

proceeding to its never ending destination. Vanderkooi, who argued that there is no evidence to account for the process of macroevolution, is probably unaware of the fact that adaptive radiation is responsible for the evolution of higher taxa. True, there are certain forces in nature which cannot be readily explained in terms of science. This inability of science has often been taken up as a proof of the existence of a creator. It is increasingly evident that selection pressures direct the process of evolution. Although it is very difficult to interpret what is exactly a selection pressure, it is not ruled out that a scientist may come out with a model which unearths the hidden secret of selection pressures.

Vanderkooi pointed out that bacterial cells are as complex as any other living cells of the organism, and as such they cannot be considered as the primitive living organisms from which other organisms have been evolved. It is possible that all living organisms might have evolved from some primitive form (monophyletically), and further diversification within the evolved groups might have resulted in the evolution of different groups polyphyletically. The closer resemblance of the amino-acid sequence in cytochrome-C of wheat to that of animals rather than to cytochrome-C of fungi favours the polyphyletic origin.

On the other hand, the concept of

creation is nominalistic, and has no place in scientific thinking. The doctrine of creation is a man-made catastrophe, and if it is continued to be advocated by man as a basic conceptual controversy, it is just like putting the clock back and will hamper the advancement of humanity.

To denounce the teaching of the theory of evolution, which has been nurtured by the cumulative efforts of hundreds of scientists for about 100 years, is to deny the legitimate rights of society to learn and understand the reality of the nature and the role of man as part of the natural and social world. If it is done it will become one of the greatest tragedies and educational failures of our time.

Yours faithfully,

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### Use of IS, TWA and ILWS

SIR,—The present author (PA) is writing to request the increased use in *Nature* of initial-letter-word-substitution (ILWS). Unpublished studies of the PA show that the superficial-scientific-appearance-rating (SSAR) of a paper is most effectively increased by impersonal style (IS), technical-word-

amplification (TWA) and ILWS. There is, moreover, a highly significant positive correlation between the SSAR of a paper and its peer-esteem-rating (PER). The PA hopes that *Nature* will cooperate in raising the PER of its contributors by encouragement of ILWS, as well as acceptance of IS and TWA.

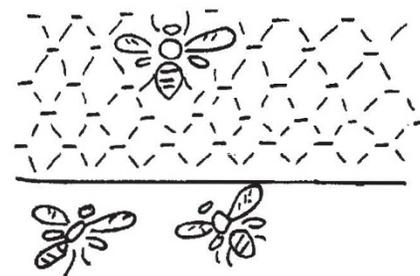
Yours faithfully,

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Parks Road, Oxford OX1 3PF

### Between Bees

SIR,—



He's saying, "Go to Hive 2 tomorrow.  
They're killing bees at Hives 1 and 3".<sup>1</sup>  
Yours faithfully,

F. J. MALONEY

Livermore,  
California

<sup>1</sup> *Nature*, 241, 171 (1973).

## Obituary

### Dr Stephen R. Pelc

STEPHEN R. PELC, who died suddenly on February 6, at the age of 65, was internationally famous for his pioneer work on the techniques of autoradiography and for his use of these techniques in cellular biological research. He graduated from the University of Vienna and published his first work from the Institut für Radiumforschung in 1931. In 1938 he came to Britain and, after serving in the forces during the war, he restarted his scientific work at the Hammersmith Hospital, London, first as a hospital physicist and then as a member of the MRC Radiotherapeutic Research Unit.

There he began his studies on the action of ionizing radiations on photographic film which led to his development of stripping-film autoradiography for obtaining high resolution autoradiographs of sections of biological material, work done with the enthusiastic collaboration of Dr (now Professor) I. Doniach and under the scientific directorship of the late Dr L. H. Gray.

Dr Pelc had the idea of using pliable photographic film stripped from Ilford stripping plates which were, at that time, being used in industry for other purposes. Kodak then produced the AR10 and AR50 stripping film to his requirements, giving far greater resolution, so that these have now become the standard materials for this form of autoradiography. Initially, when <sup>131</sup>I was the most readily available isotope, this technique was used by Professor Doniach and himself for studies on the thyroid gland under various physiological conditions. As other radioactive isotopes became available, however, the applications of autoradiography expanded rapidly so that it is now used throughout the world on many varied biological and medical research problems.

He is most famous for work begun in the early nineteen-fifties with Dr Alma Howard. By incorporating <sup>32</sup>P into dividing cells and removing all but the DNA by acid hydrolysis he was able to time the incorporation of <sup>32</sup>P into nuclear DNA. He showed that DNA synthesis did not occur after prophase,

as had been believed previously from staining evidence, nor did it occur continuously throughout interphase. He and Howard showed that, for each type of nucleus, there was a particular period of interphase, which he called the "S" (synthesis) stage, during which the DNA content doubled; this DNA was stable and became divided equally into the two daughter nuclei. Before and after the "S" there was a gap in his knowledge of what metabolic processes occurred in the nuclei and, understandably, he named these "G<sub>1</sub>" and "G<sub>2</sub>". The period of interphase therefore could be extended if G<sub>1</sub> or G<sub>2</sub> became prolonged. These results were confirmed and extended considerably with the introduction of other isotopically labelled DNA and RNA precursors, particularly those labelled with <sup>3</sup>H.

Thus he laid the basis for the study of cell kinetics based on the timed uptake of isotopically-labelled precursors and their distribution into the cells derived from the initial, labelled mitotic cell. Of particular importance were his studies on the small intestine, in which