

SCIENTIFIC RESULTS OF THE KATMAI EXPEDITION
OF THE NATIONAL GEOGRAPHIC SOCIETY.

THE CRANE-FLIES (TIPULIDÆ, DIPTERA).

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The crane-flies collected by Prof. James S. Hine and A. J. Basinger, members of the Katmai Expedition, have been submitted to me for examination. The material is of exceptional interest in the high percentage of undescribed species that it includes. The types of the new species are deposited in the collection of Ohio State University.

FAMILY TIPULIDÆ.

SUBFAMILY LIMNOBIINÆ.

Tribe Limnobiini.

Genus *Limnobia* Meigen.

Limnobia hudsonica Osten Sacken.

1861 *Limnobia hudsonica* Osten Sacken; Proc. Acad. Nat. Sci. Philadelphia, 1861, p. 289.

One specimen, Savonoski, Naknek Lake, July, 1919.

Limnobia sciophila Osten Sacken.

1877 *Limnobia sciophila* Osten Sacken; Bull. U. S. Geol. Geog. Survey Terr., 3, p. 197.

One specimen, Katmai, July, 1917. The species had previously been recorded from Kodiak Island by Coquillett.

Limnobia indigenoides, sp. n.

Allied to *L. indigena*; mesonotal præscutum brown with three brownish black stripes; mesopleura and mesosternum broadly dark brown; femora brownish yellow, with a single narrow, brown ring before the apex; wings subhyaline with heavy dark brown seams to the cord and outer end of cell 1st M₂; abdominal tergites brownish black, narrowly ringed caudally with yellowish.

Male.—Length 8 mm.; wing, 10 mm.

Rostrum and palpi dark brownish black. Antennæ black, the flagellar segments subcylindrical with conspicuous verticils. Head dark brown, sparsely brownish gray pruinose, most of the pruinosity destroyed in the type; a delicate, impressed median line.

Mesonotal præscutum dark brown with three brownish black stripes, the median stripe entire, broadest anteriorly; scutum with the lobes dark brown, the median area pruinose; scutellum dark brown; postnotum reddish brown. Mesopleura dark brown; metapleura and lateral sclerites of the postnotum paler brown; sternites dark brown. Halteres dark brown, the base of the stem and the knobs obscure yellow. Legs with the fore coxæ dark brown; remaining coxæ obscure yellowish; trochanters obscure yellow; femora brownish yellow with a narrow, brown band before the tip; tibiæ light brown, narrowly tipped with dark brown; tarsi dark brown; tarsal claws very long and slender, with two teeth, the longest just before midlength, the second basal in position. Wings subhyaline with a heavy dark brown pattern along the veins, as follows: a large spot at the origin of Rs; the large stigmal blotch, continued down onto the fork of Rs; cord and outer end of cell 1st M_2 narrowly seamed with brown; narrow brown seams along veins Cu_1 , Cu_2 , and the Anal veins; veins dark brown. Venation: Sc_1 ending slightly before midlength of Rs, Sc_2 at the tip of Sc_1 ; Rs long, square and long-spurred at origin; r removed from the tip of R_1 but this distance considerably shorter than in *L. indigena*, a little shorter than the basal deflection of Cu_1 ; basal deflection of Cu_1 a short distance before the fork of M.

Abdominal tergites brownish black, conspicuously ringed caudally with yellowish, the yellow pattern narrowed or obliterated at the lateral margins of the segments; sternites two to four yellowish, the lateral margins narrowly black; remaining sternites brownish black, slightly paler medially, the caudal margin very narrowly pale. Hypopygium obscure brownish yellow.

HABITAT.—Alaska.

Holotype, ♂, Katmai, August, 1917 (Jas. S. Hine).

Limnobia indigenoides is most nearly related to *L. indigena* Osten Sacken but is readily told by the coloration of the femora and the unusual reversal of pattern of the abdominal tergites. The wing-pattern is much heavier and confined to the veins beyond the origin of the sector with the exception of narrow seams to the cubital and anal veins.

Genus *Dicranomyia* Stephens.

Dicranomyia halterata Osten Sacken.

1869 *Dicranomyia halterata* Osten Sacken; Mon. Dipt. N. Amer., pt. 4, pp. 71, 72.

A few males and females from Savonoski, Naknek Lake, July, 1919.

Dicranomyia aquita Dietz.

1915 *Dicranomyia aquita* Dietz; Can. Ent., Vol. 47, pp. 331, 332.

A few specimens of both sexes from Savonoski, Naknek Lake, July, 1919, and one from Katmai, August, 1917. The species had hitherto been known only from the types taken in the vicinity of Great Slave Lake.

Dicranomyia melleicauda Alexander.

1917 *Dicranomyia melleicauda* Alexander; Can. Ent., Vol. 49, pp. 22, 23.

A single female of this autumnal species was taken on Kodiak Island in September, 1919 (Jas. S. Hine). The species had hitherto been known only from the type-locality (Colorado).

Dicranomyia duplicata Doane.

1900 *Dicranomyia duplicata* Doane; Journ. N. Y. Ent. Soc., Vol. 8, pp. 185, 186, pl. 7, fig. 12.

One female specimen from Katmai, July, 1917.

Tribe Eriopterini.

Genus *Erioptera* Meigen.

Erioptera katmai, sp. n.

General coloration black, dusted with gray; wings of normal shape, yellowish gray, veins dark brown, Sc more yellowish; cell 1st M_2 open, Anal veins divergent.

Female.—Length, 7 mm.; wing, 7 mm.

Rostrum and palpi black, the former dusted with gray. Antennæ black, the basal flagellar segments short-cylindrical, the distal segments oval. Head black, dusted with gray.

Thorax black, dusted with brownish gray, the type specimen badly rubbed. Halteres conspicuously light brownish yellow. Legs with the coxæ, trochanters and femora black, the tibiæ and metatarsi brown, tipped with black, the remaining tarsal segments black. Wings of almost normal shape and size, yellowish gray, the stigmal region but little darker; veins dark brown, Sc yellow. Venation: Sc_1 ending just before r; that section of R_2 before r about equal to R_{2+3} ; cell 1st M_2 open; 2nd Anal vein straight.

Abdomen dark, sparsely pruinose and provided with an abundant, short, appressed, golden yellow pubescence. Ovipositor with the valves horn-colored, the tergal valves slightly upcurved, compressed, the tips subacute, the sternal valves shorter, straight, the tips acute.

HABITAT.—Alaska.

Holotype, ♀, Savonoski, Naknek Lake, June, 1919. (Jas. S. Hine).

Erioptera katmai is closely related to *E. angustipennis* Alexander (North-western Canada), from which it is readily told by the almost normal wings. Both of these species, as well as the forms belonging to the *microcellula* group, deviate from the characters of the subgenus *Erioptera* in the straight 2nd Anal vein.

Genus *Ormosia* Rondani.

Ormosia subnubila, sp. n.

Related to *O. nubila* Osten Sacken; patches of dark hairs on the wings not forming transverse clouds; cell 1st M_2 broader, strongly widened distally.

Female.—Length 6 mm.; wing, 8.2 mm.

Rostrum and palpi brownish black. Antennæ black, the flagellar segments oval, the distal segments more elongated. Head gray.

Thorax dark brown, dusted with brownish gray, the pronotal scutellum yellowish on the sides. Pleura gray pruinose with sparse yellowish hairs arranged in patches; mesosternum with yellowish hairs. Halteres light yellow, the extreme base of the stem darkened. Legs with the coxæ and trochanters gray pruinose, provided with conspicuous yellow hairs; remainder of the legs dark brown. Wings broad, grayish subhyaline, with faint dark clouds along the cord and some of the longitudinal veins beyond the cord; stigma conspicuous, dark brown; veins dark brown; a more nearly hyaline area before the stigma cephalad of the end of the sector. Venation: Sc_2 a little before midlength of the distance between the origin of Rs and the end of Sc_1 ; cell 1st M_2 closed, much broader than in *O. nubila*, strongly widened distally; m and the outer deflection of M_3 subequal; Anal veins convergent.

Abdomen black, sparsely pruinose and with appressed yellowish hairs. Ovipositor with the tergal valves horn-colored but very dark at the base, the valves strongly upcurved to the acute tips; sternal valves much shorter, straight, the tips subacute.

HABITAT.—Alaska.

Holotype, ♀, Savonoski, Naknek Lake, July, 1919 (Jas. S. Hine).

Genus *Helobia* St. Fargeau et Serville.

Helobia hybrida (Meigen).

1804 *Limonia hybrida* Meigen; Klass. Beschr. Eur. Zweifl. Ins., p. 57.

A few males and females from Savonoski, Naknek Lake, June, 1919.

Tribe *Limnophilini*.

Genus *Limnophila* Macquart.

Limnophila subunica, sp. n.

General coloration gray; wings long and narrow, grayish subhyaline, the stigma and small clouds at the origin and end of Rs brown; radial sector longer than R_{2+3} .

Male.—Length, 8 mm.; wing, 8.6 mm.

Rostrum light gray; palpi brown. Antennæ of the male elongated; basal scapal segment brown, sparsely dusted with gray; second scapal segment yellowish brown; flagellar segments brownish black, the basal segments indistinctly yellowish at the extreme base, the segments provided with a conspicuous white outspreading pubescence and moderately long verticils. Head gray.

Mesonotal præscutum yellowish gray with a barely indicated darker median stripe; remainder of the mesonotum and the pleura clear light gray, the dorso-pleural membrane brown. Halteres very pale brown, the knobs dark brown. Legs with the coxæ yellow, indistinctly darkened at the base; trochanters yellow; femora dark brown, more yellowish basally, this color narrowest on the fore legs, broadest on the hind legs where only the tips are darkened; tibiæ and tarsi dark brown. Wings much longer and narrower than in *L. unica*; grayish subhyaline, marked as follows: stigma conspicuous, oval, dark brown; a faint brown cloud at the origin of Rs and a larger and more conspicuous seam at r-m and the deflection of R_{4+5} ; outer end of cell 1st M_2 indistinctly seamed with brown; veins brownish black. Venation: Rs long, only slightly arcuated at origin, from one-third to one-fourth longer than R_{2+3} ; r at the tip of R_1 , inserted on R_2 about twice its length beyond the fork of R_{2+3} ; cell 1st M_2 long and narrow, with the basal deflection of Cu_1 inserted at about one-third its length; cell M_1 nearly twice the length of its petiole which is about one-half longer than the basal deflection of Cu_1 .

Abdomen brownish gray, the basal sternites more yellowish.

HABITAT.—Alaska.

Holotype, ♂, Katmai, June 10, 1919 (Jas. S. Hine).

Limnophila subunica is closely allied to *L. unica* Osten Sacken of North-eastern North America, from which it is readily told by the long, narrow wings with Rs elongate and scarcely arcuated at origin, cell 1st M_2 long and narrow, with the basal deflection of Cu_1 near one-third its length, and other characters. The specimens of *L. unica* recorded by Coquillett (Proc. Washington Acad. Sci., Vol. II, p. 399; 1900) from Yakutat and Sitka presumably refer to the present species.

Limnophila aleutica, sp. n.

General coloration dark brown, sparsely pruinose; legs dark brown, the femoral bases yellow; wings yellow, Rs long, about equal to R₂, r at the tip of R₁; cell M₁ present.

Male.—Length, 10.5 mm.; wing, 10 mm.

Rostrum dark brown; palpi black. Antennæ short; first scapal segment black, sparsely pruinose; basal segments of the flagellum brown, rather enlarged, oval, the distal segments darker and more elongated. Head greyish brown.

Thorax dark brown, shiny, sparsely brownish pollinose, the post-notum with a gray pruinosity. Pleura gray. Halteres rather long, pale, the knobs brown. Legs with the coxæ yellow, the fore and middle coxæ brownish basally; trochanters pale; femora dark brown, the bases narrowly yellowish, broadest on the posterior femora, narrowest on the fore femora; tibiæ pale brown, passing into dark brown at the tips; tarsi dark brown. Wings with a strong yellowish tinge, the subcostal cell even more saturated; stigma conspicuous, dark brown; a faint brown cloud at the end of Rs; veins dark brown. Venation: Rs long strongly arcuated to slightly angulated at origin, subequal to R₂; R₂₊₃ but little longer than the basal deflection of R₄₊₅; r at the tip of R₁ and on R₂ at about two-fifths its length; cell M₁ longer than its petiole; basal deflection of Cu₁ at or slightly before midlength of cell 1st M₂.

Abdomen dark brown, sparsely yellowish pollinose. Male hypopygium rather large and conspicuous; ninth tergite produced medially into a rather large, tumid, subquadrate lobe that is gently concave apically; pleurites short and stout; outer pleural appendage slender, chitinized, expanded distally into a flattened blade; inner appendage bent strongly cephalad a short distance beyond the base.

HABITAT.—Alaska.

Holotype, ♂, Katmai, June 10, 1919 (Jas. S. Hine).

Paratopotypes, 3 ♂'s.

Limnophila aleutica may be placed temporarily in the subgenus *Phylidorea* Bigot which includes *L. ferruginea*, *L. adusta* and others. In this group it approaches most nearly *L. similis*, *L. terræ-novæ* and other dark colored species from which it is readily told by the elongate radial sector.

Tribe *Pediciini*.Genus *Tricyphona* Zetterstedt.*Tricyphona frigida* Alexander.

1919 *Tricyphona frigida* Alexander; Rept. Canadian Arctic Exped., 1913-18. Vol. 3C, pp. 7c, 8c.

This species was taken at Katmai, June 10, 1919.

SUBFAMILY TIPULINÆ.

Tribe *Tipulini*.Genus *Stygeropsis* Loew.*Stygeropsis ominosa*, sp. n.

Female.—Length 16 mm.; wing, 15.8 mm.

Generally similar to *S. bergrothi* Williston, differing as follows:

Size larger. Frontal prolongation of the head entirely dark in color. Antennæ with the first scapal segment dark brown, transversely wrinkled; second scapal and first flagellar segments conspicuously reddish yellow, the remainder of the flagellum gradually passing into black. Head obscure gray, the middle of the vertex suffused with brown, paler adjoining the inner margin of the eyes.

Thorax brownish gray, with three dull gray stripes that are indistinctly paler medially, the median stripe split by a capillary black line. Halteres with the base of the stem bright yellowish brown. Legs comparatively stout, especially the fore legs. Wings with a strong fulvous brown tinge that is about intermediate in intensity between *S. dimidiata* and *S. fuscipennis*. Abdomen obscure gray, the caudal margins of the segments narrowly pale, the lateral margins of the tergites broadly yellowish buff, the dorso-median area suffused with brown; ovipositor horn-colored.

HABITAT.—Alaska.

Holotype, ♀, Savonoski, Naknek Lake, July, 1919 (Jas. S. Hine).

Stygeropsis fuscipennis Loew.

1865 *Stygeropsis fuscipennis* Loew; Berliner Ent. Zeitschr., Vol. 9, p. 129.

A specimen of each sex from Savonoski, Naknek Lake, July, 1919.

Stygeropsis dimidiata Loew.

1865 *Stygeropsis dimidiata* Loew; Berliner Ent. Zeitschr., Vol. 9, p. 129.

A number of specimens of both sexes, from Savonoski, Naknek Lake and Katmai, June, 1919. This series shows that this species varies considerably in the coloration of the frontal prolongation of the head and, to a slight degree, in the pattern of the mesonotal præscutum.

Genus *Tipula* Linnæus.*Tipula hinei*, sp. n.

Generally similar to *T. centralis* Lœw; antennæ bicolorous; mesonotum light brown, the præscutum with three clear gray stripes that are narrowly margined with brown, the median stripe split by a capillary brown line; male hypopygium with the ninth tergite as in *centralis*, the U-shaped posterior notch much wider.

Male.—Length 16.5 mm.; wing, 17.6 mm.

Female.—Length 22 mm.; wing, 17 mm.

Frontal prolongation of the head brown, sparsely pruinose; palpi brown. Antennæ with the basal three segments yellow, the flagellar segments distinctly bicolorous, the basal enlargement conspicuous, black, the remainder of the segments brownish yellow; distal flagellar segments slightly more unicolorous. Head light gray, paler adjoining the inner margin of the eye; a narrow, indistinct, capillary line that is impressed on the vertical tubercle.

Mesonotal præscutum light brown, the region before the pseudo-sutural foveæ more grayish; three clear gray stripes that are narrowly margined with brown, the median stripe split by a capillary dark brown line that broadens out slightly behind; scutum dull gray, each lobe with two clearer gray areas that are encircled by brown; scutellum and postnotum gray with a narrow brown line. Pleura dull gray. Halteres dark brown. Legs with the coxæ faintly gray pruinose; trochanters brownish yellow; femora pale brown, more yellowish basally, the tips narrowly brown; tibiæ and tarsi brown. Wings of the type of *T. septentrionis* Lœw and related species, whitish subhyaline with a heavy brown and gray clouded pattern.

Abdomen brown, the basal tergites paler, the segments pale laterally; sternites pale reddish brown. Male hypopygium as in *T. centralis*, the ninth tergite as in this species but the median notch broadly U-shaped, the adjacent angles subacute. Ninth pleurite small, complete or nearly so; outer pleural appendage rather small, pale basally, covered with a dense pale pubescence and rather long black setæ; inner pleural appendage compressed, the caudal margin roughened and blackened. Ninth sternite profoundly incised beneath. Eighth sternite unarmed.

The female is generally similar to the male but the wing-pattern more tessellated with white. Abdominal tergites buff with three conspicuous brown stripes, the lateral margins conspicuously light gray. Ovipositor and dorsal shield shiny dark brown; lateral margins of the tergal valves with comparatively few (about ten) blunt teeth.

HABITAT.—Alaska.

Holotype, ♂, Katmai, August, 1917 (Jas. S. Hine).

Allotopotype, ♀.

Tipula alaska Alexander.

1918 *Tipula alaska* Alexander; Can. Ent., Vol. 50, pp. 412-414.

One male specimen from Katmai, August, 1917.

Tipula fragilina Alexander.

1919 *Tipula fragilina* Alexander; Can. Ent., Vol. 51, pp. 171, 172.

A few specimens from Kodiak in September, 1919, (Jas. S. Hine). Prof. Hine states that the flies of this species were very numerous in the woods during September.

Tipula tænigaster, sp. n.

General coloration of the thorax light gray, the præscutal stripes very ill-defined; legs dull yellow; wings subhyaline; abdomen long and moderately slender; ovipositor with only the tergal valves functional, these short and stout, the outer face flattened and reticulate.

Female.—Length 20 mm.; wing, 13.5 mm.

Frontal prolongation of the head dark above, light gray pruinose; lateral and ventral surfaces obscure brownish yellow; nasus rather long and very broad at the base; palpi brown. Antenna with the basal segment light brown, pruinose above; flagellum black. Head light gray, the middle of the vertex between the eyes with a brown cloud and a capillary dark brown line.

Mesonotum clear light gray, the præscutum with three very indistinct and ill-defined darker gray stripes; a very restricted yellowish triangular area at the humeral region; scutellum brown, more sparsely pruinose than the remainder of the thorax. Pleura light gray, the dorso-pleural membrane and the area immediately ventrad of the base of the halteres dull yellow. Halteres light brown. Legs with the coxæ light gray; trochanters dull yellow; remainder of the legs dull yellow with only the distal tarsal segments darkened. Wings comparatively narrow, subhyaline; stigma comparatively large, brown; veins brown. Venation: base of R_2 nearly perpendicular at origin; petiole of cell M_1 nearly equal to m ; cell 1st M_2 long and narrow, about as long as cell M_1 ; $m-cu$ punctiform.

Abdomen comparatively long and slender; basal tergites pale brown; remaining tergites rather bright yellow; a distinct, slightly interrupted, dorso-median line; lateral margins of the tergites rather broadly grayish buff; basal sternites yellowish; segments five to eight pruinose. Ovipositor and dorsal shield light castaneous; valves of the ovipositor very short and stout, the outer face flattened, microscopically pitted and reticulate and with a narrow ridge down the middle; proximal face convex, shiny, provided with pale, erect hairs; sternal valves microscopic.

HABITAT.—Alaska.

Holotype, ♀, Katmai, July, 1917 (Jas. S. Hine).

This interesting fly belongs to the group of *T. pribilofensis* Alexander, *T. subarctica* Alexander and other species; the structure of the ovipositor is very different from the other members of the *arctica* group, in which the tergal valves are flattened, with the outer margin serrate. It is possible that this fly is the female of the paratype specimen of *T. subarctica* from this region (see Report Canadian Arctic Expedition, Vol. III, part C, p. 16c; 1919) but it now seems probable that this paratype is not conspecific with the holotype from Camden Bay, Alaska.

Tipula subarctica Alexander.

1919 *Tipula subarctica* Alexander; Rept. Canadian Arctic Exped., 1913-18, Vol. 3C, pp. 15c, 16c.

A paratype of this species was taken at Katmai in July, 1917; a second male from Savonoski, Naknek Lake, June, 1919 (Jas. S. Hine). As remarked under the discussion of the preceding species, this male may belong to *Tipula taenigaster*.

Tipula katmaiensis, sp. n.

Nasus lacking; antennæ with the scape reddish brown, flagellum black, the segments short, binodose; mesonotal præscutum brownish gray with two indistinct brown stripes; wings with a rather strong brownish yellow tinge, stigma brown; abdomen reddish with a black dorso-median stripe; hypopygium simple.

Male.—Length about 11 mm.; wing, 12 mm.

Frontal prolongation of the head dark brown, dusted with yellowish gray; nasus lacking; palpi brownish black. Antennæ with the scapal segments reddish brown, the first segment slightly darkened at the base; flagellar segments black, the intermediate segments short but with the inner face strongly constricted at mid-length, the basal swelling being but little thicker and a little shorter than the distal portion of the segment; outer flagellar segments cylindrical and crowded, the apical segment minute. Head yellowish gray with a moderately conspicuous, capillary, brown, median line; vertical tubercle of moderate size, entire; eyes small.

Mesonotal præscutum obscure brownish gray with two indistinct brown stripes, the lateral stripes obliterated, the stripes submedian in position, separated by a narrow line of the ground color; remainder of the mesonotum brownish gray. Pleura brownish gray. Halteres yellow, the knobs brown. Legs with the coxæ rather large, gray; trochanters yellowish brown; femora and tibiæ reddish yellow, the tips narrowly dark brown; metatarsi pale brown, the tips and the remainder of the tarsi dark brown. Wings strongly brownish yellow, the stigma brown; veins dark brown, Sc and R more reddish brown. Venation: cell 1st M_2 small but high; m short; cell M_1 about twice the length of its petiole.

Abdominal tergites with the first segment brownish black, gray basally; remaining tergites reddish with a continuous black median stripe and paler sublateral stripes; lateral margins of the tergites conspicuously buffy; sternites reddish, very sparsely pruinose. Hypopygium small, pale reddish brown. Ninth tergite with a broad median notch, the lateral lobes squarely truncated. Ninth pleurite complete; outer pleural appendage long, slender, only slightly flattened, provided with sparse, rather short, hairs; inner pleural appendage very long and comparatively narrow, directed dorsad, the tip bent cephalad into the notch of the tergite; at its base, this appendage is expanded into a flattened portion that is directed laterad. Ninth sternite with a broad but comparatively shallow U-shaped median notch. Eighth sternite unarmed.

HABITAT.—Alaska.

Holotype, ♂, Katmai, July, 1917 (Jas. S. Hine).

This interesting little *Tipula* is very closely allied to *T. cineracea* Coquillett in its general size and habitus, the conspicuous lack of a nasus and the venational characters, especially the very high cell 1st M_2 . It differs from *cineracea* in the shorter antennæ, with the first flagellar segment entirely dark; the dark brownish gray coloration of the body, the more saturated wings and the details of the male hypopygium; in *cineracea*, the outer pleural appendage is much broader, subspatulate and conspicuously light yellow in color; the notch of the ninth sternite is small, V-shaped and that portion of the sclerite cephalad of it is feebly carinate.

Tipula besselsi Osten Sacken.

1877 *Tipula besselsi* Osten Sacken; Proc. Boston Soc. Nat. Hist., Vol. 19, pp. 42, 43; April, 1877.

Specimens from Savonoski, Naknek Lake, June, 1919.

Tipula appendiculata Lœw.

1863 *Tipula appendiculata* Lœw; Berliner Ent. Zeitschr., Vol. 7, p. 287.

Specimens from Katmai, July, 1917, and from Savonoski, Naknek Lake, June, 1919.

Tipula cimmaria Speiser.

1900 *Tipula strigata* Coquillett; Proc. Washington Acad. Sci., Vol. 2, pp. 402, 403; December 7, 1900; preoccupied.

1909 *Tipula cimmaria* Speiser; Kilimandjaro-Meru Exped., Diptera 4 Orthorapha, p. 57.

One male from Savonoski, Naknek Lake, June, 1919.

Urbana, Illinois.