

Introduction

This is a completely new book, designed for people who begin advanced level work from success in the Broad Balanced Science of the National Curriculum. The book presents the principles and processes of modern biology succinctly, in the context of their applications for human society. Our aim is to sustain the reader's enthusiasm for the study of biological science in the face of the ever-burgeoning body of knowledge in published syllabuses. How is this achieved?

1 The compact text addresses the essential subject matter of the published syllabuses in thirty-one chapters, arranged in six sections:

- ▷ **One** about environmental biology in its broadest sense, is an ideal entry point to the issues of modern biology.
- ▷ **Two** about cell biology, presents the structure, function and roles of cells in the context of how this information has been discovered.
- ▷ **Three** on the maintenance of organisms, considers how nutrients are obtained, metabolised, transported internally, and finally disposed of by organisms.
- ▷ **Four** about the responding organism, details the efficient mechanisms by which the organism responds appropriately to internal and external change.
- ▷ **Five** on the continuity of life, covers reproductive processes, inheritance mechanisms, and evolution.
- ▷ **Six** about the nature of science, challenges the reader to think about the processes of science itself.

2 The book is beautifully illustrated. The photographs and diagrams are intended to complement the explanation in the text, and are at the heart of the teaching approach. The interplay between illustration and text is an important feature.

3 The presence of questions on almost every double-page spread supports independent learning and private study. Questions check comprehension, or make links to related issues, which are key steps to understanding. Some require the application of principles in new situations, or are about applications, or are data or 'extension' text questions. Answers are indicated at the end of the book. Published examination questions are given at the end of each section.

4 The text is differentiated between core and extension material. Terminology is kept to a minimum. Important everyday applications are highlighted, and extension text boxes discuss additional issues. The text is cross-referenced to convey the interrelated nature of modern biology.

5 The work of many individual scientists is introduced, and the text gives due recognition to the methods used to make discoveries. Evidence is often included where it is appropriate. The nature of 'scientific method' is addressed at the outset, as a key issue for science students to ponder, linked to the long history of science and its multicultural origins. This is also the subject of the final section.

6 Each chapter ends with a guide to further reading. If special interests are developed at points in the course these can be taken further, with the help of a good library. See also the list of

journals which are written at this level (below). These can aid understanding and help specialisation.

7 The contents of each chapter have been discussed with biologists who have special interests and advanced knowledge, so that we reflect new developments appropriately, without loss of our clear approach.

This book is designed to be used in conjunction with a companion volume, *Study Guide*. The chapters of the *Study Guide* (which parallel those of this book) will have the following contents:

Summary a brief résumé of the contents (concepts and their application) in the corresponding 'theory' chapter.

Practical activities a sequence of data-obtaining tasks (consideration is given to the essential laboratory practicals needed to acquire basic science skills) and computer simulations. Statistical methods will be introduced in appropriate situations.

Problem-solving assignments opportunities to process second-hand data, interpret results and discuss scientific issues presented in realistic scenarios.

Projects 'starter' suggestions for longer-term investigations.

Also included will be a **Glossary** applicable to both this book and the *Study Guide*.

■ Taking your studies further

You can keep in touch with developments in modern biology with the help of journals. The following often carry articles that are highly appropriate to your course. Keep an eye on them if you can.

New Scientist a weekly review of developments, with occasional features of special value, for example, the 'Inside Science' series. From newsagents, and in your library.

Scientific American a series of review articles, but less of a journalistic magazine and more of a scientific review journal. The quality of the photographs and colour illustrations is high. From major newsagents, and in main libraries.

Biological Sciences Review a relatively new journal, written directly for students of A level biology, and obtainable from the publishers Philip Allen, Oxford OX5 4SE (discount with bulk purchases or through the purchase of a library copy). Definitely try this one early on!

The publications of the Institute of Biology (20 Queensbury Place, London SW7 2DZ), produced for teachers and students, including the *Journal of Biological Education* and specialist booklets such as *Careers with Biology*, *Tackling Biology Projects* and *Living Biology in the Classroom*. *Biological Nomenclature* sets out an Internationally agreed list of the terms, units and symbols that are used in this book and in the *Study Guide*.

C J Clegg, Bromley, Kent

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May 1994