

This species is related to *M. falli* Martin, with which it agrees in the ridged mesonotal stridulatory plate and type of pubescence, but the latter differs by its uniform brown color, the shallowly punctured neck, shorter third segment of the antennae, feebly basally constricted pronotum, and by having the eyes more widely separated below than above. It superficially resembles *M. aestiva* Fall and *M. knulli* Linsley, but may be immediately separated by the uniform, short recumbent pubescence and the structure of the stridulatory plate. In the type of pubescence, *carinata* agrees with *pusilla* Newman, but differs from the latter in having the eyes more widely separated on the vertex (in *pusilla* they are nearly contiguous) and the dorsal and ventral lobes connected posteriorly by a double row of facets, in the evenly rounded pronotum without a basal constriction, and in the distinct second segment of the antennae (in *pusilla* the second segment is very short, usually concealed within the apex of the scape).

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### New Cicadellidae (Homoptera).

By DOROTHY JOHNSON KNULL, Columbus, Ohio.

#### *Carnecephala balli* n. sp.

Smaller than *C. floridana* (Ball) near which it should be placed, due to its long vertex which exceeds the pronotum in median length in both sexes. Smaller too than *C. gillettei* (Ball) which it otherwise resembles. Length: male, 4.3 mm.; female, 5 mm.

♂. Head, including eyes, wider than pronotum. Vertex swollen apically, concave behind middle, and decidedly excavated laterad of ocelli; coarsely granulated; including eyes a little less than twice as broad as long; lateral margins convex; apex bluntly angulate; ocelli large, slightly closer to posterior than to lateral margin. Pronotum coarsely granulate, distinctly shorter than vertex, sides almost parallel, posterior margin faintly emarginate with sides broadly rounded; scutellum small, somewhat granulate. Elytra longer than abdomen, nervures distinct, apical reticulations sparse.

Last ventral segment twice as long as preceding, valve small, triangular, three times as wide as long; plates as long as last ventral segment, tubular, closely appressed, inner margins divergently rounded at apex, exceeded in length by pygofer.

Vertex pale yellow, a dark brown square at apex, irregular blotches below, and a narrow fuscous line extending from middle to base; frontal sutures irregularly mottled with light brown, dark lines extending from ocelli, sparse discal mottling, a dark impressed point on each side on posterior margin midway between median line and lateral margin. Scutellum pale yellow with a small dark point within each basal angle, black median impressed line, and black hair-line along margins. Elytra dark green with minute brown punctures, veins pale green. Face yellow, darker toward middle, frontal arcs distinct, thorax and legs chiefly yellowish green, abdomen bright red, pygofer and last ventral segment tinged with green.

♀. Vertex not definitely concave behind middle, nor as swollen apically as in male. General color pale straw with irregular fuscous mottling on vertex, leaving only basal median line distinct. Below pale straw but for dark tarsal claws. Last ventral segment more than twice as long as preceding, posterior margin with emarginated lobe on median fourth, deeply sinuated to produced lateral angles.

Male *holotype* and female *allotype* taken at Holbrook, ARIZONA, July 28, 1938, by D. J. and J. N. Knull. Types in collection of The Ohio State University.

Named for Dr. E. D. Ball, originator of the genus.

***Alebra interrogata* n. sp.**

This small species with its extensive pale green markings seems quite distinct in character from any previously described member of this genus.

♂. Vertex a little more than half-length of pronotum, scarcely produced at apex, margins about parallel, eyes large, occupying more than two-thirds surface; pronotum posteriorly wider than vertex, hind margin very obtusely angulate; scutellum large, equilaterally triangular with the apex swollen, especially noticeable from side; elytron with appendix extending from base of cell  $M_4$  just beyond  $M_2$ ; apical cells  $R_1$  and  $R_3$  triangular, about equal in size,  $M_2$  elongate, twice as long as wide, with anterior third bent feebly toward costa,  $M_4$  apically not quite as wide as  $M_2$  but a third longer and almost twice as wide basally. Wing with three closed apical cells and

submarginal vein. But for the extended appendix, the venation approximates that of *Protalebra similis* Baker as illustrated by McAtee.\*

Front long, narrow, tapering toward clypeus which is also long, a little broader at middle and narrows to bluntly rounded apex; no distinct suture between front and clypeus. Last ventral segment as long at middle as preceding segment, but a third longer at sides as posterior margin is angulately excavated. No valve visible; plates widest at base, distinctly indented near inner margin before middle, produced more than twice width and gradually narrowing to acute tips; seven coarse white hairs and numerous fine ones toward outer apical margins.

♀ similar in structure, a little more robust, with last ventral segment three times as long as preceding, bluntly produced on posterior margin, with median portion above ovipositor narrowly embrowned, ovipositor stout, slightly exceeding pygofer.

Eyes brown, median vitta of vertex white with rounded knob at apex, remainder sordid yellow darkened interiorly; pronotum with pale median vitta and humeral angles, remainder sordid yellow with underlying dark coloring producing greenish cast; scutellum sordid yellow with brown transverse median impressed line, narrow yellow longitudinal median vitta between darker basal angles, apex pale, darkened around swollen area; elytron chiefly pale green with basic milky white appearing on clavus in small oval area bordering scutellum and angulate stripe across middle; corium pale at base, middle, and before crossveins; costa pale green to hyaline, dusky bordered plaque; apical veins and sectors approaching apex broadly yellowish white definitely outlined by dark brown blotches, centers of cells hyaline, apices fumose. Veins bordering inner apical cell form a large pale question mark. Appendix smoky semihyaline. Dorsum dark brown, face and venter mostly yellow with dark tarsal claws, bases of spines of hind femora, and a dark brown area below center of male plates extending narrowly along inner margins.

Length, both sexes, 3 mm.

Male *holotype*, female *allotype*, 36 *paratypes*, Starr County, TEXAS, June 2, 1939, D. J. and J. N. Knull; 2 *paratypes*, Zapata County, Texas, June 2, 1939, D. J. and J. N. Knull.

Holotype, allotype and paratypes in collection of author, paratypes in Collection of The Ohio State University, U. S. National

\* W. L. McAtee, Jour. N. Y. Ent. Soc. 34: Fig. 4, p. 173, 1926.

Museum and Academy of Natural Sciences of Philadelphia. The host plant is *Cordia bioissieri* DC., as determined by Dr. F. W. Pennell of the Philadelphia Academy. I am grateful to Mr. P. W. Oman for his examination of specimens.

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The Effect of Isolation on Growth in the Cockroach  
*Blattella germanica* (L.) (Orthoptera Blattidae).

Investigators who employ the common household roach, *Blattella germanica* (L.), for studies on growth and nutrition, often isolate the nymphs to prevent cannibalism.

When nymphs reared in isolation are compared with others from the same litter which have been reared in groups, it is found that a longer time elapses before the isolated nymphs accomplish equivalent molts. As would be expected, the longer stadia of the isolated nymphs delay the attainment of maturity. Comparisons between animals reared in isolation and those reared in groups must thus be made with caution.

This slower growth of isolated nymphs may be ascribed to the absence of jostling and mutual stimulation. Similarly, Faure\* and others have noted differences between migratory locusts reared under crowded conditions and those reared in isolation; but in Faure's experiments the increased activity gave rise to structural and colorational differences. In *Blattella germanica*, differences of this sort have not been detected; the altered metabolism, under conditions of crowding and resulting stimulation, appears merely to affect the time required to reach maturity. Such differences in growth rate are detectable up to 23 to 25° C., but are less noticeable as the temperature increases because the nymphal period and the differences are similarly reduced.

When large-sample experiments now in progress have been subjected to analysis of variance for such factors as sex-ratio (males appear to mature earlier than females) and possible variation among litters, fuller data will be presented.—LINCOLN C. PETTIT, Washington and Lee University, Lexington, Virginia.

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\* Faure, Jacobus C. The phases of locusts in South Africa. Bull. Ent. Res., 23 pp 293-405, 25 pl., 1 map. 1932.