

A REVIEW OF THE TORTRICID SUBFAMILY
 PHALONIINÆ WITH DESCRIPTIONS OF
 NEW AMERICAN SPECIES.

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The subfamily Phaloniinæ comprises a natural group of moths, which are easily distinguished from all other Tortricidæ by having vein 2 in the fore wings emitted from the outer fourth of the cell. This character is always diagnostic. Several other characters are more or less common and peculiar to the species of the group, and the general habitus normally indicates the subfamily to a student of Tortricidæ, but the above named character is the safest final guide for the determination.

The genera of this subfamily are well separated on the venation alone without resort to the costal fold on the fore wings of the males which is objectionable as a generic character. The presence or absence of this fold with our present knowledge seems nearly persistent within the genera of the group; but it would not be surprising to find exceptions,* when our fauna becomes better known, and the character should not be depended upon as of more than specific value.

The following synoptic table may be utilized in separating the American and European genera of Phaloniinæ at present recognized.

SYNOPTIC TABLE OF THE GENERA OF PHALONIINÆ.

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|--|--------------------|
| Hind wings with all veins present; no pecten on median vein..... | 1 |
| Hind wings with but 6 veins; median vein with pecten..... | <i>Carposina</i> . |
| i. Fore wings with veins 7 and 8 stalked..... | 2 |
| Fore wing with veins 7 and 8 separate or connate..... | 3 |

*One exception is found in *Commophila duponcheliana* Duponchel, which has a very small costal fold, while the other species of the genus, to which it is undoubtedly properly referred, have no costal fold.

2. Hind wings with veins 3 and 4 separate.....*Lozopera*.*
 Hind wings with veins 3 and 4 stalked.....*Clysia*.*
3. Fore wings with vein 7 to apex or costa..... 4
 Fore wings with vein 7 to termen..... 6
4. Hind wings with veins 3 and 4 separate.....*Phalonia*.
 Hind wings with veins 3 and 4 connate or stalked..... 5
5. Fore wings with vein 11 strongly approximate to 10.....*Phtheochroa*.*
 Fore wings with vein 11 midway between 10 and 12.....*Commophila*.
6. Hind wings with veins 3 and 4 separate.....*Chlidonia*.*
 Hind wings with veins 3 and 4 connate or stalked..... 7
7. Hind wings with veins 6 and 7 stalked.....*Pharmacis*.
 Hind wings with veins 6 and 7 separate.....*Hysterosia*.

Pseudoconchylis Walsingham† does not belong in the Phaloniinae where it was originally placed and has since been retained in our lists. It is a genus of the Tineidæ. *Phalonia unistrigana* Dyar,‡ is also a Tineid and belongs to this genus. It is exceedingly close to if not identical with *laticapitana*, Walsingham; but considering the different localities it will be safer to retain it as distinct specifically until more material is at hand or the life history is worked out.

Thyraylia Walsingham§, type *Phalonia bunteana* Robinson, I am unable to consider a valid genus. None of the characters given by Lord Walsingham differ from those of typical *Phalonia*. The males of *bunteana* have a curious secondary sexual character not mentioned by Lord Walsingham, namely, a costal fold on the hind wings, involving vein 8; but this should not be given more than specific importance. A similar fold, sometimes containing a hairpencil, is found in the males of several other species of *Phalonia*, as *felix* Walsingham, *rupicola* Curtis, *manniana* Fabricius, and to a less extent, not involving vein 8, in others, as *rutilana* Hübner and *badiana* Hübner; but it is not found in species otherwise closely related to these.

Anisotenia Stephens, which is placed by Mr. E. Meyrick|| in this subfamily, has vein 2 of the fore wing arising before the outer

*Not known in America.

†Trans. Ent. Soc. London, p. 133, 1884.

‡Proc. Ent. Soc. Washington, V, p. 232, 1903.

§Proc. Zool. Soc. London, p. 138, 1897.

||Handbook Br. Lepid., p. 556, 1895.

third of the cell and I am inclined to refer it to the subfamily Tortricinæ.

Pharmacis Hübner is the same as *Euxanthis* Hübner, and pre-occupies it, as already pointed out by Lord Walsingham.*

The generic name *Phtheochroa* Stephens, should be restricted to the type of this genus, *rugusana* Hubner, while *Commophila* should be used for the rest of the species at present included in that genus; *rugusana* differs strikingly from the others by its peculiar venation of the fore wings, which have vein 11 strongly approximate to vein 10, while in the other species it is about midway between veins 10 and 12. The result of this is that the upper internal vein originates between veins 11 and 12 instead of beyond 11, a very unusual character in the family.

Eupæcilia Stephens, which Meyrick utilized for *maculosana* Haworth† is, according to Walsingham,‡ a synonym of *Euxanthis* Hübner and he removes this species and *Commophila duponcheliana* to *Hysterosia* on the strength of their costal folds. *Commophila* is distinguished from *Hysterosia* by having vein 7 in the fore wings to costa or at least very close to apex, while *Hysterosia* has it distinctly to termen; *Commophila* is, however, more readily separated from *Hysterosia* by having more or less well developed raised scale-tufts on the fore wings, and I should on that ground retain *duponcheliana* in *Commophila*, where it certainly would be placed by its general habitus, regardless of the costal fold, which I consider merely specific.

Genus PHALONIA Hübner.

Fore wings with 7 to costa. Hind wings with 3 and 4 separate; 6 and 7 stalked.

This easily recognized genus is represented by many species in this country and the described forms are only a small portion of those that we have. Several European species have been recorded from America, but most of these records I am inclined to doubt.

*Ann. and Mag. Nat. Hist. V., p. 488, 1900.

†Handbook Br. Lepid., p. 554, 1895.

‡Ann. and Mag. Nat. Hist. VI, p. 446, 1900.

Erigeronana Riley, described and hitherto listed in this genus, is a *Pharmacis* as examination of the type in United States National Museum (U. S. N. M., type No. 379) proves.

P. vitellinana Zeller is also a *Pharmacis*.

Clemens' name *angustana* for which Robinson* substituted *dorsimaculana* on account of the European *angustana* Hübner, should be resurrected as the latter species does not belong to this genus but to *Pharmacis*.

Phalonia comes Walsingham belong to *Commophila* (see post.)

***Phalonia atomosana*, new species.**

Labial palpi face head and thorax unicolorous dirty ochreous. Fore wings light ochreous evenly suffused with darker ochreous scales and irregularly sprinkled with single black scales, especially along the extreme dorsal edge and before tremen. At the end of the cell is an aggregation of black scales and obliquely below and before these is a small black dash on the fold. Hind wings light ochreous fuscous. Abdomen ochreous. Legs ochreous with tarsal joints faintly annulated with black.

Alar expanse: 19-20 mm.

Habitat: Pittsburg, Pa. (H. Engel).

Type: U. S. N. M., No. 10223.

Of about the size and shape of *Phalonia floccosana* Walker, but with less clear ground color, without the darker dorsal shade and differing in the sprinkling of dark scales.

***Phalonia rana*, new species.**

Labial palpi blackish brown exteriorly, ochreous on their inner side. Face, head and thorax light ochreous fuscous. Fore wings whitish ochreous strongly suffused with dark fuscous and with blackish brown ornamentation as follows: A blackish spot on base of costa; an outwardly oblique streak from base of dorsal edge, terminating on the middle of the cell; a small round spot just within the dorsal edge at apical third; a broad outwardly oblique costal streak from just beyond middle of costal edge, terminating at the end of the cell; a small costal spot just before apex. Hind wings ochreous fuscous. Abdomen fuscous. Front legs blackish, posterior legs ochreous sprinkled with black.

Alar expanse, 17-18 mm.

Habitat: Pittsburg, Pa. (H. Engel).

Type: U. S. N. M., No. 10224.

*Trans. Am. Ent. Soc., vol. II., p. 285, 1869.

This strongly marked dark species suggests by its color and general habitus the genus *Hysterosia*, but has the venation typical of the present genus.

***Phalonia grandis*, new species.**

Labial palpi ochreous white, suffused with dark fuscous exteriorly. Face, head and thorax yellowish white. Fore wings yellowish white slightly suffused with deeper ochreous on apical half. Three blackish brown costal spots, one at base, one on the middle, and one at apical fourth. A large dark triangular spot on the middle of the dorsal edge reaches with its tip up into the middle of the cell; this spot is light olivaceous brown with darker fuscous and black scales intermixed. Extreme terminal edge slightly sprinkled with dark slate-colored scales. Cilia white. Hind wings silvery white with dark fuscous short transverse striation nearly equally plain on both sides of the wing. Abdomen ochreous fuscous. Forelegs blackish, posterior legs ochreous.

Alar expanse: 30 mm.

Habitat: Chimney Gulch, Golden, Colorado (Osler).

Type: U. S. N. M., No. 10225.

This is the largest species of this genus described from Europe or America both in regards alar expanse and width. It approaches in size and color *edwardsiana* Walsingham, but is readily distinguished by the ornamentation of both fore and hind wings.

***Phalonia yuccatana*, new species.**

Labial palpi creamy white, second joint shaded with reddish brown exteriorly. Face, head and thorax yellowish creamy white with a slight rosy tint. Fore wings creamy white with costal edge from base to beyond middle narrowly dark reddish brown and with a similarly colored spot at apical fifth of costa. Both of these markings contain transverse black streaks. On the middle of the dorsal edge is a small, round, blackish spot preceded and followed by a few black striations. On the disc just before the end of the cell are two short, parallel, transverse, blackish brown dashes, sometimes continued into a longitudinal series of small transverse streaks of which, however, only the outer ones near the terminal edge are persistent. Hind wings light fuscous with darker veins and dorsal edge. Abdomen yellowish. Legs creamy yellow. The entire insect has a slight rose tinge.

Alar expanse: 18-20 mm.

Habitat: Nuecestown, Texas (C. L. Marlatt).

Type: U. S. N. M., No. 10226.

Foodplant: *Yucca baccata*.

Bred in the insectary of U. S. Department of Agriculture from pupæ, collected by Mr. C. L. Marlatt, April, 1896, on the above

plant, where the larvæ had spun their cocoons in the rolled-up leaflets. A very distinct large species not easily confounded with any described species of this genus.

***Phalonia louisiana*, new species.**

Labial palpi light yellow. Face, head and thorax dark golden yellow. Fore wings light shining straw-colored overlaid with golden yellow, and with the base and two oblique fasciæ dark golden brown. The first of these fasciæ runs from before the middle of the dorsal edge to beyond the middle of costal edge and is the broadest of the two; the second fascia runs between and parallel with the first and the terminal edge. Both are darkest on the dorsal edge, and gradually become lighter and more yellow towards costa. The intervening space is strongly suffused with golden yellow. Apical edge silvery overlaid with golden yellow. Cilia white. Hind wings dark fuscous. Abdomen blackish fuscous. Legs ochreous shaded with black.

Alar expanse: 16 mm.

Habitat: St. Louis, Missouri (Busck).

Type: U. S. N. M., No. 10227.

This species has the same general pattern as *Phalonia parallelana*, Walsingham, but is a larger, more brilliant insect with darker hind wings.

***Phalonia pimana*, new species.**

Labial palpi, head and thorax light ochreous. Fore wings whitish ochreous, suffused with deeper ochreous scales and with reddish brown markings. A complete narrow reddish brown central fascia, parallel with the oblique terminal edge has both edges straight and sharp and is the dominating ornamentation. The base of costal edge is reddish brown, and there is a nearly obsolete small fascia across the extreme apex of the wing, indicated mainly by reddish brown scales at both ends, while the middle part is suffused and obscured by the ochreous scaling. At apical third is a small reddish brown dorsal spot. Hind wings whitish ochreous. Abdomen and legs ochreous.

Alar expanse: 16 mm.

Habitat: Baboquiveria Mts., Pima Co., Arizona.

Type: U. S. N. M., No. 10228.

This species belong near *transversana*, Walsingham.

***Phalonia plummeriana*, new species.**

Labial palpi, face, head and thorax light ochreous. Fore wings light ochreous suffused with reddish brown scales, especially on the apical half, and with an oblique reddish brown fascia from before the middle of the dorsal edge to beyond the middle of the costal edge. This fascia has straight and parallel edges, and is more intensely reddish brown on the dorsal side, gradu-

ally losing itself towards costa in the reddish scaling around it. Extreme tip of the wing is reddish brown. Hind wing silvery ochreous white. Abdomen dark ochreous fuscous. Legs whitish ochreous sparsely sprinkled on external surfaces with fuscous.

Alar expanse: 13-14 mm.

Habitat: Plummers Island, Maryland (in the Potomac river above Washington City).

Type: U. S. N. M., No. 10229.

Phalonia schwarziana, new species.

Labial palpi, light yellow, sprinkled with reddish scales on the underside and towards the tip. Face, head and thorax light yellow; scales on patagia tipped with dark fuscous. Fore wings rather broad and square, light greenish yellow with a striking central fascia parallel with terminal edge; this fascia is of a rich reddish brown color on dorsal edge lined with darker brown, but gradually becomes narrower and lighter towards costal edge, where the light ground color is merely darkened by a sprinkling of slate-colored scales; the fascia is edged on both sides by strongly lustrous golden yellow scales. Costal edge at base narrowly darkened by fuscous scales and extreme tip of wing is similarly darkened. Hind wings light fuscous with whitish cilia. Abdomen ochreous. Four anterior legs blackish with white annulations on the tarsi; posterior legs ochreous, slightly sprinkled with fuscous.

Alar expanse: 11 mm.

Habitat: Plummers Island, Maryland (in the Potomac river above Washington City).

Type: U. S. N. M., No. 10230.

The species approaches in pattern *hospes* Walsingham, but the light olivaceous yellow ground color and the definitely limited fascia at once separates it; it belongs besides to the more broad and short-winged group of the genus.

I name this pretty and striking little species after Mr. E. A. Schwarz in pleasant memory of the many long summer evenings and nights spent together with him on Plummers Island in the pursuit of insects attracted to light, when the micros were too numerous to allow sleep, and when Mr. Schwarz could always be counted on to keep the enthusiasm up until the morning.

Phalonia aureana, new species.

Labial palpi, head and thorax fawn-colored. Basal third of the fore wings fawn-colored except along the dark fuscous costal edge; this basal patch is not very sharply limited by a large, dark, blackish fuscous cloud, which covers the entire apical part of the wing except the terminal and apical edges, and

which contains light ochreous, reddish and silvery scales especially in its basal part. Apical and terminal edge golden fawn-colored with an oblique narrow silvery streak crossing the tip. Cilia light yellow. Hind wings dark blackish fuscous. Abdomen dark fuscous. Legs ochreous shaded with black.

Alar expanse: 12-13 mm.

Habitat: Oak Station, Pennsylvania (F. Marloff).

Type: U. S. N. M., No. 10231.

Nearest and quite close to *Phalonia hospes* Walsingham, but differing in that the basal light area is broadest on the dorsal side instead of at the costal part as in Lord Walsingham's species.

Phalonia gunniana, new species.

Labial palpi white, shaded with fuscous on the exterior sides. Face light ochreous. Head and thorax whitish ochreous mixed with brown and black scales. Fore wings dark brownish ochreous on the terminal part with a rosy tint; on the middle of the dorsal edge is a large semicircular blackish spot, which is the base of an indistinct transverse light brown fascia, hardly darker than the ground color. Before tornus is a similarly colored large round spot surrounded by silvery and light rose-colored scales. Across the extreme apex of the wings is an oblique black streak and terminal edge and the cilia is dusted with black. Hind wings dark fuscous. Abdomen, dark fuscous. Legs, ochreous shaded externally with black.

Alar expanse: 10-12 mm.

Habitat: Plummers Island, Md. (Busck).

Type: U. S. N. M., No. 10232.

This species is very close to, and when rubbed mistakeable for *Phalonia bunteana* Robinson, but differs by the darker basal part and the more brownish general color.

Phalonia marloffiana, new species.

Labial palpi whitish dusted with fuscous; terminal joint fuscous. Face and head whitish sprinkled with fuscous. Thorax light fuscous. Fore wings white with dark fuscous and black markings and slightly suffused with ochreous near base. Basal third white except the costal edge and a dorsal spot near the base which are dark fuscous. This nearly unmottled basal patch reaches further out on the costal than on the dorsal edge, and is limited by a poorly defined broad central blackish fuscous area, sprinkled with whitish and brownish scales and somewhat incised on the middle of the wing. Beyond this area is a transverse white fascia parallel with the terminal edge and more or less obscured by dark mottling especially towards the dorsal edge. Apical part of the wing black sprinkled with scattered brown and whitish scales. Hind wings dark blackish fuscous. Abdomen dark fuscous above, under side ochreous sprinkled with fuscous. Legs whitish ochreous, sprinkled with fuscous.

Alar expanse: 10-11 mm.

Habitat: Oak Station, Pennsylvania (F. Marloff).

Type: U. S. N. M., No. 10233.

I take pleasure in naming this very distinct species in honor of the collector, from whom I have repeatedly had interesting and carefully mounted Microlepidoptera.

The species has a certain similarity to the European *angustana* Treitsche.

Phalonia lavana, new species.

Labial palpi white, shaded with light fuscous. Face and head dirty white. Thorax light fuscous. Fore wings silvery white, mottled and marked with black and brown. Costal edge is tinged with brown, especially at base and marked with about sixteen equidistant small black streaks from base to apex. On the middle of the wing three of these streaks are combined into a larger spot by intervening dark brown scales, and from the spot is emitted an indistinct, poorly defined brown shade across the wing. Basal third of the wing is nearly unmottled, but the apical part is somewhat darkened by irregular black striation. The apical two-thirds of the dorsal edge is also marked with small black streaks and the tip of the wing is strongly mottled with black and brown scales. Hind wings whitish silvery fuscous. Abdomen dark fuscous. Legs, whitish; anterior tarsal joints annulated with black.

Alar expanse: 12-13 mm.

Habitat: Oak Station, Pennsylvania (F. Marloff); Hyattsville, Maryland (Busck).

Type: U. S. N. M., No. 10234.

Phalonia hubbardana, new species.

Labial palpi smoky white, externally shaded with fuscous. Face smoky, yellowish white. Top of head and thorax yellowish white strongly sprinkled with black. Fore wing smoky white overlaid with light yellow and faintly mottled by transverse black striation; this striation is emphasized on the costal edge, which on account of the many close short streaks appears blackish. Tergites and cilia black, each black scale, however, minutely tipped with white. On the middle of the dorsal edge is an outwardly oblique more or less distinct black streak reaching the fold. Hind wings light silvery fuscous. Abdomen and legs whitish fuscous; tarsal joints blackish.

Alar expanse: 12-13 mm.

Habitat: Tucson, Arizona (H. G. Hubbard).

Type: U. S. N. M., No. 10235.

Food plant: *Koeberlinia spinosa*.

The larva of this species is a borer in the stems and thorns of the above plant, and is "bright semitransparent greenish yellow, with head and cervical shield pale brownish." They were received in January, 1897, from Mr. Hubbard by the U. S. Department of Agriculture, and bred by Mr. Pergande in May of the same year. Mr. Hubbard stated in his letter of transmission that the plant never has leaves and that the thorns are poisonous.

The species is nearest *Phalonia campicolana* Walsingham in coloration, but is much smaller and differs by its yellow color, which suffuses the wing, as well as by the absence of the black base and darker costal markings found on the fore wings of Lord Walsingham's species.

***Phalonia temerana*, new species.**

Labial palpi whitish with exterior sides of second joint and the apical joint clear brown. Face, head and thorax whitish, sprinkled with brown. Fore wings white evenly suffused with brown scales; just before the middle of the dorsal edge is an outwardly oblique brown streak edged with black and terminating on the fold, though faintly continued beyond it as a slight dark shade. Apical third of the wing brown sprinkled with sparse black scales. Cilia sprinkled with black. Hind wings dark fuscous. Abdomen ochreous fuscous. Anterior legs blackish; posterior legs whitish ochreous.

Alar expanse: 12-13 mm.

Habitat: Oak Station, Pennsylvania (F. Marloff).

Type: U. S. N. M., No. 10236.

An obscurely marked species recognizable by the clear brown labial palpi and the brownish apical part of the fore wings.

***Phalonia leguminana*, new species.**

Labial palpi dark reddish brown exteriorly, sprinkled with white on the inner side. Face and head dark fuscous, sprinkled with white. Anterior part of thorax dark fuscous; posterior part whitish sprinkled with fuscous; posterior tuft dark reddish brown. The lustrous white ground-color of the fore wings is for the greater part heavily overlaid with shining dark fuscous, light slate-colored, black and brown scales; a basal patch of mixed dark fuscous, black and brown scales, wider on costal side than on the dorsal, is limited exteriorly by a nearly unmottled oblique white fascia; this spreads out on the costal edge over the central part of the wing, and downwards in a narrow spur to the dorsal edge at apical third, enclosing a large round blotch of dark scales on the middle of the dorsal edge. On the costal edge are several small dark spots in the white part. Apical third of the wing is entirely overlaid with dark mixed fuscous brown and black scales except for a thin white

line across the tip. Hind wings light whitish fuscous with darker tip and veins. The four anterior legs are blackish with white annulations on the tarsi; posterior legs whitish ochreous, slightly sprinkled on the outer surfaces with fuscous.

Alar expanse: 14-15 mm.

Habitat: Washington, D. C.

Type: U. S. N. M., No. 10237.

Food plant: *Gleditschia horrida*.

This species was bred in the insectary of the U. S. Department of Agriculture in February from seedpods of the above plant, collected the previous September; the larvæ fed on the pulp around the seeds. They were dirty greenish, tinged with purple, head brownish yellow, cervical shield lighter, both highly polished; piliferous warts large, flat, polished, about the color of the body.

The species is nearest and quite close to the European *dubitana* Hübner, but differs in the much greater extent of the dark parts of the fore wings and in the presence of the narrow transverse white line across the tip.

Genus PHARMACIS Hübner.

Fore wings with vein 7 to termen. Hind wings with 3 and 4 connate or stalked; 6 and 7 stalked.

Type: *sartana* Hübner.

Synopsis of American species:

- Ground color of fore wings white.....*mexicana*.
- Ground color ochreous..... 1
- 1. Entire apical part of wing dark clouded..... 2
- Apical part of wing with limited dark markings..... 3
- 2. With broad dark dorsal marking touching the edge.....*erigeronana*.
- With narrow dark dorsal marking not touching edge.....*deceptana*.
- 3. With complete central fascia.....*sartana*.
- Without such fascia.....*bimaculana*.

Pharmacis deceptana, new species.

Labial palpi whitish, sprinkled with ochreous fuscous. Face, head and thorax dirty white, sprinkled with ochreous fuscous. Fore wings dirty white overlaid with ochreous fuscous and with dark brown markings. The basal two-thirds of the fore wing is evenly sprinkled with short, ill-defined transverse ochreous fuscous streaks, and contains on the middle of the fold a conspicuous dark brown kidney-shaped oblique spot, nearly but not quite touching the dorsal edge: this spot is emphasized by being surrounded by a narrow

edge of unmottled white. Beyond the end of the cell is a large, indistinct, round, light brown spot, which is rather sharply defined towards the lighter basal part of the wing, but which apically gradually mixes with the surrounding color and partly covers the entire apical third. Hind wings dark brown with whitish cilia and with under side slightly speckled with white transverse streaks. Abdomen, dark fuscous. Legs, light ochreous.

Alar expanse: 16 mm.

Habitat: Kerrville, Texas (Wm. Barnes).

Type: U. S. N. M., No. 10238.

Near to *bimaculana* Robinson, but larger and with the well-defined apical spot of that species supplanted by the suffused brown shade. This species has a certain general resemblance to Lord Walsingham's figure of *Pædisca maculatana* and the type specimens were determined by Mr. Wm. Kearfott as that species for the National Museum.

Pharmacis mexicana, new species.

Labial palpi white, slightly sprinkled with light fuscous externally and with apical joint light fuscous. Head and thorax white, slightly suffused with light ochreous fuscous. Fore wings white, slightly suffused with light ochreous fuscous and with brown markings. Basal third evenly and lightly darkened by short indistinct transverse striation; before the middle of the dorsal edge is a large conspicuous dark brown, outwardly oblique streak, terminating beyond the middle of the cell. This streak has parallel and straight edges, and is limited on both sides by a narrow edging of pure white scales. Beyond the end of the cell is a large ill-defined ashy brown shade, limited basally by a line of unmottled white and reaching nearly to the terminal edge; beyond it is a short oblique whitish fascia across the tip of the wing. Extreme apex ashy brown. Cilia white with dark fuscous tips. Hind wings light whitish fuscous on the upper side, faintly showing the ornamentation of the under side, which is whitish with dark fuscous transverse lines. Abdomen and legs ochreous white, slightly dusted with light fuscous.

Alar expanse: 22 mm.

Habitat: Beulah, New Mexico, 8,000 feet altitude (T. D. A. Cockerell).

Type: U. S. N. M., No. 10238.

This is the largest and lightest colored of the described American species of this genus.

Genus COMMOPHILA Hübner.

Fore wings with vein 7 to costa or apex; 7 and 8 sometimes connate; with raised scales. Hind wings with 6 and 7 approximate, connate or stalked; 3 and 4 connate or stalked.

Synopsis of American species.

- Ground color whitish..... 1
- Ground color not white..... 2
- 1. Hind wings with strong dark transverse striation..... *macrocarpana*.
- Hind wings without such striation..... *fuscodorsana*.
- 2. Fore wings dark brown..... *saxicolana*.
- Fore wings light ochreous..... *comes*.

Commophila comes Walsingham.

Conchylis comes Walsingham, Trans. Ent. Soc., London, 1884, p. 129.
Phalonia comes Fernald, Dyar, List N. Am. Lep. No. 5463, 1903.

This species should be referred to the present genus, if Lord Walsingham's determination of my specimen is authentic, as I believe. It has slightly raised, smooth scale tufts on the fore wings and veins 7 and 8 connate to costa; hind wings with 3 and 4 connate, 6 and 7 stalked. The specimen before me was bred in the insectary of the U. S. Department of Agriculture from galls on oak, made by *Olliffiella cristicolæ* Cockerell, received from Mr. H. K. Morrison, Fort Grant, Arizona. The following is Mr. Pergande's note on the larva: "Preying on the Coccid. Head "brick red, body purplish, cervical plate paler anteriorly with a "broad black posterior margin; body marked each side with a "somewhat irregular row of minute whitish spots and similar "spots across the middle of the segments; venter pale dirty "yellowish; length, 7 mm."

Genus HYSTEROSIA Stephens.

Fore wings with vein 7 to termen. Hind wings with veins 3 and 4 connate; 6 and 7 approximate but separate at base.

Type: inopiana Haworth.

Synopsis of American species.

- Fore wings creamy white..... *agrana*.
- Fore wings not creamy white..... 1
- 1. Fore wings with ochreous markings..... 2
- Fore wings with brown or fuscous markings..... 4
- 2. Hind wing whitish..... 3
- Hind wing fuscous..... *inopiana*.
- 3. Fore wings suffused with light golden yellow..... *aureoalbida*.
- Fore wings blotched with darker yellow scaling..... *fulviplicana*.

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| 4. Head dark fuscous..... | 5 |
| Head ochreous..... | 6 |
| 5. Fore wings with a violet tint..... | <i>birdana</i> . |
| Fore wings without such tint..... | <i>modestana</i> . |
| 6. The light ground color prevailing..... | <i>villana</i> . |
| The dark fuscous scaling prevailing..... | 7 |
| 7. Fore wings with deep ochreous markings on fold..... | <i>baracana</i> . |
| Fore wings without such markings..... | <i>terminana</i> . |

Hysterosia birdana, new species.

Labial palpi blackish brown. Head dark brown intermixed with ochreous. Thorax dark purplish brown with a posterior tuft. Fore wings dark violet brown with still darker purplish brown markings as follows: a costal spot at base; another before the middle of the wing, which emits a narrow inwardly oblique fascia, which gradually widens until it reaches the dorsal edge at basal third. A round dark spot within the dorsal edge at apical third and the entire tip of the wing limited inwardly by a straight line running from tornus to apical third of costal edge. At the end of the cell is a small round black dot. Hind wings above light ochreous fuscous with the ornamentation of the under side faintly showing through; under side whitish with numerous, undulating, transverse, dark fuscous lines running across the wing. Abdomen ochreous fuscous. Legs ochreous, shaded externally with black.

Alar expanse: 27 mm.

Habitat: Rye, New York (H. Bird).

Type: U. S. N. M., No. 10240.

Food plant: *Helianthus*.

Bred by Mr. H. Bird from larvæ boring in the roots of *Helianthus*, occurring with those of *Papaipema nelita* Strecker.

This fine species, which I take pleasure in naming in honor of the discoverer, is by far the largest and darkest of the genus, and can not be mistaken for any of the other described species, though partaking in the general common scheme of markings.

Hysterosia modestana, new species.

Labial palpi dark fuscous with inner surfaces ochreous. Face, head and thorax dark fuscous; thorax smooth. Fore wings uniformly dark fuscous with a strong silky lustre; at the end of the cell outside of the usual small black dot is a small transverse blackish spot and between this and the apex is another larger blackish spot. Hind wings dark ochreous fuscous above; under side whitish fuscous checkered with dark fuscous transverse striation. Abdomen, dark fuscous. Anterior legs black with ochreous annulations on tarsal joints; posterior legs ochreous, mottled with black.

Alar expanse: 20 mm.

Habitat: Pittsburg, Pennsylvania (H. Engel).

Type: U. S. N. M., No. 10241.

The uniform dark color and the strong silky lustre, together with the dark head easily separates this species from the others here defined.

Hysterosia terminana, new species.

Labial palpi yellowish white, slightly shaded with black on the exterior side of second joint. Face ochreous white. Head, ochreous intermixed with fuscous. Thorax smooth, ochreous fuscous. Fore wings whitish ochreous, irregularly overlaid with dark fuscous spots and blotches. Costal fold dark fuscous. At the end of the cell is a small blackish dot, followed by a transverse, elongate triangular, dark fuscous shade; between this and the dark apical part of the wing is a nearly unmottled, narrow fasci-form, ochreous white space, limiting sharply the dark apical part, which is darkest towards the base of the wing and gradually becomes lighter towards the tip. Upper side of the hind wings light whitish fuscous with the ornamentation of the under side faintly showing through; under side ochreous white, slightly mottled with light fuscous, transverse striation. Abdomen and legs ochreous.

Alar expanse: 17-20 mm.

Habitat: Pittsburg, Pennsylvania (H. Engel).

Type: U. S. N. M., No. 10242.

Nearest the following species from which it differs by the lighter head and palpi and by the absence of deep ochreous markings on the fold.

Hysterosia baracana, new species.

Labial palpi ochreous, shaded externally with black. Face and head ochreous brown, the face rather darker than the top of the head. Thorax dark fuscous with small ochreous posterior tuft. Fore wings with the ochreous white ground color, nearly completely obscured by dark fuscous black and deep ochreous scales. Costal edge blackish with three pairs of small indistinct ochreous streaks on the outer half. At the end of the cell is a small round black dot, surrounded by light ochreous scales; beyond it is faintly indicated the usual small transverse dark shade, followed by a blackish streak across the tip of the wing. On the disc and along the fold are several small ill-defined deep ochreous spots and single scales of the same color are sprinkled on the dorsal part of the wing below the fold. Hind wings light fuscous above and below with merely a trace of darker striation on the under side. Abdomen dark fuscous with ochreous anal tuft. Anterior legs blackish; posterior legs ochreous with blackish spurs.

Alar expanse: 16-17 mm.

Habitat: St. Louis, Missouri (McElhose, Busck).

Type: U. S. N. M., No. 10243.

The tufted thorax and the ochreous markings on the fold of the fore wings distinguish this species from its allies.

Hysterosia villana, new species.

Labial palpi ochreous with under side and tip black. Face, head and thorax ochreous. Fore wings clear straw-yellow with blackish fuscous markings and slightly suffused in irregular spots with deeper ochreous. Base of costa blackish. A basal patch of unmottled yellow reaches further out on the costal edge than on the dorsal edge, and is limited by a large ill-defined dark suffused patch, running obliquely across the wing, though not reaching the costal edge. Beyond this central patch is a narrow, nearly unmottled light space across the wing, limiting the dark mottled apical part of the wing in an inwardly angulated line from tornus to apical third of costal edge. At the end of the cell is a blackish dot, connected with dark apical part by some dark fuscous scales. Hind wings light silvery fuscous on the upper side; under side slightly mottled with dark transverse striation. Abdomen and legs ochreous.

Alar expanse: 19-21 mm.

Habitat: Denver, Colorado (Oslar).

Type: U. S. N. M., No. 10244.

This species approaches in color *aureoalbida*, Walsingham, but belongs rather together with the dark species described in the present paper.

Hysterosia inopiana Haworth.

There is in the U. S. National Museum a single specimen collected in California by Lord Walsingham, and determined as this species by him. From the comparison of this specimen with European specimens I am unwilling to pronounce on their identity but I am inclined to regard the record from this country as doubtful.

Genus CARPOSINA Herrich-Schaffer.

This remarkable genus was defined, naturally rather incompletely, as a Tineid genus by Herrich-Schaffer in his "Syst. Bear. der Schmetterlinge von Europa," vol. v., p. 38, 1853, and has not, as far as I am aware, been adequately characterized in print since. It has the following characters: Labial palpi in the female very long, straight, porrected; second joint thickened with short

brushes above and below, terminal joint rather long, plainly visible beyond the hairs of the second joint; in the male the palpi are much shorter and strongly upward curved, second joint with thick short brush above and beneath, terminal joint short, erect and clothed with scales, so as to appear as broad as long and nearly square. Antennæ in the female simple, shortly ciliate; in the male with enlarged basal joint and long (2-3) ciliation. Ocelli obsolete. Thorax smooth. Fore wings narrow, elongate; apex pointed; termen very oblique; with raised scale tufts; 12 veins, all separate; 2, 3, 4 and 5 approximate from lower corner of cell; 7 to termen. Hind wings broader than the fore wing, with well developed pecten on lower median vein; costa nearly straight; termen strongly oblique, straight or subsinuate; dorsal edge rounded; 6 veins; veins 4 and 6 obsolete (coincident with 3 and 7); 3 and 5 approximate or connate; 7 to apex. Posterior tibiæ hairy.

The known larvae of this genus feed in the seeds of fruits and pupate in the ground in a cocoon, made of silk and particles of earth. The Japanese species *Carposina sasaki* Matsumura* is an important enemy of the peach crop of the country†.

The genus belongs to a very abnormal group of the subfamily *Phaloniinæ* together with one Japanese genus *Propedesis* Walsingham‡ and three Australian genera *Paramorpha* Meyrick, *Oistophora* Meyrick, and *Coscinoptycha* Meyrick.§ all having the characteristic reduction of veins in the hind wings and all with a peculiar general habitus abnormal within the family, due to their narrow, tufted fore wings and the unusual palpi.

The group might with propriety be given separate subfamily rank, with the reduction of the number of veins and the hairy lower median vein as distinctive characters.

*Entom. Nachricht. xxvi, p. 198, 1900.

†This is the *Carpocapsa persicae* Sasaki, mentioned in "Insect Life" (vol. II, pp. 24, 65; IV, p. 341). This species, of which specimens from Prof. Sasaki are in the National Museum, appears to be quite variable and I would suggest the probability of its identity with *Carposina niponensis* Walsingham (Ann. and Mag. N. H. VI, p. 121, 1900).

‡Ann. and Mag. N. H. VI., p. 122, 1900.

§Proc. Linn. Soc. N. S. Wales, VI., p. 693, 1881.

Meyrick's interpretation of the venation of his Australian genera is very singular and I venture to believe that he would now analyze it otherwise and in conformity with the above.

One of the American species, *Carposina crescentella* Walsingham, has veins 3 and 5 separate in the hind wings, while the type of the genus and the other known species have these veins connate; but the characters are in all other respects identical and I do not believe the difference is of more than specific value in this group.

The two American species at present named may be separated thus:

With white dark-margined crescent-shaped mark at end of cell. *crescentella*
Without such mark; wings much broader *fernaldana*

Carposina crescentella Walsingham.

Carposina crescentella, Walsingham, Trans. Am. Ent. Soc., x., p. 189, 1882; Dyar, List. N. Am. Lep., No. 5475, 1903.

In U. S. National Museum are specimens of this easily recognized species from New Brighton, Pa. (Merrick) and from Ottawa, Canada (C. H. Young).

Carposina fernaldana, new species.

Labial palpi in the male blackish with inner side and tip of terminal joint dirty white; in the female they are black with upper tuft on second joint and tip of terminal joint dirty white. Face, head and thorax whitish, sprinkled with light fuscous. Fore wings whitish, liberally sprinkled with light ochreous fuscous; basal third of costal edge black, followed by equidistant, rather ill-defined, black spots on the entire costal edge and around apex to tornus. Reaching from the middle of costal edge to apical third is a black, more or less interrupted, crescent-formed marking, the most persistent part of which is two short longitudinal black lines just above the cell ending in a scale tuft; other tufts of raised scales are found on the middle of the cell, just below the end of the cell and below the fold. Hind wings whitish fuscous; abdomen, light fuscous. Legs, black exteriorly, shining ochreous white on the inner side; tarsal joints with indistinct darker annulations.

Alar expanse: 15-20 mm. (the males being the larger).

Habitat: Plummers Island, Maryland (Busck); Oak Station, Pa. (Marhoff); New Brighton, Pa. (Merrick); St. Louis, Mo. (McElhose, Busck); Chicago, Ill. (Kwiat).

Type: ♂ and ♀ U. S. N. M. No. 10245.

I take pleasure in naming this very distinct and pretty species in honor of the American authority in this family, my esteemed friend, Professor C. H. Fernald.



Busck, August. 1907. "A Review of the Tortricid Subfamily Phaloniinae with Descriptions of New American Species." *Journal of the New York Entomological Society* 15, 19–36.

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