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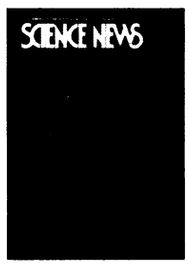
This Week

Research Notes

Articles

Cover: This computer-generated picture, known as the Ikeda map, is the result of substituting an initial value into a mathematical expression modeling the action of an optical switch, computing the answer, then substituting that answer back into the expression, and so on. Such an iterative process generates a sequence of dots – an orbit – that jumps about randomly, creating the pattern shown. A team of mathematicians has now worked out a way to tell when such "chaotic" orbits follow a true path and are not solely due to the accumulation of computational errors. (Image: C. Grebogi, E. Ott, F. Varosi, J.A. Yorke/University of Maryland)



Departments

Letters

Groovy idea

"Ancient tooth grooves: Take your pick" (SN: 10/8/88, p.237) presents the mystery of the cause for the tooth grooves observed on fossil teeth. I have an idea.

Have you never, while hiking the hot, dusty trail, picked up a small stone and sucked on it because your Scout leader once told you that sucking on a stone would keep away thirst? Imagine now the Neanderthal on the go who doesn't have time between hunting and gathering to stop and drink. Practicing the "stereotyped activity" of a stone in the mouth could have formed the "polished grooves" described by the researchers.

Victoria A. Wills
Newport Beach, Calif.

Obese increase

I am puzzled by the statements in "Young Hearts" (SN: 10/8/88, p.234) that "obesity in U.S. schoolchildren is increasing" and "children are classified as obese if the measurement of skin thickness . . . ranks in the upper 15 percent for their age and height." How can the rate of obesity be increasing if it is defined as the top 15 percent of a group?

Payne Freret
Los Altos, Calif.

You are right: This paragraph could be much clearer. The base year is 1963, and the percentage increases relate to how many children fit the 1963 definition of obesity in 1980. —the editors

HIV screening: Scientific or social?

SCIENCE NEWS' coverage of AIDS has been among the best available. You are to be congratulated for this, especially now that much of the media seems to consider it old news.

However, I must point out that "Truth in testing" (SN: 10/15/88, p.244) misses the most important reason why widespread screening for HIV antibodies is counterproductive. Most gay people are practicing safe sex anyway and do not wish to know their HIV status. Knowing of infection would only result in unnecessary stress, possibly worsening an already compromised immune capability. These people will avoid checkups, hospital admissions and other situations in which they might be tested. Thus the group most at risk would be left out of the sample and effectively banished from the health care system.

Even if the rate of false positives is as low as you suggest and the cost is only $19 per person, routine testing makes no sense. As the President's Commission on AIDS discovered, research and education are better ways to spend the money. The "debate" about widespread screening is no longer so much a scientific debate as a forum for those who would like to identify and isolate members of the affected groups for reasons of prejudice.

Philip Bockman
New York, N.Y.

Results defended

In "Results disputed" (Letters, SN: 10/15/88, p.243), Donald Moores of Gallaudet University attacked results obtained by Geers and Moog in an NIH-contracted study of deaf adolescents. The Geers/Moog study, described in "Sound advice for deaf learners" (SN: 7/30/88, p.21), evaluated a group of 100 orally educated students from programs throughout the country and found that, as a

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really exist, another run of the model can come up with a new system that handles them. Wagner and Gorelick, who outlined the technique in the July 1987 WATER RESOURCES RESEARCH, say the program still needs improvement because it ignores vertical variations in aquifers.

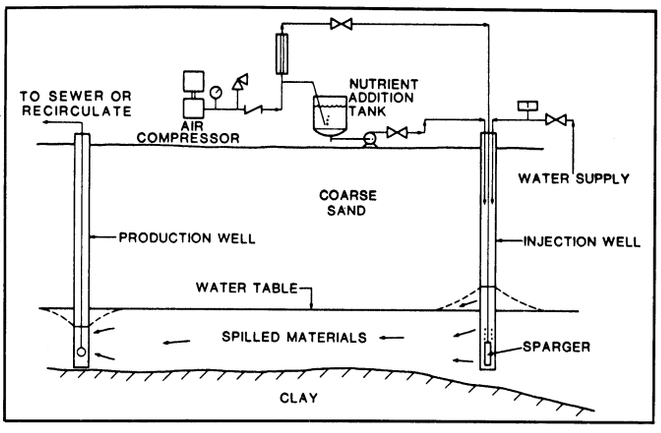
In some cases, pollutants adhere to soil above the water table despite flushing with clean water. In others, contaminants in that unsaturated zone comprise the entire problem. A process similar to water flushing, pumping air into ground above the water table can remove hydrocarbon pollutants trapped in the soil, according to new observations by researchers from USGS and the University of Connecticut in Storrs.

Hydrologists have speculated that injected air could force volatile hydrocarbon contaminants to vaporize and escape from the soil. Although private engineering firms have utilized this concept since 1980, "a lack of study of this method has left researchers uncertain of its universal applicability," says Arthur L. Baehr of the USGS Trenton, N.J., office.

Baehr and George E. Hoag of the University of Connecticut led a team that used the technique, known as induced air venting, to decontaminate soil around a leaky tank at a Connecticut gas station. Their results, scheduled for publication early next year in the JOURNAL OF CONTAMINANT HYDROLOGY, indicate the venting may have forced all the pollutants out of the ground.

"Whether or not the gas has been completely removed, the soil has been completely rehabilitated," Baehr says. "No one's worried about the site anymore." He says although expensive methods exist for collecting the vapors, "discharging them to the atmosphere is not nearly as bad a pollution problem as the exhaust from diesel trucks, and certainly is preferable to leaving contaminants in the soil."

Baehr says air venting and other evolving methods, along with better understanding of the physics and chemistry of groundwater, will help regulators decide which sites pose the greatest threats to human safety and the environment and thus deserve high cleanup priority. Ironically, he says, in some cases the best decisions may involve *less* action: "It may eventually become possible for scientists and engineers to walk away from some sites," confident that groundwater cleanup efforts should be concentrated elsewhere. □



American Petroleum Inst. (Publication 44-30)

When properly stimulated, bacteria in groundwater can consume large volumes of pollutants. Getting microbes to restore water quality requires feeding them oxygen and/or nutrients, and recirculating these substances increases the technique's effectiveness.

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group, they achieved much higher levels of literacy than has previously been reported for deaf students. The top third, identified as good readers, had achieved reading levels of 10th grade or above. The bottom third averaged a fourth grade reading level. The study was designed to examine characteristics differentiating good and poor readers. All had learned to speak before they learned to sign.

Moores' letter is highly critical of these findings, but his arguments have no data to support them.

He contends that we "seriously misrepresented" data obtained by him for adolescents enrolled in total communication programs. Our study does not report data from his, and so far as we know no data from his study have been reported or published.

No subjects were eliminated from our sample on the basis of reading level. If Moores eliminated the 21 best readers from his study, as he states in the letter, then he did not comply with the intention of the contract to test good and poor readers. If any readers were to be eliminated, they should have been those scoring in the middle, since the purpose was to identify differences between the best and the worst.

Students who depend on sign language are often segregated into state schools and other special programs for the hearing-impaired throughout their education, making it easy to assemble them for testing in a project such as this one. However, most orally educated students, because they can talk and can lipread, are enrolled in high schools with their normally hearing peers. Since most of the subjects in this study were enrolled in their neighborhood public schools, they were scattered throughout the country. NIH commended us for the innovative idea of bringing the subjects to St. Louis for testing. Rather than biasing the sample, as Moores suggests, having NIH funds available to sponsor the testing meant that no subjects were eliminated because their families could not afford to send them to St. Louis.

Moores maintains that we intended to test only subjects enrolled in private residential schools for the deaf. This is not true. Since private oral schools, such as Central Institute for the Deaf, provide education only through the elementary grades, only one adolescent in the study was currently enrolled in a private oral school for the deaf. We were delighted to be able to recruit 10 subjects for this study from those who had attended CID and had since gone back to their home communities. The statement by Moores that "one-third to one-half" of CID graduates had transferred to total communication programs is false.

We can understand that the results of our study are distressing to those who have spent most of their professional careers believing that the oral method of teaching deaf children is invalid. We do not contend that this method is best for all deaf children. However, the data collected from this large, diverse sample of orally educated deaf adolescents indicate this method is very effective for many profoundly deaf children and deserves serious reconsideration.

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Jean S. Moog
Central Institute for the Deaf
St. Louis, Mo.