

NOTES ON CORYTHUCA BULBOSA O. & D.

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The following notes are the results of observations made at Uhlerstown, Pa., during the first half of the summer of 1919 at which time and place, *Corythucha bulbosa* was noted on the bladder nut tree *Staphylea trifolia*.

On June 11 eggs and adults were present. The blackish eggs were found in groups of from ten to two hundred and fifty, each egg being inserted in the tissue of the lower leaf surface usually more or less at right angles to the leaf. Groups of eggs were noted at various places on the lower surfaces, but in most cases they seemed to be near the edges. The adult feeding was scattered and showed as light spots on the upper surfaces. On June 24 many eggs were found, a few adults and first, second and third stage nymphs. The nymphs were feeding in colonies on the under leaf surfaces. The individuals of a colony tend to scatter out somewhat and the groups are not as compact as those of *Gargaphia tilia*.

On July 8 adults were missing, but all stages of the nymphs were present with fourth and fifth stages most plentiful. These were shining brownish-black or black in color. A very few eggs still remained unhatched. The leaflets bearing the fourth and fifth stages were badly injured, many of them being perfectly white and some from which the nymphs had moved were dried and curled. On July 12 the first adults appeared. While an opportunity for visiting this locality again was not afforded, it is extremely probable that this insect is two brooded as in this latitude most species of *Corythucha* are and as adults collected in Ohio and received from Mr. C. J. Drake bear the date September 30.

EGG.

Length 0.65 mm. Width 0.18 mm. Subelliptical, slightly curved, one side almost straight; basal portion with rounded tip; extremity of apical and truncate with rim-like collar and central projecting cone-shaped nipple; sides of apical third almost parallel; widest across middle third. Entire surface

covered with black or brownish black varnish-like material, which sometimes hides the contour and makes the shape somewhat irregular; when material is removed, egg is translucent.

FIRST NYMPHAL STAGE.

Length 0.51 mm. Greatest width 0.12 mm. Elongate-elliptical; whitish or brownish white; eyes red, consisting of five, distinct ommatidia; antennæ white, hairy, more than one third length of body; legs long, white; rostrum white, extending beyond bases of last pair of legs; tubercles on head, thorax and abdomen minute and bearing comparatively long hairs.

SECOND NYMPHAL STAGE.

Length 0.82 mm. Greatest width 0.32 mm. Brownish-white; last antennal segment club-like; antennæ almost one-half length of body; tubercles somewhat more developed; otherwise similar in shape, color, armature, etc., to first nymphal stage.

THIRD NYMPHAL STAGE.

Length 1.05 mm. Greatest width 0.55 mm. Subelliptical or oval; brownish to brownish-black; sides of abdomen flattened in this and remaining stages; rostrum extending considerably beyond bases of third pair of legs; armature similar to that of fourth stage, except that in addition the metathorax bears a minute, lateral, dorsal tubercle on each side.

FOURTH NYMPHAL STAGE.

Length 1.65 mm. Greatest width 0.79 mm. Subelliptical or oval; brownish-black or black; antennæ white, almost one-half as long as body; lobes of mesothorax rounded, quite pronounced, extending posteriorly to second abdominal segment; ventral surface and legs white, sparsely hairy; rostrum extending to beyond bases of second pair legs; spines on thoracic and abdominal tubercles light; armature similar to that of fifth stage nymph, except for following: Lateral edge of prothorax anterior to lateral tubercle bears only two spines; lateral edge of mesothorax anterior to lateral tubercle bears only two spines; swelling in centre of mesothoracic wing pad missing.

FIFTH NYMPHAL STAGE.

Length 2.2 mm. Greatest width 1.3 mm. Suboval; prothoracic lobes rounded extending laterally, slightly more than half the width of the mesothoracic lobes; anterior lateral angle of mesothoracic lobe obtuse; wing pads extending posteriorly to lateral tubercles on fourth abdominal segment; sides of abdomen flattened; color brownish-black or black, except for light area on posterior surface of mesothoracic wing pads and a light median area posterior to the prothorax and extending as far as and including median, dorsal portion of the second abdominal segment and its pair of spines; fine, median, light, dorsal line on prothorax; eyes lateral, consisting of numerous distinct, red ommatidia; antennæ white, sparsely hairy, almost one-half as long as body. Legs white, sparsely hairy, hairs short, claws slightly brownish; ventral surface brownish-black or black, except median portion of thorax, rostrum and first two abdominal segments, which are whitish; rostrum extending to between bases of third pair legs. Head bears a pair of spines just above the antennæ, posterior to this pair is a median tubercle bearing two spines, posterior to this tubercle and close to anterior margin of prothorax are two large tubercles, each bearing three prominent spines and several spine-like hairs. Prothorax bears large, median tubercle tipped with several spines and spine-like hairs and a pair of minute, median spines posterior to this tubercle. Posterior lateral angle of prothoracic lobe bears large tubercle with three large spines and several spine-like hairs, on the lateral edge anterior to this tubercle are five minute to medium sized spines. Mesothorax bears pair median, dorsal tubercles, each bearing several small spines; on the lateral edge of the mesothoracic lobe midway between anterior and posterior lateral angles is a large tubercle bearing two prominent and several smaller spines, anterior to this on the lateral edge are five smaller spines. Centre of mesothoracic wing-pad bears a tubercle-like elevation. Second abdominal segment bears a median, dorsal pair of spines. Fifth, sixth and eighth abdominal segments each bear pair median, dorsal tubercles, each tubercle bearing a spine and several spine-like hairs, median spines on eighth abdominal segment close together. Posterior lateral edges of abdominal segments beginning with the fourth each bear a prominent tubercle, each tubercle bearing

one large and several smaller spines. Each spine on this and previous stages bears a hair. All spines and hairs arise from tuberculate bases.

ADULT.

Corythucha bulbosa Osborn and Drake (Ohio Biol. Sur. ii, No. 4, p. 232, 1916). This is the largest of the species of *Corythucha* and easily recognized by the brown costal margins of the elytra. According to Gibson it was known by the manuscript names, *carbonata* of Uhler and Heidemann and *staphlea* of Heidemann before being described by Osborn and Drake. It occurs on *Staphylea trifolia*, American bladder-nut, and Gibson gives its known range as from Maryland and Virginia west to Ohio.

REFERENCES TO THE SPECIES.

Osborn and Drake, Ohio Biol. Sur. II, No. 4, p. 232.

Van Duzee, Cat. Hem. p. 215.

Osborn and Drake, Ohio Jour. Sci., Vol. XVII, No. 8, p. 304.

McAtee, Bull. Brook. Ent. Soc., Vol. XII, No. 4, p. 79

Gibson, Tr. Am. Ent. Soc., XIIV, p. 77.