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Incorporating Science News Letter

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COVER: Layers of volcanic ash bury Preclassic Maya artifacts. Examinations of the ash and the artifacts tend to confirm the theory that a massive volcanic eruption destroyed parts of El Salvador and caused a major migration into the Maya Lowlands, 2,000 years ago. See p. 74. (Photo: Payson Sheets; drawing: Peabody Museum)

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LETTERS

Quanta give us the jumps

While reading Jonathan Eberhart's lucid (as usual) article concerning MJS '77 (SN: 1/1/77, p. 10), I was mildly jolted again by a phrase that I feel is commonly misapplied. When people intend to convey that some change was large, noticeable, dramatic or highly significant, they sometimes call it a "quantum jump." This phrase puzzles me because I tend to think of a quantum jump as the *smallest* change possible. A system may not change its energy by any arbitrary amount. The smallest allowed change in energy occurs when the system emits or absorbs a single quantum of energy, whereupon the system executes a quantum jump.

There is nothing in the concept which implies that a quantum jump must be large or impressive. A blade of grass growing in the sunlight is undergoing almost innumerable quantum jumps each second and yet no large, observable, dramatic change occurs. It is true that *some* quantum jumps are impressive, but it is not usually so.

Charles Long
Minneapolis, Minn.

Waiting for black hole gamma rays

Congratulations on an outstanding magazine with fascinating reading. SCIENCE NEWS has moved rapidly to top priority on my list of reading material. This is the only magazine that I read cover to cover. Information obtained from its text has been valuable directly in business decisions.

I note with interest the statement in "Physics at the Edge of the Universe" (SN: 12/18&25/76, p. 388). "If they are, the pops should give rise to bursts of gamma rays that should be observable by the next generation of gamma ray astronomy equipment." Page 395 of the same issue says "four gamma ray burst events were detected by Helios 2 in the early part of 1976."

The information in this second article may be that required to substantiate the black hole prediction by Stephen F. Hawking of Cambridge University.

R. D. Zimmer
General Manager
Pulse Dynamics Manufacturing Corp.
Colchester, Ill.

(There was not room in the article to mention that although the gamma-ray bursts recently recorded by several space vehicles caused "intense excitement" in the Hawking

precincts at Cambridge, closer examination of their characteristics shows that they do not fit the prediction.—Ed.)

Crab nebula gamma rays

It is important that I make several clarifying points concerning your article "Gamma-Ray Laser in the Sky" (SN: 12/18&25/76, p. 389).

1. The work is the result of a joint Bell Labs-Sandia Labs gamma-ray astronomy team. The principal Sandia Labs people were C. J. MacCallum and A. C. Watts Jr.
2. The line at 400 ± 1 KeV was detected at the 3.3 to 4.2 sigma level which means that the probability that we are considering a statistical fluke is not negligible.
3. We have no way of telling experimentally whether or not the line comes from the Crab pulsar or the surrounding nebula.
4. While I did speculate that gravitationally red-shifted positron annihilation radiation might be involved, it was C. Varma at Bell Labs who first suggested the possibility of a coherent process.

Marvin Leventhal
Bell Laboratories
Murray Hill, N.J.

Wildlife vs. people

Since my wife recently resubscribed to SCIENCE NEWS I have noticed that there exists an editorial policy favoring saving various animal species at the expense of me and my fellow citizens' economic welfare.

Being a firm believer in freedom of the press, this does not disturb me. Is it, however, a *scientific* thesis that the survival of certain endangered species is more important than what I and others would accomplish with our earnings? As far as your editorial preferences are concerned, I wish to register my very strong disagreement with you. I like wildlife but I like my life and my goals more and do not recognize any rights you seem to see for the government to sacrifice my own for those you prefer, animal or human.

Perhaps you could print a detailed discussion of this topic, inviting Peter Singer (author of *Animal Liberation*) and Michael Martin (author of "Critique of Moral Vegetarianism"). If you don't, why inject this bias into your otherwise excellent pages?

Tibor R. Machan
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Department of Philosophy
State University College
Fredonia, N.Y.

(Our job is to report, not to advocate. The "editorial policy" Prof. Machan refers to does not exist.—Ed.)

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