

## INSECTS.

MOSQUITOES. Not very numerous along rivers, except at mouth of Missinaibi. Very plentiful at Moose Factory, on August 18th and 19th, and in

general below tide water.

MOURNING CLOAK BUTTERFLY, *Aglais antiopa* L. Two seen near foot of Long Rapids, Mattagami river, August 13th.

## THE LARGER FRESHWATER CRUSTACEA OF CANADA AND ALASKA.

BY FRITS JOHANSEN.

## INTRODUCTION.

Though the freshwater-crustacea are of great importance as food for fishes, birds, water-insects, etc., occurring in vast numbers even in ponds, and certain of them (Malacostraca) are conspicuous enough by their size, their occurrence in Canada and Alaska has been little studied, apart from cray-fishes. A. G. Huntsman has already called attention to this fact in his "Freshwater-Malacostraca of Ontario," (Contributions to Canadian Biology 1911-14, Fasc. II, p. 145), and he also there emphasizes how comparatively little is known about their habits and life-histories, on which their distribution in and their introduction into the innumerable ponds, creeks and lakes in Canada depends.

So far as Alaska is concerned cray-fishes are not found there (they may occur in southern Alaska), and the other freshwater-crustacea do not seem to have appealed much to the many collectors in that territory as of sufficient interest, even to the extent of their picking up a few odd specimens, so easily secured by pulling up water plants, by using a catcher from the margin of a lake or pond, or by examining stomachs of fishes caught. The writer has had personal experience of how common freshwater-crustacea are along the arctic coast of Alaska, and it is to be hoped that future collectors will connect up the collections made here with the data secured in the western provinces of Canada, by an examination of the bodies of freshwater in the more southern parts of Alaska and of Yukon Territory, so easily accessible all the year round.\* As is the case for the United States so also for Canada the hitherto published records of freshwater-crustacea refer mainly to the Great Lakes and their ramifications and tributaries. The present writer has only a few new data or collections to record from this area, and has only a tourist's acquaintance with these extensive bodies of water. The present article therefore does not claim to treat the basin of the Great Lakes exhaustively; other writers are more qualified to do so, and as mentioned, these bodies of

freshwater have been studied fairly well before (see bibliography), even Georgian Bay and other purely Canadian (Ontario) localities (Huntsman).

But, thanks to the efforts of various Canadian expeditions and collectors quite a few freshwater-crustacea have been collected in Canada and the arctic part of Alaska, in various ponds, lakes and streams, particularly in more recent years. I have gone over most of the larger forms from the collections (Amphipods, Isopods, Phyllopods), except cray-fishes, in the possession of the various museums in Canada; and by letters and words I have tried to stimulate the securing of further data, in particular from hitherto quite unrepresented areas. The result has been most gratifying and the time seems now opportune to publish these many data, which perhaps will create a still greater interest in the subject. I may add that the freshwater-crustacea (Amphipoda, Phyllopoda, Cladocera, Copepoda, Ostracoda) I secured along the arctic coast of America while with the southern party of the Canadian Arctic Expedition, 1913-16, are treated in detail by various specialists in Volume VII, of the scientific reports of the said expedition (Ottawa, 1920), so I need only here refer to these reports.

To give an idea of the many widely separated localities in Canada and Alaska from which we (mainly the Victoria Memorial Museum, Ottawa) have specimens of freshwater-crustacea I mention the following places:—Teller (Port Clarence); Point Barrow, Camden Bay, Demarcation Point and Herschel Island, along the north coast of Alaska and Yukon Territory; International Boundary line between New Rampart House and Arctic coast; Cape Bathurst and various places on the south side of Dolphin and Union Strait in Arctic Canada; Fullerton on the west side of Hudson Bay; east coast of Grinnell land; Labrador coast and Newfoundland; western, northern and eastern coasts of Greenland (collections in Copenhagen); west side of Cape Breton island, N.S.; Nova Scotia, (according to Dr. Marsh's and Juday's letters to me of March 10, 11, 1920); Magdalen islands, Tadoussac and Quebec City, P. Que.;

\*See recent collections recorded by Pearse (1913).