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This Week

Research Notes

Articles

Cover: Twenty-five feet deep, in a kelp forest near Alaska's Amchitka Island, marine ecologist Charles A. Simenstad collects bottom-dwelling animals to study the local food chain. Directly or indirectly, the lush kelp feeds much of this subtidal community. In stark contrast is nearby Shemya Island (inset), where sea urchins graze tiny kelps before they have a chance to grow. Sea otters make the difference: On Amchitka, they keep urchin populations under control; on Shemya, the otters themselves fell prey to fur traders in the 19th century. (Photos: David O. Duggins)

Departments

Letters

Field observations, kitchen tests

"Digging Into Sand" (SN: 7/15/89, p.40) is one of the best articles I have read dealing with the physics of space-time. It reminds me of when I was a farm boy back in the 1930s, watching the north forty blow off in the direction of Wyoming. Sandstorms, called dust storms, were common.

When the wind blows a sand dune, the sand goes up the side the wind is blowing from. When the sand falls down the other side of the dune, it falls as Ivars Peterson describes. Inertial force stabilizes the dune when the wind is calm. The problem is to keep it stable at an equilibrium. We used to build snow fences to keep both drifting snow and sandy dirt more or less in place.

James A. Reese
Glendale, Ore.

Per Bak's study of sand piles is very intriguing and rewarding. My imagination kept giving me answers as I read the article. I ran to our kitchen for an hourglass to do my own study of the falling sand. With the aid of a magnifying glass, I could see the avalanches and less violent movements.

In the top section of the hourglass, the vortex made by the falling sand was revealing: The level of the hourglass determined the position of the vortex. Change the level, and the vortex slowly moved correspondingly. Tap the hourglass, and the vortex immediately appeared in its proper, gravitationally controlled position.

A specially made hourglass might allow properly controlled, repeated studies of the same pile of sand.

Robert Lee Turner
Eden, N.C.

Grasshoppers as food

In Mexico, children collect grasshoppers in waste places, taking them home to be fried in oil. They are an important food item.

I hope USDA scientists ("An Aussie fungus among us," SN: 7/15/89, p.46) will keep this in mind as they infect grasshoppers with *Entomophaga grylli.*

M. Greenwood
Ottawa, Ontario

Mediterranean molecules

Regarding your comparison of 10^{50} to the number of water molecules in the Mediterranean Sea ("The straight side of sliced circles," SN: 7/8/89, p.31), my calculations show that the Mediterranean, having a volume of 10^6 cubic miles, contains 10^{44} molecules. Your comparison is off by a factor of almost 10^6.

All the world's oceans, seas, lakes, rivers, ice caps, etc., contain less than 400×10^6 cubic miles of water.

Richard W. Vesel
Willoughby, Ohio

Your calculations appear to be correct. I used an off-the-cuff estimate provided by a mathematician and neglected to check it. — I. Peterson