

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

1969

EMIL HAURY	KENNETH S. PITZER
WILLARD F. LIBBY	ALEXANDER RICH
EVERETT I. MENDELSON	CLARENCE M. ZENER
JOHN R. PIERCE	

1970

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

Editorial Staff

Editor

PHILIP H. ABELSON

Publisher
DAEL WOLFLE

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, BRYCE NELSON, PHILIP M. BOFFEY, MARK W. OBERLE, MARTI MUELLER, SCHERRAINE MACK

Book Reviews: SYLVIA EBERHART

Editorial Assistants: JOANNE BELK, ISABELLA BOULDIN, ELEANORE BUTZ, HELEN CARTER, GRAYCE FINGER, NANCY HAMILTON, OLIVER HEATWOLE, ANNE HOLDSWORTH, PAULA LECKY, KATHERINE LIVINGSTON, VIRGINIA NUESSELE, SANDRA RATTLEY, PATRICIA ROWE, LEAH RYAN, LOIS SCHMITT, BARBARA SHEFFER, RICHARD SOMMER, YA LI SWIGARI, ALICE THEILE

* *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. Ezequelle, 4 Rolling Lane (617-444-1439); CHICAGO, ILL. 60611: Heibert L. Burkland, 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 7, *Science*, 4 July 1969. ADVERTISING CORRESPONDENCE: Rm. 1740, 11 W. 42 St., New York, N.Y. 10036. Phone: 212-PE-6-1858.

The University as a Five-Legged Animal*

I have come to think that the really complete University should be a sort of five-legged animal. The left hind leg is scholarship—the knowledge of everything that a man has done or written or thought. The left front leg is teaching—the transmission of this knowledge to the next generation. The right hind leg is creativity—the generation or discovery of new insights or new knowledge in literature and the arts and the sciences. And the right front leg is public service—the application of all this knowledge in writing and consulting and inventing, for its value to industry and government and the public.

(From this point of view the real gap between "the two cultures" is not between the sciences and the humanities but between the creation-minded sciences and humanities and the storage-oriented sciences and humanities. Creative humanists, from Chaucer to Goethe and Browning, were making fun of storage-minded academics and pedants long before scientists appeared on the scene. The weakness of the humanities departments in not having enough top-rate creators and inspirers of the young continues to be one of the sad facts of university life today. Newton could do his lifework at a university now, but Mozart and Michelangelo and Shakespeare would more likely be working in New York lofts.)

To go on with our analogy, the fifth leg of the complete animal is innovation—the trunk of this wise elephant, let us say, reaching forward to grasp the future. By innovation I mean a different kind of public service—not the kind that simply meets the requests of existing industry or government or the military, but the kind that enlarges the achievements of man and transforms societies. I mean not merely achievements, such as atomic energy and radar, that generals did not even know they wanted, but input-output matrices and Keynesian economics, that show us how to avoid economic dislocations and depressions; or theories of information and feedback and competitive decision-making and operations analysis, that change our whole approach to problems of communication and conflict and organizational structure; or the application of chemistry and biochemistry and the new biology to effect spectacular reductions in disease and mental illness. Thinkers in industry and government, of course, have also been generators of innovation, from television to the Peace Corps, but recent studies have shown that the major innovative ideas are perhaps ten times as likely to be born in the intellectual centers of the great university communities. The universities are coming to be not only repositories of knowledge and trainers for the future but places where the most important contribution may be the search for new understanding and the combining of ideas into new patterns.

In many schools, one or more of these five legs is missing. The undergraduate colleges are weak on research and public service and so have trouble getting faculty and funds, while the great research schools are often weak on teaching and have trouble with their neglected students. But the schools that are weak on systematic innovative thinking are betraying in a deeper sense the society that supports them and that can find in no other place the new solutions and the new trained leaders it needs in facing the complex and terrible new problems of the next 10 years.—JOHN PLATT, *Associate Director, Mental Health Research Institute, University of Michigan, Ann Arbor*

* Adapted from an address presented before the Midwest Conference of College Administrators, Ann Arbor, October 1968.