

and is similar in shape to species of *Euphoria*. The body and legs are metallic, bronze green in colour, save for the elytra which are reddish brown with dark margins. The lateral margins of the abdomen bear single tufts of conspicuous yellowish white hairs on each segment and a pair of these tufts on the exposed dorsal surface of the last segment. Each tuft extends downward forming a transverse line on the ventral surface, which becomes obsolete in the central portion. The ventral surface of the thorax and the basal segments of the legs are conspicuously hairy.

NOTES ON COCCIDÆ (HEMIPTERA).

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It is the belief of the present author that more may now be accomplished by the redescription of many of our named species of Coccidæ than by the addition of new forms. Especially is it desirable that the types of many of the non-Diaspine genera be elucidated for the existing descriptions are, in certain cases, so inadequate that only the most vague and unsatisfying conception can be formed from them of the real character of the genera which they typify. Nor will the mere redescription of these forms in terms of the methods heretofore so generally employed by certain authors be sufficient. There must be an accompanying search for characters of real significance. Confidence in the all-sufficiency of the number of antennal segments and the character of the secretions as taxonomic criteria can no longer be maintained.

The present paper, therefore, is the first of a proposed series in which redescriptions of and notes upon the more interesting and more significant species available for study will be presented. Throughout these papers no references other than to the Fernald Catalogue and its supplements will be given, except in the case of some which may not be found therein.

Genus CRYPTOKERMES Hempel.

1903. Fernald, Catalogue of the Coccidæ, p. 88.

Monophleboid Coccidæ in which the adult female is entirely without legs or antennæ (and possibly without mouth-parts), remaining enclosed within the derm of the penultimate stage; penult-
July, 1918

imate stage with an anal tube which is formed by the chitination of the posterior portion of the anal ring and not by the invagination of the posterior portion of the abdomen, with short, stout legs and antennæ and with mouth-parts; first larval stage in general resembling the first stage of *Icerya*, with slender, six-segmented antennæ, a well-developed anal tube, and with a series of long, slender setæ along the posterior margin of the body; all stages with six pairs of abdominal spiracles.

Type of the genus, *Cryptokermes brasiliensis* Hempel.

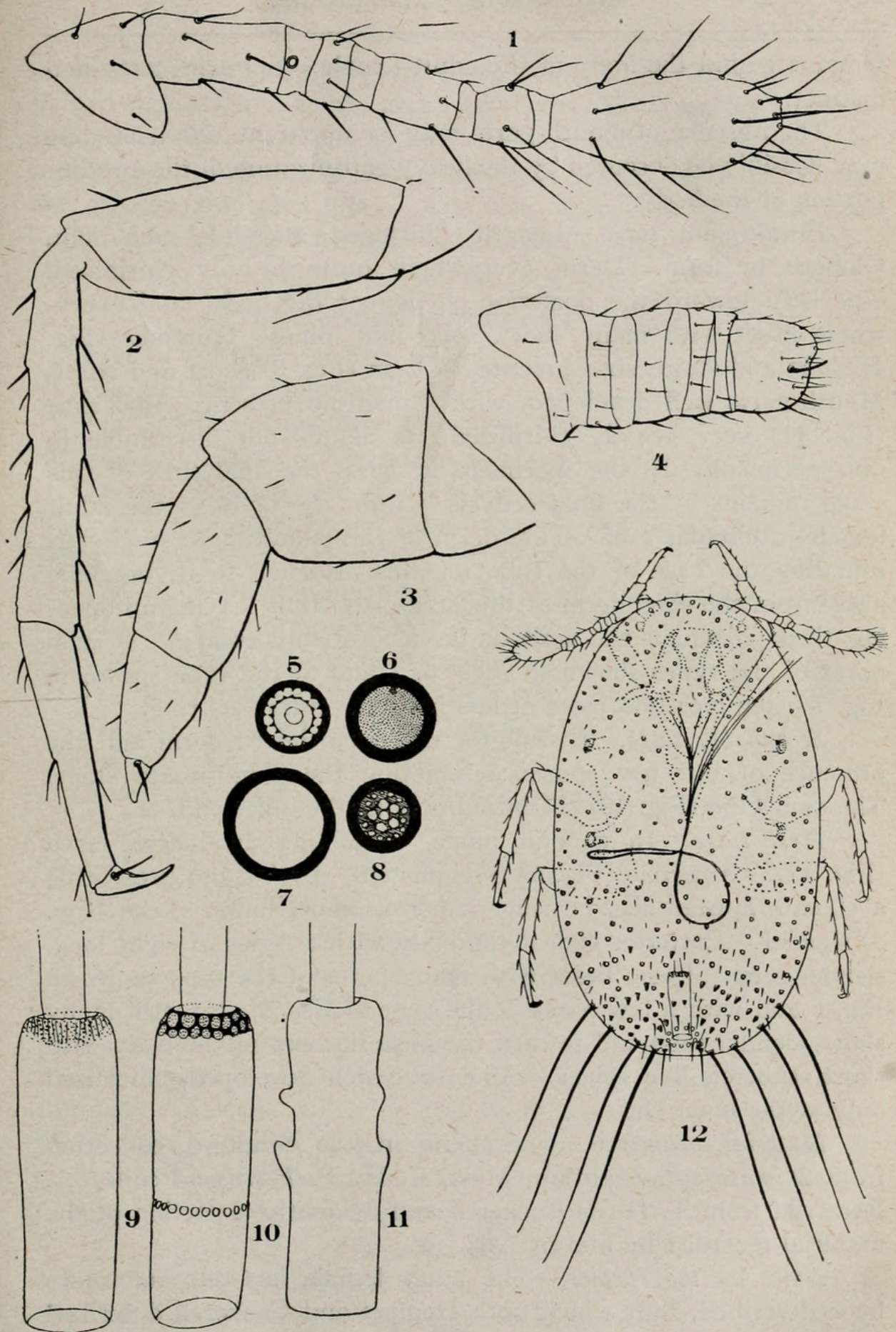
Notes on the genus.—In the Fernald Catalogue this genus is referred to the subfamily Dactylopiinæ, and is placed between *Ourococcus* and *Sphaerococcus*, apparently because of Cockerell's statement (1902) that "It is now clear that the genus is related to the Australian *Sphaerococcus* and *Ourococcus*." The real nature of the genera mentioned cannot well be determined from the existing descriptions, but it is fairly evident that *Cryptokermes* is related to neither of them. It is, in fact, unmistakably a Monophleboid form, the presence of the abdominal spiracles alone being sufficient evidence of this. I may say that in this opinion Mr. E. E. Green concurs.

The exact affinities of the genus are somewhat in doubt. The first stage larva is distinctly *Icerya*-like, while the intermediate stages are very similar to *Xylococcus* except for the presence of the short legs and antennæ. The absence of legs and antennæ in the adult female is unique in this group, although by no means uncommon in the Coccidæ.

***Cryptokermes brasiliensis* Hempel.**

1903. Fernald, Catalogue of the Coccidæ, p. 88.

Adult female.—Length (flattened on slide) 5 mm. Derm membranous except for a large area of the dorsum (and possibly a portion of the venter) at the anterior end of the body, which is heavily chitinated. The eyes appear as two light spots in this chitinated area, which is thickly beset with short, spike-like spines. Remainder of the body sparingly beset with short, slender setæ, except about the vaginal orifice where the setæ are longer and more numerous. Dermal pores of the types shown in Fig. 5. The anal tube of the penultimate stage (in my specimens at least)



CRYPTOKERMES BRASILIENSIS Hempel.
(See p. 225.)

remains within the body of the adult female. Spiracles large and distinct.

The absence of mouth-parts may be apparent only, as they may possibly be obscured by the heavy chitinization of the anterior portion of the body.

Penultimate stage.—Length (flattened on slide) 4.5 mm. Globose in form. Derm everywhere quite heavily chitinized, especially toward the posterior portion of the body, and everywhere beset with many short, spike-like spines. Antennæ (Fig. 4) short and stout, six-segmented. Legs (Fig. 3) short and stout. Mouth-parts well developed, with a mentum present. Anal tube (Fig. 11) very heavily chitinized, its details not discernible in my specimens. In the specimens at hand the anal tube of this stage remains at the final ecdysis within the body of the adult female, a circular area of the derm of the penultimate stage surrounding the base of the tube remains attached to it, breaking away from the shed derm of this stage, and thus leaving an opening through which the eggs or larvæ probably escape. Dermal pores of the types shown in Figs. 6, 7 and 8, the type shown in Fig. 7 being merely a more or less irregular chitinized ring.

Second (?) stage.—Except for the unchitinized derm and the presence of but few spines, resembling the penultimate stage. The anal tube (Fig. 10) chitinized only at the inner end.

First stage.—In general much resembling an *Icerya* larva (Fig. 12). Antennæ (Fig. 1) 6-segmented, slender and presenting a clavate appearance, bearing numerous short hairs. Legs (Fig. 2) slender. Posterior end of the body with a series of eight long, slender setæ. Derm beset with many pores of the type shown in Fig. 6 and with a few pores of the type of Fig. 8, also with many short, slender setæ and toward the posterior end of the body with short, tubercle-like spines. Anal tube well developed, chitinized only at the inner end.

Material examined.—Specimens in the Stanford collection from *Mimosa* sp., Zapotlan, Mex., C. H. T. Townsend collector. Received from T. D. A. Cockerell and evidently a portion of the material recorded by him in 1902.

Notes on the species.—The adult female has not heretofore been described, that which both Hempel and Cockerell described

as this stage being in reality the penultimate stage. The form described by Cockerell as the first stage larva of this species is probably either incorrectly described or does not belong with this species, for he speaks of the presence of "figure-of-eight" pores and of projecting anal lobes. The form described by him as the second stage is what I here consider to be the first stage.

EXPLANATION OF PLATE IV.

Cryptokermes brasiliensis Hempel.

- Fig. 1. Antenna of first stage larva.
 - Fig. 2. Leg of first stage larva.
 - Fig. 3. Leg of penultimate stage.
 - Fig. 4. Antenna of penultimate stage.
 - Fig. 5. Dermal pore of adult female.
 - Fig. 6. Dermal pore of first stage and succeeding larval stages.
 - Fig. 7. Dermal pore of second (?) and penultimate stages.
 - Fig. 8. Dermal pore of larval stages.
 - Fig. 9. Anal tube of first stage larva.
 - Fig. 10. Anal tube of second (?) stage larva.
 - Fig. 11. Anal tube of penultimate stage.
 - Fig. 12. First stage larva.
- Note.*—Antennæ and legs only drawn to uniform scale.

THE HEATH COLLECTION OF LEPIDOPTERA.

(Continued from Vol. XLIX, p. 92.)

BY J. B. WALLIS, WINNIPEG, MAN.

The Geometridæ were, in cases of doubt, submitted to Mr. A. F. Winn or to Drs. Barnes and McDunnough.

In all the following species it was considered advisable to give the changes as indicated by the new check list. But as it is improbable that the collection will be re-arranged for a considerable period; the order of the species in the collection, that is, of the Smith list, is adhered to. The names in brackets are those given in Drs. Barnes and McDunnough's list.

Geometridæ.

3504 *Nyctobia nigroangulata* Strck.

3508 *Rachela bruceata* Hulst. Rare in Manitoba.

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Ferris, Gordon Floyd. 1918. "Notes on Coccidae (Hemiptera)." *The Canadian entomologist* 50, 221–225.

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