Onderstepoort Journal of Veterinary Science and Animal Industry, Volume 3, Number 2, October, 1934.

On *Habronema murrayi* sp. n. from the Barn Owl—*Tyto alba*.

By R. J. ORTLEPP, M.A., PH.D., Empire Marketing Board Research Officer, Onderstepoort, Transvaal.

THROUGH the kind offices of Mr. G. N. Murray, of this Institute, a barn owl was placed at the disposal of the writer for dissection. A careful examination of the digestive tract revealed the presence of 14 nematodes in the gizzard, some of which were lying free in its lumen, whereas others were embedded in its lining. All the other organs were free of helminths, but smears made from the heart blood, kidneys, and spleen were found by Mr. W. O. Neitz, of this Institute, to contain *Leucocytozoon*, *Haemoproteus* and *Trypanosomes*.

The worms are pinkish in colour, slender and attenuated towards their anterior end. The head is set off from the rest of the body by a slight constriction, and the cuticle shows very coarse annulations, which in optical section gives the sides of the body the appearance of being serrated; these annulations are about 0·0125 mm. from each other and in the oesophageal region are interrupted in both the lateral fields. There are no lateral alae, the area in which they normally occur being smooth and devoid of annulations. The cervical papillae are very small and peg-like and are lodged a little over half-way between the anterior extremity and nerve ring; in a 7·6 mm. long male they were 0·154 mm. and in a 11 mm. female 0·166 mm. from the anterior end. In these same two specimens the nerve ring was 0·23 mm. and 0·28 mm. from the front end respectively with the excretory pore some 0·05 mm. posterior to it in both cases.

The two lateral lips are very complicated and it was with difficulty that their true nature was made out. Each is tri-lobed, the middle lobe being the largest (Fig. 1). This lobe has a somewhat quadrangular shaft and from its antero-dorsal and antero-ventral

corners a curved horn-like process passes dorsalwards and ventralwards respectively on the inner side of the outer lobes. The outer lobes are somewhat rounded, their inner faces being concave and into this concavity the curved processes of the median lobe fit. The median lobes each carry on its inner face a tripartite tooth which is supported by a cuticular branch from the buccal capsule. In addition to these two trilobed lateral lips there is a small spike-like and keeled process on the dorsal and ventral side between the lateral lips, these may perhaps be regarded as of the nature of interlabia (Fig. 2). There are four submedian papillae, one near the base of each of the four outer lobes of the lips.

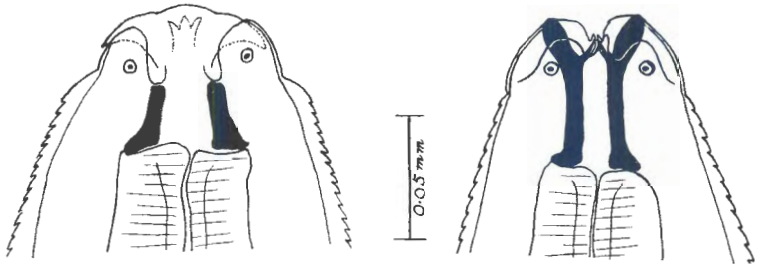

Fig. 1.—Anterior extremity, lateral view.
Fig. 2.—Anterior extremity, dorsal view.

There is a well-developed buccal capsule which appears deeper in a dorsal or ventral than in a lateral view (Figs. 1 and 2); this is due to the fact that it is continued as a process into each median lobe of the lateral lips; these processes are slightly club-shaped and extend to the anterior margin of the lips; about half-way up the lips each process gives off a fine branch on its inner side; these branches pass inwards and forwards and form the supports of the tripartite teeth. The buccal capsule in lateral view has about the same depth in both sexes (0·03 mm.), but its diameter is slightly greater in the female (0·028 mm.) than in the male (0·022 mm.).

The oesophagus is long and slender and consists of two distinct parts (Fig. 3); it occupies just under a third of the total body length in the female and about two-fifths of the body length in the male. In a 11 mm. female it was 3·5 mm. long and in a 7·5 mm. male it measured 2·7 mm. The muscular oesophagus forms about 1/9th of the total oesophagus in the female and about 1/7th in the male, and is slightly thinner in the latter, being 0·044 mm. in diameter as against 0·058 mm.; the glandular oesophagus increases slightly in thickness towards its posterior end; in the female the measurements are 0·11 mm. at its anterior end and 0·19 mm. at its posterior end, whereas in the male these measurements are 0·1 mm. and 0·16 mm. respectively.

Female.—The length varies from 10·75 mm. to 12 mm. and the body tapers towards both extremities; its thickest portion is in its middle where the diameter varies from 0·356 to 0·41 mm. The tail is short and bluntly-pointed and is from 0·186 mm. to 0·191 mm. long (Fig. 4).

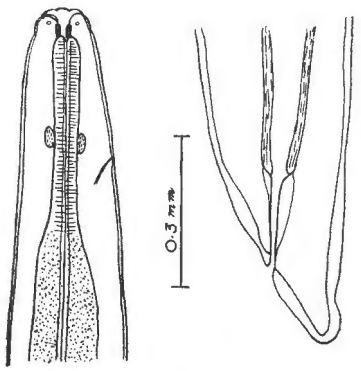

Fig. 3.—Anterior oesophageal region.
Fig. 4.—Caudal extremity of female.

The vulva opens just anterior to the middle of the body, being 5·4 mm. from the anterior end in a 11 mm. long female; its aperture is small and rounded and opens flush with the surface. The genitalia are of the type typical for the genus (Fig. 5); the vulva is small 0·038 mm. long by 0·022 mm. in diameter; this leads into the somewhat pyriform vestibule which is bent at its inner extremity; it is about 0·24 mm. long with a diameter in its middle of 0·07 mm. Its lumen is large and is lined by thick cuticle. The sphincter is elongate, 0·3 mm. long and has a uniform diameter of 0·032 mm.; its lumen also has a cuticular lining; the unpaired portion of the trompe is 0·22 mm. long and has an initial diameter of 0·045 mm., increasing to 0·077 mm. at the level of its two branches; these latter are the same length as the unpaired limb. The inner surface of this organ is lined by tall columnar cells, whose free ends meet each other in its lumen. At first the two uteri are parallel, but one soon bends back and passes forwards so that for their greater portion they are divergent. The uteri are filled with numerous eggs; these are oval, smooth, and thick-shelled and are embryonated prior to deposition; their average size is 0·047 mm. long by 0·028 mm. broad.

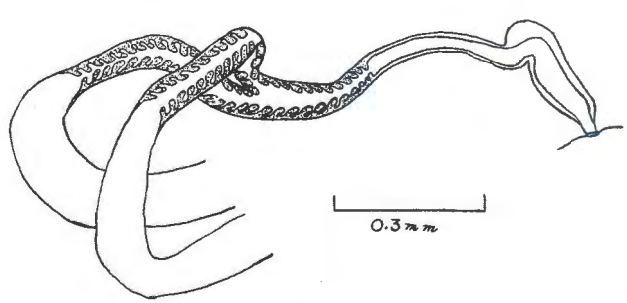

Fig. 5.—Terminal portion of female genitalia.

Male.—The males vary in length from 6·8 to 7·5 mm. and their maximum thickness is just anterior to the caudal expansions; from here the body tapers anteriorly, and whereas this also happens posteriorly, it is to a great extent masked by the large caudal expansions. The caudal extremity is generally hooked ventralwards, and in some it may even show a tendency to form a loose spiral. There are two large caudal expansions which are normally supported by four pairs of stalked preanal papillae, but this number is not always constant; e.g. in six males three had four papillae on either side, the fourth had five on the right and six on the left, the fifth had six on the right and four on the left, and the sixth had four on the right and six on the left (Fig. 6). The number and arrangement of

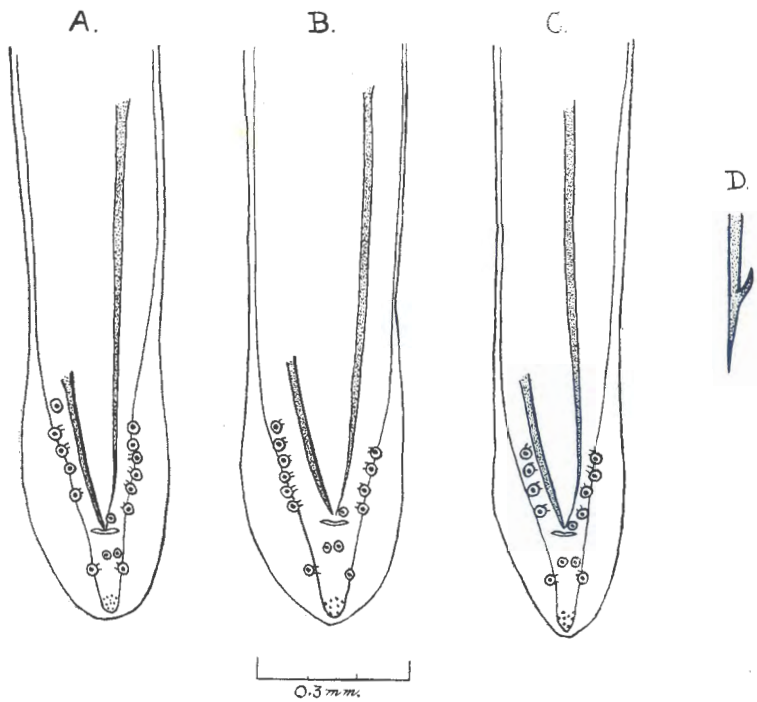

Fig. 6.—A, B, C, Ventral view of caudal extremities of three males. D, Tip of left spicule.

the post-caudal large papillae is constant; one pair is stalked and situated half-way down the tail, and another pair is sessile and approximated to each other and are found midway between the cloaca and the stalked papillae. In addition to these there is a group of about five pairs of very small papillae towards the tip of the tail. On the anterior lip of the cloaca there is a single large sessile papilla always situated towards its left corner. The whole ventral surface of the tail and its expensions is covered by elongated rugosities arranged longtitudinally; they are, however, entirely absent on a somewhat circular patch at the tip of the tail, and in the area anterior of this patch and posterior of the ventral postanal sessile papilla the rugosities are circular and not elongate.

The spicules are pointed, elongate and slender, that of the right being, however, slightly stouter than that of the left. The left spicule is from 0·884 mm. to 0·896 mm. long and 0·012 mm. thick, and about 0·03 mm. from its tip it carries a barb on one side. The right spicule is from 0·325 mm. to 0·332 mm. long with a maximum thickness of 0·019 mm. A somewhat trident-shaped gubernaculum is present.

Host: *Tyto alba.*

Location: Gizzard.

Locality: Onderstepoort, Transvaal.

Types in the Helminthological Collection, Onderstepoort.

Affinities.—The literature referring to 24 of the 25 known species of this genus reported from birds has been available; that not available was on *Habronem dipterum* Popowa, 1927. The absence of lateral alae separates the above described species from all the known species except from *Habronema ficheuri* Seurat, 1916, and possibly *H. casuaria* Maplestone, 1932; *H. euplocami*, Maplestone, 1930; and *H. indica* Maplestone, 1929. No mention is made of alae in any of these species of Maplestone, so that their presence or absence is problematical. However, these three species all differ from the author's in that in them the vulva is situated towards the posterior extremity, whereas in the author's species its position is median.

The above described species shows close affinities to Seurat's species, the position of the vulva and nature of the female genitalia is similar in both, the annulations are interrupted along the lateral lines in both, and the tip of the left spicule is barbed in both, although in Seurat's species there are two hooks, in addition the lips also appear to be similar. However, it differs from Seurat's species in that the arrangement of the preanal caudal apillae is different, the left spicule is much shorter and carries only one hook.

[ADDENDUM.—Since the writing of this article the author has collected this parasite from the Grass Owl, *Tyto capensis*, Onderstepoort.]

REFERENCES.

CRAM, E. B. (1927). Bird Parasites of the Nematode Suborders Strongylata, Ascaridata and Spirurata. *U. St. Nat. Mus. Bul.*, 140, pp. 164-187, Washington.

MAPLESTONE, P. A. (1929). Two New Species of Nematodes from Indian Hosts. *Records Ind. Museum*, Vol. 31, pt. 2, pp. 90-92. Calcutta.

MAPLESTONE, P. A. (1930). Parasitic Nematodes obtained from Animals dying in the Calcutta Zoological Gardens, Pt. 3. *Ibid.*, Vol. 32, Pt. 4, pp. 403-411.

MAPLESTONE, P. A. (1932). *Ibid.*, Pt. 10; *Ibid.*, Vol. 34, Pt. 3, pp. 238-248.

SEURAT, L. G. (1916). Sur un nouvel *Habronema* du *Bubulcus lucidus* Raf. *Comp. Rend. Soc. Biol.*, Vol. 79, p. 295. Paris.

WALTON, A. C. (1927). A Revision of the Nematodes of the Leidy Collections. *Proc. Acad. Nat. Sc. of Philad.*, Vol. 79, pp. 126-131. Philadelphia.

WEHR, E. E. (1931). A New Species of Nematode Worm from the Sage Grouse. *Proc. Un. St. Nat. Mus.*, Vol. 79, art. 3, pp. 1-3. Washington.