SOME CUBAN CICADIDÆ, CERCOPIDÆ AND MEMBRACIDÆ

By J. G. Myers.[1]

The material on which the present notes are based was collected largely during parts of February, March and April, 1925, while the writer enjoyed the privilege of an Atkins Fellowship at the Soledad Laboratory. The chief species of importance to cane culture were dealt with in an earlier paper.[2] For some of the specimens I am indebted to Dr. George Salt, who took them after my departure. The Cicadidæ, Cercopidæ, and Membracidæ are now considered, while the Fulgoroidea, in which a number of life-history studies were made, are reserved for a later contribution. Owing to travelling, the study of my Cuban material has been interrupted for two years.

CICADIDÆ.

Tibicen (*Diceroprocta*) *biconica* (Wk.)

A single female of this species was taken by Dr. Salt at La Milpa, near Cienfuegos, 3rd July, 1925, and two recent last nymphal exuviæ at the same place a week previously. It has been recorded under the name of *Cicada bicosta* Wk. (which is a mainland form) as ovipositing in the leaf stalks of coconut palms (*U. S. Dept. Agric., Div. Entom.*, Bull. VI, pp. 20-23, 1902).

[1]Studies from the Biological Laboratory in Cuba (Atkins Foundation) of the Harvard Institute for Tropical Biology and Medicine.

[2]*Contr. Harvard Inst. Trop. Biol. Med.*, III, pp. 69-110, 1 fig. 1926. Other papers on these collections are in *Ann. Ent. Soc. America*, Sept. 1927, and, in collaboration with Dr. Salt, *Trans. Ent. Soc. London*, (1926), pp. 427-436, pl. xciii. The Homoptera in general of Cuba have been recently dealt with by Osborn, *Journ. Econ. Entom.* XIX, pp. 99-106, 1926; and *Ann. Ent. Soc. America*, XIX, pp. 335-366, pls. 30, 31, 1926; while the Cercopidæ (*Psyche*, XXXII, pp. 95-105, 1925) and the Membracidæ (Bull. *Brooklyn Ent. Soc.*, XX, pp. 203-214, pl. 1) have received comprehensive taxonomic treatment from Metcalf and Bruner.

Odopœa walkeri (Guér.)

A single female was captured by Dr. Salt at La Milpa, near Cienfuegos, 24th June, 1925, and two nymphal exuviæ collected on the same date.

The following species of cicadas have so far been recorded from Cuba. Doubtless many more remain to be discovered.—

Tibicen (*Diceroprocta*) *biconica* (Wk.), *List Hom. Brit. Mus.*, I, p. 120, 1850.

Juanaria poeyi (Guér.), *in* de la Sagra, *Hist. fis nat. Cuba*, p. 425, 1857.

O. sagræ (Guér.), *op. cit.*, p. 426.

O. walkeri (Guér.), *op. cit.*, p. 426.

Proarna chariclo (Wk.), *List Hom. Brit. Mus.*, I, p. 146, 1850.

Juanaria mimica Distant, *Ann. Mag. Nat. Hist.*, (9), VI, p. 455, 1920. An endemic genus.

Uhleroides cubensis Distant, *Ann. Mag. Nat. Hist.*, (8), IX, p. 644, 1912. Endemic genus.

CERCOPIDÆ.

Monecphora bicincta fraterna (Uhl.).

2 specimens only, Soledad, 1st, 7th July, 1925, G. Salt. This was not seen by me during the dry season.

Leocomia balloui Metcalf and Bruner.

This froghopper was taken in some abundance by sweeping bushes in the Trinidad Mountains, at Mina Carlota. Usually the undergrowth was too mixed for one to ascertain a definite food-plant. In one case it was swept from *Asclepias curassavica* L.,[3] but this seemed exceptional. So far as present knowledge indicates *L. balloui* is definitely a hill species, not occurring below about 1200 feet.

Leocomia collina sp. n. (Figs. 1-2).

A tawny species, the tegmina obscurely mottled with paler, the crown long and acute. Sexes closely similar.

[3]For this and other plant determinations I am indebted to Mr. C. A. Weatherby, of the Gray Herbarium.

Head (Fig, 1, 1) considerably narrower than pronotum, the crown greatly produced, with the slightly upturned edge not quite in line with the eyes. Area between ocelli somewhat elevated. Ocelli nearer to each other than to eyes, about their own length

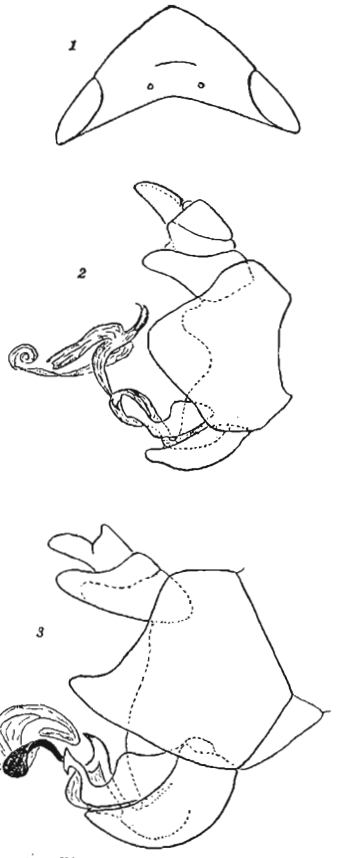

Fig. 1.—1, *Leocomia collina* sp. n.; 2, same; 3, *Dasyoptera variegata.*

from posterior margin of vertex. Frons flat, the cross-ridges visible only laterally. Pronotum just twice as wide as medianly long, widely subangulately excavated posteriorly. Scutellum 1.2 times median length of pronotum, apex long acute, with incurved sides. Tegmina 2.4 times as long as greatest width; veins very indistinct. Spines on hind tibiæ very stout.

Colour pale brown thickly covered on body and tegmina with short brown pubescence. Indications of a paler fascia about middle of tegmen and at about three-quarters. Hind wings infumated.

Length 4.3 mm. (holotype), 4.2 (allotype), measured to tip of closed tegmina.

The ædeagus is an extraordinary structure—very long and tubular, with the distal half more or less membranous, bent back on proximal half, to the Xth segment, to the under surface of which and to a conspicuous swelling of the membrane beneath, it is apparently fastened by hook-like projections. Part of this hooking apparatus is a long spirally coiled membranous arm. The proximal more chitinised part of the ædeagus is elbowed as it leaves the membrane of the pygophor, and more distally bears on each side a stout basally directed hook. In the figure (fig. 2) for the sake of clearness the lateral appendages of only one side are shown.

Described from 11 specimens, Mina Carlota, Trinidad Mts., Cuba, March, 1925 (Nos. 637. 641. 643. 647, 658, 664).

Holotype, allotype, Museum of Comparative Zoölogy, Harvard University.

Paratypes, Collections of British Museum and the writer.

This species differs from the genotype in having a large spine on the middle of the hind tibia, as do all the Cuban representatives (Metcalf and Bruner).

Judging from the descriptions, it differs from *L. grisea* M. & B. in its smaller size, the middle spine of hind tibia being much more than twice as long as basal one, the pronotum much longer than crown and differently shaped; from *L. balloui* M. & B. in its longer vertex and in colour; from *L. nagua* M. & B. in being larger and more slender in all proportions; from *L. mœstralis* M. & B. in having head much narrower than pronotum; from *L. pileœ* M. & B. in colouration and in the long vertex; and finally from *L. fulva* M. & B. in its smaller size, in the absence of straight sides to the vertex, and of carina to the pronotum.

L. collina was swept from mixed bushy undergrowth, and on two occasions from lantana (*Lantana camara* L.).

Dasyoptera variegata Metcalf and Bruner.

The male of this species, belonging to an interesting monotypic and endemic genus, was taken for the first time, and the external genitalia are herewith described and figured (fig. 3). It will be seen that their structure is a further specialisation and elaboration of that of *Leocomia*, as exemplified by *L. collina*. The ædeagus is .extraordinarily complicated, with an apical semi-membranous portion which I have not been able completely to elucidate, in the one example available.

The male genitalia of the Cercopidæ afford most excellent taxonomic characters, especially in the ædeagus and the genital styles. The Xth segment is relatively simple in *Leocomia* and *Dasyoptera*, but in the common *Philœnus lineatus* (L.)—an example from Massachusetts—this is produced into great caudo-ventral processes homologous with and resembling those of the Cicadidæ, but more flaring, whereas in cicadas they are usually parallel and sometimes fused, when they form the so-called "uncus" of American taxonomists.

The ovipositor of the female *Dasyoptera variegata* is extraordinarily small and weak—even more so than that of *Leocomia*.

The holotype of this species, and only other recorded specimen, was taken in eastern Cuba, at an elevation of 6770 feet on Pico Turquino. Curiously enough I did not find either of my two examples in the main range of the Trinidad Mountains, where *Leocomia balloui* and *L. collina* were both abundant. Both specimens were swept from miscellaneous underbushes, below the 1000 feet level, one at the Hanabanilla Falls (G. Salt) and the other in the wooded hills east of Soledad, on 7th April and 10th March, respectively.

Lepyronia robusta Metcalf and Bruner.

During the dry season this was the only abundant Cercopid—in fact the only adult—collected on the lowlands.

Sweeping wayside roughage and the coarse grasses, especially *Panicum maximum* Jacq., of the *potreros* nearly always, at least in February, yielded this species in great numbers. It oc-

curred sometimes on *Panicum barbinode* Trin., also, but not in the lush stands of this species which grew in damp places. *L. robusta* is essentially an inhabitant of the drier pastures, whence, however, it tended to disappear towards the end of February, save in places where the Guinea grass was more closely grazed and consequently (?) greener.

Clastoptera sp.

An undetermined species of this genus occurred in some numbers on the imported shrub, *Acalypha Wilkesiana* (Mull.) Arg., in the Soledad Botanical Garden during February. Efforts to rear it to maturity, either in sleeves or in the laboratory, were unsuccessful owing to wholesale destruction by a small parasitic wasp. When this has been determined, observations upon it and its host and an interesting Drosophiline inquiline larva will be published.

MEMBRACIDÆ.

Only one species was collected during the dry season—or such part of it as was spent at Soledad. Two others were taken in the rainy season by Dr. Salt.

Goniolomus tricorniger Stål.

One example only, Soledad, G. Salt, 6th June.

Monobelus flavidus (Fairm.)

One specimen, Soledad, 9th June, G. Salt.

Stictocephala rotundata Stål.

The only abundant Membracid during my stay. It occurred plentifully during February in company with the still more common Cercopid, *Lepyronia robusta*, on the rough growth of *Panicum maximum* in the dry potreros. It was swept also from *Panicum barbinode* in considerably damper situations than those to which the froghopper was confined. Some examples were taken on mixed non-gramineous weeds, among which *Commelina nudiflora* L. bulked largely, on the edge of cane-fields and on *guardarayas*. It was beaten from adjacent undetermined bushes in the Botanical Garden and other Soledad localities, and

from young leafy shoots of the tree, *Guazuma tomentosa* Kth. So far as can be ascertained from collections of the adults only, it would thus appear that this is a highly polyphagous species.

I found it at Soledad only during February and March, but Dr. Salt took it there on 20th June, and at San Nicolas (Habana) on 15th April.

BIOLOGICAL NOTES ON *NEMERITIS CANESCENS* (GRAV.) (ICHNEUMONIDÆ).

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On September 7, 1926 at Lowell, Massachusetts, in a grain and feed store heavily infested with *Ephestia kuehniella* Zeller and *Plodia interpunctella* Hb. there were observed a large number of females of *Nemeritis canescens* (Grav.) No males were to be found.

Six of these wasps were set with Ephestia larvæ and descendants were reared during the winter through six generations. Females only were produced totalling 3953. Since all of these except the 415 of the first generation were reared from bred virgins and since no males could be found among the numerous specimens in the store, the species appears to be almost or quite thelytokous.

Dissection showed that many eggs may be laid within the tissues of one caterpillar although only one maggot develops. The caterpillar is not paralyzed but feeds and grows normally and usually spins a cocoon. Ordinarily the full-grown maggot ruptures the skin of the caterpillar and spins its own brownish cocoon within the white silken tube of the latter. Not infrequently, however, the caterpillar is able to form a chrysalis in which case its chitinous covering left intact encloses the cocoon and pupa of the wasp. Adult wasps may be kept alive for several days if fed on honey and water.

There have been bred from single females from five to 43 offspring, but it is very likely that this number might be con-