Darwin in the Headlines

I enjoyed Richard A. Kerr's article about support for punctuated equilibrium (Research News, 10 Mar., p. 1421), but the accompanying headline—"Did Darwin get it all right?"—is a bit problematic for those of us who deal regularly with the continuing evolution-creation controversy. It is virtually certain that this headline soon will reappear in creationist literature, accompanied by assertions that Darwin was completely wrong and that evolution theory therefore is bankrupt. It matters not that the article says nothing of the kind, that research on punctuated equilibrium occurs within a solidly Darwinian framework, or that debates about the mode and tempo of evolution demonstrate the nature and methods of science and the differences between science and religion. Creationists will distort the headline to meet their needs.

This headline is reminiscent of one from some years back, when *Science* covered a meeting at Chicago's Field Museum of Natural History, also devoted to the debate about gradualism and punctuated equilibrium (R. Lewin, Research News, 21 Nov. 1980, p. 887). The headline, "Evolutionary theory under fire," provided a gold mine for subsequent creationist propaganda.

I do not propose editorial censorship, but I suggest that a journal representing an organization of some 130,000 scientists be a bit more judicious in its choice of headlines. I realize that such headlines are intended to attract readers, but they should not have the subsidiary effect of providing support for those whose views are antithetical to science and reason.

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The headline "Did Darwin get it all right?" refers to punctuated equilibrium in evolution. But Ernst Mayr (*1*) has "partitioned Darwin's evolutionary paradigm into five theories." They are (i) evolution as such, the theory that the world is steadily changing and that organisms are transformed in time; (ii) common descent from a single ancestor; (iii) multiplication of species, the origin of organic diversity; (iv) gradualism; and (v) natural selection. Only the fourth of these theories relates to punctuated equilibrium. The "punctuations" are actually fairly long periods. The time cited by Kerr is "less than 160,000 years"; Niles Eldredge and Stephen J. Gould (*2*) cited 100,000 years. Darwin's other four main precepts are unaffected, and a punctuation of 100,000 years might be time enough for evolutionary changes to take place in bryozoa.

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References

1. E. Mayr, *One Long Argument* (Harvard Univ. Press, Cambridge, MA, 1991).
2. N. Eldredge and S. J. Gould, in *Models in Paleobiology*, T. J. M. Schopf, Ed. (Freeman Cooper, San Francisco, CA, 1972), pp. 82–115.

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No Perpetual Motion Machine

John Travis's Research News article "Making light work of Brownian motion" (17 Mar., p. 1593) should not be misinterpreted as saying that the "optical thermal ratchet" invented by Albert Libchaber and his colleagues extracts energy from Brownian motion. While Brownian motion is an important component of Libchaber's arrangement, it is the force of the light on the bead that does the work. No energy is extracted from the thermal noise. A perpetual motion machine has not been invented.

In fact, a more efficient system for moving the beads around the circle is evident. Rather than turning the ramped intensity on and off, one could just rotate the ramped intensity in the desired direction. The beads would then move to the intensity peaks and be dragged along with the rotation. This would be more efficient in that none of the particles, once pulled to the peak, would wander backward and lose the ground already gained. In this arrangement, the asymmetry of the ramp would also be unnecessary.

Nature, however, is not always able to "rotate the ramp," hence the importance of the "optical thermal ratchet" work.

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An Ominous Blooding?

Many nations have fewer restrictions on unreasonable searches than does the United States. For example, blood analysis from a large cohort can be of significant forensic import. A recent example may be that in St. Mellons, Cardiff, Wales. A tragic rape and murder of a 15-year-old girl has stirred a drive for a "voluntary" citizen sampling of 2000 persons.

The molecular analysis of blood has advanced briskly in the hands of scientists in search of facts. The polymerase chain