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Letts GCSE Success series**Letts GCSE OCR Additional Science Higher Success Revision Guide**

Brian Arnold, Hannah Kingston and Emma Poole. 112 pp. £4.50. ISBN 1 84315 684 9

Letts GCSE OCR Science Foundation Success Workbook

Brian Arnold, Emma Poole and Elaine Gill. 103 pp. £4.50. ISBN 1 84315 711 X

Letts GCSE OCR Additional Science Foundation Success Revision Guide

Brian Arnold, Hannah Kingston and Emma Poole. 112 pp. £4.50. ISBN 1 84315 684 9

Letts GCSE Science Foundation Success Revision Guide

Brian Arnold, Hannah Kingston and Emma Poole. 128 pp. £4.50. ISBN 1 84315 646 6

London: Letts Educational, 2006.

These revision guides and workbooks provide students with revision material for the new GCSE courses, with the first three books meeting the requirements for the OCR Science and Additional Science specifications, and a separate book that is suitable for all specifications.

The revision guides are brightly presented and clearly laid out, using a double-page spread format. Each topic is broken down into small sections with plenty of clear diagrams to illustrate the information. Boxes of key terms highlight the technical vocabulary important for each topic. Despite being a revision guide, the coverage of information is quite comprehensive, providing students with a detailed set of notes on each topic. Calculations include clear worked examples, and

helpful exam hints are included as appropriate. However, even in the foundation guide, some of the text is very dense and perhaps too challenging for students of lower ability to access independently. There is also no at-a-glance revision summary/checklist for each topic, which might be expected in a book of this kind, and no section covering *How science works*.

Each double-page spread includes a quick-test section which could be used for homework activities. Practice questions at the end of each unit could also be used for end-of-topic tests or revision practice. Answers to these questions are available in a section at the end of each book.

The comprehensive coverage of information in these revision guides, along with the exercises that accompany each topic, make them a useful and inexpensive classroom resource to support teachers in delivering the new GCSE specifications, as well as being a useful tool for students' self-study and homework activities.

The workbook accompanying the revision guides is also presented in double-page spread format with three sections of questions for each topic. Section A provides a series of multiple-choice questions, Section B some structured questions and Section C a series of questions relating to *How science works*. Mark allocations for each question are clearly indicated. However, answers are not provided making it difficult for students to use this book independently. Despite this, it would provide a useful homework resource.

Katrina Fox

Letts GCSE AQA Science Foundation Success Revision Guide

Brian Arnold, Emma Poole and Elaine Gill. 112 pp. £4.50. ISBN 1 84315 617 7

Letts AQA Science Higher Success Revision Guide

Brian Arnold, Emma Poole and Elaine Gill. 112 pp. £4.50. ISBN 1 84315 670 9

Letts AQA Science Higher Success Workbook

Brian Arnold, Emma Poole and Elaine Gill. 103 pp. £4.50. ISBN 1 84315 676 8

London: Letts Educational, 2006.

These revision guides meet at the dividing line between a short textbook and a long revision guide. They cover their respective specifications, one double-page spread for a given topic. The text within the spread is necessarily 'full', in order to cover the body of knowledge. Coloured illustrations are used; these vary between very basic clip art and detailed photographs. The extensive use of coloured text, highlighting and illustrations should help students access the work. Questions are set during the spreads and at the end of each section.

The complementary workbook is, needless to say, full of questions. Some are structured, but also, thankfully, some are multiple choice.

There is considerable competition in this area of publishing, and schools will select from a variety of criteria. Letts Guides are worth a look.

Jim Hudson

Science uncovered: AQA Additional Applied Science for GCSE Student Book

Keith Hirst (ed). 212 pp. Oxford: Heinemann, 2006. £16.99. ISBN 978 0 435586 03 4

A book that covers perhaps the most original specification of AQA's new science suite. The book does follow the specification very closely and would provide an easy-to-follow course for both students and staff.

Unit 1 covers 'Science in the workplace' (a common item with its Double Award cousin). Unit 2 deals with the externally assessed section; students are able to choose between food science, forensic science and sports science. Finally, Unit 3 looks at 'Using scientific skills'.

The layout of the pages is excellent; there is a good balance between explaining the work and suggesting areas that students themselves need to research. Unlike some texts for the 'old applied science' that gave too much help, with the resultant reduction in marks at moderation, this book appears to steer a safer course. Students should be able to access the higher marks.

I found the text very engaging and very well illustrated. The topics deal with current issues, I would hope that students would also appreciate this.

Unfortunately some elements of the course were not available for review, but on the basis of this single text I will seriously consider adopting it.

Jim Hudson

Edexcel GCSE Science Foundation Homework Book

Chris Conoley, Mary Jones, and David Sang. 118 pp. £5.99. ISBN 978 0 340 91489 2

Edexcel GCSE Science Higher Homework Book

Chris Conoley, Mary Jones, and David Sang. 96 pp. £5.99. ISBN 978 0 340 91490 8

WJEC GCSE Science and GCSE Additional Science

Morton Jenkins, Philip Barratt and George Snape. 336 pp. £19.99. ISBN 978 0 340 88582 6

London: Hodder Murray, 2006.

Whenever a specification changes these types of books are very much awaited and appreciated when they appear, as they give the teachers and educationalists a good idea of the material to be taught to their students

The two texts that support the Edexcel specification have very similar layouts. There are three colour-coded sections for biology, chemistry and physics, and each of the chapters within those sections is entitled with exactly the same titles as those in the Edexcel specification. Each section starts with some summaries, which are basically bullet-pointed sentences of the major facts candidate should have learnt during their course of study of this section.

Both books use word searches, Cloze exercises, tables to be completed, terms to be defined or to be matched with definitions, and examples of practicals students may have seen, which have to be explained or described.

As would be expected, in the foundation text the length of re-

sponse in prose is limited by the majority of responses being short phrases or individual words, which show the student's level of understanding.

The higher homework book has some tasks exactly the same as those in the foundation book, which is not unexpected. In each chapter these are followed by questions which are much more demanding. This includes the level of material covered and the level of response in the length of the prose required to answer the questions. Graphs to be drawn and drawings to be completed and labelled are introduced. A more novel approach is to design clues for already completed cross-words. Very good use is made of the Internet, with candidates being required to research online. This was particularly noticed in the section 'Designer products', where the reader is given information about a new material and then asked to suggest its possible uses. Students are then required to search online to see what uses it has and to give two websites where these uses can be found. Both these books are good value for money and are worth a serious look, irrespective of whether your school is doing the Edexcel specification or not.

The textbook designed to support the WJEC CBAC specification for Science and Additional Science is a much weightier text, as it is a coursework book, not a homework book. The book itself reverts to the familiar style of textbooks and is not in a double-page spread format. It makes very good use of colour throughout, again having colour-coded sections for biology, physics and chemistry. Practical work is highlighted with a light purple background and 'did you know' boxes in brown. Internet references

are highlighted in blue-framed blocks, directing students to find extra information and to search for more about the subject being studied throughout the text. Good use is made of modern photographs, which would appeal to most GCSE students.

Each chapter begins with the section headed 'by the end of this chapter you should', and ends with a summary. Each chapter has questions in the margins throughout the text designed to challenge the reader to understand and comprehend the information they have just read. These questions are often displayed in blue background blocks and are on the same page as the information they relate to. I was particularly taken by a well explained section on mobile phone technology and a short yet very interesting section on green chemistry and water, which if you want to know more about you will have to read the book. There is also a CD-ROM containing interactive presentations, supporting this text, which has to be purchased separately. This textbook could be used to support any of the GCSE specifications.

All three books would be a valuable addition to the resources of any science department, especially as student textbooks.

M. E. Maclannan

The human body

Tony Smith. 240 pp. London: Dorling Kindersley, 2006. £25.00.

ISBN 978 1 4053 1466 4

For anyone with an interest in human anatomy, this is a fascinating book. A beautifully illustrated hardback volume, **The human body** provides a comprehensive guide to the structure, function and disorders of all the major body systems. With stun-

ning colour images throughout, the detailed information is supplemented with clear colour diagrams, micrographs, X-rays and scan images. The book begins by outlining simply the medical technologies used to explore the human body, as well as providing a fold-out overview of the major body systems. Each subsequent chapter then provides a detailed and holistic view of each of the major organ systems, their structure and role within the human body, diseases and malfunctions of the system, and the role of modern medicine.

Each chapter begins with a useful introduction to 'set the scene' and provide a contemporary context which enhances the readability of this book. Whilst the information provided is quite detailed, the style is simple and descriptive with minimal use of technical vocabulary, making this book easily readable and accessible to a wide range of readers. An illustrated glossary at the end of the book clearly defines key scientific terms. Concepts are explained clearly and concisely, with plentiful diagrams and images to enhance and aid understanding. Information is provided in short sections, which make this book easy to dip into rather than a cover-to-cover read.

The visual appeal of this book, along with its comprehensive coverage of human body systems, would make this an ideal reference volume for any school library and would be suitable for use by students at key stages 3, 4 and 5. Its coverage of issues in modern medicine would also make it a useful resource for teachers in planning for the delivery of the new key stage 4 specifications.

Katrina Fox

Science 101: Evolution 101

Randy Moore and Janice Moore. 240 pp. Portsmouth NH, USA: Greenwood, 2006. £27.95.

ISBN 978 0 313 33292 0

Science 101 is a series of relatively short texts aimed at providing readers of all abilities with accessible accounts of the major fields of scientific research. This timely contribution is introduced with a quote from the Nobel Laureate Françoise Jacob, who reminded us as far back as 1973 of the central importance of evolution in biology as a theory which '*... unites all the disciplines concerned with living beings ... [and which] ... provides a causal explanation of the living world and its heterogeneity*'. However, the authors accept that there are still many people for whom these ideas are controversial and unconvincing and set out to provide a reasoned and non-threatening review of evolutionary theory and of the enormous body of evidence behind it.

Over five chapters, the authors review the history of evolutionary thinking (from the early Greek philosophers to Lamarck, Darwin and Wallace, and forwards to '*the modern synthesis*'), evidence for evolution (with a good coverage of fossils, comparative anatomy, embryology, biogeography, etc.), examples of evolution in action today, and how evolution works. There is coverage of microevolution (changes within populations) and macroevolution (responsible for species diversity), and even eugenics and social Darwinism are given enough space to provide background material for discussion. The text is divided into short, bite-size sections, which are clear and easy to follow. The pace is easy-going, with enough examples to make the point but

not too many to lose the story in the detail. In addition, there are five appendices covering not only the traditional extras such as the geological time scale and meiosis, but including an excellent review of the legal decisions involving the teaching of evolution in American schools, a timeline for evolutionary thought and a summary of the characteristics of the living world (the 'products of evolution'). Altogether a most commendable account of a complex but essential area of biology. Inevitably in such a wide-ranging account there are errors. Most are trivial (for example, Robert Grant is credited as Darwin's mentor at Cambridge, a misquotation of Thomas Malthus suggests that it was he who introduced the term 'natural selection', Down House mysteriously moves to the south west of London, learned societies are incorrectly identified, TB and typhoid are listed as viruses – to name but a few!), and they do not necessarily detract from the overall narrative. However, they do raise concerns about the general standard of scholarship that might be accepted by the series editors or publishers. Recommended? Definitely. But students should be advised that specific details may seem to contradict other texts.

Ian Lancaster

Dinosaur atlas

John Malam. 96 pp. plus CD-ROM. London: Dorling Kindersley, 2006. £12.99. ISBN 978 1 4053 1343 8

Anyone interested in dinosaurs will revel in the contents of this book and its accompanying CD-ROM. There is a wealth of information contained within the 96 pages covering examples of organisms known to have existed, or presumed so from fragments of

fossils, across seven continents. The text is very user friendly and the pages are arranged so that each continent occupies a double-page spread showing the geography and the principal animals, drawn to a scale set against a human presumed to be 1.8 m tall. In addition many of the organisms represented are shown as both skeletons and with flesh; some of the organisms have annotated skeleton overlays, for example on page 63, which reveals the size of the skull, the type and arrangement of teeth, the lengths of the bones and, in the example quoted on page 63, the unusual blade-like spines that attached to the backbone and supported the sail, a particular structure of this animal. All the graphics are in colour and of a high quality; organisms show camouflage details where known and background vegetation/habitat appearance is also included.

The beginning part of the book, up to page 25, deals exhaustively with topics such as: how to use the atlas; life on Earth; rise of the reptiles; Triassic world; Jurassic world; Cretaceous world; what is a dinosaur; the fossil record; flying reptiles and those found in the seas. On pages 25–83 the seven continents are studied in detail, after which the authors relate the theories pertaining to the demise of the dinosaurs and the rise of the mammals and birds. On pages 90 and 91 are questions and answers of the type generally posed about dinosaurs and this is followed by information on excavation and the display of fossils and the use of computer modelling to produce virtual reality images.

The book is spiral bound which allows the pages to be viewed completely flat and without parts missing in the folds and represents in my view an excellent re-

source for younger pupils at key stages 3 and 4, while also clearly illustrating to students of AS and A2 biology the extent of nature's early experimentation with size and form that resulted in adaptive radiation on islands (see pages 54 and 55) and the extent of biodiversity that pervades to today. The CD-ROM is interactive and shows six skeleton representative dinosaurs that can be rotated and viewed from different angles as well as having the flesh superimposed. One animal is shown feeding with head and body movements and another running; a soundtrack of the animal's sounds adds to the effects.

A great deal of research, thought and time has gone into this publication and I think at least one copy should find its way into every school and home; it's an excellent publication.

Stephen Hoskins

A dictionary of international units: metric matters: names and symbols (2nd edn)

Philip Bladon. 100 pp. New York: iUniverse, Inc., 2005. £7.49. ISBN 0 595 37115 9 (paperback); ISBN 0 595 81515 4 (eBook)

This is available as a conventional book and as an eBook.

I am perplexed as to why a 'dictionary' of SI units should be thought necessary. Science teachers are usually careful to distinguish 'quantity', 'unit' and 'symbol' as, for example, with *luminous intensity*, measured in candela (cd). So why should the author feel it necessary to set out all the SI units with prefixes from atto to zepto and units from ampere to weber – indeed, from attoampere to zeptoampere – in dictionary style? Of course, Bladon

may be right and students today do need a little more 'drill' rather than 'sailing orders'. Certainly, the author believes in drill when it comes to driving home the three most oft-repeated mistakes: the sin of pluralising units; the error of capitalising unit names; and the sloppiness of presenting prefixes without their units. Those guilty of writing 'ms' (meaning millisecond) for metres, or Newton for newton, are reminded – by repeated boxed instruction on every page – that a rule has been broken. Useful additions (again in dictionary form) are two extensive tables setting out symbols (alphabetically *from* A, ampere, electric current *to* Wb/m, weber per metre, magnetic vector potential) and quantities (alphabetically *from* absorbed dose, gray, Gy *to* volumic mass, kg/m³). As a pedant myself, I am happy to drive home the presentation of derived units properly, for example, angular momentum as kg m²/s or massic heat capacity as kJ/(kg K) but surely not as kg·m²/s and kJ/(kg·K) with bold mid-line point? There is much to recommend this work as a department reference tool but advanced level teachers would be advised to examine this work before buying.

Brian Gee

Encyclopedia of science

448 pp. London: Dorling Kindersley, 2006. £14.99. ISBN 978 14053 1606 4

This book is ideal for presents, prizes, school libraries and any parent who needs to help their child with homework. It is an excellent book to dip into for information on a whole range of scientific subjects, such as how snow is made, what is a light year or the formation of mirages. The

factfinder and glossary at the back could be particularly useful. Finding the answers to your questions here could be faster than using the Internet.

The book is very attractively presented, with lots of full colour pictures. All the topics are covered in single or double-page spreads. These are grouped in themes such as matter, reactions or space. It is good to see that chemistry is extensively covered as well as physics and biology. The text has an introduction for each page and then smaller notes accompanying the illustrations. The reading level of some of these notes is too high for young children, but is aimed at older children and adults. The size of the text is quite small in places: admittedly this does allow more material to be included without the pages looking cluttered.

This is a new, updated version of the encyclopedia and it includes new material. It is good value for money as there is a lot of material for the price.

Ann Reddecliffe

101 things everyone should know about science

Dia L Michels and Nathan Levy. 128 pp. Washington, DC: Science, Naturally!, LLC, 2006. 9.95 \$. ISBN 0 9678020 5 9

Only 101 things? However, it is a good start! This well intentioned and well received book in the States consists of twenty-one pages of questions with 98 pages of full, explanatory answers categorised into: biology, chemistry, physics, earth science, and general science (plus a bonus question/answer in each category). The questions range from the simple to the more subtle and complex and are aimed at an audience with an age range of eight

to 108. 'This book began as a tool for children. It expanded to become a tool for everyone – no matter what their age.'

This book is probably more useful as a resource for teachers with upper primary school and lower secondary school classes in the British context. Put it on the library shelf.

J. Keri Davies

Teaching language, arts, math, and science to students with significant cognitive difficulties

Diane M. Browder and Fred Spooner (eds). 344 pp. Maryland: Brookes Publishing, 2006. £40.00 (approx.). ISBN 978 1 55766 798 4

The aim of this book is to provide educational teams with new guidance to help enrich access to the general curriculum for students with significant cognitive disabilities. The book covers all four key stages. For the purposes of the book significant cognitive disability is used in a very broad way, covering students who have severe or moderate disabilities, and including autism, sensory, physical and cognitive disabilities.

The editors, who are both distinguished professors in the field of special education, have invited contributions from a number of eminent researchers to write about their research into the major content areas. The aim is to provide ideas about adapting lessons for students with disabilities; to create a learning environment through peer tutoring, cooperative learning and co-teaching; to set appropriate expectations for student achievement; and to align instruction with state content standards. Obviously, state standards in America may vary from

the National Curriculum here but the ideas are still valid.

The book provides a considerable foundation of evidence that allows its readers to examine and adjust their views about academic curriculum access for students with severe disabilities and to broaden their grasp of effective teaching procedures. Practical suggestions are made which focus on what to teach and how to teach it. Three of the chapters address science but the literacy and numeracy sections are also appropriate to science teachers. In this era of integration and inclusion in schools the ideas are particularly helpful. It would be a useful book for the staff or science library and very helpful for research projects.

Sandra Bagglely

Why don't penguins' feet freeze?

Mick O'Hare (ed). 236 pp. London: Profile Books, 2006. £7.99. ISBN 9781 8 6197 876 9

This book and its predecessor (*Does anything eat wasps?*) are best-sellers and will already be familiar to many. However, if you have not seen either – buy both. *Why don't penguins' feet freeze?* is only one of 115 questions. The answers are interesting, insightful, and informative – just the kind of data that good teachers will find useful in enriching and enhancing science lessons. The questions and answers have been trawled from the *New Scientist's* Last Word column and cover a wide range of scientific interests and concerns. Although the answers provide independent globules of knowledge – these should fit into the prepared minds of effective teachers and arouse the inter-

ests of pupils/students. Everyone needs to know why snot is green, why the sky is blue, and why kettles sing – and a lot more!

J. Keri Davies

Discarded science: ideas that seemed good at the time...

John Grant. 336 pp. Surrey: Wisley: facts, figures and fun (an imprint of AAPPL), 2006. £9.99. ISBN 978 1 904332 49 7

'Defunct science, pseudoscience, the ideological corruption of science, conspiracy theories, hoaxing, fraud ...' and *'... just plain, straightforward, honest mistakes ...'* are carefully explored with intellectual rigour. The text is wide ranging in its past and contemporary targets, for example: Ptolemaic cosmologies, the humours, phlogiston, perpetual motion, IQ studies, aliens, creationism, intelligent design – and much more. If there are any members of the Flat Earth Society left, they will not find this an acceptable read. Anyone interested in the history, development, and the refinement of scientific ideas, methods, and thinking will be engrossed by this book. Scientific 'truth' as the current acceptable theory becomes a very tenuous claim. Teachers and lecturers could use this text to provide illustrations for students about the many pitfalls and naive accounts that appear about science not only in the past but also in the present, particularly through less-than-accurate reporting in the media and by various groups who have reduced pseudoscience to a fine art (*sic*). Buy it and make it accessible to pupils and students.

J. Keri Davies

Reviewers

Sandra Bagglely is an assistant head, recently retired, but still a moderator and examiner for GCSE sciences and an author for Exploring Science key stage 3 books.

J. Keri Davies is an independent consultant in higher education.

Katrina Fox is key stage 4 co-ordinator in science at Twynham School, an 11–18 comprehensive school in Christchurch, Dorset.

Brian Gee is a scientific editor and formerly a physics teacher and Open University tutor.

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

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

Ian Lancaster has extensive experience as an A-level teacher, examiner and head of department. He currently teaches at an independent school in Cheshire.

Malcolm Maclannan is an A-level biology teacher at Kingsmead School, Enfield.

Ann Reddecliffe teaches science in Leicestershire.

BRITISH PHYSICS OLYMPIAD (BPhO)

<http://www.bpho.org.uk>

The following students will form the 2007 BPhO team to compete in IPhO in Isfahan, Iran during 13 -22 July:

Peter Ford	Royal Grammar School Worcester
Paul Gillard	Aquinas College, Stockport
Tom Hiscock	Bexhill College, Sussex
Alice Webster	Richard Huish College, Somerset
Carter Zhou	Dean Close School, Cheltenham

The five outstanding students in the 2007 AS Competition :

Philip Crump	Uppingham School, Rutland
William Kalderon	St. Paul's School, London
Angela Li	Withington Girls' School, Manchester
Jingwei Li	Shrewsbury School
Chris Rowe	Merchant Taylors' School, Liverpool

The six outstanding students in the 2007 Physics Challenge Competition

Maria Gavriliouk	St. Paul's Girls' School, London
James Ingoldby	Adams Grammar School, Shropshire
Isabella Murray	Oathall Community College, Sussex
Sebastian Rex	The King's School, Canterbury
Nicola Young	Strabane Grammar School, N. Ireland
Benjamin Yadin	Queen Elizabeth's School, Barnet

All the above students attended , together with their teachers, the BPhO Presentation at The Royal Society on 26 April.

A full set of the results for all competitions are available on our web site under *WINNERS*.

Further information concerning all the 2008 competitions can be obtained from our web site.

Other information can be obtained from:

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