the resources that depend on energy, have been experienced recently and much more intensely than at any time in the history of the United States. With most Americans lacking in any personal experience with the realities of deprivation, this country luxuriates in debate, searching for near-zero hypothetical risks to man and environment from nuclear and fossil energy, while the far greater real risks of inaction grow and multiply.

The European determination and progress on the breeder highlights the importance of maintaining our momentum with this energy option so that it may be available if the great hopes for conservation and for other, more speculative, technologies are not fully realized in this century.

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Notes

1. This commentary represents our personal views and does not necessarily reflect the views of EPRI or of electric utilities.

Marihuana Effects

Thomas H. Maugh II, in his article "Marihuana: New support for immune and reproductive hazards" (Research News, 28 Nov. 1975, p. 865), includes an account of our work which, unfortunately, is a mixture of information from two different sets of experiments (*1*). He states that we "observed a variety of abnormalities in the sperm of men who have smoked cannabis for many years. These abnormalities include changes in lipid concentrations, protrusions of chromatids from the nucleus, and marked changes in the balance of acidic and basic amino acids in the histone proteins that encapsulate the sperm DNA. The significance of these changes is unclear, however, as Stefanis has found no ill effects definitely associated with them." Our only finding from the sperm study was a low, arginine-rich protein (protamine) content in sperm nuclei, indicative of deviant maturation (*2*). Reproductivity of these donors seemed not to be affected. As stated in our article (*1*), "this would be consistent with our finding that despite the low protamine content, the sperm heads of the users display the normal species-specific shape which is an indicator of normal condensation and reproductive capacity" (*3*).

The other findings, incorrectly described by Maugh, were actually abnormalities in peripheral blood cells of chronic cannabis users, and they include the following: low membrane phospholipids, protrusions of heterochromatin from the nucleus, and changes in the normal complement of histones and nuclear acidic proteins. Since these findings were not associated with overt blood pathology, they may represent compensatory changes resulting from a primary effect of cannabis.

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"Extation"

There is a need for a single word to describe the status of a species whose population has been reduced to such a low level that it can no longer function as a significant part of its normal ecosystem [as in the case of the California condor (*Gymnogyps californianus*), the whooping crane (*Grus americana*), and the black-footed ferret (*Mustela nigripes*)] or to the point where there is considerable doubt whether the species remains extant [the status of the ivory-billed woodpecker (*Campephilus principalis*), the Eskimo curlew (*Numenius borealis*), and the Caribbean monk seal (*Monachus tropicalis*)]. The use of an adverb—nearly, probably, almost, perhaps—or phrase to modify the adjective "extinct" may merely mask our ignorance, implies an irreversible state, is wordier than necessary, and is probably conceptually incorrect. Extinction, like pregnancy and uniqueness, is not subject to degree. Further, such terms are basically numerical and only by inference convey any biological information.

I propose the word "extaille" (pronounced ex-tail) to fill the need expressed above. Extaille is based on the Middle English adjective "taille," meaning cut, trimmed, or limited. As a noun it can refer to what is left over after cutting and trimming. It is the root of the word "tailor" and of "tailings" (from a mine). The prefix "ex" brings the root into consonance with other words that describe the biological status of a species—"extant" and "extinct"—and further suggests a remnant "from" a formerly more abundant popu-

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lation. As a noun to stand for the condition of being extaille, I propose "extation." In unusual instances where a transitive verb is necessary, "extaille" could serve. Thus, one might write that the Eskimo curlew is extaille, or that loss of habitat was the cause of the extation of the ivory-billed woodpecker.

Other words describe population levels or status with other connotations. "Rare" refers to frequency of observation or occurrence and may or may not imply a reduced population level or an inability to function in an ecosystem. "Endangered" and "threatened" are more sociological than biological in nature. Most species to which the word "extaille" would apply would also be considered threatened or endangered, but the converse would not necessarily be true.

Strictly speaking, one might say that whatever causes the death of the last remaining individual of a species is the cause of extinction. In general parlance, discussion of causes of extinction are really related to the causes of extation, the factors that lead to a condition whence extinction is possible. From a conservation viewpoint, the causes of extation are much more important than the cause of extinction because it is easier and more feasible to control the destiny of a population than of an individual. Further, extation may be reversible whereas extinction is not.

The verb "become" is most frequently used to indicate the course of a species to extinction, and could also be used with extation. Despite the precedence of modern usage, and particularly Will Cuppy's famous essay (*1*), I suggest that the verb "go" is more appropriate. Thus, a species would go extaille or extinct. "Become" usually implies a positive goal orientation, whereas "go" implies a departure. In an economic analogy, one becomes wealthy, but one goes broke.

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PCB's in Bald Eagle Eggs

The continued threat of polychlorinated biphenyls (PCB's) is reported in a Research News article by Thomas H. Maugh II (19 Dec. 1975, p. 1189). I would like to emphasize the magnitude of the threat to natural fisheaters, such as bald eagles. Maugh notes that salmon and striped bass from the northeastern United States contain PCB's in concentrations from 5 to 20 parts per million and that 2 ppm is the upper limit adopted for edible fish. From a population of bald eagles with declining reproduction in northwestern Ontario I obtained a number of addled eggs during a period from 1967 to 1972 (*1*). The contents of these were analyzed for mercury and several organochlorines, including PCB's (*2*). The PCB concentrations in the three eggs in which that contaminant was measured were 25, 30, and 166 ppm, respectively (*3*). These levels are higher than those reported for bald eagle eggs in other regions of North America (*4*), and the last is among the highest on record for North American wildlife, amounting to nearly 0.1 percent of the entire dry weight content of that egg. I would not advise eating bald eagle eggs for breakfast.

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2. PCB's were analyzed by gas chromatography, using Aroclor 1260 as reference standard, with calculations averaged from peaks 8 and 10. Analyses were performed by the Ontario Research Foundation for the Canadian Wildlife Service.
3. Concentrations are expressed as parts per million of estimated fresh wet weight to be consistent with Food and Drug Administration bases for reporting. Levels are converted from dry weight [see (*1*)] by assuming 83 percent moisture in freshly laid eggs.
4. S. N. Wiemeyer, B. M. Mulhern, F. J. Ligas, R. J. Hensel, J. E. Mathisen, F. C. Robards, S. Postupalsky, *Pestic. Monit. J.* **6**, 50 (1972).

Solar Models

Roger K. Ulrich, in his article "Solar neutrinos and variations in the solar luminosity" (14 Nov. 1975, p. 619), seriously misrepresents my work (*1*) on stellar structure and variations of solar radiation. He rightly says that the described model "is physically untenable," but it is not my model, but rather, so to speak, the very opposite of mine, which he describes. With a solar core depleted of hydrogen, this element (not "heavy elements," as Ulrich says) diffuses inward, leaving the practically nondiffusing heavy elements in an outer shell, thus increasing the opacity in this shell (not "in the center of the sun"). There a superadiabatic gradient is formed, causing convection and leading to a fresh supply of hydrogen being transported to the core (not "causing the