

who have not, should help us to distinguish between these two hypotheses.

Yours faithfully,

HARVEY GOLDSTEIN

National Children's Bureau,  
Adam House,  
1 Fitzroy Square,  
London W1P 5AH

- <sup>1</sup> Yerushalmy, J., *Am. J. Epidemiol.*, **93**, 443 (1971).
- <sup>2</sup> Yerushalmy, J., *Am. J. Obstet. Gynecol.*, **112**, 277 (1972).
- <sup>3</sup> Goldstein, H., *Am. J. Epidemiol.*, **95**, 1 (1972).
- <sup>4</sup> Goldstein, H., *Am. J. Obstet. Gynecol.*, **114**, 570 (1972).

SIR,—Your editorial (*Nature*, **245**, 61; 1973) raises a central problem in environmental protection: when action is justified on the basis of incomplete evidence. You are correct that the study by Goldstein *et al.* does not prove that smoking during pregnancy causes the deaths of 1,500 babies in Britain each year, but the study does indicate a substantial probability that it does. You may possibly be right that an effective campaign to prevent pregnant women from smoking might cause comparably serious side effects, but the probability that it would is surely much smaller. You place yourself in a curious logical position, because the standard of proof you demand—"that compulsory abstinence produces the same sort of statistics as voluntary abstinence"—could only be obtained by a campaign of the kind to which you object.

A determined campaign to eliminate smoking, started in the early nineteen-sixties, would, if effective, have probably averted at least a million smoking-related deaths. Paraphrasing your arguments, it is "quite possible" that it would also have had undesirable side effects. "Perhaps" involuntary ex-smokers would have died in large

numbers from stomach ulcers, or road accidents, or other ill-defined consequences of "well-known tensions", but the balance of probabilities is and was against this. Those who opposed controls on smoking in the 1960s should now have a heavy burden on their consciences.

The same questions are raised by almost every major environmental health issue, whether sulphur in fuel, lead in petrol, DDT on food crops, or asbestos in beverages. It is never possible to 'prove' hazard completely, because of the host of uncontrolled variables and the lack of unexposed controls. Decisions to act against a hazard must always be made on incomplete evidence. But those who argue for inaction until the hazard is 'proved' bear as much moral responsibility for the consequences of their recommendations as those who urge action before the evidence for hazard is compelling.

In your case, the burden of responsibility is relatively light. The course of inaction which you recommend would probably result in the deaths of only about 1,500 babies a year in Britain, or perhaps 50,000 a year world-wide. As you say, perhaps the effects would be less serious, or even beneficial. But the weight of evidence, as it exists now, is against you. I hope your conscience will remain clear.

Yours faithfully,

I. C. T. NISBET

Massachusetts Audubon Society,  
Lincoln,  
Massachusetts 01773

A list of books received will appear in the November 2 issue of *Nature*.

# Announcements

## Erratum

In the book review 'Electromyography' (on page 437 of this issue) the title of the book should be *New Developments in Electromyography and Clinical Neurophysiology*.

## International Meetings

December 2-5, **First International Symposium and Exposition on Ozone for Wastewater Treatment** (International Ozone Institute, 24 Central Avenue, Waterbury, Connecticut 06702, Myron E. Browning).

December 3-4, **The Mammalian Fetus-Comparative Biology and Methodology** (Dr E. S. E. Hafez, Department of Gynecology-Obstetrics, 550 E. Canfield, Detroit, Michigan 48201).

December 3-5, **Advances in Analytical Toxicology** (Registrar, Institute of Clinical Toxicology, PO Box 2565, Houston, Texas 77001).

December 4, **Technology of Superplasticity** (The Meetings Officer, The Institute of Physics, 47 Belgrave Square, London SW1X 8QX).

December 4, **Analytical Techniques for the Museum and Art Gallery** (The Society for Analytical Chemistry, 9/10 Savile Row, London W1X 1AF).

December 4-5, **The Selection of Materials in Machine Design** (Conference Department, Institution of Mechanical Engineers, 1 Birdcage Walk, London SW1H 9JJ).

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