Undescribed Species of Crane-Flies from the Eastern United States and Canada (Dipt.: Tipulidae). Part I.

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The new species of crane-flies described at this time were chiefly included in extensive collections that were sent to me by Professor J. Speed Rogers, head of the Department of Biology, University of Florida at Gainesville, Florida. The flies are described at this time in order to make the names available for the forthcoming state lists by Professor Rogers. I am very greatly indebted to the collector for many favors

* Contribution from the Department of Entomology, Massachusetts Agricultural College.

and kind co-operation in making known the crane-flies of the Eastern United States. The types have been returned to Professor Rogers.

Antocha (Antocha) obtusa sp.n.

General coloration ochreous, the rostrum dark; mesonotal praescutum with a median brown stripe; wings with macrotrichiae on the distal sections of veins $M_1 + _2$ and M_3; male hypopygium with the outer dististyle chitinized, the apex obtuse.

♂. Length about 4.8 mm.; wing 5.5 mm. ♀. Length about 5.2 mm.; wing 6 mm.

Rostrum dark brown, the palpi a trifle paler brown. Antennae dark brown throughout. Head grey, paler posteriorly.

Pronotum yellowish above, darker medially. Mesonotum pale yellowish ochreous, the praescutum with a conspicuous median brown stripe, darkest in front, becoming paler behind and obsolescent before the suture; lateral stripes very indistinct, reddish. Pleura reddish ochreous, in the female very sparsely pruinose. Halteres pale, the knobs a little infuscated.

Legs with the coxae and trochanters testaceous ochreous; remainder of the legs pale brown, gradually darkening outwardly; the tarsi dark brown.

Wings opalescent whitish, the veins brown; prearcular region whitish. Macrotrichiae on distal three-fourths of vein $R_4 + _5$ and on the distal sections of $M_1 + _2$ and M_3 almost throughout their length. Venation: $R_2 + _3$ beneath the stigma very faint, beyond the stigma with about four macrotrichiae.

Abdomen brown, the lateral margins of the segments a little paler, the subterminal segments of the male darkened to form a ring; hypopygium and ovipositor pale. Male hypopygium with the dististyles about equal in length, the outer style chitinized for almost its whole length, bent at about one-third the length, the long, straight terminal portion obtuse at apex. Gonapophyses profoundly bifid as in the genus, the lateral arm a flattened blade, the mesal arm more chitinized apically, slightly expanded before the tip, the apex terminating in a long acute beak, the whole suggesting the head of a bird. Aedeagus distinct.

Habitat.—Michigan, New York, Quebec. *Holotype:* ♂, Ann Arbor, Washtenaw County, Michigan, August 24, 1921 (*J. Speed Rogers*); Coll. No. 12. *Allotopotype,* ♀. *Paratopotypes,* ♂♀. *Paratypes,* 1 ♂, Portage, Wyoming County, New

York, May 24, 1914 (*H. H. Knight*); 2 ♂ 2 ♀, P. Golf Club, Quebec, August 14-25, 1924 (*G. S. Walley*), in Canadian National Collection.

Antocha obtusa is readily told from the other described American species by the obtuse apices of the elongate dististyles of the male hypopygium.

DICRANOTA Zetterstedt and RHAPHIDOLABIS Osten Sacken.

The male genitalia of the various species of *Dicranota,* as well as of the related genus *Rhaphidolabis* Osten Sacken, offer excellent characters for recognition of the species. The ninth tergite has the caudal margin straight across in some species, or with a very low median lobe; this lobe becomes more conspicuous, though low and obtuse, in *R. cayuga* Alexander and species of the subgenus *Plectromyia,* gradually enlarging until, in the *tenuipes* group of *Rhaphidolabis* (*forceps* Alexander, *persimilis* Alexander, *tenuipes* Osten Sacken) it becomes long and slender. The basistyles are relatively stout, and, in most species, bear spines or spinous setae at the slightly produced apices; the ventral face is produced ventrad and mesad into a slender finger-like lobe in *R. persimilis* and a much larger and stouter one in *R. forceps.* The two dististyles are very similar in appearance, the outer one being clavate or cylindrical, fleshy, covered with spines or spinous setae; the inner style assumes various shapes in different species and offers excellent characters for the differentiation of otherwise similar species; in almost all cases this style appears as a more or less flattened blade, the distal portion of which is glabrous and subchitinized.

At the base of the basistyles, on the mesal face, appear two distinct structures that are of prime importance in the differentiation of species, the first being dorsal in position and thus being apparently homologous with the true interbases as defined by Crampton (Trans. Amer. Ent. Soc., 48: 207-225; 1923); these structures, which are here discussed as the *dorsal interbases,* lie immediately ventrad of the caudo-lateral angles of the tergite and appear to arise from pale membrane at this point. In microscopic slides they even appear to arise from the extreme caudo-lateral angles of the ninth tergite but must be considered as being interbasal structures. In the majority of cases they appear as a simple, strongly curved hook, though in a few species (*R. cayuga* Alexander, *R. rubescens* Alexander) they are large claviform blades that exceed in size the ventral interbases. The second set of interbasal processes lie

in a more ventral position at the base of the mesal face of the basistyles and seem to be homologous with the *claspettes* of the Culicidae; in the present paper they are discussed as *ventral interbases* and offer the most convenient and evident structures to be used in the differentiation of species in the *Dicranotae*. In most forms studied they are larger than the dorsal interbases and appear as flattened blades bearing on the face a certain number of small setae; the shape of the blade varies greatly in the different species, in *R. persimilis* and *R. forceps* being deeply bifid or tong-shaped. It should be noted that in some species of *Dicranota* and *Rhaphidolabis,* one or both of the interbasal processes appears to be lacking or at least reduced to a microscopic tubercle. The gonapophyses usually closely subtend the aedeagus, the phallosome appearing as a depressed, compact, subquadrate, central mass, with the lateral angles and the apex of the aedeagus free.

Dicranota divaricata sp.n.

Related to *D. noveboracensis* Alexander, differing chiefly in the structure of the male hypopygium; ventral interbasal process a slender straight rod with the apex obtuse; phallosome quadrate, the gonapophyses directed caudad and laterad as slender divergent horns.

♂. Length 4.5 — 5 mm.; wing 6.3 — 7 mm. Rostrum and palpi dark brown. Antennae short in both sexes, brown throughout, the flagellar segments a trifle paler than the scape. Head clear gray.

Mesonotal praescutum gray with four grayish brown stripes, the long intermediate pair separated from one another by a capillary vitta; scutum gray, the centers of the lobes grayish brown; scutellum light brown; postnotum darker brown, sparsely pruinose. Pleura dark brown, gray pruinose, the dorso-pleural membrane a little brighter. Halteres brownish testaceous, the base of the stem yellowish.

Legs with the coxae brownish gray, paler at tips; trochanters pale yellow; remainder of legs brown, the femoral bases vaguely paler.

Wings with a very pale brown tinge, the slightly darker stigma oval; veins darker brown. Venation: Sc_1 extending to one-third the distance between *r* and the outer deflection of R_2; *Rs* feebly angulated; R_{2+3} a little longer than *r;* outer deflection of R_2 slightly oblique in position, less than its length from the tip of R_{1+2}; distance between *r* and the outer deflection of R_2 greater than the terminal section of R_3 alone; cell M_1 present; *m* absent; *m-cu* about its length beyond the fork of *M*.

Basal abdominal tergites reddish brown, the more distal segments darker; caudal margins of the intermediate segments narrowly and inconspicuously yellowish; sternites similar, the lateral margins paler. Male hypopygium with the basistyles stout; ventral interbasal process a slender, straight rod, the apex obtuse. Phallosome a central quadrate mass, the caudolateral angles with the gonapophyses produced into slender divergent horns, the aedeagus a little longer and stouter, occupying a median position.

Habitat.—North Carolina. *Holotype:* ♂, Guilford College, Guilford County, March 13, 1918 (*J. Speed Rogers*); Coll. No. 31. *Paratopotypes,* 3♂♀, with the type; 1 ♂, March 11, 1918; Coll. No. 30.

Rhaphidolabis (Rhaphidolabis) rogersiana sp.n.

♂. Length about 5.5 mm.; wing 6 — 6.5 mm. ♀. Length 6 mm.; wing 7 mm.

Closely allied to *R.* (*R.*) *cayuga* Alexander, to which species it would run in existant keys.

General coloration dark gray, the mesonotal praescutum with three still darker leaden gray stripes. Wings with a peculiar milky-white tinge, the stigma pale brown; veins darker brown. Venation: Cell R_3 sessile or very short petiolate.

Male hypopygium strikingly different from *R. cayuga.* Median lobe of ninth tergite broad but longer. Produced apex of basistyle with relatively few spines. Dorsal interbases appearing as slender chitinized rods that are bent at a right angle before the tips, the extreme apex deflected into a hawk-like beak. Ventral interbases appearing as long, flattened, simple blades, broad at base, narrowed gradually to the obtuse apex which is microscopically serrulate.

Habitat.—Michigan. *Holotype:* ♂, Gogebic County, August 9, 1920 (*J. Speed Rogers*); Coll. No. 72. *Allotopotype:* ♀, *Paratopotypes:* 2 ♂♂, August 10, 1920; Coll. No. 73; 1 ♀, August 11, 1920; Coll. No. 81.

This interesting crane-fly is named in honor of the collector, Professor James Speed Rogers, who has done much toward making known the crane-flies of Eastern North America.

(To be continued)