

XXVIII.—*A Note on Two Species of the Genus Murshidia (Nematode, Strongyloidea) parasitic in the Wart-Hog.* By R. DAUBNEY, M.Sc., M.R.C.V.S., Ministry of Agriculture and Fisheries.

THE material dealt with in this paper is the property of the British Museum (Natural History), South Kensington. I wish to express my thanks to Dr. H. A. Baylis for his generosity in placing this material at my disposal. The type-specimens of the new species are in the British Museum (Natural History).

Genus MURSHIDIA, Lane, 1914.

This genus, described by Lane (1914), differs from the genus *Cylicostomum* in characters of the head, the male bursa, the spicules, and the female tail. Lane's diagnosis has recently been reprinted in Khalil (1922, p. 220).

That both of the species discussed below should be assigned to this genus is indubitable, although hitherto its members have been described from elephants only. It is, however, always of peculiar interest to note the occurrence of members of a helminth genus, previously associated entirely with one host genus or group, in another host-group whose relationship to the first is not very obvious.

Murshidia pugnicaudata (Leiper, 1909).

Synonym. *Cylicnostomum pugnicaudatum*, Leiper, 1909.

This species has been collected recently on four occasions from the wart-hog (*Phacochærus æthiopicus*) in Zululand. On each occasion there was also present a closely allied species—*Murshidia hamata*,—which is described below. From the description of Leiper (1909, p. 23) there is reason to suppose that the material from which his species was originally described included also the second species. His figure of the œsophagus in particular would appear to apply more closely to *M. hamata* than to *M. pugnicaudata*. However, it is clearly indicated by his figure of the spicules which of the two species should be regarded as *M. pugnicaudata*.

Murshidia hamata, sp. n.

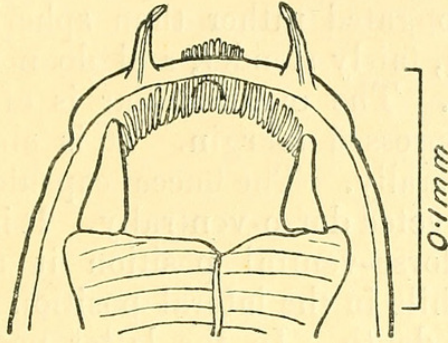
Host. Wart-hog (*Phacochærus æthiopicus*).

Locality. Zululand.

This is a fairly long robust form. The females measure

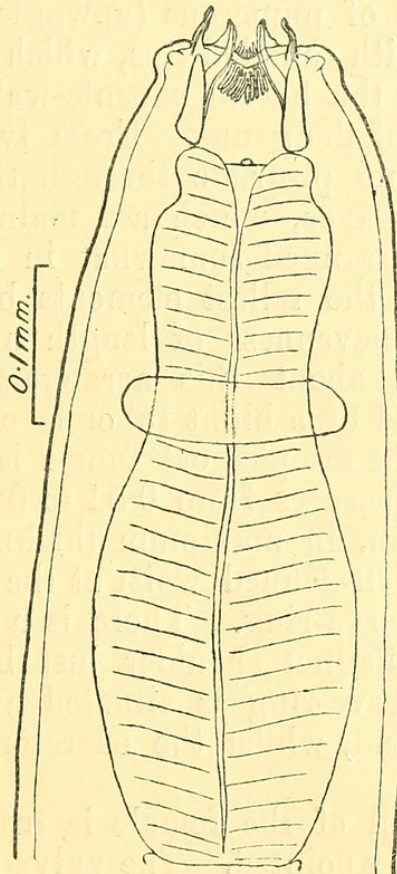
from 16·5 to 19 mm. in length and up to 0·79 mm. in thickness, the males from 13 to 14·5 mm. and up to 0·52 mm.

Fig. 1.



Murshidia hamata. Head, lateral view.

Fig. 2.



Murshidia hamata. Anterior end, dorsal view.

respectively. The female is tapered at both ends, the tip of the tail being drawn out to a fine point. The male is tapered

from just in front of the bursa forwards. The striæ of the cuticle are about $3\ \mu$ apart.

The head, which measures about 0.12 mm. in dorso-ventral diameter, has well-developed, freely projecting, submedian papillæ, of which that part which is distal to the constriction is elongated rather than spherical. The lateral papillæ are small, fairly slender, and do not project through the mouth-collar. The mouth-collar is of medium height, with a rather depressed margin. It is elliptical in outline, and is notched laterally. The buccal capsule itself is ellipsoid, its longer axis directed dorso-ventrally. It is about 0.065 mm. deep. In the dorso-ventral position it appears about as broad as deep, while in the lateral position its width is much greater than its depth. In the latter position its walls in optical section appear roughly triangular, the base being considerably thickened. In the dorso-ventral position, however, this thickening towards the base is much less marked. The internal leaf-crown appears to be absent. The external leaf-crown consists of numerous (upwards of eighty) rather slender elements with rounded tips, which originate from the interior surface of the buccal capsule-wall along the curved line characteristic of the genus. From twenty-six to thirty-two of the elements protrude through the mouth-opening. These projecting leaves, which are mainly confined to the lateral walls, are arranged somewhat in the fashion of the feathers of a fan, the tallest elements being opposite the lateral papillæ; unevenness of length and of origin both assist in bringing about this arrangement. The dorsal gutter is represented by a blunt tubercle on the floor of the buccal capsule. The œsophageal funnel is poorly developed. The œsophagus measures from 0.54 to 0.56 mm. in length and up to 0.16 mm. in maximum thickness. It is bottle-shaped, having a well-defined waist at the point where it is encircled by the nerve-ring. There is a sharp constriction giving rise to a distinct shoulder just behind its anterior extremity. The nerve-ring is situated at about 0.16 mm. from its anterior end, whilst the excretory pore opens just behind its base.

Female.—The tail of the female is from 1 to 1.1 mm. in length and is sharply pointed. The vulva is situated at about 0.7 to 0.8 mm. in front of the anus, or from 1.7 to 1.9 mm. from the posterior extremity. The diameter of the worm increases suddenly immediately in front of the vulva. The vagina is curved spirally and appears to be muscular. The two branches of the uterus run directly forwards to within

about 1·8 mm. of the base of the œsophagus, where the ovarian tubes commence, running directly backwards to within about 5 mm. of the posterior extremity. Both uterine branches and ovarian tubes are arranged in numerous transverse loops partially encircling the gut. The eggs in the uterus are oval and measure $0\cdot072-80 \times 0\cdot036-0\cdot04$ mm. Their content is unsegmented.

Fig. 3.

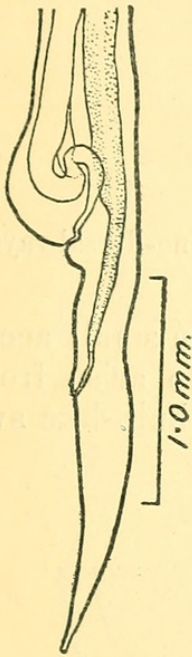


Fig. 4.

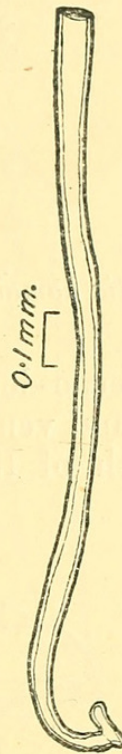


Fig. 3.—*Murshidia hamata*. Tail of female, lateral view.

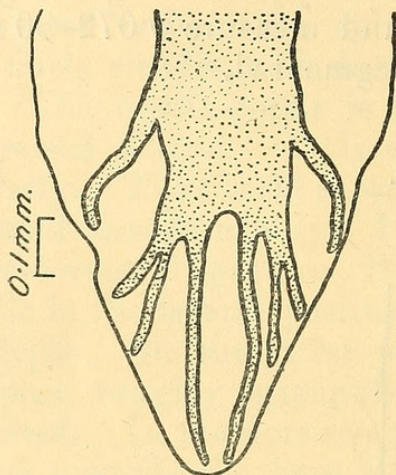
Fig. 4.—*Murshidia hamata*. Spicule of male.

Male.—The bursa of the male is completely closed, but possesses a long dorsal lobe. In addition to this and the lateral lobes there is a small accessory lobe on either side supported by the externo-dorsal ray.

The main trunk of the dorsal ray is exceedingly stout and rather short. The externo-dorsal rays are detached at a wide angle and recurve towards the dorsal side of the bursa. At about 0·2 mm. behind the point of origin of the externo-dorsal rays a pair of stout branches leaves the main trunk. Each of these, soon after leaving the main trunk, divides into two slender branches, of which the outer is distinctly the shorter. Just behind this point the main trunk divides into

two long slender branches which extend to the tip of the dorsal lobe. There are thus six rays in the dorsal lobe and a

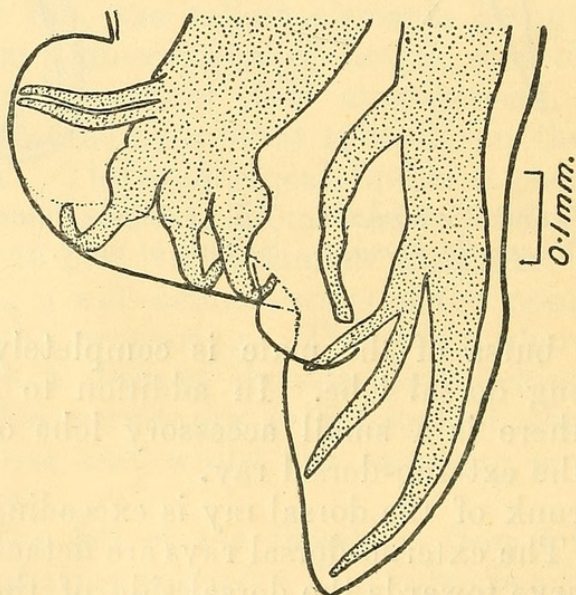
Fig. 5.



Murshidia hamata. Dorsal and externo-dorsal rays of male.

ray (the externo-dorsal) in each of the small accessory lobes. The lateral and ventral rays appear to arise from a common trunk. Each of the former has a bulb-like swelling at its

Fig. 6.

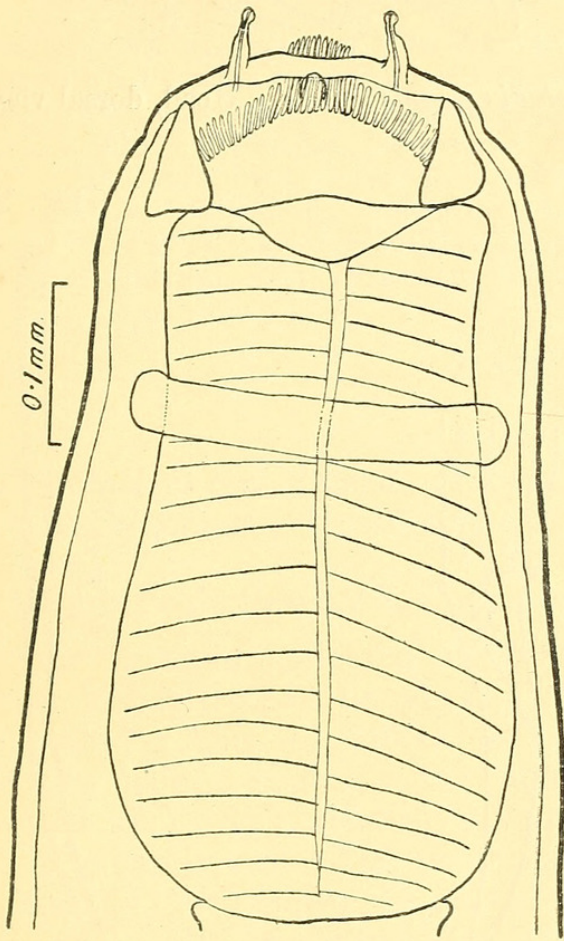


Murshidia hamata. Bursa of male, lateral view.

point of separation from the common trunk. The externo-lateral ray diverges noticeably from the other two and is

directed towards the ventral rays. The ventral rays are short, slender, and closely applied to each other. The spicules are rather stout and measure about 1.57 mm. in length. They curve distinctly in the dorsal direction near their posterior ends. Their extremities have each a large flattened hook, which faces ventrally and is somewhat like the sole of a child's sandal. A roughly conical accessory piece measuring 0.38 mm. to 0.4 mm. is present. The male

Fig. 7.



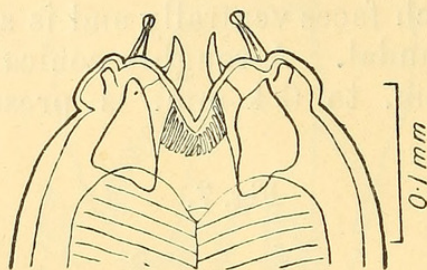
Murshidia pugnicaudata. Anterior and lateral view.

genital tube is much coiled and extends to within a short distance of the œsophagus.

Figures of *M. pugnicaudata* (Leiper) are appended, for purposes of comparison. The new species differs from *M. pugnicaudata* in the form of the mouth-capsule, of the œsophagus, of the vulva and vagina, and of the spicules of the male. Comparing the two, the buccal capsule of *M. hamata* is much narrower in proportion to its depth,

whilst in optical section its walls do not show such pronounced thickening towards the base. The terminations

Fig. 8.



Murshidia pugnicaudata. Head, dorsal view.

Fig. 10.

Fig. 9.

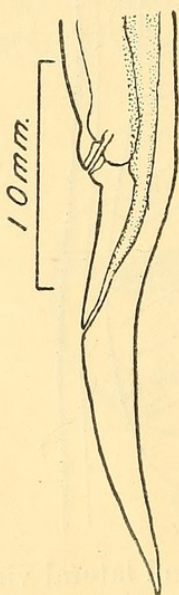


Fig. 9.—*Murshidia pugnicaudata.* Tail of female, lateral view. ■
 Fig. 10.—*Murshidia pugnicaudata.* Spicule of male.

of the submedian papillæ are also different in shape, being globular in *M. vugnicaudata* and elongated in *M. hamata*.

The figures will indicate the pronounced difference in the shape of the œsophagus. The anterior shoulder and the well-defined waist are conspicuous characters in *M. hamata*. Both lips of the vulva in *M. pugnicaudata* are somewhat prominent and the vagina is straight, while in the new species the anterior lip of the vulva is especially swollen and boss-like, and the vagina spirally curved.

Figures 4 and 10 will indicate clearly the differences between the spicules.

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XXIX.—*Descriptions and Records of Bees.*—XCVII.

By T. D. A. COCKERELL, University of Colorado.

Megachile fortis vestali, Cockerell.

Described from a male collected in Nebraska. Miss Grace Sandhouse has collected a female at Jumbo Reservoir, near Crook, Colorado, Aug. 13, 1921. It has exactly the appearance of the male, except for the sexual characters. The face is covered with bright reddish-fulvous hair, and the ventral scopa is entirely red. The posterior basitarsi are very broad. Among the known females, this is closely related to *M. emoryi*, Ckll., but is smaller, with redder hair. It seems possible that *M. emoryi* is the true female of *M. fortis*, Cresson, and that the present insect should stand as a distinct species, *M. vestali*.

Hoplitis graceæ, sp. n.

♀.—Length about 9 mm.

Black, rather narrow, with nearly parallel-sided abdomen; head and thorax shining, but closely punctured; mandibles broad, 3-dentate; clypeus with lower margin strongly but broadly emarginate; disc of clypeus convex, with no smooth



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