Arresting *Paramecium*

VARIOUS devices are employed in an effort to slow down the movements of *Paramecium* for the benefit of first-year students. It seemed worth while to report that the so-called cellulose adhesives are very successful indeed.

The material was prepared from 'Stadex C.A.', a commercial product intended for the use of decorators. Movement was slowed to a convenient rate in a 0.15 per cent solution, and one twice this strength was also useful for demonstrating the twisting and turning movements of which the animal is capable. The animals look perfectly normal in the solutions and their movement is normal though slowed; they are apparently unharmed and have survived for more than two months.

I am given to understand that 'Stadex C.A.' is sodium carboxy methyl cellulose. The results should therefore not have been unexpected, for methyl cellulose has already been used successfully¹; but as its use does not appear to be widely known, it was thought that the present observations would be of value.

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¹ Pennak, R. W., "Fresh Water Invertebrates of the United States" (Ronald Press Co., New York, 1953).

Use of Gold Sols as an Aid to focusing in High-Resolution Electron Microscopy

ALTHOUGH electron microscope contrast may be increased by the use of objective apertures, accurate focusing in thin-section work is still difficult and, in order to obtain an in-focus picture of a particular field, it is very helpful to find a small dense particle, or a hole in the membrane, on which to focus. An obvious solution to this problem is to distribute small dense particles on the specimen.

Birch-Andersen *et al.*¹ have tried using carbon black, but the method is open to two objections: (1) large masses must be deposited on the specimen, and (2) even if only single particles are present, it is necessary to focus slightly off the particle to get an in-focus picture of the section, since the diameter, or edge, of the particle is at a different focal level. This effect is of importance, however, only towards the limit of resolution.

We decided that a gold sol might provide particles of useful size and density. Fortunately, it is easy to make gold sols in a wide range of particle sizes. We have found that particles of 130–150 Å. diameter are very useful for focusing at a magnification of 9,000; for higher magnifications, smaller particles would be useful.

Turkevich, Stevenson and Hillier² described a method of making gold sols in a range of particle sizes. The method (reduction of acid gold chloride, 95 ml. of which contained 5 mgm. of gold, with 1 per cent sodium citrate at 60–100° C. depending on the particle size required) is easy, and yields sols with a very small scatter of particle diameter—the standard deviation of the distribution is about 10 per cent. We diluted the sol 1 in 10 and put drops on

mounted sections, left them for 10 min., and then drained off as much as possible. The particles were rather more evenly spread over the specimen if the sol was put on the 'Formvar' membranes before mounting the sections.

We have found that gold sols, prepared in this way, have several advantages: (1) they are extremely dense and give very good images when in focus; (2) they are so uniform in size and their density is so great that they are unlikely to be confused with any tissue components; (3) the size of the particles and their number on the specimen can be varied to suit any particular purpose.

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¹ Birch-Andersen, A., Maaøe, O., and Sjöstrand, F. S., *Biochim. Biophys. Acta*, **12**, 395 (1953).

² Turkevich, J., Stevenson, P. C., and Hillier, J., *Disc. Farad. Soc.*, **11**, 55 (1951).

Quotation of Titles of Papers in Review Articles

As one of the contributors to the "International Review of Cytology", vol. 3, reviewed in *Nature* of October 8 (p. 664) by Dr. D. R. Newth, I should like to direct attention to certain facts. Dr. Newth concludes his review with the words: "The reviewer of Vol. 1 pleaded for titles of papers to be given in the lists of references. If a reminder will strengthen the editors' hands in forcing this reform upon unwilling authors, it is gladly given".

My review was submitted with a bibliography including full titles, and I strenuously urged the publishers to include them. The following is a quotation from a letter from me to the publishers, dated March 29, 1954: "In a letter to Dr. Bourne [one of the editors] last year, I quoted the review of Dr. E. N. Willmer in 'Nature', in which he strongly deplored the omission of titles of papers referred to in the IRC. A very great deal of the value of any review article is lost if the full bibliography is omitted, and I would have wished to place this review elsewhere had I thought that this grave and short-sighted defect was to be repeated in vol. III. I feel most strongly that the main use of most reviews lies in the bibliography; many of the references I quote are of little use to the reader if he cannot refer to their titles easily, and would not have been included had I known that the titles were to be cut out".

The publishers replied on April 7, 1954: "With respect to the omission of titles of papers, we regret that we will be unable to insert them. It is our house style and also the style of this series, and we have found that on the rare occasions when we have made exceptions we have had unfavorable comments from reviewers concerning the inconsistency. We hope that you will not find this unreasonable".

The editors' hands indeed need strengthening; but not against unwilling authors.

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