

THE ANATOMY OF *STILESIA GLOBIPUNCTATA* (RIVOLTA).

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(With 2 Text-figures.)

IN my "Revision of the Genus *Stilesia*¹" I had to leave several points in the anatomy of *Stilesia globipunctata* (Riv.) undecided, as the material I had of the worm was too macerated to allow of any definite conclusions. At the same time I pointed out, that the topography of the male canals as described by Stiles and Hassall² disagreed with the conditions obtaining in *Stilesia hepatica* Wolffhügel, in other respects a very closely related species. The necessity for a re-examination of *Stilesia globipunctata* (Riv.) in order to decide whether the differences really exist, or whether they were supposed to do so, on account of the material examined by Stiles being rather macerated (*loc. cit.* p. 74), was all the greater as *Stilesia globipunctata* (Riv.) is the type species of the genus *Stilesia*. Through the kindness of Mr Littlewood, Chief Inspector of the Veterinary Department, I was able to obtain living examples of *Stilesia globipunctata* (Riv.) at the Cairo abattoir on Jan. 27, 1912. These worms have been fixed with Zenker's solution, hardened and cut.

Stilesia globipunctata (Riv.) when living very closely resembles *Stilesia hepatica* Wolffhügel. Both worms have in common a certain gelatinous appearance commented on by Dr Giles, quoted by Stiles and Hassall (*loc. cit.* p. 74). Both are of approximately the same size, and are extremely contractile. My new specimens, when found,

¹ *Quart. Journ. Micr. Sci.*, Feb. 1911.

² Stiles, C. W. and Hassall, A. (1893). A Revision of the Adult Cestodes of cattle, sheep, and allied animals. *U. S. Dept. Agric., Bur. Animal Industry, Bulletin No. 4.*

were contracted to their fullest extent, the strobila being spirally twisted, or frilled by the extremity of the contraction. Some of the specimens, however, could be relaxed sufficiently before fixing, to enable good sections to be made.

In my specimens the scolex is generally rather smaller than the size given by Stiles, being about 0.5 mm. in diameter instead of 0.768–0.9 mm. The strobila directly behind the scolex is only one-half to two-thirds this width; it begins to widen 2–3 mms. behind the head, and attains 1.3 mm. at 1 cm. from the scolex. The widest segments are about 2.5 mm. wide, by 0.07 mm. long, and the thickness varies from 0.25 mm., at the level of the ventral canals, to 0.1 mm. along the median line. In consequence of the thinness of the median portion of the segments, the strobila has a tendency to fold over on itself longitudinally.

There are four to eight testes on either side of the segment, six being a common number. These all lie laterally or dorsally to the ventral canal, and are arranged in one row, or in two consecutive transverse rows of three or four, according to the state of contraction of the worm. (Text-figure 1 t.) In *Stilesia hepatica* Wolff. some of the testes are median to the ventral canal. (Text-figure 2 t.) The vas deferens of each side starts dorsally to the testes, as in *Stilesia hepatica* Wolff. (v.d.) and crosses above both the ventral canal and the dorsal canal; the right and left branches of the vas deferens meet in the median field, here they combine and form a common vas deferens which runs across the segment towards the pore side, crossing the dorsal canal ventrally, and the ventral canal dorsally, just as in *Stilesia hepatica* Wolff. (see figures.) Arrived lateral to the ventral canal the vas deferens becomes swollen with spermatozoa, and forms many closely wound convolutions, which lie either ventral to the testes, or when the worm is well expanded anterior to them. The absence of convolutions of the vas deferens can consequently no longer be used to differentiate *Stilesia globipunctata* (Riv.) from *Stilesia vittata* Railliet. The cirrus pouch in my sections is invariably ventral to the vagina. It lies in the anterior corner of the segment, alternating irregularly on the right or left of the strobila. When the strobila is very contracted, the cirrus pouch and vagina are often extruded together so as to form a small knob-like projection covered of course by subcuticula and cuticula.

The ovary (ov.) lies median to the ventral canal and lateral to the dorsal canal of the pore side. The oviduct (o.d.) meets the seminal

canal (*c.s.*) and the uterine duct (*u.d.*) and joins them dorsally and median to the ventral canal. The seminal canal runs straight from the point of its junction with the oviduct to the vagina (*v.*), which, as already stated, appears to be always dorsal to the cirrus pouch. The uterine duct, after branching off from the canalis seminalis and oviduct, turns ventrally and connects with the developing uterus (*ut.*), which,

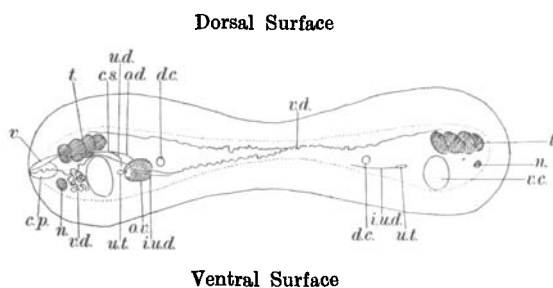


Fig. 1. Diagrammatic transverse section of *Stilesia globipunctata* (Rivolta).

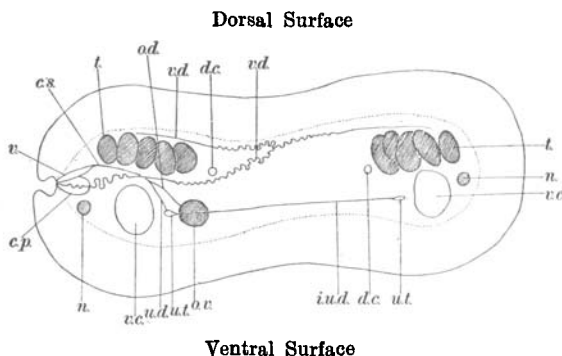


Fig. 2. Diagrammatic transverse section of *Stilesia hepatica* Wolffhügel.

List of abbreviations: *v.c.* ventral canal; *d.c.* dorsal canal; *n.* nerve; *t.* testes; *v.d.* vas deferens; *c.p.* cirrus pouch; *ov.* ovarium; *ut.* uterus; *o.d.* oviduct; *u.d.* uterine duct; *i.u.d.* inter-uterine duct; *c.s.* seminal canal; *v.* vagina.

as it comes into function, lies lateral to the ovary. The ovary disappears very soon after the uterus has commenced to function, but the oviduct persisting for some time marks the place where the ovary used to be. An inter-uterine duct apparently functions for a short time only (*i.u.d.*), the portions nearest to the uterus being most readily made out. The paruterine organs appear to develop in this

portion of the inter-uterine duet. The eggs come to lie in pockets on the lateral side of the paruterine organ.

The ventral canal is always well developed, often occupying half of the dorsoventral width of the medullary layer. The ventral canals of both sides are connected by a network of transverse canals, as in *Stilesia hepatica* Wolffhiigel. The dorsal canals are less developed, and without transverse connections; glandular cells, such as I described for *Avitellina centripunctata* (Riv.), surround the dorsal canal.

The nerve lies ventral to the genital canals on the pore side, ventral to the testes on the non-pore side.

The great similarity in the general arrangement of *Stilesia globipunctata* (Riv.) and of *Stilesia hepatica* Wolff, is very easily seen by comparing the two diagrams.

Stilesia hepatica Wolff, does not appear to be known in Egypt; *Stilesia globipunctata* (Riv.) was certainly never found in any of the many sheep I examined in the Transvaal.

My thanks are due to Prof. W. Garstang of Leeds University, for having kindly revised all the proofs of my paper on the "Revision of the Genus *Stilesia*," which appeared when I was in Trinidad. • This is the first opportunity I have had of thanking him publicly for the immense amount of trouble it must have involved.