To prepare slides for microscopic examination, the method described by Meredith[9] for mammalian tissue was used. The pieces of fixed hydra tissue were transferred into a Dreyer tube containing 0.5 ml 60% acetic acid. Within 5 min the tissue loses its coherence, and a cell suspension could be formed by aspiration with a finely-drawn pasteur pipette. A drop of cell suspension was then transferred onto a microscope slide on a hot plate at about 60 °C and immediately withdrawn. The same drop of cell suspension was applied to the slide in this manner 5–10 times before discarding. The procedure was repeated with further drops of suspension until all the fixed material was applied onto the slide. The slides were than placed vertically for 10 min in a 5% aqueous solution of Giemsa stain, rinsed with tap water and air-dried.

The preparations were scanned for metaphases under the microscope. Chromosome counts were made for all metaphase spreads in which the chromosomes showed little or no overlap. We applied a preparation of three hydra per slide and could observe on average 12 metaphase spreads, of which an average of 2–3 spreads could be used for analysis.

Results. Chromosome counts were made from 31 spreads of *H. vulgaris* cells and 24 spreads of green hydra cells. Representative photomicrographs of spreads of each species are given in figure 1. For both species a range of chromosome counts were obtained with a maximum of 34 chromosomes per spread, a minimum of 26, and most counts around 30 (fig. 2). The most likely explanations for the variation in chromosome counts between spreads are observational error and artifactual loss of chromosomes during preparation.

Discussion. A search of the literature shows that very few attempts have been made to develop a method for the examination of hydra chromosomes[5, 6, 10–13] and those methods that have been developed involve cumbersome sectioning or squash procedures. The method described here should enable the researcher working with hydra to make chromosome counts easily and quickly. In this manner the species of hydra may be defined more precisely.

Previous reports on the chromosome number of *H. vulgaris* show 2n = 32 (Niiyama[5]; Datta[6]). Our counts are consistent with this number for the subspecies we used *(attenuata)*. For green hydra no attempts to count the chromosome number has been reported since Dowing[10, 11], who recorded 2n = 12. Our counts of about 30 chromosomes per cell differ markedly from this number. It would be of much interest to verify whether the chromosome number does vary between species or strains of green hydra.

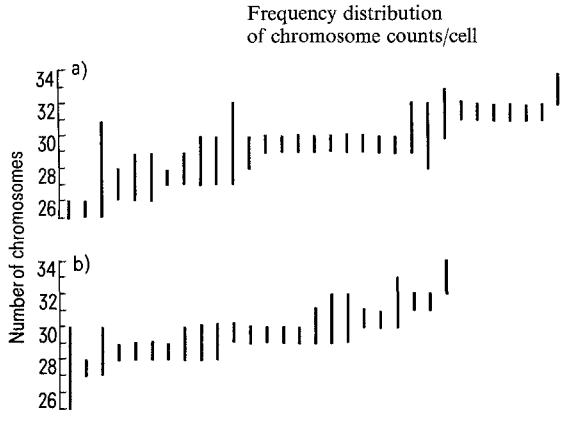

Figure 2. Chromosome counts based on spreads of *H. vulgaris* cells (a) and green hydra cells (b). Each bar represents one spread. For some spreads more than one interpretation in terms of chromosome number was possible.

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