of the cell and of cell 1st M_2 ; cross-vein m connects M_{1+2} with M_3 , weak and tending to atrophy; Cu_1 leaves M_3 before mid-length of the long cell 1st M_2 .

Abdomen elongated, tergites dark brown, the caudal margins of the segments narrowly paler; basal sternites more yellowish than the terminal segments; hypopygium brown.

Habitat.—Alaska.

Holotype, ♂, Sitka, Alaska; June 16, 1899 (Kincaid).

Allotype, ♀, Saldovia, Alaska; July 21, 1899 (Kincaid).

Paratypes, ♂ ♀, Yakutat, Alaska; June 21, 1899 (Kincaid); ♂, Virgin's Bay, Alaska, June 26, 1899 (Kincaid); ♂, Saldovia, Alaska, July 21, 1899 (Kincaid).

The type is in the collection of the United States National Museum; the species is based on material taken on the Harriman Expedition, and was determined by Coquillett as being *T. debilis* Will.

The species agrees with *debilis* in many respects, but the general coloration is dark brown, not yellow; the basal segments of the antennæ are not reddish and the venation is different, the cells 1st M_2 and M_1 being greatly elongated. The abdomen and halteres are longer than is usual in this group of the genus.

GEOMETRID NOTES.

THE GENUS *Dysstroma* Hübner.

BY L. W. SWETT, WEST SOMERVILLE, MASS.

The genus *Dysstroma* Hüb. (Verz. p. 333, 1825) with its type *truncata* Hufn. seems to be a natural group by itself. Hulst (Trans. Am. Ent. Soc., vol. XXIII, p. 283, 1896) under *Hydriomena*, cites *truncata* Hufn. as the type of *Dysstroma*. Warren and Hampson both refer the *truncata* group to *Polyphasia* Stephens, but treat it as a separate genus (Proc. Zool. Soc., p. 373, 1893, and Ind. Moths, III, p. 378). Mr. L. B. Prout points out in Trans. London Ent. Soc., part XVIII, p. 33, 1908, that *Polyphasia* cannot hold, as Hübner's name *Dysstroma* has priority. According to Mr. Prout's and my own views, what we have been calling *truncata* in North America is really *citrata* Linné ("Fauna Suecica," ed. II, p. 332, 1761).

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Werneburg (Stett. Ent. Zeit., vol. XIX, pp. 49-57, 1855) shows, I believe for the first time, that *citrata* Linné is related to *truncata*. In Linné's original description of *citrata*, he speaks of the fore wings having a grayish central band, with a variegated outer margin and reddish yellow costal spot. *Dysstroma citrata* Linn. with its variations appears to be our American form, and *truncata* Hufnagel, though closely resembling it, is quite distinct. There is much doubt also as to the occurrence of *truncata* Hufn. in South America, as I have never seen authentic specimens of it.

I shall use the term *aberration* in this paper in place of *variety* in conformity with the practice of the European specialists, while *variety* will be employed in the sense of local race.

The typical *Dysstroma citrata* Linn., or gray form with variegated outer margins, seems to be rare, and is only found in cold climates and high altitudes. Our commonest form, which generally stands in collections as *Dysstroma truncata* Hufn., is *D. citrata* Linn. aberration *punctum-notata* Haworth, with the central band of the fore wings clear white. In Dyar's List, page 281, the aberrations of *truncata* Hufn. and *citrata* Linn. are badly confused, but I shall only consider *citrata* here; so the rest may be referred to *truncata*. *Dysstroma citrata* Linn., and its aberrations may be listed as follows:

I. *Dysstroma citrata* Linné.—Fore wings with a gray central area, variegated outer margin with reddish yellow costal spot.

This appears to be rather a rare form, probably occurring in the mountainous regions and colder climates. The central band of fore wings is even, uniform gray, with enough variegation in the outer margins not to be unicolorous. I have this form, if I have identified it correctly, from Atlin, British Columbia, collected by Mr. Anderson. The gray form taken in the East is not exactly the same, but I will place it here tentatively until more is known of the group and the genitalia can be studied. I have not seen aberration *fusca* Prout (Trans. London Ent. Soc., part XVIII, p. 50, 1908), which is unicolorous dark gray without variegations, but I hardly think it applies to the forms mentioned above.

Ab. (a) *punctum-notata* Haworth (Prod. Lep. Brit., p. 26, 1802).

This form has the central band of the fore wings clear white, the intra- and extradiscal lines not touching. In most collections it has been placed under *truncata*, in error, though the resemblance is close, but beneath, on hind wings, the extradiscal line of *citrata* has a much sharper angle. *Punctum-notata* Haw. occurs in most of the Eastern States and a few of the Western, and also in British Columbia. Packard seems to have found it quite abundant in the White Mountains of New Hampshire, and has quite a series in his collection from there. Mr. Prout has pointed out the distinctiveness of this aberration from *truncata* Hufn., and was one of the first to do so.

Ab. (b) *immanata* Haw. (Lep. Brit., II, p. 323, 1809). This form has the prominent, reddish yellow costal spot, with central band solid blackish gray, and brownish variegated outer margins. It appears to be rather a rare form in North America, but it may be more common in the north. I have specimens from Victoria, B.C., received from Mr. E. H. Blackmore, and also from Mt. Washington, New Hampshire. The black, central band will distinguish it at once from all other forms.

Ab. (c) *simpliciata* Walk. (List Lep. Brit. Mus., XXV, p. 1422, 1862).

This form has the central band blackish as in the aberration *immanata* Haw., but there are white spots at costa and inner margin. I have never taken exactly this form, the white spots in my specimens not being intense enough, but rather grayish. Possibly it is nearer the aberration *tysfjordensis* Strand. (Nyt. Mag. Nat., XXXIX, p. 62, 1901). The latter form is said to have a gray black central band with gray spots at costa and inner margin. I list these two forms provisionally, but we get aberrations which are very close to them if not identical. I believe these to be rather northern forms and not very common.

Ab. (d) *insolida* Prout (Trans. London Ent. Soc., p. 59, 1908).

This form has the central band pale gray, with the inner and outer lines on either side strongly contrasting black. I have two specimens from British Columbia which approach it very closely. The black, contrasting lines on either side of the central band will readily separate this form from all others.

?Ab. (e) *rufibrunnea* Warren (Nov. Zool., VII, p. 181, 1900).

This seems to be a form close to *punctum-notata* Haw., in which the white central band is more or less suffused with light reddish brown. The types, two females, came from Argentine, South America, so there is always a slight doubt as to their standing. Mr. Prout, who has seen the types, believes they are aberrations of *citrata*. The form I have identified as this one came from Mr. E. H. Blackmore, Victoria, British Columbia, and seems quite rare. There are several other aberrations of *citrata* Linn. found in Europe, but as I have not seen them as yet from North America, I think it is better not to list them.

2. Var. *brunneata* Packard, (Proc. Bost. Soc. Nat. Hist., XI, p. 47, 1867 [1861 in error, in Dyar's list]; Monograph, p. 108, pl. VIII, fig. 38, 1876).

This northern form was described from Labrador by Packard, and is very closely allied to *citrata* if not a variety or race of it. It is a small, stunted form, brown-shaded, with a cinereous central band, three times as wide at costa as on inner margin. It is difficult to say whether this should be listed as a distinct species or variety, as I have only seen two or three specimens other than the type. Taylor's *Mesoleuca casloata* resembles *brunneata* Pack., but is larger. They are, however, closely allied. In Dyar's list *brunneata* Pack. is incorrectly placed under *truncata* Hufn., and should be referred to *citrata*. In Ent. Zeit. Stettin, XXV, p. 160, 1874, Mäeschler described "*Cidaria suspectata*," which must be close to *brunneata* according to the description. There is a copy of the original description in the Packard Monograph, page 130, 1876. The type of *suspectata* is said to be in the Staudinger collection and was taken in Labrador, as was *brunneata*. Both Staudinger and Mäeschler later regarded *suspectata* as identical with *brunneata*, but there is a slight doubt as to the correctness of this view. The older authors did not have a very clear eye for differences, and in most cases were not very careful in their comparisons. Packard in the Monograph mixed the forms, as figure 38, plate VIII, is evidently *Dysstroma citrata* ab. *punctum-notata* Haw., the white central band of the fore wings showing plainly. On the same plate, figure 39, is *brunneata* Packard, while figure 40 is probably *ethela* Hulst. In the Packard collection there is a specimen just

like figure 40 from Victoria, B.C., which is *ethela* Hulst. Figure 41 of the same plate is our eastern *hersiliata*, while figure 42 is *Dysstroma* (*Mesoleuca*) *occidentata*, described by Taylor in the Canadian Entomologist, vol. XLII, p. 86, 1910. Note the sharp indentation of the intradiscal line in the figure, on the median vein, also the peculiar central band and wide basal space. There is always a chance of error in determining species from figures, but as Packard had the specimens in his collection, from which the figures were made, I think I have identified them correctly.

Dr. Dyar (Proc. U. S. Nat. Mus., vol. XXVII, p. 897, 1904) describes the larvæ of *hersiliata* Guenée and mentions rearing them on currant. Dr. Dyar also mentions that there is considerable variation in this species, there being a dark and a light form, and he thought the latter might be *ethela* of Hulst. Both forms will have to be studied as they seem to differ from our eastern *hersiliata*. Possibly they may be forms of *occidentata* Taylor.

Traversata Kellicott (Bull. Buffalo Soc., Vol. V, p. 45, 1886 [*transversata* in error in Dyar's List]) is not to be considered under *citrata* (*truncata*) as it belongs to another group.

Atrifasciata Hulst. (Entomologica Americana, vol. III, p. 214, 1887) described from one female from California, turns out to be a *Eustroma* or *Lygris* and not *Cleora* or *Mesoleuca* as placed by Hulst. (See Grossbeck's notes in Trans. Amer. Ent. Soc., vol. XXXIII, p. 338, November, 1907.)

Mesoleuca mulleolata Hulst is placed incorrectly as a synonym of *truncata* in Dyar's List. It was described in the Bulletin of the Brooklyn Entomological Society, vol. IV, p. 26, 1881, and is a very large species and very distinct when once separated. There were two types from Colorado in the Hulst collection, and I shall restrict the type to the white banded form there. This, in a general way, resembles the aberration *punctum-notata* Haworth cf *citrata*, but the basal band of the fore wings has two very strong, toothed projections and the intradiscal band is inwardly less crenulate than in *citrata*. The extradiscal line of the fore wings runs straight from costa about 2.5 mm. before the first projecting tooth, and also the costal reddish spot is more accentuated than in *citrata*. The hind wings of *mulleolata* Hulst are darker than those of *citrata*, and the extradiscal line makes a much sharper angle. Then

again, *mulleolata* emerges a month earlier than *citrata*, namely in June, while the latter appears in July and August. The genitalia also show it to be distinct from *citrata*, the terminal spines being nearly three times as long and much stouter. The species, therefore, should be considered as distinct and so listed. Hulst's types are not in very good condition and more or less rubbed, so this is probably the reason why the older authors regarded it as *truncata*. I have specimens from Mr. Fernekes from Tacoma, Washington, and from Mr. Blackmore and Dr. Dyar from Victoria, B.C., and the Rocky Mountains. It is evidently a rare species in collections, but probably the characteristic locality has not been found.

Mulleolata Hulst has several striking forms which correspond to the forms of *citrata* and should be described, so that they may be understood. I may perhaps be criticized for naming aberrations, but I feel that we cannot correctly understand the limits of variation unless we do so. In many species it is absolutely necessary to do this, as different species have corresponding forms and would otherwise be confused with one another. I think it unnecessary to go as far as the European specialists do, but certainly every distinct form should have a name, and both Dr. Bastelberger and Mr. Prout concur in this view. The difficulty is to avoid splitting the forms too finely, as in the case of *truncata* and *citrata*. It is better to take a conservative view of them where confusion might arise, e. g., in the case of the white-banded forms of *citrata* and *mulleolata*, or the black-banded forms of the same, or in the case of many of the species of *Hydriomena*.

We may next consider the forms of *mulleolata* Hulst which seem to be worthy of names.

Dysstroma mulleolata Hulst, ab. *sobria*, nov.

Expanse 36-39 mm.

This is the black-banded form of *mulleolata* Hulst, corresponding to ab. *immanata* Haworth of *citrata*. The central band of the fore wings is solid black with no markings or whitish spots visible. The wing pattern is otherwise the same as in normal *mulleolata*, except that possibly the brown is a trifle more yellowish extradiscally. The aberration *sobria* can be easily recognized by the solid black central band and the date of appearance. Apparently this is one of the rarer forms, as other specimens show the transition

between the black-banded and the white-banded forms, the bands having begun to break up into spots of white or gray.

Holotype.—♂, Victoria, B.C., June 22, 1914, E. H. Blackmore, in my collection.

***Dysstroma mulleolata* Hulst, ab. *subumbrata*, nov.**

Expanse 39–40 mm.

In this form the black central band has begun to break up into grayish spots, especially at costa and inner margin. This form tends to show the transition from the black-banded to the gray or white-banded form. It corresponds to the aberration *simpliciata* Walker and *tysfjordensis* Strand of *citrata*. The outer area has the normal wing pattern of *mulleolata*, but in the character of the central band it is allied to *sobria*, except that the band is not solid black but broken into gray spots.

Holotype.—♂, Victoria, B.C., June 14, 1914; from E. H. Blackmore, in my collection.

Allotype.—♀, Victoria, B.C., June 24, 1915; in the collection of Mr. Blackmore.

Paratypes.—Victoria, B.C.; ♂, June 2, 1914; ♀, June 16, July 22, 1914, and June 26, 1915; in coll. Blackmore.

***Dysstroma mulleolata*, ab. *ochrofuscaria*, nov.**

Expanse 37–39 mm.

This form has the central band whitish, suffused with reddish brown, in fact, the whole fore wing is more or less suffused with brownish. It seems to be a somewhat rare form and represented in few collections and corresponds to ab. *rufibrunnea* Warren of *D. citrata*. It is yellowish along the costa just beyond the extra-discal band of the fore wings, and has a large, reddish brown costal spot at the anal angle. The hind wings have a reddish tinge along the outer margin.

Holotype.—♂, Victoria, B.C., June 27, 1915; in coll. Blackmore.

Allotype.—♀, Vancouver Island, B.C., July 16, 1905; in my collection.

Paratypes.—Duncans, B.C.; ♂, June 14, 1910; in coll. A. W. Hanham; ♀, Aug. 7, 1908; in coll. G. O. Day.

The forms of *D. citrata* and *mulleolata*, together with related species I have seen, may be listed as follows:—

1. *Dysstroma citrata* Linn. (gray central band).
 - (a) Ab. *punctum-notata* Haw. (white central band).
 - (b) Ab. *immanata* Haw. (black central band).
 - (c) Ab. *simpliciata* Walk. (black central band, white spots at margins).
 - (d) Ab. *tysfjordensis* Strand (black central band, gray spots at margins).
 - (e) Ab. *insolida* Prout. (gray central band, black at edge).
 - ? (f) Ab. *rufibrunnea* Warren (white centrally, suffused with reddish brown).
 - ? var. *brunneata* Pack. (blackish central band, brownish basally and extradiscally).
 - Syn.? *suspectata* Moesch.
2. *Dysstroma mulleolata* Hulst.
 - (a) Ab. *sobria* Swett.
 - (b) " *subumbrata* Swett.
 - (c) " *ochrofuscaria* Swett.
3. *Dysstroma hersiliata* Gn.
 - " ab. *mirandata* Taylor.
4. " *walkerata* Pears.
5. " *occidentata* Taylor.
6. " ab. *mutata* Taylor.
7. " *ethela* Hulst.
8. " *casloata* Taylor.
9. " *boreata* Taylor.
10. " *decorata* Taylor.
11. " *hulstata* Taylor.

There are other species to be added, but I have not had the opportunity to examine them in series, so will omit them for the present. The aberrations *simpliciata* Walker and *tysfjordensis* Strand, I have doubtfully referred to our fauna, but at least we have very closely allied forms which, if not identical with the European forms, are hardly distinct enough to warrant description. A very interesting fact is brought forth by Edelston (Zool., XXI, page 8784), viz., that *truncata* is normally double brooded and passes the winter in larval form, while *citrata* is single brooded and passes

the winter in the egg. The larva of *truncata* differs from that of *citrata* in colour and form of anal joints.

In conclusion I wish to thank Mr. E. H. Blackmore and also Messrs. G. O. Day and A. W. Hanham for suggestions and loan of specimens. I am also deeply indebted to Mr. L. B. Prout, of London, England, for notes and references.

ON MILITARY SERVICE.

The following is a list of the officers and employees of the Entomological Branch of the Dominion Department of Agriculture, Ottawa, who have enlisted for Overseas Service either in the Canadian or Imperial Forces:

H. F. HUDSON, B.S.A.—Field Officer, Strathroy, Ont., 16th Battery, C. F. A. Wounded and permanently disabled for further active service.

E. H. STRICKLAND, M. Sc.—Field Officer, Lethbridge, Alta., Machine Gun Section, 196th Battalion (Western Universities), C. E. F.

H. S. FLEMING.—Messenger, Ottawa, 52nd Battery, C. F. A.

F. M. MACKENZIE.—Assistant, Fredericton, N.B., Princess Patricia's Canadian Light Infantry, (P. P. C. L. I.).

*F. W. WALSH.—Assistant, Lethbridge, Alta., Welsh Fusiliers.

H. S. BRODIE.—Assistant, Agassiz, B.C., Imperial Forces.

H. CURRAN.—Assistant, Vineland Station, Ont.

C. A. WILLIAMS.—Inspector, Fredericton, N.B., 23rd Battery, C. F. A.

G. F. BALL.—Inspector, Fredericton, N.B., 104th Battalion, C.E.F.

H. S. FLEWELLING.—Inspector, Fredericton, N.B., P. P. C. L. I.

**J. C. SHIPTON.—Assistant and Inspector, Annapolis Royal, N.S., P. P. C. L. I.

L. M. HOW.—Inspector, Annapolis Royal, N.S., 112th Battalion, C. E. F.

T. H. H. FORTIER.—Inspector, Annapolis Royal, N.S., Heavy Artillery, C. E. F.

W. L. HARRIS.—Inspector, Annapolis Royal, N.S., Heavy Artillery, C. E. F.

*Killed.

**Died in Hospital in France.