CORRESPONDENCE

Creation *versus* Evolution

SIR,—In your editorial entitled "Creation in California" (*Nature*, 239, 420; 1972) you ask for scientists to identify themselves who do not hold to the "doctrine of evolution" (your terminology), who are working in a field related to the evolutionary question. I am a research chemist presently involved in work on biological membrane structure and function, and formerly on polypeptide and protein conformations, and am ready to state my dissenting position.

I do not believe that the evidence in hand demonstrates that the origin and development of life on Earth occurred by an evolutionary pathway. My objection is not to evolution on a small scale, that is microevolution, meaning the variation and development within related plant or animal groupings; indeed, I would go so far as to say that in my opinion this type of evolution has been proven to occur. One is not warranted, however, to extrapolate from the evidence for microevolution to the contention that general evolution is therefore also true.

The simplest living cells are still very complicated on a molecular level; to suppose that there were even simpler cells in the past is pure speculation designed to fit a theory. In any case, it is generally agreed that the coming into existence of the first living cell must have been an extremely improbable event, but we know it happened because cells now exist.

Natural phenomena may be defined as events which have a finite probability of happening, on the basis of known or at least knowable natural laws. Events which are extremely rare or which have a vanishingly small probability of occurrence cannot readily be classified as natural phenomena. The origin and development of life fall into this category. It must be admitted that such events may be the result of a supernatural act, unless one wishes arbitrarily to dismiss the possibility that God exists and that He can and does operate the universe. It is my reasoned opinion that the empirical evidence in hand concerning the nature and origin of life is better explained in terms of

supernatural, creative acts than it is by the general theory of evolution.

The editor of *Nature* is to be complimented for providing a forum for the open discussion in scientific circles of the creation *versus* evolution question.

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SIR,—Your challenge (*Nature*, 239, 420; 1972) to those who do not believe that evolution supplies all answers on the existence of the universe, Earth and life cannot go unanswered.

I do not see that the existence of the universe, the Earth, and living systems can be separated from one another: you seem to be considering only the Earth and species but ignoring the whole question of beginnings. Even such an impersonal idea as a "master clock-winder" who established matter, perhaps set up some master laws (including evolution?) and is, for all intents and purposes, now "dead" should deserve more than one sentence in a science textbook. A God who took a direct part in organization of the universe should deserve far more recognition. You state that the "doctrine of evolution . . . deserves to be called the truth." Jesus Christ said, "I am the Truth" (*John*, 14, 6). If evolution proves the non-existence of God, then Jesus was a liar and the dichotomy need not be reconciled. If evolution does not speak to that question, then the possibility that God could have taken an active role in organization of the universe, Earth, and life is a viable alternative.

A chemical kineticist will state that his proposed mechanism is consistent with the kinetic data but that kinetics cannot prove a mechanism, for there may be other mechanisms just as consistent with the data. Then one must look for additional evidence to support or disprove the mechanism. There are too many unanswered questions in evolution for me to be able to call it "truth", so

we must look for additional evidence. Two arguments will be presented.

If the essence of thermodynamics may be stated as given by Giles, "There exists an additive function of state S , called the entropy, and a set of additive functions of state, called components of content, such that, for any states a and b , $a \rightarrow b$ if, and only if, $S(a) \leq S(b)$, and $Q(a) = Q(b)$ for every component of content Q " (quoted by W. Brostow, *Science*, 178, 123; 1972), then simple examination states that something or someone larger than the universe must have formed the original state a from which entropy is changing to this day. I understand that information theory and the second law of thermodynamics have been redefined and expanded to allow for living systems to drive constantly toward greater organization in contrast to the rest of the universe (advance statement on Gatlin, L., *Information Theory and the Living System*, Columbia University Press, 1972). Without having read the ideas, this seems to give to living systems a new form of "vitalism" such that in only one aspect of life (evolution), different forms of the laws of thermodynamics apply. Is it not better to have a God that is beyond the limits of the universe because He made it? Are not evolutionary trees of protein and nucleic acid structures just as well explained by a common originator as by a common origin? If so, is not the alternative mechanism of relationship of the species worthy of presentation?

The second argument is lacking an exact figure. At the AAAS meeting in Philadelphia last December, it was stated that it should be possible to synthesize more efficient proteins because there are 10^{72} (? I did not record the number) electrons in the universe and 20^{100} possible combinations of amino-acids (not to mention modification of specific residues by methylation, acetylation, phosphorylation, and so on) in a protein containing 100 amino-acid residues (one of the smallest proteins) so that evolution had to stop with a combination that worked and not necessarily the best (comments in parentheses are mine, not the speaker's). If there