sediment in a few centuries, is hydroelectricity truly renewable energy? What about the ecological, aesthetic, and recreational value of natural lakes, free-flowing rivers, gorges, rapids, waterfalls, and wilderness? Think of the extinct rapids beneath the reservoirs of the Snake and Colorado rivers. We may dismantle the transmission lines, but the dams and the sediment behind them are forever.

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How Much for Research?

Leonard Sagan (Letters, 21 June, p. 1382) argues that no causal relationship has been demonstrated between mortality and wealth. But mortality is not the sole measure of health. It is undeniable that wealth has something to do with the quality of life while it is being lived, and although we may not have been able to extend its length by expenditure of funds, it is unquestionable that we have been able to improve its quality, both in terms of lower morbidity and greater mental health. But the question is not whether we should spend or not spend on research. The question is how much. When does one reach a point of diminishing returns? Anyone asking for research funds should be able to tell the funding source what minimum value society will gain from answering the question his or her experiments address. That this is not an unreasonable requirement is demonstrated by the fact that such questions are asked and answered daily in industrial research.

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The Fajada Butte Solar Marker

Zeilik (Reports, 14 June, p. 1311) adds to the published data (*1*, *2*) indicating that site 29 SJ 2387 at Chaco Canyon, New Mexico, did not work as described by Sofaer *et al.* (*3*, *4*). However, one of Zeilik's conclusions does not follow from his argument, and he also omits an important ethnographic fact.

Zeilik concludes that 29 SJ 2387 was probably a sun shrine and states, "The turns in the spiral could then mark out a rough planting calendar" (p. 1312). Arguing earlier against the use of 29 SJ 2387 as an accurate solar calendar, he correctly cites ethnographic accounts to show that Pueblo sun-watching sites are (i) usually unmarked and (ii) easily accessible to the Sun Priest. These same accounts and others (*5*) also note that planting times and dates for other subsistence activities are set using sun-watching stations. Zeilik notes that these calendars are much more accurate than the Fajada Butte feature. The same is true for known prehistoric Anasazi solar alignments (*5*), making 29 SJ 2387 unneeded. Furthermore, the difficult access to Fajada Butte that makes the butte an unlikely place for sun-watching also makes it an unlikely location for *any* calendrical marker, even a "rough" one.

Finally, like Sofaer *et al.*, Zeilik does not mention that among the Pueblos spirals represent water or serpents (*1*, *6*), not the sun. "Sun and water are necessary elements for farming, but they are distinct elements in Puebloan symbolic systems. Serpents are associated with both sun and water . . . but are similarly distinct" (*1*). Ethnographically there is little to indicate that 29 SJ 2387 is Pueblo; by extension, other than because of its location at Chaco Canyon, the designation of 29 SJ 2387 as Chacoan Anasazi remains unproved. The slabs and other geological features are probably natural (*1*, *2*), not cultural, and the two spiral petroglyphs could be Navajo.

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Iowa, Not Ohio

John K. Smith and David A. Hounshell wrote a fascinating account (Articles, 2 Aug., p. 436) of Carothers' career at DuPont. They erred, however, in identifying my affiliation in 1928 as Ohio State University. I was then, and remain to this day, a professor at Iowa State University.

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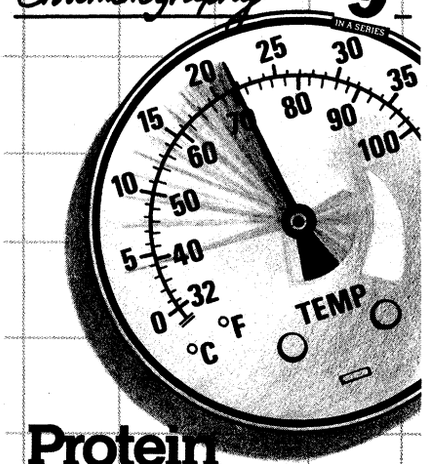

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