

# 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

1971

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

1972

ALFRED BROWN	FRANK PRESS
JAMES F. CROW	FRANK W. PUTNAM
THOMAS KUHN	WALTER O. ROBERTS
ELLIOTT W. MONTROLL	

## Editorial Staff

### Editor

PHILIP H. ABELSON

### Publisher

WILLIAM BEVAN

### Business Manager

HANS NUSSBAUM

Managing Editor: ROBERT V. ORMES

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

Assistant to the Editor: NANCY TEIMOURIAN

News and Comment: JOHN WALSH, ROBERT J. BAZELL\*, DEBORAH SHAPLEY, ROBERT GILLETTE, NICHOLAS WADE, CONSTANCE HOLDEN, SCHERRAINE MACK

Research Topics: ALLEN L. HAMMOND

Book Reviews: SYLVIA EBERHART, KATHERINE LIVINGSTON, KATHRYN MOUTON

Cover Editor: GRAYCE FINGER

Editorial Assistants: MARGARET ALLEN, ISABELLA BOULDIN, BLAIR BURNS, ELEANORE BUTZ, RONNA CLINE, MARY DORFMAN, JUDITH GIVELBER, MARLENE GLASER, CORRINE HARRIS, OLIVER HEATWOLE, CHRISTINE KARLIK, MARSHALL KATHAN, MARGARET LLOYD, JANE MINOR, DANIEL RABOVSKY, PATRICIA ROWE, LEAH RYAN, LOIS SCHMITT, RICHARD SOMMER, YA LI SWIGART, ALICE THEILE

Membership Recruitment: LEONARD WRAY; Subscriptions: BETTE SEEMUND; Addressing: THOMAS BAZAN

\* New York Office (News only): P.O. Box 267, Brooklyn, N.Y. 11217 Telephone: 212-596-1409

## Advertising Staff

### Director

EARL J. SCHERAGO

### Production Manager

BONNIE SEMEL

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); MEDFIELD, MASS. 02052: Richard M. Ezequelle, 4 Rolling Lane (617-444-1439); CHICAGO, ILL. 60611: John P. Cahill, 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. 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 Topics: 467-4455; Reviewing: 467-4440. Cable: Advancesci, Washington. Copies of "Instructions for Contributors" can be obtained from the editorial office. See also page xv, *Science*, 24 September 1971. ADVERTISING CORRESPONDENCE: Room 1740, 11 W. 42 St., New York, N.Y. 10036. Phone: 212-PE-6-1858.

## Mass Transfer and Urban Problems

Geophysicists are understandably excited because they have clearly detected continental drift. This finding comes as no surprise to the public official, who has already observed that the island of Jamaica, a huge exporter of bauxite, is gradually drifting—in the form of a unicellular layer of aluminum beer cans—onto the United States and covering us.

Indeed, one way of looking at the problem of the urban environment is from this mass-transfer point of view. An urban society is characterized by the continuing transfer of substantial amounts of matter from remote, uninhabited sites to urban centers. Thus, fuel, ore, and timber, as well as food, are extracted or harvested in distant, rural locations and ultimately transported to urban areas. There, after physical and chemical transformation, they are deposited within the urban environment as solid, liquid, and gaseous wastes, and our cities stagger under the resulting burden of polluted air and water and mounting piles of solid refuse.

Yet, as a matter of public policy, our society perversely encourages and subsidizes this process of mass transfer. We grant generous depletion allowances instead of levying prohibitive depletion penalties. A pound of iron as ore is less costly to transport than a pound of iron as scrap, a rate preference enshrined in federally prescribed interstate tariffs. Thus, although recycling presents itself as a way of reducing the overload on our environment, our system discourages recycling and rewards profligate consumption. The required national changes are obvious, but the political will is generally lacking. One hopeful sign is the recent legislation in New York City which discriminates in favor of manufacturers who use recycled material in paper products purchased by the city government.

At the municipal level, a refuse-collection service that is paid for exclusively by real estate taxes offers no incentive to reduce the amount of refuse that is generated; whether one produces a lot of refuse or a little makes no difference, for it is removed "free of charge." The result, again, is that we encourage indiscriminate production of waste in our "effluent society" at the same time that we are running out of land for waste disposal. To repair this portion of our malfunctioning system, we ought to either impose a disposal tax—collected at the manufacturing source—on all inedible products (with the tax proportional to the difficulty of disposal), or else charge the consumer directly, by the pound, for the waste he nonchalantly bequeaths to his municipality.

The challenge before us is to design and implement the right kind of regulatory feedback mechanisms, through enlightened tax and transport policies, so that we can reduce the rate of depletion of our resources, increase recycling, reduce the amount of material that has to be handled in the cycle, and improve the quality of our urban environment.—E. S. SAVAS, *First Deputy City Administrator, Office of the Mayor, 250 Broadway, New York 10007*