

# SCIENCE NEWS®

The Weekly Newsmagazine of Science

Science Service Publication  
Volume 151, No. 2, January 11, 1997

Thomas Peter Bennett	Publisher
Julie Ann Miller	Editor
Blair Burns Potter	Managing Editor
Dan Skripkar	Production/Design Director
David Lindley	Associate Editor
Janet Raloff	Senior Editor
Ivars Peterson	Environment/Policy Online Editor
Bruce Bower	Mathematics/Physics
Richard Monastersky	Behavioral Sciences Internship Coordinator
Kathleen Fackelmann, Steve Sternberg	Earth Science Biomedicine
Ron Cowen	Astronomy
Tina Adler, Christine Mlot	Life Sciences
John Travis	Biology
Corinna Wu	Chemistry/Materials Science
Dan Vergano	Science Writer Intern
Meghan Mitchell	Editorial Assistant
Cait Anthony	Books/Advertising
Donald R. Harless	Business Manager

SCIENCE NEWS (ISSN 0036-8423) is published weekly on Saturday, except the last week in December, for \$49.50 for 1 year or \$88.00 for 2 years (foreign postage \$6.00 additional per year) by Science Service, 1719 N Street, N.W., Washington, D.C. 20036. Preferred Periodicals postage paid at Washington, D.C., and additional mailing office. POSTMASTER: Send address changes to SCIENCE NEWS, P.O. Box 1925, Marion, Ohio 43305. Change of address: Four to six weeks' notice is required — old and new addresses, including zip codes, must be provided. Copyright © 1997 by Science Service. Title registered as trademark U.S. and Canadian Patent Offices. Printed in U.S.A. on recycled paper. ♻️ Reproduction of any portion of SCIENCE NEWS without written permission of the publisher is prohibited.

Editorial and Business Offices  
1719 N St. N.W., Washington, D.C. 20036  
202-785-2255; [scinews@scisvc.org](mailto:scinews@scisvc.org)

Advertising Representative  
Lewis Edge & Associates, Inc.  
366 Wall St., Princeton, N.J. 08540, 609-683-7900

Subscription Department  
P.O. Box 1925, Marion, Ohio 43305  
For new subscriptions only, call 1-800-247-2160.  
For customer service, call 1-800-552-4412.

SCIENCE NEWS ONLINE <http://www.sciencenews.org>

## This Week

- 20 Study Frays Abortion, Cancer Link
- 20 Satellite gets a kick out of sun's photons
- 21 Sound waves may drive cosmic structure
- 21 Uncovering traits of effective therapists
- 22 New heart risk from too much coffee?
- 22 Earth's poles feel warmth of the full moon
- 23 Hitting malaria parasites early and hard
- 23 Weight control for bacterial plastic

## Research Notes

- 26 Biology
- 26 Biomedicine
- 31 Earth Science
- 31 Nutrition

## Articles

- 24 Banking on Blood Conversion

Cover: A color-enhanced scanning electron micrograph shows disk-shaped red blood cells in the company of other blood cells. Researchers are now developing biochemical processes to transform all red cells into type O so they can be transfused into any patient. The technology could help prevent deadly transfusion mistakes and make more efficient use of donated blood. (Photo: © N. Giles/Fran Heyl Associates)

- 28 Bombs Away!

## Departments

- 19 Letters

Science Service is a nonprofit corporation founded in 1921 to increase the public understanding of science. It publishes SCIENCE NEWS and administers the International Science and Engineering Fair and the Science Talent Search.

Board of Trustees — *Chairman*, Dudley Herschbach; *Vice Chairman*, Gerald F. Tape; *Secretary*, David A. Goslin; *Treasurer*, Willis Harlow Shapley; Joseph W. Berg Jr.; Robert W. Fri; J. David Hann; Shirley M. Malcom; Eve L. Menger; C. Bradley Moore; Ben Patrusky; H. Guyford Stever; Sanford J. Ungar; Deborah P. Wolfe; *Chairman Emeritus*, Glenn T. Seaborg; *Honorary Trustees*, Edward Bliss Jr.; Bowen C. Dees; Elena O. Nightingale; O.W. Riegel; John Troan.

Officers—*President*, Thomas Peter Bennett; *Vice President and Business Manager*, Donald R. Harless.



## Letters

### The whole of ozone measurements

"Ozone hole starts strong, fades quickly" (SN: 10/19/96, p. 246) is misleading in that it refers only to the total amount of ozone in an atmospheric column measured by satellites from the surface to outer space. Total ozone is a measure of the vagaries of ozone at high altitudes above the ozone hole as well as the effects of ozone loss due to chlorine chemistry in the 12- to 20-kilometer (7.5- to 12.5-mile) ozone hole region.

Above the hole, where about one-third of the total ozone column resides, ozone is quite variable because of changes in stratospheric air motions. This is revealed in balloon-borne ozone profile measurements conducted at the South Pole each year.

The accompanying graph shows that, on the days in 1995 and 1996 when minimum total ozone was recorded, there was considerably more ozone above 25 km in 1996 than in 1995. This increased total ozone (measured in



Dobson units, DU), even though ozone in the 12- to 20-km hole region was near zero earlier and for a longer period in 1996 than ever before. (Dotted lines show values in early September, before ozone destruction had begun.) Thus, while the ozone hole did "start strong," it did not "fade quickly."

David J. Hofmann  
*Climate Monitoring and Diagnostics Lab  
National Oceanic and  
Atmospheric Administration  
Boulder, Colo.*

If you check the NASA TOMS home page (<http://jwocky.gsfc.nasa.gov/>), you will see that the ozone hole has been sitting over the Weddell Sea, allowing tropical levels of

ultraviolet B radiation to impinge on this important marine environment.

Art Neuendorffer  
*District Heights, Md.*

The ozone hole continues to defy expectations. During early September, the area of the ozone hole grew rapidly to reach a record value briefly. Then, it started to shrink, even as ozone destruction continued. In early October, the total amount of ozone in the sky, which defines the ozone hole, did not reach a record minimum. So the growth of the hole, which had started out quite strong, had faded a bit by mid-October. "The [SCIENCE NEWS] headline was correct for that period of time," says Arlin Krueger of NASA's Goddard Space Flight Center. The hole revived and persisted through October, November, and into the first week of December. During this period, the hole gradually weakened in terms of size and depth, but these waning stages were just as severe as they had been in years past. So ultimately, the hole did not fade quickly. — R. Monastersky

JANUARY 11, 1997

SCIENCE NEWS, VOL. 151

19