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MASTERING BIOLOGY

SECOND EDITION

O. F. G. KILGOUR

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MACMILLAN
EDUCATION

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First edition 1982
Reprinted 1982, 1983, 1984, 1986
Second edition 1987

Published by
MACMILLAN EDUCATION LTD
Houndmills, Basingstoke, Hampshire RG21 2XS
and London
Companies and representatives
throughout the world

British Library Cataloguing in Publication Data
Kilgour, O.F.G.

Mastering biology. — 2nd ed. — (Macmillan master series)

1. Biology

I. Title

574 QH307.2

ISBN 978-0-333-44678-2

ISBN 978-1-349-09692-3 (eBook)

DOI 10.1007/978-1-349-09692-3

DEDICATION

To Irene Rachelle and Janet Katharine

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PREFACE TO THE FIRST EDITION

The aim of this book is to emphasise the importance of understanding the *principles* of biology rather than to be a separate study of plant and animal *types*. The approach includes an elementary treatment of the chemistry, physics and mathematics essential to a proper understanding of biological *processes*. For additional exercises in answering questions, the reader is referred to the author's *Multiple Choice Questions in Biology and Human Biology* published by Heinemann Educational Books.

I should like to express my sincere thanks to Meinwen Parry, B.Sc., M.I.Biol., a biology teacher of long experience, for her critical reading of the typescript and many invaluable suggestions to improve the work, and to my son David Kilgour of New Zealand for his help and advice.

I am indebted to Dr Ronald Hope, Director of the Marine Society, for use of reference facilities, and for my correspondence tutoring experience with the Seafarers Education Service, which provided the insight to the specific needs of a student working alone by self-education.

I thank the industrial and international organisations named in the figure, plate or table captions for permission to use photographic and reference material, and also William Heinemann Medical Books Ltd for permission to re-use certain illustrational material that appeared in the author's *An Introduction to The Biological Aspects of Nursing Science*.

Finally, thanks are due to Mrs V. C. Stirling for her faultless work in preparing the typescript.

The illustration of a white blood cell engulfing a bacterium which appears on the front of the dust jacket and cover was photographed with phase contrast by Gene Cox of Trowbridge and the publishers are grateful for permission to use it here.

O. F. G. K.

PREFACE TO THE SECOND EDITION

In this second edition the text is divided into the *four main themes* to conform to the Secondary Examinations Council, National Criteria in Biology. New material is also included to meet the *subject content* requirements of the different Examining Groups General Certificate of Secondary Education – GCSE – syllabuses in Biology.

The reader is strongly advised to use the author's companion titles *Work Out Biology GCSE* and *Multiple Choice Questions in Biology and Human Biology* in order to gain familiarity with the different types of *examination question* they will encounter in the GCSE, apart from the free response and data interpretation questions given in this book.

Practical assessment either school based or by an alternative external examination is an important aspect of biology study covered in this text in *outline practical* procedures and by emphasis on *basic practical* skills in *Work Out Biology GCSE*.

I renew my appreciation to the Marine Society in obtaining all the GCSE syllabuses for the 1988 examination for me, and thank Mary Waltham and Peter Oates of Macmillan Education for their kind assistance and encouragement.

I value the help and interest shown by the New Zealand School Certificate Board and West Australia Secondary Examinations Authority.

Colwyn Bay, Wales – Cymru

O.F.G.K.