A Manual of Practical Entomology (Field and Laboratory Guide) 3e

M.M. Trigunayat
A Manual of Practical Entomology
(Field and Laboratory guide)

(3rd Revised and Enlarged Edition)

M.M. Trigunayat
Ph.D., FESI, FZSI
Head, Department of Zoology
Govt. R.D. Girls (PG) College,
Bharatpur - 321001 (India)
PREFACE (3rd Edition)

I have received commendable response from the readers from all corners of country and abroad. The book was first published in 2002 and since then the trend of the readers has been increasing. The efforts have been made to make the book more comprehensive and several other exercises have been included. In the present edition general account on pests like Red pumpkin beetle, Thrips and scale insects have been incorporated. I would feel pleasure if the readers can communicate the mistakes and other limitations left over.

Dr. M.M. Trigunayat
E-mail: mm_trigunayat@yahoo.com
PREFACE

The present book is an outcome of the long need felt by the students of Entomology. Though there is no dearth of literature on such a popular subject like entomology but hardly any book is available as laboratory guide which can display all exercises mentioned in their syllabi in comprehensive and concise manner, if at all available, they hardly envisage the whole aspects of practical syllabi. Thus, this manual is unique in this respect as it envisage almost all broad headings of the practical syllabi of M.Sc. classes viz. Collection and preservation, Conspectus of insect orders, Identification of insects with the help of keys, Applied entomology, Insect physiology, ecology, toxicology and behavioural exercises, Histological slides, Dissections and Microtomy. A note on field report is also being given, as to how a student should prepare a report of the area visited by him. Originality of the presentation and style is claimed.

A number of references and books have been consulted in depth during the preparation of manuscript. Though it is not possible to enlist them but a few are being listed in the 'References'. I have received the help of different personales in various ways (encouragement, suggestions and blessings) who either have been my colleagues, learned teachers, research personales at different part of the country, friends and students. I greatly acknowledge the help rendered by Prof. N.P. Singh (Jaipur), Prof. Irfan Ahmad (Aligarh), Prof. H.S. Rose (Jalandhar), Prof. B.N. Pandey (Bodhgaya), Prof. S.K.A. Rizvi (Aligarh), Dr. Farida (Jaipur), Mr. Raj Mohan Meena, Mr. Vivek Singh Maharia (Jhunjhunu), Prof. K.K. Sharma (Ajmer), Prof. Girish Sharma, Agriculture Research Station, Durgapura, Jaipur, Late Prof. R.K. Gautam, (Agra), Prof. J.S. Kirti (Patiala), Prof. S.C. Dwivedi (Jaipur), Dr. Rajender Kaushik (Jaipur), Prof. Jaimala Sharma (Jaipur), Dr. Kavita Sahni (Jaipur), Dr. Arti Mathur (Udaipur), Prof. O.P. Agarwal (Gwalior), Dr. Rajesh Sharma (Alwar), Dr. Ashok Purohit (Jodhpur), Dr. V.B. Awasthi (Jodhpur), Dr. N.S. Rathore (ZSI, Jodhpur), Dr. S. Shanmugavel (Tuticorin), Dr. Bharti
Prakash, Dr. Kalpana Sharma (Ajmer), Dr. Neeta Jain (Kota), Dr. Uma Shankar Sharma (Udaipur) My colleagues at Bharatpur have been helpful indirectly in one way or other. I am indebted to my wife Neerja and children Kritika and Mrigank for their endless patience shown during the preparation of this manuscript. I am thankful to Shri Pawan Kumar Sharma and Mr. Tanay Sharma, Scientific Publishers (India), Jodhpur for bringing out this book. Last but not the least, thanks are due to my niece Tanu and my daughter Kritika for drawing some of the figures.

Suggestions of the readers, are invited.

Dr. M.M. Trigunayat
CONTENTS

Preface (3rd Ed.) iii
Preface (1st Ed.) v

1. Insect Collection and Preservation 1
2. Classification of Insects 26
3. Survey of Representative Insect Orders 29
4. Identification of Insects with the help of Taxonomic Keys 105
5. Brief Natural History of some Common Insects 127
6. Applied Entomology 146
7. Exercises Based on Insect Physiology, Ecology, Toxicology and Behaviour 199
8. Insect Anatomy 230
9. Histological Slides 309
10. Microtomy 315
11. Field Report 320
    References and Suggested Readings 322
    Appendix I 325
    Appendix II 333
    Appendix III 336
    Subject Index 354