

CORRESPONDENCE

Medical schools

SIR — Although your editorial of 27th November 1980 on the reorganization of London Medical Schools has some hard things to say about London University in general and some of its senior members in particular, for these your writer may perhaps be forgiven, since they are largely matters of opinion. Less forgivable, however, are the errors of fact that spice the article. I wish to draw attention to only two of these. You refer to "two preclinical schools (at King's College and Westminster Hospital)". The Westminster Medical School has no preclinical departments of its own: King's College is a preclinical school for both King's College Hospital Medical School and the Westminster Medical School. More important, you continue "... the effect of the Senate's decision is that the preclinical schools at King's College and Westminster Hospital (sic) should be closed ...". The Senate's decision implies nothing of the sort: all preclinical schools of the University, including that at King's College, are to be reinvestigated in the next few months. Which school, if any, is to be recommended for closure is still a matter of speculation, even for members of the new Working Party. The article does contain one germ of good sense, where it refers to planning. If there is or ever has been a plan, would that the hewers of wood and drawers of water could be told it.

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Badgers and TB

SIR — Following public criticism of the policy of the Ministry of Agriculture, Fisheries and Food (MAFF) for dealing with badgers infected with tuberculosis (TB) the Minister of Agriculture asked Lord Zuckerman to take an objective look at the relationship between badgers, cattle and bovine TB, and to advise on how the problem should be tackled in the future¹. This is a complex question. The Mammal Society agrees with Lord Zuckerman's basic conclusion that the badger is a major reservoir of bovine TB in certain limited areas of South West England, and hence is a potential danger to the cattle in those areas. However, we feel that the report gives a biased interpretation of the evidence, and that many of Lord Zuckerman's conclusions were not justified from the data presented in the report. We would like to correct some of the factually misleading statements.

During the period of the moratorium on gassing, the percentage incidence of TB in badgers from Gloucestershire and Avon increased, an observation that Lord Zuckerman took to imply that the disease has "spread". The fact that the percentage incidence declined slightly in Cornwall during the same period was overlooked (p. 63). Also, Lord Zuckerman's statement (p. 40) that at

least one in five to one in ten badgers in affected areas is now infected with TB is misleading. The incidence quoted relates largely to samples taken in the vicinity of TB outbreaks in cattle, and there is no reason to believe that such high levels of TB are to be found except in very small pockets of infection. Certainly there is no scientific evidence to justify Lord Zuckerman describing badgers in the South West as a "highly-infected population" spreading TB to badgers in other areas.

Since TB in badgers appears to be confined largely to limited areas of the South West, and since the evidence to suggest that the disease is spreading is equivocal, we strongly contest Lord Zuckerman's view that bovine TB is a major hazard to the survival of the badger.

Lord Zuckerman stated (p. 27) that the gassing of badgers was accompanied by a decline in the number of reactors in the cattle herds concerned, and that the two events were related. However, the rate of decline in the incidence of TB in badgers in the South West was paralleled by a decline in the incidence of reactors in cattle herds not only in the South West but also in the rest of England. The timing and rate of decline were similar in all three samples. Lord Zuckerman offered no explanation for this. One possible interpretation is that the incidence of TB in both badgers and cattle underwent a decline throughout the country, and that the badger gassing campaign had little significant effect on the overall timing or rate of decline, though gassing may have affected the situation locally.

Lord Zuckerman concluded that the appearance of the disease in cattle in the South West reflected a high local prevalence of TB in badgers (p. 41). This is manifestly untrue; in Cornwall only 15 per cent (51/340) of herd infections were definitely attributable to badgers (p. 57).

Lord Zuckerman stated that "population density is a major factor in the spread of TB". Certainly it is probable that population density is a factor in the spread of disease, but other more subtle factors may be significant. Badger and cattle densities² in parts of Dorset and Somerset are as high or higher than in Gloucestershire, Avon and Wiltshire, yet the incidence of TB is very much lower. Why? Also, the presence of infected badgers does not always result in reactors in nearby cattle herds (p. 21). Why?

Lord Zuckerman speculated that badgers all over the country once suffered and died from TB, and that the prevalence of TB in badgers had declined in parallel with the decrease in the incidence of TB in humans and cattle (p. 41). But since badgers are a self-perpetuating reservoir of tuberculosis (p. 95), it is difficult to see why, when the incidence of TB was reduced in cattle, it should also have declined in the badger. This is particularly inexplicable in areas such as parts of South East England and North Wales, where badger densities are comparable to those in the South West (p. 68). In the absence of any evidence to support Lord Zuckerman's view, it seems more logical to speculate that TB was never as prevalent in badgers in the rest of England. So what factors make the situation so different in parts of the South West?

There are many anomalies in the data presented in the report; we have only mentioned a few. Clearly many issues remain unresolved, and there are likely to be many subtle factors involved in the process of transmission of TB from badgers to cattle which are not yet understood. We believe that the continuation of the badger gassing campaign should only be regarded as a short-term expedient. Lord Zuckerman accepted that eradication of TB in badgers is probably impossible (p. 27). In that case, there is every reason to suppose that if/once gassing operations cease, and the badger population builds up again, the incidence of TB in the badger will also increase. In order to achieve an acceptable long-term solution we believe that it is imperative that further research is undertaken to (1) explain some of the many anomalies in the data available and (2) understand the factors involved in the transmission of TB from badgers to cattle.

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1. Zuckerman, Lord. *Badgers, Cattle and Tuberculosis: Report to The Right Honourable Peter Walker, MBE, MP* (HMSO, London, 1980).
2. Ministry of Agriculture, Fisheries and Food — *Agricultural Returns — England and Wales, Regions and Counties — Final Results of the June 1979 Census* (HMSO, London, 1980).

Court feasibility

SIR — Your United States election scoreboard of pluses and minuses (*Nature* 13 November, p. 107) scores the President-elect's statement that he would explore the feasibility of a "science court" as a "plus". This seems only justifiable if one regards a statement that feasibility will be explored as preferable to one that the concept will be implemented. At the risk of making a hackneyed point that is, however, evidently unfamiliar to your reporter, it cannot be too strongly emphasized that the procedures of science and a court of law are necessarily different. To take only the best known example: the verdict of a court of law can take only one of two values — guilty or not guilty. In science, there are no probabilities that are equal to zero or one.

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Plusses and losses

In the article by David Dickson on the likely consequences of the election of Mr Ronald Regan as President of the United States, published on 13 November, the likely changes in US science policy were described as "Plusses" and "Minuses", not as "Winners" and "Losers" as in the original article. The complaints of Messrs Noble, Klimkowsky, Volliamy, Price and Joyce (*Nature* 27 November) therefore lie against the London office and not against Mr Dickson.

EDITOR, *Nature*