

velocity.  $S^3$  offers a design service for objective lenses.

Second, electrical interference on the recorded signal increases the error in the velocity inferred. It is difficult to be precise as electrical interference is highly variable from one location to another, but for most locations the  $S^3-204$  is probably adequately screened. If, however, as was our experience, the interferometer had to be operated outside a conventional screened room near equipment generating severe electrical interference ( $>1 \text{ kV m}^{-1}$ ) then the screening of the photomultiplier assembly is not adequate and local elec-

trical double screening is necessary to reduce the interference to an acceptable level of less than 10% of the recorded signal.

Third, the interferometer does not measure the direction of the target movement, and it is in many cases not obvious from the record itself where acceleration reversals have taken place. Nonetheless, the  $S^3-204$  can be adapted to use an optical technique of phase shifting the laser light recorded in one photomultiplier by  $\lambda/4$  to obtain records in both photomultipliers that unambiguously identify acceleration reversals (Bouricous and Clifford, *Rev. Sci. Inst.*,

41, 1800; 1970). Fig. 2 shows interferometer records obtained with this technique together with the inferred velocity. In only one record are the acceleration reversals unambiguous. The technique is available from  $S^3$ .

The  $S^3-204$  interferometer measures reliably surface velocities from shock physics experiments, and, once a prospective purchaser has decided which of the many available options are useful to him, the instrument will provide a useful addition to any laboratory working in shock physics.

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## CORRESPONDENCE

### Creation or Evolution

SIR,—The discussion by advocates of creation vs evolution (*Nature*, 240, 365; 1972) was triggered by the "school textbook controversy" in California. Solan, at least by implication, identifies the dispute with the State of California, but a bill requiring Michigan's public schools to teach the biblical account of creation along with evolutionary theory was unanimously approved by the House Education Committee in Michigan on December 5.

The textbook controversy has both religious and scientific components. The religious arguments used by the California State Board of Education and its creationist supporters were opposed by eminent clergymen, representing several of the leading faiths, in the hearings at Sacramento on November 9. Other objections raised by the "creationists" were directed against the scientific content of evolution. These objections are uninformed, illogical, trivial, and, if they find their way into the textbooks, they will degrade the teaching of science to the children of California.

Dr John Ford, the vice-president of the Board, favours "as the best current explanation for variation among plants and other living things the Special Theory of Evolution as defined by G. A. Kerkut and others". He also states that science "classically ignores" the areas of "value systems, morals, art and poetry". Evidently, he does not know, or ignores, the contributions made to human welfare by great scientists who were also great humanitarians.

An engineer named Vernon Grose has been the Board's leading adviser on evolution. The Board elevated him to the State Textbook Commission. He is also a member of the Governor's Commission on Law Enforcement. Mr Grose's statements have made it evident that he does not have even a

rudimentary knowledge of biology. He says that Pasteur's demonstration that bacteria do not arise spontaneously disproves theories of the origin of life. Mr Grose strongly opposes the concept of adaptation as an evolutionary force. He asserts that "the regular absence of transitional forms may best be explained by a creation theory", and he dislikes the concept that plants and animals have a common ancestral origin. However, he has not so far proposed a revision of the primary sequence of cytochrome *c*.

The controversy continues, and the Board, on December 14, evidently favoured introducing the teaching of creation into science textbooks. There will be more news in January, following action by a new committee of the Board that includes Dr Ford and two scientists (Richard Bube and Robert Fischer) who are active in the religiously-oriented American Scientific Affiliation.

Yours faithfully,  
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SIR,—It is welcome that you are initiating a review of any time-honoured scientific tenet of faith—for this is what evolution has become to many of us—rather like a theological doctrine, to be defended with some passion. It is a good thing for people to question broad philosophical assumptions and keep open minds. On the issue of evolution as a primary directive force in the cosmos, I propose to do just that whilst feeling free to use the evolutionary hypothesis in relevant cases in my research and thinking.

I feel undogmatic and somewhat sceptical in the debate. Special creation cannot be proved, and a thoroughgoing evolutionary origin on the basis of environmental adaptation explains

much, but leaves plenty of unanswerable queries.

My atheist undergraduate diet of Haldane, Huxley, Bernal, Wells and so on failed to satisfy me that evolution is the sole creative force behind the cosmos and the biosphere and modern *Homo sapiens*. On more recent review, I find it too much for my credulity, for reasons similar to those cited by Vanderkooi and Van Kley (*Nature*, 240, 365; 1972). On the other hand, I find God real and His activity demonstrable over the years.

One demonstrates biogenetic evolution in the laboratory and field at species and generic level, but I doubt the validity of extrapolating these data and turning them into a first cause. Wouldn't we beat our students about the head for far less a sin?

So one opts for some creative power—I call Him God—as a first cause, which I maintain is common sense and fair science. Why did it happen—that is a non-scientific issue. How it happened is a valid question, but too difficult, except as the answer comes clear here and there from observation and experiments.

Yours faithfully,  
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SIR,—I thank you for publishing my letter on the subject of creation or evolution.

The whole fable of evolution is nothing more than a confidence trick on the part of the Devil, who is as perfectly well able to blind the eyes of men of science as he is those of lesser mortals. A theory which results in a grovellingly debased view of human origins—the absolute opposite of the truth that man was created in God's own image—and which helps to spawn such