

COLLEMBOLA OF HEARD ISLAND¹By K. A. J. Wise²

Abstract. Seven species of Collembola are now recorded from Heard I. but only 4 were present in the collection examined. *Sorensia subflava* Salm. is recorded and a new species of *Tullbergia* is described.

Collembola were first recorded on Heard I. by Vanhöffen (1908a), as *Isotoma reagens* Enderlein n. sp. and *Tullbergia antarctica* Lubbock, apparently from preliminary determinations by Enderlein. The former species was recorded by Vanhöffen (1908b) as *Cryptopygus reagens* in another paper on the results of the German South Polar Expedition of 1901-1903. Enderlein, writing on the material of the same expedition, mentioned (1909a) *Cryptopygus reagens*, and in his main taxonomic paper (1909b) recorded *C. reagens* and *Tullbergia antarctica* from Heard I., describing the former in the section on the fauna of Crozet Is.

Womersley (1937) recorded *Tullbergia bisetosa*, *Cryptopygus antarcticus*, and *Isotoma octo-oculata* from specimens collected by the B. A. N. Z. Antarctic Research Expedition, 1929-1931. Denis (1947) referred to a record of *T. bisetosa* by "Womersley (1935)", presumably intended for Womersley (1937) Salmon (1949) included Heard I. records of *Parisotoma octooculata*, *T. bisetosa*, and *T. antarctica*, in keys.

A paper on the insects of Heard I. by Brown (1964) was based on his own collections made during the Australian National Antarctic Research Expeditions, Heard Island, 1951-52. Brown recorded *T. antarctica*, *T. bisetosa*, *C. antarcticus*, and *Parisotoma octo-oculata* from specimens, and mentioned the early record of *C. reagens*. Records of *C. antarcticus* and *Parisotoma octooculata* on Heard I. by Gressitt (1967) and Wise (1967) were based on previous records.

This present paper records specimens in the Bernice P. Bishop Museum collection, collected by P. Temple during a private expedition in 1965. The types will be deposited in the Commonwealth Scientific and Industrial Research Organization, in Canberra. The classification used here and some of the species are discussed in greater detail in concurrent papers on Collembola of South Georgia Islands (Wise 1970) and Antarctica (Wise, in press). Apart from the original reference, only Heard I. references are included in the synonymic lists.

KEY TO SPECIES OF HEARD I. COLLEMBOLA

1. Abdomen elongate; Th. I similar to II, III, dorsum setose; pseudocelli present, white. (Arthropleona: Poduromorpha: Onychiuridae: Tullbergiinae: *Tullbergia*).....2
- Abdomen elongate; Th. I reduced, dorsum not setose; Abd. IV no longer than III. (Arthropleona: Entomobryomorpha: Isotomidae)4
2. With 1 pair lateral spines on Th. II, III.....3
- Lateral spines absent.....***Tullbergia antarctica***
3. PAO with over 70 lobes, unguiculus present.....***Tullbergia bisetosa***
- PAO with less than 60 lobes, unguiculus absent.....***Tullbergia templei* n. sp.**
4. Furcula reduced; Abd. VI placed ventrally. (Anurophorinae: *Cryptopygus*)5
- Furcula long. (Isotominae).....6

¹Results of fieldwork South Indian Ocean Expedition to Heard Island.

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5. Clavate tenant hairs present on tibiotarsi; setae of dens 5 anterior 4 posterior... **Cryptopygus antarcticus**
Clavate tenant hairs absent; setae of dens 5 anterior 5 posterior..... **Cryptopygus reagens**
6. Ocelli 1 + 1..... **Sorensia subflava**
Ocelli 4 + 4..... **Parisotoma octoculata**

Family ONYCHIURIDAE

Subfamily TULLBERGIIINAE

Genus **Tullbergia** Lubbock, 1876

Tullbergia antarctica Lubbock

Tullbergia antarctica Lub., 1876, *Ann. Mag. Nat. Hist.* 4, **18**: 324.—Vanhöffen, 1908, *Deut. Südpolar-Exped.* (1901–1903) **(3)**: 269.—Enderlein, 1909, *Deuts. Südpolar-Exped.* (1901–1903) **10**(4): 470.—Salmon, 1949, *Cape Exped. Ser. Bull.* **4**: 17.—Brown, 1964, *ANARE Repts.* (B) **1**(73): 9.

This species was recorded by Brown (1964) as not very common. It was not represented in the present collection.

Tullbergia bisetosa Börner

Tullbergia bisetosa Börner, 1902, *Zool. Anz.* **26**(689): 128–29.—Womersley, 1937, *Rep. B. A. N. Z. Antarc. Res. Exped.* 1929–1931, (B) **4**(1): 2.—Denis, 1947, *Mém. Mus. Hist. Nat. Paris* (N. S.) **20**: 42.—Salmon, 1949, *Cape Exped. Ser. Bull.* **4**: 17.—Brown, 1964, *ANARE Repts.* (B) **1**(73): 9–10.

HEARD I.: POLY GULLY: 4.II.1965, 1; 5.II.1965, 1; 6.II.1965, 3; 9.II.1965, 2; burrow of *Pachyptila desolata*, 6.II.1965, 1; nesting material dove prion *P. desolata*, 8.II.1965, 3; 9.II.1965, 3; Winston Lagoon, 2.II.1965, 2; P. Temple. Green Valley: 2.II.1965, 1; Temple. SPIT BAY: 31.I.1965, 1; 1.II.1965, 1; Temple. LONG BEACH: 8.II.1965, 1; Temple. S. BARRIER: cinder cone, 610 m, 8.II.1965, 2; Temple.

All specimens were determined from the thoracic spines and long unguiculus. These two characters separate this species from *T. antarctica*. Both these species have over 70 tubercles in the PAO.

Tullbergia templei Wise, new species. Fig. 1–10.

Color: White.

Clothing: Short to medium length setae (Fig. 1, 2).

Body: Length up to 1.25 mm. Antenna IV with short broad sensory knob and 5 slender curved sensory rods (Fig. 3). Apical sense organ of Ant. III consisting of 3 large sense-cones each with guard seta, and 2 sense-rods (Fig. 4). Ant. III also with 1 sense-cone on opposite side of segment and further basad. Postantennal organ with 39–42 lobes arranged mainly in 2 rows (Fig. 5). Ocelli absent. Pseudocelli circular, arranged as 11; 111; 11221 on holotype specimen, 11; 111; 11121 on paratype specimen, circular (Fig. 1, 2, 5). Cuticular granules fine, subequal. Th. II, III, each with a pair of small lateral spines in oval depressions (Fig. 6, 7), as in *T. bisetosa*. Genital area, ♀, as figured (Fig. 8). Anal spines short (Fig. 9).

Legs (Fig. 10): Claw untoothed. Claw base with moderately long seta on each side. Unguiculus absent, a short lateral lobe present.

Holotype ♀ (CSIRO), S. Barrier: Cairn 5, 457 m, 8.II.1965, P. Temple. Paratype. Same data as holotype, 1.

This species is most interesting in that it is obviously very close to the Antarctic species *T. medianarctica* Wise and *T. mixta* Wahlgren, both in general characters and in setation. It is separated from these two by small differences in setation and by the predominantly round, not oval shape of the ocelli. It is separated from *T. bisetosa* and others by the low number of PAO lobes and absence of unguiculus.

The relationship of *T. templei* to the two Antarctic species is further discussed in a concurrent paper on Antarctic Collembola (Wise, in press).



Fig. 1. *Tullbergia templei* n. sp. Head and thorax, setation and pseudocelli, (Holotype).

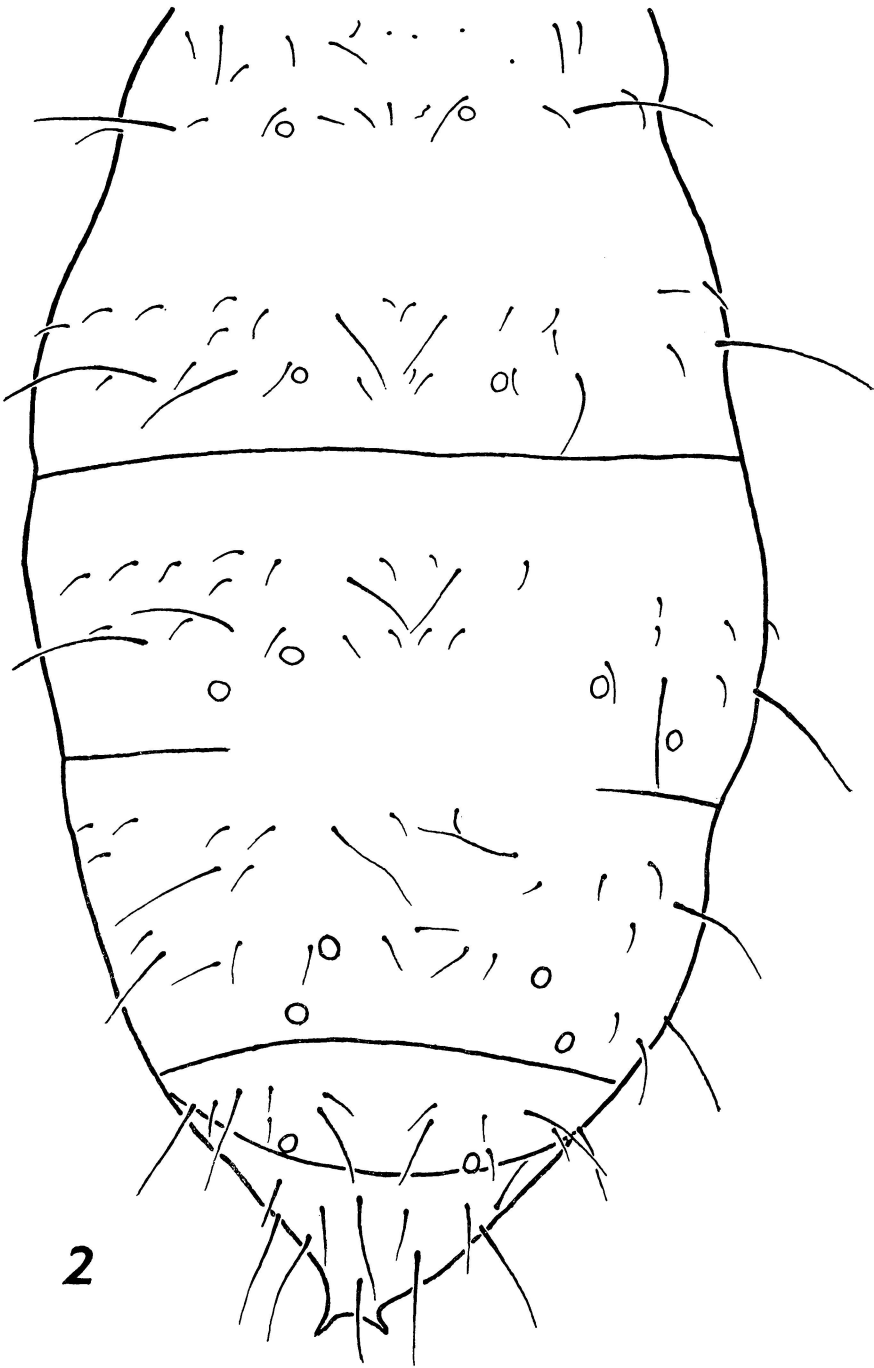


Fig. 2. *Tullbergia templei* n. sp. Abdomen, setation and pseudocelli, (Holotype).

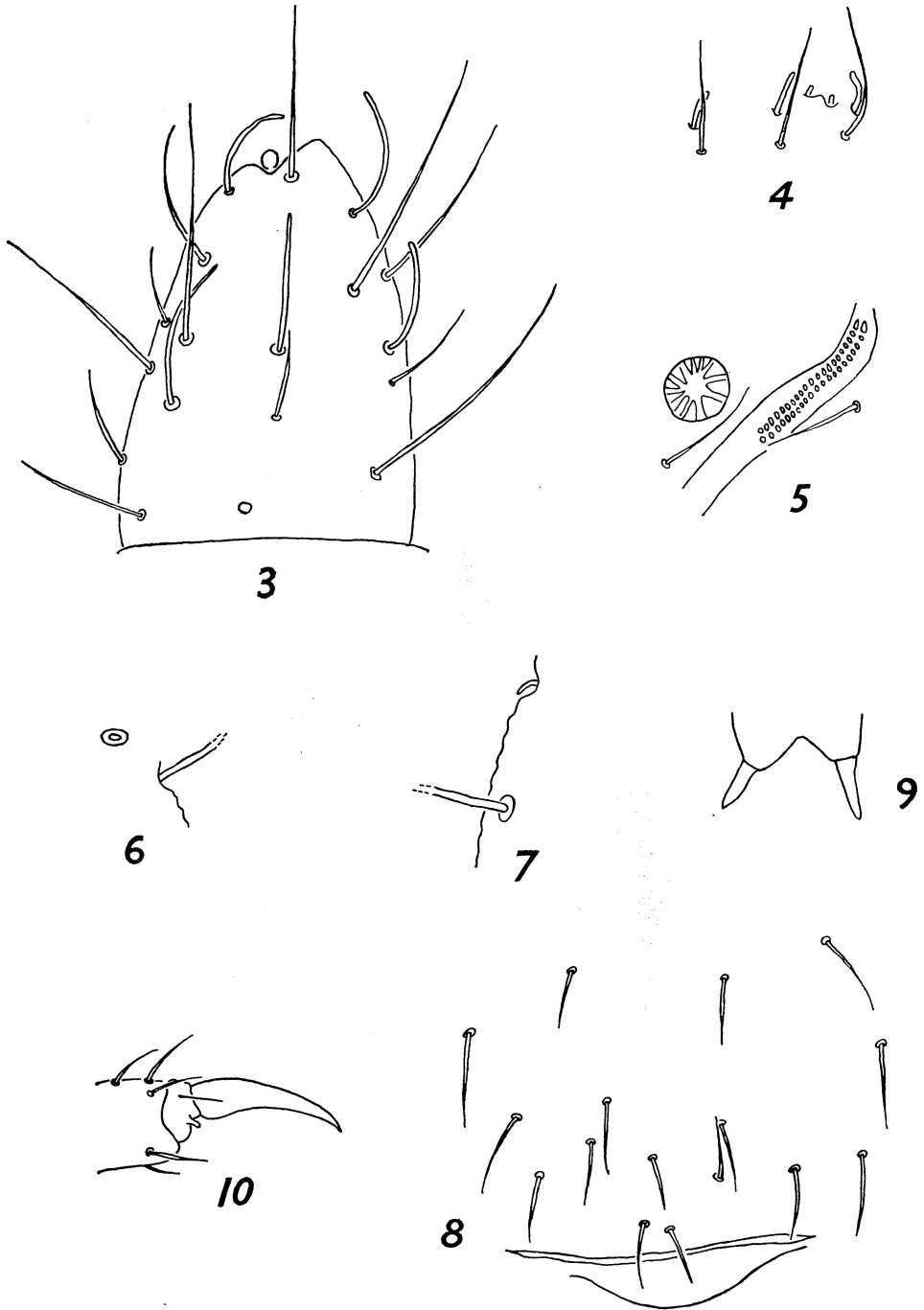


Fig. 3-10. *Tullbergia templei* n. sp. 3, Antenna IV, (Holotype). 4, Antenna III, apical sense organ, (Holotype). 5, Postantennal organ and pseudocellus, (Holotype). 6, Lateral spine, Th. II. 7, Lateral spine, Th. III. 8, Genitalia, ♀, (Holotype). 9, Anal spines. 10, Foot.

Family ISOTOMIDAE

Subfamily ANUROPHORINAE

Genus **Cryptopygus** Willem, 1902**Cryptopygus antarcticus** Willem.

Cryptopygus antarcticus Will., 1901, *Ann. Soc. Entomol. Belg.* **45**: 261.—Womersley, 1937, *Rep. B. A. N. Z. Antarc. Res. Exped.* 1929–1931 (B) **4**(1): 4.—Brown, 1964, *ANARE Repts.* (B) **1**(73): 10.—Gressitt, 1967, *Antarc. Res. Ser.* **10**: 14.—Wise, 1967, *Antarc. Res. Ser.* **10**: 134.

HEARD I.: POLY GULLY: nest material dove prion *Pachyptila desolata*, 8.II.1965, 3; 9.II.1965, 2; P. Temple.

Specimens have the typical dens setal number and pattern of *C. antarcticus*. Clavate tenant hairs are present on tibiotarsi but are not quite as prominent as usual. Further work is required on the *Cryptopygus* species present in the Heard, Crozet, Kerguelen Is. area.

Cryptopygus reagens Enderlein

Cryptopygus reagens End., 1909, *Deuts. Südpolar-Exped.* (1901–1903) **10**(4): 407–8, 470; 1909, *Deuts. Südpolar-Exped.* (1901–1903) **10**(4): 328.—Brown, 1964, *ANARE Repts.* (B) **1**(73): 10.

Isotoma reagens: Vanhöffen, 1908, *Deuts. Südpolar-Exped.* (1901–1903) **2**(3): 269.

Not represented in the present collection. This species was originally described (Enderlein 1909b) from Crozet I. specimens and was recorded on Heard I. only from immature specimens. The species needs to be redescribed from Crozet I. specimens to be certain of the characters previously used for separating it from *C. antarcticus*.

Subfamily ISOTOMINAE

Genus **Sorensia** Salmon, 1949**Sorensia subflava** Salmon

Sorensia subflava Sal., 1949, *Cape Exped. Ser. Bull.* **4**: 22–24.

HEARD I.: POLY GULLY: 4.II.1965, 1; 5.II.1965, 1; 6.II.1965, 1; 9.II.1965, 1; 15.II.1965, 1; nest material dove prion *Pachyptila desolata*, 8.II.1965, 1; 9.II.1965, 1; Winston Lagoon, 2.II.1965, 1; P. Temple. S. Barrier, Cairn 5, 457 m, 8.II.1965, 1; Temple.

These specimens represent the first record of this species on Heard I. The species is discussed and the distribution recorded in my preceding paper on South Georgia Collembola.

Genus **Parisotoma** Bagnall, 1940**Parisotoma octooculata** (Willem)

Isotoma octo-oculata Wil., 1901, *Ann. Soc. Entomol. Belg.* **45**: 262.—Womersley, 1937, *Rep. B. A. N. Z. Antarc. Res. Exped.* 1929–1931 (B) **4**(1): 4.

Parisotoma octo-oculata: Salmon, 1949, *Cape Exped. Ser. Bull.* **4**: 36.—Brown, 1964, *ANARE Repts.* (B) **1**(73): 11.

Parisotoma octooculata: Gressitt, 1967, *Antarc. Res. Ser.* **10**: 14.—Wise, 1967, *Antarc. Res. Ser.* **10**: 138.

This species, which Brown (1964) recorded as rare, did not occur in the present collection.

DISCUSSION

Of the 7 species of Collembola now recorded on Heard I. only 4 were represented in the present collection, *Tullbergia bisetosa*, *T. templei*, *Cryptopygus antarcticus* and *Sorensia subflava*. Previous records of *Tullbergia antarctica* by Enderlein (1909b) and *Parisotoma octooculata* by Womersley

(1937) were confirmed by Brown (1964). *Cryptopygus reagens* recorded by Enderlein (1909b) remains unconfirmed.

It is considered that the collembolan fauna of Heard I. is still not accurately known. Further collecting, and comparison of specimens and species with those from other southern areas, particularly Crozet and Kerguelen Is., is required before a more definite list can be compiled.

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