BOOK REVIEW

MARINE AND FRESH WATER INVERTEBRATES COLLECTED BY THE CANADIAN ARCTIC EXPEDITION, 1913-18.

Since my note about this subject was published in the *Ottawa Naturalist* for May, 1918, p. 30, twenty-seven different reports belonging to four volumes (VI-IX) have been published by the Dominion Government, and additional ones are in preparation. The first report was issued in August, 1919, the latest in February, 1923.

The sea-squirts (Ascidians) appear in Vol. VI, and the report discusses, besides the C.A.E. specimens, also other Arctic material, except the Hudson Bay and Strait area, which is treated in *Contrib. to Canad. Biology*, New Ser., Vol. 1, 1922. As is the case with so many of the other marine invertebrates, the Ascidian fauna in the area examined by the Canadian Arctic Expedition was almost entirely unknown; while now a dozen species are recorded. Perhaps the most interesting of these is *Cystingia griffithsii*, originally described by MacLeay from Winter Island, Fox Channel, (lat. 66°N., Long 85°W.), Arctic Canada (Parry's 2d. Expedition), but not secured later; so that its systematic position remained uncertain until now ample material from north of Bering Strait and from Dolphin and Union Strait was brought back by the Canadian Arctic Expedition; and the species is found to be merely an unusual specimen of the well known *Caesira* (*Molgula*) *crystallina*, first described by Moeller in 1842, from Greenland.

Vol. VII in the Canadian Arctic Expedition series is devoted exclusively to Crustaceans; and some of the groups (Decapods, Isopods and Parasitic Copepods) have already been referred to in the *Ottawa Naturalist*, May, 1918. The report on the Isopods takes in all the Arctic species known, as is the case with the one on Parasitic Copepods; the latter report also lists the Antarctic species and their hosts.

The Schizopod Crustacea comprise five marine species (one of which is new to science) and one from fresh water; the latter one is the interesting glacial relict *Mysis relicta*, hitherto known only from northern Europe, Hamilton Inlet and the Great Lakes area, but now also recorded from Bernard Harbour (Dolphin and Union Straits), Arctic Canada (see *Canadian Field-Naturalist* for May, 1921, p. 99.)

The Cumacea include four species and one variety, all belonging to the same genus (*Diastylis*.).

The Amphipods (scuds) comprise fifty marine and three fresh water species; one of the latter (*Synurella Johanseni*, see *Canadian Field-Naturalist* for October, 1920, p. 128) is new to science. Of the marine species, one, *Katius obesus*, is now recorded for the first time from the Pacific, and the known ranges of several of the others have now also been greatly extended. An appendix consisting of the specimens collected by earlier Canadian Arctic Expeditions (*Neptune*, etc.) has been added to this, as to others of the reports in these volumes.

The peculiar Pycnogonids (Pantopoda) which are really a kind of marine spiders, are included in this volume, following the usual custom of treating them together with Crustacea. The specimens from the Canadian Arctic Expedition belong to three species; while three others already known from the Canadian and Alaskan Arctic are recorded.

We now come to the smaller Crustaceans, the Entomostraca. Of these the Euphyllopoda comprise three species of fairy-shrimps, one tadpole-shrimp, and one clam-shrimp; the whole of the American Arctic being considered (see *Canadian Field-Naturalist* for February, March, May, 1921.)

The Water fleas (*Cladocera*) include several fresh water and two marine species. One of the former is an interesting pleagic deep water form from a lake at Bernard Harbour. No marine Cladocera were secured east of Point Barrow, Alaska.

The Fresh-water Copepods comprise ten species, four of which are new to Science. One of them is an interesting stenothermal, cold water form, hitherto not found in America.

The marine Copepods include 3 dozen species, six of which are new. The most interesting record is that of *Limnocalanus grimaldii* from Collinson Point, Arctic Alaska; hitherto it was known only from the Baltic, Caspian Sea and the mouth of the Jena River in eastern Siberia.

Most of the above reports are illustrated by line-drawings showing the new and more interesting species.

The last report in this volume (VII) contains a description of the various lagoons, lakes and ponds examined during the expedition, with particular reference to their Crustacean life, and is illustrated by maps and photographs.

In Vol. VIII will be found the reports upon Mollusks, Echinoderms, Coelenterates, etc. Of these the reports on the Echinoderms, and recent and pleistocene, terrestrial and marine, bottom Molluscs have been referred to in the *Ottawa Naturalist* for May, 1918. Of these two reports, the former also takes in specimens from the eastern part of the American Arctic, collected by other Canadian expeditions (see also *Contrib. to Canad.*

Biol. for 1922); and the latter has 3 fine, heliotyped plates.

The report on Rotatoria (wheel-animalcules) records 64 species (four of which are new); specimens from the northern part of the Alaska-Yukon boundary being included. The most interesting form is a new marine *Synchaeta* from Amundsen Gulf, Arctic Canada, where it was found in vast numbers in the surface; all the other species are from fresh water. Four plates accompany this report.

The voluminous report upon the Alcyonaria and Actinaria (corals and sea-anemones) by the veteran Zoologist, Prof. A. E. Verrill, takes in the whole of the American Arctic, and also hitherto unpublished material from Alaska, British Columbia and the Atlantic Coast of Canada and New England. Thirty species (four of which are new) of Alcyonaria, and twenty-eight species (five of which are new) of Actinaria are described in detail, illustrated by many text-figures and plates; some of the latter ones are heliotyped. The pelagic Actinaria-larvæ from Camden Bay, Arctic Alaska, secured under the sea ice in October, 1913, are particularly valuable.

The report on the Medusae and Ctenophora (jelly-fishes) is accompanied by two beautiful, heliotyped plates; and takes in also the Medusae collected by the *Neptune* in the eastern part of the American Arctic. Sixteen species are recorded and described, one of which is new, and another (hitherto known only from Bering Island, Arctic Asia) belongs to the family Lucernaridae, which is attached to sea-weed, and thus not floating in the water as are other Medusae. An interesting chapter about the distribution and hydrographic importance of Arctic Medusae is added to this report.

The report upon the Hydroids (Polyps) enumerates 25 marine species from both the western and eastern part of the American Arctic; and also mentions a fresh water form (*Hydra*) from Camden Bay and Bernard Harbour.

The report on the Bryozoa (Polyzoa) records more than fifty species; like the Hydroids, from the whole of the American Arctic, and attached to sea-weed, stones and shells.

In Vol. IX of the series will be found the reports upon the different worms (both free-living and parasitic), and also the most primitive animals known, the Protozoa.

The report on the Oligochæta has already been mentioned in the *Ottawa Naturalist* for May, 1918. The report upon the related marine forms (Polychæta) describes 4 dozen species, nine of which are new. Some pelagic larval stages are also referred to; and specimens from the eastern part of the American Arctic secured by Canadian expeditions included.

In the report upon the leeches (Hirudinea) three species, attached to fishes, etc., are described.

The report upon the peculiar worms, Gephyrea, describes a new species from Hudson Bay collected by the late James Macoun, and records five other species from the coasts of Canada and Alaska. A complete bibliography for this group of animals, which is added to the report, is not the least valuable part of it.

The report on the Acanthocephala describes a new species from the King Eider and three others from fresh water and marine fishes, while the report upon the Trematodes and Cestodes describes two flukes from halibut and seal and a score of tape-worms, four of which are new species, from fishes, birds and mammals. Next to nothing was hitherto known about parasitic worms in the American Arctic regions.

Finally the report upon the minute, but important Foraminifera, which are responsible for the formation of the sea-bottom, limestone-layers, etc., records 26 species from ice-cakes and dredgings in the western part of the American Arctic. A similar report upon the Foraminifera in the eastern part of the American Arctic will be found in *Contrib. to Canad. Biol.* for 1921.

Most of these reports are illustrated by detail-figures.

Any of the above mentioned reports may be had on application to the Department of Marine and Fisheries, Ottawa. The Dominion Commissioner of Fisheries, Prof. E. E. Prince, is Chairman of the Scientific Committee in charge of the publication of this series, to which contribute a great many specialists from Canada, United States and Great Britain.—F. J.

EUPHYLLOPODS FROM THE ARCTIC.—Mr. Frits Johansen, the marine biologist of the Southern Party of the Canadian Arctic Expedition, has by his careful collecting provided a large amount of very interesting marine and fresh-water material from the comparatively unknown Arctic coast of Canada. He is first and foremost a naturalist, whose greatest delight is in observing the varied forms of life as they occur in nature.

This is well shown in his recently published account of the Euphyllopoda (principally fairy shrimps) of that Expedition (*Canad. Arctic Exped. 1913-18*, Vol. VII, part G.). Although the number of species is necessarily small (four), he has given us very considerable details concerning their occurrence, habits, rate of growth, etc., in the region of his observations. This is the first comprehensive account of Canadian Arctic Euphyll-