

443 This Week in *Science*

## Editorial

445 Cassette Principles

## Letters

447 Robert Frost on Thinking: D. M. JOHNSON ■ Mathematics Education: J. D. STEIN JR.; N. W. RICKERT; L. A. STEEN ■ Peer Review at the Agricultural Research Service: T. B. KINNEY, JR.; C. NORMAN ■ International Science Foundation: A. HASEGAWA

## Perspective

452 The Regulation of ACTH Secretion by IL-1: M. D. LUMPKIN

## Policy Forum

455 A Low-Threshold Test Ban Is Feasible: H. A. FEIVESON, C. E. PAINE, F. VON HIPPEL ■ Facing Nuclear Reality: G. H. MILLER, P. S. BROWN, M. D. NORDYKE

## News & Comment

471 Progress on a Chemical Arms Treaty  
472 Slowdown for French Fast Breeders?  
473 A Scientist Back at the Helm of Unesco?  
474 Engineers Hear a Competitive Parable  
475 Feathers Still Fly in Row over Fossil Bird  
476 Koryagin Skeptical on *Glasnost*  
477 Science Committee Okays Supercollider  
*Briefing*: Alexander Bearn: New Hughes Trustee ■ AIDS 101 ■ Progress Report on NSF ■ Science Agencies Brace for 1988 Budget Cuts  
478 NSF Official's Finances Probed by Justice

## Research News

479 Sunspot-Weather Correlation Found  
481 The 1987 Nobel Prize for Physics  
482 Measuring Cholesterol Is as Tricky as Lowering It  
484 Antibody Research Garners Nobel Prize

## Articles

486 Computer-Aided Molecular Design: J. A. McCAMMON  
491 New Perspectives in Cell Adhesion: RGD and Integrins: E. RUOSLAHTI AND M. D. PIERSCHBACHER

## Research Articles

498 Helix Geometry, Hydration, and G · A Mismatch in a B-DNA Decamer: G. G. PRIVÉ, Ü. HEINEMANN, S. CHANDRASEGARAN, L.-S. KAN, M. L. KOPKA, R. E. DICKERSON  
504 Clathrin Requirement for Normal Growth of Yeast: S. K. LEMMON AND E. W. JONES

## Reports

512 Detection of Uranium from Cosmos-1402 in the Stratosphere: R. LEIFER, Z. R. JUZDAN, W. R. KELLY, J. D. FASSETT, K. R. EBERHARDT

- SCIENCE is published weekly on Friday, except the last week in December, and with an extra issue in February 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 © 1987 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership and subscription (51 issues): \$65. Domestic institutional subscription (51 issues): \$98. Foreign postage extra: Canada \$32, 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; Guide to Biotechnology Products and Instruments \$16 (\$17 by mail). **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** Early morning launching of a 138,000-cubic-meter polyethylene balloon by the Air Force Geophysical Laboratory, 28 February 1984, at Alamogordo, New Mexico. Filter sampling equipment was flown on the balloon for the Environmental Measurements Laboratory, Department of Energy, to retrieve nuclear reactor ablation aerosol from the burnup of Cosmos-1402 at 36 kilometers. See page 512. [Official U.S. Air Force Photograph]

- 514 X-ray Holograms at Improved Resolution: A Study of Zymogen Granules: M. HOWELLS, C. JACOBSEN, J. KIRZ, R. FEDER, K. MCQUAID, S. ROTHMAN
- 517 Demonstration of X-ray Holography with an X-ray Laser: J. E. TREBES, S. B. BROWN, E. M. CAMPBELL, D. L. MATTHEWS, D. G. NILSON, G. F. STONE, D. A. WHELAN
- 519 Release of Multiple Hormones by a Direct Action of Interleukin-1 on Pituitary Cells: E. W. BERNTON, J. E. BEACH, J. W. HOLADAY, R. C. SMALLRIDGE, H. G. FEIN
- 522 Interleukin-1 Stimulates the Secretion of Hypothalamic Corticotropin-Releasing Factor: R. SAPOLSKY, C. RIVIER, G. YAMAMOTO, P. PLOTSKY, W. VALE
- 524 Corticotropin-Releasing Factor-Producing Neurons in the Rat Activated by Interleukin-1: F. BERKENBOSCH, J. VAN OERS, A. DEL REY, F. TILDERS, H. BESEDOVSKY
- 527 Model Substrates for an RNA Enzyme: W. H. MCCLAIN, C. GUERRIER-TAKADA, S. ALTMAN
- 530 Recombinant Fragment of Protein Kinase Inhibitor Blocks Cyclic AMP-Dependent Gene Transcription: J. R. GROVE, D. J. PRICE, H. M. GOODMAN, J. AVRUCH
- 533 Rapid Stimulation of Diacylglycerol Production in *Xenopus* Oocytes by Microinjection of H-ras p21: J. C. LACAL, P. DE LA PEÑA, J. MOSCAT, P. GARCIA-BARRENO, P. S. ANDERSON, S. A. AARONSON
- 536 Mutations in Diphtheria Toxin Separate Binding from Entry and Amplify Immunotoxin Selectivity: L. GREENFIELD, V. G. JOHNSON, R. J. YOULE
- 539 Family Study of Platelet Membrane Fluidity in Alzheimer's Disease: G. S. ZUBENKO, M. WUSYLKO, B. M. COHEN, F. BOLLER, I. TEPLY
- 542 A Cytoplasmic Protein Stimulates Normal N-ras p21 GTPase, but Does Not Affect Oncogenic Mutants: M. TRAHEY AND F. MCCORMICK
- 545 Germline Organization of the Murine T Cell Receptor  $\beta$ -Chain Genes: H. S. CHOU, C. A. NELSON, S. A. GODAMBE, D. D. CHAPLIN, D. Y. LOH
- 548 Nuclear Reassembly Excludes Large Macromolecules: J. A. SWANSON AND P. L. MCNEIL

## Technical Comments

- 550 Quick-Freeze Lipid Techniques: Correction: D. L. MELCHIOR ■ Negative Poisson's Ratio Materials: S. BURNS; R. LAKES

## Book Reviews

- 556 Brought to Bed, reviewed by S. REVERBY ■ Plant Ecology, R. B. PRIMACK ■ Pollen and Spores, J. A. DOYLE ■ The Quantum Universe: O. W. GREENBERG ■ Some Other Books of Interest ■ Books Received

## Products & Materials

- 560 Preparative HPLC System ■ Benchtop Bioreactor Chromatography Gradient Systems ■ Radiation Shield for Computer Monitors ■ Multiple-User Gamma Counter ■ Nonradioactive Labeling of DNA Probes ■ Multitasking Open-Architecture Computer ■ Automated AA Spectrometer ■ Literature

### Board of Directors

Lawrence Bogorad  
*Retiring President,  
Chairman*

Sheila E. Widnall  
*President*

Walter E. Massey  
*President-elect*

Robert McC. Adams  
Floyd E. Bloom  
Mary E. Clutter  
Mildred S. Dresselhaus  
Beatrice A. Hamburg  
Donald N. Langenberg  
Frank von Hippel  
Linda S. Wilson  
William T. Golden  
*Treasurer*  
Alvin W. Trivelpiece  
*Executive Officer*

### Editorial Board

Elizabeth E. Bailey  
David Baltimore  
William F. Brinkman  
Phillip E. Converse  
Joseph L. Goldstein  
James D. Idol, Jr.  
Leon Knopoff  
Seymour Lipset  
Oliver E. Nelson  
David V. Ragone  
David M. Raup  
Vera C. Rubin  
Larry L. Smarr  
Solomon H. Snyder  
Robert M. Solow  
James D. Watson

### Board of Reviewing Editors

John Abelson  
Qais Al-Awqati  
James P. Allison  
Don L. Anderson  
Elizabeth H. Blackburn  
Floyd E. Bloom  
Charles R. Cantor  
Ralph J. Cicerone  
James H. Clark  
Bruce F. Eldridge  
Stanley Falkow  
Theodore H. Geballe  
Roger I. M. Glass  
Stephen P. Goff  
Robert B. Goldberg

Corey S. Goodman  
Stephen J. Gould  
Richard M. Held  
Gloria Heppner  
Eric F. Johnson  
Konrad B. Krauskopf  
I. Robert Lehman  
Karl L. Magleby  
Joseph B. Martin  
John C. McGiff  
Alton Meister  
Mortimer Mishkin  
Peter Olson  
Gordon H. Orians  
Carl O. Pabo  
John S. Pearce

Yeshayau Pocker  
Jean Paul Revel  
James E. Rothman  
Thomas C. Schelling  
Ronald H. Schwartz  
Stephen M. Schwartz  
Otto T. Solbrig  
Robert T. N. Tjian  
Virginia Trimble  
Geerat J. Vermeij  
Martin G. Weigert  
Harold Weintraub  
Irving L. Weissman  
George M. Whitesides  
Owen N. Witte  
William B. Wood

# Science

**238 (4826)**

*Science* **238** (4826), 443-560.

ARTICLE TOOLS

<http://science.sciencemag.org/content/238/4826>

PERMISSIONS

<http://www.sciencemag.org/help/reprints-and-permissions>

Use of this article is subject to the [Terms of Service](#)

---

*Science* (print ISSN 0036-8075; online ISSN 1095-9203) is published by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. 2017 © The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works. The title *Science* is a registered trademark of AAAS.