A NEW SPECIES OF *PSEUDOLEPOCREADIOIDES* HAFEEZULLAH, 1970 (TREMATODA : LEPOCREADIIDAE) FROM PURI COAST, BAY OF BENGAL

Pseudolepocreadioides secundus sp. nov. (Fig. 1).

Type host : *Pomacanthus annularis* (Bl.); Chaetodontidae.

Site : Small intestine.

Locality : Puri coast, Bay of Bengal.

Number of specimens: 38 from 2 of 10 hosts.

Specimens deposited No. MT 160 (Holotype); MT 161 (Paratypes).

Body rhomboid, slightly wider than long (1,230 to 1,780 long by 1,320 to 1,850 wide*). Cuticle thick, spined. Eye spot pigment present. Oral sucker spherical, subterminal, 150 to 193 in diameter; aperture ventral, oval. Acetabulum spherical, equal to oral sucker, median, preequatorial, 150 to 193 in diameter, aperture oval, 520 to 660 from anterior end of body. Forebody 37·64 to 42·27% of body length. Prepharynx indistinct. Pharynx ovoid, 76 to 94 long by 92 to 102 wide. Oesophagus 68 to 76 long. Intestinal bifurcation midway between suckers. Caeca simple, straight, terminating near posterior end of body.

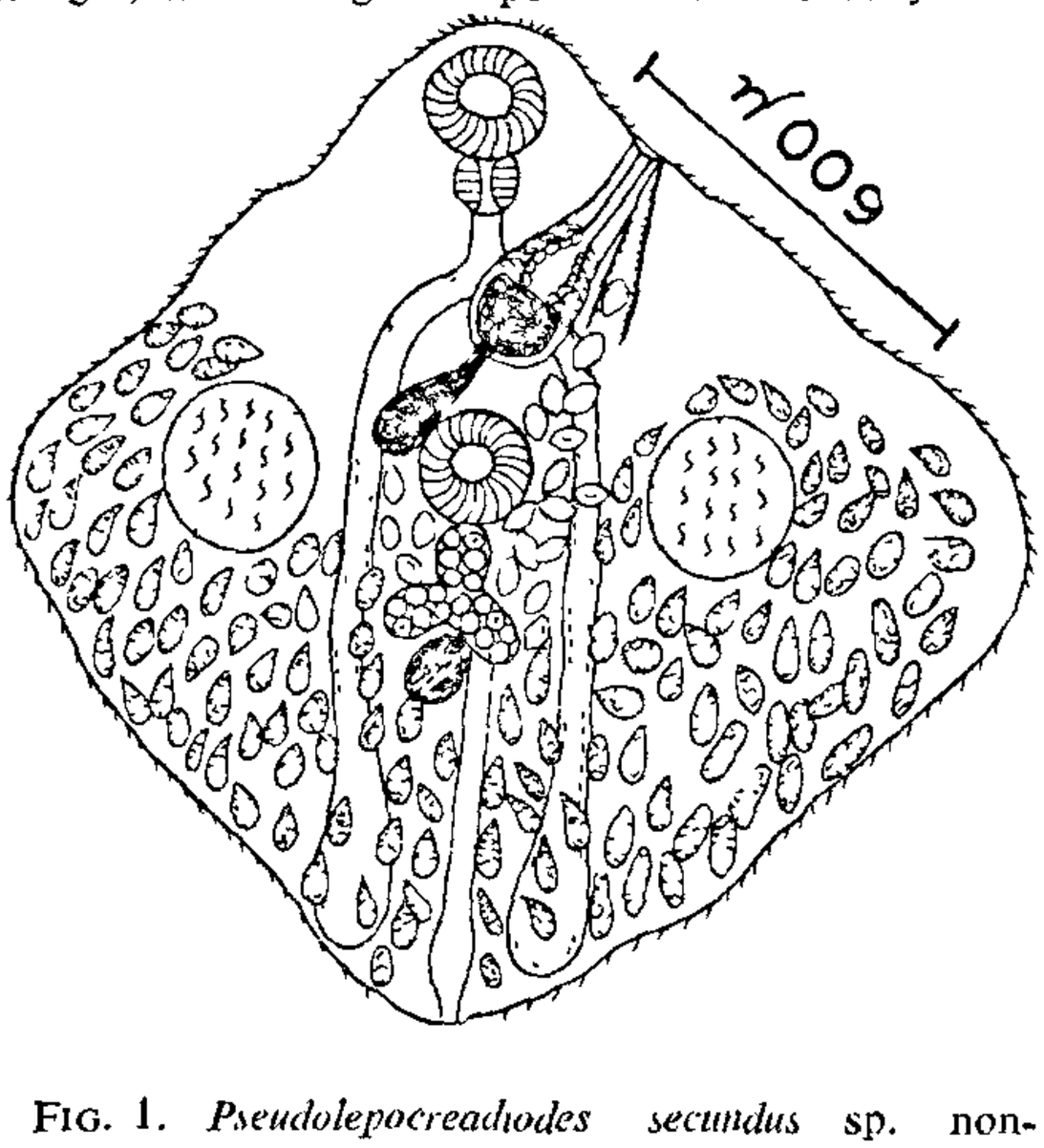

FIG. 1. *Pseudolepocreadioides secundus* sp. nov. ventral view of the holotype.

Testes two, oval, smooth in outline, symmetrical, extracaecal, para-acetabular in position, 210 to 260 long by 200 to 240 wide and 151 to 188 away from acetabulum. Cirrus sac club-shaped, straight, lying obliquely between acetabulum and genital pore, 372 to 395 long by 142 to 156 wide, enclosing 95 to 116 long by 115 to 126 wide internal seminal vesicle; 100 to 130 long by 70 to 82 wide pars prostatica surrounded by prostate gland cells and 121 to 139 long cirrus. External seminal vesicle saccular, 210 to 240 long by 80 to 90 wide, extending up to middle of acetabulum. Genital pore marginal, sinistral to oral sucker.

Ovary trilobed, immediately postacetabulur, median, inter-caecal, 100 to 130 long by 82 to 90 wide. Seminal receptacle oval, postovarian, 100 to 123 long by 78 to 92 wide. Vitellaria, follicular, follicles large, extending between anterior border of testes and posterior end of body, filling wing-like sides of body. Uterus running between ovary and cirrus sac. Metraterm well developed, muscular, 256 to 287 long and 66·1 to 72·65% of cirrus sac length. Eggs 84 to 91 long by 39 to 50 wide. Excretory vesicle I-shaped, extending to ovary; excretory pore terminal.

The new species differs from the genotype *Pseudolepocreadioides symmetrorchis* Hafeezullah, 1970 and the only other species in the genus in having suckers of equal size instead of unequal, ovary trilobed and immediately postacetabular instead of deeply lobed and well posterior to acetabulum, seminal receptacle postovarian instead of between ovary and acetabulum, external seminal vesicle extending up to middle of acetabulum instead of up to posterior border of acetabulum, testes are well separated from acetabulum instead of close to it, vitellaria extending between anterior border of testes instead of form level of caeca bifurcation and eggs of larger size (51 to 60 by 33 to 481 in *P. symmetrorchis*).

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* All measurements are given in microns. Holotypes and paratypes are deposited with the Helminthological collection of the Zoological Museum of Shibli National College, Azamgarh.

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EFFECT OF LEAF AND KERNEL EXTRACTS OF NEEM ON MOULTING AND VITELLOGENESIS IN *DYSDERCUS CINGULATUS* FABR. (HETEROPTERA: PYRRHOCORIDAE)

THE antifeedant, deterrent[1–2] and insecticidal[3–4] properties of neem seed kernel and leaves are now well established. The adverse effect of neem seed kernel on the growth and development of *Tribolium castaneum*[5] is recently reported. Prabhu *et al.*[6] have indicated that a good number of plant extracts contain juvenile hormone (JH) analogues which inhibit moulting in *Dysdercus cingulatus*. The effect of leaf and kernel extracts of neem on moulting and vitellogenesis in *D. cingulatus* is reported in the present paper.

Neem leaves and kernels from mature seeds were dried at room temperature and powdered. Ten grams of each were soxhlet extracted with acetone[6]

and the solution evaporated in vacuum. The solvent was redissolved in the required quantities of acetone and applied topically on the dorsal side of the abdomen of early third, fourth and fifth instar nymphs. The control insects were treated with acetone.

Both leaf and kernel extracts showed similar results. The third instar nymphs moulted into sixth instar supernumerary nymphs, skipping the fourth and fifth stages. This sixth instar nymph was small as compared to the sixth instar nymph that had moulted directly from the treated fifth instar. The treated fourth instar moulted into fifth instar as usual, but subsequently, it moulted into sixth instar. All the treated fifth instar nymphs moulted into the sixth instar. The sixth instar nymphs in all cases retained some of the nymphal characters such as two-segmented tarsi, reduced paramere and rudimentary wings. They failed to copulate. Though both leaf and kernel extracts had similar effects, mortality was 80% among the kernel extract treated insects as against 55% for the leaf extract treated ones. In controls, the development was normal.

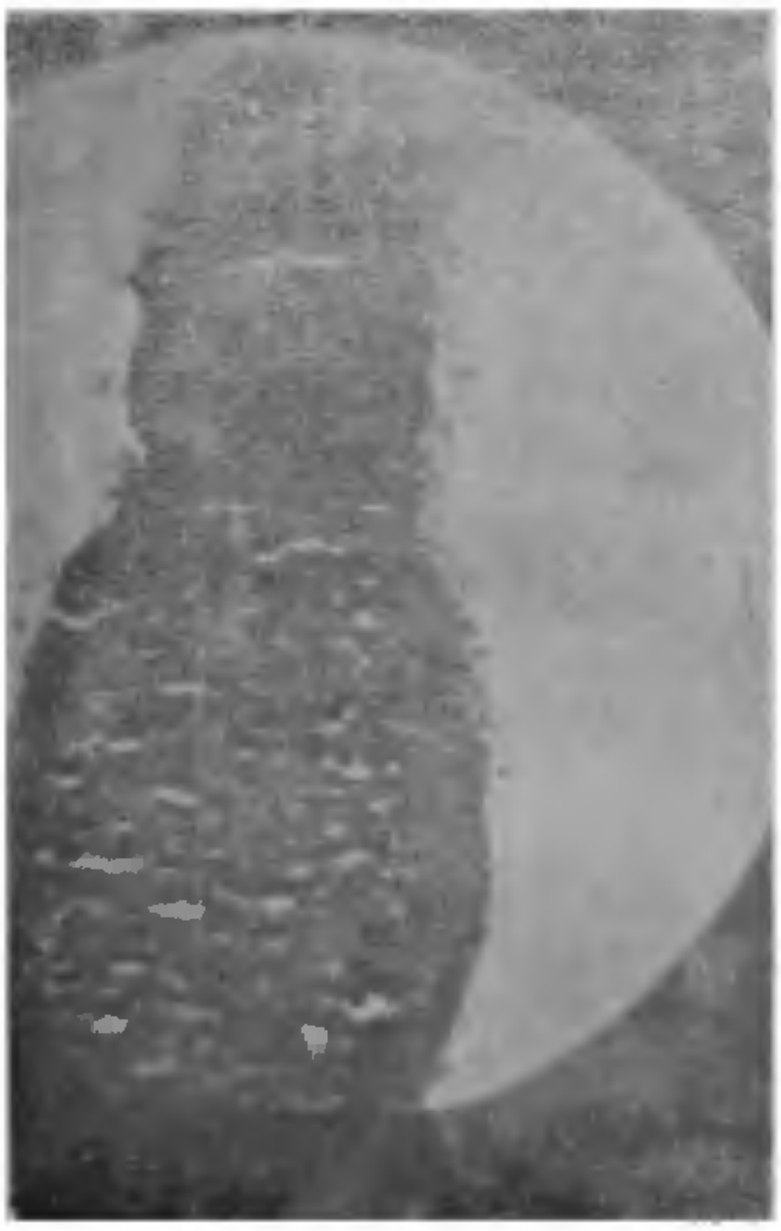

FIG. 1. Microphotograph of the degenerated and incomplete ovarioles in *D. cingulatus* due to treatment.

The ovaries of both sixth instar supernumerary nymphs obtained through treatment of the extracts and untreated insects were dissected out and fixed in Bouin's fluid for histological studies. They were examined for morphological changes. Morphologically, the ovarioles of the sixth instar nymphs were in a degenerate condition as compared to the control insects in which the ovarioles were fully developed. Yolk deposition did not take place in the ovarioles of the sixth instar nymphs even after six days of moulting whereas in the controls complete vitellogenesis occurred (Figs. 1, 2).

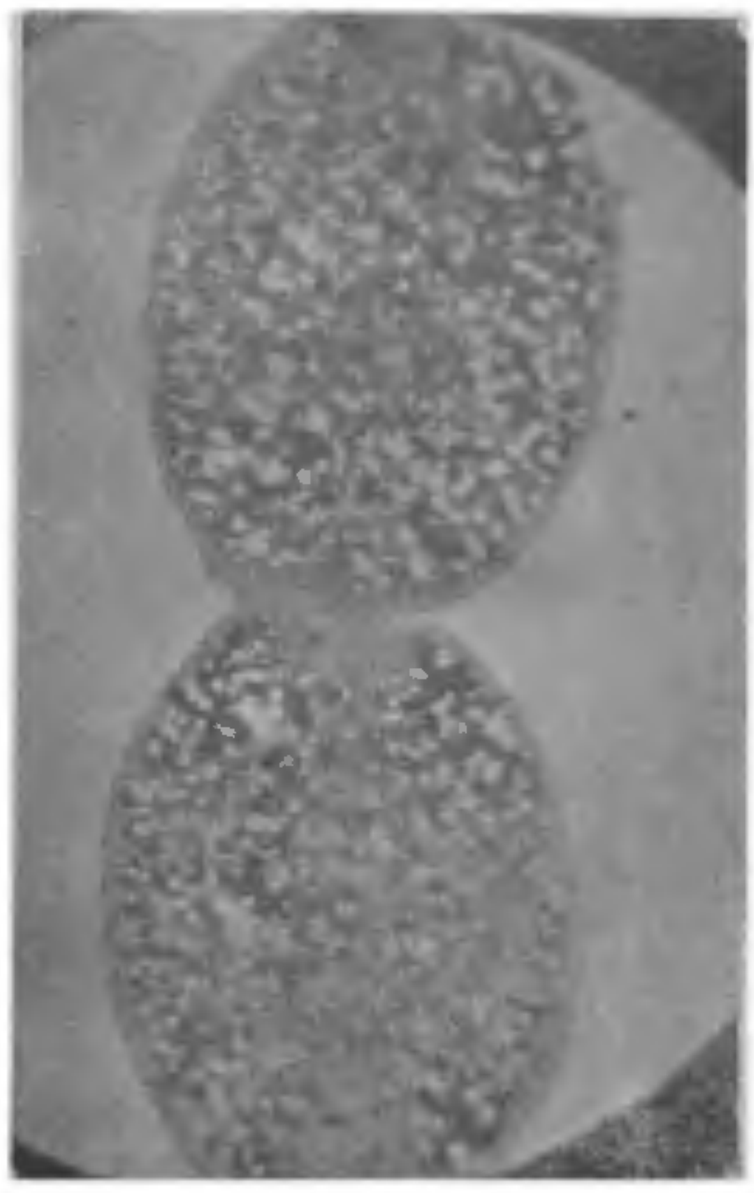

FIG. 2. Microphotograph of complete ovarioles in *D. cingulatus*.

The results indicate that both leaf and kernel extracts possess some JH-like substance which impairs the moulting pattern. Similar results were reported by Prabhu *et al.*[6], when crude plant extracts containing JH-like substances were applied on *D. cingulatus*. When Farnesyl Methyl Ether (FME) was applied to the fourth instar *D. cingulatus*, the insect developed into fifth instar[7]. Similar results were obtained in the present study also. That the topical application of JH mimics to adult females of *D. cingulatus* has ovicidal effects[8,9] has been already reported. It is, therefore, quite possible that the leaf and kernel extracts of neem contain JH-like substances.

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ANATOMY OF THE UTERO-VAGINAL JUNCTION IN THE INDIAN SHEATH-TAILED BAT, *TAPHOZOUS LONGIMANUS* (HARDWICKE)

EARLIER studies[1–11] on the female reproductive organs of bats have revealed that there are considerable differences in the anatomy of the utero-vaginal junction in these animals, and this falls into four main categories: (*1*) the two uterine cornua open separately into the vagina which is also partially or nearly completely septate as in *Cynopterus* and *Pteropus*[10]. (2) The two uterine cornua open by independent cervical canals into a common vagina as in *Rousettus*[12–14]. (3) The uterine cornua are separate but their lumina unite caudally to open through a cervical canal into the vagina as in most microchiropteran species[2,4,5,10,11]. (4) The uterus is simplex and opens into the vagina by a cervical canal as in some phyllostomid bats[2,3,15]. Minor modifications of the above mentioned main categories may occur in some bats.

The present study has been undertaken because the anatomy of the utero-vaginal junction in *Taphozous longimanus* changes after the animal undergoes its first parturition. Such a phenomenon has not been reported so far in any other eutherian mammal.

Figures 1, 3 and 4 illustrate the anatomy of the utero-vaginal junction in a non-parous female of *Taphozous longimanus*. Although the two uterine cornua are united externally, their lumina are independent throughout their lengths and open independently through separate cervical canals which pass through a common cervical bulb. The two cervical canals have their own muscular coat and they open on the ventro-lateral sides of the cervical bulb subterminally so that a small part of the cervical bulb projects beyond the openings of the cervical canals. Figures 2, 5 and 6 illustrate the anatomy of the utero-vaginal junction of a parous female of *Taphozous longimanus*. Whereas the lumina of the two uterine cornua are independent and each cornu has its own cervical canal, the two cervical canals fuse at about the

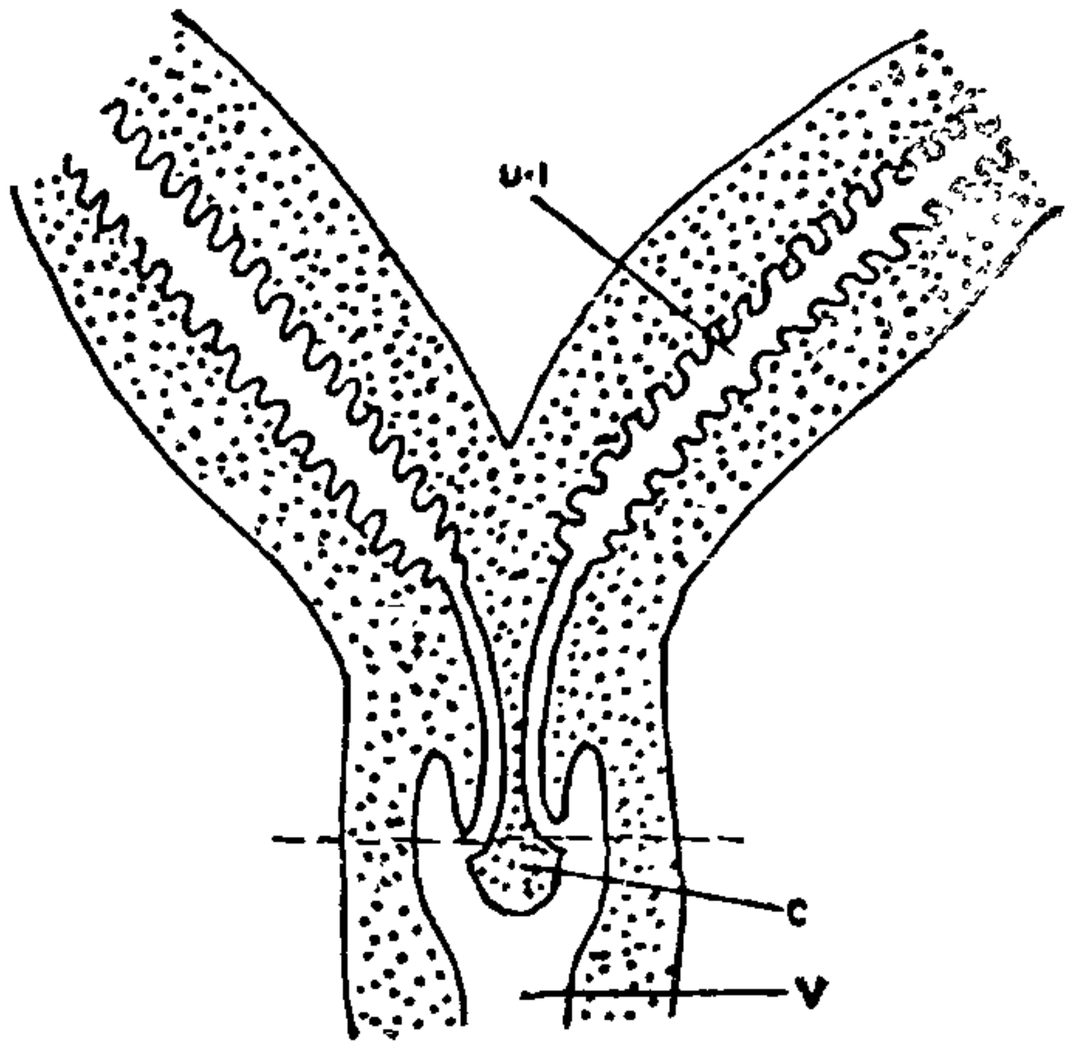

FIG. 1. Schematic representation of the anatomy of the utero-vaginal junction in a juvenile female of *Taphozous longimanus*. Note the independent cervical canals opening separately into the vagina. *c*, cervical bulb; *u·l*, uterine lumen; *v*, vagina.

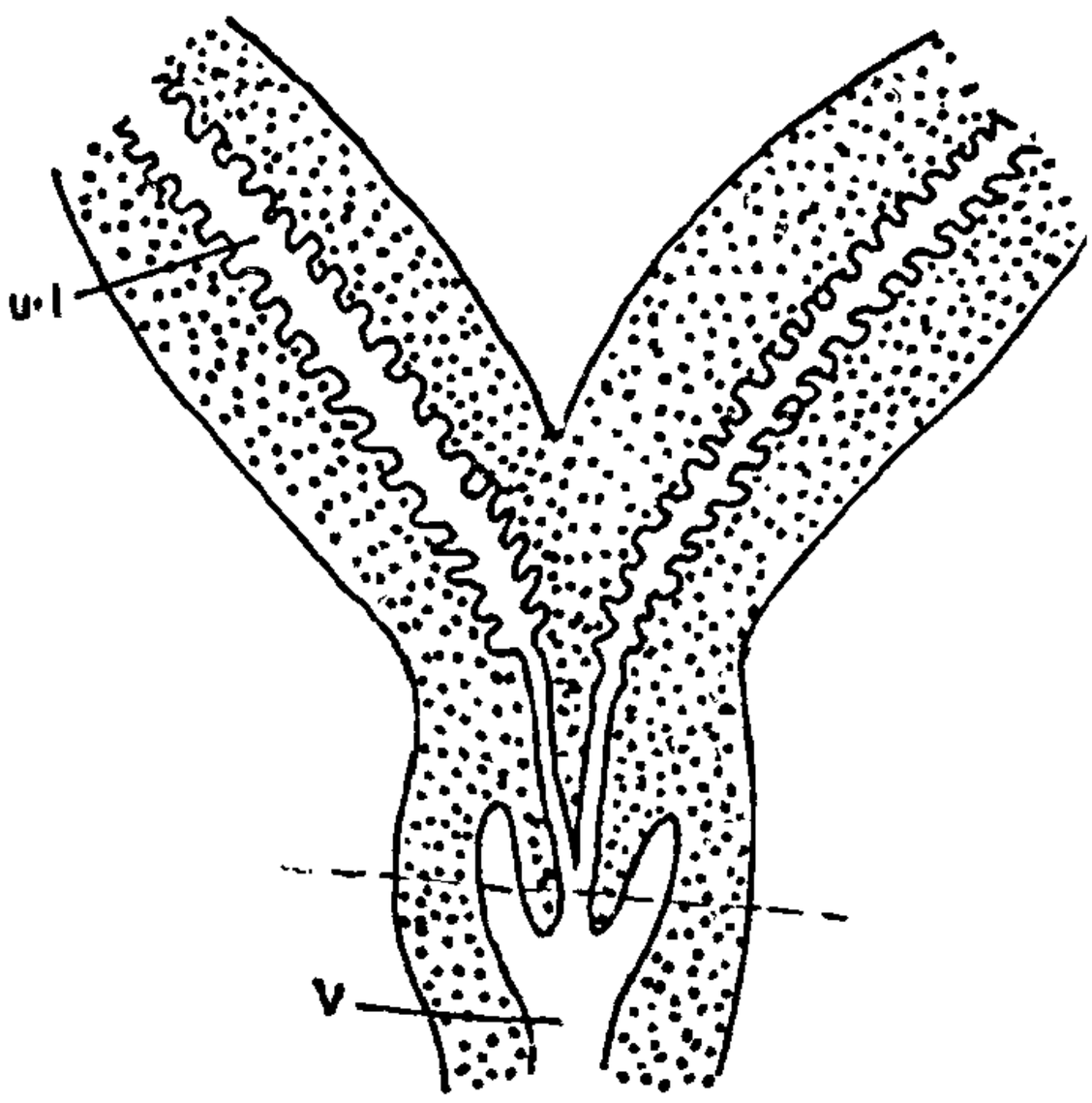

FIG. 2. Schematic representation of the anatomy of the utero-vaginal junction of a parous female of *Tapozous longimanus*. The two cervical canals fuse and open by a common cervical opening at the tip of the cervix. Legends as in earlier figure.