

CORRESPONDENCE

Extraterrestrial Intelligence

SIR,—Nobody, it is to be hoped, now believes that the question, how many angels could stand on the head of a pin, used to be a standard topic of debate among the Schoolmen. Tenth-rate philosophers, then as now, may, of course, have debated many senseless things; but to suppose that men of the calibre of Albertus Magnus or St Thomas Aquinas would have wasted their time on such nonsense is absurd.

Yet the Schoolmen at least had this much on which to go, if they ever did consider such a question: they knew that the angels existed—or, at least, they thought that they knew it. But what is to be made of it when, in these enlightened times, men discuss things in the existence of which they have no real reason to believe? I am thinking of discussions about civilizations, or intelligent beings, outside the Earth, as for example in Walker's recent article (*Nature*, 241, 379; 1973).

There is not, I suggest, a single bit of evidence to show that there is any likelihood that such things exist. What do we know about the matter? In the Solar System, every piece of new evidence makes it seem less and less likely that there are living beings of any kind, let alone intelligent ones, outside the Earth. As for hypothetical systems associated with other stars, we know—nothing. That there are binary stars, the members not necessarily of equal brightness or temperature, we know. It is quite possible that, in some cases, one of the pair might be relatively cool and small; and there may be some observations to support such a notion. But observations from a distance on our own Sun, if precise enough, would show that Jupiter is here. From what we see of Jupiter and the other giant planets, it would seem that, if there are planets around other stars, the more likely they are to be detected the less likely they are to be suitable homes for living beings. And even if matters of size and temperature could be resolved, we are, needless to say, far from finding out anything about the chemical composition of such hypothetical planets. But the composition is crucial to their suitability as homes for living beings.

Besides, the supposition that there are such intelligent beings in such situations depends on the supposition that intelligence will, somehow, arise of its own accord. But in any such view there are extremely grave philosophical difficulties, as even Darwin admitted.

So why do we not, for the time being, put a little more imagination into our discussions of extraterrestrial civilizations—we have nothing else to put into them anyway—and call them science fiction? If, then, the day should come when we have some sober facts on which to go, we could begin to call the result sober science.

Yours faithfully,

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Neolithic Garden of Eden

SIR,—Mr Macy asks why, if one assumes the concept of a creator, should one then accept the idea of "fixed laws", such as gravity (*Nature*, 242, 73; 1973). In answer, I suggest that he reads what Whitehead, Collingwood, Butterfield and Hookyaas have to say about the influence of religion on the rise of modern science. They conclude that belief in the Christian doctrine of the creation of an orderly universe by a rational God helped provide a philosophical climate in which science could flourish. It gave Kepler, Newton and so on a basis for belief in the existence of "natural laws" for which they could therefore confidently search.

If I understand him correctly, Mr Macy then says that religious and scientific models of the universe are "contradictory". Surely the word he should have used is "complementary"? The aim of religion is to understand the meaning and purpose of the universe. The aim of science is to understand its mechanism. This is why those who try to build a world view on a purely scientific basis often conclude, as they logically must, that there is no meaning or purpose to the universe. This does not prove that there is no purpose to it, only that the concept of purpose is excluded from science by its terms of reference. The complementary, and compatible, nature of Christianity and science is shown by the fact that modern science rests on a philosophical basis borrowed from Christian theology. As Collingwood has said "The presuppositions that go to make up this Catholic Faith . . . have as a matter of historical fact been the main or fundamental presuppositions of natural science ever since"¹. The major points of conflict between Christian theology and science have been at points where the former had, unfortunately, been adulterated by Aristotelianism.

When Mr Macy says that the book of Genesis must be taken as poetical, I

presume that he is referring only to the creation story. From chapter 12 onwards the archaeologist Albright can say "But as a whole the picture in Genesis is historical"². Even if the creation story is poetry, that does not exclude it from having a factual basis. What impresses me about it is how well it agrees with the available evidence. This is even more remarkable when one compares it with the fantastic nature of the other extant creation stories from the Near East. The order of creation given in Genesis is in general accord with the fossil evidence. Pearce³ has pointed out that chapters 2–4 agree well with what we know about the rise of neolithic culture in the Near East. Thus Adam and his immediate descendants are presented as stone age people (the first use of bronze is noted some generations later, in chapter 4, verse 22) who were agriculturalists living in settled communities. The origin of this culture is given as the Garden of Eden. The geographical position given for the Garden puts it in the area from which neolithic culture spread into the Middle East and Europe. It seems to me that far from being something to be sneered at or ignored the early chapters of Genesis form a very remarkable document, both from a historical and religious point of view, and they deserve to be taken seriously.

Yours faithfully,

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¹ Collingwood, R. G., *Essays in Metaphysics*, 227 (Oxford University Press, Oxford, 1966).

² Albright, F. W., *The Biblical Period from Abraham to Ezra*, 5 (Harper and Row, New York, 1963).

³ Pearce, E. K. V., *Who Was Adam?* (Paternoster Press, Exeter, 1969).

Square Cylinder

SIR,—A "cylinder" of square cross section. So the Cambridge applied mathematicians and/or theoretical physicists¹ have squared the circle or have they cibered the cylinder?

This is a protest against the misuse of universally accepted terms. A cylinder is essentially circular and cannot have a square cross section in the sense used. The body was apparently a right prism of square cross section or in common terms a square bar.

Yours faithfully,

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¹ Mulhearn, P. J., *Nature Physical Science*, 241, 165 (1973).