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## LETTERS

### Nomina Generica

In a report by S. Remillard *et al.* (19 Sept., p. 1002), we read that a potent tumor inhibitor, maytansine, inhibits mitosis. From where does this remarkable substance come? We learn only that it was isolated from "various *Maytenus* species." Is it a mold, beast, or tree? I finally learned (1) that the substance can be extracted from the fruit, stem, and wood of *Maytenus*. Aha! Evidently it must be a plant. Aware of my botanical ignorance, I inquired of four botanists the nature of *Maytenus*; none could tell me anything. I eventually learned that it is a member of a group of flowering shrubs or shrub-trees.

No doubt it is essential to have a specific Latin name for each organism, but since more than  $1.5 \times 10^6$  species of organisms have been identified, a generic designation is often not sufficient, particularly when these names have frequently undergone substantial change. The importance of retaining common names was made clear by George Wald (2) when he commented on a table of data on the precipitin test prepared by Nuttall in 1904, which showed that rabbit antiserum against human serum, when mixed with nonhuman serums, caused less and less precipitate the more distantly related was the species of animal providing the serum. Wald wrote:

In the original version of this table, Nuttall mentions *Cynocephalus mormon* and *sphinx*, omitting their common names. I have learned since that one is the mandrill, the other the guinea baboon. Since Nuttall wrote in 1904, these names have undergone the following vagaries. *Cynocephalus mormon* became *Papio mormon*, otherwise *Papio maimon*, which turned to *Papio sphinx*. This might well have been confused with *Cynocephalus*, now become *Papio*, *sphinx*, had not the latter meanwhile been turned into *Papio papio*. This danger averted, *Papio sphinx* now became *Mandrillus sphinx*, while *Papio papio* became *Papio comatus*. All I can say to this is, thank heavens one is called the mandrill, the other the guinea baboon.

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### References

1. S. M. Kupchan, Y. Komoda, W. A. Court, G. J. Thomas, R. M. Smith, A. Karim, C. J. Gilmore, R. C. Haltiwanger, R. F. Bryan, *J. Am. Chem. Soc.* **94**, 1354 (1972). (This reference is incorrectly cited in Remillard *et al.*)
2. G. Wald, in *Modern Trends in Physiology and Biochemistry*, E. S. G. Barron, Ed. (Academic Press, New York, 1952), p. 339.

We have been informed by R. E. Perdue, Jr., the botanist primarily responsible for the *Maytenus* collections in Africa, that the only common name he has found used for any species of *Maytenus* is "ack-ack," reflecting the sound made when the plant is burned as firewood. We appreciate Riggs

calling our attention to a typographical error in the citation of a most important article.

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### A New Characteristic of Life?

One of the major problems with the insight that Darwin and Wallace brought to our knowledge of the origin and diversity of life is its simplicity (1). The essence of natural selection lies in the notion that adaptiveness is a result of the differential reproduction of individuals of different genotypes. However, many people find the concept of natural selection too straightforward to explain the past and present array of living forms and their manifold means of adaptation. The article by J. M. Burgers (18 July, p. 194) is an example. He, with others, feels that the principle of causal relationship which forms the basis of scientific inquiry is not enough to account for the living world. Or, more simply put, surely life cannot be reduced to a set of interactions among atoms and molecules. It is indeed a distasteful realization, but likely true. Burgers argues that the human "notion of being alive" cannot as yet be explained by modern physical principles. From this he jumps to the statement that "we must give attention to the idea of freedom, as being an essential aspect of life. . . ." Life he defines as a game in which the players maneuver to maintain the ability to choose, to retain "some measure of freedom." Surely we are dealing here with as yet poorly understood psychological aspects of the human mind. Burgers is correct—neither physics nor biology can explain the "notion of being alive," but just because it happens to be a part of human psychic makeup does not render it a basic aspect of all life. There is always the hope that science will eventually lead us to an understanding of even such sacred complexities as our own minds.

In an attempt to bolster his argument for a new conceptual approach to the living world, Burgers appears to have reached some misunderstandings. He feels that, while molecular biology has revealed the structures and operation of living systems, it has added nothing to our understanding of the origin and evolution of these structures. Nothing could be further from reality. Much of what we know of the evolutionary history of many groups of organisms has been gained from a comparative analysis of structures across systematic boundaries. The results of molecular biology research have allowed similar comparisons at a finer resolution. Consider, for