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CESTODES IN THE COLLECTION OF THE INDIAN MUSEUM

BY

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A. MAMMALS

The parasites described below were obtained, with a few exceptions, from animals which died in the Zoological Gardens, Calcutta.

I do not propose dealing in this paper with the synonymy of the forms recorded.

Family *TAENIIDAE*, Ludwig, 1886

Taenia crassicollis, Rudolphi, 1810

1. One specimen from a cat. Punjab Civil Veterinary College, Lahore, 30.1.14.

2. Three complete specimens from the intestine of *Felis viverrina*. Zoological Gardens, Calcutta, collected by the author, 11.11.14.

3. Another specimen without a head, collected from the same host by the author, 17.2.16.

4. One specimen from the same host. Tollygunge, Calcutta, 9.4.20.

Taenia serrata, Goeze, 1782

1. One specimen from *Felis tigris*. Sukna, Darjeeling district, Bengal, 17.3.17.

2. Two complete and mature specimens from same host, shot at Sevoke, Darjeeling district, Bengal, 3.2.17.

Taenia pisiformis (Bloch, 1780), Gmelin, 1790

One complete specimen from intestine of *Felis leo*. Zoological Gardens, Calcutta, collected by the author, 3.1.16.

Taenia sp.

Eight specimens from the intestine of *Felis pardus*. Zoological Gardens, Calcutta, collected by the author, 19.1.15.

The specimens measured about 1 cm. long and 0·5 mm. broad; they were all immature, no trace of genitalia being visible.

The head was armed with a double row of hooks, the number varying from thirteen to seventeen in each row. The large hooks measured from 135μ to 145μ, and the smaller from 90μ to 100μ.

About fifty segments only were present; the neck measured about 750μ. As the specimens were quite immature, it was impossible to say whether they were new or not.

The following species have been recorded from:—

(1) *Felis concolar*

(*a*) *T. ammonitiformis*, Baird, 1862, possesses only a single row of hooks.

(*b*) *T. oligarthra*, Diesing, 1863, has only three to four segments.

(2) *Felis pardus*

(*a*) *T. polycalcaria*, Linstow, 1903, possesses two rows, each row with nineteen hooks, measuring 238μ and 158μ.

(*b*) *T. serrata*, Goeze, 1782, has two rows each with twenty to twenty-one hooks, which measure 250μ to 260μ and 150μ to 155μ.

It is, of course, quite probable that in the worm in question the hooks would have increased in size as it matured, and that it may be either of the last two species.

Taenia sp.

Fragments comprising a few segments (all sterile) of what appeared to be a *Taenia* sp. were obtained from the intestine of a dog at Lahore. No date.

Taenia sp.

Fragments from the intestine of *Felis tigris*. Zoological Gardens, Calcutta, collected by the author, 22.2.16.

No head was present and no gravid uterus, hence the determination of these fragments was impossible, but superficially they resembled segments of *T. serrata*.

Taenia sp.

One specimen without head from the intestine of *Ursus torquatus* (bear). Zoological Gardens, Calcutta, collected by the author, 21.9.15.

The worm measured about 1 m.; the segments at the anterior end were square and mature. The genital pore was prominent, and, in gravid segments, was situated posterior to the middle of the segment. The worm resembles *T. pisiformis* externally, but the eggs are round and measure 40μ to 45μ; those of *T. pisiformis* are oval and measure about 37μ by 32μ.

Cysticercus fasciolaris, Rudolphi, 1808

1. *Mus rattus.* Berhampore, Bengal. Collected by Lt.-Col. Clayton Lane and numbered Z.E.V. $\frac{5416}{7}$ in the collection of the Indian Museum. No date.

2. *Mus decumanus.* Collected by Lt.-Col. Alcock and numbered Z.E.V. $\frac{2367}{7}$ in the collection of the Indian Museum. Locality and date not given.

3. Rat. Civil Veterinary College, Lahore. Numbered Z.E.V. $\frac{4672}{7}$ in the collection of the Indian Museum. No date or locality given.

4. Liver of rat. Collected by Dr. D. E. Muir. No date or locality given.

5. *Mus rattus.* Calcutta. Collected by Lt.-Col. Clayton Lane. Numbered Z.E.V $\frac{927}{7}$ in the collection of the Indian Museum. No date.

Cysticercus cellulosae (Gmelin, 1790), Rudolphi, 1808

One specimen from human brain, Colombo, collected by the author, June, 1911.

Cysticercus tenuicollis, Rudolphi, 1810

Four specimens from the four-horned antelope (*Tetracercus quadricornis*). Zoological Gardens, Calcutta, collected by the author, February, 1914.

Cysticercus sp.

Collected by Capt. Boulenger, 14.12.18. Host and locality unknown.

Family *HYMENOLEPIDIDAE*, Railliet and Henry, 1909

Sub-family (1) *HYMENOLEPIDINAE*, Ransom, 1909

Hymenolepis murina (Duj., 1845), R. Blanchard, 1891

A few specimens from the following sources:—

1. No history. Numbered Z.E.V. $\frac{4689}{7}$ in the collection of the Indian Museum.

2. From a rat. Civil Veterinary College, Lahore, Punjab, no date. Numbered Z.E.V. $\frac{4672}{7}$ in the collection of the Indian Museum.

3. From *Mus decumanus*, collected by Lt.-Col. Alcock, I.M.S., Calcutta. No date. Numbered Z.E.V. $\frac{2367}{7}$ in the collection of the Indian Museum.

Hymenolepis diminuta (Rudolphi, 1819), R. Blanchard, 1891

1. A few specimens from the intestine of a rat, London. Numbered W. $\frac{16}{1}$ in the collection of the Indian Museum.

2. A few specimens from the intestine of *Mus rattus*, Hong Kong, collected by Capt. F. H. Stewart, I.M.S., and numbered W. $\frac{17}{1}$ in the collection of the Indian Museum. No date.

Sub-family (2) *DIPYLIDIINAE*, Stiles, 1896

Dipylidium caninum (Linn., 1758), Railliet, 1892

1. From a cat, Egypt. Numbered Z.E.V. $\frac{2979}{7}$ in the collection of the Indian Museum. No date.

2. From the intestine of a cat, Punjab Civil Veterinary College, Lahore, 30.1.14.

3. From the intestine of a dog. Numbered Z.E.V. $\frac{5505}{7}$ in the collection of the Indian Museum. Locality and date not given.

4. From the intestine of a dog, Lahore. No date. Numbered Z.E.V. $\frac{4675}{7}$ in the collection of the Indian Museum.

5. From the intestine of a dog, Ceylon Medical College, Colombo. Numbered Z.E.V. $\frac{5507}{7}$ in the collection of the Indian Museum. No date.

6. Several specimens. Locality, host, and date not given. Numbered Z.E.V. $\frac{2979}{7}$ in the collection of the Indian Museum.

7. Two specimens from the intestine of *Felis viverrina*. Zoological Gardens, Calcutta, 23.5.19.

8. Three specimens from the intestine of *Hyaena striata*. Zoological Gardens, Calcutta, collected by the author, 17.8.15.

9. Several specimens from *Paradoxurus grayi* (Himalayan palm-civet). Zoological Gardens, Calcutta, collected by the author, 29.3.15.

Dipylidium gervaisi, Setti, 1895

1. One specimen from the intestine of *Felis viverrina*. Zoological Gardens, Calcutta, 30.5.19.

2. Several specimens from the intestine of *Paradoxurus hermaphroditicus* (Malayan palm-civet). Zoological Gardens, Calcutta, collected by the author, 18.5.15.

Family *ANOPLOCEPHALIDAE*, Führmann, 1907

Sub-family *ANOPLOCEPHALINAE*, Blanchard, 1891

Anoplocephala vulgaris, Southwell, 1920

One specimen from *Rhinoceros sondiacus*. No date or locality. Numbered Z.E.V. $\frac{4680}{7}$ in the collection of the Indian Museum.

From a superficial examination of this worm in 1916, I was led to the opinion that it probably belonged to the genus *Thysanosoma*. A more careful examination of the anatomy has, however, left no doubt that it is an *Anoplocephala*, identical with the species *vulgaris*.

Bertiella satyra (R. Blanchard, 1891), Stiles and Hassall, 1902

One specimen without head, from the intestine of *Simia satyrus*. Zoological Gardens, Calcutta, collected by the author, 5.4.16.

Cittotaenia mosaica, Hall, 1908

A few specimens from *Lepus ruficaudatus*, Songara, Gonda district, United Provinces, India. Museum collector (R. Hodgart). Numbered Z.E.V. $\frac{2771}{7}$ in the collection of the Indian Museum. As a result of a preliminary examination, this species was identified as *C. bursaria*, Linstow, 1906. More careful examination of prepared

slides left no room for doubt that they are identical with Hall's specimens.

Moniezia trigonophora, Stiles and Hassall, 1892

1. An immature specimen from the intestine of a black buck (*A. cervicapra*). Zoological Gardens, Calcutta, collected by the author, 30.8.13. Numbered Z.E.V. $\frac{6044}{7}$ in the collection of the Indian Museum.

2. One specimen from the intestine of a four-horned antelope (*Tetracercus quadricornis*. Zoological Gardens, Calcutta, collected by the author, 19.8.19.

Moniezia oblongiceps, Stiles and Hassall, 1893

One specimen from the intestine of a domestic goat, Rangoon, Burma, collected by Dr. A. A. Marshall, 8.8.16.

Moniezia alba (Per., 1879), R. Blanchard, 1891

1. A few specimens from the intestine of *Bos grunniens* (Yak), Tibet, 26.6.16.

2. Other specimens of this species were obtained from sheep, Civil Veterinary College, Lahore, Punjab, 31.1.14.

Moniezia expansa (Rudolphi, 1810), R. Blanchard, 1891

One specimen from the intestine of a domestic goat, Rangoon, *cercus quadricornis*). Zoological Gardens, Calcutta, collected by the author 1.2.13, and numbered Z.E.V. $\frac{6160}{7}$ in the collection of the Indian Museum.

Moniezia neumanni, Moniez, 1891

One specimen from the intestine of a sheep. Civil Veterinary College, Lahore, Punjab, 31.1.14.

Avitellina centripunctata (Riv., 1874), Gough, 1911

Numerous specimens from cattle. Civil Veterinary College, Lahore, Punjab. No date.

Stilesia globipunctata (Riv., 1874), Railliet, 1893

Numerous specimens from sheep. Civil Veterinary College, Lahore, Punjab, 31.1.14.

Family *DIBOTHRIOCEPHALIDAE*, Lühe, 1902

Bothriocephalus maculatus (Leuckart, 1848), Lühe, 1899

Very numerous specimens, all immature, measuring about 10 cms. long and 1·5 mm. broad, from the intestine of *Felis pardus* (black leopard). Zoological Gardens, Calcutta, collected by the author, 31.12.14.

Bothriocephalus sulcatus (Molin, 1858), Linstow, 1878

Two small specimens measuring about 10 cms. long and 3 mm. broad, from the intestine of *Felis pardus*. Zoological Gardens, Calcutta, collected by the author, 5.2.14.

Bothriocephalus decipiens (Diesing, 1850), Lühe, 1899

1. Very numerous specimens (mostly just mature), from the intestine of *Felis tigris*. Zoological Gardens, Calcutta, 23.2.19.

2. Another specimen without head, which appeared to belong to this species, was obtained from the intestine of *Felis pardus*. Zoological Gardens, Calcutta, collected by the author, 10.2.16.

Bothriocephalus sp.

One specimen from a black leopard. Collected by the author, 12.5.13.

The specimen measured 2 cms. long and its greatest breadth was 1·2 mm. As it was quite immature, it is impossible to assign it to any particular species.

Bothriocephalus sp.

From *Paradoxurus grayi* (Himalayan palm-civet). One specimen 10 cms. long and 6 to 7 mm. wide. No head. Zoological Gardens, collected by the author, 19.2.16.

Order *TETRAPHYLLIDEA*, Carus, 1863

Genus *Ophiotaenia*, La Rue, 1911

The systematic position of this genus within the above order is a matter of some uncertainty.

Ophiotaenia punica (Cholodkovski, 1908), La Rue, 1911

Four specimens (one immature), from *Paradoxurus hermaphroditicus* (Malayan palm-civet). Zoological Gardens, Calcutta, collected by the author, 18.5.15.

The largest specimen measured about 30 cms. long and 4 mm. broad. The cirrus was spiny; otherwise the worm agreed in detail with the description of this species given by La Rue.

Cholodkovski obtained the parasite from a dog in Tunis (1908); Hall, Ransom and La Rue were all of opinion that the normal host is a snake, and that the presence of the worm in a dog was to be accounted for by the dog having eaten a snake. On this hypothesis we have to assume that the Malayan palm-civet must likewise have eaten a snake which harboured the adult worm, but its presence in both a dog and a cat, each from different localities, is of note.

Cestoda sp.

About ten segments of a worm from the intestine of *Loris gracilis*. Zoological Gardens, Calcutta, collected by the author, 29.7.16. They measure about 2 mm. wide and are much broader than long. The genital pores are irregularly alternate. The ovary is central, anterior and fan-shaped, the testes being posterior and extending across the segment. The cirrus is unarmed. Eggs round and measuring 35μ, not in capsules; they have double coverings and contain a hexacanth embryo. Pyriform apparatus absent. Owing to lack of material and the absence of a head, it is impossible to say with certainty to which genus the specimens belong.

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