correspondence

First-year ecology

SIR,—The teaching of ecology at university first-year level probably poses more problems than any other area of biology. Although in general there is agreement as to its desirability, opinions differ considerably as to the methods of implementation. Wide-spread public interest in topics such as conservation and pollution, reflected in pressure from students for courses in ecology, provide powerful reasons for attempting to overcome curriculum problems. We also believe that in an introductory biology course ecology should be presented not only as a subject in its own right but also as having important links with other fields of biology such as physiology, behaviour and genetics. Furthermore, it must be interdisciplinary, involving zoological and botanical aspects, as well as incorporating discussions of the role of micro-organisms in different ecosystems.

To meet these requirements at Bath, we have been reviewing the teaching of ecology at the first-year level in which there is provision for ten one-hour lectures and five two-hour periods of practical work. Our lecture/seminar programme centres around three principal themes—spatial distribution of organisms, the flow of energy in ecosystems and the gene as an element of continuity in populations. On the practical side we have accepted the fact that, at the most, only one field trip will be feasible and we exclude the possibility of vacation courses at this level. The main problem is the practical work which must necessarily be restricted almost entirely to the laboratory and be carried out in the minimum of time. It is also important that, being the first year, various investigations should work. We have therefore directed planning towards the possibility of using simulation experiments with living organisms, many of which have already been tried out in smaller and more advanced classes. The value of these experiments lies in the fact that they aim to reproduce and illustrate in miniature within the laboratory certain selected aspects of the real environment. Study involves not only qualitative description but also quantitative sampling and statistical treatment of results, together with simulation experiments covering such topics as succession, population growth, selection and the estimation of animal

numbers by means of mark, release and recapture experiments.

Simulation, however, has serious drawbacks since it demands extrapolation by the student from imitation to reality. Such an intellectual jump can pose problems. Although in the teaching of ecology, there is no substitute for the experience of a visit to a natural habitat, the introduction into the lecture component of visual aids, such as ciné films, still photographs and slides can help to bridge the gaps.

The inception of a new curriculum should also be associated with a fresh range of objectives some of which will bear on the cognitive field and some on the affective. It is not therefore enough merely to change the nature and quantity of the course content; the methods of teaching and learning must also be adjusted to suit the new requirements. This is particularly true in a complex subject such as ecology which tends to face students initially with a bewildering diversity of problems. Such needs have served to underline the changing role of the lecturer and tutor who acts not only in his traditional capacity of expositor, but also as guide, consultant and stimulator of discussion.

W. H. DOWDESWELL

I. C. POTTER

University of Bath

Cheating children

SIR,—I would like to comment on two letters in your issue of September 4 which are related to my work on metal bending. The first is that by Dr Pamplin and Mr Collins, whose interesting study of deception in spoon-bending leads me to ask what is the proportion of children who cheat in other forms of activity in which they are given the opportunity to deceive. I have also seen cases of obvious fraud in my initial tests and have not continued working with the subjects in such cases. I have found so far a ratio of no more than one in six of those who claim metal-bending powers (at least forty subjects) to have been able to achieve the effect in a manner which I cannot explain by deception. This is consistent with the results of Pamplin and Collins.

I would like to suggest that the criteria of bending might have been made more stringent before children were tested in this way, and even while the one-way mirror tests were being performed. Apparently some of the

children still claimed they could spoon-bend without cheating after they had been caught. They might still be able to do so, though only if the conditions are stringent enough will it be possible to get them to turn their attention to using any abnormal powers they possess. The measuring of pressure or at least having a strip of metal taped flat to a desk so it cannot be mechanically bent is necessary here.

In response to Mr Randi, who was very proud of his ability to be able to cheat all and sundry, may I say that his last sentence has remarkable hubris. I would be grateful to learn of Mr Randi's scientific qualifications before I can accept it, and I echo the apt words of the great scientist Sir William Crookes, a past President of the Royal Society, by insisting that when it is necessary to trust my senses I maintain that a physical enquirer is more than a match for a professional conjurer.

May I also recommend to Mr Randi the report of his fellow magicians from Atlanta, A. Zorka and A. Dickson who tested Mr Geller under conditions they felt excluded fraud.

Yours faithfully,

JOHN TAYLOR

King's College, London, UK

Assays

SIR,—With reference to the article of A. Dorozynski (September 11), I would like to make the following comments:

1. The mutagenicity assay, elaborated by Dr Bruce Ames, has been used by the IARC in Lyon for three years within the framework of a continuous collaboration with Dr Ames. Dr Bartsch of the Unit of Chemical Carcinogenesis of the IARC has devised some modifications of the original procedure which have allowed an improvement of the testing efficiency.

2. The IARC is collaborating, and is certainly willing to continue and expand its collaboration, with a number of national laboratories, including the Institut Pasteur in Paris, on the development of screening tests to detect chemical mutagens and/or carcinogens.

3. The IARC is not, and will not be, involved in the commercial dissemination of the "mutatest".

Yours faithfully,

L. TOMATIS

*International Agency for Research on Cancer,
Lyon, France*