

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Science serves its readers as a forum for the presentation and discussion of important issues related to the advancement of science, including the presentation of minority or conflicting points of view, rather than by publishing only material on which a consensus has been reached. Accordingly, all articles published in *Science*—including editorials, news and comment, and book reviews—are signed and reflect the individual views of the authors and not official points of view adopted by the AAAS or the institutions with which the authors are affiliated.

Editorial Board 1970

GUSTAF O. ARRHENIUS	RICHARD C. LEWONTIN
FRED R. EGGAN	ALFRED O. C. NIER
HARRY F. HARLOW	FRANK W. PUTNAM
MILTON HARRIS	

1971

THOMAS EISNER	NEAL MILLER
AMITAI ETZIONI	BRUCE MURRAY
EMIL HAURY	JOHN R. PIERCE
DANIEL KOSHLAND, JR.	

Editorial Staff

Editor

PHILIP H. ABELSON

Business Manager: HANS NUSSBAUM

Managing Editor: ROBERT V. ORMES

Assistant Editors: ELLEN E. MURPHY, JOHN E. RINGLE

Assistant to the Editor: NANCY TEIMOURIAN

News Editor: JOHN WALSH

Foreign Editor: DANIEL S. GREENBERG*

News and Comment: LUTHER J. CARTER, PHILIP M. BOFFEY, NANCY GRUCHOW, SCHERRAINE MACK, SAMUEL Z. GOLDBABER, THOMAS P. SOUTHWICK

Research Topics: ROBERT W. HOLCOMB

Book Reviews: SYLVIA EBERHART, KATHERINE LIVINGTON, ANN BARKDOLL

Cover Editor: GRAYCE FINGER

Editorial Assistants: JOANNE BELK, ISABELLA BOULDIN, ELEANORE BUTZ, NANCY HAMILTON, CORINE HARRIS, OLIVER HEATWOLE, ANNE HOLDSWORTH, MARSHALL KATHAN, MARGARET LLOYD, VIRGINIA NUSSLE, PATRICIA ROWE, LEAH RYAN, LOIS SCHMITT, BARBARA SHEFFER, RICHARD SOMMER, YA LI SWIGART, ALICE THEILE, MARIE WEBNER

Membership Recruitment: PATRICIA CAESAR; *Subscriptions:* BETT SEEMUND; *Addressing:* THOMAS BAZAN

* *European Office:* 22 Mulberry Walk, London, S.W.3, England (Telephone: 352-9749)

Advertising Staff

Director

EARL J. SCHERAGO

Production Manager

KAY GOLDSTEIN

Advertising Sales Manager: RICHARD L. CHARLES

Sales: NEW YORK, N.Y. 10036: Robert S. Bugbee, 11 W. 42 St. (212-PE-6-1858); SCOTCH PLAINS, N.J. 07076: C. Richard Callis, 12 Unami Lane (201-889-4873); MEDFIELD, MASS. 02052: Richard M. Ezequille, 4 Rolling Lane (617-444-1439); CHICAGO, ILL. 60611: Herbert L. Burklund, Room 2107, 919 N. Michigan Ave. (312-DE-7-4973); BEVERLY HILLS, CALIF. 90211: Winn Nance, 111 N. La Cienega Blvd. (213-657-2772)

EDITORIAL CORRESPONDENCE: 1515 Massachusetts Ave., NW, Washington, D.C. 20005. Phone: 202-387-7171. Cable: Advancesci, Washington. Copies of "Instructions for Contributors" can be obtained from the editorial office. See also page xviA, *Science*, 27 March 1970. **ADVERTISING CORRESPONDENCE:** Room 1740, 11 W. 42 St., New York, N.Y. 10036. Phone: 212-PE-6-1858.

Science: Attack and Defense

The voices that comment upon science today carry a number of different messages: two of them imply that science (and technology) are virtually omnipotent, but one ascribes to them omnipotence for good, the other omnipotence for evil. The Voice of Expectation says, "With all our much-vaunted science and technology, we ought to be able to feed all the world's hungry, or cure cancer, or (whatever)"; in other words, science may be adequate in content but it is being misapplied. The Voice of Disillusionment says, "It is science and technology that are responsible for all this pollution, or overpopulation, or war, or (whatever); therefore, let us not support them any longer." A third voice, that of Doom-and-Gloom, opposes both of these, saying, "The world is in so desperately bad a state, *no amount* of science or technology can ever prevent the disasters in store for us." There is, alas, a fourth voice. It is not primarily directed against science but against the universities—and thus against intellectual activities in general. What it says is simple enough. It says, "We will destroy you."

How should we defend science against its attackers? To what extent should we change direction so as to work more specifically on the applications of science to the public good? Should we as scientists throw our support behind one or other of the major social and political forces, or indeed behind some other political force?

Of course, it may well be misleading to extrapolate present trends into the future; the voices may die down or be extinguished by technological victories. But if they should continue and strengthen, some argue that we may eventually be faced with a choice between plunging into political activity or withdrawing from the world like the monks of the Dark Ages, to keep the candle of science burning until a serener day dawns. But the second alternative is not a real one, for modern science cannot be pursued in a cell like ancient learning, and very few monasteries are equipped with oscilloscopes and centrifuges.

The first alternative is not a real one either, and this gives us the answer to the questions above. The reasons are obvious and they are twofold, one practical and the other theoretical. The first is that there are only 24 hours in a day and there is only so much energy in each of us; what we divert into political action we take away from science. The second is that, as soon as a scientist becomes a special pleader, he loses his status as an objective judge of evidence, so that his opinion has precisely the same worth as that of any other citizen; each one grinds his own particular ax, and everyone knows it. The politicization of science, like the politicization of the universities for which the radicals clamor, is the road to its destruction. If we were to fall for this, the fourth voice would have achieved victory from within.

No, the only effective defense of science is through strengthening science itself. Our devotion to our research and teaching, our determination not to let them be interfered with, our instruction of laymen and of nonscience students so that the future businessmen and lawyers really understand something of science, our continued and lively awareness of useful and humane applications, our careful and responsible use of funds—these will maintain respect for science and scientists. Then we could say with Brutus,

"There is no terror, Cassius, in your threats,
For I am arm'd so strong in honesty,
That they pass me by as the idle wind."

—KENNETH V. THIMANN, *University of California, Santa Cruz*