

## Evolution — the struggle continues

SIR—In an interesting and provocative article, Halstead<sup>1</sup> rejected the anti-darwinian views of the Japanese biologist Imanishi. His rejection is apparently based on his negative impressions of Japanese society. Halstead remarked that: “the ordinary Japanese [is] condemned... to the rigid authoritarian feudal society that masquerades as one of the advanced nations of the world.”

Halstead sees the world as “demonstrably... [one]... of competition, struggle and disharmony”. This is not surprising when one considers that the concept of competition is inherent to Neo-Darwinism and that Halstead is a staunch supporter of this theory. However, while Halstead may see the world in this way, the question remains — is there any evidence for the reality of what he sees?

Halstead states: “Recent research... [has]... demonstrated that interspecific competition takes place in 90 per cent of all cases studied”. On the contrary, a critical review of a large number of cases by Underwood<sup>2</sup> suggests that this statement is grossly inaccurate. This also suggests that Halstead's claim that “the informational foundation of Imanishi's theory no longer stands” is incorrect. Irrespective of this, the conclusive demonstration of competition is unlikely to deter the Japanese public from supporting Imanishi's theory. As suggested by Brady<sup>3</sup>, there may be more than one reason for accepting a theory. This is not an attribute unique to the Japanese scientific community, as suggested by Halstead, but a characteristic of the development of theories in general.

We agree with Imanishi that the selectionism of Darwin has its roots in Western society. In the same way Imanishi's theory has been influenced by Japanese society. However, while the theory was developed by a Japanese, it is not necessarily uniquely Japanese in concept and therefore judgement of the theory on the basis of the values of the society in which it was developed cannot be feasible. After reading Halstead's article, one is left with the distinct impression that this is exactly what he has done.

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1. Halstead, B. *Nature* 317, 587-589 (1985).

2. Underwood, A.J., Anderson, D.J. & Kikkaw, J. (eds) *Community Ecology-Pattern and Process* (Blackwell, Oxford, 1984).

3. Brady, R.H. *Biol. J. Linn. Soc.* 17, 79 (1982).

SIR—Halstead's commentary “Anti-

darwinian theory in Japan” (*Nature* 317, 587; 1985) introduces the theory of evolution advanced by Imanishi, at the same time rejecting it. We feel, however, that Halstead rejected Imanishi's theory of evolution without fully understanding it, and we wish to comment on the theory on purely scientific grounds.

First, Halstead introduces Imanishi's concept of habitat segregation and comments that this is but a “dream” attractive to members of Japanese society, which is actually extremely competitive. Leaving aside the rather meaningless discussion as to whether or not Japanese society is more competitive than that of Europe or America, we would like to know whether Halstead will recognize habitat segregation as a principle on which a wholly different theory of evolution could be built. We consider habitat segregation to be a real biological phenomenon.

Second, if Halstead recognizes habitat segregation as propounded by Imanishi as a possibility, he ought either by explaining habitat segregation by means of Darwinism, include it in Darwinism or clearly recognize Imanishi-ism as a view of evolution which is independent of Darwinism. Interestingly, Halstead does not attempt this but tries to give a “sociological” explanation of Imanishi's theory. We think that there is a relationship between the competitive exclusion principle of Gause<sup>1</sup> and Hardin<sup>2</sup> and Imanishi's concept of habitat segregation.

Third, Imanishi strongly refutes Darwin's hypothesis of the survival of the fittest and asserts that: “Survival is in most cases purely accidental. It is a matter of luck rather than selection”. Darwin considers the struggle for existence to be fierce among individuals of the same species as well as between different species, but Imanishi is critical of this idea. Imanishi, as Halstead stresses several times, understands evolution as being a transformation only occurring to the species, and not to the individual. In contrast to Darwinism, which considers the individual to be the unit of evolution and expends great energy in explaining how the transformations of this individual are magnified in the transformations of the species, Imanishi asserts that the unit for explaining evolution is not the individual but the species.

We believe this idea of the species as a unit to be the essence of Imanishi's assertion that “all the individuals of a species change at once when the time to change comes” will be understood. Concerning this unit of evolution, we support Imanishi's ideas. In the case of the law of movement of heavenly bodies, the Earth and the Moon are considered the units regardless of their components. The minute examination of brain cells probably will not be able to tell us how humans

think. Building theories to explain natural phenomena requires an appropriate unit. The originality of Imanishi's theory of evolution is the idea of the species as its unit. We would like to ask what Halstead's opinions are upon this point.

We consider that Darwinism and Imanishi's theories are two separate views of evolution. If Halstead feels that Imanishi's theory of evolution is unscientific, that it could not even stand as a hypothesis, he should give scientific reasons, and not literary or sociological explanations.

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2. Hardin, G. *Science* 131, 1292-1297 (1960).

## Kenyan finds not early Miocene *Sivapithecus*

SIR—In his recent commentary in *News and Views* questioning the assignment of the new Miocene hominoid specimens from Buluk, Kenya<sup>1</sup> to *Sivapithecus*, Delson<sup>2</sup> referred to a paper of ours in which we discuss the hominoid genus *Ouranopithecus* from Ravin de la Pluie, Greece<sup>3</sup>. As he states, we suggested a link with “hominines”, but one based upon a particular assumption about character state polarities drawn from several alternatives, any of which, as we stated, might be correct.

He failed to note another argument in that paper which goes to the heart of the issue of the generic status of the Buluk specimens. As others have done, we argue for a *Sivapithecus*-orangutan clade based on a set of facial characters worked out by Ward<sup>4</sup> and Andrews<sup>5</sup> relating to the premaxilla and palate. As the clade is defined by these presumed shared derived features, any species included in *Sivapithecus* must also possess these character states. By these criteria, only *Sivapithecus* species from the Siwaliks of Indo-Pakistan and *S. metei* from the Sinap series in Turkey are definitely included in *Sivapithecus*. *Ouranopithecus* from Ravin de la Pluie<sup>3,6</sup>, *Rudapithecus* or *Dryopithecus* from Rudabanya, Hungary<sup>7</sup>, *Kenyapithecus* from Nachola, Kenya<sup>8</sup>, and the large hominoid from Lufeng, China (personal observation) clearly are not. The status of other thick-enamelled hominoid samples which lack specimens with the critical nasopalatal morphology, such as that from Buluk, must remain open, although in some other features Buluk specimens differ markedly from Asian *Sivapithecus*.

We have provided a specific diagnosis