

SCIENCE NEWS®

The Weekly Newsmagazine of Science

A Science Service Publication
Volume 139, No. 22, June 1, 1991

E. G. Sherburne Jr.	Publisher
Patrick Young	Editor
Laurie Jackson Vaughan	Managing Editor
Janice Rickerich	Production/Design Director
Janet Raloff	Senior Editor Environment/Policy
Bruce Bower	Behavioral Sciences
Elizabeth Pennisi	Chemistry/ Materials Science
Richard Monastersky	Earth Sciences
Ron Cowen	General Science/ Space Sciences
Carol Ezzell, Kathy A. Fackelmann	Life Sciences/ Biomedicine
Ivars Peterson	Mathematics/Physics
Larry Norland	Editorial Assistant
John Travis, Tim Walker	Science Writer Interns
Liz Marshall	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 © 1991 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.

Letters

Burning questions

In "Fresh smoke lowers nitrous oxide estimate" (SN: 3/2/91, p.134), researchers report that chemical reactions within stored air samples collected from the air above a forest fire generated nitrous oxide. They say this suggests that estimates of nitrous oxide emissions from the burning of biomass have been exaggerated.

Yet if the same chemical reactions that occur in the collection jars also occur in the environment after a forest fire, biomass burning may be contributing *more* nitrous oxide to the atmosphere, rather than less.

Patricia Shannon
Huntsville, Ala.

The researchers think the chemical reactions creating nitrous oxide in their experiments take place on the interior surfaces of the collection containers themselves. The walls of these containers act to bring sulfuric acid, water vapor and nitric oxide together to form nitrous oxide. The odds of these three molecules meeting in the air

This Week

- 340 Opening a Window of Transparency
- 340 Antibodies pinpoint migrating mini-tumors
- 341 Cave evidence chews up cannibalism claims
- 341 Helping cancers mature so they might die
- 342 Daily exercise fights hypertension, clots
- 342 Trouble with bubbles precedes the popping
- 343 Evidence for buried quasars unites galaxies
- 343 Deep-sea denizen may tell of ocean's past

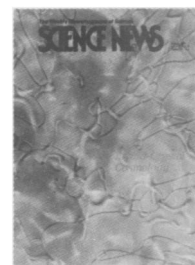
Research Notes

- 347 Biomedicine
- 351 Behavior
- 351 Earth Science

Articles

344 Cracks in the Cosmos

Cover: A defect tangle appears in a thin film of liquid crystal after a phase transition in which randomly oriented, rod-like molecules become aligned. Mismatches between regions with different alignments create a network of string-like defects. This type of laboratory system serves as an analog for defect-generating phase transitions that play key roles in certain cosmological theories. (Photo: B. Yurke)



348 Butterflies and Bad Taste

Departments

- 339 Letters
- 350 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; Sanford J. Ungar; 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.

above a biomass fire are much lower than the odds of their meeting in a sealed container. The shape of the collection containers — typically long, narrow cylinders with a large surface-to-volume ratio — also gives these three molecules many opportunities to come in contact with a surface and to react with one another to form nitrous oxide.

— T. Walker

Two separate problems seem intertwined in "Fresh smoke lowers nitrous oxide estimate." New sources of nitrous oxide have not been identified to account for the increasing concentration, and it appears that baseline sources also have not been completely identified.

As a volunteer rural firefighter, I have a suggestion for an unidentified baseline source: nitrogen compounds deposited by snow.

Grass fires are especially common in the spring. Part of the standard explanation for this is that winter snows deposit nitrogen compounds on the grass, making it much more flammable. Farmers also claim that the winter snows deposit nitrogen compounds in the soil to fertilize crops.

Such conditions exist over vast areas. Since the spring rains probably don't wash all of the exposed nitrogen compounds into the soil, and since sunlight might convert these unstable compounds into nitrous oxide, I wonder if this could be a cause of an unexplained seasonal variation in nitrous oxide.

Emmett Redd
Assistant Professor, Industrial Technology
Southwest Missouri State University
Springfield, Mo.

Astronomic acronyms

It's obvious that the acronym COSTAR was coined before the unfortunate title, Corrective Optics Space Telescope Axial Replacement ("Uncertainties surface over Hubble 'fix,'" SN: 3/2/91, p.142).

I have some better names for this package of corrective mirrors. How about Focus Optics Repair (FOUR-EYES), Updated Hubble Optics (UH-O) or Focus Improvement in Xtremely Inaccessible Telescope (FIXIT)?

Al Pergande
Orlando, Fla.