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Letters

Irreverent exhumation

The public exhibition of the remains of Inca burials is a particularly insensitive and indelicate act ("Inca mummies emerge from deep freeze," SN: 4/17/99, p. 244). Continued exhumation of these remains appears to be a self-aggrandizing sideshow. "Study" to some archaeologists seems to imply license to investigate human remains at will, at great disrespect to both the dead and their living descendants. The means of death is irrelevant; the means of study and publication are irrelevant. The responsibility of preserving the sites is for Peruvian Native American leaders to decide, not a foreigner from a distant culture or museum looking for "information."

Dolan Eargle
University of California, San Francisco
San Francisco, Calif.

Beta, gamma, what's the problem?

"Radiation helps break down toxic waste" (SN: 4/10/99, p. 229) states that strontium in radioactive waste emits gamma rays. The only isotope of strontium with a half-life greater

than 1 year is Sr-90, with a half-life of about 28 years. This is the isotope of concern in high-level waste. Sr-90 and its daughter yttrium-90 are pure beta emitters. They emit no gammas. Their betas are very energetic and probably also help degrade toxic chemicals.

Jesse Coleman
Tusculum, Ala.

Strontium-90 is, indeed, one of the dominant radioactive isotopes in tank waste and emits beta particles, says Donald M. Camaioni of the Pacific Northwest National Laboratory in Richland, Wash. Its subsequent decay products, however, emit both gamma and beta radiation on their way to becoming stable isotopes. "The chemical effects of gamma and beta radiation differ little," he adds. "Both are ionizing radia-

CORRECTION

The word polyandry was used incorrectly in "Battle of the sexes" (SN: 5/15/99, p. 312). Polyandry is a mating system in which the female mates with more than one male, not one in which both males and females mate with multiple partners throughout their lives.

tion. Gamma just does its damage over a greater distance." Cesium-137, which is both a gamma and a beta emitter and has a 30-year half-life, is also present in large quantities in underground storage tanks.

—C. Wu

Your article states that hazardous gases are produced by the breakdown of organic material, but it says nothing about any gas other than hydrogen. So, what is the problem?

Jim LeSire
San Diego, Calif.

Hydrogen poses an immediate threat because of its flammability. Volatile organic gases are probably formed also.

—C. Wu

Light news and entertainment

The article "Slow motion sets in when the light dims" (SN: 4/10/99, p. 228) is very intriguing. The rod system is not only much more sensitive than the cone system but also is much more sensitive to the short wavelengths (blue and violet), with the result that light sources rich in these wavelengths are much

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Cover: The brassy, sassy blue jay belongs to a group of birds that ranks high when researchers tally reports of novel ways birds get a meal. Unusual foraging tactics offer fodder for the study of innovation in animals.

Page 364 (Photo: Cornell University)

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run of piping, with cooking spray so it was too slippery to climb. However, the chimps then started shredding materials in their cage and rubbing off the grease. Boysen gave up and installed a mesh ceiling to protect the chimps and the lights from each other.

She also relates what happened when, to create a new toy, she dangled a length of stretchy surgical tubing from the mesh. "They loved it—bungee, bungee, bungee!" she remembers. Then, the young female wove the loose end of the tubing back up into the mesh and made her own swing.

Innovation goes beyond the antics of captive animals, Boysen says. Studies of tool use among wild chimps show powerful evidence of lightening-bolt creativity. Animals in one part of Africa carry around stones that they use as hammers and anvils to crack open nuts. The same nuts grow among chimps elsewhere, but those animals don't pick up stones to crack the nutshells.

Such localized tool traditions keep popping up as investigators watch the animals in the field, Boysen notes. One group of chimps drags a plant through ponds and then eats the algae collected on the leaves and stems. Another group clambers to the top of oil palms, rips out the central fronds, and then pounds a pestle into the trunk to crush and release the soft innards.

These examples show how innovation allows animals to exploit a new niche,



Juvenile chimps come up with all kinds of antics, supporting the idea that, regardless of species, the creative spark flares especially bright among the young, the low-ranking, and the hungry.

Boysen observes. Classic evolutionary theory emphasized population processes, but to appreciate innovation, "the individual becomes very important," she says.

Primate studies in particular suggest that most individuals' innovations die with them. Laland notes, "Only a tiny, tiny fraction spread to the rest of the population."

Part of the reason may lie in the usually low status of innovators: the poor competitors, the small, and the hungry. "They're not being watched," he notes.

Actually, there may be Edisons all over the place, throughout the animal kingdom. The tricky part is getting anyone to notice. □

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more effective at low levels.


In your example, incandescent automobile headlights are rich in red and deficient in blue. Metal halide headlights, which are very strong in the blue region, are just now becoming available. Not only are these much more energy efficient, but they are also about three times as effective visually at these low levels. This should help compensate for the slower rod reaction.

*Bill F. Jones
Orange, Calif.*

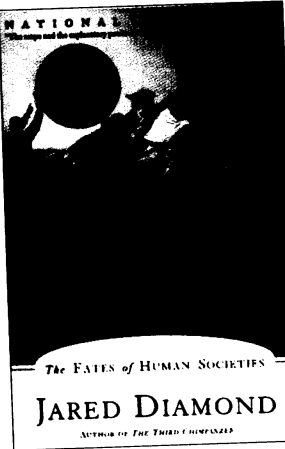
For an entertaining demonstration of the difference in latency between rod and cone vision, just wiggle any small object that features a glowing part in front of your eyes under low lighting. The glowing part (perceived by the fast cones) appears to move out of synch with the rest of the world (perceived by the slower rods). A most dramatic form of this illusion is experienced when throwing an LED-equipped Frisbee under a full moon: In flight, the ring of light created by the spinning LED can appear to precede the disk it's mounted on by a yard. In order to catch the disk, one must learn to grab the ethereal ring of light.

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