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ON THE GENUS *CYLICOSTOMUM**

BY

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Last year (1920 *a*, p. 268) I published an enumeration of the species of the genus *Cylicostomum*, and divided this genus into eight groups, of which three had been distinguished by Looss (1902, pp. 130-132). Since that time some new species have been described. Moreover, I think it necessary to modify somewhat the groups, so that I now divide the *Cylicostomum* species as follows:—

I. *Tetracanthum-coronatum* group.

The external leaf-crown is composed of eighteen to twenty-four elements; those of the internal leaf-crown are thin, triangular plates, the place of origin of the latter extending in a backward direction to some distance from the anterior margin of the mouth-capsule. Mouth-capsule rather short. Posterior extremity of the ♀ straight or slightly bent in a dorsal direction.

* Of late, some authors (Railliet, Travassos) use, instead of the name *Cylicostomum*, the genus-name *Tricbonema*, which ought to be used according to the law of priority. In 1874, Cobbold (*Veterinarian*, Vol. XLVII, p. 85) described under the name *Tricbonema arcuata* larvae of *Cylicostomum*. One year later (*Veterinarian*, Vol. XLVIII, p. 241) he established the fact that this *Tricbonema* is the larva of '*Strongylus tetracanthus*,' the present genus *Cylicostomum* Railliet. As, however, the law of priority must be applied 'when any stage in the life-history is named before the adult,' and the name *Cylicostomum* (Railliet, *L'Écho Vétérin.*, Vol. XXXI, p. 40) is used in 1901 for the first time, *Tricbonema* ought to be used.

It does not seem advisable to me in this, nor in the like cases, to adhere to the rules of zoological nomenclature, when, owing to this, a completely familiar name would be replaced by one still entirely unknown. Neither did I always adhere to the law of priority in my revision of the Trematodes, Cestodes and Nematodes of domestic animals, in the third edition of Sluiter and Swellengrebel, 'De dierlijke parasieten van den mensch en van onze huisdieren.'

1. *C. tetracanthum* (Looss), 1902, p. 124.
2. *C. labratum* (Looss), 1902, p. 124. H.*
3. *C. ornatum*, Kotlán, 1919, p. 10.
4. *C. labiatum* (Looss), 1902, p. 125.
- 4a. *C. labiatum* (Looss) var. *digitatum*, n. var. H.
5. *C. sagittatum*, Kotlán, 1920, p. 4.
6. *C. coronatum* (Looss), 1902, p. 125. H.

II. *Alveatum-catinatum* group.

The external leaf-crown consists of twenty to twenty-nine elements; those of the internal leaf-crown are similar to those of the first group. Posterior extremity of the ♀ strongly bent in a dorsal direction, with a swelling before the vulva, so that it reminds one of a human foot, seen laterally.

7. *C. alveatum* (Looss), 1902, p. 127.
8. *C. catinatum* (Looss), 1902, p. 128.
- 8a. *C. catinatum* (Looss), var. *litoraureum*, Yorke and Macfie, 1920, p. 166.
9. *C. pseudocatinatum*, Yorke and Macfie, 1919, p. 273. H.
10. *C. pateratum*, Yorke and Macfie, 1919a, p. 57 (= *C. cymatostomum*, Kotlán, 1919, p. 11). H.
11. *C. goldi*, Boulenger, 1917, p. 210. H.
12. *C. tridentatum*, Yorke and Macfie, 1920, p. 153.
13. *C. mettami*, Leiper, 1913, p. 460.

C. tridentatum and *C. goldi* are evidently closely allied species, as I found the three teeth of the oesophageal funnel of *C. tridentatum*, described by Yorke and Macfie, also in *C. goldi*. They are visible only in thoroughly transparent specimens with clean mouth-capsule.

It seems to me that *C. pseudocatinatum* must be considered a variety of *C. catinatum*. The former does not differ more from *C. catinatum* than does *C. catinatum* var. *litoraureum*, Yorke and Macfie. Both differ from *C. catinatum* in the appendages of the genital cone. Moreover, the appendages of *C. catinatum litoraureum* are more like those of *C. pseudocatinatum* than like those of the typical *catinatum* form. So when we consider *litoraureum* a variety as Yorke and Macfie do, this also applies to *pseudocatinatum*.

* The species occurring in Holland are marked H.

III. *Radiatum-elongatum* group.

Mouth-capsule with a hoop-like thickening at the posterior margin. Elements of the internal leaf-crown generally small and numerous, originating close to the anterior margin of the mouth-capsule. Posterior extremity of the ♀ straight, or slightly bent in a dorsal direction.

14. *C. radiatum* (Looss), 1902, p. 129.
15. *C. triramosum*, Yorke and Macfie, 1920, p. 175.
16. *C. elongatum* (Looss), 1902, p. 129. H.
- 16a. *C. elongatum* (Looss) var. *Kotláni*, Ihle, 1920, p. 269 (= *C. elongatum* var. *macrobursatum*, Kotlán, 1920, p. 6). H.
17. *C. insigne*, Boulenger, 1917, p. 207. H.
18. *C. zebrae*, Boulenger, 1920 a, p. 102.
19. *C. adersi*, Boulenger, 1920, p. 30.
20. *C. nassatum* (Looss), 1902, p. 128.
- 20a. *C. nassatum* (Looss) var. *parvum*, Yorke and Macfie (1918, p. 400). H.
21. *C. leptostomum*, Kotlán, 1920, p. 3. H.
22. *C. auriculatum* (Looss), 1902, p. 130.

The ♀ of the species last mentioned forms a transition to the *alveatum-catinatum* group by the form of its posterior extremity.

In this group I now also include *C. leptostomum*, Kotlán, a species about which Kotlán published a description in Hungarian only; the author was so kind, however, as to send me a German translation. *C. leptostomum* is closely allied to *C. nassatum*, from which it is distinguished by the posterior extremity of the ♀ being straight.

IV. *Calicatum* group.

Mouth-capsule mostly cylindrical or trapezium-shaped in optical section. Elements of the internal leaf-crown mostly short and implanted in the immediate neighbourhood of the anterior margin of the mouth-capsule. Posterior end of the ♀ mostly straight.

23. *C. calicatum* (Looss), 1902, p. 127. H.
24. *C. minutum*, Yorke and Macfie, 1918, p. 405 (= *C. calicatum* var. *minus*, Kotlán, 1920, p. 6). H.

25. *C. longibursatum*, Yorke and Macfie, 1918, p. 400
(= *C. caliciforme*, Kotlán, 1919 a, p. 559 = *C. nanum*,
Ihle, 1919, p. 720). H.
26. *C. hybridum*, Kotlán, 1920, p. 5.
27. *C. poculatum* (Looss), 1902, p. 126. H.

The last mentioned species differs considerably from *C. calicatum* (e.g., in the bursa, which is closed all round and has a finely denticulated border) so that Looss (1902, p. 132) did not group them under one head.

V. *Euproctus-bicoronatum* group.

The external leaf-crown mostly consists of numerous slender elements; the elements of the internal leaf-crown are extremely large. The posterior extremity of the ♀ is straight.

28. *C. euproctus*, Boulenger, 1917, p. 204. H.
29. *C. bicoronatum* (Looss), 1902, p. 125. H.
30. *C. ihlei*, Kotlán, 1921, p. 300. H.
31. *C. ultrajectinum*, Ihle, 1920 a, p. 269; 1921, p. 372. H.

For the present, some heterogenous elements are taken together in this group, characterized by the possession of very large elements of the internal leaf-crown.

C. ihlei is closely allied to the genus *Poteriostomum* in structure of mouth-capsule and leaf-crowns. The fact, however, that the bursa copulatrix of this species shows the typical characteristics of *Cylicostomum* and differs from that of *Poteriostomum*, supports the opinion, shared by Yorke and Macfie (1920, p. 159), that *Poteriostomum* must be considered an independent genus contrary to Kotlán's view (1921, p. 299).

Formerly, I considered *C. ultrajectinum* to belong to the *radiatum-elongatum* group, with which it agrees in the thickened posterior margin of the mouth-capsule, from which it differs, however, in the size of the elements of the internal leaf-crown. It is, however, also considerably different from the other species of the *euproctus-bicoronatum* group in size and number of the elements of the external leaf-crown. Yorke and Macfie (1920, p. 162) expressed the opinion that *C. ultrajectinum* might belong to the genus

Poteriostomum. It has become evident, however (Ihle, 1921, p. 372), that the bursa copulatrix resembles that of the other *Cylicostomum* species in every respect, so that it is certain that this species belongs to the genus *Cylicostomum*.

VI. *Brevicapsulatum* group.

Mouth-capsule extremely short. Posterior extremity of the ♀ straight.

32. *C. brevicapsulatum*, Ihle, 1920, p. 562. H.

33. *C. prionodes*, Kotlán, 1921, p. 305.

These two species differ considerably, but they can be grouped together for the present.

VII. *Montgomeryi* group.

The dorsal and ventral walls of the mouth-capsule are much longer than the lateral walls.

34. *C. montgomeryi*, Boulenger, 1920 a, p. 104.

I will conclude by describing a new variety of *C. labiatum* (Looss), of which I found a small number of specimens in the large intestine of the horse in Holland.

Cylicostomum labiatum (Looss) var. *digitatum*, nov. var.

The new variety agrees in the main (mouth-collar, mouth-capsule) with the typical form.

♂ 7 to 8 mm., the immature ♀ 8 to $8\frac{3}{4}$ mm. long. Oesophagus 345 to 410μ long. The bursa copulatrix has a dorsal lobe, which varies in length and is mostly longer than in the typical form. The distance from the extremity of D^{3*} to the point of origin of the postero-external ray varies from 310μ to 380μ . The posterior part of the dermal collar shows the processes occurring in the typical form. The chief difference from the typical form is that the new variety shows finger-like processes on both sides of the posterior part of the genital cone, which are absent in the typical form. The number and form of these processes perhaps fluctuate. (In one case I counted three on each side.) The posterior extremity of the ♀ is like that of the typical form. The distance from the vulva to the

* The short stem which the dorsal rays have in common, I name D⁰, the two main trunks D, the side branches, from before backwards, D¹, D², and D³. In *Cylicostomum* D³ forms the immediate continuation of D.

anus is smaller however (ca. 95μ) than in the typical form; the distance from the anus to the posterior extremity is 86μ to 110μ ,

FIG. 1. *Cylicostomum labiatum* var. *digitatum*. Dorsal lobe of the bursa.

FIG. 2. *Cylicostomum labiatum* var. *digitatum*. Processes of the genital cone, lateral view.

FIG. 3. *Cylicostomum labiatum* var. *digitatum*. Posterior extremity of female, lateral view.

measured along the axis of the body. The conical end of the body is bent somewhat in a ventral direction.

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