

service to the student who may undertake the task I abandon. It is only in the first two subfamilies that genera and species are considered, and I have therefore adopted for this collection of fragments the title given above.

#### Subfamily EUPLOEINAE.

*Butterfly*: Palpi stout, tufted with hairs. Antennae naked, arcuate, the club drooping, tolerably well marked. Fore legs of both sexes excessively atrophied, short and nearly naked. Fore wings long but ample; none of the nervures swollen at the base; internal nervure present; discal cell of hind wings long

and closed by an interrupted vein; costal nervure terminating at middle of costal border. Abdomen unusually long and slender, the males with anal tufts of protrusile hairs. Colors of wings generally massive and generally very similar above and beneath. *Egg*: Sugarloaf shaped, considerably higher than broad, truncate and scarcely rounded at base, with slight vertical ribs and small cells at the outer borders of the crown. *Caterpillar at birth*: Head no larger than segments following. Body cylindrical, uniform, unicolorous; ranged appendages simple tapering hairs usually shorter than the segments.

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

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

#### *Endropia duaria* Guenée.

*Egg*. Laid loose, rolling. Elliptical with only traces of the side flattenings and end truncation, smooth, somewhat like hens eggs though more evenly alike at the two ends. Reticulations absent, represented only by the angle pores which are arranged in fine hexagonal pattern and look like light dots in the shadows. All pale yellow. Size  $.9 \times .55$  mm. They turned bright red in a day or two and black before hatching.

*Stage I*. Head rounded, erect, free; sooty brown black, the clypeus, a little dot each side and epistoma white; width .4 mm. Body moderate, normal with rounded wing-like elevations laterally on joints 5 to 9. Purple black with five dotted, transverse intersegmental white bands on joints 5 to 9 anteriorly, cut by narrow dorsal and lateral lines of the ground color; a few whitish dots on

joint 13 anteriorly. Bands narrowed to obsolescence ventrally; feet dark.

*Stage II*. Head vinous brown, a bright white spot in the clypeus, two on each side, one on base of antennae, base of labium and a small geminate one on face of lobe; width .6 mm. Body, robust, a little inflated centrally, a round prominence, bearing tubercle iv, most distinct on joints 5 and 6. Ground color sordid brown, mottled and faintly longitudinally lined in darker and with streaks of pale dottings; two oblique white spots subdorsally anteriorly on the segments, one before the dark vinous spot covering tubercle iv, elongate and obscurely trilobed; ventral streaking irregularly brightened into nearly white. Tubercles and setae obscure.

*Stage III*. Head rounded, squarish, broad, lobes full at vertex, flat before, erect. White, heavily black mottled over lobes, leaving a

white space at vertex and near clypeus; sutures dark, epistoma brownish; width 1.1 mm. Body normal, rather thick, the area of tubercle iv slightly cushiony elevated. Purplish brown, tubercles iv and vii dark velvety brown; addorsal, subdorsal, lateral, substigmatal and subventral narrow, faint, dotted, white lines; two obliquely placed, round, slightly elevated white spots subdorsally anteriorly on joints 5 to 7, one on 8. Lateral anterior white patch of four subconfluent elevated spots between the black tubercle iv and the front edge of the segment on joints 5 to 8. A rounded, elevated, unpaired, dorsal prominence on joint 12; sides of 13 whitish. Feet pale, the thoracic of joint 4 and the abdominal ones, especially those of joint 13 black marked. Tubercles and setae small, black. Venter doubly, obliquely, dark streaked, forming a broad lattice work in diamond shape.

*Stage IV.* Head rounded, disk-like, flat before, a broad margin all around, flattened and shallowly notched at vertex. Face mottled with large, subconfluent, white spots, separated by black dottings and with an irregular black rim; sides and vertex gray, of brown mottlings on a whitish ground; width 1.8 mm. Body nearly cylindrical, smooth, the dark spot at tubercle iv scarcely elevated. Gray, the spot at iv dark brown on joints 5 to 10; venter lighter with irregular dotting, suggesting a diamond pattern. Dorsum finely lined and marbled with blackish on a gray ground, the bright white dots two subdorsal and two above, a streak below the stigmatal region, both anterior, conspicuous on joint 6, smaller and partly absent on the other segments. Tubercles in black spots;

setae very short, pale brown. Ground color luteous gray, the area about the dark tubercles i lighter, looking tessellated.

*Stage V.* Head rounded, somewhat flat before, thick, slightly bilobed; whitish, mottled with gray-luteous, white on face, black bordered, dotted, the black edge depressed to apex of clypeus, covering the apices of the paraclypeal pieces; epistoma greenish; width 2.7 mm. Body normal, thick, equal and cylindrical, a cylindrical papilla bearing tubercle ii on joint 12 about twice as long as thick; tubercle iv of joint 12 elevated and white. Anal plate large, rounded triangular; anal foot plates elongate triangular. Thoracic feet moderate, pale. Subventral fold waved, distinct. Ocherous wood brown, the dorsum checkered in large segmentary diamonds, edged by lateral waved black mottlings that reach the subdorsal region intersegmentally and depressed to tubercle iii segmentarily, nearly absent on joints 10 to 13. Thorax darker brown, obscurely. Two rounded, obliquely placed, small white spots on joint 6 and white dots behind tubercle ii throughout; white dots behind tubercle iv and, on joint 6, several dots before the spiracle. A slight transverse ridge on joint 12 bearing the papillae (ii), black before, white behind. Subventral ridge slightly pale. Venter marked like dorsum with a black mottled lattice on a brownish ground, but less distinctly. Tubercle i black marked, distinct in the pale brown areas.

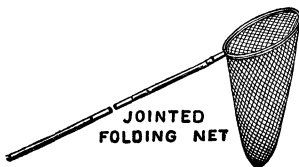
*Food plant.* The larvae ate wild cherry.

Eggs from a ♀ taken at the mouth of the Platte Canyon, twenty miles from Denver, Colorado; eggs June 8th, mature larva July 8th.

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