the knowledge and technical support for the government agencies to efficiently, effectively, expeditiously, and economically tackle this silent epidemic.

Kunnath S. Subramanian
Environmental Health Directorate, Health Canada, Ottawa, Ontario, Canada K1A 0L2

■

In Defense of Nannobacteria

Enough! As one of the discoverers of mineralized nannobacteria on Earth (*1*), I must come to their defense. They are so abundant in samples I have studied that I believe they may make up most of Earth's biomass. Yet they appear to be nearly unknown to many biologists, hence the questions about putative Martian nannobacteria (Letters, 20 Sept., p. 1639; Reports, 16 Aug., p. 924).

Nannobacteria with cells 0.1 to 0.4 micrometer in diameter have been cultured by Allan Pentecost from the hot spring waters at Viterbo, Italy (*2*). Nannobacteria 0.05 micrometer in diameter have been found in thickly packed colonies on decaying leaves in the San Marcos River in Texas (*3*). K. K. Akerman *et al.* have found forms they term "nannobacteria" in blood (*4*). If these are not nannobacteria, then what are they? Until we know, perhaps the term "protobiont" or "quasibiont" might be used.

Microbiologists should be aware that there are vast numbers of organisms detectable by scanning electron microscope in the 0.01- to 0.2-micrometer range happily precipitating all sorts of minerals, acting symbiotically to precipitate organic hard parts, and generally exerting what appears to be an enormous influence on Earth's surface chemistry.

Robert L. Folk
Department of Geological Sciences, University of Texas, Austin, TX 78712, USA

References

1. R. L. Folk, *J. Sediment. Petrol.* **63**, 990 (1993).
2. ——— *et al.*, unpublished manuscript.
3. R. L. Folk, P. J. Noble, G. Gelato, R. J. C. McLean, *Geol. Soc. Am. Annu. Mtg. Abstr.* (1995), p. A305.
4. K. K. Akerman, I. Juronen, E. O. Kajander, *Scanning* **15** (suppl. 3), 90 (1993).

■

Cold Neutron Production

We disagree with the statements in Andrew Lawler's article "U.S. neutron scientists settle for less" concerning the availability of cold neutrons at pulsed neutron sources (PSs) (News & Comment, 9 Aug., p. 728) that cold neutron production is merely a "theoretical possibility" and that the associated technology lags behind that for reactors.

Because pulsed sources produce high fluxes of "hot" neutrons in a natural way, perhaps not everyone is aware of the success with which cold neutrons are being produced and exploited at PSs. It is actually easier to produce cold neutrons at a PS than at a reactor. The overall heat load is much less for the same peak neutron flux, and the required moderators are small in dimension and can usually be inserted into the neighborhood of the spallation target in a simple way. Thus, a moderator change can be accomplished in a few weeks. The cold moderator design, construction, and installation can be done within normal operating budgets. This is in contrast to the case for reactors, where the installation of a cold moderator is a major project requiring separate funding and usually a significant shutdown for installation. Moreover, the spectral and pulse characteristics can be tailored to fit applications.

The existing pulsed spallation neutron sources owe much of their success to cold moderator technology. The scientific prob-

lems that have been addressed have been in the same areas as those addressed using reactor-based cold sources. The areas in question, as is typical for neutron beam exploitation in general, are extraordinarily diverse and range from surface science and chemical spectroscopy to magnetism. The possibilities inherent in the time structure of PS cold moderator performance represent opportunities for optimization beyond those of steady-source moderators that are still being explored.

James D. Jorgensen
Group Leader for Neutron and X-ray Scattering, Materials Science Division, Argonne National Laboratory, Argonne, IL 60439, USA
John M. Carpenter
Technical Director, Intense Pulsed Neutron Source Division, Argonne National Laboratory
Gabriel Aeppli
NEC Research Institute, 4 Independence Way, Princeton, NJ 08540, USA

■

"Quetzal" Coatings

The Mayan mural illustrated on the cover of the 12 July issue clearly illustrates the beauty of the blue dye used by the Mayans (Reports, 12 July, p. 223). The bird in the mural is identified as a "quetzal," but its features—the sturdy curved bill, pale lore around the eyes, long tail, and sturdy legs—suggest that it is probably a macaw. Although no extant macaw matches the painting in every detail, the bird is most likely a macaw of the genus *Anodorhynchus*. All three extant *Anodorhynchus* species have blue plumage and pale lores. Two of them measure about 73 centimeters from head to tail (*1*); the bird as painted measures 70 centimeters from head to tail. Given the generally high level of Mayan artistic accuracy, it seems likely that the artist knew this bird well and did not simply create it from the imagination. The genus *Anodorhynchus* is today restricted to Brazil and Argentina (*1*). Thus, the Maya painting suggests that some species of blue macaw may have formerly inhabited Mexico. Differences between extant species of *Anodorhynchus* and the bird depicted (such as the presence of a crest and pale epaulets) might even suggest that Mexico once boasted its own, now extinct, species of blue macaw, lost perhaps to overhunting or habitat destruction. Alternatively, Mayans and the inhabitants of South America might have engaged in trade in these birds.

Shou-Hsien Li
Walter Messier
Department of Biological Sciences, State University of New York, Albany, NY 12222, USA

References

1. J. M. Forshaw and W. T. Cooper, *Parrots of the World* (Lansdowne, Melbourne, Australia, 1973).

Corrections and Clarifications

In the report "A revised chronology for Mississippi River subdeltas" by T. E. Törnqvist *et al.* (20 Sept., p. 1693), the e-mail address of the corresponding author should have read, "t.tornqvist@frw.ruu.nl".

In the letter "Science in China" by T. C. Tso (13 Sept., p. 1478), the reference numbers in the text should have read 1 through 4, not 2 through 5. In the second column of the letter, 12 lines from the bottom, "(*1*)" should not have appeared.

In the letter "Redundant genome sequencing" by J. E. Davies (30 Aug., p. 1155), the word "*Mycobacterium*" was misspelled twice, and the word "mycobacterial" was incorrectly spelled. These errors occurred during editing.

In the Research News article "Learning deficit identified in brain" by Marcia Barinaga (16 Aug., p. 867), the end of the first sentence should have read "the certain spoken sounds known as phonemes." The end of the last complete sentence on that page should have read, "distinguish between syllables that begin with closely related phonemes."

In the Research News article "Forging a path to cell death" by Marcia Barinaga (9 Aug., p. 735), Matthias Man of the European Molecular Biology Laboratory in Heidelberg, Germany, should have been included as a collaborator with the groups of V. Dixit and P. Krammer in the discovery of the FLICE protein.

The Random Samples item "Grassroots search for primes . . ." (9 Aug., p. 743), inaccurately described assembly language as the raw code read by a computer. Assembly language must be translated by an assembler into machine language (ones and zeros) before a computer reads it.

Letters to the Editor

Letters may be submitted by e-mail (at science_letters@aaas.org), fax (202-789-4669), or regular mail (*Science*, 1200 New York Avenue, NW, Washington, DC 20005, USA). Letters are not routinely acknowledged. Full addresses, signatures, and daytime phone numbers should be included. Letters should be brief (300 words or less) and may be edited for reasons of clarity or space. They may appear in print and/or on the World Wide Web. Letter writers are not consulted before publication.