

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

1976

ALFRED E. BROWN	FRANK PRESS
JAMES F. CROW	FRANK W. PUTNAM
HANS LANDSBERG	MAXINE SINGER
EDWARD NEY	ARTHUR M. SQUIRES

1977

WARD GOODENOUGH	DONALD KENNEDY
CLIFFORD GROBSTEIN	NEAL E. MILLER
H. S. GUTOWSKY	RAYMOND H. THOMPSON
N. BRUCE HANNAY	

Editorial Staff

Editor

PHILIP H. ABELSON

Publisher

WILLIAM D. CAREY

Business Manager

HANS NUSSBAUM

Managing Editor: ROBERT V. ORMES

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

Assistant to the Editors: RICHARD SEMIKLOSE

News and Comment: JOHN WALSH, *Editor*; PHILIP M. BOFFEY, LUTHER J. CARTER, BARBARA J. CULLITON, CONSTANCE HOLDEN, DEBORAH SHAPLEY, NICHOLAS WADE, *Editorial Assistant*, SCHERRAINE MACK

Research News: ALLEN L. HAMMOND, *Editor*; GINA BARI KOLATA, JEAN L. MARX, THOMAS H. MAUGH II, WILLIAM D. METZ, ARTHUR L. ROBINSON, *Editorial Assistant*, FANNIE GROOM

Book Reviews: KATHERINE LIVINGSTON, LYNN MANFIELD, JANET KEGG

Cover Editor: GRAYCE FINGER

Editorial Assistants: JOHN BAKER, ISABELLA BOULDIN, MARGARET BURESCH, ELEANORE BUTZ, MARY DORFMAN, SYLVIA EBERHART, JUDITH GIVELBER, CAITILIN GORDON, CORRINE HARRIS, NANCY HARTNAGEL, OLIVER HEATWOLE, CHRISTINE KARLIK, RUTH KULSTAD, MARGARET LLOYD, JEAN ROCKWOOD, LEAH RYAN, LOIS SCHMITT, YA LI SWIGART, ELEANOR WARNER

Guide to Scientific Instruments: RICHARD SOMMER

Membership Recruitment: GWENDOLYN HUDDLE;

Subscription Records and Member Records: ANN RAGLAND

Advertising Staff

Director

EARL J. SCHERAGO

Production Manager

MARGARET STERLING

Advertising Sales Manager: RICHARD L. CHARLES

Sales: NEW YORK, N.Y. 10036: Herbert L. Burklund, 11 W. 42 St. (212-PE-6-1858); SCOTCH PLAINS, N.J. 07076: C. Richard Callis, 12 Unami Lane (201-889-4873); CHICAGO, ILL. 60611: Jack Ryan, Room 2107, 919 N. Michigan Ave. (312-DE-7-4973); BEVERLY HILLS, CALIF. 90211: Winn Nance, 11 N. La Cienega Blvd. (213-657-2772); DORSET Vt. 05251: Fred W. Dieffenbach, Kent Hill Rd. (802-867-5581)

EDITORIAL CORRESPONDENCE: 1515 Massachusetts Ave., NW, Washington, D.C. 20005. Phones: (Area Code 202) Central Office: 467-4350; Book Reviews: 467-4367; Business Office: 467-4411; Circulation: 467-4417; Guide to Scientific Instruments: 467-4480; News and Comment: 467-4430; Reprints and Permissions: 467-4483; Research News: 467-4321; Reviewing: 467-4443. Cable: Advancesci, Washington. Copies of "Instructions for Contributors" can be obtained from the editorial office. See also page xi, *Science*, 26 March 1976. ADVERTISING CORRESPONDENCE: Room 1740, 11 W. 42 St., New York, N.Y. 10036. Phone: 212-PE-6-1858.

A Report from the Research Community

During the past decade this nation's financial support for basic research (measured in constant dollars) has decreased. More serious have been actions by successive Administrations and Congresses, which have diminished the effectiveness of the funds that have been appropriated. Particularly deleterious have been sudden changes in policies and priorities made in quick reaction to shifting political needs. Research centers responding to urgent federal programs have repeatedly found themselves gearing up to activities that suddenly become passé. Research scientists have encountered similar shifts in priorities with an added hazard. Paperwork for grants and delay times for decisions have increased substantially.

Federal policies for support of research have been discussed sporadically by individuals. Recently, however, the National Science Board tapped the opinions of a large fraction of the leaders of research administration in universities, industries, government research centers, and private research laboratories and published the findings in a report.* Thus, instead of isolated single voices one has a chorus of about 640. Opinions offered by individuals from the different research sectors are remarkably similar. The net impression produced is one of deep concern for the health and future of basic research in this country.

The concerns expressed in the report are given in four main categories: dependability in funding for research, vitality of the research system, freedom in the research system, and confidence in science and technology. In addition, the responses are grouped according to the research sectors they represent. An example is the problem of dependability in funding for research in industry.

At one time basic research was comparatively well supported in industry, at least in some companies. Of late, however, there has been a sharp decrease in long-term support for fundamental work. Instead, much of the effort of industrial laboratories is now devoted to quick-payoff activities, such as improving existing products and cutting costs in their manufacture. The combination of scarce capital and environmental and other regulations has suppressed initiative. Expenditures for environmental cleanup and compliance with safety legislation have the first call on capital funds of most companies. There is a well-known empirical relation in industry between funds for research and capital investments: that is, for each \$1 spent on successful research, \$100 must be spent to bring a product to market. When long-term prospects for capital funds are dim, it is difficult to justify long-term basic research. Further complicating the situation is the erratic nature of federal policies. On the negative side, industry does not know where the next blow is coming from. On the positive side, the government has not established long-range policies on such matters as energy. Thus it is very difficult to make forward-looking plans.

Changes in industrial research policies have important implications for the nation's competitive status. Our relative strength in high-technology products is already slipping, and the way is being prepared for an accelerated decline. An ameliorating action by the federal government would be to give favorable tax treatment for basic industrial research.

With its report from the research community, the National Science Board has rendered an important service to the country. The report should receive the serious consideration of those who have a role in formulating federal research policies. The scientific community should help in seeing to it that their congressional representatives are repeatedly made aware of the document.—PHILIP H. ABELSON

*National Science Board, *Science at the Bicentennial—A Report from the Research Community* (Government Printing Office, Washington, D.C., 1976). See also P. M. Boffey, *Science*, 22 October 1976, pp. 409-410.