

## NOTES ON NEWFOUNDLAND BUTTERFLIES

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## INTRODUCTION

The island of Newfoundland is roughly triangular, having an east-west extent of about 300 miles and a north-south extent of about 270 miles (Fig. 1). It is located in the mouth of the Gulf of St. Lawrence, and is separated by about fifteen miles from the Labrador coast to the north-east. To the southeast is Cape Breton Island of Nova Scotia at a distance of eighty miles. Excluding Greenland, Newfoundland is the easternmost part of North America. All Newfoundland localities mentioned in this article may be found on the map of Fig. 1.

The first records of Newfoundland Lepidoptera are due to Gosse (1883), who collected 13 species on Carbonear Is., about thirty miles west of St. John's, between 1832 and 1835. His data, however, remained unpublished until 1883, when it came into the possession of W. H. Edwards (1883). It was not until 1934 that extensively publicized collecting again took place on Newfoundland. At that time McIsaac found 21 species near Doyle's Station in the extreme southwestern part of the island. This was reported by dos Passos (1935), who also described four new subspecies from the McIsaac material. By far the most ambitious research to date on Newfoundland Lepidoptera was carried out in 1949 by Krogerus, taking part in a Finnish-Swedish expedition. Krogerus travelled the island extensively, and recorded a total of 29 species of Rhopalocera and several hundred species of Heterocera (Krogerus, 1954).

## ENVIRONMENTAL OBSERVATIONS

For about two weeks at the end of July, 1965, I collected along the west coast of Newfoundland. The entire northeastern U. S. was then three years into a severe drought; this drought was manifested in Newfoundland only by clear skies a phenomenally high fraction of the time (50%). Biting insects were so severe that highway construction had been stopped—this in spite of the fact that weather conditions only permit road building about three months out of the year. Otherwise 1965 was an apparently normal summer.

Western Newfoundland consists of a low coastal plain up to twenty miles wide, which rises abruptly about 1500' into the plateau-like Long Range.

Figure 2, taken on Table Mt., showing the coastal plain on the left and the plateau on the right, is quite characteristic of the abrupt transi-

tion between the two. The Long Range plateau is remarkably level, and extends many miles inland; it is cut by U-shaped glacial valleys such as the one shown in Fig. 3, at least in the South. In the North the plateau apparently has not been glaciated (Brown, 1955). Figure 3 was taken just south of Table Mt. on Aug. 1 looking east into a glacial valley. The snow patches are about 1000' above sea level, and are on the *southern exposure only*. (Perhaps in winter the north wind disburdens itself as it begins to dip into the valley just as it does after dipping on the leeward side of a snowfence, and piles snow there to an enormous depth.)

In most cases the coastal plain is forested with black spruce, although certain exposed areas very close to the sea, such as Port aux Basques, have only tundra-like vegetation including Arctic grasses, pitcher plant, Labrador tea, and dwarf birch. The Long Range plateau is apparently

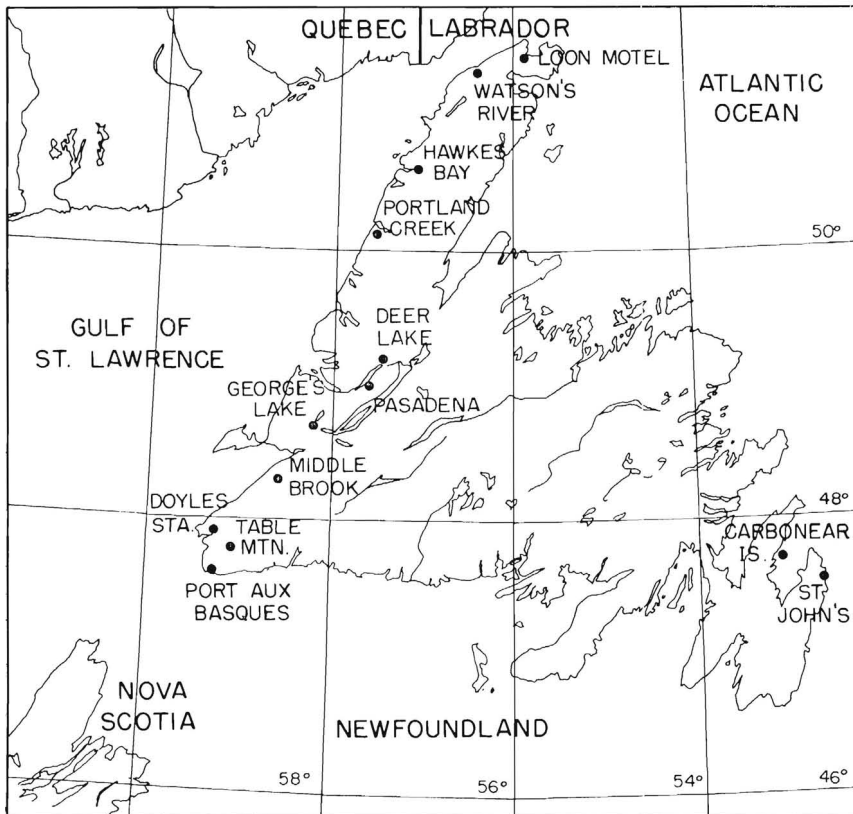


Fig. 1. Newfoundland and adjacent land masses. All localities mentioned in the text are indicated here.

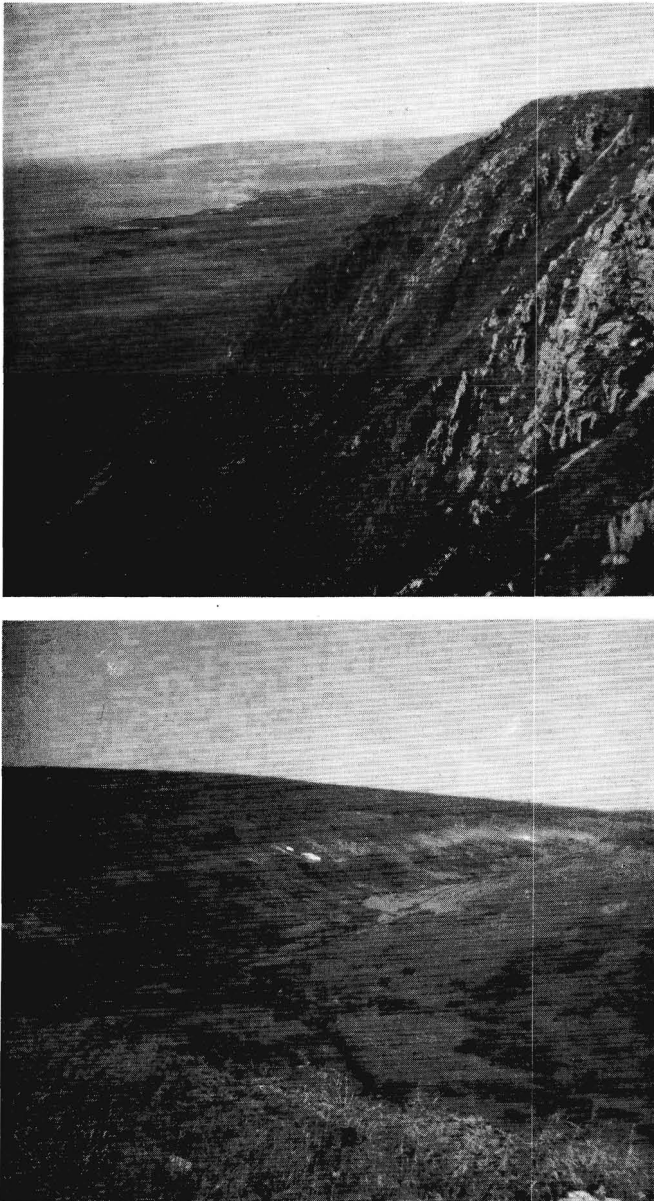


Fig. 2 (upper). The edge of the Long Range plateau. On the far left is the Gulf of St. Lawrence, next is the coastal plain, and finally the abrupt 1500' transition to the plateau. The very edge of the plateau is a typical habitat for *Papilio brevicauda* Saunders and *Agriades aquilo* (Bdv.). Fig. 3 (lower). Looking east into a U-shaped glacial valley carved from the plateau. Note the snow patches on the southern exposure.

completely tundra and barrens; it is exceedingly inaccessible in most places. Bogs, some miles in extent, occur both on the coastal plain and on the plateau. These bogs, in addition to the plants representative of more southern bogs, are characterized by a small edible berry (probably *Rubus chamaemorus* L.), superficially resembling a strawberry.

An all-weather road, which is paved south of Deer Lake, follows the west coast. Just north of Deer Lake it rises to a height of 1500'; otherwise it follows the coastal plain. All of the records reported here are from walking distance of this road. No previously unreported *Rhopalocera* were taken, although some of my captures have been found only once before, and others represent significant range extensions.

#### ANNOTATED LIST OF SPECIES<sup>1</sup>

##### SATYRIDAE

1. *Coenonympha inornata macisaaci* dos Passos (Figured by Brown (1955)). Port aux Basques (STL), 22-VII-65; Table Mt. (ATL), 23-VII-65; Middle Brook (F), 24-VII-65; George's Lake (B), 24-VII-65; Hawkes Bay (F), 29-VII-65; Watson's River (STL), 26-VII-65; Loon Motel (F), 26-VII-65. This species is found in all environments, including above and seaward of tree line. Brown (1955) knew of no records of it from near or beyond tree line. For this and other reasons, he concluded that *macisaaci* could not have survived the last ice age on Newfoundland.<sup>2</sup> While I would not attempt to pass final judgment on this conclusion, it does appear that *macisaaci* can tolerate a colder environment than has sometimes been assumed.

##### NYMPHALIDAE

2. *Speyeria atlantis canadensis* (dos Passos). Hawkes Bay (F), 29-VII-65. This species was common at one locality (25♂♂, no♀♀), and not seen elsewhere. It is compared in Fig. 4 with the mainland race, typical *atlantis* (Edw.). The VHW light submarginal band may be seen to be considerably reduced in *canadensis*. Grey (1966) has indicated that these Hawkes Bay specimens are smaller and more red than the type series of *canadensis* from Doyles Station, Newfoundland.
3. *Boloria selene terraenovae* (Holland) (Figured by Holland (1931), Plate LV, Fig. 13). Hawkes Bay (B & F), 29-VII-65; Loon Motel

<sup>1</sup> B = bog; F = forest (generally black spruce); ATL = above tree line; STL = seaward of tree line.

<sup>2</sup> In a private communication, L. P. Grey of Lincoln, Maine, has made the imaginative suggestion that *macisaaci* may have passed the most recent ice age on the Grand Bank.

(F), 26-VII-65. This race may be nearly always distinguished from the mainland race, *atrocostalis* (Huard), by the obsolescence of the first DHW submarginal dot (cell RS).

4. *Vanessa atalanta* (L.). Hawkes Bay (F), 26-VII-65.
5. *Vanessa cardui* (L.). Hawkes Bay (F), 26-VII-65.

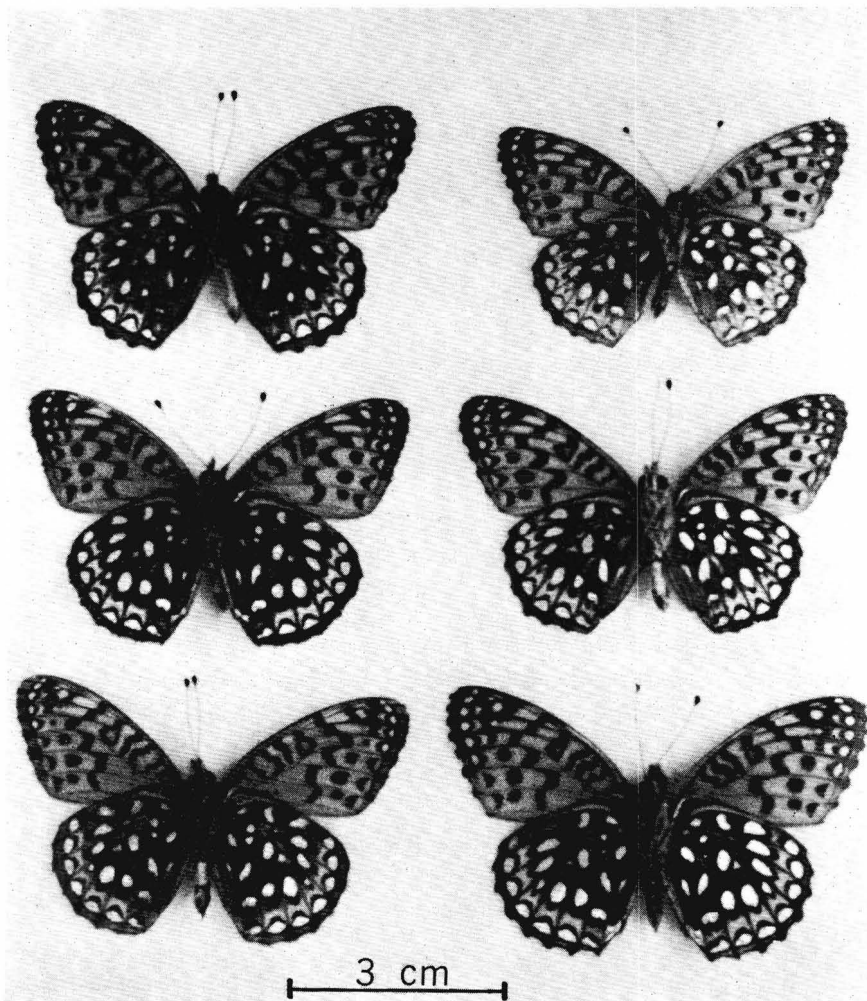


Fig. 4. *Speyeria atlantis*. Left side shows *S. a. canadensis* (dos Passos) from Hawkes Bay, Nfld. Right side shows typical *atlantis* (Edw.) from San Quentin, N.B. Note the reduced submarginal light band on the hind wing of *canadensis*. (All specimens are males.)

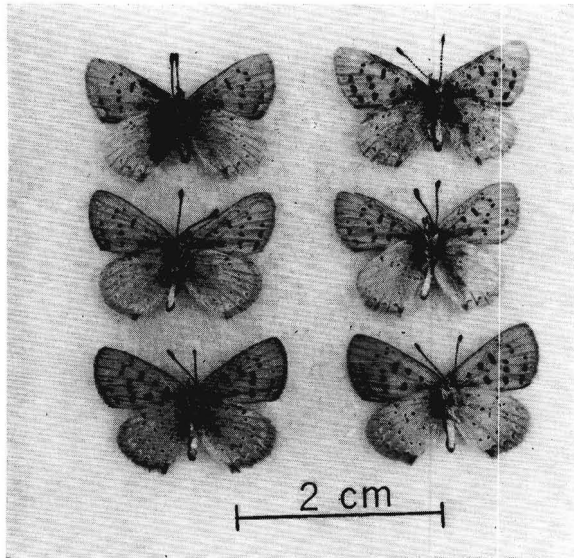


Fig. 5. *Lycaena epixanthe*. Top pair are *L. e. phaedrus* (Hall) from Hawkes Bay, Nfld.; middle pair are *phaedrus* from Cape Breton Highlands, N.S.; bottom pair are typical *epixanthe* (Bdv. & LeC.) from Lincoln, Me. All specimens are males. Note that there is little difference between the Nova Scotia and Newfoundland specimens, but that the Maine specimens are definitely more heavily marked.

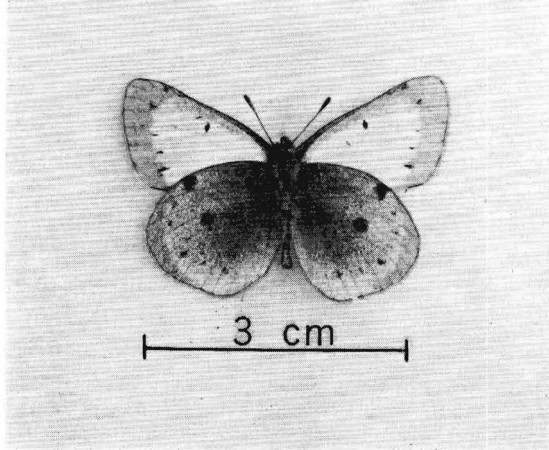
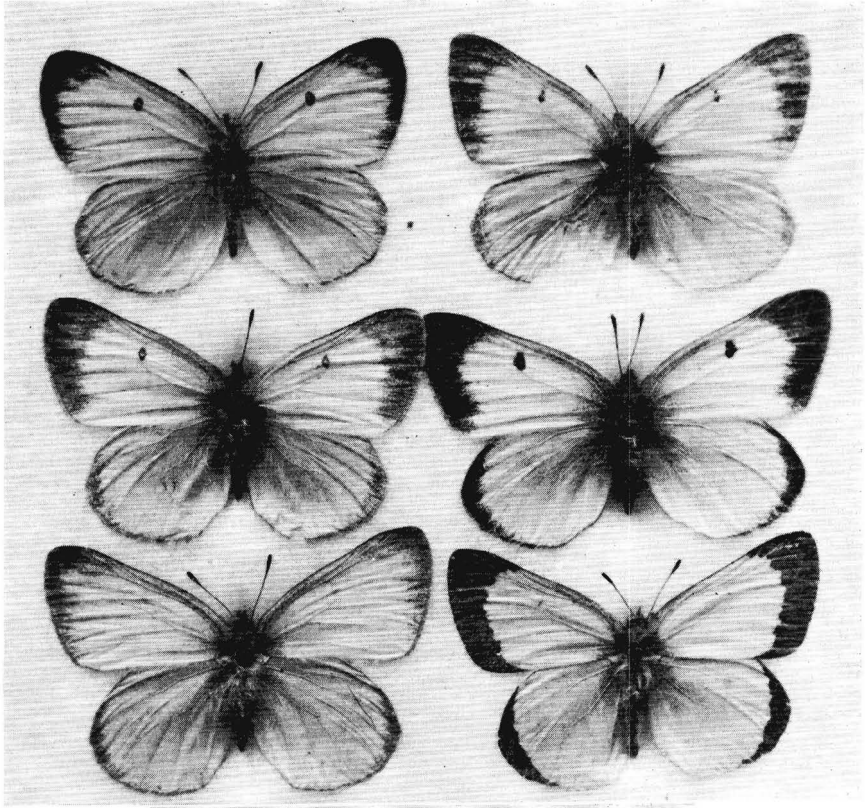
#### LYCAENIDAE

6. *Agriades aquilo* (Boisduval). Port aux Basques (STL), 22-VII-65; Table Mt. (ATL), 23-VII-65. This little butterfly fairly swarmed at the tops of small rises. It is apparently associated with much harsher environments than its Rocky Mountain and Sierra Nevada relatives, *rustica* (Edw.) and *podarce* (Felder & Felder).
7. *Plebejus argyrognomon aster* (Edw.) (Figured by Klots (1951), Plate 19, Fig. 7). George's Lake (B), 24-VII-65; Hawkes Bay (B), 29-VII-65. This insect was seen by the hundreds at Hawkes Bay.
8. *Lycaena epixanthe phaedrus* (Hall). Hawkes Bay (B), 29-VII-65. The Newfoundland form of this subspecies is illustrated in Fig. 5, and is compared with *phaedrus* from nearby Cape Breton Is., N.S.,

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Fig. 6. *Colias* from Table Mt., Nfld. Top left, yellow female *interior laurentina* (Scudder); top right, yellow female *pelidne labradorensis* Scudder; second row and third row left, white *pelidne* females; third row right, *pelidne* male. (Even though the *pelidne* females are quite variable, none have the rounded forewing characteristic of *interior*.); lower: *Colias pelidne* male with submarginal spots normally diagnostic of *philodice*.



and with typical *epixanthe* (Boisduval & Le Conte) from Maine. My specimens bear no resemblance to the subspecies *amicetus* (Scudder),<sup>3</sup> supposedly described from Newfoundland (figured by Holland (1931), Plate LXIV, Figs. 41 & 42), in that my specimens have the VHW grey (not white) and not immaculate.

PIERIDAE

9. *Pieris rapae* (L.). Hawkes Bay (F), 29-VII-65; Loon Motel (F), 26-VII-65. These records apparently represent northward extensions of the known eastern distribution of this pest.
10. *Colias interior laurentina* (Scudder). Table Mt. (ATL), 1-VIII-65. My single Newfoundland specimen is shown in Fig. 6, and is distinguished from Maine material by a more orange discal spot on the DHW and more green suffusion on the VHW.
11. *Colias pelidne labradorensis* Scudder. Table Mt. (ATL), 23-VII-65 and 1-VIII-65; Port aux Basques (STL), 22-VII-65. My specimens are very distinct from the *labradorensis* example illustrated by Holland (1931). Table Mountain where *pelidne* Boisduval & Le Conte was rather common, is the only place I know of at which it is sympatric with *interior* Scudder. Hovanitz (1950a) has suggested that there is a "continuous morphological intergradation" between *pelidne* and *interior*, so that the two are conspecific. My Table Mountain *pelidne* specimens, some of which are shown in Fig. 6, were quite variable, but do not seem to intergrade with the illustrated Table Mountain *interior* specimen, either in wing shape or color or pattern. White females outnumbered yellow 11:1 among my *pelidne* specimens. This figure is almost exactly the reverse of that cited by Hovanitz (1950b) (3:32) for Newfoundland in what he calls the "*interior-pelidne* complex." The flight period of *interior* is apparently later than that of *pelidne* on Table Mountain. On Aug. 1 when the *interior* was taken in fresh condition, *pelidne* was only about one fifth as common as it had been on July 22. The *pelidne* which were seen on Aug. 1 were usually, but not always, worn. A single *pelidne* male, taken on Table Mountain, 23-July-65, possesses the VHW submarginal spots normally distinctive of *philodice* Godart. This specimen, which is illustrated at the bottom of Figure 6, has been examined by Dr. A. B. Klots of the American Museum of Natural History. Dr. Klots, long a student of this genus, expressed his judgment that it "could be a hybrid with *philodice*, or merely an expression of some ancestral gene."

<sup>3</sup> In a private communication, F. M. Brown of Colorado Springs, Colorado, has indicated that the name *amicetus* Scudder is a synonym of *epixanthe*. The status of this name is apparently quite complex.



## PAPILIONIDAE

12. *Papilio brevicauda* Saunders. Table Mt. (ATL), 23-VII-65.

## HESPERIIDAE

13. *Hesperia comma borealis* Lindsey. Loon Motel (F), 26-VII-65; 10 mi. W. of Loon Motel (F), 26-VII-65. This species has previously been recorded from Newfoundland only by Krogerus (1954), also from the extreme northwest tip of the island. As Fig. 7 shows, my specimens bear a remarkable resemblance to material from Mt. Albert on the Gaspé Peninsula.

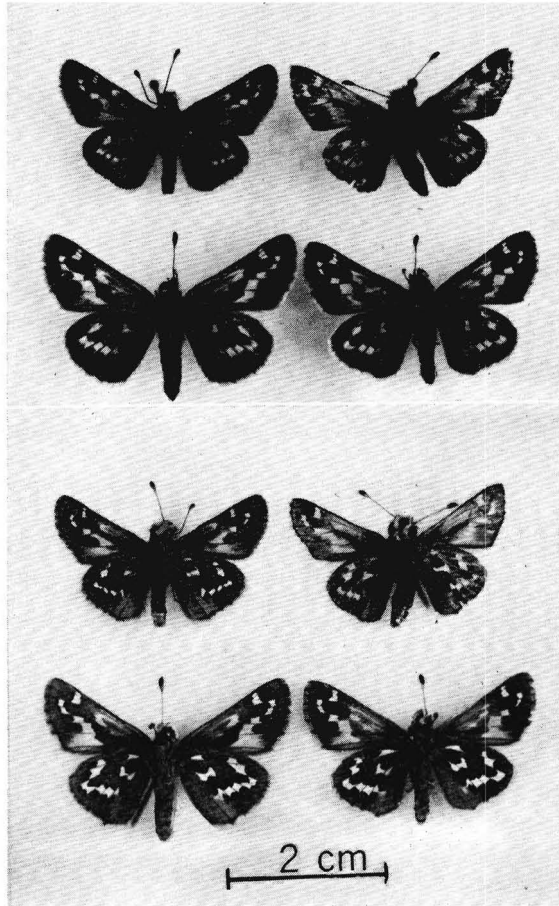


Fig. 7. *Hesperia comma borealis* Lindsey. Top, uppersides; bottom, undersides. Both frames have males above and females below; Mt. Albert, Que., to the left and Loon Motel, Nfld., to the right. Note the extreme similarity of the females.

The following province records for moths were taken at light around habitations:

NOCTUIDAE

14. *Ceramica picta* (Harris). Loon Motel (F), 27-VII-65.

LIPARIDAE

15. *Olene vagans* Barnes & McDunnough. Portland Creek (F), 30-VII-65.

ACKNOWLEDGMENTS

I would like to thank F. M. Brown for critically reading the manuscript and L. P. Grey for numerous interesting discussions and comments. The *Colias* identifications have been verified by Dr. A. B. Klots, and the moths have been identified by Dr. A. E. Brower.

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