

This Week's Citation Classic

O'Brien T P. The cytology of cell-wall formation in some eukaryotic cells.
Bot. Rev. 38:87-118, 1972. [Dept. Botany, Monash Univ., Clayton,
Victoria, Australia]

The review concluded that 'the published literature did not allow us to decide whether the cellular sites of synthesis and/or transport of cell-wall precursors are recognizable differentiations of the cell,' and was highly critical of unwarranted speculations based on electron microscopy and autoradiography. [The *SCI*[®] indicates that this paper has been cited over 75 times since 1972.]

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"This article grew out of an invited symposium address given at the International Botanical Congress in Seattle in 1968. Several months after that Congress, the editor of *Botanical Review* asked if I would prepare a review on the subject of the symposium.

"I was more than happy to do so. The period 1959-1966 had seen an explosion of papers applying permanganate fixation (with all of its artifacts) and, latterly, glutaraldehyde-O₅O₄ fixation (with fewer artifacts) to tissues engaged in cell-wall synthesis. I was not very impressed with the standard of much of that work for it seemed to me that a lot of it represented bad

science. The interpretation dynamic events from electron micrographs is always difficult and much of the literature glossed over the difficulties. The review was rather critical (I have little time for uncritical reviews that are simply extended bibliographies) and set out in plain language what could and what could not be deduce safely from structural observations. I was especially keen to stop what I called 'metamorphosis of speculation into "facts," upon which are erected further speculations that undergo further metamorphosis.'

"I heard through the grapevine that one or two of my colleagues were upset; several others wrote commending the article, and saying that they were using the paper as a discussion paper in classes. That was gratifying; one does not hope to readily change opinions of one's colleagues, but as long as the young are exposed to another view, the future seems to look after itself.

"A decade has passed since it was written and I am pleased to say that unwarranted speculation in plant cell biology has diminished. I imagine the review was widely read and cited partly because it was provocative. If it helped to check the drift into unwarranted speculation so evident in the early 1960s, then that was a good thing, and few reviewers could ask for more. An updated view is given in a chapter on growth and division in plant cells in the forthcoming book by H. Smith and D. Grierson."¹

1. Smith H & Grierson D. *The molecular biology of plant development*.
Oxford: Blackwells. In press, 1981.