

in any of the orders, it is almost necessary, as the insect fauna of the different climatic belts of the province vary so much. We have moist belts, dry belts, high and low altitudes, and I think we have active members in all of these.

Our active members in the various orders have continued their work during the past year and have added considerably to our knowledge of the Entomology of B. C. I would particularly mention the work of the following members who specialize in their orders: Messrs. E. H. Blackmore, in Geometridae and Microlepidoptera; R. S. Sherman, in Diptera; R. Glendenning, in the Aphids; W. Downes, in the Hemiptera; E. R. Buckell, in the Orthoptera. Many other members have also been active in gathering material which has added vastly to the list of known species occurring in B. C.

In such generally studied order, even as the **Lepidoptera**, we have no check list anywhere near up to date, and here is a labor of love and value for such as have the necessary knowledge and the enterprise to carry it out.

Some of the other orders are almost virgin fields as far as B. C. is concerned, and offer to those who take them up the incentive of almost untrodden ground and new discoveries.

Life is never dull for those who have the desire to delve into the mysteries and beauties of nature, and a hobby, if you like to call it such, is a grand thing to fall back upon, and, I have even heard, conduces to longevity.

I trust our deliberations may result in much benefit to the Society during the coming year.

L. E. MARMONT.

ADDITIONS AND CORRECTIONS TO THE LIST OF BRITISH COLUMBIA ORTHOPTERA

BY E. R. BUCKELL.

In the Proceedings of the British Columbia Entomological Society for 1922 (Systematic series No. 20.) there was published a list of the **Dermaptera** and **Orthoptera** recorded from British Columbia prior to 1922. The list was intended as a basis on which to build up an authentic check list of the **Dermaptera** and **Orthoptera** of British Columbia.

In the present paper twelve species are added to the list, some necessary corrections made, and occasional notes of interest are added to species previously listed.

I am indebted to Messrs. J. A. G. Rehn and Morgan Hebard for many of the corrections made and for the determination of material and permission to use certain racial names.

NEW RECORDS.

Family **Arcrididae**

Subfamily **Oedipodinae**

Xanthippus leprosus (Saussure), 1884.

SAUSSURE, H. DE. Mem. Soc. Geneve, XXVIII., p. 89 (1884).

This large red-winged species is found throughout the interior dry belt from the Chilcotin district to the southern Okanagan valley. The winter is passed as a nymph in hibernation.

LOCALITY RECORDS. Oliver, 1919; Chilcotin, Williams Lake, Big Bar, Rock Creek, Nicola, Minnie Lake, Douglas Lake, Chapperon Lake, Aspen Grove, Knutsford, Beresford, Kamloops, Vernon, 1922; Merritt, Princeton, Hedley, Keremeos, Osoyoos, 1923 (E. R. Buckell).

Dissosteira spurcata (Saussure), 1884.

SAUSSURE, H. DE. Mem. Soc. Geneve, XXXIII., p. 134 (1884).

Two males of this species have been taken in August at Oliver, in the southern Okanagan valley. They were found on a sandy flat close to the Okanagan river, amongst a scant growth of Sage-brush (**Artemisia tridentata** Nutt.), Rabbit-bush (**Bigelovia graveolens** Nutt.), and Antelope-bush (**Purshia tridentata** D. C.).

LOCALITY RECORDS. Oliver, 1922-23 (E. R. Buckell).

Trimerotropis gracilis (Thomas) 1872.

THOMAS, CYRUS. Rep. U. S. Geol. Surv., Montana, p. 461 (1872).

This is not a common species in British Columbia, but occurs in small colonies amongst Sage-brush in warm, sheltered localities.

LOCALITY RECORDS. Chilcotin, 1921; Kamloops, 1922; Nicola, 1923 (E. R. Buckell).

Subfamily **Acridinae**

Melanoplus scriptus (F. Walker) and **Melanoplus repletus** (F. Walker) were recorded from Vancouver Island by Francis Walker and described by him in the Cat. Derm. Salt. Brit. Mus., IV., pp. 680 and 678 (1870).

Mr. B. Uvarov has recently been revising the Walkerian types in the British Museum of Natural History and has sent me the following notes on these species. "There is no doubt that **M. scriptus** (F. Walker) is a synonym of **M. bilituratus** (F. Walker), and the types agree absolutely with Seudder's description and figure in his Monograph." The

type of **M. repletus** (F. Walker) has apparently been lost, and Mr. Uvarov believes that a female of **Melanoplus femur—rubrum** (De Geer) from "N. America" is the actual type of **repletus**, although he cannot as yet find any actual proof of it.

Melanoplus borealis junius (Dodge) 1876.

DODGE. *Canad. Ent.* VIII., p. 9 (1876).

This geographic race of **Melanoplus borealis** (Fieber) has been erected for **Melanoplus junius** (Dodge) by Mr. Morgan Hebard, who kindly identified a small series of specimens from Anahim Lake, in the northern Chilcotin district, as this race. They were taken in a shady situation at the edge of a big bog.

LOCALITY RECORDS. Anahim Lake, 1921 (E. R. Buckell).

Phoetaliotes nebrascensis (Thomas) 1872.

THOMAS, CYRUS. *Rep. Geol. Surv., Montana*, p. 455 (1872).

This species was found commonly on certain stony hillsides, in the southern Okanagan valley, at Oliver. All the specimens seen were **brachypterous**.

LOCALITY RECORDS. Oliver, 1922-23 (E. R. Buckell).

Bradynotes pinguis (Scudder), 1898.

SCUDDER, SAMUEL H. *Proc. U. S. Nat. Mus.*, XX., pp. 81, 85 (1898).

In 1922 a few specimens of this wingless species were found on the higher slopes of the hills, near Rock Creek in the Kettle river valley, where they were associated with **Asemoplus montanus** (Bruner). In June, 1923, a large colony was seen on the western slope of Anarchist Mountain, above Osoyoos Lake, in the southern Okanagan valley. They were found in open grassy glades in the forest above the 3,000-foot line. This habitat was similar in every way to that in which **Bradynotes chilcotinae** (Hebard) has been found in other parts of the province, but the two species have not as yet been found inhabiting the same area.

LOCALITY RECORDS. Rock Creek, 1922; Anarchist Mt., 1923 (E. R. Buckell).

Family **Tettigoniidae**
Subfamily **Stenopelmatinae**

Cyphoderris piperi (Caudell), 1907.

CAUDELL, A. N. *Ent. News.* XVIII., p. 335 (1907).

The records of this species in British Columbia have been incorporated in the past under **Cyphoderris monstrosa** (Uhler). Since the striking differences in the male genitalia of the two species were pointed out to me by Mr. B. B. Fulton, an examination of the available British Columbia material has shown that both species are present and that there are considerably more males of **piperi** than of **monstrosa** in the collections.

Both species have been seen at Nicola in large numbers during late May feeding together upon flowers of **Amelanchier cusickii** (Fer.), **Amelanchier florida** (Lindl.), and **Elaeagnus argentea** (Pursh).

LOCALITY RECORDS. Peachland, 1907; Lillooet, 1920 (A. B. Baird); Nicola, 1922-23 (E. R. Buckell).

Subfamily **Decticinae**

Peranabrus scabricollis (Thomas) 1872. The Coulee Cricket.

THOMAS, CYRUS. Hayden's Rep., Geol. Surv., Montana, p. 441 (1872).

Small colonies of the Coulee cricket were found at Stump Lake and near Aspen Grove in the Nicola valley in 1922. All the specimens found were bright apple green.

LOCALITY RECORDS. Stump Lake, Aspen Grove, 1922 (E. R. Buckell).

Steiroxys trilineata (Thomas) 1870.

THOMAS, CYRUS. Proc. Acad. Nat. Sci., Philad., p. 76 (1870).

This species was recorded in the previous list as **Steiroxys** sp. (Proc. B. C. Ent. Soc. p. 36. Systematic series No. 20, 1922).

A number of males were secured in 1922, making the determination of the species possible.

LOCALITY RECORDS. Chilcotin, 1920-21; Nicola, Aspen Grove, Kamloops, Penticton, Oliver, Osoyoos, Rock Creek, 1922-23 (E. R. Buckell).

Family **Gryllidae**

Subfamily **Gryllinae**

Nemobius fasciatus (De Geer), 1773.

DE GEER. Mem. l'Hist. Ins., III., p. 522 (1773).

This species occurs commonly in fields at Kelowna, on the Okanagan Lake. It has not been found elsewhere in the province.

LOCALITY RECORDS. Kelowna, 1922-23 (E. R. Buckell).

CORRECTIONS AND NOTES OF INTEREST.

Since the first list was prepared it has been found necessary to make certain corrections and alterations, which are here set down in the order in which they occur. Notes of interest on some of the species are also included.

The **Grylloblattidae** were placed in the previous list as a sub-family of the **Orthoptera**. This is incorrect, as they are considered to constitute a distinct order, the **Notoptera** (Crampton, 1915), or **Grylloblattaria** (Bruner, 1916).

Acrididae

In the genus **Xanthippus** (Saussure) a large number of specimens of **Xanthippus neglectus** (Thomas) and **Xanthippus obscurus** (Scudder)

have been collected. Series of these were sent to Messrs. J. A. G. Rehn and Morgan Hebard, who informed me that they consider **Xanthippus obscurus** (Saunders) to be an absolute synonym of **Xanthippus neglectus** (Thomas); and it must therefore be struck off the list.

It is further considered that the species listed in the present paper as **Xanthippus leprosus** (Saunders) and the species listed in the former paper as **Xanthippus latefasciatus** (Saunders) probably represent one species in British Columbia.

They find that the material submitted to them for determination during the past few years agrees with material determined by Saunders as **leprosus**, but may not be identical with the **leprosus** of Saunders, which was described from Mexico. The genus is a difficult one, and more work is needed to definitely determine what species we have represented in Canada. The two names, **leprosus** and **latefasciatus**, are temporarily retained until further work can be done on the genus.

Mr. Rehn informs me that in the genus **Trimerotropis** the species listed as **Trimerotropis ferruginea** (McNeill) will probably be found to be a synonym of **Trimerotropis caeruleipes** (Saunders).

The record of **Trimerotropis citrina** (Saunders) was made from a single specimen collected by Mr. E. P. Venables at Vernon in 1905 and recorded by Dr. James Fletcher as this species. The specimen has been examined and found to be a male **Spharagemon aequale** (Say) in which the notching of the median carina of the pronotum closely resembles a member of the genus **Trimerotropis**, as there is a distinct second notch, a feature which occasionally occurs in specimens of **Spharagemon aequale** (Say).

It is probable that **Trimerotropis citrina** (Saunders) will not be found in Canada.

The type specimen of **Trimerotropis longicornis** (E. M. Walker) was recently compared by Prof. Walker and the author to material collected in British Columbia which had been determined by Mr. Rehn as **Trimerotropis monticola** (Saunders), and found to be very close to if not identical with this material. In British Columbia **Trimerotropis monticola** (Saunders) has yellow hind tibiae and does not bear much superficial resemblance to the **monticola** found on the prairies in Canada. It is thought, however, that **Trimerotropis longicornis** (E. M. Walker) may eventually be found to be **Trimerotropis monticola** (Saunders).

Mr. Morgan Hebard informs me that he finds **Melanoplus flabellifer** (Saunders) to be an absolute synonym of **Melanoplus occidentalis** (Thomas).

In the previous list I placed Thomas as the author of **Melanoplus mexicanus atlanis**; this is incorrect and should read (Riley) Ann. Rep. Ins. Mo. VII., p. 169 (1875).

The author of **Melanoplus borealis monticola** is Scudder and not Fieber, as I stated, and should read: Scudder, S. H. Proc. Amer. Phil. Soc. XXXVI., p. 24 (1897). The spelling is incorrect in **Melanoplus washingtonianus**, and should read: **Melanoplus washingtonius** (Bruner).

Tettigoniidae

In the previous list **Cyphoderris monstrosus** (Uhler) should be **Cyphoderris monstrosa** (Uhler), Proc. Ent. Soc. Philad., II., p. 551 (1864).

The use of varietal names in so variable an order as the **Orthoptera** is not generally considered advisable and **Anabrus simplex** var. **maculosus** (Caudell) is best recorded as **Anabrus simplex** (Haldeman). Stansbury, Exped. Great Salt Lake of Utah, p. 372 (1852).

Further study in the British Columbia material of **Conocephalus fasciatus** (De Geer) by Messrs. Rehn and Hebard has shown that **Conocephalus fasciatus fasciatus** (De Geer) and intermediates between this geographic race and **Conocephalus fasciatus vicinus** (Morse) occur, but probably true **vicinus** will not be found in British Columbia.

“VESPA”

The First Paper Maker

BY W. B. ANDERSON.

We, of this age of inventions, of useful commodities of all kinds, of thousands of things little and big which have been evolved for the convenience and the comfort of us pampered humans, seldom if ever pause to think of the long trails made by patient toilers, which lead eventually to the successes as we know them. Do we ever consider, when looking at and admiring a beautifully finished sword, that the first sword was made of a thin slice of intensely hard stone, cut from the larger block by means of a sandstone slip, sand, water, and days, nay weeks, of hard labour? Do we ever consider that the surgeon's keen scalpels had their beginning in a bit of sharp shell, or agate chip? Very few, among a million people, give thought to the evolution of the commercial article in every day use.

We read a book, admire the print, the binding, the texture of the paper. We sit down to write on various themes, and at times throw down pen or pencil with a “Pshaw, why don't they make better paper to write on?” Forgetting for the time, that the first documents were scribed on stone; then on bark, or papyrus, until at last some human more clever than the rest, or one who desired less manual labour in inditing his love letters or his declarations of war, hit upon a scheme whereby some vegetable substance was pulped, mixed with a glutinous vehicle, then spread thin and dried; with the result that a material was finally