

PREFACE

This book owes its conception to an Advanced Research Institute held in the Netherlands, 24 - 30 September 1978, under the sponsorship of the ECO-Sciences Panel of the NATO Science Committee. It was attended by 35 experts from 12 NATO as well as non-NATO countries.

In 1977 the ECO-Sciences Panel visited some units of the Division of Technology for Society of the Netherlands Organization for Applied Scientific Research (TNO) in Delft and was particularly interested in our work on insect pheromones. They invited TNO to organize an Advanced Research Institute, and me to act as the director and to submit a formal proposal for such a meeting. From the very beginning it was suggested that the meeting should have a wider scope than insect pheromones only. It was proposed, in particular, that the theory of smell and semiochemicals of other organisms than insects should be included. After some hesitation I accepted the invitation and - in close cooperation with Mrs Dr J. Buzeman, Head of our Foreign Relations Bureau - submitted a proposal that was accepted by the ECO-Sciences Panel in December 1977.

We were fortunate enough to assemble a Planning Committee of highly distinguished experts in the field of odour communication in animals: Prof. Blum, Dr Evans, Prof. Köster, Dr Priesner and Prof. Silverstein. They all responded favourably and without hesitation to our invitation. At a memorable meeting, held in the middle of a snow storm at Leoni, near Seewiesen, Germany, in February 1978, we agreed on the details of the programme and the experts to be invited. This job was a difficult one, owing to the wide scope of the programme and the budgetary limits imposed on the number of experts that could be invited. In fact, several highly qualified experts could not be invited and we had to restrict the non-insect topics to vertebrates and some fundamental aspects of olfaction.

The prompt and enthusiastic replies of almost all the experts invited seemed to prove that the meeting was a timely one, and that the ECO-Sciences Panel had made a good choice in selecting Odour Communication in Animals as a topic for such a meeting. Among the few people who to our regret could not accept our invitation are some experts on aquatic and other vertebrates, this being the reason why the vertebrates were finally limited to mammals.

Chemical ecology comprises interactions of organisms mediated by the chemicals they produce. An important part of it relates to odour communication in animals, of which four aspects are discussed in this book.

1. A fundamental question to which no generally accepted answer can yet be given is: "What is odour and how does it act?" In this book current theories are discussed and new approaches to the study of structure-activity relationships in olfaction are proposed.
2. Odorous mammalian secretions have attracted the attention of perfume makers for ages, but little is known about their role in animal communication and the chemical structure of the compounds involved is largely unknown. However, knowledge in this field is beginning to accumulate and this book gives an account of some of the important developments in this field.
3. As against early views that pheromones and other natural behaviour-modifying chemicals (BMC's; semiochemicals) were single component systems, evidence is accumulating that they are much more complex. Their diversity, complexity and chemical constitution, including chirality, is extensively discussed.
4. During the last decade many pheromones and related compounds have been identified. They are being increasingly applied in pest control, but many practical, economic and legislative or regulatory difficulties must still be overcome. The problems and prospects of the application and commercial production of pheromones are analysed and discussed.

The Advanced Research Institute was held for the purpose of outlining the present state of the art, as well as drawing conclusions and making recommendations for promising future research. I hope this book constitutes proof of these aims having been achieved.