

FAUNA OF RAJASTHAN, INDIA

PART 9.—CESTODA

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(With 9 Text-figures)

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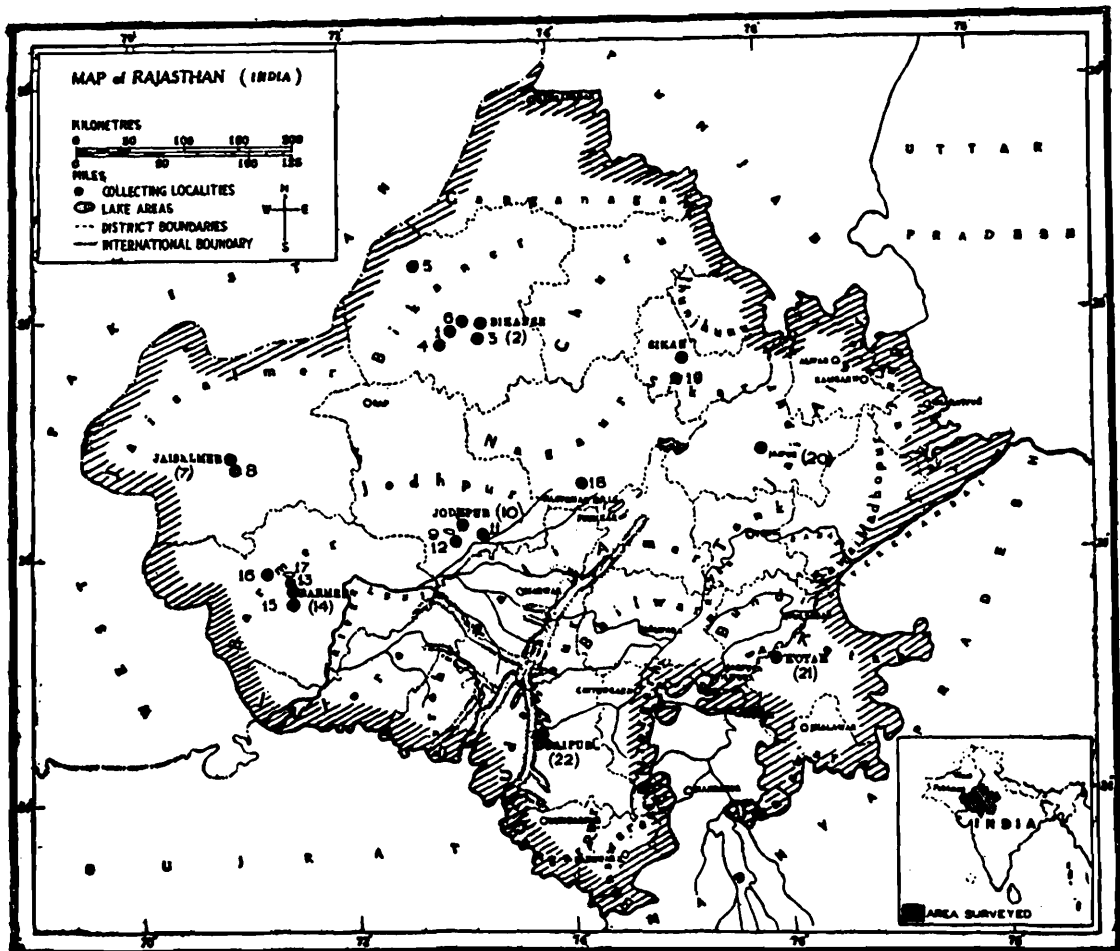
I—INTRODUCTION

A study of the literature reveals that only a few cestodes have been reported from Rajasthan. This paper deals with the cestode parasite collected in recent years from various hosts by Dr. P. D. Gupta and other parties of the Zoological Survey of India from different parts of Rajasthan. The author is of the opinion that further studies of these parasites from Rajasthan may bring to light some more new forms or new records. It is hoped that this paper may be of some help to the future workers. Unless otherwise mentioned all the specimens which form the basis of this paper were collected by Dr. P. D. Gupta.

A total of 26 species belonging to 16 genera are recorded here. Of these all but one (*Vampirolepis nana*) are new records from Rajasthan ; and 8 species are new to science.

Acknowledgement.—The author feels grateful to Dr. M. L. Roonwal, Director, Zoological Survey of India, Calcutta, for his encouragement, necessary help, for providing facilities throughout the work, for placing the specimens at the disposal of the author and for going through the manuscript.

II—LIST OF COLLECTING STATIONS FOR RAJASTHAN CESTODE



TEXT-FIG. 1.—Map of Rajasthan, showing the collecting localities for cestodes, (The number given refers to the serial number of locality in the list of collecting stations in the text).

A total of 22 Collecting Stations in 9 districts of Rajasthan from which the cestodes were obtained are listed below. A few places marked with an asterisk (*) refer to those taken from the published literature. The serial numbers given below will also be found in the map (Text-fig. 1). The approximate longitudes and latitudes are also given.

1. Bikaner District

Place	Long. E.	Lat. N.
1. Sobasar village	73°10'	28°05'
2. Bikaner	73°22'	28°01'
3. Devikund	73°18'	27°56'
4. Kolayat	72°58'	27°50'
5. Pungal	72°48'	28°30'
6. Gajner road (3 km. W. of Bikaner)

2. Jaisalmer District

1. Jaisalmer	70°57'	26°55'
2. Goreshwar (3 km. S. E. of Jaisalmer)	70°57'	26°55'

3. Jodhpur District

9. Kailana tank	72°58'	26°19'
10. Jodhpur	73°04'	26°18'
11. Bilaspur Dam	73°27'	26°18'
12. Umedsagar	72°55'	26°15'

4. Barmer District

13. Nehru-Nagar (1 km. N. of Barmer)	71°23'	25°45'
14. Barmer	71°25'	25°45'
15. Sujer Hills	71°23'	25°45'
16. Kapurdi	71°20'	25°50'
17. Bhap talao	71°26'	25°51'

5. Nagaur District

18. Merta	74°06'	26°35'
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6. Sikar District

19. Choka-Ka-Bas (16 km. S. of Sikar)	75°08'	27°29'
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7. Jaipur District

*20. Jaipur	75°52'	26°55'
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8. Kotah District

*21. Kotah	75°52'	25°10'
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9. Udaipur District

*22. Udaipur	73°42'	24°35'
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III—LISTS OF CESTODES KNOWN FROM RAJASTHAN

Note.—All the species except one (No. 20, marked *) are new records from Rajasthan; 8 species are new.

Class I. CESTODA

Subclass (a) *EUCESTODA* SouthwellOrder (1) *PSEUDOPHYLLIDEA* CarusFamily (i) *DIPHYLLOBOTHRIDAE* LüheGenus 1. *Duthiersia* Perrier1. *Duthiersia fimbriata* (Diesing)Order (2) *PROTEOCEPHALIDEA* MolaFamily (i) *PROTEOCEPHALIDAE* La RueGenus. 1. *Proteocephalus* Weinland2. *Proteocephalus woodlandi* MogheOrder (3) *CYCLOPHYLLIDEA* Ben in BraunFamily (i) *ANOPLOCEPHALIDAE* CholodkovskyGenus 1. *Oochoristica* Lühe3. *Oochoristica tuberculata* (Rudolphi)Family (ii) *DAVAINEIDAE* FuhrmannSubfamily (i) *Davaineinae* BraunGenus 1. *Raillietina* FuhrmannSubgenus (1) *Raillietina* Stiles and Orleman4. *Raillietina (Raillietina) polychalix* (Kotlan)5. *Raillietina (Raillietina) torquata* (Meggitt)6. *Raillietina (Raillietina) quxdritesticulata* Moghe7. *Raillietina (Raillietina) nagpurensis* MogheSubgenus (2) *Paroniella* Fuhrmann8. *Raillietina (Paroniella) barmerensis* n. sp.Genus 2. *Davainea* Blanchard9. *Davainea himantopodis* JohnstonGenus 3. *Cotugnia* Diamare10. *Cotugnia cuneata* Meggitt11. *Cotugnia bikanerensis* sp. n.Family (iii) *DILEPIDIDAE* Railliet and HenrySubfamily (i) *Dilepidinae* FuhrmannGenus 1. *Laterorchites* Fuhrmann

12. *Laterorchites rajasthanensis* n. sp.
Genus 2. *Paricterotaenia* Fuhrmann
13. *Paricterotaenia coronata* (Creplin)
14. *Paricterotaenia sujerensis* n. sp.
Subfamily (ii) *Dipylidiinae* Stiles
Genus 1. *Choanotaenia* Railliet
15. *Choanotaenia kapurdiensis* n. sp.
16. *Choanotaenia croaxum* n. sp.
Family (iv) HYMENOLEPIDIDAE Railliet and Henry
Subfamily (i) *Hymenolepidinae* Perrier
Genus 1. *Sobolevicanthus* Spassky & Spasskaja
17. *Sobolevicanthus gracilis* (Zeder)
18. *Sobolevicanthus serratus birmanicus* (Meggitt)
Genus 2. *Hymenolepis* Weinland
19. *Hymenolepis diminuta* (Rudolphi)
Genus 3. *Vampirolepis* Spassky
20. *Vampirolepis nana* (Siebold)
Genus 4. *Myotolepis* Spassky
21. *Myotolepis jaisalmerensis* n. sp.
Genus 5. *Diorchis* Clerc
22. *Diorchis magnicirrosa* Moghe and Inamdar
23. *Diorchis gigantocirrosa* Singh
24. *Diorchis jodhpurensis* n. sp.
Family (v) ACOLEIDAE Fuhrmann
Genus 1. *Acoelus* Fuhrmann
25. *Acoelus vaginatus* (Rudolphi)
Family (vi) TAENIDAE Ludwig
Genus 1. *Taenia* Linnaeus
26. *Taenia taeniaeformis* (Batsch)

IV—KEY FOR RAJASTHAN CESTODES

- (3). Scolex compressed laterally ; bothria present.
2. Genital pore ventral. . . *Duthiersia fimbriata*
- 3(1). Scolex not compressed ; bothria absent.
- 4(5). Fifth sucker or apical organ present ; cuticle of scolex in anterior part covered with spines. *Proteocephalus woodlanai*
- 5(4). Fifth sucker or apical organ absent ; spines absent from cuticle of scolex in anterior part.

- 6(7). Rostellum absent ; testes in 3-4 rows across posterior region of ovary or in horse-shoe shape. .. *Oochoristica tuberculata*
- 7(6). Rostellum present ; testes may or may not be arranged in 3-4 rows but not in horse-shoe shape.
- 8(10). Few segments ; small worms.
9. Genital pores regularly alternate. .. *Davainea himantopodia*
- 10(8). Numerous segments ; large worms.
- 11(20). Suckers armed ; genitalia single.
- 12(13). Testes 75-90 ; each egg-capsule with single egg. .. 5. *Raillietina (Paroniella) barmerensis* n. sp.
- 13(12). Testes not more than 22 ; each egg-capsule with several eggs.
- 14(17). Rostellum with 220-250 hooks ; testes 10-22.
- 15(16). Rostellum with 220 hooks ; suckers with single row of hooks ; testes 19-22. .. *Raillietina (Raillietina) nagpurensis*
- 16(15). Rostellum with 240-250 hooks ; suckers with 4-5 rows of minute hooks ; testes 10. .. *Raillietina (Raillietina) polychalix*
- 17(14). Rostellum with 150-180 hooks ; testes 4-10.
- 18(19). Rostellum with 150 hooks ; barrel-shaped collar with thickly studded deciduous hooks present at posterior part of rostellum ; testes 8-10. .. *Raillietina (Raillietina) torquata*
- 19(18). Rostellum with 180 hooks ; barrel-shaped collar with hooks at posterior part of rostellum absent ; testes 4. .. *Raillietina (Raillietina) quadritesticulata*
- 20(11). Suckers unarmed ; genitalia double.
- 21(22). Rostellum with double circle of hooks ; a circular cushion present behind rostellum ; testes may extend laterally to longitudinal excretory canal. .. *Cotugnia cuneata*
- 22(21). Rostellum with single crown of hooks ; circular cushion absent ; testes not extending beyond excretory canals. .. *Cotugnia bikanerensis* n. sp.
- 23(30). Uterus sac-like, containing several eggs.
- 24(26). Proglottids broader than long ; rostellar hooks 24.
- 25(27). Testes in two groups one on each side of female gland. .. *Laterorchites rajasthanensis* n. sp.
- 26(24). Proglottids usually longer than broad ; rostellar hooks 10-22.
- 27(25). Testes in one group present posterior to female gland.
- 28(29). Rostellum with 10 hooks ; testes 20-27. .. *Paricterotaenia coronata*
- 29(28). Rostellum with 22 hooks ; testes 30-58. .. *Paricterotaenia sujerensis* n. sp.
- 30(23). Uterus represented by egg-capsules, containing one to several eggs.
- 31(32). Rostellum with 12-14 hooks ; testes 20-30. .. *Choanotaenia croaxus* n. sp.
- 32(31). Rostellum with 16 hooks ; testes 46-61. .. *Choanotaenia kapurdiensis* n. sp.
- 33(43). Testes 3 in number.
- 34(37). Rostellum present well developed and armed.
- 35(36). Cirrus extends almost to the aporal margin of proglottid ; testes usually in straight lines across the proglottid. .. *Sobolevicanthus serratus birmanicus*
- 36(35). Cirrus extends nearly to aporal longitudinal excretory canal ; 2 testes aporal. .. *Sobolevicanthus gracilis*
- 37(34). Rostellum absent or rudimentary and unarmed.

38. Testes one poral and two antiporal to vitelline gland.
Hymenolepis diminuta
- 39(41). Testes forming triangle.
- 40(42). Medium sized worm.
Myotolepis jaisalmerensis n. sp.
- 41(39). Testes not forming triangle.
- 42(40). Dwarf tapeworm.
Vampirolepis nana
- 43(33). Testes 2 in number.
- 44(45). Suckers armed ; cirrus sac extending beyond aporal longitudinal excretory ducts ; testes lie side by side.
Diorchis gigantocirrosa
- 45(44). Suckers unarmed ; cirrus sac extends upto middle to beyond the middle of proglottid ; testes quite apart or lie on either side close to ovary.
- 46(47). Cirrus sac extends upto middle of proglottid ; testes present one on either side close to ovary.
Diorchis jodhpurensis n. sp.
- 47(46). Cirrus sac reaches beyond centre of proglottid ; testes lie quite apart to each other.
Diorchis magnicirrosa
- 48(49). Scolex unarmed ; genital pores alternating regularly ; cirrus large and armed.
Acoleus vaginatus
- 49(48). Scolex armed ; genital pores alternating irregularly ; cirrus not so large and unarmed.
Taenia taeniaeformis

V—SYSTEMATIC ACCOUNT

1. *Duthiersia fimbriata* (Diesing)

1850. *Solenophorous fimbriatus* Diesing, K. M., *Syst. helm.*, Vienna, 1, p. 679.

1930. *Duthiersia fimbriata* : Southwell, T., *Fauna Brit. India, Cestoda*, London, 1, pp. 60-62, figs. 9 and 10.

Material.—8 exs., near kailana tank (Jodhpur Dist.), 10.x.62, ex. rectum of a monitor lizard *Varanus monitor* (Linnaeus).

Distribution.—RAJASTHAN : Kailana tank (Jodhpur Dist.). *Elsewhere* : India (Bengal and Punjab) ; Ceylon ; Africa.

2. *Proteocephalus woodlandi* Moghe

1926. *Proteocephalus woodlandi* Moghe, M.A., *Rec. Indian Mus.*, Calcutta, 28, pp. 55-60, figs. 4-10.

Material.—20 exs., Sobasar village (Bikaner Dist.), 5.x.62 ; near Kailana tank (Jodhpur Dist.), 10.x.62; ex (i) rectum of a uromastix *Uromastix hardwickii* Gray (4 exs.); (ii) intestine of 3 monitor lizards *Varanus monitor* (Linnaeus) (16 exs.).

Distribution.—RAJASTHAN : Sobasar village, Kailana tank (Bikaner; Jodhpur Dists.). *Elsewhere* : India (Nagpur).

3. *Oochoristica tuberculata* (Rudolphi)

1819. *Taenia tuberculata* Rudolphi, C. A., *Eutozoorum synopsis cui accedunt mahtissa duplex et indices locupletissimi*, Berolini, 10, p. 811.
 1930. *Oochoristica tuberculata* : Southwell, T., *Fauna Brit. India, Cestoda*, London, 2, pp. 61-62, fig. 247.

Material.—17 exs., Sobasar village (Bikaner Dist.), 5.x.62 (12 exs.), Jaisalmer (5 exs.); 23.x.62; *ex* intestine of a monitor lizard *Varanus monitor* (Linnaeus).

Distribution.—RAJASTHAN : Sobasar (Bikaner) and Jaisalmer Dists. *Elsewhere* : Europe ; N. Africa (Morocco).

Remarks.—Out of 17 specimens, one is provided with a fifth sucker. Probably this is a variation.

4. *Raillietina (Raillietina) polychalix* (Kotlan)

1921. *Davainea polychalix* Kotlan, A., *Ann. Hist. Nat. Mus. Nat. Hungarici*, Budapest, 18, pp. 17-20, figs. 10-12.
 1930. *Raillietina (Raillietina) polychalix* : Southwell, T., *Fauna Brit. India, Cestoda*, London, 2, pp. 80-81, fig. 259.

Material.—3 exs., Bikaner city, 2.x.62. *ex* intestine of a pigeon, *Columba livia* Gmelin.

Distribution.—RAJASTHAN : Bikaner city. *Elsewhere* : India (Calcutta ; Lucknow) ; New Guinea.

5. *Raillietina (Raillietina) torquata* (Meggitt)

1924. *Houttuynia torquata* Meggitt, F. J., *Parasitol.*, Cambridge, 16, pp. 307-309, text-figs. 3 and 4.

Material.—8 exs., Jaisalmer, 22.x.62, *ex* intestine of a pigeon, *Columba livia* Gmelin.

Distribution.—RAJASTHAN : Jaisalmer. *Elsewhere* : India ; Rangoon ; Nepal.

6. *Raillietina (Raillietina) quadritesticulata* Moghe

1925. *Raillietina (Raillietina) quadritesticulata* Moghe, M.A., *Rec. Indian Mus.*, Calcutta, 27, pp. 433-437, figs. 5-7.

Material.—21 exs., Jaisalmer, 19.x.62, 20.x.62, *ex* intestine of 4 brown doves, *Streptopelia senegalensis* (L.).

Distribution.—RAJASTHAN : Jaisalmer city. *Elsewhere* : India (Nagpur).

7. *Raillietina (Raillietina) nagpurensis* Moghe

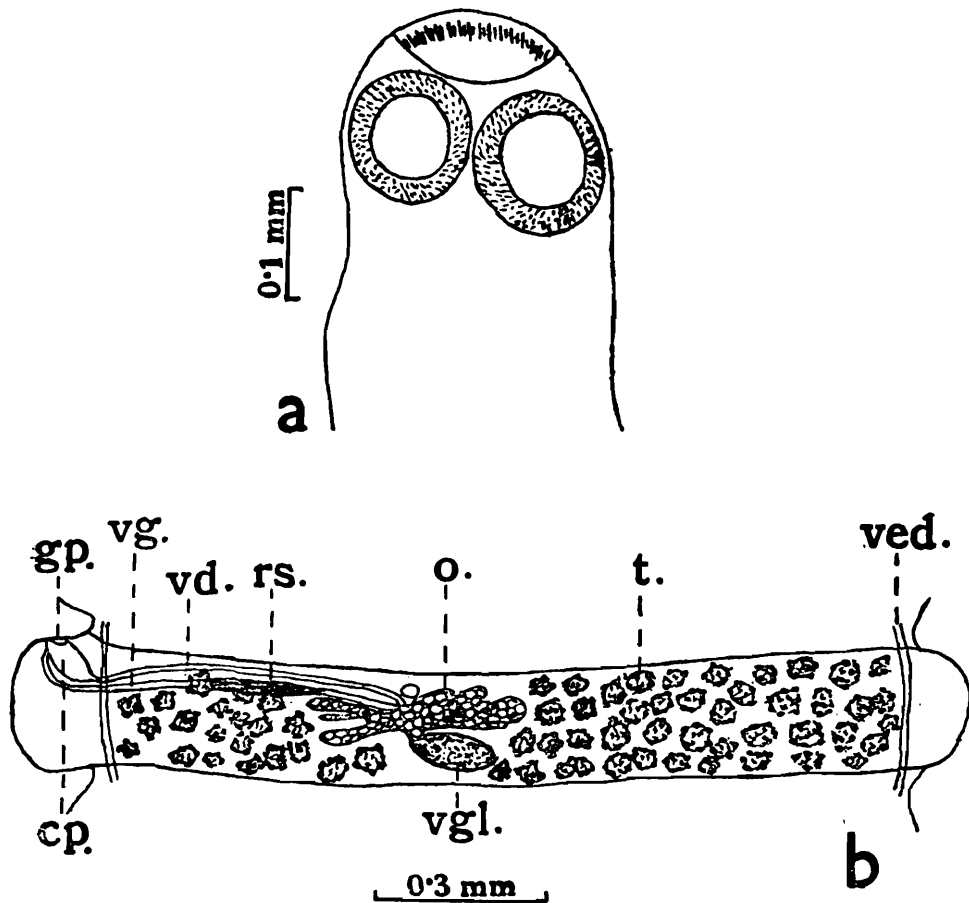
1925. *Raillietina (Raillietina) nagpurensis* Moghe, M.A., *Rec. Indian Mus.*, Calcutta, 27, pp. 431-437, figs. 1-4.

Material.—27 exs., Jaisalmer, 22.x.62, *ex* intestine of 3 pigeons, *Columba livia* Gmelin.

Distribution.—RAJASTHAN : Jaisalmer. *Elsewhere* : India (Nagpur); Nepal ; Australia.

8. *Raillietina (Paroniella) barmerensis* n. sp.
(Text-fig. 2)

Material.—3 exs., Nehru Nagar (Barmer Dist.), 1.XI.62, ex intestine of a house crow, *Corvus splendens* Vieillot.



TEXT-FIG. 2.—*Raillietina (Paroniella) barmerensis* n. sp.
(a) Scolex. (b) Mature proglottid.

Description.—Length 31-37 mm. ; maximum breadth 1.2-1.7 mm. Proglottids broader than long. Scolex small almost rounded ; length 0.25-0.42 mm. ; width 0.23-0.35 mm. Rostellum length 0.06-0.07 mm. ; width 0.08-0.09 mm. Rostellum with double crown of 120 hooks ; length of hooks 0.01-0.02 mm. Suckers muscular ; diameter 0.08-0.12 mm. ; with 4-5 rows of hooks. Testes small, in two groups on each side of ovary ; 75-90 in numbers, 20-25 poral and 55-65 aporal ; testes in between longitudinal excretory ducts. Cirrus pouch not extending upto longitudinal excretory ducts ; length of cirrus 0.10-0.11 mm., width 0.04-0.06 mm. Vas deferens less coiled. Genital pore anterior of lateral margin of segment. Ovary asymmetrically bilobed, each lobe again lobed. Vitelline gland slightly lobed ; posterior to ovary ; length 0.15-0.17 mm. ; width 0.04-0.05 mm. Vagina narrow canal ; opening posterior to cirrus pouch ; provided posterior end with receptaculum seminis.

Comparison.—The present species comes close to *R. (P.) corvina* (Fuhrmann), *R. (P.) compacta* (Clerc), *R. (P.) reynoldsae* Meggitt and *R. (P.) coronea* Tubanguai and Masilungan but differs as follows :—

From *R. (P.) corvina* : (i) Body-length 31-37 mm. (vs. 120). (ii) Genital opening lies anterior (vs. middle of lateral margin of segment). (iii) Rostellar hooks 120 (vs. 80). (iv) Number of testes 75-90 (vs. 26). (v) Vas deferens almost straight (vs. much coiled).

From *R. (P.) compacta*.—(i) Rostellar hooks 120 (vs. 400). (ii) Length of rostellar hooks 0.01-0.02 mm. (vs. 0.013-0.015). (iii) Number of testes 75-90 (vs. 20-25). (iv) Length of cirrus pouch 0.12 mm. (vs. 0.15).

From *R. (P.) reynoldsae*.—(i) Body-length 31-37 mm. (vs. 250) ; width 1.2-1.7 mm. (vs. 3). (ii) Rostellar hooks 120 (vs. 250). (iii) Spiny collar absent (vs. present). (iv) Testes 75-90 (vs. 33-39). (v) Vas deferens almost straight (vs. much coiled). (vi) Length of cirrus pouch 0.10-0.11 mm. (vs. 0.13-0.21). (vii) Ovary asymmetrically bilobed (vs. not bilobed).

From *R. (P.) coronea*.—(i) Body-length 31-37 mm. (vs. 250) ; width 1.2-1.7 mm. (vs. 3.3). (ii) Rostellar hooks 120 (vs. 200). (iii) Testes 75-90 (vs. 44-46). (iv) Vas deferens almost straight (vs. much coiled). (v) Length of cirrus pouch 0.10-0.11 mm. (vs. 0.13-0.14). (vi) Ovary asymmetrically bilobed (vs. not bilobed). (vii) Vitelline gland almost straight (vs. much coiled).

Type-Specimens.—*Holotype* : On a slide, Z.S.I. Reg. No. W6608/1 ; Nehru Nagar (Barmer Dist.), ex intestine of the house crow, *Corvus splendens* Vieillot, P. D. Gupta, coll., 1.XI.62. *Paratype* : (i) 1, on a slide, Z.S.I. Reg. No. W6609/1. Other details as above. (ii) 1, in tube, Z.S.I. Reg. No. W6610/1 ; other details as above.

Distribution.—RAJASTHAN : Barmer Dist. Nehru Nagar near Barmer, (the Type-locality). Known only from there.

9. *Davainea himantopodis* Johnston

1911. *Davainea himantopodis* Johnston, T., *Proc. Linn. Soc. N.S.W.*, Sydney, 36, pp. 75-79, figs. 1-5.

1952. *Davainea himantopodis* : Singh, K. S., *Indian J. Helm.*, Lucknow, 4, pp. 7-8, figs. 3-5.

Material.—15 exs., Chokhaka (Sikar Dist.), 14.ix.60. *Desert and Gangetic Plain Regional Station*, Z.S.I. Coll.; ex intestine of a black winged stilt, *Himantopus himantopus* (Linnaeus).

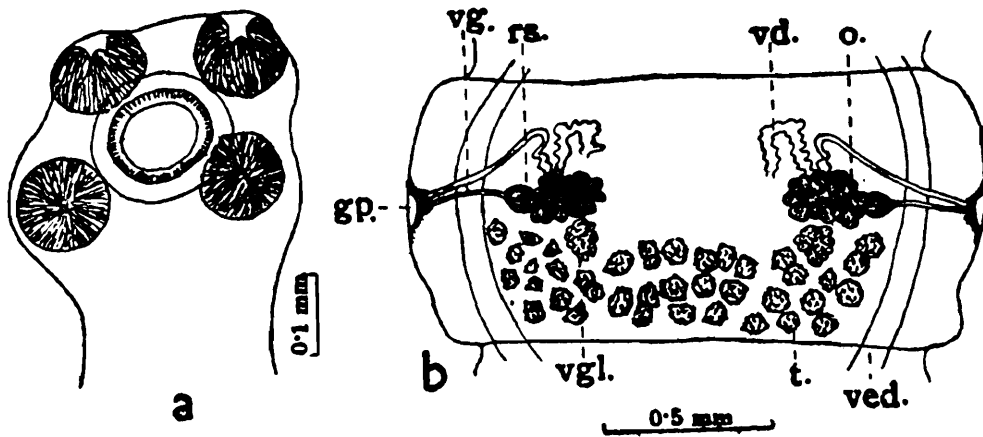
Distribution.—RAJASTHAN : Chokhaka (Sikar Dist.). *Elsewhere* : India (Lucknow) ; China ; Australia.

10. *Cotugnia cuneata* Meggitt

1924. *Cotugnia cuneata* Meggitt, F. J., *Parasitol.*, Cambridge, 16, pp. 304-307, text-figs. 1 and 2.

Material.—3 exs., Devikund (Bikaner Dist.), 2.X.62, ex intestine of a ring dove, *Streptopelia decaocto* (Fridvaldszky).

Distribution.—RAJASTHAN: Devikund (Bikaner Dist.). *Elsewhere*: India (Kasauli ; Nagpur ; Lucknow) ; Burma (Rangoon) ; Egypt ; Eastern Europe.

11. *Cotugnia bikanerensis* n. sp.

TEXT-FIG. 3.—*Cotugnia bikanerensis* n. sp.
(a) Scolex. (b) Mature proglottid.

Material.—2 exs., Bikaner, 5.x.62, ex intestine of a sand grouse *Pterocles exustus* Temminck.

Description.—Length 56.1-60.3 mm.; maximum width 2.1-2.3 mm. Proglottids broader than long. Scolex rounded 0.35-0.37 mm. in diameter. Rostellum 0.15-0.17 mm. in diameter; provided with a single crown of more than 200 hooks. Hooks 0.01 mm. in length. Unarmed muscular suckers 0.13 mm. in diameter. Testes 35-41, arranged in one group, posterior to ovaries, between two longitudinal excretory ducts. Testes 0.05-0.06 mm. in diameter. Cirrus pouch long reaches and even crosses in certain proglottids longitudinal excretory ducts, 0.38 mm. in length, 0.02 mm. in breadth. Cirrus unarmed. Small vas deferens less coiled. Genital pores anterior to middle of lateral margins. Each proglottid with two sets of female genitalia, one on each side. Ovary much lobed, 0.12-0.16 mm. long, 0.22-0.25 mm. broad. Vitelline gland posterior to ovary, 0.08-0.12 mm. in length, 0.11-0.13 mm. in breadth. Vagina wide tube opens posterior to male genital opening, near ovary vagina enlarges to form a large receptaculum seminis. Uterus occupying almost whole of proglottid, contains numerous egg-capsules. Each egg-capsule with a single egg. Eggs rounded, 0.02-0.04 mm. in diameter.

Comparison.—The present species comes close to *C. digonopora* (Pasuqale), *C. inaequalis* Fuhrmann and *C. seni* Meggitt, but differs as follows :—

From *C. digonopora*.—(i) Body-length 56.1-60.3 mm. (vs. 80); breadth 2.1-2.3 mm. (vs. 8). (ii) Testes 35-41, in between two longitudinal excretory canal (vs. 100, crosses two longitudinal canal). (iii) Ovary large, much lobed (vs. small less lobed). (iv) Sucker 0.13 mm. (vs. 0.45). (v) Vas deferens less coiled (vs. much coiled).

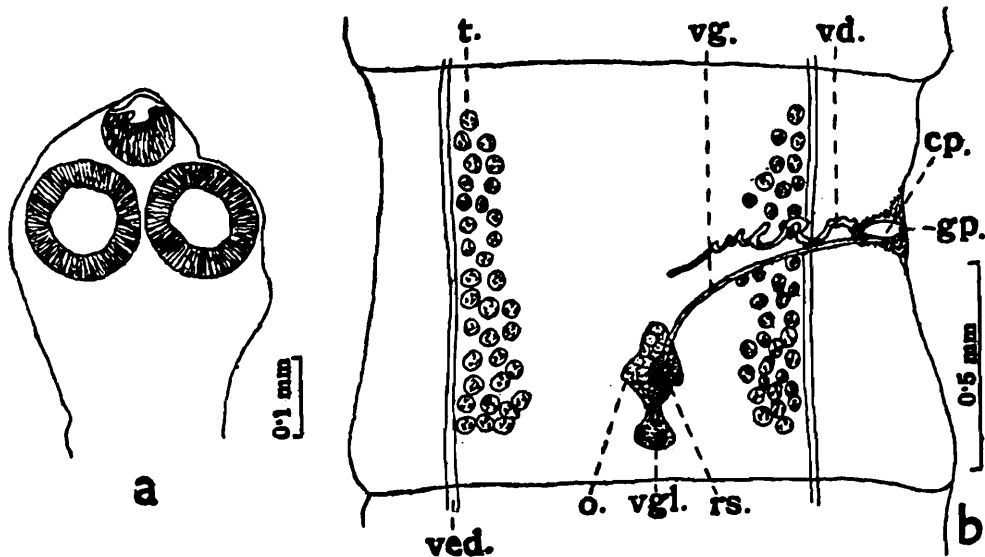
From *C. inaequalis*.—(i) Testes 30-41 in single group (vs. 50, in two groups). (ii) Cirrus pouch long, reaches or crosses longitudinal excretory ducts (vs. short, not reaching longitudinal excretory ducts). (iii) Receptaculum seminis close to ovary (vs. away from ovary). (iv) Vas deferens less coiled (vs. much coiled).

From *C. seni*.—(i) Body-length 56.1-60.3 mm. (vs. 10), breadth 2.1-2.3 mm. (vs. 1). (ii) Size of rostellum 0.15-0.17 mm. (vs. 0.21-0.27). (iii) Cirrus pouch 0.38 mm. (vs. 0.19). (iv) Vas deferens less coiled (vs. much coiled). (v) Receptaculum seminis small (vs. large).

Type-Specimens.—*Holotype* : On a slide, Z.S.I. Reg. No. W6611/1; Bikaner, *ex intestine* of sand grouse *Pterocles exustus* Temminck ; *P. D. Gupta*, coll., 5.x.62. *Paratype* : 1, in a tube, Z.S.I. Reg. No. W6612/1; other details as above.

Distribution.—RAJASTHAN : Bikaner.

12. *Laterorchites rajasthanensis* n. sp.



TEXT-FIG. 4.—*Laterorchites rajasthanensis* n. sp.
(a) Scolex. (b) Mature proglottid.

Material.—7 exs., Barmer city, 31.x.62, *ex intestine* of two falcons, *Falco jugger* Gray, J. E.; *P. D. Gupta* coll.

Description.—Length 39.5-44.7 mm. ; maximum width 1.93-1.99 mm. Proglottids broader than long. Scolex rounded, 0.21-0.31 mm. in diameter. Rostellum small, 0.06-0.07 mm. (mean 0.07 mm.) long; 0.08-0.09 mm. broad; armed with a single crown of 24 hooks. Hooks 0.01-0.02 mm. in length. Sucker 0.12-0.17 mm. in diameter. Testes 55-87, arranged in two group on each side of female glands and lateral to proglottid ; lying between two longitudinal excretory ducts ; 0.03-0.04 mm. in diameter. Cirrus pouch small ; 0.10-0.14 mm. long 0.05-0.07 mm. broad ; not extending up to longitudinal excretory ducts. Cirrus not spiny; 0.08-0.10 mm. long. Vas deferens long but less coiled. Genital pores irregularly alternate ; open a little anterior to middle of segment. Ovary longer than broad ; situated at posterior region of proglottid. Vitelline gland situated posterior to ovary ; 0.10-0.14 mm. in breadth. Vagina a narrow canal, opening posterior to cirrus pouch opening ; portion near the ovary provided with a small receptaculum seminis.

Comparison.—It differs from the only other known species of the genus, *L. bilateralis* (Fuhrmann) (from Central America) as follows: (i) Number of hooks 24 (*vs.* 10). (ii) Genital pore opens a little anterior to middle of segment (*vs.* much anterior, near anterior margin to middle of segment). (iii) Cirrus spines absent (*vs.* present). (iv) Testes more on lateral field and not arranged in horse-shoe-shape (*vs.* less so, and arranged in horse-shoe-shape near ovary). (v) Ovary triangular (*vs.* oblong). (vi) Vitelline gland large (*vs.* small).

Type-Specimens.—*Holotype* : On a slide, Z.S.I. Reg. No. W6613/1; Barmer, *ex intestine* of falcon, *Falco jugger* J. E. Gray ; *P. D. Gupta*;

coll., 31.x.62. *Paratypes* (details as above) : 6, as follows : (i) 1, on a slide, Z.S.I. No. W6614/1 ; (ii) 1, on a slide, Z.S.I. Reg. No. W6615/1 ; (iii) 3, in a tube, Z.S.I. Reg. No. W6616/1 ; (iv) 1, in a tube, Z.S.I. Reg. No. W6617/1.

Distribution.—RAJASTHAN: Barmer Dist.

13. *Paricterotaenia coronata* (Creplin)

1829. *Taenia coronata* Creplin, F.C.H., *Novae observationes de Entosois*, Berolini, p. 134.

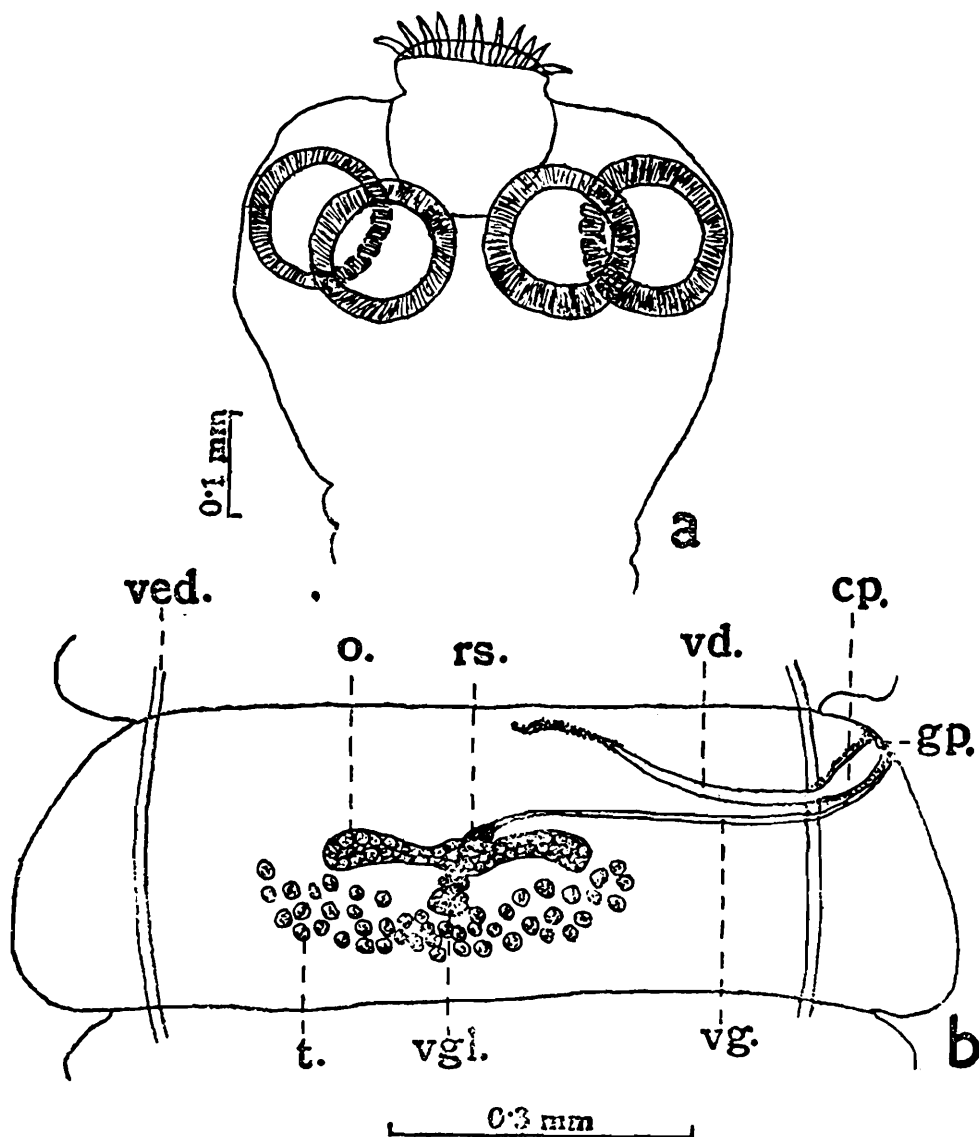
1940. *Paricterotaenia coronata* : Burt, D.R.R., *Spol. Zeyl.*, Colombo, 22, pp. 13-16, figs. 9 and 10.

Material.—5 exs., Jaisalmer, 23.x.62, ex intestine of a stone curlew, *Burhinus oedicnemus* (Linnaeus).

Distribution.—RAJASTHAN : Jaisalmer City. *Elsewhere* : India (U. P.), Ceylon ; Africa ; Europe.

14. *Paricterotaenia sujerensis* n. sp.

Material.—4 exs., Sujer Hills (Barmer Dist.), 30.x.62, ex intestine of a desert chat, *Oenanthe deserti* (Temminck).



TEXT-FIG. 5.—*Paricterotaenia sujerensis* n. sp.
(a) Scolex. (b) Mature proglottid.

Description.—Size small ; length 13.5-16.6 mm. ; maximum breadth 1.29-1.35 mm. Scolex rounded ; 0.42-0.50 mm. in diameter. Conical muscular rostellum ; 0.18-0.21 mm. in length ; 0.16-0.17 mm. in breadth. Rostellum with single crown of 22 hooks. Hooks 0.05 mm. long. Muscular sucker 0.12-0.15 mm. in diameter. Testes 30-35 present behind ovary ; between two longitudinal excretory canals ; 0.01-0.02 mm. in diameter. Cirrus pouch long, slightly bent tube, crosses excretory duct ; 0.15-0.17 mm. in length ; 0.03-0.07 mm. in breadth. Vas deferens small, less coiled. Genital pores irregularly alternate ; open much anterior to middle of lateral margin of proglottid. Ovary almost symmetrically bilobed ; in middle of segment. Vitelline gland small, compact, located posterior to ovary ; 0.01-0.02 mm. in diameter. Vagina narrow canal ; opens posterior to male genital opening ; posteriorly near ovary it dilates to form a small receptaculum seminis. Egg 0.01-0.02 mm. in diameter.

Comparison.—Present species comes close to *P. parina* (Dujardin), *P. parvirostris* (Krabbe) and *P. barbara* (Meggitt) but differs as follows :

From *P. parina* : (i) Hooks 22 (vs. 17-20) ; length 0.05 mm. (vs. 0.01-0.02). (ii) Testes 30-35 (vs. 20).

From *P. parvirostris* : (i) Body-length 13.5-16.6 mm. (vs. 30). (ii) Diameter of scolex 0.42-0.50 (vs. 0.20). (iii) Length of hooks 0.05 mm. (vs. 0.01). (iv) Testes 30-35 (vs. 18-20).

From *P. barbara* : (i) Body-length 13.5-16.6 mm. (vs. 20-30). (ii) Diameter of scolex 0.42-0.50 mm. (vs. 0.02). (iii) Length of hooks 0.05 mm. (vs. 0.01-0.02). (iv) Testes 30-35 (vs. 24-26). (v) Ovary not deeply lobed (vs. deeply lobed).

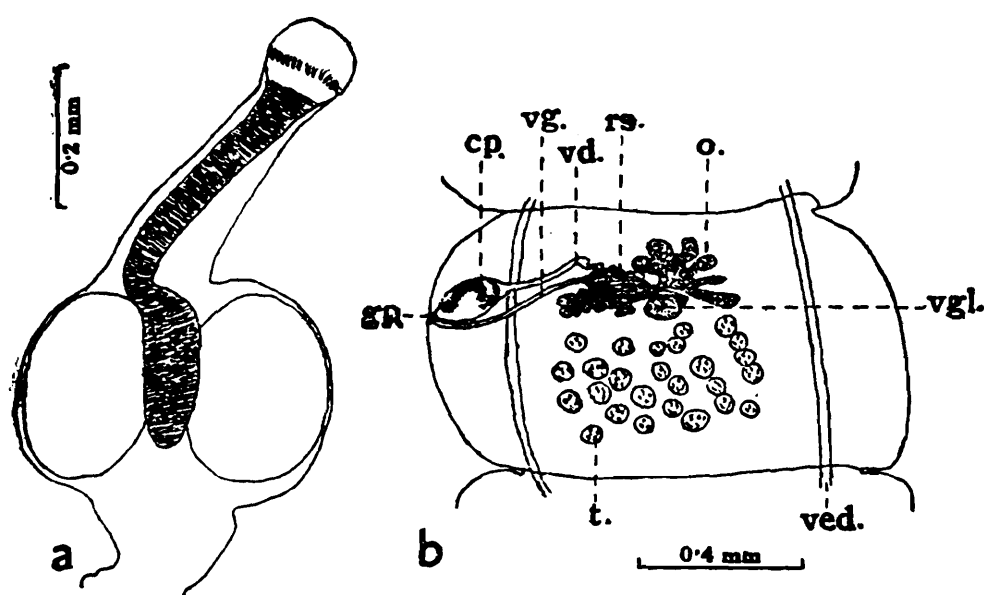
Type-Specimens.—*Holotype* : On a slide, Z.S.I. Reg. No. W6618/1; Sujer Hills (Barmer Dist.), ex intestine of desert chat *Oenanthe deserti* (Temminck), *P. D. Gupta*, coll. 30.x.62. *Paratypes* : (Details as above) : (i) 1, on a slide, Z.S.I. Reg. No. W6619/1. (ii) 1, on a slide, Z.S.I. Reg. No. W6620/1. (iii) 1, in tube, Z.S.I. Reg. No. W6621/1.

Distribution.—RAJASTHAN : Sujer Hills, Barmer Dist.

15. *Choanotaenia kapurdiensis* n. sp.

Material.—33 exs., Jaisalmer ; Nehru Nagar 21.x.62, and Kapurdi (Barmer Dist.), 1.x.62, ex intestine of 7 exs. of cream coloured courser, *Cursorius cursor* (Latham).

Description.—Body-length 54.06-57.24 mm. ; maximum breadth 1.48-1.85 mm. Proglottids broader than long. Scolex almost rounded ; 0.26-0.35 mm. in length ; 0.32-0.48 mm. in breadth. Rostellum 0.26-0.46 mm. in length ; 0.11-0.18 mm. in breadth ; armed with a single row of 12-14 hooks. Hooks 0.02-0.03 mm. in length. Suckers 0.32 mm. long ; 0.21 mm. broad. Testes 20-30, located posterior to ovary, in between two longitudinal excretory canals. Cirrus pouch extending upto longitudinal excretory duct, 0.11-0.12 mm. long ; 0.06 mm. broad. Vas deferens small, less coiled. Genital pores irregularly alternate, present anterior to middle of proglottid. Ovary asymmetrically bilobed, each lobe again lobed. Vitelline gland lies posterior to ovary, 0.03-0.05



TEXT-FIG. 6.—*Choanotaenia kapurdiensis* n. sp.
(a) Scolex. (b) Mature proglottid.

mm. long ; 0.05-0.08 mm. broad. Vagina a narrow canal, opens posterior to cirrus pouch opening ; at posterior end near ovary provided with receptaculum seminis. Uterus in form of egg capsules. Egg. 0.02-0.03 mm. in diameter.

Comparison.—The new species comes very close to *C. joyeuxi* (Tseng Shen), *C. lobipluviae* Burt and *C. aurantia* Singh, but differs from them as follows :—

From *C. joyeuxi* : (i) Body-length 54.06-57.24 mm. (vs. 45) ; width 1.48-1.85 mm. (vs. 0.65). (ii) Number of hooks 12-14 (vs. 10). (iii) Length of hook 0.02-0.03 mm. (vs. 0.23-0.25). (iv) Size of cirrus pouch 0.11-0.12 × 0.06 mm. (vs. 0.10-0.19 × 0.03). (v) Testes 20-30 (vs. 14-18). (vi) Diameter of egg 0.02-0.03 mm. (vs. 0.01-0.02).

From *C. lobipluviae* : (i) Body-breadth 1.48-1.85 mm. (vs. 2.35-2.6). (ii) Length of scolex 0.29 × 0.37 mm. (vs. 0.62-0.73). (iii) Number of hooks 12-14 (vs. 18.). (iv) Length of hooks 0.02-0.03 mm. (vs. 0.15-0.16). (v) Number of testes 20-30 (vs. 110-120). (vi) Length of cirrus pouch 0.11-0.12 × 0.06 mm. (vs. 0.26-0.28 × 0.07-0.08).

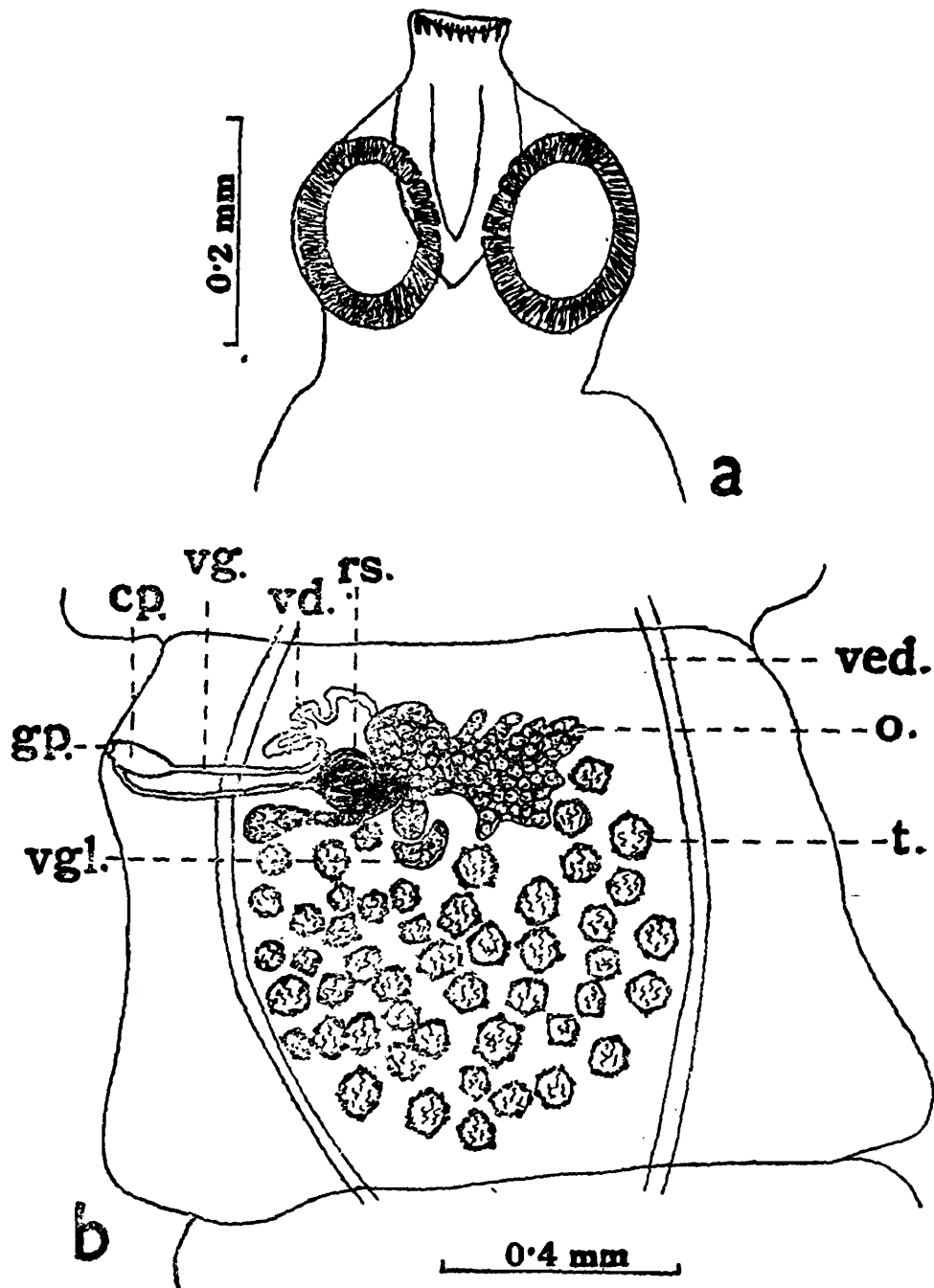
From *C. aurantia* : (i) Body-length 54.06-57.24 mm. (vs. 10-37) ; width 1.48-1.85 mm. (vs. 0.31-0.48). (ii) Sucker 0.32 × 0.21 mm. (vs. 0.12 × 0.17). (iii) Number of hooks 12-14 (vs. 14-18). (iv) Length of hooks 0.02-0.03 mm. (vs. 0.01-0.02). (v) Rostellum 0.26-0.48 × 0.11-0.18 mm. (vs. 0.06-0.11). (vi) Number of testes 20-30 (vs. 16-20). (vii) Size of cirrus pouch 0.11-0.12 × 0.06 mm. (vs. 0.03-0.05 × 0.01). (viii) Vitelline gland not lobed ; size 0.03-0.05 × 0.05-0.08 mm. (vs. lobed : size 0.04-0.08).

Type-Specimens.—*Holotype* : On a slide, Z.S.I. Reg. No. W6635/1 ; Kapurdi (Barmer Dist.), ex intestine of cream coloured courser, *Cursorius cursor* (Latham), P. D. Gupta, coll. 21.x.62. *Paratypes* : (Other details as above) : (i) 2, on a slide, Z.S.I. Reg. No. W6636/1. (ii) 2, on a slide, Z.S.I. Reg. No. W6637/1. (iii) 3, on a slide, Z.S.I. Reg. No. W6638/1. (iv) 4, on a slide, Z.S.I. Reg. No. W6639/1.

Distribution.—RAJASTHAN : Jaisalmer and Barmer Dists.

16. *Choanotaenia croaxum* n. sp.

Material.—6 exs., Nehru Nagar (Barmer Dist.), 1.xi.62. ex intestine of two house crows *Corvus splendens* Vieillot.



TEXT-FIG. 7.—*Choanotaenia croaxum* n. sp.
(a) Scolex. (b) Mature proglottid.

Description.—Length 66.77-69.68 mm. ; maximum breadth 1.35-1.66 mm. Proglottids slightly broader than long. Scolex 0.28-0.37 mm. long; 0.33-0.39 mm. broad. Muscular rostellum 0.22-0.26 mm. long ; 0.11-0.15 mm. broad ; with a single row of 16 hooks. Hook 0.01-0.02 mm. long. Muscular sucker 0.16-0.20 mm. in diameter. Testes 46-61, posterior to ovary; between two longitudinal excretory canals ; 0.07-0.09 mm. in diameter. Cirrus pouch 0.14-0.18 mm. long ; 0.04-0.05 mm. in maximum breadth ; extending upto or near to longitudinal excretory duct. Vas deferens small ; less coiled. Genital pores irregularly

alternate, lie much anterior to middle of proglottid. Ovary asymmetrically bilobed : poral lobe much smaller than aporal : both lobes again lobed. Compact vitelline gland lies posterior to ovary : 0.05-0.07 mm. long ; 0.16-0.17 mm. broad. Vagina narrow canal, opens posterior to male genital opening ; near ovary vagina dilates to form receptaculum seminis. Uterus with egg capsules. Egg 0.04-0.05 mm. in diameter.

Comparison.—The present species comes close to *C. microsoma* Southwell ; *C. iola* Lincicome and *C. orioli* Joyeux and Baer, but differs as follows :

From *C. microsoma* : (i) Length of hooks 0.01-0.02 mm. (*vs.* 0.03). (ii) Number of testes 46-61 (*vs.* 16-20). (iii) Ovary asymmetrically bilobed (*vs.* symmetrically bilobed). (iv) Vas deferens not dilates (*vs.* dilating close to median extremity).

From *C. iola* : (i) Number of hooks 16 (*vs.* 17-20) ; length of hook 0.01-0.02 mm. (*vs.* 0.03). (ii) Number of testes 46-61 (*vs.* 13-17).

From *C. orioli* : (i) Number of testes 46-61 (*vs.* 19-22). (ii) Diameter of cirrus pouch 0.14-0.18 × 0.04-0.05 mm. (*vs.* 0.12-0.13 × 0.02-0.03).

Type-Specimens.—*Holotype* : On a slide, Z.S.I. Reg. No. W6622/1 ; Nehru Nagar (Barmer Dist.), *ex* intestine of house crow *Corvus splendens* Vieillot. *P. D. Gupta*, coll. 1.xi.62. *Paratypes* (Details as above) : (i) 1, on a slide, Z.S.I. Reg. No. W6623/1. (ii) 1, on a slide, Z.S.I. Reg. No. W6624/1. (iii) 2, in a tube, Z.S.I. Reg. No. W6625/1, (iv) 1, in a tube, Z.S.I. Reg. No. W6626/1.

Distribution.—RAJASTHAN : Nehru Nagar (Barmer Dist.).

17. *Sobolevicanthus serratus birmanicus* (Meggitt)

1924. *Hymenolepis rugosa Birmanica* Meggitt, F.J., *Parasitol.*, Cambridge, 16, pp. 309-310, text-fig. 5.

Material.—4 exs., Bikaner, 2.x.62, *ex* intestine of a pigeon *Columba livia* Gmelin.

Distribution.—RAJASTHAN : Bikaner, *Elsewhere* : India (Lucknow) ; Burma (Rangoon) ; Europe.

18. *Sobolevicanthus gracilis* (Zeder)

1803. *Taenia gracilis* Zeder, J.G.H., *Anleitung Naturges. Eingeweide-würmer*, Bamberg, 16, p. 432.

1930. *Hymenolepis gracilis* : Southwell, T., *Fauna Brit, India, Cestoda*, London, 2, pp. 130-131, fig. 297.

Material.—7 exs., Goreshwar Tank (Jaisalmer Dist.), 19.x.62. Bhop Talao (Barmer Dist.), 24.x.62, 3.xi.62 ; *ex* intestine of 4 European pochard, *Aythya ferina* (Linnæus).

Distribution.—RAJASTHAN : Barmer and Jaisalmer Dists. *Elsewhere* : India (Orissa ; Manipur ; Assam ; Calcutta) ; Burma (Rangoon) ; Formosa ; Japan ; Egypt ; W Siberia ; U. S. A.

19. *Hymenolepis diminuta* (Rudolphi)

1819. *Cysticercus hymenolepis-diminutae* Rudolphi, C.A., *Entozoorum synopsis cui accedunt mantissa duplex et indices locupletissimi*, Berlin 10, p. 811.
1930. *Hymenolepis diminuta*, Southwell, T., *Fauna Brit. India, Cestoda*, London, 2, pp. 119-121, figs. 287 and 288.

Material.—7 exs., as follows : (i) 3 exs. Kolayat and Pungal (Bikaner Dist.), B. Biswas coll., 11.ix.60; 14.ix.60; 20.ix.60; 21.ix.60; ex intestine of 6 gerbils, *Gerbillus gleadowi* Murray, (ii) 4 exs, Bikaner 1.x.62; and Jaisalmer Dists.; P. D. Gupta coll. 19.x.62; 21.x.62; ex intestine of 4 rats, *Rattus rattus rufescens*.

Distribution.—RAJASTHAN : Bikaner; Jaisalmer Dists. *Elsewhere* : Cosmopolitan.

20. *Vampirolepis nana* (Siebold)

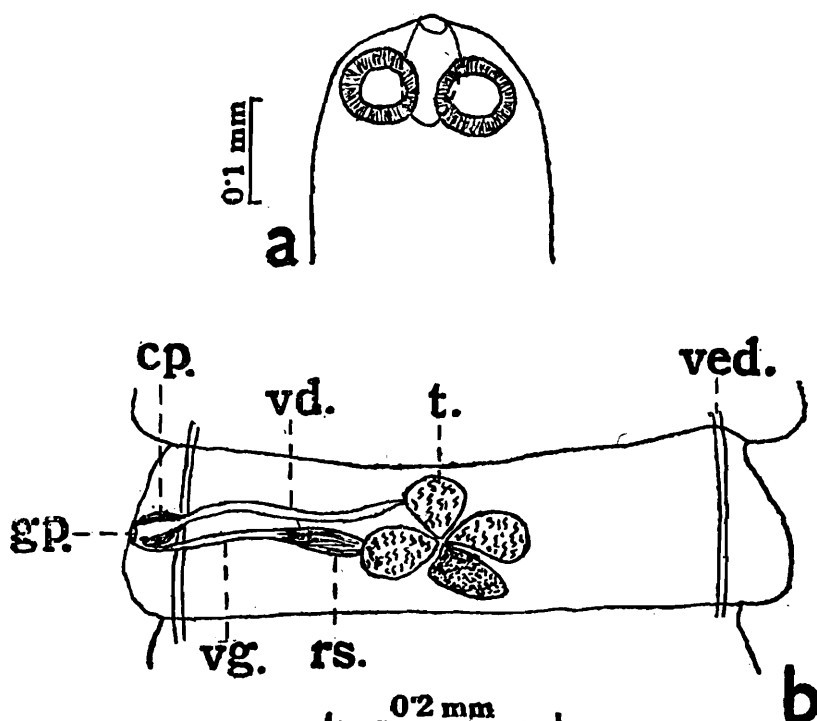
1852. *Taenia nana* Siebold, C. T., *Z. Wiss. Zool.*, Leipzig, 4, pp. 53-76.
1929. *Hymenolepis nana* : Faust, E. C., *Human Helminthol.*, Philadelphia, pp. 207-273, figs. 151 and 152.

Material.—None. (Reported by Chandler from man ex intestine).

Distribution.—RAJASTHAN : Jodhpur; Bikaner; Jaipur; Kotah; Udaipur Dists. (Chandler, 1927). *Elsewhere*; Cosmopolitan.

21. *Myotolepis jaisalmerensis* n. sp.

Material.—11 exs., Jaisalmer, 21.x.62, ex intestine of 3 bats *Tapozous kachhensis kachhensis* Dobson.



TEXT-FIG. 8.—*Myotolepis Jaisalmerensis* n. sp.
(a) Scolex. (b) Mature preglottid.

Description.—Size small; length 10.61-11.44 mm.; width 0.32-0.62 mm.; proglottids broader than long. Scolex small 0.21-0.24 mm. across suckers. Small unarmed rudimentary rostellum, 0.07-0.08 mm. in length, 0.04-0.05 mm. in width. Muscular unarmed sucker 0.05-0.06 mm. in diameter. Testes three, close together, arranged in triangle in median field of segment, 0.05-0.06 mm. in diameter. Cirrus pouch 0.37-0.42 mm. in length; 0.11-0.13 mm. in breadth; crosses longitudinal excretory canal. Genital pores unilateral, opens almost to middle of lateral margin of proglottid. Vesicula seminalis elongated, present at base of cirrus pouch. Ovary and vitelline gland compact, unlobed, rounded structure, like testes 0.05 mm. in diameter. Compact ovary and vitelline gland present almost in centre of triangle formed by three testes. Vagina a narrow tube, opening posterior to male genital opening. Receptaculum seminis elongated. Eggs 0.02-0.03 mm. in diameter.

Comparison.—It differs from the only other known species of the genus, *M. crimensis* (Skarbilovilsch) as follows :—(i) Ovary and vitelline gland almost rounded (*vs.* oblong). (ii) Cirrus pouch comparatively large reaching longitudinal excretory canals (*vs.* small not reaching longitudinal excretory canals).

Type-Specimens.—*Holotype* : On a slide, Z.S.I. Reg. No. W6627/1, Jaisalmer city, *ex* intestine of bat, *Taphozous kachhensis kachhensis* Dobson, *P. D. Gupta*, coll., 21.x.62. *Paratypes* : (i) 1, on a slide, Z.S.I. Reg. No. W6628/1. (ii) 1, on a slide, Z.S.I. Reg. No. W6629/1. (iii) 3, in a tube, Z.S.I. Reg. No. W6630/1. (iv) 2, in a tube, Z.S.I. Reg. No. W6631/1. (v) 3, in a tube, Z.S.I. Reg. No. W6632/1.

Distribution.—RAJASTHAN : Jaisalmer City.

22. *Diorchis magnicirrosa* Moghe & Inamdar

1934. *Diorchis magnicirrosa* Moghe, M.A. and Inamdar, N.B., *Rec. Indian Mus.*, Calcutta, 36, pp. 11-12, figs. 9-12.

Material.—12 *exs.*, Gajner Road (Bikaner Dist.), 3.x.62, 5.x.62 and near Bisalpur Dam (Jodhpur Dist.), 14.x.62, *ex* intestine of five ring doves, *Streptopelia decaocto* (Frisvaldszky).

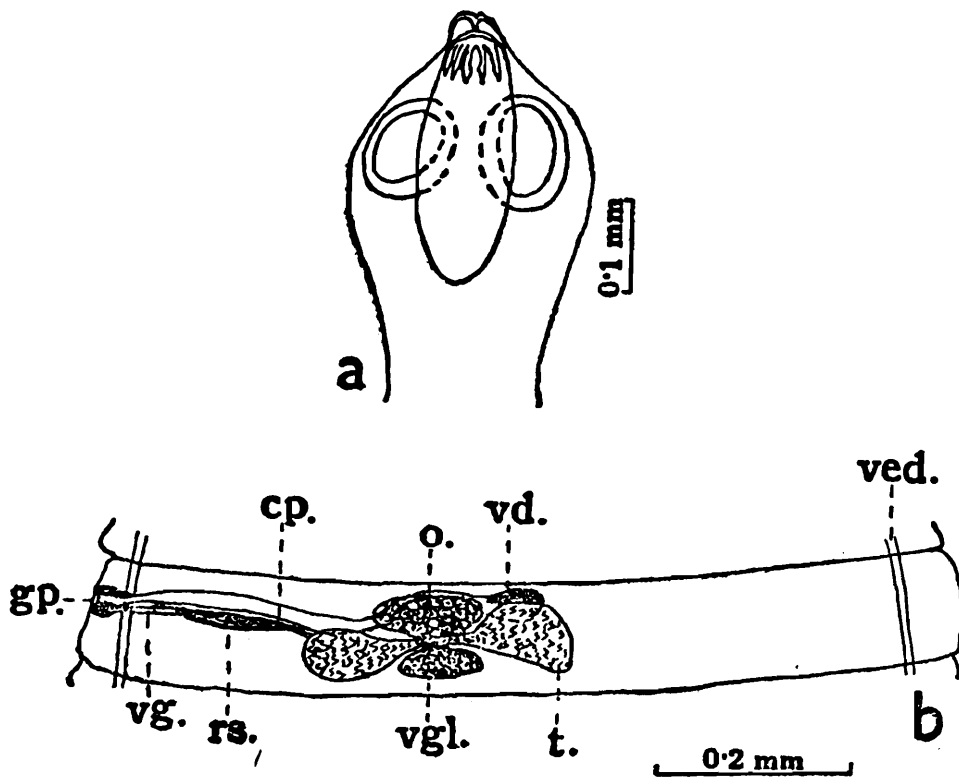
Distribution.—RAJASTHAN : Bikaner ; Jodhpur Dists. *Elsewhere* : India (U. P.).

23. *Diorchis gigantocirrosa* Singh

1959. *Diorchis gigantocirrosa* Singh, K.P., *Indian J. Helm.*, Lucknow, 11, pp. 58-62, figs. 17-22.

Material.—5 *exs.*, Devikund (Bikaner Dist.), 4.x.62 and Bhap Taloa (Barmer Dist.), 3.xi.62; *ex* intestine of coot, *Fulica atra* Linnaeus.

Distribution.—RAJASTHAN : Bikaner and Barmer Dists. *Elsewhere* : India (Barabanki, U. P.).

24. *Diorchis jodhpurensis* n. sp.

TEXT-FIG. 9.—*Diorchis jodhpurensis* n. sp.
(a) Scolex. (b) Mature proglottid.

Material.—2 exs., Umedsagar (Jodhpur Dist.), 9.x.62, ex intestine of a ringed plover *Charadrius dubius* Scopoli.

Description.—Length 29.95-33.28 mm.; maximum breadth 1.19-1.25 mm. Proglottid broader than long. Small scolex 0.34-0.38 mm. in length; 0.28-0.30 mm. in width. Rostellum muscular 0.30-0.32 mm. long; 0.09-0.13 mm. broad; rostellar pouch extends beyond base of suckers; rostellum with 10 hooks. Hooks 0.04 mm. in length, handle of hook slightly longer than blade. Suckers longer than broad; unarmed 0.18-0.19 mm. long; 0.11-0.15 mm. broad. Two fairly large testes, one on either side of ovary. Testes 0.13-0.16 mm. long; 0.17-0.21 mm. broad. Cirrus pouch 0.48-0.50 mm. long; 0.03-0.05 mm. broad; extends upto middle of proglottid. Cirrus small with 4-5 spines at base; 0.04-0.05 mm. in length. Genital pores unilateral present at middle or a little anterior to middle of proglottid. Ovary large; situated between the two testes; 0.09-0.11 mm. long; 0.11-0.22 mm. broad; slightly lobed. Vitelline gland compact located posterior to ovary 0.07-0.09 mm. long; 0.12-0.14 mm. broad. Vagina closely applied to cirrus pouch. Receptaculum seminis elongated broad structure present near posterior end of vagina. Sac like uterus full of rounded eggs. Eggs 0.01 mm. in diameter.

Comparison.—The present species comes close to *D. lintoni* (Linton), *D. spinata* Mayhew and *D. anomala* Schmelz, but differs from them as follows:

From *D. lintoni* : (i) Length of rostellar hooks 0.04 mm. (vs. 0.05). (ii) Cirrus pouch extending to middle of proglottid (vs. not reaching middle of proglottid). (iii) Cirrus with spines at base (vs. no spines at base).

From *D. spinata*: (i) Body-length 29.95-33.28 mm. (vs. 80-122). (ii) Cirrus pouch extending to middle of proglottid (vs. $\frac{1}{2}$ - $\frac{3}{4}$, often to aporal excretory vessel.). (iii) Testes broader than long (vs. almost rounded). (iv) Cirrus 0.04-0.05 mm. long (vs. 0.15). (v) Cirrus with 4-5 spines at base (vs. basal half of cirrus sparsely set with large spines). (vi) Eggs rounded (vs. cylindrical).

From *D. anomala*: (i) Body-length 29.95-33.28 mm., (vs. 80-100). (ii) Diameter of scolex 0.34-0.38 × 0.28-0.30 mm. (vs. 0.26). (iii) Length of hook 0.04 mm. (vs. 0.05). (iv) Length of cirrus pouch 0.04-0.05 mm. (vs. 0.20-0.22). (v) Cirrus armed (vs. unarmed). (vi) Ovary not deeply lobed (vs. ovary deeply lobed with three lobes).

Type-Specimens.—*Holotype* : On a slide, Z.S.I. Reg. No. W6633/1, Umedsagar (Jodhpur Dist.), ex intestine of ringed plover *Charadrius dubius* Scopoli, P. D. Gupta, coll., 9.x.62. *Paratype*: 1, on a slide, Z.S.I. Reg. No. W6634/1, other details as above.

Distribution.—RAJASTHAN : Umedsagar (Jodhpur Dist.).

25. *Acoelus vaginatus* (Rudolphi)

1819. *Taenia vaginatus* Rudolphi, C. A., *Eutozoorum synopsis accedunt mantissa duplex et indices locuplelissimi*, Berolini, 10, p. 811.

1952. *Acoelus vaginatus* : Singh, K. S., *Indian J. Helm.*, Lucknow, pp. 64-65, fig. 91.

Material.—2 exs., Merta (Nagaur Dist.) ; Chokhaka (Sikar Dist). B. Biswas ; coll., 30.xii.56; and *Desert and Gangetic Plain Regional Station*, Z.S.I. coll., 14.xi.60. ex intestine of two black winged stilts *Himantopus himantopus* (Linnaeus).

Distribution.—RAJASTHAN: Nagpur and Sikar Dists. *Elsewhere* : Widespread. India (Lucknow, U. P.) ; Asia ; Africa ; Europe ; U.S.A.

26. *Taenia taeniaeformis* (Batsch)

1786. *Hydatigena taeniaeformis* Batsch, A.J.G., *Naturgeschichte der Bandwurmgarthung veberhaupt und ihrer Arten insbesondere, nach den neuern Beobachtungen in einem systematischen Auszuge*, Halle, pp. 298.

1808. *Cysticercus fasciolaris* Rudolphi, C.A., *Entozoorum sive vermium intestinalium aistorta naturalis*, Amstelaedami, 26, p. 457.

1930. *Taenia taeniaeformis* : Southwell, T., *Fauna Brit. India, Cestoda* London, 2, pp. 18-19.

Material.—6 exs., Kolayat (Bikaner Dist.), B. Biswas coll., 15.ix.60, ex intestine of a gerbil, *Gerbillus gleadowi* Murray.

Distribution.—RAJASTHAN : Bikaner Dist. *Elsewhere* : Cosmopolitan.

VI—PARASITE-HOST LIST OF RAJASTHAN CESTODES

CESTODE PARASITES (1)	HOST	
	Scientific Name (2)	Common Name (3)
1. <i>Duthiersia fimbriata</i> (Diesing)	<i>Varanus monitor</i> (L.)	Monitor lizard
2. <i>Proteocephalus woodlandi</i> Moghe	<i>Varanus monitor</i> (L.) & <i>Uromastix hardwickii</i> Gray	Monitor lizard & Uromastix
3. <i>Oochoristica tuberculata</i> (Rudolphi)	<i>Varanus monitor</i> (L.)	Monitor lizard
4. <i>Raillietina (Raillietina) polychalix</i> (Kotlan)	<i>Columba livia</i> Gmelin	Pigeon
5. <i>Raillietina (Raillietina) torquata</i> (Meggitt)	<i>Columba livia</i> Gmelin	Pigeon
6. <i>Raillietina (Raillietina) quadritesticulata</i> Moghe	<i>Streptopelia senegalensis</i> (L.)	Brown dove
7. <i>Raillietina (Raillietina) nagpurensis</i> Moghe	<i>Columba livia</i> Gmelin	Pigeon
8. <i>Raillietina (Paroniella) barmerensis</i> n. sp.	<i>Corvus splendens</i> (Vieillot)	House crow
9. <i>Davainea himantopodis</i> Johnston	<i>Himantopus himantopus</i> (L.)	Black-winged stilt
10. <i>Cotugnia cuneata</i> Meggitt	<i>Streptopelia decaocto</i> (Frivalszky)	Ring dove
11. <i>Cotugnia bikanerensis</i> n. sp.	<i>Pterocles exustus</i> Temm. & Laug.	Sand grouse
12. <i>Laterorchites rajasthanensis</i> n. sp.	<i>Falco jugger</i> Gray	Laggar falcon
13. <i>Paricterotaenia coronata</i> (Creplin)	<i>Burhinus oedicnemus</i> (L.)	Stone-curlew
14. <i>Paricterotaenia sujerensis</i> n. sp.	<i>Oenanthe deserti</i> (Temmin- ck)	Desert chat
15. <i>Choanotaenia kapurdiensis</i> n. sp.	<i>Cursorius cursor</i> (Latham)	Cream coloured courser
16. <i>Choanotaenia croaxum</i> n. sp.	<i>Corvus splendens</i> Vieillot	House crow
17. <i>Sobolevicanthus serratus</i> <i>birmanicus</i> (Meggitt)	<i>Columba livia</i> Gmelin	Pigeon
18. <i>Sobolevicanthus gracilis</i> (Zeder)	<i>Aythya ferina</i> (L.)	European pochard

VI—PARASITE-HOST LIST OF RAJASTHAN CESTODES—*contd.*

CESTODE PARASITES (1)	HOST	
	Scientific Name (2)	Common Name (3)
19. <i>Hymenolepis diminuta</i> (Rudolphi)	<i>Rattus rattus rufescens</i> (Gray) & <i>Gerbillus gleadowi</i> Murray	Rat & Gerbil
20. <i>Vampirolepis nana</i> (Siebold)	—	Man
21. <i>Myotolepis jaisalmerensis</i> sp. n.	<i>Taphozous kachhensis kachhensis</i> Dobson	Bat
22. <i>Diorchis magnicirrosa</i> Moghe & Inamder	<i>Streptopelia decaocto</i> (Frivaldszky)	Ring dove
23. <i>Diorchis gigantocirrosa</i> Singh	<i>Fulica atra</i> L.	Coot
24. <i>Diorchis jodhpurensis</i> n. sp.	<i>Charadrius dubius</i> Scopoli	Ringed plover
25. <i>Acoleus vaginatus</i> (Rudolphi).	<i>Himantopus himantopus</i> (L.)	Black-winged stilt
26. <i>Taenia taeniaeformis</i> (Batch)	<i>Gerbillus gleadowi</i> Murray	Gerbil

VII—SUMMARY

1. This paper deals with the cestodes collected in recent years from various parts of Rajasthan by parties of the Zoological Survey of India.

2. Twenty-six species belonging to 16 genera are described. Of them, the following 8 species are new to science.

- (i) *Railletina (Paroniella) barmerensis* n. sp.
- (ii) *Cotugnia bikanerensis* n. sp.
- (iii) *Laterorchites rajasthanensis* n. sp.
- (iv) *Paricterotaenia sujerensis* n. sp.
- (v) *Choanotaenia kapurdiensis* n. sp.
- (vi) *Choanotaenia croaxum* n. sp.
- (vii) *Myotolepis jaisalmerensis* n. sp.
- (viii) *Diorchis jodhpurensis* n. sp.

3. All the species except one (*Vampirolepis nana*, reported by Chandler, 1927) are new records from Rajasthan.

4. A systematic list of the cestodes known from Rajasthan, a field key, a systematic account of the species and a parasite-host list are also included.

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IX.—LETTERING USED IN TEXT-FIGURES

c., cirrus.

cp., cirrus pouch.

dc., dorsal excretory duct.

gp., genital pore.

o., ovary.

rs., receptaculum seminis.

t., testis.

ted., transverse excretory duct.

vg., vagina.

vd., vas deferens.

ved., ventral excretory duct.

vgl., vitelline gland.