

1. Its cheapness and compactness.
2. It can be readily made of any size or shape.
3. It will hold twice as many insects for a given area.
4. It automatically places the specimen at the proper height on the pin.
5. Less time is required to set an insect, because the body does not have to stand in a definite relation to a groove.
6. Legs, antennae, abdominal stylets, etc., tend to lie out flat on the board, and do not

hang down in the way of pin labels: the legs are readily arranged with great advantage for seeing tibial spurs, etc.

It has its limitations in the setting of insects with dorsal crests, or with dorsal tufts of hairs, which are not to be flattened out.

The simple expedient of turning the insect over for setting obviates the necessity for the groove: and after spreading on an undivided surface for a while, one comes to regard the groove a nuisance.

*James G. Needham.*

## LIFE HISTORIES OF NORTH AMERICAN GEOMETRIDAE.—XXXVIII.

BY HARRISON G. DYAR, WASHINGTON, D. C.

*Palaecrita vernata* Peck. This well known larva, first described by Peck in 1796 and referred to in all works on economic entomology, occurred in the Platte Canyon, Colorado, numerous on a bush of wild cherry, which was defoliated. The larvae were not seen elsewhere and were massed on one tree, not scattered as was *Alsophila pometaria*, which occurred in the same canyon.

*Egg*.—Elliptical, evenly rounded, one diameter considerably less but not flattened; one end slightly depressed, the other rather distinctly truncate; reticulations broad, rounded, rather ill-defined, the cell areas however forming distinct saucer shaped pits in longitudinal rows; truncate end nearly smooth; sordid yellow, subtranslucent, appearing soft-shelled, sometimes irregularly shaped, somewhat iridescent; size  $.8 \times .6 \times .5$  mm. Laid in a mass probably in a crack in the bark or similar situation.

*Stage I*.—Head rather small, rounded, flattish before, not higher than joint 2; dull dark brown, epistoma and setae pale; width about .3 mm. Body normal, rather robust, not elongated; a broad dark brown subdorsal

band and narrow dorsal line, the whitish space between irregular and cut by the annulet incisures; subventral fold broadly pale; venter shaded in brown but leaving the tubercles pale. Feet shaded in luteous brown, normal; setae short, white, rather stiff.

*Stage II*.—Head bilobed, erect, flat before, dull black, whitish across the clypeus, in a streak each side and on epistoma; width .4 mm. Body normal, rather short and thick, a little flattened. Black, not shining, subannulate. A geminate, white, dorsal line, slightly dotted and broken, irregular; a fine white lateral line, near to, and partly joined by obscure streaks to a broad white line on subventral fold, streaked on the annulets; spiracles in white patches; a few white dots subventrally. Feet dark, the abdominal ones white streaked outwardly, the thoracic ones pale in the joints. Joint 12 slightly angularly enlarged dorsally. Setae short, black, rather stiff.

*Stage III*.—Head bilobed, erect, flat before; luteous brown to black, with two transverse, dotted, white streaks, one at the apex of clypeus, the other between the eyes; epistoma pale; width .6 mm. Body moder-

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-



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