

COLLEMBOLA FROM THE SOCIETY ISLANDS*

By

GEORGE H. CARPENTER
UNIVERSITY OF MANCHESTER, ENGLAND

Investigations of the Pacific Entomological Survey in the Society Islands have revealed 10 species of Collembola (springtails). Three of these are hitherto undescribed, and one of them may be regarded as the type of a new genus. The remainder are referable to species already recorded from the Marquesas or Hawaii, or from other localities; three at least are members of the fauna of northern continental lands. The insects recorded in this paper were collected for the most part in Tahiti, the largest and best-known island of the archipelago; a few specimens, however, were obtained in Moorea. All the species belong to the suborder Arthropleona, characterized by the more or less elongate body with segmentation definitely indicated.

FAMILY PODURIDAE

SUBFAMILY NEANURINAE

Genus NEANURA MacGillivray

Neanura Macgillivray: Canad. Ent., vol. 26, pp. 105-110, 1894.

Achorutes (in part) Templeton: Ent. Soc. London, Trans., vol. 1, 1835; Börner, Naturh. Mus., Hamburg, Mitt., vol. 13, 1906.

Neanura insularum Carpenter.

Neanura insularum Carpenter: B. P. Bishop Mus., Bull. 114, 1935.

Moorea: Faaroa Valley, altitude 1,000 feet, December 4, 1928, under bark, 10 specimens, A. M. Adamson.

These specimens are all referable to the species taken in numbers on several islands of the Marquesas and described in my recent paper on Marquesan Collembola.

FAMILY ENTOMOBRYIDAE

SUBFAMILY ISOTOMINAE

Genus FOLSOMIA Willem

Folsomia Willem: Soc. Ent. Belgique, Ann., vol. 46, p. 280, 1902.

Isotoma (in part) Bourlet: Soc. Sci. Agric. Lille, Mem., pp. 377-417, 1839; Tullberg: Ofv. Kongl. Vet-Akad. Forhandl., pp. 143-155, 1871.

* Pacific Entomological Survey Publication 6, article 29. Issued December 24, 1934.

Folsomia fimetaria (Linnaeus).

Isotoma alba Tullberg: Ofv. Kongl. Vet.-Akad. Forhandl, no. 1, p. 152, 1871.

Tahiti: Vallée de la Reine, altitude 460 feet, 3 miles from shore, December 17, 1928, 3 specimens; Faraura Valley, November 17, 1928, on bamboo, 1 specimen; Mumford and Adamson.

This small delicate springtail has a wide range over the northern continents, Europe, Asia, and North America, extending to Greenland and Franz Joseph Land.

Folsomia fimetarioides (Axelson).

Isotoma fimetarioides Axelson: Soc. Faun. et Flor. Fenn., Acta, vol. 25, no. 7, p. 8, 1903.

Tahiti: Faraura Valley, November 17, 1928, on bamboo, 4 specimens, A. M. Adamson.

This species, small and frail like the preceding, has hitherto been recorded only from northern Europe and its presence on Tahiti is noteworthy.

Genus **ISOTOMA** Bourlet

Isotoma Bourlet: Soc. Sci. Agric. Lille, Mém. (in part), pp. 377-417, 1839.

Isotoma alticola, new species (fig. 1).

Length 1 mm. Feelers twice as long as head; 8 ocelli on each side, the second in both series large; post-antennal organ narrowly crescentic (fig. 1, *b*). Abdominal segments 5 and 6 imperfectly distinct. Feet with long, narrow untoothed claw and leaflike empodium with hairlike process (fig. 1, *d*). Spring less than half as long as body, manubrium three fourths length of dens; mucro with apical and ante-apical teeth, anterior tooth on outer edge (fig. 1, *e, f*). Body clothed with uniformly short hairs. Color purple with dark mottling.

Tahiti: Hitiaa, altitude 1,500 feet, November 19, 1928, on *Freycinetia*, 3 specimens, A. M. Adamson.

The nearest ally of this springtail seems to be *Isotoma maritima* Tullberg, which inhabits the seacoasts of northwestern Europe, including Great Britain. The form of the mucro in both species is closely similar; the foot claw of *I. alticola* is narrower and less curved than that of *I. maritima*, while the empodium in *I. maritima* is relatively longer than in the European species. *I. maritima* exceeds *I. alticola* considerably in size.

SUBFAMILY ENTOMOBRYINAE

Genus ENTOMOBRYA Rondani

Entomobrya lactea Folsom.

Entomobrya lactea Folsom: Hawaiian Ent. Soc., Proc., vol. 8, pp. 65, 66, figs. 76-78, 1932; Carpenter: B. P. Bishop Mus., Bull. 114, 1935.

Tahiti: Faraura Valley, altitude 500 feet, November 17, 1928, in rotting bamboo, 3 specimens; Mataiea, sea level, December 19, 1928, in axils of sugar-cane leaves, 3 specimens; A. M. Adamson.

Moorea: Faaroa Valley, altitude 1,000 feet, December 4, 1928, 2 specimens, A. M. Adamson.

This species, described from Hawaii and recorded from the Marquesas, may be widespread in Polynesia.

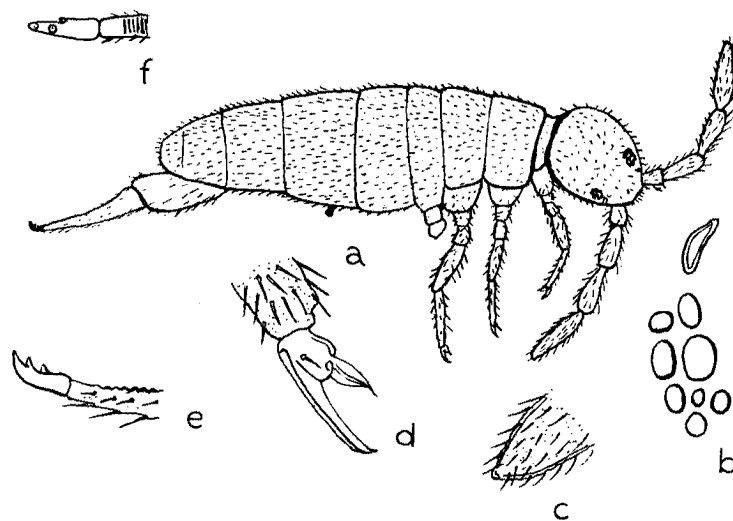


FIGURE 1.—*Isotoma alticola*, new species: a, side view, head seen from above, $\times 100$; b, ocelli and postantennal organ of right side, $\times 450$; c, tip of right feeler, $\times 335$; d, hind foot, $\times 450$; e, terminal part of left dens, and mucro, lateral view, $\times 450$; f, dorsal view, $\times 450$.

Genus SINELLA Brook

Sinella caeca (Schött).

Entomobrya caeca Schött: Calif. Acad. Sci., Proc., 2d ser., vol. 6, p. 178, figs. 14-16, 1896.

Sinella hofsti Schäffer: Naturh. Mus. Hamburg, Mitt., vol. 13, p. 192, figs. 102-105, 1896; Folsom: Hawaiian Ent. Soc., Proc., vol. 8, p. 66, figs. 79-81, 1932.

Sinella caeca Linnaniemi: Soc. Sci. Fenn., Acta, vol. 40, pp. 214, 215, pl. 14, fig. 13, 1912; Carpenter: B. P. Bishop Mus., Bull. 114, 1935.

Tahiti: Papara Valley, altitude 750 feet, 4 miles from sea, December 21, 1928, on *opuhi* (*Zingiberaceae*), 1 specimen, A. M. Adamson.

Moorea: Faaroa Valley, altitude 1,000 feet, December 12, 1928, under bark, 2 specimens, A. M. Adamson.

This species, like *Entomobrya lactea*, inhabits both Hawaii and the Marquesas; it has a wide continental range in both hemispheres.

Genus PARASINELLA, new genus

Dentes of spring with rounded scales; mucro falciform; foot claw with prominent basal wing appendage, empodium simple, acute; antennal segment 4 simple, imperfectly jointed to third; eyes and postantennal organs absent.

The insect for which this new genus is suggested is definitely related to *Sinella* Brook and *Pseudosinella* Schäffer, distinguished from *Sinella* by its scaled dentes and from *Pseudosinella* by its falciform mucro. From *Lepidosinella* Handschin it differs in the absence of a wing appendage on the empodium. The single specimen, imperfect and somewhat injured, does not show any scales on the head or body, but it is likely that in fresh specimens they would be apparent.

Parasinella adamsoni, new species (fig. 2).

Length 1 mm. White; eyes absent; feelers 1.5 times as long as head; spring two thirds as long as body. Legs with long, acute spines, and on the inner edge flattened foliate scales with short delicate spinules; foot claw with acute basal wing appendage, untoothed empodium relatively long, lanceolate, without wing appendage (fig. 2, *b*). Dens of spring with ventral scales, lateral spines, and subterminal feathered bristle; mucro falciform, elongate with sharp subapical spine (fig. 2, *c*). Hinder abdominal segments with prominent clubbed feathered bristles (fig. 2, *d*).

Tahiti: Vallée de la Reine, altitude 460 feet, 3 miles from shore, December 17, 1928, 1 specimen, A. M. Adamson.

Genus LEPIDOCYRTUS Bourlet

Lepidocyrtus medius Schäffer.

Lepidocyrtus medius Schäffer: Arch. f. Naturg. vol. 68, pp. 420-421, figs. 35-37, 1898; Carpenter: B. P. Bishop Mus., Bull. 114, 1935.

Tahiti: Mataiea, sea level, December 19, 1928, on sugar cane, 3 specimens, A. M. Adamson.

Moorea: Faaroa Valley, November 28, 1928, among dead leaves of *fei* (*Musa fehi*), 2 specimens, A. M. Adamson.

This species was described from specimens collected on Ralum in the Bismarck Archipelago. It was recorded by Handschin from Java¹ and is

¹ Handschin, E., Collembolen aus Java: Rev. Suisse Zool., vol. 28, pp. 135-147, 1920.

represented among the Marquesan Collembola of the Pacific Entomological Survey; its range in the eastern tropics must therefore be wide.

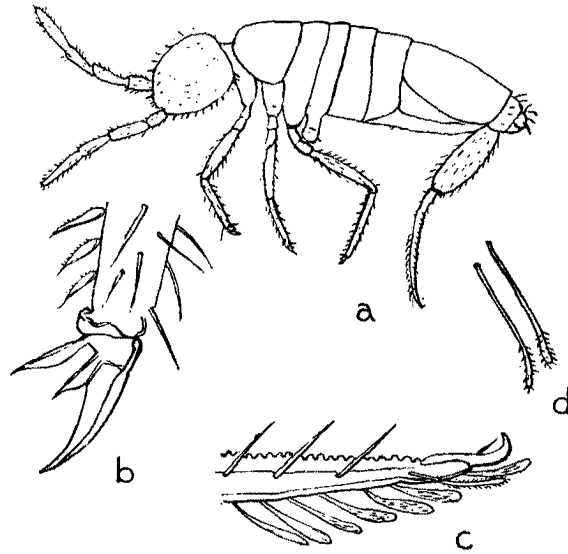


FIGURE 2.—*Parasinella adamsoni*, new species: *a*, side view, head seen from above, $\times 50$; *b*, hind foot, $\times 500$; *c*, terminal part of left dens, and mucro, lateral view, $\times 450$; *d*, feathered bristles from sixth abdominal segment, $\times 450$.

***Lepidocyrtus faaroanus*, new species (fig. 3).**

Length 2.5 mm. Mesonotum 0.80 times as long as head, twice as long as metanotum; fourth abdominal segment 5 times as long as third. Foot (fig. 3, *c*) with elongate, acute claw, bearing two pairs of teeth on the inner edge; empodium narrow and lanceolate, nearly as long as claw. Manubrium of spring three fourths length of dens, which has a terminal unannulated region somewhat longer than the mucro and bears scales and feathered bristles; mucro with strong apical and ante-apical teeth and the usual basal spine (fig. 3, *d*). Color yellowish with dark purple areas on head, mesonotum, and abdominal segments 1-5 (fig. 3, *a*).

Moorea: Faaroa Valley, November 28, 1928, among dead leaves of *fei* (*Musa fehi*), 4 specimens, A. M. Adamson.

In size and color this handsome species resembles *L. pictus* Schäffer² from the Bismarck Archipelago rather closely; the foot claw and empodium are also somewhat similar, but the empodium is longer and more acute in *L. faaroanus*. The most important distinction, however, appears to be the form of the scales, which in *L. faaroanus* have the broadly rounded distal margins

² Schäffer, C., Die Collembola des Bismarck-Archipels: Arch. f. Naturg., vol. 68, pp. 393-425, pls. 11-12, 1898.

that are characteristic of *Lepidocyrtus*, whereas those of *L. pictus* are pointed like the scales of a *Sira*. It is unfortunate that in none of the specimens are any antennal segments beyond the basal preserved; probably those appendages are elongate.

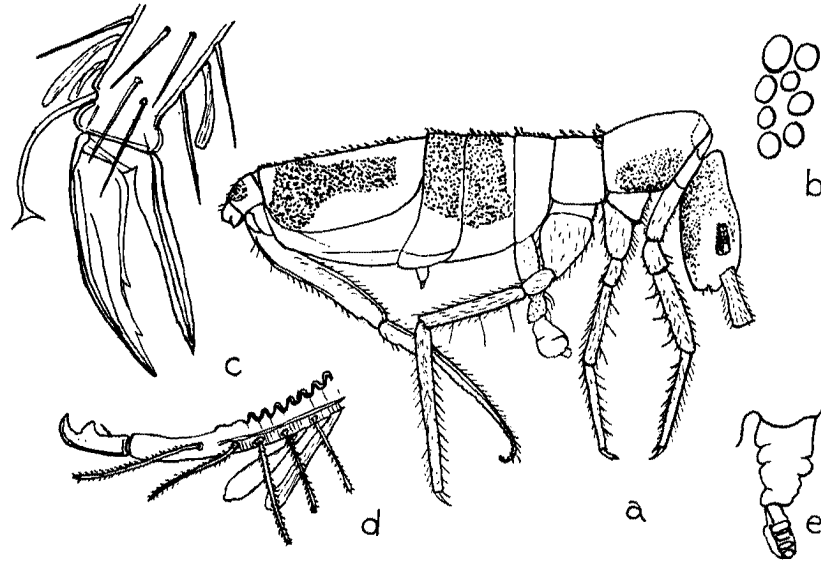


FIGURE 3.—*Lepidocyrtus faaroanus*, new species: a, side view, $\times 28$; b, eyes of right side, $\times 135$; c, hind foot, $\times 450$; d, terminal part of right dens, and mucro, $\times 450$; e, retinaculum, side view, $\times 160$.

SUBFAMILY PARONELLINAE

Genus SALINA MacGillivray

Salina MacGillivray: Canad. Ent., vol. 26, p. 107, 1894.

Cremastocephalus Schött: Calif. Acad. Sci., Proc., 2d ser., vol. 6, p. 107, 1896.

Salina maculata Folsom.

Salina maculata Folsom: Hawaiian Ent. Soc., Proc., vol. 8, p. 71, figs. 105-110, 1932.

Tahiti: Vallée de la Reine, altitude 460 feet, 3 miles from shore, December 17, 1928, 7 specimens; Fautaua Valley, altitude 750 feet, September 11, 1928, on *Hibiscus tiliaceus*, 10 specimens; A. M. Adamson.

These specimens agree closely with those from Hawaii described and figured by Folsom. It is remarkable that this Hawaiian representative of a distinct group of the Entomobryidae should inhabit the Society Islands, though it is apparently absent from the Marquesas.

DISTRIBUTION

Of the 10 species from the Society Islands recorded in this paper, four, *Neanura insularum* Carpenter, *Entomobrya lactea* Folsom, *Sinella caeca* Schött, and *Lepidocyrtus medius* Schäffer, are found also in the Marquesas; *Entomobrya lactea* Folsom, *Sinella caeca* Schött, and *Salina maculata* Folsom occur also in Hawaii. *Salina maculata* Folsom belongs to the paronelline group of the Entomobryidae, not represented in the Marquesan collections. The two species of *Folsomia* are definitely northern continental insects and the new species of *Isotoma* (*I. alticola* Carpenter) appears to have northern affinity. The two Lepidocyrti are identical with or related to springtails of the eastern tropics. As in the Marquesan collection, the apparent absence of the Podurinae and the Onychiurinae is noteworthy; the suborder Symphypleona, represented by at least one species in the Marquesas, has no member among the springtails from the Society Islands.