SCIENCE NEVS®

The Weekly Newsmagazine of Science

Science Service Publication Volume 146, No. 9, August 27, 1994

Alfred Scott McLaren Publisher
Patrick Young Editor
Blair Burns Potter Managing
Editor

Dan Skripkar Production/Design Director

Greg W. Pearson Associate Editor

Janet Raloff Senior Editor
Environment/Policy

Ron Cowen Astronomy
Bruce Bower Behavioral Sciences
Richard Lipkin Chemistry/
Materials Science
Richard Monastersky Earth Sciences

Richard Monastersky
Tina Adler
Kathy A. Fackelmann,
Elizabeth Pennisi
Ivars Peterson
Larry Norland
Earth Sciences
General Science
Life Sciences/
Biomedicine
Mathematics/Physics
Editorial Assistant

Gigi Marino Science Writer Intern
Cait Anthony 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 \$44.50 for 1 year or \$78.00 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, PO. Box 1925, Marion, OH 43305. Change of address: Four to six weeks' notice is required — old and new addresses, including zip codes, must be provided.

Copyright © 1994 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)

(202-785-2255)
Republication of any portion of SCIENCE NEws without written permission of the publisher is prohibited.

Subscription Department: PO. Box 1925, Marion, OH 43305 For new subscriptions only, call 1-800-247-2160. For customer service, call 1-800-347-6969.

This Week

132	New Path Toward X-Ray Lasers Found
132	Finding a measles-Crohn's disease link
133	Jovian comet crash: Data trickles in still
133	Twins yield clues to love's shared origins
134	Seeing and controlling chaos in the brain
134	Using bacteria to get sulfur out of oil
135	Killer CLOD strikes Indo-Pacific reefs
135	Axon acts: The unbearable likeness of being

Research Notes

137	Astronomy
137	Biomedicine
143	Behavior

Articles

138 The First Monsters

Cover: One of the earliest known predators, the bizarre beast called *Anomalocaris* from Earth's Cambrian period was originally misidentified as a strange type of shrimp. Here, a model of the creature (built for a Japanese television program "Planet of Life") demonstrates how it prowled the seas more than 500 million years ago. (Photo: courtesy NHK, Discovery Channel, Telé Image, and KBS.)

140 The Stuff of Protons

Departments

130 Books131 Letters

Science Service, which publishes Science News, is a nonprofit corporation founded in 1921. It gratefully accepts tax-deductible contributions and bequests to assist its efforts to increase the public understanding of science, with special emphasis on young people. More recently, it has included in its mission increasing scientific literacy among members of underrepresented groups. Through its Youth Programs it administers the International Science and Engineering Fair, the Science Talent Search for the Westinghouse Science Scholarships, and publishes and distributes the *Directory of Student Science Training Programs for Precollege Students*.

Board of Trustees—Chairman, Glenn T. Seaborg; Vice Chairman, Gerald F. Tape; Secretary, David A. Goslin; Treasurer, Willis Harlow Shapley; Joseph W. Berg Jr.; Robert W. Fri; J. David Hann; Dudley Herschbach; Shirley M. Malcom; Elena O. Nightingale; Ben Patrusky; Peter H. Raven; 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

Letters

Bum rap for best friend

I don't mean to downplay the significance of canine assaults as a public health problem, but I can't help but wonder whether the conclusions reached in "Some dogs are not a child's best friend" (SN: 6/18/94, p.399) are flawed. Among 178 biting dogs in Colorado, German shepherd and chow chow breeds were the most frequent biters. However, this doesn't necessarily lead to the conclusion that they are the most violent breeds or the breeds most likely to bite. Why?

First, we don't know the ratio of German shepherds and chow chows to the total purebred dog population in the region. If more people in Colorado own shepherds or chow chows, statistically these breeds could show up more frequently on the "biter" list. Second, some of the German shepherds in the study may have been *trained* as guard dogs and thus could be more aggressive.

Third, are we to assume that the 178 dog bites reflect all dog bites that occurred in the

region or only those severe enough to require emergency care? Many dogs are frequent and aggressive nippers, but these nips are usually treated at home.

Any of these factors could bias the study's conclusions about breeds most likely to bite. A more conclusive study would need to draw a random sample of all purebred dog owners in a region, with owners reporting the number of times their pet has bitten a family member versus a nonfamily member over time.

Andrea Frank Wauwatosa, Wis.

On the evidence presented, these dogs bit because they were frightened and frustrated. The "most frequent biters" were older dogs kept chained in the backyard and possibly threatened by small children.

Five hundred eighty-five thousand dog bites per annum is an impressive figure in isolation, but it's barely two-tenths of 1 percent of the population. Twenty deaths per year is so minuscule as to resist calculation.

This study is careless and full of misinforma-

tion, outrageous conclusions, and unrecognized confounders.

Mary R. Standard New York, N.Y.

SCENCE NEWS ...

The authors studied 178 dog-bite cases to determine which of nearly 200 recognized breeds of dogs are most likely to bite young children. Their results may be valid in Denver, but nationwide studies have shown for decades that the most frequent biter is the 25-pound Cocker Spaniel. Bites from 150-pound Newfoundlands, on the other hand, occur as rarely as Halley's comet.

Their comments range from insightfully true ("Young children are usually smaller than large dogs") to blindly false ("the alpha [dominant] dog is always the largest.") Finally, they issue a warning that explains everything: Dogs "are, after all, carnivores." What does that tell us? The dogs are biting from hunger? Or we are safer with herbivores, which would never attack a human? Tell that to a matador.

Milo D. Folley Nicholasville, Ky.

AUGUST 27, 1994 131