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Tipulidae of the Southeastern Pacific
(Diptera)¹

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INTRODUCTION

The following account of the crane-flies of the islands of the southeastern Pacific is based on materials procured by the Bernice P. Bishop Museum Mangarevan Expedition of 1934. The itinerary and summary of work accomplished by the members of the expedition have been given in an account in the Report of the Director for 1934 (B. P. Bishop Mus., Bull. 133: 33-71, 1935). This excellent account tells of the voyage of the *Islander*, with its staff of scientists, lasting 196 days, covering more than 9,000 miles, and exploring 25 mountainous islands and 31 additional coral islands and islets. The entomologist, E. C. Zimmerman, collected more than 40,000 specimens of insects, including a small number of Tipulidae.

Following Mr. Zimmerman's suggestion, I am including in this report all of the various island groups lying in the southeastern Pacific quadrant, east of 160° east longitude and south of the equator. The chief island groups that were visited by the staff of the *Islander* are the Society, Austral, Mangarevan, and the Tuamotu Islands. From earlier sources, a few additional records from the Marquesas and Juan Fernandez are available and are included in the basic list here provided.

LIST OF THE TIPULIDAE OF THE SOUTHEASTERN PACIFIC

TIPULINAE

Tipula (*Eumicrotipula*) *bäckströmi* Alexander: Juan Fernandez

¹ Mangarevan Expedition publication 39.

LIMONIINAE

- Limonia (Thrypticomylia) dichromogaster** (Edwards): Society Islands
L. (T.) zimmermaniana, new species: Austral Islands
L. (T.) sparsiseta, new species: Society Islands
L. (Doaneomyia) tahitiensis (Alexander): Society Islands
L. (Dicranomyia) illingworthi (Alexander): Marquesas, Society Islands
L. (D.) rapae (Alexander), new synonym: Austral Islands
L. (D.) sancti-georgii (Edwards): Austral Islands
L. (D.) selkirki (Alexander): Juan Fernandez
L. (Libnotes) perkinsi (Grimshaw): Marquesas, Society Islands
L. (L.) orofenaae, new species: Society Islands
Limonia (Limonia) raiateaae, new species: Society Islands
Gonomyia (Lipophleps) adamsoni Alexander: Marquesas
G. (L.) flavidapex Edwards: Society Islands
G. (L.) fuscocutellata Alexander: Society Islands
G. (L.) lyra Alexander: Marquesas
G. (L.) marquesana Alexander: Marquesas
G. (L.) metallescens Edwards: Marquesas
G. (L.) mumfordi Alexander: Marquesas
G. (L.) punctigera Alexander: Society Islands
G. (L.) tahitiensis Alexander: Society Islands
G. (L.) tonnoirella Alexander: Society Islands
Stringomyia didyma Grimshaw: Society Islands, Tongan Islands. (Very widespread over many of the islands of the southwestern Pacific, as far west as the Philippines and Riouw Archipelago.)

There were no previous records from Mangareva, Pitcairn, or the Tuamotus. No Tipulidae occur on Easter Island (Rapa Nui), and no collections have come to hand from the Cook Islands.

The number of species in the family Tipulidae taken by the Mangarevan Expedition is not large but includes a few novelties of more than ordinary interest. The types of the new species are preserved in Bishop Museum. I wish to express my very deepest thanks to the Museum and to Mr. Zimmerman for the privilege of studying this interesting series of crane-flies.

RECORD OF SPECIES

Limonia (Thrypticomylia) zimmermaniana, new species (fig. 1, a).

General coloration of thorax medium brown, including three almost confluent praescutal stripes; legs brownish black, the outer two-fifths or less of the basitarsi and the remainder of tarsi snowy white; wings with a weak brownish tinge, the prearcular field more nearly hyaline, stigma long and narrow; vein Sc_1 long, exceeding R_s ; free tip of Sc_2 far before R_2 ; abdominal tergites uniformly dark brown; male hypopygium with tergite unusually narrow, especially at midline, each lobe with about 18 strong but unmodified setae; ventromesal lobe of basistyle stout, without modified setae; rostrum of ventral dististyle short

and stout, the spines arising from elevated swollen tubercles that are slightly separated at bases; gonapophysis with mesal-apical lobe broad; aedeagus terminating in two acute needlelike points.

Male: length about 6-6.5 mm.; wing, 7-7.5 mm. Female: length about 6 mm.; wing, 6.5 mm.

Rostrum and palpi dark brown. Antennae relatively long; scape obscure yellow, remainder of organ dark brown; flagellar segments long-oval, with conspicuous glabrous apical necks; terminal segment elongate, about one-half longer than penultimate; verticils long, unilaterally distributed, slightly exceeding segments. Head brown; anterior vertex relatively broad.

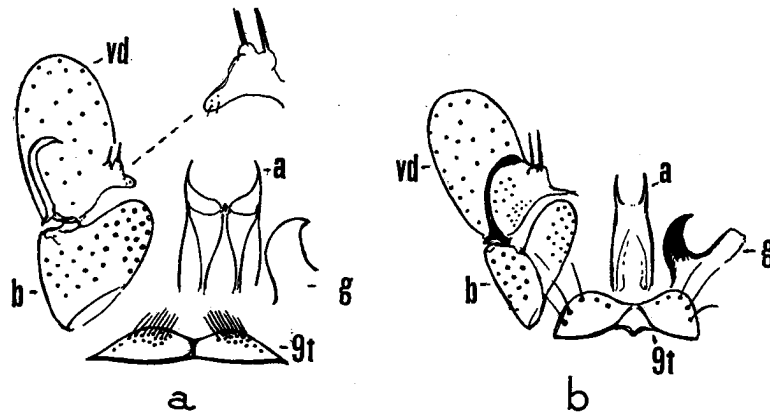


FIGURE 1.—a, *Limonia (Thrypticomyia) zimmermaniana*, male hypopygium; b, *Limonia (Thrypticomyia) sparsisetata*, male hypopygium. Symbols: a, aedeagus; b, basistyle; g, gonapophysis; t, tergite; vd, ventral dististyle.

Pronotum obscure yellow. Mesonotum chiefly medium brown, the praescutum with three almost confluent stripes of this color, the lateral borders yellow; median region of scutum obscure yellow. Pleura and pleurotergite obscure yellow. Halteres with stem yellow, knob dark brown. Legs with the coxae yellow; trochanters more testaceous; femora and tibiae dark brown; basitarsi brownish black, with about the outer two-fifths or less abruptly white, in cases with only the outer fifth whitened; remainder of tarsi similarly snowy white. Wings with a weak brownish tinge, the long narrow stigma darker brown; prearcular field more nearly hyaline; veins brown. Venation: Sc_1 ending opposite origin of R_s , Sc_2 some distance from its tip, Sc_1 alone longer than R_s ; free tip of Sc_2 far before R_2 , R_{1+2} preserved as a long spur, subequal in length to or longer than R_2 ; cell $1st M_2$ rectangular; $m-cu$ about its own length beyond the fork of M .

Abdominal tergites dark brown, the outer sternites more obscure yellow; hypopygium dark brown. Male hypopygium (fig. 1, a) with the tergite, $9t$, unusually narrow, especially at midline, which is heavily sclerotized; lobes low, each with 18 to 20 strong setae, none modified. Basistyle, b , with the ventromesal lobe very short and stout with strong setae, none modified. Dorsal dististyle entirely pale, the tip acute. Ventral dististyle, vd , dark-colored, its area nearly twice that of the basistyle; rostral prolongation relatively short and stout, the two spines

from an elevated swollen tubercle, each arising from smaller individual elevations; spines short and straight. Gonapophysis, *g*, with mesal-apical lobe broad. Aedeagus, *a*, broad, parallel-sided, the apex hyaline, each outer angle produced into a needlelike point.

Habitat: Austral Islands.

Holotype, male, Mirivaki, Tubuai, alt. 10 ft., Aug. 12, 1934, Zimmerman. Allotopotype, female, paratopotypes, male and female, Aug. 12-16, 1934, Zimmerman.

The fly is most similar to *Limonia* (*Thrypticomyia*) *dichromogaster* (Edwards), of the Society Islands, from which it differs in coloration, as the elongate stigma and the unbanded abdomen, and in the details of structure of the male hypopygium, particularly the ninth tergite, rostral prolongation, and the gonapophyses.

I take great pleasure in naming this interesting species for Elwood C. Zimmerman, distinguished student of the Coleoptera of the Pacific islands.

***Limonia* (*Thrypticomyia*) *sparsiseta*, new species (fig. 1, *b*).**

General coloration of thorax light rufous brown; antennae dark brown, flagellar segments elongate-oval, with glabrous apical stems; basitarsi with less than the proximal half blackened, the tips and remainder of tarsi snowy white; wings with proximal half whitish subhyaline, the outer half very gradually more darkened; stigma darker brown, long-oval; abdominal tergites uniformly dark brown, unpatterned; male hypopygium with each lobe of the tergite with about five strong unmodified setae; rostral spines straight, slender; gonapophyses with mesal-apical lobe a strong curved darkened horn, the tip acute; aedeagus terminating in two long pale spines.

Male: length about 4.2-4.5 mm.; wing, 5-5.5 mm. Female: length about 4.5 mm.; wing, 5.5 mm.

Rostrum and palpi brown. Antennae dark brown; flagellar segments elongate-oval, with glabrous apical stems; verticils unilaterally arranged, very long and conspicuous, the longest about twice the segments. Head dark brown.

Thorax almost uniformly light rufous brown, the pleura a trifle more yellowed. Halteres with stem yellow, knob dark brown. Legs with the coxae and trochanters yellow; femora obscure yellow, the tips weakly infuscated; tibiae light brown; basitarsi with less than the proximal half brownish black, the remainder of tarsi white. Wings with proximal half whitish subhyaline, the outer half very gradually and inconspicuously darkened, especially the cells beyond cord; stigma darker brown, long-oval, larger than in *dichromogaster*. Wing petiole proportionately a little longer and more slender than in *dichromogaster*. Venation: free tip of *Sc*₂ usually less than its own length before level of *R*₂, in the type somewhat more removed; *m-cu* shortly before mid-length of cell *1st M*₂.

Basal segment of abdomen pale, the succeeding ones, including hypopygium, dark brown, unpatterned, not variegated as in *dichromogaster*. Male hypopygium (fig. 1, *b*) with the tergite, *9t*, moderately constricted at middle, the lobes relatively prominent, each with about five strong setae, none of which is modified. Basistyle, *b*, with ventromesal lobe large and fleshy, its area only a little less than

the body of the style, without modified setae, the normal vestiture long and conspicuous, pale in color. Dorsal dististyle a gently curved rod, slightly dilated before the suddenly acute tip. Ventral dististyle, *vd*, fleshy, its area fully twice that of the basistyle; rostral prolongation very slender, its base much elevated and bearing at its summit the two spines, these slightly separated, straight and slender. Gonapophysis, *g*, with the mesal-apical lobe a strong curved darkened horn, the tip acute. Aedeagus, *a*, terminating in two long pale spines.

Habitat: Society Islands, Tahiti.

Holotype, male, Fautaua Valley, beneath banana trees, Mar. 13, 1934, Zimmerman. Allotopotype, female, paratopotypes, 3 males and females; paratypes, 2 females, Fautaua Gorge, alt. 1,500 to 2,000 ft., Mar. 13, 1934; female, Tiupi Bay, Papeari, May 3, 1934; 1 male, Arue District, alt. 500 ft., Mar. 6, 1934, on banana stump, Zimmerman.

This fly is readily distinguished from the other regional member of the subgenus, *Limonia* (*Thrypticomyia*) *dichromogaster* (Edwards), by the coloration of the abdomen and wings and by the details of structure of the male hypopygium, particularly the tergite and gonapophyses. I possess a paratype of *dichromogaster* received in exchange through Dr. Edwards.

***Limonia* (*Doaneomyia*) *tahitiensis* (Alexander).**

Doaneomyia tahitiensis Alexander, Brooklyn Ent. Soc., Bull. 16: 12, 1921.

Tahiti: Fautaua Valley, Mar. 13, 1934, beneath banana trees, Zimmerman; Arihiri, Pare, March 5 to 16, 1934, Zimmerman.

The species was described from material taken in Tahiti, without closer geographical data, collected August 1908 by the late Professor Rennie Wilbur Doane, after whom I named the subgenus. Since this first discovery, there have been a few further records from the Society Islands. Miss L. Evelyn Cheesman, whose notes are given below, procured several specimens from Tahiti in the Vallée de Sainte Amélie, Mar. 8, 1925; Papenoo, Mar. 13, 1925; Vaitepiha River, Tautira, July 9, 1925; and from Raiatea, alt. 2,000 ft., June 1, 1925. All such specimens were taken in shade, high up in the heads of the various gullies where water was flowing over precipitous rocks.

Miss Cheesman's further notes on this fly, which she calls the "Tahitian midge," have been given in one of her charming volumes, "Hunting insects in the south seas." Her notes on this particular fly (p. 72) are as follows:

There are delicate insect forms in such places [along mountain streams] which are very desirable to a collector. Fragile midges dancing over the water;

often in the spray, so that one cannot imagine how they escape destruction, since if even a drop of water touched one it must be hurled into the water. Yet you may watch a swarm of dancing midges, as I did that morning, under a waterfall, and there will not be a single casualty. I stood just below them and picking out an individual followed its graceful rhythmic figures as it wove a design against the warp of fine spray. One sees then, when watching a swarm from a few inches away, that it is their lightness which saves them. It is not their voluntary movements that keep them safe among these formidable missiles, but each drop of water disturbs the air as it falls through it and pushes the midge out of harm's way.

Her further notes (p. 74) on the interrelations of this species with spiders' webs are very interesting.

. . . They have one most curious and unaccountable habit, shared with many other midges, and that is to hang upside down in cobwebs. The spiders know them quite well, and apparently make no attempt to catch them. But although some of the webs where they hang are sticky to the touch, yet the midges never seem to be entrapped. It is a curious habit for any insect to hang suspended in this fashion, and why they should do so in a place so fraught with danger as a spider's web is incomprehensible. On some islands there are spiders with white bands to their legs which at first sight can be mistaken for these midges, but whether the spider mimics the midge or the other way is not plain, for it is difficult to see what advantage such mimicry would be to either.

The entire problem of association of Tipulidae of many kinds with spiders' webs has received much attention in the literature but the references are very incomplete and scattered. Two main genera are involved, *Limonia* Meigen, with the subgenera *Doaneomyia* Alexander, *Euglochina* Alexander, and *Thrypticomyia* Skuse, and *Trentepohlia* Bigot, subgenus *Mongoma* Westwood. It is of interest to note that all of the species of crane-flies so far involved have the legs variously patterned with snowy white, as described for *L. tahitiensis* by Miss Cheesman. It is of further interest to note that all such records pertain to the Oriental and Australasian faunal regions, although species of *Euglochina* and *Thrypticomyia* occur throughout tropical Africa and undoubtedly have the same habits. In tropical America, several of the species of *Trentepohlia* have similarly patterned legs and may have somewhat comparable habits.

***Limonia (Dicranomyia) illingworthi* (Alexander).**

Dicranomyia illingworthi Alexander, Ent. Soc. America, Ann. 7: 239-240, 1914.

Limonia (Dicranomyia) illingworthi (Alexander), Encycl. Ent., Diptera 5: 85-86, 1929.

Widespread over the Pacific islands.

Mangarevan Islands: Mangareva, near convent, alt. 300 ft., May 24, 1934, sweeping grasses and low herbage; near Atituiti, May 25, 1934; near chapel, Teomekura Point, alt. 800 ft., May 25, 1934 (all Zimmerman). Aukena Island, northwest side, alt. to 50 ft., May 25, 1934; Koiovao, May 29, 1934, sweeping grasses and low herbage, Zimmerman.

Pitcairn Island: Adamstown, June 13, 1934, at light, Zimmerman.

Rapa: Mt. Pukunia, alt. 1,377 ft., July 8, 1934, under stones, F. R. Fosberg. Southeast valley, Mt. Ororangi, alt. 600-800 ft., July 3, 1934; northwest slopes of Mt. Tautautu, alt. 700-800 ft., July 9, 1934; Mt. Vairu, alt. 1,100 ft., July 12, 1934; east ridge of Mt. Perahu, alt. 1,200-1,500 ft., July 21, 1934; Mt. Tanga, alt. 700-800 ft., July 23, 1934; northeast ridge of Mangaoa Peak, alt. 1,000-1,200 ft., July 25, 1934 (all Zimmerman).

Austral Islands: Tubuai, Mt. Taita, alt. 1,000 ft., Aug. 15, 1934, Zimmerman; Rurutu, Mt. Manureva, 1,100 ft., Aug. 29, 1934, Zimmerman.

Tuamotu Islands: northwest islet, South Marutea Island, May 22, 1934, Zimmerman.

The species described as *Dicranomyia rapae* Alexander (Ann. Mag. Nat. Hist. IX, 13: 36, 1924) is evidently based on an unusually heavily patterned specimen of *illingworthi* and should be placed in the synonymy. The type was collected at Rapa, November 1921, at light, by Mrs. A. M. Stokes, and is preserved in the British Museum.

***Limonia (Dicranomyia) sancti-georgii* (Edwards).**

Dicranomyia sancti-georgii Edwards, Ann. Mag. Nat. Hist. IX, 20: 238, 1927.

The types were from Rapa, collected in April 1925 by C. L. Collenette. Further material from Rapa in the present collection: northeast ridge of Mt. Perahu, alt. 1,000-1,400 ft., July 15, 1934, Zimmerman; east ridge of Mt. Perahu, alt. 1,200-1,500 ft., July 21, 1934, Zimmerman; northwest slopes of Mt. Tautautu, alt. 800 ft., July 25, 1935, C. M. Cooke, Jr.

***Limonia (Libnotes) perkinsi* (Grimshaw).**

Limnobia perkinsi Grimshaw, Fauna Hawaiiensis, Diptera 3 (1): 6-7, 1901.

Widespread over the Pacific islands where it appears to have been spread during the migrations of the Polynesians.

Austral Islands: Raivavae Island, near Unurau, alt. 100-200 ft., Aug. 3, 1934, Zimmerman; Raiurua, alt. 5 ft., Aug. 5, 1934, sweeping grasses and low herbage, Zimmerman.

Mangarevan Islands: northwest side of Aukena Island, alt. to 50 ft., May 25, 1934, sweeping grasses and low herbage, Zimmerman.

Society Islands: Tahiti, Tiupi Bay, Papeari, May 3, 1934, Zimmerman.

***Limonia (Libnotes) orofenaae*, new species.**

Size large (wing, male, over 12 mm.); general coloration of mesonotum black, the praescutum patterned with chestnut brown; antennae black throughout, the flagellar segments with short apical necks; apex of knob of halteres yellow; femora brown, the tip clear yellow, enclosing a narrow black subterminal ring; wings obscure yellow, restrictedly patterned with pale washes and darker brown areas, the latter including the very large stigma; *Rs* strongly arcuated; male hypopygium with the tergal lobes very low and obtuse; dististyle with a conspicuous spinous projection arising from the base of the prolongation; gonapophysis with apex of mesal-apical lobe obtusely truncated.

Male: length about 10 mm.; wing, 12.5 mm.

Rostrum black, relatively long, a little shorter than the remainder of head; maxillary palpi black. Antennae black throughout; first flagellar segment with a slender basal stem and a stouter apical neck; succeeding segments suboval, with abrupt short but conspicuous necks, those of the outer segments more slender; terminal segment elongate, pointed at tip, about one-half longer than the penultimate. Head black; anterior vertex reduced to a narrow strip that is only about as wide as two rows of ommatidia.

Pronotum black, paler behind. Mesonotal praescutum variegated with black and chestnut brown, the disk covered by three confluent black stripes, the lateral borders similarly darkened, the two dark areas separated by the paler color which thus forms a sublateral brightening, removed from the lateral margin; posterior sclerites of notum black, the median region of scutum and the postnotum sparsely more pruinose. Pleura dark chestnut brown, variegated with more blackish areas, especially involving the propleura and adjoining portions of the anepisternum and the pteropleurite; ventral sternopleurite darkened. Halteres with stem blackened, its base obscure yellow; knob darkened basally, the apical half obscure yellow. Legs with the fore coxae chestnut brown, the remaining coxae a trifle darker; trochanters reddish brown; femora obscure yellow basally, passing into brown, the apex light yellow, enclosing a narrow black subterminal ring that is wider than the yellow apex; remainder of legs brown, the terminal tarsal segments more blackened; claws toothed. Wings with the ground obscure yellow, greatly restricted by brown washes and broad darker brown seams to certain of the veins, including the origin of *Rs*, cord and outer end of cell *1st M*₂; stigma very large, elongate, dark brown, extending from *Sc*₂ to beyond *Rs*; the yellow ground is especially evident before the origin of *Rs*, before and beyond the cord, beyond the stigma and subbasally in the outer medial cells; veins dark brown. Venation: *Sc* relatively long, *Sc*₁ ending just beyond the level of *r-m*, *Sc*₂ some distance from its tip, immediately before the fork of *Rs*; free tip of *Sc*₂ a distance before *R*₂ that slightly exceeds the length of the latter; *Rs* relatively long and very strongly arcuated; cell *1st M*₂ long and narrow, its base arcuated and lying

slightly basad of cell R_3 , the cell longer than vein M_4 ; $m-cu$ at near mid-length of cell $1st\ M_2$; anal veins nearly parallel to one another for most of their length, cell $2nd\ A$ relatively narrow.

Abdominal segments conspicuously bicolored, black, with broad orange-yellow apices; on the tergites the latter color decreases in amount outwardly; sternites with the yellow borders even broader, occupying at least the distal half of the segment; eighth segment and ninth tergite chiefly pale, the latter with the lobes blackened; styli conspicuously blackened. Male hypopygium with the tergite large, broadest across the cephalic end where it narrows to acute lateral points, thence sloping to the low obtuse caudal lobes, these provided with coarse setae; elsewhere the whole tergal surface with abundant delicate pale setulae. Dististyle relatively small, its area about one-half that of the basistyle; main body oval, with long coarse setae; rostral blade compressed, very deep at base; on side of style near base of prolongation is a conspicuous lateral spine that bears two very long setae. Gonapophysis with the mesal-apical lobe appearing as a long, straight, flattened rod, the tip obliquely truncate, pale. Aedeagus bilobed at apex.

Habitat: Society Islands, Tahiti.

Holotype, male, east slope of Mt. Orofena, alt. 4,500 ft., Sept. 22, 1934, F. R. Fosberg.

This fly is amply distinct from all other described species of the subgenus. Superficially, it has somewhat the appearance of a gigantic *Limonia* (*Libnotes*) *perkinsi* (Grimshaw).

Limonia (*Limonia*) *raiateae*, new species.

Size medium (wing, female, 7 mm.); general coloration yellow and brown; antennae black, the flagellar segments with short abrupt apical stems; mesonotal praescutum with three brown stripes; femora obscure yellow, each with a brown subterminal ring; wings yellow, with a restricted brown pattern; Sc relatively long, Sc_1 ending about opposite three-fourths the length of the strongly arcuated R_5 ; $m-cu$ about one-fourth its length beyond the fork of M ; abdominal segments brown, the posterior borders broadly ringed with yellow; cerci slender.

Female: length about 7 mm.; wing, 7 mm.

Rostrum and palpi black. Antennae black throughout; basal flagellar segments oval, the outer ones more elongate, all with short abrupt apical stems; verticils of the proximal seven or eight segments elongate, exceeding the segments, becoming shorter on the outer ones, on the terminal four or five becoming subequal in length to the segments; terminal segment about one-half longer than the penultimate. Head blackened, sparsely gray pruinose, anterior vertex reduced to a narrow line.

Pronotum and cervical region infuscated above, obscure yellow on sides. Mesonotal praescutum obscure yellow, with three brown stripes, additional to a lateral darkening; median stripe broad and entire, lateral stripes continued backward over the scutal lobes, the median region of the latter yellow; posterior sclerites of notum dark brown. Pleura brown, with a vague more yellowed longitudinal stripe extending from behind fore coxae to base of abdomen. Halteres with stem testaceous, knob yellow. Legs with the coxae and trochanters yellow; femora obscure yellow, with a brown subterminal ring, preceded and

followed by narrow clearer yellow rings, the apical one less than half as extensive as the brown annulus; tibiae yellow, weakly darkened at tip; tarsi obscure yellow, the terminal segments infuscated; claws with a strong seta and with a few microscopic spinous points lying more basad. Wings with the ground color yellow, with a restricted brown pattern that is most evident as the stigma and as seams at origin of R_s , cord and outer end of cell *1st* M_2 ; vague, paler brown washes along the veins of basal third of wing, particularly in the anal cells and again at the wing tip in outer radial field; veins brown. Venation: Sc relatively long, Sc_1 ending about opposite three-fourths the length of R_s , Sc_2 near its tip; R_s strongly arcuated at origin; free tip of Sc_2 and R_2 in approximate transverse alignment, glabrous; a short, densely setuliferous spur of R_{2+3} juts beyond R_2 ; veins R_3 and R_{4+5} extending parallel to one another; cell *1st* M_2 long, subequal to the outer section of vein M_3 ; m about one-half longer than the basal section of M_3 and more arcuated; $m-cu$ about one-fourth its own length beyond the fork of M ; anal veins nearly parallel or diverging very slightly.

Abdomen conspicuously banded brown and yellow, the tergites brown, with about the outer third of each yellow; on the sternites the two colors are more nearly equal in extent. Ovipositor with the cerci slender, upcurved to the acute tips, a trifle exceeding the hypovalvae.

Habitat: leeward Society Islands, Raiatea.

Holotype, female, Temehani Plateau, alt. 1,500 ft., Oct. 5, 1934, Zimmerman.

While superficially resembling *Limonia* (*Libnotes*) *perkinsi* (Grimshaw), the present fly is well distinguished by the position of $m-cu$, on which character I am referring it to the subgenus *Limonia* rather than to *Libnotes*. The subterminal dark rings of the femora and the wing pattern and venation similarly separate the fly from *perkinsi*.

Styringomyia didyma Grimshaw, Fauna Hawaiiensis, Diptera 3 (1): 10, 1901.

Idiophlebia pallida Grünberg, Zool. Anzeiger 26: 524-528, 1903.

Austral Islands: Raiivavae Island, Pic Rouge, alt. 200-400 ft., beating *Alyxia*, Aug. 5, 1934, Zimmerman; Raiurua, alt. 5 ft., Aug. 5, 1934, Zimmerman; Ahuoivi Pt., alt. 5 ft., Aug. 9, 1934, Zimmerman. Rimatara Island, Maraitera, alt. 25 ft., Sept. 5, 1934, sweeping grasses and low herbage, Zimmerman. Tubuai Island, Murivahi, alt. 10 ft., Aug. 16, 1934, Zimmerman.

Society Islands: Tahiti, 2 miles east of Papeete, June 11, 1927, L. H. MacDaniels; Blue Lagoon Hotel, Papeete, at light, Feb. 26, 1934, Zimmerman; 1.5 miles northeast of Papeete, alt. 25 ft., Mar. 2, 1934, swept from grasses, Zimmerman; near Tiupi Bay, Papeari, Mar. 19, 1934, Zimmerman.

One of the most widely distributed crane-flies known, *S. didyma* is widespread over the Pacific islands, where it has presumably been

carried by the Polynesians in their centuries of exploration of the Pacific. Outside the southeastern quadrant here discussed, the species has been recorded from the Hawaiian Islands, Fanning Island, Samoa, Tonga, Fiji, the New Hebrides, New Guinea, the Philippines, the Caroline Islands, and the Riouw (Rhio) Archipelago. Lying just off the coast of Singapore, at approximately 104° east longitude, the Riouw Archipelago is noteworthy as being the most westerly record for the species.

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