

## Geology, but not on a plate

Peter J. Smith

### In Suspect Terrain.

By John McPhee.

Farrar, Straus & Giroux: 1983. Pp.209.  
\$12.95.

JOHN McPhee is a staff writer for *The New Yorker* who specializes in writing book-length articles that describe and interpret to the world in general the activities of particular individuals and groups within it. In 1980, for his fifteenth investigation, he turned his attention to geologists, particularly those concerned with the Basin and Range province of the United States, to see how the earth sciences in their post-revolutionary phase differ from the traditional sort of geology that he himself had been taught in an introductory course several decades ago. The result, *Basin and Range* — first published by Farrar, Straus & Giroux, and earlier this year in Britain by Faber — was so successful that it led to McPhee's being feted by the North American earth-science community, though perhaps more for his uncritical, awe-struck reverence than for his ability to capture the spirit of modern geology on the page.

For what the flattered earth scientists had failed to notice was that by concentrating largely on field geology, rather than portraying today's subject as a complex interaction of fieldwork, laboratory experiment and theoretical insight, McPhee was guilty of severely understating the most important of the cross-revolutionary differences he purported to be seeking. The view of geology and geologists he offered to the outside world was thus hardly undistorted. Moreover, for British tastes, his excesses of style were hard to take, not least his tendency to generate excitement artificially by gee-whiz prose with an abundance of one-word sentences and decidedly purple passages ("salt-and-peppery charcoal-tweed savings-bank rock"). Nevertheless, the book had undoubted strengths. McPhee's set pieces on the Huttonian and (more briefly) the plate tectonic revolutions, vivid expositions aided by a nice line in extended metaphor, were beautifully executed examples of precisely what one looks for from an external interpreter with literary aspirations.

With *In Suspect Terrain*, his second foray into the geological world, McPhee has now confounded my worst fears by producing a far superior work of remarkable power. The tendency to overblow is here much muted and the sober strengths of the previous volume are given greater play. Largely gone, too, is McPhee's irritating habit of using geological words and concepts without explanation, thereby

creating an impression of the author as an insider playing a game of one-upmanship with his non-geologist readers. The emphasis on field geology is still there, but now it has decided point — to extol the virtues of knowledge gained in the field as a counterbalance to the worst excesses of the gospel-thumping plate movers. Indeed, the geologist McPhee chose to guide him in the field, Anita Harris of the US Geological Survey, knows only too well the danger of being mesmerized by the plate people. In 1972 the pressures of the consensus led her and her colleagues to misinterpret the conodont palaeontology of an area of Pennsylvania so seriously that they came to see plate interactions where the evidence hardly warranted it — an episode that later led to painful withdrawal symptoms.

What Harris thought she had found in Pennsylvania was an exotic block, a piece of crust alien to its surroundings, a suspect terrain. Not that all suspect terrains are quite so suspect. The glacially-emplaced exotic materials with which McPhee begins and ends his spiritual journey are hardly likely to require major reinterpretation within any conceivable future. But at the

opposite extreme, the current passion for fragment tectonics and geosuturing, against which Harris so passionately inveighs in the context of the Appalachians, is altogether more insecure. At the heart of McPhee's exposition, therefore, is an extended evocation of the complex geology of the Appalachians — not a geological textbook or guidebook, but a brilliant impressionistic picture of Appalachian geology as seen on the ground acting as counterpoint to Appalachian geology perceived by the office-based global tectonicist.

"Plate tectonics is . . . a cop-out. It's what you do when you don't want to think", McPhee quotes Harris as saying. In highlighting this growing gulf between field and office geologists, McPhee is perhaps imparting to the general reader more of the spirit of modern earth sciences than some practitioners would wish. Be that as it may, he has produced by art a minor masterpiece of scientific communication. □

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## Art of indoctrination

Glynn Isaac

### The Creative Explosion: An Inquiry into the Origins of Art and Religion.

By John E. Pfeiffer.

Harper & Row: 1982. Pp.270. \$28.80, £18.50.

IN MODERN human beings the brain is the organ of culture. The intricacies of technology, communication and social interdependence would be impossible without the enlarged, elaborated brain of *Homo sapiens*; conversely having such a slowly grown, metabolically expensive organ would make no evolutionary sense in the absence of the complex programmes of rules and information, which make the human way of life possible. These programmes (including language) must be learned by each individual as he or she grows up. They comprise what anthropologists call culture.

Archaeology and hominid fossil skulls together provide evidence that, for the past two or three million years, the brain and culture developed as a joint system in a way that is partly analogous to the development of computer hardware and software over the past three decades. Looking at this long record as a whole, one can perhaps usefully pick out three, or maybe four, particularly significant transitions. First, two million years ago or earlier, tool-making, meat-eating and maybe some aspects of a basic human-like socio-economic pattern became evident; then for a very long time the record implies only very slow change: consolidation and some elaboration of these elements, but no fundamental shifts

(unless the acquisition of control over fire is to be so classed). The second transition occurred inside the past 100,000 years and seems to involve the emergence both of anatomically "modern" human beings and of levels of social-cultural complexity such as are familiar in history and ethnography. In as far as people know about this transition at all, it is associated with the passing of the Neanderthals and the Cro Magnon forms with their Upper Palaeolithic culture. The third and fourth transitions follow hard on the heels of the second; they involve food production (farming) and the development of expanded, intensified networks of organized interdependence that we call "civilization". In a sense the third and fourth developments can be seen simply as consequences of the surge of change and diversification that followed upon the second transition.

That second transition is the least well understood, and until recently was not even subject to clear-minded attempts to formulate questions. It is in this context that John Pfeiffer's book makes its contribution.

One of the most intriguing manifestations of the Upper Pleistocene transition is the first appearance of Palaeolithic art in

### Solid state physics

In 1981 Addison-Wesley published a single-volume *Encyclopedia of Physics*, reviewed in *Nature* 290, 657 (1981). An offshoot of the parent volume which has just been published is the *Concise Encyclopedia of Solid State Physics*, also edited by Rita G. Lerner and George L. Trigg. The new book aims "to provide . . . a convenient and readily accessible set of resource materials" on the subject, and is available in hardback and paperback. Prices are £29.60, \$39.50, and £17.20, \$22.95 respectively.