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CC/NUMBER 15
APRIL 13, 1987

Antia N J, McAllister C D, Parsons T R, Stephens K & Strickland J D H. Further measurements of primary production using a large-volume plastic sphere. *Limnol. Oceanogr.* 8:166-83, 1963.
[Fisheries Research Board of Canada, Biological Station, Nanaimo, British Columbia, Canada]

The progressive utilization of inorganic nutrients and vitamins was studied in natural phytoplankton enclosed in a transparent, 20-foot, plastic sphere immersed in an undisturbed corner of a marine inlet near Nanaimo, Vancouver Island, British Columbia. Concomitant with the depletion of nutrients, the production of a spring phytoplankton bloom was monitored in terms of species and photosynthetic pigments and formation of particulate carbon, nitrogen, phosphorus, and silicon. After the peak of the bloom, the plastic sphere was blackened in order to study bloom decay, oxygen consumption, and regeneration of the nutrients. Important observations were made on the ratios of phytoplankton chlorophyll to protein, carbohydrate, lipid, and carotenoids. [The *SCI*® indicates that this paper has been cited in over 225 publications.]

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March 13, 1987

In regard to this paper, I feel that the scientific community should know the truth about its so-called coauthors. Not only was the entire investigation organized by the last-named author, J.D.H. Strickland, but he was also responsible for its progress and development and for the ultimate integration and interpretation of the data obtained. At the same time, my own contribution was very modest, if not minimal, because I was at that time a novice in the field of oceanography. In other words, Strickland was the architect and principal author of the research paper, although he chose to place his name last.

Why did he follow this scheme? Apparently for two reasons. In the scientific world in which Strickland grew up, it was not uncommon to place the principal or senior author's name last, while at the same time, multiple authors were often listed in alphabetic order. This scheme proved unjustifiably advantageous to me in securing a first place in the list of authors' names. Such placement, however, has proven rather embarrassing to me in receiving undeserved accolades for the research reported. It is ironic that the place of honour due to a senior/principal scientist has been changed in recent times, without warning, from last to first in order of authors' names, and the wrong author gets undue honour. With such a change in priorities, I recommend that the first author of research papers be rightly regarded as just first in the chosen order of names and not as the senior author of a paper. Unfortunately, Strickland did not live long enough to claim the honours truly due to him, and his untimely death in 1970 did not help to rectify the honour dilemma until now with this present opportunity afforded by *Citation Classics*.

As to the paper becoming a classic, this development was not unexpected, because it reported the results of a major pioneering investigation; an earlier investigation by the same group[1] (less myself) paved the way to the classic that included me. I clearly recall Strickland saying to me at the time that the paper was accepted for publication that he expected it to become an "oceanographic classic." (See reference 2 for a recent citation.) There was no problem in editorial acceptance of the paper, since it received excellent reviews from the referees.

Regarding the nature of the travails involved, it behooves me to say that we toiled as a group an average 10-hour day for at least three months without enough time off on weekends. In those days we did not have automated nutrient analyses, and the number of manual analytical operations was often overwhelming but never neglected. Fortunately, the weather was encouraging and full of promise, since we were studying the growth and decline of a spring bloom. As for the site of the investigation, it was fixed within a picturesque bay near Nanaimo, and we had the advantage of an analytical laboratory 100 meters from the site.

In concluding, it might interest others to know that two years after our investigation was completed, the entire investigating team broke up, with Strickland heading for Scripps (La Jolla, California), Parsons for the UN Food and Agriculture Organization (Paris), McAllister for the University of Washington (Seattle), and me for the Fisheries Research Board laboratory at Vancouver, British Columbia.

1. McAllister C D, Parsons T R, Stephens K & Strickland J D H. Measurements of primary production in coastal seawater using a large-volume plastic sphere. *Limnol. Oceanogr.* 6:237-58, 1961. (Cited 80 times.)
2. Bonin D J, Maestrini S Y & Leftley J W. The role of phytohormones and vitamins in species succession of phytoplankton. (Platt T, ed.) *Physiological bases of phytoplankton ecology*. Ottawa, Ontario: Fisheries and Oceans, Scientific Information and Publication Branch, 1981. p. 310-22.

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