

The Weekly Newsmagazine of Science

A Science Service Publication Volume 126, No. 15, October 13, 1984

E.G. Sherburne Jr. Joel Greenberg Dietrick E. Thomsen Publisher Editor Senior Editor/ Physical Sciences Managing Editor

Biomedicine

Laurie Jackson Phillips Wendy McCarren

Production/Design Director Behavioral Sciences

Bruce Bower Deborah Franklin, Joanne Silberner Stefi Weisburd Julie Ann Miller

Earth Sciences Life Sciences Policy/Technology

Janet Raloff, Ivars Peterson Jonathan Eberhart Susan Welch

Space Sciences Assistant to the Editor

Steven I. Benowitz, Christine Mlot Science Writer Interns

Jane M. Livermore Donald R. Harless Books Business Manager

Scherago Associates Advertising Fred Dieffenbach, Sales Director 1515 Broadway, New York, N.Y. 10036

Copyright ©1984 by Science Service, Inc., Editorial and Business Offices, 1719 N St., N.W., Washington, D.C. 20036. Republication of any portion of SCIENCE NEWS without written permission of the publisher is prohibited.

Subscription Department 231 West Center Street, Marion, Ohio 43302

Subscription rate: 1 yr., \$27.50; 2 yrs., \$47.50; 3 yrs., \$67.00. (Foreign postage \$5.00 additional per year.) Change of address: Four to six weeks notice is required. Please state exactly how magazine is to be addressed. Include zip code. For new subscriptions only call (1) 800-247-2160. Printed in U.S.A. Second class postage paid at Washington, D. C. Title registered as trademark U.S. and Canadian Patent Offices. Published every Saturday by SCIENCE SERVICE, Inc. 1719 N St., N.W., Washington, D. C. 20036. (202-785-2255) ISSN 0036-8423

This Week

| 228 | El Niño Brought the Blues, But Bliss Too |
|-----|--|
| 229 | Caffeine: The 'all natural' pesticide |
| 229 | Suit filed against hormone-gene work |
| 229 | Gene-splice pesticides |
| 230 | Vaccine, interferon battle eye herpes |
| 230 | Low vitamin A linked to deaths |
| 230 | Soviets return after 237+ days |
| 231 | Interferon may reduce MS attacks |
| 231 | Wiring a harpsichord's subtle sound |

Research Notes

| 236 | Biomedicine |
|-----|-------------|
| 237 | Biomedicine |
| 237 | Technology |

Articles

232 The Mating Game

Cover: Tiger cub at the Minnesota Zoo is part of a national intensively managed breeding program. With the application of population genetics, zoos are undertaking sophisticated plans to ensure the survival of captive populations of endangered animals. (Photo: John Perrone/Minnesota Zoo)



Departments

226 Letters227 Books

Science Service Institution for the public understanding of science founded 1921; a nonprofit corporation. Board of Trustees—*President*, Glenn T. Seaborg; *Vice President*, Gerald F. Tape; *Treasurer*, Willis Harlow Shapley; *Secretary*, Julius Duscha; Joseph W. Berg Jr.; Edward Bliss Jr.; Bowen C. Dees; David A. Goslin; Milton Harris; Hilleary F. Hoskinson; Elizabeth F. Neufeld; O. W. Riegel; H. Guyford Stever; John Troan; Deborah P. Wolfe.

Director: E. G. Sherburne Jr.; Assistant Director: Dorothy Schriver; Business Manager: Donald R. Harless

Books

Books is an editorial service for readers' information. To order any book listed or any U.S. book in print please remit retail price, plus \$1.00 handling charge for each book, to **Book Order Service**, Science News, 1719 N Street, N.W., Washington, D.C. 20036. All books sent postpaid. Domestic orders only.

Beyond Vision — Jon Darius. The 150 years of photography are spanned by these 100 historic scientific photographs, defined here as ones that provide information inaccessible to the human eye. Text accompanies each of the stuning photographs, giving the circumstances and the significance of each. The volume is introduced by a brief history of scientific photography. Oxford U Pr, 1984, 224 p., color/b&w illus., \$29.95.

The Fourth Dimension: Toward a Geometry of Higher Reality — Rudy Rucker, foreword by Martin Gardner. An account for the general reader of what the fourth dimension means, both in physical terms and in spiritual terms. Introduces the reader to the world of Flatland, then explores the dimensions above three with text and clever illustrations. Problems, with solutions given, are interspersed throughout the book. HM, 1984, 228 p., illus. by David Povilaitis, \$17.95.

One Man's Island: A Naturalist's Year — Keith Brockie. The Isle of May in the Firth of Forth, Scotland, plays host to many migrant birds; colorful plants carpet the ground, and seals swim in the surrounding seas and breed on the island. This naturalist artist has created here 150 superb paintings and sketches that capture the beauty of the island's wildlife. Brief text and maps help give one a feel for the island. Har-Row, 1984, 167 p., color/b&w illus., \$19.95.

Searching Between the Stars — Lyman Spitzer Jr. Describes the Copernicus satellite work, a broad program of interstellar research. The use of mathematics has been minimized in this book; some familiarity with stars, atoms and light waves is assumed, but brief reviews of physical principles have been included for those whose exposure to physics is not detailed or recent. Originally published in hardback in 1982. Yale U Pr, 1984, 179 p., illus., paper, \$8.95.

Size, Function, and Life History — William A. Calder III. There can be no doubt, says the preface, that body size is a major factor in an animal's life history and requirements. This book presents quantitative representations of the consequences of size. Harvard U Pr, 1984, 431 p., charts & graphs, \$32.50.

| STATEMENT OF OWNERSHIP M | ANAGEMENT AND CIRCU | LATION |
|--|--|---|
| TA, TITLE OF PUBLICATION | 18. PUBLICATION | |
| SCIENCE NEWS | 0 0 3 6 8 4 | 2 3 October & 198 |
| FREQUENCY OF IBBUE | 2A NO OF ISSUES PUBL | |
| Weekly | | |
| COMPLETE MAILING ADDRESS OF KNOWN OFFICE OF PUBLICATION | 52 M (Street, City, County, State and 21) | \$27.50 |
| | | |
| 1719 M Street, MW, Washington, DC 20036 COMPLETE MAILING ADDRESS OF THE HEADQUARTERS OF GENER | IAL BURNISH OFFICES OF THE P | MI ISHER (Not patrice) |
| | | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |
| 1719 N Street, NW, Washington, DC 20036 FULL NAMES AND COMPLETE MAILING ADDRESS OF PUBLISHER, I | | |
| PUBLISHER (Name and Complete Maling Address) | DITOR, AND MANAGING EDITOR | (The imm MUST NOT be Mank) |
| E. G. Sherburne, Jr. 1719 N S | | |
| E. G. Sherourne, Sr. 1/19 N S' | treet, NW, Washington, | DC 20036 |
| | | |
| Joel P. Greenberg 1719 N S: MANAGING EDITOR (Name and Complete Making Address) | treet, NW, Washington, | DC 20036 |
| | | |
| | reet, NW, Washington, | |
| 7 OWNER iff - uned by a corporation, its name and address must be stated owning or holding I percent or more of road amount of stock. If not own. | and also immediately therewader the n of by a corporation, the names and ad | |
| current or holding I percent or more of rotal amount of stock. If not own be given If a unit by a partnership of other unitsociopastic films, its name as in a particular by a nonprofit or opposition, its name and address must be | and address, as well as that of each m stated ; (from must be completed) | directional results for given 1/ site publics |
| | | |
| FULL NAME Science Service, Inc. | 1719 N Street, NN. N | MILING ADDRESS |
| | ***** ** 30166 ** 38* 8 | asimiston, in 20031 |
| | | |
| | | |
| KNOWN BONDHOLDERS, MORTGAGES, AND OTHER SECURITY HAMOUNT OF BONDS, MORTGAGES OR OTHER SECURITIES (If MAY | IOLDERS OWNING OR HOLDING 1 | PERCENT OR MORE OF TOTAL |
| FULL NAME | | MAILING ADDRESS |
| None | | |
| | | |
| | | |
| | | |
| FOR COMPLETION BY MONPROFIT ORGANIZATIONS AUTHORIZE The purpose, function, and nonprofit status of the organization and the e | D TO MAIL AT SPECIAL RATES IS: | r non 423 12 DMM only) urposm (Check one) |
| | | |
| m o | | |
| HAS NOT CHANGED DURING HAS CHANGED D PRECEDING 12 MONTHS PRECEDING 12 M | URING III change ONTHS change w | nd publisher must submit explenation i ich mas sessenent ; |
| X PRECEDING 12 MONTHS PRECEDING 12 M | | |
| X MAS NOT CHANGED DURING HAS CHANGED D | ORING (III change of chang | ACTUAL NO COPIES OF SINGL ISSUE PUBLISHED NEAREST T FILING DATE |
| MAS NOT CHANGED DURING HAS CHANGED D PRECEDING 12 MONTHS PRECEDING 12 M 10 EXTENT AND NATURE OF CIRCULATION | AVERAGE NO. COPIES EACH ISSUE DURING PRECEDING 12 MONTHS | ACTUAL NO. COPIES OF SINGL ISSUE PUBLISHED NEAREST T FILING DATE |
| MAS NOT CHARGED DURING MECHANICS 1 MONTHS PRECEDING 1 3 MONTHS EXTENT AND NATURE OF CIRCULATION SET MAND NATURE OF CIRCULATION A TOTAL NO COPIES MEN AND RULE 8 PAID ANDIOR REQUESTED CIRCULATION | AVERAGE NO. COPIES EACH ISSUE DURING PRECEDING 12 MONTHS | ACTUAL NO COPIES OF SING ISSUE PUBLISHED NEAREST T FILING DATE 185,822 |
| MAS NOT CHANGED DURBING PROCESSING YEAR MECHANIC TO SMOTHER PROCESSING YEAR STEEL AND NATURE OF CIRCULATION SMOTHER HORSE ON ON PROCESSING YEAR A TOTAL NO COPIES (Not Pres Pure) 8 PAID ANDON REQUESTED CIRCULATION Seen Principle Management partners internediest and counter seen. | AVERAGE NO. COPIES EACH ISSUE DURING PRECEDING 12 MONTHS | ACTUAL NO. COPIES OF SINGL ISSUE PUBLISHED NEAREST T FILING DATE |
| MAS NOT CHANGED DURNING MAS CHANGED OF MAS CHANGED | AVERAGE NO. COPIES EACH ISSUE DURING PRECEDING 12 MONTHS | ACTUAL NO COPIES OF SING ISSUE PUBLISHED NEAREST T FILING DATE 185,822 |
| IN MAS NOT CHANGED OF PRINCIPAL MAS NOT CHANGED IN MASS NOT CHANGE | AVERAGE NO. COPIES EACH ISSUE OUR INC. PRECEDING 169,663 -0 165,587 | ACTUAL NO COPIES OF SINGL ISSUE PUBLISHED NEARISTY 185, 822 -0- 175, 831- |
| E MAS NOT CONVOCATION DEPRENENCE MASS NOT CONVOCATION OF THE CONTROL ON THE CONTROL OF THE CONTROL ON THE CONTROL OF THE CONTROL OO THE CONTROL OF THE CONTROL OF THE CONTROL OO THE CONTR | AVERAGE NO COPIES EACH ISSUE DURING PRECEDING 12 MONTHS 169,663 | ACTUAL NO. COPIES OF SINGUISSUE PUBLISHED NEAREST T FILING DATE 185,822 |
| MacConnect Description MacConnect Description STEET AND RATURE OF CRECULATION MacConnect Description TOTAL SHO COPIES (Now Prive Pairs) PACIA SHOOT COPIES (Now Prive Pairs) STEP AND AND COPIES (Now Prive Pairs) MacConnect SHOOT COPIES (Now Prive Pairs) STEP AND AND COPIES (Now Prive Pairs) COPIES (NAME AND COPIES COPIES CONTOUR ATON) MacConnect SHOOT COPIES (NOW PRIVE PAIRS) COPIES (NAME AND COPIES COPIES CONTOUR ATON) | AVERAGE NO. COPIES EACH ISSUE OUR INC. PRECEDING 169,663 -0 165,587 | ACTUAL NO COPIES OF SINGL ISSUE PUBLISHED NEARISTY 185, 822 -0- 175, 831- |
| March Condido Chamber Mar | 169,663 -0 165,587 169,587 | 185.822 -3- 175.834 -3- 175.834 -3- 175.834 -750 |
| March Connection Charmers make consoletion of the control of | 169,663 -0 165,587 169,341 | 165, 822 -0- 175, 834 175, 834 175, 934 175, 934 179, 930 |
| Make 1997 Control Control Control Make 1997 Control Control Make 1997 Control | 169,663 -0 165,587 169,587 | 185.822 -3- 175.834 -3- 175.834 -3- 175.834 -750 |
| I MALE CONTROL CONTROL IN MALE CONTROL | 169,663 -0 165,587 169,341 | 165, 822 -0- 175, 834 175, 834 175, 934 175, 934 179, 930 |
| Market Connection Communication Market Connection Mar | Average no corres acree (no corres acree (no corres acree) (no corres acree (no corres acree) (no corres (no corres) (no corre | 165,83. 175,93. 175,930. 6,232 |
| Made and Convention Community Made And Convention Made And Conven | Average to corres per correst control of the correst of the corres | 185, 822 176, 931 178, 931 178, 931 178, 931 178, 931 178, 932 179, 930 179, 930 |

OCTOBER 13, 1984 227