

807 This Week in *Science*

## Editorial

809 The Winds of Change

## Letters

810 Of Neologisms and Oxymorons: M. D. HANDEL; D. D. YAGER and R. R. HOY  
■ Real Costs: W. C. NEALE; V. M. RUTTAN ■ Nutrition Policy Controversies:  
A. E. HARPER ■ Hic, Haec, Hoc. . . : H. WEIL-MALHERBE

## News & Comment

814 Reactor Explodes Amid Soviet Silence  
816 Europe Plans Its Own Mini Space Station ■ Microgravity Seeks Lift-Off  
818 Military AIDS Testing Offers Research Bonus  
819 AIDS Patent Negotiations Break Down  
820 NAS Elects New Members  
821 *Briefing*: Yelena Bonner Tells of Medical Abuse of Her Husband ■ NIH Plans  
Probe on Test of Altered Virus ■ Congress Approves Garrison Compromise ■  
New Annual Report on Global Deterioration ■ Third Disaster in a Row for  
NASA ■ Rockefeller Doubles Third World Effort ■ Comings and Goings

## Research News

824 Gene Therapy—So Near and Yet So Far Away  
825 *Briefing*: Unexpected Size Pattern in Bacterial Proteins  
826 A Silicon Solution for Gallium Arsenide IC's

## Articles

831 Inertial Confinement Fusion with Light Ion Beams: J. P. VANDEVENDER and  
D. L. COOK  
837 Recovering Phase Information from Intensity Data: J. KARLE

## Reports

844 Natural Sources of Acid Neutralizing Capacity in Low Alkalinity Lakes of the  
Precambrian Shield: D. W. SCHINDLER, M. A. TURNER, M. P. STANTON,  
G. A. LINSEY  
847 Antarctic Mesopelagic Micronekton: Evidence from Seabirds That Pack Ice  
Affects Community Structure: D. G. AINLEY, W. R. FRASER, C. W. SULLIVAN,  
J. J. TORRES, T. L. HOPKINS, W. O. SMITH  
850 Regulation of Class III Major Histocompatibility Complex Gene Products by  
Interleukin-1: D. H. PERLMUTTER, G. GOLDBERGER, C. A. DINARELLO,  
S. B. MIZEL, H. R. COLTEN  
852 Lower Cretaceous Angiosperm Flowers: Fossil Evidence on Early Radiation of  
Dicotyledons: P. R. CRANE, E. M. FRIIS, K. R. PEDERSEN

■ SCIENCE is published weekly on Friday, except the last week in December, and with a plus issue in May by the American Association for the Advancement of Science, 1333 H Street, NW, Washington, DC 20005. Second-class postage (publication No. 484460) paid at Washington, DC, and at an additional entry. Now combined with *The Scientific Monthly* © Copyright © 1986 by the American Association for the Advancement of Science. Domestic individual membership and subscription (51 issues): \$65. Domestic institutional subscription (51 issues): \$98. Foreign postage extra: Canada \$24, other (surface mail) \$27, air-surface via Amsterdam \$65. First class, airmail, school-year, and student rates on request. Single copies \$2.50 (\$3 by mail); back issues \$4 (\$4.50 by mail); Biotechnology issue, \$5.50 (\$6 by mail); classroom rates on request. **Change of address:** allow 6 weeks, giving old and new addresses and seven-digit account number. Authorization to photocopy material for internal or personal use under circumstances not falling within the fair use provisions of the Copyright Act is granted by AAAS to libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of \$1 per copy plus \$0.10 per page is paid directly to CCC, 21 Congress Street, Salem, Massachusetts 01970. The identification code for *Science* is 0036-8075/83 \$1 + .10. **Postmaster:** Send Form 3579 to *Science*, 1333 H Street, NW, Washington, DC 20005. *Science* is indexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.

■ The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objects are to further the work of scientists, to facilitate cooperation among them, to foster scientific freedom and responsibility, to improve the effectiveness of science in the promotion of human welfare, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.



**COVER** Particle Beam Fusion Accelerator II (PBFA II) at Sandia National Laboratories was activated for the first time on 11 December 1985; it will be used to study inertial confinement fusion with light ion beams. The intense discharges on the surface were formed by the stray electromagnetic energy emanating from the 100-trillion-watt accelerator. See page 831. [Courtesy of Sandia National Laboratories, Albuquerque, NM 87185]

- 854 Cloning of a cDNA for a T Cell-Specific Serine Protease from a Cytotoxic T Lymphocyte: H. K. GERSHENFELD and I. L. WEISSMAN
- 858 Novel Serine Proteases Encoded by Two Cytotoxic T Lymphocyte-Specific Genes: C. G. LOBE, B. B. FINLAY, W. PARANCHYCH, V. H. PAETKAU, R. C. BLEACKLEY
- 861 The Locale Map of Honey Bees: Do Insects Have Cognitive Maps?: J. L. GOULD
- 863 Memory Constraints and Flower Choice in *Pieris rapae*: A. C. LEWIS
- 865 Bacterioplankton: A Sink for Carbon in a Coastal Marine Plankton Community: H. W. DUCKLOW, D. A. PURDIE, P. J. LEB. WILLIAMS, J. M. DAVIES
- 868 Innervation of Periosteum and Bone by Sympathetic Vasoactive Intestinal Peptide-Containing Nerve Fibers: E. L. HOHMANN, R. P. ELDE, J. A. RYSAVY, S. EINZIG, R. L. GEBHARD
- 871 Pancreatic Zymogen Granules Differ Markedly in Protein Composition: E. A. MROZ and C. LECHENE
- 873 Cloned Fragment of the Hepatitis Delta Virus RNA Genome: Sequence and Diagnostic Application: K. J. DENNISTON, B. H. HOYER, A. SMEDILE, F. V. WELLS, J. NELSON, J. L. GERIN
- 875 Differences in Adrenergic Recognition by Pancreatic A and B Cells: F. C. SCHUIT and D. G. PIPELEERS
- 877 *Trans*-Activator Gene of HTLV-II Induces IL-2 Receptor and IL-2 Cellular Gene Expression: W. C. GREENE, W. J. LEONARD, Y. WANO, P. B. SVETLIK, N. J. PEFFER, J. G. SODROSKI, C. A. ROSEN, W. C. GOH, W. A. HASELTINE
- 881 Inhibition of Development of Exoerythrocytic Forms of Malaria Parasites by  $\gamma$ -Interferon: A. FERREIRA, L. SCHOFIELD, V. ENEA, H. SCHELLEKENS, P. VAN DER MEIDE, W. E. COLLINS, R. S. NUSSENZWEIG, V. NUSSENZWEIG
- 884 Deregulation of *c-myc* by Translocation of the  $\alpha$ -Locus of the T-Cell Receptor in T-Cell Leukemias: J. ERIKSON, L. FINGER, L. SUN, A. AR-RUSHDI, K. NISHIKURA, J. MINOWADA, J. FINAN, B. S. EMANUEL, P. C. NOWELL, C. M. CROCE

## Book Reviews

- 891 Nuclear Battlefields, *reviewed by* A. MACK ■ On Growth and Form, A. AHARONY ■ Neural Transplantation and Regeneration, L. K. MCLOON ■ Books Received

## Products & Materials

- 893 Glass Fittings ■ Neurotransmitter ■ Digital Scales ■ Laboratory Freezer ■ Minisupercomputer ■ Monoclonal Antibodies ■ Literature

### Board of Directors

David A. Hamburg  
*Retiring President,  
Chairman*

Gerard Piel  
*President*

Lawrence Bogorad  
*President-elect*

Robert McC. Adams  
Robert W. Berliner  
Mildred Dresselhaus  
Donald N. Langenberg  
Dorothy Nelkin  
John E. Sawyer  
Shelia E. Widnall  
Linda S. Wilson

William T. Golden  
*Treasurer*

William D. Carey  
*Executive Officer*

### Editorial Board

David Baltimore  
William F. Brinkman  
Ansley J. Coale  
Joseph L. Goldstein  
James D. Idol, Jr.  
Leon Knopoff  
Seymour Lipset  
Walter Massey  
Oliver E. Nelson  
Allen Newell  
Ruth Patrick  
David V. Ragone  
Vera C. Rubin  
Howard E. Simmons  
Solomon H. Snyder  
Robert M. Solow

### Board of Reviewing Editors

Qais Al-Awqati  
James P. Allison  
Luis W. Alvarez  
Don L. Anderson  
C. Paul Bianchi  
Elizabeth H. Blackburn  
Floyd E. Bloom  
Charles R. Cantor  
James H. Clark  
Bruce F. Eldridge  
Stanley Falkow  
Theodore H. Geballe  
Roger I. M. Glass

Stephen P. Goff  
Robert B. Goldberg  
Patricia S. Goldman-Rakic  
Richard M. Held  
Gloria Heppner  
Eric F. Johnson  
Konrad B. Krauskopf  
Joseph B. Martin  
John C. McGiff  
Alton Meister  
Mortimer Mishkin  
Gordon H. Orians  
John S. Pearce  
Yeshayau Pocker  
Frederic M. Richards  
James E. Rothman

Ronald H. Schwartz  
Stephen M. Schwartz  
Otto T. Solbrig  
Robert T. N. Tjian  
Virginia Trimble  
Geerat J. Vermeij  
Martin G. Weigert  
George M. Whitesides  
William B. Wood  
Harriet Zuckerman

---

## 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.

**Publisher:** William D. Carey

**Editor:** Daniel E. Koshland, Jr.

**Deputy Editors:** Philip H. Abelson (*Engineering and Applied Sciences*); John I. Brauman (*Physical Sciences*); Gardner Lindzey (*Social Sciences*)

---

## EDITORIAL STAFF

**Managing Editor:** Patricia A. Morgan

**Assistant Managing Editors:** Nancy J. Hartnagel, John E. Ringle

**Senior Editors:** Eleanore Butz, Lawrence I. Grossman, Ruth Kulstad

**Associate Editors:** Martha Collins, Sylvia Eberhart, William Greaves, Barbara Jasny, Katrina L. Keiner, Edith Meyers

**Letters Editor:** Christine Gilbert

**Book Reviews:** Katherine Livingston, *editor*; Linda Heiserman

**This Week in Science:** Ruth Levy Guyer

**Chief Production Editor:** Ellen E. Murphy

**Editing Department:** Lois Schmitt, *head*; Caitilin Gordon, Mary McDaniel, Barbara E. Patterson

**Copy Desk:** Isabella Bouldin, *chief*; Sharon Ryan, Beverly Shields

**Production Manager:** Karen Schools

**Graphics and Production:** John Baker, *assistant manager*; Holly Bishop, Kathleen Cosimano, Eleanor Warner

**Covers Editor:** Grayce Finger

**Manuscript Systems Analyst:** William Carter

---

## NEWS STAFF

**News Editor:** Barbara J. Culliton

**News and Comment:** Colin Norman, *deputy editor*; Mark H. Crawford, Constance Holden, Eliot Marshall, R. Jeffrey Smith, Marjorie Sun, John Walsh

**Research News:** Roger Lewin, *deputy editor*; Deborah M. Barnes, Richard A. Kerr, Gina Kolata, Jean L. Marx, Arthur L. Robinson, M. Mitchell Waldrop

**European Correspondent:** David Dickson

---

## BUSINESS STAFF

**Associate Publisher:** William M. Miller, III

**Business Staff Supervisor:** Deborah Rivera-Wienhold

**Associate Business Supervisor:** Leo Lewis

**Membership Recruitment:** Gwendolyn Huddle

**Member and Subscription Records:** Ann Ragland

**Guide to Biotechnology Products and Instruments Editor:** Richard G. Sommer

---

## ADVERTISING REPRESENTATIVES

**Director:** Earl J. Scherago

**Production Manager:** Donna Rivera

**Advertising Sales Manager:** Richard L. Charles

**Marketing Manager:** Herbert L. Burklund

**Sales:** New York, NY 10036: J. Kevin Henebry, 1515 Broadway (212-730-1050); Scotch Plains, NJ 07076: C. Richard Callis, 12 Unami Lane (201-889-4873); Chicago, IL 60611: Jack Ryan, Room 2107, 919 N. Michigan Ave. (312-337-4973); Beverly Hills, CA 90211: Winn Nance, 111 N. La Cienega Blvd. (213-657-2772); San Jose, CA 95112: Bob Brindley, 310 S. 16 St. (408-998-4690); Dorset, VT 05251: Fred W. Dieffenbach, Kent Hill Rd. (802-867-5581).

Instructions for contributors appears on page xi of the 28 March 1986 issue. Editorial correspondence, including requests for permission to reprint and reprint orders, should be sent to 1333 H Street, NW, Washington, DC 20005. Telephone: 202-326-6500.

Advertising correspondence should be sent to Tenth Floor, 1515 Broadway, NY 10036. Telephone 212-730-1050.

## The Winds of Change

**T**ruth, like radioactivity, is difficult to contain. It tends to drift out of control. Small amounts are easily detectable and usually serve as tracers to larger and more significant revelations. The Soviet Union is learning this, and it will be interesting to see whether the fallout from their policy of secrecy is even more significant than the decaying fission products that illustrate it.

Reporters and government officials in foreign countries are carrying out a type of forensic medicine, trying to diagnose the events that have occurred in Chernobyl. In the face of the conventional secrecy of the Soviet Union, distant measurements of radioactivity and the expertise of scientists are being used to reconstruct what probably occurred. Perhaps of even more importance than the accident itself will be the illumination of the procedures of decision-making in the Soviet Union. One has to wonder whether someone in the lower echelons of the decision-making apparatus urged, "This is an accident that cannot be concealed. We should not follow our convention of secrecy but should announce it immediately." If anyone said this, he or she was clearly overruled.

The tendency to suppress or to conceal bad news is endemic in every government, in every civilization: history tells us what happened to messengers who brought bad news. The United States, when in the grip of McCarthyism fired the China hands who told unpleasant truths. Democracies have an enormous antidote to any desire to conceal truth: a free press. Dictatorships can suppress news in some cases, but nuclear disasters are different. Once sizable amounts of radiation have escaped local containment, any competent scientist could explain that it will be measured abroad. A combination of curiosity and anxiety will maintain the pressure to learn what actually happened at Chernobyl. From a scientist's point of view, this curiosity is well justified and is not merely a desire for gossip.

The nuclear power industry is here to stay despite its difficulties. Its future depends on incremental increases in safety, much like the airline industry which has progressed by careful study of each accident. Hard data—what set off the fire, exposure of individuals, retention of radioactivity in the soil, for example—are invaluable if analyzed objectively and scientifically. The privilege of operating a nuclear reactor should imply the responsibility to warn others of potential hazards and to provide information for a global improvement in safety.

The initial Soviet secrecy and delay in announcing the accident were bad mistakes. Continuation will further erode Soviet credibility. Gorbachev now has a chance to look inside his bureaucracy. Did anyone predict the course of events? If so, should not they be strengthened as future advisers? If no one spoke up, was it due to incompetence or fear of a policy rigidity? Whatever the cause, changes are clearly needed.

Just before the Soviet's guarded announcement of the catastrophe, there was a meeting at the National Academy of Sciences on command and control decisions during a nuclear crisis. Discussed were the awesome decisions that must be made should a nuclear confrontation between superpowers arise. Facts about troop movements, submarine deployments, and other defense strategies are only one aspect of crisis management; the decision-making apparatus and its ability to encourage and evaluate wildly different hypotheses are equally important. The accident at Chernobyl and its handling by the Soviet government is obviously going to effect our perception of its handling of even more important crises among the superpowers. The tendency of crisis managers to escalate military options on a preprogrammed scenario increases if they believe that the other side cannot adapt to new information. A system that has flexibility is needed for far more than determining electric power needs or public relations.

If there is any silver lining to this episode, it may be the message that those who tell painful truths in private are more helpful than those who accede to the party line. When facts travel on the wind, they should trigger information that travels even faster.

—DANIEL E. KOSHLAND, JR.