

THE LYCÆNINÆ OF BRITISH COLUMBIA

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At our annual meetings during the past five years I have given either one or two papers each year, relating to the Geometridæ of this Province. During that time I have been quietly but effectively working on a new Check List of British Columbia Lepidoptera. Up to the present time I have worked out 95 per cent. of the Rhopalocera, 75 per cent. of the Noctuidæ, and 90 per cent. of the Geometridæ.

In the course of my studies I have found a great many errors which have existed for a number of years. Some of them very palpable, others which could not be avoided, as later research work by specialists has only recently given us a proper understanding of some of our species, and even now many of the names are really only tentative, as much work still remains to be done in completing the life-histories of many of our species and geographical races. Long series of adults from certain localities are necessary for purposes of comparison—certain species and forms must be bred from the egg, and larval notes taken at each successive moult, before we can really determine the status of all of our species.

The butterflies of British Columbia comprise six different families, in none of which are the misidentifications more numerous than the one I have chosen as the title of this paper.

Before taking up the different species, I think that it would be as well to give a few general characteristics of this family in its different stages.

Egg. The eggs are for the most part flattened or turban shaped, curiously and beautifully adorned with ridges and reticulations.

Larva. The caterpillars present a very unusual form, being more or less slug-shaped. The body is short and broad; the legs and pro-legs are short and small, allowing the body to be closely pressed to the object upon which it is moving; in fact, some of the species glide rather than creep. They are vegetable feeders, with the exception of one species, viz., *Feniseca tarquinius* Fabr. This species occurs in the Atlantic States and is aphidivorous, feeding on the woolly lice of the alder. One or two of the species are remarkable for having honey tubes which can be pushed out from the seventh and eighth abdominal segments and through which honey dew is extracted for the use of ants.

Chrysalis. The chrysalids are short, compressed and without angulations, attached at the caudal extremity and having a loop of silk passing round the body near its middle. They are generally closely fastened to the surface upon which pupation takes place.

Imago. All the butterflies of this family are small and are of delicate structure. The antennæ are nearly always ringed with white and a conspicuous rim of white scales encircle the eyes. There is exceeding

diversity of form in the various genera comprising this family, and they have been divided into three sub-families, viz.:

(1). The **Theclinæ** or Hair Streaks, whose wings on the upper side are generally some shade of brown and which very often have on the underside some narrow white zigzag lines, also very frequently having the hind wings adorned with one or more slender tails.

(2). The **Chrysophaninæ** or Coppers, so called as in nearly all the species, shades of coppery-red predominate.

(3). The **Lycæninæ** or Blues. This sub-family contains by far the largest number of species and is characterized by the gorgeous blue of the most varying shades on the upper side of the wings, especially in the males. It is the species of this latter sub-family that I propose to deal with in this paper.

The **Lycæninæ** of Boreal North America comprise ten different genera, six of which are represented in British Columbia. Up to date there have been described thirty-eight distinct species with thirty-five geographical races and seasonal varieties, making a total of seventy-three different forms listed as occurring in North America. In British Columbia we have nine species and nine geographical races, making a total of eighteen distinct forms, which is about one-fourth of the total number of "Blues" found in North America.

We have had two Check Lists of British Columbia Lepidoptera published, one was compiled by Mr. E. M. Anderson and published by the Provincial Museum in 1904, and the other one published by the Provincial Department of Agriculture in 1906, and compiled by some of the officers of this Society. I have never been able to find out just who assisted in this latter compilation, which was certainly an improvement on the previous one, as many of the most glaring errors and misidentifications were left out. I presume, however, that Mr. J. W. Cockle, of Kaslo, was responsible for most of the "Micros," and no doubt the late Rev. G. W. Taylor compiled the whole of the Geometridæ, while the late Capt. R. V. Harvey most likely listed the Diurnals. Looking back over these lists, I find that in this sub-family, the **Lycæninæ**, there were twenty-one forms listed in the 1904 Check List, of which one belonged to the Chrysophaninæ, and ten were misidentified; of these, seven do not occur in the Province, and in one case, one species was represented by three different names, none of which were right. In the 1906 List, there were fourteen forms recorded, of which eight were misidentifications, five of them not occurring in the Province.

I will now treat of them specifically in the sequence in which they are placed in Barnes and McDunnough's Check List, commencing with:

No. 1. **Everes amyntula** Bdv. This is commonly called the Western Tailed Blue, as it has a very minute tail at the anal angle of

each hind-wing. In both the previous B.C. Check Lists its Eastern congener **comyntas** Godt. has been listed from the Interior, but this is an error, as **comyntas** does not occur in Canada any further west than about Winnipeg. It is a debatable question, however, whether they are two distinct species or merely geographical races of each other. The mistake in our local lists probably arises from the fact that Vancouver Island specimens show a greater paucity of spotting on the under side than do those from the Okanagan district. The latter is more nearly typical and some day our Vancouver Island form may need a racial name. The most distinguishing characteristics of **comyntas** is the red lunules near the anal angle on secondaries on the upper side, which are not met with in **amyntula**.

No. 2. **Plebeius scudderi** Edw. or Scudder's Blue. The genus **Plebeius** is the largest in this sub-family and comprises thirty-one forms, of which ten are taken in British Columbia. **Scudderi** was not listed in the 1906 List but was recorded from Osoyoos in the 1904 List. This latter was an error of misidentification and was really **P. melissa** Edw., which occurs throughout that district. **Scudderi** was described from Lake Winnipeg, and the only specimens of this species taken in B.C. are from the Atlin district. They are much closer to the typical form than eastern specimens going under the same name.

No. 3. **Plebeius melissa** Edw. or the Orange-margined Blue. Through some reason or other this was omitted from the 1906 Check List. This was rather strange as it occurs right through southern B.C. from Vancouver Island to the Rocky Mountains. It is not nearly as common as many of the other "Blues," and on Vancouver Island seems rather scarce. I do not think that I have taken a dozen specimens in the ten years I have been collecting here.

No. 4. **Plebeius anna** Edw. This is probably one of the most local of our "blue" butterflies as so far I have only seen specimens from the Hope Mountains. It is recognized by its nearly white under side and the diminution of the black spots, also the orange sub-marginal band is reduced to a series of yellowish brown spots. There is a smaller form occurring at Kaslo and in the Similkameen district that may be a dwarf form of this species or a race of **scudderi**. Unfortunately the specimens I have been able to obtain so far have been too worn to make definite determination possible.

No. 5. **Plebeius aquilo** Bdv. This is commonly called the Alpine Blue on account of its only being taken at high altitudes. Atlin seems to be the only locality in B.C. from which **aquilo** is recorded. It is one of the smallest of our "blue" butterflies, and in the male is of a bluish-grey colour on the upper side.

No. 6. **Plebeius aquilo** race **rustica** Edw. This is the form which is wrongly listed in both of our Check Lists as **podarce** Feld., which

latter inhabits the Sierras of Central California. **Podarce** is also profusely spotted with black dots ringed with white on the under side, while in **rustica** the spots are reduced and on the secondaries are largely suffused with whitish. **Rustica** occurs on mountains of 6,000 to 8,000 feet altitude and has been taken on Mt. Cheam, Mt. McLean and Mt. Arrowsmith.

No. 7. **Plebeius sæpiolus** Bdv. This is really a mountain species and was described from the high mountains of California. The males of this species are of a silvery blue tinted with a violaceous sheen in certain lights, differing in colour from any other species that we have. The females are brown, heavily shot with blue, especially on the primaries. The specimens taken at Atlin are the only ones that can be considered as approaching typical **sæpiolus**.

No. 8. **Plebeius sæpiolus** form **rufescens** Bdv. This is a form occurring in northern and middle California and which extends into southern British Columbia. It is generally of larger size and has more or less obsolete reddish marginal lunules on the secondaries. It has been taken at Kaslo and Cranbrook.

No. 9. **Plebeius sæpiolus** race **nov.** This is the form which occurs commonly on Vancouver Island and goes under the name of **sæpiolus**. It differs from typical **sæpiolus** in the following particulars, which appear fairly constant: in the male the blue is much brighter on the upper side and does not show the same violaceous sheen. On the under side the ground colour is considerably lighter, being a bluish white, whereas in typical **sæpiolus** it is a brownish white; also the marginal row of black dots on the under side of the secondaries have a tendency to become obsolete. The females are entirely brown with a few blue scales basally. I have listed them in my own collection under the name of **insulanus**.

No. 10. **Plebeius icarioides** race **pembina** Edw. This is the insect that has been listed in B.C. collections under six different names, viz.: **phileros** Bdv., **fulla** Edw., **icarioides** Bdv., **ardea** Edw., **lycea** Edw., and **pheres** Bdv. **Phileros** and **fulla** are pure synonyms of **icarioides**, which latter is now restricted to the mountains of California. **Ardea** is a geographical race of **icarioides** inhabiting the Great Basin region, and **lycea** is another geographical race from the mountains of Colorado. **Pheres** is a distinct species and is only known from the San Francisco Bay region. The race **pembina** that we have in B.C. and the identification of which is correct, was described from Lake Winnipeg, and also occurs at Calgary and Yellowstone Park. The specific localities I have it from in British Columbia are the Hope Mountains, Princeton, Similkameen, Vernon, Armstrong, Kaslo and Rossland.

No. 11. **Plebeius lupini** Bdv. This is the species that is listed in our Check List as **acmon** Dblly. & Hew. In Dr. Dyar's list (Bull. 52 U. S. N. M. 1902) **lupini** is listed as a synonym of **shasta** Edw., but they

have been proved to be two distinct species, typical **shasta** occurring throughout the Sierra Nevada range as far north as Oregon. **Lupini** does not have a wide range in this Province, the only known localities being Kaslo and the Okanagan district.

No. 12. **Philotes battoides** Behr. or Behr's Blue. This, like the preceding, is not at all a common species with us, and is taken in the same general localities as **lupini**. Apart from generic structure, they are very much alike superficially, but may be distinguished by the following differential characters; in **lupini** the males have an orange band on the outer margin of the hind wings on the upper side, while in **battoides** the orange only shows through at the anal angle. Underneath in **battoides** the ground colour is of a darker gray with the spots, especially on the primaries, being more or less quadrate. The easiest recognized point of difference, however, lies in the presence of a marginal row of metallic bluish green scales on the under side of the hind wings of **lupini** which is absent in **battoides**.

No. 13. **Phædrotes piasus** Bdv. or the Arrowhead Blue. This is better known under the name of **sagittigera** Feld., which name is now placed in the synonymy. It was so named in reference to the white sagittate or spear-head marks which show so prominently on the under side of the secondaries. Our records show at present only a limited distribution, the specific localities being Armstrong, Vernon, Penticton and Osoyoos.

No. 14. **Glaucopsyche lygdamus** race **oro** Scud. This and the following race have been going under various names in collections in this Province for a number of years, such as **antiacis**, **antiacis** var. **behri**, **lygdamus**, and **couperi**. Moreover, these names have been applied indiscriminately to each of these two forms. The race **oro**, of which I have a long series from Lillooet, Okanagan Landing, Armstrong, Penticton and Kaslo, is differentiated from **columbia** by the much paler blue on the upper side of the male. The females show a greater degree of differentiation, **oro** being of a uniform smoky brown with a few blue scales basally, while **columbia** is almost black, heavily shot with blue, giving it the appearance of being bright blue with a wide black border. The two races differ in the ground colour of the under side, **oro** being of a brownish-drab colour, while the majority of the specimens of **columbia** are of a light stone colour.

No. 15. **Glaucopsyche lygdamus** race **columbia** Skin. This form was described by Dr. H. Skinner in the Ent. News, May, 1917. The type and paratypes are from Port Columbia, Wash. Amongst other localities mentioned are Corfield, Vancouver, which, I imagine, is meant for Corfield near Duncan, on Vancouver Island. This race of **lygdamus** occurs and is fairly common on Vancouver Island about May, and is also taken in the Lower Fraser Valley, which in the main has a similar fauna to Vancouver Island.

No. 16. *Lycænopsis pseudargiolus* race **nigrescens** Fletcher. This butterfly is interesting from the fact that more varieties of it have been described than of any other butterfly on the North American continent. Today there are no fewer than fourteen recognized races and seasonal forms distributed from the Atlantic to the Pacific. In our Check Lists **nigrescens** is given as "generally distributed," but this is an error as it does not occur on Vancouver Island. It was described from specimens taken by Mr. J. W. Cockle at Kaslo, and as its name implies, it is a much darker form than the one on Vancouver Island, especially on the under side. I also have it from Lillooet, Penticton and Rossland.

No. 17. *Lycænopsis pseudargiolus* race **nigrescens** form **quesnelli** Cockle. This form was tentatively named by Mr. Cockle, which name has been accepted for the present and is listed in Barnes and McDunnough's Check List (1917). The only specimens known are two worn ones taken at Bala Lake near Quesnel.

No. 18. *Lycænopsis pseudargiolus* race **echo** Edw. This form is very common on Vancouver Island in the early Spring, and has been listed in all local collections under the name of **nigrescens**. **Echo** was described from California and is very common in its nimitypical locality.

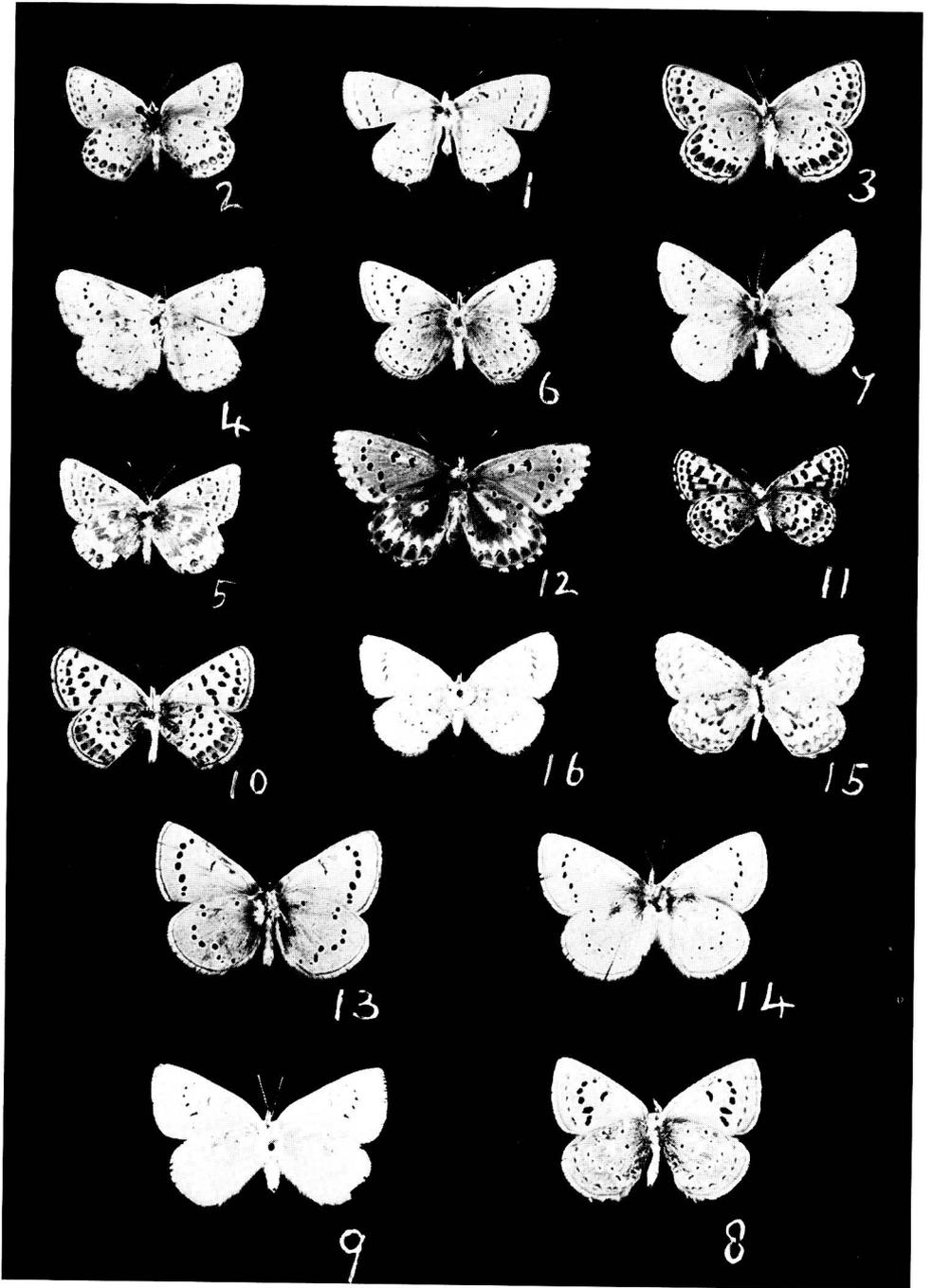
AUTHOR'S NOTE (October, 1920):

Nos. 5 and 6. *Plebeius aquilo* and its race **rustica**. Since the above paper was written I have received additional material in this group from Lillooet and Chilcotin. I have given this species considerable study and have come to the conclusion that all of the forms from the various localities in British Columbia are conspecific. I have compared them with **aquilo** from Labrador and with **rustica** from Colorado, and although they bear certain characters of each, they do not exactly correspond in all particulars with either. They are probably nearer to the race **rustica** than to **aquilo**, but until I can procure further material, especially females, it will be best to call them **rustica** for the present.

In the Can. Ent., April, 1919, p. 92, Drs. Barnes and MacDunnough have described a new race of *Plebeius icarioides* under the name of **blackmorei**, from a long series of both sexes taken by the writer at Goldstream in May, 1918. Excellent figures of the male, female, and the under side of this new race, with notes thereon, are contained in the Annual Report of the Provincial Museum for 1919.

As there seems considerable difficulty amongst collectors in identifying their specimens in this sub-family, I have prepared a plate illustrating the under sides of sixteen forms occurring in British Columbia. It is to be hoped that this will prove to be of some benefit to our B.C. collectors in enabling them to determine their "Blues" more readily than they have been able to do in the past.

PLATE I.



EXPLANATION OF PLATE

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|----------|---------------|------------------------|--|
| Fig. 1. | Under side of | <i>Everes amyntula</i> | Bdv. |
| Fig. 2. | " | " | <i>Plebeius scudderi</i> Edw. |
| Fig. 3. | " | " | <i>melissa</i> Edw. |
| Fig. 4. | " | " | <i>anna</i> Edw. |
| Fig. 5. | " | " | <i>aquilo rustica</i> Edw. |
| Fig. 6. | " | " | <i>sæpiolus</i> Bdv. |
| Fig. 7. | " | " | " <i>insulanus</i> Blackm. |
| Fig. 8. | " | " | <i>icarioides pembina</i> Edw. |
| Fig. 9. | " | " | " <i>blackmorei</i> B. & McD. |
| Fig. 10. | " | " | <i>lupini</i> Bdv. |
| Fig. 11. | " | " | <i>Philotes battoides</i> Behr. |
| Fig. 12. | " | " | <i>Phædrotes piasus</i> Bdv. |
| Fig. 13. | " | " | <i>Glaucopsyche lygdamus oro</i> Scud. |
| Fig. 14. | " | " | " <i>columbia</i> Skin. |
| Fig. 15. | " | " | <i>Lycænopsis pseudargiolus nigrescens</i> Fletch. |
| Fig. 16. | " | " | " <i>echo</i> Edw. |