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This Week

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Cover: Traditionally, ecologists have sought out research sites in pristine environments. Now, the National Science Foundation is funding ecological projects in Phoenix and Baltimore, shown here. **Page 219** (Credit: J. Morgan Grove/USDA Forest Service)

Letters

More effects of asteroid hit

In "Asteroid impact: Beware the tsunami" (SN: 2/7/98, p. 88), the judgment that an oceanic impact holds greater potential for destruction than a land hit apparently overlooks the potential effects of filling the atmosphere with vast amounts of impact debris.

Vernon Chi
Silk Hope, N.C.

A water-based impact distributes energy over a larger volume; however, a ground-based, small-volume impact has the potential for perturbing the rotational or orbital parameters of the planet.

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Jack Hills of Los Alamos National Laboratory says that unless the radius of the asteroid is greater than about 1 kilometer, it cannot send up enough dust to block out significant amounts of sunlight, even if it hits on land. If it is much larger than 1 km, it doesn't matter where it hits: The depth of the crater would be several times greater than the diameter of the asteroid, so it would penetrate the ocean floor.

As far as changing Earth's orbit, it doesn't matter whether an asteroid hits in the ocean or on land, says Hills. Either way, its momentum will be effectively taken up by Earth. As a practical matter, it would be very hard to change either the orbit or the rotation by much, because the asteroid's mass is very much smaller than Earth's. —R. Cowen

Bacteriosins and folk remedies

A few years ago, an 80-year-old respondent sent me an amazing anecdote. He had suffered a puncture wound from a pitchfork, and the wound had become infected. His mother made a poultice of cow manure, and 2 days later the infection was under control.

There have been so many similar pioneer folk reports concerning the use of manure to heal human ailments that I wondered if there were some active beneficial fraction in digestive waste. When I read "Staging Germ Warfare in Foods" (SN: 2/7/98, p. 89), it struck me that the great microbial fermentation chambers of a cow's digestive system might be producing bacteriocins. Their primary purpose in the animal would be to protect the linings of the food tract against pathogens.

The article quotes microbiologist Todd R. Klaenhammer as saying, "Virtually all bacteria—probably 99 percent"—make at least one bacteriocin. Some have turned up in milk and cheese. An earlier article ("Natural antibiotic found on human skin," SN: 7/5/97, p. 15) states that human beta-defensin-2, a naturally occurring antibiotic produced by human skin, kills *Escherichia coli, Pseudomonas aeruginosa*, and the common yeast *Candida albicans*. It closely resembles one found on the tongues and throats of cattle.

Another antibiotic, found in the human urogential track, is beta-defensin-1. Yes, there is a matching folk-healing recipe. The diary of Charlotte Cox Heaton, 1879 to 1958, tells of urine, or "chamber lye"—"It was more healing than the best Jergens lotion or Watkins salve or mentholatum you can buy on the market today."

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