

SCIENCE NEWS®

The Weekly Newsmagazine of Science

A Science Service Publication
Volume 140, No. 22, November 30, 1991

Alfred Scott McLaren	Publisher
Patrick Young	Editor
Laurie Jackson	Managing Editor
Vaughan	Editor
Janice Rickerich	Production/Design Director
Janet Raloff	Senior Editor
Bruce Bower	Environment/Policy
Elizabeth Pennisi	Behavioral Sciences
Richard Monastersky	Chemistry/ Materials Science
Ron Cowen	Earth Sciences
Carol Ezzell,	General Science/ Space Sciences
Kathy A. Fackelmann	Life Sciences/ Biomedicine
Ivars Peterson	Mathematics/Physics
Larry Norland	Editorial Assistant
Karen Schmidt	Science Writer Intern
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 \$39.50 for 1 year or \$68.00 for 2 years (foreign postage \$6.00 additional per year) by Science Service, Inc., 1719 N Street, N.W., Washington, DC 20036. Second-class postage paid at Washington, DC, 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, DC 20036
(202-785-2255)
Republication of any portion of SCIENCE NEWS without written permission of the publisher is prohibited.

Subscription Department:
231 West Center Street, Marion, OH 43305
For new subscriptions only, call 1-800-247-2160.
For customer service, call 1-800-347-6969.

Letters

Passive failure

Every now and then, science — and especially mathematics — comes up with a revelation so elegantly simple that it takes your breath away. I hadn't realized the depth of insight provided by number theory, as exemplified by the random-number generator ("Numbers at Random," SN: 11/9/91, p.300), that "on the average, a high number is followed by a lower one as often as a low number follows a higher one."

Martin Graetz
Acton, Mass.

Oops! The passive voice, against which our editors regularly campaign, somehow slipped into this crucial sentence, garbling its meaning. The sentence should read: "For example, on the average, a high number follows a lower one as often as a low number follows a higher one."

—I. Peterson

NOVEMBER 30, 1991

This Week

- 356 Many Doctors Would Shun AIDS Patients
- 356 Computing by committee: Sharing searches
- 357 Fickle fields: EMFs and epidemiology
- 357 Forgotten fossils reveal leggy legacy
- 358 An asteroid hunt finds mysterious object
- 358 Antiviral drug could cut chicken pox short
- 359 Females show strong capacity for aggression
- 359 Split hydrogen bond allows water to flow

Research Notes

- 365 Biomedicine
- 365 Computers
- 367 Physical Science
- 367 Technology

Articles

- 361 Robots Go Buggy

Cover: Hollywood cartoonists might make a more terrifying animation of a scaled-up cockroach turned loose on a city. But in this three-dimensional, computer-generated simulation, titled "Grinning Evil Death," the insect's movements are controlled by forces that follow the laws of Newtonian physics — not an artist's pen. Scientists created the simulation to demonstrate the potential of "virtual environments" for studying locomotion. (Image: David Zeltzer, Michael McKenna, Bob Subiston, et al./Massachusetts Institute of Technology Media Laboratory)



Departments

- 354 Books
- 355 Letters

Science Service, a nonprofit corporation founded in 1921, gratefully accepts tax-deductible contributions and requests to assist its efforts to increase science and mathematics literacy among the young and minorities, and to advance the public understanding of science in general.

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*; *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: Alfred Scott McLaren; **Vice President and Business Manager:** Donald R. Harless.

A world apart

While Thomas S. Ray has developed a clever software environment, I don't see that he has demonstrated evolution ("Electronic Ecosystem," SN: 8/10/91, p.88).

Ray has made a number of simplifying assumptions to guarantee that he will get most of the effects he is looking for. He has created his "organisms" out of a set of 32 distinct instructions, all of which have an important purpose. When mutations occur, the resulting program is still a combination of those same instructions and will continue to execute them (albeit differently than before).

In this way the organisms of Tierra are made to display the behaviors he calls parasitism, hyperparasitism, etc. But none of the organisms displays any capability that did not preexist in the "genetic" pattern of the original organism. In other words, none of the Tierran organisms ever invented a new instruction for itself that went fundamentally beyond the capabilities of its parent organisms. All Ray

has demonstrated so far is genetic recombination, the so-called "microevolution" we see in the world around us today.

Furthermore, when a mutation occurs in a real-life organism, the mutated instructions do not become another of the 32 useful instructions. Instead, they almost always become one of the thousands of possible "noninstructions" that result in weakness, instability and even death. Almost never do you see a random mutation that results in anything you might call an improvement.

Next, Ray has contrived a number of rules for his "universe" that exist for no other reason than to keep his "evolutionary" machinery operating. The "reaper" program, which prevents organisms from overpopulating or growing too old, is one example, as is the "fountain of youth," which arbitrarily blesses certain organisms. These mechanisms build into the

Letters continued on p. 364

355