

VIII. Descriptions of Noctuidae principally from California

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I OWE to the kindness of Professor A. S. Packard, Jr., of the Peabody Academy of Science, Salem, Mass., a collection of Moths from California and the Territory of Nevada, for study and identification. The collections had been sent by Mr. Hy. Edwards and Mr. James Behrens, to whom credit is given in the present Paper. From the condition of some of the specimens and the necessity of having a larger material for examination, I have not been able to catalogue the entire collection at the present writing, and hope to be able to turn again to the subject on receiving the necessary material.

I have included in this Paper notes on certain species received from other correspondents to whom I am indebted for the favor.

Habrosyne scripta (*Gosse*).

Habitat, Sitka (coll. Mr. Hy. Edwards, No. 137).

The specimen (in poor condition) does not seem to differ from our Eastern material. The species is very near the European *H. derasa*. This genus and *Thyatira* have a singular distribution. *Habrosyne* has one European species, *derasa*; one Asiatic, *gloriosa*; one North American, *scripta*. *Thyatira* is credited with one European, *Batis*; one Asiatic, *vicina*; one North American species, *putens*. The specific differences in each genus are slight, and are perhaps due to the effects of climate, since our N. A. species of either genus are brighter colored than the European. I remark, however, that the larval forms of our species are unknown. Again

it must be remembered that the species are all Arctogaeal. While both genera are Bombyciform Noctuidae, it seems natural that they should favor high latitudes, and *H. scripta* may be spreading southwards on this continent. We have it from Virginia, but I have already remarked that the lepidopterous fauna of the Southern States is not divisible from the Middle States, until, perhaps, we come to the Floridian peninsula and Southern Texas. Hence I would attach little value to descriptions of species principally based on Southern localities, e. g., *Grapta Crameri*, Scudder. I have the Floridian *Harveya auripennis*, also from Kentucky; this seems to me a Southern form spreading northwards, since the group to which it belongs is more extensively developed as we progress towards the equator.

***Acronycta lepusculina*, Guenée.**

Habitat, California (Mr. Hy. Edwards, No. 72).

Two specimens are before me which are better marked beneath than usual, but which belong evidently to this species. This must not be confounded with *A. lupini*, *Behr*. A study of this genus shows that the specific names retained under it represent very unequal values. Thus, *Acronycta occidentalis*, *Grote*, designates a form which differs exceedingly slightly in the imago state from another, *Acronycta psi*, while the two species differ very strongly as larvae or in the young stage. Again, *Acronycta lobeliae*, *Guenée*, represents a form that, comparatively speaking, cannot be mistaken in any stage, as far as known. Yet where we find a difference we are obliged to signalize it, the rather if we are amenable to the evidence offered by the theory of evolution of species through constantly acting natural laws. Where, as in *Acronycta*, there is a prevailing general uniformity in the appearance of the imagos of a single group of species, and generally broad distinctions between the larval forms, it is a not unreasonable conclusion that these larval differences are gradually evolved by the workings of a natural protective law which intensifies their characters in the direction in which they are serviceable to the continuance of the animal.

Understanding metamorphosis in insects as correlated with development, and as a growth-period characterizing a more sudden

escape from a lower and more embryonic physical condition, we may consider it as a reminiscent action, marking the successive developmental halts in the kingdom, through which it is given to some to pass, and at which it is fated that others shall perish.

Within the two series of suborders of Hexapoda, a synthetic type has been shown by Packard to exist in the Neuroptera. In comparing the Lepidoptera, a synthesis may be detected in the Bombycidae. Thus the Lithosiinae resemble the Pyralidae, the Arctiinae the Noctuidae, the Attacinae the Geometridae; lower down the Cossinae the Tineidae, though the actual interchange of the two latter must be doubted, even since the discovery of such a form as *Morpheis*, perhaps the most extraordinary form of the suborder. Professor Packard has compared the thoracic structure of *Sthenopsis* with the Neuropterous *Polystichoetes*. And, in a general comparison with the Neuroptera, the Lepidoptera are seen to advance along a line of parallel development. Indeed the development of all the suborders is at least biserial, reflecting the progress of the Order. Thus the Diurnals resemble the higher Neuroptera in the position of the wings, while in the lower Neuroptera these are deflexed as in the Moths. In considering the general progression of the Hexapoda, the Devonian and earliest forms known seem to be Neuropterous, nor is there yet sufficient evidence to prove that the common origin of Hexapoda is to be carried back through suborders exclusively fossil. Yet that the position of the Neuroptera suggests such a third series, which is now no longer living, and which has given rise to the Orthoptera, Hemiptera and Coleoptera, and again to the Diptera, Lepidoptera and Hymenoptera, cannot be denied. And that the Lepidoptera are the more recent, palaeontological evidence rather confirms, while we should not expect the Butterflies to be largely represented among the flowerless forests of the Carboniferous period. On general grounds we shall agree that the common origin of Tracheata is to be sought in the Zoëaeform Crustacea as suggested by Haeckel. Packard's objection, that *Leptus* begins life on a higher level than Nauplius can hardly lead us to reject the crustacean origin of Hexapoda, a type which must have been evolved from a littoral biregional ancestry. In studying the larval forms of Hexapoda we follow Packard's exposition of larval types. The exceptional position of the abdomen in the young *Laehnosterna* recalls the usual

Saw-fly form, while the larvae of the Lepidoptera more generally resemble the young stages of the higher Bees. Hitherto recorded observations suggest that the higher Tracheata have been evolved by an effort of adaptation to a land life. The land was probably visited at first irregularly and then at a stated life-period, while the Hexapodous type affords an ascending series of grade in terrestrial adaptation. The consideration of the general longer period of larval life shows a connection with this effort, while the greater equalization in duration of the periods of growth, or the curtailment of the younger stage to the benefit of the adult, marks a permanent advance in type in Hexapoda.

In examining the general characters offered by the Lepidoptera, attention has been already directed by Agassiz to the position of the wings. The elevation of both pair in the Papilionidae necessitates a single muscular action in the act of assuming flight. In the Moths the primaries being deflexed and the hind wings doubled upon themselves, an additional muscular movement is required and, as I have assured myself, the wings are first independently thrown forward. That the stronger-hued Diurnals are in all probability more recent in time than the Moths, must be, in default of palaeontological evidence, as yet mere surmise; yet *Castnia* suggests the forms through which the Bombycidous type may have passed.

The antennae of the Lepidoptera have early enlisted the attention of classifiers, but I find on reflection a renewed objection to Boisduval's terms in the physical unimportance of the difference they signalize. On comparing the antennae of the Moths and Butterflies together, we should be rather struck by their rigidity and uniform length in the latter group. The flexibility and diversity of the appendages to the joints of the antennal stem in the Moths, point to a more active use. From the stout, rayed and short antennae of *Attacus*, to the thread-like, simple and lengthy antennae of *Adela*, there is a wide diversity, indicative of utilitarian change. When we remember the general habit of the Moths, the necessity for a development of their perceptive faculties, independent of vision, seems obvious; their more sensitive antennae may protect them from many enemies their habit exposes them to. On the other hand the Butterflies are more

protected by vision, and the rigidity, together with the general uniformity of the antennae, seems to be the result of desuetude. Clemens' experiment in the excision of the antennae of *Platysamia cecropia*, points to a different conclusion from that reached by him, viz.: that the antennae are instruments of atmospheric palpation. The power of hovering was hardly lost through antennal mutilation, but suspended through the consequent loss of a heavy percentage of the perceptive faculties. On occasion I have noticed that the loss of the antennae in the Butterflies has not been attended by an equivalent result. Finally it does not seem reasonable to expect a complete differentiation of the senses in the Articulata.

Admetovis, n. g.

Ocelli. Eyes hairy. Front full, closely scaled, exceeded by the roughly scaled labial palpi. Antennae shorter in the male, each joint provided with rather stout corneous lateral pectinations, giving off at the extremity a stouter bristle, and more finely bristled beneath; in the female longer and simple. The tibiae are unarmed; legs stout and long. The body is long, stout and fusiform, thorax elevated, rather short, crested behind; abdomen long and stout, exceeding the secondaries by nearly a third of its length. In the female the stout ovipositor is notably extruded. The maxillae are moderately stout. The wings are long, with very straight costal margin of primaries, rather acute apices and oblique, but little rounded, hind margin.

Apparently the nearest European ally to our genus is *Brithys*, from which *Admetovis* differs decidedly in the shape of the wings, the extruded ♀ ovipositor, the sexual difference in the antennal length, and stouter maxillae.

Admetovis oxymorus, Grote, Plate 4, fig. 5, ♀.

♀.—Bright gray. Median lines perpendicular, accompanied by paler shades, approximate, irregular, transverse posterior more regularly scalloped. Orbicular rather large, subquadrate, double-ringed, concolorous. Reniform whitish with a brown internal annulus, claviform indistinct. Subterminal space pale, washed with a delicate brown, deepening in color to the strongly expressed subterminal line which is the most prominent feature of the wing. The line appears to arise on the external margin at vein 8 below the apices, whence it runs inwardly, meeting the margin again at the extremity of vein 4; here it runs inwardly again, shortly dentate on vein 3, forming a wide scallop and

joining the internal margin midway between the angle and the base of the transverse posterior line. It is of an intense deep brown with a thread-like white outer border. The gray terminal space is thus divided by it into unequal portions. An interrupted black terminal line; the gray fringes are a little produced at the extremity of the nervules. Hind wings obscure ochrey white, with a light brownish diffuse exterior shade; the nervules incompletely marked with dark scales and a subcontinuous marginal black line; fringes whitish with an internal dark line. Tegulae gray, contrasting with the light brown collar and thoracic disc and tuft; abdomen colored like the secondaries. Beneath the wings are pale, shaded with reddish over the apices and costal margins, sparsely dusted with dark scales, with a common exterior line emphasized on the veins and faint discal dots more apparent on the hind wings; a faint subterminal line appears contrasted by the difference in tone of the subterminal and terminal shades.

Expanse, 46 m. m. *Length of body*, 24 m. m. (including ovipositor). *Habitat*, California, Sierra Nevada (coll. Mr. Hy. Edwards, No. 2733).

♂.—At first sight, and with a different locality, the specimen I regard as belonging to this species, would not be considered as referable to it. The thorax and fore wings are uniformly gray sprinkled with darker scales. The reniform is concolorous and both spots relatively larger. The most prominent difference is expressed by the absence of the contrasting light and brown color of the subterminal space, which is here concolorous. The subterminal line is, however, here brown, distinct, and in its general course the same as in the opposite sex; it forms a more evident W-shaped mark by its dentations on veins 4 and 3; it runs backward above vein 8 to costa, leaving the apices gray; however a faint trace of this action is visible in the female, in which the apices are concolorous and apparently fused with the subterminal space. The hind wings are more whitish with a more determinate darker band and beneath the specimen lacks the reddish shade of the female, with an otherwise similar appearance of the wings.

Expanse, 46 m. m. *Length of body*, 22 m. m. *Habitat*, Colorado Territory (coll. Mr. Theo. L. Mead, No. 54, ¹³/₇).

***Agrotis Vancouverensis*, Grote, Plate 4, fig. 4, ♂.**

♂.—Light brown with pale shadings. A very broad distinct basal dash, widening outwardly, extends into the median space, apparently concealing the claviform. T. a. line strongly dentate inferiorly. Discal spots set in the black

filling of the cell. Transverse posterior line unusually sharply denticulate; the pale subterminal line preceded by large cuneiform brown marks. An interrupted black terminal line on the margin; fringes light brown. Hind wings fuscous without markings, save from the reflection of the black and distinct discal liture of the under-surface; fringes as on primaries. Beneath fuscous without markings except the discal spots, which are unusually broad on the secondaries. Thorax above brown with darker lines on the collar.

Expanse, 40 m. m. *Habitat*, Vancouver's Island (coll. Mr. Hy. Edwards, No. 2624).

A rather large, broad-winged species, allied to *A. obeliscoides* and *A. venerabilis*, differing by the dentate and distinct transverse posterior line.

***Agrotis saucia* (Hübner).**

Habitat, California (coll. Mr. Hy. Edwards, No. 157). The American specimens, described by Harris as *Agrotis inermis*, are not distinguished. In the same way Harris describes our specimens determined by Guenée as *Agrotis suffusa*, under the name of *Agrotis telifera*.

***Agrotis Wilsoni*, Grote, Plate 4, fig. 3, ♂.**

♂.—Hind and middle tibiae spinose. Eyes naked. Antennae bristled, the joints with lateral fascicles. Fore wings singular in appearance, as if overlaid from the base to the terminal space with a smooth olivaceous-ochrey shade, in which the distinct, black, pale-circled, attenuate ordinary spots appear as if cut out. At the base of the wing are some blackish marks indicating the basal half-line. On costa there is a darker somewhat ferruginous shade preceding the inception of the subterminal line, which is inwardly dentate opposite the cell and may appear by contrast against the blackish terminal space. No or very faint traces of the ordinary lines. Terminal line a series of very distinct black linear marks. Secondaries fuscous, a little paler basally, with whitish faintly interlined fringes. Beneath very pale, without lines, but with the reniform on the primaries distinctly reproduced and a black discal comma mark on the hind wings. Thorax with ferruginous shades on the collar and centrally; abdomen pale ochreous with the anal hairs reddish.

Expanse, 37 m. m. *Habitat*, California (Mr. James Behrens, No. 12). I know of no species resembling this in ornamentation. I respectfully dedicate the species to Mr. Walter T. Wilson, whose services to Natural Science deserve to be held in remembrance.

Ammoconia badicollis, Grote, Plate 4, fig. 18, ♀.

♀.—Eyes naked, strongly lashed. Middle and hind tibiae spinose. Abdomen narrow, without tufts, anal segment laterally compressed. Thorax with a slight tuft behind the collar, the latter medially produced. Gray, powdered with brown, with a warm tint which becomes reddish on the under-surface of the wings. Primaries with the ordinary lines partially effaced. The inceptions of the basal, transverse anterior and transverse posterior lines are marked with blackish brown on costa; between the first two the costal region is free from brown scales. T. a. line skirting the large, concolorous, decumbent orbicular, beneath which it is very fine, arcuate outwardly on submedian interspace, running inwardly on vein 1, again outwardly projected to internal margin. A short brown shade on the cell connects the transverse vaguely-outlined reniform, which is hardly as large as the orbicular. T. p. line geminate, consisting of a pale included space margined inwardly by an obsolete line, and marked outwardly by black and white nervular dots obsolete superiorly. Subterminal line whitish, more or less fragmentary and irregular, preceded by a brown shade. A terminal lunulated deep brown line corresponding to the slightly waved external margin. Hind wings pale fuscous, with pale fringes and depressed external margin opposite the cell. Beneath, the wings are reddish along costal and external margins, show rather distinct linear discal marks and a common exterior transverse blackish line. Body parts beneath tinged with reddish, legs brownish. Palpi prominent, brown at the sides. Collar contrasting, clear pale leather brown, with a distinct superior black line.

Expanse, 38 m. m. *Habitat*, Albany, N. Y. (Mr. J. A. Lintner, No. 2558).

Pleonectopoda,¹ n. g.

Eyes naked, with lashes. All the tibiae spinose; anterior pair with a longer lateral spinule at the extremity of the joint, at the termination of each row of spinules. Head thickly haired and thus concealing a flattened clypeal protuberance. Tongue strong, corneous. Male antennae with the edges of the antennal joints projected, bristled in lateral tufts. Size moderate, ornamentation Agrotiform.

The single species differs from *Agrotis* by the lashes of the eyes and from *Cladocera* by the corneous tongue. In the tibial armature the genus resembles *Mamestra* E b. The vestiture of the head and thorax is hairy and thick; behind the centrally projected collar a mesial crest of elevated hair traverses the thoracic disc.

¹ Gr.: βλεονεχτώ et πούς.

Pleonectopoda Lewisii, *Grote*, Plate 4, fig. 10, ♂.

♂.—Reddish purple brown, not unlike *Agrotis plecta* or *leucostigma* in general color, but more robust and without the pale longitudinal shades on primaries. Transverse lines obliterate. Median lines dark, narrow, faint; t. p. line sublunulate, projected opposite the cell, running evenly to internal margin. Ordinary spots large, concolorous, with a narrow pale powdery edging, separated by a black well-defined shade which fills up the cell and is slightly apparent before the orbicular. Median shade apparent below the orbicular and approximate to the t. p. line. Subterminal line pale. Terminal space duller, paler, less red than the rest of the wing; no terminal line, fringes concolorous. Hind wings pale testaceous fuscous, silky, without marks above or below. Head and thorax reddish; feet pale dotted; abdomen a little darker than secondaries. Costal edge of primaries with antepical pale dots, visible on the red-stained costal edge beneath. The fore wings beneath are like secondaries, without marks.

Expanse, 34 m. m. *Habitat*, Colorado Territory (No. 31, coll. Theo. L. Mead).

Named in memory of Joseph S. Lewis, late of this Society, a student of Entomology, who perished untimely by the railroad accident at Angola on the 18th day of December, 1867, at the age of 24 years.

Eupsephopaectes, n. g.

Eyes hairy, without lashes; antennae (♀) of the usual length, scaled above, pilose beneath, with two short stout bristles to each joint; front closely scaled, without prominence, rather narrow; tongue long and corneous; legs unarmed; thorax subquadrate with a slight anterior and more prominent posterior crest; abdomen with a dorsal ridge but (♀) untufted. Head prominent; the caputal squamation is massed between the antennae, front untufted. Palpi prominent, exceeding the front, directed obliquely forwards, closely scaled. Wings elongate and rather narrow; primaries widening outwardly, with straight costal edge; apices very slightly blunted; external margin short, evenly rounded; internal margin subsinuate. Hind wings moderate, exceeded by the abdomen. The fringes and the external margins of both wings lightly scalloped. Ornamentation *Hadena*-like; mimicking the *Sphingid* genus *Dupo*.

The genus differs at once from all the genera allied to *Hadena* (with which I would associate it), such as *Prodenia*, *Brotolomia*, *Phlogophora*, *Euplexia*, *Jaspidea*, by its distinctly hairy eyes. From

Mamestra by the sinuate internal margin of the primaries and the more produced apices. The moth is extraordinary for the resemblance which its primaries present to those of *Dupo vitis* or *D. Linnei*. The resemblance to *Prodenia* is therefore also strong.

Eupsephopaectes procinctus, *Grote*, Plate 4, fig. 6.

♀.—The dark greenish-black ground-color of the primaries has a light purple cast along costa and over the narrow defined external margin. The bands and lines are pale brownish-ochrey. The median nervure and veins 3 and 4 are striped with pale ochreous scales to subterminal line. The transverse anterior line is angulated, geminate and margins obliquely outwardly, below median nervure, a triangulate basal patch of the ground color, the inner pale margin of which is furnished by a purplish shade extending obliquely upwardly from the base of the wing, while a pale streak above internal margin provides the base of the triangle. The ordinary spots are opposedly oblique, pale and double-ringed, and hence enclose a V-shaped dark space of the ground color on the cell. A broad pale ochrey band runs downwardly obliquely from the apices to vein 1, which it joins at the extremity of the transverse anterior line. The pale single transverse posterior line accompanies this band from vein 5 downwards, it is dentate on 5 and, above it, runs inwardly upwardly to costa, which it joins above the reniform. The subterminal line appears below the oblique apical band as a series of pale interspaceal streaks followed by dark dots of the ground color of the wing before the purplish contrasting terminal space, which latter shows double terminal hair-lines; fringes pale. Internal margin striped with ochrey brown. Secondaries fuscous, whitish towards base and centrally; veins dark; fringes pale, white-tipped, with a middle dark line. Beneath, with reddish powderings; on secondaries a discal dot. Tegulae pale ochrey, with dark marginal lines. Collar with several alternate pale and dark hair-lines, neatly marked.

Expanse, 45 m. m. *Habitat*, California (coll. Mr. Hy. Edwards, No. 73).

Mamestra chartaria, *Grote*, Plate 4, fig. 12, ♂.

♂ ♀.—Eyes hairy; fore tibiae unarmed; the species belongs to Lederer's section *E c*, and resembles in color, size and appearance *M. allifusa* and *M. chenopodii*. Gray, shaded with olivaceous testaceous, all the markings distinct and colors clear. Basal half-line geminate, black, distinctly marked (as are all the other lines) on costa, with included white scales. T. a. line similar in appearance, the inner line, below the costa, less distinct. Claviform blunt and rounded, dark-shaded. Orbicular rather large, pale and sometimes undefined.

Reniform exceedingly large and characteristic; it is filled in *inferiorly*, over the inception of the m. nervules, by a blackish blotch. Median shade approximate to the reniform, a blackish streak well marked on costa, but below the reniform appearing as an inwardly slightly oblique lunulated line. T. p. line like the other lines, sinuous, not much exerted, lunulate with white included scales. Two white costal dots before the subterminal, on a darker costal shade which precedes the subterminal line on costal region to vein 7. Subterminal similar to the other lines, without a very prominent W-mark; the narrow terminal space is dark and appears as a prominent spot opposite the cell; a dentate terminal line; fringes cut with dark scales as in allied species. Hind wings paler in the δ , with a line and diffuse darker border in either sex; fringes whitish. Beneath pale, with a very distinct dark common line, accented on the veins, and diffuse subterminal darker shades; discal lites more or less evident. The abdomen is not crested, except incompletely at base, terminates squarely in either sex, and without any external appearance of the oviduct in the female. Male antennae ciliate beneath, impectinate, scaled. Thorax colored like fore wings with blackish lines on collar and margining the tegulae.

Expanse, 34 to 36 m. m. *Habitat*, California (colls. Mr. James Behrens, Nos. 6 and 15, and Mr. Henry Edwards, No. 173). Less glaucous than the European *M. sodae*, II.-S., figs. 66-67, and differing in the details of the ornamentation.

Mamestra cuneata, Grote, Plate 4, fig. 9, ♀.

δ ♀.—Eyes hairy; fore tibiae unarmed, size small, abdomen dorsally with small tufts which are more regular in the female; the species belongs structurally to the same group as *M. latex*. Wood-brown with ashen shades, a black basal streak supporting the half-line. The median lines are geminate with included pale ashen shades, and approach each other on the submedian interspace above vein 1, where the claviform, concolorous with the dark median space, nearly approaches the t. p. line. Ordinary spots similar in appearance, pale ashen, obovate. The t. p. line is succeeded by pale nervular dots. The subterminal space becomes paler before the subterminal line and, on the submedian fold, at the inward angulation of the pale s. t. line, there is a distinct deep yellow (ever *green?*) cuneiform mark. The W-mark is obsolete; terminal space dark, concolorous with median. A terminal whitish dentated hair-line, the dentations alternating with black lines, and preceded by black points. Secondaries dark fuscous with paler interlined fringes. Beneath fuscous with warmer costal tints and faint common line. Thorax lined; tegulae more or less conspicuously whitish.

Expanse, 30 to 32 m. m. *Habitat*, California (coll. Mr. Hy. Edwards, No. 175). Four specimens examined.

Mamestra niveiguttata, Grote, Plate 4, fig. 16, ♂.

♂ ♀.—Eyes hairy; female abdomen pointed at the extremity, but without perceptible extrusion of the oviduct. The shape of the ♀ abdomen seems to be intermediate between *Dianthoecia* and *Mamestra*, and to weaken the validity of the former genus. Size quite small, smaller than *conspurcata*. Wood-brown, with the usual lines black, geminate, without any included whitish shades. Claviform small; orbicular vague, a little paler than the ground color. Reniform large, with a double cuneiform white spot at the extremity of the median nervure, divided by vein 4. Subterminal space deepening in color to the pale subterminal line, which latter lacks the usual W-shaped mark, and contrasting with the pale terminal space. Terminal pale dentate line, as in *cuneata*, but reduced to pale dots. Hind wings very dark fuscous. Beneath a little paler, with faint common transverse line. Body vestiture dark. Abdominal tufts obsolete, except at base.

Expanse, 26 m. m. *Habitat*, California (coll. Mr. Hy. Edwards, No. 796). Five specimens, in good condition, examined.

Mamestra (Dianthoecia?) leucogramma, Grote.

♂.—Eyes hairy. Smaller than *fligramma*, and with the yellow scales confined to the subterminal line, before which they appear as minute guttiform marks, following interspaceal cuneiform black dots. Median lines with distinct white centers, dentate or denticulate. The ground color is an olivaceous wood-brown. Ordinary spots moderate, rather vague, paler than the ground color. Subterminal line white. Secondaries dark fuscous, becoming paler basally, with whitish fringes. Beneath the secondaries are palest, primaries fuscous; a common line and subterminal fuscous shading. Thorax like the fore wings; abdomen untufted, except at base.

Expanse, 32 m. m. *Habitat*, California (coll. Mr. Hy. Edwards, No. 2198). The discovery of the female may place the species in *Dianthoecia*.

Mamestra (Dianthoecia?) 4-lineata, Grote, Plate 4, fig. 15, ♂.

♂.—Size small. Eyes hairy. Primaries whitish gray; the median space powdered with blackish, contrastingly dark, wedge-shaped, owing to the course of the geminate median lines. Of these the transverse anterior runs outwardly oblique, leaving the sub-basal space wide. The ordinary spots are smaller than usual and appear more crowded, tolerably distinct, pale with dark rings, rounded, with dark central scales, while a reddish stain obtains between them and soils the reniform; the small claviform is distinctly marked.

Beyond the white-shaded transverse posterior line the wing is again pale as it is sub-basally, with the s. t. line ill defined, but is remarkable for a broad black dash which accompanies vein 2. Hind wings white, a little stained apically with testaceous, without marks, remarkable for faintly repeating the black dash on the primaries at the same place—vein 2. On the pale under-surface a common line is feebly indicated, while the secondaries show a discal dot.

Expanse, 26 m. m. *Habitat*, California (coll. Mr. Hy. Edwards, No. 176). Three ♂ specimens examined. The female may have an extruded oviduct, and then we should refer the species to *Dianthoecia*. The pale color of the species is noticeable, reminding us somewhat of *capsularis*, from which it is very distinct.

***Oncocnemis Glennyi*, Grote, Plate 4, fig. 17, ♂.**

♂.—Eyes naked, with lashes. Caputal and thoracic vestiture coarsely hairy, mixed with flattened scales. Fore tibiae with a stout terminal claw. Antennae subsimple, pubescent. Ornamentation distinct. Fore wings uniform dusty ashen, very slightly silky. Transverse anterior line perpendicular, blackish, narrowly toothed below costa, acutely lunulate on submedian space and again below vein 1. Ordinary spots larger than usual. Orbicular nearly spherical, decumbent ovate, concolorous, with a faint nucleus, edged by a blackish shade more distinct on the cell before and behind the spot. Reniform quite large, erect, not constricted, like the orbicular in appearance. Median shade apparent, approximate to t. p. line below the reniform. T. p. line geminate, the outer line obliterate, inner distinct, blackish, inwardly lunulate, marked on costa above the reniform, of the usual general shape. Subterminal line continued, of the usual appearance, pale, preceded by blackish cuneiform shades. Terminal line blackish, formed by narrow subcontinuous interspace lunules; fringes long, slightly silky, concolorous. Hind wings dusty fuscous, with a tolerably well expressed wide blackish terminal border; fringes pale, with an internal darker shade line. Beneath paler, with discal points and an extra mesial common line, discontinued inferiorly on primaries and accentuated on the veins of the hind wings. Thorax and head above concolorous with primaries.

Expanse, 38 m. m. *Habitat*, Colorado Territory, July 20th (coll. Theo. L. Mead, No. 36).

In the appearance of the primaries this species approaches *O. Hayesii*; the hind wings are more like *O. Chandleri* and the European species. The large size of the ordinary spots and the more usual ornamentation distinguish it.

I name this species after Mr. Wm. H. Glenny, Jr., Secretary, in acknowledgment of his kind interest in the welfare of this Society.

Oncoenemis Chandleri, *Grote*.

Habitat, Nevada (coll. Mr. Hy. Edwards, No. 2739).

Hadena arctica, *Boisduval*.

Habitat, Sierra Nevada, Cal. (coll. Mr. Hy. Edwards, No. 3513).

Hadena Bridghami, *Grote*.

Habitat, Sierra Nevada, Cal. (coll. Mr. Hy. Edwards, No. 3510).

The single ♀ specimen is in bad condition, but from its whitish secondaries and smaller size, while the ornamentation of the primaries is very similar, compared with *arctica*, it seems to be this species.

Hadena dubitans (Walker), *Grote*.

Habitat, Sierra Nevada, Cal. (coll. Mr. Hy. Edwards, No. 3512).

Hydroecia cataphracta, *Grote*.

Gortyna cataphracta *huj. scrip.*

Renewed examinations show me that the clypeus is smooth and has no tubercle. I correct then my former generic reference in these pages. The species can no longer be held to represent the European *Gortyna flavago* on this continent, though the two are similar in appearance and color.

Gortyna purpurifascia, *Grote and Robinson*.

A male from California (coll. Mr. Hy. Edwards, No. 135), seems to be this species, while differing by the more yellowish median spots on the fore wings. I have no longer my original material. The male from California *has a distinct clypeal tubercle*, and hence, if my present determination holds, the only species to be referred to *Gortyna* is the present; all the others wanting this tubercle, are to be referred to *Hydroecia*, as I have already catalogued them.

G. pupurifascia is to be distinguished by the shape and course of the transverse posterior line which *is not outwardly exerted opposite the cell*, where it is bent in cataphracta and the other species originally referred to *Gortyna*.

***Amphipyra pyramidoides*, Guenée.**

Habitat, California (coll. Mr. James Behrens, No. 9).

The specimen does not differ from Eastern material in our collections.²

Agrotis depressus, Grote, Can. Nat., belongs to *Amphipyra*.

***Noctua clandestina*, Harris.**

Habitat, Sierra Nevada, Cal. (coll. Mr. Hy. Edwards, No. 3503).

The specimen does not differ from our Eastern material which I determine as Harris' species. But, on the other hand, Fitch's fig. 6, Plate 5, 1st and 2d Reports, can hardly represent this species, though I fancy the figure is very bad.

***Xylomiges curialis*, Grote.**

♂.—Eyes hairy; antennae thickly bristled beneath, with the joints distinct at the sutures, centrally widened. Caputal vestiture rough, extended forwards between the antennae; palpi lengthily haired; tongue stout, long, testaceous. Thorax quadrate, with a small posterior tuft; collar raised in front. Abdomen with a dorsal tuft at base. Fore wings narrow, elongate with dentate fringes. Very dark gray, all the transverse lines broken and more or less indistinct and incomplete. Remarkable for the veins being all marked by black scales, interrupted with pale dots. Claviform and orbicular quite small, void. The angulate blackish diffuse median shade is tolerably distinct. Reniform moderate, indistinctly margined, with a reddish stain which seems to be shared in a slight degree by the claviform and orbicular. Subterminal line continued, narrow, pale, angulated below costa and interspaceally preceded centrally by evident dark brown marks. Terminal line very narrow, hardly distinct with a following pale line at the base of the fringes. Secondaries white, with a terminal lunulate broken line; fringes white. Beneath whitish,

² "It is here, as in almost every other genus and Family, the closet systematist divides up and arranges with insufficient knowledge of the variation which species are subject to," i. e. *Amphipyra conspersa*, Riley, "which affords," "on the very face of it," "good food for a reflecting mind." (3d Missouri Report.)

apices of primaries with a light purple stain (which may be accidental), a dotted transverse exterior, and terminal line, fringes dark. Hind wings white, a black discal dot, a black dotted median and terminal line, slightly dusted with dark scales along costa. Head and thorax dark griseous, like primaries; abdomen whitish gray with dark tuft. Feet gray; tarsi dotted.

Expanse, 35 m. m. *Habitat*, California (Mr. James Behrens, No. 8). This species has a spurious resemblance to *Cerura cinerea*, Walker.

Xylomiges patalis, Grote, Plate 4, fig. 11, ♀.

♂ ♀.—Eyes hairy; male antennae more shortly ciliate beneath and with the joints less prominent than in *X. curialis*. In the vestiture of head and thorax the two species agree, while the basal abdominal tuft is not so marked as in *X. curialis*. Pale whitish gray. Fore wings with a distinct black basal longitudinal liture below the median vein always distinct, whereas the ordinary marks vary in distinctness, and they are almost obliterate in one specimen. Basal space very wide and the indistinct median lines are so approximate inferiorly, that the large void claviform, distinctly black-margined, appears to overlie the t. p. line. Median spots large, void, with narrow black annuli. Orbicular obliquely decumbent, sometimes fused inferiorly with the erect reniform. Transverse posterior line with a preceding dark shade on costal region, before the angulation, and this shade is continued within the t. p. line obliquely, more or less faintly, to internal margin. Subterminal with preceding cuneiform blackish marks of which two more evident at submedian fold, and again opposite the cell. Terminal space with the nervules finely litureate. Fringes even; terminal line indistinct. Hind wings pale in ♂, without evident marks; with a median line, discal mark and subterminal fuscous shade in ♀. Beneath the fore wings are largely fuscous, terminally gray; a common line and evident discal marks; terminal line interrupted; a subterminal fuscous shade medially interrupted on the hind wings in ♀, in which sex all the markings are more evident.

Expanse, ♂ 30, ♀ 34 m. m. *Habitat*, California (No. 155, coll. Mr. Henry Edwards; Nos. 14 and 10, coll. Mr. Behrens).

A little smaller and wider-winged than *X. curialis*. When the markings are obliterate on the fore wings above, the darker stains before the subterminal line are yet perceivable.

Anytus, n. g.

Eyes naked, with lashes; middle and hind tibiae spinose. Male antennae not pectinate, but lengthily bristled beneath. Thorax a little flattened with sharp corners, and therefore recalling *Xylina*, but here the frontal hairs are

not gathered into sharp double tufts, but form a single loose tuft on the clypeus, while the hairs depend between the antennae, also in a single loose tuft. The collar is raised in front, but not hood-like as in *Cucullia*. Thorax with a loose tuft behind the collar, and the abdomen is tufted basally.

The species are large, purple gray, with large ordinary spots and zigzag lines, and not unlike the better marked species of *Xylina*, under which genus I have formerly arranged the two species.³

***Anytus sculptus*, Grote.**

Xylina sculpta, huj. scrip.

***Anytus capax*.**

Xylina capax, Grote and Robinson.

***Cucullia Yosemiteae*, Grote.**

Habitat, California (Mr. Hy. Edwards, No. 139).

A second ♀ specimen with the markings of the primaries more distinct, the outer line of the reniform indicated. The thoracic vestiture is preserved. The collar is not broad and elevated in front as in this genus, and the species must be removed from it. Unfortunately the head is defective in both my specimens so that it is impossible to examine the parts correctly. In many characters this species approaches *Anytus*, but differs by the more fusiform body, and the straighter margins of the fore wings which are apically more produced. The armature seems to agree while the ornamentation is very similar. My original specimen and figure merely indicate the very distinct zigzag median lines accompanied by black shades. Until more material is received I do not venture to disturb the present generic reference which, however, cannot remain.

³ Wenn man Lederer's dichotomische Tabelle zur Hand nimmt, um diese Arten generisch zu bestimmen, so wird man auf *Ammonoconia* gewiesen; die Fühler des Männchens sind aber hier nicht pyramidalzählig, sondern blos bewimpert. Grosse blau-graue Arten von einer oberflächlichen Aehnlichkeit mit *Polia ruficincta*, aber mit viel zackigeren Mittellinien, schärfere Zeichnung und bewehrten Mittel und Hinterschienen. Die Arten scheinen mir in die Verwandtschaft von *Xylina* gehörig, wegen ihrem etwas flachgedrücktem breitem Rücken und Hinterleib, die Ecken des Rückens ziemlich scharf vorstehend.

Plusia Pasiphaeia, Grote, Plate 4, fig. 1, ♂.

♂.—Pale yellow with a rosy tinge, size of *aercoides* and resembling that species in the rigid transverse posterior line which is here, however, whitish, and not followed by a golden band. The costal region of the primaries and the base to the t. a. line, are very pale. The very narrow linear silvery white mark reminds one of *simplex*. It is confluent with the t. a. line, rising from the internal margin of the wing and running upwardly to median nervure where it forms a wide arc running obliquely outwardly and downwardly to a point above submedian fold, whence it runs backward and upwardly to the nervure, thus allowing the pale squamation of the costal region to extend downwardly below the m. nervure in an oblique V-shaped manner at the center of the wing. The faint obliquely placed orbicular is visible on a paler portion of the discal field, darker ringed. The subterminal space is dark, being pale fuscous and the subterminal line is dark, inwardly arcuate opposite the cell, rising again towards the margin between veins 3 and 4. Hind wings pale dusty yellow with faint wide darker borders, and faint interior line. Beneath very pale yellow with obsolete shadings. Thorax with a light purple or rosy cast, collar pale-edged. Abdomen with basal tufts. A rather slight species.

Expanse, 32 m. m. *Habitat*, California (coll. Mr. Hy. Edwards, No. 152). Two male specimens.

Plusia Putnami, Grote, Plate 4, fig. 2, ♂.

♂.—A brilliant species of the colors of *festucae*, but with more produced apices and rounded external margin, the primaries being more like *aercoides* in their general shape. Golden yellow, the base powdered with orange-red scales and with the linear transverse shades traced in orange-red on the costal region at base. Beyond the t. a. line the region about internal margin is washed with pale golden as in *festucae*, irrorate with orange-red scales. The angulate median shade and all the lines are comparative more distinct, but seem to have the same general course as in *festucae*. The median metallic spots are, however, very different. Of these there are two in our new species, narrowly edged with black and subspherical. Their bases rest on the interspace above the submedian fold. The first spot extends above median nervure, and is more narrowly and roundedly terminated on the discal cell. The outer and smaller spot is distinctly separate and seems to extend upwardly slightly beyond vein 2. In *festucae* the spots are fused and elongate, while the inner portion of the spot does not attain the median nervure and has a different conformation. The wing has a pale rosy tinge absent in *festucae*. A black dot above vein 6 at its base, the indication of the reniform. The apical golden shade is limited to paler diffuse washing, and is not extended broadly inwardly above vein 5, and emphasized as in *festucae*. Hind wings pale fuscous wanting the rosy tint of

festucae. Beneath very pale with a light ochrey tint. Thorax and head rosy, collar with a lilac edge, hence differing decidedly from *festucae*, in which the head and collar are orange red and contrast with the darker tegulae.

Expanse, 35 m. m. *Habitat*, Albany, N. Y. (coll. Mr. J. A. Lintner, No. 2743).

This species is throughout of a paler, more rosy-yellow hue than its nearest ally, with which I have compared it, thinking to render its identification the more ready. In naming this species after Mr. George P. Putnam, of the Publication Committee of this Society, I testify to an unflinching interest in the welfare of the Society, and a constant appreciation of the educational value of a study of the Natural Sciences.

Plusia Ni (*Hübner*).

Plusia Ni, Boisd., Ann. Soc. Ent. Belge.

Plusia brassicae, Riley.

Habitat. California (coll. Mr. Hy. Edwards, No. 154; Mr. James Behrens, No. 13). This is a species of apparently very general distribution, and the American specimens are not to be distinguished. I have taken *Plusia Ni* abundantly in central Alabama, and from my note book as early as February 20th. It varies in general tone and in the occasional detachment of the guttiform spot beyond the silver mark on the primaries, and these variations seem to have given occasion to Professor Zeller's opinion that the American specimens are distinct specifically from the European.

Lepipolys perscripta (*Guenée*).

Habitat, California (coll. Mr. James Behrens, No. 7). The hind wings in the female are fuscous. The median lines are distinctly geminate.

Alaria florida (*Guenée*).

Habitat, Nevada (coll. Mr. Hy. Edwards, No. 2562).

Heliolonche modicella, Grote.

Habitat, California (coll. Mr. Hy. Edwards, No. 104).

Heliiothis (Melicleptria) celeris, Grote.

♂.—An exceedingly brilliantly colored species of the size of *H. mitis*. Fore wings deep purple with the median and terminal spaces olivaceous. Very faint indications of the median spots, but the usual blotch below the median nervure is large, though not highly contrasted in color. Fringes purple. Hind wings intense orange-red with paler fringes and faint indications of a paler band near the base. Beneath the wings are both intense orange-red with the costal edge and fringes of primaries purple. A faint transverse paler shade on the hind wings as on upper surface.

Expanse, 17 m. m. *Habitat*, California (Mr. Hy. Edwards, No. 2585). Cannot be confounded with any other species on account of its extremely vivid and partly unusual colors. The legs and body vestiture are defective in my specimens. The pubescence seems to be paler beneath than usual, above much as in the other species of the genus.

Heliiothis (Melicleptria) diminutivus, Grote.

♂ ♀.—A small species resembling *H. villosus*, *H. cardui* or *H. paucillus*. Varies in color, so that while the fore wings are purple-red over black they are sometimes merely yellowish bronze over the dead ground color. The usual discal and inferior whitish patches, but the first (the orbicular spot) is subobsolete, and there is a third nearer the base as in *H. persimilis*. The subterminal line usually contrasts. Fringes tipped with whitish. Hind wings black with white fringes and two variable white spots as in *H. Californicus*, but greatly reduced. Beneath largely black, so that the median space appears resolved into whitish spots. Apices of primaries and internal margin pale. Apices of secondaries more largely whitish; two whitish spots appear on the median space. Body blackish; thoracic vestiture subsericeous; abdomen fringed terminally with testaceous hair.

Expanse, 13 to 18 m. m. *Habitat*, California (Mr. Hy. Edwards, No. 204). Ten specimens examined. Varies in the extent of the pale blotches on the wings, these are sometimes fused on the secondaries. Three specimens differing by the olivaceous color of the fore wings, obsolescence of the discal blotches and presence of the

median lines, appear to me to belong to *II. paucillus*; they differ by being brighter tinted beneath. In either species the dots seem to be sometimes confluent on the secondaries. These three specimens are a little moulded and not in proper condition for study. *II. diminutivus* is apparently easily separable from *II. villosus* by the under-surface.

***Heliiothis (Melicleptria) Californicus*, Grote.**

♂.—Size of the European *H. purpurascens* and a little stouter than *H. suetus* from Colorado Territory. All the tibiae spinose. Fore wings deep purple-red over black. Some specimens have lost the intense purple-red and have a brassy-black hue. The usual markings: two whitish quadrate discal marks and a square patch below median vein, all margined by the subobsolete approximate median lines; fringes dark. Hind wings black with two large whitish spots, the upper the larger, sometimes connected; fringes whitish. Beneath grayish; wings with black bases, large black discal marks on the whitish median spaces and with wide black terminal shades, discontinued superiorly.

Expanse, 25 m. m. *Habitat*, California (Mr. Hy. Edwards, No. 93). Four specimens examined. More thickly haired and stouter than *H. suetus*, without the paler contrasting terminal space; the subterminal line is imperceptible in *H. Californicus*.

***Heliiothis phlogophagus*, Grote and Robinson.**

Habitat, Sierra Nevada and Oregon (coll. Mr. Hy. Edwards, No. 151); California (coll. Mr. Hy. Edwards, No. 1250).

***Heliiothis armigera* (Hübner).**

Habitat, California (coll. Mr. Hy. Edwards, No. 3674).

***Annaphila*, n. g.**

A genus belonging to v. Heineman's group Anartidae, with broad and short wings, hairy vestiture and constricted eyes, hence related to *Omia*. The ocelli are unusually large, remote from the naked lashless compound eyes owing to the increased width of the epicranial tegument which, from its globosity, seems to cover the hinder portion of the latter. Antennae scaled, ciliate

beneath. Clypeus full, globose, exceeded by the heavily fringed palpi. Maxillae stout; wings broad, fore wings with the costal margin arched to the sharply defined apices, below which the external margin is unusually straight, the internal angle determinate, hence the length of the costal and internal margins is very similar. Hind wings broad, full and rounded. The body parts are slight in comparison to the breadth of the wings, and the abdomen does not exceed the anal angle of the secondaries.

A singular genus, recalling *Brephos*, (from which it differs at once by the presence of ocelli,) and certain Geometridae. The hind wings are white or yellow with *Catocala*-like markings.

***Annaphila diva*, Grote, Plate 4, fig. 14, ♂.**

♂ ♀.—Primaries black or blackish, with the ordinary ornamentation. T. a. line deep black, strongly dentate inferiorly where it is preceded by a few white scales. Orbicular black, usually filled in. Median shade black and quite distinct. Reniform lost in a broad, oblique, contrasting white band, which fills in the median space posteriorly before the t. p. line, tapering toward internal margin, before which it is discontinued. The central waved streak of the reniform is apparent, and the ground color of the wing appears twice before the line opposite the cell, the second time more largely. Subterminal line indicated by white scales at costa, and there are white dots between this and the inception of the t. p. line. Fringes dark. Hind wings white or yellowish white with blackish basal patch, and a rather narrow terminal band with uneven inner edge. Beneath, the base of the fore wings is whitish; there is a central blackish shade, beyond which the oblique white band of the upper-surface is more diffusely reproduced, showing a black liturate mark in place of the reniform. The wing is blackish terminally with the subterminal line broadly marked with white. Hind wings white, with a black discal spot and a partial reproduction of the terminal band of upper surface; at base the dark shading of the upper surface is reflected. Body beneath, terminally and laterally, whitish; above black, with the segments marked with white. Thorax and head dark colored.

Expanse, 20 to 22 m. m. *Habitat*, California (coll. Theo. L. Mead; Hy. Edwards, No. 198). I have examined five specimens of this beautiful species.

***Annaphila depicta*, Grote, Plate 4, fig. 13, ♀.**

♀.—Agrees structurally with *A. diva*. Primaries with the t. a. line roundly exerted outwardly superiorly, a little duller colored perhaps than in *A. diva*. Orbicular small, filled in. Median shade determinate, even, a little

centrally inwardly arcuate. The dark reniform is here determinate against the narrower pale shading, which precedes the t. p. line more evenly and continuously than in *A. dica*. Subterminal line more irregular and contrasted by the terminal space, which is paler than in *A. dica*. Hind wings bright orange-yellow, with a large black lunate discal spot, a black narrow terminal band with irregular margin. Within anal angle is a black spot, indicating a possible subterminal line. Base with dusky scales defined outwardly by a transverse band. Beneath, both wings yellow. Primaries with a median black fascia, inwardly bent below costa, then running outwardly. A large black discal spot. A wide black subterminal shade not reaching internal margin. Fringes black and the apices and costal edge dusky. Hind wings with a continued extra basal angulate black line, a discal spot, a very attenuate subterminal irregular line and a subobsolete black edging indicated by a black spot, as on upper surface, before vein 2.

Expanse, 21 m. m. *Habitat*, California (coll. Henry Edwards, No. 2260).

***Annaphila danistica*, Grote, Plate 4, fig. 7, ♀.**

♂ ♀.—Resembles *A. depicta* in the orange-yellow color of the hind wings above, but differs throughout, and particularly in the beautiful ornamentation of the fore wings beneath. Fore wings blackish, becoming outwardly a little paler. Orbicular a long transverse black streak with equally broad, pale, linear edgings. A black blotch on the cell between the spots. Reniform large and a little vague. T. p. line even, geminate with an included pale shade, slightly and widely roundedly outwardly produced over median nervules, thence lightly sinuate to internal margin. Subterminal line contrasted by the paler terminal space, preceded by an accentuated black shade emphasized on subcostal nervules. *An accessory, narrow, continued, even, transverse black line before the margin.* A terminal dotted line; fringes blackish. Hind wings deep orange-yellow, blackish at base and along internal margin. A black discal lunule. A narrow subterminal black line, sometimes (♂) wanting. A narrow black band along external margin with *even* interior edge; fringes blackish. Beneath the primaries are pale dull-yellow, with the discal spots vivid black, eyelike, pale-yellow circled, the space between them an outwardly oblique black extended patch. Exterior transverse line black, evenly outwardly rounded; beyond it an even pale yellow arc is bounded by another line leaving the apices dusky. Hind wings dusky fulvous, powdery, with a faint transverse line and discal liture and an even narrow dark border; fringes dark. Corporal vestiture blackish.

Expanse, 20 to 22 m. m. *Habitat*, Nevada Territory (coll. Henry Edwards, No. 246).

Differs by the external margin of the wings being a little more rounded, especially in the ♀, than in the two preceding species, with which it seems otherwise to agree structurally. This species commences to remind us of *Euclidia*. The remarkably beautiful though hidden ornamentation of the under surface of the primaries will always readily distinguish *A. danistica*.

Axenus, n. g.

The corporal vestiture is rough and coarse and the eyes are almond-shaped, constricted, and to a great extent hidden by the hairs of the small head, among which the rather large ocelli are at first not easily seen. Hence we have a correspondence with *Omia*,⁴ from which the frontal characters seem to separate our species. The clypeus is furnished inferiorly with a broad thin plate, which extends horizontally forwards, is medially slightly excavate, as wide as the front, and is not exceeded by the comparatively short palpi. The habitus recalls some of the species of *Melicleptria*, such as *diminutivus*. The antennae are scaled, very finely ciliate beneath. The eyes naked and destitute of lashes. The legs appear unarmed and the maxillae are stout. The small species is olivaceous blackish, with paler powdery, transverse lines over both wings, and with long and paler fringes.

Axenus arvalis, Grote, Plate 4, fig. 8, ♂.

♂ ♀.—Primaries olivaceous blackish, with the terminal transverse lines visible, powdery, pale glaucous-ochreous; this pale color extends as a band over the anterior portion of the median space. Reniform visible, pale, inconspicuous. Hind wings more blackish, with a subterminal double, pale and dark, rigid line running straightly across the wing. Behind it is a pale shade, in which may be detected the pale discal dot. All the fringes variably pale and contrasting. Beneath paler than above, more yellowish. The markings of the upper surface are imitated and the pale discal dot of the primaries is evident. Body blackish, with olivaceous-ochrey vestiture.

Expanse, 16 to 20 m. m. *Habitat*, California (Mr. Hy. Edwards, No. 106).

Eight specimens examined. Quite variable in the distinctness of the transverse powdery lines. The ornamentation reminds us faintly

⁴ Die ich nicht in Natura kenne, von dem sich *Axenus* aber sicher unterscheidet durch die Stirnbildung, die keine nabelförmigen Zapfen (also gleich Lederer's Tafel 2, fig. 11, sein soll), sondern eine horizontaler vorstehender, in der mitte seicht ausgehöhlter, schwarze Platte zeigt (Lederer's fig. 10, nicht sehr unähnlich, aber mehr nach unten gestellt, dünner, und anders ausgeschnitten).

of *Drasteria* or *Euclidia*. The female seems the darkest, and sometimes the wing appears uniformly blackish, with double pale lines on the hind wings, and the subterminal pale line alone distinct on primaries. In one specimen all the lines are obsolete on both wings and the anterior half of the median space is alone pale-colored on the primaries.

***Tarache terminimaculata*, Grote.**

♂.—Eyes naked, without lashes. Clypeal surface without projection. Tibiæ unarmed. Head, thorax and legs with appressed squamation. Size moderate. Scutum of the thorax large and globose. The wings widen outwardly and are strongly veined. The head, thorax and fore wings are pearly gray; primaries with a black point on the cell and with the terminal portion taken up by a large red-brown shaded space, neatly defined inwardly by an arcuate line lined inwardly with white, and which, after a short oblique outward reflection below costa, sweeps inwardly roundedly to internal margin. On the dark terminal half of the wing a blackish transverse line may be discerned below the outward projection of the white line. This dark line is tremulous and marked with a pale hair-streak at internal margin. An indistinct subterminal brown shade; the wing becoming grayish again along terminal margin. A series of black terminal points; fringes pale. Posterior wings without markings above and below, silky testaceous white. Beneath without markings, primaries darker shaded. The internal angle of the fore wings is slightly produced. Abdomen without tufts.

Expanse, 28 m. m. *Habitat*, Albany, N. Y. (Mr. J. A. Lintner, No. 1061).

A little stouter than *Tarache aprica* (a species subject to great variation and of which *Acontia biplaga*, Guenée, is certainly only a variety), and differing greatly from any of its congeners in ornamentation and coloration.

***Tarache flavipennis*, Grote.**

♀.—Allied to *T. aprica*, and especially resembling that form of this species described as distinct by Guenée under the name of *biplaga*, but differing by the yellow hind wings and smaller size. The fore wings are almost entirely blackish with a larger white space at the middle on the costal region enclosing the black discal point, and a smaller, marking the inception of the dotted subterminal line. There is a whitish shade on the middle of the internal margin and the black dotted terminal line is concluded by a white streak at internal

angle. The fringes are blackish. Hind wings obscure yellow centrally with the veins marked with fuscous and with a diffuse fuscous costal and external shading which clouds also the base of the wing and the internal margin; fringes pale. Body blackish; abdomen ringed with whitish. Beneath both wings are yellow with narrow blackish external borders; the hind wings show a black discal dot and a second, larger, without on the costa. The fore wings have the nervules marked with fuscous and are clouded at base, and show a discal liture and two broader oblique dark costal shades before the apex.

Expanse, 20 m. m. *Habitat*, California, Sierra Nevada (coll. Mr. Hy. Edwards, No. 2590).

Two female specimens are before me agreeing in all their markings. I have compared the species in the body of the description with its nearest ally hitherto known to science.

***Syneda Howlandii*, Grote.**

Habitat, California (coll. Mr. Hy. Edwards, No. 240). The specimen does not seem to differ from my original types except by the bands on the secondaries being a little broader superiorly.

***Euclidia cuspidata* (Hübner).**

Habitat, California (coll. Mr. Hy. Edwards, No. 90). The specimens are not to be distinguished from our Eastern material.

***Drasteria convalescens*, Guenée.**

I have taken this species in Central Alabama. It falls into a distinct section of the genus from the pectinate, geometrifform antennae of the male.

***Drasteria erichto*, Guenée.**

I have a single ♀ specimen in the collection, from New York, which agrees with Guenée's description in the continuity of the transverse posterior line. From the distinctness of the black subapical marks it seems to bear out the remarked resemblance to *Euclidia*. But I think that it is a form of our usual species occurring plentifully in this vicinity in April and May, and which expands uniformly about 37 m. m., and for which I retain this name. By breeding the species we shall discover whether this and the following are not forms of one species.

Drasteria erichtea, Hübner.

This resembles the preceding so that I cannot distinguish it except by size. The specimens from the Middle States taken in July expand about 42 m. m. A specimen from California (Mr. Hy. Edwards) does not differ. As forms of this species the following are tabulated :

a) *ochrea*, ♂ ♀, from Colorado Territory and California, received from Mr. Mead and Mr. Edwards (No. 68), is larger and of a uniformly pale ochreous ground color above, more yellow without markings beneath, displaying on the upper-surface the customary ornamentation of the species; the expanse is 46 m. m.

β) *agricola*, only ♀ s. known, darkly but distinctly brown, with obliterate ornamentation, no subapical dots, corresponds with Guenée's var. B, and expands 46 m. m.

γ) *mundula*, only ♀ s. known, hardly distinguished from *agricola*, the brown tint is wanting and the bands are obliterate; this is not improbably the ordinary female of the species, yet ♀ specimens occur with the markings of the male type.

Drasteria caerulea, Grote.

♂ ♀.—This is decidedly a distinct species, at once recognisable by its blue color, which simulates that of the paler blue and stouter forms among the Lycaenidae. Above the primaries are blue-gray, with the usual markings of the genus, the subapical dots distinct. Hind wings distinctly blue, with white fringes and distinct black border; they vary in depth of color, worn specimens become blackish; two *unusually widely separated* angulated black transverse lines are more or less apparent, but always faint, sometimes to be perceived with great difficulty. Beneath pale blue, irrorate, without markings and with narrow black borders, and here the resemblance to certain Lycaenidae is intensified.

Expanse, 20 to 22 m. m. *Habitat*, California (Mr. Hy. Edwards, No. 91).

I have five specimens before me of this strangely colored species, which is of small size, with broad wings, and cannot by any possibility be confounded with any other. Its distinct gray-blue tints are, to my knowledge, only paralleled in the Butterflies.