ADDENDUM

T. G. Waddell, S. K. Geevarghese, B. S. Henderson, R. M. Pagni and J. J. Newton: 1989, 'Chemical Evolution of the Citric Acid Cycle: Sunlight and Ultraviolet Photolysis of Cycle Intermediates', *Origins of Life and Evolution of the Biosphere* **19**, 603–607

In this paper we reported that the UV photolysis of succinic acid (0.1 M, aqueous) produced maleic, adipic, 3-methylglutaric, 2-methylglutaric, and 2-methylsuccinaldehydic acids. We recently became aware of a reference (Lawless *et al.*, 1974) which describes dicarboxylic acids found in the Murchison meteorite. Among those present are succinic, maleic, adipic, 3-methylglutaric, and 2-methylsuccinic acids. The co-occurrence of succinic acid and its photolysis products in the meteorite suggests (1) the formation of maleic, adipic and 3-methylglutaric acids may proceed via the photolysis of succinic acid in outer space and on the primitive Earth, (2) that succinic acid may have had an important role in chemical evolution, and (3) that the UV photolyses of citric acid cycle intermediates may have occurred on the primitive Earth.

References

Lawless, J. G., Zeitman, B., Pereira, W. E., Summons, R. E., and Duffield, A. M.: 1974, *Nature* **251**, 40.