

NEW NORTH AMERICAN HOMOPTERA—IV.

BY E. P. VAN DUZEE, BUFFALO, N. Y.

Gnathodus impictus, n. sp.

Green, or yellowish green in the dried specimen; scutellum and all beneath quite strongly tinged with yellow. Corium whitish hyaline, nervures green and strong, especially in the male. Wings white, iridescent, nervures pale. Eyes blackish. Antennæ and legs soiled yellow tinged with green, especially on the posterior tibiæ. Otherwise immaculate.

Genital characters. Male: Valve short, hind edge but feebly arcuated. Plates broad and short, outer edge rounded, with a few short, stout, white spines; tips abrupt, narrow whitish, about one-half as long as the disc of the plates, placed nearly their own width from the sutural edge and approximated at apex. Pygofers moderately surpassing the plates, their leaf-like apices commencing at the extreme tip of the plates, where they are quite widely separated, and approaching posteriorly. Female: Last ventral segment long, slightly narrowed posteriorly and truncated at apex. Pygofers narrow, scarcely swollen at the middle, equalling in length the stout oviduct, disc armed with stout spines nearly to the base. Length $3\frac{1}{2}$ mm.

New Jersey. Described from a single pair received from Prof. J. B. Smith, and labelled "New Brunswick, July 20."

Gnathodus abdominalis, n. sp.

Smaller than the preceding. Green, disc of the tergum brown, venter brownish green. Pronotum with three nearly obsolete longitudinal fulvous bands, continued over the basal field of the scutellum, where the lateral ones appear as fulvous-brown spots within the basal angles. Elytra whitish tinged with smoky on their apex, nervures concolorous but distinct. Wings slightly enfumed, nervures brown. Tibial spines pale; claws brown. In faded examples the colour becomes whitish or yellowish green with the fulvous bands obsolete, or nearly so.

Genital characters. Male: Valve large, as long as the two apical ventral segments taken together; apex angled, subacute. Plates but little surpassing the valve, narrow and pointed, fringed with stout spines. Pygofers long, their expanded tips slightly separated at base but approximated beyond. Length, 3 mm.

New Jersey. Described from two male examples received from Prof. Smith, and taken at New Brunswick, July 20th, and Jamesburgh, July

15th. This species differs from the preceding by its smaller size, the discoloured abdomen and the very distinct form of the male genitalia.

Athysanus comma, n. sp.

Form of *A. obsoletus*, Kirsch. Pale yellowish lineate with black and fulvous, anterior edge of the head with four black spots. Length 5 mm.

Female: Vertex flat, very slightly impressed within the obtuse anterior edge; apex less acute than in *obsoletus* or *plutonius*. A spot below each antenna, four on the anterior edge of the head, and a smaller one on the hind edge either side of the median line, black. Pronotum short, obscurely wrinkled behind the anterior submargin, posterior edge straight, anterior feebly arcuated; disc with four equidistant longitudinal strong brown vittæ, which become black where they touch the margins, the two central continued across the scutellum. All the femora and the posterior tibiæ lineate with brown above. Limb of the connexivum, and a slender line at its base, a spot on the apex of the last ventral segment, the sides of the oviduct, a large comma-shaped spot each side on the dorsal aspect of the pygofer, and an abbreviated line on the apex of the tergum each side of the middle, black. Elytra pale; within the costal margin is a broad fulvous band which is continued around the apex and connects with a similar band within the sutural margin; claval suture marked by a slender black line, and exterior to this on the apical half of the corium is a similar and nearly parallel line.

Genital characters: Last ventral segment long, toward the sides thin and compressed around the base of the pygofer, hind edge with a broad, shallow concavity. Pygofer short and stout, their obtuse apex equalling the oviduct.

Iowa. One example received from Mr. C. P. Gillette.

Athysanus bicolor, n. sp.

Form of *A. Curtisii* but larger. Green, banded and lineated with black. Length, $3\frac{1}{2}$ mm.

Head as in *Curtisii*, well produced before and tumid; front swollen; clypeus quadrangular, its broad apex exceeding the tips of the cheeks and a little concave; outer angle of the cheeks rounded. Face black; a broad transverse band below the eyes and sometimes the apex of the clypeus, greenish yellow; vertex pale greenish, two large contiguous spots anterior to the middle or the entire apex, black. Pronotum yellowish green, black anteriorly between the eyes. Scutellum pale, with a broad

black band covering its basal field and the base of the elytra. Elytra yellowish green, nervures concolorous; apical areoles, a large costal cloud beyond the middle sometimes extended along the centre of the antiapical areoles, a line adjoining the claval suture, and the commissural nervure, blackish fuscous. Wings white, nervures slender, brown. Legs and all beneath black; rostrum, tips of the anterior and intermediate coxæ, knees, tarsi, spines of the posterior tibiæ and the narrow edge of the ventral segments, pale; tergum black with a row of marginal pale spots; last ventral segment yellow, its sides and a heavy, double median line, not reaching its apex, black.

Genital characters. Female: Last ventral segment about the length of the preceding; hind edge feebly angularly concave and impressed toward the middle. Pygofers a little swollen at their middle; black with a broad yellow dorsal line. Oviduct far surpassing the pygofers, rufous.

Described from two female examples, one from Mississippi, kindly given me by Mr. Howard Evarts Weed, and a smaller specimen taken near Emporia, Kansas, by my brother Mr. M. C. Van Duzee.

In the pattern of its markings this species recalls the dark coloured specimens of *Deltocephalus debilis*, Uhler, but may at once be distinguished by the banded head and pronotum and the more obtuse anterior edge of the vertex.

Athysanus obtusus, n. sp.

Form of the preceding. Head well produced, tumid, as wide as the pronotum, apex obtuse, vertex pentagonal; soiled yellow or fulvous, with two large square black spots anterior to the middle encircled by paler. Front with a few short arcs and a large squarish basal spot black; above this on the edge of the vertex is a concentric black band, interrupted in the middle by a square pale spot at the tip of the head; a large spot below the antennæ and sometimes the ocelli black; outer margins and apex of the face dusky or black. Eyes dark brown, edged with pale behind. Pronotum well arcuated before; surface strongly transversely wrinkled, omitting the posterior and broad anterior margins, the latter paler with about eight black marks more or less coalescent. Scutellum pale, an angular black spot within the basal angles and a few brown lines on the middle. Beneath deep blue-black with one or two spots on the pleural pieces and sometimes the narrow edge of the ventral segments pale. Tergum blue-black, spotted on the margin with yellow or rufous. Legs pale testaceous, lineate below with black. Elytra deep fulvous-

brown or fuscous, nervures distinct, pale, the commissural and those delineating the apical areoles heavy and brown. Wings whitish, highly iridescent.

Genital characters. Male: Valve small, black, edged with pale. Plates broad, but little longer than the valve, cut squarely off on their apex, with a few pale submarginal spines; yellowish, clouded with black beyond the valve. Pygofers nearly twice the length of the plates, blackish, fulvous at apex, with a broad pale yellow median band, their inner apical angles rounded off so as to expose the pale anal tube. Female: Last ventral segment short, hind edge feebly concave; pygofers broad, their pale acute tips much exceeded by the obscurely rufous oviduct.

Length, $3-3\frac{1}{2}$ mm.

Mississippi. Described from one male and three female examples received from Mr. Howard E. Weed.

Deltocephalus flavocostatus, n sp.

Small; fuscous-brown; antennæ, legs, costal margin of the elytra, and a few small spots on the vertex yellow. Elytral nervures pale. Length, 3 mm.

Male: Head shorter, more conical, with the anterior edge more rounded and the vertex more convex than in the most of our species. Vertex marked with about ten yellow points, the apical four form a rhomboidal figure, two are on the ocelli, another pair are placed against the inner margin of the eyes, and on the middle of the basal margin are two elongated marks, in one example nearly obsolete. Face black, closely punctured; clypeus quadrangular, sutures straight; loræ well rounded outwardly, cheeks wide, forming a broad margin beyond the loræ and attaining the apex of the clypeus. Outer angles of the cheeks, a dot below each ocellus and sometimes a few short arcs on the front inferiorly, yellow. Pronotum nearly smooth; anterior submargin thickened and black, with about five yellow points indicating as many very obscure longitudinal lines; hind edge moderately concave. Scutellum black with traces of four longitudinal pale lines. Beneath deep black, the narrow edge of the ventral segments paler, propleura margined with yellow behind. Legs soiled yellow; claws and basal joint of the hind tarsi black. Tergum black, narrowly margined with pale. Elytra fuscous-brown; nervures pale bordered with blackish; costa bright yellow as far as the antiapical areoles with a blackish border within, which extends over the apical areoles and includes two crescentic white marks beyond the yellow costal vitta; extreme apex white.

Genital characters : Valve longer than the last ventral segment, obtuse, brown edged with pale. Plates about one half longer than the valve, narrowed at the apical third ; brownish yellow clouded at base, with a few long pale submarginal spines.

Mississippi. Described from two males received from Mr. Howard Evarts Weed.

ENTOMOLOGY FOR BEGINNERS—PACKING INSECTS FOR TRANSPORTATION.

BY H. F. WICKHAM, IOWA CITY, IOWA.

By request of Mr. Fletcher I add a few remarks to his article in the January number on "Killing, Preserving and Relaxing Insects," though the subject is so well treated there as to leave little room for additional comment.

The action of the cyanide bottle cannot be depended on as effectual in such a short time as Mr. Fletcher mentions, except in the case of the most tender insects, many Rhynchophora will live there for several hours unless the bottle is quite freshly prepared, and I know of one case in which a *Coelocnemis* remained alive all night confined in a bottle strong enough to quickly overcome the large southwestern species of *Cleonus*. For most northern and eastern insects, however, a short space of time in the bottle is sufficient.

The tubes spoken of should be made of tolerably stiff paper—old envelopes answer nicely—but it should *not* be coloured, as by the common mode of relaxing the insects while still in the tubes there is danger of staining the more delicate ones. Each tube should have a compact wad of cotton placed in the bottom, then the insects (if they are elongate species or have long legs and antennæ) should be carefully dropped or pushed in, head foremost, so as to reduce to a minimum the danger of breakage. Now place another wad of cotton on them and close up the tube, which may be easily done by tucking in the edges with the fingers. In the case of such insects as *Pterostichus* it is my practice to place four specimens, say the size of *mutus*, together in a bunch so that the heads all point the same way and the legs lie close together, the backs being outermost ; now by introducing the heads of all at once into the open end of a tube a little pressure on the posterior extremities will pack them nicely in place. After they are in, if it is desired to put another set of four in the same tube it is much better to place a small but firm wad of