NEW OR LITTLE-KNOWN CRANE FLIES FROM NORTHERN JAPAN (TIPULIDÆ, DIPTERA)

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Separate from
THE PHILIPPINE JOURNAL OF SCIENCE
Published by the Bureau of Science of the Philippine Government
Manila, P. I.
VOLUME 24, No. 5, MAY, 1924

MANILA
BUREAU OF PRINTING
1924

NEW OR LITTLE-KNOWN CRANE FLIES FROM NORTHERN JAPAN (TIPULIDÆ, DIPTERA)

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TWO PLATES

During the summer of 1922, Teiso Esaki undertook an extensive collecting trip through Japanese Saghalien (Karafuto) and Hokkaido. Through the kind interest of Doctor Esaki, I have received the very extensive collections of Tipuloidea secured upon this expedition, these including more than one hundred species. It is no exaggeration to state that this is the largest and finest collection of crane flies that has yet been taken in Japan.

The species of Tipuloidea inhabiting Japan include a very curious admixture of forms that show affinities with others inhabiting the western Palæarctic, the Nearctic, and the Oriental Regions, as well as a small proportion of endemic genera and subgenera, though with an abundance of endemic species. This relationship is discussed in greater detail in the present paper. I am vastly indebted to Doctor Esaki for the gift of this splendid collection and for the accompanying discussion of his itinerary. All types and uniques are preserved in my collection, but certain paratypes and duplicates have been returned to Doctor Esaki.

GENERAL ACCOUNT OF THE EXPEDITION BY DOCTOR ESAKI

Saghalien.—Toyohara is the principal town of the island, located on the River Suzuya. To the east of the town there are small mountains of less than 500 feet in altitude, while east of these there is an extensive mountain range that averages more than 3,000 feet in altitude, culminating in Mount Suzuya, 3,454 feet, lying just east of Toyohara. These mountains are covered by coniferous forests, of which *Picea ajanensis* and *Abies sachalinensis* are the chief components. These two species are also found in Hokkaido, where they reach their southern limits. Crane flies appeared to be rather scarce in these mountains. Most of those from Toyohara were collected among the bushes along the river west of the town. Large trees

[1] Contribution from the Department of Entomology, Massachusetts Agricultural College.

are not plentiful there, the majority being trees of medium height, among them the following genera: *Betula*, *Alnus*, *Populus*, *Salix*, and *Ulmus*, lesser numbers of species of *Fagus* and *Quercus*, and a greatly reduced number of conifers, *Abies*, *Picea*, and *Larix*. The country is frequently swampy and the shrubs grow to a rather greater height than in Honshiu. A part of these flies were captured at light and at honey bait-traps.

Konuma lies about five miles north of Toyohara and under almost the same conditions, but the fauna seems more plentiful.

Sakaehama lies along the shore, the soil being mostly sandy, and the fauna and flora are very poor.

From Takinosawa to Shimizu (altitude about 1,000 feet) there was found a very abundant fauna, especially in butterflies. Unfortunately only a few tipulids were secured here. You probably found four examples of a medium-sized tipulid from Shimizu, whose wings are beautifully colored with hyaline and brown markings (*Polyangaeus gloriosus* sp. n.). This species was found near a valley where they fly in the evening, appearing as if entangled with one another.

The western coast of Saghalien (Honto, north to Kusunnai at 48° N. lat.) supports a very poor fauna, not only in crane flies but in almost all other groups.

From Kusunnai to Manui (northern limit reached by the expedition) the altitude is not so high as at Takinosawa (about 800 feet at Todoro-kitōge). Unfortunately while I was there the weather was inclement and collections here were not extensive. A destructive forest fire of a half century or more ago destroyed most of the larger trees, so that now there are only small specimens, mostly of *Betula alba*.

The eastern coast of Saghalien (Manui to Tonnai) is much richer in its fauna than the western coast. There are many marshes and pools along the coast but collecting is often interfered with by the windy weather. From Odomari to Tonnai (southeastern peninsula of Saghalien), we pass through extensive forests of *Abies* and *Picea*. These forests are severely attacked by a lasiocampid moth, *Dendrolimus sibiricus*, which has killed off a part of the trees.

Hokkaido.—Sapporo is the capital of Hokkaido, lying in the center of the Plain of Ishikari. In summer we have an abundant fauna, not only in the vicinity of the city, but within the city limits as well. Maruyama, just west of the city, is a most excellent collecting ground. The environment is very like that of Mount Minomo, in Settsu-no-kuni, central Honshiu, the streams in both cases being shaded by dense leafy shrubbery. Mount Moiwa, although at a higher altitude than Maruyama, seems to support a poorer fauna. The only tipulid collected there is a new species (*Discobola moiwana* sp. n.).

Jozankei is one of the best-known collecting grounds in all Japan. It is a bathing resort and has been much invaded by civilization within recent years, so its fauna is gradually becoming reduced. The vegetation along the valley is very dense. Kamuikotan, along the river Ishikari, is also a famous collecting spot in Japan, but the fauna is not so abundant as at Jozankei. Kamiotoineppu, in northern Teshio, proved to be a most excellent collecting ground. The extensive Experimental Forest of the Hokkaido Imperial University is located here. Most of the crane flies from this place were swept from trees and shrubs with spatulate leaves. The very long-beaked species (*Elephantomyia hokkaidensis* sp. n.) which was afterwards found in many stations in Hokkaido, was found on the flowers of Compositæ, on which many insects, e. g., Syrphidæ, Apidæ, Lycaenidæ, and Hesperidæ, were feeding. This was true for all specimens collected, with the exception of a few that were attracted to light. No specimens were found on other flowers.

Shikaripetsu (Teshio) and Kamiokoppe (Kitami) are on the two sides of the boundary between Teshio and Kitami. The conditions are very similar to those obtaining at Kamiotoineppu (all being mountainous but not exceeding 1,000 feet in altitude), but the fauna is much poorer.

Abashiri (Northeastern Kitami) provides excellent collecting grounds in the vicinity of the town. Specimens dated August 30th were collected on Mount Sanchozan, at an altitude of 500 feet or more, about two miles northwest of the town, and in the Abies forests at Moyoro at night [a pair of the large and beautiful *Pedicia daimio* (Matsumura), a single *Nesopeza geniculata* Alexander, and *Elephantomyia hokkaidensis* were captured here at light]. The collection dated August 31st is from the town proper.

Akan is the name of a lake in the northern extremity of the Province of Kushiro. It is one of the most interesting and beautiful lakes in Hokkaido, or even in all Japan, but it is very inconvenient to visit there. The fauna is probably a very rich one although the season during which my trip was made was not a good one. In the lake can be seen a very curious alga, *Ægagropila sauteri*, about the shape and size of a base-ball, which is spread over the bottom of a part of the lake and can be clearly

TABLE 1.—*Stations at which collections of Tipulidæ were made.*

SAGHALIEN

Japanese name.	Russian name.	Approximate location.	Approximate altitude in feet.
Higashi-shiraura	Shiraraka	East	Sea level.
Honto		West	Do.
Kawakami		South	Less than 500.
Kiminai	Kimnai	do	Less than 800.
Konuma	Novalexandrovsk	do	Very low.
Kusunnai		West	Sea level.
Manui		East	Do.
Maoka	Mauka	West	Do.
Minakishi		South	Low.
Nayoro		West	Sea level.
Nodasam		do	Do.
Ochiho		South	Do.
Odasam		East	Do.
Odomari	Korsakoff	South	Do.
Oite		West	Sea level.
Sakaehama		East	Do.
Shimizu		South	About 1,000.
Takinosawa		do	Do.
Todorokitōge		North	About 800.
Tomarioro		West	Sea level.
Tonnai	Tonnaitcha	South	Do.
Toyohara	Vladimiroffea	do	Very low.

TABLE 1.—*Stations at which collections of Tipulidæ were made*—Continued.

HOKKAIDO

Station.	Province (Ken).	Approximate altitude in feet.
Abashiri	Kitami	Sea level.
Akan (lake)	Kushiro	1,400.
Akkeshi	do	Sea level.
Biporo	Kitami	Very low.
Hakodate	Oshima	Sea level.
Jozankei	Ishikari	About 1,000.
Kamiokoppe	Kitami	Less than 1,000.
Kamiotoineppu	Teshio	Do.
Kamuikotan	Ishikari	About 800.
Kushiro	Kushiro	Sea level.
Kutchan	Iburi	Very low.
Maruyama	Ishikari	750.
Meakantake (volcano)	Kushiro	5,340.
Moiwa (Mount)	Ishikari	1,750.
Nayoro	Teshio	Low.
Nokkeushi	Kitami	Very low.
Onuma	Oshima	Do.
Otanoshike	Kushiro	Sea level.
Panketo	do	1,500.
Ponkikin	Kitami	Less than 500.
Sapporo	Ishikari	60.
Shikaripetsu	Teshio	Less than 1,000.
Shikotsu (lake)	Iburi	850.
Shitakara	Kushiro	Less than 500.
Teppetsu	do	Do.
Tomakomai	Iburi	Sea level.
Tsubetsu	Kitami	Less than 500.

seen through the very limpid water. (The stations Biporo, Tsubetsu, Ponkikin (Kitami), Panketo, Teppetsu, Shitakara, Otanoshike and Kushiro (Kushiro) are in the eastern part of Hokkaido).

Kushiro and Akkeshi are on the southeastern coast and the weather is very frequently misty. They do not support a rich fauna. Shikotsu (in Iburi) is likewise a very famous lake in Hokkaido. The water is even clearer than that of Lake Akan. The margins of the lake are covered with very rich vegetation which afford really excellent collecting.

COMPONENTS OF THE CRANE-FLY FAUNA OF NORTHERN JAPAN

The majority of the genera and species of crane flies so far discovered in northern Japan are evidently derived from, or find their closest relatives in, the Holarctic Region. However, a certain considerable proportion have evidently been derived from the west (Europe) while others are as clearly derived from the east (North America). In addition to the above, and to numerous endemic species, there has been a notable invasion of genera and species from the south, though many of these oriental types do not reach the northern island of Japan (*Trypticomyia, Euglochina, Styringomyia, Gymnastes, Trentepohlia, Ctenacroscelis, Tipulodina,* and others) but reach their northern limit at about the latitude of Tokyo, or slightly farther north in Honshiu.

With the above facts in mind, the Tipuloidea that were taken by Doctor Esaki may be roughly divided into the following groups:

1. Endemic groups.

Proantocha, a subgenus. Tipulidæ, most of the species of this family, in various genera.

2. Genera and species evidently derived from the western Palæarctic Region.

Dicranomyia megacauda sp. nov.
Limonia quadrinotata (Meigen).
Limonia annulus truncata subsp. nov.
Limonia bifasciata avis Alexander.
Limnophila japonica Alexander.
Limnophila nemoralis (Meigen) var.
Erioptera (*Acyphona*) *sachalina* sp. nov.
Erioptera (*Acyphona*) *yezoana* sp. nov.
Cheilotrichia imbuta (Meigen).
Nephrotoma dorsalis sachalina subsp. nov.
Nephrotoma aculeata atricauda subsp. nov.
Nephrotoma cornicina Linnæus var.
Nephrotoma lamellata Riedel var.
Tipula variicornis Schummel.
The genera *Psiloconopa* and *Dictenidia* in Honshiu also show this relationship.

3. Genera and species evidently derived from the Nearctic Region.

Dicranomyia globulithorax sp. nov.
Discobola moiwana sp. nov.
Discobola argus (Say).
Limonia neoindigena sp. nov.
Rhaphidolabina.
Polyangaeus.
Eriocera sachalinensis sp. nov.
Eriocera jozana sp. nov.
Erioptera (*Hoplolabis*) *asiatica* Alexander.
Ormosia subdeviata sp. nov.
Gnophomyia tristis sp. nov.
Neolimnophila ultima (Osten Sacken) var.
Oropeza satsuma Alexander.

4. Genus evidently derived from the Neotropical Region.

Paratropesa esakii sp. nov.

5. Genera and species evidently derived from the Oriental Region.

Rhipidia pulchra septentrionis Alexander.
Libnotes longistigma Alexander.
Libnotes nohirai Alexander.
Gonomyia (*Lipophleps*) *flavocostalis* sp. nov.
Conosia irrorata (Wiedemann).
Nesopeza geniculata Alexander.
Tipula nova Walker.

6. Holarctic types.

Rhipidia maculata Meigen.
Dicranomyia longipennis (Schummel).
Elliptera.
Pedicia.
Ula.
Acyphona.
Helobia hybrida Meigen.
Tanyptera.
Ctenophora.

From the above data it can readily be seen that the chief affinities of the tipulid fauna of northern Japan are with other parts of the Holarctic Region. A concrete comparison of the known Tipulidæ of three widely separated localities in the Holarctic Region has been tabulated. These regions are northern Japan (Saghalien and Hokkaido), in the eastern Palæarctic Region; Lapland, in the western Palæarctic Region; and the State of Maine in the northeastern Nearctic Region.

TABLE 2.—*Comparison of known Tipulidæ in three widely separated localities in the Holarctic Region.*

[An asterisk indicates that the genus has been taken in Honshiu, although not known to occur in the northern island of Japan.]

Genus.	Northern Japan.	Lapland.	Maine.	Genus.	Northern Japan.	Lapland.	Maine.
Ptychoptera	1	0	1	*Polyangaeus*	1	0	0
Bittacomorpha	0	0	1	*Rhaphidolabis*	2	1	2
Bittacomorphella	0	0	1	*Dicranota*	1	4	0
Trichocera *	0	3	2	*Molophilus*	1	3	3
Dicranomyia	9	11	13	*Erioptera*, s. l.	9	7	11
Rhipidia	2	1	2	*Cheilotrichia*	1	0	0
Geranomyia	1	0	2	*Psiloconopa* *	0	2	0
Discobola	3	1	1	*Helobia*	1	1	1
Limonia	13	3	8	*Cryptolabis*	0	0	1
Libnotes	2	0	0	*Gnophomyia*	1	0	1
Helius	1	1	1	*Gonomyia*, s. l.	4	0	2
Elliptera	1	0	0	*Rhabdomastix* *	0	1	0
Dicranoptycha	1	0	0	*Paratropesa*	1	0	0
Antocha	6	0	1	*Teucholabis*	1	0	0
Orimarga	0	1	0	*Toxorhina*	0	0	1
Ula	2	1	1	*Neolimnophila*	1	0	1
Epiphragma	1	0	1	*Cladura* *	0	0	1
Dactylolabis *	0	0	1	*Chionea*	1	2	0
Limnophila, s. l.	7	8	12	*Cylindroloma*	1	1	1
Pseudolimnophila *	0	0	4	*Liogma*	0	0	1
Idioptera	0	3	1	*Phalacrocera* *	0	1	1
Phyllolabis	0	1	0	*Dolichopeza*	0	1	1
Ulomorpha	0	0	1	*Oropeza*	1	0	4
Pilaria	1	0	5	*Nesopeza*	1	0	0
Hexatoma *	0	1	0	*Ctenophora*	1	0	1
Eriocera	2	0	2	*Tanyptera*	1	2	1
Elephantomyia	1	0	1	*Dictenidia* *	0	1	0
Adelphomyia	0	0	3	*Pselliophora*	1	0	0
Pedicia	1	2	1	*Prionocera*	0	4	1
Tricyphona *	0	1	5	*Nephrotoma*	8	1	10
Rhaphidolabina	1	0	1	*Tipula*	18	29	30

The most surprising features of the crane-fly fauna of the region under consideration will be noted from a study of Table 2. These are the great abundance of species of the

genera *Limonia* and *Antocha;* the lack of genera such as *Tricyphona* and *Phalacrocera;* the occurrence of a species of the genus *Paratropesa,* otherwise known only from tropical America.

PUBLISHED REFERENCES TO THE TIPULID FAUNA OF SAGHALIEN AND HOKKAIDO

The crane-fly fauna of Saghalien has been virtually unknown. The only collections that have been made in the past seem to be those discussed by Matsumura (1911), a small collection taken by Paul Labbé in 1902 and now preserved in the Paris Museum, and a few specimens taken by Satoru Kuwayama in 1921 and kindly sent by him to me. The latter records have been included in the present paper.

Matsumura's paper (1911) cited above is the first and only published account of this interesting fauna. In that paper he records the following species:

Xiphura macra Loew from Solowiyofka; this probably equals the *Tanyptera jozana* (Matsumura) var. of the present paper, and is certainly not *T. gracilis* (Portschinsky), the prior name of *Xiphura macra.*

Tipula paludosa Meigen, recorded doubtfully, but the occurrence of this species in eastern Asia would not be surprising.

Tipula variicornis Schummel, recorded from Tonnaitcha (as *Pachyrhina annulicornis* Meigen).

In addition to these, Matsumura describes as new the following:

Limnobia sachalinensis sp. nov. This certainly is not a *Limonia,* but very possibly a *Limnophila* (vein M_{1+2} forked).

Metalimnobia vittata gen. et sp. nov. The indentity of this is uncertain, but it is possibly a *Limonia,* because of the toothed ungues.

Neither of the above species was taken by Doctor Esaki.

The crane flies of Hokkaido are rather better known than are those of Saghalien, though still insufficiently when compared with the extensive and fairly complete list from Honshiu. All of the species hitherto recorded from Hokkaido are included in papers by Matsumura and by me which are included in the bibliography at the end of this paper. All of the species of Tipulidæ from Japan, described by Coquillett, Edwards, Enderlein, Loew, Westwood, and others seem to have been taken in the main island of the Empire.

PTYCHOPTERIDÆ

Genus PTYCHOPTERA Meigen

Ptychoptera MEIGEN, Illiger's Mag. 2 (1803) 262.

The only species of *Ptychoptera* taken on the present expedition was *P. subscutellaris* Alexander, hitherto known only from Hokkaido.

Ptychoptera subscutellaris Alexander.

Ptychoptera subscutellaris ALEXANDER, Insec. Inscit. Menst. 9 (1921) 81–83.

Saghalien: Konuma, July 17, 1922 (*Esaki*); Toyohara, July 24, 1922 (*Esaki*).

The femora and tibiæ are more conspicuously blackened apically than in the types from the vicinity of Sapporo.

TIPULIDÆ

TRIBE LIMNOBIINI

Genus DISCOBOLA Osten Sacken

Discobola OSTEN SACKEN, Proc. Ent. Soc. Phila. (1865) 226.

The genus *Discobola* includes thirteen described species, eight of which are known only from New Zealand. The occurrence of undescribed species of this genus in Japan has been known to me for many years. In the present collection, no fewer than three species were included, two of which are considered as being undescribed, while the third cannot be distinguished from the *Discobola argus* (Say) of eastern North America. The Holarctic species of *Discobola* may be separated as follows:

Key to the Holarctic species of the genus Discobola.

1. The spot on costal margin of wing surrounding tip of vein Sc solid.... 2.
   The spot on costal margin of wing surrounding tip of vein Sc not solid, there being small hyaline dots in the outer ends of cells C and Sc.... 3.
2. Cell M without small brown clouds; mesal face of ventral dististyle of male hypopygium produced mesad into a beak. (Western Palæarctic Region.)..... D. annulata (Linn.).
   Cell M with brown clouds and marblings; mesal face of ventral dististyle of male hypopygium not produced into a beak. (Western Palæarctic Region.)..... D. caesarea (O. S.).
3. Antennæ with the second segment light yellow; halteres black, the bases of stem and knob light yellow; femora yellow with a very narrow, brown, subterminal ring, the pale apex beyond it much broader; wings with a concentric ocellate pattern, the rings being double. (Eastern Palæarctic Region.)..... D. margarita sp. nov.

   Antennal scape uniformly black; bases of knobs of halteres black; femora yellow with a black subterminal ring that is much more extensive than the yellow apex; wings with an ocellate pattern, the rings single..... 4.
4. Mesonotal prescutum without distinct stripes, brown with a sparse yellowish pollen; halteres yellow, only base of knob black. (Eastern Palæarctic Region.)..... D. moiwana sp. nov.
   Mesonotal prescutum distinctly striped with black; halteres with the stem black..... 5.
5. Thoracic pleura conspicuously silvery pruinose; antennal flagellum paler than scape. (Western Nearctic Region.)..... D. elegans (Doane).
   Thorocic pleura inconspicuously silvery; antennæ black throughout (Nearctic Region and eastern Palæarctic Region.)..... D. argus (Say).

Discobola margarita sp. nov.

General coloration yellow; antennæ black, the second segment conspicuously light yellow; a narrow brown longitudinal stripe on lateral margins of pronotum and prescutum and another on dorsal pleurites; halteres black, base of stem and knob light yellow; femora with a very narrow, brown, subterminal ring; wings with an ocellate pattern, the outer rings of which are double, each having a pale center; abdominal segments brownish yellow, the caudal margins very narrowly brown.

Male, length, 7 to 8 millimeters; wing, 7.2 to 8.2. Female, length, 8 millimeters; wing, 8.5.

Rostrum and palpi black. Antennæ black, the second scapal segment abruptly light yellow. Head black, grayish pruinose. Pronotum shiny yellow, sides dark brown. Mesonotal prescutum and scutum yellow, the lateral margins of the former conspicuously dark brown; scutellum and postnotum obscure yellow, the latter with the posterior margin infuscated. Pleura brownish yellow, with a conspicuous dark brown longitudinal stripe extending from behind fore coxæ onto the pleurotergites of postnotum; sternopleura ventrad of this area covered with an appressed silvery pubescence; the dark longitudinal stripes of dorsum and pleuron described above are separated from one another by the pale dorsopleural membrane. Halteres black, base of stem and bases of knobs conspicuously light yellow, remainder of knobs brownish black. Legs with coxæ and trochanters obscure yellow; femora concolorous with a very narrow and indistinct brown subterminal ring some distance before tips; in some specimens, this ring is almost obliterated; tibiæ and tarsi yellow, the terminal tarsal segments dark brown. Wings yellow with a very heavy ocellate pattern, arranged about as in *Discobola argus;* the centers of the ocellate markings are

solid but the rings are double, each having a pale center with narrow dark margins; the general effect of this type of marking is a very abundant, delicate brown marking. Venation: Cell 1st M_2 elongate, tending to be irregular in outline, m being much shorter than the outer deflection of M_3, the latter angulate just beyond midlength. In the female, the cell is more regularly rectangular in outline. Abdomen brownish yellow, the caudal margins of the segments narrowly but conspicuously dark brown.

Habitat.—Japan (Saghalien and Hokkaido).

Holotype, male, Kamiotoineppu, Hokkaido, August 24, 1922 (*T. Esaki*).

Allotype, female, Kusunnai, Saghalien, August 2, 1922 (*T. Esaki*).

Paratopotypes, 2 males; paratype, male, Jozankei, Hokkaido, August 19, 1922 (*T. Esaki*).

This exquisite fly is one of the most distinct species of the genus so far discovered. It is named in honor of my wife, Mabel M. Alexander.

Discobola moiwana sp. nov.

Female, length, about 9 millimeters; wing, 9.5.

Generally similar to *Discobola argus* (Say), from which it differs as follows:

Mesonotal prescutum without distinct stripes, rather uniformly dark brown with a sparse yellowish pollen. Longitudinal brown pleural stripe very narrow, the silvery pleural areas correspondingly extensive. Halteres yellow, only bases of knobs black. Yellow femoral tips narrower. Wings with cell M marbled with brown; supernumerary cross vein in cell 1st A longer than vein 2d A beyond it.

Habitat.—Japan (Hokkaido).

Holotype, female, Mount Moiwa, September 17, 1922 (*T. Esaki*).

Discobola argus (Say).

Limnobia argus SAY, Long's Exped., Append. (1824) 358.

One female, Akan, Hokkaido, September 4, 1922 (*T. Esaki*).

I have compared this specimen critically with an extensive series of Nearctic *Discobola argus*, and can find no differences that can be considered as being of even subspecific value. It is possible that the male sex will show such differences, but this sex is not available at the present time. This is the first record of a Nearctic crane fly occurring in Japan that does not also occur in Europe.

All three species of *Discobola* recorded in this paper as from Japan are very different from the two European forms.

Genus GERANOMYIA Haliday

Geranomyia HALIDAY, Ent. Mag. 1 (1833) 154.

Geranomyia avocetta Alexander.

Geranomyia avocetta ALEXANDER, Can. Ent. 45 (1913) 205, 206.

One small female, Toyohara, Saghalien, July 13, 1922 (*T. Esaki*).

Genus RHIPIDIA Meigen

Rhipidia MEIGEN, Syst. Beschr. 1 (1818) 153.

Rhipidia maculata Meigen.

Rhipidia maculata MEIGEN, Syst. Beschr. 1 (1818) 153, pl. 5, fig. 11.

This species has a very extensive range throughout the North Temperate regions of the world. The following records are available from the present collection:

Saghalien: Toyohara, July 13 to 23, 1922 (*T. Esaki*); Takinosawa, July 26, 1922 (*T. Esaki*); Ômomari, August 9, 1922 (*T. Esaki*). Hokkaido: Jozankei, August 19, 1922 (*T. Esaki*); Kamuikotan, August 22, 1922 (*T. Esaki*); Kamiotoineppu, August 23 and 24, 1922 (*T. Esaki*).

The number of spines on the rostrum of the dististyle of the male hypopygium runs as high as seven.

Rhipidia pulchra septentrionis Alexander.

Rhipidia pulchra septentrionis ALEXANDER, Can. Ent. 45 (1913) 206, 207, pl. 3, fig. 1.

As indicated in other papers, this species runs very close to *Dicranomyia* and may more properly be considered as belonging to that genus. The following records are available from the present collection, all the specimens having been taken by Doctor Esaki:

Saghalien: Toyohara, July 20, 1922. Hokkaido: Jozankei, August 19, 1922; Kamuikotan, August 22 and 23, 1922; Kamiotoineppu, August 25, 1922; Shikaripetsu, August 26, 1922; Kamiokoppe, August 27, 1922; Akkeshi, September 11, 1922.

Genus DICRANOMYIA Stephens

Dicranomyia STEPHENS, Cat. Brit. Ins. 2 (1829) 243.

This very extensive genus was well represented in number of species.

Dicranomyia mesosternata Alexander.

Dicranomyia mesosternata ALEXANDER, Ann. Ent. Soc. Am. 12 (1919) 329, 330.

Doctor Esaki collected the following material: Saghalien: Toyohara, July 20 to 23, 1922, including one female at honey bait trap. A male from this material has cell 1st M_2 open by the atrophy of m in both wings. Hokkaido: Sapporo, August 17 to 19 and September 7, 1922; Abashiri, August 31, 1922; Akan, September 3 to 7, 1922; Panketo, September 6, 1922.

Dicranomyia longipennis (Schummel).

Limnobia longipennis SCHUMMEL, Beitr. zur Ent. 1 (1829) 104, pl. 1, fig. 2.

This species is distributed throughout the Holarctic Region. The author had already recorded it from Honshiu.[2] The following material from Hokkaido was included in the present collection:

Sapporo, August 18, 1922 (*T. Esaki*); Kamiotoineppu, August 23, 1922 (*T. Esaki*).

In the right wing of the Sapporo specimen, cell 1st M_2 is closed by the retention of m; the left wing is normal.

Dicranomyia immodestoides Alexander.

Dicranomyia immodestoides ALEXANDER, Ann. Ent. Soc. Am. 12 (1919) 327, 328.

This species has a wide range in Honshiu. It is included from Saghalien and Hokkaido as a result of the following specimens collected by Doctor Esaki:

Saghalien: Toyohara, July 13 to 25, 1922; Maoka, July 28, 1922; Kusunnai, August 2, 1922. Hokkaido: Sapporo, August 17, September 13 to 26, 1922; Jozankei, August 19, 20, 1922; Kamuikotan, August 22, 1922; Kamiotoineppu, August 23, 24, 1922; Shikotsu, September 24, 1922; Tomakomai, September 25, 1922; Onuma, September 27, 1922.

Dicranomyia subtristis sp. nov.

Related to *D. tristis* (Schummel) of the Western Palaearctic Region. General coloration gray, the prescutum with a broad, brown, median stripe; male hypopygium with spines of rostrum elongate, arising from long, enlarged bases that are connate basally.

[2] Trans. Am. Ent. Soc. 46 (1920) 1.

Male, length, 5.6 millimeters; wing, 7.4. Female, length, 5.5 millimeters; wing, 7.

Rostrum and palpi black. Antennæ black throughout. Head light gray, vertex between eyes relatively narrow. Mesonotal prescutum gray with a broad, medium dark brown stripe, the anterior end of which is indistinctly bifid; lateral stripes very small to nearly obsolete; remainder of mesonotum gray, the scutal lobes dark brown. Pleura dark gray. Halteres yellow, knobs infuscated. Legs with coxæ dark gray; trochanters obscure yellow; remainder of legs dark brown, basal half of each femur obscure yellow. Wings faintly tinged with gray; stigma small, brown, surrounding r; veins brown, those in the costal region somewhat paler. Venation: Sc_1 ending opposite or immediately before origin of Rs, Sc_2 close to its tip; Rs gently arcuated, about one-half longer than the basal deflection of R_{4+5}; cell 1st M_2 about as long as vein M_3 beyond it; basal deflection of Cu_1 a short distance before fork of M. Abdomen dark brown, the genital segment paler. Male hypopygium (Plate 1, fig. 1) with basistyles short and stout, the caudal lateral angle produced into a blunt point; dorsal face of basistyle with a small setiferous lobe; mesal face of basistyle produced caudad into a long, relatively stout lobe; ventral dististyle yellow, the mesal face produced mesad into a slender rostrum that bears far out toward its apex two elongate spines whose bases are enlarged and united for about one-half their length; dorsal dististyle suddenly narrowed into an acute spine at tip as in the *tristis* group of species.

In *tristis*, the basistyle has the lobes slenderer; the spines of the rostrum of the ventral dististyle from short, separate bases, the apex beyond them long-produced; a linear row of about five long setæ near the base of the rostrum.

Habitat.—Japan (Hokkaido).

Holotype, male, Kamuikotan, August 22, 1922 (*T. Esaki*).

Allotopotype, female.

American species of the *tristis* group include *D. liberta* Osten Sacken, *D. libertoides* Alexander, and *D. knabi* Alexander.

Dicranomyia sachalina sp. nov.

General coloration gray; rostrum and palpi brownish black; antennæ black; prescutum with an ill-defined stripe; wings very faintly darkened; stigma oval, pale brown; Sc short, cell 1st M_2 closed; hypopygium with rostrum of the ventral disti-

style short, bispinous; dorsal dististyle short and strongly curved.

Male, length, about 6 millimeters; wing, 6.5. Female, length, 7 to 7.5 millimeters; wing, 7 to 8.

Rostrum and palpi brownish black. Antennæ black throughout. Head dark gray. Pronotum and mesonotum dark, covered with an abundant gray pruinosity, prescutum with an ill-defined median stripe on the anterior portion; pruinosity on scutellum and postnotum lighter gray. Pleura light gray pruinose. Halteres pale, knobs dark brown. Legs with coxæ and trochanters obscure yellow; femora obscure yellow, passing into brown before tips; remainder of legs dark brown. Wings very faintly tinged with darker; stigma oval, pale brown; veins pale brown, those at wing base paler. Venation: Sc short, Sc_1 ending just beyond origin of Rs, Sc_2 some distance from tip of Sc_1, the latter alone about equal to the basal deflection of M_{1+2}; Rs arcuated, about twice the length of R_{2+3}; cell 1st M_2 closed; basal deflection of Cu_1 at fork of M. Abdomen dark brown, the genital segment paler. Male hypopygium with basistyles relatively short, the mesal face produced into stout lobes that are very densely set with microscopic setæ and setulæ, apex slender and provided with a few conspicuous setiferous tubercles. Ventral dististyle fleshy, the mesal face produced into a relatively short beak that bears two subequal spines, these not widely separated; dorsal dististyle a short, powerful, strongly curved hook. Ninth tergite with a broad, rectangular, median notch. Ovipositor with the valves relatively stout.

Habitat.—Japan (Saghalien).

Holotype, male, Sakaehama, July 20, 1922 (*T. Esaki*).

Allotype, female, Toyohara, July 19, 1922 (*T. Esaki*).

Paratopotype, 1 female; paratypes, 3 females, with the allotype, July 15 to 20, 1922; 1 female, Odasam, August 6, 1922 (*T. Esaki*).

Dicranomyia sachalina bears a superficial resemblance to *D. subtristis*, but is a very different fly. The stigma is full though pale, in *D. subtristis* being a narrow seam to r.

Dicranomyia sparsa sp. nov.

General coloration yellowish brown, prescutum with three slightly darker stripes; legs yellow, tips of femora and tibiæ faintly darkened; wings strongly tinged with yellow, stigma bicolorous; veins pale, cord and outer end of cell 1st M_2 dark brown; Sc_1 longer than Rs.

Female, length, 7.5 millimeters; wing, 7.6.

Rostrum short, pale brownish testaceous, mouth parts greenish, palpi pale brown. Antennæ brown, the flagellar segments oval. Head brownish gray. Mesonotal prescutum yellowish brown with three darker stripes, the median stripe more brownish, the lateral stripes more grayish; scutum with the narrow central portion gray, lobes brown, margined mesially by yellow; scutellum yellow, with a narrow, gray, median area; postnotum brownish testaceous. Pleura pale brown, very indistinctly variegated with gray. Halteres very short, with large knobs, pale, knobs a little darker. Legs with coxæ and trochanters pale testaceous, femora, tibiæ, and basitarsi yellow, tips very indistinctly darkened; terminal tarsal segments brown. Wings strongly tinged with yellow, base and costal region more saturated; stigma pale brown, the narrow part surrounding r darker brown, producing a bicolorous stigmal area; veins pale, cord and outer end of cell 1st M_2 conspicuously dark brown to produce the appearance of a faintly darkened wing. Venation: Sc short, Sc_1 ending a short distance beyond origin of Rs; Sc_2 far from tip of Sc_1 so the latter vein alone is longer than Rs; Rs nearly straight, with several macrotrichiæ; cell 1st M_2 closed, longer than the veins issuing from it; basal deflection of Cu_1 close to fork of M. Abdominal tergites dark brown, the caudal margin of basal segments indistinctly pale; basal sternites yellowish. Ovipositor with the tergal valves slender.

Habitat.—Japan (Saghalien).

Holotype, female, Toyohara, July 23, 1922, at honey bait trap (*T. Esaki*).

Dicranomyia spinicauda sp. nov.

General coloration yellowish brown; rostrum orange; mesonotal prescutum with three brown stripes; wings faintly tinged with brownish yellow; Sc short, Sc_1 long; cell 1st M_2 closed; male hypopygium with the two spines of rostrum widely separated; mesal face of ventral dististyle beyond rostrum densely set with spinous setæ.

Male, length, 5.5 millimeters; wing, 6.5 to 7. Female, length, 6.5 to 6.8 millimeters; wing, 7.2 to 7.5.

Rostrum orange, the palpi conspicuous, dark brown. Antennæ with first scapal segment orange; remainder of antennæ dark brown. Head gray. Pronotum dark brown, the lateral margins paler. Mesonotal prescutum yellowish brown, with a broad, conspicuous median and less distinct lateral stripes;

scutum yellow, the lobes dark brown; scutellum dark brown, broadly yellow medially; postnotum dark brown medially, the pleurotergite pale. Pleura pale, sparsely pollinose, the sternopleura darkened. Halteres dark brown, the base of stem narrowly pale. Legs with the coxæ and trochanters yellow; femora brownish yellow indistinctly darker toward tips; tibiæ and tarsi passing into dark brown. Wings faintly tinged with brownish yellow, base and costal region a little brighter; veins brown. Venation: Sc short, Sc_1 ending before origin of Rs; Sc_2 some distance before tip of Sc_1, the latter alone a little longer than the basal deflection of R_{4+5}; cell 1st M_2 closed; basal deflection of Cu_1 at fork of M. Abdomen dark brown, the basal sternites paler; hypopygium obscure brownish yellow. Male hypopygium (Plate 1, fig. 5) with basistyles relatively slender, the mesal face produced mesad into a very broad, triangular lobe; ventral dististyle fleshy, the mesal face at base produced into a slender rostrum that bears two very widely separated spines, the outer one shortly before tip, the shorter inner spine before midlength of rostrum; mesal face of ventral dististyle caudad of rostrum densely set with abundant spinous setæ; dorsal dististyle slender, strongly curved to the acute tip. Gonapophyses bifid by a very deep U-shaped notch, the mesal lobe thus formed slender.

Habitat.—Japan (Saghalien and Hokkaido).

Holotype, male, Toyohara, Saghalien, July 15, 1922 (*T. Esaki*).

Allotopotype, female, July 14, 1922 (*T. Esaki*).

Paratopotypes, 3 males, 1 female, July 17 to 25, 1922; paratype, 1 male, Otanoshike, Hokkaido, September 12, 1922 (*T. Esaki*).

Dicranomyia megacauda sp. nov.

Related to *D. magnicauda* Lundström (Northern Europe), differing chiefly in the details of structure of the male hypopygium; prescutum with a single dark stripe.

Male, length, 5.5 millimeters; wing, 6.8. Female, length, 6.5 millimeters; wing, 7.5.

Rostrum pale orange, the palpi dark brown. Antennæ dark brown throughout. Head dark gray, the anterior part of vertex pale gray. Pronotum dark brown, paler laterally. Mesonotal prescutum pale reddish brown with a single median dark brown stripe that becomes obliterated before suture; remainder of mesonotum pale reddish brown, indistinctly pollinose. Pleura ocherous, very indistinctly striped longitudinally with darker. Halteres elongate, pale yellow, knobs dark brown. Legs with coxæ and trochanters pale testaceous; femora pale brown, tibiæ and tarsi gradually passing into dark brown. Wings subhyaline, stigma pale brown; veins darker brown. Venation: Sc_1 ending immediately beyond origin of Rs, Sc_2 some distance from tip of Sc_1 the latter vein alone about equal to basal deflection of Cu_1; Rs long, nearly straight, in alignment with R_{2+3} basal deflection of R_{4+5} nearly one-half Rs; basal deflection of Cu_1 close to fork of M; both wings of type with malformed venation, in the presence of adventitious cross veins between R_{4+5} and M_{1+2}. Abdomen dark brown, sternites yellow. Male hypopygium very large and complicated in structure, generally similar in fundamentals to *D. magnicauda* Lundström; rostriform appendage arising as a conspicuous arm from base of ventral dististyle, shaped as in figure (Plate 1, fig. 2); dorsal dististyle almost straight, apex suddenly narrowed into a stout spine. From the ventromesal face of each basistyle arises the complex structure shown in Plate 1, fig. 3. Female generally similar to male but general coloration of body more ocherous; halteres somewhat shorter; Sc not attaining base of the shorter and more arcuated Rs; ovipositor with the valves comparatively short but slender.

Habitat.—Japan (Saghalien.)

Holotype, male, Toyohara, July 20, 1922 (*T. Esaki*).

Allotopotype, female.

Dicranomyia globulithorax sp. nov.

Related to *D. globithorax* Osten Sacken; mesonotum less gibbous; wings strongly tinged with blackish; male hypopygium with a single dististyle, the mesal face of which is truncated and densely set with numerous spinous setæ.

Male, length, 5.5 millimeters; wing, 5.8 to 6.

Rostrum and palpi very short, black. Antennæ black throughout, the basal flagellar segments nearly globular, the terminal segments passing through oval to elongate. Head dark brown. Mesonotum dark brown, slightly less gibbous than in *D. globithorax* O. S. Halteres dark brown, base of stem narrowly pale. Legs with coxæ and trochanters obscure testaceous; remainder of legs brownish black. Wings strongly tinged with blackish; stigma indistinct; veins dark brown. Venation: Sc long, ending beyond midlength of the long, straight sector, Sc_2 at tip of Sc_1; a supernumerary cross vein in cell Sc_1, as in *D. globithorax*, this from once to twice its length before r; tip of R_1 beyond r atrophied; cell 1st M_2 closed; basal deflection of Cu_1 close to or

beyond fork of M, longer than Cu_1. Abdomen dark brown, the basal sternites paler. Male hypopygium (Plate 1, fig. 4) with basistyle produced into a slender, fleshy lobe on mesal face; a single dististyle, this fleshy, the mesal face broadly truncated and densely set with abundant, stout, black spinous setæ.

Habitat.—Japan (Hokkaido).

Holotype, male, Shikotsu, September 27, 1922 (*T. Esaki*).

Paratopotype, male.

Genus LIMONIA Meigen

Limonia MEIGEN, Illiger's Mag. 2 (1803) 262.
Limnobia MEIGEN, Syst. Beschr. 1 (1818) 116.

The name *Limonia* must be used in place of *Limnobia* Meigen, it having unquestioned priority. The genus is very rich in species throughout the Japanese Empire, more than a dozen species being included in the present collection. As has been indicated by the author and other writers in other papers, the smaller species of *Limonia* run very close to those of *Dicranomyia* on the one hand, and to those of *Geranomyia* and *Rhipidia* on the other. Strict generic criteria, if such exist, are desiderata.

Limonia quadrinotata (Meigen).

Limnobia quadrinotata MEIGEN, Syst. Beschr. 1 (1818) 144.

The following records are available in Esaki's material: Hokkaido: Abashiri, August 30, 1922; Akan, September 3, 1922.

I cannot detect any differences between the Japanese specimens and a series from various countries of central and northern Europe. The specimens vary greatly in size, the wings of the females ranging in length from 9.5 to 13 millimeters. The species is related to *L. solitaria* (Osten Sacken), *L. hudsonica* (Osten Sacken), and *L. fallax* (Johnson), all from eastern North America.

Limonia annulus truncata subsp. nov.

Very similar in general appearance to typical *annulus* (Meigen) of Europe. Gonapophyses of the male hypopygium relatively slender, dilated into a distinct head at apex, this head squarely truncated, densely provided with abundant setæ which are grouped especially at the mesal apical angle. In typical *annulus* the stem of each apophyse is broader, scarcely dilated into a head, apex obliquely truncated, the mesal apical angle

with a dense brush of setæ which continue basad for some distance along the mesal face of apophyse.

Habitat.—Japan (Hokkaido).

Holotype, male, Shikotsu, September 24, 1922 (*T. Esaki*).

Allotype, female, Kamiotoineppu, August 23, 1922 (*T. Esaki*).

Paratypes, female, Kamuikotan, August 22, 1922 (*T. Esaki*); male and female, Abashiri, August 30, 1922 (*T. Esaki*); male, Akan, September 3 to 7, 1922 (*T. Esaki*); 1 female, Panketo, September 6, 1922 (*T. Esaki*); male, Teppetsu, September 9, 1922 (*T. Esaki*).

Limonia bifasciata avis (Alexander).

Limnobia avis ALEXANDER, Ann. Ent. Soc. Am. 11 (1918) 444.

The type is from Takuhara, Shinano Province, Honshiu. The race is distinguished from typical *bifasciata* (Schrank) of Europe, chiefly by the considerable increase in the amount of black on the prescutum, and especially on the tips of the femora. In this subspecies, the vertex bears a large black area extending from the posterior angles of the eyes caudad, narrowed to the occiput. The median prescutal stripe is broad and distinct, split medially, but connected narrowly at the anterior end and more broadly just before the suture. The black femoral tips measure more than 1 millimeter in extent. The Formosan *Limonia xanthopteroides* (Riedel) is probably another geographical race of this widespread Palæarctic species.

Hokkaido: Kamiotoineppu, August 25, 1922 (*T. Esaki*); Abashiri, August 30, 1922 (*T. Esaki*); Mount Meakan, altitude 5,300 feet, September 8, 1922 (*T. Esaki*).

Limonia neoindigena sp. nov.

General coloration reddish brown, prescutum with three conspicuous stripes and the extreme lateral margin blackened; anterior pleurites blackened, this also including the fore coxæ; femora pale brown with a black subterminal ring and relatively broad yellow tips; wings yellow, sparsely variegated with brown; r far from tip of R_1.

Male, length, about 11 millimeters; wing, 12.1. Female, length, about 10 millimeters; wing, 10.8 to 11.

Rostrum, palpi, and antennæ black. Head black, very sparsely pruinose. Pronotum black, broadly yellow laterally; in female, pronotum entirely black. Mesonotal prescutum reddish yellow with three conspicuous black stripes, the median stripe

not reaching suture, the lateral stripes crossing suture and suffusing the anterolateral portions of the scutal lobes; a large brownish black spot on lateral margins of prescutum opposite anterior ends of prescutal stripes; scutum obscure reddish yellow, centers of each lobe dark brown; scutellum dark brown, indistinctly bisected medially by a capillary pale vitta; mediotergite of postnotum broadly brownish black medially, narrowly pale on lateral margins. Pleura with the anterior sclerites largely shiny black, becoming paler, more brownish, on mesepimeron and pleurotergite of postnotum. Halteres brown, knobs and base of stem yellow in male, knobs infuscated in female. Legs with coxæ yellow, fore coxæ shiny black, except for the extreme apex; trochanters yellow; femora pale brown, tips rather broadly yellow, and with a subequal black subterminal ring; tibiæ and tarsi dark brown, the former paler basally. Wings strongly tinged with yellow, base and costal region brighter; rather sparse brown seams distributed as follows: Origin of Rs; along cord and outer end of cell 1st M_2, and along vein Cu; narrower brown seams along the remaining longitudinal veins and surrounding wing margin, more conspicuous at wing apex; stigma pale brown; veins brown, Sc and prearcular veins brighter. Venation: Sc_2 longer than Sc_1, ending just beyond midlength of Rs, the latter arcuated at origin; r far from tip of R_1; basal deflection of Cu_1 at or before fork of M. Abdomen obscure yellowish brown, sternites brighter, the subterminal segments infuscated. Male hypopygium infuscated; basistyles relatively slender, the mesal face produced into a simple setiferous lobe; a single dististyle, this broad at base, narrowed to apex which bears numerous tiny setæ; dististyle brown except the yellow apical third. Gonapophyses appearing as flattened plates, each with a deep U-shaped notch, the mesal lobe very large. Ædeagus bifid at apex, the ventral face densely set with abundant stout spinulæ.

Habitat.—Japan (Hokkaido).

Holotype, male, Panketo, September 6, 1922 (*T. Esaki*).

Allotype, female, Shikaripetsu, August 25, 1922 (*T. Esaki*).

Paratype, female, Kamiotoineppu, August 25, 1922 (*T. Esaki*).

Limonia karafutonis sp. nov.

Related to *L. tripunctata* (Fabricius); antennæ black, only the basal flagellar segments feebly bicolorous; mesonotal prescutum with a single very broad median stripe; femora yellow, tips broadly blackened, wings tinged with yellow, sparsely variegated with brown; r remote from tip of R_1.

Male, length, 7 millimeters; wing, 8.5 to 9. Female, length, about 8 millimeters; wing, 9.

Rostrum and palpi black, mouth parts a little paler. Antennæ black, the two basal flagellar segments bicolorous, the basal half or less of each obscure yellow. Head grayish black, occiput obscure yellow. Pronotum dark brown, paler laterally. Mesonotal prescutum obscure yellow, with a very broad median black stripe, the lateral margins of sclerite narrowly infuscated to produce small lateral stripes; scutum yellow, lobes conspicuously blackened; scutellum and postnotum less distinctly infuscated. Pleura yellow with a faint brown cloud behind fore coxæ. Halteres obscure yellow, knobs faintly infuscated. Legs with coxæ yellow, fore coxæ infuscated; trochanters obscure yellow; femora yellow, tips broadly blackened; tibiæ brownish yellow, tips narrowly blackened; tarsi dark brown, basitarsi paler at proximal ends. Wings tinged with yellow, base and costal region brighter; sparse brown seams distributed as follows: At origin of Rs, Sc_2, along cord and outer end of cell 1st M_2; more conspicuous clouds at r; behind vein Cu, interrupted before its fork; faint brown clouds in the prearcular region and along vein 2d A; veins dark brown, Sc yellow. Venation; Sc_2 a little longer than Sc_1, ending just before fork of Rs; r from three to four times its length from tip of R_1; basal deflection of Cu_1 at or close to fork of M. Abdominal tergites dark brown, sclerites a little darker posteriorly; basal sternites obscure yellow; hypopygium yellow.

Habitat.—Japan (Saghalien).

Holotype, male, Toyohara, July 17, 1922 (*T. Esaki*).

Allotopotype female, July 23, 1922 (*T. Esaki*); at honey bait trap.

Paratopotypes, 5 males and females, July 14 to 18, 1922 (*T. Esaki*).

Limonia episema sp. nov.

Related to *L. trivittata* (Schummel); general coloration obscure yellow; basal antennal segments obscure yellow; mesonotal prescutum with three conspicuous brownish black stripes; femora yellow, tips blackened, with one or two pale brown subterminal rings; wings pale yellow, very sparsely variegated with brown; r encircled by a pale brown ring; abdomen brown, the caudal margins of segments obscure yellow.

Female, length, 9 to 11 millimeters; wing, 10 to 12.

Rostrum and palpi dark brown. Antennæ with scape and basal two flagellar segments obscure yellow; intermediate flagellar segments feebly bicolorous, dark brown, base of each obscure yellow; terminal segments uniformly dark brown. Head dark gray. Pronotum black, the lateral margins obscure yellow. Mesonotal prescutum obscure ferruginous with three very conspicuous black stripes, the median stripe not reaching suture, its caudal end feebly bifid; scutal lobes conspicuously infuscated; the remainder of mesonotum obscure ferruginous. Pleura shiny ferruginous, with an ill-defined brown spot on episternum; ventral portions of sternopleura infuscated. Halteres pale brown, knobs infuscated, base of stem yellow. Legs with coxæ reddish, faintly infuscated; trochanters obscure yellow; femora yellow, tips rather broadly blackened; an ill-defined dusky ring near two-thirds the length of segment, preceded by a distinct yellowish subterminal annulus; some individuals show, in addition, a third cloud near midlength of segment; tibiæ pale brown, tips darker; tarsi dark brown. Wings pale yellow, base and costal region brighter; a very sparse brown pattern, distributed as follows: At origin of Rs; Sc_2; and a seam along vein Cu; cord and outer end of cell 1st M_2 scarcely seamed with darker; stigma an eyelike spot, r being unseamed; veins dark brown, brighter in the yellow areas. Venation: Sc_1 ending just beyond midlength of Rs; Sc_1 a little longer than Sc_2; r about twice its length from tip of R_1; basal deflection of Cu_1 variable in position, from before to beyond fork of M. Abdomen brown, the caudal margins of segments obscure yellow; sternites obscure yellow, the caudal margins brighter; basal lateral angles of sternites infuscated.

Habitat.—Japan (Saghalien).

Holotype, female, Toyohara, July 23, 1922 (*T. Esaki*); at honey bait trap.

Paratopotypes, 3 females, July 20 to 23, 1922 (*T. Esaki*).

Limonia plutonis sp. nov.

General coloration black, sparsely pruinose; halteres yellow, the knobs infuscated; legs slender, black, the femoral bases yellow; wings yellow with a sparse brown pattern.

Female, length, 10 millimeters; wing, 14.5.

Rostrum and palpi black. Antennæ with the basal segment black, the second segment brown; flagellum broken. Head dark gray; vertex between eyes reduced to a linear strip, the anterior

end of which is light silvery. Pronotum black, very sparsely dusted with gray. Mesonotum black, the prescutal interspaces sparsely pruinose, stripes shiny black; scutum, scutellum, and postnotum clear gray pruinose. Pleura black, sparsely pruinose. Halteres yellow, knobs infuscated. Legs with coxæ black; trochanters light yellow; remainder of legs black, the femoral bases yellow; legs relatively long and slender. Wings tinged with yellow, base and cells C and Sc bright yellow; a conspicuous brown stigma, extending basad in cell 1st R_1 to opposite fork of Rs; a small brown cloud at origin of Rs; conspicuous brown seams along cord and outer end of cell 1st M_2; wing tip conspicuously dark brown, broadest in cell R_3; a broad and conspicuous brown seam along vein Cu, more extensive in cell M; veins dark brown, yellowish in the flavous areas. Venation: Sc_1 ending just before fork of Rs, Sc_2 some distance from tip, Sc_1 alone about one-half longer than r; r about twice its length from tip of R_1; cell 1st M_2 long and narrow, gently widened distally, longer than the veins issuing from it; basal deflection of Cu_1 a short distance beyond fork of M. Abdomen dark brownish black. Valves of ovipositor reddish horn color; valves obliquely truncated at tips, the sternal valves more strongly so.

Habitat.—Japan (Saghalien).

Holotype, female, Toyohara, July 13, 1922 (*T. Esaki*).

Limonia monacantha sp. nov.

General coloration dark brown, wings tinged with brown and with a sparse darker brown pattern; male hypopygium with the ventral dististyle bearing on its mesal face a slender, pale, curved appendage and a single blackened spine.

Male, length, about 4.8 millimeters; wing, 6.3.

Rostrum and palpi very small, black. Antennæ black throughout, the basal flagellar segments subglobular, the terminal segments gradually more elongate; segments very short-pedicellate. Head black. Pronotum black. Mesonotum and pleura dark brown, without distinct stripes. Halteres dark brown. Legs brown throughout. Wings distinctly tinged with brown and with a sparse, darker brown pattern, distributed as follows: A large cloud at origin of Rs; a small cloud at tip of Sc; a large, circular stigmal blotch; conspicuous brown seams along cord and outer end of cell 1st M_2; veins dark brown. Venation: Sc long, ending beyond midlength of Rs, Sc_2 at tip of Sc_1; Rs long, angulated and feebly spurred at origin; r about one and one-half times its length from tip of R_1 which is curved strongly into

costa beyond it, inner ends of cells R_3 and 1st M_2 far basad of cell R_5; basal deflection of Cu_1 just beyond fork of M. Abdomen dark brown, the basal sternites a little paler. Male hypopygium (Plate 1, fig. 8) with basistyle relatively stout, the mesal face produced into a conspicuous lobe which bears near its apex on the caudal end a small tubercle bearing two or three long, powerful setæ. Ventral dististyle fleshy, the mesal face at base produced mesad into a long, slender, gently curved appendage that is only a little shorter than the dorsal dististyle; the inner or cephalic margin of this bears five or six setiferous tubercles that become more distant from one another toward apex; apex with a stouter seta; at base of this appendage and inserted just beyond it on dististyle itself is a powerful spine, curved at base, the long, straight apex heavily blackened. Dorsal dististyle straight basally, the apical third narrowed and bent almost at a right angle. Gonapophyses appearing as flattened plates, the mesal apical angle produced caudad into a short, gently curved hook.

Habitat.—Japan (Hokkaido).

Holotype, male, Teppetsu, September 9, 1922 (*T. Esaki*).

Limonia basispina sp. nov.

General coloration dark brown, the prescutal stripes pale reddish brown; wings tinged with brown, with a conspicuous dark brown pattern; male hypopygium with the mesal face of the ventral dististyle produced into a conspicuous chitinized lobe that bears a long, straight spine at one-third its length.

Male, length, 6.2 to 7 millimeters; wing, 7.8 to 8.6. Female, length, 5 to 6.2 millimeters; wing, 6.5 to 7.2.

Rostrum and palpi black. Antennæ black throughout, the basal flagellar segments globular, the terminal segments passing through oval to cylindrical, segments with a short basal pedicel. Anterior part of vertex silvery white; remainder of head dark brown. Pronotum pale ocherous brown medially, the lateral margins a little darker. Mesonotal prescutum dark brown with three conspicuous, pale reddish brown stripes; scutum pale medially, lobes reddish brown with the mesal edge dark brown; scutellum and postnotum dark brown, the posterior third of latter more reddish. Pleura dark brown, indistinctly variegated with paler brown. Halteres dark brown, the extreme base of stem obscure yellow. Legs with coxæ ocherous, the extreme bases brown; trochanters yellow; femora pale brownish yellow, faintly darkened to tips; remainder of legs dark brown; claws simple. Wings with a strong brown tinge and with a conspicuous dark brown pattern, distributed as broad clouds at origin of Rs, tip of Sc, fork of Rs, stigma, cord, outer end of cell 1st M_2, and, in cases, a spot at tip of R that is distinct from stigmal spot; wing tip distinctly darkened; veins dark brown. Venation: Sc long, Sc_2 at tip of Sc_1, ending from two-thirds to three-fourths the length of Rs; Rs strongly angulated and spurred at origin; r unusually variable in position, in cases more than twice its length from tip of R_1, in other examples less than its length from tip; inner end of cell R_3 lying slightly basad of 1st M_2 and far basad of R_5; cell 1st M_2 closed; m shorter, usually much shorter, than the more or less arcuate outer deflection of M_3; basal deflection of Cu_1 close to fork of M. Abdomen dark brown, the basal segments a little paler. Male hypopygium (Plate 1, fig. 7) with basistyle relatively stout, the mesal face produced into a conspicuous, pale, chitinized lobe that bears at its apex on the caudal end a conspicuous tubercle bearing about six stout setæ. Ventral dististyle fleshy, the mesal face at base produced mesad into a conspicuous, cylindrical arm which bears near one-third its length a powerful, straight spine; the apical two-thirds gently curved, bearing at its tip a group of setæ. Dorsal dististyle gently curved to the acute tip. Gonapophyses appearing as flattened plates, the mesal apical angle produced caudad into a gently curved hook, with a small chitinized tubercle laterad of its base.

Habitat.—Japan (Hokkaido).

Holotype, male, Panketo, September 6, 1922 (*T. Esaki*).

Allotype, female, Kamuikotan, August 22, 1922 (*T. Esaki*).

Paratypes, 1 male, Kamiokoppe, August 27, 1922 (*T. Esaki*); 1 female, Kamiotoineppu, August 23, 1922 (*T. Esaki*).

Limonia subnubeculosa (Alexander).

Limnobia subnubeculosa ALEXANDER, Trans. Am. Ent. Soc. 46 (1920) 5, 6.

Doctor Esaki's material includes the following records:

Saghalien: Toyohara, July 23, 1922, at honey bait trap; Odasam, August 5, 1922.

The species was described from Honshiu and has not yet been discovered in Hokkaido.

Limonia neonebulosa nom. nov.

Dicranomyia nebulosa ALEXANDER, Can. Ent. 45 (1913) 203 to 205, preoccupied by *Limonia nebulosa* (Zetterstedt), Ins. Lapponica, Diptera (1838) 836.

The collection includes the following records, collected by Doctor Esaki:

Saghalien: Toyohara, July 23, 1922, at honey bait trap. Hokkaido: Sapporo, August 17, 1922; Jozankei, August 19, 1922; Kamuikotan, August 22, 1922; Kamiotoineppu, August 23 to 26, 1922; Shikaripetsu, August 26, 1922; Kamiokoppe, August 27, 1922.

The fly had been known hitherto only from stations in Honshiu. It varies considerably in size, males showing wing lengths of from 4.7 to 8 millimeters.

Limonia machidai (Alexander).

Dicranomyia machidai ALEXANDER, Ann. Ent. Soc. Am. 14 (1921) 113.

This little fly was described from specimens taken in the vicinity of Tokyo, Honshiu. It seems to be more correctly referable to *Limonia* than to *Dicranomyia*. Esaki's collection adds the following records:

Saghalien: Toyohara, July 13 to 20, 1922. Hokkaido: Sapporo, August 17, 18, 1922; Kamuikotan, August 22, 1922; Kamiotoineppu, August 23, 24, 1922; Abashiri, August 30, 1922.

Limonia angustistria sp. nov.

General coloration light brownish yellow, the prescutum with a λ-shaped brown median stripe; pleura obscure yellow with a narrow but very conspicuous dark brown longitudinal stripe; wings subhyaline, stigma darker brown; Rs angulated and spurred at origin; r at tip of R_1.

Male, length, 4 to 4.8 millimeters; wing, 5.8 to 6.2. Female, length, 4.8 to 5 millimeters; wing, 6.2 to 6.8.

Rostrum and palpi brown. Antennæ black throughout, the flagellar segments subglobular, passing into oval toward end of organ. Head dark brown. Mesonotal prescutum light brownish yellow, the median stripe darker brown, beyond midlength of sclerite becoming obliterated but at this point becoming confluent with the lateral stripes, thus appearing λ-shaped, the arms inclosing a pale triangle at suture; lateral margins of segments faintly infuscated; remainder of mesonotum light brownish yellow, the scutal lobes dark brown. Pleura obscure yellow with a narrow but very conspicuous dark brown longitudinal stripe extending from propleura to base of abdomen, passing beneath root of halteres; sternopleura faintly darkened between fore and middle coxæ. Halteres pale brown, the knobs a little darker, base of stem narrowly brightened. Legs

with coxæ and trochanters yellow; femora obscure yellow; tibiæ and tarsi pale brown, the terminal segments of latter darkened. Wings subhyaline, stigma pale brown, circular to oval in outline, veins dark brown. Venation: Sc long, Sc_1 ending from two-thirds to three-fourths the length of Rs, Sc_2 close to its tip; Rs angulated and feebly spurred at origin; r at tip of R_1; inner end of cell R_3 far distad of inner ends of cells R_5 and 1st M_2; m a little shorter than outer deflection of M_3; basal deflection of Cu_1 near fork of M; Cu_2 and basal deflection of Cu_1 subequal. Abdominal tergites dark brown, the caudal margins of segments narrowly yellowish; basal sternites paler but similarly marked; hypopygium and genital segment of female obscure yellow. Male hypopygium (Plate 1, fig. 6) with each basistyle cylindrical, the mesal face with a moderately large setiferous lobe; dististyles two, one fleshy throughout, enlarged basally, narrowed to the slender apex, the mesal or cephalic face with numerous large setæ which become modified into powerful yellow spines on basal half of style to form a comb; the other dististyle is complicated in structure, consisting of two chitinized arms and a bilobed fleshy outer lobe that is provided with long setæ; the longest chitinized lobe produced into a slender beak, on outer margin before tip with a few powerful bristles; second arm a small, ovate blackened scale at base of the larger one. Gonapophyses relatively slender. Ædeagus bilobed at apex.

Habitat.—Japan (Hokkaido).

Holotype, male, Kamuikotan, August 22, 1922 (*T. Esaki*).

Allotype, female, Kamiokoppe, August 27, 1922 (*T. Esaki*).

Paratopotypes, 11 males and females; paratypes, 1 male, 1 female, with the allotype; 2 males and females, Jozankei, August 19, 1922 (*T. Esaki*); 2 males, Kamiotoineppu, August 24, 1922 (*T. Esaki*); 1 male, Nayoro, August 26, 1922 (*T. Esaki*).

Limonia angustistria bears a considerable resemblance to *L. machidai* Alexander in size and general coloration but is readily separated by the details of color and the structure of the hypopygium.

Limonia amabilis sp. nov.

General coloration light yellow; head and antennæ black; mesonotal prescutum with a single, narrow, dark brown, median stripe; legs black, the femora with an extensive, obscure yellow ring before tips; wings light yellow with a sparse brown

pattern that includes a large stigma; Rs strongly arcuated; caudal margins of abdominal segments narrowly darkened.

Female, length, 8.5 to 9 millimeters; wing, 7 to 9.

Rostrum and palpi black. Antennæ black, the apex of first and the entire second scapal segment obscure yellow. Head dark brownish black, sparsely pruinose. Pronotum dark brown, narrowly yellowish laterally. Mesonotum light yellow, prescutum with a single narrow dark brown stripe that is narrowed behind and becomes obsolete before suture. Pleura uniformly yellow. Halteres yellow, the knobs dark brown. Legs with coxæ and trochanters yellow; femora brownish black, the extreme tips very narrowly obscure yellow; an extensive obscure yellow annulus before the slightly less extensive black tips; remainder of legs black. Wings light yellow with a sparse brown pattern; stigma large, dark brown; cord and outer end of cell 1st M_2 narrowly seamed with dark brown; a small brown cloud near midlength of cell R, this sometimes barely evident; veins dark brown. Venation: Rs short and very strongly arcuated; Sc_2 at tip of Sc_1, ending near two-thirds the length of sector; r removed from tip of R_1 to at least two times its length; basal deflection of Cu_1 near fork of M. Abdomen obscure yellow, the caudal margins of segments narrowly darkened. Ovipositor with the valves relatively short and stout, especially the ventral valves.

Habitat.—Japan (Hokkaido).

Holotype, female, Kamiotoineppu, August 25, 1922 (*T. Esaki*).

Paratopotypes, 4 females, August 23 to 25, 1922; 1 female, Kamuikotan, August 22, 1922 (*T. Esaki*); 1 female, Jozankei, August 19, 1922 (*T. Esaki*).

Genus LIBNOTES Westwood

Libnotes WESTWOOD, Trans. Ent. Soc. London (1876) 505.

The genus *Libnotes* is a chiefly oriental group which sends two species into Hokkaido.

Libnotes longistigma Alexander.

Libnotes longistigma ALEXANDER, Insec. Inscit. Menst. 9 (1921) 180, 181.

Specimens from Jozankei, August 19, 1922, and Kamiotoineppu, August 23, 24, 1922, were taken by Esaki. The species was described from Koto-sho Islands, near Formosa, and is close to *L. strigivena* (Walker).

Libnotes nohirai Alexander.

Libnotes nohirai ALEXANDER, Ann. Ent. Soc. Am. 11 (1918) 445.

Esaki's material includes specimens from the following localities in Hokkaido:

Akan, September 3, 1922; Panketo, September 6, 1922; Shikotsu, September 24, 1922.

The type locality is Iwate Province, northern Honshiu.

Genus ELLIPTERA Schiner

Elliptera SCHINER, Wien. Ent. Monatschr. 7 (1863) 222.

The genus *Elliptera* includes six described species, two from Europe, three from western North America, and a single small species from eastern North America (southern Illinois to Tennessee). The discovery of an undescribed species in Japan was therefore to be expected.

Elliptera zipanguensis sp. nov.

General coloration brownish black; wings distinctly tinged with brown; r preserved; basal deflection of R_{4+5} only a little longer than r-m; cell 1st M_2 open by the atrophy of the outer deflection of M_3.

Female, length, 5.8 millimeters; wing, 8.4.

Rostrum and palpi brownish black. Antennæ black throughout, the flagellar segments with a dense white pubescence. Head black, anterior part of vertex sparsely pruinose; vertex between eyes broad, with a compressed median ridge immediately behind antennal bases. Mesonotum shiny brownish black, the lateral margins of prescutum paler. Pleura brownish black with a longitudinal gray stripe across dorsal margin of sternopleura; dorsopleural membrane dark brown. Halteres dark brown, the base of stem narrowly yellowish. Legs with coxæ greenish testaceous, the fore coxæ infuscated basally; trochanters greenish brown; remainder of legs darker brown, the femoral bases paler. Wings distinctly tinged with brown; stigma lacking; veins darker brown. Venation: Sc_1 long, ending a distance before base of deflection of R_{4+5} that is subequal to the length of latter, Sc_2 immediately before origin of long Rs, the latter longer than R_{2+3} alone; the apparent r distinctly preserved, lying beyond fork of Rs a distance about equal to basal deflection of R_{4+5}; inner ends of cells R_3, R_5 and 1st M_2 in approximate alignment; deflection of R_{4+5} only about one-third longer than r-m and nearly straight; basal deflection of M_{1+2}

arcuated; cell 2nd M_2 approximately as long as its petiole; basal deflection of Cu_1 beyond fork of M. Abdomen dark brown, the sternites obscure yellow, only the subterminal segments infuscated. Ovipositor with the valves horn-colored, the tergal valves short, very strongly upcurved.

Habitat.—Japan (Hokkaido).

Holotype, female, Shikotsu, September 24, 1922 (*T. Esaki*).

Elliptera zipanguensis is a very distinct species, remarkable in the retention of the *apparent* radial cross vein, which as was indicated by me in earlier papers is, in the Tipulidæ, almost certainly the basal deflection of vein R_2. The true r is thus presumably lacking in the Diptera, its occurrence in *Dicranota*, *Rhaphidolabina*, and *Polyangaeus* being due to a supernumerary cross vein that has persisted in this position in cell R_1. The present species is further characterized by the very elongate Sc and Rs and the shortened, subtransverse basal deflection of R_{4+5}. The specific name is derived from Zipangu, Marco Polo's designation for the Empire of the Rising Sun.

Genus HELIUS St. Fargeau and Serville

Helius ST. FARGEAU and SERVILLE, Encycl. Meth. Ins. 10, Index (1828) 831.

Rhamphidia MEIGEN, Syst. Beschr. 6 (1830) 281.

Helius (Helius) tenuirostris sp. nov.

General coloration shiny yellow, the prescutum with a median dark brown stripe; rostrum long and slender, equal in length to thorax; wings tinged with gray, the costal region yellowish; wing apex infuscated; abdominal tergites yellow, ringed with brown.

Male, length (excluding rostrum), 7 millimeters; wing, 7 to 7.5; rostrum alone, about 1.8 to 2. Female, length, 7.6 to 8 millimeters; wing, 7 to 7.2; rostrum alone, about 1.9.

Rostrum unusually long and slender, about as long as thorax alone, rostrum and palpi black. Antennæ very short, with conspicuous verticils, brown, the second segment obscure yellow. Head brownish gray; vertex between eyes very narrow. Pronotum obscure yellow, infuscated medially. Mesonotal prescutum shiny reddish yellow, the humeral region clearer yellow; a shiny brown median stripe; scutal lobes dark brown, the median area pale; scutellum brownish black; postnotum brown, passing into reddish yellow laterally. Pleura reddish yellow. Halteres pale brownish yellow, brighter at base.

Legs with coxæ and trochanters reddish yellow; femora obscure yellow, the tips narrowly blackened; tibiæ pale brown, tips very narrowly blackened; tarsi black. Wings tinged with gray; cells C and Sc more yellowish; stigma oval, brown; wing tip distinctly infuscated; veins brown, those in costal region yellowish. Venation: Sc_2 ending just before fork of Rs; r-m shorter than deflection of R_{4+5}; basal deflection of Cu_1 beyond fork of M, in some cases the distance equal to approximately one-half the deflection. Abdominal tergites obscure yellow, the basal half or more of segments infuscated; sternites uniformly yellow; a subterminal black ring on segments 7 and 8; hypopygium shiny reddish yellow. In the female, the abdominal tergites are dark brown. Ovipositor with the tergal valves very long and slender, straight.

Habitat.—Japan (Hokkaido and Honshiu).

Holotype, male, Mount Minomo, Settsu-no-kuni, Honshiu, June 22, 1922 (*T. Esaki*).

Allotopotype, female.

Paratopotypes, 3 males; paratypes, 1 male, 1 female, Jozankei, Hokkaido, August 19, 1922 (*T. Esaki*).

Genus DICRANOPTYCHA Osten Sacken

Dicranoptycha OSTEN SACKEN, Proc. Acad. Nat. Sci. Phila. (1859) 217.

Dicranoptycha venosa sp. nov.

General coloration gray; halteres yellow; legs black, femoral bases yellow, narrowest on forelegs, broadest on posterior femora; wings brownish yellow, base and costal region clear yellow; longitudinal veins seamed with brown; r some distance from tip of R_1.

Male, length, 8.5 to 10 millimeters; wing, 10 to 10.5. Female, length, 10 millimeters; wing, 11.

Rostrum and palpi black. Antennæ with first segment of scape black; second segment obscure yellow; flagellum brownish black, the proximal segments a little paler on basal half. Head gray. Mesonotum gray, prescutum with four rather ill-defined dark brown stripes. Pleura dark gray, indistinctly variegated with black. Halteres yellow. Legs with coxæ and trochanters obscure yellow; fore femora black with about the basal third yellow; other femora obscure yellow with about the distal third or less black, this a little more extensive on middle legs; remainder of legs brownish black. Wings brown-

ish yellow, base and cells C and Sc clearer yellow; longitudinal veins seamed with darker, this especially conspicuous on veins Cu and Cu_2; veins black, yellow in the flavous costal areas, including stigma. Venation: Sc_1 ending opposite midlength the deflection of R_{4+5}, Sc_2 at its tip; R_1 beyond r equal to or subequal to basal deflection of R_{4+5}; Rs longer than cell 1st M_2; Rs and R_{2+3} run very close to R_1; m short; basal deflection of Cu_1 from one-third to one-half its length beyond the fork of M. Abdomen dark brown.

Habitat.—Japan (Saghalien and Hokkaido).

Holotype, male, Shikaripetsu, Hokkaido, August 26, 1922 (*T. Esaki*).

Allotype, female, Ponkikin, Hokkaido, September 2, 1922 (*T. Esaki*).

Paratypes, 3 males, Shikotsu, Hokkaido, September 24, 1922 (*T. Esaki*); 1 female, Shimizu, Saghalien, July 27, 1922 (*T. Esaki*); 1 male, Maoka, Saghalien, July 28, 1922 (*T. Esaki*).

Genus ANTOCHA Osten Sacken

Antocha OSTEN SACKEN, Proc. Acad. Nat. Sci. Phila. (1859) 219.

No fewer than six species of *Antocha* were found in the present collection. The genus appears to be an ancient one that elsewhere in the world persists only as scattered species living under favorable conditions, chiefly in mountainous and hilly sections of the Holarctic Region. Hitherto not more than two species had been found in any one given region and the discovery of six species occurring in the vicinity of Sapporo, Hokkaido, was very surprising. The early stages of members of the genus, insofar as they are known, are spent in running water, and it seems probable that the numerous mountain streams of Japan have done much to favor the development and preservation of species of this genus. The Japanese species of the genus may be separated by means of the accompanying key.

A Key to the Japanese Species of the Genus Antocha.

[Males only.]

1. Legs very long and relatively stout, densely clothed with conspicuous erect setæ; in the male, opposable tubercles at tip of tibia and base of basitarsus; tarsi very short; in the female, tergal valves of ovipositor very short and stout, heavily chitinized, the ventral margin serrate. (Subgenus *Proantocha* Alexander.) ..... 2.

Legs relatively long and slender, clothed with inconspicuous, appressed setæ; in the male, legs unarmed and tarsi of normal length; in the female, all valves of ovipositor slender, their margins smooth. (Subgenus *Antocha* Osten Sacken.) ..... 3.

2. Large species (wing of male over 12 millimeters); posterior tarsi very short, less than one-fourth the length of tibiæ. (Honshiu.)
A. (P.) spinifer Alex.

Smaller species (wing of male less than 8 millimeters); posterior tarsi more than one-fourth the length of tibiæ. (Hokkaido.)
A. (P.) serricauda sp. nov.

3. Sc long, Sc_1 ending opposite fork of Rs or very nearly so ..... 4.
Sc shorter, Sc_1 ending some distance before fork of Rs ..... 5.

4. Wings with stigma distinct, veins dark; male hypopygium with the glabrous dististyle heavily chitinized, apex produced into a slender point; ædeagus deflexed at tip. (Honshiu and Hokkaido.)
A. (A.) satsuma Alex.

Wings with stigma lacking, veins pale; male hypopygium with the glabrous dististyle weakly chitinized, apex feebly notched; aedeagus straight. (Honshiu and Hokkaido.) ..... **A. (A.) bifida sp. nov.**

5. Basistyle of male hypopygium without a setiferous lobe on mesal face at base; glabrous dististyle chitinized, gradually narrowed to an acute point; setiferous dististyle broadly dilated at base. (Hokkaido.)
A. (A.) dilatata sp. nov.

Basistyle of male hypopygium with a small setiferous lobe on mesal face at base; glabrous dististyle feebly chitinized; setiferous dististyle not dilated at base ..... 6.

6. Wings strongly tinged with brown; r-m near one-third the length of cell 1st M_2; legs relatively slender; male hypopygium with the glabrous dististyle slender, tapering to the subacute tip; gonapophyses straight. (Hokkaido.) ..... **A. (A.) brevinervis sp. nov.**

Wings nearly hyaline; r-m immediately before midlength of cell 1st M_2; legs conspicuous, long and relatively stout; male hypopygium with the glabrous dististyle broad, apex feebly bifid; gonapophyses sinuous. (Hokkaido.) ..... **A. (A.) brevistyla sp. nov.**

Antocha (Proantocha) serricauda sp. nov.

Size medium (wing under 8 millimeters); general coloration yellow; tarsi of male more than one-fourth the length of tibiæ.

Male, length, 5 to 6 millimeters; wing, 5.8 to 7.5. Female, length, 5 to 6 millimeters; wing, 6 to 7.5 millimeters.

Rostrum and palpi obscure yellow. Antennæ pale brown, the basal segment more yellowish. Head pale yellowish brown, sparsely pruinose. Thorax yellow, prescutum and scutal lobes a trifle more fulvous. Halteres pale, knobs only slightly darker. Legs with coxæ and trochanters yellow; remainder of legs yellowish testaceous, the terminal segments dark; legs conspicuously hairy, as in this group. Wings yellowish subhyaline; veins pale brownish yellow. Venation: r a little more than its length from tip of R_1; basal deflection of Cu_1 approximately one-

third its length, or less, before fork of M. Abdomen with tergites reddish brown, the caudal and lateral margins of segments clearer yellow; sternites obscure yellow. Male hypopygium (Plate 2, fig. 9) with the ninth tergite bearing two rounded lobes, these separated by a relatively broad U-shaped notch. Basistyle relatively slender, evenly covered with a few long setæ, these more numerous and more delicate on the mesal face; mesal face at base produced into a large setiferous lobe. Dististyles two, the glabrous style a broad, paddle-like blade with a conspicuous, erect marginal tooth; setiferous style clavate, densely setiferous. Gonapophyses straight, blunt at tips. Ædeagus subtended on either side by a large flaring blade. Ovipositor with the tergal valves short and very stout, heavily chitinized, the ventral edge with about a dozen teeth, the outer ones smaller, the basal ones more obtuse; a dense pencil of yellow setæ on either side of tergite, these directed caudad.

Habitat.—Japan (Hokkaido).

Holotype, male, Jozankei, August 20, 1922 (*T. Esaki*).

Allotype, female, Sapporo, June 25, 1921 (*S. Kuwayama*). No. 105.

Paratopotypes, 13 males and females, August 19, 1922; paratype, 1 female, Shikaripetsu, August 26, 1922 (*T. Esaki*).

Antocha (Antocha) satsuma Alexander.

Antocha satsuma ALEXANDER, Ann. Ent. Soc. Am. 12 (1919) 332.

This species was described from Honshiu. The following specimens are in the present collection from Hokkaido:

Sapporo, August 17, 1922; Jozankei, August 19, 1922; Kamuikotan, August 22, 23, 1922; Kamiotoineppu, August 24 to 26, 1922; Kamiokoppe, August 27, 1922 (*T. Esaki*).

The male hypopygium is figured on Plate 2, fig. 13.

Antocha (Antocha) bifida sp. nov.

General coloration pale ocherous, with three pale brown stripes; basal antennal segments pale, the terminal segments darkened; wings subhyaline, stigma lacking, veins pale; Sc long; male hypopygium with the ninth tergite having a conspicuous lateral tooth on either side; glabrous dististyle weakly bifid at apex.

Male, length, 4.2 to 4.8 millimeters; wing, 5.3 to 5.6. Female, length, 5.5 millimeters; wing, 6.5.

Rostrum pale, palpi light brown, the basal segment pale. Antennæ with scape pale, the basal flagellar segments pale, at least basally; terminal segments oval, passing into uniform dark brown. Head dark gray. Mesonotal prescutum pale ocherous, with three pale brown stripes, the broad median stripe indistinctly split by a pale vitta; scutum brown, only the median area a little paler; scutellum and postnotum pale, the latter darker apically. Pleura reddish brown, very slightly pruinose. Halteres pale, knobs feebly darkened. Legs with coxæ and trochanters yellow; remainder of legs obscure yellow, the terminal tarsal segments darkening into brown. Wings subhyaline, stigma lacking or barely indicated; veins pale brown, those in the vicinity of stigma more yellowish. Venation: Sc long, Sc_1 ending immediately before or opposite fork of Rs; r faint, in alignment with r-m, one and one-half times its length from tip of R_1; veins R_{2+3} and R_{4+5} strongly divergent at base, R_{2+3} being subperpendicular to end of Rs; basal deflection of Cu_1 at or before fork of M. Distribution of macrotrichiæ differing from the related *A. javanensis* Alexander; none at extreme tip of R_{2+3}; macrotrichiæ on R_{4+5} including the distal two-thirds to three-fourths of veins; distal sections of veins M_{1+2} and M_3 with macrotrichiæ almost to their bases; Cu_1 with more or fewer macrotrichiæ at tip. In *A. javanensis* there are two or three macrotrichiæ at the distal end of vein R_{2+3}; those on R_{4+5}, M_{1+2} and M_3 virtually confined to the outer halves of the sections; none on distal section of Cu_1. Abdominal tergites dark brown, the caudal margins narrowly pale; basal sternites yellow, the subterminal sternites passing into brown, with pale caudal margins; hypopygium yellow. Male hypopygium (Plate 2, fig. 10) with the ninth tergite bidentate, a conspicuous lateral tooth on either side, widely separated by a setiferous U–shaped notch. Basistyles relatively slender, distribution of setæ even, no tubercle on mesal face at base. Dististyles two, the glabrous one rather strongly chinitized throughout its length, curved, apex weakly notched; setiferous style subequal to last in length, nearly uniform in width throughout its length. Gonapophyses relatively short, straight, tips subacute. Proctiger conspicuous, its caudal margin oval in outline.

Habitat.—Japan (Honshiu and Hokkaido).

Holotype, male, Jozankei, Hokkaido, August 19, 1922 (*T. Esaki*).

Allotype, female, Gifu, Mino Province, Honshiu, October 10, 1920 (*K. Takeuchi*).

Paratopotypes, 2 males; paratypes, 1 male, Sapporo, August 17, 1922 (*T. Esaki*); 4 males and females, Kamiotoineppu,

August 23, 24, 1922 (*T. Esaki*); 20 males and females, with the allotype, October 1 to 10, 1920.

In some cases, gray individuals are found, as is common in the genus *Antocha*.

Antocha (Antocha) dilatata sp. nov.

General coloration gray, prescutum with three brown stripes; wings subhyaline, stigma lacking, veins pale; Sc short; male hypopygium with basistyles lacking a setiferous lobe on mesal face at base; glabrous dististyle terminating in a chitinized point; setiferous style conspicuously dilated at base.

Male, length, 4.5 to 5 millimeters; wing, 5 to 5.5. Female, length, about 6 millimeters; wing, 6.5 to 7.

Rostrum pale brown, in some specimens brightening into yellow; mouth parts brown. Antennæ with the basal segments usually pale, the terminal segments passing into brown. Head dark brown, genæ light gray pruinose. Mesonotal prescutum dull gray with three brown stripes; scutum gray, lobes with brown centers; scutellum and postnotum light gray. Pleura gray. Halteres pale. Legs with coxæ and trochanters light yellow, fore coxæ gray pruinose at base; fore femora yellowish, the other femora brownish yellow; remainder of legs brown, the terminal tarsal segments dark brown. Wings subhyaline or whitish subhyaline, stigma lacking; veins pale and very indistinct. Venation: Sc short, Sc_1 ending some distance before fork of Rs; cell Sc_1 chitinized; r-m at from one-third to one-fourth the length of cell 1st M_2, the basal section of M_{1+2} short and straight; basal deflection of Cu_1 from one-third to one-half its length before fork of M. Abdomen dark brown, sternites pale, brownish yellow; hypopygial basistyles conspicuously yellow. Male hypopygium (Plate 2, fig. 14) with the basistyles relatively long but stout, setæ uniformly distributed; no setiferous lobe on mesal face at base. Dististyles two, the glabrous style chitinized, especially apically, broader at base, tapering gradually to the gently curved, subacute apex; setiferous style conspicuously dilated on inner margin at base. Gonapophyses short, appearing as rather broad flattened blades. Ædeagus slender, sides at base weakly setiferous.

Habitat.—Japan (Hokkaido).

Holotype, male, Kamiotoineppu, August 24, 1922 (*T. Esaki*).

Allotopotype, female.

Paratopotypes, 13 males and females, August 24, 25, 1922 (some taken in copula); paratypes, 6 males and females, Jozankei, August 19, 1922; 1 female, Lake of Akan, September 7, 1922; 1 female, Panketo, September 6, 1922 (*T. Esaki*).

Antocha (Antocha) brevinervis sp. nov.

General coloration gray, prescutum with three dark brown stripes; wings tinged with brown; vein Sc short; male hypopygium with a setiferous lobe on mesal face of each basistyle; gonapophyses short.

Male, length, 4 to 5.2 millimeters; wing, 4.3 to 6.4. Female, length, 5 millimeters; wing, 4.8.

Rostrum and palpi dark brown. Antennæ dark brown. Head brown, sparsely pruinose. Mesonotum grayish brown, prescutum with three dark brown stripes, the lateral margins clearer gray; remainder of mesonotum clearer gray, the scutal lobes infuscated. Pleura dark grayish brown. Halteres dark brown, the extreme base of stem yellow. Legs with coxæ dark brown, sparsely pruinose; trochanters dark brown, the fore trochanters brighter; remainder of legs dark brown, the posterior legs uniformly paler; setæ of legs short, appressed. Wings tinged with brown; stigma elongate, pale brown; veins dark brown. Venation: Sc short, Sc_1 ending some distance before end of Rs; the part of r within stigma faint; basal deflection of Cu_1 only a short distance before fork of M. Abdomen dark brown, pruinose. Male hypopygium (Plate 2, fig. 12) with basistyles on mesal face at base with a small obtuse tubercle, densely set with setæ; lateral face of each basistyle glabrous or nearly so. Glabrous dististyle uniformly colored throughout, apex subacute. Gonapophyses shorter, stouter and straighter than in *A. satsuma*.

Habitat.—Japan (Hokkaido).

Holotype, male, Jozankei, August 19, 1922 (*T. Esaki*).

Allotopotype, female.

Paratopotype, 1 male; paratypes, 1 male, Lake of Akan, September 4, 1922 (*T. Esaki*), 1 male, in poor condition, Sapporo, June 25, 1921 (*S. Kuwayama*), No. 102.

The Jozankei specimens are very small (the minimum measurements given) but undoubtedly refer to this species.

Antocha (Antocha) brevistyla sp. nov.

Size large (wing of male over 7 millimeters); general color ocherous, pronotum and prescutum darker medially; legs dark brown; wings with Sc short; male hypopygium with dististyles relatively short, the glabrous style dilated into a blade that is feebly notched at apex.

Male, length, about 5.3 millimeters; wing, 7.2.

Rostrum ocherous, palpi black. Antennæ dark brown throughout. Head dark, silvery gray pruinose on anterior part of vertex. Pronotum ocherous, broadly dark brown medially. Mesonotal prescutum reddish brown, darker brown medially; lateral stripes obliterated; scutum and scutellum pale brown; postnotum pale brown, darker posteriorly. Pleura pale, sternopleura infuscated. Halteres pale, knobs infuscated. Legs with coxæ pale, the outer faces darkened; trochanters pale, dark brown apically; remainder of legs dark brownish black, the femoral bases a little paler; legs relatively stout, but elongate; claws with a long, slender, basal spine. Wings subhyaline; stigma barely indicated; veins pale brown. Venation: Sc ending some distance before fork of Rs, as in *A. brevinervis*, costa beyond this fusion slightly incrassated and apparently filling cell Sc_1; r very faint; r-m just before midlength of cell 1st M_2, the basal section arcuate, the distal section straight; basal deflection of Cu_1 immediately before fork of M. Abdominal tergites obscure brownish yellow, with indications of a darker median stripe; sternites obscure yellow, the lateral margins darkened. Male hypopygium (Plate 2, fig. 11) with basistyles relatively slender, the mesal face grooved, at the bottom of this groove a small, oval, setiferous lobe. Dististyles unusually short, the glabrous one feebly expanded apically into a blade, apex weakly notched; setiferous style curved, clavate, with abundant short but conspicuous setæ. Gonapophyses slender, sinuous, their tips acute. Proctigers broad, almost straight across their caudal margins, their surface covered with abundant microscopic setæ.

Habitat.—Japan (Hokkaido).

Holotype, male, Sapporo, August 17, 1922 (*T. Esaki*).

Genus **PEDICIA** Latreille

Pedicia LATREILLE, Hist. Nat. Crust. et Ins. 4 (1809) 255.
Daimiotipula MATSUMURA, Thous. Ins. Japan, Add. 2 (1916) 463.

Pedicia daimio (Matsumura).

Daimiotipula daimio MATSUMURA, Thous. Ins. Japan, Ann. 2 (1916) 463.

Matsumura's type, a female, was from Sapporo, Hokkaido. A pair in the present collection is from Abashiri. The unknown male may be described as follows:

Allotype, male, length, 24 millimeters; wing, 23.

Antennal scape black, contrasting with the pale brown flagellum. Vertical tubercle high, conical. Head dark gray. Median prescutal stripe entire or very indistinctly bisected by a capillary pale vitta. Femora yellow, tips conspicuously blackened, more narrowly and abruptly on the posterior femora. Wings with the pattern dark brown; the brown band along cord connects with a narrow border uniting the spot at origin of Rs with the stigmal region, but isolates a large hyaline spot before stigma, immediately beneath tip of R_1; base of cell Cu very narrowly darkened. Venation: Rs square at origin, opposite Sc_2; petiole of cell M_1 only a little longer than m; cell 2d A broad. Abdomen with the basal tergite brightened, except medially; intermediate tergites brown, base narrowly pale; terminal segments dark brown, gray pruinose.

Allotype, male, Abashiri, Hokkaido, August 30, 1922 (*T. Esaki*).

Genus **RHAPHIDOLABINA** Alexander

Rhaphidolabina ALEXANDER, Proc. Acad. Nat. Sci. Phila. (1916) 540.

Rhaphidolabina gibbera Alexander.

Raphidolabina gibbera ALEXANDER, Ann. Ent. Soc. Am. 14 (1921) 121.

Toyohara, Saghalien, July 20, 1922 (*T. Esaki*); Maoka, Saghalien, July 28, 1922 (*T. Esaki*); Manui, Saghalien, August 3, 1922 (*T. Esaki*).

The species was described from rather imperfect material taken in central Honshiu. The following additional details of coloration should be given: The fore and middle legs are very different in color from the posterior legs, the femora being abruptly and entirely brownish black, the tibiæ and tarsi conspicuously light yellow, only the terminal segments of the latter being a little darkened.

The following notes by the collector are of interest. "These flies swarm like gnats and the black fore and middle femora look very strange in flight."—*Teiso Esaki.*

Genus **POLYANGAEUS** Doane

Polyangaeus DOANE, Journ. N. Y. Ent. Soc. 8 (1900) 196.

Polyangaeus gloriosus sp. nov.

General coloration yellowish ocherous; antennal flagellum yellow; legs yellow, femora and tibiæ broadly and conspicuously blackened terminally; wings subhyaline, with a brown, cross-

banded pattern, the costal cell clear, sparsely variegated with darker; supernumerary cross veins in cells R_3, R_4, M_1, and M.

Male, length, 11 to 12 millimeters; wing, 9.6 to 10.

Rostrum and palpi brownish black. Antennæ very small, the first scapal segment black, the second dark brown; flagellum conspicuously light yellow, segments subglobular. Head dark brown, the occipital region a little paler. Pronotum broadly dark brown medially, the lateral portions ocherous. Mesonotal prescutum yellowish ocherous, with three broad reddish brown stripes that are practically confluent; scutal lobes reddish brown on their cephalic halves; scutellum and postnotum yellow. Pleura yellow, mesopleura indistinctly suffused with darker. Halteres pale, knobs weakly infuscated. Legs with coxæ yellow, the middle and posterior coxæ infuscated on their outer faces; trochanters yellow, their caudal margins slightly infuscated; femora and tibiæ yellow, tips broadly and very conspicuously brownish black, these areas approximately equal on all segments; basitarsi yellow, passing into brown at tip; remainder of tarsi dark brown. Wings subhyaline, with a handsome bright brown cross-banded pattern that is generally similar to that found in certain species of *Epiphragma*, distributed as follows: At base of wing; at origin of Rs, including both basal cells; along cord, completely traversing wing; at outer deflection of R_2; a broad subterminal band having m and the supernumerary cross veins in cells R_3, R_4 and M_1 as centers, continued to wing margin along veins; all of these brown areas are bordered with still darker brown; a series of from four to eight brown spots in cell Cu; area immediately behind vein Cu darkened; still darker brown areas at h; in cell C above Sc_2; in outer end of cell C; at end of cell Cu and vein 1st A; a large blotch at end of vein 2d A, and a smaller area in base of cell 1st A; veins yellow, darker in the infuscated areas. Venation: Sc_2 ending just before origin of Rs; outer deflection of R_2 from one to two times its length from tip of R_1; Rs angulated and spurred at origin; R_2 spurred immediately beyond base; cell R_3 petiolate, the petiole about equal to r-m; cell 1st M_2 closed; petiole of cell M_1 a little longer than m; basal deflection of Cu_1 about one-third its length beyond fork of M; supernumerary cross veins distributed as follows: in cell R_3 near the distal end, in cell R_4 at two-thirds the length; in cell M_1 at from one-third to one-half the length, in cell M opposite Sc_2. In the type, cell M_1 is sessile and unusually long, the supernumerary cross vein being at two-thirds the length. In a paratype, true r is present in both wings, just beyond spur on R_2. Basal abdominal tergites brown, paler laterally; basal sternites yellow, the caudal margins narrowly ringed with dark brown; terminal segments uniformly dark brown.

Habitat.—Japan (Saghalien).

Holotype, male, Shimizu, July 27, 1922 (*T. Esaki*).

Paratopotypes, 3 males.

Polyangaeus gloriosus is the largest and most beautiful species of the genus yet discovered.

Genus **DICRANOTA** Zetterstedt

Dicranota ZETTERSTEDT, Ins. Lapponica, Dipt. (1838) 851.

Dicranota yezoensis sp. nov.

Male, length, 6.3 millimeters; wing, 7.

Generally similar to *D. nipponica* Alexander, differing as follows: Antennæ of male elongate, if bent backward extending to mid-distance between base of wing and haltere; flagellar segments elongate, shiny black, with a white pubescence. General coloration of prescutum darker gray, stripes less contrasted. Wings with ground color somewhat darker, stigma distinct, dark brown; a distinct brown cloud extending from fork of Rs to end of r-m. Venation: Rs angulated and slightly spurred at origin; m present but faint, closing cell 1st M_2; petiole of cell M_1 about one-half longer than cell. Macrotrichiæ of wing veins longer and more conspicuous.

Habitat.—Japan (Hokkaido).

Holotype, male, Lake of Akan, September 4, 1922 (*T. Esaki*).

Genus **RHAPHIDOLABIS** Osten Sacken

Rhaphidolabis OSTEN SACKEN, Mon. Dipt. N. Am. 4 (1869) 284.

Rhaphidolabis flavibasis Alexander.

Rhaphidolabis flavibasis ALEXANDER, Ann. Ent. Soc. Am. 12 (1919) 343.

One female from Toyohara, Saghalien, July 17, 1922 (*T. Esaki*). The species was described from Honshiu, but has not yet been found in Hokkaido.

Rhaphidolabis subconsors sp. nov.

Male, length, about 4.5 millimeters; wing, 6.1.

Generally similar to *R. consors* Alexander, differing as follows: Pronotum, mesonotal prescutum, scutum, postnotum, and

thoracic pleura dark gray, scutellum and posterior portions of the scutal lobes reddish; prescutum with a distinct black median stripe and less distinct lateral stripes. Wings with petiole of cell M_3 only as long as the basal deflection of Cu_1. Male hypopygium with the mesal apical angle of basistyle produced into a short, broad, blunt lobe, the truncate apex of which is densely set with strong setæ. Outer dististyle triangular, fleshy, surface with abundant, hairlike setæ; inner dististyle smooth, large, and flattened. Lateral gonapophyses appearing as long, strongly curved hooks, the long acute tips of which are produced mesad and cephalad, almost contiguous on midline of body.

Habitat.—Japan (Hokkaido).

Holotype, male, Lake Shikotsu, September 24, 1922 (*T. Esaki*).

Tribe HEXATOMINI

Genus ULA Haliday

Ula HALIDAY, Ent. Mag. 1 (1833) 224.

The genus *Ula* includes six described species, all being Holarctic with the exception of a single Javanese species. The relationships of this genus are in doubt, the details of structure of the adult pointing to the tribe Pediciini, those of the larvæ and pupæ to the Hexatomini. The present collection contained two additional undescribed species.

Ula perelegans sp. nov.

General coloration gray; antennæ long; wings with a heavy brown pattern; cell 1st M_2 relatively large.

Female, length, about 5.5 millimeters; wing, 8.

Rostrum dark gray, palpi black. Antennæ long for this sex, if bent backward extending to base of halteres, black throughout. Head light gray. Pronotum light gray. Mesonotum black, gray pruinose, on prescutum leaving a median black stripe exposed. Pleura pale brown, sparsely pruinose, the dorsopleural membrane obscure yellow. Halteres yellow, knobs feebly infuscated. Legs with coxæ and trochanters yellow; femora brown, bases broadly yellow, narrowest on forelegs where about the basal quarter is included; on the posterior legs the brown includes only the relatively narrow apices; tibiæ and tarsi pale brown, tarsi darker. Wings pale yellow with a heavy brown pattern, distributed as follows: A small spot at Sc_2; large spots at origin

of Rs, tip of Sc_1 and at r, the latter two delimiting a conspicuous yellowish stigmal area, the former confluent with a conspicuous seam along cord, continued to wing margin along vein Cu_2; outer end of cell 1st M_2 seamed with brown; veins brown. Venation: Sc_2 near midlength of distance between arculus and origin of Rs; r its own length from tip of R_1; basal deflection of R_{4+5} very short; r-m correspondingly lengthened, feebly arcuated; cell 1st M_2 rather large, as long as vein Cu_1 beyond it; basal deflection of Cu_1 about one-fourth its length beyond fork of M. Abdominal tergites infuscated, especially the basal and subterminal segments; sternites light yellow; ovipositor with valves strongly upcurved.

Habitat.—Japan (Hokkaido).

Holotype, female, Abashiri, August 30, 1922 (*T. Esaki*).

Ula cincta sp. nov.

General coloration shiny yellowish brown; antennæ long; wing pattern faintly indicated; cell 1st M_2 small; abdominal segments dark brown, the caudal margins narrowly ringed with obscure yellow.

Female, length, 5.6 to 5.8 millimeters; wing, 6.3 to 6.8.

Rostrum and palpi black. Antennæ elongate, if bent backward extending at least to base of halteres; scapal segments pale, the flagellar segments dark. Head dull gray. Mesonotal prescutum shiny yellowish brown, scutellum and postnotum darker brown. Pleura light brown. Halteres pale, knobs infuscated. Legs with coxæ and trochanters pale brownish yellow, fore coxæ a little infuscated basally; legs pale brown, tibiæ and tarsi darker; extreme tips of femora infuscated. Wings faintly tinged with brown, with faint indications of darker markings at origin of Rs, along cord, and at either end of the faintly indicated stigma; veins uniformly pale brown. Venation: Sc_2 about three-fifths the distance between arculus and origin of Rs; cell 1st M_2 relatively small, shorter than the distal section of Cu_1. Abdomen dark brown, the caudal margins of segments narrowly ringed with obscure yellow. Ovipositor with the tergal valves strongly upcurved to the acute tips.

Habitat.—Japan (Hokkaido).

Holotype, female, Akan, September 3, 1922 (*T. Esaki*).

Paratype, 1 female, Teppetsu, September 9, 1922 (*T. Esaki*).

Genus EPIPHRAGMA Osten Sacken

Epiphragma OSTEN SACKEN, Proc. Acad. Nat. Sci. Phila. (1859) 238.

Epiphragma subinsignis Alexander.

Epiphragma subinsignis ALEXANDER, Trans. Am. Ent. Soc. 46 (1920) 11, 12.

One female from Maruyama, near Sapporo, Hokkaido, August 17, 1922 (*T. Esaki*). The types are from Saitama and Mount Takao, near Tokyo, Honshiu.

Genus LIMNOPHILA Macquart

Limnophila MACQUART, Hist. Nat. Ins., Dipt. (1834) 95.

The type of the genus *Limnophila* is *L. pictipennis* Meigen, this having been designated by Westwood in 1840. One species of the typical subgenus was included in the present material. The other species fall in various subgeneric groups, some of which may not be strictly congeneric when better known.

Limnophila (Limnophila) japonica Alexander.

Limnophila japonica ALEXANDER, Can. Ent. 45 (1913) 316, 317.

Saghalien: Toyohara, July 18, 1922; Manui, August 3, 1922. Hokkaido: Kamiotoineppu, August 24, 1922.

The Saghalien specimens have the basal flagellar segment black with only the extreme base pale, but seem to be referable to this species.

Limnophila inconcussa Alexander.

Limnophila inconcussa ALEXANDER, Can. Ent. 45 (1913) 313, 314.

This is a common and widely distributed crane fly, ranging from Hokkaido to Taiwan. The present collection includes the following material, collected by Doctor Esaki:

Hokkaido: Kamiotoineppu, August 23, 1922; Shikaripetsu, August 26, 1922; Abashiri, August 31, 1922; Akan, September 6, 1922.

Limnophila unicoides sp. nov.

Allied to *L. unica* Osten Sacken; general coloration dark chocolate brown; antennæ of male elongate; wings with a faint brown tinge; stigma large, dark brown; a brown cloud at r-m; cell 1st M_2 large, cell M_1 deep.

Male, length, about 9 millimeters; wing, 8. Female, length, 8.5 to 10 millimeters; wing, 9 to 9.5.

Rostrum and palpi brownish black, the former dusted with gray. Antennæ elongate, the basal segment dark brown; second scapal segment obscure yellow; flagellum dark brown; segments elongate. Head brown, pruinose. Mesonotum dark chocolate brown, with a very sparse yellowish pollen, scutellum and postnotum more pruinose. Pleura dark brown, gray pruinose. Halteres obscure yellow, knobs infuscated. Legs with coxæ obscure yellow, their bases infuscated; trochanters yellow; remainder of legs dark brown, the femoral bases narrowly obscure brownish yellow, narrowest on forelegs, broadest on hind legs. Wings with a faint brownish tinge; stigma large, dark brown; a conspicuous brown cloud at r-m and the basal deflection of R_{4+5}; an indistinct cloud at origin of Rs; veins dark brown. Venation: Sc long, Sc_1 ending slightly beyond fork of Rs, the usually longer Sc_2 at its extreme tip; Rs long; R_{2+3} subequal to the distal section of R_2; r a little shorter than tip of R_1; inner ends of cells R_3, R_5 and 1st M_2 in alignment; cell 1st M_2 large, widened distally; petiole of cell M_1 about one-half longer than m, cell M_1 being very deep; basal deflection of Cu_1 before or near midlength of cell 1st M_2. A paratype has an adventitious cross vein in cell R_3 of one wing. Abdominal tergites dark brown, the basal sternites obscure brownish yellow; hypopygium black. In female, sternites are uniformly darkened. Male hypopygium with the mesal face of basistyle produced caudad as a stout, blunt lobe; dististyles two, the outer style a flattened, bladelike structure that terminates in a slender, curved, black spine; inner style slender, foot-shaped, at apex bent cephalad at a right angle into a long, slender beak; on the caudal margin near base, a slender, black, slightly curved spine. Gonapophyses appearing as two sets of black curved spines, directed mesad, the lateral pair longer and more strongly curved.

Habitat.—Japan (Saghalien and Hokkaido).

Holotype, male, Shimizu, Saghalien, July 27, 1922 (*T. Esaki*).

Allotype, female, Kamiotoineppu, Hokkaido, August 24, 1922 (*T. Esaki*).

Paratypes, 1 female, Teppetsu, Hokkaido, September 9, 1922 (*T. Esaki*); 1 female, Akan, Hokkaido, September 4, 1922 (*T. Esaki*).

Limnophila subpoetica sp. nov.

Allied to *L. poetica* Osten Sacken; general coloration reddish brown; femora black, broadly yellowish basally; wings tinged with grayish yellow, stigma dark brown; Rs long, cell 2d A broad.

Male, length, 10 millimeters; wing, 9.5.

Rostrum and palpi brownish black. Antennæ moderately elongate, if bent backward extending to beyond base of abdomen; scape dark brown; basal flagellar segment obscure yellow; remainder of flagellum dark brown. Head gray. Mesonotal prescutum reddish brown, sparsely pollinose, scutellum and postnotum slightly more pruinose. Pleura concolorous. Halteres pale, knobs a little darker. Legs with coxæ and trochanters obscure yellow; femora black, bases broadly obscure yellow, narrowest on forelegs where less than the basal third is included, broadest on hind legs where more than the basal half is included; tibiæ brown, passing into dark brownish black at tips and on tarsi. Wings with a grayish yellow tinge, brighter yellow at base and in cells C and Sc; stigma oval, dark brown; narrow and inconspicuous brown seams at origin of Rs, along cord and outer end of cell 1st M_2, and at wing apex. Venation: Rs long, square and spurred at origin, in alignment with R_{2+3}; r at tip of R_1; inner ends of cells R_3, R_5 and 1st M_2 in approximate alignment; cell M_1 present, a little longer than its petiole; cell 1st M_2 rectangular, the basal deflection of Cu_1 about one-third its length beyond fork of M; cell 2d A much broader than in *L. kuwayamai* Alexander. Abdomen reddish brown, variegated with black; terminal segments uniformly blackened, including hypopygium. Male hypopygium with the ninth tergite produced into a long, fingerlike lobe on either side of median line; dististyles two, the outer long and slender with the narrow apex strongly curved, the inner dististyle dilated basally, apex paler. Gonapophyses small, curved, base of each produced laterad into a small, bidentate lobe.

Habitat.—Japan (Saghalien).

Holotype, male, Toyohara, July 25, 1922 (*T. Esaki*).

Limnophila nemoralis (Meigen) var.

Limnobia nemoralis MEIGEN, Syst. Beschr. 1 (1818) 126.

One female from Toyohara, Saghalien, July 20, 1922 (*Teiso Esaki*) cannot be distinguished from European material. It is possible that the male sex will show subspecific differences.

Limnophila (Phylidorea) subadusta sp. nov.

General coloration dull reddish brown; head gray; legs black, the femoral bases broadly yellow; wings tinged with yellow, sparsely spotted and seamed with brown; abdomen dark brown, segments narrowly ringed caudally with pale.

Female, length, 9.5 millimeters; wing, 8.

Rostrum and palpi black. Antennæ with the basal segment dark brown; second scapal and basal one or two flagellar segments yellow, the terminal segments dark brown. Head gray. Pronotum dark brown. Mesonotal prescutum dull reddish brown, prescutum more infuscated medially, surface feebly pollinose. Pleura reddish brown, mesepisternum infuscated, surface slightly pollinose. Halteres yellow, knobs very slightly infuscated. Legs with coxæ and trochanters yellow; femora black, their bases bright yellow, on forelegs including about the basal third, more extensive on the other legs; tibiæ brownish black; tarsi black. Wings tinged with yellow, base and cells C and Sc more yellowish; stigma conspicuous, oval, dark brown; wing tip suffused with brown; conspicuous but narrow brown spots and seams at origin of Rs; along cord and outer end of cell 1st M_2; fork of M_{1+2}; veins brownish black, paler in the flavous areas. Venation: Sc_1 ending immediately before fork of Rs, Sc_2 at its tip; Rs long for a member of the *ferruginea* group, one-half longer than cell 1st M_2, square and spurred at origin; R_{2+3} about equal to basal deflection of R_{4+5}; r at tip of R_1; petiole of cell M_1 about as long as cell; basal deflection of Cu_1 near midlength of cell. Abdominal tergites dark brown, apices of segments indistinctly paler; basal sternites obscure yellow, the remaining sternites concolorous with tergites. Ovipositor with the valves dark horn color.

Habitat.—Japan (Saghalien).

Holotype, female, Manui, August 3, 1922 (*T. Esaki*).

Limnophila (Phylidorea) sapporensis Alexander.

Limnophila sapporensis ALEXANDER, Insec. Inscit. Menst. 9 (1921) 181, 182.

The following records are included in the present collection: Saghalien: Manui, August 3, 1922; Odasam, August 5, 1922; Odomari, August 8, 1922 (*T. Esaki*).

The type locality is Hokkaido.

Genus PILARIA Sintenis

Pilaria SINTENIS, Sitzber. Nat. Ges. Dorpat 8 (1888) 398.

Species of the genus *Pilaria* are found throughout the Holarctic Region and in Madagascar.

Pilaria dorsalis sp. nov.

Size large (wing of female, over 10 millimeters); head dull black; antennæ elongate; general coloration of thorax obscure

reddish yellow, prescutum and scutal lobes shiny black; femora and tibiæ obscure brownish yellow.

Female, length, about 9 millimeters; wing, 10.5 to 12.

Rostrum pale brown, palpi black. Antennæ elongate, scape black, the basal flagellar segment pale at base; remainder of organ black. Head dull black, light gray pruinose. Pronotum very narrow, obscure yellow, darker anteromedially. Mesonotum shiny black, the region of the pseudosutural foveæ obscure yellow; lateral margins very narrowly of the same color; scutum obscure yellow medially, lobes shiny black, narrowly connected across the median line; scutellum and postnotum obscure reddish brown, the former sometimes blackened medially. Pleura obscure reddish yellow. Halteres yellow, knobs weakly infuscated. Legs with coxæ and trochanters yellow; femora and tibiæ obscure brownish yellow, tips narrowly and indistinctly infuscated; tarsi dark brown. Wings with a faint brownish tinge, base and costal region more yellowish; stigma very small and faint, brown, veins dark brown. Venation: Sc ending just before fork of Rs, Sc_2 at tip of Sc_1; Rs long, straight, base arcuated; r at fork of R_{2+3}; cell M_1 about as long as its petiole; basal deflection of Cu_1 near two-thirds the length of cell 1st M_2. Abdomen dark brown, sternites a little paler. Ovipositor with the long, acicular valves horn-colored, basal plate black.

Habitat.—Japan (Saghalien and Hokkaido).

Holotype, female, Konuma, Saghalien, July 17, 1922 (*T. Esaki*).

Paratype, female, Sapporo, Hokkaido, June 19, 1921 (*M. Hori*), No. 55.

Genus ERIOCERA Macquart

Eriocera MACQUART, Dipt. Exot. 1 (1838) 74.

The very large genus *Eriocera* is represented in the collection by two species belonging to the *spinosa* group of the genus. Their nearest allies are found in the Nearctic Region.

Eriocera jozana sp. nov.

Male, length, 14 millimeters; wing, 22; antenna, 61.

Generally similar to *E. stricklandi* Edwards, differing as follows:

Antennæ with the enlarged basal segment ocherous on the ventral half; flagellar segments 1 to 4 gradually elongated, the entire organ more than four times the length of body. Vertical tubercle very large and conspicuous. Thoracic vestiture long and conspicuous, erect; lateral margins of prescutum not conspicuously brightened, pruinose; median prescutal stripe indistinctly bifid posteriorly. Legs with the black tips of fore femora narrower; posterior femora black with only the extreme base brightened; tibiæ not darkened basally. Wings with stigma clearly defined, oval, brown; cell 1st M_2 long and narrow, rectangular; cell M_1 about equal in length to its petiole. Abdominal segments dark brown, ocherous laterally, the caudal margins of the posterior sternites broadly pale.

Habitat.—Japan (Hokkaido).

Holotype, male, Jozankei, August 19, 1922 (*T. Esaki*).

Eriocera sachalinensis sp. nov.

Belongs to the *spinosa* group; antennæ of male shorter than body; mesonotal prescutum gray with four conspicuous dark brown stripes; cell M_1 present.

Male, length, 16 to 18 millimeters; wing, 20 to 21; antenna, 11.5 to 12.

Rostrum and palpi brownish black. Antennæ of moderate length, shorter than body; basal segment dark, reddish basally beneath; flagellum black, segments 1 to 4 gradually more elongated. Head brown, gray pruinose; a conspicuous reddish brown area on either side of the vertical tubercle. Mesonotal prescutum gray, with four conspicuous dark brown stripes; scutum gray, each lobe with a conspicuous, dark brown, central blotch; scutellum brownish gray, more yellowish laterally, clothed with abundant long, pale setæ; postnotum brownish plumbeous. Pleura dark colored, light gray pruinose. Halteres light brownish ocherous, knobs dark brown. Legs with coxæ light gray; trochanters brown; femora dark brown, bases broadly and conspicuously obscure fulvous, on the posterior legs occupying a little less than the basal half; remainder of legs brownish black. Wings with a strong brownish yellow tinge, base and cells C and Sc more saturated; stigma small, oval, dark brown; veins dark brown. Venation: r near midlength of vein R_2; cell M_1 present, longer than its petiole. Abdomen dark brown, pruinose; lateral margins of tergites narrowly ocherous.

Habitat.—Japan (Saghalien).

Holotype, male, Takinosawa, July 26, 1922 (*T. Esaki*).

Paratypes, 1 male, Shimizu, July 27, 1922 (*T. Esaki*), 1 male, Maoka, July 28, 1922 (*T. Esaki*).

Genus **ELEPHANTOMYIA** Osten Sacken

Elephantomyia OSTEN SACKEN, Proc. Acad. Nat. Sci. Phila. (1859) 220.

Elephantomyia (Elephantomyia) hokkaidensis sp. nov.

General coloration shiny brownish yellow; legs with femora dark brown, tibiæ and tarsi brownish yellow; wings tinged with yellow, apex infuscated; abdomen yellow, tergites with a longitudinal median stripe; sternites ringed caudally with black.

Male, length (excluding rostrum), 6 to 10 millimeters; wing, 8.5 to 12. Female, length (excluding rostrum), 9 to 11 millimeters; wing, 9 to 11.

Rostrum longer than body, brown, including palpi. Antennæ with scape dark brown; basal flagellar segments brownish yellow, becoming more infuscated toward tip of the organ. Head yellowish pruinose anteriorly, more yellow to brownish yellow behind. Pronotum infuscated medially. Mesonotum shiny brownish yellow to brown, without markings. Pleura concolorous. Halteres pale, knobs weakly infuscated. Legs with coxæ and trochanters yellowish testaceous; femora brown, soon passing into dark brown; tibiæ and basal segments of tarsi brownish yellow, the terminal tarsal segments infuscated. Wings tinged with yellow; apex distinctly infuscated; stigma elongate-oval, brown; cord and outer end of cell 1st M_2 narrowly and indistinctly clouded with darker; veins dark brown. Venation: Sc_1 ending nearly opposite fork of Rs, Sc_2 at tip of Sc_1; cell 1st M_2 large, rectangular; basal deflection of Cu_1 close to midlength of cell. Abdomen yellow, tergites with a median black longitudinal stripe, in some female individuals broken into triangles; sternites conspicuously ringed caudally with black; a black subterminal ring in male; hypopygium obscure yellow. Male hypopygium with the mesal face of basistyles densely setiferous; outer dististyle slender, suddenly curved at apex, before tip on the outer side with a small tooth; inner style a little longer, enlarged on basal half, setiferous. Gonapophyses slender, produced into a filiform point. Penifilum coiled in a transverse spring, suggesting a watch spring.

Habitat.—Japan (Hokkaido).

Holotype, male, Abashiri, August 30, 1922 (*T. Esaki*).

Allotopotype, female.

Paratopotypes, 2 males, 3 females; paratypes, 7 males and females, Kamiotoineppu, August 23, 25, 1922 (*T. Esaki*); 5 males and females, Shikaripetsu, August 26, 1922 (*T. Esaki*); 2 males and females, Kamiokoppe, August 27, 1922 (*T. Esaki*); 1 female, Ponkikin, September 2, 1922 (*T. Esaki*); 7 males and females, Akan, September 3, 4, 1922 (*T. Esaki*); 4 males and females, Panketo, September 6, 1922 (*T. Esaki*); 6 males and females, Shikotsu, September 24, 1922 (*T. Esaki*).

Most of the above specimens were taken while feeding on nectar of various Compositæ plants; a few came to light.

Genus **MOLOPHILUS** Curtis

Molophilus CURTIS, Brit. Ent. (1833) 444.

In addition to the new species described herewith, the collection included female specimens of at least one additional species of *Molophilus* that cannot be determined more accurately.

Molophilus albibasis sp. nov.

General coloration black; antennæ short; halteres white; wings faintly tinged with brown, their bases white; male hypopygium with the mesal apical angle of basistyle terminating in a powerful black spine.

Male, length, about 4 millimeters; wing, 4.5.

Rostrum and palpi black. Antennæ short, dark brown. Head black. Mesonotum black, pleura dark brownish black. Halteres white. Legs dark brownish black. Wings with a faint brownish tinge, base conspicuously whitish to a short distance beyond arculus; veins conspicuously dark brown. Venation: Vein 2d A comparatively short, ending before level of fork of M. Abdomen dark brown, including hypopygium. Male hypopygium very distinct in structure; each basistyle stout, the lateral apical angle produced caudad into a long, stout, cylindrical, setiferous lobe that is as long as any of the elements of hypopygium; mesal apical angle of basistyle produced into a shorter, glabrous lobe that bears near its tip a powerful, curved, black spine. Dististyles two, lying in the notch between the lobes of basistyle; longest style slender, bifid near its tip, the arms thus formed relatively long and slender; inner style a short, blackened blade, slightly curved beyond midlength, the margin with microscopic spinulæ.

Habitat.—Japan (Saghalien).

Holotype, male, Toyohara, July 16, 1922 (*T. Esaki*).

Genus ERIOPTERA Meigen

Erioptera MEIGEN, Illiger's Mag. 2 (1803) 262.

Erioptera (Erioptera) elegantula Alexander.

Erioptera elegantula ALEXANDER, Can. Ent. 45 (1913) 290, 291.

Doctor Esaki's material included the following records: Hokkaido: Sapporo, August 17, 1922; Kamuikotan, August 22, 1922; Abashiri, August 31, 1922.

Erioptera (Erioptera) xanthoptera sp. nov.

General coloration brown; antennæ pale brown; halteres and legs obscure yellow; wings with a strong yellowish tinge.

Female, length, 6 millimeters; wing, 7.

Rostrum and palpi pale brown. Antennæ pale brown throughout. Head light brown, sparsely pollinose, occiput slightly more fulvous. Mesonotum brown with a light yellow pollinosity. Pleura light brown. Halteres short, obscure yellow, knobs a very little darker. Legs with coxæ and trochanters concolorous with pleura; remainder of legs obscure yellow, the terminal tarsal segments infuscated. Wings with a strong yellow tinge, veins darker yellow. Venation: Vein 2d A strongly sinuous. Abdominal tergites brown, the caudal and lateral margins of segments a little brighter; sternites brownish black. Ovipositor with the tergal valves strongly upcurved.

Habitat.—Japan (Saghalien).

Holotype, female, Konuma, July 17, 1922 (*T. Esaki*).

Erioptera (Erioptera) flavohumeralis sp. nov.

Mesonotal prescutum yellow, with three conspicuous brown stripes; halteres obscure yellow; femora dark brown, bases broadly pale; wings tinged with brownish yellow.

Male, length, about 5.5 millimeters; wing, 5.7. Female, length, about 6 millimeters; wing, 6.2.

Rostrum and palpi black. Antennæ with the basal segment brownish black, the second segment pale brown; flagellum dark brown. Head pale. Pronotum obscure yellow, darker medially. Mesonotal prescutum yellow, with three conspicuous brown stripes, the humeral region broadly yellow; scutum yellow, lobes with brown centers; scutellum and postnotum obscure yellow, the latter darker posteriorly. Pleura ocherous, very sparsely pruinose; sternopleura darker. Halteres obscure yellow. Legs with coxæ yellow, fore coxæ darker basally; trochanters yellow; femora dark brown, bases broadly paler; tibiæ and basal segments of tarsi obscure yellow, the terminal segments darker.

Wings tinged with brownish yellow, cells beyond cord darker, especially near wing tip; veins brownish yellow. Venation: Vein 2d A strongly sinuous. Abdomen dark brown. Male hypopygium (Plate 2, fig. 21) with the outer dististyle slender, at apex dilated into a semicircular blade, before apex of which on the outer margin with a conspicuous erect spine. Gonapophyses widely separated at base, directed mesad, before tips slightly dilated and produced into acute blackened points.

Habitat.—Japan (Saghalien).

Holotype, male, Toyohara, July 19, 1922 (*T. Esaki*).

Allotopotype, female.

Erioptera (Erioptera) horii sp. nov.

General coloration light yellow; head silvery whitish; halteres with dark brown knobs.

Male, length, 4.5 to 4.7 millimeters; wing, 5.5. Female, length, 5.5 millimeters; wing, 5.6 to 5.8.

Rostrum yellow, palpi dark brown. Antennæ yellow, the terminal segments darkened, the basal segment sparsely pruinose. Head silvery white; eyes large. Pronotum white. Mesonotal prescutum pale ocherous yellow, unmarked, the lateral margins paler. Pleura whitish yellow. Halteres yellow, knobs conspicuously dark brown. Legs with coxæ and trochanters yellowish testaceous; remainder of legs yellow, the terminal tarsal segments darkened. Wings clear yellow, veins a little darker, with brownish yellow macrotrichiæ. Venation: Vein 2d A long and very strongly sinuous. Abdomen yellow. Male hypopygium (Plate 2, fig. 22) with the caudal mesal angle of each basistyle produced into a conical lobe; outer dististyle a slender black rod that tapers gradually to the acute apex; inner dististyle shorter, gently curved, beyond midlength on the outer margin with a long, erect spine; margin at apex produced into a flattened bi- or tridentate blackened blade. Gonapophyses small, relatively inconspicuous, the mesal edge blackened. Ovipositor with long, gently curved, slender valves, their margins smooth.

Habitat.—Japan (Saghalien and Hokkaido).

Holotype, male, Jozankei, August 19, 1922 (*T. Esaki*).

Allotopotype, female.

Paratype 1 male, Toyohara, Saghalien, July 13, 1922 (*T. Esaki*); 1 female, Toyohara, July 21, 1922 (*T. Esaki*); 1 female, Sapporo, Hokkaido, August 2, 1921 (*M. Hori*); 1 male, Sapporo, August 18, 1922 (*T. Esaki*); 1 female, Kamiotoineppu, August

24, 1922 (*T. Esaki*); 1 female, Abashiri, August 31, 1922 (*T. Esaki*).

This interesting species is named in honor of the collector of one of the paratype specimens, Mr. M. Hori.

Erioptera (Erioptera) orbitalis sp. nov.

General coloration reddish brown, the postnotum and pleura blue-gray pruinose; antennæ dark brown, the first flagellar segment obscure yellow; head brownish black with narrow silvery orbital lines; wings tinged with fulvous yellow.

Female, length, 5.3 millimeters; wing, 5.5.

Rostrum reddish brown, palpi dark brown. Antennæ with the scapal segments dark brown; first flagellar segment obscure yellow, the remaining segments of flagellum passing into brown. Head brownish black with a narrow silvery line adjoining the inner margin of eye, confluent on anterior part of vertex. Mesonotal prescutum reddish brown, postnotum pruinose. Pleura pale, conspicuously pale blue-gray pruinose. Halteres pale, knobs dark brown. Legs with coxæ and trochanters yellow, fore coxæ blue-gray pruinose; trochanters yellow; femora and tibiæ yellow; tarsi brownish yellow, the terminal tarsal segments passing into dark brown. Wings with a strong fulvous yellow tinge, veins darker. Venation: Vein 2d A strongly sinuous. Abdomen yellowish brown, sternites a little brighter. Ovipositor with the tergal valves long and very gently curved.

Habitat.—Japan (Hokkaido).

Holotype, female, Sapporo, August 17, 1922 (*T. Esaki*).

Erioptera (Acyphona) asymmetrica Alexander.

Erioptera asymmetrica ALEXANDER, Can. Ent. 45 (1913) 289, 290.

The following records are available in the present material: Hokkaido: Sapporo, August 17, 1922; Kamuikotan, August 22, 1922; Abashiri, August 31, 1922 (*T. Esaki*).

Erioptera (Acyphona) sachalina sp. nov.

Allied to *E. areolata* Siebke (northern Europe); general coloration pale brownish ocherous; knobs of halteres yellow; legs obscure yellow, tips of femora, tibiæ, and tarsi infuscated; male hypopygium with the intermediate chitinized lobe of dististyle simple.

Male, length, 2.6 millimeters; wing, 4 to 4.4. Female, length, 3.3 millimeters; wing, 5.5.

Rostrum and palpi dark brown. Antennæ with the basal segments light yellow, the flagellar segments beyond the basal one or two passing into light brown. Head light brown, sparsely pruinose. Mesonotum and pleura uniformly pale brownish ocherous. Halteres pale, knobs yellow. Legs with coxæ and trochanters ocherous; remainder of legs obscure yellow, tips of femora and tibiæ and the terminal tarsal segments faintly darkened. Wings with a grayish yellow tinge, base and cells C and Sc clearer yellow; veins pale brown. Venation: Cell 1st M_2 closed, very small as in the *areolata* group; basal deflection of Cu_1 slightly before fork of M; vein 2d A short and straight. Abdomen pale brownish ocherous. Male hypopygium with the ninth tergite (Plate 2, fig. 15) chitinized, the caudal margin with a broad, V-shaped notch, the lateral angles rounded; from beneath tergite on either side arises a broad plate (Plate 2, fig. 17) that is asymmetrically bifid, the mesal arm a short, blackened spine, directed mesad and nearly contiguous with its mate of the opposite side, separated therefrom by a small oval notch; the lateral arm is directed caudad into a long, blackened spine. Basistyle produced caudomesad into a long fleshy point; a single, very complex dististyle (Plate 2, fig. 19) near midlength of its mesal face, this consisting of a basal fleshy setiferous arm, and a tripartite flattened blade with the margins of all three parts chitinized, including a basal oval lobe, an intermediate simple spine, and a longer, curved, chitinized blade that runs out into a spine.

Habitat.—Japan (Saghalien).

Holotype, male, Shimizu, July 27, 1922 (*T. Esaki*).

Allotype, female, Toyohara, July 7, 1922 (*T. Esaki*).

Paratypes, 6 males and females, with the allotype, July 14 to 20, 1922 (*T. Esaki*).

Erioptera (Acyphona) yezoana sp. nov.

Male, length, about 3 millimeters; wing, 4.

Generally similar to *E.* (*A.*) *sachalina* sp. nov., differing as follows:

Antennæ longer, if bent backward extending at least to base of halteres. General coloration of head and thorax more pruinose, giving body a grayish ocherous cast. Wings with the basal section of R_2 perpendicular, subequal in length to r; cell 1st M_2 tending to be open by the atrophy of m. Male hypopygium with the lateral angles of tergite (Plate 2, fig. 16) rec-

tangular or acute; the median V-shaped notch more sinuous in outline, its point deeper; the plate arising from beneath tergite (Plate 2, fig. 18) appears as two long slender spines, directed caudad, the mesal spine about one-half the length of the lateral spine and slenderer. Dististyle (Plate 2, fig. 20) generally similar to the condition in *E. sachalina* but the basal fleshy setiferous arm is very short and stout; intermediate chitinized arm profoundly bifid; apical blade longer and slenderer.

Habitat.—Japan (Hokkaido).

Holotype, male, Shitakara, September 10, 1922 (*T. Esaki*).

Erioptera (Hoplolabis) asiatica Alexander.

Erioptera asiatica ALEXANDER, Ann. Ent. Soc. Am. 11 (1918) 447, 448.

The species had been previously known only from Honshiu. The present collection includes the following additional records:

Saghalien: Toyohara, July 17, 18, 1922 (T. Esaki); Hokkaido: Kamuikotan, August 17, 1922 (*T. Esaki*).

Genus **ORMOSIA** Rondani

Ormosia RONDANI, Dipt. Ital., Prodr. 1 (1856) 180.
Rhypholophus KOLENATI, Wien. Ent. Monatschr. 4 (1860) 393.

The extensive genus *Ormosia* is represented in the Esaki collection by two or three species, all but one being represented by female specimens only. As has been indicated in other papers, it is impossible to determine the female sex of many of the larger and more complex groups of crane flies.

Ormosia subdeviata sp. nov.

Allied to *O. deviata* Dietz (eastern North America); general coloration brown, the prescutal stripes confluent; pleura dark; r close to fork of R_{2+3}.

Male, length, about 3.5 millimeters; wing, 4.3.

Rostrum and palpi brown. Antennæ short, brown. Head brown. Mesonotal prescutum brown, the usual stripes confluent, the humeral region surrounding the pseudosutural foveæ ocherous; scutal lobes brown; scutellum and postnotum paler brown. Pleura dark brown, sparsely pruinose, with an indistinct paler longitudinal stripe. Halteres brown, stem with golden yellow setæ. Legs with coxæ and trochanters ocherous; femora light brownish yellow, becoming a little darker toward tips; tibiæ and tarsi brown, the terminal tarsal segments dark

brown. Wings subhyaline, stigma conspicuous but ill-defined, brown; veins dark brown. Venation: r immediately beyond base of R_2; veins R_2 and R_3 divergent; cell 1st M_2 open by the atrophy of the outer deflection of M_3; basal deflection of Cu_1 at fork M; anal veins strongly divergent. Abdomen dark brown, hypopygium somewhat paler. Male hypopygium of the same general structure as in the *deviata* group, the ninth tergite (the *apparent* sternite) being produced caudad into a very large, sheathlike structure that is profoundly bifid. Dististyles two, the outer one a little shorter than the inner, subglabrous. Gonapophyses acicular, as in the group.

Habitat.—Japan (Saghalien).

Holotype, male, Toyohara, July 23, 1922 (*T. Esaki*).

Genus **CHEILOTRICHIA** Rossi

Cheilotrichia ROSSI, Verz. Österreich. Dipt. (1848) 12.

It was a matter of great surprise to find in Esaki's Saghalien material a small series of the type species of this isolated monotypical genus. A critical comparison with numerous European specimens has failed to reveal any differences whatsoever.

Cheilotrichia imbuta (Meigen).

Erioptera imbuta MEIGEN, Syst. Beschr. 1 (1818) 114, pl. 4, fig. 8.

The following records for this handsome little fly are included in the present collection:

Saghalien: Konuma, July 22, 1922 (on a fungus); Shimizu, July 27, 1922; Manui, August 3, 1922 (*T. Esaki*).

The collector notes that the flies swarm in the evening.

Genus **HELOBIA** St. Fargeau

Helobia ST. FARGEAU, Encycl. Meth., Ins. 10 (1825) 585.
Symplecta MEIGEN, Syst. Beschr. 6 (1830) 282.

Helobia hybrida (Meigen).

Limnobia hybrida MEIGEN, Klass 1 (1804) 57.

A few specimens of this common and widespread species were included in the present material:

Saghalien: Toyohara, July 20, 21, 1922 (*T. Esaki*); Hokkaido: Sapporo, August 17, 1922; Jozankei, August 19, 1922; Abashiri, August 31, 1922 (*T. Esaki*).

Genus GNOPHOMYIA Osten Sacken

Gnophomyia OSTEN SACKEN, Proc. Acad. Nat. Sci. Phila. (1859) 223.

The only species included in the present collection is an undescribed form that is most closely related to the Nearctic *Gnophomyia tristissima* Osten Sacken, the genotype.

Gnophomyia tristis sp. nov.

General coloration black; halteres with knobs dirty white; wings with a strong fuscous tinge; stigma elongate-oval, dark brown.

Female, length, about 8.5 millimeters; wing, 6.8.

Rostrum and palpi black. Antennæ moderately elongate, black. Head black, the anterior part of vertex faintly pruinose. Thorax entirely dull black. Halteres dark brown, knobs dirty white. Legs with coxæ and trochanters dull black; remainder of legs brownish black. Wings with a strong fuscous tinge; stigma elongate-oval, dark brown; veins brownish black. Venation: Sc_1 ending just before fork of R_{2+3}, Sc_2 far from tip of Sc_1, the latter alone nearly as long as R_{2+3}; r on R_2 about its own length beyond fork of R_{2+3}; cell 1st M_2 elongate, only slightly widened distally; basal deflection of Cu_1 about one-half its length beyond fork of M. Abdomen black. Ovipositor with the valves long, the basal plate constricted.

Habitat.—Japan (Saghalien).

Holotype, female, Toyohara, July 21, 1922 (*T. Esaki*).

Genus GONOMYIA Meigen

Gonomyia MEIGEN, Syst. Beschr. 1 (1818) 146.

Three of the four subgenera were included in the present material, these being *Gonomyia* Meigen, *Ptilostena* Bergroth, and *Lipophleps* Bergroth.

Gonomyia (Gonomyia) superba Alexander.

Gonomyia superba ALEXANDER, Can. Ent. 45 (1914) 285, 286, pl. 3, fig. 14.

Two specimens from Abashiri, Hokkaido, August 31, 1922 (*T. Esaki*), were in the present collection.

Gonomyia (Ptilostena) subpruinosa sp. nov.

General coloration ash gray, mesonotal prescutum ash gray with two intermediate pale brown stripes; pleura pale brown with an obscure yellow longitudinal stripe; wings with a yellowish tinge; stigma ill defined, brown; Sc_1 extending to a short distance beyond origin of Rs; male hypopygium complex in structure.

Male, length, 4.5 millimeters; wing, 4.5 to 5. Female, length, 5 millimeters; wing, 5.5.

Rostrum and palpi dark brown. Antennæ with scape and basal segments of flagellum light yellow; remainder of flagellum dark brown. Head ash gray. Pronotum and mesonotum light ash gray, prescutum with two intermediate pale brown stripes, pseudosutural foveæ large, pale brown, reaching margin of intermediate brown stripe; humeral region and lateral margins narrowly obscure yellow; scutum ash gray, lobes slightly darkened; scutellum brown; postnotum ash gray, the posterior margin darkened. Pleura pale brown, with an obscure yellow, longitudinal stripe extending from behind fore coxæ to beneath halteres, this stripe sometimes less distinct than in the typical form. Halteres pale. Legs with coxæ and trochanters pale brown; femora and tibiæ brownish testaceous, tips slightly darkened, tarsi dark brown. Wings with a yellowish tinge; stigma subcircular in outline, brown, ill defined; veins pale brown, cord and basal deflection of Cu_1 conspicuously dark brown. Venation: Sc_1 ending a short distance beyond origin of Rs; Rs a little shorter than in *G. pruinosa* Alexander (Formosa). Abdomen dark brown, the caudal margins of segments narrowly pale yellow; sternites and hypopygium obscure yellow. Male hypopygium very complex in structure; lateral apical angle of basistyle produced caudad into a moderately elongate, fleshy lobe; mesal apical angle slightly produced; dististyles four in number, more or less connected basally; the longest style a conspicuous flattened blade, near base on the mesal face sending off a curved arm that is directed caudad, expanded into a blackened head at apex, the mesal end of head a straight spine, the lateral end a longer, strongly curved spine; the next longest style is a slender blade, the distal two-thirds blackened; at about two-thirds the length on the mesal face with a short, sharp spine, apex beyond this sinuous and gradually narrowed to the acute apex; the other styles are a short, straight, blackened spine and a somewhat longer, straight, fleshy, sparsely setiferous lobe, both of these styles directed caudad. Ædeagus fleshy, the short apical points decurved, the dorsal surface setiferous.

Habitat.—Japan (Hokkaido and Honshiu).

Holotype, male, Jozankei, Hokkaido, August 19, 1922 (*T. Esaki*).

Allotopotype, female.

Paratopotypes, 5 males and females; paratypes, 4 males and females, Koiwai Farm, near Morioka, northern Honshiu, August 15 to September 2, 1920 (*C. Teranishi*).

Gonomyia (Ptilostena) sachalinensis sp. nov.

Female, length, 5.2 millimeters; wing, 6.5.

Generally similar to *G. (P.) subpruinosa* sp. nov., differing as follows:

Size larger. Head light yellow. Pronotum yellow. Mesonotal prescutum with disk almost covered by four confluent brownish gray stripes, the humeral region and broad lateral margins of sclerites pale yellow; mediotergite of postnotum dark brown, a small area at each anterolateral angle yellow. The yellow pleural stripe broader and more distinct. Wings with stigma lacking; veins all uniformly pale brown. Venation: Sc long, Sc_1 ending opposite midlength of the long, gently arcuated Rs, Sc_2 opposite origin of Rs; R_3 long, running generally parallel to R_{4+5}, cell R_3 at wing margin less than one-half cell R_2; cell 2d M_2 deep, about twice its petiole.

Habitat.—Japan (Saghalien).

Holotype, female, Toyohara, July 24, 1922 (*T. Esaki*).

Gonomyia (Lipophleps) flavo costalis sp. nov.

General coloration dark brown and yellow; pleura with a longitudinal yellowish white or white stripe; wings pale brown, variegated with subhyaline, the costal margin light yellow; Sc short, cell 1st M_2 closed, basal deflection of Cu_1 at its fork.

Male, length, 3.3 millimeters; wing, 3.5. Female, length, 3.8 millimeters; wing, 3.7.

Male.—Rostrum and palpi black. Antennæ with the basal segments orange, flagellum black, segments with elongate verticils. Head yellow, center of vertex with a brown spot. Pronotum sulphur yellow. Mesonotal prescutum largely covered by three confluent grayish brown stripes, the lateral margin narrowly sulphur yellow; pseudosutural foveæ surrounded by an ocherous triangle; scutum grayish brown; scutellum and postnotum yellow, the caudal margin of the latter darkened. Pleura brown with a conspicuous, yellowish white longitudinal stripe passing beneath base of halteres; sternopleura plumbeous. Halteres pale, knobs sulphur yellow. Legs with fore coxæ sulphur yellow, the other coxæ ocherous yellow; trochanters ocherous; femora obscure brownish yellow with a subterminal brown ring; tibiæ and tarsi pale brown, the terminal tarsal segments darker. Wings faintly tinged with brown, handsomely variegated with subhyaline spots and blotches; cells C and Sc light yellow, more whitish basally; stigma oval, dark brown; veins dark brown; the subhyaline areas include the prearcular region; spots before and beyond stigma; a transverse band before cord, cell 1st M_2, and smaller and more diffuse areas elsewhere on disk; veins pale brown. Venation: Sc short, Sc_1 ending a distance before origin of Rs that is nearly as long as latter; cell 1st M_2 closed; basal deflection of Cu_1 at fork of M. Abdomen dark brown, the caudal margins of segments narrowly yellow. Hypopygium obscure reddish brown, the chitinized dististyles black.

Female.—Generally similar to male, differing as follows: Lateral margins of prescutum narrower, humeral region darker. Pale pleural stripe narrower and nearly white. Halteres with face of knobs faintly darkened. Brown subterminal ring on femora darker, preceded and followed by yellowish rings. Pale rings on abdominal segments narrower and more whitish.

Habitat.—Japan (Hokkaido).

Holotype, male, Jozankei, August 19, 1922 (*T. Esaki*).

Allotopotype, female.

Paratypes, 1 female, Kutchan, July 9, 1922 (*T. Esaki*), at light of train; 1 female, Shikaripetsu, August 26, 1922 (*T. Esaki*).

Genus PARATROPESA Schiner

Paratropesa SCHINER, Verh. Zool. bot. Ges. Wien 16 (1866) 932.

The restricted genus *Paratropesa* now includes seven species, all from Tropical America. It was a great surprise to find in the present collection a perfectly typical member of this otherwise characteristically Neotropical group.

Paratropesa esakii sp. nov.

General coloration shiny black and yellow; rostrum nearly as long as head; halteres black, knobs orange yellow; femora yellow, the enlarged tips black; wings faintly tinged with yellow, sparsely variegated with brown.

Male, length, 6 millimeters; wing, 7.5. Female, length, 6.5 millimeters; wing, 6.

Rostrum nearly as long as head, black; palpi black. Antennæ dark brown; second scapal segment and base of first flagellar segment obscure yellow or yellowish brown. Head black, the anterior part of vertex sparsely pruinose; front yellow. Pronotum shiny yellow, narrowly darkened medially. Mesonotal prescutum shiny yellow, with three confluent, shiny black stripes that cover the entire sclerite except a small median area at suture, conspicuous triangular humeral areas and small spots at lateral ends of suture; scutum light yellow, each lobe almost covered by a shiny black area that is confluent with the prescutal marking; median sclerite of scutellum yellow; postnotum black. Pleura yellow; a conspicuous circular black spot on the dorsal pleurites ventro-cephalad of wing root; sternopleura faintly darkened. Halteres black, knobs conspicuously orange yellow. Legs with coxæ and trochanters yellow; femora obscure yellow, tips swollen and extensively blackened, these broadest on fore femora where about two-fifths of segment is included, narrowest on the posterior femora where the distal fifth is blackened; tibiæ brownish yellow, base narrowly, tip more broadly blackened; metatarsi black, base paler; remainder of tarsi black. Wings faintly tinged with yellow, base brighter; stigma small, suboval, dark brown; narrow brown seams at Sc_2, along cord and outer end of cell 1st M_2, along R_2, at tips of longitudinal veins and at apex of wing; veins black. Venation: Sc_1 ending nearly opposite midlength of Rs, Sc_2 a short distance beyond origin of Rs; R_2 about one-third R_3; cell 1st M_2 elongate, gently widened distally; basal deflection of Cu_1 about one-half its length beyond fork of M. Abdomen black, the incisures of tergites yellow, this including the extreme base and apex of each segment; hypopygium black; sternum yellow, sternites 2 to 4 with a blackish subterminal ring; segment 5 black, hairy as in this group. In female, abdomen black, the caudal margins of segments narrowly yellow; tergal valves of ovipositor obscure orange.

Habitat.—Japan (Hokkaido).

Holotype, male, Maruyama, August 17, 1922 (*T. Esaki*).

Allotype, female, Jozankei, August 19, 1922 (*T. Esaki*).

Paratopotypes, 3 males; paratype, 1 male, Abashiri, August 31, 1922 (*T. Esaki*).

The discovery of a species of *Paratropesa* in Japan is of exceptional interest. The present species is a true *Paratropesa*,

the other Old World species hitherto placed in this genus being more correctly referable to *Gymnastes* Brunetti. This handsome little fly is named in honor of the collector, Dr. Teiso Esaki, who has done much toward making known the interesting tipulid fauna of Japan.

Genus TEUCHOLABIS Osten Sacken

Teucholabis OSTEN SACKEN, Proc. Acad. Nat. Sci. Phila. (1859) 222.

The genus *Teucholabis* includes more than fifty species, the great majority of which are from Tropical America. A few species occur in the Old World, mostly in the Oriental Region. The present species, *Teucholabis yezoensis* sp. nov., is the most northerly species so far discovered, with the possible exception of the Nearctic *T. complexa* Osten Sacken.

Teucholabis yezoensis sp. nov.

General coloration shiny yellow and black; halteres with knobs orange yellow; legs black, the femoral bases yellow; wings subhyaline, stigma small, oval, brown; cell 1st M_2 long and narrow.

Male, length, 7 millimeters; wing, 6.2 to 6.4. Female, length, 8.2 millimeters; wing, 6.3 to 6.4.

Rostrum about as long as head, black; palpi black. Antennæ black, the basal segments paler. Head black, sparsely pruinose anteriorly. Pronotum shiny yellow, indistinctly darkened medially. Mesonotal prescutum shiny yellow with three confluent shiny black stripes that cover the entire sclerite excepting a small median area at suture, the lateral ends of suture, and larger, triangular humeral areas; scutum yellow, the lateral margins of lobes shiny black; scutellum honey yellow; postnotum black. Pleura yellow; a small and indistinct shiny black area on the dorsopleural region immediately cephalad of the lateral ends of suture. Halteres black, knobs orange yellow. Legs with coxæ and trochanters yellow, femora black, bases broadly and conspicuously yellow, narrowest on forelegs where a little less than one-half of the segment is included, broadest on hind legs where about two-thirds of segment is included; tibiæ pale brown, blackish at base and apex; basitarsi brown, tips and remainder of tarsi black. Wings subhyaline; stigma small, oval, brown; veins dark brown. Venation: Sc_1 ending before or near midlength of Rs; Sc_2 a short distance beyond origin of Rs; r about its own length from

tip of R_1 and a short distance beyond fork of Rs; cell 1st M_2 long and narrow, gently widened distally, a little longer than vein M_3 beyond it; basal deflection of Cu_1 about one-half to one-third its length beyond fork of M. Abdomen black, incisures of tergites rather broadly yellowish; sternites yellow, faintly darkened laterally; the fifth sternite black and hairy; hypopygium brownish black.

Habitat.—Japan (Hokkaido).

Holotype, male, Shikaripetsu, August 26, 1922 (*T. Esaki*).

Allotopotype, female.

Paratopotypes, 1 male and 1 female.

Teucholabis yezoensis bears a striking superficial resemblance to *Paratropesa esakii* sp. nov.

Genus NEOLIMNOPHILA Alexander

Neolimnophila ALEXANDER, Proc. Calif. Acad. Sci. (4) 10 (1920) 37, 38.

The genus *Neolimnophila* was erected for the supposed Hexatomine *Limnophila ultima* Osten Sacken. Recent studies on the tribe Cladurariа have indicated that the present group is more properly referable to the Eriopterini than to the Hexatomini, and that the closest relative of the present group is *Crypteria* Bergroth.

Neolimnophila ultima (Osten Sacken) var.

Limnophila ultima OSTEN SACKEN, Proc. Acad. Nat. Sci. Phila. (1859) 238, pl. 4, fig. 26.

Two females, from Toyohara, Saghalien, July 17, 1922 (*T. Esaki*), are referred to this Nearctic species, as a variety.

Genus CONOSIA van der Wulp

Conosia VAN DER WULP, Tijdsch. v. Ent. 23 (1880) 159.

The genotype *Conosia irrorata* (Wiedemann) has a vast range over the tropical and subtropical regions of the Old World. In the present collection it is represented by material from Hokkaido, which seems to be the most northern station so far discovered.

Conosia irrorata (Wiedeman).

Limnobia irrorata WIEDEMANN, Aussereur. zweifl. Ins. 1 (1828) 574.

One female from Kamuikotan, Hokkaido, August 22, 1922 (*T. Esaki*).

Subfamily CYLINDROTOMINÆ

Genus CYLINDROTOMA Macquart

Cylindrotoma MACQUART, Hist. Nat. Ins., Dipt. (1834) 107.

Cylindrotoma japonica Alexander.

Cylindrotoma japonica ALEXANDER, Ann. Ent. Soc. Am. 12 (1919) 344, 345.

This was the only member of the subfamily taken by Doctor Esaki upon his northern trip. The fly was known hitherto only from Honshiu. The following additional records are available: Saghalien: Takinosawa, July 26, 1922; Shimizu, July 27, 1922. Hokkaido: Kamiotoineppu, August 24, 1922; Shikaripetsu, August 26, 1922; Akan, September 3, 1922.

Genus NESOPEZA Alexander

Nesopeza ALEXANDER, Can. Ent. 46 (1914) 157.

Nesopeza geniculata Alexander.

Nesopeza geniculata ALEXANDER, Ann. Ent. Soc. Am. 11 (1918) 448, 449.

One male, Abashiri, Hokkaido, August 30, 1922 (*T. Esaki*). The species had been recorded from Honshiu and Kiushiu.

Genus OROPEZA Needham

Oropeza NEEDHAM, 23d Rept. N. Y. St. Ent. for 1907 (1908) 211.

The genus *Oropeza* furnishes a strong point of evidence regarding the close relationship existing between the fauna and flora of Japan and those of eastern North America, well shown in many groups of animals and plants. The genus, as at present known, includes eight American species, all from the eastern United States and Canada, and three additional species from Japan, one occurring in Formosa.

Oropeza satsuma Alexander.

Oropeza satsuma ALEXANDER, Journ. N. Y. Ent. Soc. 26 (1918) 67.

Saghalien: Toyohara, July 16, 1922 (*T. Esaki*). Hokkaido: Sapporo, August 21, 1922; Kamiotoineppu, August 23, 1922 (*T. Esaki*).

Genus TANYPTERA Latreille

Tanyptera LATREILLE, Hist. Nat. Crust. et Ins. 14 (1805) 286.
Xiphura BRULLE, Ann. Soc. Ent. France 1 (1832) 206.

Tanyptera jozana (Matsumura) var.

Xiphusa jozana MATSUMURA, Thous. Ins. Japan, Add. 2 (1916) 450, 451, pl. 24, fig. 13.

Saghalien: Toyohara, July 13 to 16, 1922 (*T. Esaki*); Konuma, July 22, 1922 (*T. Esaki*).

The typical variety was described from Hokkaido, and is now known also from Honshiu. The present form is presumably the one recorded by Matsumura from Solowiyofka, Saghalien (1911: 62) under the name *Xiphura macra* Loew, which is now considered a synonym of *Tanyptera gracilis* (Portschinsky).

Genus CTENOPHORA Meigen

Ctenophora MEIGEN, Illiger's Mag. 2 (1803) 263.

Ctenophora biguttata Matsumura.

Ctenophora biguttata MATSUMURA, Thous. Ins. Japan, Add. 2 (1916) 454, 455, pl. 24, fig. 16.

One female, Manui, Saghalien, August 3, 1922 (*T. Esaki*).

Known hitherto only from the vicinity of Sapporo (the type locality) and from northern Teshio, Hokkaido.

Genus NEPHROTOMA Meigen

Nephrotoma MEIGEN, Illiger's Mag. 2 (1803) 262.
Pachyrrhina MACQUART, Hist. Nat. Ins., Dipt. 1 (1834) 88.

The genus *Nephrotoma* is abundantly represented in all parts of the Japanese Empire. The present collection included eight species.

Nephrotoma esakii sp. nov.

General coloration shiny black; head orange above; knobs of halteres sulphur yellow; legs with fore femora largely black; tibiæ yellow, tips narrowly dark brown; wings with a yellowish tinge, apex narrowly seamed with brown; valves of ovipositor orange, relatively short and small.

Female, length, about 10 millimeters; wing, 12.

Frontal prolongation of head, palpi, and mouth parts black. Antennæ with scape and basal segment of flagellum orange yellow; intermediate flagellar segments with bases paler than apices; terminal segments of antennæ dark brown. Head orange yellow, the occipital band shiny black; genæ and beneath dull black. Pronotum black. Mesonotal prescutum shiny black, the usual interspaces very narrowly yellow, these capillary lines attaining suture but not reaching the anterior end of sclerite; scutum yellow, lobes largely black; scutellum and

postnotum black. Pleura black, the dorsopleural membrane buffy; a very obscure, paler brown area before root of halteres. Halteres brown, the knobs conspicuously sulphur yellow. Legs with coxæ black; trochanters yellow; femora yellow, tips broadly blackened, fore femora black with the exception of narrow, obscure yellow bases; tibiæ abruptly yellow, tips narrowly dark brownish black; basitarsi brownish yellow, passing into black; remainder of tarsi black. Wings strongly tinged with yellow, base and cells C and Sc more saturated yellow; stigma oval, pale brown; wing apex very narrowly margined with dark brown; veins dark brown, very narrowly seamed with brown. Venation: Rs only a little longer than the basal deflection of R_{4+5}; cell M_1 rather broadly sessile; fusion of Cu_1 and M rather extensive, ending at fork of M. Abdomen black, the intermediate segments with a large, obscure yellow area on either side of the capillary median black stripe; segments 5 to 8 shiny black. Ovipositor with the valves relatively short and small, obscure orange. The somewhat similar *Nephrotoma stygia* Alexander has the valves of the ovipositor of normal length.

Habitat.—Japan (Hokkaido).

Holotype, female, Kamiotoineppu, August 25, 1922 (*T. Esaki*).

This handsome species is named in honor of the collector, Dr. Teiso Esaki, to whom we are indebted for almost our sole knowledge of the tipulid fauna of northern Hokkaido and Saghalien.

Nephrotoma dorsalis sachalina subsp. nov.

Male, length, about 11 millimeters; wing, 12.8 to 13.

Generally similar to *N. dorsalis* Meigen (Europe), differing as follows:

Lateral margins of pronotal scutum conspicuously blackened. Femoral apices more extensively infuscated. Brown cloud on basal deflection of R_{4+5} and r-m more extensive. Male hypopygium largely black instead of obscure brownish yellow; outer dististyle near midlength produced into a very slender, attenuate point, slenderer than in typical *dorsalis*.

Habitat.—Japan (Saghalien).

Holotype, male, Toyohara, July 16, 1922 (*T. Esaki*).

Paratopotype, male.

Nephrotoma hirsuticauda sp. nov.

General coloration orange, prescutum and scutum with black stripes; wings tinged with pale yellow, base and cell Sc brighter

yellow; abdomen orange, the lateral margins of tergites interruptedly darkened; eighth sternite of male hypopygium large, deeply incised medially, incision clothed with dense, long, yellow setae.

Male, length, 10 millimeters; wing, 9 to 9.2. Female, length, 13 millimeters; wing, 11.4.

Frontal prolongation of head obscure yellow, nasus darker; mouth parts and palpi pale brown. Antennæ rather short, if bent backward not extending far beyond root of wing; basal three segments obscure orange, remainder of organ black. Head orange, the occipital band conspicuous, brown. Pronotum obscure yellow. Mesonotal prescutum shiny yellow with three black stripes; in the type, these stripes are much paler, except at the anterior ends; lateral stripes very strongly and conspicuously outcurved, scutal lobes conspicuously marked with black, in the type with only the ends of these marks blackened; scutellum orange testaceous; postnotum orange. Pleura obscure orange, indistinctly variegated with obscure yellow, this including a conspicuous mark between bases of wings and halteres. Halteres pale brown, apices of knobs yellow. Legs with coxæ and trochanters obscure yellow; femora and tibiæ pale brown, tips narrowly blackened; tarsi brownish black. Wings tinged with pale yellow, base and cell Sc brighter yellow; stigma small, pale brown; veins dark brown. Venation: Rs short, in alignment with deflection of R_{4+5}, shorter than R_{2+3}; r-m short; cell M_1 narrowly sessile. Abdomen orange, the lateral margins of tergites with brown markings, more or less interrupted at base of segments; in the Mount Moiwa paratype, this coloration extends across the caudal margin of tergite 7; hypopygium orange. Male hypopygium obliquely truncated, the ventral surface of the extensive eighth sternite with conspicuous long yellow setæ, these decussate across a deep median incision; lobes of ninth sternite likewise with shorter but conspicuous yellow setæ.

Habitat.—Japan (Saghalien and Hokkaido).

Holotype, male, Sapporo, Hokkaido, July, 1921 (*S. Kuwayama*).

Allotype, female, Toyohara, Saghalien, July 20, 1922 (*T. Esaki*).

Paratypes, 1 male, Mount Moiwa, near Sapporo, Hokkaido, July 15, 1921 (*M. Hori*); 3 males and females, with the allotype, July 20 to 23, 1922 (*T. Esaki*).

Nephrotoma hirsuticauda somewhat resembles *N. geminata* Alexander (Honshiu), differing in the coloration and structure of the male hypopygium.

Nephrotoma minuticornis Alexander.

Nephrotoma minuticornis ALEXANDER, Ann. Ent. Soc. Am. 14 (1921) 134.

The type locality is Sapporo. The present collection includes the following material.

Saghalien: Toyohara, July 16, 1922 (*T. Esaki*). Hokkaido: Sapporo, August 17, 1922; Jozankei, August 19, 1922; Kamuikotan, August 22, 1922; Kamiotoineppu, August 24, 1922; Kamiokoppe, August 27, 1922; Setoughi, August 28, 1922; Abashiri, August 31, 1922; Tsubetsu, September 1, 1922; Ponkikin, September 2, 1922 (*T. Esaki*).

Nephrotoma aculeata atricauda subsp. nov.

Male, length, 12 millimeters; wing, 13. Female, length, 14 millimeters; wing, 13.5.

Generally similar to typical *aculeata* (Loew) of Europe, differing as follows: Body heavier, including hypopygium. Male hypopygium shiny black, appendages larger and more prominent. Aculeate spine on eighth sternite stouter and more strongly curved.

Habitat.—Japan (Saghalien).

Holotype, male, Toyohara, August 8, 1922 (*T. Esaki*).

Allotopotype, female.

Paratopotype, male.

Nephrotoma cornicina (Linnæus) var.

Tipula cornicina LINNÆUS, Syst. Nat., ed. 10 (1758) 586.

This species had already been recorded from Honshiu. Doctor Esaki's material adds the following records of distribution: Saghalien: Maoka, July 29, 1922 (*T. Esaki*). Hokkaido: Sapporo, July 10 to August 16, 1922; Jozankei, August 19, 1922; Kamiotoineppu, August 24, 1922; Abashiri, August 31, 1922 (*T. Esaki*).

Nephrotoma lamellata (Riedel) var.

I can detect no essential differences between the Japanese specimens and Riedel's description of this European species. The present collection includes the following records:

Saghalien: Shimizu, July 27, 1922; Maoka, July 28; 1922; Todorokitôge, August 2, 1922 (*T. Esaki*).

Nephrotoma parvirostra sp. nov.

General coloration yellow; occiptal band very small to subobsolete; lateral ends of transverse suture blackened; abdomen orange, tergites with an interrupted median stripe; eighth sternite of male hypopygium with a small, prow-shaped median lobe.

Male, length, 11 to 11.5 millimeters; wing, 11 to 11.5.

Frontal prolongation of head yellow, the elongate nasus brown; palpi pale brown, the terminal segment yellow, narrowly tipped with brown. Antennæ rather short, if bent backward extending to beyond wing root; first scapal segment bright yellow; segments 2 and 3 light brown; remaining segments dark brownish black, covered with a dense microscopic pubescence. Head orange, the vertical tubercle light sulphur yellow; occipital band very small to subobsolete, pale brown, the anterior end truncate. Pronotum sulphur yellow. Mesonotum light yellow, prescutum with three black stripes, the lateral stripes with a dark spot at their anterior ends, producing the appearance of being outcurved; scutal lobes similar, very extensively marked with black, the color following along suture to wing root; scutellum pale brownish testaceous; postnotum whitish yellow, the caudal margin of the median sclerite with two pale brown areas. Pleura pale reddish brown, variegated with pale yellow, the latter color including a conspicuous area on the lateral sclerites of postnotum between bases of wings and halteres. Halteres pale brown, base of stem and knobs yellow. Legs with coxæ and trochanters yellow; femora pale brown; tibiæ pale brown, narrowly tipped with dark brown; tarsi dark brown. Wings with a pale brown tinge; stigma rather light brown; a very indistinct seam along the basal deflection of R_{4+5} and r-m; veins dark brownish black. Venation: Cell M_1 subsessile or very short-petiolate. Abdomen obscure orange, tergites with a median series of black areas on the posterior half of tergites 2 to 6; tergite 7 more extensively blackened; tergites 8 and 9 and hypopygium orange; eighth sternite black on basal half. Male hypopygium with the median portion of the caudal margin of the eighth sternite produced into a small, prow-shaped lobe, this very compressed and covered with an appressed yellow pubescence, directed caudad, tip ventrad.

Habitat.—Japan (Hokkaido).

Holotype, male, Sapporo (*M. Hori*).

Paratopotype, male, July 25, 1921 (*S. Kuwayama*); paratypes, male, Shikaripetsu, August 26, 1922 (*T. Esaki*); male, Kamiokoppe, August 27, 1922 (*T. Esaki*).

Genus TIPULA Linnæus

Tipula LINNAEUS, Syst. Nat. ed. 10 (1758) 585.
Nippotipula MATSUMURA, Thous. Ins. Japan, Add. 2 (1916) 457, 458.
Platytipula MATSUMURA, Thous. Ins. Japan, Add. 2 (1916) 459.
Yamatotipula MATSUMURA, Thous. Ins. Japan, Add. 2 (1916) 461, 462.
Togotipula MATSUMURA, Thous. Ins. Japan, Add. 2 (1916) 465.

The great genus *Tipula* is abundantly represented in the Japanese Empire. The present collection included representatives of eighteen species, seven of which are considered as being undescribed.

Tipula coquilletti Enderlein.

Tipula nubifera COQUILLET, Proc. U. S. Nat. Mus. 21 (1898) 305; preoccupied by *Tipula nubifera* van der Wulp (1881).
Tipula coquilletti ENDERLEIN, Zool. Jahrb., Syst. 32 (1912) 7.

This is the largest and handsomest species of the genus in Japan. It ranges from Saghalien southward to the mountains of Taiwan. The Esaki material includes the following:

Saghalien: Kiminai, August 12, 1922. Hokkaido: Kamiokoppe, August 27, 1922; Panketo, September 6, 1922; Maruyama, September 17, 1922.

Tipula moiwana (Matsumura).

Platytipula moiwana MATSUMURA, Thous. Ins. Japan, Add. 2 (1916) 458, 459, pl. 25, fig. 2.

This beautiful late summer and autumnal species bears a resemblance to the Nearctic *T. ultima* Alexander. It was described from Mount Moiwa and other stations near Sapporo. Doctor Esaki's collections include the following records:

Hokkaido: Kamiotoineppu, August 25, 1922; Shikaripetsu, August 26, 1922; Kamiokoppe, August 27, 1922; Abashiri, August 31, 1922; Akan, September 4 to 7, 1922; Sapporo, September 26, 1922.

Tipula nova Walker.

Tipula nova WALKER, List Dipt. Brit. Mus. 1 (1848) 71.
Yamatotipula nohirae MATSUMURA, Thous. Ins. Japan, Add. 2 (1916) 461, pl. 25, fig. 4.

This species has a very wide range over eastern and southern Asia. Doctor Esaki secured the species in two places in

Hokkaido: Kamiotoineppu, August 25, 1922; Shitakara, September 10, 1922.

Tipula variicornis Schummel.

Tipula variicornis SCHUMMEL, Beitr. zur Entomol. 3 (1833) 99, pl. 3, figs. 2, 3.

Tipula annulicornis MEIGEN, Syst. Beschr. 6 (1830) 289, pl. 65, fig. 9; preoccupied by *T. annulicornis* Say (1829).

This familiar European species was taken by Doctor Esaki at Toyohara, Saghalien, July 13 to 21, 1922. It had previously been recorded from Tonnaitcha, Saghalien, by Matsumura (1911) under the name *Pachyrrhina annulicornis* Meigen.

Tipula latemarginata Alexander.

Tipula latemarginata ALEXANDER, Ann. Ent. Soc. Am. 14 (1921) 128, 129.

This species is related to *T. marginata* Meigen of Europe. Some of the Hokkaido specimens recorded below are larger and with a heavier wing pattern than in typical examples, but undoubtedly belong here. The following material was secured by Doctor Esaki:

Saghalien: Konuma, July 17, 1922; Toyohara, July 25, 1922; Takinosawa, July 26, 1922; Shimizu, July 27, 1922; Manui, August 3, 1922; Odasam, August 5, 1922; Kiminai, August 12, 1922. Hokkaido: Maruyama, August 17, 1922; Jozankei, August 19, 1922; Kamuikotan, August 23, 1922; Kamiotoineppu, August 24, 1922; Shikaripetsu, August 26, 1922; Abashiri, August 31, 1922; Ponkikin, September 2, 1922.

Tipula fumida sp. nov.

General coloration gray, prescutum with three dark brown stripes; wings strongly tinged with brown, with obliterative areas before stigma and across base of cell 1st M_2; male hypopygium with the caudal margin of the ninth tergite produced into a blunt median lobe, apex of which is blackened and feebly bilobed.

Male, length, 12 millimeters; wing, 14.5.

Frontal prolongation of head obscure brownish yellow, light gray above; nasus elongate; palpi brownish black. Antennæ rather short, scape and two basal segments of flagellum brown, the terminal flagellar segments darker brown to almost black. Head dark gray, the median area darker. Pronotum dark gray, the scutellar angles light yellow. Mesonotal prescutum gray

with three dark brown stripes, the median stripe split by a capillary dark brown vitta; scutellum and postnotum dark brownish gray. Pleura gray, darker on the anterior pleurites; dorsopleural membrane buffy. Halteres light brown. Legs with coxæ pale; trochanters obscure yellow; femora and tibiæ brownish yellow, tips narrowly but conspicuously blackened, this amount subequal on all legs; tarsi black, basitarsi paler proximally. Wings strongly tinged with brown, base more yellowish; stigma slightly darker brown; conspicuous obliterative areas before stigma and across base of cell 1st M_2; veins dark brown. Venation: Rs long, more than twice R_{2+3}; R_2 entire; r relatively short; cell 1st M_2 gently narrowed distally; petiole of cell M_1 longer than m; m-cu at about one-fifth the length of cell 1st M_2; cell 2d A relatively narrow. Abdominal tergites obscure yellow, on either side with a broad, conspicuous, dark stripe, the lateral margins and median area broadly of ground color; caudal margins of segments narrowly pale; sternites dark brown, the terminal segments more pruinose; caudal margins of sternites narrowly ringed with pale; hypopygium rather pale. Male hypopygium with the caudal margin of the ninth tergite produced into a median lobe as in *T. latemarginata* Alexander and allies, apex feebly bilobed, blackened. Outer dististyle a pale, flattened lobe. Eighth sternite unarmed.

Habitat.—Japan (Hokkaido).

Holotype, male, Kushiro, September 11, 1922 (*T. Esaki*).

Tipula bipenicillata sp. nov.

Male, length, 16 to 17 millimeters; wing, 17 to 18. Female, length, 22 millimeters; wing, 18.

Rather closely resembling *T. saitamæ* Alexander, differing in the details of coloration and the structure of the male hypopygium.

Femoral tips conspicuously and broadly dark brown; tibial apices extensively blackened. Wings more grayish; cell Sc and stigma infuscated; obliterative areas passing from cell 1st R_1 before stigma into cell 1st M_2. Abdomen with segments 6 to 9 black, the caudal margins of segments narrow, the lateral margins of tergites more broadly pale. Male hypopygium with the caudal margin of the eighth sternite unarmed except for a conspicuous pencil or rather short golden setæ on either side.

Habitat.—Japan (Saghalien).

Holotype, male, Toyohara, July 23, 1922 (*T. Esaki*).

Allotype, female, Konuma, July 21, 1922 (*T. Esaki*).

Paratopotype, male, July 25, 1922; paratypes, 2 males, with the allotype; 1 male, Shimizu, July 27, 1922 (*T. Esaki*).

Tipula saitamæ Alexander.

Tipula saitamæ ALEXANDER, Trans. Amer. Ent. Soc. 46 (1920) 21, 22.

One male, Abashiri, Hokkaido, August 30, 1922 (*T. Esaki*).

Tipula insulicola fuscicauda subsp. nov.

Male, length, 10 millimeters; wing, 12.5. Female, length, 11 to 12 millimeters; wing, 11.5 to 12.

Close to the typical subspecies, differing in the larger and stouter hypopygium of the male which is conspicuously brownish black, the longer median process of the ninth tergite yellow. Wing membrane more grayish yellow.

Habitat.—Japan (Saghalien).

Holotype, male, Manui, August 3, 1922 (*T. Esaki*).

Allotopotype, female.

Paratypes, 1 male, Toyohara, July 21, 1922 (*T. Esaki*), at honey bait trap; 2 females, July 25, 1922 (*T. Esaki*).

Tipula nipponensis Alexander.

Tipula nipponensis ALEXANDER, Can. Ent. 46 (1914) 236, 237.

Saghalien: Toyohara, July 21, 1922, at honey bait trap; Konuma, July 21, 1922; Takinosawa, July 26, 1922; Nodasam, July 30, 1922 (*T. Esaki*). Hokkaido: Kamiotoineppu, August 23, 24, 1922 (*T. Esaki*).

The radial sector is shorter than in the type but the species is almost certainly identical.

Tipula westwoodiana sp. nov.

Size large (wing, over 25 millimeters); general coloration gray, prescutum with four brown stripes; wings with a strong yellowish tinge, base and cells C and Sc more saturated; stigma brown; abdominal tergites obscure yellow with two sublateral brown stripes on either side.

Female (?), length of wing, 26.8 millimeters.

Frontal prolongation of head dark; nasus elongate; palpi with basal two segments black, the terminal two yellow, with the extreme tip of the last darkened. Antennæ with the scape yellow, the flagellar segments brown. Head dark, sparsely pruinose; vertex flattened, the usual tubercle represented only by a tiny protuberence behind each antennal fossa. Mesonotal prescutum dull gray with four brown stripes; humeral triangle

reddish brown; scutum light gray, each lobe with a circular brown mark; scutellum with the median lobe dark, dusted with gray, the lateral lobes variegated with pale; postnotum with mediotergite black, dusted with gray. Pleura dark brown, discolored in type, presumably gray pruinose in fresh specimens; pleurotergite with a yellowish semicircle surrounding root of halteres. Halteres brownish yellow. Legs with coxæ dark, presumably pruinose in fresh specimens, apices paler; trochanters obscure yellow; femora obscure yellow basally, tips conspicuously blackened, on forelegs including the distal two-thirds, on the posterior femora only the broad tips are blackened; tibiæ brown, tips darker; tarsi brownish black. Wings with a strong yellowish tinge, base and cells C and Sc saturated; stigma oval, brown; brown seams along cord and more narrowly on the longitudinal veins beyond cord; veins black, paler in the flavous areas. Venation: Rs long; R_2 distinct for its entire length; r with macrotrichiæ throughout its length; petiole of cell M_1 about one-half m; m-cu short but distinct. Abdominal tergites obscure yellow, the lateral margins buffy, margined internally by a more or less distinct brown stripe; median line of tergite broadly obscure yellow, bordered on either side by a broad, sublateral, dark brown stripe; on the subterminal segments the dark stripes become confluent; sternites brownish yellow; tip of abdomen broken in the unique type.

Habitat.—Japan (Saghalien).

Holotype, sex ?, Shimizu, July 27, 1922 (*T. Esaki*).

Tipula coquillettiana sp. nov.

Belongs to the *centralis* group; male hypopygium with the ninth tergite rather narrow, the caudal margin elevated into a narrow, erect, chitinized rim that is feebly denticulate.

Male, length, 16 millimeters; wing, 18.

Frontal prolongation of head reddish brown, gray above; nasus elongate; palpi black. Antennæ relatively short; scape obscure yellow, the first segment a little darkened basally; flagellum dark brown, the basal swellings moderate in size. Head gray, clearer posteriorly. Mesonotal prescutum light gray with four darker gray stripes, each of which is narrowly bordered by brown; scutum light gray, lobes largely dark gray; scutellum and postnotum light gray. Pleura gray; dorsopleural membrane buffy. Halteres obscure brownish yellow, knobs dark brown. Legs with coxæ gray; trochanters obscure yellow; femora brownish yellow, tips broadly dark brown; tibiæ brown, tips

very indistinctly darker; tarsi brown, the terminal segments passing into dark brown. Wings of the general type of *T. kuwayamai* Alexander and related species; whitish subhyaline, base and costal region more yellowish; stigma small, preceded by an eyelike brown spot; pale brown clouds on surface, the white pattern correspondingly restricted, including a narrow band beyond the cord extending through cell 1st M_2 into M_3; bases of cells R and M; a large blotch near two-thirds the length of cell M; and base and apex of cell 1st A; outer end of cell R_5 pale; bases of cells R and M not darkened; veins dark brown. Abdomen with the basal segment pruinose; segment 2 yellow, the lateral margins ocherous, sparsely pruinose; tergites 3 to 5 similar but becoming gradually darker colored; terminal segments and hypopygium dark brown, segments very narrowly ringed caudally with pale. Male hypopygium of the general type of *T. centralis* and related species. Ninth tergite rather narrow, the caudal margin elevated into a narrow, erect, chitinized rim, shiny black, the caudal margin nearly straight across but feebly denticulate, the lateral angles a little more conspicuous. Outer dististyle slender, clavate. Eighth sternite unarmed.

Habitat.—Japan (Saghalien).

Holotype, male, Odasam, August 5, 1922 (*T. Esaki*).

Paratopotype, male.

Tipula verecunda sp. nov.

Male, length, 13 to 14 millimeters; wing, 17. Female, length, 20 to 22 millimeters; wing, 17 to 19.

Generally similar to *T. coquillettiana* sp. nov., differing as follows:

Antennæ longer. Head light ocherous yellow with a capillary brown median vitta. Mesonotal prescutum paler with the four stripes darker brownish gray, narrowly and conspicuously margined with dark brown, the lateral stripes crossing suture onto the anterolateral regions of scutum; disk of scutal lobes with a larger brownish gray area, narrowly margined with darker; scutellum and postnotum gray with a narrow, dark brown, median line. Pleura dark gray, the dorsopleural membrane more buffy. Wings somewhat similar to *T. coquillettiana*, differing chiefly as follows: Bases of cells R and M darkened; the white band before midlength of cell 1st A continued across vein 1st A to wing margin in tip of cell 2d A; bases of anal cells more abruptly pale. Venation: Cell 1st M_2 smaller. Abdomen with tergites 2 to 4 light yellow, the lateral margins

broadly pale, narrowly margined internally by a brownish black line; terminal segments uniformly dark brownish black with pale margins; sternites similar, the terminal segments dark pruinose. Male hypopygium with the ninth tergite extensive but not chitinized, the caudal margin with a deep U-shaped notch, surface with yellow setæ. Basistyle complete. Outer dististyle flattened, dark-colored. Ninth sternite produced ventrad into a small median tubercle. Eighth sternite unarmed caudally but surface with rather numerous long yellow setæ. Female with the valves of the type of *T. arctica* et al., but margins not serrate.

Habitat.—Japan (Saghalien).

Holotype, male, Toyohara, July 16, 1922 (*T. Esaki*).

Allotype, female, Shimizu, July 27, 1922 (*T. Esaki*).

Paratopotypes, 3 males and 1 female, July 13, 14, 1922; paratype, female, Nodasam, July 31, 1922.

Tipula tantula sp. nov.

General coloration gray, prescutum with four very indistinct darker gray stripes; femora brownish yellow, tips blackened; wings subhyaline, with a very pale, ill-defined brown pattern; male hypopygium with the ninth tergite having a V-shaped notch.

Male, length, 10.5 millimeters; wing, 11.

Frontal prolongation of head dark gray above, nasus apparently lacking or very rudimentary; palpi relatively short, black. Antennæ relatively short; scape and first flagellar segment obscure yellow; remainder of antenna dark brown; individual flagellar segments moderately incised. Head dull gray, with a capillary dark brown vitta. Mesonotal prescutum gray with four very indistinct darker gray stripes, the intermediate pair only narrowly separated from one another, strongly narrowed behind; scutum dark gray, centers of lobes faintly darkened; scutellum light gray with a capillary brown median vitta; postnotum gray with a capillary brown line. Pleura gray, indistinctly variegated with darker; dorsopleural membrane buffy. Halteres pale brownish white. Legs with coxæ light gray, paler apically; trochanters yellow; femora brownish yellow, tips narrowly but conspicuously blackened, the amount subequal on all the legs; tibiæ paler brown, tips very narrowly darker brown; tarsi black. Wings subhyaline, with a very pale brown, ill-defined pattern; stigma oval, darker brown; the subhyaline markings include areas before and beyond

stigma, the latter forming an ill-defined crossband that follows through cell 1st M_2 into base of cell M_3; a blotch beyond midlength of cell M; a pale area in cell 1st A at tip of vein 2d A; less-distinct pale areas in the anal and cubital cells near base; veins brown. Venation: Rs very long; base of R_2 faintly indicated, perpendicular at origin; basal deflection of R_{4+5} short or lacking; cell 1st M_2 nearly pentagonal; petiole of cell M_1 more than twice m; m-cu obliterated by fusion of adjoining veins. Abdomen obscure yellow, the lateral margins of tergites narrowly buffy, margined internally by a narrow black line; segments 5 to 9 passing into black; sternites similar. Male hypopygium moderately incrassate. Ninth tergite with a broad V-shaped notch, at base of which is a microscopic tubercle. Outer dististyle slender, pale; inner dististyle a conspicuous compressed blade, the apical point jutting into notch of tergite. Ninth sternite with a deep V-shaped median notch. Eighth sternite unarmed.

Habitat.—Japan (Saghalien).

Holotype, male, Odasam, August 5, 1922 (*T. Esaki*).

Tipula matsumuriana sp. nov.

General coloration light gray, prescutum with four narrow pale brown stripes; pleura uniformly clear gray; femora obscure yellow, tips conspicuously blackened; wings whitish subhyaline, variegated with pale brown and yellow; a broad, nearly complete white crossband beyond cord.

Female, length, 19 millimeters; wing, 17.

Frontal prolongation of head elongate, dark brown beneath and on sides, yellow dorsally; nasus long and slender; palpi dark brown. Antennæ with scape and basal segments of flagellum yellow; remainder of antennæ dark brown. Head yellowish gray with a delicate, capillary, brown median vitta. Mesonotal prescutum light gray with four narrow, pale brown stripes, the intermediate pair narrowed posteriorly; pseudosutural foveæ reduced to a blackened puncture; scutum gray, lobes with very pale brown centers; scutellum pale gray, the lateral sclerites darker; postnotum clear light grey. Pleura uniformly clear gray; dorsopleural membranes whitish. Halteres yellow with conspicuous dark brown knobs. Legs with coxæ light gray; trochanters yellow; femora obscure yellow, tips rather narrowly but conspicuously blackened, these areas subequal on all the legs; tibiæ dark brown, bases pale; tarsi brownish black. Wings whitish subhyaline, base and cells C and Sc yellow; a conspicuous pale brown pattern occupies most of wing surface; stigma darker brown; the whitish ground color occupies the following areas: Before and beyond origin of Rs; a large area occupying the basal half of cell M; a semicircular area in cell M beneath origin of Rs and a smaller one at the outer end of cell; a very broad whitish crossband beyond cord, including the basal halves of cells R_2 and R_3; basal portion of R_5 and center of 1st M_2, passing into cells M_3 and Cu_1; outer half of cell R_5 faintly pale; pale areas in cell Cu at basal third and before apex, and in cell 1st A before midlength and at margin; bases of anal cells indistinctly paler; veins dark brown, yellowish in the costal and basal regions. Abdomen with the basal segments light yellow, the terminal segments passing into darker, surface dark gray pruinose; tergites with the lateral margins narrowly whitish, the caudal margins less distinctly so. Ovipositor with the slender valves with smooth margins.

Habitat.—Japan (Hokkaido).

Holotype, female, Jozankei, August 19, 1922 (*T. Esaki*).

Tipula bubo Alexander.

Tipula bubo ALEXANDER, Journ. N. Y. Ent. Soc. 26 (1918) 69, 70.

The type locality for this handsome fly is Honshiu. Doctor Esaki's material adds the following records:

Saghalien: Toyohara, July 14 to 23, 1922; Odasam, August 5, 1922. Hokkaido: Jozankei, August 19, 1922; Kamiotoineppu, August 23, 1922.

Tipula flavocostalis Alexander.

Tipula flavocostalis ALEXANDER, Ann. Ent. Soc. Am. 14 (1921) 124, 125.

Saghalien: Toyohara, July 13 to 18, 1922 (*T. Esaki*); Konuma, September 1, 1921 (*S. Kuwayama*).

The type locality is Honshiu and the species has not yet been taken in Hokkaido.

Tipula taikun Alexander.

Tipula taikun ALEXANDER, Ann. Ent. Soc. Am. 14 (1921) 125, 126.

Hokkaido: Kamuikotan, August 22, 1922; Kamiotoineppu, August 24, 25, 1922; Kamiokoppe, August 27, 1922; Setonshi, August 28, 1922; Abashiri August 31, 1922; Obihiro, Tokachi Province, September 12, 1922 (*T. Esaki*).

The type locality is Morioka, Iwate-Ken, Honshiu.

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ALEXANDER, CHARLES P. New species of Japanese crane-flies (Diptera, Tipulidæ) Part 2. Insec. Inscit. Menst. 9 (1921) 179 to 186.

The above works describe collections taken by Messrs. Isshiki, Kuwayama, and Shiraki in the provinces of Ishikari and Teshio.

MATSUMURA, S. Thousand Insects of Japan 2 (1905) 123, 124, Plate 29, figs. 5, 6.

Describes as new *Tipula longicauda* and *Ctenophora yezoana;* Japanese text only; figures excellent.

MATSUMURA, S. Erster Beitrag zur Insekten-Fauna von Sachalin. Journ. Coll. Agric. Tohoku Imp. Univ. 4 (1911) 1 to 145, Plates 1, 2.

Discussed in text of present paper.

MATSUMURA, S. Konchû Bunruigaku. Systematic entomology 2 (1915) 60 to 64, Plate 2, figs. 14 to 16.

Japanese text only; on page 63, fig. 15, records *Chionea araneoides* Dalman from vicinity of Sapporo.

MATSUMURA, S. Thousand Insects of Japan, Add. 2 (1916) 447 to 474, Plate 24, figs. 10 to 17, Plate 25, figs. 1 to 13.

Text in both Japanese and English; figures excellent.

ILLUSTRATIONS

[*a*= ædeagus; *b*= basistyle; *d*= dististyle; *g*= gonapophyses; *p* = proctiger; *t*= ninth tergite.]

PLATE 1

FIG. 1. *Dicranomyia subtristis* sp. nov., hypopygium.
2. *Dicranomyia megacauda* sp. nov., rostriform appendage.
3. *Dicranomyia megacauda* sp. nov., appendage of basistyle.
4. *Dicranomyia globulithorax* sp. nov., hypopygium.
5. *Dicranomyia spinicauda* sp. nov., hypopygium.
6. *Limonia angustistria* sp. nov., dististyles.
7. *Limonia basispina* sp. nov., hypopygium.
8. *Limonia monacantha* sp. nov., hypopygium.

PLATE 2

FIG. 9. *Antocha serricauda* sp. nov., hypopygium.
10. *Antocha bifida* sp. nov., hypopygium.
11. *Antocha brevistyla* sp. nov., hypopygium.
12. *Antocha brevinervis* sp. nov., hypopygium.
13. *Antocha satsuma* Alexander, hypopygium.
14. *Antocha dilatata* sp. nov., hypopygium.
15. *Erioptera sachalina* sp. nov., ninth tergite.
16. *Erioptera yezoana* sp. nov., ninth tergite.
17. *Erioptera sachalina* sp. nov., lateral lobe of tergite.
18. *Erioptera yezoana* sp. nov., lateral lobe of tergite.
19. *Erioptera sachalina* sp. nov., dististyle.
20. *Erioptera yezoana* sp. nov., dististyle.
21. *Erioptera flavohumeralis* sp. nov., hypopygium.
22. *Erioptera horii* sp. nov., hypopygium.

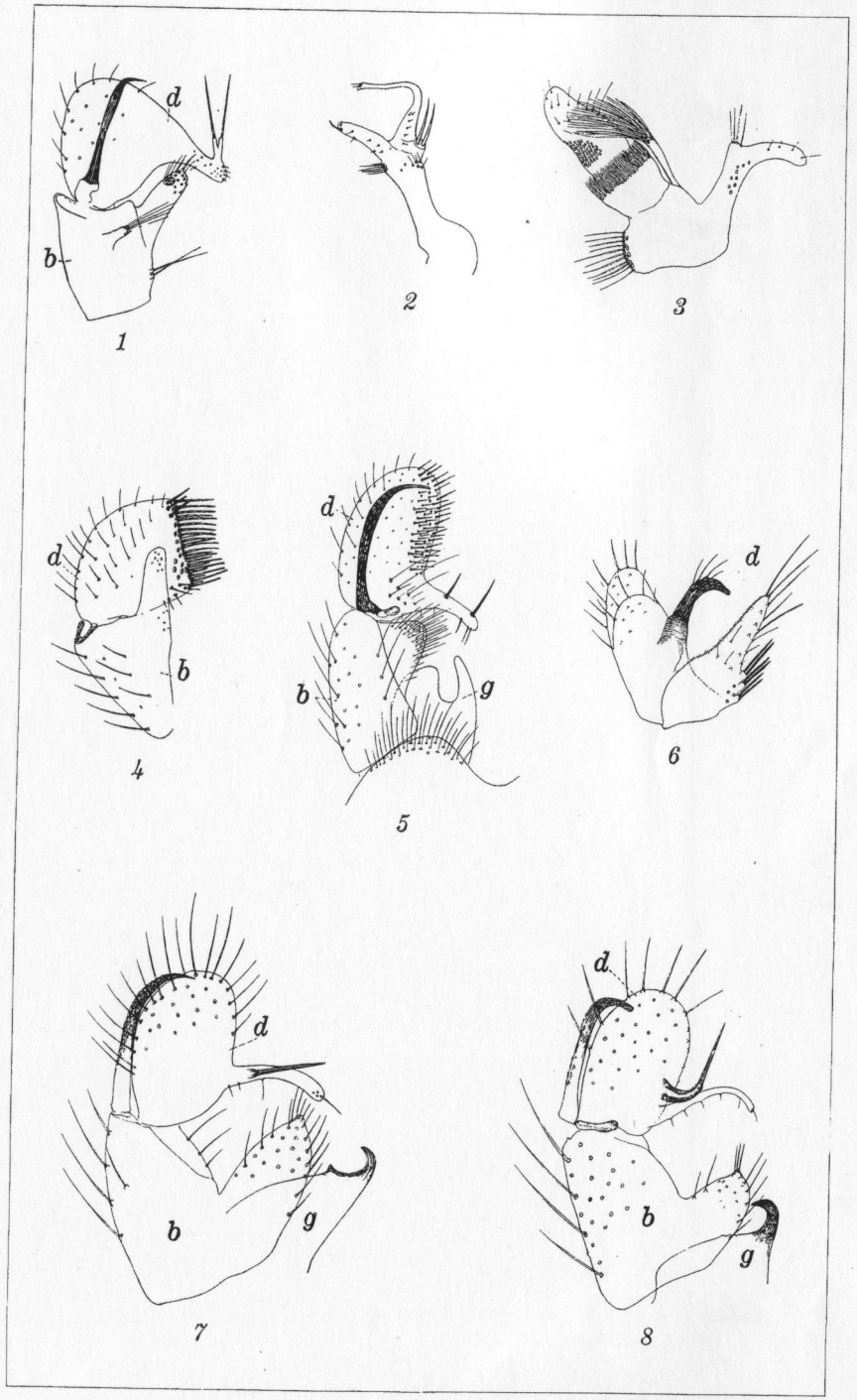

PLATE 1.

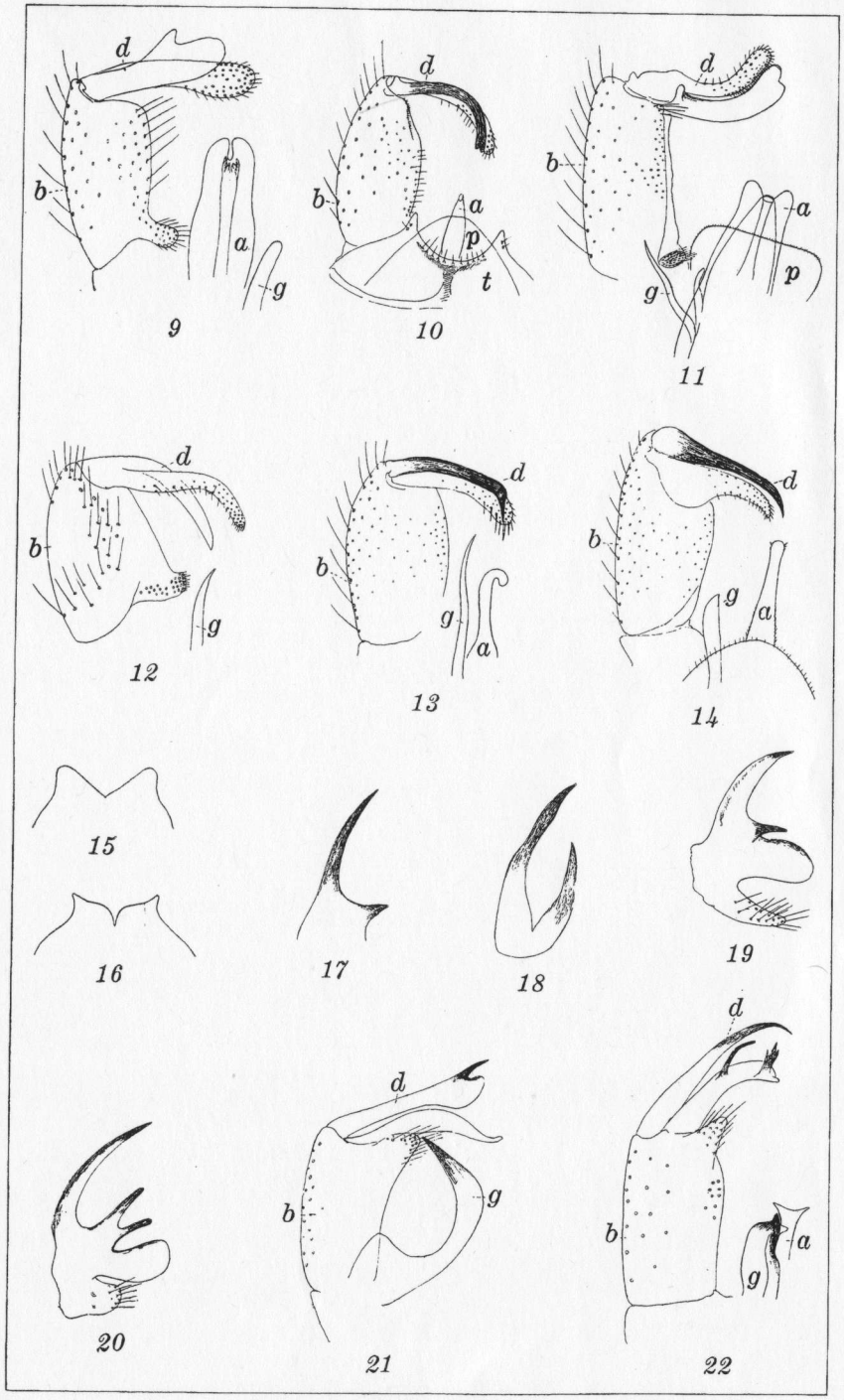

PLATE 2.