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Why does a Ball Bounce? by Adam Hart-Davis, Ebury Press Random House, London, 2005, pp. 224. Scope: popular survey. Level: general reader.

How can one make science interesting for non-scientists and, even more important, for young potential scientists? At a time of disappointing science enrolments in universities, when science often seems to be misunderstood and generally under-appreciated by journalists and opinion-formers in the press and other mass media, and when much of the physics teaching in our schools is having to be carried out by non-physicists, the question is of crucial importance.

One answer is to try to "wow" the audience by descriptions of the counter-intuitive effects and strange phenomena observed in, and predicted by, modern physics – quantum entanglement, black holes, wormholes in space-time, cosmic strings, and so on. A well-known popular science magazine that formerly provided clearly-written factual articles explaining how things work, is now largely given over to material of this kind. The difficulty of this approach – apart from the often speculative character of the subject matter and the tedium involved in the endless repetition of the same themes in slightly different guises – is that these topics are totally unreal to most of the readers. There is no way they can set them in context, and they lack the basic scientific background to have any intuitive gut-feeling for the significance of what is being presented. They might as well be reading fairy stories, or fantasy novels, because of the utter remoteness of the material from everyday experience. It may provide a form of light entertainment, but it is unlikely to inspire future scientists. Nor does it give the general public much idea of what science is about or of what scientists actually do.

Adam Hart-Davis adopts a totally different approach. He has produced a popular science book that concentrates on observable phenomena, many of which will be familiar to readers from within their own experience. It takes the form of 101 questions and answers, divided into sections covering air, earth, water, fire (i.e. the ancient "elements") as well as light, ice and rain, mathematics, technology, plants, animals and health. Many of the questions are ones that an inquisitive child might ask, for example: What is the greenhouse effect? How old is the Earth? How are rocks made? How do water drops bounce? Why is a shower warmer in the middle? Why does a match catch fire? What are firework sparks? Why is the sky blue? How do TV programmes travel down a cable?

Why does ice cool your drink? Why do some icicles have bubbles in the middle? Why don't knots come undone? How do radar guns work? How do nettles sting? What's the oldest thing alive? Could dinosaurs swim? How do diseases spread? What happens in a cardiac arrest? And many, many others. The answer to each question is given across two pages: one page of text and one with an interesting image or picture in full colour. The words are carefully chosen, easy to read and understand, devoid of jargon, and provide a huge amount of information. Sometimes they diverge interestingly away from a strict answer to the question asked. Additional asides, placed in "Did you know?" boxes, are often intriguing.

The book is attractively produced in hardback with high quality paper and graphics. Despite the huge scope of the work, the bits I know something about are accurate and well-described – and I note from the Acknowledgements that the author had taken the care to have parts of the text checked by an assortment of distinguished experts. There is an excellent index. *Why Does a Ball Bounce* will make an ideal present for a bright child, with much material to inform as well as to stimulate the scientific imagination. Adult non-scientists will find it equally entertaining and there is not the slightest trace of condescension in the exposition. Above all, the book is fun to read. I suspect it may in practice do as much to help draw schoolchildren into science as any number of worthy government initiatives.

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