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# ON *TRACHYPHARYNX NATALENSIS* SP. NOV. AND SOME ASSOCIATED GENERA OF NEMATODES

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Thirteen specimens of a round worm which appear to represent a new species, were recovered in the ingesta in the large intestine of a cane rat from Zululand. The worms have the superficial appearance of a nodular worm of domestic ruminants and were lying free in the intestinal contents.

## MORPHOLOGY

The body is straight and the cuticle finely annulated. The body is attenuated posteriorly, the narrowest portion being immediately anterior to the bursa in the four males which are 12 to 13 mm long and 0·44 to 0·48 mm thick, while the body thickness in the nine females which are 14 to 16 mm long and 0·48 to 0·5 mm thick, increases slightly towards the posterior end until just anterior to the vulva where it is much constricted. The anterior extremity is thick due to the relatively marked enlargement of the anterior quarter of the oesophagus; the head diameter in the males is about 0·38 mm and in the females from 0·39 to 0·4 mm. A flattened mouth collar is present, in the males 0·3 to 0·33 mm in diameter and in the females 0·32 to 0·34 mm. A circular and chitinous mouth capsule of which the wall is slightly inclined inwards anteriorly is present; its posterior diameter varies in the males from 0·28 to 0·31 mm and in the females from 0·3 to 0·34 mm; its depth in the males is 0·075 to 0·08 mm and in the females from 0·08 to 0·085 mm. In optical section the buccal capsule is seen to carry a small ledge projecting inwards at about the junction of its first and second fifths. From its anterior rim there arise about 30 to 35 well developed external leaf-crown elements; in the frontal view of a head separated from the body 31 elements are present (Fig. 1A); what may be regarded as an internal leaf-crown consists of two small wedge-shaped structures at the base of each external leaf-crown element and resting on the narrow internal ledge of the buccal capsule; each pair appears to form a portion of the base of one of the external elements.

The lateral and sub-lateral cephalic papillae are small and inconspicuous; the lateral cervical papillae are also small and situated 0·84 to 0·92 mm from the anterior end in the females and 0·7 to 0·96 mm in the males. In both sexes the excretory pore lies about 0·1 mm anterior to these cervical papillae. The oesophagus (Fig. 2) is straight, with a much thickened anterior end, in the males 0·33 to 0·36 mm in diameter and in females 0·39 to 0·41 mm; this is followed by a much thinner neck varying in thickness from 0·11 to 0·125 mm; posteriorly the oesophagus

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assumes a club-shaped appearance attaining in the males a maximum thickness of 0·26 to 0·27 mm and in the females 0·3 to 0·32 mm. The total length of the oesophagus is in the males 1·05 to 1·3 mm and 1·32 to 1·51 mm in the females; the nerve ring encircles the neck at about 0·48 to 0·53 mm from the anterior end.

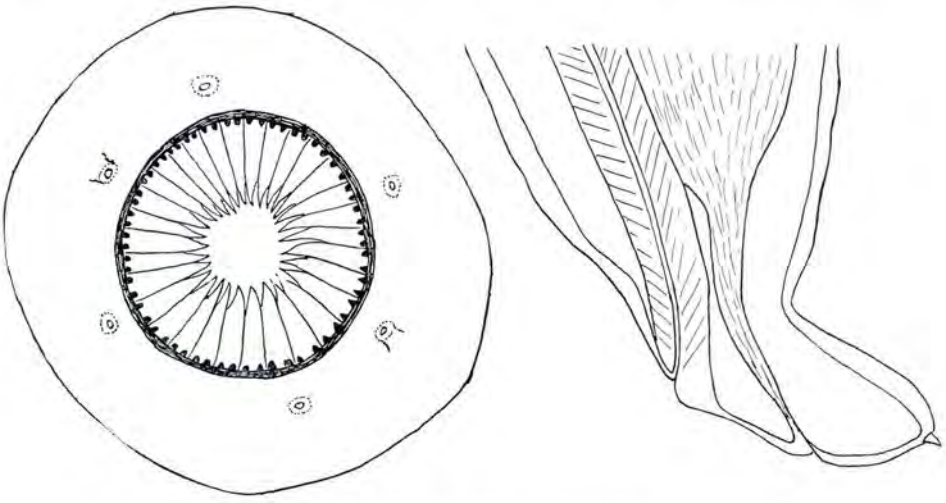

FIG. 1.—*Trachypharynx natalensis* sp. nov.
A. Front view of head; B. Female tail, lateral view.

The thickened anterior oesophageal part is due to the development of a voluminous oesophageal funnel, in the males 0·24 to 0·3 mm wide anteriorly and 0·23 to 0·24 mm deep; in the females these measurements are 0·29 to 0·31 and 0·25 to 0·27 mm respectively; internally this funnel is lined by thickened cuticle carrying about 100 backwardly curved teeth which measure up to 0·036 mm in length; at the base of the funnel the cuticle is folded and possibly assumes the function of oesophageal teeth. In both sexes the intestine is very evident due to the presence of a black pigment in its cells.

The structure of the male bursa (Fig. 3A and B) is very similar to that found in members of the genus *Oesophagostomum*; the dorsal ray (Fig. 3A) is large and split in its posterior third, each branch giving rise to a thicker outer and a thinner inner branch. The latter terminates in a small outer digit and longer inner digit. The externo-dorsal rays arise from the dorsal ray at the same level about a third of its length from its base; they do not reach the edge of the bursa. The lateral and ventral rays originate from a common trunk and have about the same size; the ventral rays are closely apposed, diverge from the lateral rays and almost reach the edge of the bursa. The postero- and medio-lateral rays are also closely apposed and diverge from the antero-lateral ray which is straight; the former two rays almost reach the margin of the bursa, the latter terminates some distance from the edge. Prebursal rays are absent. The two identical spicules are slender, 1·74 to 1·8 mm in length and 0·021 mm thick immediately posterior to their proximal ends; they are alate for most of their length and their distal points appear to be fused. The gubernaculum is 0·13 to 0·15 mm long.

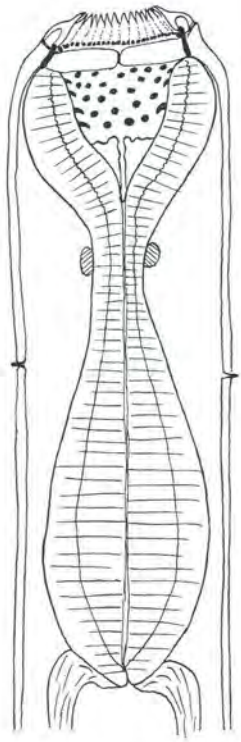

FIG. 2.—*Trachypharynx natalensis* sp. nov.
Anterior end of body, ventral view.

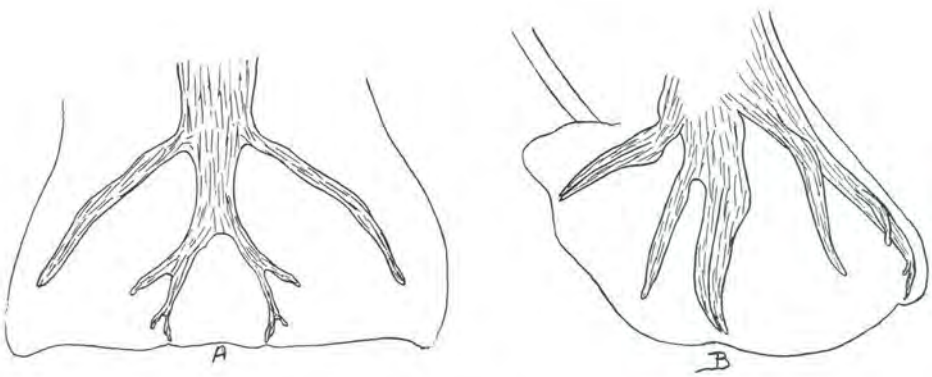


FIG. 3.—*Trachypharynx natalensis* sp. nov.
A. Dorsal ray of bursa; B. Bursa, lateral view.

The tail of the female (Fig. 1B) is short, stumpy and carries a terminal spike-like projection; it is 0·12 to 0·14 mm long. The vulva is situated 0·12 to 0·135 mm anterior to the anus. The vagina is 0·6 to 0·75 mm long and passes straight forward. The two ovejectors are parallel, about 0·36 mm long and consist of the typical structures. The uterus contains numerous oval, thin-shelled eggs developed to the morula-stage. Each egg measures 0·078 to 0·084 mm in length by 0·044 to 0·048 mm in thickness.

## Specific Identification

Strongylidae, males up to 13 mm and females up to 16 mm long; head enlarged in both sexes; ventral cervical groove absent; oesophageal funnel very well developed and provided internally with many recurved teeth in irregular concentric rows; bursa of *Oesophagostomum* type; spicules equal and similar, about 1·8 mm long; vulva near anus; tail of female short, carrying a terminal spike; eggs in uterus oval, thin-shelled, 0·078 to 0·084 mm long and 0·044 to 0·048 mm thick, and developed to morula-stage.

*Host:* Cane rat [*Thryonomys swinderianus* (Temminck)].

*Habitat:* Large intestine.

*Locality:* Zululand, Natal.

*Type* in the Onderstepoort helminthological collection.

## Discussion

In 1911, Leiper created the genus *Trachypharynx* for the accommodation of a single pair of worms collected from a large Nigerian rodent; these worms he named *T. nigeriae*. Unfortunately, the description of these worms is very incomplete and apart from its length no male characters are given. The short description of the female, together with the figure of the cephalic extremity, clearly shows that these specimens and the writer's are co-generic, and the possibility of their being co-specific is not excluded, since the cane rat is also a large rodent. Both the cane rat (*Thryonomys*) and the giant rat (*Cricetomys*) are prevalent in Nigeria. However, from Leiper's description it is not possible to make a close comparison. In order to avoid confusion the writer is treating his specimens as representing a distinct species.

On account of the nature of the bursal rays and spicules this genus is allied to the genera of the sub-family Oesophagostominae. It differs from these genera, however, by the absence of a transverse ventral cervical groove and cephalic swelling and by the presence of a well developed, armed oesophageal funnel. Because of the absence of the cervical groove and the presence of a cylindrical buccal capsule, Yorke & Maplestone (1926) placed this genus in the subfamily Trichoneminae. *Gyalocephalus* Looss, however, is the only genus of this subfamily which has a much enlarged oesophageal head and oesophageal funnel. In this genus the funnel is provided with three large crescentic teeth projecting forward from the base of the funnel into the buccal capsule; and the bursal rays are also differently arranged from those of *Trachypharynx*. In the genus *Colobostrongylus* Sandground, 1929, the ray formula is of the *Oesophagostomum* type, but a cervical groove and inflation of the head are absent and the buccal capsule is large and globular; Sandground did not assign his genus to any particular subfamily but states that it appears to fall between the subfamilies Strongylinae and Trichoneminae, having similarities also

with the subfamily Oesophagostominae. Under the present concepts of these subfamilies the species described above cannot be allocated to any one of them; consequently the writer proposes that a new subfamily, TRACHYPHARYNGINAE be created for its reception. This can be defined as follows: Strongylidae with the bursal characters of the Oesophagostominae, mouth capsule short and cylindrical, corona radiata present, head of oesophagus much enlarged and surrounding a large oesophageal funnel. The oeasophageal funnel carries many recurved teeth arranged irregularly on its inner surface. Vulva just anterior to anus, female tail short. Type genus *Trachypharynx* Leiper, 1911.

The genus *Gyalocephalus* also does not conform to all the requirements of the subfamily Trichoneminae; hence a new subfamily—GYALOCEPHALINAE—is proposed. The differentiation would be: Strongylidae with characters similar to the genus *Trichonema*, but the oesophageal head is much enlarged and encloses a voluminous oesophageal funnel from the base of which three crescentic teeth project forward into the cylindrical buccal capsule. Type genus *Gyalocephalus* Looss, 1900.

For the genus *Colobostrongylus* the subfamily COLOBOSTRONGYLINAE is proposed with the following determinative characteristics: Strongylidae with bursal formula of the *Oesophagostomum* type. Cephalic inflation and transverse ventral cervical groove absent. Mouth capsule relatively large and globular. Type genus *Colobostrongylus* Sandground, 1929.

Additional species *C. sandgroundi* Khalil, 1932.

## SUMMARY

A new species of Strongyliid round worm—*Trachypharynx natalensis*—from the large intestine of the cane rat, is described. A new subfamily—TRACHYPHARYNGINAE—of the Strongylidae is created. New subfamilies of the Strongylidae are also created, viz. GYALOCEPHALINAE, for the genus *Gyalocephalus* Looss, and COLOBOSTRONGYLINAE for the genus *Colobostrongylus* Sandground. The chief characteristics of these new subfamilies are given.

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