

LETTERS

Markings

The technology for "quick and precise" analysis of airborne particles may, or may not, be at hand. The "vast majority" of public debates about evolution are said to decrease public support for it. Despite new information provided by genetic analysis, is this "the best time" to reorganize the classification of living things? Altering cotton genetically so that it can resist pests has allowed thousands of farmers to "entirely eliminate insecticide spray treatments," according to the Monsanto Company. And do fossil stromatolites provide evidence that animals originated on Earth at least 1 billion years ago? (Right, the arthropod *Marrella*, approximately 19 millimeters long, lived about 530 million years ago.)



C. CLARK

Linnaean Categories

Solomon W. Golomb (Letters, 8 Nov., p. 902) suggests introducing the rank of "empire" to denote the highest division(s) of the living beings. I hope that any sympathetic attitude toward this proposal will be checked against the following considerations:

1) Carl Woese's divisions of life on Earth are not "categories." *Bacteria*, *Archaea*, and *Eukarya* are "taxa," as are *Aves* (the birds), *Coleoptera* (the beetles), or *Homo sapiens*. Categories are those things (for example, the species, the genus, the phylum) to which Golomb would like to add another term (the empire).

2) These Linnaean categories, in spite of their long traditional use, are not unquestionable. An increasing number of students are arguing for abolishing them as arbitrary and, in one opinion, even nonsensical and overtly misleading (1). These matters are admittedly controversial, but this does not seem the best time for introducing new formal ranks.

3) The threefold basal split of living beings that seems to be "gaining acceptance" so as to require introducing this highest rank of "empire" has two obvious weaknesses: (i) it corresponds to an incompletely resolved phylogeny, and (ii) it takes for granted the monophyletic character of each and all of the three taxa, that could be true (as assumed in the archae theory) but might not be so (as assumed by the eocyte theory).

4) The term "*imperium*" is all but new. Linnaeus (2) used the term "*Imperium Naturae*" as the whole embracing his three kingdoms (animals, plants, minerals), and the same term has been recently revived, more or less intentionally, by a few modern authors (3).

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References and Notes

1. A modern critic of the Linnaean hierarchy is G. C. D. Griffith [System. Zool. 25, 168 (1974)].
2. C. Linnaeus, *Systema Naturae* (Holmiae, ed. 10, 1758), p. 5.
3. D. L. Lipscomb, *Cladistics* 1, 127 (1985).

Debating Creationists

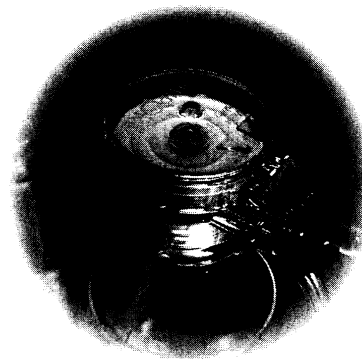
Paul R. Gross (Letters, 6 Sept., p. 1321), Michael J. Erpino (Letters, 8 Nov., p. 904), and David Edge (Letters, 8 Nov., p. 904) all take issue with my position against formal debates with creationists. I find the "duty to defend science" argument pales next to that of "above all else, do no harm."

Our goal in such debates is quite different from creationists' goal to inspire their adherents to proselytize teachers about how evolution is a "theory in crisis" and how it would be great if we could introduce this new "science" of creationism into our schools. More people will come to a debate than to a lecture in a church basement so, of course, creationists will try to get a scientist to oppose them. After the debate, citizens influenced by the creationist position proceed to write letters to the editor, talk to their kids' teachers, and so forth. This intimidates many teachers, who then may be tempted to "skip evolution this year." Hardly our side's goal.

My position is not to ignore creation science, but to confront these ideas in the

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