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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

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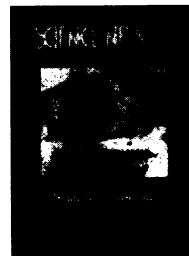
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Cover: *Chlamydia trachomatis* bacteria proliferate inside a human cell. The bacteria occupy the mottled region in the photo; the darker ovals are the cell nuclei. Chlamydia, the most common sexually transmitted disease in the United States, can progress 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)



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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.

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APRIL 20, 1991

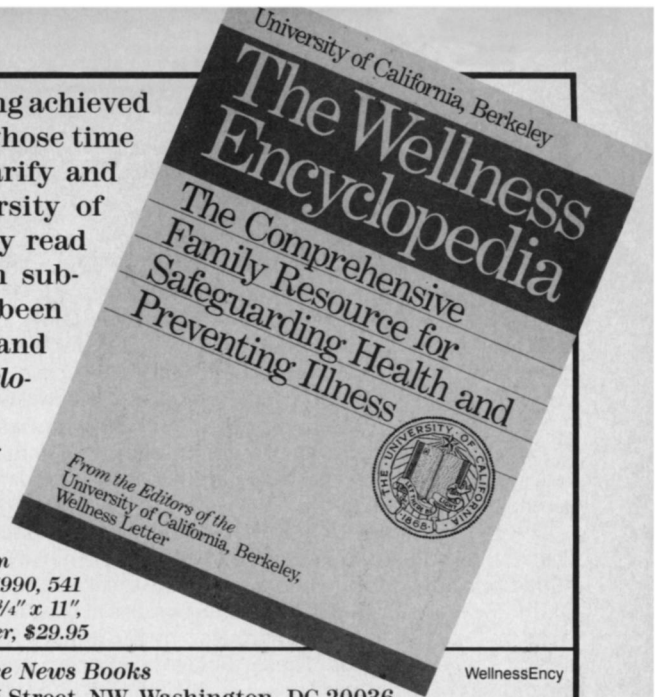
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Wellness — the optimum state of health and well-being achieved through the active prevention of illness — is an idea whose time has come. And no publication has done more to clarify and inform Americans on these issues than the University of California, Berkeley, Wellness Letter, the most widely read newsletter in America, with more than one million subscribers. Now the editors of this newsletter (which has been ranked the number-one health publication by *Money* and the *Washington Post*) have compiled *The Wellness Encyclopedia*, the essential reference for every home.

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—from the publisher



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In addition, words like "safe," "chancy" and "often" can be misleading because their interpretation depends on the context and the reader.

Barbara Mandula
Biochemist
Elizabeth Margosches
Biostatistician
Washington, D.C.

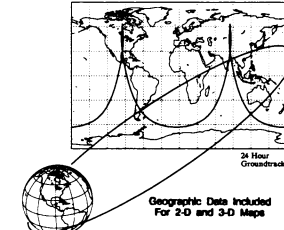
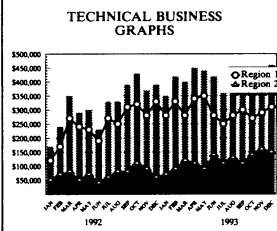
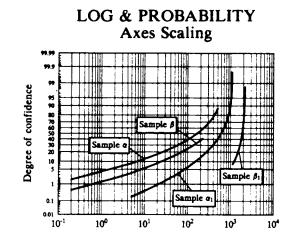
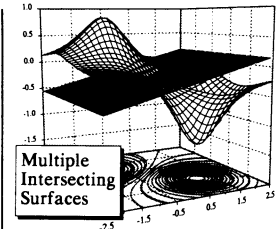
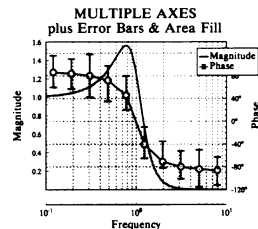
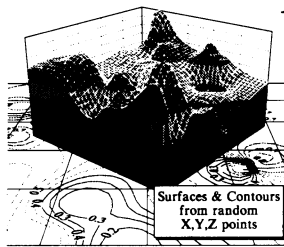
Reason and recognition

I see no threat to the integrity of reason in the notion that "a proposition must be accepted provisionally . . . [to] be rationally analyzed" (Letters, SN: 2/23/91, p.115). It's a truism of natural science that hypotheses cannot be proved true, whereas many can be proved false. In "True Believers" (SN: 1/5/91, p.14), Bruce Bower made clear that the analysis is the crucial part. Time to think is certainly no luxury.

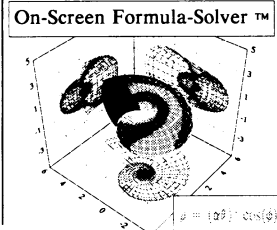
Certain illusions or failures of perception suggest that here, too, we must provisionally recognize a new datum before absorbing it. I have several times had the experience of seeing something (such as the flank of a large ship or a view of a building) as part of a cluttered field and for a moment being unable to place it in space and scale. The effect was eerie. Not only the unknown but also the surrounding and occluding objects appeared as abstract "color areas" in the midst of a "real" scene. When I realized what and where the thing was, the whole view "snapped into place."

Sam Warden
Portland, Ore.

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