PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B BIOLOGICAL SCIENCES

Preface to Insecticide resistance: from mechanisms to management. A Discussion Meeting held at the Royal Society on 8 and 9 April 1998

J. A. Pickett

Phil. Trans. R. Soc. Lond. B 1998 **353**, 1675
doi: 10.1098/rstb.1998.0317

THE ROYAL SOCIETY

Preface

Resistance by insects and other arthropod pests to chemically based control strategies, whether involving direct application to crops or resulting from the augmentation of crop-plant genetics, will be a major problem in coping with the expected rapid increase in the human population. Furthermore, the science that has already come from this subject has tremendous promise for showing how other anthropogenic influences will affect the world's fauna, including human beings. The attention currently given to both basic and applied aspects of this subject, particularly in terms of future food supplies and in preserving species diversity, makes recent developments in research on the resistance of insects to chemical control exciting in a broad context.

The papers that follow are from a Discussion Meeting, held at the Royal Society on 8 and 9 April 1998, which arose from an original suggestion by Dr Michael Elliott, CBE, DSC, FRS, my predecessor at Rothamsted, and leader in the pioneering work that gave us the pyrethroid insecticides. This meeting was seen as essential in providing a discussion on what had been achieved and where contributions could be expected in the future, but there was also a widely held feeling that we should meet to take forward and exploit the scientific legacy of the late Dr Roman Sawicki, FRS. Roman, like Michael Elliott, was recruited to Rothamsted by the British insect-control pioneer Charles Potter. While Michael and his colleagues were developing the synthetic pyrethroids, initially with biological input from Roman, he was also helping to establish the new science of insecticide resistance. The subject is now studied internationally, and leading groups from all over the world have provided papers for these Proceedings of the meeting. However, there is a major message advocated by Roman that we still need to accept: for every new pest control approach, resistance will develop. This was indeed true for the field-stable pyrethroids when their use began to be widespread in the early 1970s. A great deal has been lost by overuse and inappropriate deployment in pest control situations. Although significant enlightenment now exists in the state and industrial research communities with regard to pesticide resistance management, commercial considerations are still in danger of causing the loss of valuable chemical structural types and modes of action. It was, therefore, with some apprehension (Pickett 1997) that many viewed the rapid commercialization of the first genetically delivered toxicant, derived from the insect pathogen *Bacillus thuringiensis*. However, although the agricultural development of this technology does not yet represent all of the available predictive resistance management procedures, there is great encouragement that these will be an integral part of future plans. The Proceedings from this meeting are a formative document in ensuring this development.

June 1998 J. A. Pickett, FRS

Reference

Pickett, J. A. 1997 Protection racket. *Chemistry & Industry*, 956–957.

PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B BIOLOGICAL SCIENCES