

**AVIAN CESTODES IN THE HIMALAYAN ECO-SYSTEM. I. A NEW SPECIES OF CESTODE *COTUGNIA CHAUHANI* N. SP. (CESTODA : DAVAINEIDEA) FROM *COLUMBA LIVIA DOMESTICA* AND *COLUMBA LIVIA INTERMEDIA*\***

SANDEEP K. MALHOTRA AND V. N. CAPOOR

*Parasitology Laboratory, Department of Zoology,  
University of Allahabad, Allahabad 211 002, U.P., India*

INTRODUCTION

The morphological studies of the tapeworms under study revealed these to belong to the genus *Cotugnia* Diamare of the family Davaineidae Fuhrmann, 1907, order Cyclophyllidea Ben. in Braun, 1900 of the subclass Eucestoda Southwell, 1930.

MATERIALS AND METHODS

Nine out of 123 pigeons *Columba livia domestica* and one *C.l. intermedia* examined for cestode infection yielded 42 and 4 interesting tapeworms. The hosts were collected from Buwakhil (1600-1800 mASL) and Kotdwara (300-325 mASL) in District Pauri-Garhwal, U.P. Whole mounts of the worms were prepared by the method of Malhotra (1983) and measurements recorded in millimeters unless otherwise stated and mentioned as ranges followed by mean in parentheses. Camera lucida drawings were prepared.

RESULTS

*Cotugnia chauhani* n. sp.  
(Figs. 1-4)

Cestodes medium sized, 28-36 (33) × 2.505. Proglottides craspedote, all broader than long. Scolex (Fig. 1), 0.36-0.495 (0.428) × 0.424-0.57 (0.57). Suckers unarmed, spherical, 0.105-0.135 (0.109) × 0.06-0.135 (0.1). Rostellum, 0.055-0.125 (0.098) × 0.234-0.359 (0.30). Rostellar hooks (Figs. 2a, b) 258-280 (269), arranged in 2 alternate rows. Hooks of the outer row 0.015-0.2 (0.018) long and of the inner row 0.012-0.014 (0.013) long. Neck indistinct. Immature, mature and gravid (Figs. 3, 4) proglottides measure, 0.03-0.195 (0.138) × 0.17-0.81 (0.698); 0.099-0.225 (0.16) × 0.978-2.505 (1.785) and 0.6-0.705 (0.653) × 1.635-1.98 (1.808), respectively. Genitalia double in each proglottid. Testes spherical to oblong, 46-77 (67) in number, located only lateral to the ovary forming 2 groups. Testes never cross lateral excretory vessels.

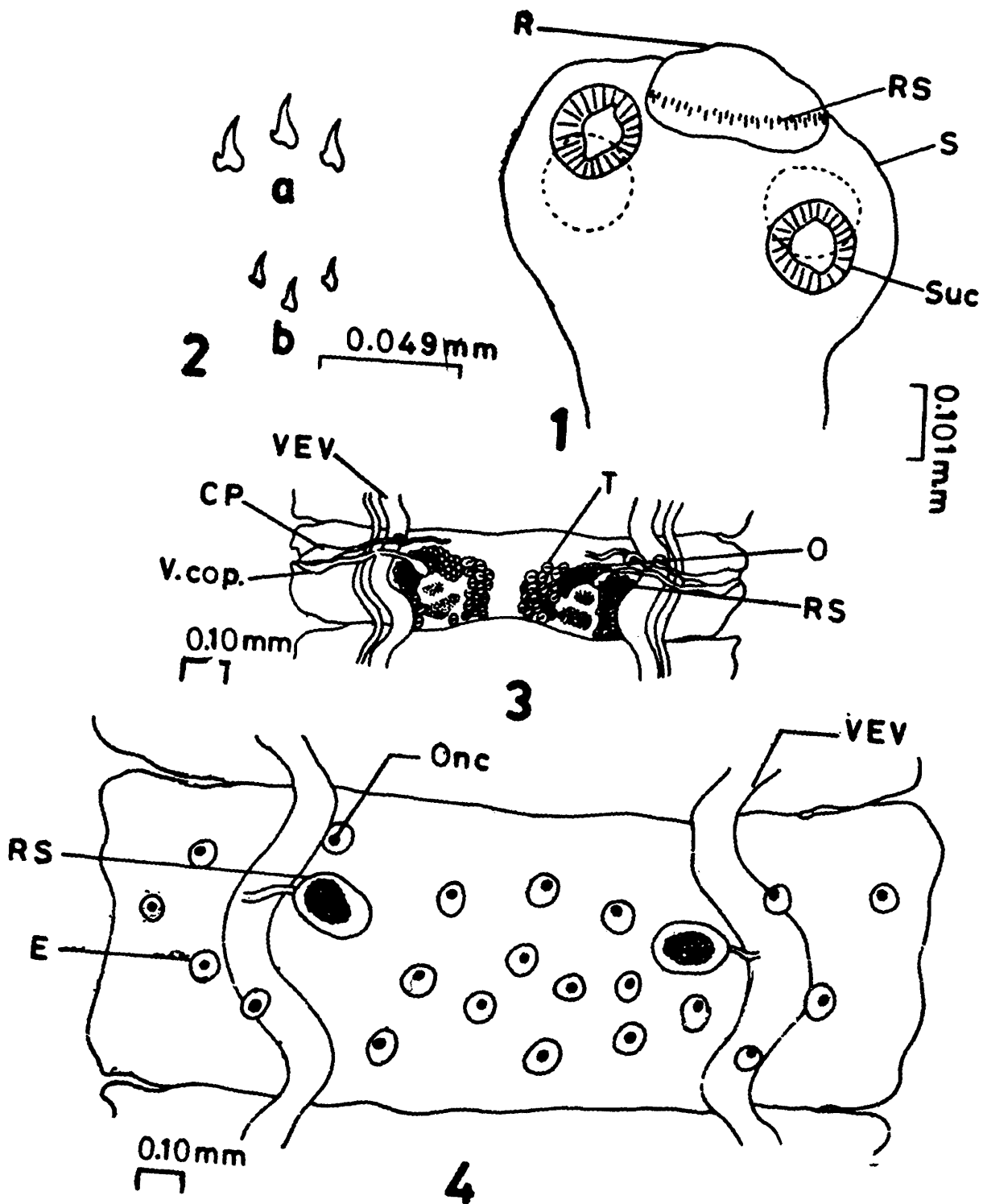
---

\* Part of D. Phil. thesis of the senior author.

Poral group of testes, 25-35 (30) and aporal group of testes 21-42 (32). Testes, 0.01-0.056 (0.03) × 0.015-0.061 (0.049). Cirrus pouch elongated, 0.09-0.285 (0.201) × 0.15-0.045 (0.033), not reaching lateral excretory vessels. Cirrus unarmed, 0.015-0.023 (0.019) in diameter. Vas deferens, 0.007-0.015 (0.011) may form few coils fan-shaped, located close to lateral excretory vessel on lateral proglottid margin, before entering into cirrus pouch. Ovary follicular, 0.03-0.15 (0.078) × 0.12-0.36 (0.248). Vagina, 0.007-0.023 (0.016) in diameter; copulatory part of vagina, 0.07-0.117 (0.094) × 0.008-0.02 (0.014). Vagina opens posterior to cirrus pouch into the genital atrium. Receptaculum seminis large, 0.03-0.195 (0.132) × 0.022-0.15 (0.089). Vitelline gland, 0.007-0.092 (0.06) × 0.045-0.165 (0.109), postovarian, near posterior border of proglottis. Ootype between ovary and vitelline gland measure, 0.03-0.045 (0.038) × 0.015-0.045 (0.03). Genital atrium, 0.015-0.045 (0.029) deep and 0.022-0.06 (0.038) wide. Genital pores in anterior third lateral margin of each proglottid. Egg capsules, 0.015-0.075 (0.045) × 0.068-0.12 (0.094), each with a single egg. Eggs, 0.015-0.075 (0.044) × 0.015-0.075 (0.069). Onchosphere, 0.007-0.03 (0.017) × 0.015-0.03 (0.024).

#### DISCUSSION

*C. chauhani* n. sp. shows difference from *C. collini* Fuhrmann (1909) in possessing smaller strobila (28-36 × 2.505 vs 50-70 × 4.5), scolex (0.57 vs 1.34), suckers (0.135 vs 0.38), rostellum (0.359 vs 0.85) and cirrus pouch (0.285 vs 0.42); and larger number of rostellar hooks (280 vs 200). It differs from *C. fleari* Meggitt (1927) in having larger number of testes (77 vs 44) and wider cirrus pouch (0.045 vs 0.03) which does not reach longitudinal excretory vessels. The worms can be differentiated from *C. govinda* Johri (1934) in possessing shorter (33mm vs 53.5mm) strobila, scolex (0.428 vs 0.565), cirrus pouch not reaching lateral excretory vessels, lesser number of testes (77 vs 54). Two proglottides of *C. govinda* were reported to have single set of female reproductive organs by Johri (1934) but in the present species all the proglottides essentially had 2 sets of reproductive organs. The new species also differs from *C. intermedia* Johri (1934) in possessing shorter (33 vs 48) and narrower strobila (2.505 vs 3.2), cirrus pouch not reaching lateral excretory vessels, and lesser number of testes (77 vs 90) invariably in 2 groups, and not forming a continuous band. It can also be differentiated from *C. noctua* Johri (1934) in consisting of shorter (33 vs 51) strobila, wider rostellum (0.359 vs 0.225), cirrus pouch not reaching lateral excretory vessels, and lesser number of testes (77 vs 182) not extending beyond lateral excretory vessels. It can be distinguished from *C. polycantha* Fuhrmann (1909) in having longer cirrus pouch (0.285 vs 0.2) which is only 0.465 to ventral excretory vessels as against 0.168 found in *C. polycantha* and lesser number of testes (77 vs 88) and from *C. taiwanensei* Yamaguti (1935) in cirrus pouch not reaching longitudinal excretory vessel and lesser number of testes (77 vs 100).



Figs. 1-4. *Cotugnia chauhani* n. sp. (1) scolex  $\times 100$  (2a). Rostellar hooks of outer row  $\times 240$  (2b) Rostellar hooks of inner row  $\times 240$  (3) mature proglottid  $\times 10$  (4) gravid proglottid  $\times 10$

CP, cirrus pouch; E, egg; O, ovary; ONC, oncosphere; R, rostellum; RH, rostellar hooks; RS, receptaculum seminis; S, scolex; SUC, sucker; T, testis; V Cop., copulatory part of vagina; VEV, ventral excretory vessel.

|          |   |
|----------|---|
| Hosts    | <i>Columba livia domestica</i> and <i>C. L intermedia</i>   |
| Habitat  | Duodenum  |
| Locality | Buwakhal (1600-1800 mASL) and Kotdwara (300-325 mASL),<br>Dist. Pauri-Garhwal, U.P., India.   |
| Holotype | Holotype slide No. PCLS 02/79 deposited with the Parasitological<br>Collections, Department of Zoology, University of Allahabad,<br>Allahabad, U.P. |

### SUMMARY

The parasitological survey of high altitude pigeons yielded tapeworms of a new species *Cotugnia chauhani* n. sp. These worms exhibit comparable characters from other close species in size of strobila, scolex suckers, rostellum, eggs; size and extension of cirrus pouch; and number of rostellar hooks.

### REFERENCES

- Braun, M. 1900. In H. G. Bronn, *Klassen and Ordnungen des Thierreichs, Band IV. Vermes; Abtheilung I. b., Cestodes.* 927-1731. Leik pzig.
- Fuhrmann, O. 1907. Die Systematik der Ordnung der Cyclophyllidea. *Zool. Anz.*, **32** : 289-297.
- Fuhrmann, O. 1909. La distribution faunistique et geographique des cestodes d'oiseaux. *Bull. soc. sci. nat. Neuchatel*, **36** : 90-101.
- Johri, L. N. 1934. Report on a collection of cestodes from Lucknow (U. P., India). *Rec. Indian Mus.*, **36**: 153-177.
- Meggitt, F. J. 1927. Report on a collection of cestodes mainly from Egypt. I. Families Anoplocephalidae, Davaineidae. *Parasitology*, **19** : 314-327.
- Malhotra, Sandeep K. 1983. Cestode fauna of hill-stream fishes in Garhwal Himalayas, India. VI. *Ptychobothrium nayarensis* n. sp. from *Barilius bola* (Ham.) and *Schizothorax richardsonii* (Gray). *Korean J. Parasit.*, **21** (2) : 205-208.
- Southwell, T. 1930. *Cestoda. Vol. 1. In the Fauna of British India, including Ceylon and Burma*, xxxxi + 391p., Vol. 2, ix + 262p.
- Yamaguti, S. 1935. Studies on the helminth fauna of Japan. Part 6. Cestodes of birds, I. *Jap. J. Zool.*, **6** : 183-232.