

## Strongylidae in Horses

Warrington Yorke & J. W. S. Macfie

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# STRONGYLIDÆ IN HORSES

BY

WARRINGTON YORKE

AND

J. W. S. MACFIE

*From the Liverpool School of Tropical Medicine*

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## INTRODUCTION

Through the courtesy of Major Brittlebank, A.V.C., we have had the opportunity of examining for parasitic worms a number of horses which had recently come from the United States of America and which had died shortly after arrival in this country. Infection with *Strongylidæ* was, in the opinion of the veterinary surgeons, the cause of death.

On post-mortem examination large numbers of many different species of *Strongylidæ* were found in the caecum and colon.

We propose in a series of notes to enumerate the species found, and to describe those which have not hitherto been recognised.

*Technique.* The worms, which were removed from the intestine as soon after death as possible, were fixed in hot 70 per cent. alcohol. They were subsequently slowly impregnated with glycerine by placing them in a solution of 70 per cent. alcohol containing 5 per cent. glycerine and allowing the alcohol to evaporate off at 37° C.; when impregnation was complete they were mounted in glycerine jelly (*vide* Looss, 1901).

In the following descriptions, terms such as 'long' or 'short' having a purely relative value are, so far as possible, replaced or supplemented by figures obtained by actual measurement. For example, it is of little value to know that the oesophagus or dorsal

lobe of the bursa is 'long' or 'short.' It is of greater assistance to know that these structures are of a certain definite length, but even this information hardly conveys any accurate impression unless it is associated with the length of the worm. In the following notes, therefore, we propose to express such lengths as that of the oesophagus or that of the main trunk of the posterior ray of the bursa, measured from the tip to the point of origin of the postero-external ray, as ratios of the total length of the worm.

### 1. *CYLICOSTOMUM LONGIBURSATUM* sp. n.

**SIZE AND SHAPE.** A small slender species of the GENUS *Cylicostomum*; on account of the remarkably long dorsal lobe of the bursa, the males and females are of about the same length. Ten males and ten females were measured. The males were from 4·8 to 5·5 mm. in length, average 5·1 mm.; the females were from 4·7 to 5·7 mm., average 5·1 mm.; the greatest breadth, in those worms which were properly orientated (lying on dorsal surface), averaged, males 182 $\mu$ , females 232 $\mu$ .

**HEAD.** The head is separated from the body by a slight neck.

*Mouth collar.* Marked off from the rest of the skin by a sharp constriction. The mouth is circular in transverse section.

*Head papillae.* Sub-median, project anteriorly slightly beyond the external leaf crown; near their extremities are minute lateral notches: lateral, not projecting beyond the surface of the mouth collar.

*Mouth capsule.* Circular in transverse section; the walls of the mouth capsule seen in optical section are slightly kneed, they are moderately stout and diverge from before backwards, so that the cavity has the shape of a truncated cone (fig. 1). The antero-posterior diameter (i.e. the distance from the anterior to the posterior opening) of the cavity in ten worms varied from 17·5 $\mu$  to 20 $\mu$ , average 19 $\mu$ ; the lateral diameter at the anterior opening varied from 18 $\mu$  to 20 $\mu$ , average 19 $\mu$ , and that at the posterior opening from 24 $\mu$  to 28 $\mu$ , average 26 $\mu$ . The ratio of the lateral diameter of the anterior opening of the mouth capsule to the antero-posterior diameter is 1 to 1.

*Dorsal oesophageal gutter.* Projects slightly into the buccal cavity, but does not extend further than a fourth of the antero-posterior diameter.

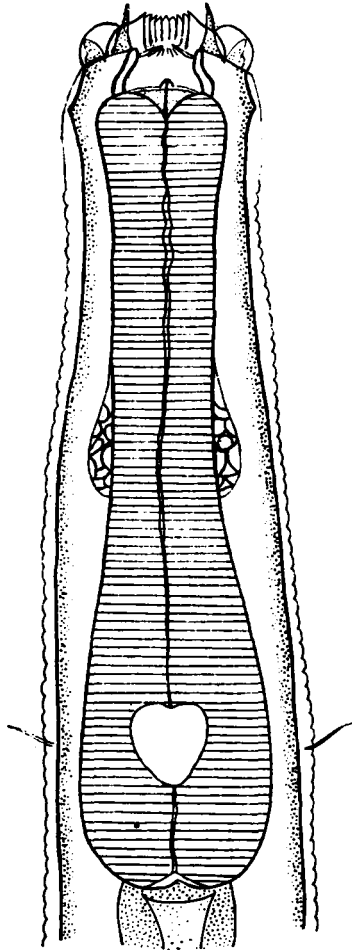


FIG. 1. *Cylicostomum longibursatum* sp. n.

Anterior extremity, ventral view,  $\times 360$ .

*Leaf crowns.* The external leaf crown consists of eighteen long narrow elements pointed at the tips arising from the mouth collar. The internal leaf crown consists of about the same number of short

and broad elements arising near the anterior opening of the buccal cavity.

**OESOPHAGUS.** The length in ten males varied from  $248\mu$  to  $292\mu$ , average  $271\mu$ , and the greatest width from  $53\mu$  to  $64\mu$ , average  $57\mu$ ; in ten females the length varied from  $259\mu$  to  $290\mu$ , average  $270\mu$ , and the greatest width from  $51\mu$  to  $63\mu$ , average  $58\mu$ . In both sexes, therefore, the ratio of average greatest breadth to average length is 1 to 4.7; and the ratio of the length of the oesophagus to that of the worm is 1 to 19.

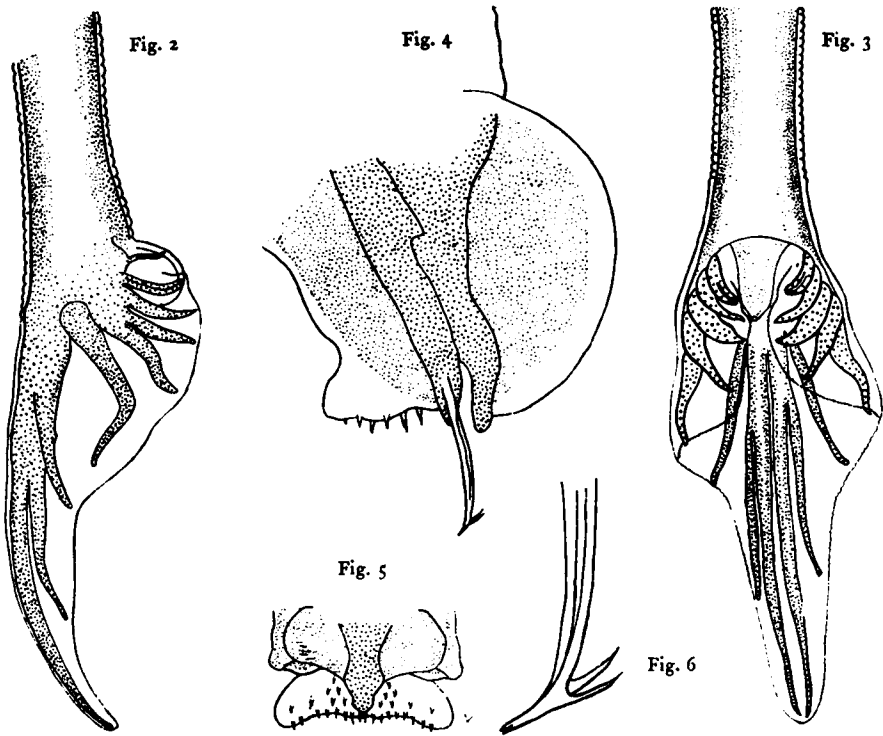
**EXCRETORY BLADDER.** Lies over the posterior fourth of the oesophagus. The distance of its posterior margin from the posterior extremity of the oesophagus varies somewhat, e.g. in seven worms from  $26\mu$  to  $63\mu$ , average  $42\mu$ .

**CERVICAL PAPILLAE.** These are found about the level of the excretory bladder. In nine worms their distance from the posterior end of the oesophagus varied from  $36\mu$  to  $75\mu$ , average  $58\mu$ .

**POSTERIOR EXTREMITY OF MALE.** The dorsal lobe of the bursa is strikingly long and narrow. The arrangement of the posterior rays and their branches is shown in fig. 3. The worm resembles *C. calicatum* in that the main trunks of the posterior ray extend almost to the tip of the dorsal lobe, whereas the lower or second lateral branches terminate a considerable distance from the tip of the dorsal lobe. In ten worms the length of the main trunks of the posterior ray, from the tip to the point of origin of the postero-external rays, varied from  $594\mu$  to  $659\mu$ , average  $631\mu$ . The ratio of the average length of the main trunks of the posterior ray to the average length of the male worm is 1 to 8.

**Genital Cone.** The dermal collar is well developed on both the dorsal and ventral surfaces of the genital cone. The genital appendages are conical when viewed laterally, but broad and united in the middle line when viewed ventrally; their ventral surface is beset with small papillae (figs. 4 and 5).

**Spicules.** The ends of the spicules are barbed, as shown in fig. 6.



FIGS. 2-6. *Cylicostomum longibursatum* sp. n.

Fig. 2: Posterior extremity of male, lateral view,  $\times 90$ . Fig. 3: Posterior extremity of male, ventral view,  $\times 90$ . Fig. 4: Genital cone and appendages, lateral view,  $\times 360$ . Fig. 5: Genital appendages, ventral view,  $\times 360$ . Fig. 6: Ends of the spicules,  $\times 1360$ .

**POSTERIOR EXTREMITY OF FEMALE.** The end of the body is straight and tapers slightly. The tail, which is distinctly demarcated from the end of the body, is straight, fairly long and tapers gradually to a point (fig. 7). In ten worms the distance between the anus and vulva varied from  $51\mu$  to  $73\mu$ , average  $62\mu$ ; and the distance measured straight along the middle of the tail from the tip to a line drawn horizontally through the anus varied from  $95\mu$  to  $124\mu$ , average  $104\mu$ .

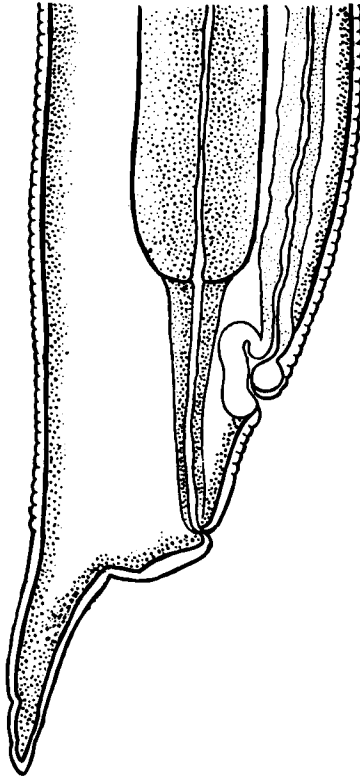


FIG. 7. *Cyclostomum longibursatum* sp. n.

Posterior extremity of female, lateral view,  $\times 360$ .

**DIAGNOSIS.** The following are the chief diagnostic characters of this species :—

1. Very small size; average length, male and female, 5·1 mm.
2. Buccal capsule: anterior opening circular; walls, when seen in optical section, kneed; ratio of breadth at anterior opening to antero-posterior diameter 1 to 1.
3. Dorsal oesophageal gutter projects slightly into buccal capsule.
4. Dorsal lobe of bursa very long and narrow; ratio of length of posterior ray to total length of male worm 1 to 8.
5. Termination of female body and tail straight.

#### REFERENCE

- Looss, A. (1901). The Sclerostomidae of Horses and Donkeys in Egypt. *Records of the School of Medicine, Cairo*, Vol. I.