two on metatarsus I., metatarsus IV. spined only at tip, anterior coxæ separated by nearly width of labium. Sternum once and a third longer than broad, broadest between coxæ I. and II. Abdomen once and a half longer than broad, rounded at base, pointed behind, moderately high. The epigynum shows two oval cavities, more than their diameter apart, some distance in front of a posterior median indentation. The male palpus is short; the tibia has a short, sharp projection on the outside; the bulb projects beyond the base, and the upper part is much smaller than the lower, showing a curved tube on the outside, and terminating in a stout, straight, black stylus.

A few specimens from Ottawa, Canada; collected by Mr. W. H. Harrington.

DIPTERA FROM YUCATAN AND CAMPECHE.—I.

BY C. H. TYLER TOWNSEND, FRONTERA, MEXICO.

A few specimens of Diptera were taken in the Yucatecan region, in April and May, 1896, by the writer. The present paper describes the new species. More material from that interesting fauna will doubtless be secured in time, and will form the subject of future papers of this series. For an account of the peculiar bio-geographical aspects of the *Yucatecan* fauna and flora, the reader is referred to the writer's second paper on the Bio-geography of the Southwestern U. S. and Mexico (Trans. Texas Acad. Sci., 1897).

TABANIDÆ.

1. *Tabanus campechianus*, n. sp.

One ♀. April 25th. Taken near Campeche, between that place and Esperanza (State of Campeche). Seems to approach *T. nigrovittatus*, McQ., according to Osten-Sacken's description.

Length, 8½ mm. Palpi almost white, with some white as well as black hairs. Face brownish, covered with a white bloom. Front brown, yellowish-gray dusted; frontal callosity nearly square, rounded on upper corners; a smaller longitudinal callosity above it twice as long as wide, and with a tendency to a linear elongation posteriorly. Callosities brown. Front parallel, about one-sixth width of head, parallel portion only a little more than twice as long as wide. First two joints of antennæ pale yellowish, second joint ending above in a sharp spur; third joint reddish-yellowish, annulate portion black, process of base angular, but not enough developed to form a right angle, greatest width

of third joint about twice the extreme basal width. Annulate portion of third joint hardly as long as the basal portion, about four times as long as wide. Thorax cinereous dusted, with a sparse short white pubescence, with four somewhat indistinct wide brownish vittæ. Pleura whitish pollinose. Scutellum cinereous, with a yellowish tinge on margin. Abdomen brownish-yellow, a well-defined, moderately broad median yellowish-white pollinose vitta of even width, becoming indistinct on sixth segment. A brown vitta on each side of and limiting the median vitta, forming a triangle on each side on third and a subarcuate marking on each side on second segment; but these brown vittæ are faintly represented in full width on second and third segments by a shading of brown supplementing the triangular and arcuate markings. On the outside of the brown vittæ on each side there is a lateral yellowish-white pollinose vitta like the median one but not so distinct; while still outside of this is another lateral brown vitta limiting the lateral white one on the inside and parallel with the edge of the abdomen on the outside. The fourth segment has the brownish-yellow considerably more tinged with brownish, and the fifth, sixth, and seventh are quite brownish. Pubescence very scanty, hairs of white portions whitish, of brown portions in main blackish, except on hind margins of posterior segments. Legs brownish-yellow, tips of tibiæ and bases of femora slightly brownish, but front tibiæ brownish on distal half; tarsi brownish, especially front tarsi, while the hind tibiæ and metatarsi are but little tinged with this colour. Wings fuscous-hyaline, costal cells and stigma distinctly yellow. Posterior cells all wide open, no stump nor even angle at the base of anterior branch of third vein, Eyes bare, no ocelli.

2. *Tabanus yucatanus*, n. sp.

Three ♀s. May 10th. Taken from horses, at the *cenote* of Xcolak, about ten miles southeast of Izamal, Yucatan. This is the first record of a Tabanid of any genus or species, so far as I can find, from Yucatan. Nor can I find any recorded from Campeche. I have searched through all the multitude of existing descriptions of *Tabanus* from North and South America, including Walker's and Bigot's numerous species, and have been unable to identify this and the preceding species with any of them.

Length, 10 to 11 mm. Differs from *campechianus* as follows: Palpi pale watery-yellowish. Gray bloom of face slightly tinged with

brownish. Front much narrower, about one-twelfth width of head, parallel portion fully five times as long as wide, just perceptibly narrowed anteriorly, with a callus swollen-conical or rounded posteriorly, prolonged into a second elongate spindle-shaped callus. Third antennal joint clearer reddish, annulate portion not so black; process more developed, ending in a sharp-pointed angle, basal part of joint rather widened and shortened; annulate portion short and comparatively stout, pointed elongate-conical, hardly three times as long as basal width in two of the specimens, slightly longer and comparatively less stout in the other. Thorax saturate yellowish-brown, with four indistinct whitish lines, the middle ones sometimes obsolete. Scutellum concolorous with thorax. Median whitish vitta of abdomen formed of whitish pubescence in triangles, under which the ground colour is seen to be paler than the brownish-yellow of rest of abdomen. Pale brownish vitta on each side of median one is composed of coalescent oblique markings, like a vitta broken at the incisures, the marking on each segment directed posteriorly outward. A nearly similar, hardly less broken lateral whitish vitta outside of this on each side; the last is bounded by a broken brown vitta on edge of abdomen, serrate on inner edge. Fourth to seventh, especially fifth to seventh segments, more deeply tinged with brown, or quite dark brown in ground colour. White incisures on sides of abdomen. White vittæ and incisures white-hairy, brownish vittæ black-hairy. Front femora quite brownish, hind metatarsi well tinged with brown, front tarsi almost black. Wings uniformly clear, except the pale yellowish oblique elongate stigma. Otherwise as in *campechianus*, including the venation, bare eyes, and absence of ocelli.

A NEW METHOD OF STUDYING NEURATION.

BY HENRY SKINNER, PROF. ENT. ACAD. NAT. SCI., PHILADELPHIA, PA.

The opprobrium cast on the lepidopterist has been that he did not study the anatomy of his specimens, but depended too much on maculation and colour. There has been much truth in the reproach, as there are few of us who would destroy a rare or unique specimen to examine the neuration. Fortunately the time has arrived when the neuration can be studied with the greatest ease and accuracy, and permanently re-recorded in a photograph, or, more strictly speaking, a radiograph. The anatomy of a living chrysalis may be studied without removing the