

... in the scientific sphere ... resignation ... is ... rooted in faith, especially as it pertains to Second Law inviolability. It has been a goal of his volume to shake this faith in the hope of attaining something more illuminating.

This volume, appropriately entitled *Challenges*, was a collaboration between Sheehan and the recently deceased Čápek. Written in an engaging and conversational style, it is extraordinarily well researched and beautifully organized; it may be approached on many levels by students and "lay" people, who will enjoy the clear explanations, discussions and disputes. It should also be read by experienced theoretical physicists, chemists and mathematicians and by experimental physicists, all of whom will appreciate a complete and descriptive bibliography.

The various typefaces, paper stock and binding are all good. With its many illustrations and few equations this book will be a useful supplement to any elementary course in thermodynamics where it would be the basis for many class discussions. But will it ever have a sequel entitled *The Second Law Vanquished*? Only time will tell.

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Tectonic Globaloney by N. Christian Smoot. Philadelphia: Xlibris Corp, 2004. 180 pp. \$20.99 (paper). ISBN 1-4134-3728-1.

Since the late 1960s, plate tectonics has been hailed as a highly successful revolution in the Earth sciences having led to a full-scale review of the fundamental structures and evolutionary aspects of the globe. Contrary to its alleged success, many critical observations have turned out to be markedly at variance with the expectations of that model, and fundamental tenets have been allowed indefinite mutability. As the situation now stands, with a steadily growing need to invoke new parameters as well as *ad hoc* elaborations of its basic principles, the celebrated "new global tectonics" has ended up in a pitiable state continuously straining our credulity.

During a one-year stay at the Department of Physics, University of Newcastle-upon-Tyne, in the early 1960s—the Mecca of modern geophysics at that time—I was easily turned into a staunch believer in Wegenerian-type continental drift. It was a truly fascinating time. However, for many years I was

pretty ignorant about the plethora of serious complications associated with the new model of the Earth. What first had made me so easily jump on the drift/plate-tectonics bandwagon was that many other scientists, and notably some who were regarded as of high standing, had done so. It was like being carried away on a wave of sentiment, and, because the drifters were a rapidly growing crowd, there was the inevitable feeling of security. However, from the turn of the 1960s I gradually came to realize that my initial admiration of the modern views in global geophysics had basically been of the non-intellectual type—I had become the victim of a trendy contraption. Besides all the important social factors at play, I had, as a palaeomagnetist, been satisfied with the fact that the disparity of palaeomagnetically based polar wander paths seemed to be accounted for by relative lateral motions of the continents; alternatives to the Wegenerian mobilistic scheme were not considered. The fact that Wegener's continental drift provided a series of fitting problems, and numerous other complications, was casually discussed but largely ignored.

During the last three decades it has become overwhelmingly transparent that the Earth sciences are in need of a surer foundation on which to build. On the current bewildering state-of-the-art in global geology and geophysics, I had many discussions with the late Keith Runcorn, the man who, for many years, was the *primus motor* in the process leading to the seemingly universal acceptance of continental drift and plate tectonics. At his older age, Keith told me repeatedly that he thought the geologists had made a complete mess of global tectonics, and it was no secret in Britain and elsewhere that he had acquired disdain for plate tectonics. Clearly, for both of us, there existed some sort of relative continental motion, to account for the intercontinental disparity of palaeomagnetic polar wander paths, but the palaeomagnetic evidence had to be associated with dynamic principles other than those invoked by plate tectonics. In a memorial volume for Runcorn, I wrote a short note about my scientific discussions with him, making public his last two fax messages, written shortly before his death in late fall 1995. My exposition of Keith's "kicks" to the orthodox crowd triggered a couple of aggressive reactions from fellow scientists; I had apparently stepped on some sore feet and hurt some feelings.

Tectonic Globaloney certainly steps on many more sore feet, but books and booklets of this kind seem absolutely necessary in the awakening process now needed in the Earth sciences. The author, N. Christian Smoot, having had a long career as a marine geomorphologist, basically presents structural data from the floor of the Pacific and Atlantic oceans, obtained by the most modern techniques, demonstrating how the mass of hard evidence contradicts plate tectonic infected interpretations. His focus is on many prominent submarine features that the plate tectonics community has never satisfactorily explained, or even bothered to discuss. Today, Smoot belongs to a growing group of dissenters dismissing the current state-of-the-art in global tectonics. He submits that the mess of *ad hoc* interpretations and logical contradictions in the current plate philosophy demonstrates that this model is just a castle in the air—nothing more. Kinematical

paradoxes are important to expose, because they serve to destabilize the current dogma, and hence open the pathway to rethinking and new theorizing.

The book is apparently pitched at the enlightened layperson's level, but the arguments are rather technical at times and some of the diagrams are difficult to peruse, due to their reduced scale, even for the well-informed reader. In fact, I for one would have had problems with several of the illustrations, unless I already had read the articles in which the diagrams originally appeared (in larger format). On the other hand, the book is full of entertaining stories from Smoot's life in marine research, helping to convey the message that science is not always that strong intellectual enterprise we want it to be. Throughout, the text is exceedingly critical of plate tectonics—due to its progressive decay into a mixture of special pleading and idiosyncratic complexity. In rather disrespectful ways, Smoot exposes the "plate mafia's" long-time play to the gallery, how "we have been cheated of our tax dollars big-time", and how "the ODP [Ocean Drilling Program] is peddling snake oil ...". For sure, in his outright rejection of the entrenched geoscientific paradigm, Smoot uses an entertaining language, rarely seen in science, and perhaps for that reason alone the book is worth owning.

After having categorically denounced one of the ruling scientific dogmas, what is then N. Christian Smoot's alternative theoretical platform? Umbrella theories have traditionally been the weak spots of all sciences; hence, discussions of such questions rarely go beyond the superficial level. Smoot says that since 1994 he has adhered to Surge Tectonics, a hypothesis developed by the late Arthur Meyerhoff. However, this hydro-dynamically related model, including along-axis magma flow on mid-ocean ridges—which is difficult to accept, however, due to the generally surprisingly low heat flow and minimal volcanic activity along these ridges—is really restricted to explaining only a limited range of geological phenomena. And even more important: *Surge Tectonics does not account for Earth history.*

The important phenomenon of polar wander, defined both by palaeoclimate and palaeomagnetic evidence, has apparently no place in the surge tectonic hypothesis. Furthermore, continental drift is ignored altogether, although both palaeomagnetic and space geodetic data demonstrate that there clearly exists some kind of relative intercontinental motions. *It is only plate tectonics, and its associated global motion system, that are at variance with the field data.* In fact, matching of palaeomagnetic polar wander curves for the larger continents only requires limited amounts of relative *in situ* rotation of the landmasses. These motions are most likely triggered by Earth's varying moments of inertia, specified by the planet's changing spin rate as well as its jerky spatial reorientation—key elements in a new theory of the Earth: Global Wrench Tectonics (Storetvedt, 2003). The new global framework readily accounts for Smoot's submarine features.

The initial proposal relating tectonic belt formation to planetary spin was by the Austrian geologist Damian Kreichgauer (Kreichgauer, 1902), suggesting that ancient tectonic belts have developed in two palaeogeographic settings, along

and perpendicular to palaeoequatorial girdles, respectively. In his figure 1, Smoot depicts a section of the equatorial belt on Venus, along with a perpendicular structural branch, and argues that these must be the product of surge tectonic processes. Hidden in such assertions are the bitter pills in all the natural sciences that, in general, *interpretation of data is theory-laden*. This means that a limited (and specific) set of observations normally have a variety of meanings, limited only by our imagination. Unless we have a wide range of diverse observations that readily fall in place within our preferred geophysical frame, defining a lengthy prediction-confirmation chain, we cannot be sure of our interpretations. Such important scientific abstractions represent glaring omissions in the book. However, this criticism does not detract from the essential message of the author: "the scandal that earth science research has become." He asks how such a travesty could happen, and he gives at least part of the answer: "... the problem is that fund managers and the big names in earth science—[those in control of] research and editorial boards of earth science journals—happen to be the same. That's right; they police themselves. Who is there to act as a watchdog? You may rightly ask. Nobody. Among the earth science community those who raise questions become pariah. So, the scandal goes on."

This is a very thought provoking book. I greatly value my copy.

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Witness to AIDS by Edwin Cameron (with contributions by Nathan Geffen). London and New York: I. B. Tauris, 2005. 240 pp. \$21.95 (UK £12.99, Australia \$35) (paper). ISBN 1-84-51111-92.

Edwin Cameron is a widely respected South African judge and human-rights activist both against apartheid and for gay rights. Since 1986 he had been open about being gay, but not about being HIV-positive. A dozen years later, soon after he was diagnosed with AIDS, he made that public. This book is both his story and an activist tract. It illustrates much about the havoc that HIV and AIDS have wreaked, the difficulty of disentangling fact from myth and from what remains unknown, and the dogmatic passions that obscure the substantive issues.

The book is written in purple prose, festooned with adjectives that paint actions and actors in black or white; black equals both untruth and evil, white equals truth and virtue. Thabo Mbeki, for example, was entirely admirable—