

# SCIENCE NEWS®

The Weekly Newsmagazine of Science

A Science Service Publication  
Volume 138, No. 4, July 28, 1990

E.G. Sherburne Jr.	Publisher
Patrick Young	Editor
Laurie Jackson	Managing Editor
Janice Rickerich	Production/Design Director
Bruce Bower	Behavioral Sciences
Ivan Amato	Chemistry/ Materials Science
Richard Monastersky	Earth Sciences
Janet Raloff	Environment/Policy
Ron Cowen	General Science
Kathy A. Fackelmann, Rick Weiss	Life Sciences/ Biomedicine
Ivars Peterson	Mathematics/Physics
Jonathan Eberhart	Space Sciences
Jennifer L. Miller	Editorial Assistant
William Stolzenburg, Peter L. Weiss	Science Writer Interns
Wendy Smith	Books/Resource Manager
Donald R. Harless	Advertising/Business Manager

SCIENCE NEWS (ISSN 0036-8423) is published weekly on Saturday, except the last week in December, for \$34.50 for 1 year or \$58.00 for 2 years (foreign postage \$6.00 additional per year) by Science Service, Inc., 1719 N Street, N.W., Washington, D.C. 20036. Second-class postage paid at Washington, D.C., and additional mailing office. **POSTMASTER:** Send address changes to SCIENCE NEWS, 231 West Center Street, Marion, OH 43305. Change of address: Four to six weeks' notice is required — old and new addresses, including zip codes, must be provided.

Copyright © 1990 by Science Service, Inc. Title registered as trademark U.S. and Canadian Patent Offices. Printed in U.S.A.

**Editorial and Business Offices:**  
1719 N St., N.W., Washington, D.C. 20036  
(202-785-2255)

Republication of any portion of SCIENCE NEWS without written permission of the publisher is prohibited.

**Subscription Department:**  
231 West Center St., Marion, OH 43305  
For new subscriptions only, call 1-800-247-2160.

## This Week

- 52 Quakes Pose Greater Threat to Bay Area
- 52 Cystic Fibrosis gene: Too many mutants
- 53 Distorted nuclei spinning to the same beat
- 53 Space base heads back to the drawing board
- 54 Mom's blood reveals baby's hemorrhage risk
- 54 Hubble's flaws: Looking for the source
- 54 Clues emerge to how brain reads, spells
- 55 Self-made molecules do the double twist
- 55 Open mind may help close rad-waste lid

## Research Notes

- 61 Biology
- 61 Biomedicine
- 62 Earth Sciences
- 62 Space Sciences

## Articles

- 56 The Shell Game

Cover: Researchers have no detailed images of the protein coats surrounding the core of the AIDS virus (HIV). To develop drugs that might interfere with the assembly of the outer HIV coat, scientists have developed a computer model (right) that relies on the known structure of the coat, or capsid, of a family of smaller viruses (left), which includes those that cause polio and the common cold. Other investigators have developed a similar computer model for the protein structure of the inner coat of the AIDS virus. (Image: T.J. O'Donnell/Searle)

- 58 Visionary Arms

## Departments

- 51 Letters
- 60 Science on the Air
- 60 Books

**Science Service** Institution for the public understanding of science founded 1921; a nonprofit corporation.

**Board of Trustees** — *Chairman*, Glenn T. Seaborg; *Vice Chairman*, Gerald F. Tape; *Treasurer*, Willis Harlow Shapley; *Joseph W. Berg Jr.*; *Robert W. Fri*; *David A. Goslin*; *J. David Hann*; *Milton Harris*; *Leon M. Lederman*; *Shirley M. Malcom*; *Elena O. Nightingale*; *Ben Patrusky*; *H. Guyford Stever*; *Deborah P. Wolfe*.

**Honorary Trustees** — *Edward Bliss Jr.*; *Bowen C. Dees*; *O. W. Riegel*; *John Troan*.

**President:** E. G. Sherburne Jr.; **Business Manager:** Donald R. Harless.



## Letters

### 'Surface chauvinism'

The most common methods of "cooking" primordial soups, as described in "Recreating prehistoric enzymes" (SN: 5/5/90, p.285), all reflect surface chauvinism. What if life originated not on the surface, driven by the sun, but rather in an oceanic abyss, driven by volcanic heat?

The environment would be more constant — no night to undo day's advances, no changing water levels, no climatic variations — and the high temperatures and pressures enzymes artificially create would already be there. As life developed, a quantity of dead material would accumulate in the cooled areas. One can imagine a bacterium that could finally survive the cold, feasting in a predator-free environment. And imagine life gaining a foothold in the treacherous surface in early areas resembling today's Iceland, where continental splitting is coming to the surface. If a pressure-cooker would get bigger and better compounds more quickly, it would increase the likelihood of such a scenario.

A possible test: If one form of life originated in the trenches and another in the tidal basins, it would seem that a genetic fingerprint would be left indicating that. Most current life there could represent a reinvasion, but exceptions might also be found.

*Fran Tabor  
Kalispell, Mont.*

### Plasmas ignored

There is one thing missing from "Cosmic Evidence of a Smooth Beginning" (SN: 1/20/90, p.36) and the subsequent letters to the editor (SN: 3/31/90, p.195) that surprises me. Why no mention of plasma physics?

I learned in graduate school that due to the equipartition of energy, the energy densities in the galaxy of magnetic fields, gravitational fields and kinetic energy are comparable in magnitude. The large energies associated with magnetic fields (plasmas) must have some effect in the structure of galaxies.

I can understand why computer simulations of galaxies ignore plasma effects, due to the difficulties of incorporating such effects in the

programs. But I cannot understand why theoretical discussions simply ignore plasmas.

The most pleasing theory of cosmology from an intellectual standpoint is the steady-state theory of Fred Hoyle. It is based upon the strong symmetry principle — namely, that there is symmetry in the large in the universe in space-time. There can be no fundamental difference in the universe here or anywhere else, or at any time. This theory lost favor due to difficulties with observations. However, recent observations and modern theoretical developments may yet rescue it.

There are other theories of physics that negate the Big Bang. The gravitational theory of Nathan Rosen, for example, denies the existence of black holes and the Big Bang.

The interesting question is: How do certain theories become so accepted that other theories of equal validity cannot even be heard? How many papers dealing with such other theories are rejected by referees? Is the Big Bang in favor due to religious feelings?

*Sanford Aranoff  
Kiryat Motzkin, Israel*

JULY 28, 1990

51