

A NEW CESTODE, *RAILLIETINA* (R.) *LEIPOAE*,
FROM THE MALLEE HEN

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Fig. 1-12.

THE present paper is based on South Australian material from two mallee fowls, *Leipoa ocellata* Gould (Galliformes, Megapodiidae), one of them taken by Mr. L. Ellis near Tailem Bend, and the other by Mr. P. Lawson, of the South Australian Museum staff, near Strathalbyn. From the former bird we obtained many specimens of the new cestode, *Raillietina leipoae*, while from the latter bird a few immature Davaineids, probably belonging to another species of *Raillietina* were collected.

We desire to thank Messrs. Ellis and Lawson for obtaining the birds for us; and to express our indebtedness to the Commonwealth Research Grant to the University of Adelaide. Type material has been deposited in the South Australian Museum.

RAILLIETINA (*RAILLIETINA*) *LEIPOAE* n.sp.

The worms are very small, most of them between 3 and 6 mm. in length, none exceeding the latter. The strobila consists of relatively few segments (23-33). All specimens are mature and possess at least one gravid proglottis. The latter probably became detached readily since there is usually only one attached to the strobila, although the last five or six segments contain developing eggs, and numerous single gravid proglottids were found free in the intestinal lumen. The maximum breadth of the strobilae was one to three millimetres, most being strongly contracted.

The scolex may reach .65 mm. in length but when contracted measures .4-.5 by .3-.45 mm. The hemispherical rostellum measures .24-.28 mm. in diameter, and at its base has 133-154 hammer-shaped hooks, each with a long ventral and a short dorsal root, and a short spine. These hooks are arranged in two alternating series, those of the inner being 52μ , and of the outer 39μ in total length. Their difference in form is indicated in fig. 3, 4. "Total length" is the distance between two parallel lines drawn from the ends of the hook (Stevenson, 1904). Behind the rostellum are 20-40 rows of very small spines, giving the

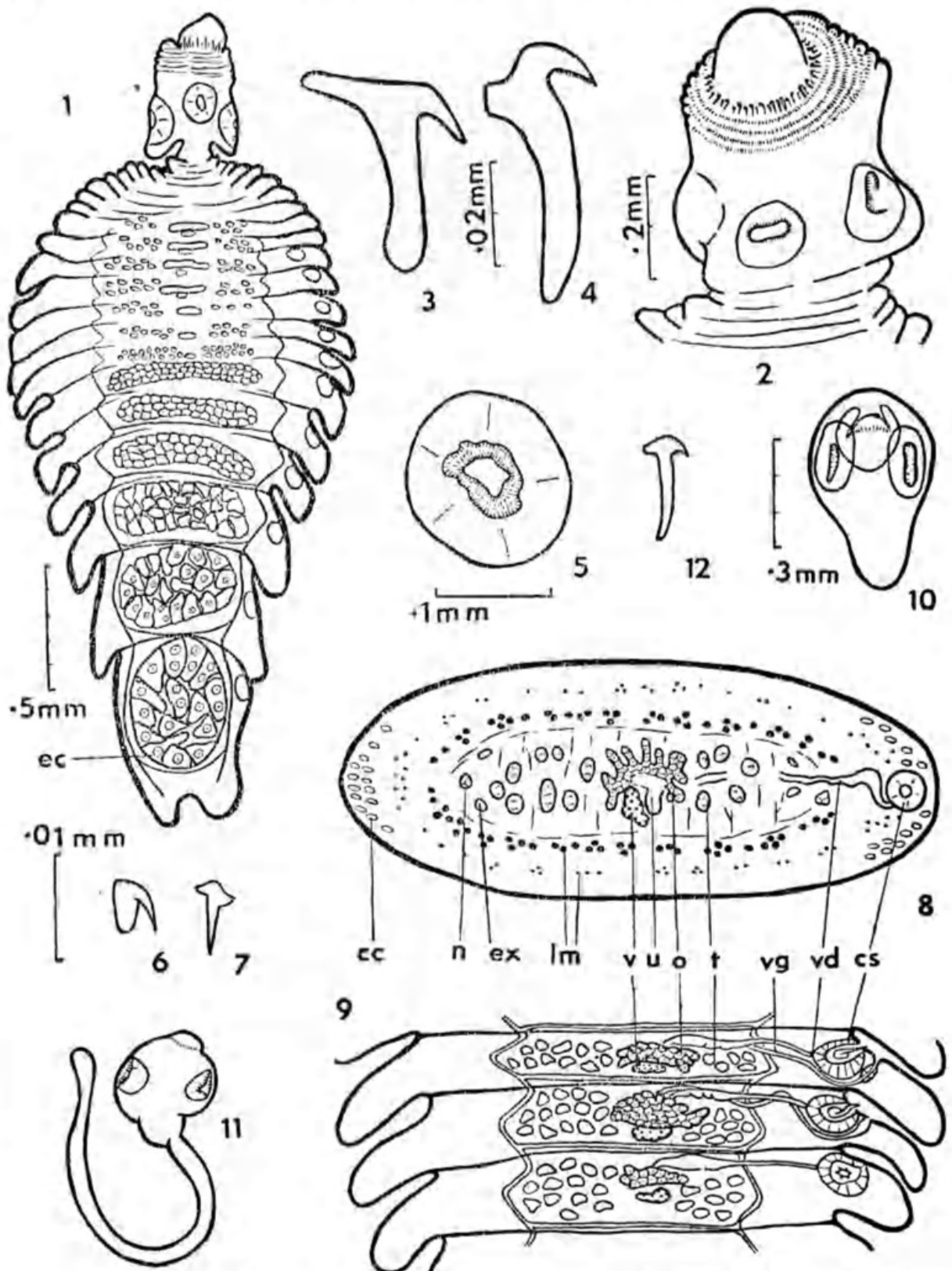


Fig. 1-9. *Raillietina leipoas*. 1. strobila; 2. scolex; 3-4. rostellar hooks; 5. sucker; 6. post-rostellar spine; 7. spine from sucker; 8. T.S. mature segment; 9. mature segments, dorsal view. Fig. 10-12. *Raillietina* sp. immature. 10, 11. young forms; 12. rostellar hook.

cc. calcareous corpuscle; cs. cirrus sac; ec. egg capsule; ex. excretory canal; lm. longitudinal musculature; n. longitudinal nerve; o. ovary; t. testis; u. uterus; v. vitellarium; vd. vas deferens; vg. vagina.

anterior end of the scolex a ringed appearance. These spines resemble rose thorns in form and are 6μ long, with a broadened base and a short recurved spine (fig. 6).

The suckers are round ($.16$ mm. diameter) or elliptical ($.2$ by $.15$ mm.) and bear on the rim about 15 rows of very small, closely set spines each $6-8\mu$ in total length, with short dorsal and ventral roots and a long spine (fig. 5, 7).

In most worms a neck was not observed, perhaps due to the state of contraction, but occasionally the scolex was seen to overhang a very short neck, about 65μ long. The segments are at first very short and narrow, but soon increase markedly in breadth. All proglottids except one or two terminals are broader than long. As the uterine capsules develop, segments become narrower and longer until the last one or two may be squarish or even longer than broad. The mature strobila thus becomes somewhat elliptical. The genital pores are unilateral and open on the anterior border of the laterally projecting lobe of the segments, close to the posterior margin of the preceding proglottid. The genital ducts pass between the two longitudinal excretory canals, and dorsally to the nerve cord.

Calcareous corpuscles, $5-10\mu$ in diameter, are scattered in the cortex, more particularly in that of the lateral projecting region, but they occur also in the posterior part of the scolex where they may be seen around the suckers. The inner longitudinal musculature is composed of bundles of larger fibres while the outer consists of smaller, more scattered fibres which are more abundant in the lateral regions of the segment. The circular musculature is rather weakly developed. The lateral nerve cords lie just laterally from the excretory ducts. Of the latter, the ventral may measure up to 8.5μ in internal diameter and communicate by wide transverse canals, while the dorsal canals are very narrow, $1-5\mu$ in diameter, with thick walls.

There are 22-33 testes, 14-21 of them on the aporal side, 8-12 on the poral side of the female organs. The vas deferens becomes coiled as it passes laterally from the median line of the segment. The small pyriform cirrus sac, $.1-.13$ by $.06-.07$ mm., does not extend inwards as far as the longitudinal nerve cord, much of it lying in the overhanging portion of the proglottis. The unarmed cirrus lies somewhat coiled, when at rest, within its sac and is supplied with gland cells. The genital atrium is shallow.

The female glands lie somewhat nearer the poral side of the segment. The strongly lobed ovary is $.167-.2$ mm. in maximum breadth. The yolk gland lies behind it but is displaced slightly towards the aporal side; it is weakly lobed and measures $.085-.12$ mm. in diameter. The vagina travels beside the vas deferens in the anterior part of the segment. Near the genital pore it has a muscular coat and numerous gland cells. The female pore lies immediately

behind the male aperture. The uterus which can be seen in relatively few segments, lies ventrally behind the ovary, and between the latter and the yolk gland. Its branches extend dorsally and ventrally in the medulla. Its walls soon disappear and the eggs come to lie singly and evenly distributed throughout the medulla, but these eggs become collected later into parenchymatous capsules. The fully gravid segment contains 20-30 such uterine capsules, closely packed and of irregular form, but they do not extend beyond the excretory canals, though they may displace the latter almost to the extreme edge of the segment. These capsules measure about $\cdot 16\text{--}\cdot 2$ mm. by $\cdot 18\text{--}\cdot 23$ mm., and each contains 21-26 eggs which measure about $11\text{--}13\mu$ by $13\text{--}14\mu$, with hooklets $5\text{--}6\mu$ long.

R. (R.) leipoae differs from all known species of the subgenus from Galliform birds in its small size, large rostellar hooks, the series of post-rostellar spines, and the number and contents of the uterine capsules. The only other representative of the subgenus from this order of birds, possessing relatively large rostellar hooks is *R. (R.) williamsi* Fuhrmann (1932, 47), syn. *Davainea fuhrmanni* Williams (1931, 17), whose hooks measure $37\text{--}39\mu$ and $33\text{--}34\mu$ respectively, as against 52 and 39μ for *R. (R.) leipoae*. In *R. (R.) permista* Southwell and Lake (1939, 76) which has only 36 hooks, minute spinules, visible only under oil immersion, are said to be present on the cuticle surrounding the rostellum whereas in *R. leipoae* these hooks are distinctly visible under high power magnification. Other species of the subgenus possessing post-rostellar spines are *R. lorquata* Meggitt (1924, 307) with 150 hooklets, 7 and $7\cdot 5\mu$ long, the host being a Burmese pigeon; *R. frontina* Duj. 1845, with 180 hooklets, $7\text{--}8\mu$ long; and *R. comitata* Ransom (1909, 141), with 80 hooklets, $11\text{--}13\mu$ long, the two latter cestodes occurring in Piciform birds.

R. (R.) leipoae differs from other members of the subgenus from Galliform hosts in the number of egg capsules (up to 26, each with 24-30 eggs). In other species there may be 50-100 capsules, each with rarely more than 15 and usually less than 10 eggs.

RAILLIETINA sp.

Fig. 10-12.

Three very young Davaineid worms, probably belonging to a *Raillietina*, were found in the intestine of *Leipoa ocellata* from Strathalbyn. One is still in the cysticercoid stage (fig. 10) and measures $\cdot 52$ mm. by $\cdot 36$ mm.; in another the hind part is ruptured, the specimen measuring $\cdot 62$ by $\cdot 38$ mm. The third (fig. 11) possesses a long, narrow appendage which may be a developing strobila or the remains of a caudal appendage; its scolex is $\cdot 46$ mm. long by $\cdot 38$ mm.

wide, and the total length is 2.1 mm. The hemispherical rostellum in the three worms is .15-.16 mm. in diameter, and has about 400 very small hooks, 11-12 μ in total length, arranged in two very closely approximated rows. Each hook is hammer-shaped with a long ventral and short dorsal root and a short spine (fig. 12). Each sucker measures .13-.17 by .11-.13 mm. and bears on its rim several rows of minute spines, 6-7 μ in total length, each with short dorsal and ventral roots and a long spine. The worms are referred provisionally to *Raillietina* because of the double crown of numerous small hammer-shaped hooks and its armed suckers.

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