

7 This Week in *Science*

Editorial

9 Inexorable Laws and the Ecosystem

Letters

10 The Ice-Minus Case and a Scientifically Informed Judiciary: R. K. COLWELL; S. EISEN, D. E. KOSHLAND, JR. ■ Availability of Human Tissues for Research in Cancer: K. P. CLAUSEN, W. E. GRIZZLE, V. A. LIVOLSI, W. E. NEWTON ■ Water Quality: J. F. SMITH AND W. A. KREUTZBERGER; R. A. SMITH, R. B. ALEXANDER, M. G. WOLMAN

News & Comment

16 FDA Puts New Heart Drug on Hold
18 U.S. Policy on Exchanges with the Soviets Called a "Shambles"
19 Broader R&D Role Sought for Commerce
20 Commerce Sees the Future; Says Industry Practices Must Change
20 CERN Urged to Cut 400 Posts
21 NSF Centers: Yes, But . . .
Indictment of Beggs Dropped
22 Science Budgets Fare Well in House Action

Research News

23 Angiogenesis Research Comes of Age
25 Supernova 1987A: A Mysterious Stranger
26 Four Groups Build More Efficient Atom Traps
28 Study Bolsters Case Against Cholesterol

Articles

31 R&D and Productivity: Measurement Issues and Econometric Results: Z. GRILICHES
35 Changes in Stratospheric Ozone: R. J. CICERONE
42 A Physiological Basis for a Theory of Synapse Modification: M. F. BEAR, L. N. COOPER, F. F. EBNER

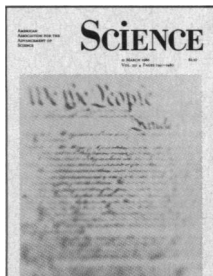
Research Articles

49 Selective Disruption of Gap Junctional Communication Interferes with a Patterning Process in Hydra: S. E. FRASER, C. R. GREEN, H. R. BODE, N. B. GILULA

Reports

56 Interstellar Polycyclic Aromatic Hydrocarbons and Carbon in Interplanetary Dust Particles and Meteorites: L. J. ALLAMANDOLA, S. A. SANDFORD, B. WOPENKA

- **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 Computer simulation of the brain's view of the opening passage of the U.S. Constitution. Each point on the image represents the activity of a retinal ganglion cell viewing the corresponding part of the original document. The image is sharp only in the fovea, which is viewing a point several lines below the large word "People." The illustration shows the rapid decrease in acuity for small features (high spatial frequencies) as a function of distance from the fovea. This effect of the spatial tuning of the nonfoveal retina is much more apparent in viewing printed text, which is dominated by such small features, than in viewing other kinds of scenes. See page 73. [Josh Wallman, Christopher M. Harris, and Michael D. Gottlieb, City University of New York]

- 59 Fossil Mycorrhizae: A Case for Symbiosis: S. P. STUBBLEFIELD, T. N. TAYLOR, J. M. TRAPPE
- 61 T-Cell Tumor Elimination as a Result of T-Cell Receptor-Mediated Activation: J. D. ASHWELL, D. L. LONGO, S. H. BRIDGES
- 64 Structurally Divergent Human T Cell Receptor γ Proteins Encoded by Distinct C γ Genes: M. S. KRANGEL, H. BAND, S. HATA, J. MCLEAN, M. B. BRENNER
- 67 A Mab to a Unique Cerebellar Neuron Generated by Immunosuppression and Rapid Immunization: S. HOCKFIELD
- 70 Early Archean (3.3-Billion to 3.5-Billion-Year-Old) Microfossils from Warrawoona Group, Australia: J. W. SCHOPF AND B. M. PACKER
- 73 Local Retinal Regions Control Local Eye Growth and Myopia: J. WALLMAN, M. D. GOTTLIEB, V. RAJARAM, L. A. FUGATE-WENTZEK
- 77 Localization of Amyloid β Protein Messenger RNA in Brains from Patients with Alzheimer's Disease: S. BAHMANYAR, G. A. HIGGINS, D. GOLDGABER, D. A. LEWIS, J. H. MORRISON, M. C. WILSON, S. K. SHANKAR, D. C. GAJDUSEK
- 81 A Major Food Web Component in the Orinoco River Channel: Evidence from Planktivorous Electric Fishes: J. G. LUNDBERG, W. M. LEWIS, JR., J. F. SAUNDERS, III, F. MAGO-LECCIA

AAAS News

- 84 Journalism Is Subject of Ethics Group Meeting: A. CRUMPTON ■ Panel for U.S./Chilean Science Formed ■ Update on AAAS Cooperative Efforts with Soviet Scientific and Engineering Community: S. M. BURNS ■ Resource Directory Available ■ "The Hole in the Sky" Transcripts Available

Book Reviews

- 86 Dark Matter in the Universe, reviewed by J. S. GALLAGHER ■ Rabi, R. R. WILSON ■ The Changing Samoans, P. J. BYARD ■ Tectonostratigraphic Terranes of the Circum-Pacific Region, M. CLOOS ■ Books Received

Products & Materials

- 90 Nonlinear Curve-Fitting Software ■ Immunological Reagents Against Rodents, Rabbits ■ Amino Acid Analyzer ■ Refrigerated, High-Speed Microcentrifuge ■ EM Specimens from Fresh Tissue ■ Floating Tube Rack ■ X-ray Fluorescence 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
Beatrix 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
Philip 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
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

237 (4810)

Science **237** (4810), 7-90.

ARTICLE TOOLS

<http://science.sciencemag.org/content/237/4810>

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. The title *Science* is a registered trademark of AAAS.

Copyright © 1987 The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works.