

immediately preceding verse explains. Equating St Paul's vision of things to come with contemporary geneticists' ideas about the continuity and change of flesh and blood across generations is clever but meretricious.

I assume the author to be both expert in and accurate about genes, yet this final *jeu d'esprit* is also biologically absurd. Things — and especially living things — do not endure forever. Even the hardest and most ingenious genes can scarcely outlast the Earth, and astronomers now agree that our Earth and Sun have a limited lifespan. I was also bothered by other instances of exaggeration. For example: "The Mormons' Ancestral File proves that by going back far enough all family trees sooner or later coalesce, meeting in an individual who links them". This cannot be true. What about New Guinea tribesmen who have been isolated from Mormon ancestors for at least 40,000 years? Assuredly, genetic resemblances attest to common ancestors for them and

all the rest of us: but the Mormon files do not prove it. All they can possibly show is that across the past two or three millennia, geographical contacts among human populations resulted in intermarriage (or at least interbreeding), thereby connecting previously distinct lineages. But even today among a few isolated populations, genetic links with the rest of humankind are so ancient as to escape all written record.

But such slips — and a few historical errors as well — do not really matter. What does matter is the rich array of historical and religious oddments that Jones has gathered together to illustrate aspects of genetics as currently understood. The combination makes for a surprising, instructive, confusing and occasionally irritating book. □

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progression of chords in the French horns as the cold comes, ice forms, thickens and begins to flow... sometimes this melody is fierce and improvisatory, as the ice cracks and creaks...". The irritation comes not from these musical asides, but from the relentless, pointless, mystifying jokiness of the book, inadequately represented by this tiny sample: "Based on age dating, the ages of most diamonds are either 3.3 billion years old (before life), 1,150 million years old (before the Volvo) or 950 million years old (before CD players)". In his acknowledgements, Morton candidly states that his editor had put "great slashing blue lines through most of what she referred to as my cornball humor". Given what survives, one can only boggle at the scale of what was omitted.

Most readers welcome touches of humor in technical texts. Apart from lightening conceptually demanding passages, they also permit the author's personality to shine through. Morton's mistake is of allowing his personality to obtrude. If he had spent less effort trying to be funny, and a little extra on weeding out the profusion of factual errors, his book would have been more useful. As it stands, it ought to carry a health warning for readers with hypertension.

Little of MacDougall's personality shows through in his *Short History of Planet Earth*, billed on the cover as "the ideal concise introduction to earth and life sciences". In his ambitious account, MacDougall attempts to review both the evolution of the solid Earth and the life forms on it. Apart from a sprinkling of jarring clichés — "these structures are mute testament to the tremendous compressive forces that occur when plates collide" — his account is instructive and readable. By adopting a narrative form, he presumably intends his book to be read by nonspecialists. Although individual paragraphs and pages are perfectly digestible, many lay readers may lack the stamina to get to the end, given the inevitably large volume of factual detail involved. To be successful, a narrative account needs to offer changing tempos and varying vistas. MacDougall's steadily paced, slightly plodding account can be rather soporific. Readers with a geological background may enjoy it, in the same way that one enjoys hearing a favourite Mozart opera for the umpteenth time.

So what is the secret to producing a successful introductory Earth science text? Lyell had it right: complete authority over the subject (he more or less invented it) and a simple incisive writing style. Both Morton and MacDougall would do well to go back and seek that end of the spectrum. □

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## A discordant duo

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**Music of the Earth: Volcanoes, Earthquakes, and Other Geological Wonders.** By Ron L. Morton. *Plenum: 1996. Pp. 312. \$28.95.*

**A Short History of Planet Earth: Mountains, Mammals, Fire and Ice.** By J. D. MacDougall. *Wiley: 1996. Pp. 266. \$24.95, £19.99.*

I HAVE found the end of the rainbow — or at least one end of a spectrum. According to fairy tales, I should have found a crock of gold there. What I actually found was a lot less appealing; more like a pile of irritating small-denomination foreign coins. The spectrum whose vexatious end I located was that of introductory Earth science texts, which span a vast range of scholarship and literacy. Ever since Lyell's classic three-volume *Principles of Geology*, which was first published between 1830 and 1833 and went through numerous subsequent editions, there has been a steady demand for elementary texts. More appear every year. Their basic ingredients are fairly standard: the origin and internal structure of the Earth, rocks and minerals, the geological timescale, chapters about plate tectonics, volcanoes and earthquakes, the origin and evolution of life, dinosaurs, mass extinctions and so on. There are rainbow-coloured shelves full of such books, mostly designed for first-year US college students.

Any author wishing to break in to this potentially lucrative field must have something special to offer. One way is to produce a yet more glossy and lavishly

illustrated text than any of its predecessors. Another is to offer a personal or idiosyncratic view of the subject. Neither of the books reviewed here has favoured the glossy route — in fact both are so sparsely illustrated as to be rather drab. MacDougall's book has a few line diagrams, and no photographs at all. Both authors seem to have elected to try the individual approach, MacDougall through a synoptic account of Earth history, Morton through a far more eccentric survey of "Volcanoes, Earthquakes, and Other Geological Wonders".

It is clear even from the dustjacket of Morton's book why it lies at the vexatious end of the spectrum. The blurb claims that: "In a stunning blend of poetry, music and science this lyrical new work evokes the wonders of our living earth. As Pythagoras marvelled over the 'music of the spheres' geologist and writer Ron Morton gives us a whole new appreciation of the awe-inspiring forces that make and shape our planet". What Morton actually gives is a clear demonstration of the dangers of going over the top. Nothing fails like excess, to coin a jokey aphorism of the sort that Morton might appreciate.

Although more than a little strained, the attempt to portray geological processes in musical terms is innocuous enough. It amounts to little more than a 'prelude' to each chapter, in which Morton uses musical metaphors to recreate the appropriate atmosphere. In places these are actually quite evocative, as in the prelude to "Winter's Breath", a chapter on the Ice Age: "Hear the slow harmonic