SCIENCE NEWS®

The Weekly Newsmagazine of Science

A Science Service Publication
Volume 139, No. 13, March 30, 1991

E.G. Sherburne Jr.	Publisher
Patrick Young	Editor
Laurie Jackson	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
Carol Ezzell, Kathy A. Fackelmann	Life Sciences/ Biomedicine
Ivars Peterson	Mathematics/Physics
Jonathan Eberhart	Space Sciences
Larry Norland	Editorial Assistant
Wendy Gibbons, 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.

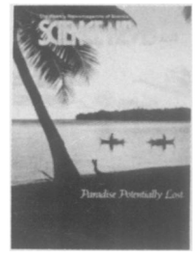
Subscription Department:
231 West Center St., Marion, OH 43305
For new subscriptions only, call 1-800-247-2160.

This Week

Research Notes

Articles

Cover: While greenhouse warming remains an abstract concept for many Americans, residents of small islands and coastal areas face a distinctly visible threat. Such regions, including this island in the Federated States of Micronesia, may disappear from the map if climate warming causes sea levels to rise substantially. Delegates from many of the world's nations met last month to launch negotiations for a treaty addressing the greenhouse problem. (Photo: Michael J. Levin/U.S. Bureau of the Census)



Departments

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

Breakthroughs in chaos control

I take exception to Ivars Peterson's claim that the successful ribbon-control experiment at the Naval Surface Warfare Center (NSWC) is the first time "researchers have controlled the chaotic behavior of the real-world physical system simply by making small adjustments to one of the [pertinent physical] parameters" ("Ribbon of Chaos," SN: 1/26/91, p.60).

Another, perhaps earlier achievement was realized in the control of chaos in solid-state lasers. In particular, intracavity frequency doubling has been known for some time to induce chaotic fluctuations in the intensity output of a Nd:YAG laser. Advances in the associated theory were made by Oka and Kubota in 1988, and our research team at Georgia Tech managed to unite theory and experiment last year to successfully eliminate the chaos in an intracavity-doubled Nd:YAG laser. We are able to demonstrate a wide range of behavior — in the time-dependent intensity output — simply by rotating the doubling crystal in its mount. Our results include completely stable time traces and various period doublings, in addition to irregular chaotic output. Research on this problem continues to investigate the particular influence of each relevant physical parameter.

We salute the success of the nonlinear dynamicists at NSWC, and we're very interested in hearing more about recent developments in the control of chaos in other physical systems.

Glenn E. James, Capt., USAF
Instructor, Dept. of Mathematical Sciences
U.S. Air Force Academy
Colorado Springs, Colo.

"Ribbon of Chaos" describes the use of the microcontrol of a magnetic field to stabilize the motion of a metal ribbon. The instability of the magnetic field has been one of the main reasons for our inability to obtain continuous controlled fusion in a Tokamak.

It would be wonderful if the results of the ordering of chaos on a ribbon could result in our entry into the age of controlled-fusion energy

Raymond V. Mikulka
Merrillville, Ind.

Depression findings questioned

When nearly 50 percent of the patients in a study drop out initially because of no response or side effects, it can hardly be concluded that "continued high daily doses of imipramine quell most recurrences of major depression with remarkably few side effects," as reported in "A Melancholy Breach" (SN: 1/26/91, p.56). Continued doses may work well, but only for those fortunate enough to have a good initial response and tolerable levels of side effects.

A second problem in this report involves the adequacy of the psychotherapy treatment. Most psychotherapy for acute depression, whether cognitive, interpersonal or psychodynamic, is conducted weekly or twice a week.

Letters continued on p.203

Science Service, Inc. is collaborating with JSTOR to digitize, preserve, and extend access to *Science News*. www.jstor.org