REPORT OF THE DIRECTOR

J. R. HILLMAN

Agriculture and its contribution to the advancement of mankind largely retained a low profile in the western world during a year noted for dramatic political changes in Eastern Europe. Economic cooperation between and within the regional blocks was counterbalanced as in the past by the tendency of certain nations to engage in neomercantilist protection or predatory policies in trade and investment. International trade practices in agricultural and horticultural commodities continued to cause dissatisfaction where interventions by governments or their agencies distorted the market. An unwitting consequence of these support, protection and restriction policies for producers was that the perceptions and funding of research and development priorities were directly and sometimes adversely affected in most countries.

Analysis of the general situation with regard to agriculture and food supplies in 1989 reveals a complex picture. According to the Quarterly Bulletin of Statistics issued by the Food and Agricultural Organisation of the United Nations, preliminary indices of total world agricultural and food production rose in 1989 after four years of barely perceptible growth. There was also evidence of a slight rise in per capita food production, stemming a worrying decline during the three previous years. Data from the United States Department of Agriculture, Foreign Agricultural Service, indicated that the 'ending stocks' of the world's cereal and sugar supplies would continue to decline during 1989-1990 to the lowest levels, as a percentage of consumption, since the mid-1970s. These statistics must be considered together with the disquieting fact that demographic trends for the foreseeable future will pose enormous pressures on food supplies and the natural environment.

A billion extra people are projected to be added to the present population of 5.3 billion over the next ten years, with inordinate strains placed mainly on the governments of countries of the third world for food, water, shelter, fuel, education and welfare. Access to the media will ensure that expectations for the quality of life will rise for all mankind regardless of local economic situations. Low-grade grazing systems coupled to poor, unsustainable agricultural systems will inexorably lead to the acceleration of deforestation, soil erosion, desertification and the rapid loss of natural and managed ecosystems, destroying genetic and environmental diversity. Social instability, emigration and trade disruption seem inevitable for

much of the third world. Biologists and agriculturalists fear that regional food surpluses and the capacity to respond to extra demand will be short-lived, not only because of a simple increase in human population but because of the possible effects of climate change arising from global warming. Agricultural and industrial activities have unequivocally modified the atmosphere. Although it is not clear how Earth will adjust to the increase in levels of the "greenhouse gases", there is the likelihood that significant changes in weather will occur within an average life span.

Largely as a result of major if unsung technological successes in the recent past, especially in plant breeding and pathology, agriculture and the related life sciences are widely assumed to be able to adapt without major investment to meet the challenges of population growth. Yet agriculture must not adversely affect the natural flora and fauna and exacerbate undesirable effects of climate change. Given that the area of land under cultivation is in reality limited and difficult to increase without massive migrations of people and devastation of rainforests, that pests and diseases have an incredible ability to overcome control measures, and that research and development require long-term commitments, current trends may not appear to offer bright prospects.

Fortunately, the life sciences have been revolutionised with huge advances in molecular and cell genetics, providing a common denominator for the application of all the other relevant sciences. Never before has there been such a sustained period of acquiring understanding of the major biological processes. With this understanding comes the ability to control and exploit development and performance of living organisms. Undoubtedly, population growth will eventually be reigned in to match world resources — nonetheless modern agriculture has the capacity to improve the quantity and quality of those resources if given the opportunity to do so.

SCRI is unique in the UK in having a wide range of scientific disciplines in agriculture and horticulture, linked by molecular, cell and population genetics. Modern laboratory and glasshouse facilities and biologically invaluable germplasm collections complement scientific departments of international standing. The research programme is designed to address at the strategic level major issues of temperate and tropical crop biology, linking with coordinated projects and research centres throughout the world.

Most important of the domestic issues for SCRI was the 1989 Visiting Group exercise organised by the Agricultural and Food Research Council (AFRC). This peer review system ensures that all institutes financed by the public purse are rigorously scrutinised and commented on by eminent scientists once every four years, with all research leaders interviewed and their records of achievement assessed. The Group, comprising Professor E. C. D. Cocking FRS (Chairman), Dr J. T. Braunholtz, Professor F. Brown FRS, Professor E. Griffiths, Dr M. A. Kirkman, Professor C. J. Leaver FRS, Professor T. A. Mansfield FRS, Mr H. H. Rogers, and

Professor J. K. Syers visited SCRI from 24 to 28 April 1989. The Group was accompanied by Professor W. D. P. Stewart FRS (Secretary of the AFRC), Dr J. V. Lake, Dr G. M. Price, Dr P. Mapleston and Mrs P. Cooper of the Council's Secretariat, and Dr A. M. Raven, Dr R. J. Dowdell and Mr E. J. Weeple from the Department of Agriculture and Fisheries for Scotland (DAFS).

The final report of the Group was sent to me in July 1989 for comment and I submitted a formal written response together with an industrial review paper which were considered by the AFRC Council in October 1989. In summary, the report was outstanding and a fitting tribute to the staff of SCRI. The Group was greatly impressed and stimulated by many of the scientists, noting the many high-calibre young scientists and climate of enthusiasm and keenness of the Institute. Excellent and exciting work was identified. In addition, the Group was very impressed with the overall appearance of the Institute and with the management of the Institute's field and glasshouse research programme. A number of constructive recommendations were made which were discussed with DAFS and AFRC in December 1989. Those recommendations which did not have major financial consequences were implemented immediately; the remaining recommendations related to new appointments which will be activated when finances permit.

Changes in the management structure of the Institute resulting from the Group recommendations are as follows:

1. Professor N. L. Innes becomes full-time Deputy Director but retains special interest in nurturing the three genetics departments.
2. The divisional and departmental structure is replaced by a single-tier departmental structure.
3. The Cereal & Legume Genetics Department and the Potato & Brassica Genetics Department fuse to form the Crop Genetics Department (Head: G. R. Mackay, UG6).
4. The Tissue Culture & Cytology Department and two staff from the Zoology Department combine to form the Cell & Molecular Genetics Department (Head: W. Powell, UG7).
5. The Soft Fruit Genetics Department is joined by two staff from the Physiology & Crop Production Department (Head: R. J. McNicol, UG7).
6. The Virology Division is retitled the Virology Department (Head: B. D. Harrison, UG5).
7. The Physiology & Crop Production Department is replaced by the Cellular & Environmental Physiology Department (Acting Head: H. M. Lawson, UG6(t)), with transfer into it of the Soil Microbiology Group from the Mycology & Bacteriology and Zoology Departments.
8. The Chemistry Department (Head: M. J. Allison, UG7) becomes free-standing.
9. The Data Processing Unit (Head: R. J. Clark, SSO) becomes a free-standing unit reporting to the Deputy Director.

10. The Crop Protection Division is replaced by two free-standing departments: Mycology & Bacteriology (Acting Head: D. A. Perry, UG6(t)) and Zoology (Head: D. L. Trudgill, UG6).

In addition to the Visiting Group, the work of the Institute was reviewed during visits of the Scottish Agricultural Research and Development Advisory Committee in February, the Fruit and Hops Research Consultative Committee in April, and various farming organisations throughout the year. There were also frequent visits by fellow scientists and politicians.

More stringent and bureaucratic commissioning procedures based on the ROAME principle (Rationale, Objective, Assessment, Monitoring and Evaluation) were announced by DAFS. Introduction of the procedures were expected to be phased in from April 1990 and would require full operation of the unified administrative computing system currently being installed throughout the Scottish Agricultural Research Institutes and Scottish Agricultural Colleges (SAC). As noted in the DAFS document 'Strategy for Agricultural Research and Development' released at the end of the year, commodity-based research is to be replaced by a thematic approach *viz:* land use, soil science, soil-plant-animal interactions, plant science, animal science, animal health and welfare, and animal and human nutrition. Revision took place of many of the SCRI research projects in any case to accommodate withdrawal of governmental support of near-market research and development, including plant breeding. As expected, the SCRI budget for the financial year 1989-1990 was slightly less than that for 1988-1989 so harsh restrictions were placed on spending and appointments. Greater emphasis was placed in obtaining external funding. Certain staff were able to take advantage of the limited voluntary redundancy scheme available through DAFS. Wage and overhead cost increases nevertheless posed difficult problems for senior management and staff alike.

Professor Noel F. Robertson CBE retired in March as Chairman of the Governing Body. A distinguished academic and past Principal of the East of Scotland School of Agriculture, he had long associations with the Scottish Horticultural Research Institute and Scottish Plant Breeding Station, the progenitors of SCRI. Sagacity, rigour, fairness and commitment to the development of the Institute were hallmarks of his chairmanship. Other members of the Governing Body retiring in March were Mr A. G. M. Forbes, Mr G. Gammie, Mr A. D. Kay, Mr G. D. Morrison, Mr A. Pattullo, Professor M. B. Wilkins and Professor M. M. Yeoman. All provided outstanding contributions to the success of the Institute. Seven new members were appointed in early summer by the Secretary of State for Scotland — Professor T. A. Mansfield FRS, Mr J. L. Millar CBE, Mr J. G. Porter, Professor J. A. Raven FRS, Mr G. Rennie, Mr R. O. Sykes and Mr L. M. Thomson. Mr J. A. Inverarity replaced Professor Robertson as Chairman.

Special mention must be made of honours and awards during 1989. Mr Inverarity was awarded an OBE, Professor Innes was elected Fellow of the Royal Society of Edinburgh, and Dr M. C. M. Perombelon was appointed Honorary Research Fellow in the Department of Medical Microbiology, Dundee University. In the New Year Honours List for 1990, Professor B. D. Harrison FRS was awarded the CBE.

Dr Derek L. Jennings, Head of Soft Fruit Genetics, retired in April. After making major contributions in East Africa to the breeding of cassava, he joined the staff at Mylnefield in 1957 to specialise in *Rubus* genetics and breeding. He is highly regarded by both the scientific community and soft fruit industry, and noted in the public eye for breeding new superior red raspberry and hybrid berry cultivars.

Closure of the Pentlandfield station and the Murrays Farm east of Edinburgh was accomplished efficiently if somewhat sadly at the end of March, marking the end of a long period of achievement in plant breeding in Edinburgh. Although the Edinburgh Centre for Rural Economy was in the process of being wound up, SCRI will intend to keep its links with related organisations and the higher education sector in Edinburgh.

On 14 September 1989, an agreement was signed by senior executives of Nickerson Seeds Limited and Dalgety Agriculture plc and the Chairman of the Governing Body on the commercial exploitation of products arising from the germplasm enhancement programmes. The agreement includes potatoes, barley, brassicas and legumes but does not cover soft fruit cultivars.

Mylnefield Research Services Ltd was incorporated on 16 November 1989. Devised primarily to protect the charitable status of SCRI as the Institute engages in commercial activities, the new commercial arm will not begin trading until a qualified accountant is recruited.

Following a review of horticultural research and development in England, Wales and Scotland, the Ministry of Agriculture, Fisheries and Food (MAFF) announced its intention to establish a single organisation, the British Society for Horticultural Research (BSHR), for horticultural research and development in England and Wales. There would be a single chief executive and management team encompassing the programmes and facilities of the AFRC Institute of Horticultural Research (IHR) and MAFF Agricultural Development and Advisory Service Experimental Horticulture Stations. The BSHR would be centred on the Wellesbourne site of IHR. Strategic research involving horticultural species is important to SCRI and thus the linking arrangements with the new organisation will need to be clarified in 1990 as a matter of urgency.

A Committee of Enquiry chaired by Sir Alwyn Williams published their report "A Collegiate System for Agriculture in Scotland" on 31 October 1989. The Committee was appointed by the Secretary of State for Scotland and the Chairman of Scottish Agricultural Colleges (SAC) Ltd to consider the future of the colleges. Of the report's conclusions and recommendations,

Government accepted the Central recommendation that the three individual Scottish Agricultural Colleges and SAC Ltd should be merged into a single national college, which would retain the functions of education, research and development, and advisory services under the management of a single Board of Directors and an executive Director. All three existing college centres at Aberdeen, Auchincruive and Edinburgh will be retained, as will the Schools of Agriculture at Aberdeen and Edinburgh. In view of the fact that SAC and the Scottish Agricultural Research Institutes are funded by DAFS, and that SCRI works closely with the Colleges, the evolution of the new integrated SAC will promote an already productive relationship.

My concluding comments relate to a scientifically rewarding calendar year. Independently assessed measures of performance, including bibliometric analyses and research reviews, point to a record of achievement by the staff. This is made possible by the assistance of individuals and organisations, and takes the form of DAFS core funding and the helpfulness of the DAFS staff, grants from governmental agencies, grower levy boards, local authorities and commercial companies, contracts, donations, farmers who generously make their land available for experiments, scientists with other organisations in the UK and abroad working on collaborative ventures, and the Scottish Society for Crop Research. SCRI is most grateful to all these collaborators and very appreciative of their invaluable assistance.