

Book reviews

- 127 **Spectrum Separate Science: Biology teacher file CD-ROM; Chemistry teacher file CD-ROM; Physics teacher file CD-ROM**, Cooke and Martin
- 128 **Thinking skills through science**, Duncan, McNiven and Savory
- 129 **AQA GCSE science: Higher revision and practice book; Foundation revision and practice book**, ed. Witney
- 129 **Collins Dictionary: Biology**, Hale, Saunders and Margham
- 129 **AQA AS biology specification A: Revision and summary book; AQA A2 biology specification A: Revision and summary book**, Baker and Rowland
- 130 **Focus on the living world: Reptiles**, Parker
- 130 **Pandemic – global health and HIV**, Davies
- 130 **Buzzed – the straight facts about the most used and abused drugs from alcohol to ecstasy**, Kuhn, Swartzwelder and Wilson
- 131 **Essential electronics**, Bishop
- 131 **21st century science: Energy**, Oxlade
- 131 **A student's guide to Earth science: Volume 1: Words and terms; Volume 2: Important people; Volume 3: Developments and discoveries; Volume 4: Debatable issues**, Harper
- 133 *Reviewers*

■ Spectrum Separate Science

Andy Cooke and Jean Martin.
Cambridge: Cambridge University Press, 2004

Spectrum biology teacher file CD-ROM

500 pp. £65.00 (+VAT).
ISBN 0 521 54924 8

The *Biology teacher file CD-ROM* is the main teachers' resource for the Spectrum Biology course. This course is unusual in covering all the biology across the key stage 3 years together, as a separate science, in one class book (reviewed in September's *SSR* **86**(314), 128) and in this CD-ROM.

All the biology units of the QCA scheme of work are covered: Unit 7A Cells: the body's building bricks; Unit 7B Reproduction; Unit 7C Environment and feeding relationships; Unit 7D Variation and classification; Unit 8A Food and digestion; Unit 8B Respiration; Unit 8C Microbes and disease; Unit 8D Ecological relationships; Unit 9A Inheritance and selection; Unit 9B Fitness and health; Unit 9C Plants and photosynthesis; and, finally, Unit 9D Plants for food.

The units are helpfully broken down into several topics. Within the topics, the material is differentiated into 'main', 'support' and 'extension'. Every topic includes: learning out-

comes; resource maps accurately linked to the class book; guidance notes, activities and answers to class book questions.

All the material on the CD-ROM is in pdf format. Although convenient for printing, it makes the worksheets less adaptable. It would be helpful if a paper copy of the contents were included in the package for a quick overview, as is done for the Spectrum Science teacher file (reviewed in March's *SSR* **85**(312), 132) as opposed to the Spectrum Separate Science teacher files. There are plentiful, clear diagrams on the worksheets and the activities seem appropriate and useful, though some of the guide sheets for students to

use in planning practicals could have included a section prompting them to think about safety issues. It is good to see some challenging material for the more able students – the extension material presented here would certainly stretch the brightest year 9 students.

Overall, if the Spectrum Biology course is adopted, then this CD-ROM is worth getting.

Sue Howarth

Spectrum chemistry teacher file CD-ROM

£65.00 (+ VAT).
ISBN 0 521 54925 6

This CD-ROM covers Units 7E–H, 8E–H and 9E–H of the QCA scheme of work, i.e. the chemistry part. This CD-ROM is the teacher file. There is also a class book (reviewed in September's *SSR* 86(314), 128).

The CD-ROM is split into 16 sections. The first is the teacher's introduction, followed by 12 topics that represent the 'bulk'. These are grouped according to age, with titles such as 'Acids and alkalis' and 'Patterns in reactivity'. Each topic starts with guidance material; the familiar 'All pupils, most and some' is present; and then a detailed set of notes describes the activities, giving ideas for class discussion, homework and ICT links. There follows a set of differentiated activities (worksheets, in all but name) headed 'main', 'support' and 'extension'. I found these activities quite interesting, and the differentiation does seem to work. There would be the usual problems of classroom management when using diverse material, but these are not a fault of the course! The activities cover practical work, research and homework. The 'main practical' sheets provide detailed instructions, and usually space is provided on the sheets for students to include their observations. Extensive use of the activity sheets would lend itself to

students using folders, rather than exercise books.

The remainder of the CD-ROM gives answers to classwork questions, and provides a set of summary sheets that generally fill in the gaps and a set of very brief teacher's notes describing 'scientific investigations'. Linked to this CD-ROM are assessment CD-ROMs, one for each year, providing sets of multiple-choice and SAT-style tests. The product under review has no tests built in. There is also a website providing additional support.

This CD-ROM is an excellent resource; it is essential if this course is adopted, and it would be a useful resource for any key stage 3 course.

Jim Hudson

Spectrum physics teacher file CD-ROM

573 pp. £65.00 (+ VAT).
ISBN 0 521 54926 4

This resource is part of the Spectrum key stage 3 science course, which is based on the English QCA scheme of work and consists of pupil texts, technicians' notes and teacher materials. A clever and unique aspect of this course is that it can be accessed as three integrated-science year modules or as the three single sciences.

This CD-ROM contains, in printable pdf format, comprehensive coverage of the QCA physics units logically divided into discrete topics. It comprises differentiated learning outcomes linked to the contents, guidance notes, a good range of activities, answers to class book questions and very useful unit summaries. Unfortunately, the material in this CD-ROM cannot be adapted or edited; it would be more convenient in *Word* format. However, it is good value and would provide support in areas of literacy, and the special requirements of reinforcement and extension. This is an excellent bank of modern, quality

materials for schools to use as a supplement to their existing courses and would be of great help to non-specialist or newly qualified physics teachers.

Caroline Greer

■ **Thinking skills through science**

Sue Duncan, Don McNiven and Chris Savory. 165 pp. plus CD-ROM. Cambridge: Chris Kington Publishing, 2004. £ 35.00. ISBN 1 899857 55 9

This book provides 18 exemplars of lessons that can be incorporated into the QCA scheme of work at key stage 3 to improve pupils' thinking skills. Information processing, reasoning, creative thinking and evaluation skills are all covered by these exemplars.

The book has obvious links with the CASE (Cognitive Acceleration through Science Education) strategy, which it builds on, and it extends the teaching of thinking skills in science. The structure of CASE lessons has been modified to provide three-part lessons. For those unfamiliar with CASE, there is a very readable section on the background and methodology of teaching thinking skills, as well as ideas for bridging and developing your own activities.

The exemplars have all been taught in schools and the feedback from these trials has resulted in detailed teaching plans for each lesson, with guidance on adapting them for different levels of ability. The thinking skills objectives are clearly shown as margin notes. All the pupil worksheets are provided in the book for photocopying and on the CD-ROM as *Word* and *Excel* files and in pdf format.

Although the lessons are aimed at key stage 3, with ten lessons for the year 7 QCA units and four each for years 8 and 9, they could quite easily be adapted to use at key stage 4.

Overall, this is probably the most exciting and useful book on the teaching of thinking skills since CASE began and, with thinking skills now embedded in the National Curriculum, it should be seriously considered for use in all secondary schools. It is a resource that I cannot recommend too highly.

Mike Everett

■ **AQA GCSE science**

Ed. Steve Witney. London: Hodder and Stoughton, 2004.

Higher revision and practice book

184 pp. £5.00. ISBN 0 340 81304 0

Foundation revision and practice book

167 pp. £5.00. ISBN 0 340 81303 2

These books are aimed at the AQA double-award science GCSEs, covering the material for the co-ordinated and modular exams, and are arranged in chapters which match the organisation of the modular course. As well as covering the basic information for the course, there are numerous 'Check your understanding' question boxes and examiner's tips. Each module has an end-of-topic test. At the back of the book are answers to the question boxes and topic tests as well as model answers and a glossary.

Each book is printed in three colours, so the layout is clear. The use of an extra colour has been a useful way of highlighting the sections of the modular specification that are needed for the terminal exam. The text for the revision material is very similar in the two books, but additional higher-level material is marked in the higher book. However, the question boxes, topic tests and example questions are different at the two levels.

My one, minor, reservation about these books is that there are no multiple-choice style practice questions. These would be helpful

for those studying the modular course, because the modular course tests six of these modules by multiple-choice questions only.

Both books are undoubtedly good value for money and would prove useful to pupils studying these courses. They are good materials for independent learning.

Ann Reddecliffe

■ **Collins dictionary: Biology**

W. G. Hale, V. A. Saunders and J. P. Margham. 516 pp. London: Harper-Collins, 2003. £8.99. ISBN 0 00 714709 0

This is an updated edition of the original *Collins dictionary of biology*, which was first published in 1988. It has been thoroughly revised and covers the terms encountered in all aspects of a modern biology course at advanced or undergraduate level. There are helpful line drawings and biological techniques, and statistical tests are also described. Biographical details of important biologists are included. I would recommend it for biology departments and students.

Diana Hudson

■ **AQA AS biology specification A: Revision and summary book**

Margaret Baker and Martin Rowland. 155 pp. London: Hodder Arnold, 2004. £5.99. ISBN 0 340 81357 1

■ **AQA A2 biology specification A: Revision and summary book**

Margaret Baker and Martin Rowland. 150 pp. London: Hodder Arnold, 2004. £5.99. ISBN 0 340 81356 3

These books have been written to be used with the traditional textbooks for the A-level specifications. They

cover the AQA AS and A2 specification A in biology comprehensively, as one would expect from a revision and summary book. Each book achieves its aims in providing a clear and concise summary of the specification and will be useful to many students. Each chapter follows the same format: a summary of what students should know followed by a concise set of facts displayed in a variety of ways (tables, diagrams, bullet points). This is followed by a worked exam question and an exam question for the student to answer. Within each chapter, there are some short-answer questions, and examiners' tips. The examiners' tips give some very useful advice on answering examination questions. The commentary on the worked examination questions is also very good. Answers to all the questions are provided at the back of the book.

By their nature these are books containing large amounts of text, despite the use of diagrams and illustrations. This may be off-putting for some students. However, for many, they will be useful books to use in revision and exam preparation.

Although these are revision and summary books, it would have been useful to have a chapter in the A2 book giving advice about answering synoptic questions/papers, together with a worked exam question, as this is an area which students find very difficult.

On a personal note, I find the use of pale green text in subheadings and in highlighting words in the AS book unusual and not as effective as other colours found in textbooks; the use of red text for subheadings and highlighting words in the A2 book is, however, very effective.

Frances Cox

■ Focus on the living world: Reptiles

S. Parker. 32 pp. London: Franklin Watts. £5.99. ISBN 0 7496 5377 9

Stunning coloured graphics accompanied by photographs interspersed with text give the reader a vivid introduction to the hidden world of the reptiles. The text is made up of short concise sentences with just the right balance of technical detail and literary connections. It is very evident that a lot of careful thinking has gone into the design and layout with the result that a polished book has emerged. Since each chapter comprises only a double-page spread, the importance of diagrams, colour and wording becomes paramount and this is the main attraction of the book's format. In keeping with modern educational practice there are lots of cross-curricular links interspersed with the importance of conserving the animals in their natural environments.

At the rear of the book are a glossary and a simple classification of reptiles, showing examples of the different groups. Judging by the differences in size of the examples shown in each group it looks as though the author is attempting to represent scale, though this is far from obvious. If this is not so, then perhaps in a reprint the individual animals could be drawn larger and with more detail shown. Looking at the language register I would estimate that the book is intended for 12–16 year-olds and at less than £6.00 a copy I think it represents excellent value.

Stephen Hoskins

■ Pandemic – global health and HIV

J. Davies. 28 pp. with a CD-ROM. Somerset: ActionAid, 2004. £25.00. ISBN 1 872502 96 2

This is a super resource about Aids / HIV for all courses. It is ideal for use in biology AS and A2, and health and social care, essential for AS science for public understanding and extremely pertinent for many citizenship courses. It also enables students to cover a wide range of key skills assessments. Do not be fooled by the slim booklet, for a wealth of information is on the accompanying CD-ROM. Produced by ActionAid, it really does do what it says and *'combines scientific learning with an understanding of why and how the epidemic continues to claim young lives across the world'*.

This resource not only covers scientific aspects but also looks at the history of HIV, the underlying causes and the social and economic impacts of this epidemic.

The CD-ROM contains sets of realistic lesson plans and all the resources needed to deliver those lessons, including a video, four PowerPoint presentations, case studies, spreadsheets of statistical data and worksheet activities. Also included are 'readers': these are a set of excellent fact sheets on all aspects of HIV. They have annotated diagrams, graphs and a great deal of up-to-date and in-depth information followed by exam-style questions. Once purchased, all resources on the CD-ROM are free for you to copy or for your students to save onto their network areas.

Chris Worrall

■ Buzzed – the straight facts about the most used and abused drugs from alcohol to ecstasy

C. Kuhn, S. Swartzwelder, W. Wilson. 345 pp. Chichester: W. W. Norton, 2003. £12.95. ISBN 0 393 32493 1

This American book is aimed at students and young adults. Its goal is to provide an unbiased, readable account of the scientific facts relating to the drugs most commonly encountered and abused. Part 1 presents the facts about a variety of drugs ranging from alcohol and caffeine to opiates, sedatives and stimulants. These chapters are presented in a direct and scientific manner, giving details of the drug itself, and of the effects on all parts of the body of both short- and long-term usage. Part 2 covers brain physiology and the basics of drug addiction. The current legal situation in America is also touched on.

I found the book fascinating in places and undoubtedly an excellent source of knowledge. The style is academic and rather hard going and I would imagine that it would be used as a source of reference rather than a book to read through. There are few light touches and no line drawings or cartoons to break up the text. I cannot see it appealing to the vast majority of young people although health professionals and youth workers might find it a useful and reliable source of information.

Diana Hudson

■ **Essential electronics**

Owen Bishop. 185 pp. London: Hodder Murray, 2004. £14.99. ISBN 0 7195 8056 0

This slim volume is intended as a summary for revision purposes. It covers the AS and A2 requirements of the AQA and WJEC boards. In addition there is coverage of the Advanced VCE and BTEC courses in electronics. Each chapter contains clear circuit diagrams of the electronic systems being covered, together with a brief explanation of their function. There are worked examples of possible calculations. The questions are of two varieties: quick questions intended to aid recall of facts, and longer questions to test understanding of the principles. Answers are provided to all the questions.

This book fulfils a particular need for students in the revision phase of their course, and it is suitable for study at home. The only thing that it lacks is past exam questions, but this can easily be remedied by giving students past exam papers together with the book.

Okan Avni

■ **21st century science: Energy**

Chris Oxlade. 44 pp. London: Franklin Watts, 2004. £12.99. ISBN 0 7496 5384 1

To quote from the back cover, '21st century science offers a look at where science is going in our new century, the interface between science and technology, and the repercussions of science on society'. In just 34 pages of text, this grand aim can only get a very superficial introduction.

This book is one of eight titles (*21st century science: Telecoms* was reviewed in June 2004 *SSR* (85(313), 130). It is *not* part of a set of course

books for the new GCSE *21st century science*. Overlooking some lapses in the language used, it would seem to be aimed at key stage 3. There are 17 copiously illustrated two-page spreads, each devoted to a specific topic.

Energy is a notoriously difficult concept to discuss and the author will not please everyone. Energy is defined as the 'ability to do work' and the text seems to opt for the 'forms of energy' approach ('electricity is a form of energy'). Electrical motors apparently turn electrical energy into kinetic energy, a generator is a machine that turns the kinetic energy of the turbines into electrical energy and 'an electrical force called voltage pushes electrons'. Other examples of confusing text are the implications: that the source of tidal energy is the Sun (the major effect is due to the Moon and so can be called lunar energy to distinguish it from solar energy if required); that geothermal energy is not being replenished; that superconductivity only occurs below absolute zero.

The section on fossil-fuel problems is good, and some technologies, etc., that do not usually get a mention do get a look in. I was particularly pleased to read briefly about ocean thermal energy conversion (OTEC), oil-shale resources, hydrogen and fuel cells.

The book's heart is in the right place, so it is a pity that it is let down by poor editing. Each topic covered would have been enhanced if a suitable website URL had been given. At £12.99 for 44 pages (which includes the contents, index and a glossary) it seems very expensive.

Rick Marshall

■ **A student's guide to Earth science**

K. Harper. USA: Greenwood Press. Each volume \$40.00

Volume 1: Words and terms

132 pp. ISBN 0 313 32902 8

Volume 2: Important people

132 pp. ISBN 0 313 32903 6

These two hardback books form the first two volumes of a four-volume set, although they would stand alone. Each volume begins with an introduction to the specific topics. However they both make the point that Earth science is not just a study of the ground but comprises four major Earth sciences: planetary astronomy, geology, meteorology and oceanography.

Volume 1: Words and terms has four sections. The first takes up the majority of the book and contains definitions of the various terms, a guide to pronunciation, a sentence which gives an example of the word in context, often with some more information, and a connection which gives further insight into the technical or historical background of the word. Approximately half the pages contain a black-and-white photograph or diagram. Finally there is a timeline of Earth science, a useful bibliography (including websites) and a cumulative index.

Volume 2: Important people has a major section which is a collection of biographical sketches about people who have made a significant contribution to one or more of the Earth sciences. The first 100 pages contain profiles from Europe and the USA, and these are mostly men. The authors maintain that this is because it is only in the last fifty years that women and minority scientists were able to enter the arena of Earth science and these scientists are profiled in the next 25 pages, followed by a timeline, a glossary, a bibliography and a cumulative index.

Both these books would be worth putting in the school library and would be useful for project work in science looking at the history of Earth science at key stage 3 or 4.

My only criticisms are that the pronunciations are all American, and the books seem a little expensive, especially with no colour photos or diagrams.

Sandra Bagglely

Volume 3: Developments and discoveries

136 pp. ISBN 0 313 32904 4

Volume 4: Debatable issues

136 pp. ISBN 0 313 32905 2

These two books form part of a four-volume hardback series aimed at teaching Earth science to high school students (grades 7 to 12) in the USA. They are text-rich, with black-and-white photos and illustrations, so that the format is rather old fashioned and may well be too dense and dry for many key stage 3 readers. There are some features intended to make the reading more digestible and appealing. The first is a form of phonetic spelling of 'technical' words, so that where the word 'geologist' appears it is followed by (jee-AHL-uh-jist) and 'astro-physicist' by (ass-truh-FIZ-uh-sist). More often than not these seem to be more difficult to read than the original words and are highly irritating to competent readers because they occur frequently but not consistently. Other features are a timeline, glossary and a bibliography with suggested books and websites. However, none of these are comprehensive. The timeline does not correlate with the events outlined in *Developments and discoveries*, and a quick search on Google would produce a far better list of weblinks.

Not surprisingly, the content of the volumes is wider than the generally accepted UK synonym of 'geology'

for Earth science, and so they embrace meteorology, oceanography and astronomy. In *Developments and discoveries* chapters include 'The Earth sciences to 1500', 'Moving toward the scientific revolution (1400–1600)', 'The role of scientific instruments (1600–1800)', 'The role of scientific societies (1600–1700)', 'The beginning of scientific communities (1700–1800)', 'Expanding the limits (1800–1900)', 'The influence of geophysics (1900–1950)' and 'New models of Earth and the Universe (1950 to the present)'. Each chapter has sections dealing with advances in different aspects of Earth science, giving an overview of the development of Earth science as a whole, but it is easy for the reader to lose sight of what is happening as the sections are not consistent. However, reading this volume does give an impression of how our view and understanding of our planet has changed over time. The text and narrative of this book make it one for the library rather than the lab/classroom.

In *Debatable issues*, individual chapters include, 'Should radioactive waste be buried for safe-keeping?', 'Do greenhouse gases cause global warming?', 'Should oil drilling be allowed in sensitive areas?', 'Does enough fossil fuel exist to meet future needs?', 'Should desert cities that lack water be allowed to expand?', 'Should the US manned space program be continued?', 'Should companies or governments try to control the weather?', 'Should people be allowed to build in high-risk areas?' and 'Did an object from space kill the dinosaurs?' For each question, one page of 'Yes' and 'No' debate-style replies is followed by a brief discussion and some supporting information. Each chapter ends with one to three questions to consider. There is an inevitable stateside

emphasis to these debates, although as live issues involving the most powerful nation on the planet they should be of concern to all, and most pupils could identify with the debates. The science is not technical but the key aspects are outlined, although more detailed information would be needed to take the debates beyond pupils' 'gut feelings'. Combined with clips from films like *The day after tomorrow* or other media, this volume could make a useful contribution towards making school science more relevant to the big questions about helping to sustain our planet.

Duncan Hawley

Reviewers

Okan Avni is head of electronics at St Paul's School, London. He teaches physics and technology and is in charge of the cosmology option in A-level physics.

Sandra Baggley is assistant head-teacher, Manchester Hospital Schools and Home Teaching Service. She is also a moderator and examiner for both OCR and AQA.

Frances Cox is head of science at Chelmer Valley High School, an 11–18 comprehensive school in Chelmsford, Essex. She teaches GCSE science and biology at A-level.

Mike Everett is second in science at Honeywood School, Coggeshall, Essex.

Caroline Greer is a physics teacher at the Royal Belfast Academical Institution.

Duncan Hawley is senior lecturer at the Swansea School of Education, and has an active interest in earth science.

Stephen Hoskins teaches biology at King Edward VI School, Southampton, and was formerly head of science in schools in Essex and Lincolnshire.

Sue Howarth is head of biology at the Royal High School, Bath.

Diana Hudson teaches biology at Wycombe Abbey School, Bucks.

Jim Hudson teaches science and chemistry at a comprehensive school in Bristol.

Rick Marshall contributes to the Physics Enhancement Course for prospective physics teachers at Keele University, and helps with the provision of web support for the OCR/IoP Advancing Physics AS/A2 course.

Ann Reddecliffe is head of science at Crown Hills Community College, Leicester.

Chris Worrall is curriculum area leader for maths and science at Tynemouth College and is a senior examiner for environmental science.

Could you be a book reviewer for SSR?

- Are you a practising secondary science teacher or engaged with secondary science education and living in the UK?
- Could you write a helpful, succinct review of a book, and return it within a month via e-mail?

If the answer to these is **yes**, and you think you might like to be a book reviewer, please send an e-mail with 'FAO SSR Book Reviews Editor' in the subject heading, to janehanrott@ase.org.uk.

A brief questionnaire about your contact details, and experience and expertise in science teaching and/or publication, will be e-mailed to you by return. You should be informed of the decision by the end of March 2005.

Reviewers are not paid for reviews, but may keep the books they review.