

a religion able to reveal the ultimate truth". However, I disagree with your headline that "there is no ultimate truth in grand unification". There is some of the ultimate truth, though certainly not all.

John Ellis

Theoretical Physics Division, European Laboratory for Particle Physics, CERN, CH-1211 Geneva 23, Switzerland

ECT damage is easy to find if you look for it

Sir— The reviewer of Max Fink's *Electroshock: Restoring the Mind*¹ claims that electroconvulsive therapy (ECT) "has proved to be one of the safest procedures in medicine" and that there is a "myth, largely promoted by anti-psychiatrists, that ECT damages ... brain functioning".

One can be sympathetic to psychiatry (as I am) and still imagine that passing 150 V between the temples to evoke a grand mal seizure might cause brain damage, especially when you realize that this 'cure' for depression requires this procedure to be repeated 10–20 times over a week or so. And when you talk to a friend who has been so treated and discover that a year later she is still experiencing huge gaps in recall of major life events, you begin to worry. Finally you discover that ECT's benefit is only temporary, so that many psychiatrists administer it chronically. Hmm.

Turn to the design of ECT protocols and you discover that many practitioners now administer ECT only unilaterally to the 'non-dominant' — non-verbal — hemisphere. Why? To avoid damaging the verbal hemisphere. In short, although ECT is completely safe, it is even safer when applied to the non-verbal hemisphere. Of course, equal damage is done to the non-verbal hemisphere, but it tells no tales.

ECT is used as an experimental tool by neuroscientists, as it releases massive quantities of glutamate, whose release following stroke causes significant neuronal death. Indeed, observers describe people who have had many ECT treatments as "punch drunk" — resembling boxers who have sustained chronic brain damage.

One reason psychiatrists are unaware that ECT is causing memory loss is that they do not test for it. Memory loss could be monitored by questioning patients before ECT about early events in their lives and then re-questioning them following each series of ECT. When this was done 50 years ago², memory losses were marked and prolonged. However, no effort has been made since to routinely perform this simple test.

It is a good bet that history will view ECT as one of what neuroscientist and author Elliot S. Valenstein calls the "great

and desperate cures" — and its promoters as kin to the promoters of lobotomy.

Peter Sterling

Department of Neuroscience, University of Pennsylvania, Philadelphia, Pennsylvania 19104-6058, USA

1. *Nature* **401**, 327 (1999).

2. Janis, I. *J. Nerv. Mental Disease* **111**, 383–397 (1950).

Full effects of oil rigs on corals are not yet known

Sir— Bell and Smith in their Brief Communication¹ said that the azooxanthellate scleractinian *Lophelia pertusa* (*L.*) had been found on oil platforms in the North Sea. They also state that corals such as those on Brent Spar and those near the Beryl Alpha platform² "have been exposed to agreed quality standards of operational discharges, such as oily water, drilling muds and chemicals, and contaminants that may leak from cuttings piles..."; suggesting that *L. pertusa* is thus not obviously affected by discharges from oil platforms.

But there is no definitive evidence that these corals have been exposed to any discharges, let alone a specific level of any "quality standard". It is perfectly feasible that their position in the water column precludes such exposure. Current understanding of the environmental sensitivity of deep-water species such as *L. pertusa* is limited by the lack of information on their biology and ecology. Our understanding of coral distribution is incomplete³; we know nothing of the reproduction or dispersal of these organisms, or their sensitivity to suspended sediments, or the effect on them of exposure to drilling discharges.

Bell and Smith's conclusion — that by leaving the 'footings' of large platforms with jacket weights of more than 10,000 tonnes in place, existing colonies will be preserved and *L. pertusa* might spread in the North Sea — is naive.

In the long term, we do not understand the ecological implications of leaving such structures in place, let alone whether they will survive to form some form of artificial reef. It is known that *L. pertusa* can settle on to man-made structures. For example, early linear extension rate measurements (*sensu* growth rate as described by Bell and Smith) were estimated from the overall length of corals that had settled on undersea cables⁴.

But we are a long way from understanding how any such decommissioning strategy would affect the ecology of the North Sea. An open debate and more effort to understand the underlying science are needed before statements can be made on the environmental sensitivity of any species.

J. M. Roberts

Scottish Association for Marine Science, PO Box 3,

Oban, Argyll PA34 4AD, UK

1. Bell, N. & Smith, J. *Nature* **402**, 601 (1999).

2. Pearce, F. *New Sci.* **164** (2211), 16 (1999).

3. Long, D., Roberts, J. M. & Gillespie, E. J. *Brit. Geol. Surv. Tech. Rep. WB/99/24C* (1999).

4. Wilson, J. B. *J. Mar. Biol. Assoc. UK* **59**, 165–177 (1979).

Cover adds fuel to the fire in evolution battle

Sir— We would very much appreciate an explanation by the editor as to why a part (the hands of God and Adam) of Michelangelo's painting *The Creation of Adam* was chosen for the cover of the 2 December 1999 issue of *Nature*. It was presumably meant to commemorate the elucidation of the first complete human chromosome nucleotide sequence.

However, the use of such Christian religious symbols to mark this event seems difficult to fathom. Does this harken back to the centuries old practice of natural theology¹? Does the elucidation of the human nucleotide sequence provide us with insights into the work of the Christian God at the creation event? Why not also use the Garden of Eden as the first event in the chronology of events leading to the revelation of the chromosome sequence in Fig. 1 of the News and Views article²? We are confident that the editors are well aware of the oft quoted statement by Dobzhansky: "Nothing in biology makes sense except in the light of evolution."

The decision to use this cover makes no sense. It is common knowledge that it continues to be a struggle in many parts of the United States to teach the principles of evolution in high schools. The recent decision by the Kansas Board of Education reveals the problem is not going to go away soon. Many letters to *Nature*, *Science* and other publications reveal the dismay felt within the scientific community regarding this action in Kansas. We are also dismayed by efforts in the United States to weaken the teaching of high-school science, but are also troubled by *Nature's* willingness to add fuel to the fire.

Gary C. Harris, Martina Königer

Biology Department, Wellesley College, Wellesley, Massachusetts 02481, USA

1. Mayr, E. *One Long Argument Charles Darwin and the Genesis of Modern Evolutionary Thought* (Harvard Univ. Press, Cambridge, Massachusetts, 1991).

2. Little, P. *Nature* **402**, 467–468 (1999).

Nature replies — The editorial staff debated this issue before publication and decided, with the enthusiastic agreement of the lead authors, that the image as a whole combined iconic symbolism with the science without implying that the Bible is true or that evolution is not the key to making sense of biology. — Editor, *Nature*