

this method the chromosomes were stained intensely and were easily photographed.

Nine bivalents are regularly formed at meiosis (Fig. 1A). The chromosomes are very small, and at metaphase I of meiosis the largest bivalent is about 1 micron long. Mitotic divisions in the anterior part of the ovary show discrete chromosomes which are extremely small and difficult to count.

The well-developed spermathecae are usually amply supplied with small, tailless sperm (Fig. 1B).

The many oocytes examined showed few did not contain sperm, but only one sperm was observed in each oocyte.

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<sup>1</sup> Mulvey, R. H., *Can. J. Zool.*, **33**, 295 (1955).

<sup>2</sup> Smith, S. G., *Can. Entomol.*, **75**, 33 (1943).

<sup>3</sup> Hyde, B. H., and Gardella, C. A., *Stain Tech.*, **28** (6), 305 (1953).

### Chromosome Number in the Ferret (*Putorius furo*)

THE testes of two male ferrets were teased in distilled water, where they remained for about 10 min., and then the pieces were put into aceto-orcein and temporary slides were made by the usual squash method.

The testicular materials under observation provided numerous spermatogonial cells undergoing division. Chromosome counts were made from those cells only that seemed to be intact and had the chromosomes well spread. From the mitotic metaphase plates it was clearly seen that the diploid chromosome number was 40 (Fig. 1 (1)).

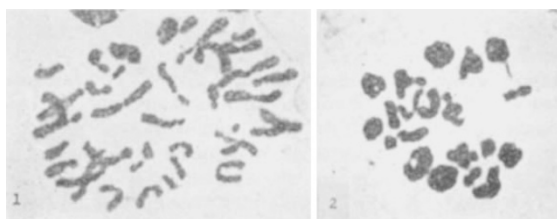


Fig. 1. Chromosomes of the ferret ( $\times 1,350$ ): (1) mitotic metaphase with 40 chromosomes; (2) first meiotic metaphase with 20 bivalents

The primary spermatocyte divisions contained 20 bivalent chromosomes (Fig. 1 (2)). Thus the first meiotic metaphase showed 19 ordinary bivalents and one element with a heteromorphic structure which was thought to be the XY-complex.

That the haploid chromosome number was 20, was also confirmed from counts of second meiotic metaphase chromosomes.

The results obtained in this investigation indicate that the diploid chromosome number in the male ferret (*Putorius furo*) is 40 and not 34 as previously reported by Koller<sup>1</sup>, who made his cytological observations on sectioned testes material.

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<sup>1</sup> Koller, P. C., *Proc. Roy. Soc., A*, **121**, 192 (1936).

### *Paravortex scrobiculariae* (Graff) in Great Britain

THE genus *Paravortex* was established by Wahl<sup>1</sup> for a vorticid Rhabdocoele living in the intestine of the lamellibranch *Scrobicularia plana*. Three species are now recognized with some certainty, all associated with bivalve molluscs. *Paravortex* (= *Graffilla*) *gemellipara* (Linton) lives as a commensal in the mantle cavity of the American ribbed mussel, *Modiolus demissus*<sup>2,3</sup>; *P. cardii* Hallez in the stomach of the common cockle *Cardium edule*<sup>4</sup> and *P. scrobiculariae* (Graff) in the intestine, and occasionally also in the stomach, of *Scrobicularia plana*. All three species are viviparous, the eggs developing in thin-walled capsules embedded in the mesenchyme of the mother. The embryos escape by passing across the maternal tissues, and, after a short free-living period, reinfect another, or perhaps the same, host.

The two European species were distinguished morphologically by Hallez<sup>4</sup>. *P. cardii* is yellow-white in colour, attains a maximum length of 1 mm., the genital pore is situated one-quarter of the body-length from the anterior end, the ovaries are corniculate, and the embryos on hatching have a length of 0.088 mm. The adult lives in the stomach of *Cardium*, and only young stages are found in the intestine, attaining a length of 0.35–0.40 mm. before being discharged through the exhalant siphon. *P. scrobiculariae* has a reddish tint, can reach a length of 1.2 mm., the genital pore is at the end of the second fifth of the body, the ovaries are disposed longitudinally, and the embryos on hatching measure 0.08 mm. The adult lives in the intestine, as well as in the stomach, of the host.

*P. cardii* has frequently been described from cockles in Great Britain (for review, see Atkins<sup>5</sup>), but the species from *Scrobicularia* has not hitherto been recorded here. Examination of *Scrobicularia* from Whitstable in Kent recently revealed an occurrence of this parasitic Rhabdocoele. Altogether some forty animals were examined and eight parasites recovered from three of them. All the specimens were found in the intestine. They were red in colour, body-length 0.53–1.15 mm., with longitudinally placed ovaries. The genital pore was situated between 0.35 and 0.39 of the total body-length from the anterior end. All the specimens included capsules, none of which contained more than two eggs, and one specimen contained at least 54 embryos with well-developed eyes, many of them already free in the mesenchyme of the mother (Fig. 1). The largest of these embryos was 0.077 mm. long. These characters clearly identify the parasite as *Paravortex scrobiculariae* (Graff).

The presence in the intestine of a specimen in full production of advanced embryos illustrates a difference between the life-cycles of the two European

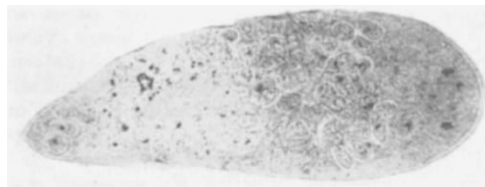


Fig. 1. *Paravortex scrobiculariae*. Adult containing embryos. ( $\times 55$ )