

CONCEPT OF *PSEUDOPARONELLA* HANDSCHIN, 1925
(COLLEMBOLA : ENTOMOBRYIDAE : PARONELLINAE)

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INTRODUCTION

HANDSCHIN (1925) splitted the genus *Paronella* Schött (1893), into four genera viz., *Paronella* Schött (1893), *Pseudoparonella* n. g., *Aphysa* n. g. and *Microphysa* n. g. He diagnosed *Pseudoparonella* and fixed *Paronella appendiculata* Schött, 1917 as the type-species of his new genus. In the same paper, he redescribed *Paronella setigera* Börner, 1906 as a new comb. viz., *Pseudoparonella setigera* and described a new species, *Pseudoparonella incerta*.

The main diagnostic characters, used by HANDSCHIN (1925) to differentiate his new genus *Pseudoparonella* from other related genera, were as follows : (1) Antennae usually short, scarcely attaining body length, Ant. IV annulated. (2) Body with larger rounded scales. (3) Mucro short, 2-teethed. (4) Dentes upto tip with spines.

Although, HANDSCHIN (1925) fixed *P. appendiculata* as the type-species of his new genus, he somewhat hesitated in fixing the above-mentioned species of Schött (*P. appendiculata*) as the type-species because of the incongruity in certain characters, specially in the shape of scales and longer antennae in *P. appendiculata* and *P. queenslandica*. It will be worthwhile to quote the following few lines, which will clearly express HANDSCHIN'S (1925) hesitations : "Als Typus fasse ich SCHÖTT'S *Paronella appendiculata* auf. Allerdings treten bei dieser Art 'bewimperte, lanzettliche an beiden Enden zugespitzte Schuppen' auf." (*Treubia*, Vol. VI, p. 254). HANDSCHIN (1925) tried to justify this difference in the shape of scales and length of antennae by attributing such difference to the developmental phases, thus to quote : "Mit der Längenzunahme der Mucronen zeigt sich auch eine Verlängerung der Antennen (*queenslandica* SCHÖTT.) doch bleibt der allgemeine Bauplan vollständig gewahrt". Examination of the lectotypes and a series of paralectotypes of *P. appendiculata* and *P. queenslandica* proves that the diagnosis given by HANDSCHIN (1925) does not agree at all with the characters actually possessed by these species (i.e., *P. appendiculata* and *P. queenslandica*) and his diagnosis of *Pseudoparonella* was actually derived from the species like *P. setigera* and *P. incerta* which he had examined at the time of describing his new genus. In fact, examination of the holotype and representative collections of *P. incerta* and *P. setigera* proves that the former should be included in *Lepidonella* Yosii (1960) and

the latter in *Bromacanthus* Schött (1925). Thus, it is now apparent that *P. appendiculata* and *P. queenslandica* are widely different from the two cited species and they belong to two widely different tribes viz., Callyntrurini (*appendiculata*, *queenslandica*) and Bromacanthini (*incerta*, *setigera*). *Paronella* with the type-species *P. fusca* Schött is widely different from the species like *P. appendiculata* and *P. queenslandica* and other

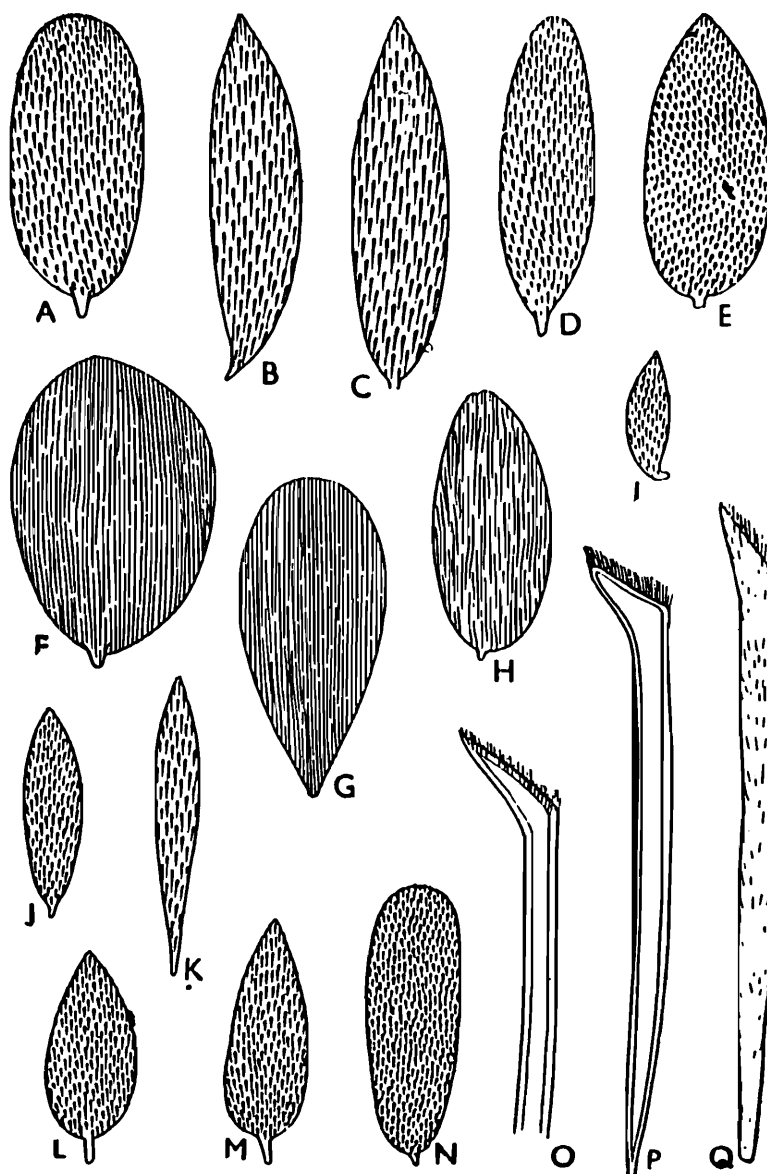


Fig. 1. Pseudoscales and flexed macrochaetae in *Pseudoparonella* and *Lawrenceana*. *Pseudoparonella* (*Lawrenceana*) *queenslandica* (Schött). A, D, I, L, M—Scales from Ths. II, III and Abd. IV ; O, apex of a flexed macrochaete from thorax ; Q, a flexed macrochaeta from head (from Lectotype and Paralectotype) ; *Pseudoparonella* (*Pseudoparonella*) *appendiculata* (Schött). B, C, E, F, G, H, J, N—Scales from thorax and abdomen (from the specimen of Belgrave, Victoria, det. Womersly) ; K, a scale from Abd. II (from Lectotype) ; P, a flexed macrochaeta from thorax (from Lectotype).

species of the genus in (1) Achaetotic condition of its body ; (2) presence of distinct simple spines on manubrium and dentes, (3) presence of extra ocular structure, (4) nature of scales clothing body and (5) nature of mucronal structure. Evidently the

species having the characters of *P. appendiculata* and *P. queenslandica* should be included in a separate genus under Callyntrurini as the characters possessed by them neither agree with the characters of *Paronella* nor with those of *P. setigera* and *P. incerta*. Some of such outstanding characters are as follows : (i) presence of transitional pseudoscales mostly of lanceolate shape of *Dicranocentroides* (*vs.* true or typical scales in *B. setigera* n. comb., *L. incerta* n. comb. and *P. fusca*) [Figs. 1-3, 5 ; PL-I, E, F] ; (ii) presence of

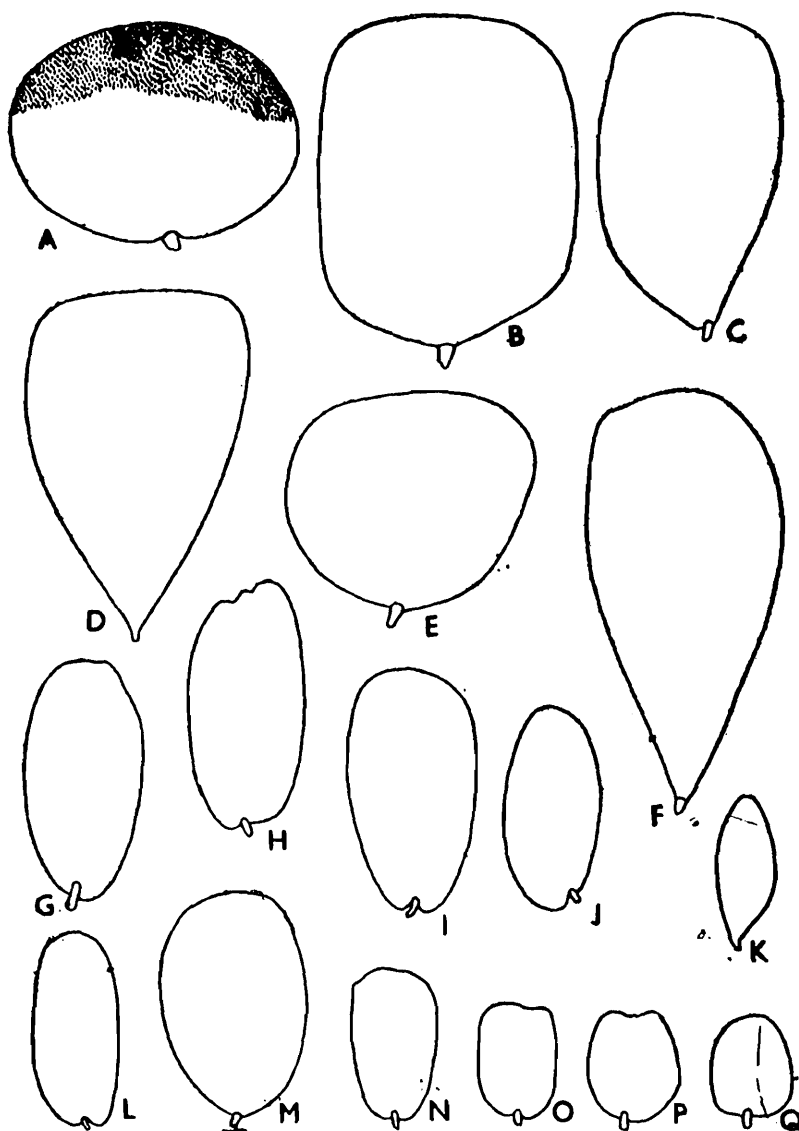


Fig. 2. Typical scales in Bromacanthini A-E, G-N, P, Q—from body ; F, O, from manubrium.

obliquely truncated flexed macrochaetae (brush setae) (*vs.* achaetotic body in *B. setigera*, *L. incerta* and *P. fusca*) ; (iii) dental spines absent (*vs.* dental apines always present in *B. setigera*, *L. incerta* and *P. fusca*) ; (iv) arrangement of ocelli always in 2 longitudinal parallel rows (*vs.* circular arrangement of ocelli with ocellus B located more or less centrally in each ocellar field in *B. setigera* and *L. incerta*). The name *Pseudoparonella* Handschin (1925), however, is to be retained as the oldest available name for the *appendiculata* and *queenslandica* groups of species with the type-species *P. appendiculata*,

fixed by HANDISCHIN (1925) [Articale 68(a)]. The present investigation further reveals that the species listed by PROF. SALMON (1964) under *Pseudoparonella* Handschin (1925) either belongs to the genus *Microparonella* Carpenter, 1916 (*doveri* Carpenter, 1932), *Bromacanthus* Schött, 1925 (*orientalis* Handschin, 1930; *setigera*

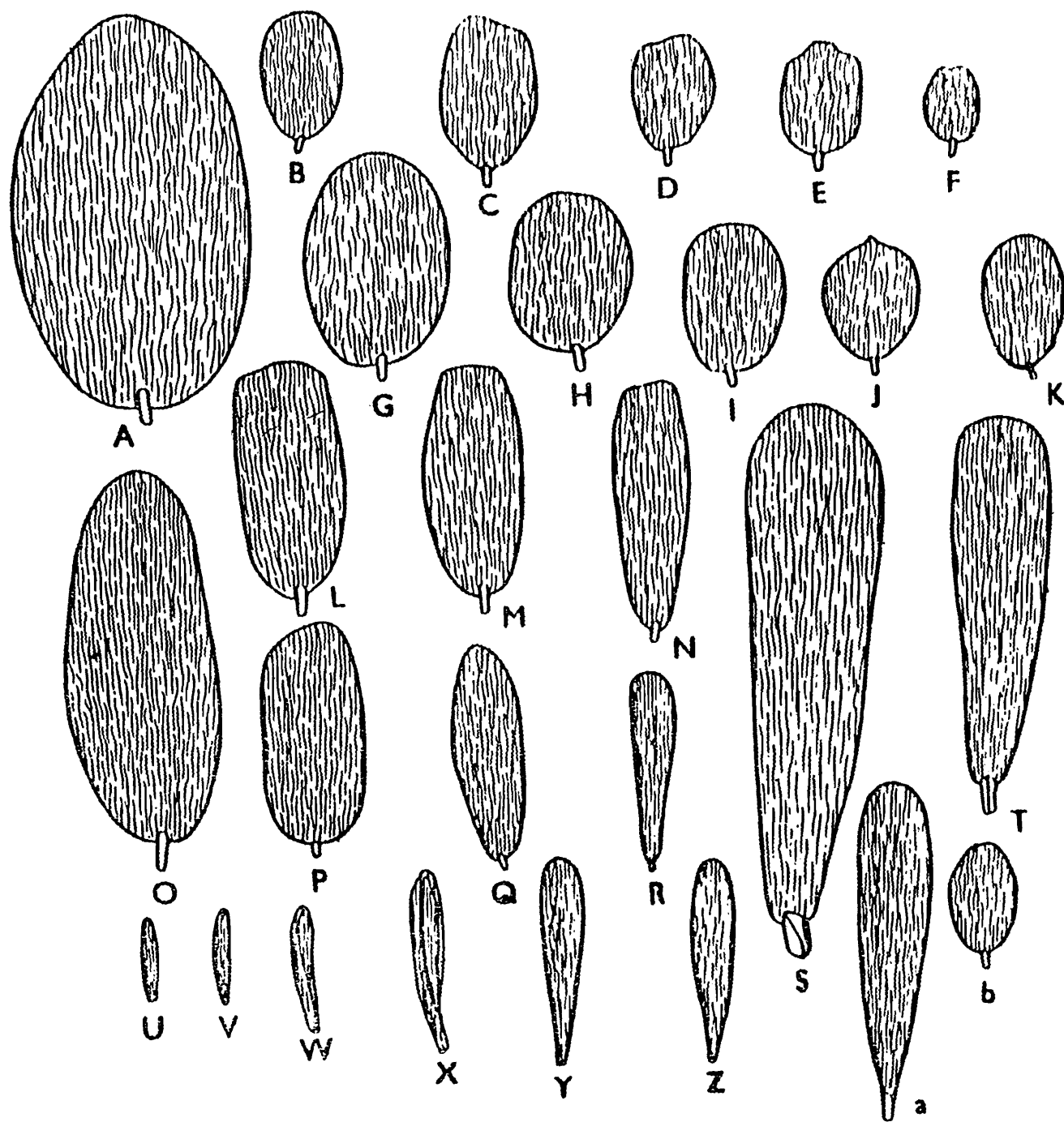


Fig. 3. Typical scales in Paronellini. A-Q, scales from body; R-Z, scales from dentes; a, b, scales from dorsal region of manubrium.

Börner, 1906), *Lepidonella* Yosii, 1960 (*incerta* Handschin, 1925; *nigrofasciata* Handschin, 1928; *papuanus* Womersley, 1937) or *Pseudoparonella* Handschin, 1925 (*halophila* Womersley, 1934; *novaecaledonine* Yosii, 1960; *shibtai* Yosii, 1960). However, his main list of species does not include the species like *Paronella* *appendiculata* Schött

(1917) which HANDSCHIN (1925) specifically and definitely fixed as the type-species of *Pseudoparonella*. Thus the present concept of the genus *Pseudoparonella* is based on four composite generic groups viz., *Bromacanthus*, *Lepidonella*, *Microparonella* and *Pseudoparonella*. A thorough redefinition of *Pseudoparonella* Handschin (1925) on the basis of its type-species and others is, therefore, imperative and given below.

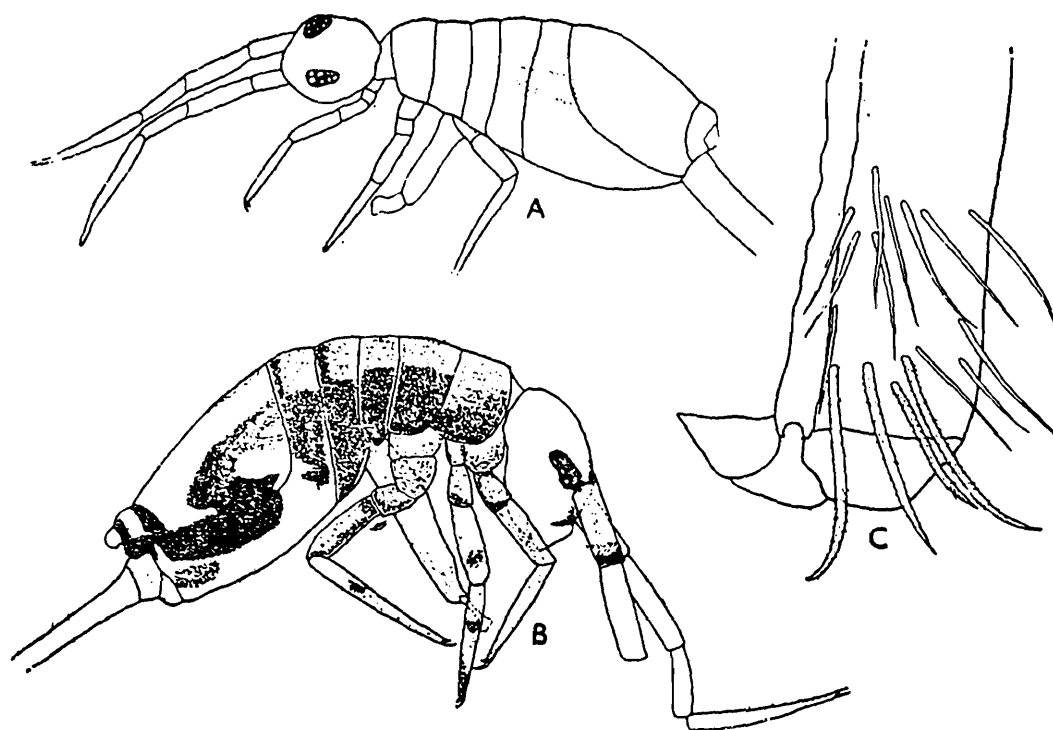


Fig. 4. Profile of *Pseudoparonella (Pseudoparonella) appendiculata* (Schötta). A, Paralectotype (Juvenile, slide No. 4175, labelled as lectotype, now amended as paralectotype); B, Lectotype (Slide No. 4177, labelled as paratype, now amended as Lectotype); C, chaetotaxy of anterior face of ventral tube.

WOMERSLEY (1939) erected the genus *Paronana* with the type-species *Paronella bidenticulata* Carpenter, 1925. The material on which WOMERSLEY'S observations were based was a single specimen from Belgrave, Victoria, South Australia. The diagnostic characters given by WOMERSLEY (1939) are (i) body scaled and (ii) two scale-like lobes at apex of dentes. In the detailed description of the species WOMERSLEY (1939) mentioned: "The apical dental lobes figured by CARPENTER are broken off but the scars are distinctly visible" (p. 212). However, in his figure (Fig. 64 M. ; p. 210), he actually depicted two sockets, one located apically and another dorsally to dentes. The present author examined that specimen of Belgrave, Victoria (Repository : South Australian Museum, Adelaide) in which it is observed that the dental scale-like lobe is totally absent and the scars of dental "scale-like lobes" mentioned by WOMERSLEY (1939) are the sockets of dental spiny appendages of *Pseudoparonella*. Simultaneously, the examination of the lectotype of *Paronella bidenticulata*

Carpenter, 1925 (Repository : Manchester University Museum, England) reveals that the species is without scales on body and with a distinct dental scale appendage. It is thus evident that *Paronana bidenticulara*, WOMERSLY, 1939 from Victoria, S. A. has no relation with *Paronella bidenticulata* Carpenter, 1925 from New Zealand, and that the specimen of Belgrave is a member of the genus *Pseudoparonella*. Therefore, WOMERSLEY'S diagnosis of *Paronana* corresponds to *Pseudoparonella* (MITRA, 1990).

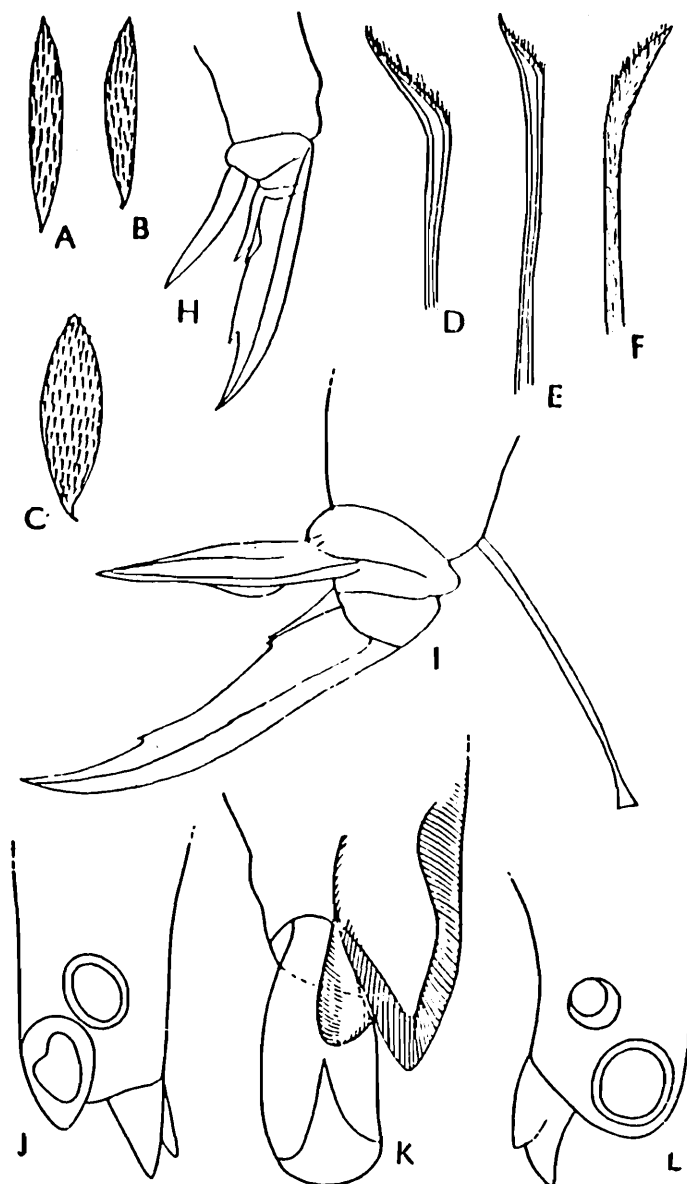


Fig. 5. Details of *Pseudoparonella (Pseudoparonella) appendiculata* (Schött). A, B, C, scales from body ; D, E, F, G, flexed macrochaetae from thorax ; H, foot-complex from leg II, I, foot-complex from leg III ; J, K, L, microdens in different views [All illustrations from the lectotype and Paralectotypes].

The species of *Pseudoparonella* Handschin (1925) can be distinctly subdivided into two sub-genera viz., *Pseudoparonella* (for *appendiculata* group of species) and *Lawrenceana* (New sub-genus) (for *queenslandica*—group of species) on the basis of striking

morphological and chaetotaxic characters which are indicated in the diagnosis of each sub-genus.

I. TAXONOMIC ACCOUNT

Pseudoparonella Handschin, 1925

1925. *Pseudoparonella* Handschin, *Treubia*, 6 : 225-270 ; *Paronana* s. str. Womersley, 1939, *Primitive Insects of South Australia, Adelaide*, pp. 322.

Redifnition : Antennae subequal or longer than body ; frontal spines absent ; prelabral setae 4, smooth, labral setae, 5, 5, 4, smooth ; anterior face of ventral tube anteriorly with 4+4 macrochaetae ; dental spines absent ; dental scale appendage absent, dental spiny appendages present ; mucrones demarcated or nondemarcated from dentes, apically or sub-apically located, with 2-3 teeth ; femoral organ absent ; body clothed with pseudoscales and flexed macrochaetae ; scales on body comparable to the scales of *Dicranocentroides*, scales may be with secondarily rounded apices but mostly with sharp apices (lanceolate) ; flexed macrochaetae involves ciliated, obliquely truncated ones (brush setae) and also setae with blunt apices (Fig. 1).

Type-species : *Paronella appendiculata* Schött, 1917, fixed by Handschin, 1925.

Sub-genus : Pseudoparonella Handschin, 1925 (New Status)

1925. *Pseudoparonella* Handschin, *Treubia*, 6 : 225-270 ; *Paronana* s. str. Womersly, 1939, *Primitive Insects of South Australia, Adelaide*, pp. 322.

Redifnition : Antennae shorter or subequal to the length of body ; mucrones small, usually not distinctly demarcated from dentes, sub-spically located, with 2 teeth ; 2 large dental spiny appendages present dorsally near base of mucrones, one of such appendages located apically on dentes.

Type-species : *Paronella appendiculata* Schött, 1917.

DESCRIPTION OF THE TYPE-SPECIES

Pseudoparonella (Pseudoparonella) appendiculata (Schött) 1917

1917. *Paronella appendiculata* Schött, *Ark. Zool.*, 11 (8) : 60 ; Salmon, 1964b, *Bull. Roy. Soc., N. Z.*, (7) 2 : 145-644.
1925. *Pseudoparonella appendiculata* Handschin, *Treubia*, 6 : 225-270 ; Womersly, 1934b, *Trans. Proc. Roy. Soc. Sth. Austr.*, 58 : 86-138 ; Womersly, 1939, *Primitive Insects of South Australia, Adelaide*, pp. 322.
1934. *Pseudoparonella halophila* Womersly, *Trans. Proc. Roy. Soc. Sth. Austr.*, 58 : 86-138 ; Womersly, 1939, *Primitive Insects of South Australia, Adelaide*, pp. 322 ? Synonym.
1936. *Pseudoparonella bidenticulata* Womersley, *Trans. Roy. Soc., N. Z.*, 66 : 316-326 New Synonymy.
1939. *Paronana bidenticulata* Womersly, *ibid.*, New Synonymy.

Material : *Pseudoparonella* (*Pseudoparonella*) *appendiculata*—on slides : Slide No. 4175, labelled as "*Paronella appendiculata* Schött, 1917. Lectotype. Malanda, North Queensland. E. Mjöberg. Jan. 1912." Slide No. 4176, labelled as "*Paronella appendiculata* Schött, 1917. Paratype. Cedar Creek, Queensland. E. Mjöberg. April, 1913." Slide No. 4177, labelled as "*Paronella appendiculata* Schött, 1917. Paratype. Cedar Creek, Queensland. E. Mjöberg. Jan. 1912." Slide No. 1237, labelled as *Paronella appendiculata* n. sp., Alkali. Australien. H. Schött." Slide No. 1238, labelled as "*Paronella appendiculata*. Harbeklad. H. Schött." In spirit : Vial No. 1, 1 ex., labelled as "*Paronella appendiculata* n. sp. Cedar Creek, Queensland. Mjöberg, mars." Vial No. 2, 1 ex., labelled as "*Paronella appendiculata* n. sp. Atherton, Queensland. Mjöberg, Jan." Vial No. 3, 1 ex., labelled as "*Paronella Queenslandica* n. sp. Malanda, Queensland. Mjöberg. Vial No. 4, 1 ex., labelled as "*Paronella appendiculata* n. sp. Malanda, Queensland. Mjöberg." All from the Swedish Museum Natural History, Stockholm. 1 ex., mounted on a slide, labelled as "*Pseudoparonella bidenticulata* Carp. Loc. Belgrave, Vic. 1/38. DWT. Det. H. Womersley", from South Australian Museum, Adelaide.

Colouration : Usually dark pigmented ; lighter forms with faint, violet pigment laterally on Abd. IV and on tergal margins, such pale colour pattern usually exhibited by juveniles with shorter antennae (Paratype, Slide No. 4176 and Lectotype, Slide No. 4175) [Fig. 4, B ; Pl. IA] ; in the darkest forms, the tergal margins of Ths. II, III, Abds. I, II, III deep violet and entire segments with lighter violet pigment ; Abds. III and IV laterally with dark and posteriorly with light violet pigment ; certain longitudinal violet strands descend from the anteromedial region of Abd. IV ; Abd. II with violet pigment ; Ant. I distally and Ant. II proximally with faint violet pigment ; Ant. III proximally and Ant. IV distally little darker ; precoxae, coxae and proximal part of femora dark violet in pigmented forms (Fig. 4, B Pl. I, A) ; femora distally and tibiotarsi with violet suffusion ; head laterally with irregular violet patches and bases of antennae with dark violet pigment.

Clothing : Body clothed with scales and setae ; scales exhibit different integrated shapes and sizes between small lanceolate to oval elongate ones, each usually with a short basal stalk, scales in general comparable with the scales of *Dicranocentroides* (Fig. 5 ; Pl. I, E, F ; Pl. II, B, C) ; ciliated, flexed macrochaetae both obliquely truncated and acuminate, obliquely truncated setae narrow or broad with obliquely truncated apices blunt or drawn into a fine apical process, located on head, Ths. II, III, Abds. I, II, III ; acuminate macrochaetae usually found on head, Abds. IV, V and VI ; antennae with acuminate microchaetae, occasionally with certain outstanding microchaetae on Ants. I, II ; Ant. IV, in addition to such setae, with certain erect, apparently smooth setae, legs clothed with long, delicate setae, tibiotarsi on inner lateral margin with certain stiff setae ; furcula clothed with acuminate, long and short setae.

CHAETOTAXY

Head : Vertex with $V_0 + V_{1-6}$, all macrochaetae, V_1, V_2 arranged in a trapezoid fashion with V_0 located medially on the line joining $V_1 - V_1$; dorsal region with 7 macrochaetae (D_{1-7}), arrangement of which characteristic for the sub-genus; subdorsal region represented by 8 setae of which SD_4 and SD_{6-8} , usually macrochaetae; ocular region with 5 microchaetae (oc_{1-5}), arrangement of which characteristic; postocular region on each side with a single macrochaeta (PO_1); parietal region medially

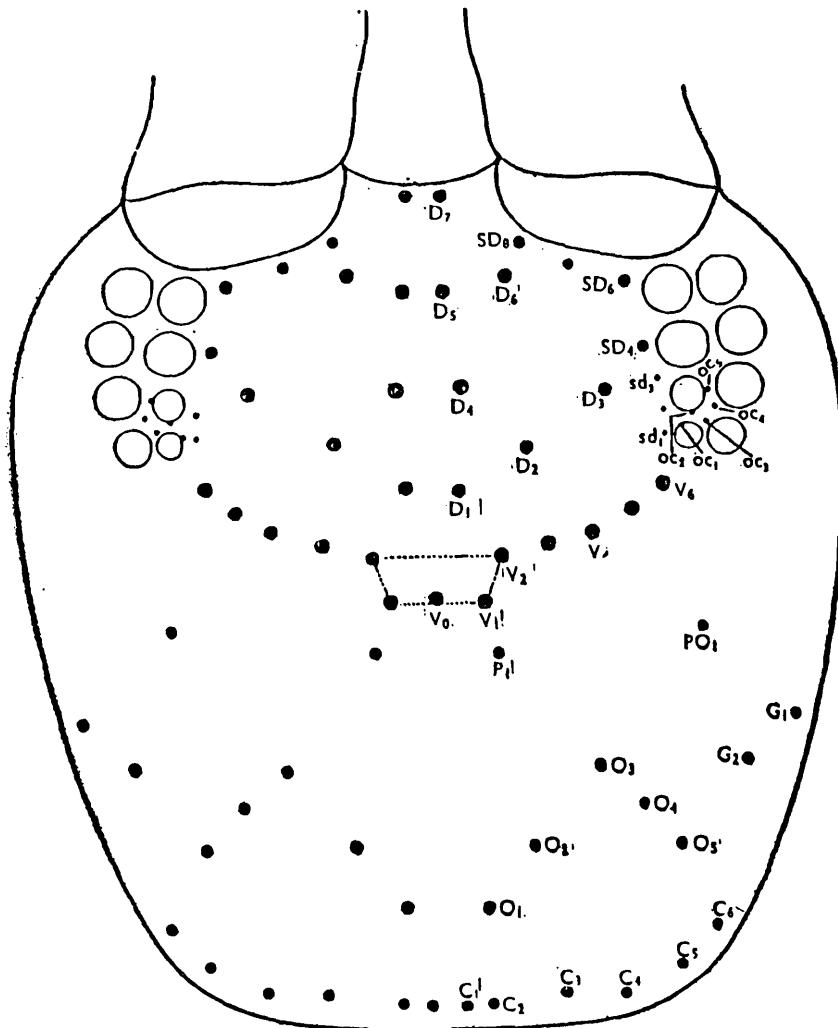


Fig. 6. Cephalic chaetotaxy of *Pseudoparonella (Pseudoparonella) appendiculata* (Schött).

represented by 1+1 macrochaeta ($P_1 + P_1$); postocular region on each side with a single macrochaeta (PO_1); occipital region has 5 macrochaetae on each side (O_{1-5}), arrangement characteristic; cervical region represented by 6 macrochaetae on each side (C_{1-6}); Genal region with 2 macrochaetae on each side (G_{1-2}) [Fig. 6].

Body : Usually with lesser number of macrochaetae on tergites than its nearest ally, *Lawrenceana*, (New subgenus). Thus, Ths. II (11-17), III (12-20); Abds. I (3-5), II (4-5), III (10) and Abd. IV anteromedially on each side with transverse row of 8 macrochaetae (Fig. 7).

Head : Almost circular in outline from above ; frontal spines absent ; ocelli 8+8, G and H smaller than the rest ; antennal length much variable, it may be shorter or subequal to the total length of head and body, the relative length index of Ants. I : II : III : IV may be (a) 12 : 24 : 17 : 40 ; (b) 17 : 30 : 20 : 48 or (c) 28 : 43 : 26 : 62 ; head diagonal/Ant. I=11/5, constant in most of the specimens examined ; prelabral setae, 4, smooth, labral setae, 5, 5, 4 smooth ; Ant. IV apically with a prominent sense-knob guarded with 3-4 smooth setae.

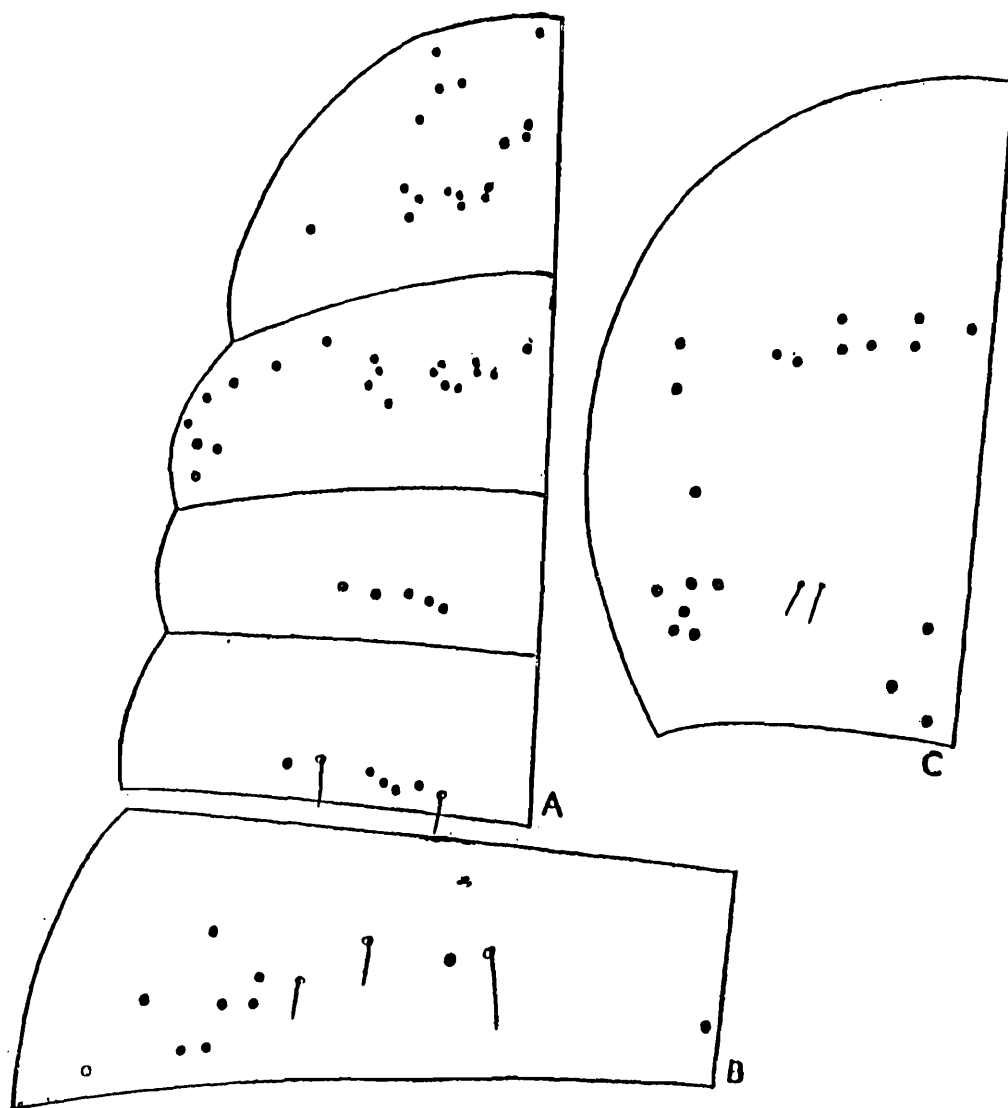


Fig. 7. Body chaetotaxy of *Pseudoparonella* (*Pseudoparonella*) *appendiculata* (Schött).

Thorax : Relative length index of Ths. II III=19 : 13 ; tibiotarsi feebly divided distally ; unguis with paired inner basal teeth and single distal unpaired tooth, external basolateral teeth reduced ; teeth more pronounced on hind legs than fore and mid-legs ; fore-unguiculi more of truncate-type, mid- and hind-unguiculi almost of lanceolate type (Fig. 5, H, I) ; all nondentate ; tenent hair slender, clavate ; trochanteral organ not seen.

Abdomen : Relative length index of Abds. I : II : III : IV : V+VI=16 : 17 : 15 : 75 : 11 ; ventral tube long with protrusible vesicles retracted in most of the examples ;

anterior face of ventral tube anteriorly with 4+4 ciliated macrochaetae arranged on each side of the ventral groove, microchaetae clothe rest of the anterior and posterior faces (Fig. 4, C) ; rami of retinaculum each with 4 teeth, corpus with a median seta ; relative length index of manubrium : mucrodens=37 : 51 ; mucro bidentate, sub-apically attached on dentes, length of mucrones variable (Fig. 5, J, K, L) ; dentes apically with a large spiny appendage followed by another smaller one as evident from its socket.

Length (excluding appendages) : 0.92-2 mm.

Type-specimens : Lectotype and 6 paralectotypes on slides and 4 in spirit are repositied in the Swedish Museum Natural History, Stockholm. Lectotype examined (Plate No. Pl. I, C) is a juvenile one and it is not known as to who designated the lectotype of the species. Present investigator, therefore, amends the previous selection and selects the syntype (Slide No. 4177) [Pl. I, A ; Fig. 4, B] as the lectotype. This is an adult specimen and corresponds well with the original description of the species. Although Slide Nos. 1237 and 1138 and the specimens in spirit bear the labels having identical data as that of the lectotype and paralectotypes, however, they do not bear any type-label. There is no doubt that these slides and specimens belong to the type-series which Schött (1917) had examined. The present investigator, therefore, considers other specimens on slides and in spirit as paralectotypes.

Type-locality : The specimens of *Pseudoparonella* (*Pseudoparonella*) *appendiculata* were collected by E. Mjöberg from various localities of Queensland, Australia. The present investigator, therefore, selects "Malanda", North Queensland, Australia, as the type-locality of the species which is the locality of the lectotype.

Comparisons : The species can be characterised by the number of setae on body which is fairly constant. Further, the species can be recognised by its colour pattern. WOMERSLEY (1934) described *P. (Pseudoparonella) halophila* from West Australia which was discriminated from *P. (Pseudoparonella) appendiculata* on the basis of the absence of pigmented patches and its shorter antennae. However, such nonpigmented forms (usually juvenile ones) are present in the material of *P. (Pseudoparonella) appendiculata* studied and in all possibility WOMERSLEY'S *P. halophila* is a juvenile of *P. (Pseudoparonella) appendiculata*. Examination of the single specimen from Belgrave, Victoria, South Australia, on which WOMERSLEY (1936) based the description of *Pseudoparonella bidenticulata* and subsequently in 1939 based the redescription of *Paronana bilenticulata* (Carpenter), proves it to be a good example of *P. (Pseudoparonella) appendiculata*. So called "scars" of "dental lobes", mentioned and depicted by WOMERSLEY are nothing but the sockets of two dental spiny appendages. Yosii (1960) also apprehended this erroneous conception of WOMERSLEY

Interrelationships : The sub-genus is close to *Lawrenceana* but differs from it in the mucro being located sub-apically on dentes and in the presence of an apical dental

spiny appendage. Further, the nature of mucrones, which are not clearly demarcated from dentes, is also a characteristic feature of the sub-genus. Chaetotaxically, the sub-genus is also distinct and usually has less number of setae on head and body than *Lawrenceana*. Similarity in the nature of mucronal end of *Pseudoparonella* and *Bromacanthus* is an analogous character. The sub-genus has some affinity with *Dicranocentroides* in the absence of frontal spines and in the presence of simple prelabral setae. However, it is distinct from it in the presence of conspicuous dental spiny appendages, absence of dental spines and in having small, bidentate mucrones, not clearly demarcated from dentes. Further, *Pseudoparonella* lacks tuft of outstanding macrochaetae on antennal segments, that is found in the species of *Dicranocentroides*.

Distribution : The members of the sub-genus are distributed in the oceanic islands of the Australian Region and also in the main territory of Australia. They have not been recorded so far from the oceanic islands of the Oriental Region and New Zealand. Besides the type-species, *P. (P.) halophila* Womersley, 1934 from Western Australia (where the type-species also occurs) and *P. (P.) shibtai* Yosii, 1960 are to be included in the subgenus *Pseudoparonella*.

Subgenus : *Lawrenceana** (New Subgenus)

Diagnosis : Antennae longer than body ; mucrones comparatively large, well demarcated from dentes, apically attached, with 2-3 teeth [rarely a fourth vestigial tooth found in *P. bougainvilleae* (Yosii, 1960) n. comb.] ; 2 dental spiny appendages located sub-apically and dorsall near base of each mucrone, no apical dental spiny appendage occurs ; represents larger species.

Type-species : *Paronella queenslandica* Schött, 1917, now designated.

DESCRIPTION OF THE TYPE-SPECIES

***Pseudoparonella (Lawrenceana) queenslandica* (Schött) 1917**

1917. *Paronella queenslandica* Schött, *Ark. Zool.*, **11** (8) : 60 ; Salmon, 1964b, *Bull. Roy. Soc., N. Z.*, (7) **2** : 145-644.
1939. *Pseudoparonella queenslandica* Womersly, *Primitive Insects of South Australia, Adelaide*, pp. 322 ; Yosii, 1960b, *Bull. Osaka Mus. Nat. Hist.*, **12** : 9-38.

Material : *Pseudoparonella (Lawrenceana) queenslandica* (Schött) : On slides—Slide No. 1284, labelled as “*Paronella queenslandica* Schött, 1917. Cedar Creek, Queensland. E. Mjöberg. Best. H. Schött.” Slide No. 1285, labelled as “*Paronella queenslandica* Schött, 1917. Paratype.” Slide No. 1286, labelled as “*Paronella queenslandica* Schött,

*Named after Mr. P. N. Lawrence, British Museum (Natural History), London in recognition of his contributions on Collembola.

1917, Paratype. Cedar Creek. Queensland. E. Mjöberg. Jan. 1913". Slide No. 1287, labelled as "*Paronella queenslandica* ; Australien ; Detaljer ; H. Schött." Slide No. 1289, labelled as "*Paronella queenslandica* n. sp. austr. E. Mjöberg. Best." Slide No. 1290, labelled as "*Paronella queenslandica* n. sp. austr. E. Mjöberg. Best. H. Schött (Furcula)".

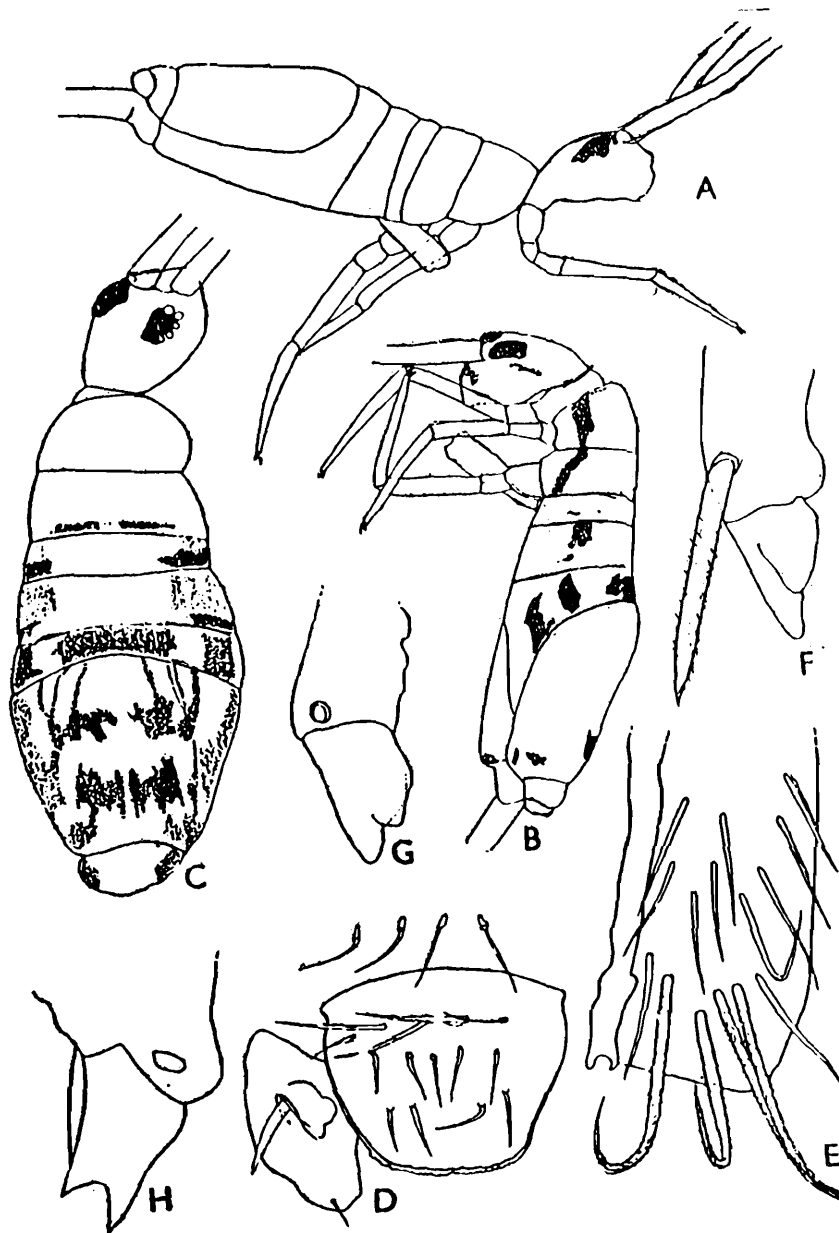


Fig. 8. *Pseudoparonella (Lawrenceana) queenslandica* (Schött). A, Paralectotype (in alcohol) showing of pigmented plateshes ; B, Paralectotype (in alcohol) showing presence of pigmented patches ; C, a dark pigmented paralectotype mounted on slide No. 1288 ; D, labral chaetotaxy and half of labium ; E, chaetotaxy of the anterior face of ventral tube ; F-H, mucrones (single d. sp. a. shown) [All from the swedish museum of Natural History, Stockholm].

Slide No. 1291, labelled as "*Paronella queenslandica* n. sp. austr. E. Mjöberg's. Best. H. Schött." Slide No. 1292, labelled as "*Paronella queenslandica* n. sp. Austral." Slide No. 1293, labelled as "*Paronella queenslandica*. Australien gaffel. H. S." Slide No. 1294, labelled as "*Paronella queenslandica* n. sp. austr. E. Mjöberg Best. H. Schött." Slide No.

4178, labelled as "*Paronella queenslandica* Schött, 1917. Lectotype, Logan village, Sth. Queensland. E. Mjöberg. Oct. 1912." In spirit—vial No. 1, 10 exs., labelled as "*Paronella queenslandica* n. sp. Malanda, Queensland. Mjöberg." Vial No. 2, 1 ex., labelled as "*Paronella queenslandica* n. sp. Atherton, Queensland, Mjöberg, April." Vial No. 3, 1 ex., labelled as "*Paronella queenslandica* n. sp. Evelyne, Queensland, Mjöberg." Vial No. 4, 1 ex., labelled as "*Paronella queenslandica* n. sp. Mt. Tambourine, Queensland. Mjöberg." Vial No. 5, 3 exs., labelled as "*Paronella queenslandica* n. sp. Bellenden Ker, Queensland, Mjöberg, Maj." (another label, written in pencil reads as Bellenden Ker, 4000 ft. ht., maj, 29/3). Vial No. 6, 6 exs., labelled as "*Paronella queenslandica* n. sp. Bellenden Ker, Queensland, Mjöberg, maj." Vial No. 7, 29 exs., labelled as "*Paronella queenslandica* n. sp. Cedar Creek, Queensland, Mjöberg, mars." Vial No. 8, 14 exs., labelled as "*Paronella queenslandica* n. sp. Atherton, Queensland, Mjöberg, april." Vial No. 9, 1 ex., labelled as "*Paronella queenslandica* n. sp. Herberton." Vial No. 10, 10 exs., labelled as "*Paronella queenslandica* n. sp. Atherton, Queensland, Mjöberg." Vial No. 11, 7 exs., labelled as "*Paronella queenslandica* n. sp. Logan Village, Queensland, Mjöberg." Vial No. 12, 1 ex. labelled as "*Paronella queenslandica* n. sp. Bellenden Ker, Queensland, Mjöberg, maj." Vial No. 13, 6 exs., labelled as "*Paronella queenslandica* n. sp. Cedar Creek, Queensl., Mjöberg, Okt."

Colouration : Ground colour of body pale yellow with variable violet to blue pigment ; three distinct forms can be discerned : (a) without any trace of pigment on body, this form mostly common in the lectotype and paralectotypes examined (Fig. 8, A ; Pl. I, D) ; (b) with purple pigment along the margins of meso and metaterga, sometime on lateral margins of Abd. I, laterally and dorsomedially on Abds. II, III and also posteromedially and laterally on Abd. IV in the form of small blotches (Fig. 8, B) ; (c) Forms with dark blue-black pigment in the form of a narrow transverse band posteriorly on Th. II, along tergal margins of Abds. I-IV ; Abd. III, medially with a broad transverse band, on Abd. IV three longitudinal strands of the same pigment descend from its anterior margin which unite posteriorly with a dark pigmented patch on either side, transverse band present posteriorly on Abd. IV, Abds. V and VI medially nonpigmented (Fig. 8, C) ; antennal bases in all the forms usually with dark pigmented patches ; pigmentation of legs and antennae variable ; furcula nonpigmented.

Clothing : Body clothed with scales and flexed macrochaetae ; macrochaetae mostly obliquely truncated, ciliated type found on head, Ths. II, III, Abds. I, II, III ; acuminate macrochaetae abundant dorsomedially on Abd. IV, Abds. V and VI ; Ants. I, II and legs with certain prominent macrochaetae ; furcula clothed with both macro and microchaetae of acuminate type, rarely with some feeble spine-like setae ; scales mostly elongate, occasionally with secondarily rounded apices but mostly acuminate (lanceolate) ; scales present on antennae, head and on Abds. IV, V, VI usually of

lanceolate type (Fig. 1), while those present dorsomedially on Ths. II, III, Abds. I, II, III with secondarily rounded apices ; scales present laterally on these segments, always with acuminate apices (Fig. 1 ; Pl. I. E. F ; Pl. II, A).

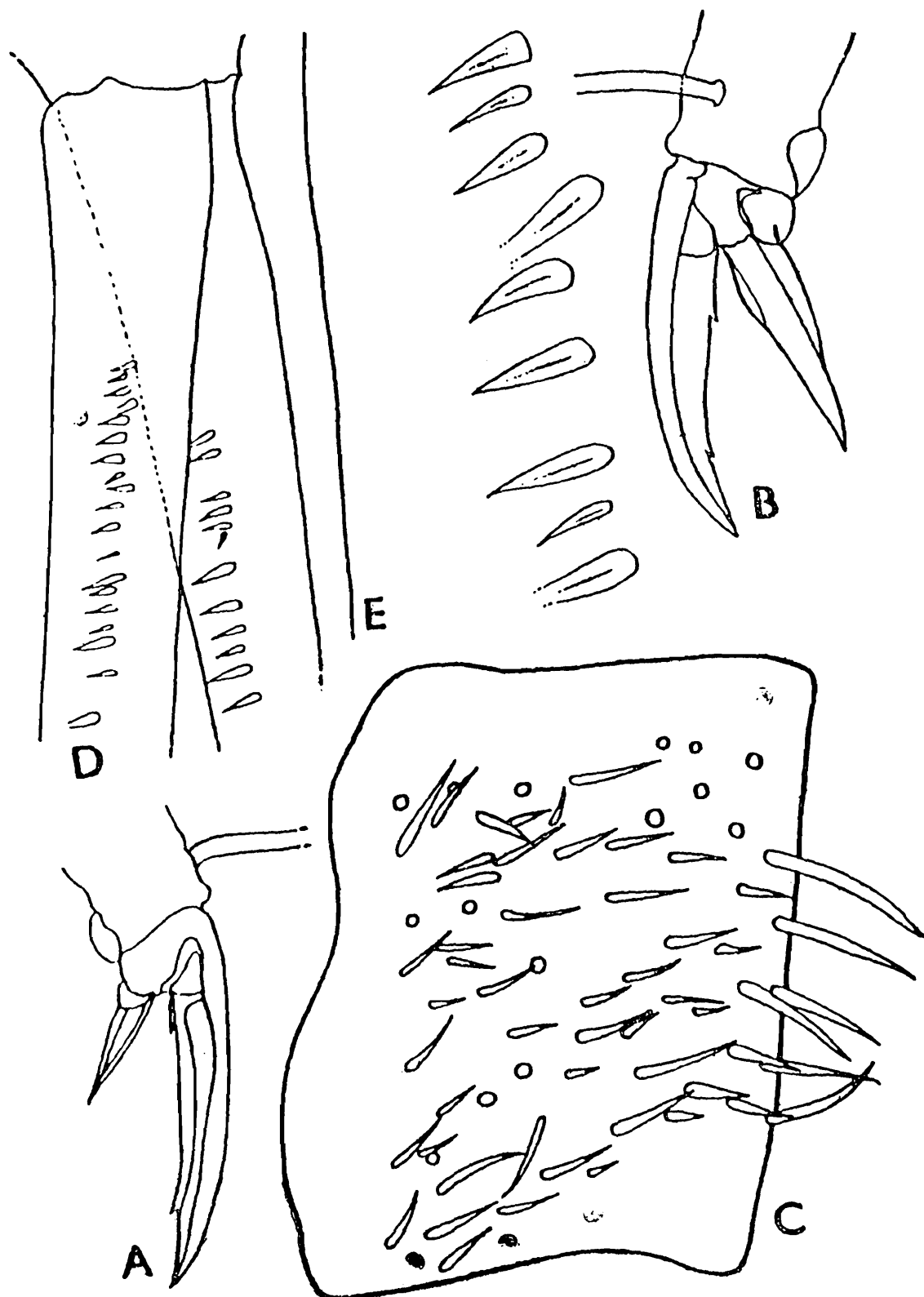


Fig. 9. *Pseudoparonella (Lawrenceana) queenslandica* (Schött). A, footcomplex of leg I (from a paralectotype) ; B, footcomplex from leg III (from a paralectotype) ; C, trochanteral organ ; D, an exceptional row of strong setae, observed in only one paralectotype (Slide No. 1288, Swedish Museum Natural History, Stockholm) ; E, same, a few spiny setae enlarge.

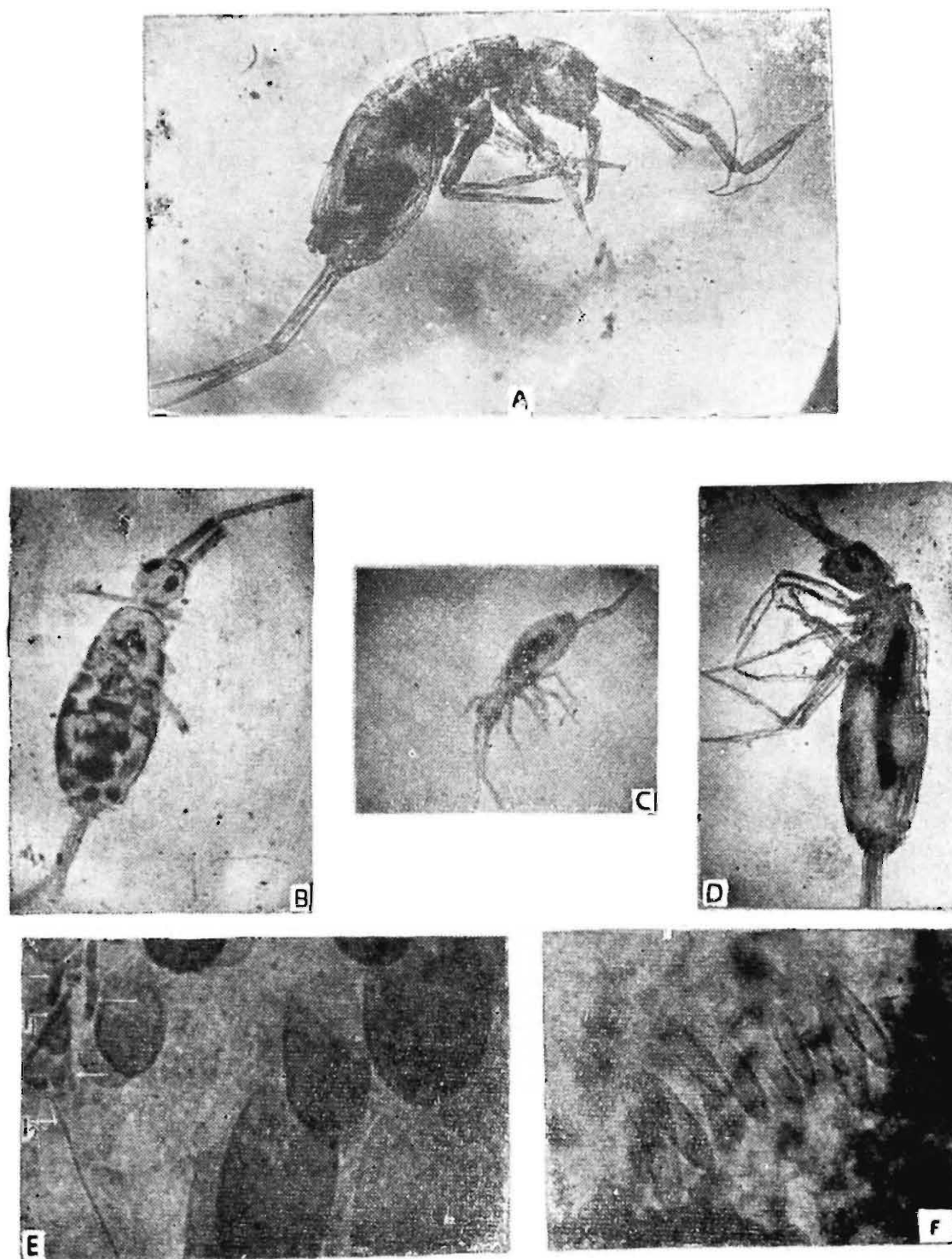


Plate I. *Pseudoparonella* (*Pseudoparonella*) *appendiculata* (Schött). A, Paralectotype, now designated as lectotype (Slide No. 4177, Swedish Museum Natural History, Stockholm) ; C, labelled as lectotype (Juvenile) [now amended and designated as paralectotype, slide No. 4175, Swedish Museum Natural History, Stockholm].

Pseudoparonella (*Lawrenceana*) *queenslandica* (Schött), B, Paralectotype (Slide No. 1291, Swedish Museum Natural History, Stockholm) ; D, Lectotype (Slide No. 4178, Swedish Museum Natural History, Stockholm) ; F, Psedoscales from Abd. III.

Lepidonella incerta (Handschin), n. comb. E. Typical scales and accessory scales near base of lasiotrichia (1_1 and 1_2) from Abd. IV.

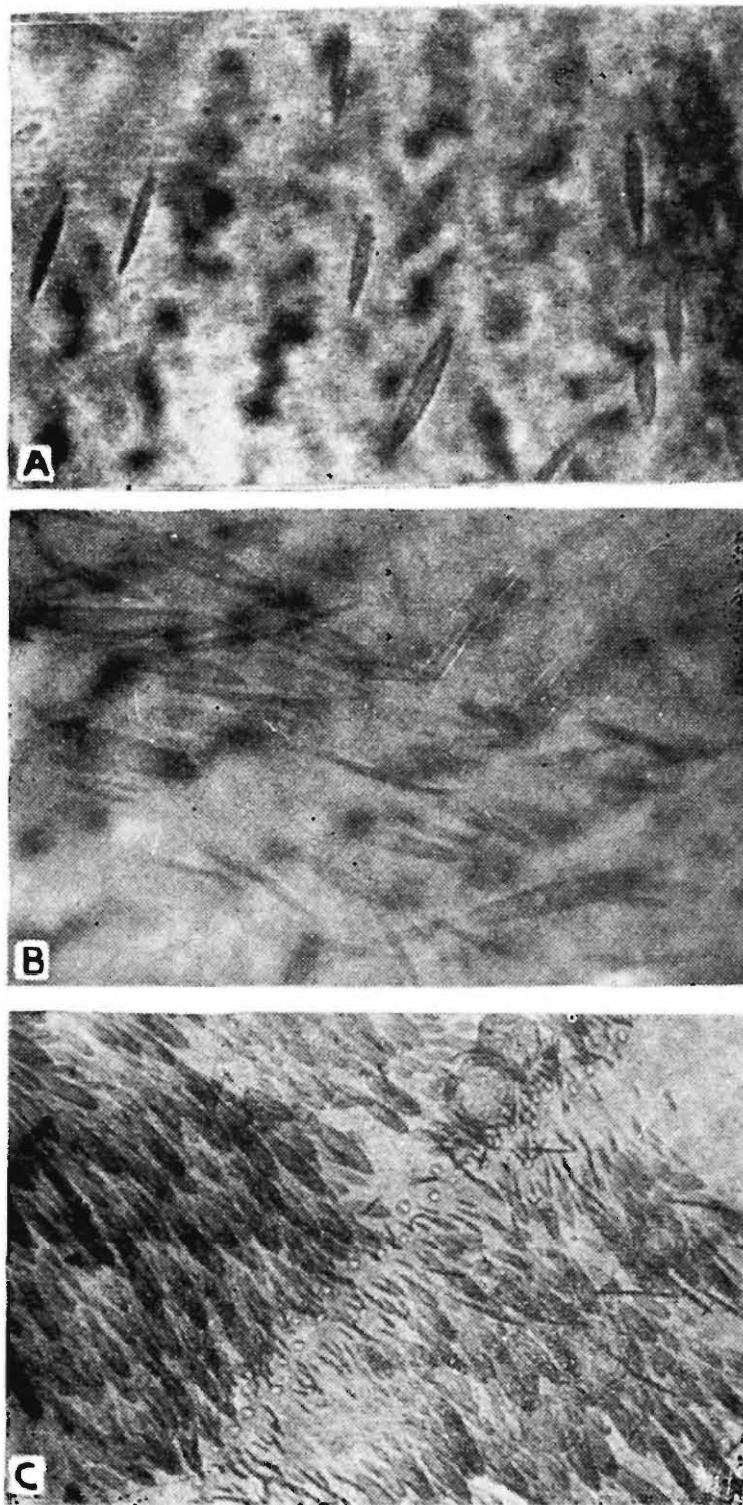


Plate II. A, Pseudoscales from Abd. IV of *Pseudoparonella (Lawrenceana) queenslandica* (Schött); B, Pseudoscales from Abd. IV of *Pseudoparonella (Pseudoparonella) appendiculata* (Schött); C, Pseudoscales and scale-primordia from Abd. IV in *Dicranocentroides flavescens* Yosii.

CHAETOTAXY

Head : Vertex with $V_0 + V_{1-7}$, all of which macrochaetae, arrangement of V_0 , V_1 , V_2 like the sub-genus *Pseudoparonella*; dorsal region with 5 macrochaetae (D_{1-5}); subdorsal region represented by 17 setae of which SD_4, SD_5, SD_{10-17} macrochaetae; ocular region represented by 5 microchaetae (oc_{1-5}); postocular region represented by a single macrochaetae on each side (PO_1); parietal region without any setae; occipital region with 6 macrochaetae on each side (O_{1-6}); cervical region with 4 macrochaetae on each side (C_{1-4}); genal region represented by 2 macrochaetae on each side (G_{1-2}), insertion of which quite characteristic for the sub-genus (Fig. 10).

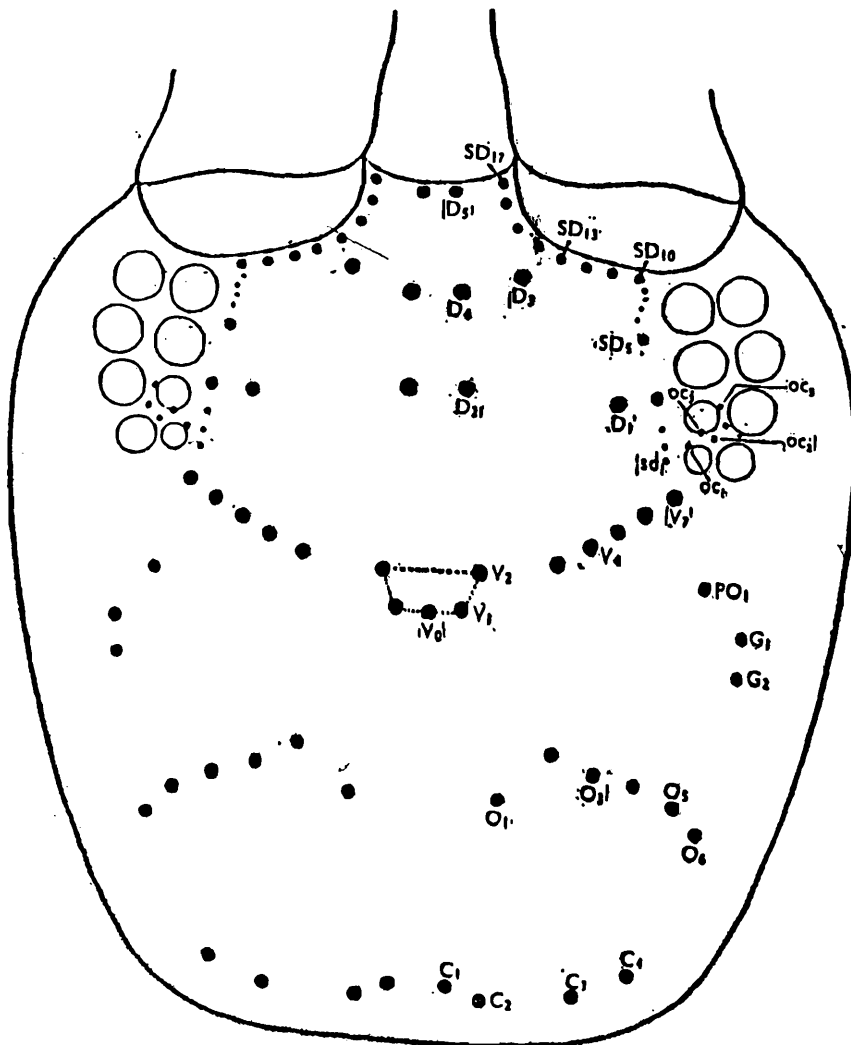


Fig. 10. Cephalic chaetotaxy of *Pseudoparonella (Lawrenceana) queenslandica* (Schött).

Body : Usually with relatively more macrochaetae on each tergite than *Pseudoparonella*, range of macrochaetae on each segment as follows: Ths. II (12-18), III (15-21); Abds. I (5-12), II (4-8), III (4-7); Abd. IV anteromedially with transverse rows of 13-16 macrochaetae on either side (Fig. 11).

Head : Pear-shaped, dorsally; frontal spines absent; 8 ocelli on each side in dark pigmented patches, ocelli G and H smaller than the rest; antennae longer than

the total length of body and outstretched furca ; number of antennal segments and their ratio variable, individuals with 3 segmented antennae frequent, relative length index of Ants. I : II : III+IV = c. 31 : 43 : 79 and Ants. I : II : III : IV = c. 30 : 39 : 78 : 76 ; Ant. IV secondarily annulated, apically with a conspicuous sense-knob guarded

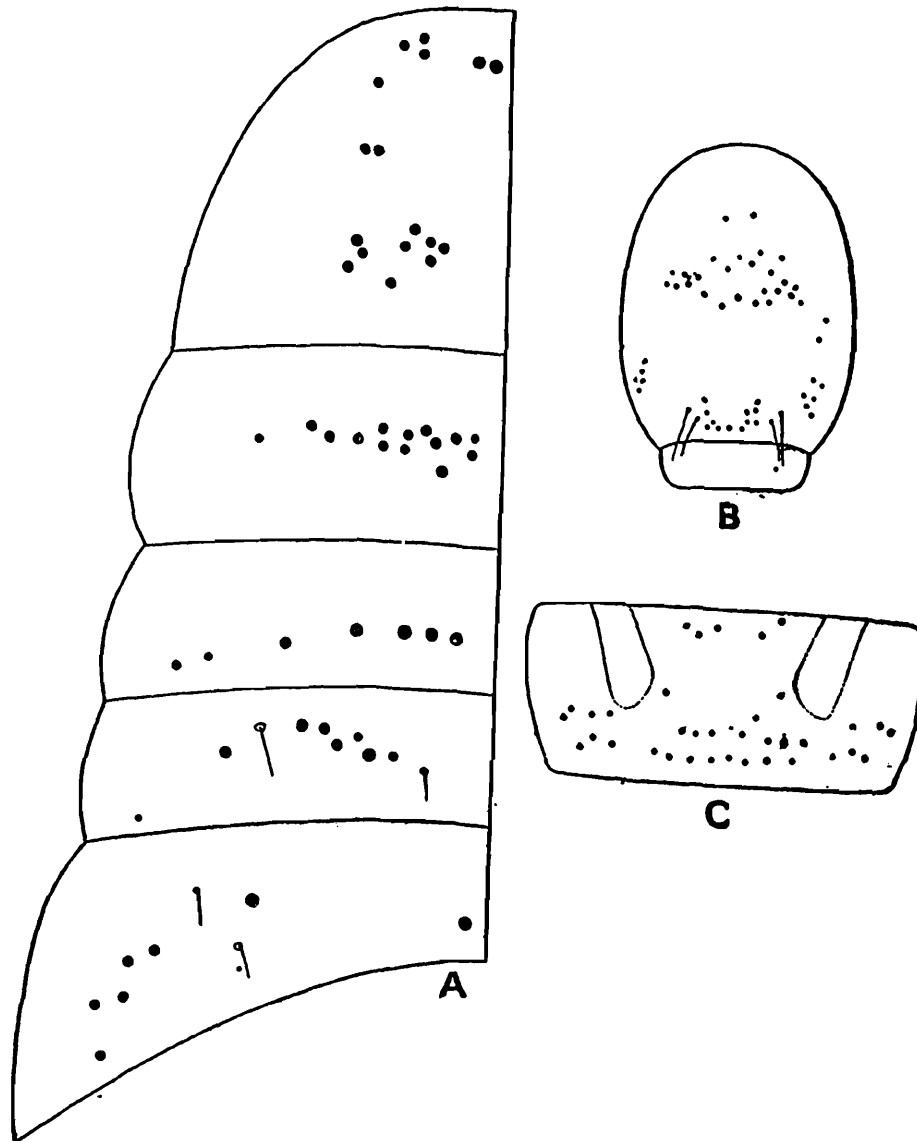


Fig. 11. Body chaetotaxy of *Pseudoparonella (Lawrenceana) queenslandica* (Schött).

with some erect smooth setae ; prelabral and labral setae slender, prelabral setae 4, smooth, labral setae 5, 5, 4, smooth, no ledges or tubercles observed near anterior margin of labrum, border of anterior margin irregular ; labium medially on each side with a stout spine-like seta (Fig. 8, D).

Thorax : Relative length index of Ths. II : III = 11 : 8 ; tibiotarsi usually divided distally ; fore unguiculi relatively small, lanceolate, paired inner basal teeth of fore unguis usually feebly developed ; mid and hind unguiculi large, lanceolate, nondentate, paired inner basal ungual teeth well developed on mid and hind ungues, in addition, an unpaired tooth occurs at the three-fourth distally on inner margin of all ungues,

external basolateral teeth present; tenent hair well developed, clavate; tibiotarsal lobes overhanging the base of unguiculi well developed (Fig. 9, A, B); trochanteral organ well developed with *c.* 68 spines (Fig. 9, C).

Abdomen: Relative length index of Abds. I : II : III : IV ; V : VI = 5 : 6 : 5 : 4 : 29 : 4 : 2; ventral tube long, anterior face anteriorly with 4+4 macrochaetae, rest of the surface with numerous microchaetae, posterior face with many microchaetae interspersed with certain long feeble setae rami of retinaculum each with 4 teeth, corpus with a median seta; furcula long, relative length index of manubrium : mucrodens = 21.6 : 28; mucro apically located on dentes, usually distinctly demarcated, bidentate; presence of 2 dental spiny appendages ascertained, in most examples, from the two large sockets, located dorsally above the base of each mucrone; a row of delicate spine like setae was observed in one paralectotype (Slide No. 1291) (Fig. 9, D, E).

Length (excluding appendages) : 2-3.5 mm.

Type-specimens: All the specimens of the species (mentioned above under material) belong to the type-series as evident from the date available from the labels of the specimens. However, excluding lectotype (Slide No. 4178), only two other slides (Slide Nos. 1285 and 1286) are labelled as "Paratypes". It is, however, not known as to who selected and designated the lectotype. The lectotype and paralectotypes are preserved in the Swedish Museum Natural History, Stockholm, Sweden.

Type-locality: The specimens of *Pseudoporonella (Lawrenceana) queenslandica* were collected by E. Mjöberg from several localities of Queensland, Australia. The present investigator takes this opportunity to select "Logan village", South Queensland, Australia, as the type-locality of the species, which happens to be the locality of the lectotype.

Comparisons: The species exhibits considerable colour variations although such variants do not differ significantly from each other in important morphological characters. Certain colour variants come close to a few species which were described by subsequent workers as new to science. The type-species can be easily discriminated from others by its bidentate mucrones and chaetotaxy of body.

Interrelationships: *Lawrenceana* apparently appears close to *Parachaetoceras* in the nature of mucrones which are bidentate and apically located on dentes but distinctly differs from it in the absence of dental apines, simple nature of prelabral setae and in the absence of dark, stiff outstanding macrochaetae on antennae and appendages. It resembles and differs from *Dicranocentroides* in the characters as mentioned under the interrelationships of the sub-genus *Pseudoparonella*.

Distribution: Species belonging to the sub-genus *Lawrenceana* are chiefly distributed in the oceanic islands of the Australian Region. Only one species (type-species) is so

far known from the main territory of Australia. From the present state of knowledge, they appear to be absent in the Oriental Region and New Zealand. Besides the type-species following species are to be included in this subgenus: *P. (L.) dahli* (Schäffer, 1893), n. comb. from Bismarck Archipelago and New Guinea; *P. (L.) dahli tamarensis* (Schött, 1901), n. comb. from New Guinea; *P. (L.) cheesmani* (Womersley, 1937), n. comb. from New Guinea; *P. (L.) bougainvilleae* (Yosii, 1960) from Solmon and Bougainville Islands; *P. (L.) queenslandica flavotruncata* Yosii, 1960 from Caledonia and *P. (L.) novaecaledoniae* Yosii, 1960 also from New Caledonia.

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SUMMARY

The concept of *Pseudoparonella* Handschin, 1925, a heterogeneous genus from the Oriental Region, is redefined and precised on the basis of the examination of the type-specimens and other collections of the species, assigned to this genus at different times by various workers in the past.

It is seen that *Pseudoparonella sensu* Handschin is a member of Callyntrurini and two subgenera under *Pseudoparonella* are now recognised in this investigation.

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