

The facts behind the fantasy **CLONING** A Biologist Reports

Robert Gilmore McKinnell

McKinnell describes the historical background of frog cloning, the actual procedure, and its uses—in studies of cancer, aging, and immunobiology.

In discussing the ethical questions about human cloning—as yet unachieved—McKinnell emphasizes the pointlessness of such a procedure. From both a biological and social standpoint, he holds, the diversity resulting from sexual reproduction is far more valuable than the sameness of cloned creatures. Illus. \$8.95



Illustration:
RANA PIPENS, the species used in the
author's cloning experiments.

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LETTERS

Risk Accounting

It seems to me that there is cause for concern that the recent flurry of letters (4 May, p. 454; 11 May, p. 564) attacking the recent article by Inhaber (23 Feb., p. 718) will cause readers of *Science* to lose sight of the fundamental methodological change in risk accounting proposed by Inhaber, namely that one should charge for those risks incurred in the acquisition of materials of construction and the construction of the facility. In fact, this aspect of risk accounting has not generally been included previously. Had it been, we would not have read a continuing series of scientific and public pronouncements in the past that solar energy is benign, either ecologically or from the point of view of health and safety. No energy source is. Just think about the pollution from copper mines and smelters when you consider a technology that needs copper.

I myself have had questions about some of Inhaber's data and results, as have had others. More detailed and accurate studies are needed to confirm or negate his general results than have been afforded by the letters of criticism. Whatever the eventual results, he has made an important contribution to our thinking.

I also question two of Lemberg's criticisms (4 May) of Inhaber's method. I find no basis for charging only incremental risks connected with material acquisition, as proposed by Lemberg. If a coal miner is killed in a coal mine accident, we don't say, "But he might have been killed constructing some skyscraper" when we count the risks from coal-generated electricity.

Second, society cannot exist only with energy systems subject to daily or other frequent loss of all or most generating capacity. There must be storage or backup systems, and a proper risk accounting has to include a charge for this aspect of an unsteady supply source. Lemberg might have suggested that Inhaber should have used the risk corresponding to the average societal energy mix rather than that due to coal, which Inhaber estimated to have the highest risk. Or Lemberg should have proposed less risky backup.

In his risk accounting, Inhaber did not allow for one potentially important aspect. If society spends \$1 billion a year more to make electricity, it does not have that billion dollars to improve the health and safety from whatever risks provide the greatest risk reduction po-

tential per dollar expended. If one could "save" a life (defer a premature death) by expending \$200,000, a billion dollars per year saved by use of a cheaper energy source could enable the "saving" of 5000 lives a year. This contribution to risk accounting could be dominant if there is a major disparity in costs of energy among various sources.

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French Anti-Nazis

As one who spent the war years in occupied France working with the Underground, I strongly disagree with Joan Bromberg's statement (18 May, p. 741) in her review of *Scientists in Power* (1) that the most active French anti-Nazi group was the Communist Party. The Communists were latecomers to the movement, siding with De Gaulle and the Resistance only after Germany attacked Russia in June 1941. At that time political and religious considerations mattered much less than individual commitment against oppression; the spectrum ranged from right to left and from fundamentalism to atheism. Furthermore, the raised fist in the accompanying photograph was not the Communist salute but that of the Popular Front, which, besides the Communists, included socialists like Pierre Cot as well as Centrists like Prime Minister Daladier.

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References

1. S. R. Weart, *Scientists in Power* (Harvard Univ. Press, Cambridge, Mass., 1979).

Proposals, Peer Review, and Research Results

The rapidly worsening nature of the processes used in the funding of research is receiving increasing if belated attention. A recent editorial by Philip H. Abelson (13 Apr., p. 133) highlights one important aspect of the situation (aside from the universal complaint of lack of money), namely the serious drop in morale among scientists. But, if the situation is to improve, the scientific community must do much more than complain. I believe that the universal solvent of "more money" (legitimate as such