

Attention may be directed here to a recent statement by Parker<sup>7</sup>, referring to the abdominal pore in the yellow perch (*Perca flavescens*), that "All the evidence so far obtained, however, leads to the conviction that no such pore exists in the adult fish and that the opening through which the eggs are discharged represents a true, although temporary, rupture. . . . After oviposition the opening closes rapidly and in time disappears." This, by analogy, supports my observations, and raises the fundamental question whether there may not be a closing of the oviducal (uterine) aperture into the cloaca after oviposition in all lower vertebrates. It is hoped that the publication of this note may arouse interest in the study of this problem.

I take this opportunity of thanking Mr. A. Loveridge (Museum of Comparative Zoology, Harvard University), Dr. C. M. Boggert (American Museum of Natural History) and Dr. W. G. Lynn (Catholic University of America, Washington), who kindly sent me the specimens upon which my observations are based. It is also my pleasant duty to thank Prof. J. Ritchie for giving me facilities to work in his laboratory and for reading this note.

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<sup>1</sup> Felix, W., and Bühler, A., *Hertwig's Handb. vergl. exp. Entw. Wirbelt.*, 3, 750 (1906).

<sup>2</sup> Noble, G. K., *Ann. N.Y. Acad. Sci.*, 30, 31 (1927). "The Biology of the Amphibia" (1931).

<sup>3</sup> Spengel, S. W., *Arb. zool.-zoot. Inst. Würzburg*, 3, 7 (1876).

<sup>4</sup> Gadow, H., "Cambridge Nat. Hist.", 8, 48 (1901).

<sup>5</sup> van den Broek, A. J. P., *Handb. vergl. Anat. Wirbelt.*, 6, 64 (1933)

<sup>6</sup> Gallien, L., *Bull. Biol.*, 78, 257 (1944).

<sup>7</sup> Parker, J. B., *Copeia*, 4, 223 (1942).

### Micronucleus of *Epistylis*

WHILE studying the cytology of species of *Epistylis*, it was noticed that the nuclear apparatus of this ciliate presented certain interesting features. The macronucleus of *Epistylis* is a large and band-shaped body, staining deeply with all nuclear stains, and especially with Feulgen. The micronucleus is a small spherical structure situated in the neighbourhood of the macronucleus. The staining reactions of the micronucleus in two species of *Epistylis* show a significant difference. In *Epistylis articulata* From., the micronucleus is easily discernible as a deeply staining body. In *E. plicatilis* Ehrbg., on the other hand, the micronucleus gives a thoroughly negative reaction to Feulgen. Sometimes there are one or two minute granules which stain pink, but the rest of the nucleus is unstained. The difference is all the more striking because in the same mass culture both species were present, and they were treated together in the matter of fixation and staining.

Since Feulgen is the most specific nuclear reaction known, and is selective to one type of nucleic acid, the desoxyribose or thymonucleic acid, it appears that, so far as staining reactions are an indication, the desoxyribose nucleic acid content of the micronucleus of these two species is different. This is very interesting, for we believe that this is the first time the micronucleus of two species of the same genus of a ciliate is seen to exhibit a differential nucleic acid content. Whether on the analogy of the metazoan nucleus this difference between the nucleic acid of the micronuclei of the two species of *Epistylis* is

correlated with a difference in protein content is not known.

It has long been known that the micronucleus of ciliates divides mitotically while the macronucleus is amitotic. If this means the formation of the chromosomes in one and not in the other, Painter's<sup>1</sup> recent observations on *Tetrahymena galeii*, where he reports the formation of "normally coiled and otherwise orthodox chromosomes" during the division of the macronucleus of this ciliate, are full of interest. This is in accordance with the staining reactions. The macronucleus gives a brilliant stain with Feulgen and should contain a large amount of desoxyribose nucleic acid, which we know is associated with the chromosomes. If the macronucleus does not form the chromosomes, then the association of large quantities of desoxyribose nucleic acid with it would need an explanation. In any event, the occurrence of desoxyribose nucleic acid in the macronucleus and its almost entire absence in the micronucleus of *E. plicatilis* is very interesting.

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<sup>1</sup> Painter, T. S., *Trans. Conn. Acad. Arts and Sci.*, 36, 443 (1945).

### Man's Reaction to Mosquito Bites

DR. MELLANBY'S communication in *Nature* of October 19 describes an investigation in progress on the reactions of different individuals to mosquito bites. These investigations could provide an opportunity to test another matter which might lead to results of far-reaching importance.

Biting insects have their preferences. Some will only attack one host species. Thus there are fleas, bird-lice, ticks, etc., which feed exclusively on one bird or animal species. The yellow fever mosquito with which Dr. Mellanby is experimenting will bite, I believe, only a few birds and animals. Coming to man, it is commonly asserted that biting insects have a marked preference for some individuals, and I know people who believe that they have never been bitten by any insect. Is this true, or is it merely that they have reached Stage IV in Dr. Mellanby's reaction list and neither feel the bites nor suffer any after-effects? Tests could be carried out on those who make such claims and, if there is any marked preference shown by insects, I suggest that it might be a matter of the utmost importance to discover the reason. If, to simplify the problem, it were found to be due to the presence of minute quantities of some substance in the blood, the possibility might arise of injecting ourselves with a substance that would make us unattractive to biting insects.

In measuring the importance of this line of inquiry, we can bear in mind three things: (1) that in the world as a whole more premature deaths are probably brought about annually by the direct and indirect results of insect bites than from any other cause; (2) that the bites of many insects, such as midges, are a matter of extreme discomfort even though they may cause no ill-effect; and (3) that vast sums of money are expended annually both in attempts to destroy biting insects and in connexion with the illness they cause.

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