Genitalia. Pygofer hook single, growing larger toward apex curving in and ending in a bifid tip. Style with medium foot; base straight; heel large; anterior point less than a right angle about as long as foot is wide at apex; posterior point longer than foot, slightly outcurved, almost parallel sided. Oedagus very small; scarcely three times as long as broad in lateral view; slightly broader in dorsal aspect, covered on outer two-third with short stubby spines.

Holotype; male, Caddo Parish La., 8-19-28, R. H. Beamer.

Allotype; female, 13 female and 14 male *paratypes,* same data; 1 male, Caddo Parish La., 9-19-28, J. G. Shaw; 1 female, Natchitoche Pat., La., 8-16-28. R. H. Beamer.

This species seems to be quite closely related to *E. rubranotata.* It can be separated from that species by its larger size and by the bifid pygofer hook.

A LIST OF THE CRANE-FLIES OF QUEBEC (DIPTERA) II*

BY CHARLES P. ALEXANDER,
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The first list under this general title (Can. Ent., 61: 231-236, 247-251; 1929) recorded from the Province of Quebec 1 species of Tanyderidae, 2 species each of Ptychopteridae and Trichoceridae, and 139 species of Tipulidae. Collections made in 1929 have added to this list 69 species of Tipulidae that are recorded at this time, such species being preceded by an asterisk (*). To this total of 208 species, at least 100 species must be added before the record for Quebec can be considered as being approximately complete.

The detailed collections of 1929 represent four major sources of material. Collections made in Canadian Labrador by Mr. W. J. Brown and now preserved in the Canadian National Collection added several Arctic crane-flies to the list. The conditions under which these specimens were taken have been indicated by McDunnough (Can. Ent., 62: 54-62; 1930). The facies of the fauna of the vicinity of Bradore Bay is very similar to that found in Labrador (C. W. Johnson, Diptera of Labrador, Psyche, 36: 129-146; 1929). The second and largest single source of additions to the list was likewise included in the Canadian National Collection, having been made in the vicinity of Knowlton, Brome County, in 1928 by Messrs. Adams and Fisk, and in 1929 by Messrs. McDunnough, Milne and Walley. A third important collection was made at Shawbridge in the Laurentian Mountains by Mr. Albert F. Winn and is now preserved in the Peter Redpath Museum of McGill University. The fourth source and the only one in which the present writer took an active part in the collection of material was the result of a trip taken between June 10 and 24, 1929, to Percé Rock, Gaspé, by Dr. G. C. Crampton and myself. A brief itinerary and discussion of certain of the best collecting localities are given.

Leaving Maine at Houlton, the trip northward was routed along the St. John River, New Brunswick, from Woodstock to Edmunston, entering Quebec below Lake Temiscouata, where the first important collections were made on June 17th at Notre Dame du Lac. Continuing to the north, collections were made along a roadside stream at St. Honore and at the foot of the great Chute

*Contribution from the Entomological Laboratory, Massachusetts Agricultural College.

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at Riviere du Loup. No collections were made along the St. Lawrence until Mt. Joli was reached. Following southward along the western end of the Gaspe Peninsula, collections were made at Ste. Angèle-de-Mérici, Lake Matapedia, Causapscal, and at intervals along the beautiful Matapedia Valley, between Ste. Florence and Matapedia on June 18th. The most interesting series taken here were from along small mountain streams flowing into the river. On this date, conditions were almost as noted three weeks earlier at Amherst, Mass., with *Clintonia* in bud and *Coptis* barely in bloom. This belated nature of the season permitted us to capture only the early spring crane-flies but it is believed that not many of these were missed. From Matapedia, we followed eastward along the south shore of Gaspé, making collections at New Richmond, mouth of the Cascapedia R., June 19th; St. Charles-de-Caplan; and at the west branch of the River Pabos, 3 miles west of Chandler, where Dr. Crampton in 1928 made his notable discovery of one of the great rarities in the lower Diptera, *Protoplasa* (Can. Ent., 61: 70-71; 1929). Here we were so fortunate as to be able to discover the larvae of this highly interesting fly and finally to rear it to the adult condition. At and near Percé, the season was very belated and only a few vernal species of crane-flies were in evidence. On the return trip over this same route, a detailed collection was made at Escuminac East, 30 miles east of Matapedia. This particular secluded locality showed the season much more advanced, being fully ten days later than noted at places only 100 miles to the east. I have seldom if ever seen a place that gave better promise of rich crane-fly collecting than this station at Escuminac East, lying on the exact boundary between the municipalities of Nouvelle and Escuminac, on property owned by Mr. George Kerr. The stream divides and ramifies through the open mixed woodland amongst a rich growth of ferns and other low herbage, and at this date, June 21st, the air was simply teeming with crane-flies of the vernal fauna, a total of 24 species being taken. The complete list for this particular locality throughout the season must be very large. Two miles east of Matapedia village, at a place called herein "Flatland", we encountered large swarms of *Protoplasa* adults, as discussed under the species. A small gorge cut by a tiny stream flowing southward down the mountain side into the Restigouche River proved a very rich collecting locality. The strata of rocks had been tilted into an almost vertical position and supported characteristic trees, as white cedar, yew, yellow birch and mountain maple, together with abundant liverworts and mosses. The rich Tipulid fauna of this place has been listed under the common term "Flatland" which applies to both the Quebec and New Brunswick sides of the head of Chaleur Bay.

Collectors of the 1929 material as above indicated are recorded by their initial letters, as follows:

JAA=J. A. Adams
CPA=C. P. Alexander
WJB=W. J. Brown
GCC=G. C. Crampton
GHF=G. H. Fisk
JM=J. McDunnough
LJM=L. J. Milne
GSW=G. S. Walley
AFW=A. F. Winn

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TANYDERIDAE

Protoplasa fitchii (O.S.) Larvae were found in the sandy margins of the west branch of the River Pabos, three miles west of Chandler. From these larvae, an adult female later emerged, proving the identity of the species. The details of structure of this larva and pupa have been discussed by the writer in another publication (Proc. Linn. Soc. New South Wales, vol. 55, 1930, *in press*). At Flatland, 142 miles to the west, adult flies were taken in some numbers, swarming after sunset over the road near a small stream. These swarms, which were composed in great part of males, were associated with small numbers of a crane-fly, *Eriocera longicornis* (Walk.). *Protoplasa* adults head into the wind and the numbers of participating individuals varies very notably from minute to minute.

PTYCHOPTERIDAE

Bittacomorpha clavipes (Fabr.) Knowlton, July 24-25, 29 (LJM); St. Honore, June 17, 29 (CPA).

TIPULIDAE

Subfamily *Tipulinae*

Tipula abdominalis (Say). Knowlton, June 26, 28 (GHF), July 9, 29 (LJM); Mississquoi R., Bolton, Knowlton, July 13, 29 (GSW).

Tipula angustipennis Lw. Notre Dame du Lac, Temiscouata, June 17, 29 (CPA); Riviere du Loup, June 17, 29 (GCC).

Tipula apicalis Lw. Oxford Lake, July 10, 20 (AFW); Fulford, June 20; Knowlton, July 25, 29 (LJM).

**Tipula balioptera* Lw. Bradore Bay, July 19-23, 29 (WJB).

Tipula bella Lw. Knowlton, Aug. 12, 29 (GSW).

Tipula bicornis Forbes. Fulford, June 22, 29 (GSW); Knowlton, June 26, 28 (JAA), June 21-24, 29 (GSW).

**Tipula centralis* Lw. Bradore Bay, July 19, 29 (WJB).

Tipula dejecta Walk. St. Hilaire, May 29, 20 (AFW); Como, May 16, 20 (AFW).

**Tipula entomophthorae* Alex.. Knowlton, July 12, 29 (GSW); Harrington Harbor, July 3, 29 (WJB); Mecotina Sanctuary, June 8, 29 (WJB).

Tipula eluta Lw. Aylmer, Aug. 23, 28 (GHF).

Tipula gaspensis Alex. Bradore Bay, July 19-24, 29 (WJB).

Tipula grata Lw. Knowlton, July 24-Aug. 12-14, 29 (LJM).

Tipula hebes Lw. Shawbridge, Aug. 1, 29 (AFW); Knowlton, July 24-Aug. 29, 29 (LJM & GSW).

Tipula hermannia Alex. Shawbridge, July 2-10, 29 (AFW); Knowlton, July 9, 29 (GSW).

Tipula iroquois Alex. St. Honore, June 17, 29 (CPA); Flatland, Gaspé, June 22, 29 (CPA).

Tipula latipennis Lw. Knowlton, July 4, 28 (GHF), June 23-July 24, 29 (LJM) & GSW); Amherst Is., Magdalen Is., July 15, 17 (A. G. Huntsman).

Tipula monticola Alex. Knowlton, June 14, 28 (GHF).

**Tipula nebulipennis* Alex. Old Fort Is., July 13, 29 (WJB); Bonne Esperance, July 14, 29 (WJB).

Tipula nobilis (Lw.) Knowlton, June 12, 28 (JAA), June 21, 29 (GSW).

**Tipula noveboracensis* Alex. Knowlton, June 26, 28 (GHF), July 9, 29 (LJM); Mississquoi R., Bolton, July 13, 29 (GSW).

Tipula parshleyi Alex. Matapedia, June 18, 29 (CPA).

Tipula penobscot Alex. Notre Dame du Lac, Temiscouata, June 17, 29 (CPA); L. Matapedia, June 18, 29 (CPA).

**Tipula rohweri* Doane. Amherst Is., Magdalen Is., July 12, 17 (A. G. Huntsman). Recorded by Dietz (Can. Ent., 52: 5; 1920), possibly an erroneous identification.

Tipula sayi Alex. Shawbridge, Aug. 2-19, 29 (AFW).

Tipula senega Alex. Knowlton, June 12-14, 28 (GHF); L. Matapedia, June 18, 29 (CPA).

Tipula serta Lw. Knowlton, June 14, 28, (GHF), June 21, 29 (GSW); Kazubazua, May 28, 28 (WJB); Mt. Joli, June 17, 29 (CPA); Escuminac East, Gaspé, June 21, 29 (CPA).

**Tipula strepens* Lw. Knowlton, June 14, 28 (CPA).

**Tipula submaculata* Lw. Knowlton, July 25, 29 (LJM).

**Tipula subserta* Alex. Bradore Bay, July 19, 29 (WJB).

Tipula sulphurea Doane. Escuminac East, Gaspé, June 21, 29 (CPA).

Tipula tephrocephala Lw. Knowlton, June 20, 29 (GSW).

Tipula trivittata Say. Amherst Is., Magdalen Is., July 15, 17 (A. G. Huntsman).

Tipula ultima Alex. Shawbridge, September 5-6, 29 (AFW).

Tipula umbrosa Lw.. Knowlton, July 12-Aug. 2, 29 (LJM), Amherst Is., Magdalen Is., July 15, (A. G. Huntsman). Reported by Dietz (Can. Ent., 52: 5; 1920) as *inermis* Doane.

Tipula unimaculata (Lw.). Shawbridge, July 14-Sept. 1, 29 (AFW).

**Tipula vicina* Dietz. Kazubazua, May 28, 28 (WJB); Riviere du Loup, June 17, 29 (GCC).

Tipula youngi Alex. Shawbridge, July 5, 29 (AFW).

**Nephrotoma brevioricornis* (Doane). Shawbridge, Aug. 10, 29 (AFW); Knowlton, July 3-7, 29 (JM).

**Nephrotoma euceroides* Alex. Knowlton, Aug. 2, 29 (LJM).

Nephrotoma ferruginea (Fabr.) Shawbridge, July 4, 29 (AFW); Knowlton, July 30, 29 (GSW), Aug. 2, 29 (LJM); Mt. Joli, June 17, 29 (CPA); Amherst Is., Magdalen Is., July 15, 17 (A. G. Huntsman).

Nephrotoma incurva (Lw.) Boulton Center, Knowlton, June 29, 28 (GHF).

Nephrotoma lugens (Lw.) Queens Park, Aylmer, May 31, 28 (GHF).

**Nephrotoma pedunculata* (Lw.). Shawbridge, June 24, 29 (AFW).

Nephrotoma xanthostigma (Lw.). Shawbridge, Aug. 12, 29 (AFW); Foster July 31, 29 (GSW), Mississquoi R., Bolton, July 5, 29 (GSW).

Dolichopeza americana Ndm. Knowlton, July 12, 29 (GSW); West Bolton Creek, Knowlton, June 26, 29 (GSW).

**Oropeza dorsalis* Johns. Knowlton, July 4-13, 29 (GSW).

Oropeza obscura Johns. Knowlton, June 29, 29 (GSW), July 12, 29 (GSW).

**Oropeza polita* Johns. Knowlton, June 29-July 12, 29 (GSW).

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This species was considered by its describer as being merely a race of *obscura* but is in reality a very distinct species. A brief re-description and comparison with *obscura* is given:

Generally similar to *O. obscura* Johns., differing especially in the short antennae and structure of the male hypopygium.

Antennae much shorter than in *obscura,* if bent backward scarcely attaining the root of the haltere. Mesonotum dark brown, nitidous, without stripes. Knobs of halteres darkened. Tarsi more evidently darkened. Wings with the stigmal area paler, not contrasting strongly with the ground-color. Venation: Cell 1*st* M_2 narrow at base. Abdominal tergites almost uniformly darkened, not conspicuously bicolorous as in several related species, the outer segment and hypopygium almost black; basal sternites a little brighter but not conspicuously dimidiate. Male hypopygium with the median region of the tergite produced into a quadrate plate that is further produced into a sharp median point; incurved lateral arms of tergite elongate, at tips dilated into spatulate dusky blades, the margins smooth. Outer dististyle black, sinuous, at base dilated and expanded, at tips nearly acute. Inner dististyle much more expanded than in *obscura,* the blade approximately as wide as long.

Oropeza venosa Johns. W. Bolton Creek, Knowlton, June 26, 29 (GSW).

* **Oropeza walleyi** sp. n.

General coloration brownish yellow, the praescutum and scutum with clearly-defined brown areas; head gray; pleura yellowish white, without distinct markings; halteres with slightly infuscated knobs; legs pale brownish yellow; wings brownish yellow, the stigma brown; abdominal tergites obscure yellow with a brown median stripe, the lateral margins not darkened; male hypopygium with the gonapophyses large and conspicuous, the margins irregularly dentate.

Male.—Length, about 9-10 mm.; wing, 11-11.5 mm.

Female.—Length, 11-12 mm.; wing, 12 mm.

Frontal prolongation of head pale yellow; palpi pale, the terminal segment suddenly blackened. Antennae (♂) elongate, the basal three segments (♂) or two segments (♀) yellow, the remaining segments passing into brown, the basal enlargments a trifle darker. Head gray, with a dark median and posterior border, the occiput paler.

Mesonotal praescutum brownish yellow, with three very distinct and clearly defined brown stripes; scutum similar, each lobe with two confluent dark brown areas; scutellum and postnotum pale brownish testaceous. Pleura yellowish white, without distinct dark markings, only the sternopleurite a little darkened. Halteres yellow at base, darkened outwardly, the knobs slightly infuscated. Legs with the coxae and trochanters yellow; remainder of legs pale brownish yellow. Wings brownish yellow, the costal region deeper yellow; stigma oval, conspicuous, brown; obliterative areas before the stigma and across the base of cell 1*st* M_2; veins brown.

Abdominal tergites obscure yellow, with a dorso-median brown stripe, the lateral margins pale; sternites yellow, with a dark spot at the incisures, the outer segments more uniformly darkened. Male hypopygium with the caudal

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margin of the tergite with a broad V-shaped notch that is extended into a flattened flange bearing a small slender spine at base of notch; lateral arms of tergite expanded at tips into obtuse blades. Outer dististyle long and slender, the base not enlarged. Inner dististyle dilated, produced into a blackened beak that is unequally bidentate. Gonapophyses very large and conspicuous, yellow, the margins irregularly dentate.

Habitat.—Northeastern North America.

Holotype, male, Knowlton, Quebec, July 4, 1929 (G. S. Walley).

Allotopotype, female, July 12, 1929 (G. S. Walley).

Paratopotypes, 3 males and females, June 29-July 12, 1929 (G. S. Walley); *paratypes,* 2 males, Brookview, Rensselaer Co., New York, June 14-21, 1923 (C. P. Alexander).

Type in the Canadian National Collection.

I take great pleasure in naming this species in honor of Mr. G. S. Walley. *Oropeza walleyi* is closest to *O. sayi* Johnson, differing in the more darkened knobs of the halteres and details of structure of the male hypopygium, especially the large, toothed gonapophyses.

Subfamily *Cylindrotominae*

Liogma nodicornis (O.S.) Knowlton, June 12, 28 (JAA), June 21-July 21, 29 (LJM).

Subfamily *Limoniinae*

Limoniini

Limonia (*Limonia*) *cinctipes* (Say) Knowlton, July 2, 28 (JAA), July 21, 29 (LJM); Flatland, Gaspé, June 22, 29 (CPA).

**Limonia* (*Limonia*) *globithorax* (O.S.). Riviere du Loup, June 17, 29 (CPA), at foot of Chute,—this specimen shows cell M_2 of both wings open by atrophy of both *m* and basal section of M_3, leaving the distal section of M_3 lying free in membrane; Matapedia Valley, along mountain stream, June 18, 29 (GCC).

Limonia (*Limonia*) *indigena* (O.S.) Matapedia, Gaspé, June 18, 29 (CPA).

**Limonia* (*Limonia*) *simulans* (Walk.) Knowlton, July 11, 29 (GSW).

Limonia (*Limonia*) *solitaria* (O.S.) Knowlton, July 30-Aug. 6, 29 (GSW).

**Limonia* (*Limonia*) *triocellata* (O.S.) Shawbridge, Aug. 19, 29 (AFW).

**Limonia* (*Dicranomyia*) *adirondacensis* (Alex.). Knowlton, July 10, 29 (LJM).

**Limonia* (*Dicranomyia*) *halterata* (O.S.). Flatland, Gaspé, June 22, 29 29 (CPA).

Limonia (*Dicranomyia*) *humidicola* (O.S) Escuminac East, Gaspé, June 21, 29 (CPA); Percé, Gaspé, June 20, 29 (CPA).

**Limonia* (*Dicranomyia*) *iowensi* (Rogers) Knowlton, July 23-24, 29 (LJM).

Limonia (*Dicranomyia*) *liberta* (O.S.). Knowlton, June 12, 28 (GHF); Notre Dame du Lac, Temiscouata, June 17, 29 (CPA).

Limonia (*Dicranomyia*) *longipennis* (Schumm.). Knowlton, June 20, 29 (GSW).

Limonia (*Dicranomyia*) *nycteris* (Alex.). St. Honore, June 17, 29 (CPA).

Limonia (*Dicranomyia*) *profunda* (*Alex.*). Knowlton, July 26, 29 (LJM); Matapedia Valley, along mountain stream, June 18, 29 (GCC); New

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Richmond, Gaspé, June 19, 29 (CPA).

Limonia (*Dicranomyia*) *sphagnicola* (Alex.). Knowlton, July 4, 29 (GSW).

**Limonia* (*Dicranomyia*) *uliginosa* Alex. Mutton Bay, July 11, 29 (WJB); Bradore Bay, July 19-24, 29 (WJB).

These specimens differ from the type-series in the larger size and the longer Sc_1, which exceeds the stigma in length. However, the peculiar male hypopygium is quite the same and I must consider the identification as being correct.

**Limonia* (*Geranomyia*) *canadensis* (Westw.) Flatland, Gaspé, June 21, 29 (CPA).

**Limonia* (*Geranomyia*) *rostrata* (Say) Shawbridge, Aug. 14-Sept. 1, 29 (AFW); Knowlton, July 4, 29 (GSW).

**Limonia* (*Rhipidia*) *fidelis* (O.S.). Knowlton, July 4-Aug. 6, 29 (LJM and GSW).

Limonia (*Rhipidia*) *maculata* (Meig.). Shawbridge, July 2-19, 29 (AFW).

**Antocha opalizans* O.S. St. Johns Co., June 14, 19 (Chagnon).

Antocha saxicola O. S. Lachine, June 19, 29 (LJM); Fulford, June 22, 29 (GSW); Knowlton, June 20-29, 29 (GSW).

Helius flavipes (Macq.). Knowlton, June 23, 29 (GSW).

**Dicranoptycha germana* O.S. Knowlton, July 12-Aug. 2, 29 (LJM).

Pediciini

**Pedicia contermina* Walk. Escuminac East, Gaspé, June 21, 29 (CPA).

**Tricyphona auripennis* (O.S.). Flatland, Gaspé, June 21-22, 29 (CPA). In small gorge, resting on cliff walls and flying overhead.

Tricyphona autumnalis Alex. Tadousac R., Aug. 10, 19 (AFW); Shawbridge, July 27, 29 (AFW).

Tricyphona calcar (O.S.). Mutton Bay, July 11, 29 (WJB); Matapedia Valley, Gaspé, June 18-19, 29 (CPA); Flatland, Gaspé, June 22, 29 (GCC); Escuminac East, Gaspé, June 21, 29 (CPA).

Tricyphona inconstans (O.S.). Shawbridge, Aug. 19, 29 (AFW); Bradore Bay, July 21, 29 (WJB); Escuminac East, Gaspé, June 21, 29 (CPA).

**Tricyphona vernalis* (O.S.). Knowlton, July 4, 29 (GSW); Escuminac East Gaspé, June 21, 29 (CPA).

Amalopina flaveola (O.S.). Causapscal, June 18, 29 (GCC); Escuminac East, Gaspé, June 21, 29 (GCC).

Dicranota iowa Alex. Notre Dame du Lac, Temiscouata, June 17, 29 (CPA); Matapedia Valley, along mountain streams, June 18, 29 (GCC).

**Rhaphidolabis* (*Rhaphidolabis*) *cayuga* Alex. St. Honore, June 17, 29 (CPA); Matapedia Valley, June 18, 29 (CPA); Flatland, Gaspé, June 21, 29 (GCC).

**Rhaphidolabis* (*Rhaphidolabis*). *forceps* Alex. Knowlton, June 29, 29 (GSW).

Rhaphidolabis (*Rhaphidolabis*) *rogersiana* Alex. Notre Dame du Lac, Temiscouata, June 17, 29 (CPA); Causapscal, June 18, 29 (CPA); Matapedia Valley, along mountain streams, June 18, 29 (GCC).

**Rhaphidolabis* (*Rhapidolabis*) *rubescens* Alex. Escuminac East, Gaspé June 21, 29 (CPA).

**Rhaphidolabis* (*Rhaphidolabis*) *tenuipes* O.S. Bradore Bay, July 24, 29 (WJB).

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Rhaphidolabis (*Plectromyia*) *confusa* Alex. Notre Dame du Lac, Temiscouata, June 17, 29 (CPA); Causapscal, June 18, 29 (CPA); Matapedia, June 18, 29 (GCC); Flatland, Gaspé, June 21, 29 (CPA); Escuminac East, Gaspé, June 21, 29 (CPA).

Hexatomini

**Adelphomyia minuta* Alex. Escuminac East, Gaspé, June 21, 29 (CPA).

**Ula elegans* O.S. Matapedia Valley, along mountain streams, June 18, 29 (GCC); Flatland, Gaspé, June 21, 29 (CPA).

Ula paupera O.S. Notre Dame du Lac, Temiscouata, June 17, 29 (CPA); Matapedia Valley, along mountain streams, June 18, 29 (GCC); Escuminac East, Gaspé, June 21, 29 (CPA).

Epiphragma fascipennis (Say). Penny's Brook, Knowlton, June 25, 29 (GSW); Mississquoi R., S. Bolton, July 5, 29 (GSW), a very small specimen; Riviere du Loup, June 17, 29 (CPA); Matapedia Valley, June 18, 29 (GCC); Escuminac East, Gaspé, June 21, 29 (GCC).

Dactylolabis montana O.S. Two miles north of Matapedia, on face of wet cliff, June 18, 29 (CPA).

Pseudolimnophila contempta (O.S.). Knowlton, July 9, 29 (GSW).

**Pseudolimnophila inornata* (O.S.). Bolton Pass Creek, Knowlton, June 26, 29 (GSW); New Richmond, Gaspé, June 19, 29 (CPA).

**Pseudolimnophila luteipennis* (O.S.). Shawbridge, Aug. 14, 29 (AFW).

**Pseudolimnophila noveboracensis* (Alex.). Knowlton, July 26, 29 (LJM).

Pseudolimnophila toxoneura (O.S). Flatland, Gaspé, June 22, 29 (CPA).

Limnophila (*Lasiomastix*) *macrocera* (Say). Shawbridge, Aug. 17, 29 (AFW); Knowlton, July 4-30, 29 (LJM and GSW).

Limnophila (*Phylidorea*) *adusta* O.S. Knowlton, July 10, 29 (GSW); Tabatiere, July 11, 29 (WJB), thorax darker than in normal individuals but agreeing in other regards; Escuminac East, Gaspé, June 21, 29 (GCC).

**Limnophila* (*Phylidorea*) *consimilis* Dietz, var. Knowlton, July 25, 29 (LJM).

**Limnophila* (*Phylidorea*) *luteola* Alex. Knowlton, July 24-25, 29 (LJM).

**Limnophila* (*Phylidorea*) *novae-angliae* Alex. Natashquan, Aug. 1, 29 (WJB).

**Limnophila* (*Phylidorea*) *platyphallus* Alex. Mt. Joli, June 17, 29 (GPA).

**Limnophila* (*Prionolabis*) *magdalena* Dietz. Amherst Is., Magdalen Is., July 15, 1917 (A. G. Huntsman). The identity of this species still remains in doubt. Its nearest ally seems to be *L.* (*P.*) *simplex* Alex.

Limnophila (*Prionolabis*) *munda* O.S. Natashquan R., Aug. 9, 29 (WJB)

Limnophila (*Prionolabis*) *rufibasis* O.S. Matapedia Valley, June 18, 29 (CPA); Escuminac East, Gaspé June 21, 29 (GCC).

**Limnophila* (*Dicranophragma*) *angustula* Alex. Knowlton, July 9, 29 (GSW).

Limnophila (*Dicranophragma*) *fuscovaria* O.S. Shawbridge, July 3, 29 (AFW); Escuminac East, Gaspé, June 21, 29 (CPA).

**Limnophila* (*Ephelia*) *sabrina* Alex. Knowlton, June 21, 29 (GSW); Flatlands, Gaspé, June 22, 29 (CPA).

**Limnophila* (*Ephelia*) *solstitialis* Alex. Knowlton, July 11, 29, (LJM).

Limnophila brevifurca O. S. Matapedia, June 18-22, 29 (CPA); Escuminac East, Gaspé, June 21, 29 (GCC).

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**Limnophila subcostata* Alex. Escuminac East, Gaspé, June 21, 29 (CPA).

Limnophila unica O.S. Flatland, Gaspé, June 21, 29 (CPA); Crevasse on Mt. Ste. Anne, Perce, Gaspé, June 20, 29 (GCC).

Pilaria quadrata (O.S.). Sainte Angèle-de-Mérici, June 18, 29 (CPA); Escuminac East, Gaspé, June 21, 29 (CPA).

**Pilaria recondita* (O.S.). Knowlton Creek, June 23, 29 (GSW).

Pilaria tenuipes (Say). Knowlton, June 23, 29 (GSW), July 25, 29 (LJM).

Shannonomyia lenta (O.S.). Matapedia, June 18, 29 (CPA), specimen with cell M_2 of both wings open; Flatland, June 22, 29 (CPA).

**Eriocera brachycera* O.S. Knowlton, July 12-31, 29 (JM, LJM, GSW).

**Eriocera cinerea* Alex. Knowlton, July 8, 29 (LJM).

* Eriocera gaspensis sp. n.

Size small (wing, female, 8 mm.); antennae short in both sexes; general coloration gray, the praescutum with three dark brown stripes; knobs of halteres pale; wings pale brownish, the veins narrowly seamed with darker; *Rs* long, weakly angulated and spurred at origin; veins R_3 and R_4 gradually diverging; cell M_1 lacking; *m-cu* a little longer than distal section of Cu_1; ovipositor with fleshy valves.

Male.—Length, about 5-6 mm.; wing, 6-7.2 mm.

Female.—Length, about 7 mm.; wing, 8 mm.

Rostrum and palpi black, the former slightly pruinose. Antennae short in both sexes, the basal segment pruinose, 7-segmented in male, 8-segmented in female; in male, first flagellar segment subequal to or a little shorter than the succeeding two segments combined; remaining segments gradually decreasing in size, the last segment less than one-half the penultimate; in female, the terminal three segments short, subequal in length. Head dark gray; vertical tubercle relatively large and conspicuous.

Mesonotum gray, variegated with dark brown, the praescutum with a very broad median and narrow lateral stripes, the latter crossing the suture onto the scutal lobes. Pleura black, heavily pruinose. Halteres dusky, the knobs light yellow. Legs with the coxae and trochanters black, pruinose; femora obscure yellow basally, the tips broadly blackened, this including more than the distal half on all legs. Wings pale brownish, the veins narrowly seamed with darker; stigma oval, darker brown; veins brownish black. Venation: *Rs* long, weakly angulated and spurred at origin; R_{2+3+4} long; R_2 subequal or longer than R_{2+3}; veins R_3 and R_4 gradually diverging; the cell relatively short; cell M_1 lacking; *m-cu* at or just beyond the fork of M, a little longer than the distal section of Cu_1.

Abdomen black, pruinose, including the hypopygium. Male hypopygium with the outer dististyle narrow, at midlength narrowed into a long slender gently curved spine. Ovipositor with fleshy valves, the sternal valves brownish yellow narrowly blackened at tips.

Habitat.—Quebec (Gaspé).

Holotype, male reared from pupae taken at the River Pabos, near Chandler, emerged June 24, 1929 (C. P. Alexander).

Allotopotype, female, emerged June 26, 1929.

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Paratopotype, male, emerged June 24, 1929; *paratype,* male, Matapedia Valley, June 18, 1929 (C. P. Alexander).

Type in the writer's collection.

Eriocera gaspensis is undoubtedly closely allied to *E. longicornis* (Walker), differing most notably in the short antennae of both sexes.

**Eriocera longicornis* (Walk.). Matapedia, June 22, 29 (CPA); Flatland, Gaspé, June 21-22, 29 (CPA and GCC).

Eriocera spinosa (O.S.). Knowlton, July 18, 29 (LJM), Aug. 3, 29 (JM).

**Penthoptera albitarsis* O.S. Knowlton, July 4-12, 29 (GSW).

Elephantomyia westwoodi O.S. Foster, July 31, 29 (GSW); Knowlton, July 12, 29 (GSW); W. Bolton R., Knowlton, June 26, 29 (GSW); Flatland, Gaspé, June 22, 29 (CPA).

Eriopterini

**Cladura flavoferruginea* O.S. (*indivisa* form). Shawbridge, Aug. 17-20, 29 (AFW); Sept. 12, 29 (E. McCarvell).

Gnophomyia tristissima O.S. Knowlton, July 12, 29 (GSW).

Gonomyia (Gonomyia) noveboracensis Alex. West branch of the Pabos R., Gaspé, a small swarm, June 19, 29 (CPA).

Gonomyia (Gonomyia) subcinerea (O.S.) Knowlton, June 20, 29 (GSW); Notre Dame du lac, Temiscouata, June 17, 29 (CPA); New Richmond, Gaspé, June 19, 29 (CPA); St. Charles-de-Caplan, Gaspé, June 19, 29 (CPA); Escuminac East, Gaspé, June 21, 29 (CPA).

**Toxorhina muliebris* O.S. Knowlton, June 24, 29 (LJM).

Helobia hybrida Meig. Knowlton, July 18, 29 (LJM), Aug. 2, 29 (LJM); Notre Dame du Lac, Temiscouata, June 17, 29 (CPA); Riviere du Loup, at Chute, June 17, 29 (GCC); Mt. Joli, June 17, 29 (CPA); Ste. Angèle-de-Mérici, June 18, 29 (CPA); New Richmond, Gaspé, June 19, 29 (CPA); Percé, Gaspè, June 20, 29 (CPA); Crevasse on Mt. Ste. Anne, June 20, 29 (GCC).

Cryptolabis paradoxa O.S. Mississquoi R., S. Bolton, Knowlton, July 5-13, 29 (GSW).

* Psiloconopa cramptonella sp. n.

General coloration polished black, the abdominal segments ringed with yellow; halteres light yellow; legs black; wings strongly tinged with dusky; cell 1*st* M_2 small.

Male.—Length, about 3.2-3.5 mm.; wing, 3.8-4.4 mm.

Female.—Length, about 4 mm.; wing, 4.5-4.6 mm.

Rostrum and palpi black. Antennae black throughout, shorter in the female; flagellar segments short-oval. Head broad, black, sparsely pruinose, especially in front.

Mesonotum chiefly polished black, the anterior lateral pretergites and posterior margin of the scutellum restrictedly obscure yellow; dorso-pleural region more sulphur-yellow. Pleura dull grayish black. Halteres light yellow. Legs black. Wings with a strong dusky tinge, the base and costal region a trifle more yellowish; stigmal region barely darker; veins dark brown. Venation: Sc_1 ending just before R_2, Sc_2 a short distance beyond origin of *Rs*, Sc_1 thus very long; *Rs* long and nearly straight; cell 1*st* M_2 small; *m-cu* at or just

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before the fork of *M*; vein *2nd A* nearly straight. In some specimens, cell *1st* M_2 is very small to subatrophied.

Abdomen black, the caudal and lateral margins of the segments light sulphur-yellow, somewhat wider on the sternites; hypopygium orange. Male hypopygium with the dististyles of nearly equal length, the latter weakly emarginate at apex, the surface with abundant microscopic spiculae. Inner dististyle smooth, a little dilated at apex. Gonapophyses appearing as broad flattened plates, the tips truncate, the outer margin corrugated into spinous ridges. Aedeagus bifid. Valves of ovipositor long chitinized.

Habitat.—Quebec (Gaspé).

Holotype, male, River Pabos, near Chandler, June 20, 1929 (C. P. Alexander).

Allotopotype, female.

Paratopotypes, 15 of both sexes, 8 being in alcohol, June 19-20, 1929 (Alexander and Crampton.)

Type in the writer's collection.

This very distinct species is named in honor of my friend, Dr. G. Chester Crampton. *Psiloconopa cramptonella* is most similar to *P. meigenii* Zett. (Europe) and *P. verna* Alex. (Japan), the hypopygial characters being quite distinct. There is no close ally among the Nearctic species so far discovered.

**Ormosia arcuata,* (Doane). Aylmer, May 11, 29 (GSW); Notre Dame du Lac, Temiscouata, June 17, 29 (CPA); New Richmond, Gaspé, June 19, 29 (CPA).

**Ormosia bilineata* Dietz. St. Honore, June 17, 29 (CPA); Causapscal, June 18, 29 (CPA); Matapedia Valley, June 18, 29 (CPA); Flatland, Gaspé, June 22, 29 (GCC); Percé, Gaspé, June 20, 29 (CPA).

Ormosia deviata Dietz. Notre Dame du Lac, Temiscouata, June 17, 29 (CPA); Ste. Angèle-de-Mérici, June 18, 29 (CPA); New Richmond, Gaspé, June 19, 29 (CPA).

Ormosia gaspensis Alex. Notre Dam du Lac, Temiscouata, June 17, 29 (CPA); Causapscal, June 18, 29 (CPA); St. Charles-de-Caplan, Gaspé, June 19, 29 (CPA); Percé, Gaspé, June 20, 29 (CPA); Flatland, Gaspé, June 21, 29 (GCC).

**Ormosia megacera* Alex. Flatland, Gaspé, June 21, 29 (CPA).

Ormosia meigenii (O.S.). Matapedia, June 18, 29 (CPA); St. Charles-de-Caplan, June 19, 29 (CPA); Escuminac East, Gaspé, June 21, 29 (GCC); Flatland, Gaspé, June 21-22, 29 (CPA).

Ormosia monticola (O.S.) Fairy Lake, Hull, Aug. 18, 29 (LJM).

Ormosia notmani Alex. Matapedia Valley, along mountain stream, June 18, 29 (GCC); New Richmond, Gaspé, June 19, 29 (CPA).

Ormosia pygmaea Alex. (*Nigripila* of List 1, p. 250) Notre Dame du Lac, Temiscouata, June 17, 29 (CPA); New Richmond, Gaspé, June 19, 29 (CPA); Escuminac East, Gaspé, June 21, 29 (GCC).

Erioptera (*Hoplolabis*) *armata* O.S. Ste. Angèle-de-Mérici, June 18, 29 (CPA); Causapscal, June 18, 29 (GCC); Matapedia Valley, June 18, 29 (CPA); New Richmond, Gaspé, June 19, 29 (CPA); St. Charles-de-Caplan, Gaspé, June 19, 29 (CPA).

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Erioptera (*Ilisia*) *armillaris* O.S. Knowlton, July 12, 29 (GSW); Mississquoi R., Bolton, July 13, 29 (GSW).

Erioptera (*Ilisia*) *venusta* O.S. Knowlton, July 1, 29 (LJM).

Erioptera (*Erioptera*) *chlorophylla* O.S. Knowlton, July 25, 29 (LJM).

Erioptera (*Erioptera*) *chrysocoma* O.S. Knowlton, June 28-29, 29 (JM and and GSW).

Erioptera (*Erioptera*) *septemtrionis* O.S. Shawbridge, Aug. 1, 29 (AFW); Knowlton, July 25, 27 (LJM), June 20, 29 (LJM), July 4, 29 (GSW); Notre Dame du Lac, Temiscouata, June 17, 29 (CPA); Mt. Joli, June 17, 29 (CPA); Percé, Gaspé, June 20, 29 (GCC).

**Erioptera* (*Erioptera*) *straminea* O.S. Knowlton, June 25-July 29, 29 (LJM).

Erioptera (*Erioptera*) *vespertina* O.S. Knowlton, June 20-29, 29 (GSW).

Erioptera (*Mesocyphona*) *caloptera* Say Knowlton, July 24-25, 29 (LJM); Sweetsburg, July 10, 29 (GSW).

Erioptera (*Mesocyphona*) *needhami* Alex. Knowlton, July 16-25, 29 (LJM).

**Erioptera* (*Empeda*) *stigmatica* (O.S.). Notre Dame du Lac, Temiscouata, June 17, 29 (CPA); Ste. Angèle-de-Mérici, June 18, 29 (CPA); L. Matapedia, June 18, 29 (GCC); Causapscal, June 18, 29 (CPA); New Richmond, Gaspé, June 19, 29 (CPA); Flatland, Gaspé, June 22, 29 (CPA).

**Molophilus forcipulus* (O.S.) Knowlton, June 20-23, 29 (GSW).

**Molophilus fultonensis* Alex. Shawbridge, July 4, 29 (AFW); Knowlton, June 29- July 25, 29 (LJM and GSW).

**Molophilus hirtipennis* (O.S.). Anse-au-Gascon, Gaspé, in a *Rhodora* bog, with much *Ledum,* balsam, spruce and larch, June 21, 29 (CPA).

* **Molophilus pollex** sp. n.

Belongs to the *gracilis* group, *pubipennis* subgroup; allied to *laricicola* Alex.; antennae (male) approximately one-half the length of body; wings yellowish gray, the axillary region more infumed; vein *2nd A* ending some distance before *m-cu;* male hypopygium with the outer lobe of the basistyle produced into a thumb-like structure; both dististyles with the concave lower margin more or less spinulose; aedeagus relatively short and stout.

Male.—Length, about 3.8 mm.; wing, 3.5 mm.; antenna about 1.8 mm.

Rostrum and palpi dark brown. Antennae black throughout, in male about one-half the length of the entire body; fourth flagellar segment a little longer than the third; outer flagellar segments very gradually decreasing in length. Head dark gray, the anterior vertex and occipital region brightened.

Anterior lateral pretergites whitish. Mesonotal praescutum light brown, the humeral region more yellowish; median region of scutum more grayish. Pleura yellowish brown. Halteres yellowish, the knobs infuscated. Legs with the coxae and trochanters obscure yellow; only the posterior legs remain, these unusually long and stout; femora obscure yellow, the tips narrowly infuscated; tibiae obscure yellow, the tips narrowly infuscated; tarsi dark brown. Wings yellowish gray, the prearcular and costal regions clearer yellow; axillary region in cell *2nd A* infumed; veins brownish yellow; macrotrichia dark brown. Venation: R_{2+3} nearly perpendicular at origin, in approximate alignment with R_2;

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petiole of cell M_3 short, less than twice *m-cu*; vein *2nd A* short, ending some distance before *m-cu*.

Abdomen brown, the large hypopygium obscure yellow. Male hypopygium with the outer lobe of the basistyle developed into a long thumb-like lobe that is about as long as the longest dististyle; inner or ventro-lateral lobe with the spines generally short. Both dististyles with denticles or serrations along the lower or concave margin. Outer dististyle relatively slender, narrowed into a long apical point. Inner dististyle smaller, the outer face with more appressed serrations. Aedeagus relatively short and stout.

Habitat.—Eastern Canada.

Holotype, male, Notre Dame du Lac, Temiscouata, Quebec, June 17, 1929 (C. P. Alexander).

Paratype, male, Bristol, New Brunswick, June 16, 1929 (C. P. Alexander).

Type in the writer's collection.

Both specimens were swept from rank vegetation growing along small rocky streams. The antennae are of about the same actual length as in *M. laricicola* Alex. but appear longer because of the smaller size of the fly.

**Molophilus pubipennis* (O.S.). Knowlton, July 23, 29 (LJM).

**Molophilus quadrispinosus* Alex. Notre Dame du Lac, Temiscouata, June 17, 29 (CPA); Flatland, Gaspé, June 22, 29 (CPA).

MOSQUITO CONTROL IN EASTERN UNITED STATES

BY ARTHUR GIBSON,
Dominion Entomologist, Ottawa, Ont.

For several years, I have had the pleasure of attending the annual meetings of the New Jersey Mosquito Extermination Association. These meetings are held at Atlantic City, usually about the middle of February. This year the 18th annual meeting was held on February 18, 19 and 20. One would think from the name of the organization that problems discussed at these annual meetings are concerned with mosquito control within the state of New Jersey. While, in the main, this may be true, at the same time, non-residents of the state, have during recent years been taking a keen interest in the sessions, not only attending them personally but contributing valuable papers to the programmes. At the meeting held last February, entomologists and public health officers from Canada and the States of Connecticut, Massachusetts, New York, Illinois, etc., took an active part in the proceedings.

At the opening session on Wednesday evening, February 18, Dr. T. J. Headlee, State Entomologist of New Jersey, presented a valuable paper on "The Biology of the Important Economic Species of Mosquitoes Occurring in New Jersey"; Mr. F. W. Millar, Associate Entomologist of the New Jersey Experiment Station, one on "A Summary of Mosquito Control Accomplishments in New Jersey During 1930", and one by the writer, prepared by Mr. C. R. Twinn, Dominion Entomological Branch, on "The Biology of the Important Species of Mosquitoes Occurring in Eastern Canada." Dr. L. O. Howard, United States Bureau of Entomology, who for a number of years pre-

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