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Letters

Little bugs take big bites

The letter to the editor titled "Elephant hunters catch mice" (SN: 5/25/91, p.323), which includes comments on my evaluation of emergency-shutdown software developed for the Darlington reactors ("Finding Fault," SN: 2/16/91, p.104), contains far more misinformation than I ever thought possible to pack into four column-inches.

The AT&T programming error discussed in "Finding Fault" is far more significant than its financial cost. Our society is increasingly dependent on communications systems. One of the calls that did not get through on the day the network failed might have been carrying life-critical information from one doctor to another.

I am not a "foe of ever trusting computer programs." I am known for identifying a specific project as impractical and writing papers explaining why that project was unique.

When Kurt Asmis of Canada's Atomic Energy Control Board stated that "the two computer

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programs remained essentially the same as before," he meant only that the basic structure had not changed. Only those changes that improved safety were considered, and many changes were made.

Most important, readers should understand that when one inspects a program, one does not look for either elephants or mice. One searches for "bugs," tiny errors that can have major effects. A single error in punctuation, or even an extra blank line, can cause a failure just when the system is needed most. It is this that makes software such a challenge.

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AIDS dementia: Misplaced blame?

The notion that AIDS dementia is caused by HIV infection of brain neurons ("AIDS dementia: Neurons nixed by virus?" SN: 5/18/91, p.311) is unlikely for four reasons.

First, unlike other viruses that attack the central nervous system, HIV has no known

tropism for neurons. Second, HIV generally requires the CD4 receptor of T-helper cells and macrophages to enter a cell, but neither the CD4 protein nor any similar protein exists on neurons. Third, viruses do not usually have access to the brain until the blood-brain barrier has been breached. Fourth, and most important, the same sorts of dementias seen in AIDS patients also occur in other immunosuppressed people, proving that HIV is not a necessary cause. Once the blood-brain barrier has been breached, any infection can — and in AIDS patients often does — get in. Cytomegalovirus, herpes simplex viruses, cryptococcus and toxoplasmosis are very frequently isolated from the central nervous systems of AIDS patients.

For these reasons, I proposed a radically different explanation of AIDS dementia last year. Animal models of diseases that cause nervous system destruction have existed for nearly a century, and their pathology mimics many aspects of AIDS dementia, including

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