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Taxonomic Position of the Genus *Selenomonas* (von Prowazek)

In a recent analytical review[1], Lessel and Breed have reiterated the conclusions of Boskamp[2] upon the bacterial nature of *Selenomonas palpitans* (Simons, *ex* Boskamp). Although they do not add materially to the information available, these authors state that *Selenomonas* clearly belongs to the family Spirillaceae.

I have studied the morphology both of *Selenomonas palpitans* from the guinea pig cæcum, and of *S. sputigena* from the human mouth, and am of the opinion that the nuclear structures, flagellation and mode of cell division are entirely unlike those of bacteria and reflect a much closer relationship with the protozoa.

The nucleus consists of a filament with expanded ends, one of which is connected by a rhizoplast to the blepharoplast, from which arises the flagellum, usually at the centre of the concave side of the crescentic cell. The nucleus and a portion of the neuromotor apparatus are embedded in deeply staining basophilic masses, in the form of two cones, point to point (Fig. 1,*b*). When the nucleus divides, a second rhizoplast appears, joining the blepharoplast to the free end of the nuclear filament. The blepharoplast divides, initiating division of the flagellum, and the division of the nucleus follows (Fig. 1,*c*). The cell then divides by constriction. This is entirely unlike any known scheme of nuclear division in bacteria[3].

The cell wall fails to stain in the characteristically bacterial manner with tannic acid and crystal violet, or with phosphomolybdic acid and methyl green[3,4], and the cell lacks the cross-walls which are found in many bacteria, including spirilla[3]. The flagellum, when compared with those of bacteria in the same field of the electron microscope, was entirely distinct in its appearance. It is composed of numerous tiny fibrils, like the flagella of protozoa, and unlike either the monofibrillar flagella of bacteria or the compound flagella of certain spirilla[3]. The flagellum of *Selenomonas* is also distinct from that of bacteria in that it can be demonstrated in the light-microscope by staining with Giemsa or simple dyes without previous mordanting. The frayed 'whip-tuft' appearance shown by Boskamp[2] and others is an artefact, due to unsuitable technique. The cell moves in an irregular tumbling course, which once more is more reminiscent of protozoa than of bacteria.

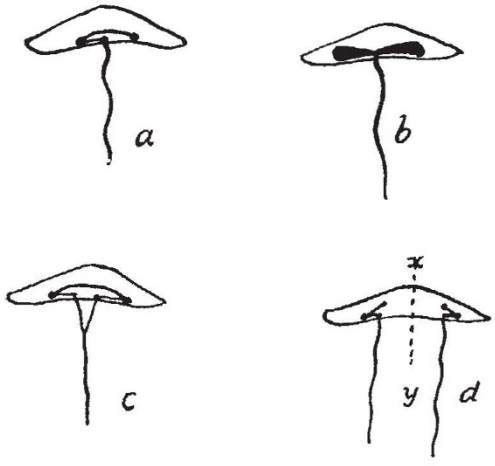

Fig. 1. (*a*) Nuclear structure in an adult cell of *S. palpitans*. (*b*) Masking basophilic materials often confused with the nucleus proper. (*c*) Division of nucleus and splitting of flagellum. (*d*) Nuclear division completed, cell now divides by constriction along *x*—*y*

These findings indicate clearly that the affinities of the genus *Selenomonas* are with the Protozoa. The classification of Wenyon[5], which places it in the family Monadidae (Kent), is adequate to the present extent of our information.

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Paper Chromatographic and Biological Properties of Reserpine and Related Compounds

Little is known of the metabolism (in man and experimental animals) of the alkaloids of *Rauwolfia serpentina*. We are particularly interested in the reported antifertility effects of reserpine in rats[1] and the mechanisms of sedative action[2] of *Rauwolfia serpentina* alkaloids in schizophrenic patients. Reserpine is known[3] to be hydrolysed *in vivo* to methyl reserpate and presumably trimethoxybenzoic acid. The latter compound has been shown[4] to influence certain enzyme systems *in vitro* which are of importance in relation to the mode of action of œstrogens on the uterus. Using a fertility performance test, we have studied the effects of the administration to male and female rats of daily oral doses of 80–100 mgm. of sodium trimethoxybenzoate given over a period of ten weeks. Since no alteration in fertility was observed, we conclude that reserpine itself or some polycyclic metabolite is responsible for the observations of previous workers[1].

We recommend the following paper chromatographic procedures as a means of checking the purity of commercial samples of *Rauwolfia* alkaloids and determining the composition of complex mixtures of the alkaloids used for therapeutic purposes and in pharmacological tests. At the time of writing, we are unaware of any detailed reports on paper chromatography of *Rauwolfia* alkaloids. The methods introduced by us employ Whatman paper No. 542 and the following developing solvent systems:

(1) *'Single phase' systems* (no pre-equilibration, capillary ascent technique employed).

(*a*) 10 per cent (v/v) acetic acid in aqueous 5 per cent sodium acetate is shaken with *n*-butyl ether, added in small portions, until saturation of the aqueous phase is just reached. The clear aqueous phase is used.