Crustacea Malacostraca. V.

By

K. Stephensen.

VI. The order *Amphipoda,* part 1.

Introduction.

As regards the exact boundary of the "Ingolf"-area, comprising the waters surrounding Greenland, Jan Mayen, Iceland, and the Færoes, I shall refer to Dr. H. J. Hansen's work on Crustacea Malacostraca I (The Danish Ingolf-Expedition, vol. III, 2, 1908) p. 1. I likewise refer to the said work for informations as to the sources of the material.

The present paper was altogether written in conformity with the plan, followed by Dr. H. J. Hansen in his previous works on the "Ingolf"-Expedition. Like Dr. Hansen I have not confined myself to material, belonging to the Zoological Museum of Copenhagen, but also treated species which I only know from the literature, in order to make the present description of the area in question as thoroughgoing as the whole of our present knowledge will allow (— it is, however, only a small number of species, known from the area, which were not collected by some Danish expedition or collector —).

For practical reasons it has been necessary to divide the work on Amphipods into several parts, the material being extremely large; a complete review of the general results, therefore, cannot be given as yet.

A few remarks are necessary here:

* before a specific name indicates that the species is new to the area.

* before a quotation from the literature indicates the best description etc. of the animal.

As to appendages etc. I have made use of the following abbreviations which are, besides, about the same as those used by G. O. Sars:

A. 1—2	= 1. and 2. antenna	Ms. 1—7	= 1.—7. mesosome segments
Ceph.	= the cephalon	Mt.	= the metasome
Ep. 3	= the epimeral part of the 3rd metasome segment	Mt. 1—3	= 1.—3. metasome segments
		Mx. 1—2	= 1. and 2. maxilla.
Epist.	= the epistomal plate	Mxp.	= the maxillipeds
L	= the anterior lip	P. 1—7	= 1.—7. pereiopods
l	= the posterior lip	T	= the telson
Md.	= the mandible	Up. 1—3	= 1.—3. uropods
Ms.	= the mesosome	Us.	= the urosome

As meters are now used by almost all nations (except England), all of the depths are stated in meters, the depths from the "Ingolf"-Expedition proper have been altered in accordance with the proportion of 1 Danish fathom = 1,883 m.

A list of the works, more frequently referred to, will be given later on; only papers exclusively used for a single species or genus will be quoted in full in the particular place.

In the paragraph about Hyperiidea reference is repeatedly made to a paper, named "Thor"-Hyperiidea pt. 2. which was finished and ready for printing in Sept. 1918, but still remains unprinted as yet. The paragraph treating Hyperiidea in my present "Ingolf"-paper was, however, written with the supposition that my "Thor"-paper would be in print before the "Ingolf"-paper, — a supposition which has unfortunately not come true, on account of the high printing charges. Some few minor paragraphs have, for that reason, been somewhat altered, as for the rest I shall have to be content to refer to the "Thor"-paper which will, I hope, be in print next year (in Report on the Danish Oceanographical Expeditions 1908—10 to the Mediterranean and adjacent seas, edited by Dr. Johs. Schmidt, leader of the Expeditions).

I. *Hyperiidea.*

A. Hyperiidea gammaroidea (H. Milne-Edwards) Woltereck.

Hypérines gammaroides H. Milne-Edwards, Hist. Nat. des Crustacés, vol. 3, 1840, p. 72.
Hyperiidea gammaroidea Woltereck 1909, p. 145.

1. Tribus Primitiva. Woltereck.

Primitiva Woltereck 1909, p. 147.

1. Subtribus Completa. Woltereck.

Completa Woltereck 1909, p. 147.

Fam. Lanceolidæ. Bovallius.

Lanceolidæ Bovallius, Syst. list 1887, p. 5.
— — Monograph pt. 1, 1887, p. 27.
— Stebbing, 1888, p. 1301.
— Woltereck 1909, p. 156.
— K. Stephensen 1918, p. 8.
— Chevreux 1920.
— K. Stephensen, "Thor"-Hyper. pt. 2, (list of genera and species).

The family comprises 3 genera (14 species). Only the genus *Lanceola* has been found in the "Ingolf" area (7 species).

Most of the species belong to the deep water layers, but a few of them (especially *Lanceola Sayana*) may also be found rather near the surface.

Genus Lanceola Say.

Lanceola Say, Journ. Acad. Nat. Sci. Philadelphia, vol. 1, pt. 2, 1818, p. 317.
— K. Stephensen 1918, p. 8 (lit.).

1. **Lanceola Loveni** Bovallius.

Lanceola Loveni Bovallius, Forgotten Amphip. 1885, p. 6.
— — — Monograph pt. 1, 1887, p. 36, Pl. 6 figs. 24—26, Pl. 6 figs. 1—13.

The Copenhagen Museum possesses the single specimen of this species; it was taken in the mouth of the Davis Straits by Inspektør Møller 1843.

2. **Lanceola Sayana** Bovallius.

Lanceola Sayana Bovallius, Forgotten Amphip. 1885, p. 7 fig. 1.
— — — Monograph pt. 1, 1887, p. 30, Pl. 4, Pl. 5 fig. 1.
— — Chevreux, "Hirondelle" 1900, p. 134, Pl. 14 fig. 10 (cold. fig.).
— — K. Stephensen 1918, p. 8, figs. 1—3, chart (distrib., lit.).
— — Chevreux 1920, p. 1.

Occurrence. The species was not taken by the "Ingolf".

S. of Iceland: "Tjalfe" St. 1 b. 59°25′ N., 22°56′ W. Surface. (12. 5. 1908). 1 spec.
— — "Thor" St. 180. (10. 7. 1904). 61°34′ N., 19°05′ W. 2160 m. 70 m. wire. 1 spec.
— — — — ibid. 1800 m. wire. 2 spec.
— — — St. 183. (11. 7. 1904). 61°30′ N., 17°08′ W. > 2000 m. 70 m. wire. 1 spec.
— — — — ibid. 1800 m. wire. 3 spec.

Our Museum possesses a specimen (determined by Bovallius), from the mouth of the Davis Straits, Inspektør Møller ded. 12. 6. 1843. It was not known with certainty to have been taken in other localities in the "Ingolf"-area.

The specimen mentioned by myself with (?) in the "Tjalfe"-Exped. (1912) from 62°53′ N., 54°15′ W. is perhaps *L. serrata*; Vosseler (1901) mentions it with (?) from the Irminger Sea (60.3° N., 27.0° W., 0—600 m.).

Distribution. Very widely distributed in the Atlantic; also found in the Indian Ocean (see K. Stephensen 1918 and Chevreux 1920).

3. **Lanceola Murrayi** Norman.

Lanceola Murrayi Norman 1900, p. 135, Pl. 6 figs. 1—4.

This species is (Stebbing 1904, p. 30) probably synonymous with

Lanceola felina Bovallius, Forgotten Amphip., 1885, p. 7.
— *curticeps* — ibid. p. 8.
— *felina* — Monograph pt. 1, 1887, p. 38, Pl. 5 figs. 14—23.
— — Chevreux 1920, p. 2.
— — var. *longipes* Woltereck 1909, p. 159, Pl. 6 fig. 20.

Occurrence. The single specimen of *L. Murrayi* was taken by tow-net sunk to abt. 1200 m. in the Færoe Channel (Norman l. c.).

Distribution. 46°13′ N., 7°00′ W., 0—3000 m. (*L. felina*) (Chevreux l. c.). — 29° N., 20° W., Hygom ded., and 27° N., 27°40′ W., Andréa ded. 1864 (Bovallius' type-specimens of *L. curticeps* in the Copenhagen Museum). — S. of Africa 35°36′ S., 27°40′ E., Andréa ded. 1862 (Bovallius' type-specimen of *L. felina* in the Copenhagen Museum). — Pacific Ocean 16°57.4 'S., 120°48′ W. (*L. felina* var. *longipes*, Woltereck 1909).

4. **Lanceola Clausii** Bovallius.

Lanceola Clausii Bovallius, Forgotten Amphip. 1885, p. 8.
— — — Arctic and Antarctic Hyper. 1887, p. 552, Pl. 41 figs. 11—14.
— — — Monograph pt. 1, 1887, p. 40, Pl. 6 figs. 14—23.
— — G. O. Sars 1900, p. 15, Pl. 1.
? — — Chevreux 1920, p. 3.

This species was not taken by any of the Danish Expeditions.

Occurrence. Baffin Bay, abt. 72° N. (Bovallius). — E. of Greenland 71°22′.5 N., 18°58′ W., vertical haul 1000—800 m., depth of the sea 1100 m. (Broch and Koefoed 1909).

Distribution. 78°05′ N., 5°21′ W., vertical haul 1350—800 m., depth of the sea 1400 m. (Broch and Koefoed 1909). — N. of Asia 80° N., 134° E.; 84°15′—84°42′ N., 96°—72° E.; 84°47′—83°57′ N., 25°—11° E. (Sars l. c.).

If Chevreux's determination is right, which for geographical reasons is not probable, the species is found at 3 localities in the tropic and subtropic Atlantic: 27°43′ N., 18°28′ W., 0—3000 m. wire, 38°02′ N., 10°44′ W., 0—4800 m. wire, and 32°21′30″ N., 12°31′ W., 0—4000 m. wire.

5. **Lanceola serrata** Bovallius.

Lanceola serrata Bovallius, Forgotten Amphip. 1885, p. 7.
— — — Monograph pt. 1, 1887, p. 34, Pl. 5 fig. 2—13.
— *Suhmi* Stebbing, 1888, p. 1313, textfig. 28 (p. 1315) (teste Stebbing 1904, p. 29).
— *serrata* K. Stephensen 1918, p. 15 (distrib.).
— — Chevreux 1920, p. 3.

Occurrence. This species was not taken by the "Ingolf".

S. of Iceland: "Thor" St. 180. (10. 7. 1904). 61°34′ N., 19°05′ W. 2160 m. 1800 m. wire. 1 spec.

In the "Ingolf" area it has hitherto been found at 3 localities in the Davis Straits, from the mouth to abt. 64½° N., 1200—1500 m. wire (K. Stephensen, Conspectus 1913, p. 94).

Distribution. The species is found at a number of localities in the Atlantic N. of abt. 43° N. (see K. Stephensen 1918 and Chevreux 1920).

*6. **Lanceola pacifica** Stebbing.

Lanceola pacifica Stebbing, 1888, p. 1302, Pls. 151—52.
— — — 1904, p. 30.

Lanceola pacifica var. *robusta* Woltereck 1909, p. 160.

— — K. Stephensen 1918, p. 14, fig. 4, chart 1.

— — Chevreux 1920, p. 3.

Occurrence. This species was not taken by the "Ingolf", but at a single station by the "Thor".

S. of Iceland: "Thor" St. 183. (11. 7. 1904). 61°30′ N., 17°08′ W. 1800 m. wire. 1 spec.

The species is new to the "Ingolf" area; the specimen possibly belongs to the var. *robusta*.

Distribution. From W. Ireland to Gibraltar, and the Pacific Ocean (see K. Stephensen 1918, p. 14).

*7. **Lanceola æstiva** Stebbing.

Lanceola æstiva Stebbing 1888, p. 1309, Pl. 153.

— — — 1904, p. 29.

— — K. Stephensen 1918, p. 15, chart 1 (p. 11) (distrib.).

— — Chevreux 1920, p. 3 (distrib.).

Occurrence. This species was not taken by the "Ingolf".

Davis Strait: "Tjalfe" St. 434. (9. 6. 1909). 62°53′ N., 54°15′ W. 1660 m. 1500—1200 m. wire. 1 spec.

S. of Iceland: "Thor" St. 180. (10. 7. 1904). 61°34′ N., 19°05′ W. 2160 m. 1800 m. wire. 1 spec.

— — — St. 183. (11. 7. 1904). 61°30′ N., 17°08′ W. > 2000 m. 1800 m. wire. 3 spec.

The species is new to the "Ingolf" area.

Distribution. SW. Ireland, Bay of Biscay, Atlantic 28°—39° N., and Equatorial Atlantic (see K. Stephensen 1918 and Chevreux 1920).

2. Subtribus **Incompleta** Woltereck.

Incompleta Woltereck 1909, p. 147.

Fam. **Eumimonectidæ** (Bovallius) Woltereck.

Mimonectidæ Bovallius, Mimonectes, a remarkable genus of Amphip. Hyper.; Nova Acta Soc. Reg. Scient. Upsal., ser. 3, vol. 13, 1885, p. 2.

— — Monograph pt. 1:2, 1889, p. 59 (lit.).

— Vosseler 1901, p. 93.

Eumimonectidæ Woltereck 1909, p. 147.

— K. Stephensen, "Thor" Hyper. pt. 2[1].

The family comprises 2 genera with 7 species; all of them deep-sea forms. Only the genus *Mimonectes* is found in the "Ingolf" area.

[1]) The "Thor"-paper which was finished Oct. 1918 will probably in a short time go to the press.

Genus **Mimonectes** Bovallius.

Mimonectes Bovallius l. c. 1885, p. 2.

— — l. c. 1889, p. 59.

— Woltereck, 3. Mitt. üb. Hyper. d. Deutsch. Tiefsee-Exped.: Sphæromimonectes Valdiviæ, n. gen. n. sp., mit ergänzenden Bemerk. zur Biol. von Phronima u. Mimonectes; Zool. Anzeiger, vol. 27, Nr. 20, 1904, p. 621.

The genus comprises 3 species; all of them were taken in the "Ingolf" area or close outside its limits. None of the species were taken by the "Ingolf" or by the "Thor".

I have revised our total material of the species and determined all the undetermined specimens in our Museum. The Copenhagen Museum possesses almost all existent specimens as well as type-specimens of all the species. Bovallius's characters based upon the pereional segments and the sphærical portion of the body are not good for a determination of the species; but the species are very easily determined by dint of his characteristics of the two first pereiopoda (Bovallius 1889).

8. **Mimonectes Loveni** Bovallius.

Mimonectes Loveni Bovallius, Mimonectes 1885, p. 3, Pl. 1, Pl. 2 figs. 15—20, Pl. 3.

— — — Monograph pt. 1:2, 1889, p. 60, Pl. 5.

— — Vosseler, 1901, p. 93.

Occurrence. The species is found close outside the "Ingolf" area, S.W. of Iceland 58° N., 28° W., Olrik ded. 7. 6. 1852, 1 spec.

Distribution. Bovallius gives 1885 the distribution as "The Atlantic", and 1889 "The northern temperate and tropical regions of the Atlantic"; he had borrowed material from the Museums in Copenhagen, Paris and Stockholm.

The single specimen in our Museum, determined by Bovallius, is from 2° N., 25° W., Hygom ded. 1853. The other specimens are from the following localities: 58° N., 28° W. (see above); 46° N., 18° W., Hygom ded. 1856; 45° N., 24° W., Hygom ded.; 25° N., 23° W., Hygom ded. 1857 (3 spec.); 13° N., 34° W., 9. 9. 1863 (donator?).

Vosseler (1901) has a specimen from the Sargasso Sea 30.3° N., 37.9° W., surf.

9. **Mimonectes sphæricus** Bovallius.

Mimonectes sphæricus Bovallius, Mimonectes 1885, p. 12, Pl. 2 fig. 12.

— — — Monograph 1889 p. 66, Pl. 6 figs. 1—10.

Occurrence. Greenland, Möller 1847. The specimen is at present totally exsiccated; it has been determined by Bovallius. The locality is probably the mouth of the Davis Straits, as we have several other Crustaceans from this locality given by Möller 1847. Bovallius does not mention this specimen.

Distribution. Bovallius 1885 states the distribution as "28° N., 21° W.", 1889 as "The northern temperate and the tropical regions of the Atlantic" and declares to have borrowed specimens only from the

Copenhagen Museum. We possess the specimen mentioned above from Greenland, and the specimen from 28° N., 21° W. (given by Hygom); this has (from a note on the label) been hyaline with red spots.

10. **Mimonectes Steenstrupii** Bovallius.

Mimonectes Steenstrupii Bovallius, Mimonectes 1885, p. 12, Pl. 2 figs. 13—14.

— — — Monograph 1889, p. 70 (lit.), Pl. 6 figs. 11—21.

Occurrence. Our Museum possesses specimens from S. of Greenland 57°45′ N., 43°53′ W., Olrik ded. 1861 (Bovallius determ.), from the Irminger Sea 64°46′ N., 35° W., Moberg ded., and from S. of Iceland 60°18′ N., 16°48′ W., 28. 5. 1882, Ryder ded. 15. 11. 1883.

Distribution. Bovallius 1885 gives the distribution as "North Atlantic. The mouth of the Davis Strait", and 1889 "The Northern temperate and the Arctic regions of the Atlantic (Copenhagen Museum). The tropical region of the Atlantic (Museums in Paris and Stockholm)".

The specimens in our Museum from regions outside the "Ingolf" area are determined by Bovallius and are from the following localities: 46° N., 18° W., Hygom ded. Nov. 1856, and 43° N., 23° W., Hygom ded. 18. 4. 1857.

2. Tribus Derivata Woltereck.

Derivata Woltereck 1909, p. 147, 148.

Fam. Scinidæ Stebbing.

Tyronidæ Bovallius Monograph pt. 1, 1887, p. 4 (lit. and syn.).

Scinidæ Stebbing, 1888, p. 1270 (lit. and syn.).

— — 1904, p. 18 (key to the genera).

— K. Stephensen 1918, p. 16 (lit.).

— Chevreux 1919.

— K. Stephensen, "Thor" Hyper. pt. 2 (list of genera and species).

This family comprises 3 genera (*Parascina, Acanthoscina, Scina*), with respectively 1, 3 and 23 species. All these 3 genera are represented in the "Ingolf" area, with respectively 1, 1 and 4 species.

A great number of the species are deep-sea forms; but several species of genus *Scina* may be found in the upper water layers.

Genus Parascina Stebbing.

Parascina Stebbing 1904, p. 20.

The genus comprises only one species.

*11. **Parascina Fowleri** Stebbing.

Parascina Fowleri Stebbing 1904, p. 21, Pl. 2 fig. B.

— — Chevreux, Scinidæ 1905, p. 1.

— — Th. Scott, Ann. Mag. Nat. Hist., ser. 8, vol. 4, 1909, p. 33, Pl. 2 figs. 10—16, Pl. 3 figs. 16—17.

Parascina Fowleri K. Stephensen, 1918, p. 17, figs. 5—6.

— — Chevreux 1919, p. 9.

Occurrence.

Davis Straits: "Ingolf" St. 24. 63°06′ N., 56°00′ W. 2258 m. Vertical-haul 377 m. 1 spec.

S. of Iceland: "Thor" St. 180 (10. 7. 1904). 61°34′ N., 19°03′ W. 2160 m., 1800 m. wire. 2 spec.

— — "Thor" St. 183 (11. 7. 1904). 61°30′ N., 17°08′ W. > 2000 m. 1800 m. wire. 12 spec.

The species is new to these waters, but it has been found S. of the Færoes (59°36′ N., 7°0′ W., abt. 1100 m., 17. 8. 1906 [Scott l. c. 1909; S. has by a printer's error 70°0′ W., not 7°00′ W.]).

Distribution. In the literature this deep-sea species is quoted from a number of localities N. of abt. 30° N.; see K. Stephensen 1918 and Chevreux 1919.

Genus **Acanthoscina** Vosseler.

Acanthoscina Vosseler, Zool. Anzeiger, Jahrg. 23, Nr. 632, 1900, p. 674.

— — 1901, p. 113.

Of the three species only one is found in the "Ingolf" area.

*12. **Acanthoscina acanthodes** Stebbing.

Scina acanthodes Stebbing, 1895, p. 352, Pl. 1.

Acanthoscina serrata Vosseler, Zool. Anzeiger, Jahrg. 23, 1900, p. 675 figs. 1—4.

— — — 1901, p. 114, Pl. 10 figs. 1—10.

— *acanthodes* Chevreux, Scinidæ 1914, p. 6.

— — — 1919, p. 18.

Occurrence. This species was not taken by the "Ingolf", but the "Thor" has taken a specimen S. of Iceland 61°30′ N., 17°8′ W., 1800 m. wire, 11. 7. 1904 (St. 183). It is new to the "Ingolf" area.

Distribution. This Atlantic deep-sea species is noted from the following localities. W. Ireland 53°7′ N., 15°6′ W., abt. 1600 m., Petersen trawl at abt. 1400 m., 1 ♀ (Tattersall, Ireland 1906). — 9 Stations between 27°04′ and 37°30′ N., and 17°46′—42°29′ W., depths and special localities not noted, 11 spec. (Chevreux 1914 and 1919). — 7°54′ N., 17°25′ W., 10 m. wire, 7.20—8.20 pm. (Stebbing 1895). — N. Equatorial Current 12.3° N., 22.3° W., 0—400 m.; S. Equatorial Current 5 Stations: 29° N., 18.4° W., 0—400 m.; 1.1° N., 16.4° W., 0—400 m.; 0.1° N., 15.2° W., surf.; 0.3° S., 15.2° W. 0—500 m. and 6.9° S., 23.4° W., 0—500 m. (Vosseler 1901).

Genus **Scina** Prestandrea.

Tyro Bovallius, Monograph pt. 1, 1887, p. 5 (lit. and syn.).

Scina Stebbing 1904, p. 23 (key to the species).

— K. Stephensen 1918, p. 19 (lit. and syn.).

— Chevreux 1919, pp. 1—22.

The genus comprises 23 species 4 of which are found in the "Ingolf" area.

*13. **Scina crassicornis** Fabricius.

Astacus crassicornis Fabricius, Systema Entomologiæ 1775, p. 415.
Tyro Sarsii + *T. atlantica* Bovallius, Monograph pt. 1, 1887, p. 9, 13, Pl. 1 figs. 1—17, Pl. 2 figs. 1—18.
Scina crassicornis Stebbing 1904, p. 24 (lit. and syn).
— — K. Stephensen 1918, p. 19 (lit. and syn., distrib.).
— — Chevreux 1919, p. 10.

Occurrence. The "Ingolf" has taken only one single specimen, but the "Thor" and the "Tjalfe" have each of them taken one specimen in the "Ingolf" area. The species is new to this area.

Davis Straits: "Ingolf" St. 36, 61°50′ N., 56°21′ W., 2702 m. 1 spec.
— — "Tjalfe" St. 338, 64°01′ N., 55°30′ W., 8. 5. 1909, 1400—1500 m. wire. 1 spec., somewhat defective (this spec. is mentioned in K. Stephensen, "Tjalfe"-Exp. 1912, p. 81, as Scina sp.).

S. of Iceland: "Thor" St. 183, 11. 7. 1904: 61°30′ N., 17°08′ W. > 2000 m. 1800 m. wire. 1 spec.

Distribution. For distribution see K. Stephensen l. c. and Chevreux l. c. In addition to the specimens enumerated by myself l. c. 1918 our Museum possesses specimens taken W. of Scotland: 57°46′ N., 9°55′ W., 1500 m. wire, 1 spec. ("Thor" St. 167, 1. 9. 1905), and 57°52′ N., 9°53′ W., 1550 m., 1500 m. wire, 1 spec. ("Thor" St. 72, 8. 6. 1905).

Colour. The "Ingolf" specimen was orange-coloured reddish when alive (according to a note on the label).

*14. **Scina Rattrayi** Stebbing.

Scina Rattrayi Stebbing 1895, p. 358, Pl. 53 fig. A.
— — Chevreux, "Hirondelle" 1900, p. 123, Pl. 15 fig. 2.
— *Bovallii* Vosseler (non Chun) 1901, p. 105, Pl. 9 figs. 8—17.
— *Rattrayi* Stebbing 1904, p. 23, 26 (lit. and syn.).
— — K. Stephensen 1918, p. 29.
— — Chevreux 1919, p. 15.

Occurrence. The species is, new to the area, taken three times by the "Thor" and probably once by the "Ingolf".

?Danmark Straits: "Ingolf" St. 18. 61°44′ N., 30°29′ W. 2137 m. Vertical haul 376 m. 1 spec.
S. of Iceland: "Thor" St. 285 (1. 9. 1904). 62°49′ N., 18°46′ W. 100 m. wire. 4 spec.
— — — St. 183 (1. 7. 1904). 61°30′ N., 17°08′ W. 1800 m. wire. abt. 10 spec.
— — — St. 104 (24. 5. 1904). 62°47′ N., 15°03′ W. 1950 m. 1500 m. wire. 5 spec.

The determination of the specimen from the "Ingolf" St. 18 is not certain; for there are no teeth on the front margin of second joint in p. 3.

Distribution. See K. Stephensen l. c. 1918 and Chevreux 1919. In addition to this our Museum possesses 3 specimens, taken W. of Scotland 57°45′ N., 9°55′ W., 300 m. wire ("Thor" St. 167, 31. 8. 1905).

15. **Scina Clausii** Bovallius.

Tyro Clausii Bovallius, Forgotten Amphip. 1885, p. 14.

— — — Monograph pt. 1, 1887, p. 18, Pl. 2 figs. 19—28.

Scina — Vosseler 1901, p. 104.

Occurrence. This species was taken neither by the "Ingolf" nor by the "Thor"; but in the "Ingolf" area it has been taken S. of Iceland 62° N., 15° W. (Bovallius l. c.) and S.W. of Iceland 60.3° N., 27° W., 0—100 and 0—600 m. (Vosseler l. c.).

Distribution. Sargasso Sea 31.4° N., 46.6° W., closing net 450—650 m., and 650—850 m.; 31.5° N., 45.6° W. and 29.8° N., 36.8° W., 0—400 m. — N. Equatorial Current 28.9° N., 35° W. and 10.2° N., 22.2° W., 0—400 m. — Guinea Current 5.3° N., 19.9° W. and 9.4° S., 41.9° W., 0—400 m. — S. Equatorial Current 1.5° S., 14.8° W.; 6.8° S., 14.2° W.; 6.9° S., 23.4° W.; 4.4° S., 29.2° W.; 2.8° S., 35.2° W.; 1.8° S., 38.1° W.; all these hauls are from a depth of 0—400 m. (Vosseler l. c.).

Our Museum has a specimen, from the Indian Ocean (34°45′ S., 53°34′ E., Andréa leg.), determined by Bovallius.

16. **Scina borealis** G. O. Sars.

Clydonia borealis G. O. Sars 1882, p. 75, Pl. 3 fig. 1.

**Scina* — — 1895, p. 20 Pl. 8.

— — Stebbing 1904, p. 23, 28 (lit. and syn.).

— — K. Stephensen 1918, p. 30.

— — Chevreux 1919, p. 16.

Occurrence. Taken once by the "Ingolf", three times by the "Thor".

W. of Iceland: "Thor" St. 153. (20. 6. 1904). 65°20′ N., 27°12½′ W. 740—768 m. 800 m. wire. 1 spec.

S.W. of Iceland: "Ingolf" St. 18. 61°44′ N., 30°29′ W. 2137 m. Vertical haul 376 m. 1 spec.

S. of Iceland: "Thor" St. 180. 10. 7. 1904. 61°34′ N., 19°03′ W. 2160 m., 1800 m. wire. 1 spec.

— — — St. 183. 11. 7. 1904. 61°30′ N., 17°08′ W. > 2000 m. 1800 m. wire. Abt. 10 spec.

The species is not new to the "Ingolf" area; for I have taken it myself in Bredefjord (S. Greenland) with closing net 450—350 m., and with young-fish trawl 450 m. wire (K. Stephensen 1916, p. 277), and Norman (1900, p. 135) mentions it from the Færoe Channel, "tow-net down to 300 fathoms".

Distribution. Regarding this very widely-distributed species see K. Stephensen 1918 and Chevreux 1919. In addition we have specimens from 57°47′ N., 11°33′ W., 1985 m., 1500 m. wire (1 spec.; "Thor" St. 71, 7. 6. 1905), 57°52′ N., 9°53′ W., 1020 m.—1490 m., 1500 m. wire (abt. 35 spec., "Thor" St. 72, 8. 6. 1905), 57°46′ N., 9°55′ W., 1500 m. wire (abt. 10 spec., of which a few ♀ with ova; "Thor" St. 167, 1. 9. 1905), and 34°20′ S., 6° W. (2 spec., Andréa leg.; by Bovallius determined as *S. Clausii*?).

Fam. Vibiliidæ Claus.

Vibiliidæ Claus, Grundzüge d. Zool., 2. Aufl. 1872, p. 236.
— Bovallius, Monograph pt. 1, 1887, p. 42 (lit.).
— Stebbing, 1888, p. 1277 (lit.).
— Behning, Die systemat. Zusammensetzung u. geogr. Verbreit. d. Fam. Vibiliidæ; Zoologica, Heft 67, 1912, pp. 211—25 (key to species and genera etc.).
— K. Stephensen, 1918 p. 32.
— — "Thor"-Hyper. pt. 2 (list of genera and species).

The family comprises 2 genera: *Vibilia* with abt. 24 species, and *Vibilioides* with only one species (*V. Alberti*). Of these species, abt. 25 in all, only *Vibilia borealis* has been found in the "Ingolf" area.

Genus Vibilia M.-Edw.

Vibilia Milne-Edwards, Ann. Sci. Nat. vol. 20, 1830, p. 386.
— Behning l. c. supra 1912, p. 212 (key to the species).
— K. Stephensen 1918, p. 33 (lit.).
— — "Thor"-Hyper. pt. 2 (list of species).

17. **Vibilia borealis** Bate & Westwood.

Vibilia borealis Bate & Westwood vol. 2, 1868, pp. 524—26, textfig.
— — Bovallius, Monograph pt. 1, 1887, p. 57, with reproduction of B. & W.'s fig.
— — Norman 1900, p. 137.
— — Behning, Zoologica 1912, p. 215.
— *Kroeyeri* Bovallius, Syst. list 1887, p. 8.
— — — Monograph pt. 1, 1887, p. 58, Pl. 8 figs. 18—25.
— — Behning, l. c. supra p. 216, 224.
— *Kröyeri* K. Stephensen 1918, pp. 38—40, figs. 10 (pars)—11, chart 5 (pars).

Norman states l. c. 1900 on the basis of two specimens of *V. borealis*, which no doubt are Bate & Westwood's types or co-types (— they are from the same donator and locality as cited by B. & W., and the species in Museum Normanianum III, Crust., second edit. 1905, p. 18 is marked with an * which indicates that "either the actual types or specimens named by the describer are in my (Norman's) collection" —), that *V. Kröyeri* Bovall. must be dropped being only a synonym; the differences between the two "species" are only due to inaccuracy in the fig. and text of B. & W. Norman's statement seems to have been overlooked by all recent writers, also by myself in my paper l. c. 1918.

The types of *V. Kröyeri* seemed to have disappeared; for Bovallius says that they should belong to the Copenhagen Museum where they were not to be found. But revising our collection of Amphipoda from the "Ingolf" area I found a tube with two Vibiliæ, by Bovallius determined as *V. borealis* B. & W.? (locality: Greenland). These two specimens, in spite of the determination, undoubtedly would be Bovallius's types of

V. Kröyeri (— the name on the label disproves nothing, as I have earlier convinced myself that B. has not always given the right names even to his own types —). One of the specimens is a (young?) ♀, 6 mm., the other specimen is ♂, 8 mm. (Bovallius: 13 mm.). In the lesser spec. some legs are dissected, among others those which are drawn on B.'s Plate VIII; the greater spec. is more complete, and this agrees very well with the corrections which I have made l. c. 1918 in B. & W.'s description and figs.

Occurrence. This species was not taken by the "Ingolf"-Exped., but is "found off the west coast of Greenland" (Bovallius, Monograph; the types of *V. Kröyeri* [see above]). In the International Marine Investigation it is mentioned from 5 localities W. of the Færoes (Sept. 1905), 61°—61½° N., 0°40′ W.—3°03′ E.; the depths of the sea are 144—394 m., the depths below surf. are 0—243 m.

Distribution. Banff, Scotland (Bate & Westwood 1868). — From N. Ireland to Gibraltar; western part of the Mediterranean (K. Stephensen 1918). — Bovallius' statement (Arctic and Antarctic Hyper. 1887, p. 576) of the distribution as (beside Greenland) European Arctic Ocean and West Atlantic is probably due to a misprint.

B. Hyperiidea Genuina Woltereck.

Hyperiidea genuina Woltereck 1909, p. 146.

1. Tribus Recticornia Bovallius.

Hyperiidea recticornia (pars) Bovallius 1890, p. 14, 17.

Fam. Thaumatopsidæ Bovallius. (=Cystisomidæ Will.-Suhm).

Thaumatopsidæ K. Stephensen 1918, p. 56 (lit. and syn.).

Genus Thaumatops Martens (= Cystisoma Guérin-Méneville).

Thaumatops K. Stephensen 1918, p. 56 (lit. and syn.).

18. **Thaumatops** sp.

In the International Marine Investigations, Scottish Report, "*Cyrtosoma*(!) *spinosum*" is noted as taken Aug. 1907 in the Færoe Channel, S. of the Wyville Thomson-Ridge, 60°23′ N., 4°06′ W., 425 m. As "*Thaumatops spinosa*" comprises a number of species (see Woltereck, Zool. Anzeiger vol. 26, 1902—03, p. 452—57), it is not possible to decide the species.

Genus *Thaumatops* was not known from other localities in the "Ingolf" area, but has been found in several localities e. g. at S.W. Ireland.

2. Tribus Filicornia Bovallius.

Hyperiidea filicornia Bovallius, 1890, p. 14, 17.

Fam. Hyperiidæ Dana.

Hyperiidæ Dana, Classification of Crustacea Choristopoda or Tetradecapoda; American Journal of Sci. and Arts, ser. 2, vol. 14, 1852, p. 314.

— Stebbing, 1888, p. 1372.

— Bovallius, Monograph pt. 1:2, 1889, p. 74 (lit. and key to the genera).

— G. O. Sars, 1895, p. 5.

— K. Stephensen, "Thor"-Hyper. pt. 2 (list of genera and species).

The family comprises 9 genera with abt. 45 species. Only 3 genera with 6 species have been found in the "Ingolf" area.

Genus Hyperoche Bovallius.

Metoecus Kröyer, Grønlands Amfipoder 1838, p. 288.

Tauria Boeck 1873, p. 82.

Hyperoche Bovallius, Syst. list 1887, p. 17.

— — Monograph pt. 1:2, 1889, p. 83 (lit.).

— G. O. Sars, 1895, p. 8.

— Senna, Boll. Soc. Entomol. Ital., vol. 38, 1906, p. 154.

Of the species only one is found in the "Ingolf" area.

19. **Hyperoche medusarum** Kröyer (Chart 1).

Hyperoche Kröyeri G. O. Sars 1895, p. 9, Pl. 4.

— *medusarum* L. Stappers 1911, p. 77 (lit. and syn.).

— *tauriformis* Tesch 1911, p. 180 (biology).

— *medusarum* K. Stephensen, Conspectus 1913, p. 99 (occurrence at Greenland).

Occurrence. The "Ingolf" has taken this species at the following Stations:

W. of Greenland: St. 24: 63°06′ N., 56°00′ W., 2258 m.; vertical haul 376 m. 1 spec.

S.E. of Greenland: St. 20: 58°20′ N., 40°48′ W., 3192 m.; vertical haul 376 m. 1 spec.

W. of Iceland: Apstein haul No. 36 (= St. 91): 64°44′ N., 31°00′ W. 1 spec.

— — St. 11: 64°34′ N., 31°12′ W. 2448 m. Vertical haul 376 m., abt. 10 spec.

S.W. of Iceland: St. 18: 61°44′ N., 30°29′ W. 2137 m. Vertical haul 376 m. 1 spec.

— — Cylinder haul No. 10: 63°43′ N., 24°20′ W. 2 spec.

— — — — 11: 62°37′ N., 27°05′ W. 1 spec.

— — — — 12: 62°17′ N., 28°03′ W. 1 spec.

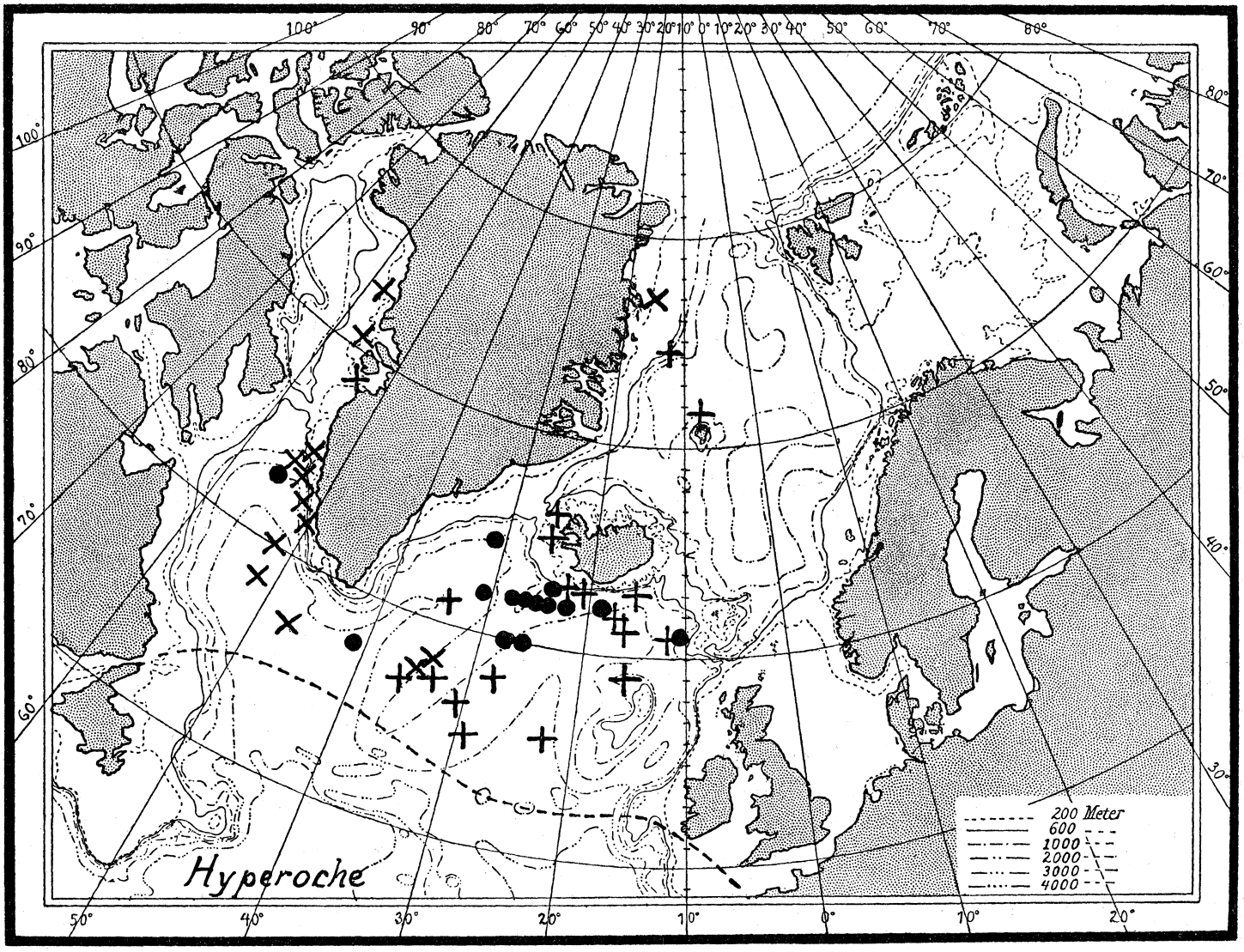

Chart 1. *Hyperoche medusarum.* ● Stations from the "Ingolf"-Expedition. + other localities, for the first time mentioned in the present paper. × localities from "Conspectus" 1913. ---- the southern limit according to the literature.

S.W. of Iceland Cylinder haul No. 22: 63°30′ N., 23°00′ W. 1 spec.
— — — — 23: 60°30′ N., 26°54′ W. 1 spec.
— — — — 24: 60°23′ N., 27°25′ W. 2 spec.
S. of Iceland: St. 63: 62°40′ N., 19°05′ W., 1506 m. Vertical haul 188 m. 3 spec.
— — - 68: 62°06′ N., 22°30′ W., 1588 m. Vertical haul 188 m. 1 spec.
— — - 69: 62°40′ N., 22°17′ W., 1118 m. Vertical haul 188 m. 3 spec.
— — - 73: 62°58′ N., 22°38′ W., 915 m. Vertical haul 188 m. 2 spec.
— — - 74: 62°17′ N., 24°36′ W. 1 spec.
W. of the Færoes: Cylinder haul No. 14: 61°32′ N., 10°47′ W. 2 spec.

In addition to these localities the Zool. Museum possesses specimens from the following localities, not mentioned in literature.

W.-Greenland: Egedesminde, Bergendal; 67°35′ N., 54°10′ W., Olrik 1866. — E.-Greenland: 74°36′ N., 12°0′ W., in a *Beroë*, Deichmann leg. 17. 7. 1891. — Jan Mayen 28. 6. 1900, E.-Greenland-Exp.

N.W.-Iceland: Dyrafjörðr 6. 7. 1892, in *Aurelia aurita*, Lundbeck; Arnarfjörðr 9. 7. 1892, Lundbeck, abt. 15 spec.; Ønundarfjörðr 12. 7. 1893, Lundbeck; mouth of Breiðifjörðr, Borch 1859. —

S.W. of Iceland: 61° N., 34° W., Prosch 1859; 57°—59° N., between Iceland and Greenland, surf., H. Rink; 56°59′ N., 36°0′ W., C. Kruuse 31. 5. 1897; 57°27′ N., 35° W., Olrik 1864; 58° N., 28° W., Olrik 1852; 57°32′ N., 33°31′ W., Olrik 14. 6. 1859; 56°55′ N., 22°57′ W., Lundbeck 29. 4. 1889; 57°10′ N., 30°55′ W., Lundbeck 6. 5. 1889; 55°25′ N., 29°5′ W., Lundbeck 18. 5. 1890; 63°43′ N., 22°22′ W., "Thor" St. 174 (8. 7. 1904), 109 m., 110 m. wire; 63°08′ N., 21°30′ W., "Thor" St. 178 (9. 7. 1904), 700 m., 70 m. wire; 63°29′ N., 21°25′ W., "Thor" St. 190 (14. 7. 1904), 120 m., 110 m. wire, abt. 20 spec.

S. of Iceland. 61°30′ N., 17°08′ W., "Thor" St. 183 (11. 7. 1904), > 2000 m., 1800 m. wire; 62°49′ N., 18°46′ W., "Thor" St. 285 (1. 9. 1904), depth?, 100 m. wire; 59° N., 17°50′ W., Lundbeck 20. 4. 1889; Vestmanna-eyar, among Medusæ, "Diana" 11. 7. 1900 (Dr. A. C. Johansen); 58°26′ N., 19° W., Olrik 1859; 63°01′ N., 15°21′ W., "Thor" St. 106 (24. 5. 1904), > 1000 m., 15 m. wire.

W. of the Færoes. 61°30′ N., 11°08′ W., "Thor" St. 183 (11. 7. 1904), > 2000 m., 1800 m. wire.

Ordinarily the samples contain only 1—2 specimens each. The sizes are 7—9 mm. —

In my Conspectus 1913, p. 100, all the Greenland localities are quoted: at the west coast to Upernivik (abt. 73° N.), at the east coast a few specimens from the southern waters and some single localities north of 74° N.

Distribution. A boreo-arctic species, found in the Atlantic, N. of abt. 50°—55° N., and the adjacent parts of the Polar Sea, to abt. 77° N.; the east-western limits are Labrador and Sibirian Polar Sea. Also found N. of Alaska: Collinson Point and Cape Smyth (Point Barrow) (Shoemaker 1920, p. 24).

Genus **Hyperia** Latreille.

Hyperia Stebbing 1888, p. 1377 (lit.).
— Bovallius, Monograph pt. 1:2, 1889, p. 129 (lit. and key to the species).
— G. O. Sars 1895, p. 6.

20. **Hyperia medusarum** O. Fr. Müller (Chart 2).

Cancer medusarum O. Fr. Müller, Zoologiæ Danicæ Prodromus 1776, No. 2355, p. 196.
Hyperia spinipes Boeck 1876, p. 81, Pl. 2 fig. 2.
— *medusarum* Bovallius, Monograph pt. 1:2, 1889, p. 147 (lit.), Pl. 9 figs. 1—21.
— *hystrix* — ibid. p. 159, Pl. 9 figs. 22—30.
* — *medusarum* G. O. Sars 1895, p. 7, Pl. 3 fig. 2.
— — Norman 1900, p. 129 (lit. and syn.).
— — Tesch 1911, p. 179 (distrib. etc.).
— — K. Stephensen, Conspectus 1913, p. 96.
— — — "Thor"-Hyper. pt. 2 (with notes on synonymy).

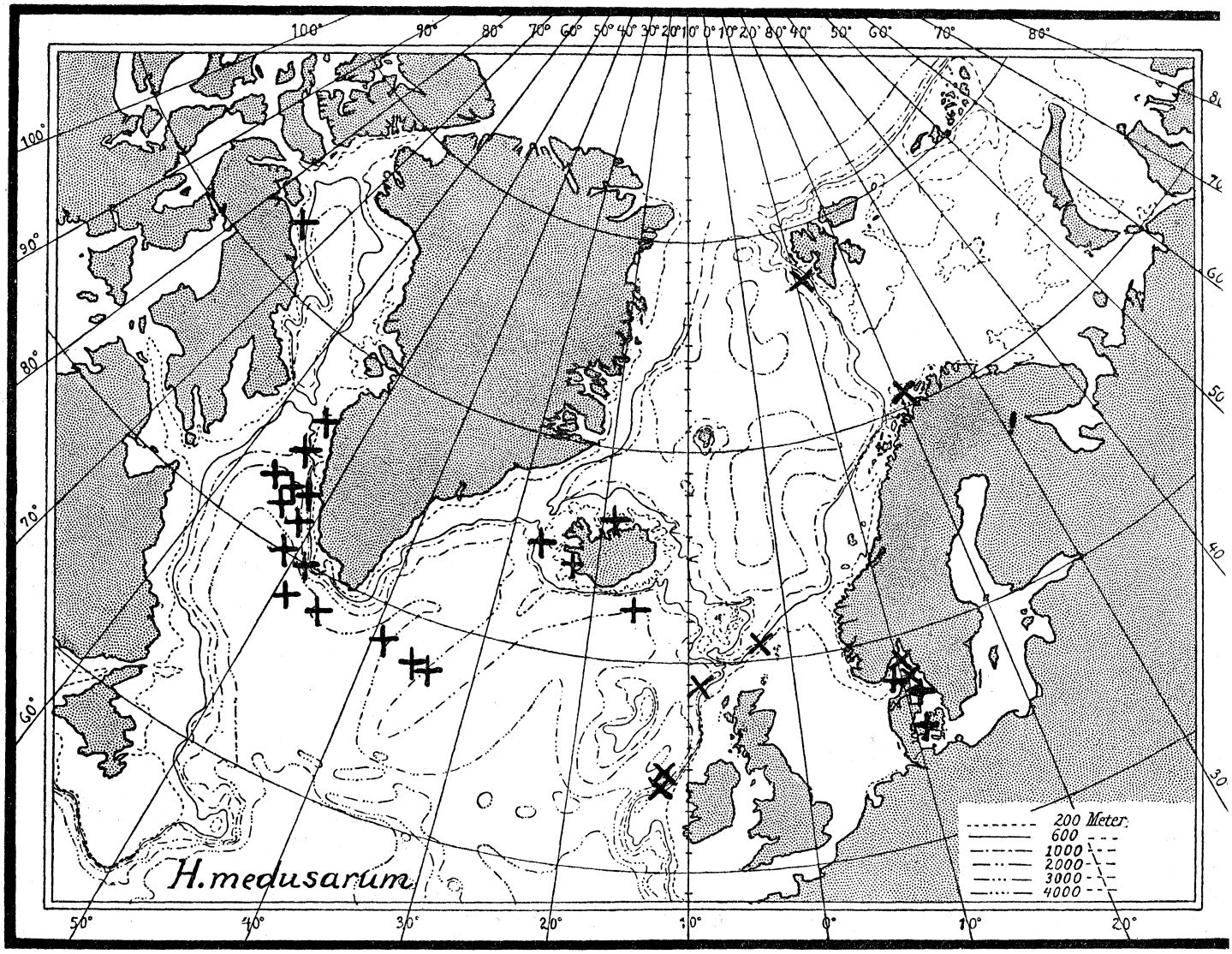

Chart 2. *Hyperia medusarum*. + Localities from the "Thor", the "Conspectus" 1913 and specimens from the Copenhagen Museum. × Localities from the literature (but not from G. O. Sars 1895, as he does not give special localities).

Occurrence. The "Ingolf" has not taken this species; but the Copenhagen Museum possesses specimens from the following localities in our area, not mentioned in the literature.

W. Greenland: Holstensborg and Godthaab, from *Thaumantias*.

S. Iceland: 62°47′ N., 15°03′ W., 1950 m., 1500 m. wire ("Thor" St. 104, 24. 5. 1904).

S. W. Iceland: Hvalfjörðr, 5. 9. 1884, Feddersen. — 65°27′ N., 27°10′ W., 700—765 m., 60 m. wire ("Thor" St. 154, 20. 6. 1904).

N. Iceland: 66°13′ N., 18°43′ W., 50 m., 50 m. wire ("Thor" St. 262, 22. 8. 1904).

In my Conspectus (1913, p. 97) a number of localities at W. Greenland are enumerated, from abt. 58° N. to 63° N. (and abt. 73° N.), and from the southern part of E. Greenland.

In most cases only a few specimens were taken at a time.

The sizes are abt. 15 mm.; a few of the ♀ from Greenland are abt. 20 mm., 1 ♂ 18 mm.

Distribution. Spitzbergen without special locality (Bovallius: Monograph). — Norway: Tromsö (Bovallius, Monograph); "West coast of Norway, found parasitic on *Cyanea*, occasionally also on *Aurelia*, but less frequently than *H. galba*" (G. O. Sars 1895). — Danish waters: Skagerak 640 m.; Kattegat (Trindelen) 34 m., and Store Belt (Nyborg) (specimens in the Copenhagen Museum). Skagerak and the northernmost part of the Kattegat (Tesch 1911). — British waters: In a few places W. of the Shetlands (Tesch 1911). 180—185 miles E. by N. of Aberdeen, surface (Scott, 22th Report Fishery Board for Scotl. 1903 (1904), p. 256). 12 records W. of Ireland, depths of the sea (600—) > 1800 m., townet at 180—1800 m. (only in one case at the surface) (Tattersall 1906). A record from Belgium is no doubt incorrect (Tesch 1911).

Also found in the Pacific: Japan, California (Point Loma, California, abt. 400—650 m. [Holmes 1908, p. 490]; Japanese Sea 45°40′ N., 139° E., between Algæ, Andréa ded. 1869 [specimen in the Copenhagen Museum]).

21. **Hyperia galba** Montagu (Chart 3).

**Hyperia galba* G. O. Sars 1895, p. 7, Pl. 2, Pl. 3 fig. 1.
— — Norman 1900, p. 128 (lit. and syn.).
— — Stappers 1911, p. 78 (lit.).
— — Tesch 1911, p. 178 (biology etc.).
— — K. Stephensen, "Thor"-Hyper., pt. 2.

Occurrence. The "Ingolf" has gathered this species at the following Stations:
Davis Straits: St. 24: 63°06′ N., 56°00′ W., 2258 m. Vertical haul 376 m. 1 spec.
W. of Iceland: Apstein haul No. 40 (= St. 96): 65°24′ N., 29°00′ W. 3 spec.
S.W. of Iceland: Apstein haul No. 37: 60°37′ N., 27°52′ W. Abt. 10 spec.
S. of Iceland: St. 53: 63°15′ N., 15°07′ W., 1497 m. Vertical haul 188 m., 3 spec.
E. of the Færoes: Cylinder haul No. 43: 61°08′ N., 3°23′ W. 1 spec.
S. of the Færoes: St. 1: 62°30′ N., 8°21′ W., 267 m. 2 spec.
The "Thor" has secured the species from the following Stations:
N.W. Iceland: St. 153 (20. 6. 1904): 65°20′ N., 27°12½′ W., 740—768 m. 800 m. wire. 1 spec.
— — - 154 (20. 6. 1904): 65°27′ N., 27°10′ W. 700—765 m. 2 spec. ibid., 800 m. wire. 1 spec.
S. of Iceland: St. 164 (12. 7. 1903): 62°10.8′ N., 19°36′ W. Surf., 1 spec.
— — - 166 (14. 7. 1903): 62°57′ N., 19°58′ W. 900 m. 1 spec.
— — - 171 (16. 7. 1903): 63°15′ N., 22°23′ W. 216—326 m. 1 spec.
— — - 178 (9. 7. 1904): 63°08′ N., 21°30′ W., Young-fish trawl 75 m. wire. 2 spec.
— — - 179 (9. 7. 1904): 62°44′ N., 20°44′ W. Young-fish trawl 50 m. wire, 1 spec.
— — - 180 (10. 7. 1904): 61°34′ N., 19°03′ W., 2160 m., 400 m. wire. 1 spec.
— — ibid. 1800 m. wire, 1 spec.
— — St. 183 (11. 7. 1904): 61°30′ N., 17°08′ W., > 2000 m. Young-fish trawl 1800 m. wire 1 spec.

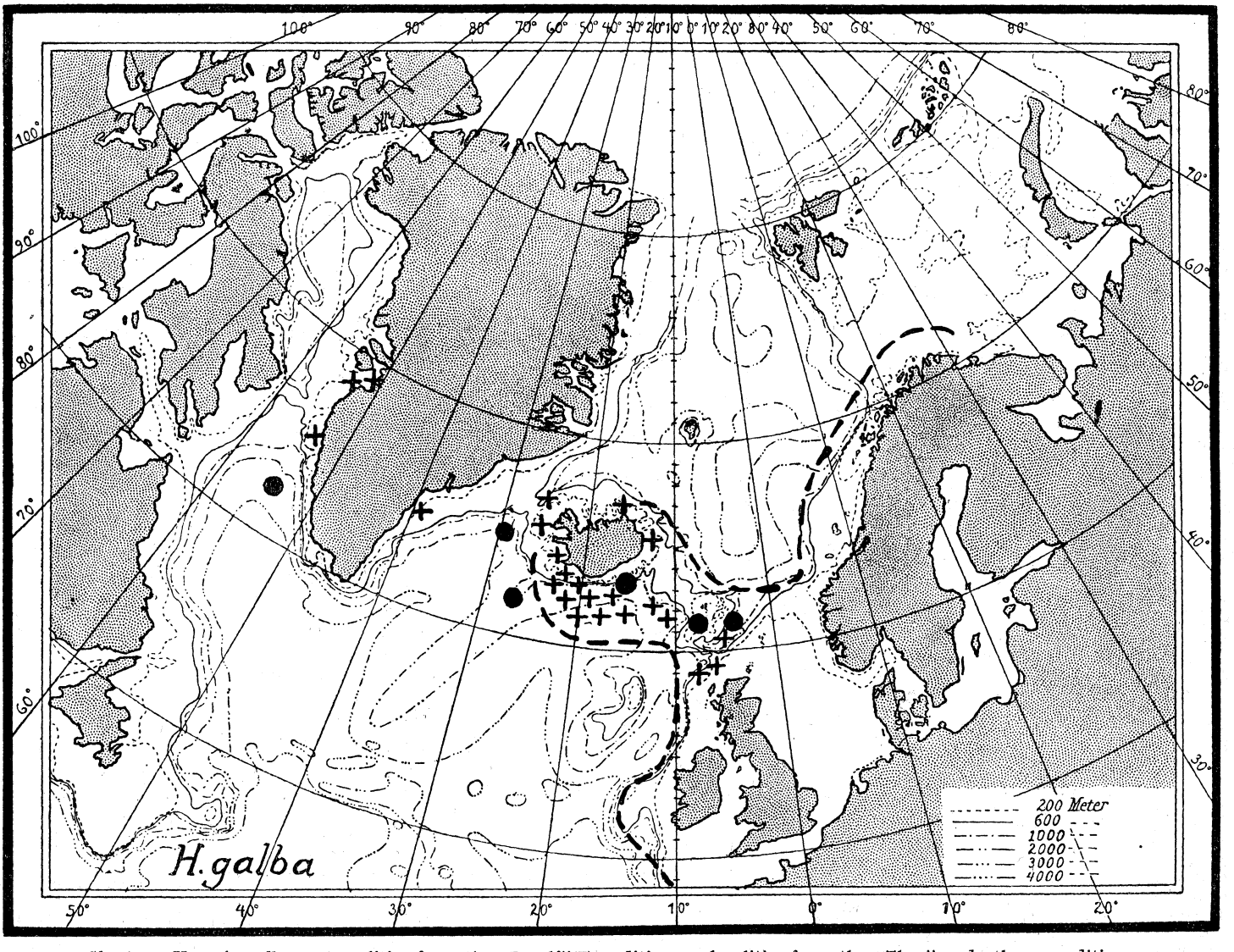

Chart 3. *Hyperia galba*. ● Localities from the "Ingolf"-Expedition. + localities from the "Thor" and other expeditions. ——— western limit of the most frequent occurrence.

S. of Iceland: ibid. 70 m. wire. 3 spec.

— — St. 190 (14. 7. 1904): 63°29′ N., 21°25′ W., 90—120 m., 100 m. wire. 2 spec.

— — - 283 (31. 8. 1904): 63°20′ N., 20°49′ W. 100 m. wire 2 spec.

— — - 285 (1. 9. 1904): 62°49′ N., 18°46′ W. 100 m. wire, 5 spec.

E. of Iceland: St. 219 (29. 7. 1904): Hjerads Floi (65°40′ N., 14°06′ W.), abt. 40 m., abt. 10 spec.

N. of Iceland: St. 212 (22. 7. 1904): 67°02′ N., 18°10′ W. 20 m. wire. 1 spec.

S.W. of the Færoes: St. 183 (11. 7. 1904): 61°30′ N., 11°08′ W. 1800 m. wire. 7 spec.

In addition to these specimens the Copenhagen Zoological Museum possesses specimens from the following localities in the "Ingolf"-area, not mentioned in the literature: W. Greenland: 58°29′ N., 44°54′ W., Olrik 1864, 1 spec.; Holstensborg, Traustedt 1892, 1 spec., and a large ♀ with ova, from a great *Beroë*, surf., 8. 7. 1895; Egedesminde, Bergendal, Aug. 1890, 2 spec., from *Aurelia*; Jacobshavn and Ritenbenk, Traustedt

1892, 3 spec. — E. Greenland: Angmagsalik, Kolonibestyrer Joh. Petersen 1909, 4 ♀; 74°15′ N., 16°29′ W., closing net, 200—75 m. (E.-Greenland Exp. 10. 7. 1900), 1 spec. — W. Iceland: Reykjavik, 5 spec. (donator?). — S. Iceland: 61° N., 20° W., Olrik 13. 7. 1867, 1 spec. — Between Iceland and the Færoes 62°2′ N., 11°47′ W., Hedemann 1868, 1 spec. — S. of the Færoes: 59°37′ N., 8° W., Olrik 1867, 1 spec.; 59°14′ N., 6°45′ W., Rink 1852, 1 spec.; 60°9′ N., 5°37′ W., Olrik 1864, 3 spec.

A list of the Greenland localities from earlier date has been given in my Conspectus 1913, p. 99.

The sizes of the specimens (♀) from Angmagsalik are 21—24 mm.; ♂ from the mouth of the Davis Straits (58°29′ N., 44°54′ W.) is 18 mm. All the other specimens are somewhat smaller.

Distribution. Atlantic, especially N. of abt. 50° N., and the Azores. Probably a circumpolar species, found at Cap Sabine (Arctic America; Sars 1909); Labrador (Vosseler 1901); Greenland, Iceland etc. (see above); Spitzbergen, Murman Coast, Kara Sea (different authors); E. of East-Taimyr 77°1′ N., 114°35′ E., 60—0 m., and Bennett Island 76°34′ N., 147°22′30″ E., 15—0 m. (Brüggen 1909, p. 5); North of Alaska: Collinson Point and 69°41′ N., 141°11′ W. (Shoemaker 1920, p. 24).

Also found S. of Africa, Indian Ocean and Northern Pacific Ocean. For special localities see my paper on the "Thor"-Hyperiidea, pt. 2.

Genus **Themisto** Guérin.

(= *Parathemisto* Boeck + *Euthemisto* Bovallius).

For lit. etc. see my paper on the "Thor"-Hyperiidea pt. 2; in the same paper I have given my reasons for reckoning the two names *Para-* and *Euthemisto* synonymous and for reestablishing the name of *Themisto*.

The genus *Themisto* comprises in the Northern waters 4 species viz., *T. libellula*, *T. abyssorum*, *T. gracilipes* and *T. compressa* (incl. *T. bispinosa*). All these are found in the "Ingolf"-area except *T. gracilipes* which has its northern limit close to the south of the area.

T. gracilipes is an intermediate species between *T. abyssorum* and *T. compressa*.

As the species may be difficult to determine (*T. libellula* excepted), an attempt has been made in a key to give a summary of the points of difference; but young individuals cannot always be determined by these characteristics.

1 a. P. 5 at least 1½ times as long as p. 6; the dactylus in p. 5 with a dense tuft of fine spinules at the base; length up to 60 mm. ..... *T. libellula* (p. 24).

1 b. The dactylus of p. 5 without such spinules; p. 5 of the same length or longer than p. 6; the length of the animal at most abt. 30 mm. ..... 2.

2 a. P. 5 and p. 6 of the same length (in both sexes); the carpus of p. 3—p. 4 alike in both sexes, with nearly parallel upper and lower margins, so that the breadth of the carpus is hardly greater at the middle than at the ends; — and in individuals of 6—8 mm. the length of the carpus in p. 3 is as a rule three times the breadth. Ant. 1 in ♀ at the distal half not thicker than ant. 2, straight or only slightly curved; at any rate not of the shape of a hook; length of the animal abt. 10—22 mm. ..... *T. abyssorum* (p. 20).

2 b. These characters not combined ..... 3.

3 a. The carpal process in p. 2 only little more than half as long as the metacarpus..... *T. gracilipes*.

3 b. The carpal process in p. 2 nearly as long as the metacarpus..... 4.

4 a. The lower (hind) margin of the carpus of p. 3 fairly regularly curved, so that it has its greatest breadth nearly at the middle..... *T. compressa* f. *compressa* (p. 27).

4 b. The lower (hind) margin of the carpus in p. 3 not regularly curved, so that its greatest breadth is next to the proximal end..... *T. compressa* f. *bispinosa* (p. 31).

22. **Themisto abyssorum** Boeck (Chart 4).

Parathemisto Abyssorum Boeck 1870, p. 7 (87).

— — Boeck 1876, p. 85, Pl. 3 fig. 1.

— *abyssorum* Bovallius, Arct. and Antarct. Hyper., 1887, p. 566, Pl. 45 figs. 84—89.

* — *oblivia* G. O. Sars 1895, p. 10, Pl. 5 fig. 1.

— — (partim) Bovallius, Monograph pt. 1:2, 1889, p. 251 (with textfigures), Pl. 12 figs. 11—16.

? — — Bonnier 1896, p. 611, Pl. 35 fig. 1.

?? — — ? Vosseler 1901, p. 80, Pl. 7 figs. 21—25, Pl. 8 figs. 1—2.

— *abyssorum* Fowler, Proc. Zool. Soc. London, 1898, pp. 583—585, § I—III (not § IV p. 584, probably being *T. gracilipes* Norman).

? — *oblivia* (partim?) Stebbing 1904, pp. 36—37.

? non *Hyperia* — Kröyer, Grønlands Amfipoder 1838, p. 298 (70), Pl. 4 fig. 19.

Parathemisto — (partim) Tesch 1911, p. 180, Pl. XXV.

**Themisto abyssorum* K. Stephensen, "Thor"-Hyperiidea pt. 2.

Occurrence. The species was taken several times both by the "Ingolf" and the "Thor".

W. of Iceland: "Thor" St. 150 (18. 6. 1904). 65°50′ N., 26°53′ W. 392 m. 1 spec.

— — — - 151 (19. 6. 1904). 65°25′ N., 27°30′ W. 70 m. wire. 1 spec.

— — — - 152 (19. 6. 1904). 65°00′ N., 28°10′ W. 1240 m. 3 spec.

— — — - — ibid. 1000 m. wire. 1 spec.

— — — - 153 (20. 6. 1904). 65°20′ N., 27°12½′ W. 740—768 m. 800 m. wire. 1 spec.

— — — - 154 (20. 6. 1904). 65°27′ N., 27°10′ W. 700—765 m. 5 spec.

— — — - — ibid. 800 m. wire. 9 spec.

S.E. of Iceland: "Ingolf" St. 6. 63°43′ N., 14°34′ W. 169 m. Vertical haul 95 m. 1 spec.

N.E. of Iceland: "Thor" St. 216 (23. 7. 1904). 66°15′ N., 12°13′ W. 600 m. wire. 1 spec.

— — — - 123 (30. 5. 1904). 66°16′ N., 14°30′ W. 70 m. 75 m. wire. 1 spec.

— — "Ingolf" St. 103. 66°23′ N., 8°52′ W. 1090 m. Vertical haul 190 m. 2 spec.

— — — - 111. 67°14′ N., 8°48′ W. 1620 m. 1 spec.

— — — - 120. 67°29′ N., 11°32′ W. 1667 m. 1 spec.

— — — - 121. 66°59′ N., 13°11′ W. 996 m. Vertical haul 190 m. Abt. 30 spec.

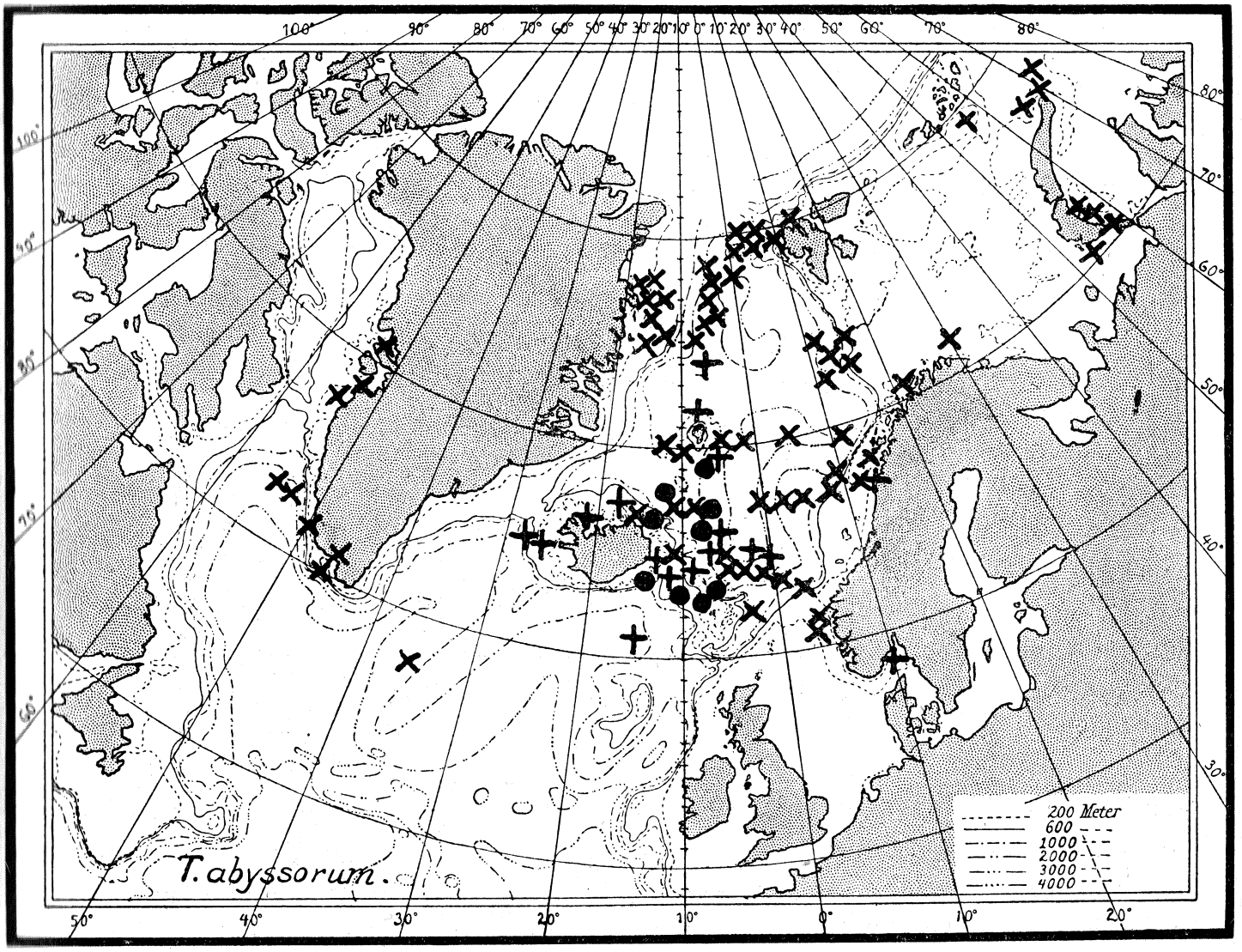

Chart 4. *Themisto abyssorum.* ● Localities from the "Ingolf"-Expedition. + other localities, not earlier mentioned in the literature. × localities from the literature.

N. of Iceland: "Thor" St. 214 (22. 7. 1904). 67°19′ N., 17°55′ W. 820 m. 800 m. wire. Abt. 15 spec.

S. of Jan Mayen: "Ingolf" St. 117. 69°13′ N., 8°29′ W. 1889 m. 1 spec.

N.W. of the Færoes: "Ingolf" St. 1. 62°30′ N., 8°21′ W. Vertical haul 95 m. 1 spec.

— — — - 3. 63°35′ N., 10°24′ W. 512 m. Vertical haul 190 m. 2 spec.

— — "Thor" St. 24 (15. 5. 1903). 64°35′ N., 11°45′ W. 435 m. Near the bottom. Abt. 10 spec.

— — — - 63 (5. 5. 1904). 64°05′ N., 9°38′ W. 800 m. 9 spec.

N. of the Færoes: "Ingolf" St. 138. 63°26′ N., 7°56′ W. 887 m. 4 spec.

— — "Thor" - 210 (22. 7. 1904). 66°43′ N., 8°10′ W. 400 m. 425 m. wire. 6 spec.

— — — - 230 (4. 8. 1904). 63°10′ N., 7°31′ W. 1090 m. 1200 m. wire. 1 spec.

The East Greenland Expedition 1900 has secured the species at the following localities: E. and N.E.

of the Færoes 63°10′ N., 0°25′ W. (20.6.1900, 11.00 pm., F. 15) to 65°27′ N., 2°10′ W. (22.6.1900, 2.00 pm., F.46), 11 hauls at the surface (exclusive of one haul with closing net 150—100 m.); S.E. of Jan Mayen 24. 6. 1900 (8.00 pm., surf.) and N. of Jan Mayen 1. 7. 1900 (200—100 m.); E. of N. Greenland 74°25′ N., 8°00′ W., 400—0 m. (8. 7. 1900, 2.00 pm.); S. of Iceland 60°50′ N., 15° W. (24. 9. 1900, 8.00 pm., F. 390).

In addition to this material our Zoological Museum possesses specimens (not mentioned in the literature) from the following localities in the "Ingolf" area: Frederikshaab (W. Greenland, abt. 62° N.), 280 m., 260 m. wire ("Tjalfe" St. 503, 2. 7. 1909, 2 spec.), and Reykjarfjörður (N. of Iceland), 6—0 m., sandy bottom, "Diana" 21. 7. 1902, Ditlevsen, 2 spec.

A list of Greenland localities quoted in the literature has been given in my Conspectus 1913 (*Parathemisto oblivia* pp. 105—06), and in my paper on the "Rink"-Exped. 1916, pp. 276—77.

The sizes of the Greenland specimens are on an average 7—8—10—13 mm. The "Tjalfe" took a few specimens at the surface; otherwise with 350—1000 m. wire and nearly only at W. Greenland, 57½°—70¾° N. The "Rink" took it chiefly in Bredefjord (W. Greenland, abt. 61° N.), in particular at 75 to at least 450 m. below surface and often in large quantities; it often represented as much as 75 per cent. of all Hyperines in a single haul.

Off N.E. Greenland it has been taken in many places (Brock and Koefoed, in Duc d'Orléans 1909), most frequently at the surface or not very deep down, at most, as far as may be seen, at a depth of 400 m. wire.

St. 124 of the "Thor" 1905 lies in the Færoe Channel, and it is from here we have the largest specimens known, 21 mm in length. —

Remarks on literature and synonymy. Almost all authors consider *Hyperia oblivia* Kröyer 1838 as synonymous with *Parathemisto Abyssorum* Boeck 1870; but this is no doubt incorrect. *Parathemisto Abyssorum* Boeck is a good species; what *Hyperia oblivia* Krøyer is, is not possible to decide with certainty, but most probably it is identic with *Parathemisto gracilipes* Norman 1868. This lastnamed species is also confused with *T. compressa.*

The true *T. abyssorum* is especially characterized by the essentials in the key above, § 2 a; for further account of the literature etc. see my paper on the "Thor"-Hyperiidea, pt. 2.

Distribution. The data given below apply, as far I can see, only to this species. Several writers have mentioned *T. oblivia* Kr. as *T. abyssorum* Boeck, but on account of the confusion it is often impossible or very difficult to see whether they mention the real *T. abyssorum* or not. As, however, practically all the certain specimens originate from the arctic area or the adjacent seas, I think that it may be considered a fact that nearly all the other occurrences, mentioned in the literature, must be attributed to *T. gracilipes.*

Fowler l. c. 1898, p. 584, § I—III (with indication of sources) briefly gives the distribution as follows: § I: Cold water (surf.), Greenland and the Murman Sea. § II: Cold water, greater depths, (293) 481—3127 m., Norske Nordhavs-Exped. (6 Stations), along the whole of the west coast of Norway as far as Finmarken abt. 200—400 m.; the cold area in the Færoe Channel abt. 1000—400 m. § III: Seems at night to rise to the surface from lower depths in the Færoe Channel; besides Shetland and the Færoe Channel (§ IV in reality deals with *T. gracilipes*). This list which I am later on going to examine in details, is undoubtedly correct in all essentials.

In 1911 (l. c.) Tesch has given a chart of the distribution of the species, based upon the results of International Marine Investigations; it fairly agrees with all that has otherwise appeared, but in any case all the occurrences in the North Sea and the Channel no doubt must be attributed not to the present species but to *T. gracilipes*.

G. O. Sars (1887) mentions the species in Norske Nordhavs Exped. from 6 localities, all within the Arctic Basin, viz., Altenfjord (N. Norway) 293 m.; between Norway and Jan Mayen 69°59′ N., 6°15′ E., 3127 m.; southwest of Jan Mayen 70°41′ N., 10°10′ W., 481 m.; southwest of Lofoten 67°24′ N., 8°58′ E., 827 m.; north and east of the Færoes 63°17′ N., 1°27′ W., 1977 m., and 63°22′ N., 5°29′ W., 2222 m. — The "Dijmphna-Exped." (H. J. Hansen 1887) took one specimen, abt. 7 mm., at the surface of the Murman coast. — In the Copenhagen Museum there are some small specimens (3—6 mm., juv.) from the surface, 4 miles off Christianssund (N. Norway), taken by Rink 12. 5. 1848. — Sars (1895) records it from the whole of the Norwegian coast as far as to Finmarken: the depths of the sea are as a rule abt. 200—400 m., and all specimens seem to have been taken at or very near the bottom. — Boeck (1876) records it from Hardangerfjord and Christianiafjord, abt. 375—550 m. — In the Skagerak it is very common; the sizes are up to 9 mm. (specimens in the Copenhagen Museum.)

Sars (1900) records it from several places in the Arctic Sea north of Siberia. — Gran (1902) mentions a number of localities from the waters between Norway, Jan Mayen and Iceland. — Brüggen (1909) quotes it from the Barents Sea 69°37′ N., 56°43′ E., 30—0 m., and from Cape Tscheliuskin, 77°46′30″ N., 105°11′ E., 205—0 m. — Stappers (1911) mentions the species from 11 stations round the coasts of Novaja Semlia.

Probably it is circumpolar, for it is noted from N. of Alaska 68°48′ N., 165°10′ W., surf., and Collinson Point, and from the Pacific Ocean S. of Alaska 59°30′ N., 159°42′ W., surf., and 54°23′ N., 164°45′ W., surf. (Shoemaker 1920, p. 25). It is also noted from Humboldt Bay, Popof Island, Alaska (Holmes, Harriman's Alaska Exped. vol. 10, 1904, p. 233).

More southerly areas. Tattersall's record (1906, pp. 5, 24) as being at times extremely numerous off West Ireland, undoubtedly, in any case, chiefly applies to *T. gracilipes*.

On the strength of the figure given by Bonnier 1896 of ant. 1, it may be considered rather certain that the female with ova, 9 mm. long which he records from 950 metres depth in the Bay of Biscay, is the present species, and perhaps this also applies to some few of the specimens mentioned by Stebbing (1904), but the greater part of his specimens are almost beyond a doubt *T. gracilipes*. Also the specimens mentioned by Chevreux 1900 and Bull. Inst. Océanogr. Monaco, No. 262, 1913, p. 6 (Mediterranean) are undoubtedly *T. gracilipes*.

Gran (1902, p. 211) describes its occurrence in the following manner "Wasserschichten arktischen Ursprungs", and this characterizes it extremely well as contrasted with *T. gracilipes* which is a more southerly species. It is also correct when Gran designates it as oceanic, for the depth of the sea is, when noted, as a rule very great: (300) 400—3127 m.; the specific name "*abyssorum*" is thus most suggestive. As to Gran's other statements they are due to the usual confusion with *T. gracilipes*.

The distribution is thus in the main surely established; indications in existing literature of non-arctic (boreo-arctic) and actual Atlantic occurrences must undoubtedly, as stated elsewhere, be referred to

T. gracilipes (further see this species in my paper on the "Thor"-Hyperiidea, pt. 2). (*T. oblivia* Vosseler 1901 I cannot at all attribute to any species known by me.) —

The size is evidently dependent on the temperature, inasmuch as the largest known individuals (17—21 mm.) originate from the Arctic (Norwegian) Sea, whereas the largest specimens from more southern waters (Skagerak; ♀ with ova from the Bay of Biscay) are only 9 mm. Further the species in the northern waters may occur in large shoals which more particularly appears from my own collections ("Rink"-Exped.) in Greenland, whereas in the Bay of Biscay it only seems to occur sporadically. Both of these facts point towards its being, if not purely arctic, then at any rate a boreo-arctic species.

23. **Themisto libellula** Mandt (Chart 5).

Gammarus libellula Mandt, Observationes in hist. nat. et anat. compar. in itinere Groenl. factæ, 1822, p. 32.
Euthemisto Nordenskiöldii Bovallius, Arct. and Antarct. Hyper. 1887, p. 570, Pl. 47, figs. 104—110.
— *libellula* Bovallius, ibid. p. 569, Pl. 46 figs. 90—96.
— — — Monograph pt. 1:2, 1889, p. 281 (lit. and syn.), Pl. 12 figs. 1—31.
* — — G. O. Sars, 1895, p. 13, Pl. 6 fig. 1.
— — Tesch 1911, p. 185, Pl. 25 (distrib., biol.).
— — K. Stephensen, Conspectus 1913, p. 100.

Occurrence. The "Ingolf" has taken this species at the following Stations:

Davis Straits: St. 33. 67°37′ N., 55°30′ W. 66 m.; 1 spec.
— — - 31. 66°43′ N., 55°57′ W. 166 m. Vertical haul 94 m. 2 spec.
— — - 32. 66°35′ N., 56°38′ W. 600 m. Vertical haul 188 m. 1 spec.
— — - 29. 65°34′ N., 54°31′ W. 128 m. Vertical haul 94 m. Abt. 10 spec.
— — - 35. 65°16′ N., 55°05′ W. 682 m. 4 spec.
— — Plankton net II, 27: 64°35′ N., 54°20′ W. Abt. 15 spec.
— — — No. 25 (= St. 26): 63°56′ N., 52°41′ W. 64 m. 3 spec.
— — St. 26 (ibid.): Vertical haul 38 m. 4 spec.
S.W. of Iceland: Plankton net (P. II), 28: 61°02′ N., 29°32′ W. 1 spec.
S.E. of Iceland: Cylinder net No. 17 (1896): 64°17′ N., 12°17′ W. 2 spec.
E. of Iceland: — No. 26: 65°24′ N., 13°26′ W. 2 spec.
— — — - 27: 65°48′ N., 13°50′ W. 6 spec.
— — St. 58: 64°25′ N., 12°09′ W. 397 m., Plankton net 188 m. Abt. 10 spec.
— — ibid., bottom(?), 4 spec.
— — Apstein haul No. 12 (= St. 59): 65°00′ N., 11°16′ W. Abt. 10 spec.
N.E. of Iceland: St. 101: 66°23′ N., 12°05′ W. 1011 m. Vertical haul 188 m. Abt. 15 spec.
— — - 102. 66°23′ N., 10°26′ W. 1412 m. Abt. 15 spec.
— — ibid. Vertical haul 188 m. Abt. 15 spec.
— — St. 103. 66°23′ N., 8°52′ W. 1090 m.: Abt. 10 spec.
— — - 104. 66°23′ N., 7°25′ W. 1802 m. 2 spec.

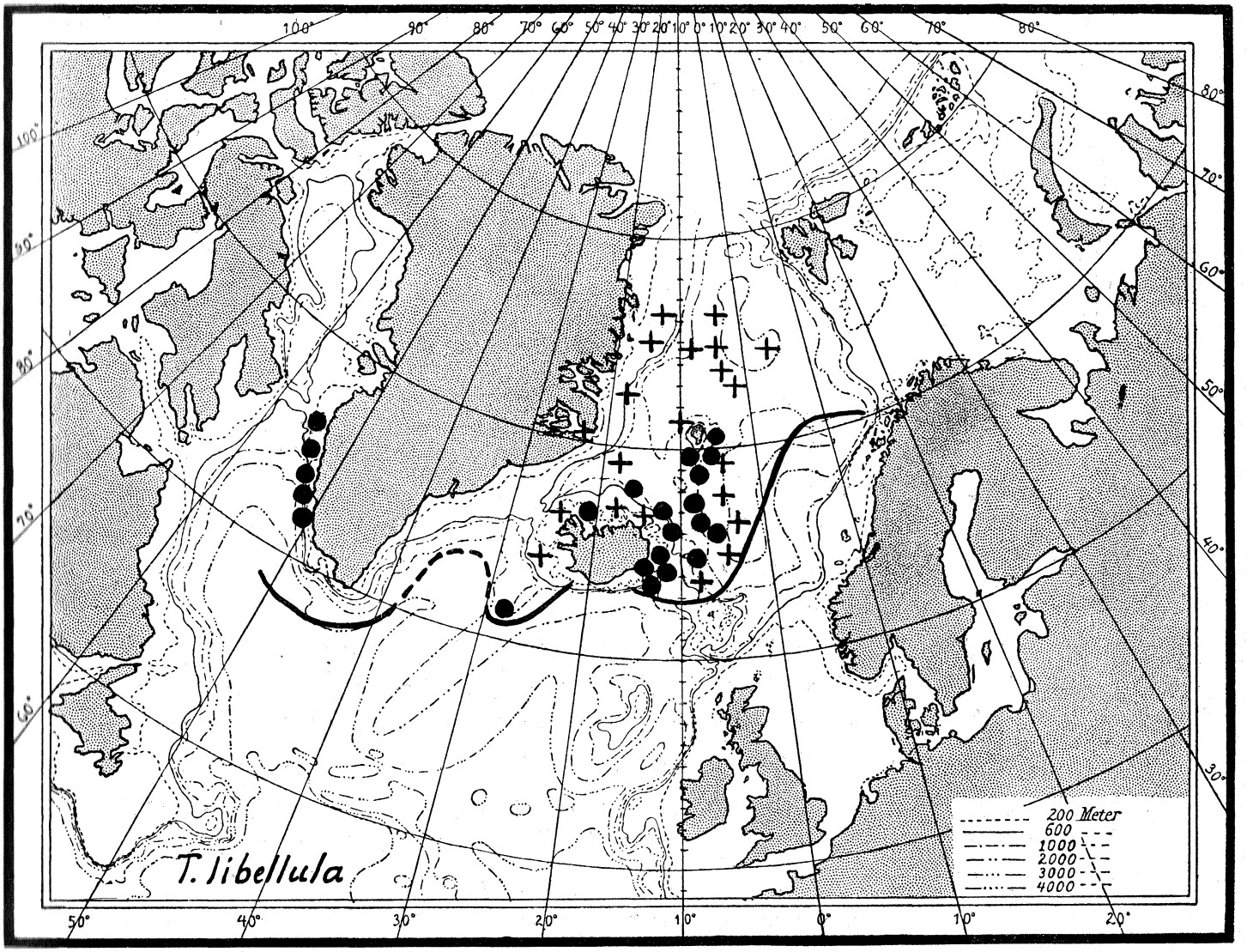

Chart 5. *Themisto libellula*. ● Localities from the "Ingolf". + localities, not earlier mentioned in the literature. —— the southern limit for distribution; the locality 42°55′ N., 46°38′ W. lies outside the Chart to the S.W.

N.E. of Iceland: St. 111. 67°14′ N., 8°48′ W. 1620 m. 1 spec.
— — - 120. 67°29′ N., 11°32′ W. 1667 m. Vertical haul 188 m. Abt. 15 spec.
N. of Iceland: Apstein haul No. 68 (= St. 125): 68°08′ N., 16°02′ W. Abt. 10 spec.
— — — — - 72 (= St. 128): 66°49.5′ N., 20°05′ W. 1 spec.
S. of Jan Mayen: St. 113. 69°31′ N., 7°06′ W. 2465 m. 4 spec.
— — Apstein haul No. 59 (= St. 113), ibid. 1 spec.
— — St. 116. 70°04′ N., 8°29′ W. 700 m. Abt. 10 spec.
— — - 117. 69°13′ N., 8°29′ W. 1889 m. 7 spec.
— — - ibid. Vertical haul 188 m. Abt. 10 spec.
— — St. 118. 68°27′ N., 8°20′ W. Plankton net 188 m. 4 spec.
N. of the Færoes: St. 105. 65°34′ N., 7°31′ W. 1435 m. Abt. 10 spec.

The East Greenland-Expedition 1898—1900 has secured numerous specimens from the following localities: N. of Grusöen (E. Greenland 66°1′ N.), from the stomach of a *Phoca foetida*, 21. 9. 1898, abt. 10 spec (abt. 40 mm.). During the sailing from Europe towards Jan Mayen the species was for the first time taken 66°20′ N., 3°10′ W. (23. 6. 1900, 1.00 am., St. E. 21); later on it was taken at the following localities at the surface: 23. 6. 1900 (0.00 pm.: 67°19′ N., 4°21′ W.), 15 hauls; 24. 6. 1900 (0.00 pm.: 69°06′ N., 6°12′ W.), 4 hauls, one of which had a depth of 94—113 m.; 25. June to 1. July, Jan Mayen, 19 hauls; N. W. of Jan Mayen 73°10′ N., 4° W., 1 spec. (from the stomach of *Cystophora*); 3.7.1900, 73°25′ N., 3°05′ W., several spec. 4. 7. 1900, and 74°30′ N., 5°30′ W., 2 hauls, 6. 7. 1900; N. of Jan Mayen 74°27′ N., 8° W., 3 hauls, 7. 7. 1900, and 74°28′ N., 7°30′ W., 1 haul, 8. 7. 1900; E. of N.E. Greenland 74°15′ N., 16°29′ W., 200—0 m., 1 haul, 10. 7. 1900; N. of Iceland 69°50′ N., 18°20′ W., 1 haul, 2. 9. 1900; N. W. of Iceland 67°16′ N., 24° W., 1 haul, 4. 9. 1900. —

The East Greenland-Expedition 1891 secured the species from the following localities: E. of Iceland 65°22′ N., 6°41′ W., abt. 10 spec.; N. E. Greenland: 74°2′ N., 2°15′ E., numerous (abt. 100) small spec.; 75°37′ N., 6°40′ W., 2 great spec.; 76°36′ N., 12° W., at the ice, 1 spec.; 72°26′ N., 19°56′ W., surf., 1 great spec. and several hundred small spec. (abt. 5—10 mm.); 70°22′ N., 22°57′ W., at the shore, 2 spec.; Danmark's Ø (in Scoresby Sund), 3 spec. —

The Copenhagen Museum further possesses specimens from the following localities, not earlier mentioned in the literature: N. Iceland: Eyja Fjörðr 40 m. wire ("Thor" St. 141, 19. 6. 1903), 1 great spec., and Grimsey, the west side, from the stomach of cods, Otterström 26. 6. 1903, abt. 10 spec. ca. 30—40 mm. — N. E. Iceland: Nepa, from the stomach of cods, "Diana", Hörring 3. 6. 1898, 6 spec. — W. Iceland: 65°27′ N., 27°10′ W., 700—765 m., 3 spec.; ibid. 50 m. wire, 1 spec., and 800 m. wire, 1 spec. ("Thor" St. 154, 20. 6. 1904). — N. of the Færoes: 63°36′ N., 6°20′ W., 600 m. wire, 2 spec. ("Thor" St. 12, 11. 5. 1903). — W. Greenland: Jacobshavn, abt. 10 spec.

Besides, the Museum possesses some Greenland specimens from localities, from where the species was earlier known.

Size. This species can attain a very considerable size, > 40 mm. though the specimens are as a rule much smaller, 10—25 mm. Very large specimens (> 40 mm.) were taken by the "Ingolf" at the following Stations: St. 103, 104, 111, 113, 116, 117; further we possess 10 spec. from Jacobshavn and abt. 10 spec. from Grimsey, 30—40 mm.

Distribution. Arctic Ocean, at all depths. The Copenhagen Museum possesses one very great spec., 43 mm., from 42°55′ N., 46°38′ W., 100—125 m., Andréa 1862. — Further see my Conspectus 1913, p. 102, Stappers 1911, p. 79, Oldevig 1917, p. 40, and Chart 5. — Several localities N. of Alaska and arctic Canada (Shoemaker 1920, p. 23—24, 28). The species is probably circumpolar.

24. **Themisto compressa** Goës.

(= *T. compressa* Goës f. *compressa* Goës + *T. compressa* Goës f. *bispinosa* Boeck.)

In my paper on the "Thor"-Hyperiidea pt. 2 I have shown that the two "species" *T. compressa* Goës and *T. bispinosa* Boeck are not always so sharply separated as given by Sars, but are to be considered formæ or varieties of one and the same species. Ibid. is given a summary of existing literature.

In the following each of the two "species" is treated separately.

24 A. **Themisto compressa** Goës forma **compressa** n. n. (Chart 6).

Themisto compressa Goes, Öfvers. Kgl. Svenska Vet. Akad.s Förhandl., 1865, p. 533, Pl. 41 fig. 34.
Lestrigonus spinidorsalis Sp. Bate, Ann. Mag. Nat. Hist., ser. 5, vol. 1, 1878, p. 411, fig. 2.
Euthemisto compressa (partim) H. J. Hansen 1887, p. 59.
— — — Bovallius, Monograph pt. 1:2, 1889, p. 305 (lit. and syn.), Pl. 12 figs. 46—47 (not Pl. 13 figs. 32—43).
Parathemisto — Stebbing 1888, p. 1409.
**Euthemisto* — G. O. Sars 1895, p. 12, Pl. 5 fig. 2.
— — Vosseler 1901, p. 81, Pl. 8 figs. 11—17 (not figs. 3—10) (lit. and syn.).
— — Chevreux, Bull. Inst. Océanogr. Monaco, No. 204, 1911, p. 13.

Occurrence. Taken at numerous stations both by the "Ingolf" and by the "Thor".

Davis Straits: "Ingolf" St. 24. 63°06′ N., 56°00′ W. 2258 m. Vertical haul 376 m. Abt. 8 ccm. small spec., and 2 ♀ with ova 11 mm.
— — — - 32. 66°35′ N., 56°38′ W. 600 m. Vertical haul 188 m. 2 spec.
S. of Greenland: "Ingolf" St. 20. 58°20′ N., 40°48′ W. 3192 m. Vertical haul 376 m. 1 ♀ with ova 6 mm.
S.W. and W. of Iceland: "Ingolf" St. 17. 62°54′ N., 26°34′ W. 1403 m. Vertical haul 376 m. 5 spec. (including 2 ♀ with ova 8 mm.).
— — — — - 18. 61°44′ N., 30°29′ W. 2137 m. Vertical haul 376 m. 7 spec.
— — — — - 78. 60°37′ N., 27°52′ W. 1505 m. 1 ♀ with embryos 9 mm.
— — — — - 97. 65°28′ N., 27°39′ W. 847 m. 5 spec.
— — — — 61°30′ N., 27°30′ W. Cylinder net, haul No. 25. Abt. 30 spec., including 1 ♀ with ova 7 mm.
— — — "Thor" St. 152 (19. 6. 1904). 65°00′ N., 28°10′ W. 1240 m. 800 m. wire. Abt. 20 spec. (most of them adult?) 7—11 mm., including 4 ♀ with ova and 1 ♀ with embryos, 7—8 mm.
— — — — - 153 (20. 6. 1904). 65°20′ N., 27°12½′ W. 740—768 m., 810 m. wire. 1 spec.
— — — — - 154 (21. 6. 1904). 65°27′ N., 27°10′ W. 700—765 m. 800 m. wire. 1 spec.
— — — — — ibid. (m. wire?). 1 ♀ with ova 7 mm.
— — — — St. 161 (11. 7. 1903). 63°40′ N., 21°58′ W. 35 m. 1 spec.

S. of Iceland: "Ingolf" St. 54. 63°08′ N., 15°40′ W. 1301 m. Vertical haul 188 m. 5 spec., including 1 ♀ with ova 7 mm.

— — — - 63. 62°40′ N., 19°05′ W. 1506 m. Vertical haul 188 m. Abt. 20 spec.

— — — - 68. 62°06′ N., 22°30′ W. 1588 m. Vertical haul 188 m. 7 spec.

— — — - 69. 62°40′ N., 22°17′ W. 1118 m. Vertical haul 188 m. 1 ♀ with ova 8 mm.

— — — 63°45′ N., 22°37′ W. Cylinder net, haul No. 32. Abt. 10 spec.

— — — Cylinder net, haul No. 33: between 63°00′ N., 19°30′ W. and haul No. 32. 10 spec.

— — — 63°00′ N., 18°00′ W. Cylinder net haul No. 35. 2 spec.

— — "Thor" St. 167 (14. 7. 1903). 63°05′ N., 20°07′ W. 575 m., dredge. 6 spec.

— — — - 181 (19. 7. 1903). 1025 m. 63°19.5′ N., 15°50′ W. Pelagic townet, surf. 12 ccm.

— — — - 171 (16. 7. 1903). 63°15′ N., 22°23′ W. 216—365 m. 5 spec.

— — — - 174 (8. 7. 1904). 63°43.5′ N., 22°22′ W. 109 m. 110 m. wire. 1 spec.

— — — - 177 (8. 7. 1904). 63°11′ N., 21°30′ W. 15 m. wire. 1 ♀ with embryos 9 mm.

— — — - 177 (9. 7. 1904). 63°11′ N., 21°30′ W. 320 m. Abt. 20 spec. 7—11 mm., including 5 ♀ with ova 8—10 mm.

— — — - 180 (10. 7. 1904). 61°34′ N., 19°03′ W. 2160 m. 1800 m. wire. 8 spec.

— — — - 183 (11. 7. 1904). 61°30′ N., 17°08′ W. 1800 m. wire. Abt. 100 spec., including a few ♂ ad. 12 mm., and 7 ♀ with ova or embryos 7—9 mm.

— — — - 184 (12. 7. 1904). 62°42′ N., 18°53′ W. 1340 m. 100 m. wire. 8 spec.

— — — - 190 (14. 7. 1904). 63°29′ N., 21°25′ W. 94—120 m. 110 m. wire. Abt. 200 spec., including abt. 10 ♀ with ova 8—9 mm.

— — — - 285 (1. 9. 1904). 62°49′ N., 18°46′ W. 100 m. wire. Abt. 25 spec. 8—12 m., including 1 ♀ with ova 10 mm.

— — — - 286 (2. 9. 1904). 61°49′ N., 14°11′ W. > 1000 m. 8 spec.

S.E. of Iceland: "Ingolf" St. 47. 61°32′ N., 13°40′ W. 1747 m. Vertical haul 188 m. 2 spec.

— — "Thor" - 183 (11. 7. 1904). 61°30′ N., 11°08′ W. 1800 m. wire. 2 spec.

— — — - 163 (28. 8. 1905). 62°36′ N., 12°05′ W. 721 m. 300 m. wire. 2 spec.

S.W. of the Færoes: "Ingolf": 61°32′ N., 10°47′ W. Cylinder net, haul No. 14. 1 spec.

— — E. Greenland Exp. 25. 9. 1900: 60°27′ N., 11°45′ W. (4.00 pm., F. 400). 1 spec.

— — "Thor" St. 14 (12. 5. 1903). 62°40′ N., 8°44′ W. 498 m. 500 m. wire. 3 spec. 9—11 mm.

— — — - 165 (29. 8. 1905). 60°00′ N., 10°35′ W. 300 m. wire. 1 spec.

N. of the Færoes: "Ingolf" St. 40, 63°30′ N., 7°40′ W. 1393 m. 1 spec.

E. of Iceland: "Thor" St. 24 (15. 5. 1903). 64°35′ N., 11°45′ W. 435 m. Near the bottom. 1 ♂ ad 12 mm.

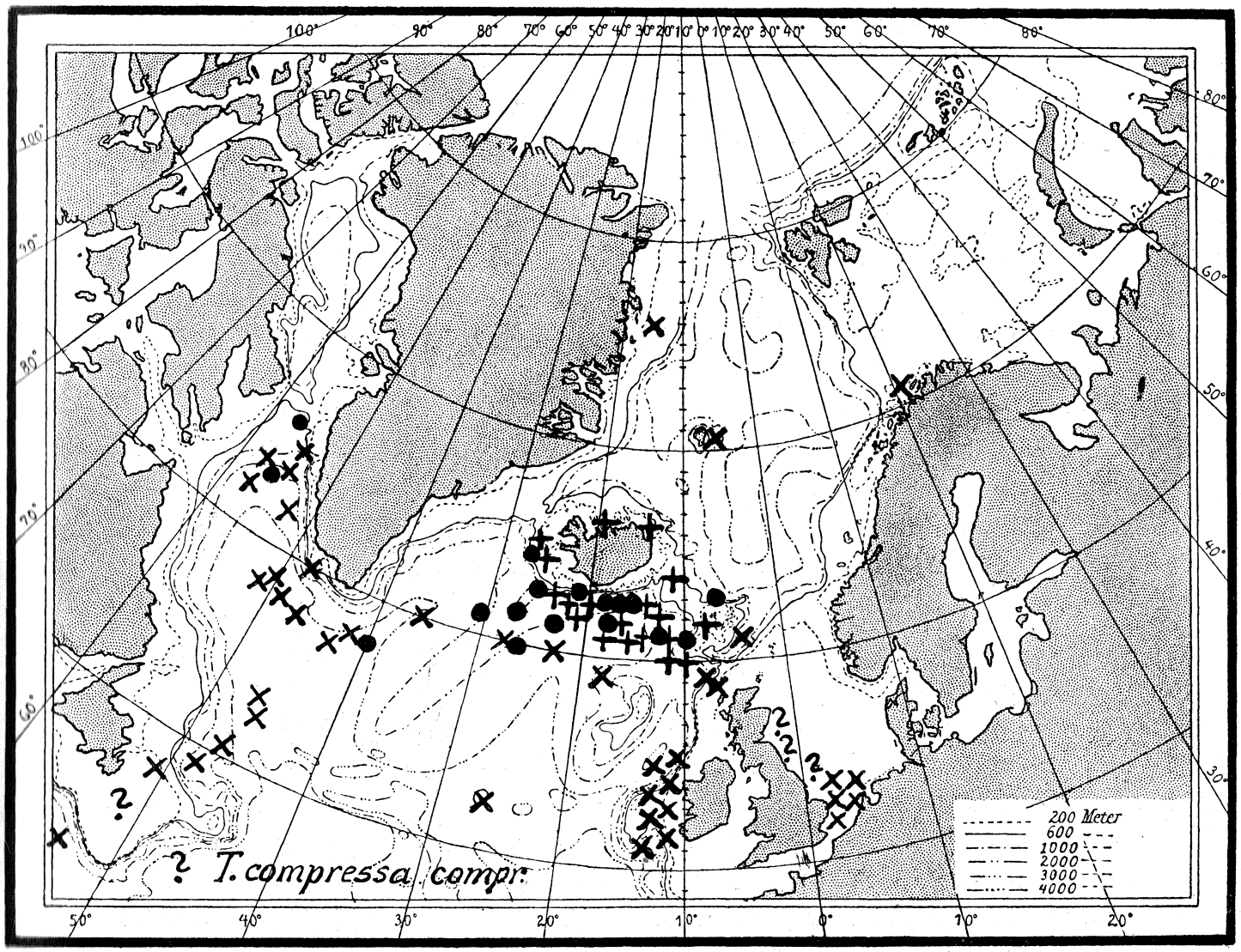

Chart 6. *Themisto compressa* f. *compressa*. ● Localities from the "Ingolf"-Expedition. + Other localities not mentioned in the literature. × Localities from the literature (a number of localities lies outside the chart of the south. The locality Black Tickle [Labrador] I have not be able to find in any chart).

?E. of Iceland: "Thor" St. 240 (7. 8. 1904). 64°12′ N., 11°45′ W. 316 m. 1 spec. jun. (determination uncertain).

N.E. of Iceland: "Thor" St. 123 (30. 5. 1904). 66°16′ N., 14°30′ W. 70 m. 75 m. wire. 1 ♀ with embryos 18 mm.

N.-Iceland: "Thor" St. 128 (1. 6. 1904). Husavik, 90—110 m. 40 m. wire. Abt. 50 spec. 11—16 mm., including a few ♀ with ova 11—14 mm.

— Eyjafjörðr. Möller 1868, 3 spec., and Steincke 1889, 2 spec.

In addition to this material our Museum possesses some specimens from a few localities in the "Ingolf"-area, known from recent literature. —

From W. Greenland it is known from abt. 58°—65° N., and from E. of Greenland abt. 58° N. and abt. 76° N.; for special localities see my Conspectus 1913, p. 103, and my paper on the "Rink"-Exped. 1916,

pp. 175—76. In the Greenland waters it is found from the very surface to a depth answering to 1000 (2000) m. wire, but the depths most often seem to be abt. 100—500 m. wire, i. e.: the temperature is 0°—3.5°.

Norman (1900, p. 132) mentions it from the Davis Straits, Greenland ("Valorous"-Exped.), and 59°16′ N., 37°16′ W. (east of the south point of Greenland). — Jan Mayen, 357 m., ÷ 0.6° (Sars 1895). — The Færoe Channel (Norman 1900).

Size. The size may be up to 22 mm (see the "Thor"-Exped.); but in the "Ingolf" area the size is smaller, 10—15 mm., very rarely 17—19 mm. From our area is scarcely known any ♂ > 10 mm.; ♀ with ova are only (9) 10—14 mm. (specimens from S. Greenland).

Distribution. The most northeasterly locality is Hasvik in Westfinmarken, where it occurs rather sporadically in deep water (Sars 1895). —

Most of the statements from the area off the Bristish Isles undoubtedly must be accepted with due caution, as the species is often confused with *T. gracilipes* (see this species in my paper on the "Thor"-Hyperiidea, pt. 2). In some cases the confusion has later on been cleared up in the literature, e. g. by Norman 1909 who states that the frequently repeated note on *"Euthemisto compressa"* which has been washed ashore in great quantities at Redcar (Yorkshire), in reality applies to *T. gracilipes*. Tattersall (1906) says that he considers *T. gracilipes* a juvenile form of *T. compressa*, for which reason he considers them synonymous, and Tesch (1911, p. 185) makes such a fusion or confusion extremely probable as regards the lists of the International Marine Investigations.

There are the following records from the area round the British Isles (besides Tesch 1911, mentioned above), but the localities with ? probably apply to *T. gracilipes*. West of May Island, Scotland, Feb. 1892 (Scott, 10th Fishery Board for Scotland [1892], p. 265). — ?Aberdeen (Bate 1878; *Lestrigonus spinidorsalis*). — ?70—80 miles E. by N. of the mouth of the Humber (Norman 1900, p. 132). — ?Northumberland (Brady and Norman 1909). — Tesch (1915, p. 320, 351) records it from a number of localities in the southern part of the North Sea, especially at the English coasts, at times in shoals. Some of the specimens measure 18 mm. and are thus undoubtedly this species; but the greater part are small, so that there have no doubt been many *T. gracilipes* among them, which also seems to appear from the rather shallow depth of the sea (17—80 m.) — Tattersall (1906) records it as numerous off the west coast of Ireland at all seasons, abt. 90—900 m., rarely deeper, but he says himself that there are several *"E. gracilipes"* among them. —

The Bay of Biscay, abt. 180—0 m. (Stebbing 1904). — The southernmost known occurrence off Europe is 45°28′ N. 5°43′ W., 4500 m. wire, 1 ♀ with ova, 23 mm. (Chevreux 1911). —

From the Atlantic outside the European waters it has apart from the "Ingolf" area (see above), been found in the following places. Black Tickle, Labrador (Shoemaker 1920, p. 28). — 52°33′ N., 26°44′ W. (Norman 1900). — ?New Foundland bank, surf., 1 ♀, and ?45°18′1/4 N., 46°51 3/3′ W., surf. (Chevreux 1900, p. 146). — According to H. B. Bigelow (Bull. Mus. Comp. Zool. Harvard College, vol. 58, No. 2, 1914, p. 19, Pl. 5 [distribution]) it is to be found in the Gulf of Maine, scattered all over the whole of the bay; when depth, salinity and temperature are noted, it is 0—100 m. below surface, 32.5—32.7 ‰ salinity, 12°—14° C.

The largest material from the Atlantic is that dealt with by Vosseler (1901, the German Plankton-Exped.); it contains from 27 stations 333 spec. (260 ♀, 73 ♂) + 1858 spec. of *"Euth. bispinosa"* + *"E. com-*

pressa". He records it from the following localities: Irminger Sea: 5 stations 60.2° N., 22.7° W. to 60.3° N., 28.8° W., and 60.1° N., 36.8° W., 400—0 (600—0) m.— West Greenland Current, 2 stations: 52.6° N., 46.3° W., and 53.8° N., 45.6° W., surf. — Labrador Current, 11 stations 50.8° N., 47.3° W., to 42.4° N., 55.7° W., 200—0 m. or surf. (but 2 stations 500—0 m. and 750—0 m.).— Gulf Stream, 6 stations 58.7° N., 6.5° W., to 59.9° N., 18° W., surf. or 400—0 m., or at the bottom (1 stat.: 1524 m.).— Florida Current, 1 stat. 40.4° N., 57° W., 200—0 m. — Sargasso Sea, 1 stat. 31.5° N., 45.6° W., 400—0 m. — Southern Equatorial Current, 7.8° S., 17.3° W., 225—0 m. — At most of these stations only a few specimens have been taken, but in some places actual shoals have been encountered, e. g. in the Gulf Stream 58.7° N., 6.5° W., 100—0 m.: 98 spec.; the Irminger Sea 60.2° N., 22.7° W., 400—0 m.: 82 spec., and at the above mentioned station in the Sargasso Sea even 442 spec. (*E. compressa* + *E. bispinosa*). —

As shown in the above the species has thus chiefly been found in the temperate regions of the Atlantic North of abt. (40°) 50° N. but only very rarely North of the ridge from Scotland to Greenland; it lives, as a rule, at great depths of the sea (> 500—1000 m.), still not particularly deep down (most frequently 10—200 m.)

South of abt. 40° N. it has, as far I have been able to see, besides at the two above-mentioned stations from the German Plankton-Exped. only been found at 35°10′ S., 13°40′ W. (11 spec., 14 mm.), and 36°27½′ S., 8°20′ W. (Tristan da Cunha, several spec., 6.5 mm.) (Stewart, Ann. Mag. Nat. Hist., ser. 8, vol. 12, 1913, p. 257). With the exception of quite a few finds the species is thus not at all found in the Atlantic between abt. 40° N. and 35° S.

24. B. **Themisto compressa** Goës forma **bispinosa** Boeck, n. n.

Themisto bispinosa Boeck 1870, p. 88.
Euthemisto compressa (partim) H. J. Hansen 1887, p. 59.
— *bispinosa* Stebbing 1888, p. 1408.
— — (partim) Bovallius, Monograph pt. 1:2, 1889, p. 305, Pl. 13 figs. 32—43.
* — — G. O. Sars 1895, p. 14, Pl. 6 fig. 2.
— — Vosseler 1901, p. 82, 84 Pl. 8 figs. 3—10 (not figs. 11—17), textfig. 3 (p. 85).
— — Tesch 1911, p. 186.

See also my paper on the "Thor"-Hyperiidea. pt. 2.

Occurrence. Taken at numerous stations both by the "Ingolf" and the "Thor".

Davis Straits: "Ingolf" St. 36. 61°50′ N., 56°21′ W. 2702 m. Vertical net 188 m., abt. 15 spec.
— — — - 24. 63°06′ N., 56°00′ W. 2258 m. 1 spec.
— — — — ibid., vertical haul 376 m. Abt. 15 spec.
— — — St. 25. 63°30′ N., 54°25′ W. 1096 m. Vertical haul 376 m. 5 spec.
— — — - 27. 64°56′ N., 55°10′ W. 740 m. Vertical haul 376 m.

W. of S. Greenland: "Ingolf" St. 94. 64°56′ N., 36°19′ W. 385 m. 1 spec.

S.W. of Iceland: "Ingolf", 60°23′ N., 27°25′ W. Cylinder haul No. 24. 6 spec.
— — — 64°45′ N., 29°06′ W. Apstein net No. 35. 4 spec.
— — — 65°28′ N., 27°39′ W. 1 spec.

S.W. of Iceland: "Thor" St. 152 (19. 6. 1904). 65°00′ N., 28°10′ W. 1240 m. 800 m. wire. 1 spec.
S. of Iceland: "Ingolf", 61°45′ N., 22°37′ W. Cylinder net No. 31. 1 spec.
— — — 63°45′ N., 22°37′ W. — No. 32. Abt. 10 spec.
— — — 63°00′ N., 19°30′ W. — No. 34. Abt. 35 spec.
— — — Cylinder net No. 33 (between Nos. 32 and 34). Abt. 50 spec.
— — — 63°00′ N., 18°00′ W. Cylinder net No. 35. 1 spec.
— — — 61°15′ N., 18°00′ W. Plankton net No. 46. 1 spec.
— — — St. 40. 62°04′ N., 21°36′ W. 1393 m. Vertical haul 188 m. Abt. 25 spec.
— — "Thor" - 166 (14. 7. 1903). 62°57′ N., 19°58′ W. Abt. 1000 m. 4 spec.
— — — - 167 (14. 7. 1903). 63°05′ N., 20°07′ W. Abt. 600 m. 2 spec.
— — — - 171 (16. 7. 1903). 63°15′ N., 22°23′ W. 216—326 m. 9 spec.
— — — - 177 (9. 7. 1904). 63°11′ N., 21°30′ W. 320 m. 5 spec.
— — — - 184 (12. 7. 1904). 62°42′ N., 18°53′ W. 1340 m. 100 m. wire. 6 spec.
— — — - 181 (19. 7. 1903). 63°19.5′ N., 15°50′ W. Abt. 1000 m. Pelagic tow net, surf. Abt. 100 spec.
— — — - 185 (12. 7. 1904). 63°16′ N., 19°17′ W. 30 m. wire. 6 spec.
— — — - 285 (1. 8. 1904). 62°49′ N., 18°46′ W. 100 m. wire. 1 spec.
— — — - 286 (2. 9. 1904). 61°49′ N., 14°11′ W. > 1000 m. 1 spec.
Between Iceland and the Færoes: "Ingolf" St. 40. 63°30′ N., 7°40′ W. 1 spec.
— — - — — 64°17′ N., 12°17′ W. Cylinder net No. 17. (1896). Abt. 20 spec.
— — - — — 63°20′ N., 8°14′ W. — - 39. 4 spec.
— — - — — St. 105. 65°34′ N., 7°31′ W. Plankton net 188 m., 1 spec.
— — - — "Thor" - 14 (12. 5. 1903). 62°40′ N., 8°44′ W. 498 m. 498 m. wire. 1 spec.
— — - — — - 58 (3. 5. 1904). 64°35′ N., 11°45′ W. 15 m. wire. 1 spec.
— — - — — - 230 (4. 8. 1904). 63°10′ N., 7°31′ W. 1190 m. 1200 m. wire. 1 spec.
— — - — — - 162 (27. 8. 1905). 63°42′ N., 13°02′ W. 560 m. 65 m. wire. 4 spec.
— — - — — - 163 (28. 8. 1905). 62°36′ N., 12°05′ W. 721 m. 65 m. wire. 4 spec.
— — - — — ibid. 300 m. wire. 1 spec.
— — - — — St. 164 (29. 8. 1905). 61°20′ N., 11°00′ W. 1300 m. 300 m. wire. 1 spec.
N.E. Iceland. "Thor" St. 123 (30. 5. 1904). 66°16′ N., 14°30′ W. 70 m., 75 m. wire. 1 spec.
S.E. of the Færoes: "Thor" St. 124 (23. 7. 1905). 61°04′ N., 4°33′ W. 1075 m. 1000 m. wire. 4 spec.
In addition to this material the Copenhagen Museum possesses specimens (not mentioned in the

literature) from the following localities in the "Ingolf"-area: S. Greenland 59° N., 51° W., Olrik ded. 1867, abt. 15 spec.; 57°56′ N., 44°2′ W., 8. 6. 1882, Ryder ded. 1883, a few spec.; 57°08′ N., 49°04′ W., W. Lundbeck leg. 19. 5. 1889, 1 spec.; Eyjafjörðr (N. Iceland), Steincke 1889, 2 spec., and Möller 1868, abt. 10 spec.; S. of Iceland 62°41′ N., 16°27′ W. (donator?), 3 spec.

In the literature the species is noted from the following localities in the "Ingolf"-area: W. Greenland S. of abt. 64½° N., and S. of Greenland (K. Stephensen 1913); it also penetrates into Bredefjord in S. Greenland (abt. 60½°—61° N.; K. Stephensen 1916). — E. of Greenland abt. 71½° N., 400—200 m. (Duc d'Orléans). — 60°24′ N., 49°57′ W. (S. of Greenland), and the Færoe Channel (Norman 1900, p. 133). — North of Shetland 63°17′ N., 1°27′ W., 1977 m., ÷ 1.0° (Sars 1886).

Size. The majority of the specimens in our Museum from the "Ingolf"-area are < 10 mm; but several are much greater, 11—16 (19) mm. ♀ with ova or embryos are found by the "Tjalfe"-Exped. in the Davis Straits abt. 58°—63° N., April 23 to June 7; the sizes of these ♀ are 11—16 mm., of one single specimen 19 mm. ("Tjalfe", St. 15 500 m. w.).

Farther to the South the species is greater: the "Thor" has between Ireland and Gibraltar secured several specimens of the size of 18—22 mm. (both ♂ and ♀). In these more southern waters ♀ with ova are found in March, June and Sept.; ♀ with ova are (6) 10—16 (20) mm.

Vertical occurrence. Several specimens were taken with the dredge ("Ingolf"), probably not at the very bottom but during the hauling in. Numerous specimens were secured at the very surface or not very far below it (vertical haul 188 or 376 m., or with pelagic implements with up to 500 m. wire). Farther to the South (Ireland to Gibraltar, "Thor") the depth below surface is the same.

Distribution. The distribution is in the main exactly as in the case of forma *compressa* (see above p. 30), and the two forms are very often — one may nearly say as a rule — taken together, but only exceptionally in arctic waters.

Off East America it has been taken at various places North of the Gulf of Maine (Tesch 1911). — Barents Sea, Norwegian Sea, Færoe-Shetland Channel, twice in Moray Firth; in the North Sea extremely rarely and only during the winter (Tesch 1911 and 1915). — Sørvær and Hasvik in West-Finmarken; Spitzbergen? (Sars 1895). — Temperatures at stations from the International Marine Investigations oscillate between ÷ 0.99° C. and + 11.25° C., but the species is able to endure still higher temperatures, being found all the year round, off West Ireland (Tattersall 1906; Tesch 1911). —

The largest material of this "species" on record in existing literature is that mentioned by Vosseler (1900) in the German Plankton-Expedition, and which comprises 199 specimens (179 ♀, 20 ♂) of *"Euth. bispinosa"* + 1858 specimens of *"E. bispinosa"* + *"E. compressa"*. In all it has been taken at 25 stations, distributed in the following manner: West Greenland Stream (1 stat.) 52.6° N.; 46.3° W., surf.; Irminger Sea, 10 stations, from 60.2° N., 22.7° W., to 60.1° N., 36.8° W., 400—0 m. (or surf. or 600—0 m.); Gulf Stream, 5 stations, from 59° N., 8.5° W., to 59.9° N., 18.8° W., 400—0 m. (or surf. or 1524 m.); Labrador Current, 8 stations, 50.8° N., 47.3° W., to 42.4° N., 55.7° W., surf. (or 200—0 m. or 500—0 m.). — 1 station (59° N., 8.5° W., 1524 m.) has yielded 959 spec. of *"E. bispinosa"* + *"E. compressa"*, another (60.1° N., 36.8° W.,

400—0 m.) 295 spec. of the same two "species". — Only one station is farther to the south viz. Sargasso Sea 31.5° N., 45.6° W., 400—0 m. 442 spec. (*"E. bisp."* + *"E. compr."*). —

The distribution in the Northern Atlantic thus presents the most complete agreement with *T. compressa* f. *compressa*.

South of 40° N. it has, as far I can see, besides in the above-mentioned locality from the German Plankton-Exped. only been found 35°10′ S., 13°40′ W. (Tristan da Cunha), 1 ♀ 13 mm. (along with *T. compr.* f. *compr.*) (Stewart 1913).

See also my paper on the "Thor"-Hyperiidea, pt. 2.

Fam. **Phronimidæ** Dana.

Phronimidæ (partim) Dana, On the Classification of the Crustacea Choristopoda or Tetradecapoda. — The American Journal of Science and Arts; ser. 2, vol. 14, 1852, p. 315.

Phroniminæ Bovallius, Monograph pt. 1:2, 1889, p. 340 (lit. and syn.).

Phronimidæ (partim) Stebbing 1888, p. 1342.

— Vosseler 1901, p. 1.

Only one species (*Phronima sedentaria*) of this southern family is found in the southern parts of the area.

Genus **Phronima** Latreille.

Phronima Stebbing 1888, p. 1346 (lit.).

— Bovallius, Monograph pt. 1:2, 1889, p. 342 (lit.).

* — Vosseler 1901, p. 1.

— K. Stephensen, "Thor"-Hyper. pt. 2.

*25. **Phronima sedentaria** Forskål.

Phronima sedentaria Stebbing 1888, p. 1357, Pl. 162 B.

* — — Bovallius, Monograph pt. 1:2, 1889 p. 354 (lit. and syn.; but not all the literature cited may be referred to this species); Pl. 16 figs. 1—3.

— — Chun, Das Männchen von Ph. sedent., nebst Bemerkungen über die Phronima-Arten; Zool. Anzeiger, vol. 12, 1889, p. 378 (♂ jun., not ♂ ad.; ♂ ad. = *Ph. atlantica*).

— — Chun, Atlantis IV, Die secundären Geschlechtscharaktere d. Männchen von Phronima; Bibliotheca Zoologica, vol. 7, 1895, p. 111, Pl. 7 fig. 2 (♂ jun., not ♂ ad.; ♂ ad. = *Ph. atlantica*).

— — Vosseler, Zool. Anzeiger vol. 23, 1900, p. 397, figs. 1—2.

* — — — 1901, p. 14, Pl. 1 figs. 1—11 (lit.).

— — R. Minkiewicz, Memoire sur la biologie du Tonnelier de mer (*Phronima sedentaria*) 1—2; Bull. Inst. Océanogr., Monaco, Nos. 146 and 152, 1910.

Occurrence. This species was only once taken by the "Ingolf":

S.W. of Iceland: St. 18: 61°44′ N., 30°29′ W. 2137 m. Vertical haul 376 m. 1 ♂ jun. abt. 7 mm.

By the "Thor" it was secured twice in the "Ingolf" area.

S.W. of the Færoes: St. 164 (29.8.1905). 61′20′ N., 11°0′ W. 1300 m. 65 m. wire. 2 ♀:1 ♀ 27 mm. with a group of small embryos (1.25 mm.) in the house, 1 ♀ 28 mm. with its house.

— — - 165 (29. 8. 1905). 60°00′ N., 10°35′ W. 1050 m. 1600 m. wire. 1 ♀ 28 mm., with several hundred embryos (2 mm.) in its house.

The species is new to the "Ingolf" area.

Distribution. A widely distributed species (a detailed list of localities see my paper on the "Thor"-Hyper. pt. 2). The northern limit for common occurrence in the Atlantic is a little North of 40° N.; it may be indicated by the following points: New England, various localities, several specimens (Holmes, Bull. Bureau Fisheries, Washington, vol. 24, 1905, p. 465); 41.6° N., 56.3° W., and 43.6° N., 17.9° W. (Vosseler 1901). North of this limit it has been taken only S.W. of Iceland ("Ingolf" St. 18, see above), and off the British Isles or in adjacent waters: "Thor" St. 164 and 165 (1905) (see above); Shetland and Burray (Zetland, Orkney Islands) (Bate & Westwood 1868, p. 26); S.W. Ireland (27, 135) 375—1800 m. wire (Tattersall 1906); ?S.W. Ireland (*Phronima* sp., name of the species not given; Walker, Transact. Liverpool Biol. Soc., vol. 12, 1898, p. 166); 52°18.1′ N., 15°53.9′ W., abt. 3000 m. (Walker, "Oceana" 1903, p. 230). — The southern limit in the Atlantic cannot be given; it is hardly noted south of 7.3° S., 21.4° W. (Vosseler 1901).

The species is also noted from the Indian and Pacific Oceans (special localities see my paper on the "Thor"-Hyperiidea, pt. 2).

3. Tribus **Curvicornia** Bovallius.

Hyperiidea curvicornia Bovallius 1890, p. 14, 18.

Curvicornia K. Stephensen, "Thor"-Hyper. pt. 2.

Fam. **Lycæidæ** Claus.

Tryphanidæ Boeck 1870, p. 88 (8).

Lycæidæ (partim) Claus, Platysceliden 1879, p. 143 (3), 177 (31).

* — — Platysceliden 1887, p. 55.

Tryphænidæ Bovallius, Syst. list 1887, p. 30.

* — — 1890, p. 18—19, footnote.

Lycæidæ Senna, Ann. Mus. Zool. Univ. Napoli, 1903, No. 6, p. 5.

Of this family only one species is known from the southern limit of the area.

Genus Tryphana Boeck (= Tryphæna Bovallius).

Tryphana Boeck 1870, p. 89 (9).

Tryphæna Bovallius, Syst. list 1887, p. 30.

Tryphana Stebbing 1888, p. 1538 (lit.).

Tryphæna G. O. Sars 1895, p. 16.

The name is written now *Tryphana*, now *Tryphæna*. Boeck writes *Tryphana*, but states (1876, p. 91) that it is derived from the Greek female name *Τρυφαινα*. It is Bovallius who has changed it to *Tryphæna*, but it is not a lucky change, as this form has a claim of priority in the case of a butterfly genus (*Triphæna* or *Tryphæna*; Fr. Treitschke, Die Schmetterlinge von Europa, vol. 5, Abt. 1, 1825, p. 252) which by the way has been derived from the same Greek name as that of Boeck.

26. **Tryphana Malmi** Boeck.

Tryphana Malmi Boeck 1870, p. 89 (9).

Tryphæna Nordenskiöldii Bovallius l. c. 1887, p. 30.

**Tryphana Boeckii* Stebbing 1888, p. 1539, Pl. 194.

**Tryphæna Malmi* G. O. Sars 1895, p. 17 Pl. 7.

Tryphana — J. J. Tesch 1911, p. 187.

Occurrence. This species was not taken by the "Ingolf".

In the literature it was noted by Bovallius (Arctic and Antarct. Hyper. 1887, p. 573: *T. Nördenskiöldii*) from "Off the Færö Islands at Lat. 65° N.", and by Tesch 1911, p. 187 it is given from a few localities S. or S.E. of the Færoes.

Distribution. The species was almost only found in the eastern half of the northern Atlantic, abt. 40°—67½° N., but also in quite a few cases south of this area. The list given below is no doubt complete.

Boeck's type-specimens were from the Hardangerfjord; Sars records it from 3 localities off Norway, viz. Sunde and Folgerö in Söndhordland south of Bergen, and Foldenfjord at Apelvær (abt. 67° N.), in all 3 localities, abt. 150—375 m.

East of Scotland and partly between Scotland (Shetland) and the Færoes it has been taken both winter and summer — very often, though as a rule only extremely few specimens at a time — by the International Marine Investigations (Tesch 1911). From the east side of Scotland it has also been mentioned by Norman (1900, p. 134) and by Scott (22nd Fishery Board, Scotland 1904, p. 256). West of the British Islands it is very widely distributed at all levels, but only a few specimens have been taken every time (Tattersall 1906; International Marine Investigations; Tattersall 1913, p. 21). The species is upon the whole chiefly known from the Scottish and West- and Southwest-Irish waters; but this is probably only due to the fact, that these waters are particularly well investigated.

Otherwise the species is known from 46°23′ N., 11°15′ W. (mouth of the Bay of Biscay, specimens in the Copenhagen Museum); between the Azores and New Foundland 40°28¾′ N., 38°53′ W., surf. (Chevreux 1900), and 18°8′ N., 30°3′ W., surf., night, temp. 73.7° F. (Stebbing l. c.).

As to temperatures, see Tesch l. c. Whether Tesch is justified in calling it "an apparently subtropical

or tropical species", the future must prove; it does not seem to appear from what is hitherto known. Tesch is of opinion that it prefers the surface to the great depths.

Fam. Brachyscelidæ n. n.

Euthamneidæ Bovallius 1890, p. 18.

Bovallius (l. c.) separated the two genera *Brachyscelus* and *Euthamneus* from the fam. *Lycæidæ* and out of these he established a new family, *Euthamneidæ*. *Brachyscelus*, however, being the older genus, established in 1861, whereas *Euthamneus* (*Thamneus*) only dates from 1887, the family must be named after the older genus and so be called *Brachyscelidæ*.

Of this tropical and subtropical family only two species have been found in (the southern part of) the area.

Genus Brachyscelus Sp. Bate.

Brachyscelus Sp. Bate, Ann. Mag. Nat. Hist., ser. 3, vol. 8, 1861, p. 7.
— — British Mus. Catal. Amphip. Crust. 1862, p. 333.
Thamyris — ibid. p. 335.
Schnehagenia Claus, Untersuch. Bau u. Verwandsch. d. Hyperiden; Nachricht. K. Gött. Soc., 1871, p. 157.
Thamyris — Platysceliden 1879, p. 178 (32).
— — Platysceliden 1887, p. 55, 56.
Brachyscelus Stebbing 1888, p. 1543 (lit. and syn.).

27. **Brachyscelus crusculum** Sp. Bate.

Brachyscelus crusculum Bate, Ann. Mag. Nat. Hist., ser. 3, vol. 8, 1861, p. 7, Pl. 2 figs. 1—2.
— — — British Mus. Catal. Amphip. Crust. 1862, p. 333, Pl. 53 figs. 2—3.
Thamyris mediterranea Claus, Platysceliden 1887, p. 60, Pl. 16 figs. 11—18.
Brachyscelus crusculum + *B. mediterranea* Stebbing 1888, p. 1544, Pl. 195; p. 1547, Pl. 196; p. 1556.
* — — Chevreux, Bull. Soc. Zool. France, vol. 18, 1893, pp. 70—74, textfigs. 1—9.
— — + *B. mediterraneus* Chevreux 1900, p. 153, 154.
— *crustulum* (!) Norman 1900, p. 134 (lit. and syn.).
* — *mediterraneus* Senna, Ann. Mus. Zool. Univ. Napoli, n. ser., vol. 1, No. 6, 1903, p. 3 (*Orio Zancleus*), p. 5 (*Br. mediterr.*), 10 textfigs.
— *crusculum* Tattersall 1906, p. 26.
* — — K. Stephensen, "Thor"-Hyperiidea, pt. 2.

Occurrence. This species was not taken by the "Ingolf", but by the "Thor" it was secured from 2 localities in the "Ingolf" area.

S.W of the Færoes: St. 99 (22. 5. 1904). 61°15′ N., 9°35′ W. 900 m. 1 spec.

S.W. of Iceland: St. 154 (20. 6. 1904). 65°27′ N., 27°10′ W. 763 m. 800 m. wire. 1 spec.

The species is not new to the "Ingolf"-area, for it is by Norman 1900 quoted from the Færoe Channel (without exact locality).

Distribution. A widely distributed species, found in the Atlantic especially abt. 16°—50° N. and 16°—32° S.

The special localities are as follows: 52°4.5′ N., 12°27′ W., abt. 500 and 1200 m.; 52°27.6′ N., 15°40′ W., abt. 2700 m.; 52°18.1′ N., 15°53.9′ W., abt. 900 m.; 52°20′ N., 15°7.9′ W., abt. 275 m.; in all 6 spec. taken 1898 (Walker 1903). — W. of Ireland 9 st., abt. 170—> 1800 m., 55—1300 m. wire., 36 spec. (Tattersall 1906). — 47°17 1/4′ N., 11°59′ W., surf.; 47°7 1/2′ W., 9°56′ W., surf.; 47°15 2/3′ N., 22°48 2/3′ W., surf.; 44°1 1/2′ N., 15°31′ W., surf.; 43°26′ N., 17°31′ W., in the stomach of *Thynnus alalonga*; in all 154 spec. (42 ♂, 112 ♀) (Chevreux 1893 and 1900). — 48°24 3/4′ N., 20°38 1/2′ W., 2200 m., 1.19—2.34 night; 47°38 1/4′ N., 22°13 2/3′ W., 1300 m., 0.50 pm.; 40°28 3/4′ N., 38°53′ W., surf., night; 39°06′ N., 28°29′ W., surf.; in all 13 spec. (1 ♂, 6 ♀, 6 jun.) (Chevreux, "Hirondelle" 1900). — 16°49′ N., 25°14′ W., surf. (Stebbing "Challenger"). — Our Zool. Mus. has specimens from the following localities N. of Equator: 50° N., 24°16′ W., 1 ♀ with embr., abt. 18 mm; 47° N., 7°30′ W., 1 ♂ jun. 13 mm.; 43° N., 19° W., 1 ♂ ad., 2 ♀ 13—16 mm.; 44° N., 37° W., 1 ♂ ad. 15 mm.; 42°38′ N., 29°37′ W., from *Salpæ*, 15 jun. abt. 10 mm.; 40° N., 14° W., 1 ♀ 19 mm.; 38°23′ N., 16°43′ W., 1 ♀ 9 mm.; 33° N., 47° W., 4 small spec.; 31° N., 40° W., from the stomach of an Albacore (*Orcynus*), 1 ♂ ad. only 10 mm., 7 ♀ 10—20 mm.; 30°30′ N., 17°12′ W., 2 ♂ ad. 13 mm. —

S. of Equator it is taken 28°25′ S., 23°26′ W. (N. of Tristan da Cunha), 1 ♂ 6.5 mm. (Stewart 1913). — Zool. Mus. has specimens from 16°20′ S., 5° W., 1 ♂ jun. abt. 12 mm., 2 ♀ 11—14 mm., and 32°30′ S., 15° E., 1 ♀ 10 mm. —

In the Mediterranean it is found in the following localities. Messina (*Orio zancleus* Natale, Descrizione zoologica d'una nuova specie di Plojaria e di alcuni Crostacei del porto di Messina, Messina 1850, p. 12; teste Senna l. c. 1903, p. 3—5). — The Copenhagen Museum possesses specimens from Messina. — Naples (Senna, Claus). — Lo Bianco (1904, p. 44) mentions the species as "rather rare at Naples": 1 ♀ ad. 1500 m. wire, daytime, spring, and 1 spec. 500 m. wire, daytime, spring. — Vosseler (in Lo Bianco 1903—04, p. 278 [*Th. mediterraneus*]) mentions 9 specimens taken at Naples: 500 m. wire (depth of the sea 1200 m.), and surface; and 4 ♀ taken between Capo Corso and Monaco, 2000 m. wire (depth of the sea 1900 m).

Indian Ocean. 4°16′ S., 71°53′ E., abt. 4000 m., 1 spec.; off entrance to Salomon Atoll (S. of Maldive), surf., 1 small; 10°27′ S., 51°17′ E., abt. 450—900 m., 1 spec. 5 mm.; Amirante, surf., 2 spec. 5 mm.; Desroches Atoll (Amirante), abt. 350 m., 1 small; ibid. abt. 1350 m., 1 ♂ 10 mm.; 6 miles N.N.W. of entrance to Desroches Atoll, abt. 350 m., 2 spec. 15 mm. (Walker 1909). — Zool. Mus. has 1 ♀ 13 mm. from 32° S., 43°20′ E., and 1 ♀ 11 mm. from 34° S., 36° E.

Pacific Ocean. Without loc., 1 ♀ 13 mm. (spec. in Zool. Mus.). — 24°49′ N., 138°34′ E., 1 ♂; between Japan and Honolulu, 35° N., surf., 1 ♂; ?Ocean Beach, Dunedin, New Zealand, 1 ♀ (Stebbing, "Challenger").

Genus **Euthamneus** Bovallius.

**Thamneus* Bovallius, Syst. list. 1887, p. 31.

— Stebbing 1888, p. 1558 (lit.).

Euthamneus Bovallius 1890, p. 19, foot-note.

28. **Euthamneus** (**platyrrhynchus** Stebbing?).

**Thamneus platyrrhynchus* Stebbing 1888, p. 1558, Pl. 198.

Occurrence. This species is not taken in the "Ingolf" area by any Danish Expedition.

"Thamneus sp." (— on account of the locality most probably *Euth. platyrrhynchus* —) is by Tesch 1911, p. 193 quoted from the Færoe Channel. Tesch gives the Scottish Report from the Internat. Marine Investigation as his authority; but I have not been able to find the species in that Report.

Distribution. A cosmopolitic species; further see my paper on the "Thor"-Hyperiidea pt. 2.

II. *Gammaridea.*

Fam. **Lysianassidæ** Dana.

Lysianassidæ G. O. Sars 1895, p. 28.

— Stebbing 1906, p. 8.

This family, one of the greatest within the Gammaridea, is in the "Ingolf" area represented in all by 41 genera, 90 species. 59 species are new to the area, and 5 genera, 27 species out of these are new to science.

Genus **Trichizostoma** Boeck.

Trischizostoma G. O. Sars 1895, p. 29.

— Stebbing 1906, p. 12 (lit. and syn.).

— E. W. Sexton, On the Amphipod Genus Trischizostoma; Proc. Zool. Soc. London 1908, p. 370.

Of the 5 species of the genus only 3 are North Atlantic, viz.: *T. nicæense* Costa (Sexton l. c. 1908, p. 375, with figs.), *T. Raschii* Esmark & Boeck (see below) and *T. longirostre* Chevreux (Bull. Mus. d'Hist. Nat. Paris 1919—20, p. 575). Only *T. Raschii* is found in the "Ingolf" area.

*29. **Trischizostoma Raschii** Esmark & Boeck.

Trischizostoma Raschi G. O. Sars 1895, p. 31, 673, Pl. 12.

— *nicæense* Stebbing 1906, p. 13 (partim).

* — *Raschii* Sexton l. c. 1908, p. 385 (lit. and syn.), Pl. XVII fig. 13; Pls. XVIII, XIX figs. 2—11; Pls. XX, XXI figs. 1—13, 15—18.

Occurrence. This species was not taken by the "Ingolf"; but the "Thor" has secured one specimen, length 28 mm., S. of Iceland abt. 63° N., 20° W. (15. 7. 1903; the specimen belongs to the Reykjavik Museum).

Distribution. W. Norway from abt. 66° N. to abt. 60° N.: Hardangerfjord; the Storeggen-bank, abt. 200 m., "on the skinned body of a newly shot bird"; Trondhjemsfjord, on the skin of *Spinax niger* several times; Tjötö (Tjötta) in Nordland (Sars l. c.). — S.W. of Ireland 50°37′ N., 11°12′ W., abt. 450—1000 m., in a small net attached to the trawl (Sexton l. c. p. 375).

Genus Acidostoma Norman.

Acidostoma G. O. Sars 1895, p. 37.

— Stebbing, 1906, p. 14 (lit.).

Only one species, *A. nodiferum* n. sp., is found in the "Ingolf"-area. Also the other two species of the genus are North Atlantic, but they are not found in the "Ingolf"-area.

*30. **Acidostoma nodiferum** n. sp. (Fig. 1).

Occurrence. This new species was not taken by the "Ingolf", but was secured by the "Thor". S.W. of the Færoes: "Thor" St. 78 (12. 3. 1904). 61°07′ N., 9°30′ W. 835 m. 1 spec. (sex?), 5 mm. (type).

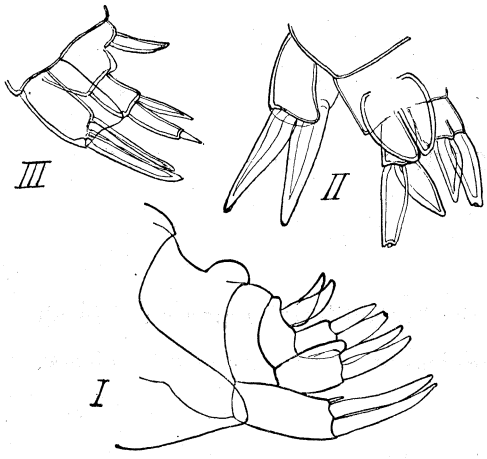

Fig. 1. *Acidostoma nodiferum*. I—II. Urosome of the type (from "Thor" 1904, St. 78). — III. Urosome of specimen from "Thor" 1905, St. 120.

The present species, as far as may be seen without total dissection, differs from *A. obesum* (G. O. Sars 1895, p. 38, Pl. 14 fig. 2) only in the great notch on the dorsal side of 1. urosome segment (— the specific name is an allusion to this character —).

On account of the very thick peduncle of 1. antenna the type seems to be an immature ♂, but there are no calceoli. In ant. 1 only the 5 proximal flagellar joints are kept; accessory flagellum is 5-articulate; flagellum of ant. 2 is 5(?)-articulate. (In a specimen [sex?], 4.5 mm., from 6 miles N.E. of Skagen, with well preserved antennæ, the figures are: Ant. 1: flagellum 6-articulate, accessory flagellum 5 joints; in ant. 2 flagellum has 5 joints. — In a specimen [sex?], 4 mm., from "Thor" St. 120, 1905 [see below] the figures are 4, 6, 6 respectively, and in this last-named specimen the rather long apical joint of outer ramus of 3. uropod is kept [it is almost totally lost in the type-specimen]).

In 2. uropod the peduncle has on the outer side the same large wing that is found in *A. obesum* and *A. laticorne* (G. O. Sars 1895, p. 38 says ". . . . having the basal part very broad").

Distribution. E. of Shetland 61°14′ N., 1°19′ E., 160 m. ("Thor" St. 120, 21. 7. 1905), 1 spec. 4 mm.; Skagerak 6 miles N.E. of Skagen, 132 m., clay with fine sand, 1 spec. 4 mm. ("Hauch" St. 58) (specimens in the Copenhagen Museum).

The species is probably an Atlantic deep-sea species.

Genus Euonyx Norman.

Euonyx G. O. Sars 1895, p. 116.

— Stebbing 1906, p. 19 (lit.).

All the three described North Atlantic species are found in the "Ingolf" area (and are new to the area).

*31. **Euonyx chelatus** Norman.

Euonyx chelatus G. O. Sars 1895, p. 117, Pl. 40 fig 1.

— — Stebbing 1906, p. 19 (lit. and syn.).

Occurrence. Secured once by the "Ingolf" (but the specimen is too young to be determined with absolute certainty) and once by the "Thor". It is new to the "Ingolf" area.

?W. of Greenland: "Ingolf" St. 28. 65°17′ N., 55°42′ W. 791 m., temp. 3.8° C. 1 spec. jun. (determination not certain).

S.W. of the Færoes: "Thor" St. 99 (22. 5. 1904). 61°15′ N., 9°35′ W. 900 m. 4 spec.

The sizes are up to abt. 10 mm.

Occurrence. West side of Great Britain, from Isle of Skye (W. of Scotland) to Wales, often on *Echinus esculentus* (Norman 1900, p. 214). Shetland (Bate and Westwood 1869). Norway: Trondhjems Fjord 200—300 m., among deep-sea corals, and Vardö (E. Finmark) 100—120 m. (Sars l. c.). Between Norway and Shetland 61°14′ N., 1°19′ E., 160 m. ("Thor" St. 120, 1905; specimen in the Copenhagen Museum).

The species is thus probably an Atlantic species.

*32. **Euonyx Talismani** Chevreux (Fig. 2).

Enonyx(!) *Talismani* Chevreux, Bull. Mus. d'Hist. Nat. Paris, 1919, p. 576 (no figs.).

Occurrence. The "Ingolf" has not taken this species; but the "Thor" has secured it from two stations. It is new to the "Ingolf" area.

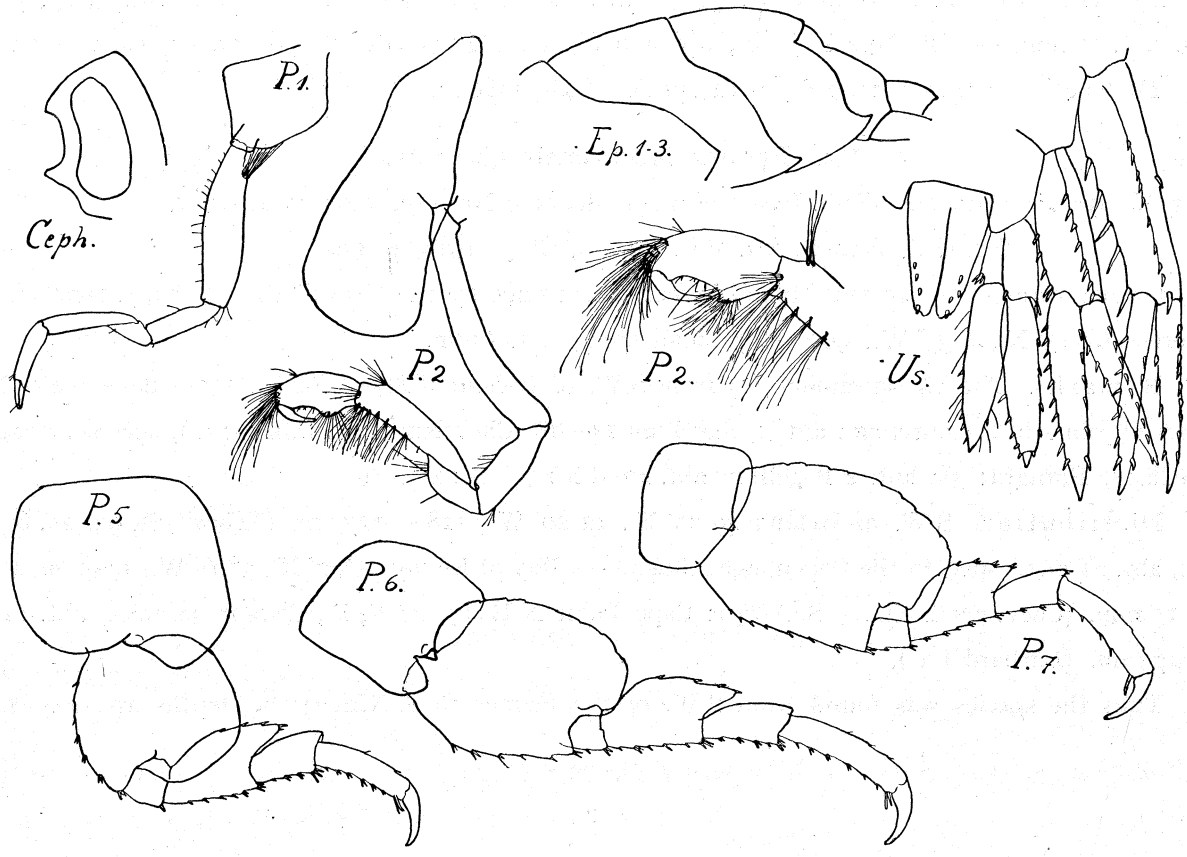

Fig. 2. *Euonyx Talismani* ♀.

S.W. of the Færoes: "Thor" St. 78 (12. 5. 1904). 61°7′ N., 9°30′ W. 850 m. 1 spec. abt. 7 mm.

— — — — - 99 (22. 5. 1904). 61°15′ N., 9°35′ W. 872—970 m. 2 ♀ abt. 14 mm.

The specimens agree very well with Chevreux's description, especially as regards the very characteristic p. 2 (Chevreux: gnathopode II).

One of the specimens (♀) from St. 99 is dissected and in every particular compared with Chevreux's description; some few supplementary notes are given below. Of the epimeral plates in the metasome only nos. 2 and 3 (not no. 1) end in an acute point. 1. Urosome segment is on the dorsal surface glabrous, without any process. The eyes are (in spirit) brownish yellow. In ant. 1 the flagellum and accessory flagellum have in the two great specimens respectively 22—22 and 8—10 joints (Chevreux: 25 and 11); in ant. 2: 33—34 joints (Ch.: 37). Ant. 2 is abt. 1½ time as long as ant. 1, not "un peu plus longues que les antennes I".

The extremely characteristic form of p. 2 may be seen from my fig. The hind edge of 2. joint in p. 6 not even, but crenulate, and the hind corner is abruptly cut off, about as in p. 7 (an indication of the same character is also to be found in p. 5).

Of the uropoda the first pair have the peduncle a trifle longer than the rami; in up. 2 the rami are a little longer than the peduncle, in up. 3 abt. twice as long as the peduncle. Though the dissected specimen is a ♀ (there are marsupial plates), the inner ramus in up. 3 has a few setæ in addition to the spines. Telson twice as long as the peduncle in up. 3; besides the apical spines there are 3 pairs of rather irregularly situated dorsal spines.

Distribution. S. W. of Ireland: 49°25′ N., 12°20′ W., 1275—1180 m ("Thor" St. 93, 25. 6. 1905), 1 (♂?), abt. 10 mm. — Off Cape Bojador, 698 and 882 m. ("Talisman" St. 70 and 92, Chevreux l. c.).

The species is thus a true deep-sea species, 698—1180 m.

*33. **Euonyx biscayensis** Chevreux.

Euonyx biscayensis Chevreux, Bull. Inst. Océanogr. Monaco, No. 117, 1908, p. 1, fig. 1.

— — Barnard, Ann. S. Afr. Mus. vol. 15, pt. 3, 1916, p. 110.

Occurrence. New to the "Ingolf"-area; taken once by the "Thor" (St. 99, 22. 5. 1904) S. W. of the Færoes 61°15′ N., 9°35′ W., 900 m., 7 small spec., abt. 5 mm.

Remarks. The big specimens (♀) from S.W. of Ireland ("Thor" St. 93, 1905) have the following numbers of joints in the antennæ: ant. 1, flagellum 14—18 (Chevreux: 19, Barnard: 12), accessory flagellum 8—9 (Ch.:?, Barnard: 5); ant. 2 flagellum abt. 40 (Ch.: 33, B.: 16).

Distribution. S.W. of Ireland 49°25′ N., 12°20′ W., 1180—1275 m. ("Thor" St. 93, 25. 6. 1905), 3 spec., abt. 21 mm. (spec. in the Copenhagen Mus.). — Bay of Biscay 45°02′ N., 3°16′ W., 1455 m., 11 spec. up to 13 mm. (Chevreux l. c.). — S. Africa: Cape Point N.E. by E. ¼ E., distant 38 miles, abt. 1400 m., 1 ♂?, 17 mm. (Barnard l. c.).

Thus the species was found from S.W. of the Færoes to S. Africa; the depths are 900—1455 m.

Genus Opisa Boeck.

Opisa G. O. Sars 1895, p. 36.

— Stebbing 1906, p. 20 (lit. and syn.).

The genus has only one species.

34. **Opisa Eschrichtii** Kröyer.

Opisa Eschrichtii G. O. Sars 1895, p. 36, Pl. 14 fig. 1.

— *eschrichtii* Stebbing 1906, p. 20 (lit. and syn.).

— *Eschrichtii* K. Stephensen, Conspectus 1913, p. 126.

Occurrence. This species was not taken by the "Ingolf"; but our Museum possesses material, not mentioned in literature, the following localities: W. Greenland: Godthaab 1892, 8 spec., and Holstensborg 1892, 1 spec. (Traustedt leg. et ded.). — E. Iceland: Seydisfjörðr, 28. 4. 1890, 1 spec. (Hj. Jensen ded.). — E. of the Færoes, from cod, 432 m., 1 spec. Ad. Jensen 2. 7. 1902 ("Michael Sars").

In recent literature it is quoted from W. Greenland abt. 64°—71° N. (Godthaab to Umanak) (Conspectus 1913, p. 127, and K. Stephensen: N. Strömfjord 1913, p. 60); the depths are 30—190 m. — Iceland without special locality (Torell, teste Boeck 1876).

Distribution. Varangerfjord at Vadsö (Finmark) 190 m., and Grötösund (at Bodö, W. Norway) (G. O. Sars l. c.). — North-Sea and Skagerrak (Stebbing l. c.) — Pacific Ocean: Korea Sea, 66 m. (Stebbing l. c.; specimens in the Copenhagen Museum).

The species belongs probably to the boreo-arctic littoral-sublittoral fauna, but is also found in the Northern Pacific Ocean (Korea Sea). Perhaps it leads a parasitic or semiparasitic life on fishes; at all events a specimen from the Færoes (see above) was found on a cod.

Genus Amaryllis Haswell.

Amaryllis Stebbing 1906, p. 23 (lit.).

Vijaya Walker 1904, p. 231, 244.

Amaryllis = *Vijaya* Stebbing, Mem. Austral. Mus. Sidney, vol. 4, 1910, p. 570.

Of the 6 species of the genus only 3 are Atlantic (North Atlantic), viz.: *A. Haswelli* Stebbing (found 37°26′ N., 25°13′ W., 1829 m., volcanic mud, 1 ♀ 11 mm., described by Stebbing 1888, p. 703, Pl. 28), *A. rostrata* Chevreux (Bull. Monaco, No. 204, 1911, p. 1, with fig., from 43°45½′ N., 9°41′ W., 2320 m., 1 ♂ 7 mm.), and *A. pulchella* Bonnier. Only the last-named species is found in the "Ingolf" area (see below).

*35. **Amaryllis pulchella** Bonnier.

Amaryllis pulchellus Bonnier 1896, p. 624, Pl. 36 fig. 3.

— *pulchella* Stebbing 1906, p. 24.

Occurrence. The "Thor" has twice taken this species, S.W. of the Færoes and S. of Iceland; it was not secured by the "Ingolf". New to the area.

S. of Iceland: "Thor" St. 166 (14. 7. 1903). 62°57′ N., 19°58′ W., 957 m. 1 spec. jun. 6 mm.

S.W. of the Færoes: "Thor" St. 99 (22. 5. 1904). 61°15′ N., 9°35′ W., 900 m. 5 spec.: 2 ♂ abt. 9 mm., 3 jun. abt. 6 mm.

Remarks. One of the ♂ from St. 99 was dissected; it agrees upon the whole very well with Bonnier's ♀, but there are a few disagreements. The specimen is young (no calceoli on antennæ), 9 mm., thus lesser than ♀ (11 mm.). There was no ♀.

Mandibular palp has setæ not only on third joint, but also on the distal half of the second joint. Number of joints in ant. 1 as in ♀; but in ♂ ant. 2 is twice as long as ant. 1 and has abt. 50 joints in the flagellum. In p. 1 the metacarpus is only a trifle longer than the carpus (Bonnier: in the text "plus long que. . .", in the figure of equal length); in p. 2 carpus abt. $^5/_3$ as long as the matacarpus; in p. 5 second joint on the lower part of the hind edge almost straight as in p. 6—p. 7, not as rounded as in Bonnier fig. 3 i. First metasome segment with a dorsal impression at the base. In up. 1 the distal end of the peduncle does not reach beyond the distal end of the peduncle in up. 2.

The species is very closely allied to *A. Haswelli* Stebbing (1888, p. 703, Pl. 28; Stebbing, 1906, p. 23), but differs in some small details, especially in the want of the long process on first joint in ant. 1.

Distribution. Bay of Biscay: 44°17′ N., 4°38′ W., 950 m., 1 ♀ 11 mm. (Bonnier l. c.).

It is an Atlantic deep-sea species; the depths are 900—957 m.

Genus **Onisimus** Boeck.

Onesimus G. O. Sars 1895, p. 104.

Onisimus Stebbing 1906, p. 25 (lit. and syn.).

The genus comprises totally abt. 10 species which all are arctic or boreo-arctic littoral species or arctic deep-sea species. 5 species are found in the "Ingolf" area, and 3 of these are new to the area. Only one species, *O. Normani*, is also found in the deep Atlantic basin S. of the ridge.

36. **Onisimus Edwardsii** Kröyer (Chart 7).

Onesimus Edwardsii G. O. Sars 1895, p. 105, Pl. 36 fig. 1.

Onisimus edwardsii Stebbing 1906, p. 25 (lit. and syn.).

— *Edwardsii* K. Stephensen, Conspectus 1913, p. 121.

Occurrence. The species was only once secured by the "Ingolf", viz. Holstensborg, the harbour, 19 m., 9. 7. 1895, 1 spec.

From the following localities in the "Ingolf" area our Museum possesses specimens, not as yet quoted in literature.

W. Greenland: Godthaab, several spec. (Traustedt 1892). — Egedesminde, depth not given, 1 spec. (Lundager leg. 12. 8. 1905), and 20 m., clay bottom, numerous spec. (Bergendal leg. 12. 8. 1890). — Sakkrak (in Waigat), several spec. (Traustedt leg. 1892).

E. Greenland: Cape Borlase Warren, at the anchorage, 14. 7. 1900, numerous spec. (2. Amdrup-Exped.).

Jan Mayen: "diffent depths", 26. 6. 1900, and 28 m., 26. 6. 1900, several spec.; in the carcass of a bird, the same date, numerous spec. (2. Amdrup-Exped.).

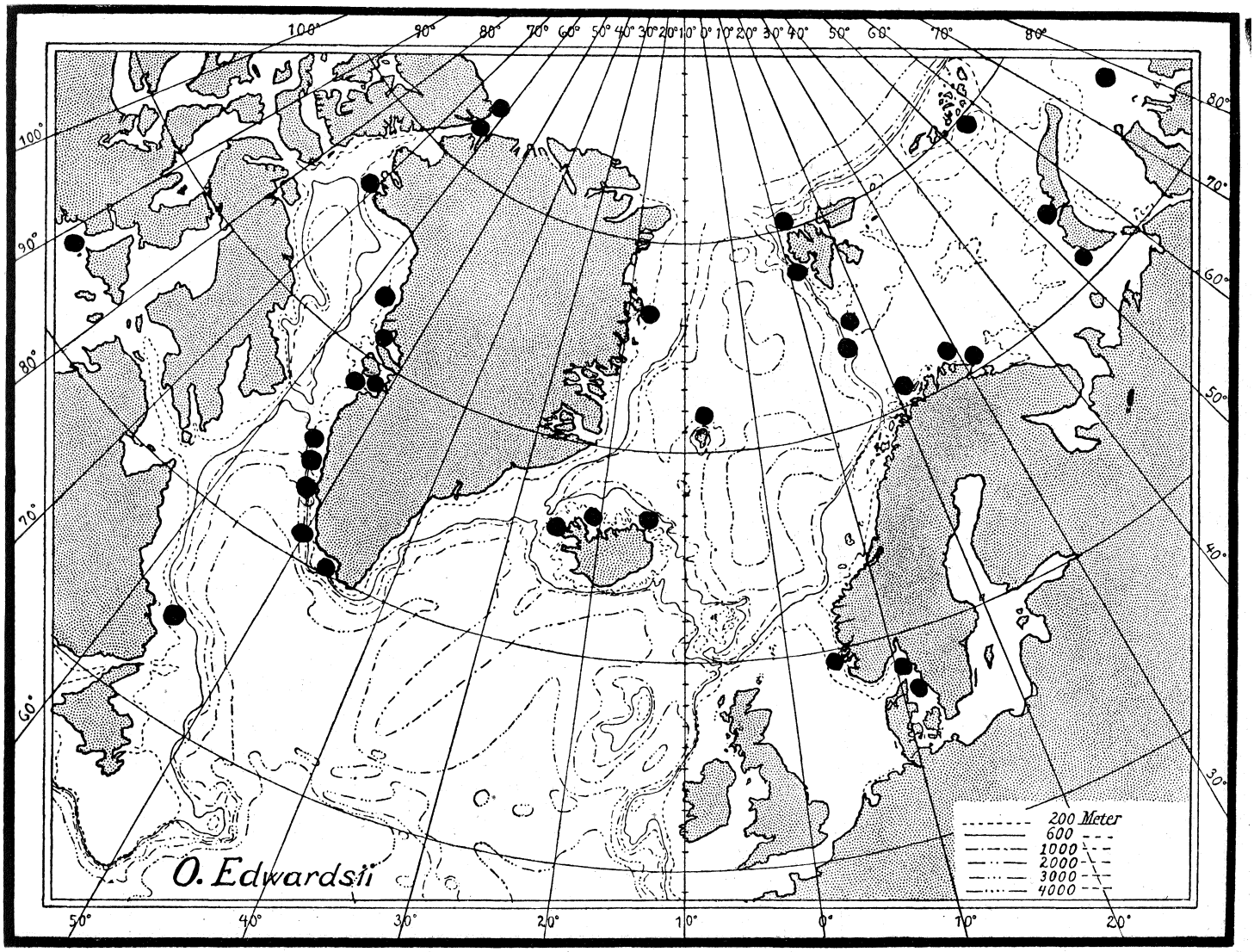

Chart 7. *Onisimus Edwardsii.*

N. Iceland: Skutilsfjörðr, 4—6 m., B. Sæmundsson 3. 8. 1915, 1 spec. (in the Reykjavik Museum). — Skagestrand, 11 m., 1 spec. (Steincke ded. 1875). — Þórshöfn, 8—9 m., from flatfishes, numerous spec. ("Beskytteren", Otterström leg.). —

In my Conspectus 1913, p. 121 is given a long series of localities at W. Greenland from abt. 62°—abt. 82° N.; also in my paper from 1916 (p. 285) are given some localities (abt. 61°—62° N.). At E. Greenland it is found abt. 77° N. (see my Conspectus p. 122). — The size is up to 14 mm.

It is very common on carcasses and is most commonly found in shallow water, down to abt. 25 m., but it may be found in much deeper water, and then as a rule not at the very bottom, but pelagically.

Distribution. A boreo-arctic littoral species, found from off Cape Fullerton (Westside of the Hudson Bay, Shoemaker 1920, p. 26) and Grinnel Land to Franz Joseph Land and Kara Sea (a detailed list of localities see Oldevig 1917, p. 4). The southern limit is: Labrador, S. Greenland, N. Iceland, Hardangerfjord, Bohuslän and Kattegat; thus it is also found outside the limits of the arctic area.

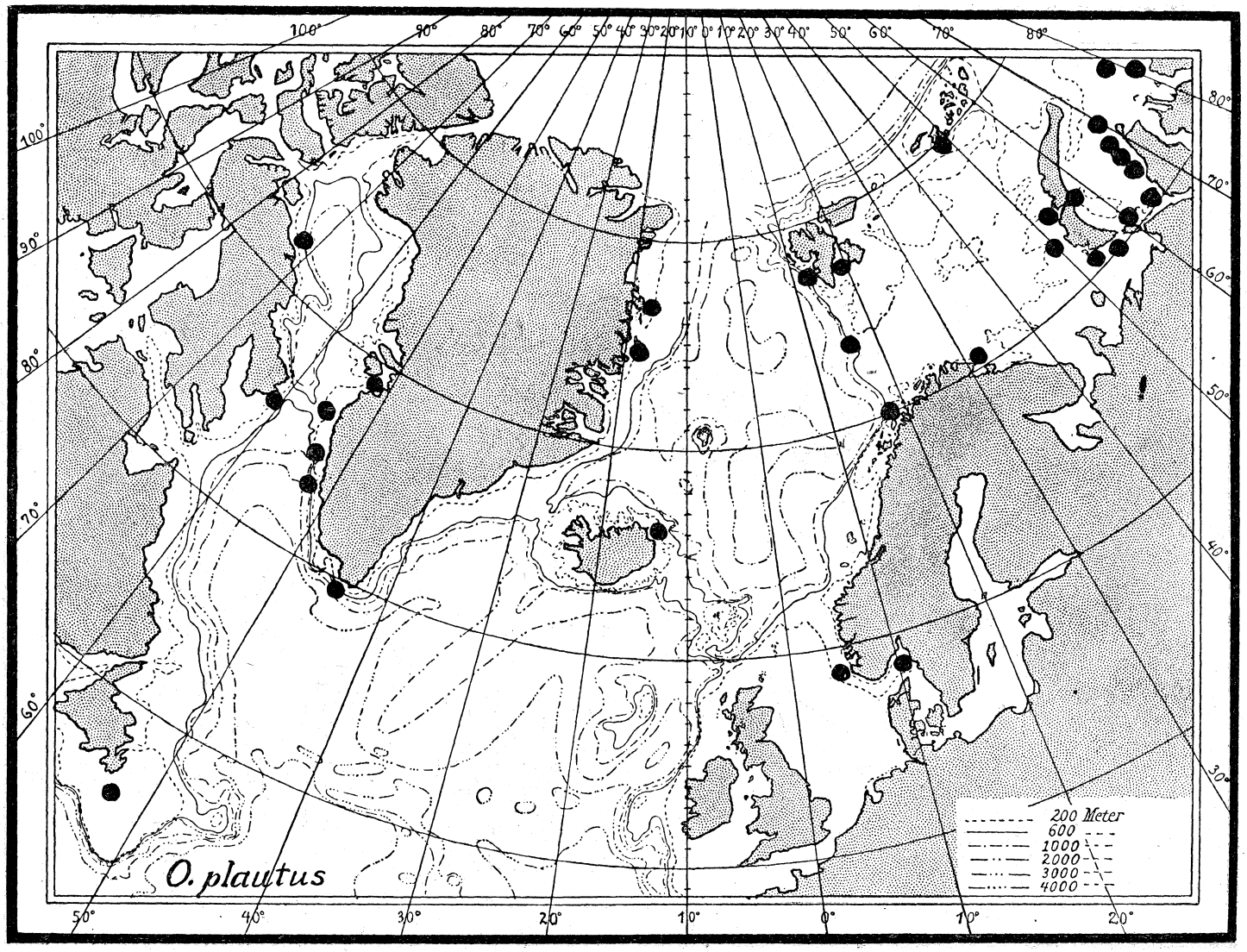

Chart 8. *Onisimus plautus.*

37. **Onisimus plautus** Kröyer (Chart 8).

Onesimus plautus G. O. Sars 1895, p. 107, Pl. 37 fig. 1.

Onisimus — Stebbing 1906, p. 26 (lit. and syn.).

— — K. Stephensen, Conspectus 1913, p. 122.

Occurrence. The species was not taken by the "Ingolf", but the Museum possesses one spec. from N. E. Iceland: Vopnafjörðr, 11—22 m., temp. 1°—8°, black sand, 20. 6. 1899, R. Hörring leg.

In my Conspectus 1913, p. 122 are given a number of localities at W. Greenland abt. 60°—69° N., and at E. Greenland abt. 74°—77° N. The depth is as a rule abt. 10—40 m. The size is abt. 8 mm.

Distribution. Dolphin and Union strait, Northwest Territories, off Bernard harbour, pelagic, over 12 m. water (arctic Canada; Shoemaker 1920, p. 6). — A detailed list of localities from literature up to 1911 is given by Stappers 1911 p. 17; but Stappers has forgotten the following localities: 70°30′8″ N., 49°41′5″ E., abt. 100 m. (Stebbing 1894); W. of Beeren Eiland, 1403 m., ÷ 1.4°, clay (Sars 1886).

Probably it is a circumpolar arctic (boreo-arctic) species; the southern limit is New Foundland, S. Greenland, N. E. Iceland and Skagerak. The depths are ordinarily down to abt. 40 m., but it may occassionally be found at much greater depths, down to abt. 220 m. (Jacobshavn, W. Greenland) or even 1403 m. (see above).

*38. **Onisimus affinis** H. J. Hansen.

Onisimus affinis H. J. Hansen 1886, p. 216, Pl. 21 fig. 9.
— — Stebbing 1906, p. 28.
— — v. d. Brüggen 1909, p. 6, Pl. 2 figs. 6—9.
?*Onesimus botkini* Birula 1897, p. 105.
?*Onisimus* — v. d. Brüggen 1909, p. 7, textfig. 1, Pl. 2 figs. 20—25.
? — — Shoemaker 1920, p. 4, textfigs. 1—2.

Occurrence. New to the "Ingolf" area; only once taken by the "Ingolf". E. Greenland: Hurry Inlet (70°50′ N., 22°35′ W., 13—0 m., 7. 8. 1900, 1 spec. abt. 11 mm.; Cape Borlase Warren (74 1/3° N., 19° W.), at the anchorage, 14. 7. 1900, 7 spec. (3 spec. abt. 10 mm., 4 spec. abt. 16—20 mm.); S. E. of Sabine Island, 207 m., 10. 7. 1900, 1 spec. abt. 12 mm., 1 ♀ with ova abt. 15 mm. (all these specimens were taken by 2. Amdrup Exped.).

Jan Mayen, 162 m., temp. 0.1°, 1 spec. abt. 7 mm. ("Ingolf" St. 115).

Remarks. Regarding the literature a few remarks may be made.

O. botkini was described by Birula 1897 in a very short diagnosis in Latin and two pages in Russian (these latter I am not able to read). Birula gives no figures. v. d. Brüggen 1909 reprints Birula's Latin diagnosis and gives some remarks and figures (— his textfig. 1 is called Epimere III; this would be a misprint for Epimere IV —). Also Shoemaker 1920 gives some supplementary notes and a number of figures.

O. affinis is described by H. J. Hansen 1886 with a few figures (p. 2, telson). His 2 specimens (— he says "two lesser and one bigger specimen". In our Museum we have only 2 type-specimens; thus "two lesser" would be a misprint for "one lesser" —) had a maximal size of 13.3 mm. and were probably not adult. Later on this species is mentioned only by Brüggen (1909, p. 6), who adds nothing, but for a little note on the setæ on the telson, and a few figures (p. 2, epimeral part of 3. metasome segment, telson). —

These two species are very closely allied to each other, which has already been remarked by Brüggen. Having revised the literature and the type-specimens of *O. affinis* I mean to be able to suggest that this species is only a young *O. botkini*; but, if so, the name would be *O. affinis*, as this species was established previous to *O. botkini* (1886 and 1897 respectively).

The only real difference seems to be the dactylus in p. 2 (gn. 2). This dactylus is in *O. affinis* fixed at about the middle of the distal edge of the metacarpus, in *O. botkini* closer to the hind corner of the distal edge (v. d. Brüggen 1909, Pl. 2 figs. 6 and 20). All other differences seem to be due to difference in age or to simple variation. Especially the hind corner of 3. epimeral plate of the metasome varies to a high degree. In *O. affinis* it always has a more or less sharp point; in the type-specimens the shape is as given by Shoemaker (1920, textfig. 1, 4) for *O. botkini*; v. d. Brüggen gives (1909, Pl. 2 fig. 9) the apex of a somewhat

varying form. In *O. botkini* the shape varies to a much higher degree, from an angle as in *O. affinis* to being about totally missing: "processu postico lato subrotundato fere obsoleto vel nullo" (Birula 1897; v. d. Brüggen 1909 Pl. 2 fig. 24, and Shoemaker 1920, textfig. 1, 4).

The specimens in the Copenhagen Museum from Greenland and Jan Mayen agree very well with Shoemaker's figs. of *O. botkini*, but the dactylus of p. 2 is rather long as in *O. affinis* (Brüggen 1909, Pl. 2 fig. 6), and the telson is about as broad as long, not longer than broad. The hind corner of 3. metasome segment is in the lesser specimens (abt. 10 mm.) acute and rather long as in *O. Normani* (Sars 1895, Pl. 36 fig. 2), in the greater specimens (abt. 20 mm.) a little shorter and more rounded.

A middle-sized specimen (15 mm., from Sabine Island, E. Greenland) is ovigerous; the exact number of eggs cannot be given, but it scarcely amounts to ten. The size of the eggs is colossal: 1.25 × 1.0 mm.

Distribution. *O. affinis:* Kara Sea, the exact locality probably 70°58′ N., 65°09′ E., 40 m. (type-locality, H. J. Hansen 1886). — Kara Sea 73°27′ N., 79°15′ E., and 75°49′ N., 89°35′ E., 38 m.; — and North of Sibiria: New Sibirian Islands abt. 75° N., abt. 140°—152° E., 2 stations, 3—34 m. (Brüggen 1909). — *O. botkini*: Wilkitzky- and Sibirjakov-Islands in the Kara Sea (Jenissei-Bay), brackish water (type-locality, Birula 1897, teste v. d. Brüggen 1909). — Kara-Sea, Jenissei-Bay, Dickson-Harbour at the Kusjkin Island, 4—9 m., sandy clay (v. d. Brüggen 1909). — Collinson Point and Demarcation Point, Alaska, 0—6 m. or from stomachs of fishes (Shoemaker 1920).

The species is thus probably a circumpolar arctic littoral species (0—40 m.) which occasionally may be found in greater depths (162—207 m.).

*39. **Onisimus Normani** G. O. Sars.

Onesimus Normani G. O. Sars 1895, p. 106, 686, Pl. 36 fig. 2.

— *normani* Stebbing 1906, p. 26.

— *Normani* Stappers 1911, p. 17, Pl. 1 figs. 4—5.

Occurrence. This species was (new to the "Ingolf" area) four times secured by the "Ingolf" W. of Greenland.

W. Greenland: St. 27. 64°56′ N., 55°10′ W. 740 m., temp. 3.8°. 10 spec., up to abt. 8 mm. Taken together with big *Actiniæ*.

— - 28. 65°17′ N., 55°42′ W. 791 m., temp. 3.5°. 3 spec. up to 5 mm.

— - 32. 66°35′ N., 56°38′ W. 600 m., temp. 3.9°. 2 spec., 7—12 mm.

— - 35. 66°16′ N., 55°08′ W. 681 m., temp. 3.6°. 7 spec., up to 7 mm.

From the same area the Copenhagen Museum possesses some specimens taken by Capt. Wandel 1889: 65°36′ N., 56°24′ W., 658 m., clay and mud, bottom temp. 3.2°, from the stomach of *Actiniæ*, 2 spec., — and 66°49′ N., 56°28′ W., 443 m., sand and clay, bottom-temp. 4.4°, 1 spec.

Remarks. The greatest specimen is 12 mm.; also Stappers gives 12 mm., Sars only 9 mm. The very characteristic uncinate angle on 1. metasome segment is to be found already in specimens of 3 mm.

Distribution. Tromsö and Christianiafjord, 150 m. (G. O. Sars). — Between Norway and Shetland 61°40′ N., 3°11′ E., 400 m. ("Michael Sars" 15. 7. 1902), 1 spec. (in the Copenhagen Museum). — Murman

Sea 70°20° N., 56°36′ E., 90 m. (Stappers). — North coast of W.-Taimyr peninsula, "Sarja"-harbour at the Bonnevie-Island, 17—20 m, sand with clay and gravel (v. d. Brüggen 1909). — Skagerak 58°20′ N., 9°0′ E., 350 m., "Thor" 8. 7. 1907, 2 spec. (in the Copenhagen Museum).

The species belongs to the northern parts of the Atlantic basin S. of the ridge, but is also found in the arctic area, 17—400 m.

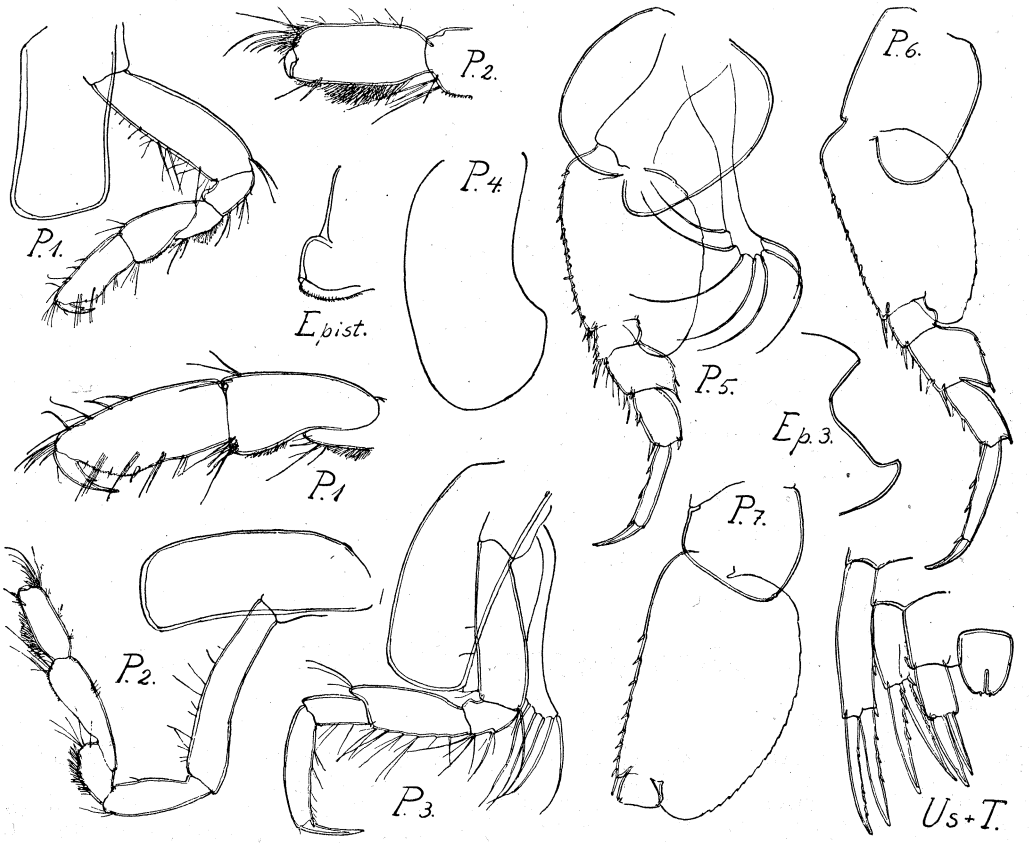

Fig. 3. *Onisimus (leucopis?)*, ♀ ad.

*40. **Onisimus** (**leucopis** G. O. Sars?) (Fig. 3).

Onisimus leucopis G. O. Sars 1885, p. 149, Pl. 13 fig. 1.

— — Stebbing 1906, p. 28 (lit.).

Occurrence. The species represented by the present specimen is new to the "Ingolf"-area; it was taken by the "Ingolf".

Between Iceland and Jan Mayen: St. 120. 67°29′ N., 11°32′ W. 1667 m., temp. ÷1.0°. 1 ♀ ad. with setiferous marsupial plates, 9 mm.

The "Ingolf"-specimen agrees — with the exception of some few differences — very well with the single specimen described by Sars; but some additions are to be made, and I give some figures, as Sars has only given a drawing of the whole animal and of the urus. —

The eye could not be found. Ant. 1: flagellum has 13 (not 11) joints, and there is a long spine on the

distal end (median side) of 1. and 2. joints. Accessory flagellum has 5 (not 4) joints. Ant. 2: flagellum has 17 (not 16) joints.

Oral parts are not described by Sars; but there is (after dissection) a very good agreement with those of *O. Edwardsii* (G. O. Sars 1895, p. 105, Pl. 36 fig. 1). The most important difference is that the fore margin of the epistomal plate is almost vertical, not somewhat obliquely bent backward.

P. 1—p. 2 "could not be closely examined" in the type specimen, but they "had no appearance of differing in any essential degree" from those in *O. turgidus* (G. O. Sars 1885, p. 147, Pl. 12 fig. 5). In the "Ingolf"-specimen the coxal plate of p. 1 has almost parallel sides; carpus and metacarpus are of equal length, metacarpus has almost parallel sides and the distal end very obliquely cut off; dactylus has a tooth at about the middle. In p. 2 the metacarpus is abt. 3/4 the length of carpus, with almost parallel sides; dactylus half as long as the distal margin of metacarpus. P. 3—p. 4 medium heavy; coxal plate of p. 4 almost as in *O. plautus* (Sars 1895, Pl. 37 fig. 1), but a trifle broader, with hinder expansion obtuse, very slight. In p. 5—p. 6 (and p. 7?; the distal 4 joints of p. 7 are lost) the 4th joints are very broad. Telson has no central emargination but an incision to abt. 2/5 of the total length, and one pair of apical spines.

Remarks. On account of the different shape of the telson it cannot be taken for granted that the "Ingolf"-species is identic with that described by Sars.

Distribution. The single specimen described by Sars was taken between Iceland and Norway, 66°8′ N., 3°0′ E., 1472 m., temp. ÷ 1.1°, Binoculina-clay, and the species thus belongs to the arctic deep-sea fauna.

Genus **Cyphocaris** Boeck.

Cyphocaris Stebbing 1906, p. 28.

— Chevreux, Sur les Amphipodes du genre *Cyphocaris* Boeck recueillis par la Princesse-Alice au moyen du filet Richard à grande ouverture; Bull. Inst. Océanogr. Monaco, No. 19, 1916.

Four species are found in the Atlantic N. of Equator (vide Chevreux l. c.), but only one, *C. anonyx*, was known from the "Ingolf"-area, and one species, *C. Bouvieri*, is new to the area taken by the "Ingolf".

All the species are pelagical.

41. **Cyphocaris anonyx** Boeck (Chart 9).

Cyphocaris anonyx Stebbing, 1906, p. 29 (lit. and syn.).

— *micronyx* Chevreux, "Hirondelle" 1900, p. 165, Pl. 14 fig. 11 (cold. fig.).

— *anonyx* Chilton, Transact. Royal Soc., Edinburgh, vol. 48, pt. 2, 1912, p. 464, figs.

— — K. Stephensen, Conspectus 1913, p. 111.

— — Chevreux l. c. 1916, p. 2.

Occurrence. The "Ingolf" has not taken this species; but the "Thor" has secured it 9 times in the "Ingolf"-area.

W. of Iceland: "Thor" St. 152 (19. 6. 1904). 65° N., 28°10′ W. 1240 m. 800 m. wire, 1 spec., and 1000 m. wire, 1 spec.

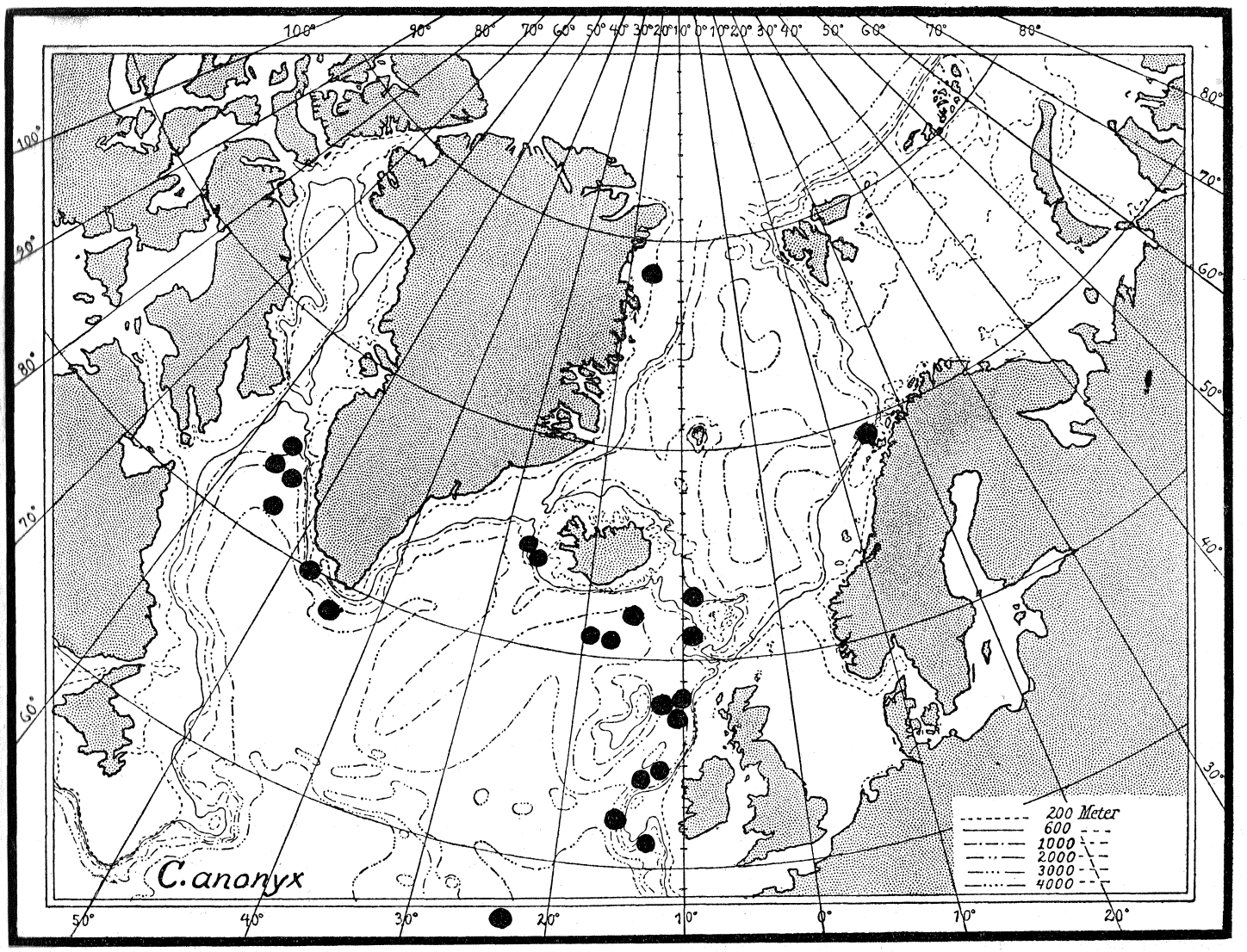

Chart 9. *Cyphocaris anonyx*. Localities N. of abt. 50° N.

W. of Iceland: "Thor" St. 153 (20. 6. 1904). 65°20′ N., 27°12½′ W. 740 m. 810 m. wire. 5 spec.

— — — - 154 (21. 6. 1904). 65°27′ N., 27°10′ W. 763 m. 800 m. wire. 2 spec.

S. of Iceland: "Thor" St. 180 (10. 7. 1904). 61°34′ N., 19°05′ W. 2160 m. 1800 m. wire. 2 spec.

— — — - 183 (11. 7. 1904). 61°30′ N., 17°08′ W. > 2000 m. 1800 m. wire. Abt. 10 spec.

— — — - 104 (24. 5. 1904). 62°47′ N., 15°03′ W. 1950 m. 1500 m. wire. 1 spec.

N.W. of the Færoes: "Thor" St. 225 (31. 7. 1904). 63°07′ N., 9°24′ W. 520 m. 600 m. wire. 1 spec.

W. of the Færoes: "Thor" St. 99 (22. 5. 1905). 61°15′ N., 9°35′ W. 900 m. 3 spec.

The species was known from several localities in the "Ingolf" area: Boeck's type-specimen was secured 30 miles S. E. of Cape Farvel, 540 m., and the "Tjalfe" Exped. collected a number of specimens at W. Greenland from 60° to 64½° N., depths of the sea 1040—1300 m., 400—2000 m. wire (K. Stephensen, "Tjalfe" 1913, p. 87). At E. Greenland it was taken 78°13′ N., 16°31′ W., 480 m., vertical haul 475—310 m.

The average size of the specimens is abt. 10 mm.; Chevreux gives (1916) the maximum sizes as 12 mm. (♂) and 13 mm. (♀ with embryos in marsupium). Chilton mentions (l. c. 1912) a specimen, 20 mm., from 70°50′ S., 20°30′ W.

Distribution. Appears to be rather common in the deeper water layers in the Northern Atlantic (see my papers: Conspectus 1913, p. 111, and 1915, p. 37). Our Museum possesses specimens (not mentioned in literature) taken by the "Thor" at 3 localities 57°47′ N., 11°33′ W., to 57°52′ N., 9°53′ W., 1020—1885 m., 1500 m. wire. The southern limit of its northern distribution seems to be abt. 30° N. It is also found in the Southern Atlantic 70°50′ S., 20°30′ W., 0—abt. 1800 m. (Chilton l. c. 1912) and 32°44′ S., 13°05′ W., abt. 2700 m. (Stebbing, "Challenger"), and in the Southern Pacific 38°07′ S., 94°04′ W., abt. 2800 m. (Stebbing, "Challenger").

It is a pelagical Atlantic deep-sea species, found at depths of the sea > 500 (1000 m.), and is commonly taken with > 1000 m. wire. Only in two cases it was taken North of the Ridge: 78°13′ N., 16°31′ W. (E. Greenland), 490 m., vertical haul 475—310 m. (Broch & Koefoed in: Duc d'Orléans 1909, St. 43), — and 69°41′ N., 15°41′ E. (the Finmark), 1591 m., temp. 1.2° (Sars 1886).

*42. **Cyphocaris Bouvieri** Chevreux.

Cyphocaris Bouvieri Chevreux, Bull. Inst. Océanogr. Monaco, No. 319, 1916, p. 4, fig. 2.

Occurrence. This species is (new to the area) taken by the "Ingolf".

N. of the Færoes: St. 138. 63°26′ N., 7°26′ W. 887 m. 1 spec. (♂?), 17 mm.

Chevreux has l. c. established a new species, *C. Bouvieri*, differing from *C. Challengeri* (= *C. Alicei*) chiefly in the length of the spur of 2. joint on p. 5.

The specimen taken by the "Ingolf" might be determined as *C. Bouvieri*, though the spur on p. 5 is a little too long (as long as the following 3 joints); 1. mesosome segment is shaped as in *"C. Alicei"* given by Chevreux (Bull. Monaco, No. 27, 1905, fig. 1). The agreement with Chevreux's description is very good except for the antennæ (too short in the "Ingolf" specimen), but there is a distinct hook at the anterior corner of the coxal plate, quite as drawn by Chevreux in *C. Alicei* (l. c. 1905, fig. 2, F and K).

Distribution. 38°04′ N., 26°07′30″ W., 0—3000 m. wire (Chevreux l. c. 1916).

Genus **Cyclocaris** Stebbing.

Cyclocaris Stebbing, 1906, p. 30 (lit.).

The genus comprises only one Atlantic (arctic) species.

43. **Cyclocaris guilelmi** Chevreux (Chart 10).

Cyclocaris Guilelmi Chevreux, Bull. Soc. Zool. France, vol. 24, 1899, p. 148, figs. 1—5.

— — G. O. Sars, 1900, p. 20, Pls. 2—3.

— *faroensis* A. M. Norman, 1900, p. 197, Pl. 6 figs. 5—15.

— *guilelmi* Stebbing 1906, p. 31.

Occurrence.

N.E. of Iceland: "Ingolf" St. 120. 67°29′ N., 11°32′ W. Closing net, 1667 m., 1 spec.

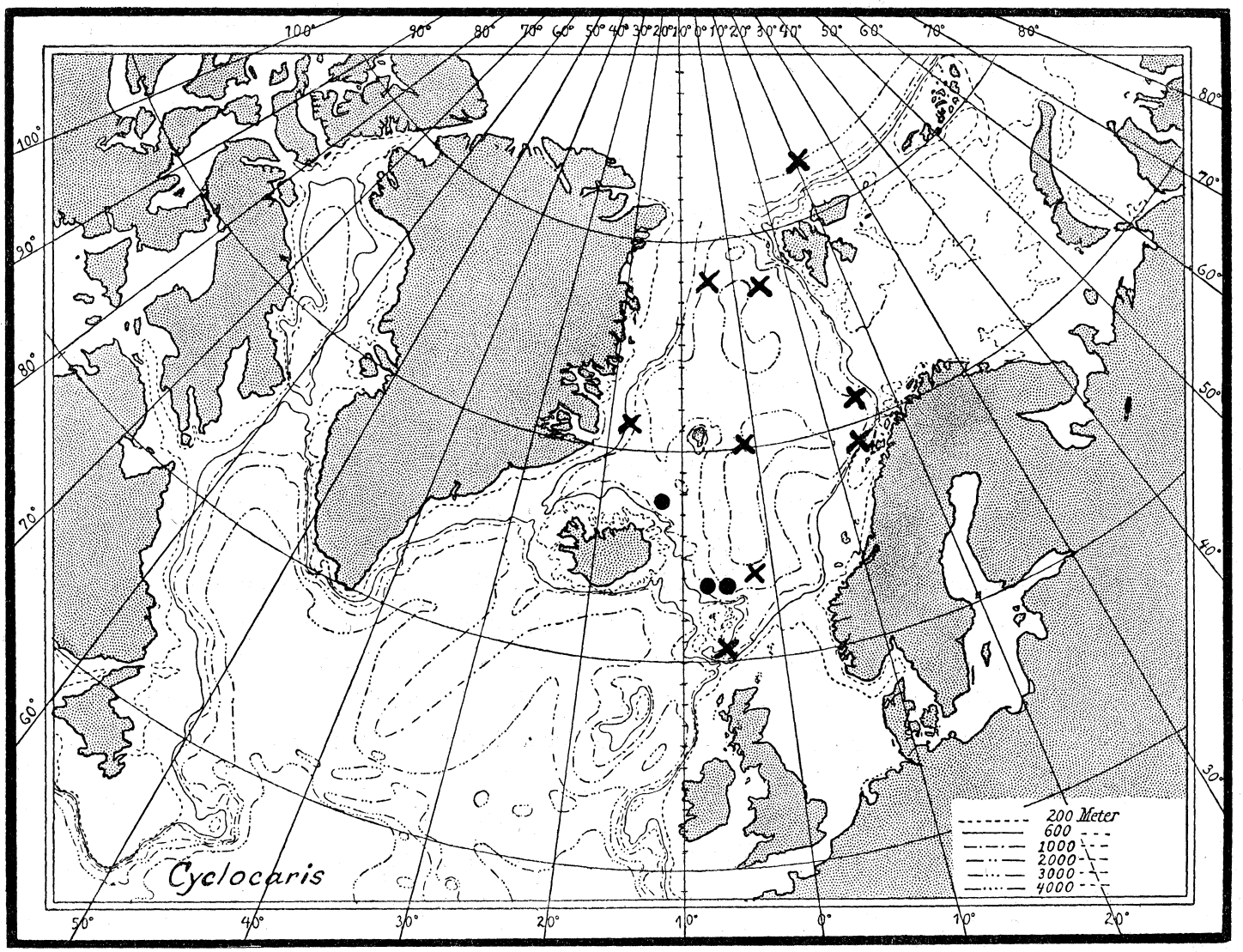

Chart 10. *Cyclocaris Guilelmi*. ● Localities from the "Ingolf" (and the "Thor"). × Localities from the literature (2 loc. lie outside the Chart to the N.E.).

N.E. of the Færoes: "Thor" St. 71. 63°06′ N., 6°20′ W. 1760 m. 1500 m. wire. 9. 5. 1904. 5 spec.

— — — - 230 (4. 8. 1904). 63°10′ N., 7°31′ W. 1090 m. 1200 m. wire. 1 spec.

Within the limits of the "Ingolf" area in existant literature it is only quoted from E. Greenland 71°22′5″ N., 18°58′ W., 800—1000 m., temp. ÷ 0.3°— ÷0.63° (Damas & Koefoed in Duc d'Orléans 1909, St. 48; by a misprint it is named *Bythocaris guilelmi* Chevr.)

The size of the specimens above is up to abt. 15 mm.

Distribution. Off Lofotes, 1095 m. (Chevreux l. c.). — 60°18′ N., 6°15′ W., abt. 1200 m., temp. 30° F. = ÷ 1.1° C. (Norman l. c.). — 63°51′ N., 1°14′ W., 0—800 m., temp. 11.12°— ÷0.37° C.; 70°15′ N., 2°30′ W., 500—1000 m., temp. 0.6°— ÷0.4° C.; 71°10′ N., 12°30′ E., 1000—1500 m. (Gran 1902). — 76°34′ N., 2°40′ E., depth of the sea 1800 m., 1800—1200 m., temp. ÷ 0.95°— ÷ 0.72° C.; 78°05′ N., 5°21′ W., depth of the sea 1400 m., 1350—800 m., ÷ 0.37°—+0.08° C. (Damas & Koefoed in Duc d'Orléans 1909)

— 80° N., 134° E., 300 m. and 1000—500 m.; 84°47′—83°57′ N., 25°—11° E., 100—130 m. (Sars l. c.). — 79°41′ N., 4°58′ E., 2857 m., bt. 1.1° (v. d. Brüggen 1907).

"Characterform der intermediären Tiefseefauna des Norwegischen Nordmeeres. Im nördlichen Eismeere auch an der Oberfläche." (Gran 1902, p. 211.)

Genus **Metacyphocaris** Tattersall.

Metacyphocaris Tattersall 1906, p. 29.

Only one species.

44. **Metacyphocaris Helgæ** Tattersall.

Metacyphocaris Helgæ Tattersall 1906, p. 29, Pl. 3 fig. 1, Pl. 4.

Occurrence. Taken three times by the "Thor" S. of Iceland:

S. of Iceland: "Thor" St. 164 (12.(13.) 7. 1903). 62°10′8″ N., 19°36′ W. 1900—2150 m. 1 spec.

— — — - 183 (11. 7. 1904). 61°30′ N., 17°08′ W. 1800 m. wire. 13 spec.

— — — - 180 (10. 7. 1904). 61°34′ N., 19°35′ W. 2160 m., 1800 m. wire. 1 spec.

The species was taken 3 times by the "Tjalfe"-Exped. at S. and W. Greenland, 60°—64° N., 1185—1300 m., 1400—2000 m. wire (K. Stephensen, "Tjalfe" 1913, p. 88).

The size is up to 11 mm.; none of the specimens has marsupial plates.

Distribution. 4 localities at S.W. Ireland, > abt. 1200—2200 m., abt. 1100—2100 m. wire (Tattersall l. c.). 2 loc. S. of W. Ireland, > 2600 and 4000 m., 1800 and 2800 m. wire (K. Stephensen 1915, p. 39). Is an Atlantic pelagic deep-sea species.

Genus **Paracyphocaris** Chevreux.

Paracyphocaris Chevreux, Bull. Mus. Océanogr. Monaco, No. 32, 1905.

Only one species.

*45. **Paracyphocaris prædator** Chevreux.

Paracyphocaris prædator Chevreux, l. c., 3 textfigs.

Occurrence. This very rare deep-sea species was not hitherto known from the "Ingolf" area; 1 spec. was taken by the "Thor".

S. of Iceland: "Thor" St. 164 (12.(13.) 7. 1903). 62°10′8″ N., 19°36′ W. 1900—2150 m. 1 spec. 9 mm.

This specimen, probably a male, does not seem to disagree with the description and figs. given by Chevreux.

Distribution. Bay of Biscay 46°15′ N., 7°09′ W., 0—3000 m., 1 spec.; Azores 36°46′ N., 26°41′ W., 0—3250 m., depth of the sea 3620 m., 1 spec. (Chevreux). An Atlantic pelagical deep-sea species.

Genus **Crybelocephalus** Tattersall.

Crybelocephalus Tattersall 1906, p. 32.

The genus comprises only one species.

*46. **Crybelocephalus megalurus** Tattersall.

Crybelocephalus megalurus Tattersall 1906, p. 33, Pl. 3 fig. 1, Pl. 5.

Occurrence. The "Thor" has taken this species, new to the area, at one single station.

S. of Iceland: "Thor" St. 183 (11. 7. 1904). 61°30′ N., 17°08′ W. 1800 m. wire. 4 spec. 5—10 mm.

Distribution. 50 miles N. by W. of Eagle Island, Co. Mayo, Ireland, Petersen trawl at 2166 m., 2 spec. (Tattersall 1906). — 49°27′ N., 13°33′ W., > 2600 m., 2800 m. wire, 1 spec. ("Thor" St. 76, 11. 6. 1906; K. Stephensen 1915, p. 39). Is an Atlantic pelagical deep-sea species.

Genus **Thoriella** K. Stephensen.

Thoriella K. Stephensen 1915, p. 39.

Only one species.

47. **Thoriella islandica** K. Stephensen.

Thoriella islandica K. Stephensen 1915, p. 39, fig. 23.

Occurrence. This species was not taken by the "Ingolf"; but the "Thor" has secured a specimen, 19 mm., S. of Iceland 61°30′ N., 17°08′ W., 1800 m. wire, St. 183 (11. 7. 1904) (K. St., l. c. 1915; St. 173 in this paper is a misprint for St. 183). It is not found outside of the type-locality.

Genus **Pseudalibrotus** Della Valle.

Alibrotus G. O. Sars, 1895, p. 101.

Pseudalibrotus Stebbing 1906, p. 33 (lit.).

The genus *Pseudalibrotus* comprises 5 species in all, viz. 3 (almost exclusively arctic) marine species: *P. litoralis*, *P. glacialis* and *P. Nanseni* (for these 3 species see below), and two species from the Caspian Sea: *P. caspius* (Grimm) G. O. Sars and *P. platyceras* (Grimm) G. O. Sars (literature see Stebbing 1906, p. 34).

I have not seen specimens of the two Caspian species myself except for a specimen of *P. caspius* (Grimm leg. et determ.) in a rather bad state of preservation; but of the 3 marine species the Copenhagen Museum possesses a rather good material, and I give a key to these species.

1 a. Outer ramus of up. 2 deeply indented beyond the middle, terminal part spiniform; a long and heavy spine on the distal end of the broad part of the ramus (Sars 1895, Pl. 35, fig. 2 up. 3) .. *P. litoralis.*

1 b. Outer ramus of up. 2 not essentially different from the inner ramus ..... 2.

2 a. Metacarpus of p. 2 "obliquely truncate at the tip, with the lower corner produced, so as to form, with the extremely small dactylus, a minute chela" (Sars 1900, p. 31, Pl. 6 fig. 6, 6 a) .. *P. glacialis.*

2 b. Metacarpus of p. 2 rather broad and "transversely truncated at the tip, with the lower corner scarcely produced at all" (Sars 1900, p. 29, Pl. 15 fig. 1, 1 a) ..... *P. Nanseni.*

The characters used in this key seem to me to be the best for determination; they are much better than the coxal plate of p. 1 and the length of the distal part of p. 7 which may vary most considerably. Specimens smaller than 4—5 mm. can scarcely be determined. — Specimens of the two other species are undubitably very often incorrectly determined as *P. litoralis* (see p. 56).

48. **Pseudalibrotus litoralis** Kröyer (Chart 11).

Anonyx litoralis Kröyer, Naturh. Tidsskr., 2. Række, vol. 1, 1845, p. 621.

— *littoralis* — in Gaimard's Voyage, Crust., 1846, Pl. 13 fig. 1.

Onisimus litoralis (partim) H. J. Hansen 1887, p. 73.

**Alibrotus littoralis* G. O. Sars 1895, p. 102, Pl. 35 fig. 2.

Pseudalibrotus litoralis Stebbing 1906, p. 33 (the description, but probably not all the literature is to be referred to this species).

Alibrotus — (partim) K. Stephensen, Conspectus 1913, p. 119.

Occurrence. This species was not taken by the "Ingolf".

W. Greenland: Kangerdluarsuk (61°53′ N.), "Tjalfe" 28. 6. 1909, from stomachs of herrings, numerous specimens abt. 10—14 mm. — Ritenbenk 1892, Traustedt leg., 1 spec. abt. 13 mm. — Sakkrak (in the Waigat) 1892, Traustedt leg., 12 spec. abt. 14—15 mm. — Thule 1914, P. Freuchen leg., a few greater specimens up to 18 mm., several small ones abt. 10 mm. — Thule, Plankton-net on the shore, 7. 7. 1916, temp. 1°—2°, Lauge Koch leg., 5 spec. abt. 14 mm. — The harbour at North Star Bay, 15. 7. 1916, Lauge Koch leg., 2 spec. abt. 14 mm. — Numerous small specimens (abt. 5 mm.) from the two last-named localities probably belong to this species. — "North-Greenland", Rudolph leg., 2 spec. 12 mm.

E. Greenland: Ödesund (66°10′ N.), 10—28 m., stony bottom with algæ, Amdrup-Exped. 6. 8. 1899, 3 spec.: 6, 14, 14 mm. — Tasiusak (65°37′ N.), on the shore, E. Bay leg. 23. 9. 1892, 1 spec. abt. 7 mm. — Jameson Land 70°21′ N., 22°08′ W., Ryder's Exped. 2. 8. 1891, 7 spec. abt. 12—13 mm., and a number of small spec. abt. 5 mm. — Hurry Inlet 70°50′ N., 22°35′ W., 13—0 m., II. Amdrup-Exped. 7. 8. 1900, 2 spec. 14—18 mm., and(?) a few small spec. — The "Danmark"-Exped. St. 17, Stormkap, 0—2 m., 18. 8. 1906, on the shore, numerous spec. abt. 14 mm. — The "Danmark"-Exp. St. 18 f, Hvalrosodden 0—4 m., 25. 8. 1906, littoral region, soft bottom, 3 spec., abt. 12 mm., 2 spec. abt. 7 mm., and a few small spec. — The "Danmark"-Exp. St. 18 g, Hvalrosodden, Dove Bay, 0—4 m., 26. 8. 1906, and with mud and stones, 9 spec. 12—14 mm.

N. Iceland: Husavik, 90—110 m., 1. 6. 1904 ("Thor" St. 128). 1 spec. abt. 14 mm.

W. Iceland: Borgarfjörðr, 8—0 m., 20. 5. 1899, R. Hörring leg., 2 spec. 15 mm. —

Above is given a list of the whole revised material in the Copenhagen Museum. Several additional localities from our area are given in existant literature (H. J. Hansen 1887, p. 73; K. Stephensen, Conspectus 1913 p. 119; Stappers 1911, p. 15; Oldevig 1917, p. 4), but most of these are to be accepted with great reservation (see Remarks).

Remarks. Up to 1900, when Sars described two additional species (*P. Nanseni* and *P. glacialis*), *P. litoralis* was the only known marine species.

Several authors (among others H. J. Hansen 1887, p. 74, Ohlin 1895, p. 27) quote that it leads a pelagic life and may be found far from the coast. Revising the material in the Copenhagen Museum I have found that all the specimens which were taken pelagically in greater depths or at great distances from the shore, are to be referred to the two other species. I therefore think that also a great number of the quotations in literature of earlier date than Sars's paper 1900 (— and perhaps also after that year —) do not apply

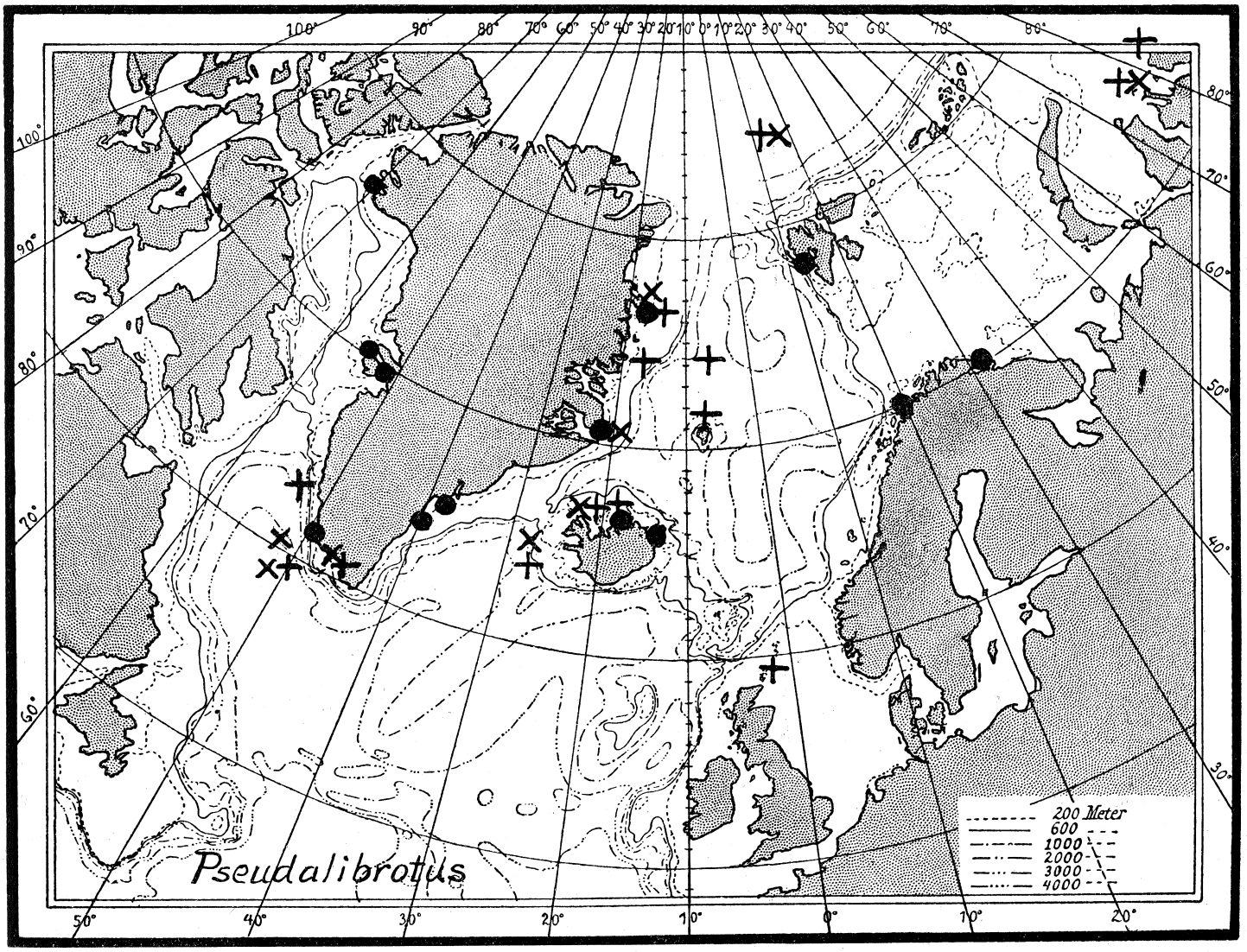

Chart 11. *Pseudalibrotus.* ● *P. litoralis* (only localities from the present paper and G. O. Sars 1895). × *P. Nanseni.* + *P. glacialis.*

to this species but to one of the other marine species; very often it is impossible to decide from the literature whether the author has had the true *P. litoralis* or any of the other species.

The Copenhagen Museum possesses abt. 20 specimens from Spitzbergen, abt. 14—15 mm. in length, determined by Kröyer and undubitably his types (H. J. Hansen 1887, p. 74). In the original description Kröyer (l. c. 1845) writes: "This species . . . I have found in the Spitzbergen in the harbour of Belsound where it was swimming in great quantities close to the flat shore, so that I was able to take them with my hands, standing on the very shore. . . . At deeper water I got only one or two specimens in the dredge." — This agrees very well with the specimens determined by myself (from Greenland, see Occurrence), for a great number of these latter are found under the same conditions, and always rather near the shore.

Distribution. Stappers (1911, p. 14) and Oldevig (1917, p. 5) have given a most elaborate list of localities; but for the reasons given above many of these localities probably are not certain. Yet it seems that we may take it for granted that it is an arctic circumpolar littoral species. In addition to the localities

given by Stappers and Oldevig it is found North of Alaska and off N.W. Canada in several localities (Shoemaker 1920, p. 7).

49. **Pseudalibrotus Nanseni** G. O. Sars (Chart 11 [p. 57].)

Pseudalibrotus Nanseni G. O. Sars 1900, p. 26, Pls. IV—V.

— — Brüggen 1909, p. 9.

— *Nanseni*?, partim, K. Stephensen 1916, p. 278, with figs.

Occurrence. "The Ingolf" has not taken this species.

W. Greenland: The Davis Straits, surface, Rink, June 1848, 1 spec. (♀ without marsupial plates?) abt. 20 mm. — 60°48′ N., 52°32′ W., Olrik 1861, 6 spec. abt. 13—18 mm. — Bredefjord Sermilik, "Rink" St. 118, 500 m. wire, 2 spec. (K. Stephensen l. c. 1916, spec. No. 1 [♂ ad. 14 mm.], No. 3 [♀ jun. 14 mm.]). — Bredefjord, "Rink" St. 126, 800 m. wire, 1 spec. 8 mm.

E. Greenland: Danmark's Ø (70°27′ N.), Ryder's Exped. VIII 1891, 1 spec. abt. 18 mm. (defective). — Hvalrosodden, 0—4 m., 25. 8. 1906, littoral region, soft bottom, "Danmark"-Exped. St. 18 f., 16 spec. 6—14 mm. — Hvalrosodden, Dove Bay, 0—4 m., 26. 8. 1906, sand and clay with stones, "Danmark"-Exped. St. 18 g, 3 spec. abt. 14 mm.

N. Iceland: 66°23′ N., 21°21′ W., 108 m., 15 and 70 m. wire ("Thor" St. 266, 24. 8. 1904). 1 spec. 15 mm.

W. of Iceland: 65°27′ N., 27°10′ W., 765 m., 50 m. wire ("Thor" St. 154, 20.6. 1904), 2 spec. 7 mm. — ibid. 75 m. wire, 3 spec. 5—8 mm. — ibid. 800 m. wire, 2 spec. 7 mm.

A certain number of the specimens above have been (incorrectly) determined as *P. litoralis* in my Conspectus 1913.

The species is best characterized by the characters given in the key p. 55.

Distribution. Abt. 80° N., 134° E.; between 84°47′ N. and 83°57′ N., and between 25° and 11° E. "The specimens seem not to have been taken by aid of the tow-net, but on bait hung down from the ship" (Sars 1900). — Kara Sea 73°27′ N., 79°15′ E., 25—0 m.; Western Taimyr-Peninsula 75°54′ N., 92°59′ E., surface; Cape Tscheliuskin 77°46′30″ N., 105°11′ E., 205—0 m.; off the Chatanga Bay 75°38′ N., 114°11′ E., 17—0 m.; South of the New Sibirian Islands 74°13′ N., 151°36′ E., 9—0 m. (Brüggen 1909). — Cape Smyth (Point Barrow), Alaska, pelagic, over 2 m. of water (Shoemaker 1920, p. 7).

P. Nanseni thus is a pelagic arctic, probably circumpolar species; it may sometimes be found rather near by the shore, but may also be found over very considerable depths ("Thor" St. 154, 1904: 765 m.).

*50. **Pseudalibrotus glacialis** G. O. Sars (Fig. 4, Chart 11 [p. 57]).

Pseudalibrotus glacialis G. O. Sars 1900, p. 31, Pl. VI.

— — Brüggen 1909, p. 9.

— *Nanseni*?, partim, K. Stephensen 1916, p. 278, with figs.

Occurrence. The "Ingolf" at one single station has taken a young specimen that probably is to be referred to this species. The species is not hitherto mentioned from the "Ingolf"-area, but the Copenhagen Museum possesses specimens from a number of localities, to be enumerated below.

W. Greenland: Mouth of the Davis Straits, Möller 2.6.1843, 3 spec. 8—12 mm., 4 ♂ ad. 10—12 mm. Bredefjord Sermilik, "Rink" St. 118, 500 m. wire, 3 spec. (K. Stephensen 1916, spec. No. 2 [♀ jun., 16 mm.], Nos. 4—5 [young ones, 8 mm.]). — Bredefjord, "Rink" St. 119, 400 m. wire, 1 ♂ ad. 13 mm. (K. Stephensen 1916, p. 284). — 64°46′ N., 53°35′ W., among see-weed, Moberg leg., 1 ♂ ad. 13 mm. — ?"Ingolf" St. 32, 66°35′ N., 56°38′ W., 600 m., vertical net 190—0 m., 1 spec. abt. 5 mm. (determination not certain). — Baffin-Bay, without special locality, 190 m., Borch 1859, 5 spec. abt. 8—14 mm. (inclusive of 3 ♂ ad. 13—14 mm.).

E. Greenland: ?Tasiusak (65°37′ N.), 6—10 m., stony bottom with some algæ, Amdrup-Exped. 22. 10. 1898, 3 spec. jun. abt. 6 mm. (determination not certain). — Abt. 74°15′ N., 16°29′ W., 200—0 m., E. Greenland-Exped. 10. 7. 1900, 1 spec. — 74°27′ N., 7°55′ W., from the "ice-foot", E. Greenland Exped. 7. 7. 1900, 1 ♂ ad. 12 mm. — "Danmark"-Exp. St. 77 (abt. 77° N.), vertical net 20—0 m., 19. 9. 1907, 1 spec. abt. 10 mm.

Jan Mayen: 95—114 m., clay bottom, E.-Greenland-Exped. 25. 6. 1900, 1 spec. 5 mm. —

W. of Iceland: 65°27′ N., 27°10′ W., 765 m. ("Thor" St. 154, 20. 6. 1904), 50 m. wire, 1 ♂ ad. abt. 12 mm.; ibid. 75 m. wire, ?11 spec. up to abt. 11 mm. (determination not certain).

N. of Iceland: 66°23′ N., 21°21′ W., 108 m. ("Thor" St. 266, 24. 8. 1904). 15 and 70 m. wire, ?1 spec. abt. 10 mm. (determination not certain). — Eyarfjörðr, Mr. Steincke 1887, 1 spec. 6 mm.

Some of the specimens above in my earlier papers were determined as *P. litoralis* (or *P. Nanseni*?).

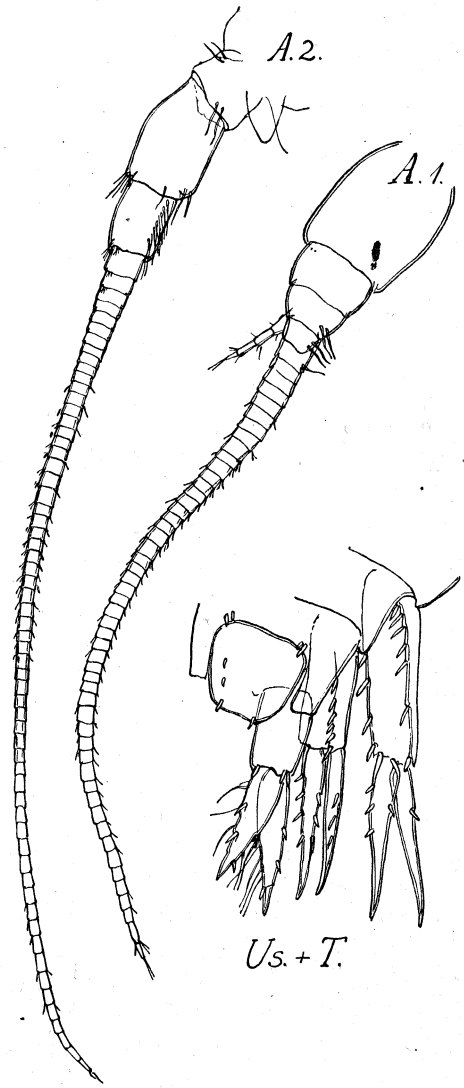

Fig. 4. *Pseudalibrotus glacialis* ♂ 12 mm; mouth of the Davis Straits, Møller ded. 2—6—1843.

Remarks. The species is best recognizable through the characters given in the key above p. 55.

Sars (l. c.) has only described the ♀. The ♂ (— I have dissected a specimen, 12 mm., from the mouth of the Davis Straits, Möller ded. 2. 6. 1843 —) differs very little from the ♀. The antennæ are a little longer. In ant. 1 the flagellum has abt. 50 joints (♀ in Sars' fig.: 22 joints); the accessory flagellum has 4 joints (♀: 3). Ant. 2 in the flagellum has abt. 50 joints (♀: 24).

The uropoda almost as in *P. Nanseni* (Sars l. c. Pl. 5, figs. 9—11), and up. 3 has natatory setæ, not "without any marginal setæ" (Sars l. c. p. 31, Pl. 6 fig. 8). The telson has one pair of apical spines (and in the figured specimen, 2 dorsal spines on the left side in addition).

Colour. The specimen from the "Ingolf" (St. 32, 66°35′ N., 56°38′ W.; the determination not certain) was according to a note by Dr. H. J. Hansen, when the animal was alive, "yellow, almost orange, the eyes high-red".

Distribution. Between Fairhill and Northern Ronaldsha (Orkney Islands), 1 ♂ ad. abt. 12 mm. (the Copenhagen Museum, Olrik ded. 1. 6. 1859). — Abt. 80° N., 134° E.; between 84°47′ N. and 83°57′ N., and between 25° E. and 11° E., "the townet having been lowered to from 50 to 130 metres" (G. O. Sars l. c.). — Kara Sea 73°27′ N., 79°15′ E., 25—0 m., and 74°28′ N., 83°33′ E., 10—0 m.; Taimyr Bay, 76°59′30″ N., 100°19′30″ E., 28 m.; off the mouth of Chatanga 75°38′ N., 114°11′ E., 10—0 m.; 75°42′ N., 124°41′ E., 47—0 m. (Brüggen 1909). — Collinson Point, Alaska, from the stomach of *Salvelinus malma*; Cape Smyth (Point Barrow, Alaska), pelagic, over 2 m. of water (Shoemaker 1920, p. 7).

Also this species is pelagic, arctic, and probably circumpolar.

Genus **Koroga** Holmes.

Koroga Holmes, Proc. U. S. Nat. Mus. vol. 35, 1909, p. 502.

Only one species.

*51. **Koroga** (**megalops** Holmes?) (Fig. 5).

Koroga megalops Holmes l. c. 1909, p. 503, fig. 13.

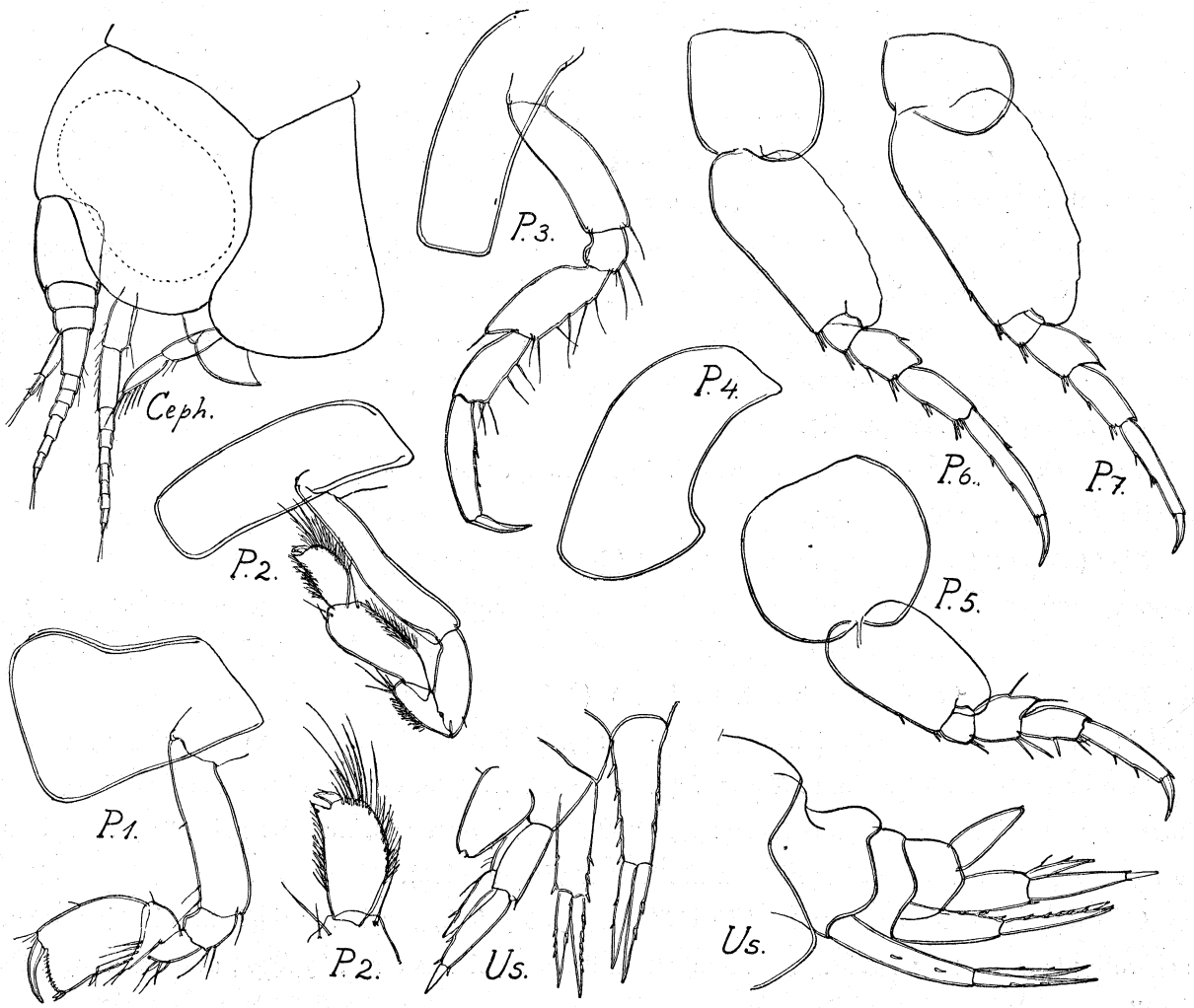

Fig. 5. *Koroga (megalops?).*

Occurrence. This species was not taken by the "Ingolf"; but the "Thor" has taken one specimen which probably is to be referred to this species.

S. of Iceland. "Thor" St. 183 (11. 7. 1904). 61°30′ N., 17°08′ W. Young-fish trawl, 1800 m. wire. 1 (♀ jun.?) abt. 8 mm.

The specimen may with rather great certainty be referred to *Koroga megalops*. There are a few differences from Holmes' single specimen, but they are probably due to difference in size (the "Thor"-specimen is abt. 8 mm. (♀ jun.?), the type is ♀ with ova, 10 mm.).

Upon the whole Holmes' figures and text totally correspond with the present specimen; the only differences are the following (— the oral parts were not dissected —): accessory flagellum of ant. 1 has 3 (not 4) joints. Flagellum of ant. 2 has 8 (not "about twelve") joints. Metacarpus of p. 1 is abt. 1½ time longer than broad, not "quadrate, nearly as broad as long". Metacarpus of p. 2 ovate, not "slightly widening distally". The coxal plate of p. 4 but slightly expanded at the lower part; Holmes says nothing about this character. The shape of p. 5—p. 7 may be seen from my figures. The infero-lateral corner of 3. metasome segment right angled, but somewhat rounded at the tip. In up. 3 the inner ramus is only abt. half as long as the outer ramus. I was not able to find the two dorsal spines on the telson (shown in Holmes' fig., not mentioned in his text).

Distribution. Funter Bay, Lynn Canal (S. of Alaska), abt. 700 m., 1 ♀ with ova (Holmes l. c.).

Genus **Paralibrotus** n. gen.

This new genus is very closely allied to *Pseudalibrotus*, but differs in the simple, not subchelate p. 1. It comprises only one species, *P. setosus* n. sp.

*52. **Paralibrotus setosus** n. sp. (Figs. 6—7).

Occurrence. The "Ingolf" has secured this new species at two stations at W. Greenland.

W. Greenland St. 29. 65°34′ N., 54°31′ W. 128 m., temp. 0.2°. 2 spec. (♂?), abt. 8 mm.

— - 31. 66°35′ N., 55°54′ W. 166 m., temp. 1.6°. 7 spec. (♂?), 7—8 mm. (the types).

Description of ♂(?), abt. 8 mm, from St. 31. Body rather robust, with evenly vaulted back. Head as long as first mesosome segment; lateral lobes only slightly projecting, broad and evenly rounded at the tip. Eyes of medium size, ovate, colourless. There are no calceoli on the antennæ. Ant. 1 is abt. 2½ time as long as the head, very stout; first joint of the peduncle as long as the head, twice as long as the two next joints combined. Accesssory flagellum 4-articulate, as long as the 3 proximal joints of flagellum. Flagellum as long as peduncle, 8-articulate, first joint very short. Ant. 2 1½ time as long as ant. 1, flagellum 11—13-articulate.

Epistomal plate high, but not at all projecting. Md. strong; the palp originates off the proximal end of the molar expansion. Mx. 1 has the masticatory lobe abruptly truncate, with 4 strong teeth; basal lobe short, bi-setose; palp only a trifle longer than masticatory lobe, with 4 teeth. Mx. 2 has long narrow lobi; the outer with abt. 12 setæ, the inner with abt. 7—8. Mxp. almost totally as in *Pseudalibrotus*, but the palp has only very few setæ.

P. 1—p. 4 have the coxal plates rather broad and the legs (except p. 2) are very heavy. P. 1 has the

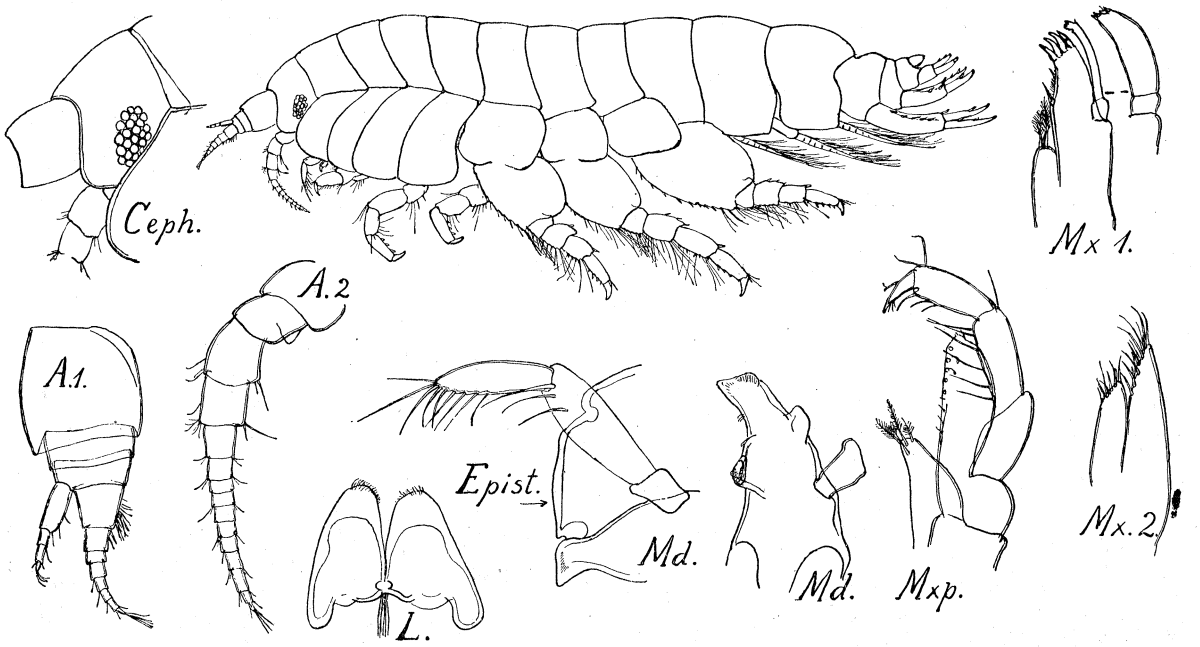

Fig. 6. *Paralibrotus setosus.*

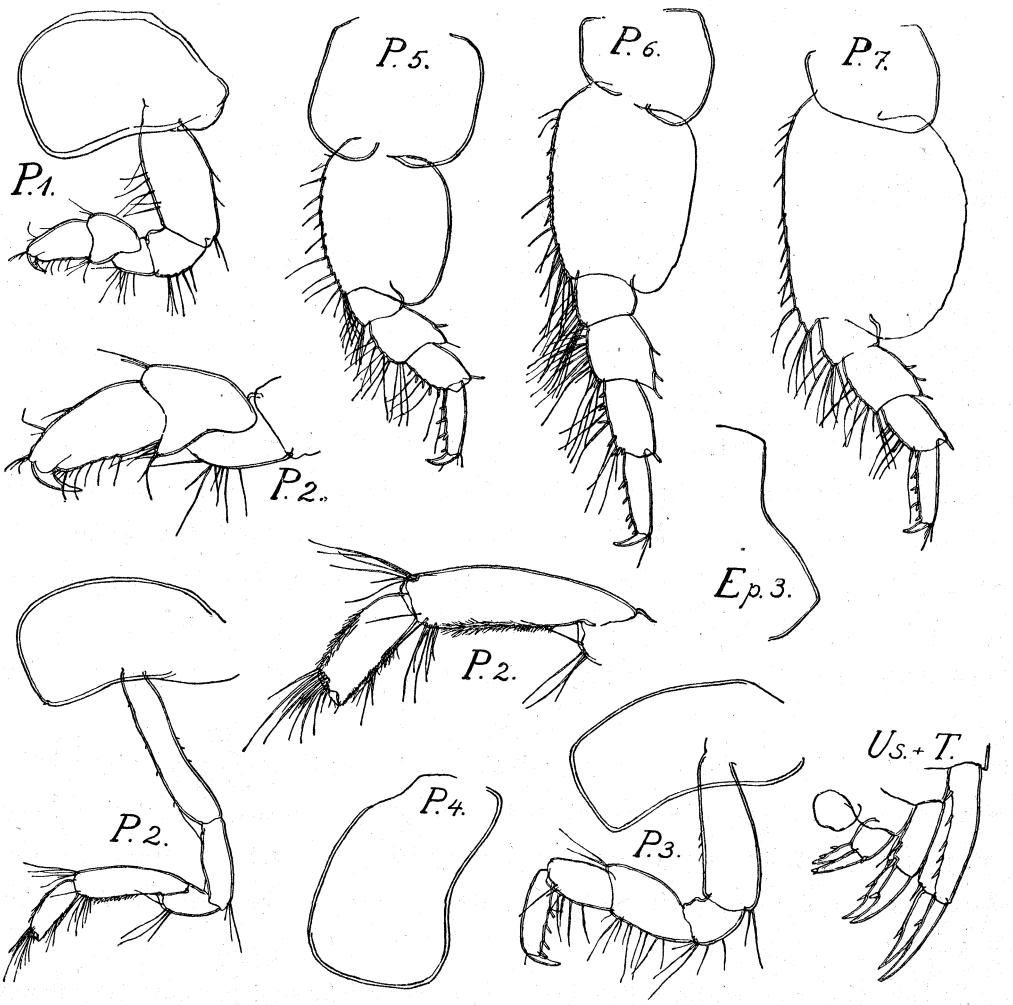

Fig. 7. *Paralibrotus setosus.*

coxal plate rounded trapezoid; metacarpus simple, about as in *Aristias*, as long as carpus. P. 2 long, slender, with very few long setæ; metacarpus half the length of carpus, forms with the little dactylus a very little chela. P. 3—p. 4 have a few long setæ on the hind edge of 2.—5. joints; coxal plate of p. 4 with the hind edge evenly excavate, but without any lower hind lobe P. 5—p. 7 short, heavy, with long setæ on the anterior hind corners of 2. joint and on the fore edge of 3.—5. joints; p. 5 much shorter than p. 6 which is of equal length with p. 7; dactyli short, stout.

Ep. 3 almost rectangular. Us. 1 dorsally depressed at the base, but there is no real carina. Up. 1 has the rami a trifle shorter than peduncle, up. 2 and up. 3 have rami and peduncle of abt. equal length. Apical joint in up. 3 extremely short. Telson as long as peduncle in up. 3, entire, with a deminutive excavation on the hind edge.

The species is very easily recognizable on the simple p. 1 and the setose p. 5—p. 7.

Distribution. The species is not found outside the two "Ingolf"-stations mentioned above.

Genus **Tetronychia** n. gen.

This new genus is characterized by a number of good characters. Mx. 1 has the basal lobe rather broad, bi-setose, with the lateral seta very broad at the base. P. 1 has the coxal plate almost triangular; metacarpus rather broad, subchelate; dactylus long, curvate, having 4 teeth in all viz. 3 teeth on the inner side in addition to the apical tooth. (The generic name is an allusion to this character [from τέσσαρες = 4, and ὄνυξ = nail]). Further see the specific diagnosis.

*53. **Tetronychia abyssalis** n. sp. (Figs. 8—9).

Occurrence. The "Ingolf" has secured this new species at one single station.

S. of Iceland: St. 10: 64°24′ N., 28°50′ W. 1484 m., temp. 3.5°. 1 ♀ (with small marsupial plates) 8 mm.

Description of ♀. Body stout, somewhat compressed, without any dorsal carina (but there is a dorsal process on us. 1). Head with broad, short, rounded lateral lobes. No traces of eyes. Ant. 1 abt. twice as long as the head, peduncle somewhat shorter than flagellum. Accessory flagellum as long as peduncle, with 5 joints, flagellum 14-articulate.

Epistomal plate high, triangular, but not projecting in front of the upper lip. Posterior lip with projecting lateral corners. Md. long, with great molar expansion; palp long, slender, originating distally of the base of the molar expansion. Mx. 1 has the masticatory lobe rounded at the tip, with 5 longer and 5—6 shorter strong spines and numerous fine setæ; basal lobe broad, with two strong setæ or rather spines, of which the lateral one is very broad at the base; palp broad, with 4 teeth and one seta at the apical end, and two small denticles on the median side. Mx. 2 with both lobi, but especially the inner one, very broad; both of the lobi have abt. 20 spines. Mxp. with masticatory lobe rather broad, with inner edge crenulated, palp rather heavy, with dactylus as long as the preceding joint.

P. 1 medium heavy, coxal plate almost triangular. Carpus rather broad, triangular, broader than metacarpus. Metacarpus with almost parallel sides, with the distal end somewhat concave and the terminal corner somewhat projecting; dactylus long, curvate, with 3 teeth on the inner edge. P. 2 has metacarpus

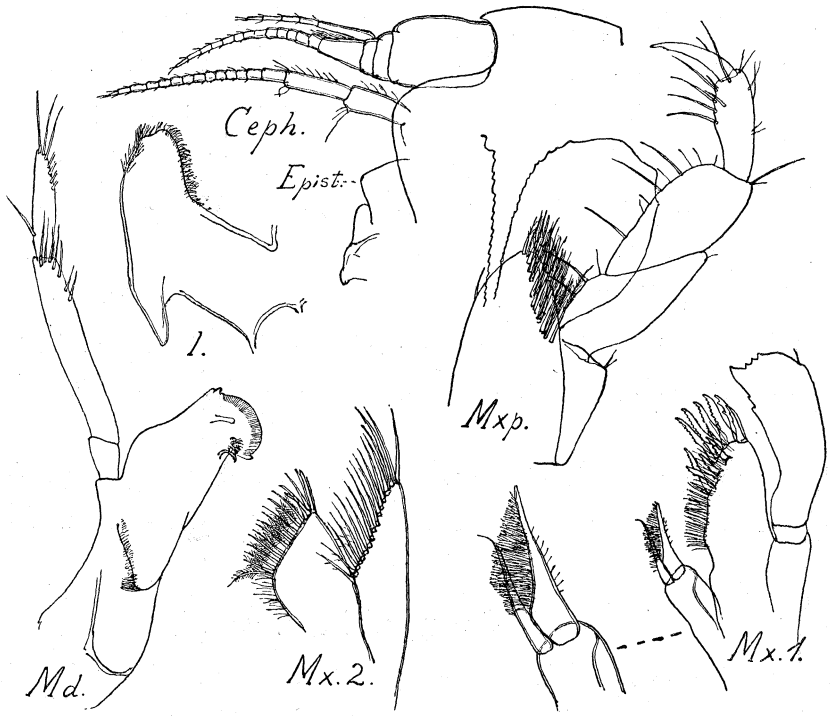

Fig. 8. *Tetronychia abyssalis.*

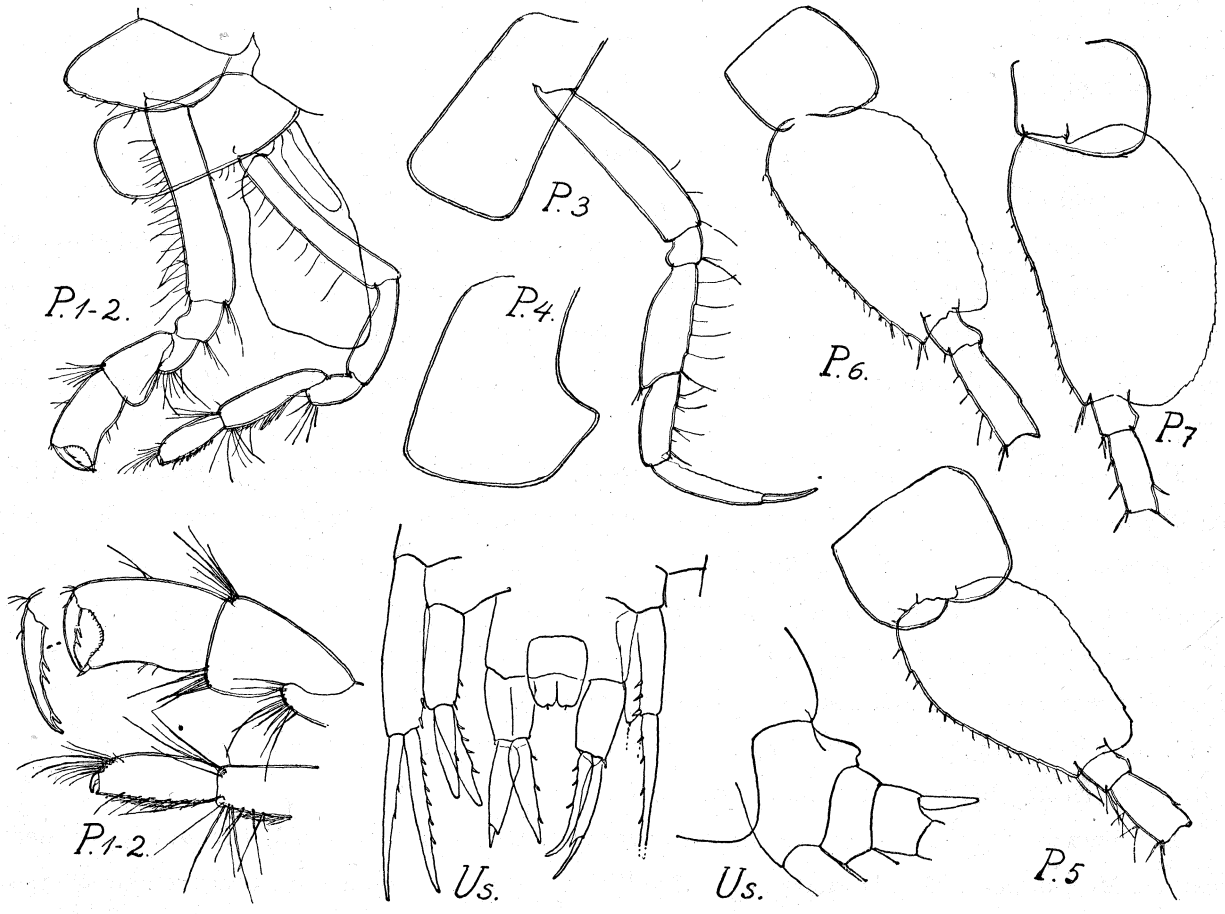

Fig. 9. *Tetronychia abyssalis.*

somewhat shorter than carpus, narrow, with almost parallel sides, 3—4 times as long as broad; the distal end somewhat truncate with a little apical tooth, dactylus short. Coxal plates of p. 2—p. 3 long, but not very broad, that of p. 4 much broader with on acute hind lobe and a not very deep excavation on the hind edge. Dactylus of p. 3—p. 4 rather long. P. 5—p. 7 almost uniform; the 3 distal joints are lost in all these 3 pairs of pereiopoda (in one side p. 7 is totally kept, but is very little on account of its being in regeneration).

Ep. 3 triangular, rounded. Us. 1 has a dorsal impression and a little dorsal process. Up. 1 has long rami of equal length; also in up. 2 the rami seem to be rather long and thin (— but in the right side only the proximal part of outer ramus is kept, the inner ramus is totally lost; and in the left up. 2 both of the rami are very short and seem to be in regeneration —). The two up. 3 are not uniform; the rami in the right one are longer than those of the left one. Telson somewhat broader than long, cleft abt. to the middle, and with one pair of apical spines.

Remarks. By the shape of p. 1—p. 2 the genus seems to be rather closely allied to *Normania*, but the two genera differ in almost all other regards, especially in the oral parts which are much stronger in the present genus, and the position within the family seems to be quite uncertain.

Distribution. The species is not found outside the single station mentioned above, but would seem to belong to the Atlantic abyssal fauna.

Genus **Paratryphosites** Stebbing.

Paratryphosites Stebbing 1906, p. 42 (lit. and syn.).

The genus comprises only one species.

54. **Paratryphosites abyssi** Goës.

Lysianassa abyssi Goës 1866, p. 519, Pl. 37 fig. 5.

Paratryphosites abyssi Stebbing 1906, p. 43 (lit. and syn.).

Occurrence. The "Ingolf" has not secured this species. It is known from a number of localities in W. Greenland abt. 68½°—73° N., abt. (50) 150—500 m. (K. Stephensen, "Tjalfe" 1912, p. 87, and Conspectus 1913, p. 111 [*Hippomedon abyssi*]).

Distribution. Labrador (1 spec. in the Copenhagen Mus., Packard ded.). It seems to be a West Greenland arctic species.

Genus **Orchomene** Boeck.

Orchomene G. O. Sars 1895, p. 59.

— Stebbing 1906, p. 44 (lit.).

The genus comprises 7 North Atlantic species; only one of these was known from the "Ingolf"-area, and the "Ingolf" has taken two as new to the area. But in addition to these 3 species 4 shall be described below as new to science; thus the area now has 7 species in all.

The species may be determined by dint of the following key.

Key to all described species of *Orchomene*.

(the Antarctic species *O. goniops* Walker [Amphip.; National Antarctic Exped., vol. 3, 1907 (1908), p. 12, Pl. 3 fig. 6], described from immature [?] specimens, is not included in this list).

1. Epistomal plate acute at the apex ..... 2.
   Epistomal plate rounded at the apex ..... 3.
2. Epistomal plate with the tip turned upward. *O. similis* Chevreux (Bull. Soc. Zool. France, vol. 37, 1912, p. 283, figs.) (Bretagne).
   Epistomal plate with the tip projecting forward ..... *O. oxystoma* n. sp. (p. 67).
3. Carpus of p. 2 has the inferior apical corner projecting in a long narrow process with parallel sides *O. tscheryschevi* Birula (1909, p. 10, Pl. 2 figs. 26—29) (Jugor-Scharr).
   Carpus of p. 2 has the inferior apical corner short, rounded ..... 4.
4. Epistomal plate not (or only very little) projecting in front of the upper lip ..... 5.
   Epistomal plate highly projecting ..... 8.
5. Eyes black (very large) .. *O. Hanseni* Meinert (G. O. Sars 1895, p. 681, Suppl.-Pl. 3, fig. 2) (Christianiafjord, Kattegat, Hebrides).
   Eyes not black (or eyes totally missing) ..... 6.
6. Eyes L-shaped ..... *O. amblyops* (p. 67).
   Eyes very indistinct or totally missing ..... 7.
7. P. 7 with numerous distinct (but small) teeth on the hind edge of 2. joint .... *O. Thorii n.* sp. (p. 68).
   P. 7 without distinct teeth on the hind edge of 2. joint (hind edge undulated) ... *O. lævipes* n. sp. (p. 69).
8. Us. 1 with an acute dorsal process ..... 9.
   Us. 1 with a rounded dorsal process ..... 10.
9. No eyes; telson with 4 pairs of dorsal spines ..... *O. faeroensis* n. sp. (p. 70).
   Eyes imperfectly developed; telson with 2 pairs of dorsal spines .. *O. pectinata* (G. O. Sars 1895, p. 64, 682, Pl. 23 fig. 3) (W.-Norway).
10. Hind margin of ep. 3 without distinct teeth .... *O. batei* (G. O. Sars 1895, p. 60 Pl. 22) (N.E.-Atlantic).
    Hind margin of ep. 3 with distinct teeth ..... 11.
11. Epistomal plate very broad ..... *O. crispata* (p. 67).
    Epistomal plate narrow ..... *O. serrata* (see below).

55. **Orchomene serrata** Boeck.

Orchomene serratus G. O. Sars 1895, pp. 62, 682; Pl. 23 fig. 1, Suppl.-Pl. IV, fig. 1.

— *serrata* Stebbing 1906, p. 44 (lit. and syn.).

Occurrence. This species was not secured by the "Ingolf"; but it was taken at Jan Mayen, "different depths", 26. 6. 1900, by II. Amdrup-Exped., and W. of the Færoes (S. W. of Myggenæs, close by and N. of the Færö-Bank), 250 m., by the "Diana" 1902. The "Thor" has taken it S. of Iceland 63°18′ N., 21°30′ W., 178 m. (St. 176, 8. 7. 1904; specimen in the Reykjavik Museum).

From the literature it is known from the following localities in the "Ingolf"-area: between 75°58′ N.,

14°08′ W., and 75°59′ N., 14°12′ W., 300 m. w. (Duc d'Orléans) and "Danmark's Havn" in N. E. Greenland, 19—28 m., Delesseriaregion, soft bottom. (K. Stephensen, "Danmark" Exped. 1912).

Distribution. Norse Island, Spitzbergen (Sars 1895), the Sibirian Polar Sea (Stuxberg), Norway "along the whole coast up to Finmark in moderately deep water", from 57 to 100 m. (Sars 1895). Skagerak, 660 m. (specimens in the Copenhagen Museum). It is not known from British waters (see Norman 1900, p. 202).

*56. **Orchomene amblyops** G. O. Sars.

Orchomene amblyops G. O. Sars 1895, p. 65, Pl. 25 fig. 1.

— — Stebbing 1906, p. 46.

Occurrence. Secured three times by the "Ingolf"; new to the area.

W. Greenland: St. 32. 66°30′ N., 56°38′ W. 600 m., temp. 4.2°. 1 spec.

N. E. Iceland: St. 101: 66°23′ N., 12°05′ W. 1011 m., temp. ÷ 1.1°. 2 spec.

N. of the Færoes: St. 139. 63°36′ N., 7°30′ W. 1322 m., temp. ÷ 0.3°. 2 spec.

The "Thor" has secured the species at the following locality.

S.W. of the Færoes: St. 99 (22. 5. 1904). 61°15′ N., 9°35′ W. 900 m. 2 spec.

It was not possible to find any difference between the specimens found in the Arctic and the Atlantic area.

Distribution. "In a few localities off the west coast of Norway, and, besides, in the Trondhjem fjord and at Apelvær in Namdalen." 190—380 m. (Sars l. c.).

*57. **Orchomene** (**crispata** Goes?).

Orchomene crispatus G. O. Sars 1895, p. 63, Pl. 23 fig. 2.

— *crispata* Stebbing 1906, p. 46 (lit.).

Occurrence. The "Thor" (St. 168, 14. 7. 1903) S. of Iceland (63°12½′ N., 20°06′ W., 510 m.) secured a young specimen, 5.5 mm. in length, which for the following reasons probably might be determined as the present species: 1. joint in peduncle of ant. 1 almost cylindrical, and 1. joint in flagellum extremely short; metacarpus in p. 1 very long and slender. In some points it differs from the figures given by Sars (especially up. 3 is very short and stout); but these differences may probably be declared as youth-characters.

If the determination is correct, the species is new to the "Ingolf" area.

Distribution. Väderöerne, Bohuslän; Spitzbergen 78° N., 38 m. (Goës 1866). — "In a few localities off the west coast of Norway and quite recently also in the Trondhjemsfjord. It occurs, as a rule, in very deep water, especially in the region of the deep-sea corals, depths from 100 to 200 fathoms" (G. O. Sars 1895).

*58. **Orchomene oxystoma** n. sp. (Fig. 10).

Occurrence. Taken once by the "Ingolf" in the following locality:

W. Greenland: St. 24. 63°06′ N., 56°00′ W. 2258 m., temp. 2.4°. 1 ♂ jun. abt. 8 mm.

Body rather slender. Lateral corners of the head almost as in *O. pectinata*. No eyes. Ant. 1: abt. as in *O. serrata* ♀, but flagellum 15(?)-articulate. Ant. 2 abt. half as long as the total length of the body, the joints short, without calceoli. Epistomal plate not very prominent, but of a very characteristic, triangular

form. P. 1—p. 2. about as in *O. amblyops*. 2 joint in p. 5—p. 7 narrower than in the other species, evenly rounded at the inferior hind corner.

3. epimeral plate of the metasome with abt. 12 teeth, 6 of them very large (2. epimeral plate without teeth). 1 urosome segment dorsally with a sharply angulate process (not so acute as in *O. pectinata*). Up. 3: inner ramus of equal length with the basal joint of the outer ramus, the latter with abt. 8 long ciliæ on the inner margin. Telson with 2 (3?) pairs of dorsal spines, cleft abt. to the middle.

Remarks. This species is extremely easily recognizable on account of the acute epistome (— the specific name is an allusion hereto —) and the process on 1. urosome segment.

Distribution. The species seems to belong to the Atlantic abyssal fauna.

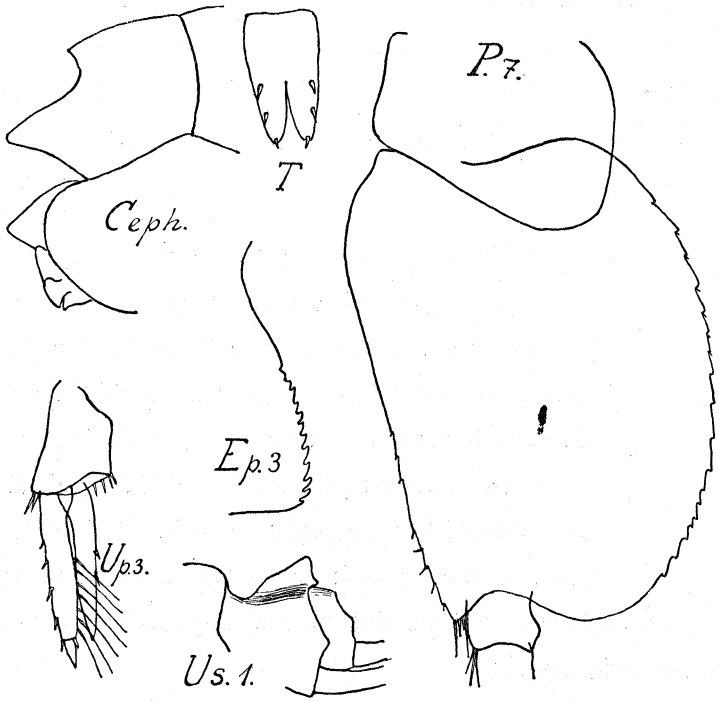

Fig. 10. *Orchomene oxystoma.*

*59. **Orchomene Thorii** n. sp. (Fig. 11).

Occurrence. This new species was secured by the "Thor".

S.W. of the Færoes: "Thor" St. 78 (12. 5. 1904). 61°07′ N., 9°30′ W. 835 m. Abt. 20 spec.

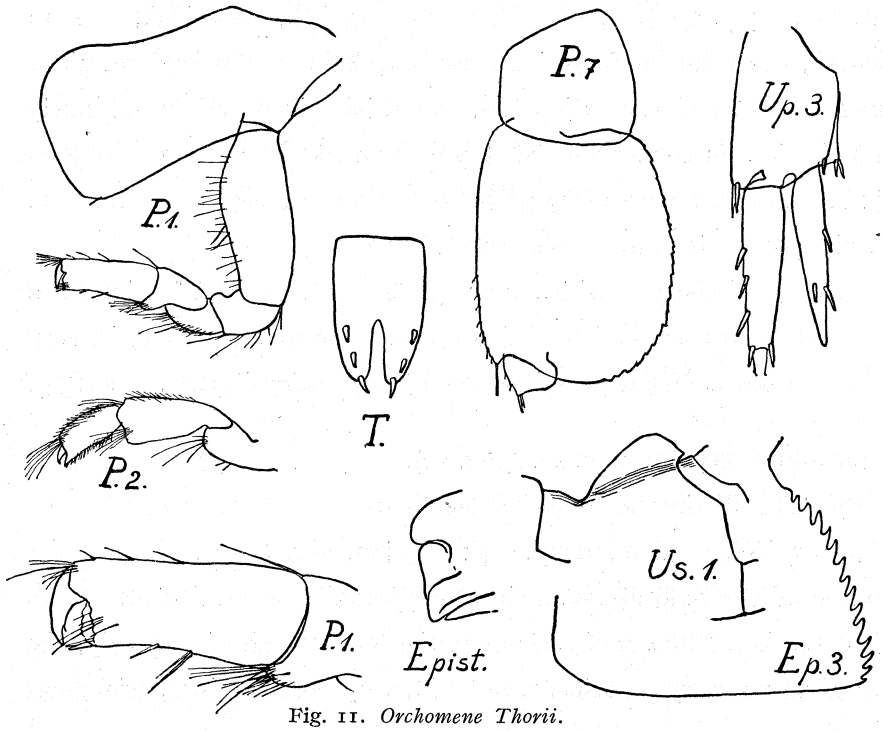

Fig. 11. *Orchomene Thorii.*

Description of ♀ with ova, abt. 8 mm. Body rather stout. Lateral corners of the head as in *O. amblyops*; no eyes. Ant. 1 totally as in *O. batei*, but has 9 (not 8) joints in the flagellum. Ant. 2 a trifle more slender than in *O. batei*, but with an equal number of joints. Epistomal plate very narrow, not projecting, rounded at the tip. Coxal plates of the pereiopoda very great (distal joints of p. 5—p. 7 are lost in all the specimens). P. 1: metacarpus longer than 4.—5. joints together, gradually tapering. In p. 2 the carpus is rather broad distally. P. 5: coxal plate as deep as broad. P. 7: coxal plate has the lower

edge totally straight; inferior hind corner of basal joint evenly rounded. 3. epimeral plate of the metasome with abt. 14 stout teeth. 1. urosome segment dorsally with a large, rounded-triangular projection. Up. 3: rami narrow, inner ramus of equal length with proximal joints in outer ramus (length of apical joint cannot be given, because it is broken in all ♀ specimens). Telson: cleft extending abt. to the middle; incision not very narrow.

The ova very few in number (some of them probably lost) are simply colossal: 1.00 × 1.40 mm.

Description of ♂ jun. The material contains a few ♂ jun. of equal size with ♀ with ova. They differ in no respects from the ♀ with the exception that ant. 2 (ant. 1 is broken) has a great number of very short joints, but the total length of ant. 2 is not greater than in ♀.

The species belongs to the group with short, narrow, not projecting epistomal plate; it may be determined by the Key (see above p. 66) § 4 seq.

*60. **Orchomene lævipes** n. sp. (Fig. 12 partim).

Occurrence. This new species was once secured by the "Ingolf".

W. of Iceland: St. 95. 65°14′ N., 30°39′ W. 1318 m., temp. 2.1°. 2 ♀ abt. 7—9 mm.

♀ 9 mm. (without marsupial plates). Body rather slender. Head shorter than the first mesosome segment; lateral corners narrow and highly projecting. Eyes colourless and very indistinct. Ant. 1: 1. joint in the peduncle cylindrical, flagellum 8(9?)-articulate, accessory flagellum abt. $^2/_3$ the length of the flagellum, 6-articulate. Ant. 2 only a trifle longer than ant. 1, flagellum 8-articulate. Epistomal plate very little projecting. P. 1—p. 4 almost totally as in *O. serrata*. P. 5—p. 7 with almost even hind edge of 2. joint (there are only a few, 5—7, extremely small rounded teeth); for this reason I propose the specific name: *lævipes*). The hinder process on 4. joint is long and broad in p. 5—p. 6, narrow in p. 7. Hind edge of 3. epimeral plate of the metasome with abt. 14 middle-sized teeth. Dorsal side of 1. urosome segment with a rounded projection of the same shape as in *O. Thorii*. Up. 3 proportionally short and broad. Telson almost totally as in *O. oxystoma*.

Remarks. The species is easily recognizable with the cylindrical 1. joint in the peduncle of ant. 1, and the almost even hind edge of 2. joint in p. 5—p. 7, especially in p. 7.

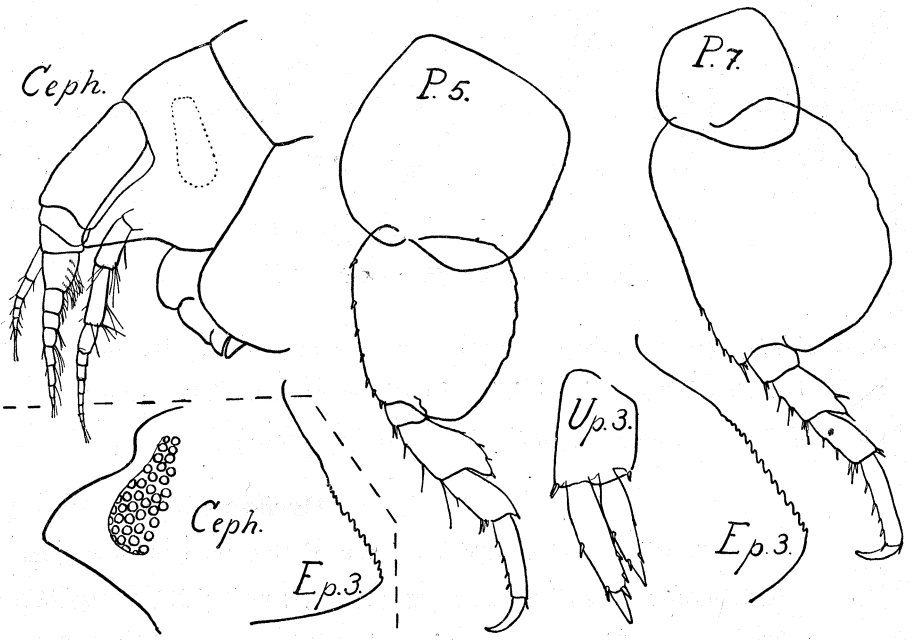

Fig. 12. *Orchomene lævipes* from "Ingolf" St. 95. The two figures below in the left corner are *O. lævipes?* from "Ingolf" St. 78.

60 A. **Orchomene** (**lævipes**?) (Fig. 12, partim.).

Occurrence. The "Ingolf" has W. of Greenland (St. 78: 60°37′ N., 52°00′ W., 1505 m., between spiculæ of sponges) secured a number of specimens (3 spec. up to abt. 8 mm., abt. 50 spec. abt. 5 mm.), which probably are identic with *O. lævipes.*

I have dissected the biggest specimen (♀ without marsupial plates, 8 mm.) from this station, and it totally agrees with *O. lævipes* except in the following respects. Lateral lobes of the head much broader. Eyes distinct, but ocelli colourless. Ant. 1: 1. joint in peduncle barrel-shaped as is usually the case, not cylindrical; flagellum 8-articulate, accessory flagellum 4-articulate. P. 5—p. 7: the dentition on the hind edge of 2. joint is a little more distinct; number of teeth on anterior edge of the same joint is a little greater. Epimeral part of 3. segment of the metasome has abt. 13 middle-sized teeth; the inferior hind corner acute-angled, not almost right-angled. Telson has 3 (not 2) pairs of dorsal spines.

*61. **Orchomene faeroensis** n. sp. (fig. 13).

Occurrence. The "Thor" has secured 1 ♂ ad. of this new species.

S. W. of the Færoes: "Thor" St. 99 (22. 5. 1904): 61°15′ N., 9°35′ W. 900 m. 1 ♂ ad., 7 mm.

The present species is very closely allied to *O. pectinata,* but differs from this species in some few respects. Eyes not visible. Lateral corners of the head and epistomal plate almost totally as in *O. pectinata.* (Both pairs of antennæ have calceoli). Ant. 1: flagellum > 11 joints (apex is lost), accessory flagellum 5-articulate. Ant. 2 long, > 30 joints in flagellum (apex lost), which is abt. half the length of the body. Pereiopoda almost totally as in *O. pectinata* with the single exception, that basal plate in p. 7 is somewhat narrower, especially in the distal part. Epimeral plate of 3. metasome segment has abt. 14 small teeth; 1. urosome segment has a dorsal projection as in *O. pectinata,* but apically still more acute. Up. 3 long, with natatory setæ on both rami; inner ramus of equal length with proximal joint in outer ramus. Telson long, narrow, with very narrow incision and 4 pairs of dorsal spines (*O. pectinata* has only 2 pairs).

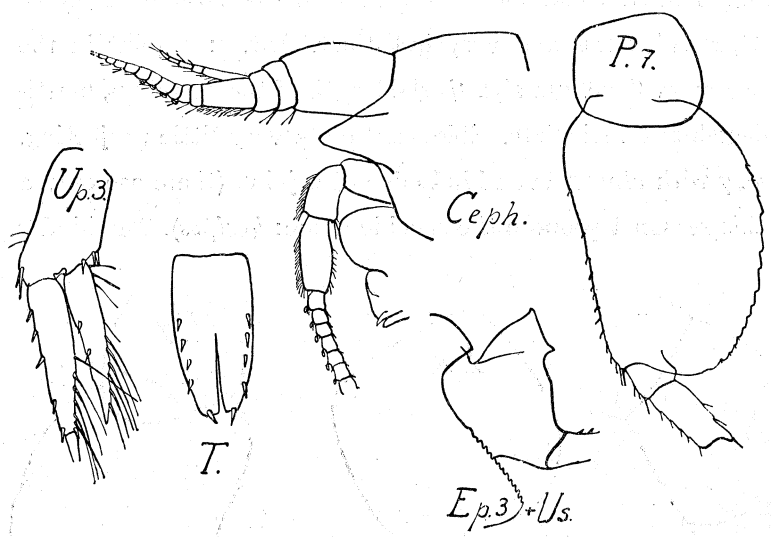

Fig. 13. *Orchomene faeroensis.*

Orchomene sp.

The "Thor" has secured a specimen of *Orchomene* which I have not been able to determine.

E. Iceland: "Thor" St. 217 (24. 7. 1904): 66°14′ N., 12°13′ W. 350—550 m. On bait. 1 spec., 7 mm.

The specimen is probably ♀ jun., but it has no marsupial plates. It is very closely allied to *O. serrata,* but the head has lateral corners of the shape in *O. amblyops.* No eyes. The epistomal plate represents an intermediate stage between the shape in *O. serrata* and that in *O. pectinata.* Up. 3 and telson totally as in *O. pectinata.*

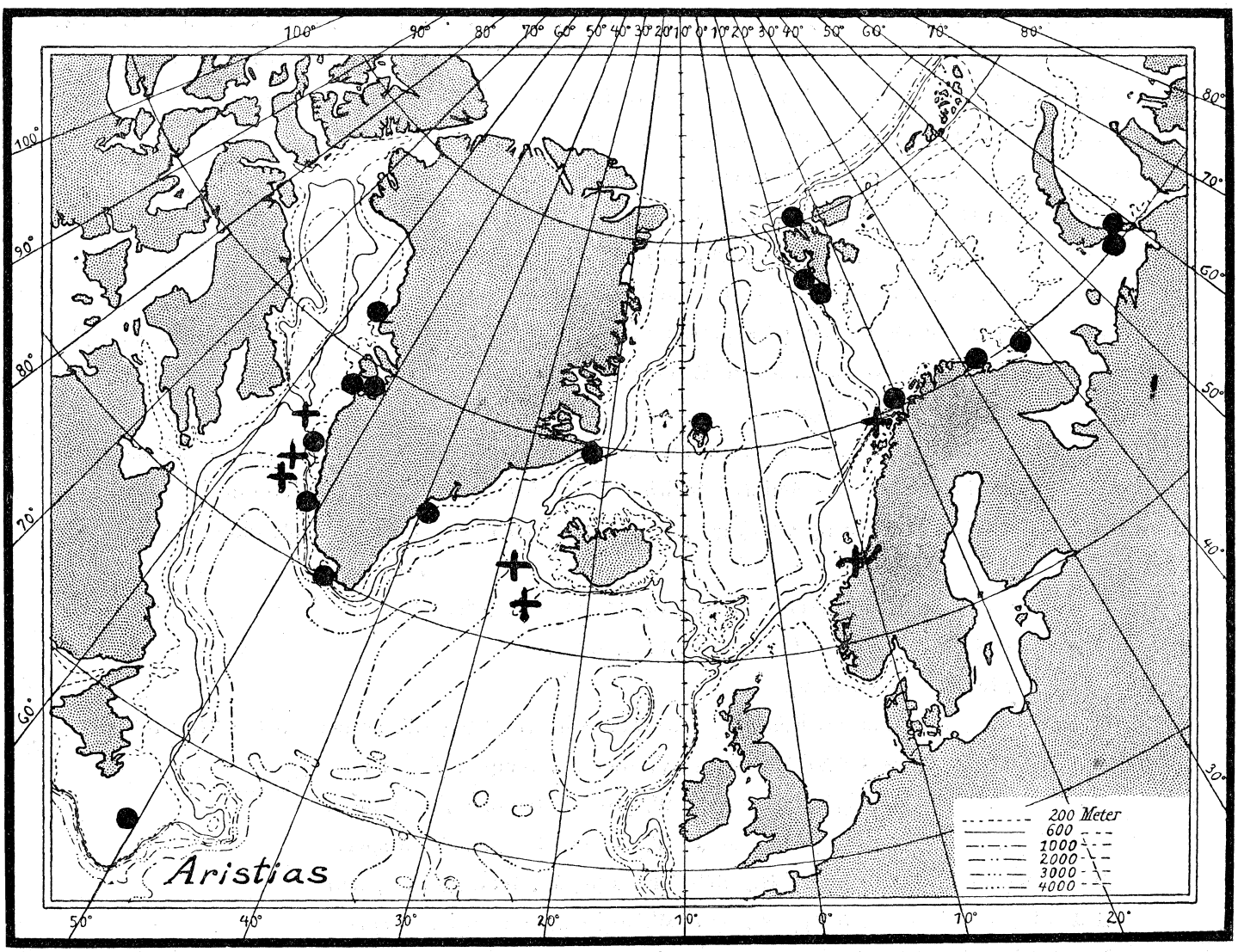

Chart 12. *Aristias.* ● *A. tumidus,* + *A. microps.*

Genus **Aristias** Boeck.

Aristias G. O. Sars 1895, pp. 47, 675.

— Stebbing 1906, p. 49 (lit.).

Six species are described in existant literature from the Northern Atlantic. Two of these are found in the "Ingolf"-area, and in addition hereto one species (*A. falcatus*) is new to science.

62. **Aristias tumidus** Kröyer (Chart 12).

Aristias tumidus G. O. Sars 1895, p. 49, Pl. 18 fig. 1.

— — Stebbing 1906, p. 49 (lit. and syn.).

— — K. Stephensen, Conspectus 1913, p. 114.

— — Deriugin, Mém. Acad. Sci. Petrograd, vol. 34, No. 1, 1916, p. 441, figs.

Occurrence. The "Ingolf" has only once taken this species.

W. Greenland: St. 34. 65°17′ N., 54°17′ W. 105 m., temp. 0.9°. 3 spec., one of them with 6 ova 1.10 × 0.80 mm.

We have material, not earlier mentioned in literature, from the following localities.

W. Greenland: Egedesminde, abt. 25 spec.; Jacobshavn, 1 spec.; Godhavn, 4 spec.; Disco bay, 7 spec. (all these were collected by Traustedt 1892).

E. Greenland: Tasiusak (65°37′ N.), with dredge under the ice, abt. 45—55 m., rocky bottom with many algæ, 1. 6. 1899, 2 spec., and 69¾° N., 23⅓° W., 6 m., 25. 7. 1900, 1 spec. (2. Amdrup-Exped.).

Jan Mayen, 105 m., clay, 1 spec. (2. Amdrup-Exped.).

In my papers on Greenland (Conspectus 1913, p. 114; N. Strømfjord 1913, p. 66; 1916, p. 277) I have enumerated a number of localities at W. Greenland abt. 60°—72½° N., abt. 15—100 (325—770) m. It was not known from E. Greenland.

Distribution (Chart 12). In recent literature it is mentioned from the New Foundland Bank, Spitzbergen, Finmarken, Kara Sea and the Sibirian Polar Sea to N. E. of E.-Taimyr 6—90 (217) m. (a detailed list of localities is given by Oldevig 1917, p. 5); thus it is an arctic (probably circumpolar) littoral species.

*63. **Aristias microps** G. O. Sars (Chart 12).

Aristias microps G. O. Sars 1895, p. 675, Suppl.-Pl. 1, fig. 2.

— — Stebbing 1906, p. 49.

Occurrence. This species was five times taken by the "Ingolf", as new to the "Ingolf"-area.

W. Greenland: St. 25. 63°30′ N., 54°25′ W. 1096 m., temp. 3.3°. 12 spec.

— - 28. 65°14′ N., 55°42′ W. 791 m., temp. 3.5°. 11 spec.

— - 32. 66°35′ N., 56°38′ W. 600 m., temp. 3.9°. 6 spec.

W. of Iceland: St. 10. 64°24′ N., 28°50′ W. 1484 m., temp. 3.5°. 4 spec.

S.W. of — - 81. 61°44′ N., 27°0′ W. 913 m., temp. 6.1°. 1 spec.

In addition the "Thor" has taken a specimen which perhaps might be referred to this species:

?S.W. of the Færoes: "Thor" St. 99 (22. 5. 1904): 61°15′ N., 9°35′ W. 900 m. 1 spec. abt. 4 mm.

Remarks. Regarding the epimeral plate of third metasome segment there is a little disagreement between the description and the figure given by Sars; in the specimens from the "Ingolf" the shape takes up an intermediary position between Sars's text and figure: it is about as in *A. megalops* (Sars 1895, Suppl.-Pl. 2, fig. 1). The eyes could not be seen.

The specimen taken by the "Thor" is more deviating. It seems to be ♂; if it is the ♂ of the species in question this cannot also be the case with *A. megalops*, as suggested by Stebbing (1906, p. 51). The determination is not quite certain, as there are some disagreements with *A. microps* ♀: ant. 1 has in the flagellum 6 joints, in the accessory flagellum 3 joints; ant. 2 has in the flagellum 5 joints, and flagellum is of equal length with the peduncle. The epimeral plate in third metasome segment much longer than in the other specimens; the shape is almost as in *Perrierella audouiniana* (Sars 1895, Suppl.-Pl. 2, fig. 2).

Distribution. Norway, "very deep water": Tromsö, Nordland, Trondhjemsfjord (Sars l. c.). It is probably a (North) Atlantic deep-sea species.

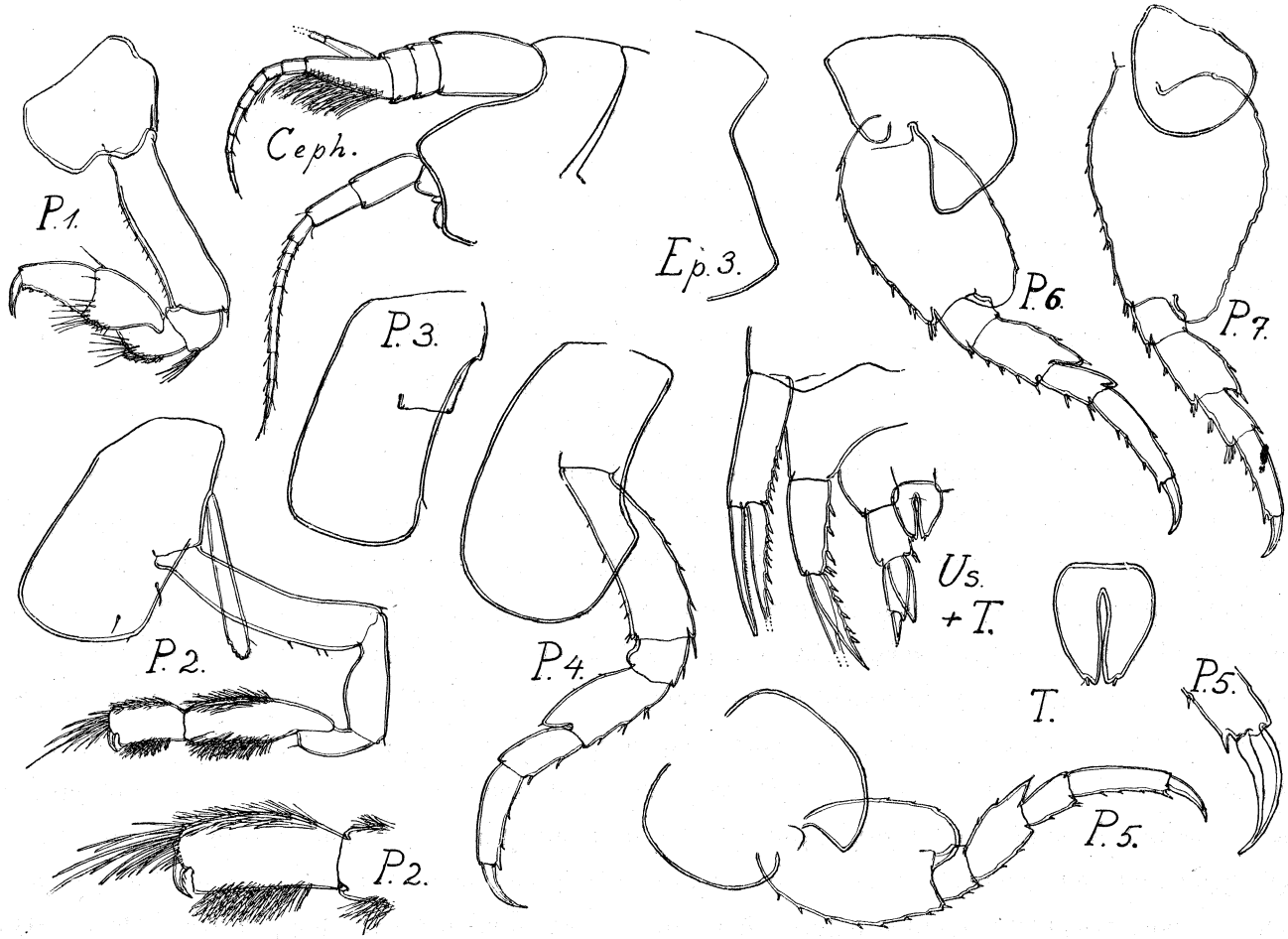

Fig. 14. *Aristias falcatus*, ♀ ad.

*64. **Aristias falcatus** n. sp. (Fig. 14).

Occurrence. This new species was taken at a single station by the "Thor".

S.W. of the Færoes: "Thor" St. 99 (22. 5. 1904). 61°15′ N., 9°35′ W. 872—970 m., 1700 m. wire. 1 ♀ with marsupial plates, 11 mm.

The present specimen must be considered the type of a new species; it is very closely allied to *A. commensalis* Bonnier (1896, p. 614, Pl. 35 fig. 4), but it differs in the total want of eyes, the different shape of p. 2, the great process on the hind edges of the coxal plates of p. 5—p. 6, and other characters. The specific name *falcatus* (it is: scythe-shaped) is an allusion to the process on the coxal plate of p. 6 (similar processes, but not quite so highly developed, are also found by investigation of material of *A. tumidus* and *A. neglectus* in the Copenhagen Museum, but they are not to be seen in Sars's figures [Sars 1895]).

The species may be determined by the following addition to Stebbing's key to the genus *Aristias* (Stebbing 1906, p. 49, § 2).

2. Eyes rudimentary (or totally lost) ..... a

a. 3. urosome segment has a pair of great lateral "wings" *A. Topsenti* Chevreux ("Hirondelle" 1900, p. 18, Pl. III fig. 2).

3. urosome segment has not such wings ..... b

b. Flagellum of ant. 2 ♀ has 4 joints (total length of the body 3 mm) *A. microps* (see above p. 72).

Flagellum of ant. 2 ♀ has 10 joints (total length of the body 11—12 mm) *A. falcatus* n. sp.

Body not very robust; the back broadly rounded. Head very short, lateral lobes short, very deep and almost rectangular. No traces of eyes could be found. The two pairs of eyes of equal length. Ant. 1 has the first joint of the peduncle somewhat longer than the two next joints combined. Flagellum abt. 1½ time as long as the peduncle, 9-articulate, first joint abt. as long as 1. joint of the peduncle. The number of joints of the accessory flagellum cannot be given; only the two proximal joints are kept, the others are lost. Ant. 2 has the flagellum as long as the peduncle, 10-articulate. Oral parts were not dissected out.

P. 1 has the coxal plate a trifle longer than deep, almost quadrate, the lower edge covered by the second coxal plate; the remaining joints almost as in *A. neglectus* (= "*A. audouinianus*" G. O. Sars 1895, p. 48, Pl. 17 fig. 2). P. 2 has the metacarpus truncate, half as long as the carpus; these two joints are equally broad and not very slender; dactylus curved, a trifle longer than the truncate end of metacarpus. P. 3—p. 7 have metacarpus produced at the tip, totally as in *A. tumidus* (G. O. Sars 1895, p. 49, Pl. 18 fig. 1); 4. joints somewhat dilated, but not very much elongated at the distal end. P. 4 has the coxal plate somewhat broader than that of p. 3, slightly emarginate at the hind margin. Coxal plates of p. 5—p. 6 have the inferior hind corners strongly elongate, especially in p. 6 where they form a long curved process. Epimeral part of 3. metasome segment almost quadrate. No dorsal processes on the urosome segments. Up. 1 has the rami abt. as long as the peduncle; inner ramus and peduncle have (as is also the case with up. 2) a row of spines at the median edge, but outer ramus is without any armature. Up. 3 has the inner ramus as long as the peduncle, somewhat longer than the proximal joint of inner ramus. Telson as long as peduncle of up. 3, longer than broad, cleft abt. to the base, each lobe armed with one apical spine.

Distribution. 49°25′ N., 12°20′ W., 1180—1275 m. ("Thor" St. 93, 25. 6. 1905) 2 spec.: 1 ♀ with marsupial plates 12 mm., 1 (♀?) 11 mm. (specimens in the Copenhagen Museum).

The agreement of these two specimens with the type specimen would seem to be complete, and there is the same number of joints in the two pairs of antennæ. Accessory flagellum of ant. 1 is complete in one ant. of each specimen; it reaches to the middle of the third joint of ant. 1 and has 5 joints, the first of which is abt. as long as the three next combined (these 3 are of equal length), and the fifth joint is very little.

Genus **Ambasia** Boeck.

Ambasia G. O. Sars 1895, p. 45.

— Stebbing 1906, p. 51 (lit. and syn.).

The genus has only one species; the second one, *A. pulchra*, is by Stebbing 1906, p. 719, referred to the genus *Schisturella*.

65. **Ambasia atlantica** M.-Edwards.

Ambasia Danielsseni G. O. Sars 1895, p. 46, Pl. 17 fig. 1.

— — Stebbing 1906, p. 51 (lit. and syn.).

— *atlantica* — — p. 719 (lit. and syn.).

Ambasia atlantica K. Stephensen, Conspectus 1913, p. 107.

Occurrence. This species was only once (twice?) secured by the "Ingolf".

W. Greenland: St. 25. 63°30′ N., 54°25′ W. 1096 m., temp. 3.3°. 1 spec., abt. 6 mm.

?S. W. of the Færoes: St. 44. 61°42′ N., 9°36′ W. 1026 m., temp. 4.8°. 1 spec. jun. (determination not certain), abt. 5 mm.

Also the "Thor" has taken a specimen:

S. of Iceland: "Thor" St. 171 (1903). 63°15′ N., 22°23′ W., 216—326 m. 1 spec. abt. 9 mm.

In the specimen from the "Thor" St. 171 the anterior "wing" on the epistoma is more rounded, not sharp-angled as in Sars's fig. (1895, Pl. 17 fig. 1), and the same character also applies to the specimen from the "Ingolf" St. 25 and to some specimens from the Trondhjems fjord in our Museum, presented by G. O. Sars.

In the specimen from the "Ingolf" St. 44 this "wing" on the epistoma seems to be quite absent; this is also the case in a specimen, abt. 5 mm. (mentioned by H. J. Hansen 1895) from 72°35′ N., 19°33′ W. In both these two last-named specimens the process on first urosome segment is not sharp-pointed, but blunt. For these reasons (shape of epistoma and of urosome-process) the determination of these two specimens is not certain; but probably the disagreement is only a juvenile character.

In existing literature it is given from E. Greenland 72°35′ N., 19°33′ W., 264 m., E. Bay leg. 27. 7. 1891, 1 spec. 5 mm. (determination not certain, see above) (H. J. Hansen 1895), and from E. of Greenland 75°58′ N., 14°08′ W. to 79°59′ N., 14°12′ W., 300 m. below surf. (Duc d'Orléans).

Distributions. Norway, "in several places both on the south and west coast as far north as Hammerfest in Finmark", abt. 75—190 m. (Sars 1895). — Trondhjems fjord, abt. 190—565 m. (Norman 1900, p. 144, and specimens in the Copenhagen Museum). — S. W. of Ireland, abt. 1400 m. (Walker, Transact. Liverpool. Biol. Soc., vol. 12, 1898, pp. 166, 171).

Genus **Schisturella** Norman.

Schisturella Norman 1900, p. 208.

66. **Schisturella pulchra** H. J. Hansen.

Tryphosa pulchra H. J. Hansen 1887, p. 78, Pl. 2 fig. 6.
Schisturella — Norman 1900, p. 208.
— — Stebbing 1906, p. 719.
Ambasia — — 1906, p. 52 (lit.).

Occurrence. Of this species the Copenhagen Museum possesses 1 ♀ with ova, 16 mm., from Ritenbenk, Traustedt leg. 1892, but it was neither taken by the "Ingolf" nor by any of the more recent Expeditions. It is only found at W. Greenland: Sukkertoppen, 190 m., shells; Egedesminde 150—190 m., stony bottom; Christianshaab, 30—55 m., clay bottom, and Greenland (?) without special locality (H. J. Hansen 1887, p. 79).

Distribution. N. W. of Scotland 61°10′ N., 2°21′ W., 650 m. (Norman 1900).

Genus **Metambasia** n. gen.

This new genus agrees very well with *Ambasia* as regards pereiopoda (p. 1 is simple and has a very little coxal plate, partly covered by the second coxal plate) and telson, but differs from the named genus especially in the oral parts. In ♂ the third joint in ant. 2 is very thick, and the flagellum is very long (♂ of *Ambasia* is not known). The generic name is an allusion to the affinity to genus *Ambasia*.

*67. **Metambasia faeroensis** n. sp. (Figs. 15—16).

Occurrence. The "Ingolf" has not taken this species; but it was secured by the "Thor" at two stations S. W. of the Færoes.

S. W. of the Færoes: "Thor" St. 78 (12. 5. 1904). 61°07′ N., 9°30′ W. 835 m. Abt. 20 spec., most of them ♀ (ad.?; 1 with ova) 6 mm, and 4 ♂ (2 ad. 7—8 mm., 2 jun. 6—7 mm.).

— — — - 99 (22. 5. 1904). 61°05′ N., 9°35′ W. 900 m. 7 spec.: 7 ♀ (all of them with marsupial plates?) 5—6 mm., 1 ♂ ad. 8 mm.

Description of ♀ with marsupial plates, 6 mm. (from the "Thor", St. 99, 1904). Body moderately slender, back evenly rounded. Cephalon rather deep, lateral lobes rectangular, very broad and short. No traces of eyes could be found. Ant. 1 abt. three times as long as cephalon; 1. joint of the peduncle not very thick, not bulging out anteriorly, abt. three times as long as the two next joints combined. Flagellum 8-articulate, 1. joint a little shorter than 1. joint of the peduncle. Accessory flagellum 4-articulate, as long as the three first joints of the flagellum combined; 1. joint is concave on the side turning toward 1. joint of the flagellum. Ant. 2 not much longer than ant. 1; 3. joint of peduncle only a trifle wider than 4. joint. Flagellum has 13 joints.

Epistomal plate very little, is far behind the anterior lip. Posterior lip almost as in *Ambasia*. Md. with the cutting edge broad, molar expansion rather great; palp rather slender, originates off the proximal end of the molar expansion. Mx. 1 has the masticatory lobe rather strong, with 11 teeth in all: the 9 distal are dentate on the median side (— only 7 of them may be seen in the fig. —), the next one is bifid, the proximal one is feather-shaped. Basal lobe rather short, bisetose, the palp somewhat longer than the masticatory lobe, with 5 strong teeth and two setæ. Mx. 2 with the outer lobe somewhat longer than the inner lobe; both of them rather narrow. Mxp. almost as in *Ambasia*, but the palp is much longer, and the distal joint long, finger-shaped.

P. 1 has the coxal plate rounded triangular, very little, partly covered by the second coxal plate; the whole limb rather narrow. Metacarpus somewhat shorter than carpus, tapering, simply leg-shaped, not subchelate; dactylus a little curved, rather long. P. 2 very slender, metacarpus a little more than half the length of the carpus, with almost parallel sides, and very slightly produced off the apex of the rather small dactylus. P. 3—p. 4 not especially slender, dactylus rather short; the coxal plate of p. 4 dilated inferiorly, with a rather large hind lobe. P. 5 much shorter than p. 7 (in all the specimens p. 6 has lost the distal joints). P. 5 has the coxal plate as deep as broad. Dactyli of p. 5—p. 7 are of medium size. P. 7 very long and slender.

Epimeral part of 3. metasome segment obtusely rounded. First urosome segment has dorsally a

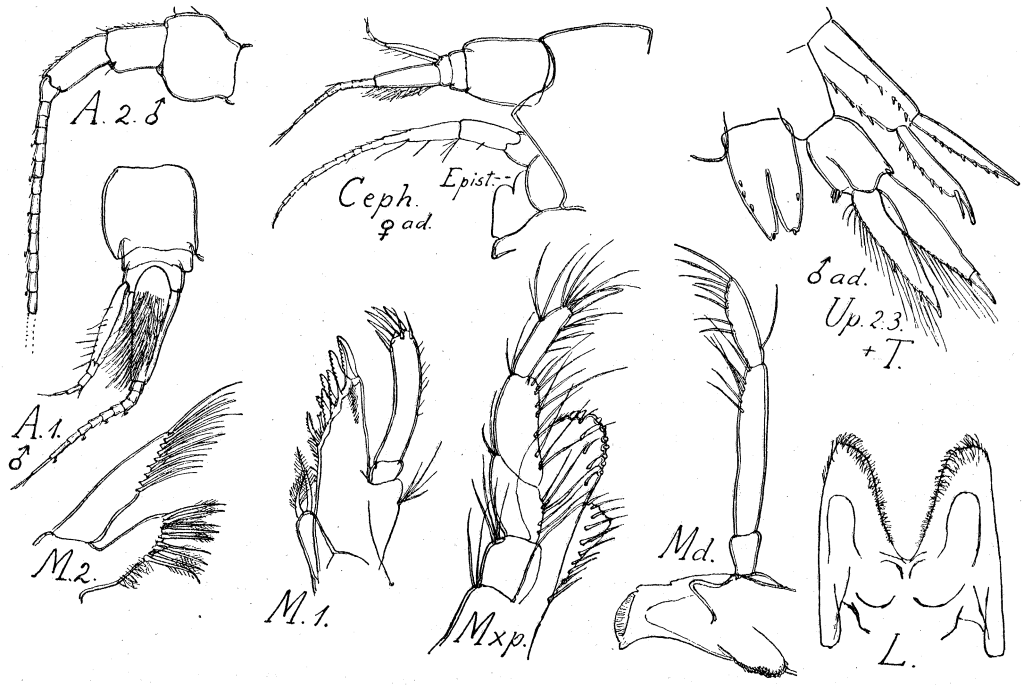

Fig. 15. *Metambasia faeroensis*. Cephalon and oral parts are from a ♀ with marsupial plates, 6 mm. ("Thor" St. 99, 1904). Ant. 1—2 of ♂ ad., 7 mm. ("Thor" St. 78, 1904). Urosome of ♂ ad., 8 mm. ("Thor" St. 99, 1904).

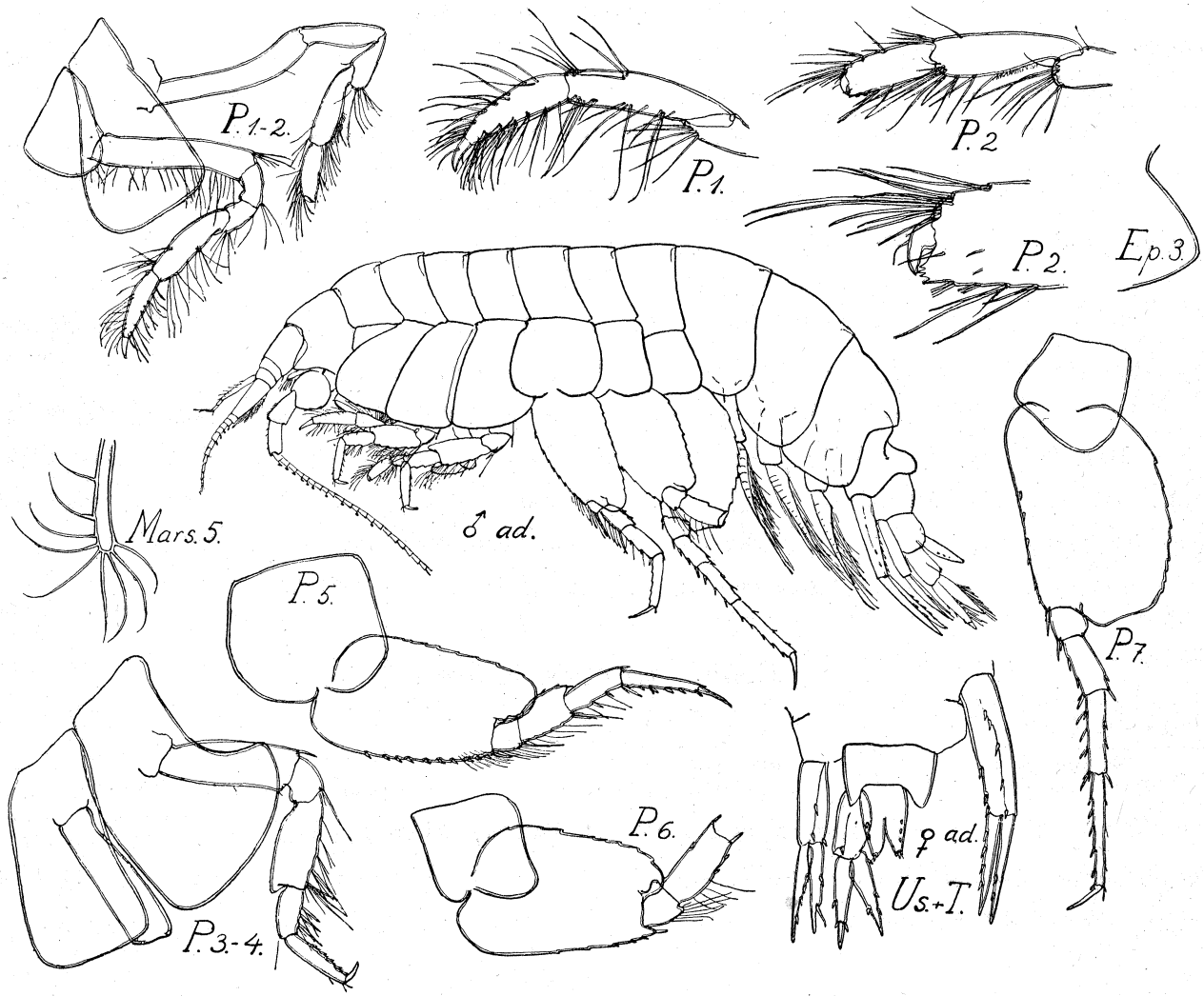

Fig. 16. *Metambasia faeroensis* ("Thor" St. 99. 1904). All the detail figures are from ♀ with marsupial plates, 6 mm.; the ♂ ad. is 8 mm. *Mars.* 5=5 th marsupial plate.

deep transversal impression and a high, rounded process. Up. 1—up. 3 of abt. equal length, rami rather narrow, outer rami a little longer than inner rami. Up. 1 has the rami long, narrow, a trifle shorter than the peduncle. Up. 2 has the rami abt. as long as the peduncle, the inner ramus (in both sexes) indented near the apex, and with a long seta at the base of the indentation. Up. 3 has the rami abt. as long as the peduncle, distal joint of outer ramus very short. The telson as long as the peduncle of up. 3, a little tapering, cleft beyond the middle, with 2—3 pairs of dorsal spines.

The marsupial plates are long, narrow. One ♀ from st. 78 has 2 very great ova; the diameter is abt. as long as each of the mesosome segments (abt. 0.4 mm.).

♂ ad. (with calceoli) 7—8 mm. Differs very little from the ♀ described above.

Lateral lobes of the head a little longer and narrower. Ant. 1 a trifle longer than in ♀; flagellum 11-articulate, accessory flagellum 5-articulate. Ant. 2 has the third joint of the peduncle very thick; flagellum multiarticulate, at least half as long as the body (the distal end is lost in all the specimens).

Up. 1—2 as in ♀, but more highly spinose. Up. 3 has the rami abt. twice as long as the peduncle, setose on the median side. Telson abt. 1 1/2 times as long as the peduncle of up. 3.

Distribution. The species has not been found outside the two stations mentioned above.

Genus Ichnopus Costa.

Ichnopus G. O. Sars 1895, p. 39.

— Stebbing 1906, p. 52 (lit. and syn.).

Of the two North-Atlantic species only one was found in the "Ingolf"-area.

*68. **Ichnopus spinicornis** Boeck.

Ichnopus spinicornis G. O. Sars 1895, p. 40, Pl. 15.

— — Stebbing 1906, p. 52 (lit. and syn.).

Occurrence. Not taken by the "Ingolf", but secured (new to the "Ingolf"-area) by Dr. Th. Mortensen 1899, Akraleite (the Færoes) in N 57 W, 12 miles, 280 m., 1 spec. 20 mm.

Distribution. An east-Atlantic species. W. Norway S. of Trondhjemsfjord, abt. 35—95 m. (Sars l. c.). — Bay of Biscay, 166 and 180 m (Chevreux 1900, p. 15). — 5 localities from Gibraltar to Bay of Ægina (1 stat. in the southern Adriatic), 58—1125 m. (K. Stephensen 1915, p. 35). — Between Marseille and Corsica, 250 m. (Chevreux 1900, p. 15). — Ragusa (Heller, Denk. Akad. Wien, vol. 26, II, 1866, p. 21).

Also found in the Indo-Pacific Ocean: Java Sea 3° S., 107° E. (Stebbing l. c.).

Genus Anonyx Kröyer.

Anonyx G. O. Sars, 1895, p. 87.

— Stebbing, 1906, p. 53 (lit. and syn.).

69. **Anonyx nugax** Phipps (Fig. 17, Charts 13—14).

Anonyx nugax G. O. Sars 1895, p. 88, Pl. 31.

— — Stebbing 1894, p. 7.

Anonyx nugax Norman 1900, p. 209.
— — Stebbing, 1906, p. 54 (lit. and syn.).
— — v. d. Brüggen 1907, p. 216.
— — Stappers 1911, p. 8 (lit. and syn.).
— *lagena* Stebbing 1906, p. 54 (lit. and syn.)
— *lilljeborgii* G. O. Sars 1895, p. 90, Pl. 32 fig. 1.
— — Stebbing 1894, p. 8.
— — — 1906, p. 55 (lit. and syn.).

Occurrence. The "Ingolf" has secured this species at 10 stations.

W. Greenland: Ameragdla 22. 7. 1895, 2 spec. abt. 7 and 10 mm.
— St. 28. 65°14′ N., 55°42′ W. 791 m., temp. 3.5°. 1 spec. abt. 7 mm.
— - 33. 67°57′ N., 55°30′ W. 66 m., temp. 0.8°. 90 spec.: 31 spec. (9) 10—15 mm., 20 spec. 16—20 mm., 39 spec. 21—35 mm. (1 ♂ with calceoli 35 mm).

Danmark Straits: St. 95. 65°14′ N., 30°39′ W. 1318 m., temp. 2.1°. 1 defective spec., abt. 30 mm.

N. of Iceland: St. 128. 66°50′ N., 20°02′ W. 367 m., temp. 0.6°. 1 spec. 4 mm.

E. of Iceland: St. 105. 65°34′ N., 7°31′ W. 1435 m., temp. ÷ 0.8°. 2 spec., the greater one 40 mm.

N. of the Færoes: St. 139. 63°36′ N., 7°30′ W. 1322 m., temp. ÷ 0.6°. 10 spec., the largest one 37.5 mm.
— — - 140. 63°29′ N., 6°57′ W. 1469 m., temp. ÷ 0.9°. 3 spec.; the largest one (♂) 42 mm.
— — - 141. 63°22′ N., 6°58′ W. 1278 m., temp. ÷ 0.6°. 9 spec., the largest one 38 mm.
— — - 143. 62°58′ N., 7°09′ W. 730 m., temp. ÷ 0.4°. 1 spec. abt. 35 mm.

In addition to this material the Copenhagen Museum possesses specimens from the following localities in the "Ingolf"-area, not earlier dealt with in literature.

W. Greenland: Godthaab, 3 spec. 8—24 mm (Traustedt?, 1892). — 66°49′ N., 54°40′ W., 50 m. 2 spec. abt. 8—18 mm. (Lundbeck 11. 6. 1890). — 67°55′ N., 54° W., from the stomach of *Hippoglossus maximus*, 1 ♀ with young 36 mm. (Olrik 1866). — Store Helfiskebanke, 24 miles W. S. W. of Rifkol, 40 m., from the stomach of *Hippoglossus maximus*, 1 spec. abt. 25 mm. and 1 spec., taken free, 25 mm. (Generallæge Bornemann 1913). — Egedesminde, 7 spec. 25—31 mm. (Lundager 12. 8. 1905). — Jakobshavn, 7 spec.: 2 spec. 14—21 mm., 5 spec. 26—33 mm.; Bredebugt (Jakobshavn), 3 spec. 32—35 mm.; Ritenbenk, 4 spec. 13—28 mm.; Sakkrak (Waigat), 5 spec. abt. 15 mm. (Traustedt 1892).

E. Greenland: Tiningneketok (at Angmagssalik), dredge, 1 spec. abt. 35 mm. (Kruuse 1902). — Tasiusak (at Angmagssalik) 25. 5. 1899, dredge under the ice, 40—60 m., stony bottom with algæ, 1 spec. 11 mm.; Angmagssalik, 17—0 m., 14. 9. 1900, 2 spec. 27—36 mm.; Cape Dan (Angmagssalik), 19—28 m., rocky bottom with algæ, 11. 6. 1899, 1 spec. abt. 25 mm.; 69 3/4° N., 23 1/3° W., 6 m., 25. 7. 1900, 1 ♀ with ova, 24 mm.; 69°32′ N., 23 2/3° W., 38 m., stony bottom, 21. 7. 1900, 1 spec. 36 mm. (Amdrup-Exp.). — Danmarks Ø, 15. 1. 1893, eating up a dead seal, 4 spec. 33—40 mm. (Ryder-Exp.). — Sabine Ø, anchoring-ground, 12. 7. 1900, 4 spec. (7, 8, 23, 23 mm.), and 200 m., 10. 7. 1900, 1 spec. abt. 8 mm.; Cape Borlase Warren, at the anchoring-ground, 14. 7. 1900, abt. 200 spec., abt. 20—30 mm. (Amdrup-Exp.).

Jan Mayen, 100 m., clay, 28. 6. 1900, 6 spec.: 1 spec. 11 mm., 5 spec. abt. 28—33 mm. (Amdrup-Exp.).

W. Iceland: Reykjavik, 6 spec. 11—17 mm. (Jap. Steenstrup). — ibid., at the shore, 3. 4. 1908, 3 spec. 13—15 mm.; Faxe Fj., 38 m., 15. 4. 1908, 4 spec. abt. 13 mm. (B. Sæmundsson). —

N. Iceland: Skagestrand, 100—115 m., 3 spec. 10—14 mm., and ibid. 11 m., 6 spec. 12—16 mm. Steincke 1875). — ? Haganesvik, 6—7 m., 8. 8. 1902, 1 spec. 4 mm. (determination not certain); Siglufjörðr, 6—8 m., 1902, 14 spec. 15—18 mm.; Eyjafjörðr, S. of Hris-ey, 34 m., 1. 8. 1902, 1 spec. 15 mm. ("Diana" 1902, A. Ditlevsen). — Husavik, 80 m., 1. 8. 1903, 1 spec. 11 mm. ("Thor" St. 147). — Snartarstaðir, 4-0 m., black sand, 24. 7. 1903, 1 spec. 14 mm. (C. Otterström). — Thorshöfn, 8—9 m., black sand, on different flat-fishes taken in net, without date ("Beskytteren", Otterström): abt. 1000 spec. abt. 6 mm., 73 spec. 14—18 mm. (there were no specimens of a size between abt. 6 and 14 mm.). — Thistilfjörðr, 93 m., clay with sand, 2 spec. 7—8 mm. ("Beskytteren", 25. 6. 1904).

E. Iceland: 65°41′ N., 14°09′ W., 34—41 m., young-fish trawl 40 m. w., 1 spec. 16 mm. ("Thor" St. 83, 28. 7. 1906). — Bakkefjörðr, 15—19 m., black sand, 13. 6. 1900, 2 spec. abt. 3 mm. and 38—53 m., sand with clay, 14. 6. 1900, 2 spec. abt. 11 mm. ("Diana", A. C. Johansen). — Höfn Bugt, abt. 20 m., 28. 6. 1892, 8 spec. 11—22 mm. (Lundbeck). — Vopnafjörðr, from stomach of cods, 6. 7. 1898, 2 spec. abt. 16 mm. (B. Sæmundsson). — Hjéraðsflóin, young-fish trawl 100 m. wire, 3 spec., abt. 18 mm. ("Thor" St. 156, 24. 8. 1905). — Borgarfjörðr, 8—0 m., 30. 5. 1899, 17 spec. 12—14 mm. (R. Hörring). — Seydisfjörðr, 43 m., 1 spec. 8 mm. (Klixbüll 1880). — 2 miles E. of Seydisfjörðr, 190 m., 24. 7. 1905, in cod, 4 spec. 6—9 mm. (Sæmundsson), and 5 miles to the East, 250 m., black clay, 1 spec. 30 mm. (Wandel 1890). — Nordfjords Handelssted, 75 m., 18. 5. 1899, 1 spec. 14 mm. (R. Hørring). — Reyðarfjörðr, 260 m., 2 spec. 6—7 mm. ("Thor" St. 48, 29. 4. 1904). — Faskrudfjörðr, 38—94 m., blue clay, 7. 7. 1899, 3 spec. 6—8 mm. (R. Hörring). — Breidalsvik, 11 m., mud and black sand, 19. 7. 1900, 1 spec. 8 mm.; Berufjörðr, mud with black sand, 11 m., 19. 7. 1900, 3 spec. 15—16 mm.; Lónsvik, 19 m., black sand, 4 spec. 4—5 mm., 20. 7. 1900 ("Diana", A. C. Johansen).

S. of Iceland: 63°27′ N., 19°37′ W., 84 m., 1 spec. 19 mm. ("Thor" St. 194, 16. 7. 1904).

The Færoes: Thorshavn, 2 spec. 21 mm. (Benzon). — Færoes, without special locality, 1 spec. 11 mm. (Rostrup 1867), and some defective specimens, abt. 15 mm., from stomachs of *Gadus* (Müller 1866). — Bordövik, 13—19 m., 23. 5. 1901, 1 spec. 5 mm. (donator?). —

In the literature this species was known from abt. the whole of W. Greenland, and from E. Greenland 70°—77° N. (K. Stephensen, Conspectus 1913, p. 117—18), Jan Mayen, shallow water (Sars 1885), Iceland without special locality (Goës 1866), and the Færoe Channel, abt. 600—1000 m. (Norman 1900).

Remarks. v. d. Brüggen (1907) and Stappers (1911) have clearly shown that *A. lagena* cannot be distinguished from equal-sized specimens of *A. nugax*, and my own material would serve to show the same thing.

Also *A. lilljeborgii* must be considered synonymous with *A. nugax* which, as a matter of fact, Stebbing (1894, but not 1906), Norman (1900) and Stappers (1911) (but not Sars 1895) are disposed to suggest. From a closer examination of the small specimens (abt. 5—10 mm.) of *Anonyx* in our Museum (including some specimens of *A. lilljeborgii* determined by Sars) it was clear that all the characters enumerated by Sars 1895 are subject to considerable variation. Most of these variations would seem to be only such which are due to difference in age (e. g. side plates, no. of joints in antennæ, relative length of joints in p. 1); to age-characters

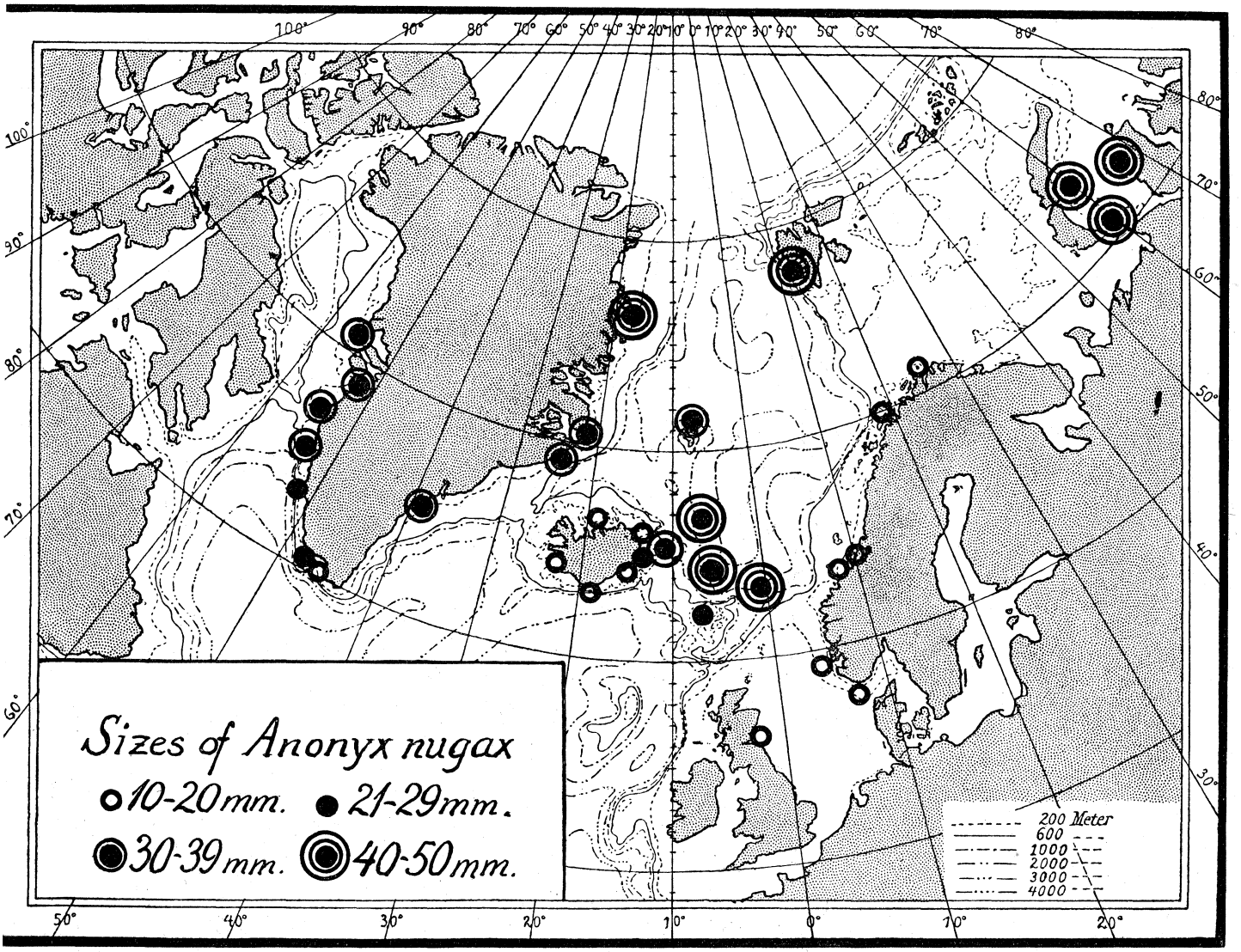

Chart 13. The sizes of *Anonyx nugax* from boreal, boreo-arctic and true arctic localities. (All the specimens were measured by myself except those from Scotland and the Norwegian specimens of a "*A. lilljeborgii*" [Sars 1895]).

would also be reckoned the obtuse denticle in p. 3—p. 4 (Norman 1900). Neither the ocular pigment (black or brown to red) nor the shape of 3. epimeral plate in the metasome are constant; and the deep dorsal impression in 1. urosome segment, by Sars (1895) considered a specific character of *A. lilljeborgii*, may be found in specimens of 25 mm. or more which in all other regards would be certain *A. nugax*. Thus there can be no doubt that all three "species" (*A. nugax, A. lagena, A. lilljeborgii*) are only synonyms.

Size and propagation. As the species is very widely distributed both in the real arctic and the boreo-arctic area, and as the size varies very much (— the arctic specimens are much larger than those from more southern localities —), I have tried to determine the sizes and the growth in the different areas.

Size. From the first table and chart 13 it appears that the maximal size in boreo-arctic waters is up to abt. 20 mm., in true arctic waters up to abt. 40—50 mm.

Table 1. Maximal sizes of *Anonyx nugax*.

Area	Special locality	Author	Temperature	Depth (m.)	Maximal sizes (mm.)				
					10—20	21—29	30—39	40—50	♀ with ova
Kara Sea	?	H. J. Hansen 1886, p. 213	÷1.2° —÷1.5°	85—175	..	..	..	up to 50	..
—	?	Birula 1899, p. 432	.. (+2.3°)	..	..	..	37	..	..
Barents Sea	?	Stebbing 1894, p. 6	÷0.6° —÷1.6°	15—78	—	..	..	45	..
Spitzbergen	Icefjord	Oldevig 1917, p. 6	÷1.8° —+5.6°	1—20 (1—260)	..	..	..	49	..
Polar Deep	Norwegian Sea	Sars 1886, p. 39	÷0.9° —÷1.2°	640—1203 ..	..	..	..	"truly coloss."	.. ..
—	E. of Iceland, etc.	Present paper	+0.6° —÷0.9°	350—1425	..	..	..	42	..
Jan Mayen		—	?	100	..	..	33	..	..
East Greenland	65½° N. (Angmagsalik)	—	?	17	..	..	36	..	..
—	69¾° N.	—	?	6—37	..	..	36	..	24
—	70° N. (Scoresby Sound)	—	?	9—45	..	..	36	..	..
—	77° N. (Danm. Havn)	—	?	0—27	..	..	..	46	28
West Greenland	abt. 60° N. (Bredefjord)	—	2°—3°	10—15	10-15, a few up to 27		..	..	13
—	abt. 64° N. (Godthaab)	—	?	?	..	24	..	..	..
—	abt. 68° N.	—	?	?	..	..	36—40	..	36
—	abt. 71° N. (Umanak)	—	?	from sharks	..	..	32	..	..
New England		Holmes 1905, p. 472	?	"common"	up to 20	..	..	..	..
West Iceland	Reykjavik	Present paper	?	?	17	..	..	..	..
North Iceland	Siglufjörðr	—	?	6—8	18	..	..	..	..
—	Eyjafjörðr	—	?	34	15	..	..	..	15
East Iceland	Nordfjörðr	—	?	75	14	..	..	..	..
—	Höfn Bugt	—	?	20	..	20—22	..	..	20—22
—	Berufjörðr	—	?	11	15	..	..	..	15
South Iceland	abt. 63½° N., 19½° W.	—	?	84	19	..	..	..	..
The Færoes	Thorshavn	—	?	?	..	21	..	..	..
Scotland	Firth of Forth	Scott, see Norman 1900, p. 210	?	?	up to 20	..	..	..	..
North Norway	Magerö	Copenhagen Mus.	?	?	13	..	..	..	..
—	Tromsö	Nordgaard 1905, p. 183	1.0°—1.4°	?	?	..	..	..	..
—	—	Norman 1900, p. 209	?	?	11	..	..	..	..
West Norway	Trondhjemsfj.	Norman 1900, p. 211	?	5—18	"small" 11	..	..	..	..
South Norway	Skagerrak	Copenhagen Museum	?	108	14	..	..	..	..
Norway	?	Sars 1895, p. 88	?	37—540	up to 18	..	..	..	..

The second table contains all the specimens (in the Copenhagen Museum) which may be determined with certainty as to sex (♂: adult [with calceoli] or young [with long antennæ without calceoli]; ♀: ad. with large marsupial plates or with ova or embryos, and young ones with small marsupial plates; it may be seen that the two sexes attain about equal sizes.

Table 2. Sizes of the two sexes of *Anonyx nugax*.

Area	Special locality	Date	Depth (m.)	♂ (mm.)		♀ (mm.)			
				jun.	ad.	jun.	ad. without ova	with ova or embryos	size of the ova (mm.)
West Greenland	abt. 60° N. (Bredefjord)	27. VII.	30—50	..	26	..	..	..	..
—	—	26. VIII.	10—15	..	11	..	..	13	0.40 × 0.50
—	abt. 60° N. (Tunugdliarfik)	2. IX.	14—18	18	..	..	..	..	..
—	abt. 64° N. (Godthaab)	?	?	..	25	..	..	..	—
—	abt. 67½° N. (N.-Strömfj.)	July ?	12—29	..	..	..	36	..	—
—	67°55′ N., 54° W.	?	from *Hippoglossus*	..	..	..	..	36	..
—	abt. 68¾° N. (Egedesminde)	?	?	..	30—32	..	..	..	..
—	abt. 69° N. (Jacobshavn)	?	?	..	..	33	..	33	1.20 × 1.50
—	—	..	..	..	..	35	..	32—33	1.20 × 1.50
—	abt. 71° N. (Umanak)	?	from sharks	..	32	..	..	..	..
—	? ("Fylla")	?	?	26—34	..	..	38	29—31	embryos 2—3 mm.
East Greenland	abt. 65½° N. (Angmagsalik)	14. IX.	17—0	..	..	36	..	..	..
—	— (Tiningneketok)	?	?	35	..	..	..	..	..
—	69¾° N., 23⅓° W.	21(27).VII.	6—37	36	..	..	..	24	..
—	abt. 70° N. (Scoresby Sound)	3. VIII.	9—45	36	..	..	..	..	..
—	abt. 70½° N. (Danmarks Ø)	5. I.	from a seal	..	32—40	..	..	..	..
—	abt. 77° N. (Danm. Havn)	7. I.	0—16	..	37	..	..	..	..
—	—	8. VIII.	18	..	..	..	..	28	..
—	—	4. IX.	18—27	..	..	..	42	..	..
—	—	29. IX.	..	..	35	..	..	..	..
Jan Mayen		28. VI.	100	33	..	..	..	..	..
West Iceland	Reykjavik	?	?	17	..	..	..	..	..
North Iceland	Siglufjörðr	?	6—8	..	18	..	..	..	..
—	Eyjafjörðr	1. VIII.	33	..	..	..	..	15	1.00 × 1.25 (including embryos)
East Iceland	Nordfjord	18. V.	75	..	..	..	14	..	..
—	Höfn Bugt	26. VI.	20	..	..	..	..	20—22	with embryos
—	Berufjörðr	19. VII.	11	..	..	..	..	15	0.80 × 1.00 (including embryos)
Polar Deep	63°07′ N., 1°38′ E.	28. VI.	1200 (from *Motella*)	..	..	4♀	..	..	..
—									
—	off E. Iceland and N. of the Færoes ("Ingolf" St. 105, 139—141)	..	abt. 1300—1500	35—41	42	36—41	..	..	..
Spitzbergen	Kröyer's types	..	..	36	28	..	..	..	..
North Norway	abt. 71° N. (Magerö)	30. III.	?	12—13	13	abt. 13	..	..	..

Propagation (fig. 17). I. East Greenland. From East Greenland the Copenhagen Museum possesses a rather great material from Danmarks Havn (abt. 77° N.; the "Danmark"-Exped.) and from Cape Borlase Warren (abt. 74° N.; Amdrup-Exped. 14. VII. 1900, the anchoring-place). The material from these two places may very well be taken together.

The specimens from Danmarks Havn, 22. IX. to 10. X. 1906 may be divided into two groups: 8—14 mm. (especially 8—10 mm.) and 30—46 mm. (especially 40 mm.). Here we have clearly two year-classes, repres-

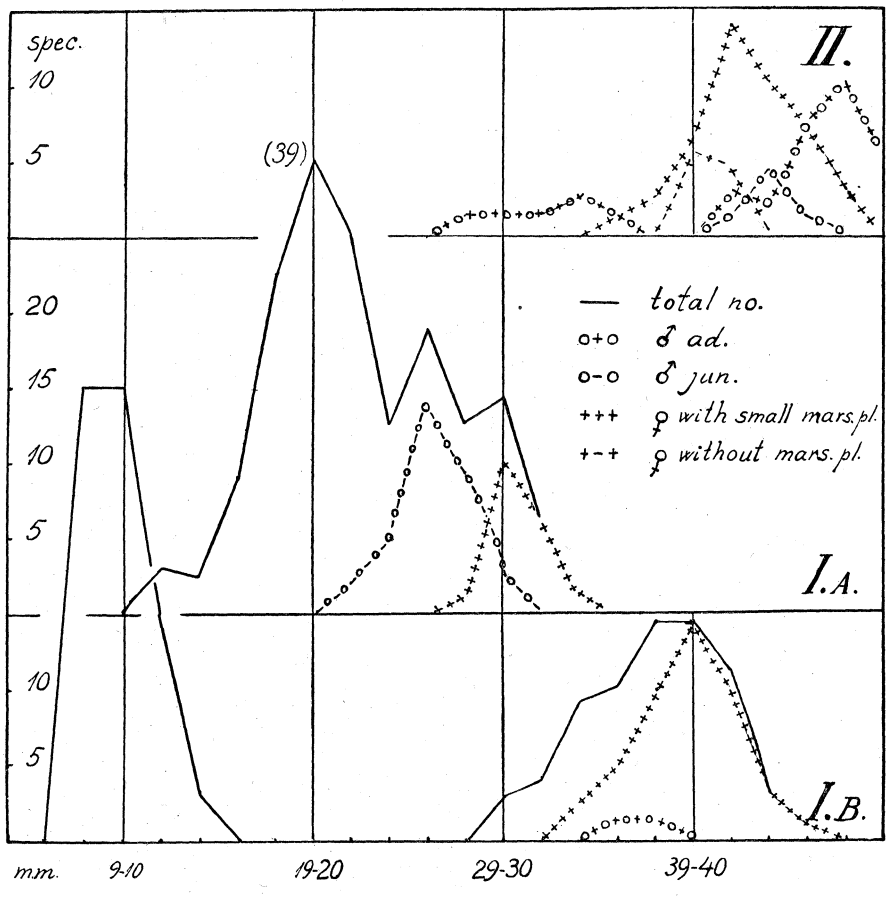

Fig. 17. Sizes of *Anonyx nugax* from three arctic localities. I.A. = East Greenland abt. 74° N. (Cape Borlase Warren), July 14th. I.B. = East Greenland abt. 77° N. (Danmarks Havn) Sept. 22th to Oct. 10th. II. = Kara Sea (without date). Some specimens have been omitted: in I.A. 1 ♂ ad. 28 mm.; in I.B. 3 ♂ jun. 35—38 mm. and 6 ♀ without marsupial plates 31—42 mm.; in II. almost all specimens < 30 mm.

enting the brood from the two years 1905 and 1906. From Cape Borlase Warren 14. VII. 1900 we have only specimens of an intermediary size, abt. 12—34 mm., especially 20 mm. From the littoral zone of the northern E. Greenland we have one ♀ without ova, but with great marsupial plates, thus probably recently spent, taken 4. IX. (42mm., Danmarks Havn), and only 2 ♀ with ova, taken 8. VIII. (28 mm., Danmarks Havn) and 25. VII. (24 mm., abt. 69¾° N.).

These facts may probably be explained in the following manner: the females have eggs the marsupium abt. Aug. 1st; then the eggs are hatched, and the embryos leave the marsupium (previously Sept. 1st). Abt. Oct. 1st the young ones have a length of 8—10 mm. During the winter the growth is very slow, for in the middle of July the length is only abt. 20(—30) mm., but abt. Oct. 1st the length is up to 40 mm. or still more. It cannot be decided with certainty whether the specimens may attain the age of two years.

The majority of specimens < 30 (35) mm. can hardly be determined with certainty as to sex.

When the two sexes are taken separately we see that adult specimens are very rare; I am not able to explain why on abt. Oct. 1st we have a great number of young ♀ (with small marsupial plates) of sizes much greater than the two single ♀ with ova (taken 25. VII. and 8. VIII. respectively).

♂ is much more rare and somewhat smaller than ♀: in the very great material (specimens > abt. 30 mm.) from E. Greenland (see table 2) I have only found 6 ♂ ad. (with calceoli), 2 ♀ with ova and 1 ♀ recently spent, but abt. 60 ♀ with small marsupial plates.

2. The Kara Sea. The material (from the "Dijmphna"-Exped.) was possibly collected during the whole of the year, but all notes on dates, depths etc. have now been lost.

Of the specimens > 25 mm. ♂ and ♀ are represented in about equal numbers, 41 and 52 respectively.

♂ may be divided into two groups, 28—35 mm. (6 spec.) and 41—50 mm. (27 spec.). The ♂ jun. are smaller than ♂ ad.

1 ♀ has ova, 36 mm. 42 spec. 37—47 mm. have small marsupial plates, 11 ♀ 35—42 mm. have no plates.

3. Other arctic areas. Oldevig (1917) has worked out a great material from Spitzbergen. I have had for examination the majority of this material from the Museums where it is preserved, and I herewith beg the directors of the different museums accept my sincerest thanks (Göteborg Zool. Museum: Prof. Dr. L. A. Jägerskiöld; Riksmuseum, Stockholm: Prof. Dr. T. Odhner; Zool. Institutionen, Uppsala: Prof. Dr. N. v. Hofsten); — but I have not been able to obtain any results as to growth or propagation. No ♀ with ova was found.

From W. Greenland we have a rather great number of specimens from "Ingolf" St. 33; but also this material is without any value in this respect.

4. Boreo-arctic area. In the littoral zone ♀ with ova (or embryos) are only found during the summer: S. Greenland (Bredefjord) ♀ 13 mm., 26.VIII.; N. Iceland (Eyjafjörðr) ♀ 15 mm., 1. VIII.; E. Iceland (Höfn Bugt) ♀ (with embryos) 20—22 mm., 26.VI., and (Berufjörðr) ♀ 15 mm., 19.VII. From E. Iceland (Nordfjords Handelssted), 18.V., we have a ♀, 14 mm., with fully developed marsupial plates, but without ova.

From N. E. Iceland (Thorshöfn, 8—9 m.; unfortunately with no date, but most probably taken 7.—14.VIII. [or 22.VI.?]) we have numerous specimens which may be divided up into two groups: abt. 1000 spec. abt. 6 mm. and 73 spec. 14—18 mm., but the great specimens cannot be determined as to sex. Here we clearly have two year-classes of brood; but it is impossible to decide whether the ages of the two groups are respectively 1 and 2 years, or a couple of months and a little more than one year. Most probably the latter is the case.

In N. Norway (Tromsø) Sparre Schneider (Tromsø Museums Aarshefter 14, 1891, p. 62) found specimens with ova in May and June; at Hillesö he found two year-classes abt. July 1st (l. c. p. 103).

Table 3. Spawning season of *Anonyx nugax*.

Area	Special locality	May	June	July	Aug.	Sept.	Oct.
E. Greenland	77°N.	..	..	..	8-VIII: ♀ with ova 28 mm.	4-IX: ♀ with great mars. pl., 42 mm.	up to 10-X ♀ with great mars. pl., up to 48 mm.
—	74°N.	..	..	14-VII: ♀ with small mars. pl., 27-35 mm.	..	..	..
—	$69^3/_4$°N.	..	..	5-VII: ♀ with ova 24 mm.	..	..	..
—	$65^1/_2$°N.	..	..	..	..	14-IX: ♀ with small mars. pl. 36 mm.	..
W. Greenland	abt. 69°N.	..	..	..	(Date?) ♀ with ova 33 mm.	..	..
—	$67^1/_2$°N.	..	..	(Date?) ♀ with great mars. pl. 36 mm.	..	..	..
—	60°N.	..	..	..	26-VIII: ♀ with ova 13 mm.	..	..
N. Iceland	Eyjafjörðr	..	..	..	1-VIII: ♀ (14 mm.) with ova including embryos	..	..
E. Iceland	Höfn Bugt	..	28-VI: ♀ with embryos 21 mm.	..	..	..	..
—	Berufjörðr	..	..	19-VII: ♀ with ova 16 mm.	..	..	..
—	Nordfjord	18-V: ♀ with great mars. pl. 14 mm.	..	..	..	..	..
N. Norway	(Schneider 1891)	♀ with ova May-June		..	..	..	..

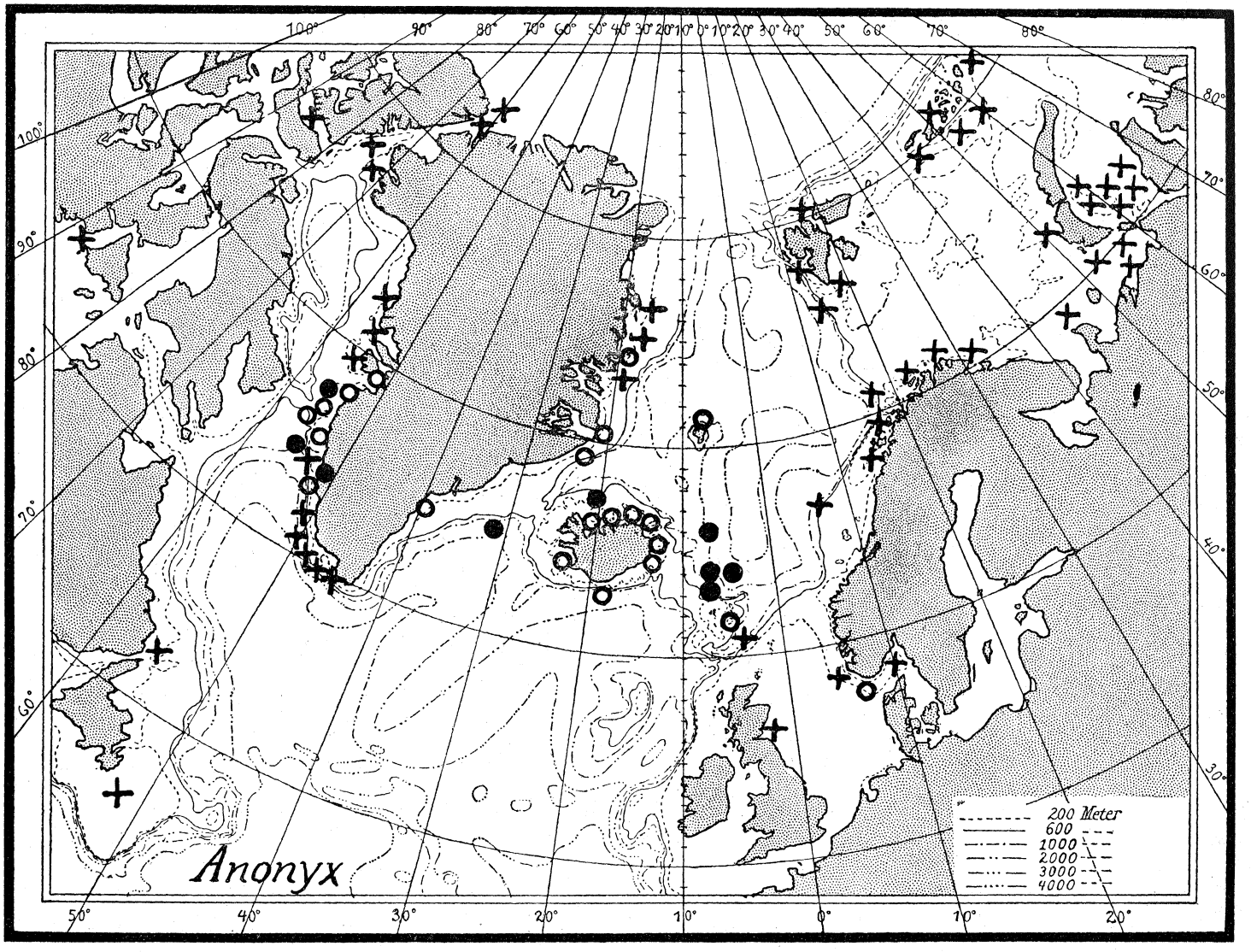

Chart 14. *Anonyx nugax*. ● Localities from the "Ingolf", ○ other localities not earlier quoted in the literature, + localities from the existing literature.

In table 3 all ovigerous females (or specimens with large marsupial plates) from the Copenhagen Museum are noted: it is obvious that the spawning season is later in the true arctic area (July—Sept.) than in the boreo-arctic area (May-Aug.).

Distribution (see Chart 14). A circumpolar arctic (and boreo-arctic) species; the southern limit is: New England, Iceland, the Færoes, Scotland and Skagerak (Bohuslän). It is most commonly found in the littoral zone; only in the Polar deep it is found in very great depths (> 1000 m.).

Very explicit lists of localities are given by Stappers (1911, p. 10) and Oldevig (1917, p. 9). To these lists some additions may be made. N. of Canada, from 140°50′ W. to Hudson Bay (or Hudson Strait), several localities (Shoemaker 1920, pp. 3 and 26). — Between the Færoes and Norway 62°15′ N., 0°15′ E., 800 m., temp. ÷ 0.23° C., hard bottom (Grieg 1914, p. 20), and 63°7′ N., 1°38′ E., abt. 1200 m., clay, from the mouth of *Motella Reinhardi* ("Michael Sars" 28. 6. 1902, cand. mag. Ad. S. Jensen; in our Museum), 1 spec.

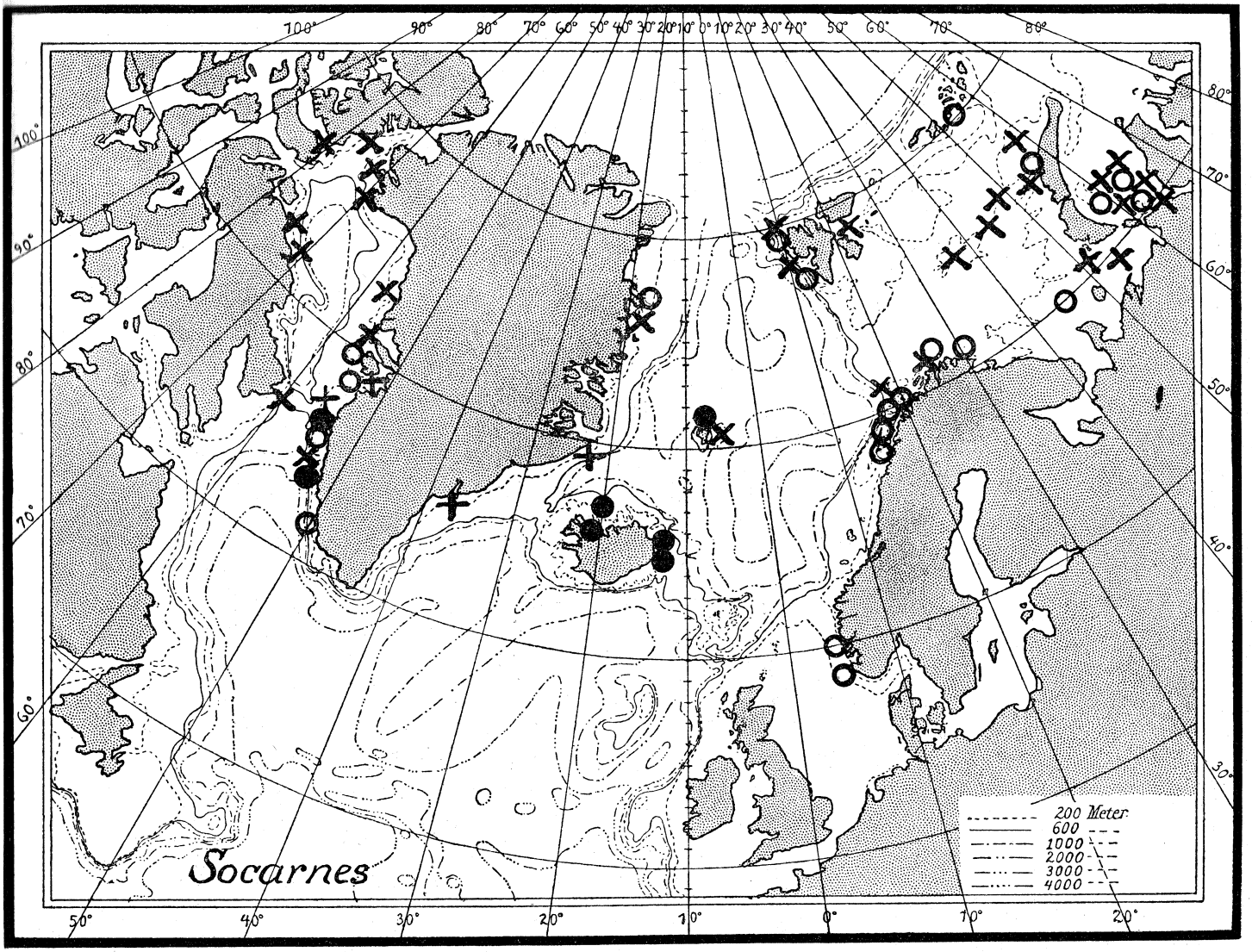

Chart 15. *Socarnes.* ● and ○ *S. Vahlii*, + and × *S. bidenticulatus* (● and + localities for the first time quoted in the present paper, ○ and × localities from the literature).

40 mm. — Skagerak 57°24′ N., 7°25′ E., 108 m. ("Thor" 20. 6. 1911), 5 spec. up to 14 mm. (in the Copenhagen Museum).

The locality of Shetland (Norman 1869, etc.) must be dropped (see Norman 1900, p. 210: the species in question is *Tryphosa nanoides*), but the locality of Firth of Forth (Scott 1898) is correct (see Norman 1900, p. 210).

Genus **Socarnes** Boeck.

Socarnes G. O. Sars, 1895, p. 43.

— Stebbing 1906, p. 56 (lit. and syn.).

Only two species are known from the area.

70. **Socarnes bidenticulatus** Bate (Chart 15).

Socarnes bidenticulatus G. O. Sars 1885—86, I, p. 136, 276, Pl. 12 fig. 1.

— — Stebbing 1906, p. 56 (lit. and syn.).

Occurrence.

W. Greenland: "Ingolf" St. 33. 67°57′ N., 55°30′ W. 66 m., temp. 0.8°. 10 spec. up to abt. 28 mm.

E. Greenland: Angmagssalik 19. 6. 1902, 1 spec. 31 mm.; Tiningneketok (at Angmagssalik, 1902), 2 spec. 17 mm (Kruuse coll.). — Cape Dan Islands (near Angmagssalik), 13—19 m., rocky bottom, almost without algæ, 14. 6. 1899, 1 spec. abt. 23 mm.; 69¾° N., 23⅓° W., 6 m., 25. 7. 1900, 1 spec. abt. 22 mm. (II. Amdrup-Exp.).

In addition to this material the Museum possesses 1 spec. from Brede Bugt (Jakobshavn), Traustedt 1892. —

In my papers 1916, p. 65 and Conspectus 1913, p. 108, are given a number of localities at W. Greenland abt. 65½°—78° N., and at E. Greenland abt. 77° N. The depths as a rule are not great, 10—50 m.; only rarely it is found in deeper water. The size is abt. 30 mm.

Distribution. Arctic Canada: Bernard Harbour, Northwest Territories, from the stomach of *Erignathus barbatus*, 5 spec., and Melville Island, Northwest Territories, 13 m., 3 spec. (Shoemaker 1920, pp. 8, 26).

The species is probably circumpolar arctic; it is found from N. W. Canada over Greenland etc. to the New Sibirian Islands. For special localities see Oldevig 1917, p. 10. The depths are as a rule only up to abt. 100 m. The only locality outside the true arctic area is Westfinmarken 70°13′ N., 18°21′ E., abt. 140 m. (Stebbing 1894).

71. **Socarnes Vahlii** Kröyer. (Chart 15).

Socarnes Vahli G. O. Sars 1895, p. 44, Pl. 16 fig. 2.

— — Stebbing 1906, p. 57 (lit. and syn.).

Occurrence. The "Ingolf" has only taken this species in 3 localities.

W. Greenland: Mouth of Ameralikfjord (Godthaab), 10—132 m., shells. 4 spec.

— St. 33. 67°57′ N., 55°30′ W. 66 m., temp. 0.8°. 1 spec.

N. of Iceland: St. 127. 66°33′ N., 20°05′ W. 83 m., temp. 5.6°. 1 spec.

In addition to these specimens the Copenhagen Museum possesses so from the following localities. W. Greenland: Holstensborg, 5 spec.; Hunde-Eiland, 1. 7. 1892, 2 spec.; Ritenbenk, 6 spec. (Traustedt 1892). — Jan Mayen: different depths, 26. 6. 1900, 4 spec.; on carcasses, 26. 6. 1900, 1 spec.; 95—115 m., 25. 6. 1900, 4 spec. (2. Amdrup-Exped., Søren Jensen). — E. Iceland: Berufjörðr, 19 m., stony bottom, "Diana" 19. 7. 1900, 1 spec. (A. C. Johansen), and Faskrudfjörðr, abt. 35—100 m., blue clay, 7. 7. 1899, 6 spec. (R. Hörring leg.). — N. Iceland: Kollafjörðr 8 m., and 300 m. (12 m. wire) (G. Barðarson leg.; specimens in the Reykjavik Museum).

In my Conspectus 1913, p. 109, I have given a number of localities at W. Greenland abt. 63°—70° N.; at E. Greenland it was found abt. 77° N. The depths are as a rule 10—100 m., the sizes up to 14—15 mm.

Distribution. The species is a boreo-arctic littoral species; it was found from the arctic N. E. America to Franz Joseph Land. The southern limit is S. W. Greenland, N. and E. Iceland and Haugesund (S. W.-Norway). It was not found in the Kattegat as given by Meinert ("Hauch"s Togter 1890); the specimen in question is *Orchomene Batei*. For special localities see Oldevig 1917, p. 9.

Genus Hippomedon Boeck.

Hippomedon G. O. Sars 1895, p. 55.

— Stebbing 1906, p. 58 (lit. and syn.).

9 species were found in the area; 8 of these are new to the area (5 new to science).

72. **Hippomedon Holbölli** Kröyer.

Hippomedon Holbölli H. J. Hansen 1887, p. 63, Pl. 2 fig. 1.

— — G. O. Sars 1895, p. 58, Pl. 21 fig. 2.

— *holbölli* Stebbing 1906, p. 58 (lit. and syn.).

— *Holbölli* Stappers 1911, p. 6.

Occurrence. The "Ingolf" has only once taken this species.

S. of Jan Mayen: St. 115. 70°50′ N., 8°29′ W., 162 m., temp. 0.1°; 1 spec.

1 spec. was taken S. E. of Sabine Island (E. Greenland), 207 m., by the Second Amdrup-Exped. 10. 7. 1900.

In our Museum we possess a number of specimens from Godthaab, 15—19 m., and from S. Greenland without special locality, among others Kröyer's type-specimens (see H. J. Hansen l. c., p. 64—65). The species was not known from other localities in the "Ingolf"-area, than the following given by G. O. Sars 1886: Jan Mayen and 2 stations S. of Jan Mayen (70°54′ N., 8°24′ W., 128 m., temp. ÷ 0.6°, and 70°58′ N., 8°4′ W., 357 m., temp. ÷ 0.6°, dark-grey sabulous clay), and N. of the Færoes 63°22′ N., 5°29′ W., 2222 m., temp. ÷ 1.2°. (*H. Holbölli* var., G. O. Sars 1885, p. 142).

Distribution. A (possibly circumpolar) arctic species, very eurybathic, abt. 15—2222 m. Spitzbergen, Nova Zembla, Kara Sea (for special localities see Stappers l. c. p. 7). — N. of N. W. Canada 70°13′ N., 140°50′ W., from the stomach of *Phoca hispida*, abt. 30 spec. (Shoemaker 1920, p. 3).

*73. **Hippomedon denticulatus** Bate.

Hippomedon denticulatus G. O. Sars 1895, p. 56, Pl. 20.

— — Stebbing 1906, p. 59 (lit.).

non — — H. J. Hansen 1887, p. 65, Pl. 2 fig. 2 (= H. *propinquus* G. O. S.).

Occurrence. The "Ingolf" has not secured this species, but the "Thor" has taken a single specimen E. of the Færoes 61°31′ N., 0°39′ W., 196 m.

From other localities in the "Ingolf"-area it was not known; the specimens mentioned from W. Greenland by H. J. Hansen 1887, p. 65, are in reality *H. propinquus* (see this species).

Distribution. An east-Atlantic species, found from W. Norway (and North-Sea, Skagerrak and Kattegat: specimens in the Copenhagen Museum) to France; Naples. Distribution at the British Isles, see Norman 1900, p. 201. Often it is found in comparatively shallow water, 12—35 m., but may descend to abt. 110—180 m. (G. O. Sars and specimens in the Copenhagen Museum).

*74. **Hippomedon propinquus** G. O. Sars.

Hippomedon propinquus G. O. Sars 1895, p. 57, Pl. 21 fig. 1.

— *propinqvus* Stebbing 1906, p. 59 (lit. and syn.).

— *denticulatus* H. J. Hansen 1887, p. 65, Pl. 2 fig. 2.

Occurrence. The "Ingolf" has probably twice taken this species, but the determination is not quite certain (see below). New to the area.

?N. E. Iceland: St. 120. 67°29′ N., 11°32′ W. 1667 m., temp. ÷ 1.0°. 1 spec. 11 mm.

? — — - 103. 66°23′ N., 8°52′ W. 1090 m., temp. ÷ 0.6°. 1 spec. 14 mm., and some fragments.

Hippomedon denticulatus H. J. Hansen 1887, p. 65 is the present species, which was already many years ago corrected on the labels of the material by Dr. H. J. Hansen himself. All these specimens were taken in Greenland, but there is only one special locality: Godthaab, 15—19 m., Holböll ded.

The "Thor" has secured the species from a number of localities round Iceland; there are also some specimens from the "Diana".

N. Iceland: Siglufjörðr, 28 m., 1 spec. ("Diana" 3. 7. 1902). — Hjédinsfjörðr, 12 m., 1 spec. ("Diana" 3. 7. 1902). — Skjalfandi-Bugt, 17—21 m., 3 spec. ("Thor" St. 207, 21. 7. 1904). — 4 miles W. of Husavik, 80 m., 1 ♀ with ova 11 mm. ("Thor" St. 147, 1. 7. 1903).

E. Iceland: Vopnafjörðr 11—22 m., temp. 1.8°, black sand, 2 spec. (R. Hörring leg. 20. 6. 1899). — Hjéradsflóin, 28—47 m., several spec. ("Thor" St. 219, 29. 7. 1904). — 65°41′ N., 14°09′ W., 63 m., 6 spec. ("Thor" St. 201, 20. 7. 1904). — ibid., 34—41 m., 40 m. w., 2 spec. ("Thor" St. 83, 28. 7. 1906). — 65°40′ N., 14°08′ W., 51 m., 10 spec. ("Thor" St. 188, 26. 7. 1903).

S. Iceland: 63°42′ N., 17°34′ W., 35—75 m., 1 spec. ("Thor" St. 196, 17. 7. 1904). — Medalland Bugt, 90—70 m., abt. 10 spec. ("Thor" St. 178, 19. 7. 1903). — ?63°46′ N., 22°56′ W., 150 m., 1 spec. jun.? ("Thor" St. 171, 2. 7. 1904). — 63°15′ N., 22°23′ W., 216—326 m., 3 spec. ("Thor" St. 171).

Remarks. In ♂ the first coxal plate inferiorly is much more dilated than in ♀. The reticulation on the integuments is extremely indistinct.

The determination of the specimens from the "Ingolf" is not quite certain; on the specimen from St. 120 the process on third metasome segment is a little too long and narrow, and the fragments from St. 103 have striolation on the segments. Also the temperatures for these specimens are curious: ÷ 0.6°—÷ 1.0°.

The average size is 10—11 mm. (Sars: ♀ 10 mm.), but one single ♂ from S. Iceland ("Thor" St. 196, 1904) is 14 mm. A ♀ with ova was taken at Husavik (N. Iceland, 1.VII.); there are scarcely more than 10 ova, their size abt. 0.5 × 0.6 mm.

Distribution. Norway: Trondhjemsfjord; "very common on the whole coast of Nordland and Finmark up to Vadsö", 38—100 m. (Sars l. c.). — 58°32′ N., 4°18′ E., 280 m., 1 spec., and 2 localities in the Skagerrak into Bohuslän, 470—640 m. (specimens in the Copenhagen Museum). — Bohuslän (*Anonyx Holbölli*, Bruzelius 1859).

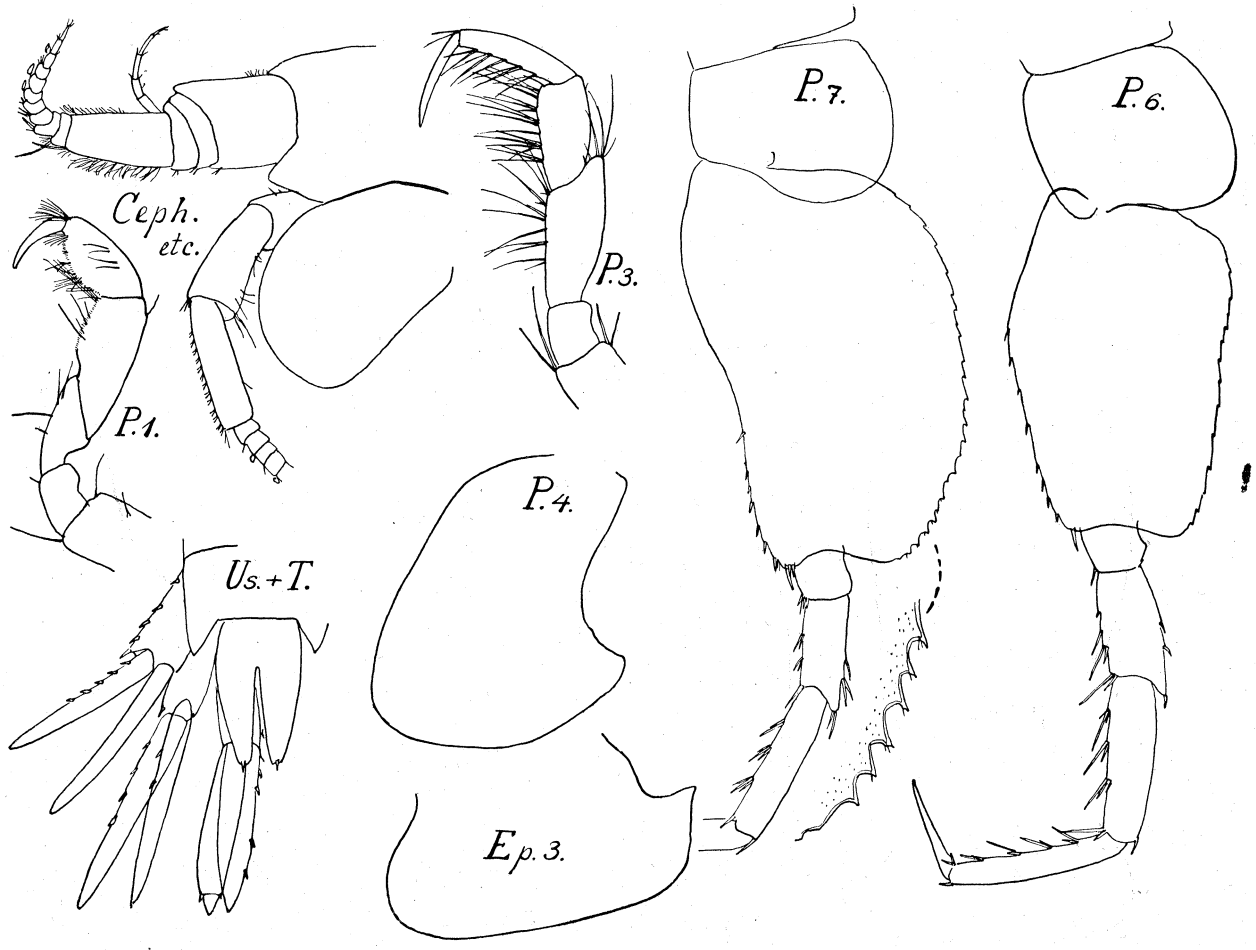

Fig. 18. *Hippomedon serratipes.*

*75. **Hippomedon robustus** G. O. Sars.

Hippomedon robustus G. O. Sars 1895, p. 679, Suppl.-Pl. 3 fig. 1.

— — Stebbing 1906, p. 59.

Occurrence. New to the "Ingolf"-area; taken twice by the "Thor", not by the "Ingolf".

S. of Iceland: "Thor" St. 166 (14. 7. 1903): 62°57′ N., 19°58′ N., 957 m., two small spec., and St. 171: 63°15′ N., 22°23′ W., 216—326 m., 1 spec. 11 mm.

Distribution. Trondhjemsfjord, 94 m. (Sars l. c.). — 53 miles N. by W. 1/4 W. of Thyborön Kanal (W. Jylland), 105—115 m., and 58°54′ N., 10°37′ E., 246 m. (specimens in the Copenhagen Museum).

*76. **Hippomedon serratipes** n. sp. (Fig. 18).

Occurrence. Of this species, new to science, the "Thor" has taken one specimen:

S. of Iceland: "Thor" St. 164 (12 [13]. 7. 1903): 62°10.8′ N., 19°36′ W. 1900—2150 m., temp. 2.85°.

1 ♂ jun. abt. 12 mm.

Body with back evenly vaulted; first urosome segment slightly produced dorsally, about as in *H. propinquus*. No traces of sculpture could be found.

Head seems to be a little shorter than the two first mesosome segments combined (these latter are

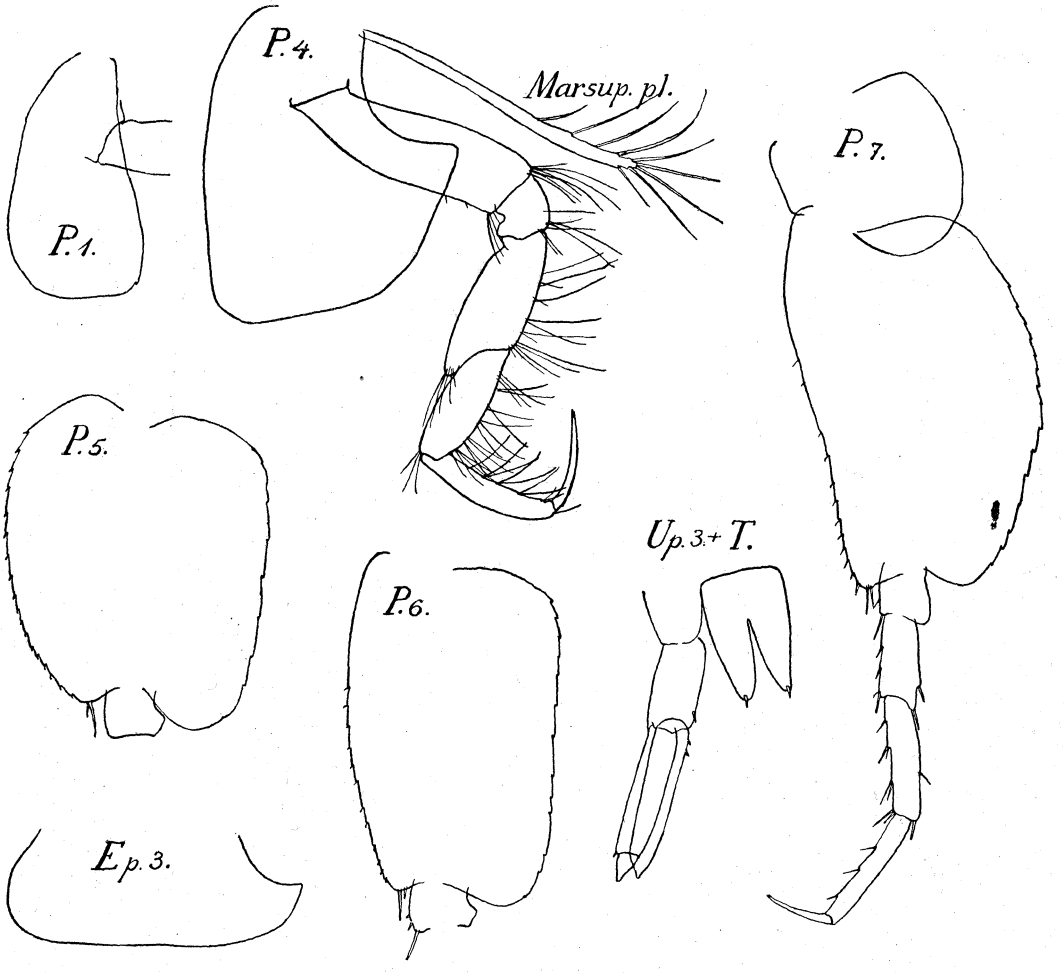

Fig. 19. *Hippomedon frigidus.*

somewhat damaged); lateral lobes not very narrowly rounded at the apex. No traces of eyes could be found. 1. antenna has 1. (but not 2.) joint in the peduncle apically somewhat produced; the flagellum has 11 joints, the first of them as long as the dorsal line of 1. joint of the peduncle. Some of the short joints have calceoli. Accessory flagellum as long as 1. joint in the flagellum, 5-articulate. 2. antenna 6½ mm. long, it is: as long as cephalon + mesosome (dorsal line) or 3½ time as long as ant. 1. Ultimate and penultimate joints of equal length; flagellum has 42 joints. Oral parts not dissected.

Coxal plates very broad, especially 1. and 4. pairs. Metacarpus in p. 2 broader than in *H. denticulatus*, about as in *H. Holbölli* (Sars 1895, Pl. 21). Dactylus in p. 3—p. 4 almost ¾ the length of metacarpus. The inferior half of hind edge of 2. joint in p. 7 has strong teeth (see fig.); the specific name alludes to this character. The projection of the epimeral part of 3. metasome segment short and stout, abt. as in *H. robustus* (Sars 1895, Suppl.-pl. 3, fig. 1). Apical joint in outer ramus of up. 3 short, abt. ⅙ as long as the proximal joint. Telson seems to lack dorsal spines.

*77. **Hippomedon frigidus** n. sp. (Fig. 19).

Occurrence. This species, new to science, was once taken by the "Ingolf".

N. E. Iceland: St. 102. 66°23′ N., 10°26′ W. 1412 m., temp. ÷ 0.9°. 1 ♀ (with marsupial plates), 18 mm.

Body of the usual shape; 1. urosome segment dorsally produced into a blunt process. Integuments with an extremely indistinct sculpture of irregular anastomosing striæ.

Head as long as the two first mesosome segments combined; lateral lobes of the usual form (e. g. *H. serratipes*, fig. 18 above). No traces of eyes. Ant. 1 with a little but distinct process at the distal end of 1. joint of the peduncle; flagellum 10-articulate. Accessory flagellum 4-articulate; the proximal 3 joints in length = 1. joint in flagellum, the whole accessory flagellum in length = 2 first joints in flagellum. Ant. 2: peduncle as long as the whole of ant. 1, 4. joint 1 1/2 time as long as 3. joint; flagellum 40-articulate.

P. 1 abt. as in *H. reticulatus* (see below p. 95); 1. joint narrow. P. 2: metacarpus broad, abt. as in *H. Holbölli* (Sars 1895, Pl. 21 fig. 2 p. 2 x). P. 3—p. 4 have very long dactyli, abt. 3/4 the length of metacarpus. 2. joint in p. 5—p. 6 with very small, almost invisible teeth at the hind edge; on p. 7 they are a little greater, and the intervals are smaller. Dactyli of p. 5—p. 7 rather short. The process on 3. epimeral plate of the metasome not very long, with blunt apex. On 1. urosome segment a very distinct, but blunt dorsal process (abt. as in *H. propinquus*, Sars 1895, Pl. 21). Last pair of uropoda with very broad rami, outer ramus a little longer than the inner ramus; apical joint abt. 1/4 as long as proximal joint. Telson with incision to abt. 2/3 of total length, not very narrow, probably without dorsal spines.

Affinities. Of all known species it seems to be the nearest allied to *H. serratipes* (see above), but differs i. a. as regards the narrower coxal plate in p. 1, the much more indistinct teeth on 2. joint in p. 7 and the somewhat deviating shape of 3. epimeral plate of the metasome. Although we would regard these differences as sex characters (the single spec. of *H. serratipes* is ♂), the two specimens would for zoogeographical reasons not belong to the same species; for *H. serratipes* is found S. of Iceland, the present species at N. E. Iceland at negative temperature (hence the specific name). — It is also very closely allied to *H. propinquus*, but differs chiefly in regard to the much heavier form of the 3. epimeral process in the metasome, and also the much heavier up. 3.

*78. **Hippomedon nasutus** n. sp. (Fig. 20).

Occurrence. Taken once by the "Ingolf".

S. W. of Iceland: St. 85. 63°21′ N., 25°21′ W. 320 m., temp.? 1 spec. (♂ jun.?) abt. 12 mm.

Of this new species, easily recognizable on account of the blunt process on 1. joint of the peduncle in ant. 1, the "Ingolf" has taken one single specimen (♂ jun.?; short antennæ; no marsupial plates could be found).

It has a very great resemblance to *H. serratipes* (see above),

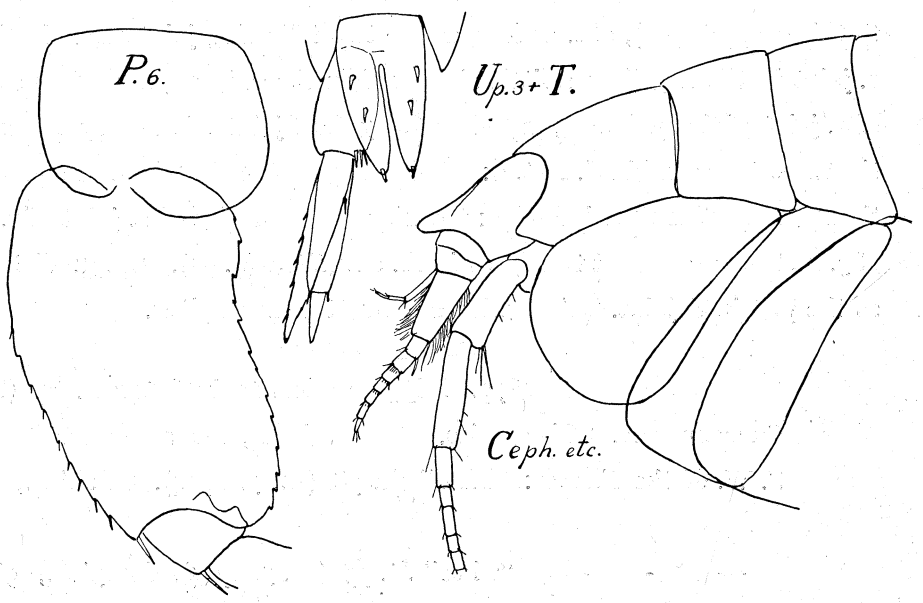

Fig. 20. *Hippomedon nasutus.*

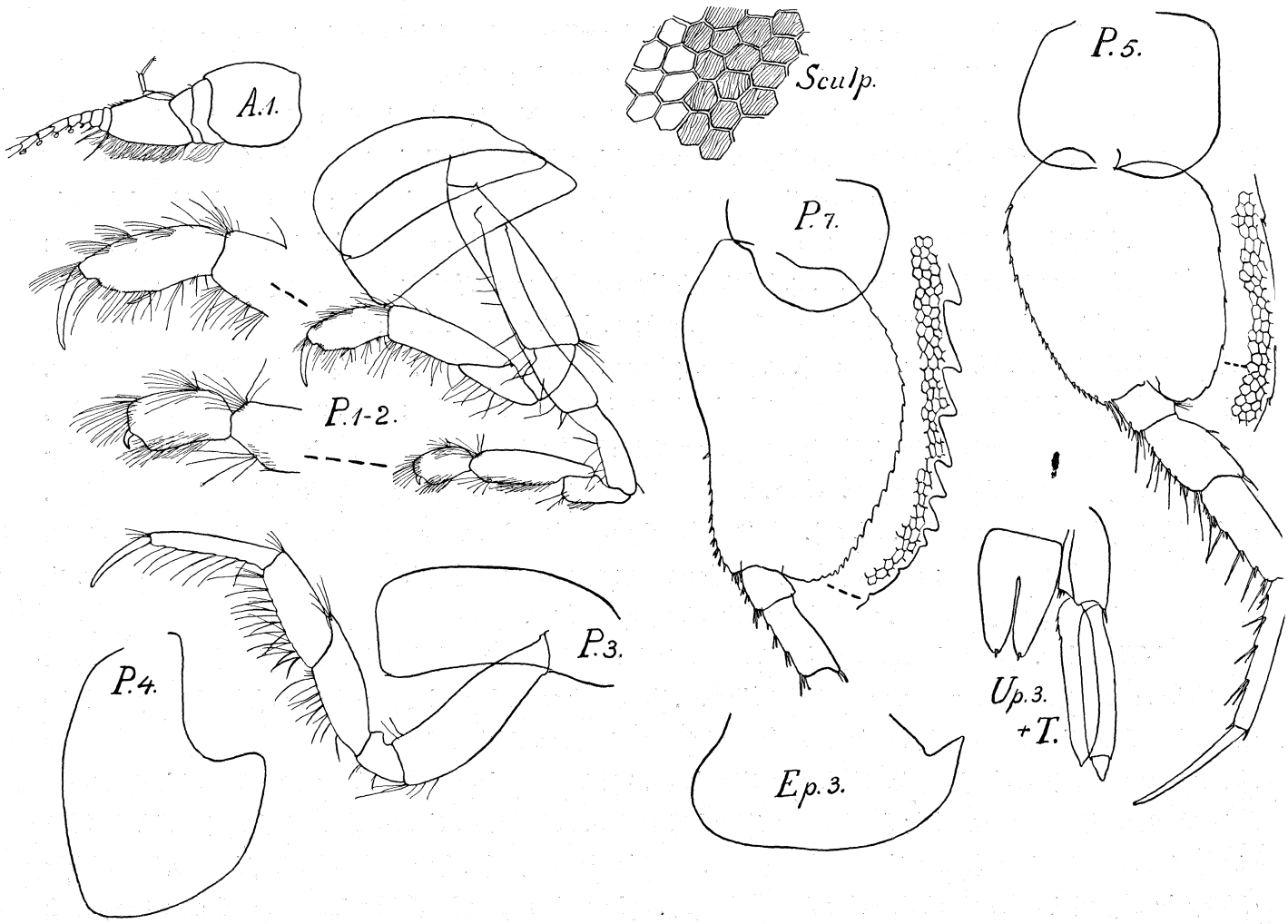

Fig. 21. *Hippomedon reticulatus.* (*Sculp.* = Sculpture).

but differs in the following characters. Ant. 1 has a long blunt process (— the specific name is an allusion to this character —), abt. as long as the two following joints combined; but these latter have no processes. 1. joint in the flagellum a little shorter than the accessory flagellum and abt. half as long as the dorsal side of 1. joint of the peduncle; flagellum has 7 short joints. Accessory flagellum 3-articulate; 1. joint longer than the two others combined. Ant. 2: flagellum 29-articulate. There are no calceoli. 2. joint in p. 6 has a sinus on the upper part of the hind edge; teeth on the hind edge of 2. joint of p. 7 as in the other legs. Epimeral part of 3. metasome segment totally as in *H. serratipes* (p. 91). Up. 3: distal joint of the outer ramus 1/3 as long as the proximal joint. Telson with 2 pairs of dorsal spines.

*79. **Hippomedon reticulatus** n. sp. (Fig. 21).

Occurrence. This species, new to science, was secured twice by the "Thor", not by the "Ingolf". S. W. of the Færoes: "Thor" St. 78 (12. 5. 1904). 61°08′ N., 9°28′ W. 820 m. 6 ♂ 14—17 mm., 5 spec. 6—7 mm.

— - — "Thor" St. 99 (22. 5. 1904). 61°15′ N., 9°35′ W. 900 m. 1 ♂ 18 mm., 4 spec. 8—12 mm.

Description af ♂ abt. 17 mm. (from "Thor" St. 78, 1904). Body abt. as in the other species; 1. urosome segment very slightly produced dorsally. The surface of the whole of the body and the limbs reticulated (— the specific name is an allusion to this character —); the bottom of the mesh has very fine striæ.

Head dorsally abt. as long as the two first mesosome segments combined; lateral corners as in *H. serratipes* (p. 91) and *H. nasutus* (see above). No trace of eyes. Ant. 1 has no dorsal processes on the peduncle; 1. joint dorsally abt. the length of 1. joint in the flagellum, 3 times as long as 2. and 3. peduncular joints combined. Accessory flagellum has 3 joints of abt. equal length, the first a little longer than the two others. Flagellum 26-articulate, with calceoli. Peduncle of ant. 2 abt. as in *H. serratipes*; total length of ant. 2 15 mm. Flagellum with abt. 60 joints (in the distal half of the flagellum highly elongated), most of them with calceoli. Oral parts not dissected.

P. 1: coxal plate not broader than in p. 2, metacarpus rather narrow, dactylus only half the length of the anterior edge of metacarpus. P. 2: carpus twice as long as the metacarpus. P. 3—p. 4: dactylus only $^2/_3$ the length of metacarpus; coxal plate in p. 4 posteriorly blunt-angled. Dactylus in p. 5—p. 6 not much shorter than the metacarpus, in p. 7 only abt. $^2/_3$ as long as the metacarpus. Hind edge of 2. joint in p. 5—p.6 has only abt. 10 teeth (— in p. 6 in some specimens a greater number —), placed with long intervals especially at the middle of the hind edge. Hind edge of 2. joint in p. 7 with strong denticles, especially in the distal half. 3. epimeral plate of the metasome has posteriorly a not very acute process, defined from the posterior edge by an incision (in the young individuals very slightly indicated), which is however not so deep as in *H. denticulatus* (Sars 1895, Pl. 20). Up. 3 with broad rami; terminal joint in the outer ramus short and broad. Telson abt. $1^1/_2$ time longer than broad, apparently without dorsal spines; incision very narrow, abt. $^2/_3$ of the total length of the telson.

Remarks. This species is very easily recognizable on account of the reticulated integuments and the 3. epimeral plate of the metasome.

*80. **Hippomedon striolatus** n. sp. (Fig. 22).

Occurrence. This extremely easily recognizable species which is new to science, was secured by the "Thor".

S.W. of the Færoes: "Thor" St. 99 (22.5.1904). 61°15′ N., 9°35′ W. 900 m. Fragments of 2 specimens, abt. 8—13 mm.

Description of ♂ (jun.?, small calceoli) abt. 13 mm. Body of the usual shape. Integuments of the body, of the peduncle of ant. 1, and of the coxal and basal plates with very distinct sculpture of fine parallel striæ (— hence the specific name —) quite as in *H. Holbölli* (Sars 1895, p. 59, Pl. 21 fig. 2 sculpt.), but still more distinct. Lateral corners of the cephalon acute, as in *H. denticulatus* (Sars 1895. Pl. 20). No trace of eyes. Ant. 1—2 with relative length of joints almost totally as in *H. denticulatus*. 1. joint in the peduncle of ant. 1 dorsally a trifle produced, flagellum with 14 short joints, accessory flagellum 4-articulate; ant. 2 abt. 3 times as long as ant. 1, flagellum 50-articulate.

Coxal plate of p. 1 not broad, shape as in *H. propinquus* (Sars 1895, Pl. 20 fig. 1). P. 1—p. 4 almost as in the same species; dactylus in p. 3—p. 4 as long as metacarpus. Hind edge of basal plate of p. 5—p. 7

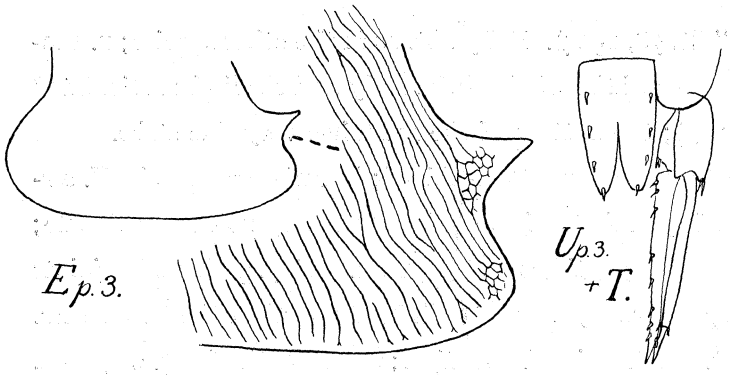

Fig. 22. *Hippomedeon striolatus.*

with small teeth which are a little more sharp-pointed in p. 7 than in p. 5—p. 6; dactyli $^2/_3$—$^3/_4$ as long as metacarpus. Epimeral part of 3. metasome segment very characteristic: the process of the hind edge is placed somewhat above the proceeding and rounded inferior corner from which it is separated by a rounded excavation. Up. 3 with rami abt. $2^1/_2$ time as long as the peduncle, very narrow; apical joint in outer ramus $^1/_4$ as long as the proximal joint. Telson twice as long as it is broad, cleft a little beyond the middle, incision very narrow; 3 pairs of dorsal spines.

Remarks. This species is extremely easily recognizable on account of its striolation and the characteristic form of 3. epimeral plate of the metasome.

Genus **Scopelocheirus** Bate.

Callisoma G. O. Sars 1895, p. 52.

Scopelocheirus Stebbing 1906, p. 61 (lit. and syn.).

Only one species was found in the area.

*81. **Scopelocheirus crenatus** Bate.

**Callisoma crenata* G. O. Sars 1895, p. 53, Pl. 19 fig. 1.

Scopelocheirus crenatus Stebbing 1906, p. 62 (lit. and syn.).

Occurrence. This species was not known from the area; but the "Thor" has secured one specimen. S. W. of Iceland: "Thor" St. 176 (8. 7. 1904). 63°18′ N., 21°30′ W. 178 m. 1 spec.

Distribution. "In several places both on the south and west coasts of Norway", abt. 40—190 m.; "rather plentifully in the Trondhjemsfjord from dead fishes fastened on the fishermen's lines" (Sars l. c.). — Found in numerous localities round the British coasts; Shetland; west coast of France; Naples (Norman 1900, p. 200). — Skagerak and Kattegat, 30—460 m. (specimens in the Copenhagen Museum).

Genus **Uristes** Dana.

Pseudotryphosa G. O. Sars 1895, p. 83.

Uristes Stebbing, 1906, p. 63 (lit. and syn.).

The genus comprises only one north Atlantic species.

*82. **Uristes umbonatus** G. O. Sars.

**Pseudotryphosa umbonata* G. O. Sars, 1895, pp. 83, 686, Pl. 29 fig. 2.

Uristes umbonatus Stebbing 1906, p. 64 (lit. and syn.).

Occurrence. Secured once by the "Ingolf", three times by the "Thor"; new to the area.

W. of Iceland: "Ingolf" St. 9. 64°18′ N., 27°0′ W. 560 m., temp. 6.2°. 1 ♂ ad. 19 mm.

S. of Iceland: "Thor" St. 171 (16. 7. 1903). 63°15′ N., 20°04′ W. 216—326 m. 1 ♂ ad. 16 mm.

S. W. of the Færoes: "Thor" St. 78 (12. 5. 1904.) 61°07′ N., 9°30′ W. 835 m. temp. 7.72°. 2 ♂ ad. 9—13 mm.

— — — - 99 (22. 5. 1904). 61°15′ N., 9°35′ W. 900 m. 2 ♂ ad. 12—18 mm.

All the specimens have great calceoli on the antennæ. The size is (9) 12—19 mm. (Sars: 11 mm.). 60°0′ N., 5°13′ W., abt. 600 m. (Norman 1900).

Distribution. Norway: Bejan (W. of Trondhjem), 56—75 m., and Hvitingsö (off Stavanger), abt. 280 m. Skagerak, abt. 750—800 m. (G. O. Sars l. c.). — W. of Väderöerne, Skagerak, 470 m. (1 spec. jun. in the Copenhagen Mus.). — An Atlantic deep-sea species.

Genus **Centromedon** G. O. Sars.

Centromedon G. O. Sars 1895, p. 99.

— Stebbing 1906, p. 65.

Two species were found in the area.

83. **Centromedon calcaratus** G. O. Sars.

**Anonyx calcaratus* G. O. Sars 1885, p. 142, Pl. 12 fig. 3.

Centromedon — Stebbing 1906, p. 65.

Occurrence. This species was not taken by any Danish Expedition. It was secured once by the Norwegian North Atlantic Exped. between Iceland and Jan Mayen 69°2′ N., 11°26′ W., 1836 m., ÷ 1.1° C. (Sars l. c.).

Distribution. S. W. of Spitzbergen 75°12′ N., 3°2′ E., 2195 m., ÷ 1.6°, and S. of Spitzbergen 74°54′ N., 14°53′ E., 1203 m., ÷ 1.2° (Sars l. c.). An arctic deep-sea species.

*84. **Centromedon typhlops** G. O. Sars.

**Anonyx typhlops* G. O. Sars 1885, p. 145, Pl. 12 fig. 4.

Centromedon typhlops Stebbing 1906, p. 66 (lit. and syn.).

Occurrence. Only once taken by the "Ingolf"; new to the area.

N. E. of Iceland: St. 102. 66°23′ N., 10°26′ W. 1412 m., temp. ÷ 0.6°. 1 spec.

Distribution. Spitzbergen, without special locality (*Anonyx cæcus*, Vosseler 1889, p. 155). — Between Jan Mayen and Finmarken (69°59′ N., 6°15′ E., 3127 m., temp. ÷ 1.3°, and 70°23′ N., 2°30′ E., 3219 m., temp. ÷ 1.2°) (Sars 1885). — An arctic deep-sea species.

Genus **Cheirimedon** Stebbing.

Cheirimedon G. O. Sars 1895, p. 34.

— Stebbing 1906, p. 66 (lit.).

The genus comprises only one north Atlantic species.

*85. **Cheirimedon latimanus** G. O. Sars.

**Cheiromedon latimanus* G. O. Sars 1895, p. 35, Pl. 13 fig. 2.

Cheirimedon — Stebbing 1906, p. 67 (lit. and syn.).

Occurrence. New to the "Ingolf"-area; taken once by the "Ingolf".

S. W. of Iceland: St. 78. 60°37′ N., 27°52′ W. 1505 m., temp. 4.5°. 1 spec. (♀?, 6 mm.), taken between spiculæ of sponges.

Distribution. Bukken (at Stavanger, W. Norway), depth not noted (G. O. Sars).

(The fam. *Lysianassidæ* will be continued in the next part).

Literature.

(List of abbreviations used in the present paper).

Bate & Westwood 1868: A History of the British Sessile-eyed Crustacea, I-II.

Birula 1897: Materialuidlya Biologii i Zoogeographii Preimushchestvenns Russikikh mor'ei. II. Hydrozoa, Polychæta, Crustacea... (Researches on Biology and Zoogeography of the Russian Seas. II. Hydrozoa, Polychæta, Crustacea, collected by Dr. Botkine in 1895, in the Gulfs of the Enisei and Obi). — Ann. Mus. St. Petersb., vol. 2, 1897, pp. 78—116.

— 1899: Researches... VII (Russian). Note on the Crustacea collected by Dr. A. S. Botkine in 1896 and 1897 from the Kara Sea and the Region southeast of the Murman Sea. — ibid. vol. 4, 1899 (1900), pp. 418—48.

Boeck 1870: Crustacea amphipoda borealia et arctica. — Kristiania Vid. Selsk. Forhandl. 1870 (1871), pp. 81—284 (1—204).

— 1873—76: De skandinaviske og arktiske Amphipoder. — Christiania 1873—76.

Bonnier 1896: Edriophthalmes (Resultats scientifiques de la campagne du "Caudan" dans le Golfe de Gascogne, Août—Septembre 1895). — Ann. Univ. Lyon 1896, pp. 527—689.

Bovallius 1885: On some forgotten genera among the Amphipodous Crustacea. — Bihang till K. Svenska Vet.-Akad. Handl., Bd. 11, No. 14, 1885.

— 1887 (Syst. list): Systematical list of the Amphipoda Hyperiidea. — ibid. Bd. 11, No. 16, 1887.

— 1887 (Arct. and Antarct. Hyper.): Arctic and Antarctic Hyperids. — "Vega"-Expeditionens vetenskap. iakttag., Bd. 4, 1887, pp. 543—82.

Bovallius 1887—89 (Monograph): Contributions to a Monograph of the Amphipoda Hyperiidea. Part. I: 1 (1887) and part. I: 2 (1889). — Kongl. Svenska Vet.-Akad.s Handl., Bd. 21, No. 5, 1887, and Bd. 22, No. 7, 1889.

— 1890: The Oxycephalids. — Nova Acta Reg. Soc. Sci. Upsal., ser. 3, 1890.

Brady & Norman 1909, see Norman & Brady.

(Broch &) Koefoed 1909: Lists of Plankton in: Duc d'Orléans, Croisière Océanographique... Belgica dans la Mer de Grönland 1905; Bruxelles 1909, pp. 15—160.

v. d. Brüggen 1907: Zool. Ergebnisse d. Russ. Exped. nach Spitzbergen. Amphipoda. — Ann. Mus. Zool. St. Petersbourg, vol. 11, 1906 (1907).

— 1909: Beiträge zur Kenntniss d. Amphipoden-Fauna d. Russ. Arctis. — Mém. Acad. Imp. Sci. St. Pétersb., ser. 8, vol. 18, 1909.

Buchholz 1874: Crustaceen. — 2. Deutsche Nordpolarfahrt 1869—70 unter Führung des Kapt. Koldewey; vol. 2, Wiss. Ergebn. 1874, p. 262.

Chevreux 1899: Sur deux espèces géants d'Amphipodes provenant des campagnes du yacht Princesse-Alice. — Bull. Soc. Zool. France, vol. 24, 1899, pp. 152—58.

— 1900: Amphipodes provenant des campagnes de l'Hirondelle. — Res. Sci. Monaco, vol. 16, 1900.

— 1903: Note préliminaire sur les Amphipodes de la Fam. des Lysianassidæ, recueillis par la Princesse-Alice dans les eaux profondes de l'Atlantique et de la Mediterranée. — Bull. Soc. Zool. France, vol. 28, 1903, pp. 81—97.

Chevreux 1905: Liste des Scinidæ de la Princesse-Alice et description d'une espèce nouvelle. — Bull. Mus. Monaco, No. 37, 1905.

— 1911: Diagnoses d'Amphipodes nouveaux provenant des campagnes de la Princesse-Alice dans l'Atlantique Nord. — ibid. No. 204, 1911.

— 1914: Sur quelques Amphipodes pélagiques nouveaux ou peu connus provenant des Campagnes de S. A. S. le Prince de Monaco. I. Scinidæ. — ibid. No. 291, 1914.

— 1919: Révision des Scinidæ provenant des Campagnes de S. A. S. le Prince de Monaco. — ibid. No. 352, 1919.

— 1920: Révision des Lanceolidæ provenant des Campagnes de S. A. S. le Prince de Monaco. — ibid. No. 363, 1920.

Claus 1879: Die Gattungen und Arten der Platysceliden in systematischer Uebersicht. — Arb. Zool. Inst. Wien, vol. 2, 1879.

— 1887: Die Platysceliden. — Wien.

Damas & Koefoed 1909: Le plankton de la mer du Grönland. — Duc d'Orléans, Croisière Océanogr.... Belgica... Mer du Grönland 1905; Bruxelles 1909.

Duc d'Orléans, see Damas & Koefoed.

Goës 1866: Crustacea Amphipoda maris Spetsbergiam alluentis. — Öfvers. K. Svenska Vet.-Akad. Förhandl. 1865 (1866).

Gran 1902: Das Plankton des Norweg. Nordmeeres von biolog. und hydrograph. Gesichtspunkten behandelt. — Report Norwegian Fishery- and Marine Invest., vol. 2, 1902, No. 5.

Grieg 1909: Invertébrés du fond. — Duc d'Orléans, Croisière Océanogr.... Mer du Grönland 1905; Bruxelles 1909.

— 1914: Evertebratfaunaen paa havdypet utenfor "Tampen". — Bergens Museums Årbok 1914, No. 3.

Hansen, H. J., 1886: Oversigt over de paa Dijmphna-Togtet indsamlede Krebsdyr. — Dijmphna-Togtets zool.-botan. Udbytte 1886 (1887), pp. 183—286.

— 1887: Malacostraca maris Groenlandiæ occidentalis. Oversigt over det vestlige Grønlands Fauna af malacostrake Havkrebsdyr. — Vid. Meddel. Naturh. Foren. Kjbhv. 1887 (1888), pp. 1—226.

— 1895: Pycnogonider og Malakostrake Havkrebsdyr. — Meddel. om Grønl., vol. 19, 1895, p. 121.

Hoek 1882: Die Crustaceen gesammelt während d. Fahrten des Willem Barents 1878—79. — Niederl. Archiv f. Zool., Suppl.-Bd. I, 1882.

Holmes 1905: The Amphipoda of southern New England. — Bull. Bureau of Fisheries, Washington, vol. 24, 1904 (1905), p. 457.

— 1908: The Amphipods collected by the U. S. Bureau of Fisheries Steamer Albatross off the West Coast of North America, in 1903 and 1904, with description of a new Family and several new Genera and Species. — Proc. U. S. Nat. Mus., vol. 35, 1908, pp. 489—543.

Kröyer 1838: Grönlands Amfipoder. — Vid. Selsk. Naturv. og Math. Afhandl., Bd. 7, 1838, Kjøbenhavn.

Lilljeborg 1865: On the Lysianassa magellanica H. Milne-Edwards and on the Crustacea of the suborder Amphipoda and subfam. Lysianassina found on the coast of Sweden and Norway. — Nova Acta Reg. Soc. Upsal., ser. 3, vol. 6, 1865.

Lo Bianco 1904: Pelagische Tiefseefischerei der "Maia" in der Umgebung von Capri. Beiträge zur Kenntnis des Meeres und seiner Bewohner. I. Jena 1904.

Nordgaard 1905: Hydrographical and biological Invest. in Norwegian fjords. — Bergen 1905.

Norman 1900: British Amphipoda. — Ann. Mag. Nat. Hist., ser. 7, vol. 5, 1900, pp. 126 seq., 196 seq., 326 seq.

Norman & Brady 1909: The Crustacea of Northumberland and Durham. — Transact. Nat. Hist. Soc. Northumberland, Durham and Newcastle-upon-Tyne, new ser., vol. 3, 1909, pp. 252—417.

Ohlin 1895: Bidrag til Kännedomen om Malacostrakfaunan i Baffin Bay och Smith Sound. — Acta Univ. Lundensis. Lunds Univ. Årsskrift, vol. 31, 1895, pp. 20—65.

Oldevig 1917: Die Amphipoden, Isopoden und Cumaceen des Eisfjords. Zool. Ergebn. d. Schwed. Exp. nach Spitzbergen 1908, Teil II, 8. — Kungl. Svenska Vet.-Akad. Handl., Bd. 54, No. 8, 1917.

Ruijs 1887: Zoolog. Bijdr. t. d. Kennis d. Karazee I. Inleid. en algem. mededeel. — Bijdr. t. d. Dierkunde, 14. Afl., 1887.

Sars, G. O., 1882: Oversigt af Norges Crust. I. — Forhandl. Vid. Selsk. Christiania 1882 (1883).

— 1885(—86): Crustacea I—II. — Norske Nordhavs-Exped. 1876—78 (= Norwegian North-Atlantic Exped.), vol. 6.

— (1891—)1895: Account of the Crustacea of Norway. Vol. 1, Amphipoda.

— 1900: Crustacea. — Nansen, Norwegian North-Polar Exped., Sci. Results, vol. 1, No. 5, 1900.

— 1909: Crustacea: Report on the second Norwegian arctic exped. in the Fram 1898—1902, No. 18, 1909.

Shoemaker 1920: Amphipods. — Report of the Canadian Arctic Exped. 1913—18, vol. VII, Crust., part. E, 1920.

Smith, S. I., 1884: List of the Crustacea dreadged on the coast of Labrador 1882. Revision of the marine Crust. of Labrador. — Proc. U. S. Nat. Mus., vol. 6, 1884.

Stappers 1911: Crustacés malacostracés. — Duc d'Orléans, Campagne arctique de 1907, Bruxelles 1911.

Stebbing 1888: Report of the Amphipoda. — "Challenger"-Report, Zool., vol. 29.

— 1894: The Amphipoda collected during the voyage of "Willem Barents" 1880—84. — Bijdr. t. d. Dierk., Afl. 17, 1894.

— 1895: Descriptions of nine new Species of Amphipodous Crustaceans from the Tropical Atlantic.-Transact. Zool. Soc. London, vol. 13, 1895, pp. 349—71.

Stebbing 1904: Biscayan Plankton. Part II. The Amphipoda and Cladocera. — Transact. Linn. Soc., London, ser. 2, Zool., vol. 10, 1904, pp. 13—54.

— 1906: Amphipoda. I. Gammaridea. — Das Tierreich, vol. 21.

Stephensen, K., 1912 ("Tjalfe"): Report on the Malacostraca collected by the "Tjalfe"-Expedition, under the direction of cand. mag. Ad. S. Jensen, especially at W. Greenland. — Vid. Meddel. Naturh. Foren. Kbhv., vol. 64, 1912 (1913), pp. 57—134, 329.

— 1912 ("Danmark"-Exped.): Report on the Malacostraca, Pycnogonida and some Entomostraca collected by the Danmark-Expedition to North-East Greenland. — Meddel. om Grønland, vol. 45, 1912, pp. 501—630.

— 1913 (N. Strömfjord): Account of the Crustacea and the Pycnogonida collected by Dr. V. Nordmann in the summer of 1911 from Northern Strömfjord and Giesecke Lake in West Greenland. — ibid. vol. 51, 1913, pp. 53—77.

— 1913 (Conspectus): Grønlands Krebsdyr og Pycnogonider (Conspectus Crustacearum et Pycnogonidorum Groënlandiæ) — ibid. vol. 22, 1913, pp. 1—479.

— 1915: Isopoda, Tanaidacea Cumacea, Amphipoda (excl. Hyperiidea). — Report on the Danish Oceanographical Expeditions 1908—10 to the Mediterranean and adjacent Seas, vol. 2, D. 1, 1915.

— 1916: Zoogeographical Investigation of certain Fjords in Southern Greenland with special Reference to Crustacea, Pycnogonida and Echinodermata, including a List of Alcyonaria and Pisces. — Meddel. om Grønl. vol. 53, 1916, pp. 229—378.

— 1918: Hyperiidea-Amphipoda (Lanceolidæ, Scinidæ, Vibiliidæ, Thaumatopsidæ). — Report on the Danish Oceanographical Expeditions 1908—10 to the Mediterranean and adjacent Seas, vol. 2, D. 2, 1918.

Stephensen, K. "Thor"-Hyper. pt. 2: not yet in the press, see above p. 2.

Stuxberg 1886: Faunan på och omkring Novaja Selmja. — "Vega"-Expeditionens Vet. Iakttag., vol. 5, 1886.

Tattersall 1906: Pelagic Amphipoda of the Irish Atlantic Slobe. — Fisheries Ireland, Sci. Invest. 1905 pt. 4 (1906).

Tesch 1911: Amphipoda. — Bull. trimestriel 1902—08, Résumé des observations sur le plankton, pt. 2, 1911 (Conseil permanent internat. explor. de la mer).

— 1915: De Amphipoden der Zuidelijke Noordzee verzameld met de "Wodan". — Rapporten en Verhandel. uitgegeven door het Rijksinst. vor Visscherij onderzoek, Deel 1, Afl. 3, 1915.

Vosseler 1889: Amphipoden und Isopoden von Spitzbergen. — Archiv f. Naturgesch., 55. Jahrg., Bd. 1, 1889, pp. 151—62.

— 1901: Die Amphipoden der Plankton-Exped., 1, Hyperiidea 1. — Ergebn. d. Plankton-Exped. d. Humboldt-Stiftung, vol. 2, G, 1901.

— 1903: Amphipoda Hyperiidea, in Lo Bianco: Le pesche abissali... Mediterraneo. — Mitt. Zool. Stat. Neapel, vol. 16, 1903, p. 278.

Walker 1903: Report on the Isopoda and Amphipoda collected by Mr. George Murray, F. R. S., during the cruise of the "Oceana" in November 1898. — Ann. Mag. Nat. Hist., ser. 7, vol. 12, 1903.

— 1904: On the Amphipoda. — Report Ceylon Pearl Oyster Fisheries of the Gulf of Manaar, pt. 2, Suppl. Report 17, 1904.

— 1909: Amphipoda Hyperiidea of the "Sealark"-Expedition to the Indian Ocean. — Transact. Linn. Soc. London, Zool., vol. 13, 1909, pp. 49—55.

Woltereck 1909: Amphipoda ("Albatross"-Exped. XVIII). — Bull. Mus. Comp. Zool. Harvard College, vol. 52, No. 9, 1909.

THE INGOLF-EXPEDITION

1895—1896.

THE LOCALITIES, DEPTHS, AND BOTTOMTEMPERATURES OF THE STATIONS

Station Nr.	Lat. N.	Long. W.	Depth in Danish fathoms	Bottom-temp.	Station Nr.	Lat. N.	Long. W.	Depth in Danish fathoms	Bottom-temp.	Station Nr.	Lat. N.	Long. W.	Depth in Danish fathoms	Bottom-temp.
1	62° 30′	8° 21′	132	7°2	24	63° 06′	56° 00′	1199	2°4	45	61° 32′	9° 43′	643	4°17
2	63° 04′	9° 22′	262	5°3	25	63° 30′	54° 25′	582	3°3	46	61° 32′	11° 36′	720	2°40
3	63° 35′	10° 24′	272	0°5		63° 51′	53° 03′	136		47	61° 32′	13° 40′	950	3°23
4	64° 07′	11° 12′	237	2°5	26	63° 57′	52° 41′	34	0°6	48	61° 32′	15° 11′	1150	3°17
5	64° 40′	12° 09′	155			64° 37′	54° 24′	109		49	62° 07′	15° 07′	1120	2°91
6	63° 43′	14° 34′	90	7°0	27	64° 54′	55° 10′	393	3°8	50	62° 43′	15° 07′	1020	3°13
7	63° 13′	15° 41′	600	4°5	28	65° 14′	55° 42′	420	3°5	51	64° 15′	14° 22′	68	7°32
8	63° 56′	24° 40′	136	6°0	29	65° 34′	54° 31′	68	0°2	52	63° 57′	13° 32′	420	7°87
9	64° 18′	27° 00′	295	5°8	30	66° 50′	54° 28′	22	1°05	53	63° 15′	15° 07′	795	3°08
10	64° 24′	28° 50′	788	3°5	31	66° 35′	55° 54′	88	1°6	54	63° 08′	15° 40′	691	3°9
11	64° 34′	31° 12′	1300	1°6	32	66° 35′	56° 38′	318	3°9	55	63° 33′	15° 02′	316	5°9
12	64° 38′	32° 37′	1040	0°3	33	67° 57′	55° 30′	35	0°8	56	64° 00′	15° 09′	68	7°57
13	64° 47′	34° 33′	622	3°0	34	65° 17′	54° 17′	55		57	63° 37′	13° 02′	350	3°4
14	64° 45′	35° 05′	176	4°4	35	65° 16′	55° 05′	362	3°6	58	64° 25′	12° 09′	211	0°8
15	66° 18′	25° 59′	330	—0°75	36	61° 50′	56° 21′	1435	1°5	59	65° 00′	11° 16′	310	—0°1
16	65° 43′	26° 58′	250	6°1	37	60° 17′	54° 05′	1715	1°4	60	65° 09′	12° 27′	124	0°9
17	62° 49′	26° 55′	745	3°4	38	59° 12′	51° 05′	1870	1°3	61	65° 03′	13° 06′	55	0°4
18	61° 44′	30° 29′	1135	3°0	39	62° 00′	22° 38′	865	2°9	62	63° 18′	19° 12′	72	7°92
19	60° 29′	34° 14′	1566	2°4	40	62° 00′	21° 36′	845	3°3	63	62° 40′	19° 05′	800	4°0
20	58° 20′	40° 48′	1695	1°5	41	61° 39′	17° 10′	1245	2°0	64	62° 06′	19° 00′	1041	3°1
21	58° 01′	44° 45′	1330	2°4	42	61° 41′	10° 17′	625	0°4	65	61° 33′	19° 00′	1089	3°0
22	58° 10′	48° 25′	1845	1°4	43	61° 42′	10° 11′	645	0°05	66	61° 33′	20° 43′	1128	3°3
23	60° 43′	56° 00′	Only the Plankton-Net used		44	61° 42′	9° 36′	545	4°8	67	61° 30′	22° 30′	975	3°0

Station Nr.	Lat. N.	Long. W.	Depth in Danish fathoms	Bottom-temp.	Station Nr.	Lat. N.	Long W.	Depth in Danish fathoms	Bottom-temp.	Station Nr.	Lat. N.	Long. W.	Depth in Danish fathoms	Bottom-temp.
68	62° 06′	22° 30′	843	3°4	92	64° 44′	32° 52′	976	1°4	118	68° 27′	8° 20′	1060	—1°0
69	62° 40′	22° 17′	589	3°9	93	64° 24′	35° 14′	767	1°46	119	67° 53′	10° 19′	1010	—1°0
70	63° 09	22° 05′	134	7°0	94	64° 56′	36° 19′	204	4°1	120	67° 29′	11° 32′	885	—1°0
71	63° 46′	22° 03′	46			65° 31′	30° 45′	213		121	66° 59′	13° 11′	529	—0°7
72	63° 12′	23° 04′	197	6°7	95	65° 14′	30° 39′	752	2°1	122	66° 42′	14° 44′	115	1°8
73	62° 58′	23° 28′	486	5°5	96	65° 24′	29° 00′	735	1°2	123	66° 52′	15° 40′	145	2°0
74	62° 17′	24° 36′	695	4°2	97	65° 28′	27° 39′	450	5°5	124	67° 40′	15° 40′	495	—0°6
	61° 57′	25° 35′	761		98	65° 38′	26° 27′	138	5°9	125	68° 08′	16° 02′	729	—0°8
	61° 28′	25° 06′	829		99	66° 13′	25° 53′	187	6°1	126	67° 19′	15° 52′	293	—0°5
75	61° 28′	26° 25′	780	4°3	100	66° 23′	14° 02′	59	0°4	127	66° 33′	20° 05′	44	5°6
76	60° 50′	26° 50′	806	4°1	101	66° 23′	12° 05′	537	—0°7	128	66° 50′	20° 02′	194	0°6
77	60° 10′	26° 59′	951	3°6	102	66° 23′	10° 26′	750	—0°9	129	66° 35′	23° 47′	117	6°5
78	60° 37′	27° 52′	799	4°5	103	66° 23′	8° 52′	579	—0°6	130	63° 00′	20° 40′	338	6°55
79	60° 52′	28° 58′	653	4°4	104	66° 23′	7° 25′	957	—1°1	131	63° 00′	19° 09′	698	4°7
80	61° 02′	29° 32′	935	4°0	105	65° 34′	7° 31′	762	—0°8	132	63° 00′	17° 04′	747	4°6
81	61° 44′	27° 00′	485	6°1	106	65° 34′	8° 54′	447	—0°6	133	63° 14′	11° 24′	230	2°2
82	61° 55′	27° 28′	824	4°1		65° 29′	8° 40′	466		134	62° 34′	10° 26′	299	4°1
83	62° 25′	28° 30′	912	3°5	107	65° 33′	10° 28′	492	—0°3	135	62° 48′	9° 48′	270	0°4
	62° 36′	26° 01′	472		108	65° 30′	12° 00′	97	1°1	136	63° 01′	9° 11′	256	4°8
	62° 36′	25° 30′	401		109	65° 29′	13° 25′	38	1°5	137	63° 14′	8° 31′	297	—0°6
84	62° 58′	25° 24′	633	4°8	110	66° 44′	11° 33′	781	—0°8	138	63° 26′	7° 56′	471	—0°6
85	63° 21′	25° 21′	170		111	67° 14′	8° 48′	860	—0°9	139	63° 36′	7° 30′	702	—0°6
86	65° 03′$_6$	23° 47′$_6$	76		112	67° 57′	6° 44′	1267	—1°1	140	63° 29′	6° 57′	780	—0°9
87	65° 02′$_3$	23° 56′$_2$	110		113	69° 31′	7° 06′	1309	—1°0	141	63° 22′	6° 58′	679	—0°6
88	64° 58′	24° 25′	76	6°9	114	70° 36′	7° 29′	773	—1°0	142	63° 07′	7° 05′	587	—0°6
89	64° 45′	27° 20′	310	8°4	115	70° 50′	8° 29′	86	0°1	143	62° 58′	7° 09′	388	—0°4
90	64° 45′	29° 06′	568	4°4	116	70° 05′	8° 26′	371	—0°4	144	62° 49′	7° 12′	276	1°6
91	64° 44′	31° 00′	1236	3°1	117	69° 13′	8° 23′	1003	—1°0					