

SCIENCE NEWS®

The Weekly Newsmagazine of Science

A Science Service Publication
Volume 139, No. 16, April 20, 1991

E.G. Sherburne Jr.	Publisher
Patrick Young	Editor
Laurie Jackson	Managing 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
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

- 244 Buckyballs' Supercool Spring Surprise
- 244 Alcohol's fetal harm lasts a lifetime
- 245 Blood enzyme foretells heart attack threat
- 245 Toward laser control of chemical reactions
- 246 Genetic therapy: Just a nasal spray away?
- 246 DNA strands form molecular scaffolding
- 246 Breakfast may reduce morning heart risk
- 247 Huge black hole may lurk in nearby galaxy

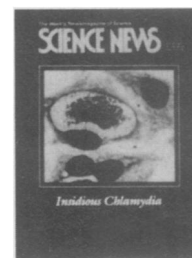
Research Notes

- 254 Anthropology
- 254 Chemistry
- 255 Earth Science
- 255 Genetics

Articles

- 248 Disorderly Light
- 250 Clueing in on Chlamydia

Cover: *Chlamydia trachomatis* bacteria proliferate inside a human cell. The bacteria occupy the mottled region in the photo; the darker ovals are the cell nuclei. Chlamydia, the most common sexually transmitted disease in the United States, can progress from the cervix into the fallopian tubes, causing severe inflammation and scarring that may lead to ectopic pregnancy or infertility. Scientists are trying to learn how this "silent" infection can wreak such reproductive havoc, and how to gauge the risk of fallopian damage in women who have had the disease. (Photo: Richard S. Stephens)



Departments

- 242 Books
- 243 Letters

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; Sanford J. Ungar; 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

'Breakthrough' challenged

"Tooth-wear gauge opens up dental research" (SN: 2/16/91, p.102) addresses an important investigative method, described by its developer as a "breakthrough" that will stimulate a wide range of dental research.

However, the process is not a "breakthrough," since the technique is relatively simple and has been available for a number of years. Moreover, you refer to the use of powerful scanning electron microscopes in detecting tiny defects in tooth enamel, but these types of defects can readily be evaluated quantitatively with conventional scanning electron microscopy at magnification levels as low as 200X.

You discuss human enamel wear rates as high as 50 microns per year. Such values are totally unrealistic and would result in total loss of enamel from the occlusal surface by age 40 to 50. Generalized wear of human teeth is probably closer to 3 to 5 microns per year.

Also, it can be interpreted from the article that the investigators acid-etched the tooth

enamel to morphologically identify individual enamel rods. You suggest that the rods could be used to monitor wear rates since they are of fixed dimensions. Unfortunately, such a process would weaken the enamel surface considerably, resulting in reduced resistance to wear. Morphological defects should be placed mechanically or by other means without affecting the soundness of enamel.

Karl F. Leinfelder
Volker Professor of Clinical Dentistry
Director, Biomaterials Clinical Research
University of Alabama School of Dentistry
Birmingham, Ala.

Researchers have used scanning electron microscopes to study teeth for some time, but the new method for estimating tooth wear from microscopic marks on enamel indeed represents an important breakthrough, insists Mark Teaford of Johns Hopkins University in Baltimore. Teaford's studies use magnification levels similar to the 200X you cite. The article refers to 50 microns as the maximum annual wear rate for human enamel, not the norm. Moreover, Teaford's approach involves only counting the pits and

scratches on enamel, not acid-etching.

— B. Bower

Chancy statistics

The data reported in "Fetal repair: Safe for mom, chancy for child" (SN: 2/16/91, p.102) are much less reassuring for mothers than your article suggests. A finding of zero apparent maternal complications in 17 operations means that the actual rate of such complications could be as high as 20 percent (with 95 percent confidence, the usual confidence level used in these types of statistical estimates). On the other hand, the actual rate might indeed be close to zero. Additional cases are needed to narrow these confidence limits.

Results from small samples are notoriously easy to misinterpret if they are not subjected to even the most rudimentary statistical tests and critical comparisons. Given the possibility that an adverse outcome might occur as often as one time in five, few of us would be likely to call such a procedure safe, although we might choose to undergo it anyway.

Letters continued on p.253

APRIL 20, 1991

243