

ate, normal, not elongate; black, not shining, marked in white as before, the lines all narrow, dotted, somewhat broken; joint 12 a little enlarged, the addorsal line widened on it; anal feet projecting laterally. No shields; tubercles and setae obscure, their bases a little enlarged, making the surface of the body somewhat irregular; traces of a subdorsal line; abdominal feet pale dotted outwardly.

*Stage IV.*—Head dull black, white dotted, the upper faces of the lobes nearly solidly black, but many dots across clypeus in two transverse bands; width 1.1 mm. Body dull black with fine, broken, addorsal and more continuous but narrow substigmatal white lines; traces of the other lines as dottings. Tubercles small, slightly elevated; setae short; black. Cervical shield, anal plate and feet slightly brownish diluted; no cornified shields. Segments wrinkly subannulate.

*Stage V.*—Head broad, erect, roundedly bilobed; sordid white in ground color, a

black band on the vertex, one across apex of clypeus, broken, one above mouth, irregular and with dots between; width 1.5 to 1.8 mm. Body smooth, rather robust, normal, not elongate; setae and tubercles minute except tubercle ii of joint 12 which is elevated. Color variable. Dark gray, finely lined. Thoracic feet red-brown or black. Body lines addorsal, subdorsal, lateral and stigmatal, the addorsal ones enclosing black spots, or a continuous black space or broken up by red and white dots. Ground color dark purplish shaded with black laterally and subventrally and with reddish stigmatally; a dark swelling behind the spiracle; substigmatal line usually yellow, narrow, distinct; other lines more or less broken and dotted; all the surface finely dotted and mottled. Feet sometimes reddish.

The larvae entered the earth May 24th and emerged the following March. Eggs were obtained which hatched March 24th and the larvae matured again before the end of May.

COCCIDAE AND ALEURODIDAE.—Two papers, embodying contributions to our knowledge of the Coccidae and Aleurodidae, have just been completed in the laboratory of entomology at Stanford University. The papers are of such size that some time must elapse before their publication, so that an immediate brief statement of their contents will probably be of interest to entomologists. "Coccidae of Coniferae" is the title of a paper by Geo. A. Coleman, based on material collected by the author in the summer of 1901, in the course of a trip on foot and horseback of a thousand miles through the great coniferous forests of Northern California. This expedition was made for the express purpose of gathering specimens and notes for a study of the conifer-infesting scale insects. Mr. Coleman collected 22 species of Coccidae from 26 species of conifers, ten of the species

being described as new. Of these ten, immature stages of four are described, and the complete life history of one. The paper also includes a compiled list of the Coccidae recorded from the Coniferae of the world, and a host list with distribution. There are included also notes on the economic status of the conifer-infesting scales.

"Aleurodidae of California" is a paper by Mrs. Florence E. Dorsey which describes twenty new species of aleurodids found in California, thus increasing the number of known N. A. species in this family from 40 to 60. In the case of every one of these 20 new species the immature stages have been studied by the author and are described in detail. It is unnecessary to say that these accounts of the post-embryonic life history of so many aleurodid species constitute a really important contribution to our knowl-

edge of a problem of much biological interest. Mrs. Dorsey summarizes her observations in a special discussion of aleurodid development. A list with references, together with an analytical table, of all the North American

species of the family are given. The paper is unusually well supplied with drawings, in which work Mrs. Dorsey has been aided by Mary Wellman, scientific artist.

Vernon L. Kellogg.

## THE PUPA OF MERMIRIA TEXANA BRUNER.

BY T. D. A. COECKRELL, EAST LAS VEGAS, N. MEX.

Orthopterists have not usually paid much attention to the pupae of grasshoppers; partly, no doubt, because they rarely offer any remarkable characters, and partly because they often shrivel and lose their natural colors, when pinned in the cabinet. The pupa of *Mermiria texana*, now described, is a very striking and beautiful creature when alive, and it seems well worth while to present an account of it.

♀. Length 34–36 mm., antennae 10½ mm., dorsal surface of head 5½ mm., pronotum 5½ mm., tegmina 8 mm., end of tegmina to tip of abdomen 16–18 mm., femur 16 mm., tibia 15 mm., breadth of thorax 4 mm. 21 spines on outer margin of hind tibia. Brown of various shades, with pure white longitudinal stripes; top of head with a broad median longitudinal pale sepia band, narrowly edged with darker; on each side of this a broad pale apricot or reddish-ocherous band, clouded with pale gray, and externally bordered with white, the white border running through the upper edge of the eye; next to this a broad dark sepia band, also bordered

below with white; then a dilute gray band, marbled with lighter veins and at its lower part spotted with darker; this lower spotted part bordered below with white; running from below the eye, bordering on the lateral carinae of the face, is a pale reddish-ochreous band. Eye gray, its upper part spotted, its lower part striped with grayish-white. Face gray mottled with blackish, the median carinae pale. Antennae a warm brown, distinctly triquetrous towards base, not nearly so broad as the shorter diameter of the eye. The prothorax continues the longitudinal markings of the head, but the median zone, is mottled with dark gray, and its ground-color is inclined to purple, with the median carina, which is very distinct, is indicated by a pale line. The subdorsal dark band passes backwards along the thorax and abdomen, crossing the tegmina, which thus have their lower half dark and the upper a light warm reddish-ochreous. On the sides of the thorax the dark band is broadly bordered below by white; but on the abdomen it is narrow, and is bordered *above* by white.



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