Peer Review

LETTERS FROM READERS

GROUND NASA?

The July/August issue of *The Sciences,* with its stunning series of articles about the frontiers of life, has made clear the immense relevance of recent breakthroughs in astrobiology. It should also lead to a new debate about the potential for the contamination of extraterrestrial environments.

In the past two years the examination of scientific claims for the evidence of life in a meteorite from Mars has spurred many projects aimed at better defining what is properly called "life." As *The Sciences* makes clear, those reevaluations must take account of an enormous range of forms, from bacterial blooms in undersea volcanic eruptions to radiation-tolerant organisms to forms of life that prosper in total darkness, deep inside our planet. The thrust of the entire issue is a vibrantly optimistic panorama of all the discoveries that can be expected, as space probes reach new areas of Mars, the hypothetical oceans of Europa and other bodies in our solar system.

Andrew Bush, Envelope #941, *1997*

Nevertheless, there is an important corollary to the discovery that life is more pervasive and durable than anyone had imagined before. Although none of the authors mentioned the point in *The Sciences,* their results seem to suggest a new but critical qualification about the current state of biological knowledge: no one can accurately predict how many terrestrial microorganisms our space probes will be depositing into the atmosphere, soil and oceans of Europa, Jupiter, Mars and the other bodies that NASA has targeted. Terrestrial organisms that stay alive in the cavities of space probes, or get picked up on the way out of the earth's atmosphere, may be able to destroy or alter the evolutionary patterns of forms of life on other planets. If life is more durable than biologists ever suspected, how credible are NASA's current efforts at sterilizing spacecraft before they are launched?

Although the title of my message is purposely provocative (it would be a pity to "ground NASA" just as all those discoveries are being made), an intense effort should be made to assess the probability that we will contaminate other worlds. Pursuing space exploration in the current state of ignorance about the survival of earth-based microorganisms in space may one day be seen as an example of misguided arrogance, reminiscent of the attitudes that allowed contaminated blood to continue to be transfused at the dawn of the AIDS epidemic. In that instance, too, some biologists estimated that the probability of spreading a dangerous organism was vanishingly small.

JACQUES F. VALLÉE
San Francisco, California

SMALLPOX SCANDAL?

The editors of *The Sciences* would seem to have propagated a misconception that I suspect is far more grievous than the misleading allegation made (and subsequently withdrawn) by CNN and *Time* magazine with the "Operation Tailwind" story, which caused such a furor after it was aired this past June. A colleague has just sent me a copy of Wendy Orent's article, "Escape from Moscow," [May/ June]. Several statements in it are both false and scandalous.

On page 29 Ms. Orent writes: "In Novosibirsk, the inspectors were shown dismantled missiles but not their payloads." First, no missiles, dismantled or undismantled—nor *any other weapon system*—was shown to the U.S. and U.K. inspectors in 1991 (or on any other occasion). Second, the sentence that follows ostensibly quotes Peter Jahrling of the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID): "I don't think anyone knows what happened to them." Nevertheless, in a conversation with me on August 21, 1998, Jahrling stated that he specifically told Ms. Orent that he did not believe any kind of biological-warfare (BW) weapons were produced at the Novosibirsk facility. Jahrling added that the editors of *The Sciences* were welcome to contact him for confirmation of that statement. [Editor's Note: Mr. Jahrling's telephone number has been deleted here to preserve his privacy.] Third, the sentence immediately following that quotation begins with a "Nevertheless," but in reality the sentence is about an entirely different subject.

Earlier, on pages 26–27, Ms. Orent writes: ". . . *tons* of the deadly virus are thought to exist *in Russia* [my emphasis]."

Continued on Page 10

New York Academy of Sciences

BOARD OF GOVERNORS

CHAIRMAN OF THE BOARD *Eleanor Baum*
VICE-CHAIRMAN *Bill Green*
TREASURER *John T. Morgan*
GOVERNORS *D. Allan Bromley, Laurence B. Buttenwieser, Praveen Chaudhari, John H. Gibbons, Ronald L. Graham, Henry M. Greenberg, Robert G. Lahita, Martin L. Leibowitz, Jacqueline Leo, William J. McDonough, Kathleen P. Mullinix, Sandra Panem, Charles Ramond, Sara Lee Schupf, James H. Simons, Torsten Wiesel*
PAST CHAIRMAN *Richard A. Rifkind*
HONORARY LIFE GOVERNORS *William T. Golden, Joshua Lederberg*
COUNSEL *Helene L. Kaplan*

SENIOR STAFF

PRESIDENT & CEO *Rodney W. Nichols*
EXECUTIVE EDITOR, THE ANNALS *Bill M. Boland*
EDITOR-IN-CHIEF, THE SCIENCES *Peter G. Brown*
DIRECTOR, POLICY PROGRAMS *Allison L.C. de Cerreño*
VICE PRESIDENT & CFO *Edward J. Dietze*
DIRECTOR, MARKETING & MEMBERSHIP *Katherine Goldring*
DIRECTOR, HUMAN RESOURCES *Susan Kennedy*
VICE PRESIDENT, INSTITUTIONAL ADVANCEMENT *Peter H. Kohn*
DIRECTOR, COMMUNICATIONS *Diane McNulty*
DIRECTOR, INFORMATION TECHNOLOGY *D'or Palmer*
SECRETARY TO THE BOARD *Craig Purinton*
DIRECTOR, STRATEGIC PLANNING & SPECIAL PROJECTS *Susan U. Raymond*
DIRECTOR, SCIENCE & TECHNOLOGY MEETINGS *Rashid Shaikh*
DIRECTOR, EDUCATION *Lori D. Skopp*
DIRECTOR, HUMAN RIGHTS OF SCIENTISTS *Svetlana Stone*

SECTION CHAIRS AND VICE-CHAIRS

ANTHROPOLOGY CO-CHAIRS: *Antonio Lauria-Perricelli and Johanna Lessinger;* CO-VICE-CHAIRS: *Madeleine Tramm and Lucie Wood Saunders*
ATMOSPHERIC SCIENCES CHAIR: *Mark Kramer;* VICE-CHAIR: *Edward Hindman*
BIOCHEMISTRY CHAIR: *Patricia M. Rose;* VICE-CHAIR: *JoAnne M. Saye*
BIOMEDICAL SCIENCES CHAIR: *Mark A.W. Andrews;* VICE-CHAIR: *John D. Strauss*
CHEMICAL SCIENCES CO-CHAIRS: *Nan Zhang and Kang Zhao*
COMPUTER AND INFORMATION SCIENCES CHAIR: *Ted Brown;* CO-VICE-CHAIRS: *Pauline M. Rothstein and Jacob Shapiro*
ECONOMICS CHAIR: *Dominick Salvatore;* CO-VICE-CHAIRS: *Samuel Ehrenhalt and Douglas Walker*
ENGINEERING CHAIR: *James Cohen;* VICE-CHAIR: *Victor M. Serby*
ENVIRONMENTAL SCIENCES CHAIR: *John L. Cusack;* VICE-CHAIR: *Nevin Cohen*
GEOLOGICAL SCIENCES CHAIR: *Gerald M. Friedman;* VICE-CHAIR: *Samuel A. Epstein*
HISTORY AND PHILOSOPHY OF SCIENCE CHAIR: *Joseph W. Dauben;* VICE-CHAIR: *Bruce Chandler*
INORGANIC CHEMISTRY AND CATALYTIC SCIENCE CHAIR: *Lynn Francesconi;* VICE-CHAIR: *Robert Beer*
LINGUISTICS CHAIR: *F. Frank LeFever;* VICE-CHAIR: *Avraham Schweiger*
MATHEMATICS CHAIR: *Robert J. Bumcrot;* VICE-CHAIR: *Harold Hastings*
MICROBIOLOGY CHAIR: *Barry N. Kreiswirth;* VICE-CHAIR: *Shirley Raps*
NEUROSCIENCE CHAIR: *Wilma J. Friedman;* VICE-CHAIR: *Samuel E. Gandy*
PHYSICS AND ASTRONOMY CHAIR: *David W. Kraft;* VICE-CHAIR: *Harry Sticker*
PSYCHOLOGY CHAIR: *Margot B. Nadien;* VICE-CHAIR: *Uwe P. Gielen*
SCIENCE EDUCATION CHAIR: *Ellen Goldstein;* VICE-CHAIR: *Peter W.R. Corfield*
WOMEN IN SCIENCE CHAIR: *Frances Stern;* VICE-CHAIR: *Nancy M. Tooney*