

# SCIENCE NEWS®

The Weekly Newsmagazine of Science

A Science Service Publication  
Volume 134, No. 22, November 26, 1988

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SCIENCE SERVICE, Inc., 1719 N St., N.W.,  
Washington, D.C. 20036. (202-785-2255)  
ISSN 0036-8423

## Letters

### MDs and Zs

The suggestion that sleep deprivation in interns and residents does not impair patient care ("Doctors-in-training: Wake up bright?" SN: 10/1/88, p.218) is another example of the hazards involved in extending the results of a limited experiment to the complex real world.

Doctors-in-training would certainly be highly motivated to perform well on tests, and this could temporarily compensate for fatigue. But suppose that what diminishes in sleep deprivation is motivation? Or attention to detail, or long-term memory? Or even bedside manner? Tests of cognition and motor performance evaluate just that; the way to evaluate patient care is to observe patient care. This study also ignores other important issues such as the long-term health of trainees.

William Steele  
Ithaca, N. Y.

I want *my* surgeon to have eight hours of sleep (or more). If I discovered that my

### This Week

- 340 Nuclear Satellites Disrupt Research
- 340 Bottled error distorts N<sub>2</sub>O estimates
- 341 Women's skills linked to estrogen levels
- 342 Astronomers lament loss of telescope
- 342 Onshore earthquakes trigger sea shocks
- 342 Older smokers still helped by quitting
- 343 Prodigious protein production *sans* cells
- 343 Heart studies add to fish-oil controversy

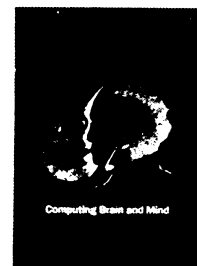
### Research Notes

- 348 Biomedicine
- 348 Physics
- 350 Neuroscience
- 351 Nutrition

### Articles

#### 344 The Brain in the Machine

Cover: Some scientists contend that new findings in neurobiology will enable a class of computers known as neural networks to model a variety of mental functions. Their assertion has added fuel to an already heated debate over the nature of the mind. (Painting by Todd Siler/Courtesy Ronald Feldman Fine Arts, New York)



### Departments

- 339 Letters
- 346 Off the Beat
- 347 Science on the Air
- 347 Books

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surgeon had only four hours, it would not reassure me one bit to learn that there are only trivial differences in performance between surgeons who had four hours and surgeons who had two hours of sleep!

Victoria Day  
Duluth, Minn.

### Shrouded in mystery

I read with interest "Shroud of Turin is fake, official confirms" (SN: 10/8/88, p.229). I believe this is a conclusion that cannot yet be drawn.

The date provided by the three labs mentioned is based upon tests done on a single sample cut into three pieces which was taken from the frontal end of the shroud at the corner in the immediate area of the so-called "sideshow." In order to conclude that the shroud is dated to the 14th century, one must assume that the date obtained for this corner actually represents the entire shroud. In fact, we do not know this to be true. No control samples were taken from elsewhere on the cloth. A minimum of three separate samples

taken at random should have been tested.

There are genuine reasons why we may question the results. First, for years it has been argued by some that the "sideshow" may have been a later addition. Second, during the fire of 1532 the shroud was subjected to "pressure cooker" conditions when water was poured on the superheated silver reliquary in which the shroud was kept at the time. Since cloth has not been extensively tested by accelerator technology since its development in 1977, what special conditions might this circumstance have presented which could possibly have affected the results? The question deserves consideration since this very corner was heavily laden with contaminants due to the shroud being hand-held at this very spot during exhibitions over the centuries. It is a rule of thumb in radiocarbon technology that roughly 10 percent of modern carbon levels left on or in the sample being tested will skew the date by 1,000 years.

I should also like to point out that a

Letters continued on p.349

NOVEMBER 26, 1988

339

Letters continued from p.339

confirmed carbon date placing the shroud in the medieval time frame has nothing to do with determining the nature of the image on the cloth. It is true that if the shroud is dated to the 14th century then the most likely mode of rendering such images would be painting. But the nature of the image is still highly controversial, and further research is called for to settle the matter.

Paul C. Maloney  
General Projects Director  
Association of Scientists and Scholars  
International for the Shroud of Turin, Ltd.  
Quakertown, Pa.

If, in fact, the shroud was forged by a 14th-century artist, that in itself represents a mystery perhaps far deeper than if the shroud is authentic. For how could a man 631 years ago create a computer-perfect image with the primitive knowledge and technology available at that time? I refer to the observation that the dorsal/ventral symmetry of the image is within angstrom accuracy and the image density is perfectly proportional to the distance the shroud once laid from the body contained within it.

Barry E. Taff  
Los Angeles, Calif.

The Shroud of Turin Research Team uncovered facts during their exhaustive investigation in the late 1970s and early '80s strongly suggesting that the image in the shroud was not the result of painted pigments, and that the image was bilaterally

symmetrical — i.e., three dimensional — and possibly the result of flash photolysis or a "light burn." Are we to ignore all the previous data collected and rely totally on the evidence of radiocarbon dating, which is known for its inaccuracy? One might also give thought to the possibility that whatever energetic process produced the flash photolytic "burn" in the cloth might have dramatically altered both the atomic and molecular structure of the linen, thus resulting in faulty or artificial carbon-14 readings.

Lawrence Brooks  
Los Angeles, Calif.

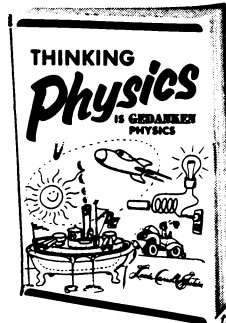
### Concentration clarification

In "Aspirin fells flu viruses *in vitro*" (SN: 10/1/88, p.218), you state that "as the concentration increased, viral activity gradually decreased until, at 1.8 grams, aspirin completely prevented the synthesis. . . ." My question is 1.8 grams/what? The amount specified is not a concentration but a quantity.

David A. Mathews  
Cullowhee, N.C.

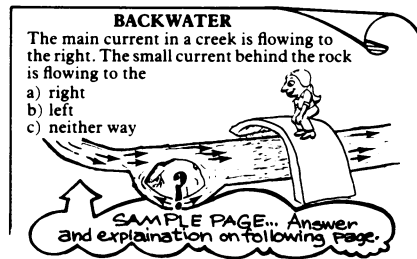
In laboratory tests, aspirin completely prevented the synthesis of two key viral proteins when present in the viral growth medium at a 10-millimolar concentration — about eight times the concentration of aspirin one might expect to find in the blood of an adult who had taken two 500-milligram aspirins four times within 24 hours.

While this concentration is too high to be clinically safe, it remains to be seen, the researchers note, whether a lower dose might prove equally effective *in vivo*. — the editors



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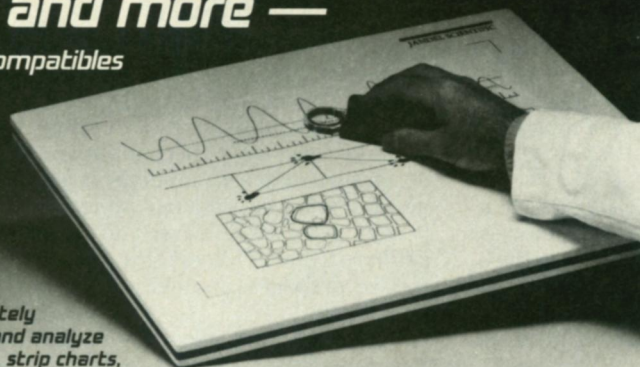
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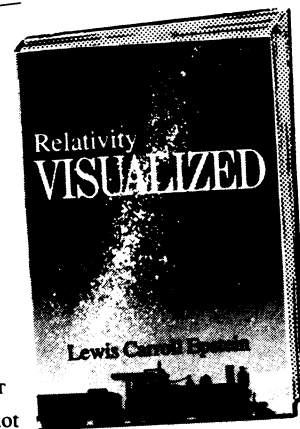
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