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**REPORT OF THE COMMITTEE OF  
ENQUIRY INTO VETERINARY RESEARCH**

**NOVEMBER  
1997**

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Report of the Committee of Enquiry  
into Veterinary Research

Report commissioned by  
Royal College of Veterinary Surgeons Trust Fund

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## ACKNOWLEDGEMENTS

When last year's President of the Royal College of Veterinary Surgeons, Professor Ron Jones, invited the members to serve on this Committee of Enquiry, he promised us a free hand but full support. We have availed ourselves of both in full measure. We thank all at the Royal College who have assisted us in the preparation of this report and in particular for providing us with an office. The major contributor to the cost of the enquiry has been the Wellcome Trust, with further contributions from the Animal Health Trust, the Ministry of Agriculture, Fisheries and Food, the Biotechnology and Biological Sciences Research Council and the Association of Veterinary Teachers and Research Workers.

We have received much help and advice from a wide range of individuals and organizations. We would like to acknowledge all such help, and particularly that of the six Deans of the veterinary schools who have been very patient in supplying us with information. Our greatest debt is to our secretary, Jeff Gill, who has earned the gratitude and admiration of all members of the Committee for the way he has administered this enquiry from its inception to the publication of this report.

We welcome the opportunity to comment on the problems facing veterinary research, which are pressing. We hope therefore that our report will not only be read but also will lead to action.

Selborne  
*Chairman of the Committee of Enquiry into Veterinary Research*

*October 1997*

## SUMMARY OF FINDINGS

S.1. Veterinary science is important to any society which is concerned about the health of farm and companion animals and the safety of food of animal origin. Veterinarians need research to understand new diseases and respond to public expectations of better care for animals.

S.2. The arrangements for research into veterinary science are complex and fragmented. It is carried out in the universities (mainly but not wholly in the six university veterinary schools) and in specialized research establishments. The state-sponsored Institute for Animal Health, the Moredun Research Institute and the Veterinary Laboratories Agency of MAFF are major centres for studying the diseases of farm animals. Their work is complemented by that of the Animal Health Trust, a charitable body, which concentrates on horses and small companion animals, and the work of the Roslin Institute on farm animal genetics.

S.3. Government funding for research comes from the Higher Education Funding Councils, BBSRC, MAFF and the Scottish Office. Charitable funding comes from the Wellcome Trust and from private benefactions through the Animal Health Trust and a range of other organizations concerned with animal welfare. There is some funding from industry and commerce, not only the pharmaceutical companies but also the bloodstock industry and agriculture. Total identifiable spending on research into animal health and welfare in Great Britain in the public sector and the universities is £60m – £70m a year.

S.4. A wide range of people and organizations have put views to us. Naturally these do not all concur, but there is a striking level of agreement on the major issues. These concern the engagement of the veterinary profession in research, the balance of effort in animal health research programmes, the relations between the different research institutions and the importance of the veterinary schools, along with their special financial challenges.

S.5. We are told repeatedly that too few veterinarians are involved in research. Scientists who are not veterinary graduates undertake a significant proportion of studies into animal health and welfare, but veterinarians do have a

special contribution to make. Veterinary graduates with the right training and experience for public sector research appointments are in short supply, and young veterinarians who have taken up postgraduate studies tend not to pursue research careers after obtaining a doctorate. There are major concerns that undergraduate veterinary education is so focussed on preparation for practice that it does not give students a proper understanding of the roles of research in advancing veterinary science.

S.6. Many of those who have expressed views on the balance and coverage of current research into animal health and welfare disagree with the priorities adopted by the major funding bodies. Some think that public spending on farm animal health is too focussed on the infectious diseases which can be transmitted to man while too little attention is given to endemic conditions which have a major impact on animal welfare and the efficiency of production. A separate concern is that basic clinical research on the main veterinary species falls into a funding gap. Those who wish to carry out fundamental studies to advance biological science can compete for mainstream research funds from the Research Councils and elsewhere; the state supports strategic and applied work on the diseases of farm animals; but researchers seeking to gain a deeper understanding of disease mechanisms in veterinary species face an uphill struggle to finance their work. In recent years there has been spectacular progress in understanding mechanisms at the level of the molecule and the cell, but if these insights are to be fully exploited for the benefit of clinical veterinary practice they need to be related to the animal species involved.

S.7. There are important questions concerning institutions: how can *deep* co-operation be fostered between the veterinary schools and between them and the free-standing research establishments? How can the funding of research be better co-ordinated? Much of the ground is well-trodden, notably in the Wildy Report which in 1987 urged the need for closer working relationships between the Institutes, the veterinary schools and the Veterinary Investigation Service, and in the Riley Report which two years later recommended a concentration of the resources of the veterinary schools and educational co-operation

between them and the Institute for Animal Health and the Animal Health Trust. The arguments for co-operation are stronger than ever in the late nineties.

S.8. The veterinary schools face a particular problem in that the financial regime within which they operate does not fully recognize all the different tasks which they perform. Primarily, of course, they are university departments undertaking teaching and research, and preparing veterinary graduates for practice. There is no state animal health service comparable with the NHS to provide a clinical setting for the training of veterinary students, so the veterinary schools have to run their own clinics for this purpose. The clinical services provided by the schools cannot, however, hope to be self-financing, because they must be organized for the benefit of teaching rather than the delivery of health care at minimum cost. The financial arrangements for higher education are not designed to cover the full costs of clinical instruction, and as a result the veterinary schools face a gap in their accounts which they try to fill by maximizing income from fees for patient services. The effect, not surprisingly, is such a load on the clinical staff that time for research is squeezed to an unacceptably low level. The British veterinary schools are not alone in finding it difficult to combine the functions of a university department and a clinical training establishment: we heard of similar problems in the American veterinary colleges and the British dental schools.

S.9. Our report offers a number of detailed recommendations, which are listed below. We draw attention here to our main proposals.

S.10. The first three recommendations concern undergraduate veterinary education. We believe that the universities and the Royal College of Veterinary Surgeons should take a fresh look at course content, selection criteria and the requirement to deliver graduates who are competent to practise. The perspective should be that veterinary students are highly talented young people who must receive a true university education, including wide exposure to research, no matter which branch of the profession they may later choose.

S.11. Recommendation 6 is directed at those veterinary researchers who have drawn attention to the lack of funding for baseline clinical studies of the veterinary species. They have made an important point, and they should put forward concrete proposals for new initiatives. We believe that the main funding bodies are ready to listen.

S.12. In recommendation 7 we move, without apology, into an area which may seem some way removed from our remit: the funding of undergraduate clinical teaching. The clinical departments of the veterinary schools should be the major centres for clinical research into animal health. Instead they lag behind the pre-clinical departments and the research Institutes, because the clinical staff of the schools are preoccupied with training tomorrow's veterinary practitioners and supervising the treatment of patients. The Deans of the schools have accurately diagnosed the flaw in their funding arrangements which gives rise to this unhappy state of affairs, but in our view they are mistaken in looking solely to the Government for a solution. The practising profession and its clients reap the main benefit from the efforts which the universities devote to producing veterinary graduates who are ready for clinical practice, and it is they who should accept responsibility for some of the special costs which the higher education system incurs in the process. There are a number of ways in which the funding of the veterinary schools could be put on a sound basis and it is not for us to offer a detailed prescription, but we are in no doubt that it is unreasonable to expect the clinical academic staff of the schools to carry out excellent research until clinical teaching is properly financed.

S.13. Recommendations 9, 10 and 11 are all about making better use of scarce resources. Most of those who put views to us were agreed that expensive facilities should be shared, that the schools and state research institutions must develop complementary and collaborative research programmes, and that links between the sectors should be fostered through such means as joint appointments. It is time to turn such New Year resolutions into practice. The carrot is the ability of a collaborative research group with a range of complementary skills to obtain project funding which would be beyond the reach of the individual

partners. The stick is the prospect of continuing decline in core budgets which will force institutions to focus on the areas where they can compete.

S.14. Our last three recommendations concern consultation and co-ordination. The evidence we received identified deep-seated issues which will not be resolved simply by setting up more committees. The various bodies involved with animal health research – the major funding bodies, the universities, the specialist research organizations – have their own terms of reference and different priorities. In our discussions, however, we formed the clear impression that they did not spend enough time listening to each other. There is need for clear and coherent advocacy of the strong case for veterinary research.

S.15. Our final recommendation is that in a year's time the Royal College of Veterinary Surgeons should bring together all the bodies affected by our recommendations to review progress. Such a review will be valuable in its own right if it promotes a better understanding between the participants.

S.16. We make the following recommendations:

(1) The veterinary schools should take steps to expose undergraduates to research and research role-models, by encouraging and facilitating intercalated science studies so far as the cost constraints allow; by exposing students to research within the universities and research institutions through elective and vacation studies; and by developing stronger teaching links with university biological and medical departments and the state funded Institutes and laboratories, for instance through shared posts.

(2) The veterinary schools should review their undergraduate selection practices to ensure that potential students with an inclination to an academic and research career are included. The schools should seek the support of the RCVS for this change of emphasis.

(3) The RCVS should review the requirement on the schools to produce veterinary graduates competent to practise without further training.

(4) The major employers of veterinarians in research should assess their veterinary recruitment needs and measures to meet them, and take stock collectively of current provision for veterinary research training and career development, taking account of the needs of the other employers of veterinarians in research.

(5) Funding bodies considering applications for grants in veterinary science should judge them not only on the quality of science but also on the needs for understanding, prevention and treatment of disease in the target species. The need to integrate knowledge at a cellular and genetic level with whole animal function in the target species should be recognized.

(6) Those engaged in research in the veterinary species should jointly make a case to BBSRC and other funding bodies for a special funding programme.

(7) The veterinary schools, the profession and MAFF (as the major public sector user of the services of veterinary graduates) should review the financial arrangements for clinical veterinary teaching. Those who benefit from undergraduate veterinary education should contribute to the special costs of clinical teaching, so that clinical academic staff can combine a reduced teaching and service load with a proper involvement in research.

(8) The funding bodies which sponsor or have an interest in veterinary research – notably BBSRC, MRC, the agriculture departments and the Wellcome Trust – should review the effectiveness and complementarity of their programmes, giving the main research contractors an opportunity to contribute, and should repeat this exercise from time to time.

(9) The research Institutes and veterinary schools should share the use of existing specialized facilities and co-operate in making the case for new investment in centres of excellence.

(10) The veterinary schools, Institutes, government laboratories and Veterinary Investigation Centres should collaborate and, where appropriate, form regional groupings.



(11) Each veterinary school should develop its own areas of research based on the starred areas in the Research Assessment Exercises, provided, of course, those areas continue to be actively pursued. These areas for each school should be agreed between the schools and published as statements of individual and common strategy. The veterinary schools should exploit the complementary strengths of other bodies.

(12) The heads of the veterinary schools should set up an

interest group to represent the schools collectively in dealings with other bodies.

(13) The heads of research in the bodies engaged in research into animal health and welfare should meet formally to promote collaboration and co-ordination.

(14) The bodies affected by our recommendations should jointly review progress in a year's time, the review being convened by the RCVS.

## PREFACE

P.1. Research in the veterinary sciences is vital for several reasons. It enhances the health, welfare and usefulness of both production and companion animals. It safeguards the public from diseases spread from these animals in food and by other means. By comparative investigations it illuminates our understanding and management of human disease, for example in such areas as infections, cancer, genetics and reproduction.

P.2. The Committee was set up by the Royal College of Veterinary Surgeons “to assess the current state and provision for veterinary science and research and to develop a strategy from which priorities can be determined, to ensure UK veterinary research and research training are at the forefront internationally and meet the nation’s needs in the future”. We were asked to report by the end of 1997. The composition of the Committee is set out in annex A.

P.3. At the beginning of our Enquiry we invited views from the veterinary profession, the research community, Government departments and other funding bodies, representative organizations, animal welfare bodies, animal health and pharmaceutical companies and other interested bodies and individuals. The text of our call for evidence is at annex B. In addition to receiving written submissions we heard oral evidence during our meetings and listened to a wide range of views during visits. Annex C gives the names of those who put evidence to us and the establishments we visited. Annex D notes the recommendations of earlier studies, annex E lists abbreviations, and annex F gives information on changes in the number of veterinary graduates employed in research in recent years.

P.4. In inviting views we did not define the subject of our Enquiry, namely “veterinary research”, not wishing to constrain the range of issues which those responding to our invitation might raise. In the event, the views put to us have related to two distinct topics.

P.5. The first is veterinary research in the sense of studies of the health and welfare of those animal species which are the concern of veterinary practice. Such research may lie at any point on a broad spectrum from fundamental studies of the molecular biology of pathogens to clinical trials of new therapies, and is carried out by scientists who may or may not have a veterinary degree. We received evidence about gaps in research coverage and the difficulty of funding certain kinds of research into animal health.

P.6. The second topic is the place of veterinarians in research. Under this head views were expressed on the level of recruitment of veterinary graduates into research careers, over opportunities for training and career development for veterinary graduates in research, and on the special issues encountered by veterinarians in academic appointments seeking to combine research with clinical and other service work.

P.7. Our report first sets the scene by describing, in chapter 1, the main institutions involved in veterinary research and research training. In chapter 2 we note issues identified and views expressed in the evidence put to us, and also in reports of earlier enquiries and reviews which we consulted. The report then offers in chapter 3 our own analysis of the main issues and recommendations.



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## CHAPTER 1: INSTITUTIONS AND FUNDING SYSTEMS

### INTRODUCTION

1.1. A wide range of bodies are engaged in or fund veterinary research, notably the university veterinary schools, other university departments, Government departments, Research Councils, the Higher Education Funding Councils in England and Scotland, statutory levy boards, research Institutes and charities. We have not sought to compile a full inventory but consider briefly below the part played by:

- the main bodies which fund veterinary research and research training, namely the Higher Education Funding Councils, the Biotechnology and Biological Sciences Research Council, the Medical Research Council, the Ministry of Agriculture, Fisheries and Food, the Scottish Office Agriculture, Environment and Fisheries Department, industrial funding bodies, the Wellcome Trust and other charities;
- the main bodies which carry out veterinary research and provide research training for veterinarians, namely the university veterinary schools, the relevant publicly-funded research establishments and the Animal Health Trust.

### THE HIGHER EDUCATION FUNDING COUNCILS

1.2. Universities receive core Government funding for teaching and research from the higher education funding councils for England, Scotland and Wales. The funding pays the salaries of the permanent staff and contributes to the costs of buildings, equipment, and other infrastructure for teaching and research. The extra costs of particular research projects are met by the universities obtaining competitive research grants or contracts from a wide range of sources. In the case of the six veterinary schools, the Royal Veterinary College receives an allocation from the Higher Education Funding Council for England direct, but the other veterinary schools receive a share of the Funding Council resources allotted to their parent

universities. Institutions generally have discretion to divide their Funding Council grants between subject areas as they think fit, although the sums allocated to each subject area are public knowledge.

1.3. Funding Council resources are almost entirely distributed in accordance with formulae which take account of the costs of teaching and the level and quality of research activity in the different institutions. Research quality is measured for this purpose by periodic research assessment exercises in which the output of each institution in each subject area is subject to peer review. Allocations for 1997/98 were sharply geared to ratings in the 1996 Research Assessment Exercise.

### THE BIOTECHNOLOGY AND BIOLOGICAL SCIENCES RESEARCH COUNCIL

1.4. The Biotechnology and Biological Sciences Research Council (BBSRC) promotes basic, strategic and applied research and related postgraduate training in the area of biological systems. It does so mainly by sponsoring research Institutes and by supporting research projects and programmes, principally in the universities, through competitive grants.

1.5. The eight BBSRC-sponsored research Institutes have an annual turnover of £120m. The Council provides 44% of their overall research income, but the level of support varies considerably between the institutions. The Institutes which carry out research on animal health are described later in this chapter. Research projects and programmes are funded through responsive-mode grants for basic and strategic research enhancing the science and engineering base (£50m a year) and under strategic research initiatives underpinning user needs in agriculture, chemicals, pharmaceuticals and food (£26m a year).

1.6. A strategic programme on biological responses to stress (£4.1m in 1996/97) covers animal welfare, animal disease pathogenesis, the biology of the spongiform encephalopathies and aspects of plant disease. Current research supported by BBSRC in the areas of animal welfare and animal disease pathogenesis, other than the



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spongiform encephalopathies, represents a total of £3m in three-year grants, and annual spending under a special programme on the spongiform encephalopathies is currently around £2.5m.

1.7. BBSRC funds some 2000 PhD studentships at any time together with more advanced fellowship posts. Twelve studentships are currently held by veterinary graduates. 35% of new studentships are allocated to individual supervisors and the rest distributed through allocations to university departments, research institutes and industrial companies: four allocated studentships went to the Institute for Animal Health and three to veterinary schools in 1996.

### THE MEDICAL RESEARCH COUNCIL

1.8. The Medical Research Council (MRC) spent £305m in 1996/97 on research to maintain and improve human health. This is divided about evenly between support for grants and career awards and support for MRC Units and Institutes. Studies of animal health and systems can contribute to human medicine, and the Council currently supports 19 projects in the veterinary schools with an

annual spend of £710 000. A small number of projects elsewhere use animals such as cattle, sheep and cats to elucidate aspects of human health.

1.9. MRC maintains liaison with BBSRC, for example in relation to:

- basic biology (for instance genome sequencing);
- farm animal zoonoses (notably the transmissible spongiform encephalopathies);
- the BBSRC/MRC Neuropathogenesis Unit in Edinburgh;
- health applications of biology and biotechnology (for instance, MRC supports the Edward Jenner Institute for Vaccine Research); and
- research relevant to human nutrition.

### THE MINISTRY OF AGRICULTURE, FISHERIES AND FOOD

1.10. The Ministry of Agriculture, Fisheries and Food (MAFF) commissions research in order to inform and implement policies, to provide scientific foresight and contribute to the identification of future policy options.

Table 1. Ministry of Agriculture, Fisheries and Food: expenditure on animal health and welfare research.

	£000	
	1996–97	1997–98
BSE and scrapie	10 431	10 681
Brucellosis, TB, salmonella and other zoonoses	3857	4360
Prevention and control of other animal diseases	6783	5948
Farm animal welfare	4148	3928
Meat hygiene	533	533
<b>Total animal health and welfare e</b>	<b>25 752</b>	<b>25 450</b>



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Its research on animal health serves principally to help protect the public from animal diseases which may affect human health, to protect animal welfare, and to promote a competitive economy. The Ministry's research programme, as set out in the Departmental Report for 1997 (CM 3604), provides for total expenditure of some £123m in 1996/97 and £126m in 1997/98. Forecast expenditure on animal health and welfare within these totals is set out in Table 1.

1.11. In recent years the emphasis of the programme has shifted away from the endemic diseases and disorders which are primarily of concern to producers, in favour of work on diseases (including those introduced from overseas) and pathogens which are of major policy importance because of their impact on public health. The Ministry advise that about half of the third head of expenditure, "prevention and control of other animal diseases", represents statutory work on animal diseases which pose major threats to the economic well-being of agriculture. The other half includes research on economically important endemic diseases and is aimed at improving diagnosis and control, primarily by vaccination.

1.12. Most of the Ministry's research in this area is carried out by the Veterinary Laboratories Agency, a Next Steps Agency formed in 1995 from the merger of the Central Veterinary Laboratory with the Veterinary Investigation Service. The main function of the Agency is the diagnosis and surveillance of livestock disease, through site investigations, through laboratory testing at 14 Veterinary Investigation Centres, the Central Veterinary Laboratory and the Lasswade Veterinary Laboratory, and through the analysis of data. The Agency's running costs are currently £44m a year and it has some 1050 staff, about 650 of them being at the Central Veterinary Laboratory. Most of the staff have a scientific background, 67 being project leaders, and 90 of them are veterinarians. Research, mostly at the Central Veterinary Laboratory, employs about 20% of the Agency's resources: the in-house research programme costs about £9m, a third of this being for work on BSE. The Central Veterinary Laboratory also commissions work from specialized centres of excellence for particular purposes and has extensive and growing links with universities, in particular the Universities of Surrey and Reading.

### SCOTTISH OFFICE

1.13. The Scottish Office Agriculture, Environment and Fisheries Department (SOAEFD) funds basic, strategic and applied research at the Scottish Agricultural and Biological Research Institutes (SABRIs), the Scottish Agricultural College and the Royal Botanic Garden Edinburgh. The SABRIs are the Hannah Research Institute, the Macaulay Land Use Research Institute, the Moredun Research Institute, the Rowett Research Institute and the Scottish Crop Research Institute.

1.14. The Department's current research budget is £49m, of which some £43m is used for core support to the institutions through grant in aid. This core funding accounts for about 70% of the income of the SABRIs and 40% of that of the College. The remainder of the SOAEFD's research budget is allocated to the Flexible Fund and additional research projects and programmes.

1.15. The "Scottish System" is designed to:

- encourage co-operation between the sponsored bodies (which have complementary rather than overlapping remits) and between them and other local research providers, notably the universities; and
- ensure that basic, strategic and applied research is linked with practical applications in end-user industries.

Collaboration is facilitated by the Committee of Heads of Agricultural and Biological Organisations of Scotland, formed in 1994 to promote an integrated approach to biological, environmental and agricultural research and development, technology transfer and policy support. The members of the Committee represent the SABRIs together with the Scottish Agricultural College, the Royal Botanic Garden Edinburgh, Fisheries Research Services, the Forestry Commission Research Division and the Scottish Agricultural Science Agency. The transfer of technology to the agricultural and other end-user industries is promoted by a range of mechanisms, including advisory services for farmers, the integration of research with further and higher education in agriculture, and the setting up of commercial subsidiaries by most of the SABRIs to exploit their discoveries.



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### THE HORSERACE BETTING LEVY BOARD

1.16. The Board is a statutory body which collects a levy from bookmakers and the Horserace Totalisator Board and applies it for the improvement of horseracing, the improvement of breeds, and veterinary science and education. Grants are usually made to veterinary schools, other university departments, research Institutes and veterinary practices. Some £1.5m (representing about 3% of the Board's total expenditure) was spent on veterinary science and education in 1996/97. Of this about £1m was spent on research to improve the health and welfare of the horse, particularly the Thoroughbred, £140 000 on veterinary postgraduate research training leading to the PhD in relevant fields, and the remainder on other veterinary purposes including specialist clinical training through residencies. The allocation for 1997/98 has been reduced to £1.26m as a result of an expected fall in levy income, and the number of scholarships and residencies will be phased down from eight to six awards of each kind.

1.17. The Board seeks to support strategic and applied research. It does not provide long-term support for research groups, but it contributes indirectly to the research infrastructure by making project grants. These may cover the provision of specialist equipment and occasionally accommodation.

### THE MILK DEVELOPMENT COUNCIL

1.18. The Council was set up under the Milk Development Council Order 1995, SI 1995/356, following a producer poll which confirmed that a majority of dairy farmers were prepared to pay to ensure that the research funded by the Milk Marketing Boards would continue after they were wound up. The Council derives its income from a levy on milk produced for sale in Great Britain, the levy having initially been set at 0.04p per litre and then reduced to 0.03p per litre raising approximately £5.5m. The continuance of the levy must be approved from time to time by the producers collectively. The Council's statutory functions include those of promoting or undertaking research in the fields of milk production and consumption.

Last year the Council allocated approximately £1.6m to projects on infertility, mastitis, lameness and other diseases of dairy cattle. In addition a further £1.5m has been allocated to research into improved nutrition, welfare and environmental issues.

### THE MEAT AND LIVESTOCK COMMISSION

1.19. The Commission sponsors research totalling £2m to £3m a year on behalf of the livestock and meat industries, using funds from levies collected at the point of slaughter of cattle, sheep and pigs and also from consultancy earnings. Some 90 projects are currently supported, the emphasis being on research which will lead to practical benefits within 3–5 years. Subjects include animal management, nutrition, breeding, welfare and disease.

### THE BRITISH EGG MARKETING BOARD RESEARCH AND EDUCATION TRUST

1.20. The Trust was established with capital derived from the demise of the British Egg Marketing Board, the income from which is to be applied to research and education for the advancement of the production of hen or duck eggs. The Trustees apply the income of about £90 000 per annum to support a Nuffield Scholarship each year, six PhD students and a number of small pump-priming grants.

### THE WELLCOME TRUST

1.21. The Wellcome Trust spends about £5m a year on veterinary research and research training. Two thirds of this support has taken the form of project and programme grants, the remainder being fellowship and scholarship awards for veterinary research and veterinary graduates.

1.22. The Trust seeks to promote collaboration between the biological sciences and human and veterinary medicine. To this end it has, in particular, invested more than £5m in a Unit for Molecular Parasitology at the University of Glasgow, based in the Science Faculty but with close links



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with medical researchers and parasitologists in the veterinary school, and expects to invest more than £3m in the Research Centre in Comparative Respiratory Medicine in the University of Edinburgh, based in the veterinary school but with the medical school and Moredun Research Institute closely involved. The Trust also supports veterinary research outside the veterinary schools: about a quarter of its veterinary project and programme directed grants are held in university scientific and medical departments.

1.23. The Trust applies common criteria of scientific excellence to grant applications for veterinary, medical and biological research. It does not fund purely clinical investigation in either human or veterinary medicine.

1.24. The Trust's support for training and career development of graduates with veterinary qualifications is mainly channelled through five schemes:

- standard scholarship awards: for full-time research in any appropriate university or research laboratory in the UK leading to a PhD in three years;
- scholarship awards in clinical research: for those wishing to obtain a postgraduate clinical training while undertaking research leading to a PhD. The awards are for four years, 70% of the time being for research and 30% for clinical training;
- five-year scholarship/fellowship awards: for exceptional graduates to study for a PhD outside the veterinary schools, the first three years being spent in a non-veterinary school laboratory and the last two years as a fellow in a department in a veterinary school.
- veterinary fellowships: for veterinary graduates with a PhD or equivalent research experience or postdoctoral science graduates wishing to undertake research in a veterinary subject;
- research career development fellowships: for veterinary graduates with postdoctoral research experience who have already achieved substantial research success and wish to develop an independent research career while maintaining an active involvement in clinical veterinary medicine.

1.25. Veterinarians may also apply for awards designed for

non-veterinary scientists and for medical graduates, and for the Trust's multidisciplinary Senior Clinical Fellowships and Senior Basic Biomedical Fellowships. Currently, 54 veterinary graduates hold the Trust's veterinary PhD scholarships, 15 hold postdoctoral veterinary fellowships and three hold veterinary research career development fellowships. A further 19 individuals hold awards for veterinary research made through the Trust's personal support schemes for science and medical graduates.

### OTHER CHARITIES

1.26. Veterinary education, research and research training receives significant support from a range of other charities with varying objects, many of them concerned with the welfare of particular species of companion animals. Three examples may be given:

- the Guide Dogs for the Blind Association, which commissions research on canine health and reproduction from the veterinary schools and the Animal Health Trust to the value of some £650 000 a year;
- the Home of Rest for Horses, which has made grants to the veterinary schools and the Animal Health Trust, including capital grants for the improvement of clinical facilities, totalling £6.3m over the last 30 years; and
- the Pet Plan Charitable Trust, funded by voluntary £1 donations from owners paying healthcare insurance premiums for their pets plus a contribution from the company itself. Since the Trust was set up in 1994 it has made grants totalling £297 000 for research and postgraduate education in the veterinary schools and the Animal Health Trust and given £360 000 for new infrastructure in the schools.

1.27. The Home of Rest for Horses, like other animal welfare charities, does not fund research which involves invasive surgical or manipulative procedures.

1.28. From time to time voluntary support may be mobilized for a specific research purpose. An example was





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the creation in 1986 of the Equine Virology Research Foundation to raise funds for research into the control of viral diseases and in particular equine herpesvirus.

### THE VETERINARY SCHOOLS

1.29. There are six veterinary schools in Great Britain, in the Universities of Bristol, Cambridge, Edinburgh, Glasgow, Liverpool and London (where the veterinary school is the Royal Veterinary College – RVC). They award first degrees which qualify their holders to practise as veterinarians, they provide postgraduate education and

research training for veterinary, medical and biological graduates, and they carry out a significant amount of research into basic biomedical sciences and animal health. The schools are by no means staffed exclusively by veterinarians but they are significant employers of veterinary graduates, with 481 as staff or postgraduate students compared to over 9000 in general practice. Table 2 indicates the scale on which the schools operate.

1.30. The undergraduate course normally extends over five years (six at Cambridge) embracing pre-clinical studies of animal structure and function, para-clinical studies of the nature of disease, and clinical medicine and surgery. The

Table 2. The veterinary schools: size and level of activity.

	Bristol	Cambridge	Edinburgh	Glasgow	Liverpool	RVC	Total
Annual expenditure	£12m	£5m	£9m	£10m	£5m	£17m	£58m
Salaried academic staff, 1997 (of whom are veterinarians)	92 (40)	50 (35)	80 (53)	81 (41)	81 (55)	88 (57)	472 (281)
Research students, 1997 (of whom are veterinarians)	67 (11)	48 (25)	103 (63)	108 (43)	37 (25)	67 (33)	430 (200)
Undergraduate intake, 1996	72	58	86	86	85	143	530
Veterinary students, 96/97	368	372	430	404	404	500	2478
Veterinary degrees awarded, 96/97	72	55	88	77	72	79	443
Intercalated science degrees awarded, 96/97	4	54*	6	4	4	11	83
PhD and Master's degrees awarded, 96/97	18	10	42	23	20	21	134

\* part II of Tripos.

Notes: The staff and expenditure figures for Bristol and Cambridge relate only to the clinical veterinary schools and do not cover pre- and para-clinical departments. The annual expenditure figure for RVC, which is a financially independent institution, includes overheads some of which may be carried by the parent university in the case of the other veterinary schools.





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parts of the course are not rigidly compartmentalized, and students handle and examine animals from the first year. Students complete 12 weeks of animal husbandry extramural studies during the first two years of the course and 26 weeks of clinical extramural studies during the last three years. The course covers all the main domestic and agricultural species.

1.31. At the end of the second or third year students may take an honours science degree in one year before completing the veterinary course. At the University of Cambridge all veterinary students obtain a BA degree at the end of the first three years before completing the veterinary course.

1.32. The veterinary schools spend about £17m a year on

externally-funded research in a wide range of areas covering the interests of the pre-clinical, para-clinical and clinical departments. The quality of the research is evaluated periodically in the Research Assessment Exercises of the Higher Education Funding Councils. Table 3 sets out the results for the veterinary schools in 1992 and 1996.

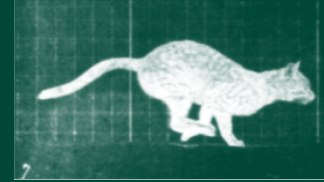
1.33. The rating of 4 achieved by all the veterinary schools in 1996 indicated:

“research quality that equates to attainable levels of national excellence in virtually all sub-areas of activity, possibly showing some evidence of international excellence, or to international level in some and at least national level in a majority”.

1.34. In 1992 a rating of 4 had substantially the same

Table 3. The veterinary schools: outcome of 1996 Research Assessment Exercise.

		Rating	Proportion of staff selected	Research active staff	Flagged research groups
Bristol	1992	4	A	62.6	Food science area for collagen and muscle Muscle and connective tissue biology
	1996	4	B	52.0	
Cambridge	1992	3	A	24.0	Neuropathology Neurology; infection and immunity
	1996	4	A	34.0	
Edinburgh	1992	4	B	76.1	Immunology; paraclinical science Physiology; clinical and molecular immunology
	1996	4	B	84.9	
Glasgow	1992	5	B	68.5	Pathology; parasitology Parasitology; pathology
	1996	4	A	81.0	
Liverpool	1992	3	B	41.8	Muscle and nerve in preclinical Cell physiology
	1996	4	C	35.2	
RVC	1992	4	B	54.0	Basic veterinary science physiology and molecular biology of muscle and biology of bone Reproduction; musculoskeletal pathobiology
	1996	4	B	73.4	



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significance, while the other ratings achieved in that exercise had the following meanings:

- 5: “research quality that equates to attainable levels of international excellence in some sub-areas of activity and to attainable levels of national excellence in virtually all others”; and
- 3: “research quality that equates to attainable levels of national excellence in a majority of the sub-areas of activity, or to international level in some”.

1.35. The third column of the table shows the proportion (in bands) of the staff employed on academic contracts and working within the subject area who were selected for assessment:

- A: 95% – 100%
- B: 80% – 94%
- C: 60% – 79%.

The number of staff employed by the institution who were put forward for assessment as being active in research is shown in the fourth column.

1.36. The fifth column of the table shows “flagged research groups” carrying out work of relatively higher quality than the other work covered by the submission.

### INSTITUTE OF ZOOLOGY

1.37. The Institute of Zoology is a grant-aided Institute of the University of London with an annual income in 1996 of £2.4m, including research grants and contracts of £750 000. The Institute employs seven veterinarians in strategic research and clinical investigations. Research areas include the causes of mortality in stranded cetaceans and the common frog, the pathology of spongiform encephalopathy in kudu, the epidemiology of parapoxvirus infection in red and grey squirrels, reproduction in porcine species and the health and welfare of mammals and birds in translocation programmes. Staff collaborate with many other universities and Institutes, both nationally and internationally, for example with the Moredun Research

Institute on parapoxvirus infections and the CSIRO Animal Health Laboratory in Australia on amphibian disease. Clinical investigations into the health and diseases of captive wild animals include projects on the prevalence of malignant catarrhal fever in deer and antelope.

### RESEARCH INSTITUTES SPONSORED BY BBSRC

1.38. BBSRC’s sponsored Institutes include four engaged in work directly or indirectly relevant to animal health:

- the Institute for Animal Health studies infectious diseases of farm animals: annual income is £18m;
- the Roslin Institute studies the productivity, breeding and welfare of farm animals, focussing particularly on the genetics of farm animals in the UK. Annual turnover is £10m;
- the Institute of Grassland and Environmental Research undertakes basic and strategic research relevant to grassland agriculture, including a substantial programme of work on ruminants. Annual turnover is £13m;
- the Babraham Institute studies physiology at all levels, but with particular focuses upon cell biology and system physiology. It is no longer engaged in veterinary research. Annual turnover is £14m.

1.39. The Institute for Animal Health comprises three laboratories, at Compton (endemic diseases, including those of poultry), Pirbright (exotic diseases that threaten the UK) and the BBSRC/MRC Neuropathogenesis Unit in Edinburgh (transmissible spongiform encephalopathies). The Compton site was extensively redeveloped to accommodate the poultry science which moved from the former Houghton Laboratory, and the Pirbright site is the subject of a major current redevelopment programme. The Institute’s assets include advanced containment facilities for work with dangerous pathogens and unique animal stocks of known health status and genotype. It employs around 500 staff, 100 of these being postdoctoral scientists (including 11 veterinarians). There are also about 60 postgraduate students, three being veterinarians. The Institute is an associated institution of the Universities



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of Bristol and Reading.

1.40. The Roslin Institute was formed by the amalgamation of separate organizations conducting research into animal breeding and into poultry science, and these are still the main areas of focus. Current research on breeding covers theoretical and applied genetics, genome mapping with an eye to economically important traits, genetic modification, reproductive physiology and immunogenetics, while remaining work on poultry concerns welfare, metabolic and developmental disorders and nutrition. There are some 300 staff, including 30 research leaders (two of whom are veterinarians), and 30 students. The BBSRC strategic grant of £1.8m represents a fifth of total income; MAFF provides two fifths in contracts; the chief sources of project funding are BBSRC and the agriculture Departments, together with the agricultural industry (including levy boards) and the European Commission. The main site, part of which is being developed as a biotechnology centre, is on the outskirts of Edinburgh close to the Moredun Foundation's Pentland Science Park, the University's veterinary field station and the Edinburgh Veterinary Investigation Centre. The Institute is an associated institution of the University of Edinburgh and collaborates in research with the veterinary school and a wide range of other bodies.

1.41. The Institute of Grassland and Environmental Research occupies three sites in central Wales, including a research farm, and one site in north Devon. There are some 400 staff, of whom about 110 are postdoctoral research initiators, and about 40 postgraduate students; there are no veterinary graduates. Two thirds of the Institute's funding is derived from MAFF contracts and the BBSRC strategic grant of £2m represents only a fifth of the annual turnover. Studies of animal nutrition, grazing behaviour and the conversion of plant fibre to meat, milk and wool account for about a third of the research budget. The Institute has collaborated with the veterinary school of the University of Edinburgh, the Moredun Research Institute, the Roslin Institute and the Veterinary Laboratories Agency in research projects, and there are teaching and research links with the Universities of Wales (particularly the University College of

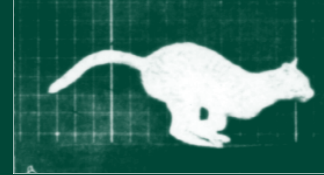
Aberystwyth), Plymouth and Reading (40 members of staff being involved in undergraduate teaching).

1.42. The Babraham Institute has focussed its work in recent years on cell signalling, recognition mechanisms, and development and genetics, while programmes specifically related to agriculture and animal welfare are being phased out. The Institute is sited near Cambridge and linked with the University: Institute staff teach on some undergraduate courses, and postgraduate students read for Cambridge PhDs at the Institute. There are research collaborations with a wide range of UK and overseas universities. The Institute has about 500 staff, including some 50 project leaders and 140 postdoctoral staff, and 60 postgraduate students. Two members of staff are veterinary graduates. The BBSRC strategic grant of £7.5m represents just over half of total income; other sources of funding include project grants from BBSRC, MRC, MAFF and other Government departments. The Institute's assets include a large site on which it rents space to biotechnology companies working in relevant subject areas.

### RESEARCH ESTABLISHMENTS SPONSORED BY SCOTTISH OFFICE

1.43. The following institutions funded by Scottish Office are particularly relevant:

- the Moredun Research Institute conducts basic and strategic research on the biology of infectious disease in sheep and other economically important grazing animals. Annual expenditure is £5m;
- the Hannah Research Institute studies lactation, milk and dairy products and related subjects, including the welfare of dairy cattle. Annual expenditure is some £4m;
- the Rowett Research Institute studies mammalian nutrition with particular emphasis on the effects of diet on health. Annual expenditure is £11m;
- the Scottish Agricultural College engages in education, research and technology transfer. Annual expenditure is about £45m.



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1.44. The Moredun Research Institute was established in 1926 by the Animal Diseases Research Association. The Association became the Moredun Foundation, of which the Institute is a wholly owned subsidiary. Since the 1950s the Institute has received grants from Scottish Office, some three quarters of the Institute's income currently being from that source. It employs 250 staff, of whom 50 are scientists (including 13 veterinarians), and has 20 research students. There are links with the Universities of Edinburgh and Glasgow and with the Scottish Agricultural College.

1.45. In 1988 the Moredun Foundation formed a subsidiary company to develop the commercial exploitation of the Institute's research. The Foundation is now using the proceeds of the phased sale of the original large site on the outskirts of Edinburgh and a grant from the European Regional Development Fund to develop the Pentlands Science Park. The Science Park will accommodate the Institute and other biological organizations and adjoins the University of Edinburgh Veterinary Field Station and the Edinburgh Veterinary Investigation Centre of the Scottish Agricultural College. The Foundation manages high specification containment facilities at the Science Park for the use of the Institute and other clients.

1.46. The Hannah Research Institute, founded in 1928, is located at Ayr but has close links with the University of Glasgow 40 miles away. Research is focussed in the areas of control of the mammary gland, control of nutrient partitioning in pregnancy and lactation, fetal programming and development, welfare of dairy cows (including lameness), food quality and safety, and molecular interactions in milk and food processing. There are some 150 staff, including about 40 postdoctoral scientists but no veterinary graduates, and 20 postgraduate students. Scottish Office grant represents about three quarters of total income. There are research and teaching links with the Universities of Glasgow and Strathclyde, and other research partners include other UK universities, the Scottish Agricultural College, the Babraham, Moredun, Roslin and Rowett Institutes, and a range of overseas research groups.

1.47. The Rowett Research Institute was founded in 1913 on a site near Aberdeen and was supervised initially by a joint committee appointed by the North of Scotland College of Agriculture and the University of Aberdeen. The original remit was to study animal nutrition, but an integrated programme of research on human and animal nutrition was pursued from the outset. The main current research themes are energy balance, gastroenterology, gut reactivity and immune function, protein metabolism and muscle function, nutrient-gene interactions in development, the maintenance of cellular function, and skeletal growth and bone turnover. The Institute's assets include a farm with large animal facilities and a small animal unit with specialized stocks of laboratory animals. Two thirds of its income comes from Scottish Office, the balance being covered mainly from project grants (15%) and from work carried out for Rowett Research Services, the Institute's research company (10%). There are some 280 staff, of whom 80 are innovative scientists. Two members of staff are veterinarians, but they are not primarily engaged in research. The Institute is host to about 100 postgraduate students, mostly registered with the University of Aberdeen, and Institute staff are involved in undergraduate and postgraduate teaching at the University. There are collaborative research links with other members of the Aberdeen Research Consortium (which brings together the University of Aberdeen, Robert Gordon University, the Scottish Agricultural College and other research institutes), with other establishments supported by Scottish Office, and with overseas research groups.

1.48. The Scottish Agricultural College (SAC) combines teaching with major advisory, consultancy and scientific services along with research on animal and plant science, crop protection, food technology, economics, engineering, soils and environmental science. There are 1350 staff. Just under 50% of the research programme is funded by the Scottish Office. Animal science accounts for 36% of the research income, the main areas covered being the genetics and reproduction of farm livestock, the metabolism of ruminants, pigs and poultry, and animal health, behaviour and welfare. SAC's assets include seven research farms and the eight veterinary laboratories of the Veterinary Science Division, which provides veterinary surgeons in practice



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with advisory, clinical and diagnostic services similar to those provided in England and Wales by the MAFF Veterinary Investigation Centres. The staff of SAC Veterinary Services include 30 veterinarians.

### THE ANIMAL HEALTH TRUST

1.49. The Trust is an independent charitable organization which seeks to develop better means of diagnosing, treating and preventing disease in horses and small animals. It pursues research, referral services and education, with long-term, strategic research being the main activity. The Trust employs 180 staff, 36 being veterinarians. The annual income is over £6m, derived from research grants, clinical services and charitable income. The Trust is seeking recognition as an “academic analogue” eligible for BBSRC grants. Over £10m is currently being spent to concentrate the Trust’s infrastructure on the larger of its two sites outside Newmarket.

1.50. The forerunner of the present Trust, set up in 1942, established not only an Equine Research Station and a Small Animal Centre but also a Poultry Research Station and a Farm Livestock Station, but there was little success in raising funds from the agricultural industry for the last two enterprises. The Poultry Research Station was transferred to the Agricultural Research Council, its activities ultimately being taken over by the Institute for Animal Health, and the Farm Livestock Station closed in 1971. The development of the Trust as it now stands reflects continued support from equine and companion animal interests and individual donors.

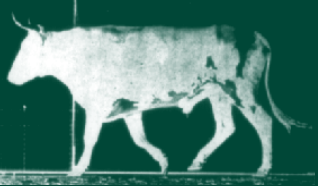
### RESEARCH SPENDING

1.51. It would be difficult to give an accurate measure of current expenditure on research into animal health and welfare in view of the wide range of bodies involved and the lack of any clear boundary between such research and neighbouring areas. The information quoted above nevertheless gives a broad picture. The spending

programmes of BBSRC, MAFF, SOAEFD, the Wellcome Trust and the industrial funding bodies add up to £40m to £50m a year for research into animal health and welfare. This figure does not take account of the contribution of the Higher Education Funding Councils in supporting research infrastructure in the veterinary schools and other university departments, or of research funds from other sources such as the animal welfare societies or pharmaceutical companies. The annual research spending of the veterinary schools, the Institute for Animal Health, MAFF, the Animal Health Trust and the Moredun Research Institute adds up to £50m to £60m, and relevant expenditure by bodies not predominantly engaged in research on animal health and welfare may total some £10m. Annual spending on research on animal health and welfare in Great Britain therefore seems likely to be in the region of £60m to £70m.

1.52. A comparison with medical research is instructive. Just four of the medical schools (The Royal Free Hospital, St George’s Hospital, UMDS and University of Wales) between them received £60m in 1995/96 from research grants and contracts, and (as noted earlier) MRC alone invested £305m in research and research training in 1996/97.

1.53. Spending on veterinary research may also be put into the context of its economic importance. The Annual Abstract of Statistics shows that in 1995 the output of livestock and livestock products in the UK was worth over £10 200m. The Institute for Animal Health has cited an estimate that, in the developed world, disease in farm animals costs around 17% of turnover in mortality and morbidity. For the UK, that would imply regular losses of the order of £1700m a year. Outbreaks of particular serious diseases can lead to heavy public expenditure as well: thus the MAFF Departmental Report for 1997 records that the estimated cost to public funds of measures taken to deal with BSE in 1996/97 was £1370m, further expenditure totalling £1800m being planned over the next three years. It would be difficult to use such figures to establish the need for a particular level of investment in animal health research, but annual expenditure of less than 1% of the value of the production of the livestock industry seems modest.



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### CHAPTER 2: VIEWS RECEIVED BY THE COMMITTEE

#### INTRODUCTION

2.1. This chapter summarizes the main messages which we derived from written and oral evidence put to us, and also from the reports of earlier enquiries (noted in annex D). The views expressed and issues identified are presented in this chapter topic by topic.

2.2. We deal first with the subject of veterinarians in research, under the following headings:

- need for veterinary contribution in research;
- research exposure and basic science in undergraduate education;
- research training of those with a veterinary qualification; and
- careers in research for those with veterinary qualifications.

The chapter then reports the issues which were raised on research into animal health and welfare, under the headings:

- coverage of different areas of research;
- requirements of clinical research;
- research by clinicians in the veterinary schools;
- research and general practice;
- funding of research;
- funding strategy and co-ordination;
- competition, collaboration and specialization;
- comparison with American experience; and
- comparison with human academic medicine and dentistry.

Particular themes falling under these headings are *picked out in italics*.

#### NEED FOR VETERINARY CONTRIBUTION IN RESEARCH

2.3. The veterinary schools and research Institutes, including the Animal Health Trust, are staffed by people

whose first and higher degrees span many disciplines. Three fifths of the permanent staff of the schools have veterinary qualifications. A fifth of the staff of the Animal Health Trust are veterinary graduates, while the Institutes referred to in chapter 1 employ very few: a little over 1% of their staff. *Veterinarians are seen as making a special contribution*, in particular in that they have combined expertise in clinical practice and fundamental biology. The British Veterinary Association (BVA) expressed the general view: “Whilst non-veterinarians make a huge contribution to veterinary research, appropriate disease research requires a balanced and relevant multidisciplinary approach in which veterinarians should play an essential part”. The Animal Health Trust saw a particular need for veterinarians in research because of their strengths in comparative medicine and epidemiology. The Wellcome Trust told us that much of the veterinary research which it financed was done by non-veterinarians, but the Trust nevertheless took the view that researchers with veterinary training had a very specific contribution to make and that, for instance, research in veterinary pathology called for veterinary training.

2.4. There was similarly general agreement that *too few veterinarians were engaged in research*. Professor Wildy’s Working Party (see annex D) identified a chronic shortage of good veterinary researchers, and Professor Pickering’s group (see annex D) made recommendations on recruitment of veterinary scientists. In evidence to us BVA said that there had been a decrease in the number of veterinarians involved in research in the Institutes and the veterinary schools; the information in annex F supports this. The Association feared that for lack of their contribution research would be less relevant and responsive to the needs of animals and agriculture, veterinary students would be less drawn to research careers and there would be less communication between practitioners and researchers. The Wellcome Trust said that its veterinary research and research training fellowships were undersubscribed, and even allowing for the relatively small size of the field the Trust felt that there were too few outstanding figures who combined veterinary and research skills of high quality.

2.5. MAFF estimated that five or six veterinary graduates needed to be recruited into a research career each year to





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maintain the present complement of researchers with veterinary qualifications in the public sector (principally the agriculture Departments and the Research Council Institutes). There was *a particular shortage of research epidemiologists, pathologists and microbiologists with veterinary training*. Respondents from the pharmaceutical industry similarly said there was difficulty in finding veterinarians with postgraduate training in relevant science subjects. Fewer seemed to be trained in such basic disciplines as immunology, pathology, bacteriology and virology or in whole animal science, and veterinary graduates joining industry did not have as good a command of fundamental research techniques as did holders of biological science doctorates.

### RESEARCH EXPOSURE AND BASIC SCIENCE IN UNDERGRADUATE EDUCATION

2.6. The pre-registration training of veterinarians falls outside our remit, but the arrangements for undergraduate veterinary education proved to have a bearing on our enquiry. This was partly because the veterinary schools are the conduits (to quote Professor Lanyon) through which young people in the UK pass in order to become veterinarians. Those who teach veterinary undergraduates have the opportunity to prepare and enthuse some of them for careers in research. We were also told, however, that *veterinary education should take place in a research environment*, even for those students who are destined for practice. The latter view was authoritatively advanced in two of the existing reports we consulted: the Riley Report and the Lucke Report (see annex D).

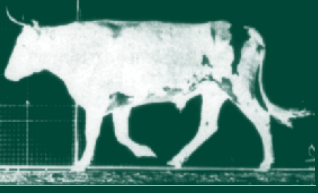
2.7. Sir Ralph Riley's Working Party recommended that veterinary graduates should have a broad education in the basic sciences in order to be able to keep pace with the developments likely to take place during their careers. The Working Party saw research and the training of postgraduate research students as a necessary background to undergraduate teaching, and favoured the development of clinical research to the benefit of undergraduate and postgraduate teaching. The report recommended that the Institute for Animal Health and the Animal Health Trust

should be involved in undergraduate education because of their special capability in relation to infectious diseases.

2.8. Dr Lucke's Working Party put forward similar views, the central theme of the Report being that veterinary education should concentrate on "an understanding of biological principles and the scientific assessment of information rather than acquiring immediate technical competence". The Working Party feared that the volume of knowledge undergraduates were expected to acquire might squeeze out the development of their powers of reasoning and deduction. Their view was that the curriculum should maximize comprehension, if necessary at the expense of proficiency and comprehensive knowledge, and all students should obtain a firm understanding of the scientific basis of all subjects in the curriculum in order to provide a sound basis for later development. Further encouragement should be given to the intercalation of degrees within the veterinary course, the subjects taken being wide in scope.

2.9. Dr Lucke's Working Party made a number of recommendations particularly relevant to our enquiry. The veterinary schools should be enabled to establish centres of excellence, on the basis of species or discipline, and movement of undergraduates between the schools should be facilitated so that they could work in a centre of excellence outside their own school. Maximum use should be made of the fund of expertise and goodwill available from the profession at large. Students were to be allowed, or even encouraged, to take elective periods away from their schools, possible locations being non-clinical university departments, research Institutes, MAFF laboratories and specialist practices. The Working Party saw research as an appropriate use of an elective period, and invited the RCVS to seek, with the universities, to find ways of providing a career structure for teachers in the veterinary schools which would stimulate basic and clinical research. The Working Party recommended that, in order to attract clinicians with open and enquiring minds, clinical departments should allow them opportunities for research so as to advance their subjects and provide a high standard of clinical care.

2.10. In the evidence put to us there was wide agreement on the importance of *exposing veterinary undergraduates to*



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*research concepts and methods*, not only in order to influence some of them to go on to careers in research. One respondent urged that students should be exposed to research and the application of research data, being stimulated by teachers actively engaged in research and being encouraged to participate in or at least observe research carried out by their teachers. Another took the view that research methods, especially quantitative analysis, were as pertinent in practice as in the research laboratory. Modest scholarships might usefully be given for vacation research projects (as was commonly done in the United States and in other subjects), or some elective periods might be used for research studies, not necessarily within the school.

2.11. Professor Pickering's group recommended stronger links between the Institutes and the veterinary schools, and the Moredun Research Institute told us that it had taken three or four undergraduates on Wellcome Trust vacation studentships each year for the last ten years (though sadly with no evidence that any of the visitors had been prompted to enter research careers). We heard also from a number of sources about the high-quality research summer schools organized by the University of Cornell for selected veterinary undergraduates, and we are aware that there have been proposals, as yet unsuccessful, for similar courses based in the UK.

2.12. *Intercalated studies*, in which undergraduates take a year out of the veterinary course in order to read for an honours science degree, were agreed to be a valuable way to stimulate students and give them a deeper scientific training, though they carry a cost. A number of submissions expressed disappointment that relatively few undergraduates (outside Cambridge, where the Tripos system requires all veterinary students to take a science degree en route to their veterinary qualification) chose to take the extra year: we heard that medical students were more inclined to take an intercalated degree because this is seen as part of a standard career path.

2.13. In view of the consensus that undergraduate veterinary education should take place in a research environment we were sorry to learn that *undergraduate veterinary courses were not generally thought to prepare or motivate students for a research career*. One explanation of

this was the large, and growing, mass of information which students had to absorb in order to obtain a first degree entitling them to be registered to practise in any branch of the profession without further training. During our visits we met a number of young veterinarians who had taken intercalated science degrees, and we heard how during the clinical phase of their undergraduate studies they had had to return to cramming facts and stop questioning what they were told. The students perceived the undergraduate course as strongly directed toward practice, and although aware that research was pursued in the veterinary schools they saw it as something which happened elsewhere and was not accessible to them.

2.14. The veterinary schools did not accept it as inevitable that veterinary undergraduates should be trained for practice to the exclusion of a grounding in science and exposure to research. The University of Bristol, for example, had adopted the aim of equipping veterinary students for a career in biomedical or veterinary science, encouraging a significant proportion to take an honours science degree by intercalation.

2.15. There was general concern about the *motivation of veterinary students*, most of whom were seen as fixed on the aim of entering practice. One view was that students would be more inclined to take advantage of the opportunities for intercalation and postgraduate study if they saw a clear career path in research and were exposed to suitable role models. In the event their exposure to research was limited because the public sector research establishments stood apart from the veterinary schools. Another factor was that a proportion of veterinary students shared the reservations of many of their contemporaries over animal experimentation.

2.16. A number of the faculty members we met during visits to the veterinary schools drew attention to the *criteria adopted in selecting school-leavers for the undergraduate course*. The competition was such that, in addition to high academic qualifications, the schools looked for signs of practical aptitude and motivation for working with animals, as evidenced by time spent on attachments to farms or veterinary practices. The selection of undergraduates was thus biased in favour of young people who were likely to be





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drawn to a career in practice, and their subsequent training did little to change this emphasis.

### RESEARCH TRAINING OF THOSE WITH A VETERINARY QUALIFICATION

2.17. The PhD was seen as the *basic qualification* for an academic research career. The Faculty of Veterinary Medicine of the University of Edinburgh thought four-year PhD courses desirable for veterinary graduates who had not taken intercalated science degrees, the first year of the doctoral course being devoted mainly to course work. Some respondents felt that clinical veterinarians needed a qualification more akin to the MD. Value was also seen in short but intensive workshop courses of the kind which had been successful in human medicine, for instance in epidemiology.

2.18. The British Small Animal Veterinary Association expressed concern over the *protracted training period* for clinical research. In the Association's view the veterinary schools relied on junior clinicians in residency posts to assist with clinical services and were not able to give them adequate opportunity for or training in research. This meant that a young clinician with research ambitions had first to spend at least three years in a clinical training post in order to obtain an RCVS specialist Diploma, then go on to doctoral studies in order to learn research methodology, and then take up a postdoctoral post, all on low salaries.

2.19. It was suggested that some postgraduate students sought *a doctorate with the intention of pursuing an academic clinical career rather than research*, while others took up doctoral studies because they had found practice unsatisfying but were not necessarily committed to a career in research. Our conversations with postgraduate students during visits tended to support this view, few of them being firmly set on research careers. One respondent observed that the current trend in clinical medicine was to gain the RCVS specialist qualifications as well as a PhD, hard though it might be to envisage a position which would make good use of all those skills: he suggested that it might be time to recognize different qualifications for teachers and researchers.

### CAREERS IN RESEARCH FOR THOSE WITH VETERINARY QUALIFICATIONS

2.20. There was very general agreement that young veterinarians could not see *a coherent structure for a research career* and were deterred as a result.

2.21. Most of the students we spoke to thought it desirable to *enter practice for two or three year* following graduation, even if the intention was to pursue a different career. The experience of diagnosis and treatment was seen as consolidating the clinical skills which were the particular asset of the veterinary scientist. The evidence we received from the academic world was generally sympathetic to this view, and those who returned to do postgraduate studies after a short spell in practice were seen to make good PhD students. The Horserace Betting Levy Board mentioned that the applicants for its research scholarships had generally developed their motivation toward research after graduation and one or more years in practice.

2.22. *Postgraduate veterinary studies were seen as reasonably well-provided*, in particular because of the generous contribution of the Wellcome Trust. On the other hand we heard about a *shortage of funding for postdoctoral posts*. For want of such openings new postdoctoral researchers had either to find teaching positions, which might not be in their area of research, or take short-term posts as research assistants. It was recognized that this problem was not peculiar to veterinary science, but veterinarians had the financially attractive alternative of entering practice and so were liable to leave the academic sector after completing doctoral studies. BVA said that veterinarians in university research were badly paid compared with those in referral practices, and suggested that the universities create a higher salary scale by analogy with medically-qualified academic staff.

2.23. Lord Soulsby argued that a research pyramid was needed, with:

- support for undergraduate vacation research and intercalation;

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- postgraduate studies, normally for a PhD, which might be supported by the same organizations which funded residency training programmes;
- postdoctoral posts, perhaps focussed on particular disciplines, which might be funded by the public sector employers of veterinarians and also by industry and the specialist divisions of the BVA;
- a small number of ten-year senior postdoctoral posts, with an expectation of tenure thereafter, perhaps endowed as named posts; and
- a research chair or chairs, probably funded by several donors (preferably by endowment), awarded competitively to a veterinary school.

2.24. Lord Soulsby noted that the creation of such a pyramid would call for co-operation between the veterinary schools and other research institutions to establish a national approach to research and research training and convince potential donors.

### COVERAGE OF DIFFERENT AREAS OF RESEARCH

2.25. Our call for evidence invited comments on the strengths and weaknesses of veterinary research in the UK and on existing or foreseen gaps in coverage. The results of the 1996 Research Assessment Exercise, noted in chapter 1 above, identified particularly strong research groups in the veterinary schools working in the following areas:

- muscle and connective tissue biology;
- neurology;
- infection and immunity;
- physiology;
- clinical and molecular immunology;
- parasitology;
- pathology;
- cell physiology;
- reproduction; and
- musculoskeletal pathobiology.

The views put to us in evidence, noted below, extended to research in other university departments and in the research Institutes and elsewhere.

2.26. There was concern that the *common diseases of farm animals needed more attention*. Much of the evidence came from bodies concerned with particular sectors.

2.27. The Milk Development Council saw infertility, lameness and mastitis as major causes of lost productivity and leading to some welfare concerns in the dairy sector. The Council considered that the current level of research on these conditions did not reflect their importance to the industry. Much of the research commissioned by the Council itself was directed at the applied level and technology transfer, and more fundamental research was also needed. The British Cattle Veterinary Association identified mastitis, infertility, lameness, metabolic conditions, parturition problems, calf pneumonia and calf diarrhoea as the main priorities for research in cattle disease.

2.28. The British Veterinary Poultry Association, drawing attention to the size and economic importance of the poultry industry, declared roundly that UK veterinary research and teaching were failing adequately to support it. The Association noted that research on poultry disease was done in various establishments, but on short-term contracts; it also expressed concern over the supply of veterinarians with the relevant skills for work on poultry disease, notably pathology, microbiology and immunology, and over the loss of existing expertise when funds were diverted in response to changes in priorities.

2.29. The Pig Veterinary Society took an equally sombre view, suggesting that “farm animal veterinary research and teaching is probably at the lowest point since 1945”. The Society saw a pressing need for more research on pig respiratory and enteric diseases, and also identified a need for more attention to locomotor disorders, infertility and certain zoonoses. Expertise in pig disease was being lost: between 1984 and 1996 the number of the Society’s members employed in commercial research, in the Institutes or in the universities had gone down from 47 to 26 and MAFF employed 38 in 1996 as against 78 in 1984.

2.30. On a wider point, a number of respondents advocated closer links between veterinary and agricultural research and more attention to the control of disease through husbandry



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and preventive management, in order to reduce reliance on antibiotics, anthelmintics and vaccines.

2.31. We were told that *research at the molecular level was strong but with patchy coverage*. Professor Onions identified the following areas of particular strength:

- transgenic animal technology, including research on the development of nuclear transfer technologies and stem cell technologies for the production of cloned embryos;
- genome mapping of the domestic species;
- molecular virology and bacteriology, including recombinant vaccine development;
- the transmissible spongiform encephalopathies;
- molecular parasitology;
- aspects of neurology and neuropathology; and
- bone formation and skeletal disorders.

2.32. In its particular field of companion animal studies the Animal Health Trust noted good research in equine virology, molecular biology and vaccine development, canine immunodermatology, genome and ocular studies, and equine sports science.

2.33. A number of submissions drew attention to a *shortage of basic knowledge of the diseases of the main veterinary species*, including both farm and companion animals. Professor Michell explained the problem in the following terms:

“The distinctive difficulty for veterinary research is this: whether in important areas of basic research or the majority of areas of clinical research, the species-specific baseline knowledge is not in place. We have to dig foundations as well as erect state-of-the-art architecture.... In most areas of veterinary clinical science, certainly for non-infectious disease (in which the problems are more constant, less susceptible to change) we lack the baseline quantitative knowledge, both epidemiological and analytical, which has been commonplace in human medicine for decades.”

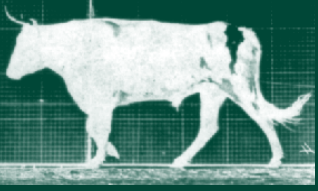
2.34. Others expressed similar views. The British Small Animal Veterinary Association called for research to be

targeted so as to supply quantitative knowledge of the problems encountered in practice. Individual submissions commented on an erosion in the capacity to undertake interdisciplinary field studies of the aetiology and pathogenesis of diseases and a “desperate” need for good clinical research to provide reliable data on many of the commonest animal diseases. A practitioner reported that he had originally been drawn to research for lack of the data needed for objective diagnosis and therapy; many areas of clinical ignorance still needed to be remedied. The Horserace Betting Levy Board similarly said that knowledge of the horse was less advanced than for other species and that basic studies were often needed before a strategic or applied problem could be addressed. Examples of areas where the Board had identified such a lack of basic studies included the relationship between nutrition and health in the horse and the exploitation of epidemiology. The British Equine Veterinary Association commented that there had been remarkably little application of molecular biology to equine research in the UK. The Animal Health Trust thought that significantly under-researched areas included small animal and equine bacteriology, pathogenesis studies and epidemiology.

2.35. Basic research on the veterinary species was seen as important not only for veterinary practice but also for its contribution to *comparative medicine*. Human and veterinary medicine were seen as symbiotic, and it was noted that many of the early discoveries of oncogenes resulted from studies of virus-induced cancers in birds and cats.

### REQUIREMENTS OF CLINICAL RESEARCH

2.36. We received views on *how to develop high-quality clinical research*. This term was widely used in the evidence without being defined. A simple definition was given by the House of Lords Select Committee on Science and Technology in appendix 3 of its Report on Medical Research and the NHS Reforms (HL Paper 12, May 1995): in the context of human medicine clinical research was described as that which required access to patients or to well volunteers. In veterinary science “clinical research” seems to be used in either or both of two senses:



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- research which studies the veterinary species as subjects in their own right (as distinct from using laboratory animals as models for other species);
- research designed to elucidate the diseases of the veterinary species, for the sake of better prevention, diagnosis and treatment.

2.37. One prerequisite was the right combination of skills. This was variously described, but with broad agreement on the importance of *clinicians with research training collaborating with laboratory scientists in interdisciplinary teams*.

2.38. *Access to clinical material* was not generally seen as a problem, though the British Small Animal Veterinary Association said that there was sometimes a disappointing response from practitioners to requests for case material. A reasonable time-span was seen as necessary in order to obtain enough cases, and it was suggested that important strategic research often needed to be done on a larger scale and over a longer period than was possible for a single research fellow on a three-year grant. Short-term project funding for studies of the veterinary species also created a problem for the maintenance of animal facilities and purpose-bred animal stocks.

2.39. The controls applied under the Animals (Scientific Procedures) Act 1986 were said to inhibit the use of material (such as blood samples) from general practice for clinical epidemiology; the Home Office took the view, however, that the controls were necessary in order to regulate sampling when this was for the purposes of research (rather than for clinical purposes) in accordance with the intentions of the Act.

### RESEARCH BY CLINICIANS IN THE VETERINARY SCHOOLS

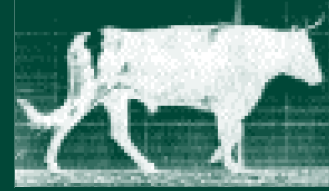
2.40. The evidence we received, and the views put to us during visits, painted a consistent picture of the *difficulty faced by clinicians in the veterinary schools in pursuing research*. The Wellcome Trust was aware of postgraduate veterinarians who aimed to divide their time between research and clinical teaching or practice, but the Trust

doubted whether they would generally succeed in the competition for grants. Other evidence expressed concern that the young researchers currently being trained on Wellcome Trust studentships and fellowships would have difficulty later in returning to clinical work while continuing with research.

2.41. The problem was pressure of time. The schools were said to be understaffed in the face of rising student numbers and unable to afford proper cover in the full range of clinical specialities. The referral services had become substantial and necessary money-raising enterprises in their own right and made significant demands on the time of clinical staff. As a result it was said that most clinicians in the veterinary schools were too busy teaching in small groups, and delivering and supervising services to patients, to be able to devote time to research on a regular basis, or indeed to acquire research skills and compete for funds. The difficulty was worse when, as was often the case, a clinician was the sole representative of a speciality within the school. Clinician members of research teams faced a danger of being marginalized because of their limited and irregular time-commitment and could find that they did little except produce clinical specimens. In one visit we were told that the clinician was liable to become “the person who cuts the lumps off”.

2.42. We are once more indebted to Professor Michell for an eloquent statement of the dilemma:

“Veterinary clinical academics cannot simply turn their backs on their clinical responsibilities through appropriate timetabling, even if their consciences would allow it. They remain role models and work in a small profession: students are future colleagues and know existing colleagues. If there is a patient in the clinic whose survival may depend on their unique expertise they cannot simply plead that it is ‘their month on research’. Of course, colleagues can deputise for many clinical responsibilities but if there are not ‘edge of knowledge’ problems coming into the clinic and leaders in their field on the staff, how can veterinary schools claim to be centres of excellence?”



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2.43. One response was to propose some *separation of teaching and research* functions, with ring-fenced posts. We were told that the University of Glasgow had decided to allow some staff to opt for full-time teaching and clinical duties, thus enabling others to have time protected for research. Such a solution was not, however, seen as ideal: combining teaching and research was seen as intellectually and educationally preferable, and it was suggested that the clinician was best placed to recognize the problems which might be solved by applying the discoveries of fundamental science. The Animal Health Trust proposed that the assessment regimes to which the schools and Institutes are subject should reward success in combining teaching and research.

2.44. The heads of the veterinary schools urged the need to remedy what they saw as the *structural underfunding of undergraduate veterinary education*. Veterinary students, like medical students, had to be taught clinical skills by being exposed to patients. The medical schools had access without charge to the teaching hospitals and other National Health Service institutions for this purpose, while the veterinary schools had to provide their own clinical services so as to have patients for teaching purposes. Fees were recovered from the owners of the patients, but the level of fees which could be charged was constrained by the competition of private referral practices. The costs of the referral services provided by the schools were, moreover, inevitably higher than those of private practitioners because of the teaching function. It was therefore very difficult for the referral services of the veterinary schools to be financially self-supporting.

2.45. The Wellcome Trust endorsed the analysis of the heads of the veterinary schools and described the veterinary schools as like clinical medical schools denied involvement in the NHS. The Trust argued that the financial gap should be filled by the Government in recognition of the importance of veterinary science to the public health and that MAFF should take on a sponsoring role for veterinary medicine within the veterinary schools, including research and training, over and above the support given by the Higher Education Funding Councils. The Ministry in response took the view that it had no brief to support clinical training.

### RESEARCH AND GENERAL PRACTICE

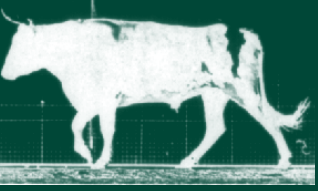
2.46. We asked whether there were arrangements for publicizing and exploiting research carried out by veterinary practitioners. Some excellent research was said to have come from this quarter, and the Animal Health Trust, which has close links with practitioners, spoke of a pressing need to engage them in research in the schools and Institutes so as to take advantage of their wealth of experience and knowledge and provide researchers with better clinical information. The Trust also noted that research by practitioners was regularly published in a number of journals, but emphasized the importance of high standards of peer review and recognized that this could be intimidating. A number of submissions saw scope for young veterinarians to build a hybrid career spanning practice and research, and for the veterinary schools to cultivate a closer relationship with selected practices (whose facilities and clinical reputations might rival those of their university colleagues) and involve them in both research and teaching. On the other hand, two postgraduate veterinarians who had spent some time in practice reported that they had tried to combine it with research and had met resistance from practice colleagues, who were unsympathetic to part-time working.

### FUNDING OF RESEARCH

2.47. We asked whether present funding arrangements provided adequately for basic, strategic and applied research.

2.48. There was general agreement that *clinical research accounted for a relatively small share of expenditure* on veterinary research, as compared with fundamental science on the one hand (much, of course, of inestimable value to veterinary species) and near-market clinical trials on the other. This was not new: Professor Wildy's Working Party found that clinical research was less well-funded than pre- and para-clinical research, being relatively unsuccessful in the competition for Research Council grants. The evidence we received from the veterinary schools spoke of a funding gap, the difficulty of obtaining funding for studies of veterinary species as subjects in their own right, over-reliance on support





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from charities and little scope for long-term funding of research groups. There was a widespread view that *fundamental molecular biology was currently being favoured at the expense of applicable research*. The Animal Health Trust, for example, suggested that clinical research was chronically underfunded and grant awards skewed toward the study of molecular mechanisms to the neglect of clinical trials and epidemiological studies of non-infectious disease.

2.49. A number of submissions suggested that even when funds were obtained for clinical research the institution tended to derive less benefit than might be expected. Thus we were told that *grants from the animal charities were normally restricted to non-invasive studies* and did not cover anything like the full overhead costs of the institution. It was also claimed that a track-record of carrying out *clinical research did not count for much in finding Council research assessments*, because publications in the clinical and veterinary journals were poorly rated and little weight was given to grants from charities and industry when an institution's success in obtaining external research funding was measured. The Funding Councils disagreed and told us that the assessment process was not intended to favour any particular kind of research: the object was to measure research quality through peer review.

2.50. Many of the submissions received claimed that *BBSRC was increasingly supporting fundamental science using laboratory animals rather than applied research and research on the veterinary species*. The University of Edinburgh stressed the need for adequate veterinary representation on the Council's advisory panels to ensure that clinical and whole animal research were properly valued and guard against a drift of funds into "mouse genetics". BVA among others pointed out that there was no Research Council with a specific remit to support veterinary research; the Association suggested that applied research on animal disease was disadvantaged by the inclusion of veterinary research under the broad heading of animal science, and that the subject would more appropriately be sponsored by MRC.

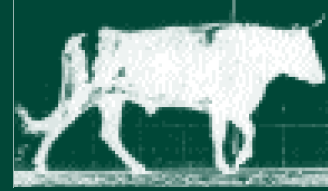
2.51. BBSRC itself told us that it sought to fund all forms of excellent science based on biology and biotechnology.

It did not have a remit to support research on particular species, whether they were of biological importance, companion animals or raised for food. It was ready to fund such work if it was excellent science and an account was given of the relevance of the research. The Council continued to be substantially engaged in large animal science through the relevant Institutes and through grants to other establishments. New budgetary arrangements had been adopted in order to allocate funds more flexibly between subjects within its remit, and the Council could consider a special initiative if evidence were produced to show that a particular area of research was underdeveloped.

2.52. The evidence put to us recognized the *unique contribution made by the Wellcome Trust* in funding veterinary science, notably research training and clinical research. The evidence noted the need for adequate veterinary representation on the Trust's advisory panels, particularly in relation to the funding of projects as distinct from the support of individuals. The Trust itself has expressed concern that its support should be complemented by greater funding for veterinary research infrastructure and training from other bodies.

2.53. When visiting the Moredun Research Institute we heard that its *core funding from Scottish Office enabled it to undertake a sustained programme of basic and strategic research*, giving a foundation for applied studies. The funding regime did not, however, enable the Institute to respond quickly to new opportunities, and it could not obtain grants for this purpose from other major funding bodies.

2.54. We received comments on the particular funding arrangements for *equine research*. The British Equine Veterinary Association told us that such research had benefited from support by bodies such as the Horserace Betting Levy Board and the Home of Rest for Horses, particularly for clinical research, but had had a minimal contribution from public funds. The Levy Board itself expressed concern that basic and strategic equine research received little support from other bodies apart from the Wellcome Trust, that the equine charities were inhibited from funding invasive research, and that the total funding from the equine grant awarding bodies did not meet the



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need. The Board's own funds had in recent years only been enough to support projects which were rated very highly by independent assessors.

2.55. A number of those who gave evidence saw scope for *more funding of research by industry*, which according to the context might refer to the pharmaceutical companies, the various enterprises engaged in the production and marketing of food animals, the horse breeders, or the manufacturers of food and other products and services for companion animals. BVA reported that, in their perception, industry was reluctant to invest in research unless the results were almost ready to be marketed. Others suggested that pharmaceutical and biotechnology companies might support pre-patentable clinical research (as distinct from clinical trials of new products), and that industry might invest in research in publicly-funded institutions in order to underpin its present and future needs for expertise and facilities. The Pig Veterinary Society suggested splitting the costs of pig research three ways, between the producers, the abattoirs or retailers, and the Government.

### FUNDING STRATEGY AND CO-ORDINATION

2.56. We asked whether there were satisfactory arrangements for co-ordinating funding policy.

2.57. A number of submissions commented on the *lack of a national strategy and the weakness of arrangements for co-ordination* of veterinary research. The Animal Health Trust, citing BSE and equine viral arteritis as examples, criticized what it described as a national weakness of responding to short-term crises rather than following a long-term plan. The Trust suggested setting up a permanent body to advise on veterinary research strategy.

2.58. The Horserace Betting Levy Board and British Equine Veterinary Association told us that there were arrangements for liaison and exchange of information in the field of equine medicine but not for co-ordination of policy between the different interests, and the Association described equine research as fragmented and lacking in strategy. Other submissions supported the view that more

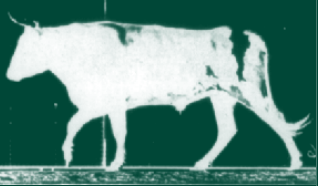
co-ordinated arrangements were needed for funding and planning research on a national basis, although there was also some concern to maintain a diverse funding base and avoid over-concentration of decisions. MAFF thought there were already satisfactory arrangements for co-ordinating the activities of the agriculture departments and BBSRC. The British Veterinary Poultry Association saw a need for central co-ordination in order to ensure that specialized expertise was not lost when projects came to an end. The Milk Development Council commented on the complexity of funding systems in England and suggested that the simpler arrangements in Scotland made for better integration and co-ordination of the chain from basic to applied research.

2.59. A different point was made by the Agricultural Economics Unit of the University of Exeter, arguing that strategic and applied veterinary research needed to be justified by the economic value of the reduction in disease or improvement in welfare that it was designed to achieve. The Unit called for *a greater involvement of economists and epidemiologists in decisions on animal health*.

### COMPETITION, COLLABORATION AND SPECIALIZATION

2.60. We raised the question how far centres of veterinary research should specialize rather than compete. The responses raised complex and important issues.

2.61. *Competition for funding* was generally thought to be healthy, even though it might under some circumstances inhibit free exchange of ideas. Some regretted that a climate of rivalry was promoted by competition for grants and by the emphasis on research funding, rather than outcomes, in assessments of performance; others accepted the value of competition between research institutions but thought it realistic to recognize the special strengths of particular centres and refrain from duplicating them. The University of Edinburgh saw *specialization growing out of competition* as institutions sought large grants and created centres of excellence, though it was important that small groups should still be able to obtain funds in order to challenge the established fundholders.



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2.62. The terms “centre of excellence” and “critical mass” were regularly used to refer to collaborative groupings of complementary expertise (not necessarily in one place or confined to one institution) big enough to compete for funding, establish a reputation and draw in talent from elsewhere. *Specialization through centres of excellence was seen as promoting collaboration*, with institutions taking advantage of each other’s particular strengths rather than aiming to be self-sufficient. The Animal Health Trust maintained that the small size of the veterinary research community in the UK, or indeed in the European Union, *did not permit the luxury of unnecessary duplication* and that projects should increasingly make use of the specialized contributions of different bodies. A study might, for instance, draw on basic molecular biology at one centre and animal challenge studies in the target species in another. The Trust thought the funding agencies might reasonably insist on collaboration of this kind.

2.63. Some suggested that *the veterinary schools should develop clinical specialisms and academic depth in some areas and drop others*, in order to reduce the teaching load on clinicians and so free them for research. The British Small Animal Veterinary Association found this idea attractive but impractical, given the need for all the schools to deliver the complete veterinary curriculum, and the British Equine Veterinary Association explored the point in the following terms:

“As far as the veterinary schools are concerned they have to comprise a broad church of clinical and basic science interests in order to teach their undergraduate curriculum. This limits the extent to which they can specialize and in turn leads to fragmented effort, and competition. The critical problem for schools is that research cannot be seen in isolation. It has to be put into the context of undergraduate and postgraduate teaching and clinical service. Thus specialization with the development of ‘critical mass’, long-term stability and ‘well found laboratories’ is attractive but not necessarily easily attainable under the current system.”

2.64. There was an impressive consensus on the need for *far closer links between the veterinary schools, the research*

*Institutes and other bodies*, including non-veterinary university departments and the Veterinary Investigation Centres. Professor Wildy’s Working Party reported ten years ago that the veterinary schools were not well-equipped to house large animals or contain infectious diseases and thought they could do more to use the facilities and expertise of other establishments. The evidence we received indicated that this remained the case.

2.65. The Animal Health Trust urged the Institutes to encourage joint collaborative projects with the veterinary schools and suggested that undergraduate and postgraduate students in the schools could make a marked contribution to research programmes in the Institutes, for instance during elective studies. The Moredun Research Institute thought it beneficial for its staff to teach undergraduates and was exploring the possibility of joint appointments with the University of Edinburgh. Collaboration with the universities also offered the Institute indirect access to a wide range of funding sources, making possible a rapid response to new research opportunities.

2.66. The veterinary schools for their part were well aware of the practical advantages they could gain from collaboration with the Institutes and saw themselves as able to offer a particular benefit in return: ready access to a community of scholars, to borrow a phrase from the submission of the University of Edinburgh. On the same theme we were told that the veterinary school of the University of Bristol was placed within the Faculty of Medicine alongside the medical and dental schools so that the three clinical schools could feed off the same strong School of Medical Sciences, the constituent departments of which also belonged to the Faculty of Science. A view from the pharmaceutical industry was that the schools should not try to reproduce the infrastructure of the Institutes but should exploit interaction with their medical and biological science departments in order to create leading edge services for the Institutes to draw on.

2.67. A number of submissions advocated a *closer relationship between the veterinary schools and the research and diagnostic facilities of MAF* and the other agriculture Departments (and SAC Veterinary Services).





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2.68. There were proposals for *structural changes* in order to promote collaboration. Professor Wildy's report favoured bringing together the veterinary laboratories of the State Veterinary Service and the research Institutes under common management and associating them with the universities, and in particular the veterinary schools where possible. At least two of the reorganized laboratories were to be co-located with veterinary schools and work with them, making joint applications for research funds and involving laboratory staff in teaching the university's postgraduate students. In evidence to us some of the Heads of the veterinary schools proposed similarly that the long-term aim should be to group veterinary research (and ideally surveillance) facilities round the schools, these being seen as the natural centres because they were the only bodies which covered the spectrum from patient care to basic research. Some submissions commended the benefits for teaching and research of *locating research units within university clinical schools* and suggested that the Research Councils might make it their policy to support new centres of excellence in strategic areas (such as animal welfare, neuropathology, genetic disorders and epidemiology) in the veterinary schools.

### COMPARISON WITH AMERICAN EXPERIENCE

2.69. Our concern was with veterinary research in the UK, but we benefited from a discussion with Dr John Shadduck, the former Dean of the College of Veterinary Medicine of Texas A & M University who studied aspects of veterinary education in Britain as an Administrative Fulbright Fellow in 1994.

2.70. A number of the American veterinary colleges have the advantage of operating on a larger scale than the British veterinary schools, employing 100 – 150 staff. In Dr Shadduck's experience a veterinary College with a large faculty had more flexibility to reserve staff time for research and to build links with other parts of the parent university. Nevertheless, in Dr Shadduck's view many of the issues raised in the evidence we received arose also in the United States.

2.71. Dr Shadduck reported concerns in the US that too few veterinarians took up careers in research. One contributory factor, in America as in Britain, was the selection of veterinary students (by themselves and by the colleges) on the basis of motivation toward practice and the subsequent reinforcement of that bias by clinical teachers in the colleges. In Dr Shadduck's view the best way to interest veterinary students in research was to link it in their minds with clinical application and show them researchers and clinicians working side-by-side.

2.72. Dr Shadduck reported that veterinary researchers in the United States complained, as in Britain, that they had to compete for mainstream funding with medical researchers and biologists, and there was similar difficulty in financing work on animal health for its own sake rather than in the context of comparative medicine or for agricultural or pharmaceutical purposes. There were major gaps in knowledge of the diseases of the veterinary species.

2.73. We heard from Dr Shadduck that veterinary Colleges in the US did not have the same financial incentives as the British veterinary schools to carry out pure research. The States supported veterinary education and applied research for the benefit of agriculture, and the internal allocation of resources by the universities was in general not explicitly linked to research performance. By contrast there was a strong expectation, reinforced by the specialty colleges, of excellence within the various clinical disciplines, and this pulled against the integration of veterinarians into the wider academic community.

2.74. Dr Shadduck advised that the difficulties experienced by the British veterinary schools in funding their clinical services were not unique. Clinical services provided as an adjunct to teaching inevitably lost money, because an academic clinician who treated patients while instructing students could not hope to match the throughput of a practitioner whose sole concern was to deal with each patient as rapidly and efficiently as possible. As a result clinical teachers in American colleges tended to be under pressure, as in Britain, and the colleges had to be resourceful in finding new ways to finance themselves. Dr Shadduck's impression was that veterinarians in the US



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tended to be less entrepreneurial than in the UK, for instance in exploiting their intellectual property through consultancy, but were better at working with the private sector (both practitioners and pharmaceutical companies).

2.75. Dr Shadduck considered that there was scope for greater co-operation between the different American veterinary colleges and between them and the medical schools, the obstacles being human rather than geographical.

### COMPARISON WITH HUMAN ACADEMIC MEDICINE AND DENTISTRY

2.76. We were fortunate in being able to refer to the report, “Clinical Academic Careers”, of the Task Force chaired by Sir Rex Richards at the invitation of the Committee of Vice-Chancellors and Principals. The findings of the Task Force, published on 1 July, show that some of the major issues which came to light in the evidence we received are also important in human medicine and dentistry.

2.77. The Task Force was asked to report on the recruitment and retention of clinical academic staff in UK universities. Its starting point was the proposition (paragraph 2.1 of the report) that it is “self-evident that every effort must be made to continue to attract some of our most able and innovative young doctors and dentists into the academic branch of the profession. They are required to maintain the thriving academic and research base which contributes much to undergraduate teaching and to postgraduate training and continuing education, as well as to acquiring new knowledge of disease processes and improving the quality of patient care.”

2.78. The report adduces the following grounds for concern:

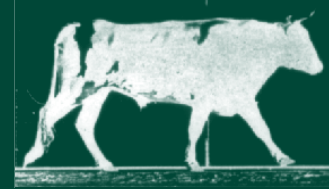
- the performance, described by the Task Force as disappointing, of many of the medical and dental schools in the 1996 Research Assessment Exercise;
- difficulties reported by the Deans of the schools in filling academic posts at lecturer grade and above;
- the experience reported in evidence to the Task Force that the time which academic clinicians were meant

to devote to research was commonly eroded by the pressures of service, teaching and administration.

On this last point, the Task Force comments: “The division of effort between research, scholarship and teaching is, of course, faced by all academics, whatever the subject; but the addition of direct patient care, to which most clinical academics attach great importance, presents this issue in a particularly acute form”. This is of course the same point as that made to us in relation to veterinary medicine by Professor Michell (quoted in paragraph 2.42 above) and others.

2.79. The Task Force observes that if academic clinicians are, at the very best, spending less than half their time on research this helps to explain why so many medical schools were rated 3 or 4 in the Research Assessment Exercise, where their research output was compared with that of research clinicians in other parts of the world who spend much more of their year on research. The postgraduate medical institutes all achieved Research Assessment Exercise ratings of 5 or 5\* in at least one of the three relevant units of assessment, and the report attributes this in large part to the establishment of major research teams in the institutes, many of them interdisciplinary, and the relatively modest service commitment of the clinical members of these teams. The Task Force urges the medical and dental schools to review the deployment of their staff so as to ensure that the most promising research talents have proper time and facilities while other staff less active in research take on extra teaching and service responsibilities.

2.80. The report notes with concern that some of the smaller medical and dental schools, while seeking to cover a full range of specialties, cannot staff some departments (such as anaesthetics and radiology) in sufficient depth for them to be able to sustain a significant research programme. The Task Force rejects the view that some specialties might be taught by clinical staff not involved in research and recommends collaborative teaching arrangements in order to avoid very small departments: “By collaboration, there is a chance that each school can



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develop a world class department in one of these minority disciplines, rather than each having a mediocre department in both”. The report also suggests that alliances between departments within a medical or dental school may yield better research results.

2.81. The Task Force draws special attention to the difficulty experienced by clinical academic staff in the *dental hospitals* in preserving time for research in the face of the demands of teaching and service, for two reasons which are particularly relevant to the veterinary schools.

2.82. The first reason concerns the different ways in which medical and dental care are delivered. The Task Force points out that in human medicine the service is divided fairly equally between primary care in the community and the hospitals. The NHS hospitals employ substantial numbers of clinicians, while academic doctors, whose primary responsibilities are teaching and research, represent only a tenth of their clinical staff. By contrast,

“dentistry is overwhelmingly a community based service with dental hospitals existing largely as teaching and research centres where it is also expedient to offer specialist services. It follows from this that most of the clinical staff in dental hospitals, certainly at senior level, are academics concerned with teaching and research as well as the service that is intimately involved with teaching.”

The position in veterinary medicine seems to be similar. The bulk of veterinary patient care is delivered by general practitioners, clinical services are provided by the veterinary

schools mainly as an adjunct to teaching and research, and the staff responsible for those services are academics whose main focus should be on teaching and research.

2.83. The second factor to which the Task Force draws attention is that the dental schools are required to deliver graduates who are competent to enter practice without further preparation, there being no equivalent of the medical pre-registration year. Dental students must therefore spend a large part of their clinical years learning to treat patients, under close supervision, and the academic clinicians who represent most of the staff of the dental schools must spend much of their time providing that supervision. Again there is a clear parallel with the veterinary schools, where the academic staff of the clinical departments are heavily engaged in teaching students in small groups in order to prepare them to be practising veterinarians. There is a tension between the different roles of a university department and a vocational training college.

2.84. The Task Force concludes that “dental specialties are very similar to the smallest medical specialties: they share the problems of small numbers of academic staff with little flexibility, great service and teaching pressures, and often poor research funding and infrastructure and, in any case, little time to pursue serious research. As a result, many able members of staff find it difficult to fulfil the requirements of their universities that will gain them promotion.” The report does not offer a solution but recommends a review of the funding of dental schools and hospitals and an enquiry into the long-term arrangements, structure and objectives of dental education and training.



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### CHAPTER 3: THE COMMITTEE'S FINDINGS

#### INTRODUCTION

3.1. In this chapter we give our own assessment of the main issues which were raised in evidence to us and offer recommendations. Before dealing, however, with the various questions which have been identified in relation to research into animal health and welfare, and the engagement of the veterinary profession in that research, we should say why we believe that the subject matters.

3.2. Historically, veterinary research has been supported by the State for the benefit of agriculture and public health, because of the national interest in having healthy farm animals and wholesome food. Research has been focussed on the infectious diseases, both endemic and exotic, of production animals and on the pathogens which pass from animals to people through the food chain. Recent events – not only the BSE epidemic and the transmission of *Escherichia coli* 0157 in food but also the current outbreak of classical swine fever on the continent – show that these traditional concerns remain valid. Pathogens evolve, and an infectious disease cannot be written off simply because an effective vaccine or drug therapy seems to have been found. In human medicine the resurgence of tuberculosis and the failure to control malaria are sobering demonstrations of the resourcefulness of the micro-organisms which cause disease. A wider range of measures can be used to deal with animal disease, including the culling of affected populations and breeding for resistance, but such measures can carry heavy costs.

3.3. The reasons which lay behind the post-war research programmes on the diseases of farm animals thus remain as valid as ever. In recent years, however, new concerns have emerged as well. Dairy farming and the breeding of pigs and poultry have become very much more productive, but changed methods and research developments (e.g. in genetics) call for new research to identify and help resolve new problems. There is growing public sensitivity to the welfare of farm animals, and that concern needs to be backed by science in order to establish as objectively as

possible the effects of different production systems on the well-being of the animals.

3.4. There is a further factor. Research into companion animal medicine has not enjoyed the same financial support as work on production animals, yet pet animals are the main business of many veterinary practices and the owners of the animals expect ever higher standards of treatment. Practitioners are responding with growing specialization and better equipment, but the knowledge-base lags behind. The demand for more advanced care for companion animals implies a demand for a higher level of fundamental research on the anatomy and physiology of the veterinary species and more clinical research into their diseases and disorders.

3.5. We now move on to consider, first, the subject of veterinarians in research and then issues on research into animal health and welfare.

#### THE NEED FOR VETERINARIANS IN RESEARCH

3.6. It is generally agreed that research into animal health benefits from the involvement of veterinarians, collaborating with biological scientists. This is partly for the practical reason that their experience gives veterinarians a particular understanding of the lives of production animals and the impact of breeding, environment and nutrition on their health. This is particularly relevant in view of current concerns over the safety of food of animal origin, since the control of dangerous pathogens needs to start with the live animal. But there is a more fundamental point. Veterinarians are trained to look at the working of the whole animal and so can make the connection between the advances in the various biological specialisms and the health and welfare of animals. Following decades in which the biomedical sciences have made spectacular progress by unravelling mechanisms at the level of the cell, the emphasis is increasingly on the translation of basic research into clinical practice. In veterinary science much basic work remains to be done, and the research portfolios of the veterinary schools and the research Institutes still show a marked concentration on cellular processes and pathogens,



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often with wholly *in vitro* systems. In future, however, there will be a growing need to use the results of basic veterinary research to gain a better understanding of animal function in health and disease, and veterinary graduates will have a special part to play in this.

3.7. It would be hard to say just how many veterinary graduates need to be recruited each year into full- or part-time research careers, but some indications can be given on the basis of the numbers currently employed in different sectors. The RCVS annual report shows 11 115 registered veterinarians currently in employment in the UK. Five sixths of these – 9264 – are in full-time general practice and the remainder – 1851 – are in Government service, higher education, Research Council Institutes, charities, industry and commerce. The detailed breakdown of the locations of the 1851 employed outside practice indicates that about 1000 are likely to be active in research.

3.8. This simple comparison between employment sectors suggests that, if the veterinary schools are delivering the right number of graduates each year to meet future needs and the present distribution of the profession is to be maintained, about a sixth of the new veterinarians should take up long-term careers other than practice and of these about a half should take up careers where research is a significant commitment. Last year the British veterinary schools produced 396 graduates, so some 60–70 of these might be expected to pursue careers other than practice, and of these perhaps 30–35 might become active in research. These figures do not take account of likely changes (whether desirable or not) in the numbers employed in the different sectors or of the movement of veterinarians into and out of the UK, so they should not be taken literally. They do, however, help to demonstrate that veterinarians active in research are a significant minority whose numbers need at least to be replenished by young veterinary graduates leaving the schools.

3.9. Veterinarians employed in research are of course not a homogeneous commodity but need different skills for different purposes. The public sector and industrial employers of veterinary researchers told us that they had difficulty in finding veterinary graduates who have both

research training and expertise in particular disciplines such as pathology, microbiology, epidemiology and immunology.

### UNDERGRADUATE EDUCATION

3.10. Our terms of reference do not mention undergraduate education, but the evidence we received (both formally and in discussions during visits) made it impossible to ignore its impact on the well-being of veterinary research. The issues identified concern the selection of veterinary students, their exposure to research as undergraduates, and the demands which the curriculum makes on the academic staff of the veterinary schools.

3.11. Most of the young people who go to the veterinary schools intend to enter practice, and that is where most of the demand for veterinary graduates lies. The figures quoted above show, however, that veterinarians are also needed in significant numbers by employers in other areas, not least the veterinary schools themselves. Students should therefore be selected and educated with an eye to the needs of all the main areas of employment, including research. The numbers discussed above suggest that, in selecting new entrants and determining course contents, the schools should see one in every dozen students as a future researcher.

3.12. In fact we were told that the large majority of veterinary students are fixed on the idea of entering practice before they even go to veterinary school. That may be partly the result of self-selection, but we understand also that the universities, having to choose between large numbers of highly-qualified school-leavers, look for those with a clear bent toward working with animals. Clearly it is right for the veterinary schools to have in mind the recruitment needs of practice, but there should also be a place for young people who wish to use a veterinary degree as the foundation for a different career. It may, for instance, be possible partly to substitute work experience in a laboratory for that with a farm or veterinary practice. We were concerned also that the veterinary schools did not seem to acknowledge ownership of their selection practices. We were told that the RCVS constrained the selection



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criteria adopted by the schools, but the Royal College itself denied doing so. The schools need to be clear where the responsibility lies, but it would also be helpful if they and the RCVS could reach a common view of the selection policies which are appropriate.

3.13. Once admitted to a veterinary course, students need to receive an education which gives them a grasp of the importance of research, no matter which branch of the profession they may go into later. Research, not opinion, underpins veterinary practice (as it does in all professions). The science which veterinarians learn as undergraduates is based on past and recent research, and the science they apply during the course of their working lives will undergo major changes as a result of research in progress now and in the future. It is therefore important for veterinary graduates who enter practice, or government service or industry, to know how research is done and how the results are used, even if they themselves do not carry out research. As to the minority of veterinary undergraduates who will take up research as a career, they need to have their interest aroused and get a feel for what it is like to work in a laboratory and test hypotheses.

3.14. These propositions were widely accepted by those who put views to us, and there was general support for the value of intercalated science degrees, research-based elective studies, teaching links between veterinary, biological and medical departments, and research experience in vacations. This is where the focus for research-based teaching must lie within the existing course structure. The evidence nevertheless suggests that in reality undergraduate courses are dominated by training for practice and include very little exposure to research or preparation for a research career. We were sorry to hear from a number of undergraduates that their teachers tended to frown on any diversions from training for practice. The veterinary profession claims to be science-led and needs to convey that message to new entrants during their formative years.

3.15. For this purpose it is a complication that a substantial part of the animal health research infrastructure lies outside the veterinary schools, in the research Institutes and the MAFF laboratories. It would serve little purpose if we were

to debate the advantages and disadvantages of the historic separation between the universities and the state research establishments, but the resulting divorce between education and an important part of the research base can only be regretted. The veterinary schools must of course maintain their own research programmes, both in laboratory-based and in clinical disciplines, but it would also be valuable if undergraduates could share in the excitement of studies using the specialized facilities and expertise of the Institutes to elucidate, in particular, the infectious diseases of production animals. It is no surprise that the state-funded sector should find it difficult to recruit young veterinarians if their education largely ignores its existence, and even those veterinary graduates who enter practice need to be aware of the very important work being done in the Institutes and the Government laboratories.

3.16. The evidence from all sides favoured involving the state-funded Institutes and laboratories in undergraduate education by, for instance, placing students in the Institutes for vacation and elective studies and setting up teaching links and joint appointments. Such co-operation happens already to some extent. For the most part, however, we have the impression that it is seen as desirable in theory but not something which anyone is responsible for bringing about. The physical separation between the veterinary schools and most of the research establishments is admittedly an obstacle, but this could be overcome if educational co-operation between them were built into the system rather than treated as an optional extra. The universities should regard the free-standing institutions as part of the research world to which their students must be exposed, while those engaged in research outside the higher education sector should see it as part of their remit to engage in teaching and examining so as to help develop the next generation of scientists.

3.17. A further issue concerns the requirement to deliver graduates who are competent to practise without further training. Five years is a short period in which to gain a broad knowledge of veterinary science together with the applied skills of veterinary medicine and surgery, and it is not surprising that the curriculum is overloaded. In chapter 2 we quoted the remarks of the Task Force on Clinical





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Academic Careers on the pressures which the dental schools face as a result of the similar requirement on them to produce graduates who are competent to practise. We are aware that this issue has been considered in the past, notably by Dr Lucke's Working Party on Veterinary Undergraduate Education, and that it would not be a straightforward matter to change the present rules on the registration of veterinary practitioners. We believe, however, that the RCVS needs to look at this question again, because the veterinary schools cannot realistically aim to deliver graduates who have not only had a rounded scientific education but can also treat animals without supervision. So long as the schools are under pressure to achieve this impossible task they cannot hope also to give students a proper awareness of research, and the burden which is placed on clinical teaching staff makes it particularly difficult for them to make a full contribution to research.

3.18. It will not be possible to assess the likely impact of the report of the National Committee of Inquiry into Higher Education chaired by Sir Ron Dearing until the Government has made decisions on the recommendations. If, however, the result is that veterinary students carry a larger share of the costs of their undergraduate education, this will discourage them from extending a course which is already long by taking intercalated science degrees. It will also create an incentive to enter well-paid employment immediately after graduation. For both these reasons the recruitment of veterinary graduates into research could be jeopardized, and compensating mechanisms would need to be considered.

3.19. *We recommend*

- *that the veterinary schools should take steps to expose undergraduates to research and research role-models, by encouraging and facilitating intercalated science studies so far as the cost constraints allow; by exposing students to research within the universities and research institutions through elective and vacation studies; and by developing stronger teaching links with university biological and medical departments and the state funded Institutes and laboratories, for instance through shared posts;*

- *that the veterinary schools should review their undergraduate selection practices to ensure that potential students with an inclination to an academic and research career are included. The schools should seek the support of the RCVS for this change of emphasis;*
- *that the RCVS should review the requirement on the schools to produce veterinary graduates competent to practise without further training.*

### CAREERS IN RESEARCH FOR VETERINARY GRADUATES

3.20. A good deal of the evidence we received about the difficulties facing young researchers with veterinary qualifications identified problems common to other areas of academic science. Short-term contracts, teaching pressures in academic posts and the difficulty of mapping out a long-term career plan are not exclusive to veterinarian researchers but reflect wider issues. It was suggested, indeed, that veterinarians entering research careers are in some ways more fortunate than scientists in other disciplines as a result of the generosity of the Wellcome Trust and other sponsors of training posts, and BBSRC mentioned that its studentships for veterinarians carry stipends designed to recognize the competing financial attractions of practice.

3.21. We would not think it appropriate to recommend favoured treatment for veterinary researchers. The evidence suggests nevertheless that there is a real problem of promising young people being lost to research at the postdoctoral stage. The picture is not entirely clear, because veterinary graduates studying for doctorates may have no intention of going on to research careers. They may plan to pursue one of the clinical specialisms and enter referral practice. We also heard, however, of young veterinarians obtaining a PhD as the first step toward a research career but then abandoning that aim for want of suitable postdoctoral posts.

3.22. There are a limited number of employers of veterinarians with research training, and few jobs are likely to be advertised at one time. In consequence the market may need a degree of management to ensure that it meets



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the needs of the employers. If, for example, none of them happens to advertise a first postdoctoral post in one year, that year's crop of veterinary PhDs may be lost. The hierarchy of schemes provided by the Wellcome Trust provides invaluable opportunities for orderly career progression, but the Trust cannot be expected to meet the need alone. The Government and the veterinary schools as the major employers of veterinarians in research should therefore assess their requirements and consider making specific arrangements to meet these needs.

3.23. The veterinary schools may see a particular problem in growing successors for their present senior staff, given that staffing at junior level is largely dependent on short-term funding and promising young people are liable to disappear when the current grant runs out. One answer is to offer a short-term contract with external funding but with a guarantee of longer-term employment when the initial contract has run its course. We noted earlier that MAFF has a specific need for veterinarians with both research and disciplinary training. The Ministry should therefore consider supporting training posts in appropriate institutions.

3.24. The Government and the schools could with advantage pool their assessments of their requirements for veterinary recruitment and consider jointly whether current research training provision is enough to ensure an adequate supply of mature researchers. We do not suggest formal manpower planning arrangements, but the employers acting separately are in danger of adopting mutually contradictory policies. They might, for instance, all decide to rely on recruiting experienced people in mid-career while assuming that someone else will provide the necessary experience. If the major employers in the state and academic sectors come together to consider training and career development for veterinary researchers they should bear in mind the needs of the other employers.

3.25. *We recommend that the major employers of veterinarians in research should:*

- *assess their veterinary recruitment needs and measures to meet them;*

- *take stock collectively of current provision for veterinary research training and career development, taking account of the needs of the other employers of veterinarians in research.*

### COVERAGE OF DIFFERENT AREAS OF RESEARCH

3.26. Many of those who put evidence to us had strongly-felt concerns about the balance of effort in current research into animal health. There are two main points, which overlap. It is said, first, that Government research spending gives lower priority than formerly to work on the economically important endemic diseases of farm animals. Secondly, we were told that it is difficult to obtain funds for clinical research into the veterinary species because the main funding agencies favour leading-edge science using laboratory animals and the animal welfare charities will not fund invasive research.

3.27. There was little dispute with either of these propositions. MAFF's priorities have been revised in recent years in favour of work on the animal diseases most important for public health. BBSRC and the Wellcome Trust, considered as funders of research as distinct from research training, made clear to us that they are chiefly concerned to promote science which measures up to international standards of excellence, and it is sometimes more sensible to work with rodents or other laboratory species where knowledge is more complete than with dogs or cattle. BBSRC is also concerned to support economically important research for the benefit of industry and still funds some areas of work with large animals in its sponsored Institutes and elsewhere, but it has given relatively low priority in recent years to strategic work on farm animal health and welfare. The animal welfare societies for their part are an important source of funds for veterinary research but they must respect the views of their donors when deciding what activities to support.

3.28. Plurality of funding is a feature of research in this country. Various bodies finance it, following their own policies and priorities, and in animal health there is no one body with the task of ensuring that the research programmes





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of the different institutions add up to a coherent whole. The different grant-awarding bodies judge research proposals against their own criteria and take such initiatives as they think fit, and it would serve little purpose if the Committee were to urge them to change their policies and give more priority to one area and less to another. Researchers must take the funding bodies as they find them and be creative in finding ways to tap existing and new sources of finance.

3.29. We are nevertheless concerned that research into the veterinary species tends to be undervalued. Veterinary research must of course be good science. Some veterinary research has been at the leading edge of science in the past and some will be in the future. Worthwhile veterinary research will not, however, always be at the leading edge because much of the physiology and pathology of the veterinary species differs from that of rodents and man and greater knowledge is needed. Research in this area can and should be good science but it should not be criticized because it is not on a par with leading edge research in rodent or *in vitro* model systems. Research is needed to increase knowledge of species of veterinary importance, and applications for funds to support veterinary research should be judged on relevance to the needs of veterinary science as well as the quality of the science. Failure to support veterinary research in the target species inevitably leads to such research falling so far behind that it becomes unfundable.

3.30. We noted in the second chapter the suggestions in the evidence we received for new sources of funding, notably from the sectors of industry which benefit from veterinary science. The control of disease is, for example, of major commercial importance to pig producers, and it is open to research providers to try to persuade them collectively to sponsor research. Realism is nevertheless needed. Commercial organizations will only contribute to research on a significant scale if they are satisfied that it will help to meet their specific needs and yield an identifiable return in the foreseeable future. Industry is not a promising source of support for basic, curiosity-driven research, the benefits of which are inevitably hard to predict.

3.31. There is, however, another possible source of new funding. The BBSRC's Corporate Plan confirms the

Council's intention to keep under review its funding of the sponsored Institutes and to discontinue the present funding of the interdisciplinary research centres as they come to the end of their expected ten-year lifetime. There will be no shortage of proposals for recycling any BBSRC resources which are released as a result, but veterinary scientists should ensure that their voice is heard. BBSRC has commented on the low level of applications from the veterinary schools for its standard PhD studentships and told us that it accepts in principle that pump-priming finance can be justifiable for a developing area of science. Those who wish to carry out basic research in the veterinary species should jointly take up the challenge and come together to demonstrate to the funding bodies the need for a special programme to bring it to the point where it can compete with other claims on the Research Council's funds. The climate of public opinion is favourable, given current concerns over food safety, growing sensitivity over animal welfare and the potential of comparative medicine.

3.32. *We recommend that*

- *funding bodies considering applications for grants in veterinary science judge them not only on the quality of science but also on the needs for understanding, prevention and treatment of disease in the target species. The need to integrate knowledge at a cellular and genetic level with whole animal function in the target species should be recognized;*
- *those engaged in research in the veterinary species should jointly make a case to BBSRC and other funding bodies for a special funding programme.*

### CLINICAL RESEARCH

3.33. Under this heading we look at the special issues which arise in relation to clinical research, with particular reference to such research when carried out by academic clinicians in the veterinary schools.

3.34. The evidence suggests that even in ideal circumstances there would be some difficulty in bringing the necessary mix of skills and experience to bear on



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clinical research. Collaboration between clinicians and laboratory scientists will normally be needed, each must have a good understanding of the other's perspective, and clinicians in academic posts are always liable to be pulled between research, teaching and service. The problems are well-known, and they are not peculiar to veterinary science. Sir Rex Richards' Task Force on clinical academic careers in human medicine and dentistry identified the same problem of research being edged out by service, teaching and administration.

3.35. A number of those who put views to us noted, without enthusiasm, the option of separating research from teaching and service to some extent, allowing a minority of clinical academic staff to concentrate on teaching and service so as to release others for research. This was not seen as ideal, and it runs counter to the expectations of the higher education research assessment process. We think it worth drawing attention also to the educational objection to segregating teaching and research. No doubt it would be unrealistic to expect veterinary undergraduates to be taught only by staff who are actively engaged in research, but it would be most unhealthy if academic veterinarians were divided into separate camps for those who teach veterinary science and those who seek to advance it.

3.36. We note in this connection that those who gave evidence to the National Committee of Inquiry into Higher Education chaired by Sir Ron Dearing almost without exception rejected the idea of "teaching only" institutions of higher education, most taking the view that such institutions would not be universities in any legitimate sense. The National Committee proposed instead that those higher education institutions that were focussed mainly on teaching and could not realistically expect to be rated higher than 3b in research assessment exercises should be able to obtain, without competition, modest funding to support the level of research by their staff which was necessary to complement good teaching. The veterinary schools clearly do not fall within this category of institution, but the National Committee's view of the importance of research to "inform and enhance" teaching is in line with the views which were put to us, and with our own views.

3.37. Clinical veterinary scientists, like clinical medical and dental scientists, can only conduct high quality research if robust measures are enforced to protect the time allocated to research. Where the research environment is supportive British veterinary research can compete with the best in the world. At present the veterinary schools are not able consistently to provide a supportive research environment which provides substantial release time for clinical staff.

3.38. This is partly because, like all university departments, the veterinary schools have had to accommodate an expanded student population and expanding curriculum within ever tighter budgets. The evidence suggests, however, that the clinical teachers in the veterinary schools face a special problem because of the peculiar pressures on the clinical departments. On the one hand we were told that, for lack of a National Health Service for animals, the clinicians in the schools have to run the referral services as self-financing businesses. On the other hand we heard that those services can only charge similar fees to private referral practices and necessarily incur higher costs, because of their teaching function. If clinical teachers are devoting long hours to their students and patients in order to make inherently loss-making services break even it would be surprising if they could engage in sustained research as well.

3.39. This situation is not unique to veterinary medicine. The report of Sir Rex Richards' Task Force describes the predicament of clinical teachers in the dental schools in terms which could be applied with very little modification to the veterinary schools. The problem seems to be the same, in that in both the veterinary and the dental schools clinical services are provided primarily as an adjunct to teaching, in order to train students for practice, but the clinical academic staff then find that their time is pre-empted by the demands of service and small-group or individual teaching.

3.40. The financial predicament of the clinical departments in the veterinary schools is of particular concern to us because of its effects on research. Plainly, it is an unhealthy situation if the leading academic practitioners of veterinary clinical medicine are prevented from contributing to research. The clinical teachers who instruct



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veterinary undergraduates in small groups are, moreover, bound to influence strongly their conception of the role of the veterinary professional, and it is damaging if research does not form part of the picture. For both these reasons the funding of veterinary clinical education can prejudice clinical research and the recruitment of veterinary graduates into research careers. Unless a new funding stream is put in place, or the excess costs of the clinical services are borne in some other way, the veterinary schools will face ever greater difficulty in affording the time to conduct research of the required standard. We consider below what form a solution might take.

### FUNDING OF THE VETERINARY SCHOOLS

3.41. A contrast has often been drawn between the arrangements for veterinary and human medical education. The medical schools, like the veterinary schools, need access to patients and clinical facilities in order to teach students the skills of their future profession. The medical schools, however, traditionally have access, free of charge, to the teaching hospitals of the National Health Service for this purpose. The academic staff of the medical schools use the patients and facilities of the teaching hospital to teach their students and as a base for research, and the NHS does not bill the university for the extra costs which the hospital incurs as a result. Those extra costs have been recognized since the 1970s, when those health authorities which had teaching hospitals began to receive extra allocations in compensation – in England now known as SIFTR, the Service Increment for Teaching and Research. SIFTR and its counterparts are not, however, the concern of the university medical schools. They receive a free benefit from the teaching hospitals and are not directly affected by the arrangements under which the costs are covered within the Health Service.

3.42. We have noted above that the veterinary schools incur costs similar to those which arise in the NHS teaching hospitals. There must, indeed, be a special emphasis on clinical teaching in the veterinary schools because of the requirement, which we have suggested should be reviewed, to produce graduates who are ready

for practice. The veterinary schools themselves provide clinical services as a base for teaching, and so function like a medical school and teaching hospital rolled into one. The clinical services of the veterinary schools cannot charge higher fees than the larger specialist referral practices, yet they incur extra costs by reason of their teaching function and so are bound to lose money. It has therefore been suggested that the Government should provide special financial support for the veterinary schools, in lieu of the benefit in kind which the medical schools receive from the teaching hospitals.

3.43. In considering that suggestion it has to be borne in mind that the National Health Service is the main beneficiary of the product of the medical schools, the majority of whose graduates work within the NHS. That, no doubt, is why the NHS does not seek to recover the extra costs of the teaching hospitals from the medical schools.

3.44. There is no veterinary counterpart to the state-funded National Health Service and the large majority of veterinary graduates work in private practice. The practising veterinary profession is therefore the main ultimate beneficiary from the product of the veterinary schools. The inescapable conclusion we come to is that the veterinary profession should contribute more than at present to veterinary undergraduate education.

3.45. Such a contribution could take a number of forms. Practices already make a major input by taking students on extramural studies, and there may be ways to build on this successful precedent by involving practitioners more extensively in veterinary education. Selected practices might, for instance, provide a setting for some of the clinical teaching which currently takes place in the clinics of the veterinary schools. Another possibility would be a financial contribution. Such contributions are well-established in agriculture, where farmers now pay levies to a number of funding bodies. To cite one example, a dairy farmer with a 1m-litre quota would have an annual turnover of approximately £250 000 and would contribute an annual levy of £300 to the Milk Development Council. A funding body might similarly be established to enable the veterinary profession to make a direct contribution to



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the costs of clinical teaching in the veterinary schools. Such a levy could bring major benefits for clinical research, both by funding projects and by releasing academic clinicians from some of their teaching and service duties.

3.46. We do not suggest that the practising profession is the sole beneficiary of undergraduate veterinary education. Other major employers of veterinary graduates are the veterinary schools themselves and MAFF, as employers of full-time veterinarians and practitioners part-time as Local Veterinary Inspectors. We have already suggested above that the Ministry might support postgraduate training posts in order to secure its particular need for veterinary graduates with particular skills. Such support would also go some way to recognize the benefit which MAFF derives from undergraduate veterinary education.

3.47. *We recommend that the veterinary schools, the profession and MAFF (as the major public sector user of the services of veterinary graduates) should review the financial arrangements for clinical veterinary teaching. Those who benefit from undergraduate veterinary education should contribute to the special costs of clinical teaching, so that clinical academic staff can combine a reduced teaching and service load with a proper involvement in research.*

### FUNDING STRATEGY AND CO-ORDINATION

3.48. Under this heading we consider the funding of research projects by the major funding bodies.

3.49. We recognized above that the funding bodies were bound to follow their own policies and priorities. Each funding body obviously needs to make sure that its spending programmes are achieving the results it intends, but it should also consider how its activities fit with those of other bodies. The evidence put to us suggested that there was a lack of strategic co-ordination in the funding of research on animal health and that in consequence effort could be fragmented and research could be slow to respond to new challenges. It would be valuable if the major

funding bodies severally and jointly reviewed their support for research into animal health and welfare, looking for gaps in coverage and scope for joint ventures. As part of this process the funding bodies could usefully invite the main research providers to contribute views on research priorities, on the location of major investments in infrastructure and on administrative systems. Funders and providers may not always agree with each other, but informed and responsible debate must be beneficial.

3.50. *We recommend that the funding bodies which sponsor or have an interest in veterinary research – notably BBSRC, MRC, the agriculture departments and the Wellcome Trust – should review the effectiveness and complementarity of their programmes, giving the main research contractors an opportunity to contribute, and should repeat this exercise from time to time.*

### COLLABORATION AND SPECIALIZATION

3.51. The issues arising under this broad heading concern working relations between the six veterinary schools and between them and the research Institutes and other bodies. The evidence showed wide agreement on the need for the veterinary schools to identify and build on their special research strengths and to make use of the expertise of other bodies. In undergraduate teaching they are constrained by the need to cover the full curriculum, but where research is concerned there is no dissent over the need for specialization and for collaboration between the different schools and between them and the neighbouring medical and biological departments, and between the universities and the Institutes. Such collaboration would not only yield research benefits but would also create more opportunities to expose veterinary students to a range of high-quality research.

3.52. We sympathize with the views of those who would like physically to bring together the universities and the research Institutes, but it is not realistic to propose incurring the major costs of relocation. Certainly the benefits of co-location should be borne in mind when considering developments for the future and changes for



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other reasons. In the meanwhile collaboration should be pursued in spite of geographical separation. If research teams can collaborate across the world, the veterinary schools and Institutes within the UK can certainly work together if they have the will.

3.53. There are promising developments. In Scotland, where a range of agricultural and biological disciplines operate within a 50-mile radius, there is scope to develop centres of excellence that could be unrivalled in Europe. We heard about the closer working relationship which the Moredun Research Institute is building with the Scottish veterinary schools and other institutions. Other research Institutes have links with a wide range of university departments in the UK and abroad but relatively weak connections with veterinary schools. The special and expensive facilities of publicly funded research institutions, such as isolation accommodation for large animals, should be available for collaborative studies with the veterinary schools. The proximity of the Animal Health Trust and the University of Cambridge does not seem to have been exploited, and the links between the schools and the MAFF Veterinary Investigation Centres seem to be getting weaker even though both sides told us that they would welcome closer collaboration.

3.54. We detected a problem of attitudes, and it does not help when bodies which could benefit from working together have contrasting institutional cultures and traditions. If two organizations are to overcome such obstacles and take advantage of each other's strengths, each must first be convinced that the other has something valuable to offer. The Institutes have specialized expertise and infrastructure which the veterinary schools cannot hope to emulate. The latter, on the other hand, have unrivalled clinical skill and knowledge, are well placed to tap the expertise of neighbouring university departments, benefit from an annual injection of young talent, and have access to a range of sources of funding. Both sides need to trade on their advantages in order to present themselves as desirable research partners. By pooling their resources, moreover, the Institutes and schools will be well placed to convince the major funding bodies that they should invest in new centres of excellence.

3.55. Within the university sector, co-ordination between the six veterinary schools is impeded by their long tradition of independence. In private discussion they agree that they need to respect each other's areas of research specialization and develop complementary roles, but they have not as yet made public a shared strategy for developing their research strengths. The flagged research groups identified in the Research Assessment Exercises provide one starting point. Institutional change takes time, but a public statement of the aim can be a major step toward realizing it. A declared strategy could also help to persuade funding bodies to invest in new infrastructure. It might cover collaboration and specialization at regional, national and European levels, take account of growth areas such as food safety and comparative medicine and build in ways of exposing veterinary undergraduates to leading edge research.

3.56. *We recommend that:*

- *the research Institutes and veterinary schools should share the use of existing specialized facilities and co-operate in making the case for new investment in centres of excellence;*
- *the veterinary schools, Institutes, government laboratories and Veterinary Investigation Centres should collaborate and, where appropriate, form regional groupings;*
- *each veterinary school should develop its own areas of research based on the starred areas in the Research Assessment Exercises, provided, of course, those areas continue to be actively pursued. These areas for each school should be agreed between the schools and published as statements of individual and common strategy. The veterinary schools should exploit the complementary strengths of other bodies.*

### **MACHINERY FOR CONSULTATION AND CO-ORDINATION**

3.57. We have recommended above that the major employers of veterinarians in research should assess their recruitment needs and take stock collectively of the provision for veterinary research training and career development; that the bodies which fund veterinary





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research should jointly review their programmes from time to time, with an input from the main research contractors; and that the veterinary schools should agree the areas in which they will specialize.

3.58. We hesitate to propose new machinery for these purposes, because debate over the membership and terms of reference of committees can easily be a substitute for action. The priority is for the employers, funding bodies and veterinary schools to set in hand the reviews and discussions recommended above, and none of these requires a new forum. New administrative arrangements on a modest scale could nevertheless offer benefits.

3.59. We would see advantage, first, in the heads of the veterinary schools setting up an interest group to represent them collectively in dealing with the funding bodies and other institutions. They must of course compete separately for project and programme grants, but they need to speak with one voice if, for instance, they wish to convince BBSRC that it should locate new infrastructure in the veterinary schools or debate with the profession the level of its support for clinical teaching.

3.60. Our second proposal is that the heads of research in the veterinary schools, Institutes and other bodies engaged in research into animal health and welfare should meet formally to promote collaboration and co-ordination. Such meetings would not replace the normal bilateral communications between partners in particular projects, but could be used to agree a common research strategy between the veterinary schools, identify possibilities for major initiatives and seek to remove obstacles to research collaboration.

3.61. We propose, thirdly, that all the bodies which we have invited to take action – the major employers of veterinarians in research, the main funding bodies, the main research providers, and the RCVS as the regulating authority for veterinary education – should come together in a year's time to review progress. The RCVS, as the instigator (through its Trust Fund) of our Enquiry, would be the natural body to convene this review.

3.62. If this follow-up exercise proved valuable it might be repeated annually and the parties might also consider establishing a forum for this purpose. A possible model for such a forum would be the UK Co-ordinating Committee on Cancer Research which helps the main funders of cancer research to co-ordinate their activities and gives the research providers an opportunity to contribute. The Committee now has a well-developed organization and handles substantial funds, but it grew from modest beginnings. Any similar organization to co-ordinate veterinary research would need to be simple at its inception and realistic in its aims, but the UK Co-ordinating Committee shows what can be achieved given the will.

3.63. *We recommend that*

- *the heads of the veterinary schools should set up an interest group to represent the schools collectively in dealings with other bodies;*
- *the heads of research in the bodies engaged in research into animal health and welfare should meet formally to promote collaboration and co-ordination;*
- *the bodies affected by our recommendations should jointly review progress in a year's time, the review being convened by the RCVS.*

### THE SPECIAL CONTRIBUTION OF THE VETERINARY SCHOOLS

3.64. Our remit was broad, and within it we have considered and made recommendations on a range of issues of different kinds. Most of our recommendations, however, affect the university veterinary schools, and we return to them in a final comment.

3.65. The schools make an impressive job of responding to diverse and not wholly compatible demands from different quarters. They are institutions of higher education with a duty to develop the personal and intellectual capital of the very talented young people who pass through them as students. They are centres of learning with a responsibility to advance science through published research, and these days they face serious financial penalties if they neglect to do so.



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The schools are clinical training establishments, formally charged to deliver veterinary graduates competent to give medical and surgical care to a wide and growing range of species. They also run animal hospitals. It is not surprising if the strain of rising to all these different expectations sometimes shows. It would be remarkable if the clinical academic staff managed to maintain a full involvement in research of top quality at the same time as responding to all the other calls on their time.

3.66. The veterinary sciences are not unusual in having to cope with financial pressures and a changing external

environment by working hard, cutting costs and constantly looking for new ways to be more efficient. In our view, however, the veterinary schools have difficulties which will not be solved by the continuing application of such measures, because they are not funded for the very special job which they do. It is time for the veterinary schools and those who benefit from their work jointly to consider what the schools can reasonably achieve and what should be required of them in the future. They should look to the veterinary profession and the major employers of veterinary graduates to share some of the costs of meeting these expectations.





## ANNEX A AND B

### ANNEX A: THE COMMITTEE

**Chairman: The Earl of Selborne**  
*KBE FRS*

**Professor Peter M Biggs**  
*CBE DSc DVM FRCPath FIBiol FRS FRCVS*

**Professor Alan Cuthbert**  
*PhD FRS*

**Professor Sir Brian Follett**  
*PhD DSc Hon LLD FRS*

**Professor Ian McConnell**  
*MA BVMS PhD FRCPath FRSE MRCVS*

**Professor Graham MacGregor**  
*FRCP*

**Dr John Moffitt**  
*CBE Hon DCL FRASE FRAGS*

**Miss Kirsten Rausing**

**Professor John A Wyke**  
*MA VetMB PhD FRSE MRCVS*

**Secretary: J S Gill**

### ANNEX B: THE INVITATION TO GIVE EVIDENCE

The Committee of Enquiry has been set up by the Royal College of Veterinary Surgeons in the light of concerns about the future development of veterinary research in the UK and its view that an overall long-term strategy for veterinary science and research is needed in order to ensure the best use of resources and identify any areas where greater depth and breadth of research may be required. The terms of reference of the Enquiry are “to assess the current state and provision for veterinary science and research and to develop a strategy from which priorities can be determined, to ensure UK veterinary research and research training are at the forefront internationally and meet the nation’s needs in the future”. [The composition of the Committee is set out under annex A.]

The Committee invites written evidence from organizations and individuals involved or interested in veterinary research. The Committee does not wish to constrain the freedom of respondents to raise the issues which they think important, but offers as a guide the questions listed in the attachment.

This invitation has been sent to the agriculture departments for England, Scotland, Wales and Northern Ireland; the Higher Education Funding Councils for England, Scotland and Wales; the Biotechnology and Biological Sciences Research Council, Medical Research Council and Natural Environment Research Council; the veterinary schools of the Universities of Bristol, Cambridge, Edinburgh, Glasgow, Liverpool and London; University College, Dublin; the Institute of Aquaculture, University of Stirling; the Department of Biological Sciences, University College of North Wales; the Royal Agricultural College; the Scottish Agricultural College; the Institute of Zoology, Regents Park; the Wellcome Trust; the Animal Health Trust; the Institute for Animal Health, Babraham Institute, Institute of Grassland and Environmental Research, Moredun Research Institute and Roslin Institute; the British Veterinary Association and Association of Veterinary Teachers and Research Workers; the National Farmers’ Union; and other bodies and individuals. [Responses should be sent by the end of November to... ]

*September 1996*



## ANNEX B

### THE CURRENT STATE OF RESEARCH

1. What are the strengths and weaknesses of veterinary research in the UK?
2. Are there significant gaps in coverage at present? Are there indications that new gaps may open up in future?
3. How far is it desirable to link the research activities of the university veterinary Schools, the research Institutes, the Veterinary Laboratories Agency and the private sector?
4. What arrangements exist for this purpose?
5. How far should centres of veterinary research specialize rather than compete?
6. Do veterinary researchers have sufficient access to clinical practice?
7. Are there arrangements for publicizing and exploiting research carried out by veterinary practitioners?

### FUNDING ARRANGEMENTS

8. Do present arrangements provide adequately for basic, strategic and applied research?
9. Are there satisfactory arrangements for funding veterinary research and co-ordinating funding policy?

### RESEARCH AND EDUCATION

10. Does undergraduate veterinary education select and prepare suitable students for a career in research?
11. Is an attractive career path in research open to veterinary graduates?
12. Are there sufficient opportunities for staff in the university veterinary Schools to combine research with teaching?
13. How can high-quality clinical research best be developed?

### ACTION

14. If action is needed, what form should it take?

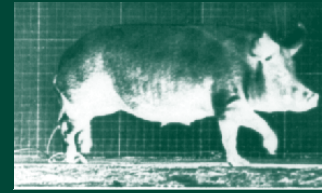


## ANNEX C

### ANNEX C: CONTRIBUTORS OF EVIDENCE

C.1. The Committee received evidence in writing from:

- **universities:**  
Universities of Bristol, Cambridge, Edinburgh, Glasgow, and Liverpool,  
Royal Veterinary College,  
Agricultural Economics Unit of the University of Exeter;
- **funding bodies and charities:**  
BBSRC,  
Guide Dogs for the Blind Association,  
Home of Rest for Horses,  
Horserace Betting Levy Board,  
Meat and Livestock Commission,  
Medical Research Council,  
Milk Development Council,  
Pet Plan Charitable Trust,  
Scottish Higher Education Funding Council,  
Wellcome Trust;
- **Government departments:**  
Department of Health,  
Home Office,  
MAFF,  
SOAEFD;
- **research organizations:**  
Babraham Institute,  
Animal Health Trust,  
Institute of Grassland and Environmental Research,  
Hannah Research Institute,  
Roslin Institute,  
Rowett Research Institute,  
Institute of Zoology;
- **professional and other bodies:**  
BVA and some of its specialist divisions,  
Canine Health Census,  
Farm and Food Society;
- **industry:**  
Bayer plc,  
Genus Limited,  
Hoechst Roussel Vet Limited,  
Mallinckrodt Veterinary Ltd,  
Zeneca Pharmaceuticals;
- **individuals:**  
Professor Sir James Armour,  
Dr W F Blakemore,  
Dr P D Cockcroft,  
Dr G C Coles,  
Dr J M Dewdney,  
Mr B L Edwards,  
Dr N T Gorman,  
Professor I R Griffiths,  
Dr D Haig,  
Professor P H Holmes,  
Dr J Jones,  
Professor R S Jones,  
Mr T Lonsdale,  
Dr J N Lucke,  
Mrs J A MacArthur Clark,  
Dr R J Martin,  
Professor A R Michell,  
Dr V Molony,  
Mr I B Munro,  
Professor D E Onions,  
Dr A C Palmer,  
Dr P D Rossdale,  
Dr D R Sargan,  
Dr J Shaddock,  
Dr J D Slater,  
Professor The Lord Soulsby,  
Dr M E Stoddart.



## ANNEX C

### C.2. The Committee heard oral evidence from:

Professor Sir James Armour,  
Professor R Baker,  
Ms A Frost,  
Professor C J Gaskell,  
Dr N T Gorman,  
Professor I R Griffiths,  
Mr L Howells,  
Professor L B Jeffcott,  
Professor R S Jones,  
Professor L E Lanyon,  
Dr K A Linklater,  
Dr T W A Little,  
Dame Bridget Ogilvie,  
Professor Sir Stanley Peart,  
Professor M M H Sewell,  
Dr J A Shadduck,  
Dr D W F Shannon,  
Dr N J Watt,  
Professor A J F Webster,  
Professor N G Wright.

C.3. Members of the Committee also received views and information during visits to the Universities of Cambridge, Edinburgh and Liverpool, the Institute for Animal Health, the Animal Health Trust, the Equine Fertility Unit, the Moredun Foundation and the Moredun Research Institute.



## ANNEX D

### ANNEX D: REPORTS OF EARLIER ENQUIRIES

D.1. Our enquiry did not start from a blank sheet. We looked at the results of earlier studies, notably:

- the review of research and development in farm animal diseases carried out by Professor Peter Wildy's working party;
- the Working Party on Veterinary Education chaired by Sir Ralph Riley;
- the Working Party on Veterinary Undergraduate Education chaired by Dr Jeremy Lucke; and
- the review of the role of the Agricultural and Food Research Council in veterinary research and research training carried out by a group chaired by Professor Brian Pickering.

D.2. Their recommendations are noted below. Not all were adopted, and some have become less relevant with the passage of time, but they nevertheless gave us valuable pointers.

#### WILDY REPORT

D.3. The Working Party chaired by the late Professor Peter Wildy was commissioned by the Agriculture Departments in Great Britain and the former Agricultural and Food Research Council (AFRC) to review public sector funded research and development in diseases of agricultural animals and recommend a framework for the future. The Working Party reported in July 1987, the chair having been taken over by Dr W B Martin of the Department of Agriculture and Fisheries for Scotland following the death of Professor Wildy in March that year.

D.4. The report made the following recommendations for the short term:

- *co-ordination of farm animal disease R & D:*  
“We recommend that to improve the co-ordination of farm animal disease R & D and facilitate the effective co-ordination of funds, a properly serviced Animal Disease Co-ordinating Board (ADCB) be established. The Board would have a UK remit to advise the Sponsors and Priorities Board on:  
(a) co-ordination of programmes,  
(b) the most appropriate distribution of funds from multiple sources,  
(c) the priorities for farm animal disease R & D,  
(d) the value of novel ideas for possible support.”
- *assessing industry's needs:*  
“We recommend that the establishment of Species Discussion Groups be encouraged which could act as a forum for the needs of the industry and advise the ADCB appropriately.”
- *funding:*  
“We recommend that:  
(a) sufficient funds should be available to meet the basic R & D needs of the agricultural industry. It is therefore essential that there be no further reductions in the funding of farm animal disease R & D,  
(b) establishments should remain free to seek funding from public and private sources and to benefit directly from this funding,  
(c) the livestock industry be urged to contribute more significantly to R & D,  
(d) other industry funding be encouraged,  
(e) these funding sources (c) and (d) above should not exceed 20% of the total spent on R & D at any one establishment,  
(f) other funding sources, especially charities and trusts, be welcomed and that they be encouraged to fund work that government finds difficult to support.”



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- **training and related research:**

“We recommend that urgent attention be given by the UGC, universities and veterinary schools to improving the research base in the schools and training of veterinary graduates for a research career. This can be assisted by:

- (a) the extension of the AFRC Link scheme and its orientation towards both the institutes and universities,
- (b) establishing research groups in the veterinary schools funded by the AFRC and charitable trusts,
- (c) providing support and opportunity for interchange of staff between veterinary schools and other research centres,
- (d) encouraging collaboration both within and between establishments,
- (e) increased provision of pump-priming grants,
- (f) enlarging the amount of awards and support grants for veterinary postgraduate students at universities and other centres of expertise,
- (g) a greater emphasis on disciplinary training.”

- **recruitment:**

“We recommend that recruitment into research be improved by:

- (a) open recruitment at all grades of veterinary and science staff,
- (b) increased flexibility to seek funding from all sources to employ short-term staff where necessary,
- (c) providing the opportunity for short-term contracts of 3–5 years for postgraduates and post-doctorates.”

- **restructuring the R & D establishment**

“We recommend the rationalisation of the resources and responsibilities of MAFF and the AFRC by a restructuring of the present establishments and their functions. To achieve this we strongly recommend the adoption of the following option subject to a detailed feasibility study by MAFF and AFRC:

- (a) the DES funds used at Pirbright Laboratory to transfer to Compton Laboratory,

- (b) Pirbright Laboratory to come under the management of MAFF and be of a size appropriate to MAFF’s needs,
- (c) non-statutory poultry work at CVL transfers to Houghton Laboratory and comes under its management,
- (d) the laboratories at Compton, Houghton, Pirbright and Weybridge to remain at their existing sites.”

D.5. For the longer term the Working Party made the following recommendations:

- **establishing an executive body:**

“We recommend that a new body be established, or an existing one adapted, which would assume an executive function with the following responsibilities for the UK:

- (a) to act as a common employing authority for all veterinary laboratory staff within the SVS, the VIS in GB, the AFRS and the VRL,
- (b) to ensure the integration and co-ordination of all aspects of the veterinary laboratory services including statutory and service work, associated R & D and all other research.”

- **restructuring the laboratories:**

“We recommend that detailed consideration be given to a major reorganization of the UK’s animal disease laboratories with the aim of establishing an integrated service with the following structure and responsibilities:

- (a) 6 laboratories in the UK, each of 250 – 300 people, to be associated with universities and, where possible, the veterinary schools,
- (b) each laboratory to have regional diagnostic responsibilities integral with the VIS,
- (c) each laboratory to develop a lead responsibility for a species and, or, discipline(s),
- (d) each laboratory to be supported by an Advisory Board.”



## ANNEX D

### RILEY REPORT

D.6. The Working Party on Veterinary Education chaired by Sir Ralph Riley reported in January 1989 to the University Grants Committee, making the following recommendations:

- *recommendation1:*

“It is recommended that basic science courses should be strengthened, that adequate provision should be available for students to intercalate work for a science degree into veterinary courses and that universities should encourage them to do so.”

- *recommendation2:*

“The Working Party recommends the vertical integration of veterinary education but recognizes that the process, although rewarding to all concerned, is time consuming and can only be applied when appropriate links between disciplines are possible. It should not be implemented if it leads to a reduction in the study of basic sciences.”

(This referred to integration between the pre-clinical, para-clinical and clinical phases of the course, with, for instance, anatomy teachers collaborating with surgeons on functional and surgical anatomy.)

- *recommendation3:*

“It is recommended that pre-clinical, para-clinical, and clinical veterinary teaching should continue at the Universities of Bristol, Liverpool and London and that a single Scottish School of Veterinary Studies should be created by merging parts of the veterinary activities at the Universities of Edinburgh and Glasgow. The Scottish School of Veterinary Studies should be in the University of Edinburgh, utilizing the sites already committed to veterinary education. Each of the four universities with responsibility for awarding registrable veterinary degrees should have the capacity to teach 85 students in each of the para-clinical and clinical years. With the present overall annual intake of 302

students each university should also have not less than 36 clinical teachers in the professor, reader or lecturer grades. Any increases in student numbers should be accompanied by increases in the numbers of clinical teachers to maintain staff:student ratios close to 1:4. Each university should have four Residency posts (see recommendation 10). It is further recommended that pre-clinical teaching of veterinary students to tripos level should continue at Cambridge but for para-clinical and clinical studies these students should move to one of the four universities which have that capability. Clinical and para-clinical teaching posts at Cambridge should be used to reinforce the teaching strengths of universities continuing with these responsibilities, but principally London and Bristol. The teaching strength at Liverpool should be reinforced by the movement of posts from Edinburgh or Glasgow following the creation of a staff complement of about 36 clinical and proportionate numbers of pre- and para-clinical teachers in the Scottish School of Veterinary Studies.”

- *recommendations 4, 5, 6 and 7* concerned arrangements for bringing about the changes proposed in recommendation 3.

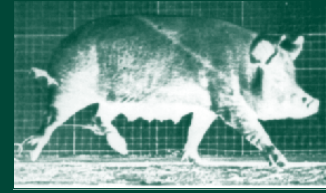
- *recommendation8:*

“It is recommended that each university reviews its arrangements for the placement of students when they ‘see practice’ in the community of veterinary surgeons to ensure that the maximum educational benefit is obtained from this process.”

- *recommendation9:*

“It is recommended that the final year of undergraduate veterinary teaching should consist of at least 46 weeks of work so that students can more readily follow the complete course of treatment of many animal patients and to extend their opportunities to gain ‘hands on’ practical experience prior to their obtaining professional qualifications.”





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- **recommendation D:**

“Each of the universities teaching clinical veterinary medicine should have four Residency posts supported from General Funds in part by the redeployment of the resources used previously to support junior clinicians at Cambridge and Glasgow/Edinburgh. These Residents should be additional to those employed by universities using funds from non-UGC sources. Residents will gain advanced skills in a clinical discipline or a species specialty as a preliminary to specialist practice or to clinical teaching. Appointments as Residents will be held for not more than three years.”

- **recommendation II:**

“It is recommended that the heads of veterinary schools should jointly discuss with the Directors of the AFRC IAH, Compton, and of the AHT, Newmarket, ways in which the capabilities of these institutions can be used in the education of veterinary undergraduates. This can take the form either of taught courses or by elective training at Compton and Newmarket. Appropriate costs of the arrangements that may be agreed should be a charge on university general funds from the UGC.”

- **recommendation D:**

“It is recommended that research should play a greater part in the work on veterinary science in the universities. Concentration of teachers in fewer universities will enable clinical research, which has been of modest achievement thus far, to expand to the benefit of teaching at undergraduate and postgraduate levels. In seeking support for research, from sources outside universities, care should be exercised to constrain acceptance of contracts or projects with limited intellectual content. It is important that research undertaken with outside support should contribute to knowledge in the widest sense and enhance the scientific competence and confidence of the veterinary workers whose reputations and career prospects should benefit from their work on the projects.”

### LUCKE REPORT

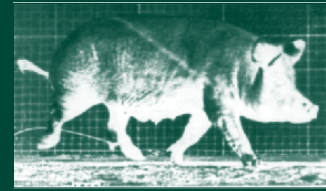
D.7. The Working Party on Veterinary Undergraduate Education chaired by Dr Jeremy Lucke, Chairman at the time of the Education Committee of the Royal College of Veterinary Surgeons, reported to the College in October 1991 following a review undertaken in pursuance of its statutory role in supervising veterinary education. It made the following recommendations:

- **recommendation 1** resources for undergraduate veterinary education in the UK: “The Royal College must seek to ensure proper funding for undergraduate education in the UK; must encourage the universities to make the most effective use of their resources on a UK (and European) rather than on an individual basis; and must seek ways of utilizing the resources of the private sector, state veterinary service and research and commercial institutions by closer integration.”
- **recommendation 2** the undergraduate curriculum: “Changes in the Veterinary Training Directive should be discussed and implemented without delay. Such changes should recognize not only the developments in veterinary science and the needs of society but accept changing attitudes to education. The Directive should make clear that the priority for the veterinary profession is the health and welfare of animals in the Community as well as their impact on public health and the environment. The UK veterinary degree should remain the sole and sufficient qualification to practise as a veterinary surgeon in the UK.”
- **recommendation 3** duration of the course: “The 5-year course resulting in a registrable qualification should be retained.”
- **recommendation 4** features of a ‘model curriculum’: “Further encouragement should be given to the intercalation of degrees within the veterinary course. The subjects taken should be wide in scope.”



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- *recommendation 5* features of a ‘model curriculum’: “It is also recommended that the Royal College should continue to press for funding of students to intercalate degrees because veterinary surgeons with this type of training are needed. It may be that, at a time of change from local to central funding, this might now be the opportunity to apply such pressure.”
- *recommendation 6* features of a ‘model curriculum’: “The Working Party was convinced of the advantages of a term-free lecture-free final year and recommends that the schools should give serious consideration to the implementation of such a final year comprising clinical rotations, extra-mural rotations and elective periods. Extra-mural rotations should be regarded as an integral part of the clinical course – comprising a final year of at least 48 weeks and earlier clinical years of at least 45 weeks each. On this basis the Royal College should press for the funding of students in the three clinical years at the full-time rate that is applicable to medical students.”
- *recommendation 7* electives: “Each school should provide elective periods at least during the final year, which are sufficiently long (at least 12 weeks) to allow study in depth or involvement in a project. The advantages of electives being taken outside the parent school should be recognised.”
- *recommendation 8* staffing: “The Royal College should seek, with the universities, to find ways of providing a career structure for teachers in veterinary schools, which will stimulate basic and clinical research, allow high standards of clinical care and reward veterinarians with skill and dedication to undergraduate education.”
- *recommendation 9* extra-mural rotations (EMR): “The term ‘seeing practice’ should be abandoned and replaced with extramural rotations. Extramural rotations should be an integral part of the degree course and provide structured use of the students’ time, and a closer relationship between school and practice or other institution. An extramural rotation should only be accepted as part of the course if it is undertaken in a practice or other institution recognized for the purpose by the schools and the Royal College.”
- *recommendation 10* teaching of regulatory medicine, public health and food hygiene: “The Royal College should seek appropriate support, including that of the Chief Veterinary Officer, to press for funding for this increased professional responsibility. The Royal College should carefully monitor the progress to high standards of the undergraduate course in regulatory medicine, public health and food hygiene. If necessary, the Royal College should use its powers under the Veterinary Surgeons Act to make specific enquiry into these aspects of the course.”
- *recommendation 11* undergraduate entry requirements: “The selection of veterinary undergraduates should remain the responsibility of the university veterinary schools but it would be expected that the system in place would always be under review.”



### PICKERING REPORT

D.8. We were grateful to the Biotechnology and Biological Sciences Research Council for allowing us to see an internal document, a report of July 1993 from a Group chaired by Professor Brian Pickering which reviewed the role of the former Agricultural and Food Research Council in veterinary research and research training. The Review Group made the following recommendations:

- *recommendation 1*  
“If the AFRS is to meet its recruitment needs for veterinary scientists, it should encourage its institutes to interact more positively with the veterinary schools and actively promote farm animal research at the undergraduate level. This should include the provision of opportunities for electives and vacation studentships.”
- *recommendation 2*  
“The AFRS should participate in the provision of summer schools for veterinary undergraduates. Preferably, these should be held at institutes with large animal facilities, in order that students may benefit from the proximity to farm animal research.”
- *recommendation 3*  
“AFRC should consider the introduction of a four-year research training programme for veterinary graduates which would provide a year’s specialist training, followed by a standard three-year research project leading to a PhD. This would be in line with proposals set out in the Government’s White Paper on science and technology.”
- *recommendation 4*  
“Opportunities should be provided for the secondment of veterinary school staff to institutes and vice versa.”
- *recommendation 5*  
“AFRC should consider how to further the establishment in the veterinary schools of centres of excellence in areas of strategic importance. In doing so, the Council should consult with other bodies interested in the advancement of veterinary science, or which have a need for research-trained veterinarians, such as the Wellcome Trust and the UK agriculture departments. Where centres of excellence are established, they should be complementary to, and associated with, AFRC institutes.”



## ANNEX E

### ANNEX E: KEY TO ABBREVIATIONS

<b>ADCB</b>	Animal Disease Co-ordinating Board (as recommended by the Wildy Report)	<b>RCVS</b>	Royal College of Veterinary Surgeons
<b>AFRC</b>	The former Agricultural and Food Research Council. The Pickering and Wildy Reports also refer to the AFRS, the Agricultural and Food Research Service	<b>RVC</b>	Royal Veterinary College
<b>AHT</b>	Animal Health Trust	<b>SABRIs</b>	Scottish Agricultural and Biological Research Institutes
<b>BBSRC</b>	Biotechnology and Biological Sciences Research Council	<b>SAC</b>	Scottish Agricultural College
<b>BVA</b>	British Veterinary Association	<b>SOAEFD</b>	Scottish Office Agriculture, Environment and Fisheries Department
<b>CVL</b>	Central Veterinary Laboratory (now part of the MAFF Veterinary Laboratories Agency)	<b>SVS</b>	State Veterinary Service
<b>MAFF</b>	Ministry of Agriculture, Fisheries and Food	<b>UGC</b>	The former University Grants Committee
<b>MRC</b>	Medical Research Council	<b>UMDS</b>	United Medical and Dental School – Guy’s and St Thomas’
		<b>VIS</b>	The former Veterinary Investigation Service (now part of the Veterinary Laboratories Agency)
		<b>VRL</b>	The former Veterinary Research Laboratory of the Department of Agriculture for Northern Ireland



## ANNEX F

### ANNEX F: CHANGES IN THE NUMBERS OF VETERINARIANS EMPLOYED IN RESEARCH

In its evidence to the Committee, BVA referred to a decline in the number of veterinary graduates involved in research in the Institutes and the veterinary schools. This has been quantified by referring to the Directories published by RCVS, showing where individual veterinarians are employed, twenty years ago and in selected years since. Between 1977 and 1997 the number of veterinarians employed in general practice

nearly doubled, rising from 4752 to 9264 according to the RCVS Annual Reports for those years.

Table 4 below gives the number of veterinary graduates shown in the Directories as employed in Great Britain in the veterinary schools, the research Institutes, the Animal Health Trust and the MAFF research service. The figures only give a broad indication of the number of veterinarians involved in research, since a proportion of those employed in the veterinary schools and the Animal Health Trust will have been engaged primarily in clinical service.

Table 4. Veterinary graduates.

	1977	1987	1992	1996/97 <sup>1</sup>
Veterinary schools <sup>2</sup>	290	285	367	407
Research Institutes	96	66	45	44
Animal Health Trust	14	18	27	41
MAFF research service <sup>3</sup>	82	60	47	42

#### Notes

1. The most recent Directory published, for 1996/97, gives information as at 31 July 1996.
2. Honorary and visiting appointments are excluded. The increased numbers in the veterinary schools in 1992 and 1996/97 are largely attributable to postgraduate students.
3. For the sake of comparison between the earlier and later years the figures for the MAFF research service exclude the Veterinary Investigation Division of the Veterinary Laboratories Agency but include the Veterinary Medicines Directorate (which employed 11 veterinarians in 1992 and 10 in 1996/97).

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