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TOXICITY OF CERTAIN CARMINE PREPARATIONS TO PROTOZOA*

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A common practice in demonstrating the food vacuoles of ciliates is to feed carmine to the animals. Some time ago, in applying this method to a flourishing mixed culture, I was surprised to find many of the animals dead or in a dying condition within a few minutes. Apparently the carmine itself or some substance present as an impurity in the sample being used was a toxic to the animals.

Appropriately controlled tests proved the following: carmine of the lot being tested, when present in small amounts, had no visible effect on the organisms. Increasing proportions of the carmine first killed *Paramecium trichium*, then *P. caudatum*, and finally *Colpidium striatum*. *Chilomonas paramecium* was visibly effected only by very strong concentrations.

The carmine being used came from a bottle which bore the label of Coleman and Bell but which had been opened and some of the contents removed before I received it from the stockroom. Similar tests were run using a previously unopened bottle of Coleman and Bell's carmine. This had no visible effect on the organisms. Washing the first lot of carmine (1 gram to 1 litre of tap water, either hot or cold) removed the toxic properties thus showing that the carmine *per se* was not toxic. Recently, I found

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another lot of carmine which was toxic to *Paramecium aurelia* and to *P. multimicronucleata*. This also was from a bottle with the original seal broken. Apparently, therefore, either certain lots of carmine as they come from the manufacturer contain toxic substances or, what is more likely, the carmine reacts with (or absorbs) certain substances from the laboratory after being opened.

What ever the source of the toxic substance may be, the results of these simple observations indicate that persons using carmine in the study of physiological reactions of Protozoa should first test the carmine so used. Otherwise, inconsistent or incorrect conclusions may be drawn.