CORRESPONDENCE

Cancer hazards

SIR — Epstein and Swartz (*Nature* **289**, 127; 1981) cited our critique of the report by Bridbord *et al.* on *Estimates of the Fraction of Cancer in the United States Related to Occupational Factors*. Their citation was correct as given, but misleading without our antecedent qualifications. In general, we agree with many others who have reviewed the document that the estimates of occupationally related cancer presented there are probably substantially higher than the data support. In any event, the important question is what reduction in cancer frequency might be achieved by control of occupational exposures. Further epidemiological inquiry should improve those estimates.

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Draize test must go

SIR — The news that Revlon is to finance research into developing an *in vitro* alternative to the Draize test for eye irritation should be welcomed by everyone, not just by anti-vivisectionists (*Nature* 19 March, p.181). The Draize test is notoriously unreliable, yet it has survived basically unchanged for over 36 years. A replacement is long overdue.

As far back as 1971 a survey of intra- and inter-laboratory variation in the interpretation of results indicated that the Draize test was inadequate for assessing eye irritation even on a simple pass/fail situation. As a result of the study it was recommended that, failing moves to improve reliability, the test had little relevance and should be excluded in regulations as a toxicity test. Despite this, the Draize test is still the only recognized test for eye irritation.

On scientific grounds alone, the Draize test should have been replaced years ago.

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IQ put to test

SIR — In his recent *Nature* article¹ N. J. Mackintosh refers to our research demonstrating a relationship between IQ and "inspection time", the latter being a measure assumed to reflect the speed at which a person processes information.

Although we have found inspection time to be correlated with IQ, this relationship becomes statistically significant only for samples with widely varying IQ scores. The correlation coefficient of -0.92 between inspection time and IQ was obtained from a group of 10 individuals whose IQ scores ranged from 47 to 119. We emphasized that this correlation should be interpreted cautiously because of the manner in which the sample was chosen. Furthermore, this relationship was found only with respect to Performance IQ scores, as measured by the Wechsler Adult Intelligence Scale; correlations between Verbal IQ and inspection time estimates were much smaller and not statistically significant². Our study involving 48 subjects, and which found a correlation of -0.80 between Performance IQ

and inspection time³, also included retarded persons. Here again the strong correlation was the consequence of a very wide range in IQ scores. The study involved three groups, each of 16 adolescents; a retarded group where IQ scores ranged from 57 to 81, a group of nonretarded individuals with IQ ranging from 90 to 115, and a third group with scores between 116 and 130. We found no difference in the values of inspection time for the two nonretarded groups (mean = 93 ms, standard deviation = 40 ms and mean = 90 ms, standard deviation = 42 ms). Further analysis of these data (not previously published) confirms only a low correlation between inspection times and IQ for the 32 nonretarded subjects ($r = -0.23$).

At this stage of our research, it is not clear what inspection time is measuring. It is one of a number of measures⁴ developed within a model which attempts to account for capacity limitations, response bias and the caution with which a response is made⁵. The inspection time index suggests that it may prove useful for investigating what limits there are to the speed of human information processing. Insofar as it turns out to be an adequate measure of a sub-process involved in human decision making, it may conceivably be a factor in what might be termed intelligent behaviour, assuming as is widely held that this involves a speed component. To suggest more at this stage, however, seems unwarranted.

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1. Mackintosh, N. T. *Nature* **289**, 529–530 (1981).
2. Lally, M. & Nettelbeck, T. **82**, 273–281 (1977).
3. Nettelbeck, T. & Lally, M. *Br. J. Psychol.* **67**, 17–22 (1976).
4. Vickers, D. *Decision Processes in Visual Perception* (Academic, London, 1979).
5. Vickers, D., Nettelbeck, T. & Willson, R. J. *Perception* **1**, 263–295 (1972).

Why conserve?

SIR — Without seeking to emulate the composer Johann Joseph Fux, who "could not resist being drawn into endless polemics"¹ we feel that some of the points raised by Dr Muir² require critical examination.

The argument that a species or habitat need not be preserved after it has been "competently" investigated raises several questions. First, what criteria can be used to decide whether a particular investigation has, in fact, been competently executed? After the completion of a study by one group of investigators, will it be possible for other workers to confirm or refute their findings, or will the relevant biological phenomenon already have ceased to exist? Second, is it realistic to suppose that everything can be learned about a given phenomenon using presently available experimental techniques? Will future techniques have nothing new to contribute? Third, are biologists concerned only with documenting facts which immediately become historical, rather than remaining current?

Perhaps the most surprising feature of Dr Muir's arguments is that they are utilitarian. Their implication is that a species or habitat should not be permitted to exist for its own

sake, but only if it provides an opportunity for human exploitation. It must be unusual for a professional biologist to express this opinion.

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1. Wellesz, E. *Oxford Studies of Composers (1): Fux* (Oxford University Press, 1965).
2. Muir, C. *Nature* **290**, 82, 173 (1981).

Lamarck's revival

SIR — The following type of argument has always struck me as unfair to Lamarck and beneath the dignity of a respectable scientist. On the one hand, the emphasis of microevolution and minuteness of changes from one generation to the next, combined with extreme refinement and a plethora of sophisticated tricks (mutation, selection, drift, spatial isolation, genetic isolation, etc.) employed in defence of Darwinism and, on the other, the arrogant vulgarity in discrediting Lamarckism, for example, "why does not a woman whose arm is amputated produce one-armed children?" (ref.1), "can an animal practice being purple?" (ref.2).

The essence of the scientific argument is the validity or otherwise of the Weissman doctrine. It seems logical that resistance to transformation of somatic changes into genetic ones must be high to prevent an organism from the danger of over-reacting to environmental fluctuations and to make it maintain a certain stability. But, in view of the importance of feedback in nature, it seems unlikely that the Weissman barrier is completely leakproof under sustained nonrandom directional stress. Even from the Darwinist viewpoint such complete rigidity and unresponsiveness does not make much sense.

Whether Steel and Gorczynski³ are right or wrong is not so much important in this context. What is extremely important however, is that they are forcing the discussion onto a scientific level which it deserves.

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1. *Nature* **289**, 631–632 (1981).
2. Savage, R. J. G. *Evolution* 3rd edn, 24 (1977).
3. Gorczynski, R. M. & Steele, E. J. *Nature* **289**, 678–681 (1981).

Evolution on trial

SIR — Following the evolution trial in Sacramento, California, thanks are due to scientists who responded to requests from Mr Tyler and myself, acting as his consultant, to be available as witnesses. These were Drs C.R. Berger, B. Dalrymple, R. Dickerson, R. Doolittle, A. Kornberg, J. Kumamoto, W. Laetsch, R. Lemmon, W. Mayer, E. Olson, C. Sagan and D. Wake, evolutionists all, who generously agreed to undergo, if needed, the inevitable frustrations and delays of courtroom trials.

The next "round" will presumably be in Arkansas, where legislature passed a bill, on 17 March, prescribing the teaching of creationism.

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