

the like, but words such as 'engineer' and 'engineering' appear all too infrequently in the text and not at all in the title of this book about engineering and built things. □

Henry Petroski, author of Engineers of Dreams: Great Bridge Builders and the Spanning of America (Knopf), is in the Department of Civil Engineering, Duke University, Durham, North Carolina 27708-0287, USA.

EARTH SCIENCE

Getting the Earth right

Peter Nisbet

I LIKE books that are simple and not at all like school textbooks. I like science books that give you lots of interesting information. I think quite a few people think differently, but I like old facts mixed up with new, and good diagrams. My eyes are better than my parents' so I also can read small print — if it's fun, that is.

Connections! Earth by Caroline Grimshaw (Two-Can, £7.99) is divided into four sections called "Mysterious Planet", "Changing Planet", "Life on Earth" and "What Future?". This is a good book in the way that it is set out in the form of questions and answers. But many of the facts are wrong, and some of the pictures are inappropriate for the caption.

For instance, one of the questions is "How do climates divide the world?", and there is a map of the globe with each major climate represented by a different colour. In the key, one of the colours is named "Polar" but this colour does not appear on the map. The map shows Siberia and Alaska at winter temperatures of -6°C . (I didn't know that we had so much global warming!) Moving through the book, it says that the Milky Way is part of a galaxy. This is not really right, as it is a galaxy — 'galaxy' means 'milky way'. The book says the inner mantle is molten, which is not true. It also says that the inner core has a temperature of $4,500^{\circ}\text{C}$. Nowadays we think it is a bit hotter, and my mother says that it is around $6,000^{\circ}\text{C}$ in the middle. I don't much like the strange typeface and the way that some text is on coloured patterned paper. The index is especially hard to read because of this. The front page has a nice satellite picture of a city, but it doesn't say that it is Washington DC.

Earth and Space by Susan Mayes and Sophy Tahta (Usborne; £7.99, \$17.95 (hbk); £5.99 (pbk)) is also divided into sections but there are six of them. They are "What's the Earth made of?", "What's under the ground?", "What's under the sea?", "What makes it rain?", "Why is night dark?" and "What's out in space?". Parts of "What makes it rain?" are a bit too

simple, but other parts are really good. As well as having very few errors, this book is five times as long as *Connections! Earth*. Like all my other Usborne books it has good facts and good colour pictures. It is not quite right when it says that there is hot sticky liquid rock in the mantle that churns around and makes the plates move. Otherwise it's super. It is rather strange, though, because its content is really for 10–12-year-olds but the size of the writing is meant for younger people. But I think that younger children would enjoy it too. Did you know that Antarctic cod has special chemicals in its blood to stop it freezing? Or that the longest tunnel is almost 169 km long and carries water to New York City?

If I had to choose between these two books for myself or the school library I would choose *Earth and Space*.

Peter Nisbet (aged 10) is at St Jude's Church of England School, Englefield Green, Surrey, UK.

QUANTUM PHYSICS

Curiouser and curiouser

Alfred Mallet and Edward A. Knapp

ALFRED: Russell Stannard's **Uncle Albert and the Quantum Quest** (Faber, £3.99) is about a girl called Gedanken and some of her adventures with her eccentric Uncle Albert. She goes to visit him a lot and he can make a thought bubble, and if he thinks very hard, she goes into the bubble. Children will enjoy the book because the story is fun and exciting, but it is too complicated and densely packed with some of the most interesting physics. The White Rabbit and nuclear raspberries make it fun, but Gedanken's confusion leaves the reader confused.

ED: Although Uncle Albert seems to be correct in the description of quantum theory, to a young reader this just has to be extremely perplexing and very *ad hoc*. After all, quantum theory did emerge from a set of puzzling experimental results that could not be described by the classical physics of the day. The particle-wave duality is described in the book in terms of diffraction — a phenomenon with which no youngster could have had experience. [**ALFRED:** How does diffraction happen anyway?] The book is an enjoyable read for a physicist, but we doubt whether any child will emerge with more real understanding of quantum theory than when they began the quest. □

Alfred Mallet (aged 8) is at The Oratory RC Primary School, Chelsea, London, UK; Edward A. Knapp is Alfred's grandfather and is president of the Santa Fe Institute, Santa Fe, New Mexico 87501, USA.

GEOGRAPHY

Global expeditions

Anne Surridge



3D Atlas: A Multi-Media Expedition to Understanding Planet Earth (Creative Wonders; \$49.95, £55) can show lots of different globes, such as an environmental globe, a physical globe and a political globe. You can turn these to see the world from different angles and you can zoom in to look at different countries — England can be made to fill the whole screen. It has 3D flight simulations over places like the Rockies and short narrated stories about things like global warming and volcanoes. There are other globes that show the world at night and the Earth's crust. It also has a game called "Around the World", with lots of challenging questions.

The best features are the colourful graphics. There are good movie clips with the stories and in the 3D flights you really believe you are flying in an aeroplane. The sound and narration are also very good. There is lots of information about the countries: the atlas not only shows you where in the world things like countries, cities and rivers are but it gives you facts and pictures as well. I found the stories useful for finding out about the ozone layer and the sea level too. The atlas has already helped me with a school project — there is so much in it that you learn more and more every time you use it.

I did not find many problems with the **3D Atlas**. It was very slow on my machine (486 DX2 with a 66 Mhz clock) and it can sometimes be confusing as there are so many things it can do. It sometimes doesn't do what you want it to. For instance, you have to be careful when rotating the globes or you can turn too far, although this might be easier to avoid with a faster computer. The title list is also a bit erratic. Some of the features are a bit disappointing, such as the world at night which I expected to look prettier.

The **3D Atlas** is easy to use. Everything is normally straightforward and quite simple. If you really get stuck you can go to the help section, which gives good advice. The game always makes it clear what you have to do — I did not need to use the instruction book at all.

I liked the **3D Atlas** a lot. I think anyone would find it interesting and fun, and it will improve their geography too. I learnt many things and it is definitely useful for homework. It has a few problems, but I think it is really good and exciting. You probably need a fairly fast computer for it to work well, so if you have a computer like mine you need to be patient.

Anne Surridge (aged 11) is at Sedgehill School, Catford, London, UK.

