
Preface

The last two decades have witnessed the growth of a new inter-disciplinary subject, variously termed ecological biochemistry, chemical ecology or phytochemical ecology, which is concerned with the biochemistry of plant and animal interactions. Its development has been due in no small measure to the increasingly successful identifications of organic molecules in microquantities, following the application of modern chemical techniques to biological systems. It has also been due to the awareness of ecologists that chemical substances and particularly secondary metabolites such as alkaloids, tannins and terpenoids have a significant role in the complex interactions occurring between animal and animal, animal and plant or plant and plant in the natural environment. A further stimulation has been the possible applications of such new information in the control of insect pests and of microbial diseases in crop plants and in the conservation of natural communities. The present text is intended as an introduction to these new developments in biochemistry that have so enormously expanded our knowledge of plant and animal ecology.

This book is based on a course taught by the author over a number of years, both at Reading and at other universities. It has been planned so that it is suitable for second or third year university teaching in Departments of Botany, Biochemistry and Biological Sciences. Two general points may be emphasized about the use of this text for university teaching. First, each chapter is intended to be self-contained, so that there should be no problem if the order is rearranged to meet the requirements of a particular course. Second, in the bibliography of each chapter, the major books and review articles have been separated from the other references with the intention that these might form a reading list for students. It is also hoped that the book will be of more general value as a simple introduction to a new subject area.

In preparing this fourth edition, every effort has been made to bring it up to date with the latest developments in the subject. New sections have been provided on the cost of chemical defence and on the release of predator-attracting volatiles. The section on increased synthesis of toxins has been rewritten. A summary has been added to Chapter 3 and new references have been included in many places.

The author is grateful to Dr Miriam Rothschild, FRS for her introductory foreword. By her own pioneering experiments with aposematic insects and equally her encouragements of other scientists, Dr Rothschild has contributed more than anyone else to this new subject and this book owes much to her example. The author is also grateful to many friends and colleagues who have provided him with reprints of their work in this field. He also thanks Miss Valerie Norris, his secretary, for her assistance in revising the text. Finally, he has pleasure in acknowledging his debt to the editorial staff of the publishers for their enthusiasm and expertise in handling this venture.

This edition, like the third, is dedicated to the memory of Professor Tony Swain,