of marine shell samples.

5) That Hilborne T. Cresson committed suicide while his mental state was disturbed is not a matter of dispute. The problems with some of Cresson's archeological work are also well established. These issues are legitimate background to a story about the Holly Oak pendant, as he was its "discoverer." If Custer *et al.* wish to infer from this that Cresson was "capable of lying and perpetuating frauds," then this is a matter of judgment. It was not presented as such.

In their concluding paragraph, Custer *et al.* say that "the Smithsonian Institution has finally *allowed* the kind of studies that we originally requested more than a decade ago" (emphasis added). This is an interesting view of the progress of science, because, to an outsider in this affair, it seems that dating was done just as soon as the techniques became available that would offer a secure answer.—ROGER LEWIN

Demand for Electricity

Mark Crawford (News & Comment, 18 Nov., p. 1005) is correct in noting the likely power crunch parts of the country will experience in the next decade, but misses the most important point. We need to start building capacity to meet demand as well as continue to improve efficiency. Crawford points out that electricity demand has been growing since 1983. In fact, it has continued to grow for at least the past 20 years, with the exception of 1982. The demand for power has directly matched growth in the economy for over a decade, while the demand for oil and gas has largely declined.

The Energy Information Administration estimate of the annual growth rate in power demand of 2.4%, Crawford states, is viewed with "caution, because the utility industry has overestimated its capacity needs in the past." It appears, however, that the opposite is now the case. In 1987 electrical demand grew 4.5%. Capital investments in new capacity is now a high-risk game for utilities, and thus there is great incentive for downplaying demand projections.

The energy analysts Crawford quotes as demonstrating the opportunities for great electrical savings have one thing in common—they do not have the responsibility to serve that is incumbent on the utilities. If the analysts are wrong, they suffer no consequences. If a utility underestimates electrical demand, millions of individuals are affected, either through reduced economic growth due to insufficient supply or through reduced reliability of the network.

It would be disastrously imprudent to not plan for new capacity additions in the hope that we can impress conservation on a diverse, free society. The conservation efforts being proposed require individual actions and investments by millions of people. How can that be *assured* without overt regulation or coercion? And if it is not assured, then how can utilities safely assume they do not have to build capacity on the basis of their current view of demand growth?

THEODORE M. BESMANN
Oak Ridge National Laboratory,
Post Office Box 2008,
Mail Stop 6063,
Oak Ridge, TN 37831–6063

Response: It would appear that Bessman makes electricity the old-fashioned way—by building new billion-dollar power stations. He does not acknowledge that significant amounts of reliable power can be obtained by making commercial buildings more efficient. The nation's electric utilities can capture these power savings if regulatory commissions will move to reward them for doing so. Yes, as I said in my article, new power plants must be built in parts of the United States. Is it wise, however, to burden the country's economy with these capital projects without aggressively pursuing less costly efficiency programs in the commercial sector?—MARK CRAWFORD

Orangutan Tool Use

Since my copy of *Science* sometimes comes late to my field site in Central Indonesian Borneo (Kalimantan Tengah), I am only now responding to the Research News item of 15 May 1987 by Roger Lewin concerning ape tool use. Discussion of pongid tool use is always timely.

Contrary to what is stated in the article, wild orangutans *do* spontaneously use tools in the wild. While captive orangutans are the most adept pongid tool users in capitivity, wild orangutans are said by Lewin to "have never been observed to use tools in the wild, uninfluenced by humans." If human "influence" means that a human observer is below the wild orangutan's tree unobtrusively watching from 30 to 50 feet away with binoculars, then we will probably never see wild orangutan tool use "uninfluenced by humans" unless the observers are robots.

However, in my study of wild orangutans at Tanjung Puting National Park, now in its 17th year, while tool use is by no means common, it does occasionally occur (*1*). For instance, a wild orangutan adult male was observed breaking off a dead ironwood branch and using the stick to scratch himself (*2*). In another instance, a juvenile was seen tearing off a branch and whipping it frantically around him to drive off wasps.

Nonetheless, observations by Suzanne Chevalier-Skolnikoff and me indicate that the high cognitive abilities of orangutans are most frequently used in locomotion (*3*). The levels of cognition involved can be equated with the levels that are assumed to be required for what anthropologists typically call tool use (*4*), but since the pole trees, branches, and vegetation orangutans manipulate in a very sophisticated manner are still attached to the substrate, these manipulations are not generally called tool use.

If one understands wild pongids and their environments as well as their particular adaptations, ape tool use is not confusing. In the wild, orangutans are constantly manipulating their three-dimensional environment as they move and as they forage. It is not surprising that they perform well in captivity with sticks and other materials no longer attached to the substrate. Orangutans demonstrate the same high cognitive abilities observed in nature as they do in captivity, but the usual barren cage is a totally different environment from that of the dense, supple, tridimensional world of the tropical rain forest canopy.

It would be a mistake to assume that higher cognitive abilities in the pongids evolved as an adaptation for tool use or as a result of tool use. Rather, tool use is an expression of a more general adaptation for solving problems. Obviously, the problems faced in captivity by orangutans are different from those faced in the wild.

A more interesting question not addressed by the Research News article is, why do orangutans, unlike chimpanzees, *not* exhibit complexes of tool-*making* behavior in terms of extracting resources from the wild?

BIRUTÉ M. F. GALDIKAS
Orangutan Research and Conservation Project,
Tromol Pos 1,
Pangkalan Bun,
Kalimantan Tengah, Indonesia

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4. B. Beck, in *Socioecology and Psychology of Primates*, R. Tuttle, Ed. (Mouton, The Hague, 1975), pp. 413–447).

Erratum: In the picture accompanying the News & Comment article "NIH holds a science fair" by Gregory Byrne (4 Nov., p. 661), Dale Kiesewetter was incorrectly identified as Ronald D. Finn.

Erratum: In the News & Comment article "U.S.–Soviet weapons journal launched" by Eliot Marshall (2 Dec., p. 1243), Herbert L. Abrams, a member of the editorial board of *Science and Global Security*, was incorrectly identified as Herbert L. Adams.