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REPORT

OF THE

CANADIAN ARCTIC EXPEDITION • 1913-18

VOLUME VII: CRUSTACEA

PART D: ISOPODA

By P. L. BOONE

SOUTHERN PARTY—1913-16



OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920

Issued November 10, 1920.



Report of the Canadian Arctic Expedition 1913-18.

VOLUME VII : CRUSTACEA.

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The Isopoda of the Canadian Arctic and Adjoining Regions.

By P. L. BOONE

Aid, Division of Marine Invertebrates, U. S. National Museum

The Isopod crustacea secured by the Canadian Arctic Expedition represent four species of well-known polar forms; namely, *Arcturus baffini* Sabine, *Mesidotea entomon* (Linnaeus), *M. sabini* (Krøyer), *Munnopsis typica* M. Sars. Mr. Frits Johansen's field notes present interesting data on the life history of some of these species and I have therefore incorporated them verbatim in the following list.

In the collections of the Victoria Memorial Museum at Ottawa are several lots of Isopoda secured in the Arctic regions by the "*Diana*," "*Neptune*" and other expeditions. It has been thought advisable to include the records of these specimens in this report.

The collections of the U. S. National Museum contain valuable collections of Arctic material; namely, that secured by Dr. William H. Dall during his explorations in Alaska from 1865 to 1885, collections from the U. S. Bureau of Fisheries, the U. S. Department of Agriculture, the Revenue Marine, members of the Navy, Army and various individual collaborators, also material secured by gift or exchange from other institutions, which has likewise been examined and included in this report.

On the whole, though the collection is not remarkably large, it is probably the largest and most complete for the Alaskan-Canadian Arctic region ever brought together.

The following annotated catalog is intended to contain a list of all the species known to inhabit the designated region with the addition of a few which approach the boundary so closely and whose affinities are Arctic, rather than boreal, that it is highly probable that on further search their range will be found to cross it.

It is intended that the synonymy cited shall be comprehensive, giving references to the original description, to good figures, and to the data of geographical distribution which has necessarily been taken from the literature. The material examined by the writer embraces the entire collections of the Victoria Memorial Museum and the U. S. National Museum; but in many cases it has been necessary to take the data from the literature, especially that of the early writers, and it follows that the present writer assumes no responsibility for the identification of species so derived. Usually, however, there is no particular reason for doubting the accuracy of these identifications, except in a very few cases, to which attention is directed in connection with the discussion of the species involved.

The object of this work is to sum up the known Isopod fauna of arctic North America. This has involved an examination not only of the species obtained within this area, but also of the adjacent region to the west, east and south. The result is that the work includes a summary of our present knowledge of the Isopoda for that region of North America limited on the Alaskan shore line to the winter line of floating ice and passing southward indefinitely in deep water; northward embracing arctic Alaska and Canada and restricted on the east Canadian coast to the 60° parallel. In considering the very interesting complex of the Davis strait fauna, I have followed Dr. H. J. Hansen's masterly treatment of the area, and include in my report only those species which have

been recorded from the real cold deep sea area of Davis strait as defined by him. Those species reported from the warm area of Davis strait, whose affinities in the light of present records appear to be boreal and sub-boreal, are not included in the present paper. For consideration of these, refer to H. J. Hansen, The Danish Ingolf Expedition, Crustacea, Malacostraca, Vol. 3, Pt. 5, 1916. Likewise the many species from boreal Alaska are omitted, since these have been exhaustively discussed by Harriet Richardson, Bull. 54, U. S. National Museum, 1905; Isopods of North America.

The table here given indicates the general extent of the distribution of the Isopoda of Arctic North America. No attempt has been made to represent the detailed distribution of the species since this has been given in the text, nor to discuss the intricacies of the overlapping boreal faunas. All doubtful species are omitted, only representatives of the well established Arctic fauna being tabulated.

The following areas are represented in the successive columns of the table:

East Asia—This column indicates those species known to also inhabit Plover island, eastern Arctic Siberia, Kamchatka, the Commander islands, and northern coast of Japan.

Bering Sea—This column cites those species reported from the Bering Sea. The extensive explorations in this area by the United States Government have enriched our Arctic fauna by several new species, and also secured a vast mass of evidence sufficient to correlate the Asiatic and West American faunas.

West Coast North America—This column indicates what seems to be the general meridional distribution of the true polar species along the great stretch of coast line beginning just south of the winter line of floating ice on the Alaskan shore, embracing the Aleutian chain, the coast of southeastern Alaska, the Canadian coast and associated islands, and that of the United States as far south as Monterey bay, California.

Arctic Alaska—This includes the Alaskan west coast north of Hagemeister island, and the entire Arctic coast.

Arctic Canada—This vast area includes the entire Arctic coast of the Canadian mainland,—also the large northern archipelago, eastward including Grantland, Ellesmereland, and Baffinland, southward to the mouth of Ungava bay.

Baffin Bay—Davis straits—This column indicates those species definitely recorded either from the Baffin bay or the real cold deep sea area of Davis straits.

East Coast North America—This column is similar to that of "West Coast North America" and indicates the general meridional distribution of the polar species along the eastern coast of Labrador, Newfoundland, southeastern Canada, and the United States as far south as New Jersey.

West Greenland—It has seemed desirable to indicate the fauna of West Greenland separately from that of East Greenland, though it is interesting to note that many of the Arctic Isopoda occur on both shores; however, we find seven species recorded from West Greenland which are not known from East Greenland, likewise we find one species, *Pleuropirion frigidum* Hansen, known only from the type locality in eastern Greenland.

Iceland and the Faeroes.—This region includes the Arctic species recorded from the harbors of Iceland and the Faeroes and the adjacent seas. The comprehensive explorations by the Danish government have contributed a very thorough knowledge of this area.

Europe—This includes the entire arctic coast of Europe, also the boreal area of the Scandinavian coast, and that of the British Isles from which Arctic species have been recorded.

West Siberia—This column lists those species recorded from the eastern Kara sea and adjacent Siberian coast.

DISTRIBUTION OF THE ISOPODA OF ARCTIC NORTH AMERICA.

| | Eastern Asia | Bering Sea | West Coast North America | Arctic Alaska | Arctic Canada | Baffin bay, Davis strait | East Coast North America | West Greenland | East Greenland | Iceland-Faeroes | Europe | West Siberia | Depths—fathoms | Remarks. |
|--|--------------|------------|--------------------------|---------------|---------------|--------------------------|--------------------------|----------------|----------------|-----------------|--------|--------------|----------------|----------------|
| <i>Janira laciniata</i> G. O. Sars | | | | | | * | * | * | | * | * | | 100-582 | |
| " <i>spinosa</i> (Harger) | | | | | | * | * | * | | * | * | | 33-349 | |
| " <i>libbetti</i> (Ornham) | | | | | | * | * | * | | * | * | | 27 | |
| " <i>speciosa</i> (Bovallius) | | | | | | * | * | * | | * | * | | 98 | |
| <i>Monia groenlandica</i> , Hansen | | | | | | * | * | * | | * | * | | 3-50 | |
| <i>Pleurononion latimanum</i> Hansen | | | | | | * | * | * | | * | * | | 100 | |
| <i>Nannosericita groenlandica</i> Hansen | | | | | | * | * | * | | * | * | | 5-70 | |
| <i>Monnopsis typica</i> M. Sars | | | | | | * | * | * | | * | * | | 2-471 | |
| <i>Aega psora</i> (Linne) | | | | | | * | * | * | | * | * | | 7-350 | Several hosts. |
| <i>Rocinela crenulata</i> Lütken | * | * | * | * | * | * | * | * | | * | * | | 101-508 | " |
| " <i>maculata</i> Schiodte and Meinert | * | * | * | * | * | * | * | * | | * | * | | 310-799 | " |
| <i>Tecticeps alaseensis</i> Richardson | * | * | * | * | * | * | * | * | | * | * | | 12-298 | " |
| <i>Catathura brachiata</i> (Stimpson) | * | * | * | * | * | * | * | * | | * | * | | 13-100 | |
| <i>Mesidoiea entomon</i> (Linnaeus) | * | * | * | * | * | * | * | * | | * | * | | 10-1360 | |
| " <i>sabini</i> (Krøyer) | * | * | * | * | * | * | * | * | | * | * | | beach, 15-53 | |
| <i>Idothea ochotensis</i> Brandt | * | * | * | * | * | * | * | * | | * | * | | shore to 197 | |
| <i>Synidoiea bicuspida</i> (Owen) | * | * | * | * | * | * | * | * | | * | * | | shore to 18 | |
| " <i>nodulosa</i> (Krøyer) | * | * | * | * | * | * | * | * | | * | * | | 5-81 | |
| " <i>laevis</i> Benedict | * | * | * | * | * | * | * | * | | * | * | | 29½-36 | |
| " <i>muricata</i> (Harford) | * | * | * | * | * | * | * | * | | * | * | | 25 | |
| " <i>picta</i> Benedict | * | * | * | * | * | * | * | * | | * | * | | 13½ | |
| <i>Pleuronon murdochi</i> (Benedict) | * | * | * | * | * | * | * | * | | * | * | | | shallow water |
| <i>Arcturus frigidum</i> Hansen | | | | | | * | * | * | | * | * | | | |
| " <i>beringanus</i> Benedict | | | | | | * | * | * | | * | * | | | |
| <i>Astacilla granulata</i> (G. O. Sars) | | | | | | * | * | * | | * | * | | | 12 hosts. |
| <i>Bopyroides hippolytes</i> (Krøyer) | | | | | | * | * | * | | * | * | | | 22 " |
| <i>Phryxus abdominalis</i> (Krøyer) | | | | | | * | * | * | | * | * | | | 2 " |
| <i>Dauis mysidis</i> Krøyer | | | | | | * | * | * | | * | * | | | " |
| <i>Clypeomiscus meinerti</i> Giard and Bonnier | | | | | | * | * | * | | * | * | | | 2 " |
| " <i>elongata</i> (Krøyer) | | | | | | * | * | * | | * | * | | | 5-37 |
| " <i>cristata</i> (Hansen) | | | | | | * | * | * | | * | * | | | 116 |

SYSTEMATIC CATALOGUE OF THE ISOPODA OF ARCTIC NORTH AMERICA.

ORDER ISOPODA.

SUBORDER ASELOTA.

Family PARASELLIDAE.

Group IANIRINI.

Genus *Ianira* Leach.

(See Hansen for synonymy.)

Ianira laciniata (G. O. Sars).

1872. *Ianira lacinita* G. O. Sars, Vid. Selsk. Forh. Christiania, p. 92.
 1899. *Ianthe laciniata* G. O. Sars, Crust. Norway, 2, p. 101, pl. 41.
 1912. *Janthe laciniata* K. STEPHENSEN, Danmark Exped., p. 601.
 1913. *Janthe laciniata* K. STEPHENSEN, Conspectus Crust. Meddel. om Grønland, 22, p. 243.
 1916. *Janthe laciniata* HANSEN, H. J., The Danish Ingolf Exped., Crust., Malacost, 3, pt. 5, p. 20.

Distribution: Davis straits, West Greenland; Europe: off Molde, Norway, also off the coast of Nordland and Finmark and west of North Iceland.

Localities recorded: West Greenland, lat. 66° 45' N.; Davis straits—*Ingolf* Station 32, lat. 66° 35' N., long. 56° 38' W., 318 fathoms, temperature 3·9°; lat. 65° 45', long. 54° 30' W., about 200 fathoms; lat. 65° 36' N., long. 56° 24' W., 349 fathoms, temperature 3·2°; *Ingolf* Station 35, lat. 65° 16' N., long. 55° 05' W., 362 fathoms, temperature 3·6°; *Ingolf* Station 28, lat. 65° 14' N., long. 55° 42' W., 420 fathoms, temperature 3·5°; *Ingolf* Station 27, lat. 64° 54' N., long., 55° 10' W., 393 fathoms, temperature 3·8°; *Ingolf* Station 25, lat. 63° 30' N., long. 54° 25' W., 582 fathoms, temperature 3·3°; latitude 63° 24' N., long. 53° 10' W., 473 fathoms.

Europe: Storeggen bank, off Molde, Norway, 400 fathoms; off the coast of Nordland and Finmark, 100 to 150 fathoms; West of North Iceland, *Ingolf* station 96, Lat. 65° 24' N., long. 29° 00' W., 735 fathoms, temperature 1·2°.

Ianira spinosa (Harger).

1879. *Janira spinosa* HARGER, Proc. U.S. Nat. Mus. 2, p. 158.
 1880. *Janira spinosa* HARGER, Report U.S. Comm. Fish & Fisheries, pt. 6, pp. 323-324.
 1886. *Ianthe spinosa* BOVALLIUS, Bihang til Kgl. Sv. Vet. Acad. Handl. ii, No. 15, p. 34.
 1887-88. *Janira spinosa* HANSEN (part), Vid. Medd. naturh Foren. i Kjöbn., p. 191.
 1900. *Ianthe spinosa* RICHARDSON, American Naturalist, 34, p. 299.
 1901. *Ianthe spinosa* RICHARDSON, Proc. U.S. Nat. Mus. 23, p. 555.
 1905. *Iolella spinosa* RICHARDSON, Bull. 54, U.S.N.M., p. 458, fig. 515.
 1913. *Janira spinosa* K. STEPHENSEN, Conspectus Crustaceorum et Pycnogonidorum Groenlandiae, Meddel. om Gronland, 22, p. 242.
 1916. *Ianira spinosa* HANSEN, The Danish Ingolf Exp., Crustacea, Malacostacea, vol. 3, pt. 5, p. 21.

Range, lat. 67° 59' N., long. 56° 33' W., Davis straits, southward to lat. 39° 56' N., long. 69° 45' W., off Martha's Vineyard, also off Iceland.

Localities recorded: North America:—Lat. 67° 59' N., long. 56° 33' W., 99 fathoms, stony bottom, 1 specimen; Davis strait, *Ingolf* Station 31, lat. 66° 35' N., long. 55° 54' W., 88 fathoms; lat. 66° 34' W., 100 fathoms, stones with Hydroids and (Balanus ?) no algae, 2 specimens; lat. 65° 35' N., long. 54° 50' W., 80 fathoms, stones with hydroids, no algae, 3 specimens; Davis Straits, *Ingolf* Station 29, lat. 65° 34' N., long. 54° 31' W., 68 fathoms. Type locality: 2 specimens of this species were collected at Banquereau by Capt. Collins of the schooner *Marion*, Aug. 25, 1878. They were found clinging to the cable of the schooner." (Harger); deposited in the Yale University collections. Cat. No. 11000, U.S.N.M., 1 specimen, collected by the U. S. Bureau of Fisheries steamer *Albatross*, Sta. 2969, 201 fathoms, between St. Peters Bank and Banquereau, 201 fathoms; Cat. No. 35523, 2 female specimens taken by the U. S. Bureau of Fisheries steamer *Fish Hawk* at Station 1154, off Martha's Vineyard, 193 fathoms, Cat. No. 32706, 1 male and 1 female specimen also taken by the *Fish Hawk* off Martha's Vineyard at Station 1093, in 349 fathoms.

Europe: Besides it has been secured by Admiral Wandel at a place northwest of Iceland, lat. 66° 16' N., long. 26° 8' W., 33 fathoms, temperature 0·1° and by the *Ingolf* southeast of Iceland, Station 4, lat. 64° 07' N., long. 11° 12' W., 237 fathoms, temperature 2·5°.

***Ianira libbeyi* (Ortmann).**

1900. *Jolanthe libbeyi* ORYMAN, Princeton Univ. Bull. 11, No. 3, pp. 39-40.
 1901. *Tole libbeyi* ORTMANN, Proc. Acad. Nat. Sci. Phila., p. 157.
 1905. *Iolella libbeyi* RICHARDSON, Bull. 54, U.S. Nat. Mus., p. 463.
 1912. *Ianthe speciosa* K. STEPHENSEN, Danmark Exp., p. 518.
 1913. *Ianthe speciosa* K. STEPHENSEN, Conspectus Crust. Meddel. Gronland, 22, p. 243.

Locality recorded:

Station 26, Cape Alexander, N. Greenland—type locality, 27 fms., 5 specimens, collected by Princeton Arctic Expedition, 1899.

So far this is the only record of this species.

***Lanira speciosa* (Bovallius).**

1881. *Ianthe speciosa* BOVALLIUS, Bihang till K. Sv. Vet. Akad. Handl. VI, No. 4, p. 5-14, pls. 1-3.
 1886. *Ianthe speciosa* BOVALLIUS, Bihang till K. Sv. Vet. Akad. Handl. II, No. 15, p. 35.
 1900. *Ianthe speciosa* RICHARDSON, American Naturalist, 34, p. 299.
 1901. *Ianthe speciosa* RICHARDSON, Proc. U.S. Nat. Mus. 23, p. 555.
 1905. *Ianthe speciosa* RICHARDSON, Bull. 54, U.S. Nat. Mus., p. 460.
 1913. *Janira speciosa* K. STEPHENSEN, Conspect. Crust. Groenlandiae Meddel. 22, p. 242.

Range: Baffin bay, type locality, is the only known record

Localities recorded: "The only known specimen is, as mentioned above, the one in the collections of the Royal Swedish Zoological Museum, dredged in the Baffins bay the 26th of July, 1871, at 67° 59' N. 56° 33' V.L. from a stony bottom at a depth of 98 fathoms, by Dr. Joshua Lindahl, the zoologist of the Swedish arctic expedition of that year." (*Bovallius*, 1886).

Group MUNNINI.

Munna Krøyer.**Munna groenlandica** Hansen.

- 1846 ? *Munna fabricii* KRØYER, in Gaimard, Voy. et Scand. Crust., pl. 31, figs. 1-a-2 (partim).
 1847. *Munna fabricii* KRØYER, Nat. Tidsskr., Ny Raekke, vol. 2, p. 380, (partim).
 1916. *Munna groenlandica* HANSEN, The Danish Ingolf Exp., Crustacea, Malacost., vol. 3, pt. 5, p. 35, pl. 3, figs. 2a-2d.

Range: Greenland, west coast, Upernavik to Godthaab, east coast, Danmarks O, to Angmagsalik.

Localities recorded:

West Greenland: In the Upernavik district, latitude about 72° 47' N., 3 specimens, secured by Commodore Ryder; at Egedesminde, latitude 68° 42' N., 1 specimen by Mag. Traustedt; Godthaab, latitude 64° 11' N., about 50 fathoms, Holboll, 6 specimens.

East Greenland: at Danmarks—O, latitude 70° 27' N., 3 specimens by the Ryder Expedition; at Tasuisak, latitude 67° 37' N., 3-5 fathoms, 5 specimens by the first Amdrup Expedition, latitude 67° 4' N., at the beach, 2 specimens by the second Amdrup Expedition; Angmagsalik, latitude 65° 30' N., 2 specimens by Mag. Kruuse.

Pleurogonium G. O. Sars.

Pleurogonium latimanum Hansen.

1916. *Pleurogonium latimanum* HANSEN, Danish Ingolf Exp., Crust. Malacost., vol. 3, pt 5, p. 44, pl. 3, figs. 9a-9d.

Localities recorded: Davis strait, latitude 66° 32' N., longitude 55° 34' W., 100 fathoms, stones with Hydroids, 1 specimen taken by Th. Holm. during the cruise of the *Fylla* in 1884.

Group NANNONISCINI.

Nannoniscella Hansen 1916.**Nannoniscella groenlandica** Hansen.

1916. *Nannoniscella groenlandica* HANSEN, Danish Ingolf Expedition, Crust. Malacost, vol. 3, pt. 5, p. 85 pl. 7, figs. 7a-7d, pl. 81, figs. 1a-1f.

Distribution. Known only from the type locality.

Locality recorded: West Greenland, latitude 64° 03' N., mouth of Ameralik fjord, 5-70 fathoms, shells, 1 specimen, taken by the *Ingolf*; type in the Copenhagen Museum.

Group MUNNOPSISINI.

Family MUNNOPSISIDAE.

Genus **Munnopsis**.**Munnopsis typica** M. Sars.

1860. *Munnopsis typica* M. SARS, Chr. Vid. Selsk. Forh., p. 84 (1861).
 1863. *Munnopsis typica* G. O. SARS, Chr. Vid. Selsk. Forh., p. 206 (1864).
 1866. *Munnopsis typica*, G. O. SARS, Nyt. Magazin for Naturvidenskaberne, p. 5.
 1868. *Munnopsis typica* M. SARS, Chrst. Fjord Fauna, p. 70, pls. vi, vii, figs. 101-138.

1868. *Munnopsis typica* M. SARS, Chr. Vid. Selsk. Forh., p. 261 (1869).
 1869. *Munnopsis typica* G. O. SARS, Nyt. Magazin for Naturvidenskaberne, p. 44.
 1872. *Munnopsis typica* G. O. SARS, Chr. Vid. Selsk. Forh., p. 79 (1873).
 1874. *Munnopsis typica* BUCHHOLZ, Zweite Deutsche Nordpolfahrt, Crust., p. 285.
 1878. *Munnopsis typica*, HELLER, Deutsch. Acad. Wiss. Wien, XXXV, p. (14) 38.
 1876. *Munnopsis typica* NORMAN, Proc. Royal Soc., XXV, p. 208.
 1877. *Munnopsis typica* G. O. SARS, Arch. Math. Nat., II, p. 353 (253).
 1877. *Munnopsis typica* MIERS, Ann. Mag. Nat. Hist., (4), XIX, p. 65.
 1879. *Munnopsis typica* HARGER, Proc. U.S. Nat. Mus., II, p. 159.
 1880. *Munnopsis typica* HARGER, Report U.S. Comm. of Fish and Fisheries, Pt. 6, pp. 330-332, pl. ii, fig. 11. (See Harger for synonymy).
 1887-88. *Munnopsis typica* HANSEN, Videnskabelige Meddelelser fra den naturhistoriske Forening i Kjøbenhavn, p. 195.
 1895. *Munnopsis typica* AXEL OHLIN, Akademisk Afhandling, XXII, p. 18.
 1899. *Munnopsis typica* SARS, Crust. of Norway, II, pp. 133-134, pls. lviii-lviii.
 1900. *Munnopsis typica* STEBBING, Ann. Mag. Nat. Hist. (7), V, p. 14.
 1901. *Munnopsis typica* OHLIN, Bihang till K. Sv. Vet.-Akad. Handl. XXVI, Afd. iv, No. 12, pp. 31-33.
 1901. *Munnopsis typica* ORTMANN, Proc. Phil. Acad. Nat. Sci., p. 159.
 1901. *Munnopsis typica*, RICHARDSON, Proc. U.S. Nat. Mus., XXIII, p. 557.
 1905. *Munnopsis typica* RICHARDSON, Bull. 54, U.S. National Museum, p. 486.
 1909. *Munnopsis typica* G. O. SARS, Sec. Arc. Exp. Fram. Videnskabs-Selskabet i Kristiania, No. 18, p. 9.
 1916. *Munnopsis typica* HANSEN, H. J., Danish Ingolf Exp., Crust. Malacost., 3, pt. 5, p. 156.

The following representatives of this species were secured by the Canadian Arctic Expedition:

Station 43a, off Cockburn point, Dolphin and Union strait, about 50 fathoms, sandy mud with pebbles, and no algae, Sept. 13, 1915. 11 specimens.

"The Isopoda has broad, alternating dark purple and white bands on the long body-legs, and dark purple dorsal side of body." Johansen.

I have also examined nine lots of this species in the collections of the U.S. National Museum, namely: Cat. No. 19830, Davis strait, D'Arcy W. Thompson, collector, 2 specimens; Cat. No. 38414, outside Hebron, Labrador, 100 fathoms, mud, Aug. 25, 1908, Owen Bryant, collector; Cat. No. 38413, halfway from cape Mugford to Hebron, Labrador, 60 fathoms, mud and sand, Aug. 25, 1908, 1 specimen; Cat. No. 38415, off Beachy island, between Flint island and cape Mugford, Labrador, 80 fathoms, soft mud, Aug. 22, 1907, 1 specimen; Cat. No. 34491, off Newport, R.I., Station 893, 372 fathoms, 1880, U.S. Bureau of Fisheries Steamer *Fish Hawk*, collector, 1 specimen; Cat. No. 35535, also off Newport, Rhode Island, station 878, 142 fathoms, collected by the *Fish Hawk*, 1 specimen; Cat. No. 35536, off Martha's Vineyard, Station 1124, 640 fathoms, *Fish Hawk*, collector, 2 specimens; also Cat. No. 39217, Station 2547, South of Martha's Vineyard, 390 fathoms, U.S. Bureau of Fisheries Steamer *Albatross* collector, 1 specimen, Cat. No. 17244, Kara sea, collected by the steamer *Dijmphna* 1882-83, and received in exchange from the Royal Zoological Museum, Copenhagen. It has also been recorded from Grinnell land, cape Fraser, lat. 79° 44' N.; also lat. 79° 38' N., several places off West Greenland in the eastern part of the Baffin bay between lat. 78° 18' N., and lat. 69° 31' N., from 100-199 fathoms; lat. 76° 48' N., long. 88° 39' West.

Arctic America; two places on the west coast of Baffin bay between 5 and 28 fathoms; Gaase Fjord, Ellesmere island; from five *Ingolf* stations in the Davis strait as follows: Station 31, lat. 66° 54' N., long. 55° 34' W., 88

fathoms, temperature 1·6°; Station 32, lat. 66° 35' N., long. 56° 38' W., 318 fathoms, temperature 3·9°; Station 35, lat. 65° 16' N., long. 55° 05' W., 362 fathoms, temperature 3·6°; Station 28, lat. 65° 14' N., long. 55° 42' W., 420 fathoms, temperature 5·5°; Station 27, lat. 64° 54' N., long. 55° 10' W., 393 fathoms.

West Greenland: Olrik bay, 15-20 fathoms, Murchison sound, 25 fathoms, clay; Granville bay, 20-40 fathoms; lat. 71° 10' N., long. 58° 56' W., 199 fathoms, clay; Umanak fjord, 122 fathoms, hard light gray clay; lat. 69° 31' N., long. 56° 1' W., 100 fathoms.

East Greenland: lat. 77° 31' N., long. 18° 24' W., 275 m.; Franz Josef fjord, cape Weber; lat. 73° 32' N., long. 24° 38' W., 100-110 fathoms; lat. 72° 28' N., long. 21° 48' W., 180 m.; lat. 72° 01' N., long. 23° 03' W., 32-40 m., mud; lat. 70° 43' N., long. 22° 29' W., Scoresby sound, Hurry inlet, 70 m., mud; lat. 70° 50' N., long. 22° 33' W., Scoresby sound, Fame island, 23-25 m.; Scoresby sound, 5-25 fathoms; lat. 69° 44' N., Turner sound, about 3 fathoms; lat. 69° 25' N., long. 20° 1' W., 167 fathoms.

Europe: In the Kara sea, 20-100 fathoms, and eastwards to long. 78° 40' East; near the south coast of Novaya Zemlya, about 50 fathoms; Franz Josef land, 2-30 fathoms; Barents sea, 62-180 fathoms; several places at Spitzbergen, northwards to lat. 81° 14' N., 5 and 8 down to 157 fathoms; northwest of Beeren Eiland 658 fathoms; between Beeren Eiland and Norway 217 fathoms; in the sea west of Norway at three stations in the cold area, 350 to 417 fathoms; and one station in the warm area; along the whole coast of Norway from Christiania fjord to Vadso, 60-400 fathoms; and from Skager Rak between Jutland and Norway in depths from 110-340 fathoms; North of Iceland in Skagestrand bay, 119 fathoms, temperature 2·9°; east of Iceland, lat. 63° 15' N., long. 9° 35' W., 270 fathoms; nearer to Iceland off Seydis fjord, 135 fathoms, Nord fjord, East Iceland 35-55 fathoms; between Iceland and the Faeroes, Ingolf station 4, Lat. 67° 07' N., long. 11° 12' W., 237 fathoms, temperature 2·5°; also Station 2, lat. 63° 04' N., long. 9° 22' W., 262 fathoms, temperature 5·3° 1 specimen; North of the Faeroes, Ingolf station 138, lat. 63° 26' N., long. 7° 56' W., 471 fathoms, temperature 0·6°, 1 specimen.

Suborder FLABELLIFERA.

Family CYMOTHOIDAE.

Subfamily AEGIDAE.

Genus *Aega* Leach.

Aega psora (Linnæe).

1761. *Oniscus psora* LINNAEUS, Fauna suecica, 2nd es., p. 499, No. 2054.
 1767. *Oniscus psora* LINNAEUS, Syst. Nat., 12th ed., 1, p. 1060.
 1780. *Oniscus psora* O. FABRICIUS, Fauna Groenlandica, p. 249.
 1815. *Aega emarginata* LEACH, Trans. Linn. Soc. London, 11, p. 370.
 1818. *Aega emarginata* LEACH, Dict. Sci. Nat., 12, p. 349.
 1825. *Aega emarginata* DEMAREST, Consid. Crust., p. 305, pl. 47, figs. 4-5.
 1829. *Aega entaille* LATREILLE, Regne Anim. 4, p. 134.
 1835. *Aega emarginata* GOULD, Rept. Geol. Mass., p. 549.
 1838. *Aega (Oniscus) psora* KRØYER, Dansk. Vid. Selsk. Afh. 7, p. 318.
 1840. *Aega emarginata* MILNE EDWARDS, Hist. Nat. Crust., 3, p. 240.
 1841. *Aega emarginata* GOULD, Invert. Mass., p. 338.
 1849. *Aega emarginata* MILNE EDWARDS, Regne Anim. Crust., pl. 4, fig. 4, pl. 67, fig. 1.
 1850. *Aega psora* LILLJEBORG, Ofvers Vet. Acad. Forh. 7, p. 84.
 1851. *Aega psora* LILLJEBORG, Ofvers Vet. Acad. Forh. 8, p. 24.
 1859. *Aega psora* LÜTKEN, Vidensk. Meddel. 1859, pp. 65, 179.

1861. *Aega psora* LÜTKEN, Vidensk. Meddel., p. 181.
 1868. *Aega psora* SCHIODTE, Ann. Mag. Nat. Hist., 4, 1, p. 12.
 1868. *Aega psora* BATE AND WESTWOOD, British Sessile-Eyed Crustacea, 2, p. 283.
 1869. *Aega psora* M. SARS, Chr. Vid.-Selsk. Forh., p. 261.
 1872. *Aega psora* G. O. SARS, Chr. Vid.-Selsk. Forh., p. 275 (32).
 1873. *Aega psora* VERRILL, Am. Jrn. Sci., 3, V, p. 16.
 1874. *Aega psora* SMITH AND HARGER, Trans. Conn. Acad. Sci., 3, p. 22.
 1875. *Aega psora* LÜTKEN, Crustacea of Greenland, p. 150.
 1877. *Aega psora* MEINERT, Naturh. Tidsskr., 3, 11, p. 89.
 1877. *Aega psora* MIERS, Ann. Mag. Nat. Hist., 4, 19, p. 134.
 1879. *Aega psora* HARGER, Proc. U.S. Nat. Mus., 2, p. 161.
 1880. *Aega psora* HARGER, Report U.S. Com. Fish & Fisheries, Pt. 6, p. 384-387, pl. 10, fig. 64.
 1878-80. *Aega psora* SCHIODTE AND MEINERT, Nat. Tidsskr. 3, vol. 12, pp. 357-380, pl. 8, figs. 5 and 6.
 1881. *Aega psora* MIERS, Jrn. Linn. Soc. Lond. Zool. 15, pp. 65-66.
 1887-1888. *Aega psora* HANSEN, Videnskabelige Meddelelser fra den Naturhistoriske Forening i Kjobenhavn, p. 183.
 1899. *Aega psora* SARS, Crust. of Norway, 2, p. 59, pl. 24.
 1900. *Aega psora* RICHARDSON, American Naturalist, 34, p. 218.
 1901. *Aega psora* RICHARDSON, Proc. U.S. Nat. Mus., 23, p. 521.
 1901. *Aega psora* AXEL OHLIN, Bihang till K. Svenska Vet.-Akad. Handl. 26, Afd. 4, pp. 22-23.
 1901. *Aega psora* WHITEAVES, Cat. Marine Invert. E. Canada, Ottawa, p. 241.
 1904. *Aega psora* NORMAN, Ann. Mag. Nat. Hist., vol. 14, p. 432.
 1905. *Aega psora* RICHARDSON, Bull. 54. U. S. Nat. Mus., p. 168.
 1912. *Aega psora* STEPHENSEN, K., Danmark Exp., p. 614.
 1912. *Aega psora* STEPHENSEN, Rept. Tjalfe Exp. especially at W. Greenland, p. 98.
 1913. *Aega psora* STEPHENSEN, Conspectus Crustacorum Groenlandiae, p. 232.
 1918. *Aega psora* KINDLE, E. M. AND WHITTAKER, M. A., Bathymetric Checklist, Marine Invert. E. Canada, etc., Ottawa, p. 250.
 1916. *Aega psora* HANSEN H. J., Danish Ingolf Exp., Crust. Malacost., 3, pt. 5, p. 168.

Localities recorded:

Two lots of this well known species are in the collections of the Victoria Memorial Museum at Ottawa: Five specimens from Churchill, off river mouth, 20 fathoms, August, 1897, "*Diana*" Expedition; one specimen, "No. 1175," shoal water, a short distance off the mouth of Churchill river, low tide, "*Diana* Expedition."

The following representatives of this species are in the collections of the U. S. National Museum: Cat. No. 4515, Bjonens bay, Spitzbergen, lat. 79° 45' N., long. 8° E., 7-10 fathoms, collected by U.S.S. *Alliance*, Dr. Eckstein, 1 specimen; Cat. No. 19401, north Greenland, collected by P. H. Sorensen, 1 specimen; Cat. No. 19400, "from shark fisherman of Iceland," Capt. John Marshall, collector, 3 specimens; Cat. No. 39442, U. S. N. M., Eclipse Harbour, Labrador, from cod, J. Bryant, collector, 1 specimen; Cat. No. 9400, U. S. N. M., Nakvak, Labrador, S. M. Turner, collector, 5 specimens; Cat. No. 35318, lat. 44° 28' N., long. 53° 35' W., 128 fathoms, schooner *Guy Cunningham*, 1 specimen; Cat. No. 3179, U. S. N. M., parasites of halibut, lat. N. 43° 34', long. W., 49°, 60 fathoms, collected by the schooner *Bessie W. Somes*, 9 specimens; Cat. No. 3172, from halibut, lat. 43° 25' N., long. 59° 50' W., 300 fathoms, collected by Capt. McPhee, 1 specimen; Cat. No. 4120, U. S. N. M., lat. 42° 47' N., long. 65° 30' W., 55 fathoms, collected by Capt. Wm. E. Sweet, schooner *Grace C. Hadley*, 1 specimen; Cat. No. 6285, U. S. N. M., Georges bank,

collected by the schooner *Joseph O.*, 10 specimens; Cat. No. 4110 U. S. N. M., Georges bank, Capt. John T. Getchell, collector, 3 specimens; Cat. No. 3778, U. S. N. M., Georges bank, John Harrington, collector, 20 plus specimens; Cat. No. 3695, Georges bank, 40 fathoms, schooner *Aberdeen*, 1 specimen; Cat. No. 3182, from cod, southeast part of Georges bank, 45 fathoms; Cat. No. 10428, *Albatross* station 2471, off eastern edge Banquereau, 218 fathoms, 2 specimens; Cat. No. 10430, *Albatross* station 2484, between St. Peters bank and Banquereau, 204 fathoms, 1 specimen; Cat. No. 35319, U. S. N. M., St. Peters and Le Have banks, 150-350 fathoms, schooner *Gwendolen* collector, 2 specimens; Cat. No. 41869, U. S. N. M., from stomach of codfish, Le Have islands, Nova Scotia, 30 fathoms, gift from the Geological Survey of Canada; Cat. No. 10075, Le Have bank, Thomas Jewett, collector, 150 fathoms, 1 specimen; Cat. No. 13006, from cod, Flemish Cap, Capt. John Marshall, collector, 13 specimens; Cat. No. 3774, Brown's bank, Capt. John Getchell, collector, 7 specimens; Cat. No. 19378, Western bank, 50 fathoms, schooner *Victor* collector, 1 specimen; Cat. No. 19379, Western bank, schooner *Clytie* collector 1 specimen; Cat. No. 3694, South Channel, schooner *Sultana* collector, 1 specimen; Cat. No. 19380, U. S. N. M., on "skate," Gulf of Maine, 4 specimens; Cat. No. 4758, steamer *Fish Hawk*, Station 1095, off Martha's Vineyard, Mass., 321 fathoms, 2 specimens; Cat. No. 35410, steamer *Fish Hawk*, station 1096, 317 fathoms, off Martha's Vineyard, 1 specimen; Cat. No. 10427, from cod, collected by steamer *Albatross*, 1 specimen; Cat. No. 42096, 1 specimen without data, and Cat. No. 39426, 1 specimen without data.

Europe:

It has also been recorded from Lapponica, Russia (Schiodte and Meinert) Barents sea, lat. 72° 36' N., long. 24° 57' E., 140 fathoms, (Weber), Spitzbergen (Miers, Ohlin); north also northeast coast of Jutland; it "occurs rather frequently along the whole coast of Norway from the Christiani fjord to Vadsø," (G. O. Sars); Scotland: northeastern England and Ireland (various authors); common at Iceland, having been secured in Dyre fjord, Onundar fjord, Hofn Bugt on the northwestern coast, in Ofjord and Skjalfandi on the north coast, in Seydis fjord on the east coast; west of Iceland, Ingolf station 89, lat. 64° 45' N., long. 27° 20' W., 310 fathoms; also Station 9, lat. 64° 18' N., long. 27° 00' W., 295 fathoms; around the Faeroes it has been taken numerous times (Hansen).

Greenland:

West Greenland.—Lille-Karajak fjord (Vanhöffen), Umanak about lat. 70° 40' N., (Miers) Ikerasak, lat. 70° 30' N., on *Somniosus microcephalus* (Schiodte and Meinert); Godhavn (Lütken); Jakobshavn (Hansen); Hunde island near Egedesminde on *S. microcephalus* (Schiodte and Meinert); Hofstenborg on *Hippoglossus* (Hansen), lat. 66° 42' N., long. 56° 12' W., 130 fathoms (Stephenson); lat. 66° 41' N., long. 56° 17' W., 150 fathoms; Godthaab, on *Cattus scorpius* (Hansen); Arsuk-fjord (Schiodte and Meinert) Ovigut; Julianehaab, 50 fathoms, stony bottom (Hansen); Nanortalik, on *Gadus ogac*.

East Greenland—found only at Angmagalik, lat. 65° 35' N., by Mr. Soren Neilsen (Hansen).

This species has been recorded from the following hosts: *Gaddus morrhua*, *G. aeglefinus*, *G. ogac*, *Somniosus microcephalus*, *Hippoglossus vulgaris*, *H. pinguis*, *Anarrhichas latifrons*, *Molva vulgaris*, *Cottus scorpius*, and *Raja batis*.

Aega crenulata Lütken.

1858. *Aega crenulata* LÜTKEN, Vid. Medd. Naturh. Foren. i Kjøbenhavn, p. 70, pl. A, figs. 4-5.
 1879-80. *Aega crenulata* SCHIODTE & MEINERT, Naturh. Tidsskrift (3) 12, p. 343, pl. 7, figs. 6-9.

1887. *Aega crenulata* HANSEN, Vid. Medd. Naturh. Foren. i Kjøbenhavn, p. 183.
 1899. *Aega crenulata* SARS, G. O., Crust. Norway, 2, p. 61, pl. 25, fig. 3.
 1900. *Aega crenulata* RICHARDSON, American Naturalist, 34, p. 218.
 1901. *Aega crenulata* RICHARDSON, Proc. U. S. Nat. Mus., 23, p. 521.
 1904. *Aega crenulata* NORMAN, Ann. Mag. Nat. Hist. (7), 14, p. 434.
 1905. *Aega crenulata* RICHARDSON, Bull. 54, U. S. Nat. Mus., p. 18.
Aega crenulata HANSEN, Danish Ingolf Exped., Crust. Malacost., vol. 3, pt. 5, p. 142, pl. 13, figs. 2a-2b.

Distribution: This species is recorded as parasitic on *Somniosus microcephalus* and on *Malva byrkelange*. It ranges from western Greenland to west Finmark and has been recorded as far south as western Ireland (Tattersall); off Jutland and the southern coasts of Norway.

Localities recorded: West Greenland—Umanak, lat. 70° 40' N., on *Scymus microcephalus* from Ritenbenk (Anderson), Julianehaab in lat. 60° 43' N., collected by Rev. Sørensen.

Europe:

Komag fjord, west Finmark, Bergen, in Trondhjem fjord, in Christiania fjord and at some places on the south and west coasts of Norway; in Skager Rak at the north coast of Jutland; off Shetland, lat. 61° 30' N., long. 0° 10' E., 101 fathoms (Zirwas); off Aberdeen, Scotland (Matthews); off the west coast of Ireland, 242 fathoms (Tattersall); Iceland, several records without specific locality; Orford, north coast of Iceland; Dyre fjord, northwest coast of Iceland; south of Iceland, lat. 62° 57' N., long. 19° 58' W., 508 fathoms, collected by the *Thor*; southwest of Iceland; *Ingolf* station 81, lat. 61° 44' N., long. 27° 00' W., 485 fathoms, temp. 6.1°, 1 specimen; from the Faeroes (Schiodte and Meinert), lat. 62° 30' N., long. 5° 16' W., 250 fathoms.

Aega arctica Lütken.

1858. *Aega arctica* LÜTKEN, Vid. Medd. Nat. Foren. i Kjøbenhavn, p. 71, pl. 1 A, figs. 1-3.
 1879-80 *Aega arctica* SCHIODTE & MEINERT, Naturh. Tidsskrift (3), 12, pp. 374-375.
 1887-88. *Aega arctica* HANSEN, Vid. Medd. Nat. Foren. i Kjøbenhavn, pp. 183-184.
 1899. *Aega arctica* SARS, Crust. Norway, 2, p. 63, pl. 26, fig. 2.
 1900. *Aega arctica* RICHARDSON, American Naturalist, 34, p. 218.
 1901. *Aega arctica* RICHARDSON, Proc. U.S. Nat. Mus., 23, p. 522.
 1905. *Aega arctica* RICHARDSON, Bull. 54, U.S. Nat. Mus., p. 182, fig. 165.

Range: A single specimen has been recorded from Finmark, another from the west coast of Ireland; several records from the vicinity of Iceland, also West Greenland.

Localities recorded: North America:—Lütken states that the type is from Greenland, parasitic on *Scymnus microcephalus*; it has subsequently recorded from West Greenland, at Umanak, in lat. 70° 40' N., Lille-Karajok fjord, lat. 70° 20' N.; Hundeoerne near Egedesminde, lat. 68° 42'; Julianehaab, lat. 60° 43' N., East Greenland at Angmagsalik, lat. 65° 30' N., many specimens from Greenland without specific locality; Davis strait, Ingolf Station 25; lat. 63° 30' N., long. 54° 25' W., 582 fathoms, temperature 3.3°.

Europe:

Finmark, on shark; southwest of the Faeroes, lat. 61° 15' N., long. 9° 35' W., 463-515 fathoms, off the west coast of Ireland, 388 fathoms, Iceland, from the northwestern and the southern coast (Schiodte & Meinert) off West Iceland—Lat. 64° 13' N., long. 27° 30' W., 440 fathoms, by the *Thor*; *Ingolf* Station

90, lat. 64° 45' N., long. 29° 06' W., 568 fathoms, temperature 4.4°; *Ingolf* Station 89, lat. 64° 45' N., long. 27° 20' W., 310 fathoms, temperature 8.4°; Southwest of Iceland—*Ingolf* Station 81, lat. 61° 44' N., long. 27° 00' W., 485 fathoms, temperature 6.1°; *Ingolf* Station 78°, lat. 60° 37' N., long. 25° 52' W., 799 fathoms, temperature 4.5°.

Genus **Rocinela** Leach.

Rocinela belliceps (Stimpson).

1864. *Aega belliceps* STIMPSON, Proc. Acad. Nat. Sci. Phila., 16, p. 155.
 1887. *Aega alascensis* LOCKINGTON, Proc. Cal. Acad. Nat. Sci., 7, pt. 1, p. 46.
 1898. *Rocinela alascensis* RICHARDSON, Proc. Am. Philos. Soc. 37, p. 11.
 1899. *Rocinela belliceps* RICHARDSON, Proc. U.S. Nat. Mus. 21, p. 827.
 1899. *Rocinela belliceps* RICHARDSON, Ann. Mag. Nat. Hist. 7, 4, p. 169.
 1900. *Rocinela belliceps* RICHARDSON, American Naturalist, 34, p. 219.
 1904. *Rocinela belliceps* RICHARDSON, Harriman Alaska Exp. Crustacea, 10, p. 214.
 1904. *Rocinela belliceps* RICHARDSON, Proc. U.S. Nat. Mus. 27, p. 24.
 1905. *Rocinela belliceps* RICHARDSON, Bull. U.S. Fish Comm., 24, p. 213.
 1905. *Rocinela belliceps* RICHARDSON, Bull. 54, U.S. Nat. Mus., p. 199.
 1909. *Rocinela belliceps* RICHARDSON, Proc. U.S. Nat. Mus. No. 1701, vol. 37, p. 82.

Range: This species has been reported parasitic on "cod," "sculpin," "*Gadus morrhua*," "*Chimaera* species;" North American range from Icy cape, Arctic ocean to San Diego, California; Asia; Kamchatka to cape Clonard, Japan.

Localities recorded: Cat. No. 13291, U. S. N. M., Icy cape, Arctic ocean, 5-115 fathoms, sand and gravel, 1874, W. H. Dall, collector, 7 specimens; Cat. No. 13298, cape Prince of Wales, Arctic ocean, in 23 fathoms, 1874, W. H. Dall, collector, 3 specimens; Cat. No. 20485, St. Paul island, Alaska, F. W. True, collector, 1 specimen; Cat. No. 22719, U.S. Bureau of Fisheries Station 3602, Bering sea, latitude 56° 32' N., longitude 172° 40' W., 81 fathoms, *Albatross*, 1 specimen; Cat. No. 39354, U. S. B. F. Station 4782, off east cape, Attu island, latitude 52°, 55' N., longitude 173° 27' E., *Albatross* collector, 57 fathoms, 1 specimen; Cat. No. 31020, Kyska harbour, Alaska, Dr. J. Hobart Egbert, collector, 2 specimens, parasitic on cod; Cat. No. 39263, U. S. B. F. Station 4779, off Semisopochnoi islands, Alaska, *Albatross* collector, 54-56 fathoms, 1 specimen; Cat. No. 28765, Unalga pass, Aleutian islands, R. C. McGregor, collector, 3 specimens; Cat. No. 13301, Nazan bay, Atka island, W. H. Dall, collector, 1873, 1 specimen; Cat. No. 39264, Nazan bay, Atka island, U.S. Bureau of Fisheries Steamer *Albatross* collector, 1 specimen; Cat. No. 25078, U. S. B. F. Station 2842, off North Head, Akutan island, Alaska, *Albatross*, collector, 1 specimen; Cat. No. 22718, U. S. B. F. Station 3348, off Akutan islands, Alaska, 91 fathoms, *Albatross*, collector, 4 specimens; Cat. No. 39282, Unalaska, U. S. B. F. Steamer *Albatross*, collector, 1 specimen; Cat. No. 39381, 1 specimen from the same source; Cat. No. 22716, U. S. B. F. Station 3318, off Unalaska, *Albatross*, collector, 61 fathoms, 1 specimen; Cat. No. 20351, from cod, Iliuliuk harbour, in Captains bay, N. E. shore Unalaska, Dall and Harrington, collectors, 4 specimens; Cat. No. 13294, Captain's harbour, N. E. shore Unalaska, 40 fathoms, W. H. Dall, collector, 1 specimen; Cat. No. 13300, Captains harbour, inside of ridge, sand and stones, 60-80 fathoms, W. H. Dall, collector, 2 specimens; Cat. No., 20336, U. S. B. F. Station, 2844, off Rootook island, Alaska, lat. 53° 56' N., longitude 165° 40' W., *Albatross*, collector, 54 fathoms, 5 species; Cat. No. 22715, U. S. B. F. Station 3257, N. W. of Unimak island, Alaska, *Albatross*, collected in 81 fathoms, 5 specimens; Cat. No. 25062, 1 specimen from the same place; Cat. No. 22714, U. S. B. F. Station, 3224, N. W. of Unimak islands, Alaska, *Albatross*, collector, 121 fathoms, 1 specimen; Cat. No. 25061, U. S. B. F.

Station 3225, N. W. of Unimak island, Alaska, *Albatross*, collector, 85 fathoms, 1 specimen; 3 females taken from codfish caught in Ounimak pass, Alaska, latitude 54° 40' N., long. 165° W. by Capt. T. W. Williams (Lockington); Cat. No. 22713, U. S. B. F. Sta. 3213, S. W. of Sannakh islands, Alaska, *Albatross*, collector, 41 fathoms, 1 specimen; Cat. No. 12566, Belkofsky, said to have come from a sculpin, 1 specimen, T. H. Bean, collector; Cat. No. 12532, Belkofsky, Alaska, W. H. Dall, collector, 1880, 15-25 fathoms, 3 specimens; Cat. No. 13315, Sanborn harbor, Nagai, Alaska, 6-8 fathoms, W. H. Dall, collector, 1872, 1 specimen; Cat. No. 30248, Chignik bay, Alaska, U. S. B. F. Station 4282, *Albatross*, collector, 1 specimen; Cat. No. 22721, 1 specimen from the same source; Cat. No. 39342, Karluk, Alaska, 50 plus specimens, parasitic on cod, T. H. Bean, collector; Cat. No. 30241, U. S. B. F. Station 4233, vicinity of Yes bay, Behm canal, Alaska, *Albatross*, collector, 1 specimen; Cat. No. 30242, U. S. B. F. Station 4236, vicinity of Yes bay, Behm canal, Alaska, *Albatross*, collector, 1 specimen; Cat. No. 14278, Chajafka cove, Kadiak, Alaska, 12-14 fathoms, W. H. Dall, collector, 1 specimen; Cat. No. 30244, U. S. B. F. Station 4268, Afognak bay, Afognak island, Alaska, *Albatross*, collector, 1 specimen; Cat. No. 30245, U. S. B. F. Station 4269, Afognak bay, Afognak islands, *Albatross*, collector, 1 specimen; Cat. No. 4301, Sitka, Alaska, L. A. Beardslee, collector, 1 specimen; Cat. No. 30247, U. S. B. F. Station 4258, vicinity of Funter bay, Lynn canal, Alaska, *Albatross*, collector, 2 specimens; Cat. No. 30243, U. S. B. F. Station 4247, Kasaan bay, Prince of Wales island, south eastern Alaska, *Albatross*, collector, 3 specimens; Cat. No. 7601, Wrangel, Alaska, Dr. W. H. Jones, collector, 1 specimen, from rocky beach, under stones; Cat. No. 5726, 1 specimen from the same place; Cat. No. 30239, U. S. B. F. Station 4200, Queen Charlotte sound, British Columbia, *Albatross*, collector, 1 specimen; Cat. No. 30238, U. S. B. F. Station 4197, gulf of Georgia, Halibut bank, Vancouver island, B.C., *Albatross*, collector, 3 specimens; Cat. No. 30238, U. S. B. F. Station 4197, gulf of Georgia, Halibut bank, Vancouver Island, B.C., *Albatross*, collector, 3 specimens; Cat. No. 30237, U. S. B. F. Station 4193, gulf of Georgia, Halibut bank, Vancouver island, *Albatross*, collector, 1 specimen; Cat. No. 40097, Ucluellet, British Columbia, 1 specimen, from the Geological Survey of Canada; Cat. No. 30240, U. S. B. F. Station 4218, Admiralty inlet, vicinity of Port Townsend, Washington, *Albatross*, collector, 1 specimen; Cat. No. 30246, 3 specimens from the same place; Cat. No. 6651, Port Ludlow, Washington, 2 specimens; Cat. No. 22717, U. S. B. F. Station 3445, strait of Juan de Fuca, *Albatross*, collector, 100 fathoms, 2 specimens; *type specimen* from Puget sound, 2 specimens, collected by the naturalists of the Northwest Boundary Commission (Stimpson); Cat. No. 22787, Monterey Bay, California, "from the fish, *Chimaera*," 1 specimen; Cat. No. 22712, U. S. B. F. Station 2943, off Santa Cruz Island, California, *Albatross*, 41 fathoms, 1 specimen; Cat. No. 33428, U. S. B. F. Station 4421, East point, San Nicolas island, California, *Albatross* collector, 229-298 fathoms, 4 specimens; Cat. No. 33429, U. S. B. F. Station 4374, vicinity of San Diego, California, *Albatross*, 88-93 fathoms, 1 specimen.

Asia: Cat. No. 22720, U. S. B. F. Station 4643, Kamchatka, *Albatross*, collector, 100 fathoms, 1 specimen; Cat. No. 20350, U. S. N. M. Bering island, L. Stejneger, collector, 1 specimen; Cat. No. 13425, 2 specimens from the same source; Cat. No. 20349, Bering island, from the skin of "*Gadus morrhua*," N. Grebniatsky, collector, 4 specimens; Cat. No. 39283, U. S. B. F. Station 4784, off Copper island, latitude 54° 51' 30" N., long. 167° 14' E., *Albatross*, collector, 135 fathoms, 1 specimen; Cat. No. 39279, U. S. B. F. Station 4803, off cape Rollin, Simushir islands, Japan, *Albatross*, collector, 229 fathoms, 1 specimen; Cat. No. 39280, U. S. B. F. Station 4804, off cape Rollin, Simushir island, Japan, *Albatross*, collector, 229 fathoms, 1 specimen; Cat. No. 39304, U. S. B. F. Station 4812, off North point, Sado island, Japan, *Albatross*, collector, 176 fathoms, Cat. No. 39303, U. S. B. F. Station 4860, off cape Clonard, Japan, latitude 36° 18' N., longitude 129° 44' E., *Albatross*, collector, 122 fathoms, 1 specimen.

Rocinela maculata Schiodte and Meinert.

- 1879-80. *Rocinela maculata* SCHIODTE AND MEINERT, Naturh. Tidssk. 3, 12, p. 393, pl. 12, figs. 10-12.
 1885. *Rocinela maculata* BOVALLIUS, Bihang till Kgl. Sv. Vet. Akad. Handling 10, No. 11, p. 10, pl. 2, figs. 18-23.
 1887. *Rocinela maculata* HANSEN, Vidensk. Meddel. Naturh. Foren. i Kjobh., p. 187.
 1900. *Rocinela maculata* RICHARDSON, American Naturalist, 34, p. 219.
 1901. *Rocinela maculata* RICHARDSON, Proc. U. S. Nat. Mus., 23, p. 594.
 1906. *Rocinela maculata* RICHARDSON, Bull. 54, U. S. Nat. Mus., p. 198, fig. 186.
 1906. *Rocinela maculata* RICHARDSON, Proc. U. S. Nat. Mus., Vol. 37, No. 1701, p. 83, f. 9.
 1913. *Rocinela maculata* STEPHENSEN, K., Conspectus Crust. Groenlandiae, 3, Pt. 5, p. 174.

Localities recorded: Type specimen taken by H. Koch, at:

1. Vladivostok, eastern Asia, and preserved in the Copenhagen Museum. (Schiodte & Meinert).
2. "Bought in 1877, of the naturalist-merchant Wessel in Hamburg, * * * * * habitat: Greenland; a male and female specimen (Zool. State Mus. Sweden at Stockholm and Bovallius collections)". (Bovallius). The validity of this Greenland locality is questionable, though, as noted by Hansen, it is not impossible that a species found at Vladivostok also belongs to fauna of arctic America and may live at West Greenland. Hence the species is listed here, with reservations. Cat. No. 39905, U. S. N. M., 1 specimen taken by the U. S. Bureau of Fisheries steamer *Albatross*, at station 4807, off cape Tsiuka, Japan, in 44 fathoms, July 16, 1906, is the only specimen I have seen.

Family **SPHAEROMIDAE**.Genus **Tecticeps** Richardson.**Tecticeps alascensis** Richardson.

1897. *Tecticeps alascensis* RICHARDSON, Proc. Biol. Soc. Washington, 11, pp. 181-183.
 1899. *Tecticeps alascensis* RICHARDSON, Proc. U. S. Nat. Mus., 21, p. 837.
 1899. *Tecticeps alascensis* RICHARDSON, Ann. Mag. Nat. Hist. 7, 4, p. 181.
 1900. *Tecticeps alascensis* RICHARDSON, American Naturalist, 34, p. 223.
 1905. *Tecticeps alascensis* RICHARDSON, Bull. 54, U. S. Nat. Mus., fig. 266.

Range: North America: Nunivak island to Unalaska; Asia, southeast coast of Kamchatka to Kurile islands, Japan.

Localities recorded: Cat. No. 13634, U. S. N. M., lat. 60° 16' N., long. 167° 41' W., Bering sea, northwest of Nunivak island, Lt. Geo. M. Stoney, U.S.N., collector, 1 specimen; Cat. No. 20451, U.S.B.F. Station 3246, Bering sea, lat. 58° 06' N., long. 161° 36' W., *Albatross* collector, 38 fathoms, 2 specimens; Cat. No. 20450, U. S. B. F. Station 3237, Bering sea, lat. 58° 08' N., long. 158° 19' W., *Albatross*, 19 fathoms, 1 specimen; Cat. No. 25056, U. S. N. M., U. S. B. F. Station 3238, Bering sea, lat. 58° 03' N., long. 158° 30' W., *Albatross*, 18 fathoms, 2 specimens; Cat. No. 20455, U. S. B. F. Station 3304, Bering sea, lat. 58° 02' 30" N., long. 161° 13' 45" W., *Albatross*, 49 fathoms, 20 plus specimens; Cat. No. 20454, U. S. B. F. Station 3302, Bering sea, lat. 57° 45' 45" N., long. 160° 12' 15" W., *Albatross*, 30 fathoms, 1 specimen; Cat. No. 20453, U. S. B. F. Station 3297, Bering sea, lat. 57° 38' N., long. 159° 07' 30" W., *Albatross*, 26 fathoms, 6 specimens; Cat. No. 20456, U. S. B. F. Station 3488, Bering sea, lat. 57° 05' N., long. 173° 47' W., *Albatross*, 106 fathoms,

1 specimen; Cat. No. 20452, U. S. B. F. Station 3272, Bering sea, lat. 55° 31' 40" N., long. 163° 07' W., *Albatross*, 42 fathoms, 5 specimens; Cat. No. 20457, U. S. B. F. Station 3600, Bering sea, lat. 55° 06' N., long. 169° 08' W., *Albatross*, 9 fathoms, 8 specimens; *type locality*: Bering sea, off Nunivak island, U. S. B. F. Station 3515, 13 fathoms, *Albatross* collector, 3 specimens; Cat. No. 20449, U. S. B. F. Station 2841, Unalaska to Cook inlet, lat. 54° 18' N., long. 165° 55' W., *Albatross*, 56 fathoms, 3 specimens; Cat. No. 20460, between Pinnacle and Unalaska, Unalaska, W. H. Dall, collector, 1874, 16 fathoms, 3 specimens.

Asia: Cat. No. 20458, U. S. B. F. Station 3643, southeast coast Kamchatka, lat. 51° 16' N., long. 158° 03' W., *Albatross*, 100 fathoms, 3 specimens; Cat. No. 20459, U. S. B. F. Station 3652, off Shana, Iturup island (also Etorofu island), Kurile islands Japan, lat. 45° 15' 30" N., long. 147° 53' W., *Albatross*, 14 fathoms, 9 specimens.

Family ANTHURIDAE.

Genus *Calathura* Norman and Stebbing, 1886.

Calathura brachiata (Stimpson).

1853. *Anthura brachiata* STIMPSON, Smithsonian Contributions to Knowledge 6, p. 43.
1873. *Paranthura norvegica* G. O. SARS, Vidensk. Selsk. Forhandl., p. 88.
1873. *Anthura brachiata* VERRILL, Am. Jrn. Sci. (3), V, p. 101.
1873. *Anthura brachiata* HARGER with VERRILL, Report U. S. Commissioner of Fish and Fisheries, pt. 1, pp. 511, (217), 573 (279).
1874. *Anthura brachiata* VERRILL, Am. Jrn. Sci., (3), VII, pp. 42, 411, 502.
1874. *Anthura brachiata* VERRILL, Proc. Am. Assoc., pp. 350, 357.
1874. *Anthura brachiata* SMITH AND HARGER, Trans. Conn. Acad. Sci., III, p. 16.
1877. *Paranthura arctica* G. O. SARS, Archiv. for Math. og Naturv., p. 347.
1878. *Paranthura arctica* HELLER, Denk. Ak. Wien., 35, pp. 38-39, pl. 4, figs. 9-12.
1880. *Paranthura brachiata* HARGER, Report U. S. Commissioner Fish and Fisheries, pt. 6, pp. 402-405, pl. 11, fig. 70.
1886. *Calathura brachiata* NORMAN & STEBBING, Trans. Linn. Soc. Lond., 12, pt. 4, pp. 131-133, pl. 24, fig. 1.
1887. *Paranthura brachiata* HANSEN, Dijnphna Togtets Zool. bot. Udbytte, pp. 203, 204.
- 1887, 1888. *Calathura brachiata* HANSEN, Vedenskabelige Meddelelser fra den Naturhistoriske Forening i Kjøbenhavn, p. 181.
1895. *Paranthura brachiata* AXEL-OHLIN, Akademisk Afhandling 22, pp. 12-13.
1899. *Calathura brachiata* SARS, Crust. Norway, II, pp. 46-47, pl. 19, fig. 2.
1900. *Calathura brachiata* STEBBING, Ann. Mag. Nat. Hist. (7), V, p. 13.
1900. *Calathura brachiata* RICHARDSON, American Naturalist, 34, p. 215.
1901. *Calathura brachiata* RICHARDSON, Proc. U. S. Nat. Mus., 23, p. 509.
1901. *Calathura brachiata* AXEL-OHLIN, Bihang till K. Sv. Vet-Akad. Handl. 24, Afd. 4, No. 12, pp. 17-20.
1905. *Calathura brachiata* RICHARDSON, Bull. 54, U. S. Nat. Mus., p. 72, fig. 56-57.
1912. *Calathura brachiata* K. STEPHENSEN, Danmark-Exp., pp. 574-600.
1913. *Calathura brachiata* K. STEPHENSEN, Grondlands Krebsdyr og Pycnogonider, Medd. om Gronl. vol. 22, pp. 229, 230.
1916. *Calathura brachiata* K. STEPHENSEN, Zoogeographical Investigation of Certain Fjords in Southern Greenland, Meddels. Am. Gronl., vol. 23, p. 297.
1916. *Calathura brachiata* HANSEN, Crustacea Malacostraca; The Danish Ingolf Exp., vol. 3, pt. 5, pp. 183, 184, pl. 15, fig. 3a.

Distribution:

North America:—West coast of Baffin bay, lat. $72^{\circ} 08' N.$, 10-28 fathoms (Ohlin); Cat. No. 60436, U. S. N. M., U. S. B. F. Station 2499, between Misaine bank and Middle ground, 130 fathoms, *Albatross*, collector, 3 specimens; Cat. No. 10437, U. S. N. M., U. S. B. F. Station 2504, between Middle Ground and Halifax, Nova Scotia, 82 fathoms, *Albatross*, 1 specimen; “dredged on a shelly and somewhat muddy bottom, in 20 fathoms, off the northern point of Duck island (New Brunswick),” *type locality*, (Stimpson); Cat. No. 2915, U. S. N. M., Georges bank, lat. $42^{\circ} 5' N.$, long. $67^{\circ} 49' W.$, 110 fathoms, Steamer *Bache*, collector, 1 specimen; Cat. No. 10923, U. S. N. M., Station 2523, east of Georges bank, 111 fathoms, *Albatross*, collector, 1 specimen; Cat. No. 2914, U. S. N. M., Steamer *Speedwell*, Station 47, 95 fathoms, 1 specimen; Cat. No. 2904, U. S. N. M., bay of Fundy, 77 fathoms, Aug. 16, 1872, 1 specimen; Cat. No. 2905, U. S. N. M., between Head harbour and Wolves, bay of Fundy, Aug. 16, 1872, 60 fathoms, U. S. Bureau of Fisheries, collector, 3 specimens; Cat. No. 2906, U. S. N. M., gulf of Maine, Steamer *Bache*, Stations 16, 12, 13, 3 specimens; Cat. No. 2908, Gulf of Maine, *Bache*, Stations 60, 66, 65 fathoms, mud, sand and gravel, 1 male specimen; Cat. No. 2912, U. S. N. M., *Bache* Station 76, gulf of Maine, 51 fathoms, mud, sand and gravel, 1 specimen; Cat. No. 2913, U. S. N. M., *Bache* Station 5, gulf of Maine, 17 miles southeast of Monegan islands, 72 fathoms, brown mud, 1 specimen; Cat. No. 37580, U. S. N. M., Steamer *Speedwell*, Station 41, 82 fathoms, 2 specimens; Cat. No. 2909, U. S. N. M., *Bache*, Stations 45, 74 and 75, west of Jeffrey’s ledge, gulf of Maine, 88-92 fathoms, brown mud, 2 specimens; Cat. No. 39203, U. S. N. M., Steamer *Speedwell*, Station 170-171, gulf of Maine, 90 fathoms, 1 specimen; Cat. No. 37582, U. S. N. M., Casco bay, 1 specimen; Cat. No. 2907, U. S. N. M., Casco bay, 2-7 miles off Portland, 90 fathoms, 1 specimen; Cat. No. 2910, U. S. N. M., Casco bay, 2 females; Cat. No. 35798, U. S. N. M., off cape Ann, Mass., Steamer *Speedwell*, Station 137, 1 specimen; Cat. No. 37566, U. S. N. M., another specimen from the same station; Cat. No. 37567, U. S. N. M., Steamer *Speedwell*, Station 157, off cape Ann, 40 fathoms, 1 specimen; Cat. No. 37597, U. S. N. M., Steamer *Speedwell*, Station 326, off cape Cod, Mass., 75 fathoms, 1 specimen; Cat. No. 35538, U. S. N. M., Steamer *Fish Hawk*, Station 1093, off Martha’s Vineyard, 349 fathoms, 1 specimen; Cat. No. 35539, U. S. N. M., *Fish Hawk*, Station 1028, off Martha’s Vineyard, 1 specimen; Cat. No. 39197, U. S. N. M., Steamer *Albairross*, Station 2547, south of Martha’s Vineyard, 390 fathoms, 1 specimen.

Greenland: West Greenland, latitude $72^{\circ} 20' N.$, long. $59^{\circ} 39' W.$, 172 fathoms, stones and clay; lat. $71^{\circ} 10' N.$, long. $58^{\circ} 56' W.$, 199 fathoms, blue brown clay; outside of Umanak fjord, 122 fathoms, hard light clay; Umanak, 200-235-250 fathoms; lat. $70^{\circ} 0' N.$, long. $58^{\circ} 38' W.$, 199 fathoms, clay and stones; lat. $66^{\circ} 22' N.$, long. $57^{\circ} 16' W.$, 686 m.; *Ingolf* Station 32, Davis strait, lat. $66^{\circ} 35' N.$, long. $56^{\circ} 38' W.$, 318 fathoms, also *Ingolf* Station 35, lat. $65^{\circ} 16' N.$, long. $55^{\circ} 05' W.$, 362 fathoms; Brede fjord, about lat. $61^{\circ} 20' N.$, 164-175 fathoms.

East Greenland: Lat. $75^{\circ} 59' N.$, long. $14^{\circ} 12' W.$, 300 m; lat. $75^{\circ} 58' N.$, long. $14^{\circ} 18' W.$, (Duc d’Orleans); lat. $74^{\circ} 52' N.$, long. $17^{\circ} 16' W.$, 359 m., (Ohlin) Lat. $74^{\circ} 20' N.$, long. $17^{\circ} 00' W.$, 110 fathoms; lat. $73^{\circ} 20' N.$, long. $21^{\circ} 20' W.$, 70 m.; lat. $72^{\circ} 28' N.$, long. $21^{\circ} 48' W.$, 180 m.; Forsblad fjord, lat. $72^{\circ} 17' N.$, 50 fathoms; lat. $71^{\circ} 33' N.$, long. $21^{\circ} 30' W.$, Murray island, 200 m.; Hurry inlet, lat. $70^{\circ} 50' N.$, 50 fathoms, near Stewart land about lat. $70^{\circ} 30' N.$, 158 fathoms; Scoresby sound, 5-25 fathoms, lat. $69^{\circ} 25' N.$, long. $20^{\circ} 1' W.$, 167 fathoms, large stones and clay.

Europe: Between Novaya Zemlya and Franz Josef land, 117 fathoms (Heller); Kara sea, 30-80 fathoms, Novaya Zemlya, Murman sea, 76 fathoms (Stebbing) nine stations in the Barents sea; Franz Josef land; lat. $81^{\circ} 14' N.$,

long. 22° 50' E., northeast of Seven islands; lat. 79° 58' N., long. 9° 30' E., N. of Danish island, lat. 78° 50' N., long. 27° 39' E., King Charles island; lat. 78° 50' N., long. 29° 39' E., King Charles island; Bremer sound, King Charles island; lat. 77° 25' N., long. 27° 30' E., north of Hope island; lat. 76° 46' N., long. 15° 22' E., off Horn sound, West Spitzbergen; lat. 73° 27' N., long. 23° 11' E., between Norway and Beeren island; lat. 73° 3' N., long. 18° 30' E., between Beeren island and Norway; lat. 71° 35' N., long. 22° 47' E., between Norway and Beeren island; lat. 71° 31' N., long. 49° 12' E.; off Jan Mayen, by Ohlin; south of Jan Mayen, *Ingolf* Station 116, lat. 70° 05' N., long. 8° 26' W., 371 fathoms; Bog fjord, Porsanger fjord, Varanger fjord, and off Vardo 100-120 fathoms (Sars-Norman) three stations at west Norway, 150-200 fathoms (G. O. Sars); off Norway in lat. 58° 22' N. (Zirwas), off the Faeroes; southwest of Faeroes, lat. 61° 15' N., long. 9° 35' W., 403-515 fathoms, north of the Faeroes, *Ingolf* Station 144, lat. 62° 49' N., long. 7° 12' W., 276 fathoms, between Shetland and the Faeroes, north of Shetland, 263 fathoms; west of Scotland and Ireland to far west of Brittany, lat. 48° 38' N., in depths from 199-1360 fathoms (Norman & Stebbing; Tattersall); Denmark strait, *Ingolf* Station 95, lat. 65° 14' N., long. 30° 39' W., 752 fathoms; Station 96, lat. 65° 24' N., long. 29° 00' W., 735 fathoms; north of Iceland in Skagestrand bay, 119 fathoms, also *Ingolf* Stations 128, lat. 66° 50' N., long. 20° 02' W., 194 fathoms, and Station 126, lat. 67° 19' N., long. 15° 52' W., 293 fathoms; east of Iceland, 299 fathoms, also east of Seydis fjord, 135 fathoms, southeast of Iceland, *Ingolf* Station 4, lat. 64° 04' N., long. 11° 12' W., 237 fathoms; south of Iceland, *Ingolf* Station 54, lat. 63° 08' N., long. 15° 40' W., 391 fathoms, *Ingolf* Station 55, lat. 63° 33' N., long. 15° 02' W., 316 fathoms; lat. 63° 15' N., long. 22° 23' W., 170 fathoms; southwest of Iceland, *Ingolf* Station 78, latitude 60° 37' N., long. 27° 52' W., 799 fathoms, west of Iceland, *Ingolf* Station 78, lat. 63° 21' N., long. 25° 21' W., 170 fathoms.

SUBORDER VALVIFERA.

Family IDOTHEIDAE.

Genus *Mesidotea* Richardson.*Mesidotea entomon* (Linnaeus).

1767. *Oniscus entomon* LINNAEUS Syst. Nat., 12th ed., 1, Pt. 2, p. 1060.
 1772. *Oniscus entomon* PALLAS, Spicil. Zool., IX, p. 64, pl. v, figs. 1-6.
 1778. *Squilla entomon* DE GEER, Mém. pour servir à l'Hist. des Insectes, VII, p. 514, pl. xxxii, figs. 1-10.
 1789. *Asellus entomon* OLIVIER, Encycl. Meth., IV, p. 253.
 1798. (?) *Cymothoa entomon* FABRICIUS, Ent., Syst., II, p. 505.
 1802. *Idotea entomon* BOSC, Hist. Nat. des Crust., II, p. 178.
 1803-4. *Idotea entomon* LATREILLE, Hist. Nat. Crust. et Ins., VI, p. 361; VII, pl. lviii, figs. 2-3.
 1818. (?) *Idotea entomon* LAMARCK, Hist. des Anim. sans Vert., 1st ed., V, p. 159.
 1820. *Idotea entomon* RATHKE, Neuste Schriften der naturf. Gesellsch. in Danzig, I, p. 109, pl. iv.
 1825. (?) *Idotea entomon* DESMAREST, Consid. Crust., p. 289.
 1838. *Idotea entomon* KRØYER, Vid. Selsk. Skrift., VII, p. 323.
 1840. *Idotea entomon* MILNE EDWARDS, Hist. Nat. Crust. III, p. 128.
 1846-49. *Idotea entomon* KRØYER, Nat. Tidsskr., II, p. 402.
 1847. *Idotea entomon* WHITE, List Cr. Brit. Mus., p. 93.
 1851. *Idotea entomon* BRANDT, Crust. in Middendorf's Sibirische Reise, II, p. 145.
 1852. (?) *Saduria entomon* ADAMS in WHITE, Sutherland's Voy. Baffin's Bay, Appendix, p. 207.

1877. *Idotea longicauda* LOCKINGTON, Proc. Cal. Acad. Sci., VII, Pt. 1, p. 45.
 1877. *Idotea entomon* MEINERT, Nat. Tidsskr. (3), XI, p. 84.
 1880. *Idotea entomon* BRANDT, Comptes Rendus, p. 713.
 1880. *Idotea entomon* BRANDT, Ann. Mag. Nat. Hist., VI., p. 98.
 1883. *Glyptonotus entomon* MIERS, Journ. Linn. Soc. London, XVI, pp. 12-13 pl. 1, figs. 1-2. (See Miers for further synonymy).
 1899. *Glyptonotus entomon* RICHARDSON, Proc. U. S. Nat. Mus., XXI, p. 843.
 1899. *Glyptonotus entomon* RICHARDSON, Ann. Mag. Nat. Hist. (7), IV, p. 262.
 1905. *Mesidotea entomon* RICHARDSON, Bull. 54, U. S. N. M., p. 348, figs. 374 a-m.

Range: This magnificent species is definitely recorded from the Kara sea, westward across polar Europe and America, the Bering sea, and it is not improbable that future explorations will prove it a resident of the remaining polar area, Siberia. Its present known southern range establishes it in the Cattegat, Denmark; Labrador, the east coast of North America; Pacific beach, California, the west coast of North America and Avatcha bay, Kamchatka, Asia.

The material listed herewith was secured by the Canadian Arctic Expedition:

Mesidotea entomon (Linnaeus).

Station 20b-c. Grantley harbour, Alaska, 2-3 fathoms; sandy mud with algæ; July 30, 1913. 4 specimens.

Station 24. Sandspit at point Barrow, Alaska; August 22, 1913; 2 adult specimens.

Station 27a. Collinson point, Alaska; 1 fathom; gravel, no vegetation; September 7, 1913. 7 specimens; from stomach of (white-fish?).

Station 27c. Collinson point, Alaska, 18 inches of water; sand and gravel, no vegetation; September 18, 1913. 1 adult specimen.

Station 27i. Lagoon at Collinson point, Alaska, pelagic under five-inch ice; depth 3-4 ft.; September 18, 1913. 13 immature specimens.

Station 27j. Collinson point, Alaska; September 7, 1913, from stomach of *Phoca foetida*. 2 immature specimens.

Station 27s. Collinson point, Alaska, 3 fathoms; mud and gravel; October 3, 1913. 12 specimens, adult and immature.

Station 27y.¹ Entrance to lagoon at Collinson point, Alaska; October 8, 1913, (no ice). 2 immature specimens.

Station 28a. Collinson point, Alaska, on sea bottom; mud, sand and green algae, 1 fathom; October 14, 1913. 3 adult specimens.

Station 28d. Collinson point, Alaska, on sea bottom; 1½ fathoms, gravel, sand and green algæ; October 18, 1913. 9 adult specimens.

Station 28l. Collinson point, Alaska, sea-shore; September 8, 1913. 1 adult specimen.

Station 28m. Collinson point, Alaska, July, 1914. 1 adult specimen (dry).

Station 28o. Stomach contents (samples from 10 *Salvelinus malma* Wahl.) from Collinson Point, Alaska; July 8, 1918. 6 young.

Station 28r. Part of stomach contents of 2 female *Cottus quadricornis* from bay at Collinson point, Alaska, July 24, 1914. 2 adult specimens (mutilated).

In connection with the above stations (27 and 28) Mr. Johansen notes:

"The young ones of *Idothea* sp., which are so common in the shallower parts of the sea up here (see specimens kept) are found pelagic in the water while the older *Idothea* (if they are the same species) are bottom-forms. These young stages swim in circles in the water with the ventral side upwards; or they ascend to the surface in a sloping line from below. During this they 'row' by transversal strokes with their long body-legs, while the foliaceous, abdominal legs are not used for swimming, but support the outspread tail end (telson) which serves as a 'rudder.' These young *Idothea* have thus a very strange appearance when swimming."

Station 30b. Demarcation point, Alaska, 3 fms.; mud and stones, no vegetation (on bait-trap); May 9, 1914. 1 adult specimen.

Station 31b. Basin in outlet from big lake at Konganevik (Camden bay), Alaska, from fresh water; June 30, 1914. 3 adult females and about 50 young specimens.

Mr. Johansen states:

"Followed up the outlet from the big lake inland, from the sea-beach. The course of this small creek is much winding; especially where it (nearer the sea) flows between low tundra banks. In its upper part it can be rather easily waded, as it here flows through swampy tundra; while in its lower part it forms deep holes or basins with big boulders on the bottom, covered with vegetable detritus, moss, grass, etc. In the quite fresh water of these basins I saw several of the common, littoral-marine *Idothea* crawling between and over the boulders; and I caught three of them (all fullgrown; eggs and new-born young ones in brood-pouch). The animals probably have succeeded in getting into these basins at high tide through the lagoons forming the beach-end of the outlet; and they have then remained in the quiet waterholes for the purpose of feeding among the vegetation here, and maybe also to bring forth their young ones here. They were not found in the upper part of the outlet."

Station 40g. Bernard harbour, Northwest Territory, June 20, 1915, from stomach of a female *Cristivomer namaycush*. 2 adult specimens (mutilated).

Station 41r. Bay East of Bernard harbour, Northwest Territories; in burrows in sand on littoral region; August 14, 1915; 12 young specimens.

Mr. Johansen gives the following interesting description of the habits of *M. entomon*:

"Examined the intertidal zone along the beach of the bay. The littoral region here is made up of extensive sand-flats with scattered boulders; and at low tide many shallow water-pools are left. In the sand-bottom were many winding tracks like those *Lepidurus glacialis* makes in the mud-bottom of lakes made, as I found by a small (ca. 5-20 mm. long) *Idothea* sp. buried at the one end of the track and leading it further from here. Some of the tracks were in sand *not* covered by water now (low tide); and besides being able to feed continuously the animals are hidden and protected (from enemies and the sun) in these burrows, until the high tide comes back. I observed that the animals make these burrows, by first sticking their head-end into the sand; and then the particles of this below the animal are carried backwards by quick, violent and continuous movements of the foremost, *abdominal* legs (in much the same way as a sand-burrowing wasp). The making of the burrow-track is thus effected, in a similar way as with *Lepidurus glacialis* (foliaceous legs); while the free-swimming in the water of these *Idothea* (probably all younger stages of the common *I. entomon*) is effected by the long body-(walking)-legs (see October 14, 1913). The colour of these young *Idothea* (found today) is as follows: Uniformly cuticula-brown with black eyes and pigment (dark brown) dorsally (strongest on forepart of head, along middle-dorsal and as a cross-band just in front of the telson). While these young *Idothea* thus are common at the beach around here, I have only found very few of the fullgrown ones, living here (compare the extremely common occurrence of the latter ones in the littoral region of the Alaskan Arctic Coast).

"The life-history cycle of this *Idothea* is thus:

"1) Embryo-development and the newborn young ones in the mothers' brood-pouch (June 30, 1914).

"2) The just 'emerged' young ones are pelagic, swimming in the water in the late summer and fall (September-October, 1913).

"3) The older young ones live burrowing in the bottom-mud in the littoral region (August 14, 1915).

"4) The older (until fullgrown) ones are predaceous, crawling widely around on the bottom, and often ascending creeks to lakes (1913-16)."

Station 48a. Bathurst inlet, Northwest Territories, from stomach of female *Cottus quadricornis* May, 1916. 2 adult specimens.

Station 48b. From stomach of 2 tomcods, Banks peninsula, Bathurst inlet, Northwest Territories, May 18, 1916. 1 adult (fragmentary).

Station 49x. From stomach of *Cottus quadricornis*, Bernard harbour, Northwest Territories, July 10, 1916. 1 adult specimen.

Station 53c. Sandspit at cape Bathurst, Northwest Territories, July 26, 1916. 1 adult specimen.

Station 58c. Barter island, Alaska, August 10, 1918, J. Hadley, collector. 2 specimens.

Herschel island, Yukon Territory, Rev. I. O. Stringer, collector, 1904? 2 specimens.

Fullerton, west side of Hudson bay, Northwest Territories, September, 1904—beach? *Neptune* Expedition, A. Halkett, collector. 1 fragmentary specimen.

I have examined material in the collections of the U. S. National Museum from the following localities:

North America: Cat. No. 9398, Nakvak, Labrador, S. M. Turner, collector, October, 1883, 13 specimens; Cat. No. 2431, mouth of Anderson river, north of Great Bear lake, Canada, R. McFarlane, Hudson's Bay Company, 25 plus specimens; Cat. No. 7863, Ooglaamii, near cape Smyth, west of point Barrow, Alaska, July 30, 1882, Point Barrow Exped., "629," U. S. Signal Service, 1 specimen, beach; Cat. No. 7866, cape Smyth, west of point Barrow, Alaska, beach, September 12, 1882, Point Barrow Expedition, U. S. Signal Service, 2 specimens; Cat. No. 20425, Icy cape, Arctic ocean, between tides to five fathoms, sand, gravel, Wm. H. Dall, collector, 15 specimens; Cat. No. 12336, Coal station, near cape Lisburne, Alaska, beach after a four day's northwest gale, September 11-15, 1885, Henry D. Wolfe, collector, 2 specimens; Cat. No. 20423, Chamisso harbour, Kotzebue sound, Alaska, 5-8 fathoms, sand, Wm. H. Dall, collector, 6 specimens; Cat. No. 43211, Norton sound, Alaska, E. W. Nelson, collector, 1 specimen; Cat. No. 5161, St. Michaels, Alaska, August or September, 1877, E. W. Nelson, collector, 1 specimen; Cat. No. 3274, St. Michaels, Alaska, "common along the beach," summers 1874-1875, L. M. Turner, collector, 11 specimens; Cat. No. 4645, off the mouth of the Yukon river, 3½ fathoms, June, 1877, E. W. Nelson, collector, 2 specimens; Cat. No. 6278, Bristol bay, Alaska, September 27, 1883, C. L. McKay, collector, 4 specimens; Cat. No. 20424, port Moller, Bering sea, beach to 15 fathoms, Wm. H. Dall, collector, Orig. No. 1181, 2 specimens; Cat. No. 20426, Alaskan collection of Wm. H. Dall, 1 very large specimen; Cat. No. 20422, lat. N. 48° 29' 00", long. W. 124° 55' 00", off British Columbia, Station 3230, U. S. Bureau of Fisheries steamer *Albatross* collector, 53 fathoms, 10 plus specimens; Cat. No. 22617, Pacific Grove, California, J. O. Snyder, collector, July, 1895, 3 specimens.

Asia:

Cat. No. 39300, Petropavlovsk, Avatcha bay, Kamchatka, U. S. Bureau of Fisheries steamer *Albatross*, collector, 1906, 1 specimen.

Europe:

Cat. No. 17242, Kara sea, steamer *Dijmphna*, 1882-1883, received from the Royal Zoological Museum, Copenhagen, 3 specimens; Cat. No. 3231, Baltic sea, 5 specimens; Cat. No. 3303, Kielerbucht, Germany, 2 specimens.

Mesidotea sabini (Krøyer).

- 1846-49. *Idotea sabini* KRØYER, Nat. Tidsskr. (2), II, p. 401.
 1857. *Idotea sabini* REINHARDT, Natur. Bidrag til en Beskrivelse af Grønland, p. 34.
 1875. *Idotea sabini* LÜTKEN, List of Crust. of Greenland in Arctic Manual, p. 149.
 1877. *Idotea sabini* SARS, Arch. f. Math. og Naturvidensk., II, p. 350.
 1882. *Idotea sabini* STUXBERG, Vega Exped. Vetensk. Iakttag, vol. 1, p. 716.
 1883. *Glyptonotus sabini* MIERS, Journ. Linn. Soc. London, XVI, pp. 15-17, pl. 1, figs. 3-5.
 1887-88. *Glyptonotus sabini* HANSEN, Videnskabelige Meddelelser fra den naturhistoriske Forening i Kjøbenhavn, p. 187.
 1895. *Glyptonotus sabini* AXEL OHLIN, Akademisk Afhandling, XXII, pp. 13-14.
 1899. *Glyptonotus sabini* RICHARDSON, Proc. U. S. Nat. Mus., XXI, p. 844.
 1899. *Glyptonotus sabini* RICHARDSON, Ann. Mag. Nat. Hist. (7), IV, p. 263.
 1900. *Chiridotea sabini* STEBBING, Ann. Mag. Nat. Hist. (7), V, p. 14.
 1900. *Chiridotea sabini* RICHARDSON, American Naturalist, XXXIV, p. 226.
 1901. *Chiridotea sabini* RICHARDSON, Proc. U. S. Nat. Mus., XXIII, p. 538.
 1905. *Mesidotea sabini* RICHARDSON, Bull. 54, U. S. Nat. Museum, p. 350, figs. 377 a-b.
 1909. *Mesidotea sabini* G. O. SARS, Sec. Arc. Exp. Fram. Videnskabs-Selskabet i Kristiania, No. 18, p. 9.
 1916. *Mesidothea sabini* HANSEN, Danish Ingolf Exped., Crust. Malacost. vol. 3, pt. 5, p. 15, figs. 4a-4b.

Range: This species has been definitely recorded from the Siberian polar sea, as far east as long. 170° 17' E., westward to Spitzbergen; but is not known in Jan Mayen and East Greenland; it is definitely recorded from West Greenland and various localities in arctic North America between Labrador on the east coast and Bristol bay, Alaska, on the west coast.

This species was only taken at one station by the Canadian Arctic Expedition; namely,

Station 27s. Off Collinson point, Alaska, October 2-7, 1915. 1 adult and 1 young specimen.

Mr. Johansen's field notes cited above (*Mesidotea entomon* (Linn.) of Stations 27, 28) may apply to this species also.

The type locality of this species is given by Krøyer (1846) as: Julianehaab, Greenland, collected in 1840; in his description of the new species he directs attention to the fact that in 1838, in a discussion of Greenland Amphipoda he commented on *Idothea* from the Polar sea which he believed distinct from *Mesidotea entomon*, but refrained from describing for lack of material.

West Greenland:

Lat. 76° 09' N., 17-25 fathoms (Ohlin); Lat. 76° 07' N., 5-12 fathoms (Hansen); some places in the inner part of northern Stromfjord, lat. 67° 40' N., in depths from 21 down to about 173 fathoms, temperature from slightly above zero to 1.5° (Stephensen), cape Dudley Digges and Julianehaab, South Greenland; Ivsugigsok.

North America:

Lat. N. 73° 43', long. W. 78° 48'; northeast off Cockburn island, lat. N. 71° 57', long. W. 73° 56', northeast off cape Bowen; lat. N. 66° 33', long. W. 61° 50', Exeter sound, Davis strait; Ellesmere land, in Gaase fjord, 10-15 fathoms (Sars); cape Faraday, Repulse bay, Canada; Cat. No. 38411, U. S. N. M., outside Hebron, Labrador, August 6, 1903, 80 fathoms, gravel, Owen Bryant collector, 1 specimen; Cat. No. 38423, outside Hebron, Labrador, August 25, 1908, 100 fathoms, mud, 4 specimens; Cat. No. 38412, halfway from cape Mugford to Hebron, Labrador, August 23, 1908, 60 fathoms, mud and sand, Owen Bryant collector, 1 specimen; Cat. No. 7847, cape Smyth, Alaska, shore to 15 fathoms,

mud, Point Barrow Expedition, August 14, 1882, August 7, 1883, U. S. Signal Service, 11 specimens; Cat. No. 7865, beach Ooglaamic, Alaska, Point Barrow Expedition, October 5, 1881, U. S. Signal Service, 9 specimens; Cat. No. 7864, beach, Point Barrow, Alaska, Point Barrow Expedition, September, 1882, U. S. Signal Service, 1 specimen; Cat. No. 6690, U. S. N. M., Bristol bay, Alaska, C. L. McKay, September 27, 1883, 25 plus juvenile specimens.

Europe:

Common in the Kara sea, 8-100 fathoms (Stuxberg, Hansen); between Nova Zembla and Franz Josef land (Heller) several captures from Barent's sea, 54-175 fathoms (Hock, Weber, Stebbing); Storfjord, Spitzbergen, (Stebbing) between northeast Norway and East Spitzbergen, lat. 73° 25' N., long. 31° 10' E., 197 fathoms, temperature 2·2 (Sars).

Genus *Idothea* J. C. Fabricius.

Idothea ochotensis Brandt.

1851. *Idothea ochotensis* BRANDT, Middendorff's Sibirische Reise 2, Crust., p. 145, pl. 6, fig. 33.
 1883. *Idothea ochotensis* MIERS, Jour. Linn. Soc. London, 16, p. 32, pl. 1, figs. 8-10.
 1899. *Idothea ochotensis* RICHARDSON, Proc. U.S. Nat. Mus., 21, p. 846.
 1899. *Idothea ochotensis* RICHARDSON, Ann. Mag. Nat. Hist. 7, 4, p. 265.
 1900. *Idothea ochotensis* RICHARDSON, American Naturalist, 34, p. 227.
 1904. *Idothea ochotensis* RICHARDSON, Harriman Alaska Exped. Crust. 10, p. 219.
 1904. *Idothea ochotensis* RICHARDSON, Proc. U.S. Nat. Mus., 27, p. 663.
 1904. *Idothea ochotensis* RICHARDSON, Bull. U. S. Fish Comm., p. 216.
 1905. *Idothea ochotensis* RICHARDSON, Bull. 54, U. S. Nat. Mus., p. 366, fig. 396.

Range: Bering sea: North America: southward to San Francisco bay, California: Asia: Plover bay southward to Yedo island, Japan.

Localities recorded: Cat. No. 49024, St. Paul island, Alaska, G. D. Hanna, collector, 1 specimen; Cat. No. 45511, "sea at low tide," 1 specimen from the same place, collected by the U.S. Bureau of Fisheries; Cat. No. 45519, 4 specimens, from the same locality, W. L. Hahn, collector; Cat. No. 22778, 2 specimens from the same place, Wm. Palmer, collector; Cat. No. 15363, 10 specimens from "mouth of sculpin," from the same locality, also collected by William Palmer. Cat. No. 15364, ten plus specimens, from the same source; Cat. No. 20431, 1 specimen, collected by the U.S. Bureau of Fisheries Steamer *Albatross* at the same island; Cat. No. 22771, 1 specimen from a salt lagoon, St. Paul island, Cat. No. 50370, 9 specimens collected by G. Dallas Hanna, on the beach at low tide, East landing, St. George island, Alaska; Cat. No. 22780, Kyska, Alaska, 2 specimens, collected by W. H. Dall; Cat. No. 22779, 1 immature specimen from the same place by the same collector; Cat. No. 20432, 4 specimens "Beach, low water," Kyska harbour, by the same collector; Humboldt harbour, west side of Popof island, Shumagin islands, by the Harriman Alaska Expedition; Cat. No. 20463, Chignik bay, Alaska, 7-18 fathoms, one specimen collected by W. H. Dall; Cat. No. 48817, Wrangel, Alaska, 1 young specimen, collected by E. P. Walker; Cat. No. 30258, shore, Karta bay, at head of Kasaan bay, Prince of Wales island, south eastern Alaska, 1 specimen, collected by the U. S. Bureau of Fisheries Steamer *Albatross*; British Museum collections, 1 male specimen from British Columbia, J. K. Lord, Vancouver island, collected by the Boundary Commission; Cat. No. 50560, U. S. N. M., Pacific City, M. E. Peck, collector, 2 specimens, Land's End and Fort Point, vicinity San Francisco bay, collector Wm. E. Ritter; Cat. No. 22749, U. S. N. M., Halfmoon bay, California, 1 specimen taken by the U. S. Bureau of Fisheries Steamer *Albatross*.

Asia: Cat. No. 31018, Plover bay, East Siberia, W. H. Dall, collector, 1 specimen; Cat. No. 39272, Nikolski, Bering island, "on shore," 1 specimen collected by the U. S. Bureau of Fisheries steamer *Albatross*; Cat. No. 39271, 4 specimens from the same place by the same collector; Cat. No. 22773, 4 specimens from the same locality by the same collector; Cat. No. 21820, 2 specimens also from the same source; Cat. No. 22774, 6 specimens from the same locality collected by Leonhard Stejneger, July, 1897; Cat. No. 22775, 12 plus specimens from Bering island by the same collector, 1882-83; Cat. No. 22774, 8 specimens from Bering island, collected by N. Grebnitski, in 1884; Awaatsch bay, southeast Kamchatka, Wosnesenski, collector, *type locality* (Brandt); Cat. No. 13462, Petropavlovsk, Kamchatka, 11 specimens, collected by Leonhard Stejneger in 1882, 83; Cat. No. 13464, 10 plus specimens from the same place by the same collector; Cat. No. 39889, 15 plus specimens from the same place, collected by the U. S. Bureau of Fisheries steamer *Albatross* in 1906; Cat. No. 39891, 1 specimen from the same place by the same collector, Okhotsh sea, von Middendorff, collector, *type locality* (Brandt); Cat. No. 22772, Robben island, vicinity of southeast coast of Kamchatka, 1 specimen, "On the surface" collected by the *Albatross*; Cat. No. 39329 20 specimens from Milne bay Simushir island, Japan, collected by the *Albatross*, June, 1906; "the eastern coast of Asia northward from the sea of Japan" (Miers); British Museum collections, 1 male captured by Capt. St. John, off the northeast of Yedo island, Japan; Paris Museum collections (?) 2 males from the Amur, M. A. Edwards. (Miers).

Genus *Synidotea* Harger.

Synidotea bicuspidata (Owen).

1839. *Idotea bicuspidata* OWEN, Crustacea of the *Blossom*, p. 92, pl. 27, fig. 6.
 1877. *Idotea pulchra* LOCKINGTON, Proc. Cal. Acad. Sci., 7 p. 44.
 1883. *Edotea bicuspidata* MIERS, Journ. Linn. Soc. London, 16, p. 66.
 1885. *Synidotea bicuspidata* SARS, Crust. Norwegian North Atlantic Exploring Exped. p. 116, pl. 10, figs. 24-26.
 1897. *Synidotea bicuspidata* BENEDICT, Proc. Acad. Nat. Sci. Phila., pp. 391-392.
 1899. *Synidotea bicuspidata* RICHARDSON, Proc. U. S. Nat. Mus. 21 p. 848.
 1899. *Synidotea bicuspidata* RICHARDSON, Ann. Mag. Nat. Hist., ser. 7, 4 p. 268.
 1900. *Synidotea bicuspidata* RICHARDSON, American Naturalist, 34, p. 228.
 1905. *Synidotea bicuspidata* RICHARDSON, Bull. 54, U. S. Nat. Mus., p. 385.

Range: North America: Point Franklin, Alaska, to north of Amak island, Alaska; Europe, Aberdore channel to northwest coast of Spitzbergen; Asia in the North Siberian sea.

Localities recorded: Cat. No. 7848, ten miles west of Point Franklin, Alaska, 13½ fathoms, sandy bottom, 300 plus specimens collected by the Point Barrow Expedition in 1883; Cat. No. 20418, near Point Belcher, Arctic ocean, 9 fathoms, sandy bottom, 5 specimens collected by Wm. H. Dall; Cat. No. 14283, Icy cape, Arctic ocean, 7-15 fms., sandy bottom, 3 specimens by the same collector; Cat. No. 20447 off cape Sabine, 13 fathoms, gravel, two specimens by the same collector; Cat. No. 20417, off Indian Point, Bering strait, 17 fathoms, 25 plus specimens, by the same collector; Cat. No. 20421, Norton sound, Alaska, lat. 63° 37' N., long. 165° 19' W., 12 fathoms, 2 specimens, collected by Lt. Geo. M. Stoney, U. S. N.; head of Norton sound, Alaska, 5 fathoms, 10 specimens, collected by the Point Barrow Expedition, 1883; Cat. No. 4650, off mouth of Yukon river, 3½ fathoms, 7 specimens, collected by E. W. Nelson, June, 1877; Cat. No. 13640, U.S.N.M., lat. 62° 54' N., long. 166° 38' W., off southern end Norton sound, 2 specimens, collected by Lieut. G. M. Stoney, U.S.N.; also the following lots collected by the U.S. Bureau of Fisheries Steamer *Albatross*; Cat. No. 25087, Station 3508, Bering sea between Pribilof islands and cape Newenham,

Alaska, 23 fathoms, 2 specimens; Cat. No. 3306, off Bristol bay, Alaska, 33 fathoms, 4 specimens; Cat. No. 22654, Station 3303, off Bristol bay, Alaska, 1 specimen; Cat. No. 25082, Station 3251, between Bristol bay and Pribilof islands, 25½ fathoms, 1 specimen; Cat. No. 39336, Station 3253, between Bristol bay and Pribilof islands, 36 fathoms, 6 specimens; Cat. No. 39884, Station 3255, north of Unimak island, Alaska, 43 fathoms, 2 specimens; Cat. No. 25083, Station 3254, north of Unimak island, Alaska, 46 fathoms, 1 specimen; Cat. No. 25084, Station 3257, northwest of Unimak island, Alaska, 81 fathoms, 2 specimens; Cat. No. 39883, Station 3256, North of Unimak island, Alaska, 49 fathoms, 1 specimen; Cat. No. 31026, Station 2842, off North head, Akutan island, Alaska, 72 fathoms, 2 specimens; Cat. No. 20413, Bering sea, lat. 60° 22' N., long. 171° 42' W., Station 3518, 36 fathoms, 4 specimens; Cat. No. 22656, Station 3519, Bering sea, lat. 60° 06' N., long. 171° 65' W., 37 fathoms, 12 specimens; Cat. No. 20412, Station 3508, Bering sea, lat. 58° 33' N., long. 164° 49' W., 23 fathoms, 2 specimens; Cat. No. 20414, Station 3527, Bering sea, lat. 57° 48' N., long. 171° 21' W., 52 fathoms, 1 specimen; Cat. No. 20408, Bering sea, lat. 57° 27' N., long. 160° 23' W., Station 3303, 7 specimens; Cat. No. 20410, Station 3485, Bering sea, lat. 57° 18' N., long. 172° 34' W., 62 fathoms, 1 specimen; Cat. No. 20409, Station 3483, Bering sea, lat. 57° 18' N., long. 171° 54' W., 2 specimens; Cat. No. 20402, Bering sea, lat. 57° 05' N., long. 164° 27' W., Station 3253, 36 fathoms, 50 plus specimens; Cat. No. 22650, 20 plus specimens from the same station; Cat. No. 20415, Station 3556, Bering sea, lat. 56° 52' 30" N., long. 170° 33' W., 49 fathoms, 1 specimen; Cat. No. 41005, Station 3289, off Seal islands, Alaska, lat. 56° 44' N., long. 159° 16' W., 16 fathoms, 1 specimen; Cat. No. 20404, Station 3255, Bering sea, lat. 56° 33' N., long. 164° 31' W., 10 plus specimens; Cat. No. 22653, Station 3282, off Khondoubine islands, Alaska, lat. 56° 30' N., long. 161° 50' W., 53 fathoms, 3 specimens; Cat. No. 25086, 3 specimens from the same station; Cat. No. 25085, Station 3279, off Khondoubine islands, Alaska, lat. 56° 25' N., long. 162° 39' W., 41 fathoms, 2 specimens; Cat. No. 22352, Station 3281, off Khondoubine islands, Alaska, 37 fathoms, 1 specimen; Cat. No. 22651, Station 3272, north of Amak island, Alaska, 31 fathoms, 1 specimen; Cat. No. 21251, without specific data, from the North Pacific, 25 plus specimens; Cat. No. 20420, 32 specimens, collected by the United States Revenue Ship *Corwin* in Alaskan Explorations, 1884.

Europe: Cat. No. 31567, Aberdore channel, E. of Alger island, June, 1901, 1 specimen with young, collected by the Baldwin-Ziegler Polar Expedition; Cat. No. 17246, 2 specimens from the Kara sea, received from the Royal Zoological Museum, Copenhagen and collected by the Steamer *Dijmphna*, 1882-83; Magdalen bay, fjord filled with ice cold water on the northwest coast of Spitzbergen, 1 female taken by the last cruise of the Norwegian North Atlantic Expedition.

Asia: Sars states that Stuxberg records this species as occurring and not infrequently in the "North Siberian Sea."

Synidotea nodulosa (Krøyer).

1846. *Idothea nodulosa* KRØYER, Naturhistorisk Tidsskrift (2), II, p. 100.
 1849. *Idothea nodulosa* KRØYER, Voy. en Scand. Crust., p. 26, fig. 2.
 1857. *Idothea nodulosa* REINHART, Gronlands Krebsdyr, p. 34.
 1875. *Idothea nodulosa* LÜTKEN, Crustacea Greenland, p. 150.
 1878. *Synidotea nodulosa* HARGER, Am. Journ. Sci. (3), XV, p. 374.
 1879. *Synidotea nodulosa* HARGER, Proc. U. S. Nat. Mus., p. 160.
 1880. *Synidotea nodulosa* HARGER, Report, U. S. Commissioner of Fish and Fisheries, Pt. 6, p. 331-352, pl. 6, figs. 33-35.

1880. *Synidotea nodulosa* S. I. SMITH, Report of Progress of the Geological Survey of Canada, p. 218.
1883. *Edotea nodulosa* MIERS, Journ. Linn. Soc. London, Zool. XVI, p. 67.
- 1887-88. *Edotea nodulosa* HANSEN, Videnskabelige Meddelelser fra den Naturhistoriske Forening i Kjöbenhavn, p. 188.
1897. *Synidotea nodulosa* BENEDICT, Proc. Acad. Nat. Sci. Phila., p. 398-399.
1900. *Synidotea nodulosa* RICHARDSON, American Naturalist, 34, p. 228.
1901. *Synidotea nodulosa* RICHARDSON, Proc. U. S. Nat. Mus., vol. 34, p. 541-542.
1901. *Synidotea nodulosa* OHLIN, Bihang till K. Sv. Vet. Akad. Handl. XXVI, Afd. IV, No. 12, p. 29.
1905. *Synidotea nodulosa* RICHARDSON, Bull. 54, U. S. Nat. Mus., p. 388.
1916. *Synidothea nodulosa* HANSEN, Danish Ingolf Exped., Crust. Malacostraca, vol. 3, part 5, p. 191.

Localities recorded: North America, West Greenland—Godhavn, lat. 69° 14' N., 8-10 fathoms, sand; lat. 66° 46' N., long. 54° 10' W., 18 fathoms, stones with *Balani*, and southern Greenland, living in sand; *type locality*, Nova Scotia, Middle Ground, Halifax, and Georges banks; north of Queen Charlotte island, British Columbia, 111 fathoms.

Europe: West Spitzbergen, 61 fathoms (G. O. Sars); between Reindeer point and Fox glacier, also west Spitzbergen (Ohlin); on the west coast of Novaya Zembla from 3-6 to 5-20 fathoms (Stuxberg); in Jugor Schar, 6 fathoms, and 5-8 fathoms (Hansen, Stuxberg); and some places in the Kara sea 8-11 fathoms (Stuxberg).

Asia: Miers records "a large series of both sexes from the sea of Mourman, near the Yenissei gulf, Siberia, collected by the Swedish Expedition of 1875-76.

Distribution: This species has been recorded from near the mouth of the Yenissei gulf westward in the Kara sea, Jugor Schar, the west coast of Novaya Zembla, and West Spitzbergen. In North America it has been recorded on the east coast from West Greenland, Godhavn, latitude 69° 14' N., southward. This species generally occurs in rather low water among the stones, sand, algæ, etc., but has been taken from a depth of 111 fathoms (S. I. Smith). Ohlin describes the colour as "a uniform dark olive green, sometimes on the epimeres with a trace of purplish spots."

Synidotea laevis Benedict.

1897. *Synidotea laevis* BENEDICT, Proc. Acad. Nat. Sci. Phila., pp. 399-400.
1899. *Synidotea laevis* RICHARDSON, Proc. U. S. Nat. Mus. 21, p. 849.
1899. *Synidotea laevis* RICHARDSON, Ann. Mag. Nat. Hist., ser. 7, vol. 4, p. 269.
1900. *Synidotea laevis* RICHARDSON, American Naturalist, 34, p. 228.
1905. *Synidotea laevis* RICHARDSON, Bull. 54, U. S. Nat. Mus., 1905, p. 389.

Range: Bristol bay to Pribilof islands.

Localities recorded: Cat. No. 20501, U. S. N. M., U. S. Bureau of Fisheries Station 3252, between Bristol bay and Pribilof islands, *type locality*, 29½ fathoms, steamer *Albatross* collector, 25 specimens; Cat. No. 45603, U. S. Bureau of Fisheries Station 3253, between Bristol bay and Pribilof islands, 36 fathoms, *Albatross* collector, 1 specimen; Cat. No. 39270, 6 specimens from the same source; Cat. No. 25101, 7 specimens; Cat. No. 22657, 11 specimens, from the same source, but bearing the additional data "from sponges"; Cat. No. 21261, U. S. Bureau Fisheries Station 3235, Bristol bay, lat. 58° 16' N., long. 158° 13' W., 11 fathoms, 20 plus specimens; Cat. No. 22658, 1 specimen, without locality.

Synidotea muricata (Harford).

1877. *Idotea muricata* HARFORD, Proc. Cal. Acad. Sci., 7, pt. 1, p. 117.
 1897. *Synidotea muricata* BENEDICT, Proc. Cal. Acad. Nat. Sci. Phila., p. 400.
 1899. *Synidotea muricata* RICHARDSON, Proc. U. S. Nat. Mus. 21, p. 849
 1899. *Synidotea muricata* RICHARDSON, Ann. Mag. Nat. Hist., series 7, vol. 4,
 p. 269.
 1900. *Synidotea muricata* RICHARDSON, American Naturalist, 34, p. 228.
 1905. *Synidotea muricata* RICHARDSON, Bull. 54, U. S. Nat. Mus., p. 390.

Range: Icy cape to northern California.

Localities recorded: Icy cape, lat. 70° 15' N., long. 162° 55' W., 25 fathoms, *type locality*; also lat. 41° 03' N., long. 154° 15' W., Pacific ocean, off northern California, Lt. Geo. M. Stoney, U.S.N., collector, 7 specimens, Cat. No. 21265, U. S. N. M.

Synidotea picta Benedict.

1897. *Synidotea picta* BENEDICT, Proc. Acad. Nat. Sci. Phila., pp. 401-402.
 1899. *Synidotea picta* RICHARDSON, Proc. U. S. Nat. Mus. 21, p. 849.
 1899. *Synidotea picta* RICHARDSON, Ann. Mag. Nat. Hist., ser. 7, vol. 4, p. 269.
 1900. *Synidotea picta* RICHARDSON, American Naturalist, 34, p. 228.
 1905. *Synidotea picta* RICHARDSON, Bull. 54, U. S. Nat. Mus., p. 391.

Range: Alaska: Cape Lisburne to the Shumagin islands.

Localities recorded: Cat. No. 13325, Cape Lisburne, Alaska, approximately lat. 68° 50' N., long. 166° 05' W., 5-7 fathoms, W. H. Dall, collector, 1880, 3 specimens; Cat. No. 13311, mouth of port Clarence, Bering strait, 7-12 fathoms, sandy, 1874, W. H. Dall, collector, 3 specimens; Cat. No. 21360, Norton sound, Alaska, 3 specimens; Cat. No. 20502, U. S. Bureau of Fisheries Station 3600, Aleutian islands, off Unimak island, 9 fathoms, *Albatross*, collector, 7 specimens, *cotypes*; Cat. No. 22659, anchorage, Big Koniushi island, Shumagins, Alaska, 6-20 fathoms, sand, rocks, W. H. Dall, collector, 1 specimen.

Family ARCTURIDAE.

Genus **Arcturus** Latreille.**Arcturus baffini** Sabine.

1824. *Idotea baffini* SABINE, Suppl. to App. to Capt. Parry's Voyage, p. 228, pl. 1, figs. 4-6.
 1829. *Arcturus tuberculatus* LATREILLE in Cuvier, Règne Animal, 2nd ed., IV, p. 139.
 1836. *Arcturus baffini* WESTWOOD, Trans. Entom. Soc., London, I, p. 72.
 1840. *Arcturus baffini* MILNE EDWARDS, Hist. Nat. Crust., III, p. 123, pl. xxxi, fig. 1.
 1885. *Arcturus baffini* G. O. SARS, Den Norske Nordhavs Expedition, Zool., Crust., I, p. 97, pl. ix, figs. 1-21.
 1886. *Arcturus baffini* BEDDARD, Report on the Scientific Results of the Exploring Voyage of H.M.S. *Challenger*, Zool., XVII, pl. xx, fig. 12.
 1887-88. *Arcturus baffini* HANSEN, Vid. Medd. Naturh. Foren. i Kjøbenhavn, pp. 188-189.
 1895. *Arcturus baffini* AXEL OHLIN, Akademisk Afhandling, XXII, pp. 15-18.
 1898. *Arcturus baffini* BENEDICT, Proc. Biol. Soc. Washington, XII, p. 43.
 1900. *Arcturus baffini* RICHARDSON, American Naturalist, XXXIV, p. 230.
 1901. *Arcturus baffini* RICHARDSON, Proc. U. S. Nat. Mus., XXIII, p. 549.
 1901. *Arcturus baffini* ORTMANN, Proc. Phila. Acad. Nat. Sci., pp. 156-157.

1904. *Arcturus baffini* NORMAN, Ann. Mag. Nat. Hist. (7), XIV, pp. 444-445.
 1905. *Arcturus baffini* RICHARDSON, Bull. 54, U. S. N. M., p. 338.
 1909. *Arcturus baffini* G. O. SÆRS Sec. Arc. Exped. Fram. Videnskabs-Selskabet i Kristiania, No. 18, p. 8.
 1916. *Arcturus baffini* HANSEN, Danish Ingolf Exped. Crust., Malacost., vol. 3, pt. 5, p. 192.

Localities recorded:

Station 62c, 1 mutilated specimen, 20 miles off Churchill river, 30 fathoms, clay, mud, gravel and stones, September 2, 1887, "*Diana*" Hudson Bay Exploring Expedition, 1 specimen; without locality, probably "*Neptune*" Expedition, 1903-04, A. Halkett, collector, 3 specimens.

From stomach of *Cottus groenlandica*; Cumberland gulf, east of Blackhead island, September 4, 1904, "*Neptune*" Expedition, A. Halkett, collector, 1 mutilated specimen.

I have also seen the following representatives of this species in the collections of the U. S. National Museum: Cat. No. 26649, Ellesmere land, or Greenland, R. Stein, collector, 1 specimen; Cat. No. 24924, cape Alexander, 27 fathoms, Princeton Expedition, 10 specimens; Cat. No. 24923, Granville bay, 20-30 fathoms, Princeton Expedition, 20 specimens; Cat. No. 21254, lat. 43° 55' N., long. 49° 08' W., 110-150 fathoms, collected October 12, 1881, by Capt. Geo. A. Johnston; Cat. No. 6276, 3 specimens without data.

Sabine records the *type material* from Beechey island, arctic America, about long. 91° W.; Grinnell land; Floeberg beach; Dobbin bay, 30 fathoms; cape Napoleon, 25 fathoms; Franklin Pierce bay, 13-15 fathoms, cape Sabine, Davis strait; *Ingolf* Station 31, lat. 66° 35' N., long. 55° 54' W., 88 fathoms; also Station 34, lat. 65° 17' N., long. 54° 17' W., 55 fathoms.

West Greenland: Cape Alexander, 27 fathoms; cape Chalon, 35 fathoms, McCormick bay; Robertson bay, 5-40 fathoms; Inglefield gulf, 25 fathoms; Olrik, 15-20 fathoms; Murchison sound, 2 stations, 25-50 fathoms, clay; Barden bay, 10-40 fathoms; Granville bay, 10-40 fathoms; Granville bay, 20-40 fathoms; near cape York, 15 fathoms; lat. 76° 10' N., long. 58° 56' W., 200 fathoms, clay; lat. 70° 29' N., long. 55° 40' W., 50 fathoms, hard clay; lat. 68° 28' N., long. 54° 47' W., 184-245 fathoms, lat. 68° 20' N., long. 54° 03' W., 220-280 fathoms; lat. 68° 09' N., long. 56° 32' W., 48 fathoms, sand; lat. 67° 59' N., long. 56° 33' W., 98 fathoms, stones and mud; lat. 66° 44' N., long. 56° 08' W., about 175 fathoms; lat. 66° 32' N., long. 55° 34' W., 100 fathoms; lat. 65° 35' N., long. 54° 50' W., 80 fathoms.

East Greenland: Oresund, 3 stations, 15-50 fathoms; Stormbugt, 2 stations 8-20 fathoms, lat. 77° 35½' N., long. 18° 12' W., 28 fathoms; lat. 77° N., long. 18° 30' W., 300 m.; lat. 72° 53' N., long. 20° 36' W., 96 fathoms; lat. 72° 26' N., long. 19° 35' W., 105 fathoms; Scoresby sound, 5-25 fathoms; Hurry inlet lat. 72° 26' N., 50 fathoms; Henry land, lat. 69° 34' N., 20 fathoms; near Tasiusak lat. 65° 37' N., in 15-30 fathoms.

Europe: West of Spitzbergen, 416 fathoms, temperature 0·8°; between the Faeroes and Norway, 412 fathoms, temperature 1·0°; between Iceland and the Faeroes, especially near the latter from many stations, in depths from 40-133 fathoms; at Vestmanhavn, in about 10 fathoms; southeast of the Faeroes in 620 fathoms; 5 miles east of Seydis fjord, East Iceland, 135 fathoms; and more eastward in 299 fathoms; temperature 0·3; west of Iceland, *Ingolf* Station 87, lat. 65° 02' N., long. 23° 56' W., 110 fathoms; between Iceland and the Faeroes—*Ingolf* Station 4, lat. 64° 07' N., long. 11° 12' W., 237 fathoms; Station 2, lat. 63° 04' N., long. 9° 22' W., 262 fathoms; north of the Faeroes, *Ingolf* Station 143, lat. 62° 58' N., long. 7° 29' W., 388 fathoms.

Distribution. West of Spitzbergen, between the Faeroes and Norway, especially abundant around the Faeroes, known from Iceland from many stations

of both eastern and western Greenland, from several stations in Ellesmere land and Grinnell land; Beechey island, Arctic America, *type locality* and finally from 20 miles off Churchill river.

This species has been recorded from shallow water down to a depth of 610 fathoms; the lowest temperature recorded is 1.1° Northern Stromfjord, West Greenland, but it is also recorded from places with the temperature considerably above zero, for example 5.3° .

Arcturus beringanus Benedict.

1898. *Arcturus beringanus* BENEDICT, Proc. Biol. Soc. Washington, 12, pp. 46-47.
 1899. *Arcturus beringanus* RICHARDSON, Proc. U. S. Nat. Mus., 21, p. 854.
 1899. *Arcturus beringanus* RICHARDSON, Ann. Mag. Nat. Hist., (7), 14, p. 275.
 1900. *Arcturus beringanus* RICHARDSON, American Naturalist, 34, p. 229.
 1905. *Arcturus beringanus* RICHARDSON, Bull. 54, p. 328.

Range: Bristol bay to Unimak pass.

Localities recorded: Cat. No. 20528, U. S. N. M., U. S. B. F. Station 3252 between Bristol bay and Pribiloff island, fathoms, *Albatross* coll., 200 plus specimens, *type material*; Cat. No. 22664, 100 plus specimens from the same station; Cat. No. 25136, 25 plus specimens from the same station; Cat. No. 39261, U. S. B. F. Station 3253, between Bristol bay and Pribilof island, 36 fathoms, *Albatross* coll., 7 specimens; Cat. No. 21255, 5 specimens from the same station; Cat. No. 21256, U. S. B. F. Sta. 3637, Zapadne bay, St. George island, Bering sea, 32 fathoms, *Albatross*, 1 specimen; Cat. No. 22665, U. S. B. F. Sta. 3280, off Khondoubine island, Alaska, lat. $56^{\circ} 27'$, long. $162^{\circ} 08^{\circ}$, 36 fathoms, *Albatross* coll., 2 specimens; Cat. No. 22606, U. S. B. F. Sta. 3546, off Akutan island, Alaska, 36 fathoms, *Albatross*, 4 specimens; Cat. No. 22663, U. S. B. F. Station 2842, off North head, Akutan island, Alaska, 72 fathoms, 1 mutilated specimen; Cat. No. 28560, 1 specimen from the same station; Cat. No. 22662, U. S. B. F. Sta. 2841, off North head, Akutan island, Alaska, 36 fathoms, 1 specimen; Cat. No. 25137, U. S. B. F. Station 3254, north of Unimak island, Alaska, 46 fathoms, *Albatross*, coll., 1 specimen; Cat. No. 25138, U. S. B. F. Station 3222, Unimak pass, Alaska, 50 fathoms, 1 specimen.

Genus **Pleuropriion** zur Strassen.

Pleuropriion murdochi (Benedict).

1898. *Arcturus murdochi* BENEDICT, Proc. Biol. Soc. Washington, 12, pp. 49-50.
 1899. *Arcturus murdochi* RICHARDSON, Proc. U. S. Nat. Mus., 21, p. 855.
 1899. *Arcturus murdochi* RICHARDSON, Ann. Mag. Nat. Hist., 7, 4, p. 277.
 1900. *Arcturus murdochi* RICHARDSON, American Naturalist, 34, p. 230.
 1905. *Arcturus murdochi* RICHARDSON, Bull. 54, U. S. Nat. Mus., p. 342.

Range: So far this species has only been recorded from the type locality.

Locality recorded: Cat. No. 7915, U. S. N. M., 10 miles west of Point Franklin, Alaska, (approximately lat. $70^{\circ} 40^{\circ}$ N., long. $169^{\circ} 20^{\circ}$ W.,) in $13\frac{1}{2}$ fathoms, August 31, 1883, 2 specimens, *cotypes*, collected by the Point Barrow Expedition.

Pleuropriion frigidum Hansen.

1901. *Arcturus hystrix* A. OHLIN, Bihang K. Sv. Vet. Akad. Handl. Vol. 26, Pl. IV. No. 12, p. 30, figs. 6a-6r. (Not *A. hystrix* G. O. Sars).
 1916. *Pleuropriion frigidum* HANSEN, Danish Ingolf Exped. Crust. Malacost., Vol. 3, pt. 5, p. 196, pl. XV, figs. 7a-7b.

Localities recorded: This species has only been recorded from the northern part of the east coast of Greenland; namely, lat. 74° 52' N., long. 17° 16' W., 175 fathoms, many specimens (Nathorst Exp., Ohlin); lat. 72° 53' N., long. 20° 36' W., 96 fathoms, 3 specimens; lat. 72° 27' N., long. 19° 56' W., about 100 fathoms, 1 specimen; lat. 72° 26' N., long. 19° 35' W., 105 fathoms, 5 specimens (by the Ryder Expedition); estuary of Hurry inlet, lat. 70° 50' N., 50 fathoms, 1 specimen (by the Second Amdrup Expedition (Hansen).

Genus *Astacilla* Cordiner.

Astacilla granulata (G.O. Sars).

1877. *Leachia granulata* G. O. SARS, Arch. Math. Nat., 2 p. 351, (251).
 1878. *Astacilla americana* HARGER, Amer. Journ. Sci., 3, 15, p. 374.
 1879. *Astacilla granulata* HARGER, Proc. U. S. Nat. Mus., 2, p. 161.
 1880. *Astacilla granulata* HARGER, Rept. U. S. Comm. Fish and Fisheries, Pt. 6, pp. 364-367, pls. 8, 9, figs. 48-52.
 1885. *Astacilla granulata* SARS, Norw. N. Atlantic Exp. Crust., p. 107, pl. 9, figs. 27-35.
 1887-88. *Astacilla granulata* HANSEN, Vidensk. Meddel. Naturh. Foren. i Kjøbenhavn, pp. 189-190.
 1898. *Astacilla granulata* BENEDICT, Proc. Biol. Soc. Washington, 12, p. 50.
 1900. *Astacilla granulata* RICHARDSON, American Naturalist, 34, p. 230.
 1901. *Astacilla granulata* RICHARDSON, Proc. U. S. Nat. Mus., 23, p. 550.
 1904. *Astacilla granulata* NORMAN, Ann. Mag. Nat. Hist., 7, vol. 14, p. 448.
 1905. *Astacilla granulata* RICHARDSON, Bull. 54, U. S. Nat. Mus., p. 324.
 1916. *Astacilla granulata* HANSEN, Danish Ingolf Exped., Crust. Malacost., vol. 3, pt. t5, p. 100, pl. 15, figs. 9a-b.

Range: This species has been recorded several times well off Norway in the cold area but not far from the limit between this and the warm areas; the same is true of the several records near the Færøes. In North America it has been reported from Baffin bay, off West Greenland, lat. 72° 41' N., southward to Martha's Vineyard.

North America:

Baffins Bay: off West Greenland, lat. 72° 41' N., long. 59° 50' W., 227 fathoms, hard mud; lat. 71° 10' N., long. 58° 56' W., 199 fathoms, mud; lat. 70° 0' N., long. 58° 38' W., 199 fathoms, mud and stones; lat. 69° 16' N., long. 58° 8' W., 183 fathoms, mud and stones, Georges bank, adhering to *Primnoa*, 1877, 3 specimens (Harger's cotypes of *A. americana*), Cat. Nos. 25922 and 35923, U. S. N. M.; Cat. No. 34913, U. S. N. M., Banquereau, lat. 44° 30' N., long. 58° 07' W., 200 fathoms, December 16, 1879, Schooner *Lizzie*, 1 specimen; Cat. No. 35480, U. S. N. M., off Miquelon islands, south of Newfoundland, 7 fathoms, Schooner *Alice M. Williams*, 1 specimen; Cat. No. 39408, U. S. N. M., lat. 43° 48' N., long. 59° W., 250 fathoms, Schooner *Grace L. Fears*, 1 specimen; Cat. No. 35476, U. S. N. M., off Martha's Vineyard, R.I., U. S. Bureau of Fisheries Steamer *Fish Hawk*, Station 1124, 640 fathoms, 1 female; Cat. No. 33478, 1 female from the same Station; Cat. No. 35477, U. S. N. M., off Martha's Vineyard, Station 1122, 351 fathoms, collected by the *Fish Hawk*, 2 specimens, male and female; Cat. No. 37994, U. S. N. M., 1 specimen, on *Crossaster papposus*, locality not given; Cat. No. 5060, 1 specimen without locality.

Europe:

Vestfjord, North Atlantic Expedition, Station 200, lat. 71° 25' N., long. 15° 41' E., 620 fathoms, bottom temperature 1-0°, clay; Station 164, lat. 68° 21' N., long. 40° 10' E., 457 fathoms, sabulous clay; Station 124, Romsdalsfjord,

lat. 66° 41' N., long. 6° 59' E., 350 fathoms, bottom temperature 0·9° coarse clay; between Norway and Iceland, Station 48, lat. 64° 36' N., long. 10° 21' 5'' W., in 299 fathoms, clay and sand, and Station 18, lat. 62° 44' 5'' N., long. 1° 48' E., in 412 fathoms, clayey bottom. Between Iceland and Faeroes: *Ingolf* Station 4, lat. 64° 07' N., long. 11° 12' W., 237 fathoms, temperature 2·5°; Station 2, lat. 63° 04' N., long. 9° 22' W., 545 fathoms, temperature 4·8°; west of the Faeroes, Station 44, lat. 61° 42' N., long. 9° 36' W., 545 fathoms, temperature 4·8°; southwest of the Faeroes, lat. 60° 31' N., long. 9° 18' W., 229 fathoms; southeast of the Faeroes, lat. 60° 10' N., long. 6° 25' W., 620 fathoms, temperature 0·53°.

SUBORDER EPICARIDEA.

Family BOPYRIDAE.

Genus *Bopyroides* Stimpson.*Bopyroides hippolytes* (Krøyer).

1838. *Bopyrus hippolytes* KRØYER, Kongelige Danske Videnskabenes Selskabs naturvidenskabelige og matematiske Afhandlinger, VII, p. 306, (78), pl. iv, fig. 22.
1840. *Bopyrus hippolytes* EDWARDS, Hist. Nat. des Crust., III, p. 283.
1842. *Bopyrus hippolytes* KRØYER, Kongelige Danske Videnskabenes Selskabs naturvidenskabelige og matematiske Afhandlinger, IX, p. 262.
1849. *Bopyrus hippolytes* KRØYER, Voy. en Scand., Crust., pl. xxviii, fig. 2.
1863. *Bopyrus hippolytes* STIMPSON, Proc. Acad. Nat. Sci., Phila., p. 140.
1864. *Bopyroides acutimarginatus* STIMPSON, Proc. Acad. Nat. Sci. Phila., p. 156.
1868. *Gyge hippolytes* BATE AND WESTWOOD, Brit. Sess. Crust., II, p. 230.
1877. *Gyge hippolytes* MIERS, Ann. Mag. Nat. Hist. (4), XIX, p. 64 (14).
1879. *Gyge hippolytes* SMITH, in Harger, Proc. U. S. Nat. Mus., II, p. 157.
1880. *Gyge hippolytes* HARGER, U. S. Fish Comm., Pt. 6, p. 311.
- 1887-88. *Gyge hippolytes* HANSEN, Videnskabelige Meddelelser fra den naturhistoriske Forening i Kjøbenhavn, p. 197.
1895. *Gyge hippolytes* AXEL OHLIN, Akademisk Afhandling, XXII, p. 19.
1900. *Bopyroides hippolytes* G. O. SARS, Crust. of Norway, II, pp. 199-200, pl. LXXXIV, fig. 2.
1900. *Bopyroides hippolytes* BONNIER, Travaux de la station Zool. de Wimereux, VIII, pp. 373-375.
1900. *Bopyroides sarsi* BONNIER, Travaux de la station Zool. de Wimereux, pp. 376-377.
1900. *Bopyroides* sp. BONNIER, Travaux de la Station Zool. de Wimereux, p. 378.
1901. *Bopyroides hippolytes* RICHARDSON, Proc. U. S. Nat. Mus., XXIII, p. 578.
1905. *Bopyroides hippolytes* RICHARDSON, Bull. U. S. Fish Comm., XXIV, pp. 218-219.
1905. *Bopyroides hippolytes* RICHARDSON, Bull. 54, U. S. Nat. Mus., pp. 567-568, fig. 628.
1916. *Bopyroides hippolytes* HANSEN, H. J., Danish Ingolf Expedition, Crust. Malacost. 3, pt. 5, p. 203.

Localities recorded: This species is known to infest the branchial cavities of eight species of *Spirontocaris*, three species of *Pandulus* and one species of *Pandalopsis*.

North America:

I have examined the following specimens: Grinnell land, lat. 81° 44' N., 5½-25 fathoms, on *S. polaris*; Cat. No. 31618, U. S. N. M., 1 specimen on *S. lilljeborgii*, Georges bank, collected by the Schooner *Sultana*; Cat. No. 31619, U. S. N. M., 1 specimen on *S. polaris* from Grand Manan, New Brunswick, 3-20 fathoms; Cat. No. 39425, U. S. N. M., 1 specimen also from

Grand Manan, 40-55 fathoms; Cat. No. 25073, U. S. N. M., 1 specimen on *S. spinus*, Eastport, Maine; Cat. No. 3980, U. S. N. M., 5 specimens, Steamer *Speedwell*, Station 264, five specimens off cape Cod, on *S. lilljeborgii*, 80 fathoms; Cat. No. 3983, U. S. N. M., 8 specimens from *Speedwell* Stations 342-343-344, 94-130 fathoms, from the same host and locality; Cat. No. 34489, U. S. N. M., a single specimen from *Speedwell* Station 344.

West Greenland: Port Foulke; Upernivik, 10 fathoms; also 5-35 fathoms; Lille-Karajak fjord; Egedesminde; Jakobshavn, 10-15 fathoms; Claushaven, 10-15 fathoms; Davis strait, *Ingolf* Station 33, lat. 67° 57' N., long. 55° 30' W.; lat. 66° 44' N., long. 56° 08' W., about 175 fathoms; Ikertok fjord, 30 fathoms; lat. 66° 32' N., long. 55° 34' W., Sukkertoppen, 60-70 fathoms; lat. 62° 58' N., long. 50° 52' W., 25 fathoms, Julianehaab, Akugdlek; Fiskenaes, Bredefjord.

East Greenland: Lat. 77° 31' N., long. 18° 24' W., 275 m.; Stormbugt, 10-20 fathoms; Danmarks havn, 6 stations, 5 to 15 fathoms; Hvalsosodde, 0-3 fathoms; Maroussia, 80-90 fathoms; East Greenland without locality, probably about lat. 74° N.; Sabine island, lat. 74° 30' N.; Hekla Havn, lat. 70° 27' N., Angmagalik, lat. 65° 30' N.; At East Greenland this parasite has been recorded only on *S. polaris*.

Europe: Several places in the Barents sea; from the whole coast of Norway from Vadso, Finmark to Christiania fjord, on *S. polaris*, *S. spinus*, and *S. lilljeborgii*; from Skager Rak, Denmark on *S. lilljeborgii*; also from the Clyde and the south coast of Cornwall; north of Iceland, Station 127, lat. 66 33' N., long. 20° 05', 44 fathoms, on *S. spinus*; East Iceland in Røde fjord, 88 fathoms, on the same host; near the Faeroes, off Akraleite, on *S. lilljeborgii* in about 150 fathoms.

Asia: Cat. No. 39273, U. S. N. M., 1 specimen, off Hime Saki light, Japan, 245 fathoms, host not given, collected by the "Albatross" July 19, 1906; Cat. No. 39274, U. S. N. M., 3 specimens, "Albatross" Station 4788, off north point Copper islands, 57 fathoms, host not given.

I have examined the following material from the west coast of North America:

Cat. No. 28672, U. S. N. M., 1 specimen on *Pandalus borealis* Krøyer from *Albatross* Station 3610, south of Pribilof islands, Bering sea, 75 fathoms; Cat. No. 28674, U. S. N. M., 1 specimen on *Spirontocaris polaris* from *Albatross* Station 3602, west of Pribilof islands, Bering sea; Cat. No. 28673, U. S. N. M., 1 specimen on *P. borealis* Krøyer from Station 3537, north of Umnak islands, Bering sea; Cat. No. 39360, U. S. N. M., 1 specimen from Station 4778, off Semisopochnoi islands, Alaska, 23 fathoms; Cat. No. 28655, U. S. N. M., 1 specimen on *S. spinus* from Bay of islands, Adakh, Alaska, 9-16 fathoms, collected by Wm. H. Dall; Cat. No. 28656, U. S. N. M., 1 specimen on *S. spinus* from the same locality and collector; Cat. No. 28660, U. S. N. M., 1 specimen, on *S. arcuata* Rathbun, from west of Amaknak island, Unalaska, 60 fathoms; Cat. No. 28661, U. S. N. M., 1 specimen on *S. brevisrostris*, Unalaska, collected by S. Applegate; Cat. No. 39302, U. S. N. M., 1 specimen from Unalaska, collected by the *Albatross*; Cat. No. 28663, U. S. N. M., 1 specimen *P. montagui* from *Albatross* Station 2843, off south entrance on Akutan pass, Alaska; Cat. No. 28662, U. S. N. M., 6 specimens on *S. spinus*, Station 2842, off North head, Akutan islands, Alaska, 72 fathoms; Cat. No. 28664, U. S. N. M., 1 specimen, on *P. montagui*, between Bird and Wagai islands, Shumagins, 35 fathoms; Cat. No. 30226, U. S. N. M., 1 specimen, on *S. suckleyi* from *Albatross* Station 4279, Alitak bay, Kodiak islands; Cat. No. 30225, 2 specimens, from the same host and locality; Cat. No. 30224, U. S. N. M., 1 specimen on *S. suckleyi* from Alitak bay, Kodiak islands, *Albatross* collector; Cat. No. 30221, U. S. N. M., 1 specimen on *S. suckleyi*, *Albatross* Station 4268, Afognak bay, Afognak islands, Alaska; Cat. No. 28658, U. S. N. M., 1 specimen

from *S. brevisrostris*, Lituya bay, Alaska, Wm. H. Dall, collector, 6-9 fathoms; Cat. No. 28657, U. S. N. M., 1 specimen with the same data; Cat. No. 28659, U. S. N. M., 1 specimen on *S. arcuata* Rathbun from port Etches, Alaska, 12-18 fathoms, Wm. H. Dall, collector; Cat. No. 30212, U. S. N. M., on *S. herdmani* Walker from Station 4199, Queen Charlotte sound, Vancouver islands, *Albatross* collector; Cat. No. 30213, U. S. N. M., 1 specimen on *P. jordani*, Station 4203, Queen Charlotte sound, off Vancouver islands, *Albatross* collector; Cat. No. 30214, U. S. N. M., 1 specimen from the same host and station; Cat. No. 30215, U. S. N. M., 6 specimens with the same data; Cat. No. 30216, U. S. N. M., 1 specimen with the same data; Cat. No. 30217, U. S. N. M., 1 specimen with the same data; Cat. No. 30218, another specimen with the same data; Cat. No. 30211, U. S. N. M., 1 specimen from Station 4192, gulf of Georgia, Vancouver islands, *Albatross* collector; Cat. No. 30219, U. S. N. M., 1 specimen on *S. suckleyi*, from Admiralty inlet, vicinity of port Townsend, Washington, *Albatross* collector; Cat. No. 30220, U. S. N. M., 1 specimen on *S. suckleyi*, Station 4222, Admiralty inlet, port Townsend, *Albatross* collector; Cat. No. 28666, U. S. N. M., 1 specimen, *Albatross* Station 3443, straits of Fuca, Washington, 97 fathoms; Cat. No. 28667, U. S. N. M., 1 specimen, *Albatross* 3447, straits of Fuca, Washington, *Albatross* collector; Cat. No. 28668, U. S. N. M., 1 specimen on *S. suckleyi*, straits of Fuca, *Albatross* Station 3454, 152 fathoms; Cat. No. 28669, U. S. N. M., *Albatross* Station 3460, straits of Fuca, on *S. suckleyi*, 53 fathoms; Cat. No. 28670, U. S. N. M., 1 specimen on *S. suckleyi*, Station 3461, straits of Fuca, 114 fathoms, *Albatross*, collector; Cat. No. 28671, U. S. N. M., Station 3459, straits of Fuca, on *Pandalopsis dispar* Rathbun, 123 fathoms, *Albatross* collector; Cat. No. 28665, U. S. N. M., 1 specimen on *S. bispinosa* Holmes, Station 2886, Haceta bank, Oregon, *Albatross* collector, 50 fathoms.

Phryxus abdominalis (Krøyer).

- 1840-41. *Bopyrus abdominalis* KRØYER, Nat. Tidsskr., III, pp. 102-112, 289-299, pls. 1, 11.
1842. *Bopyrus abdominalis* KRØYER, Kongelige Danske Videnskabenes Selskabs naturvidenskabelige og matematiske Afhandlinger, IX, p. 263.
1843. *Phryxus hippolytes* RATHKE, Nova Acta Academiae Cæsariæ Leopoldino-Carolinæ Naturæ Curiosorum, p. 40, pl. ii, figs. 1-10.
1849. *Bopyrus abdominalis* KRØYER, Voy. en Scand., Crust., pl. xxix, fig. 1.
1852. *Phryxus abdominalis* LILLJEBORG, Oefvers, Kongl. Vet. Akad. Forh., IX, p. 11.
1861. *Phryxus abdominalis* STEENSTRUP and LUTKEN, Vidensk. Meddelelser, p. 275 (9) (1862).
1868. *Phryxus abdominalis* BATE AND WESTWOOD, Brit. Sessile-eyed Crust., II, p. 234.
1869. *Phryxus abdominalis* NORMAN, Rep. Brit. Assoc., p. 288.
1876. *Phryxus abdominalis* NORMAN, Proc. Royal Soc. Lond., XXV, p. 209.
1877. *Phryxus abdominalis* MIERS, Ann. Mag. Nat. Hist. (4), XIX, p. 65 (15).
1879. *Phryxus abdominalis* SMITH in HARGER, Proc. U. S. Nat. Mus., II, p. 158.
1880. *Phryxus abdominalis* HARGER, Rep. U. S. Fish Comm., Pt. 6, p. 312.
- 1887-88. *Phryxus abdominalis* HANSEN, Videnskabelige Meddelelser fra den naturhistoriske Forening i Kjøbenhavn, p. 196.
1895. *Phryxus abdominalis* AXEL OHLIN, Akademisk Afhandling, XXII, pp. 18-19.
1901. *Phryxus abdominalis* AXEL OHLIN, Bihang till K. Svenska Vet.-Akad. Handl. XXVI, Afd. iv, No. 12, pp. 38-39.
1899. *Phryxus abdominalis* SÆRS, Crust. of Norway, II, pp. 215-217, pls. xc, xci.

1901. *Phryxus abdominalis* RICHARDSON, Proc. U. S. Nat. Mus., XXIII, p. 577.
 1904. *Phryxus abdominalis*, RICHARDSON, Proc. U. S. Nat. Mus., XXVII, pp. 58-59.
 1905. *Phryxus abdominalis* RICHARDSON, Bull. U. S. Fish Comm., XXIV, p. 220.
 1905. *Phryxus abdominalis* RICHARDSON, Bull. 54, U. S. Nat. Mus., p. 500.
 1916. *Phryxus abdominalis* HANSEN, Danish Ingolf Exped., Crust. Malacost. 3, pt. 5, p. 207.

Not taken by the Canadian Arctic Expedition.

Localities recorded:

Europe: Kara sea, also in the straits to the Kara sea; at the west coast of Novaya Zemlia; on *Spirontocaris turgida* in the Barents sea; northeast of Spitzbergen in lat. 80° 15' N., long. 33° 10' E.; at Spitzbergen on *S. gaimardii*, known from the whole coast of Norway from Vadso to Christiani fjord, living on *S. gaimardii*, *S. pusiola*, *S. turgida*, *S. spinus*, *S. lilljeborgii*, *P. borealis*, *P. montagui* and *P. propinquus*; at Denmark, in the Belts, in Kattegat and Skager Rak, on several species of shrimp.

Iceland: North of Iceland: Ingolf Station 127; lat. 66° 33' N., long. 20° 05' W., 44 fathoms, on *P. montagui*, also Ingolf Station 126, lat. 67° 19' N., long. 15° 52' W., 293 fathoms, on *P. borealis*, on the east coast, in Mid fjord, Seydis fjord, and Røde fjord; on the west coast in Skutils fjord, Onundar fjord, Dyre fjord and near Reykjavik; also east of Iceland at lat. 64° 17' N., long. 14° 44' W., 45 fathoms. Not recorded from the Faeroes; but it is known from places in the North sea and from Sussex in the eastern part of the Channel, but according to Hansen, not far from its major western area.

East Greenland: Lat. 77° 31' N., long. 18° 24' W., 146 fathoms; Oresund, 20-30 fathoms, hard bottom, on *S. polaris*; Vestre Havenæs 10-15 fathoms; Stormbugt 10-30 fathoms; Danmarks Havn, several catches, 3 to 15 fathoms, on *S. polaris*, *S. turgida*, *S. gaimardii*; East Greenland, without specific data, about lat. 74° N.; Hekla-Havn, on *S. turgida*.

North America: Grinnell land, lat. 81° 44' N., Discovery Bay, 5½ to 25 fathoms, on *Spirontocaris polaris*; cape Napoleon, 25 fathoms, on the same host; Franklin Pierce bay, 13-15 fathoms; off Baffin island, on *S. polaris* and *S. turgida*, at two places, the most northern being in lat. 73° 48' N.; Davis strait, off or at West Greenland; Inglefield gulf, 25 fathoms, on *S. polaris*; cape Dudley-Digges, 17-25 fathoms, on *S. polaris* and *S. turgida*; Upernavik 10 fathoms on *S. gaimardii* and *S. turgida*; Umanak, Jacobshavn, Egedesminde, Kvanefjord, Bredefjord; Lille-Karajak fjord, lat. 69° 54' N., long. 55° 34' W., 50 fathoms, on *S. spinus*; lat. 69° 29' N., long. 55° 26' W., 116 fathoms, on *S. macilenta*; Ingolf Station 33, lat. 67° 57' N., long. 55° 30' W., 35 fathoms, temperature 0.6°, on six specimens of *S. spinus* and on one specimen of *Pandalus montagui*; lat. 67° 51' N., long. 55° 15' W., 36 fathoms, on *S. spinus*; lat. 66° 56' N., long. 54° 45' W., 24 fathoms, on *S. spinus*; Ikertok-fjord, 30 fathoms, on *S. spinus*; lat. 66° 45' N. (?), long. 59° 30' W., 35 fathoms, on *S. spinus*; lat. 66° 32' N., long. 55° 34' W., 100 fathoms on *S. spinus*; lat. 66° 30' N., long. 54° 50' W., 40 fathoms, on *P. montagui*; Ingolf Station 29, lat. 65° 34' N., long. 54° 31' W., 68 fathoms, temperature 0.2° on 1 specimen of *S. spinus*; Ingolf Station 34, lat. 65° 17' N., long. 55° 17' W., 55 fathoms, on two specimens of *S. spinus* and one of *S. polaris*; lat. 62° 58' N., long. 50° 52' W., about 25 fathoms on *S. turgida*.

I have examined the following material from the east coast of North America:

Cat. No. 38417, U. S. N. M., 1 specimen on *S. macilenta*, halfway from cape Mugford to Hebron, Labrador, 60 fathoms, mud and sand, August 23, 1908, Owen Bryant, collector; Cat. No. 38418, U. S. N. M., on *S. macilenta*, outside of Hebron, Labrador, 75 fathoms, mud, August 25, 1908, Owen Bryant,

collector; Cat. No. 38419, U.S.N.M., 1 female on *S. gaimardii* (M. Edw.) varying toward *S. g. belcheri* (Bell), Nain, Labrador, 7 fathoms, mud, August 18, 1908, Owen Bryant, collector; Cat. No. 38420, U.S. N. M., 1 specimen on *S. macilenta*, Shoal Tickle, southeast of Nain, Labrador, August 15, 1908, Owen Bryant, collector; Cat. No. 28739, U. S. N. M., 2 specimens on *S. gaimardii* (M. Edw.), from *Albatross* Sta. 2446, lat. $46^{\circ} 20' N.$, long. $49^{\circ} 52' W.$; Cat. No. 28739, U.S. N.M., 2 specimens from lat. $46^{\circ} 45' N.$, long. $50^{\circ} 02' W.$, 44 fathoms, June 25, 1885, *Albatross*, collector; Cat. No. 38422, U. S. N. M., 1 specimen on *S. macilenta*, S. by E. from Burin, Placentia bay, Newfoundland, 110 fathoms, rocky, pebbly bottom, Sept. 28, 1908, Owen Bryant collector; Cat. No. 38421, U. S. N. M., on *S. pusiola* from St. Pierre harbour, Newfoundland, 5 fathoms, rock, gravel, Oct. 1, 1908, Owen Bryant; Cat. No. 35566, U.S.N.M., 1 specimen, Steamer *Speedwell* Station 85, off Nova Scotia, 100 fathoms; Cat. No. 35562, U.S.N.M., 2 specimens off Nova Scotia, 1877, collected by the U.S. Fish Commission; Cat. No. 36704, U.S.N.M., 1 specimen on *Pandalus leptocerus*, *Albatross* Station 2059, off George's Bank, 41 fathoms, Aug. 31, 1883; Cat. No. 4807, U. S. N. M., 1 specimen on *P. borealis*, Steamer *Speedwell* Station 211, gulf of Maine, 60 fathoms, 1878, U. S. Fish Commission, collector; Cat. No. 11348, U.S.N.M., 1 specimen from Casco bay, Maine, Aug. 6, 1873, U. S. Fish Commission collector; Cat. No. 35561, U. S. N. M., 2 specimens from Steamer *Speedwell*, Stations 25-33, 48-90 fathoms, 1877, U.S. Fish Commission collector; Cat. No. 35565, U.S.N.M., 1 specimen, *Speedwell* Station 23, off Salem, Mass., 35 fathoms, 1877, U.S. Fish Commission, collector; Cat. No. 35564, U.S.N.M., 1 specimen, *Speedwell* station 30-33, Mass Bay, off Salem, 48-90 fathoms, 1877; Cat. No. 35582, U. S. N. M., 1 specimen, *Speedwell* Station 233, Mass Bay, 45 fathoms, 1878, U.S. Fish Commission, collector; Cat. No. 20971, U. S. N. M., 4 specimens, *Speedwell* Station 307, off cape Cod, Mass., 5 fathoms, U.S. Fish Commission, collector; Cat. No. 31561, U. S. N. M., 3 specimens, Station 984, off Chatham, cape Cod, Mass., 33 fathoms, U.S. Fish Commission, collector; Cat. No. 4002, U. S. N. M., 5 specimens, *Speedwell* Station 249-250, off cape Cod, Mass., on *S. leptocerus*, 30 fathoms, 1879; Cat. No. 4321, U. S. N. M., 2 specimens, *Speedwell* Station 265, off cape Cod, Mass., on *S. securifrons*, 73 fathoms, 1879, U. S. Fish Commission, collector; Cat. No. 2995, U. S. N. M., 2 specimens, on *S. securifrons* from *Speedwell* Station 264, off cape Cod, Mass., 80 fathoms, 1879, U. S. Fish Commission, collector; Cat. No. 4333, U. S. N. M., 1 female on *S. pusiola*, *Speedwell* Station 372, off cape Cod, Mass., 70 fathoms, 1879; U. S. Fish Commission, collector; Cat. No. 4334, U. S. N. M., 2 specimens, on *S. polaris*, *Speedwell* Station 265, off cape Cod, Mass., 73 fathoms, 1879, U. S. Fish Commission, collector; Cat. No. 35257, U. S. N. M., 3 specimens on *P. propinquus*, off Nantucket Shoals, Steamer *Albatross*, collector, 1884; Cat. No. 35356, U. S. N. M., 9 specimens, host not given, *Albatross* Station 2247, South of Nantucket, 78 fathoms, September 27, 1884, U. S. Fish Commission, collector; Cat. No. 36937, U. S. N. M., 1 specimen on *P. leptocerus*, *Albatross* Station 2087, off Martha's Vineyard, 65 fathoms, September 20, 1883, U. S. Fish Commission; Cat. No. 35567, U. S. N. M., 2 specimens on *P. leptocerus*, *Fish Hawk* Station 917, off Martha's Vineyard, 44 fathoms, 1881, U. S. Fish Commission; Cat. No. 31563, U. S. N. M., 4 specimens on *P. leptocerus*, *Fish Hawk* Station 993, off Martha's Vineyard, 39 fathoms, U. S. Fish Commission collector; Cat. No. 31562, U. S. N. M., 3 specimens, *Fish Hawk* Station 989, off Martha's Vineyard, 30 fathoms; Cat. No. 14247, U. S. N. M., 12 specimens, off Martha's Vineyard, 69 fathoms, *Albatross*, collector; Cat. No. 12571, U.S.N.M., 1 specimen, *P. leptocerus*, off Martha's Vineyard, 1882, U. S. Fish Commission; Cat. No. 4808, U. S. N. M., 1 specimen on *S. securifrons*, *Fish Hawk* Station 1125, off Martha's Vineyard, Mass., 291 fathoms, 1882, U.S. Fish Commission, collector; Cat. No. 35261, U. S. N. M., 1 specimen from *Albatross* Station 2239, South of Martha's Vineyard, 32 fathoms, September 26, 1884, U. S. Fish Commission, collector; Cat. No. 39427, U. S. N. M., 6 specimens on *Pandalus*, off Race Point light, Fishers island, N.Y., 27 fathoms, August

25, 1879, Steamer *Speedwell*, collector; Cat. No. 31558, U.S.N.M., 6 specimens on *P. leptocerus* from *Fish Hawk* Station 813, off Block island, 28½ fathoms, U. S. Fish Commission; Cat. No. 31560, U. S. N. M., 1 specimen from Station 815, off Block island, 29 fathoms, *Fish Hawk*, collector; Cat. No. 31559, U. S. N. M., 5 specimens on *P. leptocerus* from Station 814, off Block island, 27½ fathoms, *Fish Hawk*, collector.

I have likewise examined the following material from the west coast of North America:

Cat. No. 28734, U. S. N. M., 1 specimen on *S. gaimardii belcheri* (Bell), Arctic ocean, collected by the U. S. Revenue Ship *Corwin*; Cat. No. 28748 U. S. N. M., 1 specimen on *S. fabricii* from Station 3291, off cape Strogonoff, Alaska, *Albatross*, collector, 26 fathoms; Cat. No. 39319, U. S. N. M., 7 specimens, Station 4782, off East cape, Attu islands, Alaska, 57 fathoms, June 9, 1906, *Albatross*; Cat. No. 28750, U. S. N. M., 1 specimen from Station 3334, Iliuliuk harbour, Unalaska, Alaska, on *S. suckleyi*, 50 fathoms, *Albatross*; Cat. No. 28749, U. S. N. M., 1 specimen, Station 3310, Iliuliuk harbour, Unalaska, on *S. suckleyi*, 58 fathoms; Cat. No. 28471, U. S. N. M., 1 specimen on *S. arcuata* from Station 2842, off North head, Akutan islands, Alaska, 72 fathoms, *Albatross*, collector; Cat. No. 28740, U. S. N. M., 2 specimens on *S. arcuata* also from Station 2842; Cat. No. 28751, U. S. N. M., 1 specimen on *S. biunguis*, Station 3338, off Shumagin bank, Alaska, 625 fathoms, *Albatross*, collector; Cat. No. 30257, U. S. N. M., 1 specimen on *S. suckleyi* from Station 4290, Uyak bay, Kodiak islands, Alaska, *Albatross*, collector, 1903; Cat. No. 30256, U. S. N. M., 1 specimen on *S. macrophthalma* from Station 4230, vicinity of Naha bay, Behm canal, southeast Alaska, *Albatross*, collector, 1903; Cat. No. 30253, U. S. N. M., 1 specimen on *S. macrophthalma*, from Station 4229, vicinity of Naha bay, Behm canal, southeast Alaska, *Albatross*, collector; Cat. No. 287356, 1 specimen on *S. polaris* from Alaska, collected by the U. S. Revenue Ship *Corwin*, Capt. M. A. Healy; Cat. No. 28735, U. S. N. M., 1 specimen on *S. gaimardii belcheri*, from Alaska (?), Wm. H. Dall, collector; Cat. No. 28742, U. S. N. M., 4 specimens on *S. macrophthalma* from Station 2861, off Queen Charlotte sound, British Columbia, 204 fathoms, *Albatross*, collector; Cat. No. 30251, U. S. N. M., 1 specimen from Station 4192, gulf of Georgia, Vancouver island, British Columbia, *Albatross*, collector; Cat. No. 31565, U. S. N. M., 1 specimen on *S. sitchensis* from Fort Rupert, Beaver bay, Vancouver island, British Columbia, June 25, 1903, *Albatross*, collector; Cat. No. 28805, U. S. N. M., 1 specimen on *S. townsendi* from straits of Fuca, Washington, Station 3462, 92 fathoms, *Albatross*, collector; Cat. No. 28753, U. S. N. M., 1 specimen on *S. townsendi*, Station 3443, straits of Fuca, Washington, Station 3462, 92 fathoms, *Albatross*, collector; Cat. No. 28753, U. S. N. M., 1 specimen on *S. townsendi*, Station 3443, straits of Fuca, Washington, 97 fathoms, *Albatross*, collector, Cat. No. 28744, U. S. N. M., 2 specimens on *S. tridens* Rathbun, Station 2864, straits of Fuca, Washington, 48 fathoms, *Albatross*, collector; Cat. No. 28743, U. S. N. M., 2 specimens from Station 2864, straits of Fuca, Washington, 48 fathoms, *Albatross*, collector; Cat. No. 28747, U. S. N. M., 22 specimens, on *S. macrophthalma*, from Station 3076, off Tahwit head, Washington, 178 fathoms, *Albatross*, collector; Cat. No. 28745, U. S. N. M., 3 specimens from Station 2865, Admiralty inlet, Puget sound, 40 fathoms, *Albatross*, collector; Cat. No. 28746, U. S. N. M., 1 specimen on *S. groenlandica* (Fabr.), also from *Albatross* Station 2865; Cat. No. 30250, U. S. N. M., 1 specimen on *S. tridens*, from Station 4220, Admiralty inlet, vicinity of Port Townsend, Washington, *Albatross*, collector; Cat. No. 31564, U. S. N. M., 1 specimen on *S. groenlandica* from Station 4218, Admiralty inlet, vicinity of port Townsend, Washington, 16 fathoms, *Albatross*, collector; Cat. No. 30252, U. S. N. M., 5 specimens, on *S. tridens*, Station 4216, Admiralty inlet, vicinity of Port Townsend, Washington, *Albatross*, collector; Cat. No. 30254, U. S. N. M., 1 specimen on *S. tridens*,

Station 4222, Admiralty inlet, vicinity of Port Townsend, Washington, *Albatross*, collector, 1903; Cat. No. 30253, U. S. N. M., 1 specimen, on *S. tridens* from Station 4222, Admiralty inlet, vicinity of Port Townsend, Washington, *Albatross*, collector, 1903; Cat. No. 28752, U. S. N. M., 1 specimen on *S. macrophthalma*, 239 fathoms, *Albatross*, collector; Cat. No. 31610, U. S. N. M., 1 specimen "unattached," from Station 3479, off San Francisco, California, 276 fathoms, *Albatross*, collector; Cat. No. 33431, U. S. N. M., 1 specimen on *Spirontocaris*, from Station 4533, Monterey bay, California, May 28, 1904, 144-293 fathoms, *Albatross*, collector; Cat. No. 33430, U. S. N. M., 1 specimen "from stomach of skate," Station 4507, Monterey bay, California, May 20, 1904, 308-383 fathoms, *Albatross*, collector; Cat. No. 31609, U. S. N. M., 6 specimens on *S. sica* Rathbun from Station 3195, off San Luis Obispo bay, California, 252 fathoms, *Albatross*, collector; Cat. No. 31608, U. S. N. M., 1 specimen from Station 3191, off San Simeon bay, California, 211 fathoms, *Albatross*, collector.

The following material from Asia has also been examined by the writer:

Cat. No. 28737, U. S. N. M., 1 specimen on *S. polaris*, from Plover bay, east Siberia, 10-25 fathoms, Wm. H. Dall, collector; Cat. No. 28733, U. S. N. M., 1 specimen from *S. polaris*, Plover bay, east Siberia, Wm. H. Dall, collector, original No. 1725; Cat. No. 28806, U. S. N. M., 1 male, probably *P. abdominalis*, from Petropaulski, Kamchatka, Leohnard Stejneger, collector; Cat. No. 39910, U. S. N. M., 3 specimens on *Spirontocaris* sp., from Station 5021, off Saghalin island, 73 fathoms, September 27, 1906, *Albatross*, collector; Cat. No. 39911, U. S. N. M., 1 specimen on *Spirontocaris* from Station 5020, off Saghalin island, 73 fathoms, September 27, 1906, *Albatross*, collector; Cat. No. 39907, U. S. N. M., 2 specimens on *Spirontocaris* from Station 5045, off south coast of Hokkaido, Japan, 359 fathoms, October 3, 1906, *Albatross*, collector; Cat. No. 39909, U. S. N. M., 2 specimens on *Spirontocaris* from off cape Clonard, Japan, July 30, 1906, 400 fathoms, *Albatross*, collector; Cat. No. 39908, U. S. N. M., 5 specimens on *Spirontocaris* species from Station 4992, off Bomasiri Shima, sea of Japan, 325 fathoms, September 22, 1906, *Albatross*, collector; Cat. No. 39275, U. S. N. M., 3 specimens from Station 4814, off North point, Sado islands, Japan, 429 fathoms, July 18, 1896, *Albatross*, collector; Cat. No. 39276, U. S. N. M., 5 specimens on *Spirontocaris*, also from Station 4814.

Family DAJIDAE.

Genus *Dajus* Krøyer.

Dajus mysidis Krøyer.

1849. *Dajus mysidis* KRØYER, Voy. en Scand. Crust., pl. xxviii, fig. 1.
 1867. *Bopyrus mysidium* PACKARD, Mem. Bost. Soc. Nat. Hist., I, p. 295, pl. viii, fig. 3.
 1874. *Leptophryxus mysidis* BUCHHOLZ, Zweite Deutsche Nordpolfahrt, p. 288, pl. ii, fig. 2.
 1875. *Dajus mysidis* LUTKEN, Crustacea of Greenland, p. 150.
 1877. *Dajus mysidis* G. O. SARS, Arch. Math. Nat., II, p. 354 (254).
 1879. *Dajus mysidis* SMITH in HARGER, Proc. U. S. Nat. Mus., II, p. 158.
 1880. *Dajus mysidis* HARGER, Report U. S. Comm. of Fish and Fisheries, Pt. 6, p. 312.
 1887-88. *Dajus mysidis* HANSEN, Videnskabelige Meddelelser fra den Naturhistoriske Forening i Kjøbenhavn, pp. 197-198.
 1899. *Dajus mysidis* SARS, Crust. of Norway, II, pp. 223-224, pls. xciii, xciv.
 1901. *Dajus mysidis* AXEL OHLIN, Bihang till K. Sv. Vet. Akad. Handl., XXVI, Afd. iv, No. 12, p. 39.

1901. *Dajus mysidis* RICHARDSON, Proc. U. S. Nat. Mus., XXIII, p. 579.
 1905. *Dajus mysidis* RICHARDSON, Bull. 54, U. S. Nat. Mus., p. 573.
 1909. *Dajus mysidis* G. O. SARS, Sec. Arc. Exped. Fram. Videnskabs-Selskabet i Kristiania, No. 18, p. 9.
 1916. *Dajus mysidis* HANSEN, H. J., Danish Ingolf Exped., Crust. Malacost. 3, pt. 5, p. 208.

Not taken by the Canadian Arctic Expedition.

Localities recorded:

North America: Five places off the east coast of Baffin land, namely, lat. 73° 48' N., long. 80° 30' W.; lat. 72° 33' N., long. 71° 30' W.; lat. 71° 57' N., long. 73° 56' W.; lat. 66° 33' N., long. 61° 50' W.; lat. 64° 56' N., long. 66° 18' W.; also Labrador.

West Greenland: This parasite has been taken on *Mysis oculata* from the following stations: Murchison sound, about lat. 77° 30' N., 25 fathoms; Duck island, lat. 73° 55' N., 3-15 fathoms; Kingigtok, lat. 73° 17' N., Jacobshavn, lat. 69° 13' N., Claushavn, lat. 69° 05' N., 5-10 and 10-15 fathoms; Egedesminde, lat. 68° 42' N., 20-25 fathoms; Holsteensborg, lat. 66° 56' N., and Brede fjord, about lat. 61° 20' N.

East Greenland: Danmark Havn, lat. 76° 45' N., on *M. oculata* in from 0-5 to 10 fathoms; at Sabine island: Hurry inlet, lat. 70° 50' N., Angmagsalik, lat. 65° 30' N., on *M. oculata* in 10-15 fathoms.

Europe: North of the New Siberian islands; from Kostin Shar, southwest coast of Novaya Zemlia on *M. oculata*; also from Franz Josef land on the same host; Vardo and Vadso, Finmark, on the same host; Norway, lat. 66° N., on *M. mixta*; on *M. oculata* at Jan Mayen.

Family **Cryptoniscidae**.

Clypeoniscus meinerti Giard and Bonnier.

1893. *Clypeoniscus meinerti* GIARD AND BONNIER, Bull. Scientifique de la France et de la Belgique (4), XXV, p. 421-436-444.
 1905. *Clypeoniscus meinerti* RICHARDSON, Bull. 54, U. S. Nat. Mus., p. 577.
 1916. *Clypeoniscus meinerti* HANSEN, H. J., Danish Ingolf Exped. Crust. Malacost. 3, pt. 5, p. 213.

Not taken by the Canadian Arctic Expedition.

Localities recorded:

West Greenland: Infesting *Synidotea nodulosa* Krøyer, partly from Godhavn, lat. 69° 14' N., partly without special locality, but probably from a more southern locality.

Europe: Jugor Schar, entrance to the Kara sea on *S. nodulosa*; on *Pleuroprion murdochi* either from Iceland or the *Faeroes*.

SUBORDER GNATHIIDEA.

Family **GNATHIIDAE**.

Genus **Gnathia** Leach 1814.

Syn. *Anceus* RISSO (male).

Syn. *Pranzia* LATR. (larva).

Gnathia elongata (Krøyer).

1849. *Anceus elongatus* KRØYER, Voy. en Scand., Crust., pl. 30, figs. 3 a-g.
 1846-49. *Anceus elongatus* KRØYER, Naturh. Tidsskr. (2), II, pp. 388-394.
 1887. *Anceus elongatus* HANSEN, Dijnphna-Togetete Zool.-bot. Udbytte, p. 205.

- 1887-88. *Anceus elongatus* HANSEN, Vidensk. Meddel. Naturh. Foren. i Kjøbn., p. 182.
 1899. *Gnathia elongata* G. O. SARS, Crust. of Norway, II, Isopoda, p. 55, pl. 23, fig. 1.
 1900. *Gnathia elongata* RICHARDSON, American Naturalist, 34, p. 214.
 1901. *Gnathia elongata* RICHARDSON, Proc. U. S. Nat. Mus., 23, p. 507.
 1905. *Gnathia elongata* RICHARDSON, Bull. 54, U. S. Nat. Mus., p. 58.
 1901. *Gnathia elongata* AXEL-OHLIN, Bihang till K. Sv. Vet. Akad. Handl., 24, Afd. 4, No. 12, p. 20-21.
 1912. *Anceus elongatus* K. STEPHENSEN, Danmark Exp., pp. 574, 576.
 1913. *Anceus elongatus* K. STEPHENSEN, Danmark, Exp., p. 230.
Gnathia elongata HANSEN, Danish Ingolf Exped., Crust. Malacost. 3, pt. 5, p. 224.

Range: This species has a wide distribution, having been recorded from the Kara sea regions westward to Lille Karajok fjord, West Greenland. It lives in depths from a couple of fathoms down to about 500 fathoms, more frequently in temperatures above zero but also in temperatures down to at least 0·6°.

Localities recorded: Krøyer's type material was taken from a jar of Amphipoda labelled "Greenland," but without specific locality. East Greenland, lat. 65° 37' N.; Forsblad fjord, lat. 72° 17' N., 90-40 fathoms; lat. 69° 25' N., long. 20° 01' W., 167 fathoms; West Greenland—Lille Karajok fjord, lat. N. 70° 30' (Vanhoffen); mouth of Ameralik fjord, lat. 64° 03' N., 5-70 fathoms, 14 specimens; Davis strait, Ingolf Station 32, lat. 66° 35' N., long. 56° 38' W., 318 fathoms, temperature 3·9°, 3 male specimens.

Europe:

Kara sea, 49-69 fathoms; (Hansen) King Charles islands, Bremer sound; lat. 78° 50' N., long. 29° 39' E., Spitzbergen, 35-40 fathoms (Ohlin); midway between Finmark and Beeren Eiland, lat. 72° 27' N., long. 20° 51' E.; the whole Finmark coast, especially abundant in Hammerfest harbour, 20-40 fathoms; extending southward along the coast of Lofoten islands (Sars); Station 223, Vestfjord, south of Lofoten islands; Jan Mayen, 70 fathoms, temperature 0·6°; Jan Mayen, Ingolf Station 115, lat. 70° 50' N., long. 8° 29' W., 86 fathoms, temperature 0·1°, 4 males, 2 females; south of Jan Mayen, Station 116, lat. 70° 05' N., long. 8° 26' W., 371 fathoms, temperature 0·4°, 11 specimens; north of Iceland; Ingolf Station 126, lat. 67° 19' N., long. 15° 52' W., 293 fathoms, temperature 0·5°, 4 specimens; east of Iceland, Station 59, lat. 65° 00' N., long. 11° 16' W., 310 fathoms, temperature 0·1°, 1 female. East Iceland: Seydis fjord, in a fishing net, 1 female; Faskruds fjord, 20-50 fathoms, Rode fjord, 70 fathoms.

Gnathia cristata (Hansen).

- 1887-1888. *Anceus cristatus* HANSEN, Vidensk. Meddel. Naturh. Foren. i Kjøbn., p. 182, pl. 7, fig. 2-2a.
 1900. *Gnathia cristata* RICHARDSON, American Naturalist, 34, p. 214.
 1901. *Gnathia cristata* RICHARDSON, Proc. U. S. Nat. Mus., XXIII, p. 506.
 1905. *Gnathia cristata* RICHARDSON, Bull. 54, U. S. Nat. Mus., p. 56, fig. 41.

Range: The only record of this species is the one cited below:

Locality recorded: Lat. 72° 32' N., long. 58° 51' W., Baffin bay, approximately north of Upernavik, Greenland, depth 116 fathoms, *type locality*.

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