scheme. The Office of Science and Technology is promoting, through its UK academic and industrial links, further participation of UK and Russian scientists in the programme.

DTI, working with the Moscow State University, has established a British-Russian Innovation Centre in Moscow. English-speaking staff are able to provide UK firms with details of technologies derived mainly from research institutes in Russia. Two "technology transfer days" have been held in London to enable about 20 Russian technology vendors to meet about 80 UK firms who had expressed interest in specific technology opportunities. Some of these have resulted in continuing business arrangements. In addition, a UK-Russia High Technology Working Group has been established to bring together representatives of Government and business in the two countries.

The *Royal Society* continues to operate a number of separate programmes of support, both bilaterally and multilaterally, for scientific links between the UK and the NIS. The programmes include bilateral agreements, exchange agreement visits (both to and from Russia), Royal Society/NATO science fellowships and joint projects. The overall budget for all programmes with the NIS is £1.46 million for 1998–99. Of this total, Russia receives approximately 60 per cent, being the largest recipient of the fund.

The *international association for the promotion of co-operation with scientists from the New Independent States of the Former Soviet Union (INTAS)* is an independent organisation which aims to promote co-operation in the fields of basic research and technological development between scientists of the NIS and INTAS members. Membership is made up of the 15 EU Member States plus Iceland, Israel, Switzerland and Norway. The scheme enables NIS scientists to continue their own research activities in their own countries, whilst at the same time enabling them to be part of the international scientific community through financial support for East-West collaborative actions.

The UK has been a lead driver in supporting the new four year extension of this organisation, with funding from the EU's Framework Programme 5. The UK was one of the top three members of INTAS participating in projects with Russian scientists.

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