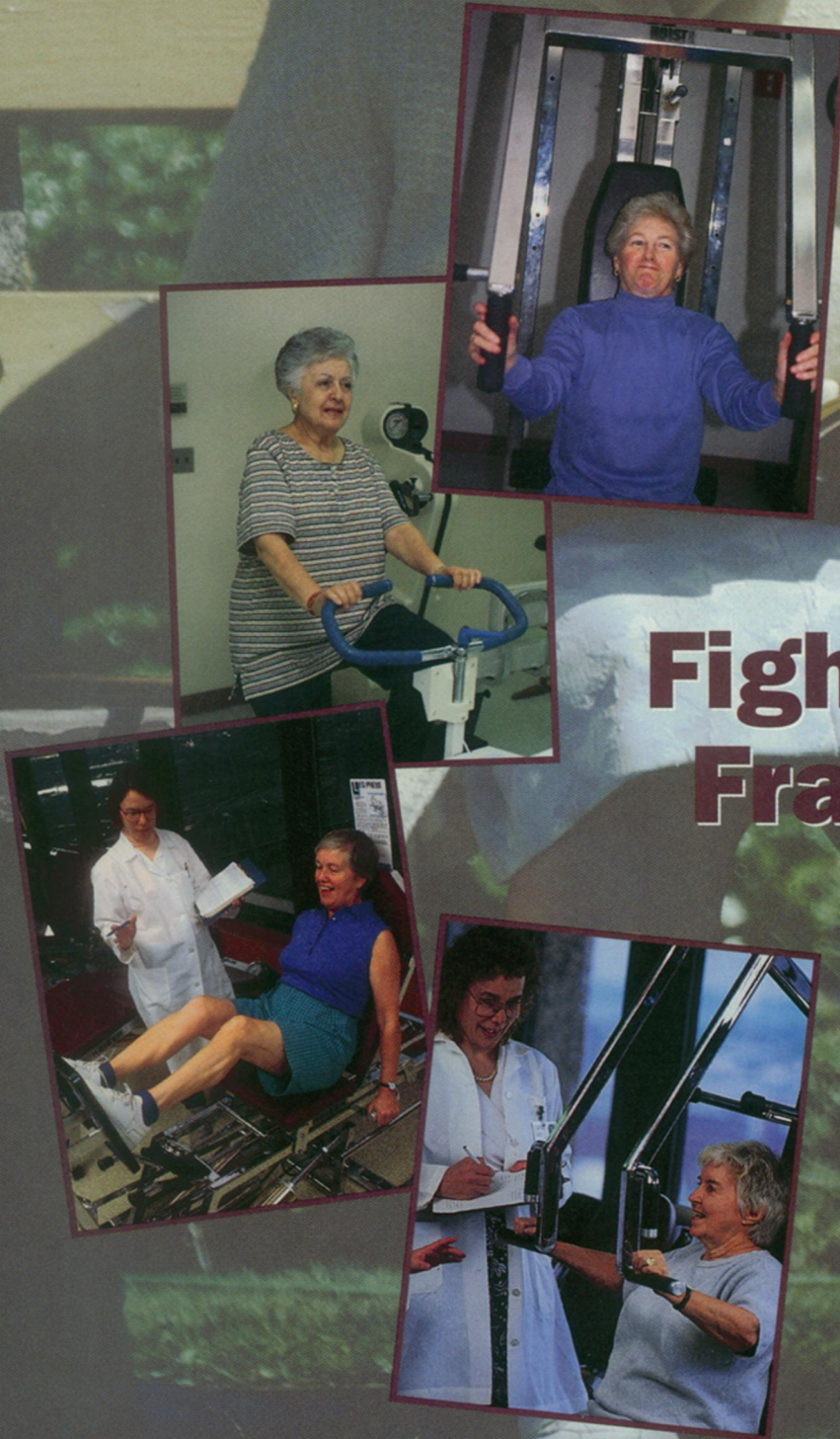


The Weekly Newsmagazine of Science

# SCIENCE NEWS

August 10, 1996  
Vol. 150, No. 6  
Pages 81-96

## Fighting Frailty



# SCIENCE NEWS®

The Weekly Newsmagazine of Science

Science Service Publication  
Volume 150, No. 6, August 10, 1996

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

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, Inc., 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 © 1996 by Science Service, Inc. Title registered as trademark U.S. and Canadian Patent Offices. Printed in U.S.A. on recycled paper. ♻️  
Republication 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 1-800-347-6969.

## This Week

- 84 Meteorite Hints at Early Life on Mars
- 85 *Legionella* kin found, linked to pneumonia
- 85 Genome sequenced for skin disease virus
- 86 Bomb testers beware: Trace gases linger
- 86 Counting millions of electrons, one by one
- 87 Unusual fats lose heart-friendly image
- 87 Yeast peptide goes forth and multiplies

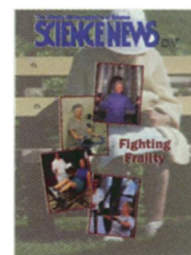
## Research Notes

- 93 Biology
- 93 Earth Science
- 95 Materials Science
- 95 Nutrition

## Articles

- 88 From Exotic to Erotic
- 90 Vanishing Flesh

Cover: Early in adulthood, the body begins losing muscle. The pace of this loss accelerates with age—eventually leading to the frailty that characterizes old age. Medicine has finally taken note, with new studies probing how and why muscle loss occurs. In the meantime, certain types of exercise build strength in the diminished muscle of even the very elderly. (Photos: Fran Heyl Associates, USDA)



## Department

- 82 Books

**Science Service**, which publishes SCIENCE NEWS, is a nonprofit corporation founded in 1921 to increase the public understanding of science. Through its youth programs, it administers the International Science and Engineering Fair and the Science Talent Search for the Westinghouse science scholarships.

**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; C. Bradley Moore; Ben Patrusky; H. Guyford Stever; Sanford J. Ungar; Deborah P. Wolfe.

**Honorary Trustees** — *Chairman Emeritus*, Glenn T. Seaborg; Edward Bliss Jr.; Bowen C. Dees; Elena O. Nightingale; O.W. Riegel; John Troan.

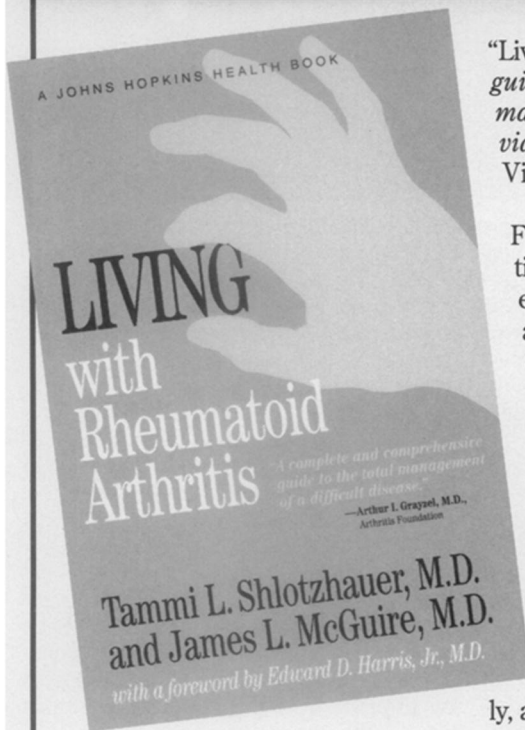
We invite you to visit our web site at:

# SCIENCE NEWS ONLINE

<http://www.sciencenews.org>

- Highlights from current and past issues
- MathLand and other features not in the magazine
- Complete book and gift listings
- Capability to search and contact SCIENCE NEWS ONLINE

Order by phone for faster service! 1-800-544-4565 (Visa or MasterCard Only) In DC area: 202-331-9653



"Living with Rheumatoid Arthritis is a complete and comprehensive guide to the total management of a difficult disease. This book will answer many questions patients and their families haven't thought to ask and provide information they need to know."—Arthur I. Grayzei, M.D., Senior Vice President for Medical Affairs, Arthritis Foundation

For the nearly 3 million Americans who live with rheumatoid arthritis—and the 200,000 more who this year will learn they have the disease—*Living with Rheumatoid Arthritis* offers reliable and practical answers to questions about everyday life. The authors provide clear explanations of the causes, diagnosis, and treatment of the disease and why medication, joint protection, physical activity, and good nutrition are essential components of care. They describe specific ways—including safe and effective exercises—to cope with pain, stiffness, and fatigue, as well as emotional responses, reactions from friends and family, and lifestyle changes.

—from Johns Hopkins University Press

Johns Hopkins University Press, 1995, 216 pages, 6" x 9", paperback, \$15.95

Science News Books LivRheumArth  
1719 N Street, NW  
Washington, DC 20036

Please send me \_\_\_\_\_ copy(ies) of **Living with Rheumatoid Arthritis**. I include a check payable to Science News Books for \$15.95 plus \$2.00 postage and handling for each book (total \$17.95). Domestic orders only.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Daytime Phone \_\_\_\_\_  
(used only for problems with order) RB2561

**How did hallucinogenic plants give rise to North America's earliest religion? Who were the master dolphin hunters? Who counted their wealth in salmon-skin bottles? Who was the great lord of Cahokia?**

In her fascinating new book, *In Search of Ancient North America*, Heather Pringle unearths the unexpected answers to these and a host of other equally engaging questions. She selects nine archaeological hot spots across the continent and heads out into the field with the researchers studying them.

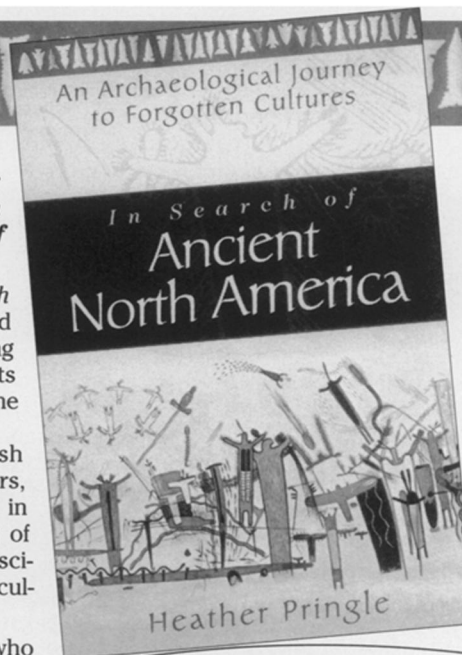
Journeying from the eerie bond-littered Bluefish Caves in the Arctic to the faded murals of panthers, snakes and shamans along the lower Pecos River in Texas, Pringle pieces together the mysterious lives of those who once flourished there. Readers will be fascinated by the newly emerging portraits of long extinct cultures such as:

▼ The rapacious mariners of Southern California who nearly wiped out one of the world's most productive ecosystems

▼ The powerful lords of the Mississippi River who won the adoration of their followers with a mysterious medicinal tonic

▼ The devout farmers of the Southwest who recreated the sacred landscape of myth in the bleak desert.

—from John Wiley & Sons



To order by phone from Science News Books, call:

**1-800-544-4565**  
(Visa or MasterCard Only)

In DC area:  
**202-331-9653**

John Wiley & Sons, 1996,  
227 pages, 6 3/8" x 9 1/2",  
hardcover, \$24.95

Science News Books,  
1719 N Street, NW, Washington, DC 20036 InSrchAncNAH

Please send \_\_\_\_\_ copy(ies) of *In Search of Ancient North America*. I include a check payable to Science News Books for \$23.00 plus \$2.00 postage and handling (total \$25.00) for each copy. Domestic orders only.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Daytime phone \_\_\_\_\_

(used only for problems with order) RB2564

**Order by phone:**  
**1-800-544-4565**  
 (Visa or MasterCard  
 Only) In D.C. area:  
 (202) 331-9653

**Updated, revised and expanded from the original edition**

*HarperPerennial,  
 1994, 142 pages  
 5 1/4" x 8", paperback, \$11.00*

**Did You Know . . .**

- ☞ **An average head wind (10 miles per hour) can turn a 400-foot home run into a 370-foot out?**
- ☞ **A curve ball that seems to break over 14 inches never actually deviates from a straight line by more than 3 1/2 inches?**
- ☞ **There is no such thing (except in softball) as a rising fastball?**
- ☞ **That a batted ball should be able to travel no farther than 545 feet?**

**Science News Books**      PhysBaseball  
 1719 N Street, NW  
 Washington, D.C. 20036

Please send me \_\_\_\_\_ copy(ies) of *The Physics of Baseball*. I include a check payable to Science News Books for \$11.00 plus \$2.00 postage and handling (total \$13.00) for each copy. Domestic orders only.

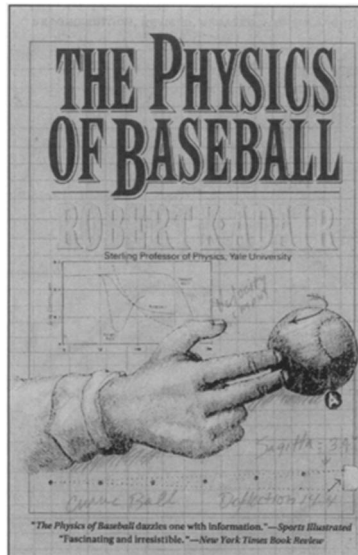
Name \_\_\_\_\_

Address \_\_\_\_\_

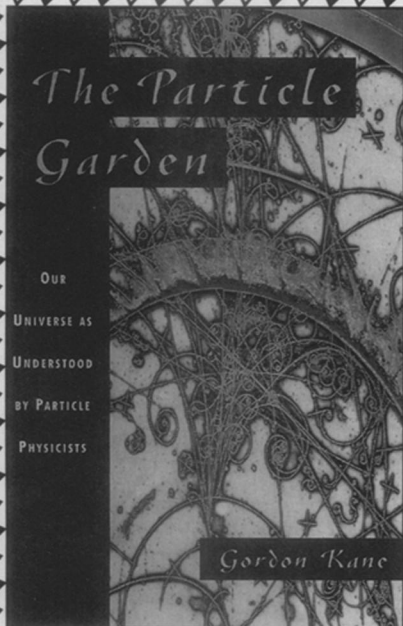
City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Daytime Phone \_\_\_\_\_  
 (used only for problems with order)      RB2565



Blending scientific facts and sports trivia, Robert Adair examines what a baseball does when thrown or batted under certain conditions — and why. This completely revised edition of *The Physics of Baseball* contains new information about baserunning, long home runs, shagging flies, and how the higher altitudes in Denver (home of the Colorado Rockies) affect batted and pitched balls. Complete with understandable charts and graphs, baseball lore, and entertaining anecdotes about various players and incidents, *The Physics of Baseball* will delight and entertain baseball fans and physics enthusiasts and provide a whole new perspective on the game. —from HarperPerennial



**To order by phone from  
 Science News Books, call  
 1-800-544-4565  
 (Visa or MasterCard Only)  
 In DC area: 202-331-9653**

*Addison-Wesley, 1996, 224 pages,  
 5 1/4" x 8 1/4", paperback, \$12.00*

As recently as 1960 we did not know that up quarks and down quarks combine with electrons to form everything from atoms to stars at the farthest reaches of the universe. Today, there is a successful theory — called the standard theory of particle physics — that describes what constitutes matter, what forces act on particles, and what rules govern interactions. In *The Particle Garden*, Professor Gordon Kane provides a lucid, nontechnical survey of particle physics, including a full explication of the standard theory, its experimental foundations, and its implications for understanding how our universe works.

*The Particle Garden* begins with a fascinating history of how scientists arrived at their current understanding of the underlying laws of the universe. Then Kane shows how groups of physicists build and use giant accelerators and colliders to “see” things a million millionth the size of objects scientists could observe using the first microscopes four centuries ago.

In the latter third of the book, Kane explains how the Standard Theory is being extended to incorporate such ongoing research topics as Higgs bosons, supersymmetry, dark matter, and superstrings. And, perhaps most exciting is a “supersymmetric grand unification.” In *The Particle Garden*, Gordon Kane marshals his research and teaching experience to make these efforts clear and significant to all of us.

—from Addison-Wesley

Science News Books, 1719 N Street, NW, Washington, DC 20036      PartGarden

Please send me \_\_\_\_\_ copy(ies) of *The Particle Garden*. I include a check payable to Science News Books for \$12.00 plus \$2.00 postage and handling for each book (total \$14.00). Domestic orders only.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Daytime Phone \_\_\_\_\_

(used only for problems with order)

RB2563