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Preliminary Report on the *Schizopoda* collected by H. S. H. Prince ALBERT of Monaco during the cruise of the *PRINCESSE-ALICE* in the year 1904.

By Dr. H. J. HANSEN (Kjøbenhavn)

Having undertaken the study of the Schizopoda collected by H. S. Highness during a long series of years I was asked to begin with the animals gathered in 1904 in order to give a view on the results of that year. For this reason I have written the present small paper; the future report shall be a detailed account of the animals mentioned here together with the vast collection secured during the preceding years.

The animals collected in 1904 were taken at 17 stations, but two of these (1849 and 1851) are in reality hauls on the same place. One of them (stat. 1639) is situated west of France about at the middle of a straight line between Brest and Cape Finisterre; all the other stations are situated in a triangle, the three angles of which are Banc de Gorringe (a place west of Gibraltar), the Azores and the Canary Islands. Only a few of the animals, viz. those from stat. 1894, were taken at the surface; all other specimens have been captured with the « filet à grande ouverture » in depths varying between 490 and 5000 meters upwards to the surface. In order to facilitate the use of this paper and avoid unnecessary statements as to latitude, longitude and depth for each station in the enumerations of the localities for the forms, I insert below a list of the seventeen stations with full informance on position and depth.

The triangular area explored in 1904 is in reality only a rather small part of the Atlantic, and the number of stations is low, but, nevertheless, the collection of Schizopoda is large and very interesting; the « filet à grande ouverture » must therefore be an excellent instrument for the capture of such forms. The size and quality of the collection may be proved to a certain degree by a comparison with that secured by the German *PLANKTON*-Expedition in 1889. The numerous stations of the latter expedition are distributed along a line between the following places : Scotland, Cape Farewell, Bermudas, Cape Verde, Ascension, Para, Azores, the Channel. Ortmann enumerates 5 species of Mysidacea and 22 species of Euphausiacea (2 of his species of the latter order I have discarded as synonyms); of these 2 forms of Mysidacea and 6 forms of the other order were established as previously unknown species; the total amount is thus 27 species, 8 of which were new. The collection gathered in 1904 contains 6 species of Mysidacea, 3 of which are new, and 20 species of Euphausiacea, 7 of which are new, in all 26 species, 10 of which are new, thus about the same number as that procured by the *PLANKTON*-Expedition which explored the Atlantic from lat. 60° N. to lat. 8° S., nearly crossed it twice in very oblique directions, and had a high number of stations. As already mentioned, the collection is besides very interesting. Some species common at the surface (as *Siriella Thompsoni* M.-Edw., *Euphausia gracilis* Dana, *Thysanopoda tricuspidata* M. Edw.) are entirely wanting, but several of earlier known forms and nearly all the species established as new are animals which generally or exclusively live in considerable depths. Among the species already known *Bentheuphausia amblyops* G. O. Sars ought to be mentioned. This form, which in some important features deviates from all other Euphausiacea, was established by Sars on two specimens from the Atlantic, and it has not been found again in that Ocean, but the collection contains 13 specimens from 7 stations of this true deep-sea form. Among the new forms I may direct the attention to the two very large and aberrant species of *Thysanopoda*, viz. *T. insignis* n. sp. and *T. egregia* n. sp. Finally, the rich material of less than half-grown to

full-grown specimens of both sexes has enabled me to point out difference according to age and sex in some forms and to prove the invalidity of some species established in the literature. All species are enumerated here and the new species described, excepting one new from, the material of which is rather mutilated. I beg my friend Dr. W. T. Calman accept my sincere thanks for having answered some questions as to structural features in some of the types of Sars preverved in the British Museum (Natural History).

The Schizopoda consist of two Orders, Mysidacea and Euphausiacea, which in reality are far from being closely related to each other. I preserve here the old denomination, Schizopoda, as brief and rather practical, but it may be emphasized that I do not consider the group a natural one; of its two orders the Mysidacea are rather related to the Leptostraca, and more akin to Cumacea and Tanaidacea than to the Euphausiacea, which are allied to the Decapoda. The Mysidacea have been correctly divided (by Boas) into two suborders: Lophogastrida and Mysida.

In this contribution I quote only rather few papers, among which that by Sars is the principal work on the order Euphausiacea and the suborder Lophogastrida; the quotations given will be sufficient for every student of the group, as I refer to the best description of each species, omitting preliminary papers of the same authors and other contributions of lesser value. The titles of the three most important works are given here, so that the majority of the quotations on the following pages can be very brief.

G. O. SARS : *Report on the Schizopoda collected by H. M. S. CHALLENGER.* Zool. *CHALLENGER* Exp., Part. XXXVII., Vol. XIII, 1885.

A. ORTMANN : *Decapoden und Schizopoden der PLANKTON Expedition.* Ergebnisse der *PLANKTON*-Exped. der *HUMBOLDT*-Stiftung, B. II, G. b., 1893.

C. CHUN : *Atlantis. Biologische Studien über pelag. Organismen; Fünftes Kapitel. Ueber pelag. Tiefsee-Schizopoden.* Bibliotheca Zoologica, B. 7, Heft. 19, 1896.

LIST OF STATIONS.

Stat. **1639** : lat. 46° 15' N., long. 7° 09' W.; 0 — 3000m.
(Depth of the sea unknown.)

Stat. **1676** : lat. 35° 44' N., long. 11° 52' W.; 0 — 1000m.
(Depth of the sea more than 5000m.)

Stat. **1736** : lat. 28° 38' 45" N.; long. 17° 59' 40" W.; 0 — 500m.
(A l'abri de Palma.)

Stat. **1749** : lat. 30° 41' N.; long. 17° 46' W.; 0 — 2500m.
(Depth of the sea unknown.)

Stat. **1760** : lat. 29° 16' N., long. 16° 11' W.; 0 — 3000m.
(Depth of the sea 3670m.)

Stat. **1768** : lat. 27° 43' N., long. 18° 28' W.; 0 — 3000m.
(Depth of the sea 3817m.)

Stat. **1781** : lat. 31° 06' N., long. 24° 06' 45" W.; 0 — 5000m.
(Depth of the sea unknown.)

Stat. **1800** : lat. 32° 18' N., long. 23° 58' W.; 0 — 1000m.
(Depth of the sea 5422m.)

Stat. **1802** : lat. 33° 06' N., long. 25° 07' W.; 0 — 500m.
(Depth of the sea 4904m.)

Stat. **1834** : lat. 37° 28' N., long. 25° 53' 30" W.; 0 — 1000m.
(Depth of the sea 1440m.)

Stat. **1844** : lat. 37° 08' N., long. 28° 28' 30" W.; 0 — 1500m.
(Depth of the sea 2815m.)

Stat. **1849**, Stat. **1851** : lat. 36° 17' N., long. 28° 53' W.; 0 — 3000m.
(Depth of the sea 3410m.)

Stat. **1856** : lat. 36° 46' N., long. 26° 41' W.; 0 — 3250m.
(Depth of the sea 3620m.)

Stat. **1869** : lat. 37° 26' 30" N., long. 25° 46' 30" W.; 0 — 490m.
(Depth of the sea 510m.)

Stat. **1874** : lat. 37° 20' N., long. 21° 40' W.; 0 — 2000m.)
(Depth of the sea 3800m.)

Stat. **1894** : lat. 36° 36' N., long. 11° 49' 30" W.; surface.
(Depth of the sea 3417m.)

I. Order MYSIDACEA.

A. Suborder LOPHOGASTRIDA.

1. **Gnathophausia zoëa**, Will. Suhm

Gnathophausia zoëa G. O. Sars, op. cit. p. 44, Pl. VI, figs. 6-10.

LOCALITY. — Stat. 1834, 1 specimen.

REMARKS.— This beautiful deep-sea form has a nearly world-wide distribution, wanting probably only in the Arctic and Antartic Seas.

2. **Eucopia australis**, Dana

(Fig. 1.)

Eucopia australis G. O. Sars, op. cit. p. 55, Pls. IX-X.

LOCALITIES. — Stat. 1639, 7 specimens; stat. 1676, 2 specimens; stat. 1844, 4 specimens; stat. 1849, 10 specimens; stat. 1851, 2 specimens; stat. 1856, 4 specimens; stat. 1874, 1 specimen.

REMARKS. — This deep-sea form is common in the whole Atlantic; its distribution seems to be even somewhat wider than that of *Gnathophausia zoëa*. — An outline of first thoracic leg is inserted for comparison with the same appendage of the two following species.

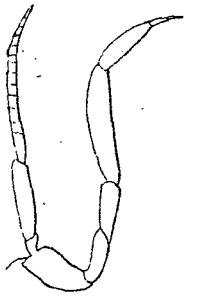

FIG. 1.— First right thoracic leg of *E. australis*, from behind.

3. **Eucopia intermedia**, n. sp.

(Figs. 2-3.)

DESCRIPTION.— Only one immature specimen is at hand, but it is so characteristic that it can be looked upon with certainty as a new form. As to general aspect it resembles *E. sculpticauda*

Faxon, but the best distinguishing features show it to be intermediate between the two hitherto known species which differ considerably from each other. As in *E. sculpticauda* the front part of the carapace is produced between the insertions of the eye-stalks as a rather low triangle, while the front margin in *E. australis* is equally and rather flatly convex. The eyes are light yellowish; the inner front end of the eye-stalks is adorned

Fig. 2.— First right thoracic leg of *E. intermedia*, from behind.

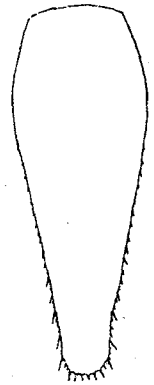

Fig. 3.— Outline of telson; the row of lateral subdistal impressions omitted.

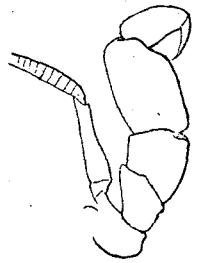

Fig. 4.— First right thoracic leg of *E. sculpticauda*, from behind.

with a small slender process which is bent somewhat outwards. First pair of thoracic legs (fig. 2) is much thicker than in *E. australis* (fig. 1) but less thick than in *E. sculpticauda* (fig. 4), (these three figures have been drawn with the same degree of enlargement); especially the difference between fifth joint of these legs is very conspicuous, this joint being in *E. australis* more than four times, in *E. intermedia* a little more than two times, in *E. sculpticauda* only 3/2 times as long as broad. Rather similar but less pronounced differences are found in second and third pairs of legs. The telson affords excellent characters; in *E. sculpticauda* « a constriction a little way in « front of the tip divides off a terminal plate which is rounded « at the end, its lateral margin being concave »; in front of this constriction a rather long part of the upper surface « is beau- « tifully ornamented with a network of ridges enclosing

« honeycomb-like cells. The distal half of the segment is armed « with marginal spines, which are obsolete on the rounded « posterior extremity (1) ». In *E. intermedia* the corresponding part of the surface of telson has only an irregular row at each side of less developed rounded impressions, a real constriction is wanting, and the end, which is broadly rounded, is furnished with several rather short spines. In *E. australis* the telson has no dorsal cells or rounded impressions, it tapers from the middle regularly to the narro wend which bears two rather long spines, and several of the lateral spines along the distal half are considerably longer than in the two other species. — Length of the immature specimen 20.5mm.

Locality. — Stat. 1768, 1 specimen.

Remarks. — One might be inclined to think that the specimen described is only a small and therefore imperfectly developed specimen of *E. sculpticauda*, but it differs so sharply in the features mentioned from an immature and only a little larger specimen of the latter species that it must be considered a new form.

4. **Eucopia sculpticauda**, Faxon.

(Fig. 4.)

Eucopia sculpticauda Faxon, The Stalk-eyed Crustacea, Reports Explorat. of the west coast of Mexico, Central and South America... by the U. S. Fish comm. steamer *Albatross*. Mem. Mus. Comp. Zool., vol. XVII, 1895, p. 210; Pl. K, figs. 2*a*-2*d*; Pl. LIII. figs. 1-1*d*.

Localities. — Stat. 1849, 1 specimen; stat. 1874, 2 specimens.

Remarks.— This species was established on a few specimens captured in the Gulf of Panama and near the Galapagos Islands; subsequently it has been found in the Indian Ocean (Alcock).

(1) Quotations from Faxon.

B. Suborder MYSIDA.

5. **Boreomysis subpellucida**, n. sp.

(Figs. 5-8.)

DESCRIPTION.— This species is allied to *B. californica* Ortm., but differs in several minor features. The front end of carapace is produced into a rather short, triangular, acute process turning somewhat or at least a little upwards; seen from above the margin between the base of this process and the side is rather convex but not angular. Seen from the side, the eye-stalk is a little or somewhat widened from the base outwards, with

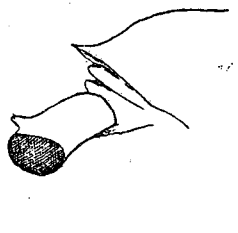

FIG. 5. — Front part of the carapace with the left eye of an adult male of *Boreomysis subpellucida*.

FIG. 6. - Left eye of same specimen, from above.

a conspicuous oblong obtuse process on the upper margin rather near the eye; the eye itself is brown, only as high as the end of the stalk, directed forwards and much downwards; seen from above (fig. 6) the eye is several times broader than long. The squama of the antennæ surpasses the antennular peduncles by about 1/3 of its length; it is a little less than four times as long as broad, at the end less than half as broad as before the middle; the distal margin is a little oblique and the outer denticle rather small. (In small, only about half-grown specimens, the squama tapers less towards the distal end, the terminal margin is much more oblique and the outer denticle therefore placed rather considerably behind the tip).

Telson is 7/2 times as long as broad, greatly narrowed in the distal half which at its narrowest point is less than 2/5 as broad as the base of telson; the lateral edges have a rather low number of strong and long spines, and between these numerous quite minute denticles are observed; the distal

FIG. 7. — Right antennal squama of same specimen.

FIG. 8.— Telson of the same specimen.

incision is about 1/6 of the length of telson, and each lobe terminates in a strong spine. — Length of an adult male 19.5mm, of a female with marsupium 20mm.

LOCALITIES. — Stat. 1844, 3 specimens; stat. 1849, 6 specimens; stat. 1851, 1 specimen; stat. 1856, 3 specimens.

6. **Boreomysis semicœca**, n. sp.

(Figs. 9-11)

DESCRIPTION. — This species is rather allied to the preceding form but differs in several particulars : it is somewhat larger, the rostral process is longer, the eye-stalks are thicker, the eyes smaller, antennal squama and telson comparatively broader. — The front end of the carapace is produced into a moderately long, triangular, acute process turning considerably upwards; seen from above the margin between this process and the side is flatly convex. The eye-stalks are somewhat compressed, very deep, strongly increasing in depth from the

base to the triangular obtuse tubercle situated obliquely above and behind the eye; the eyes are light yellowish-brown, small. The antennal squama surpasses the antennular peduncle by about 1/3 of its length; it is unusually broad, scarcely more than 5/2 times as long as broad; its distal margin is rather long, a little oblique, the outer triangular denticle rather short. Telson is somewhat less than 3 times as long as broad, considerably narrowed in its distal half, which at its narrowest point

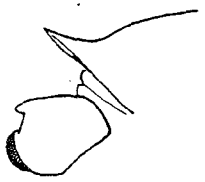

Fig. 9. — Front part of the carapace with the left eye of an adult female of *Boreomysis semicoeca*.

Fig. 10. — Right antennal squama of the same specimen.

Fig. 11. — Telson of the same specimen.

is yet slightly less than half as broad as the most proximal part of telson; the lateral edges are furnished with a rather low number of proportionately short spines, and between these numerous quite minute denticles are observed; the distal incision is scarcely 1/5 of the total length; each lobe terminates in a rather long and strong spine, and inside this a couple of shorter but conspicuous spines are observed. — Length of a female with marsupium 24.6mm.

Locality. — Stat. 1851, 1 specimen.

II. Order EUPHAUSIACEA.

All genera hitherto established, excepting *Rhoda (Boreophausia)*, are represented in the collection. In order to facilitate comparison the genera are dealt with in the same consecutive order as in the principal work on the order, viz. the Challenger-Report by Prof. G. O. Sars.

Genus EUPHAUSIA, Dana

Of this rich genus only three species have been captured; in all probability the majority of its forms live generally or at least frequently not far from the surface.

1. **Euphausia pellucida,** Dana

Euphausia pellucida G. O. Sars, op. cit. p. 75, Pls. xi and xii.

Localities. — Stat. 1639, many specimens; stat. 1676, 5 specimens; stat. 1736, 11 specimens; stat. 1749, 1 specimen; stat. 1760, 13 specimens; stat. 1802, 4 specimens; stat. 1849, large number of specimens; stat. 1856, numerous specimens; stat. 1869, 32 specimens.

2. **Euphausia pseudogibba,** Ortm.

Euphausia pseudogibba Ortmann, op. cit. p. 12, Pl. 1. fig. 6.

Localities. — Stat. 1676, 2 specimens; stat. 1736, many specimens; stat. 1749, 1 specimen; stat. 1760, 5 specimens; stat. 1768, 2 specimens; stat. 1781, 1 specimen; stat. 1800, 5 specimens; stat. 1802, 1 specimen; stat. 1844, 1 specimen; stat. 1849, 3 specimens; stat. 1856, 4 specimens; stat. 1874, 1 specimen.

Remarks. — That this species not mentioned in the Challenger-Report has been secured in 1904 on 12 out of 17 stations proves that it must be extremely common in that part of the Atlantic Ocean.

3. **Euphausia gibboides**, Ortm.

Euphausia gibboides Ortmann, op. cit. p. 12, Pl. 1. fig. 5.
Locality. — Stat. 1768, 1 specimen.

Genus THYSANOPODA, H. Milne-Edw.

This genus is chiefly distinguished by having the penultimate pair of thoracic legs rather well developed, shaped as the preceding pairs, while the last pair has the endopod obsolete but the exopod well developed. Eight species have been described, and five are added in the present paper. Especially two of these new forms, *T. insignis* and *T. egregia,* differ very materially from at least most of the other species in the structure of the maxillulæ, while their abdominal luminous organs seem to be at least rather small, the posterior pair of thoracic organs small or perhaps wanting in one of them, and the anterior thoracic pair not traceable. Nevertheless, I will at present not establish a new genus for the reception of these two forms, because the maxillulæ (and the luminous organs) have not been examined in several of the species described in the literature, and having seen no specimens of some of these species, I am unable to say anything on their organs mentioned. Especially *T. cristata* G. O. Sars seems to differ considerably in some features from forms as *T. tricuspidata* M.-Edw. and especially *T. obtusifrons* G. O. Sars and allied species, but Sars says nothing on the maxillulæ and the luminous organs in *T. cristata.*

It may be useful to give an analytical conspectus of the species hitherto known from the Atlantic Ocean.

A. Carapace with a pair of lateral marginal denticles near the posterior end.

a. Carapace with a dorsal spine behind the base of rostrum and besides a pair of lateral marginal denticles at the base of the maxillipeds.... 1. *T. tricuspidata* M.-Edw.

b. Carapace without any dorsal spine behind the rostrum and without any lateral marginal denticles in front of the middle (only the pair near the posterior end being present).

α. Fourth and fifth abdominal segments each with a dorsal spine from the posterior margin. . . . . 2. *T. biproducta* Ortm.

β. Third abdominal segment (but none of the following segments) with a dorsal spine from the posterior margin . . . . . 3. *T. monacantha* Ortm.

γ. None of the abdominal segments with dorsal spines.

†. Basal joint of the antennulæ will a very conspicuous spine proceeding forwards from the upper distal margin near the inner side . . . . . 4. *T. microphthalma* G. O. Sars.

††. Basal joint of the antennulæ without any spine from the upper distal margin . . . . . 5. *T. vulgaris,* n. sp.

B. Carapace without lateral marginal denticles.

a. Carapace without any transverse gastro-hepatic groove. Maxillulæ have the palp short, situated along the outer margin of the lobe from the preceding (third) joint and not reaching beyond its end; the exterior plate from the lobe of first joint (1) is exceedingly large, its major part proceeding outside the outer margin of the joints of the appendage. The eye-stalks without any tubercle.

α. Second joint of the antennular peduncle without any terminal dorsal spine. No ridge or impressed longitudinal line somewhat above the lateral margin of the carapace. Abdominal segments without any dorsal spine.

(1) This interpretion is explained on page 21.

†. Distal inner end of the upper lobe from first antennular joint shaped as a small, short, triangular, acute process, which is shorter than deep. Large species . . . . . 6. *T. pectinata* Ortm.

††. Distal inner end of the upper lobe from first antennular joint produced into an oblong triangular nearly spiniform, acute process, which is a good deal longer than deep. Rather small species. . . . . 7. *T. distinguenda* n. sp.

β. Second joint of the antennular peduncle dorsally produced into a narrow lobe terminating in a spine. A longitudinal ridge accompanied by a linear impression somewhat above the lateral margin of the carapace. Third abdominal segment with a slender dorsal spine from the posterior margin. . . 8. *T. lateralis* n. sp.

b. Carapace with a deep gastro-hepatic groove across the dorsal part. Maxillulæ have the palp very elongate and strongly protruding; the exterior plate from the lobe of first joint is at least rather small, situated on the lower (posterior) side of the appendage and not reaching to or slightly overreaching the outer margin of its joints. The eye-stalks with a tubercle at the upper inner end.

α. Front upper margin of carapace horizontal, terminating in a minute conical vertical process. Peduncle of the antennulæ (in the female) only moderately thick, much tapering towards the end; no tuft of setæ on the basal part of the outer lower flagellum . . . . . 9. *T. insignis* n. sp.

β. Front upper margin of carapace, seen from the side, curved downwards and rounded, without any process. Peduncle of the antennulæ (in the male) very thick, scarcely tapering towards the end; basal part of the outer lower flagellum with an extremely thick tuft of very long thin setæ... 10. *T. egregia* n. sp.

Of the 10 species enumerated the six last-named are represented in the collection.

4. **Thysanopoda vulgaris,** n. sp.

Thysanopoda obtusifrons Ortmann, op. cit. p. 9. [not *T. obtusifrons*, G. O. S.]

Description. — This species is closely allied to *T. obtusifrons*, G. O. Sars, but differs in four features. The most important of these points is that in *T. vulgaris* the carapace has a lateral marginal denticle rather near the posterior end, while the margin is smooth in *T. obtusifrons*. In *T. vulgaris* the front part of the upper side of carapace is adorned with a low keel reaching nearly to the anterior end, and at each side along the anterior half of this keel we find a rather shallow nearly linear excavation; the front tip of the carapace is, seen from above, scarcely as obtuse as in *T. obtusifrons;* seen from the side the upper margin of the front portion is horizontal, bearing on the end a quite minute conical tooth directed upwards; in *T. obtusifrons*, seen from the side, this front portion is not horizontal but rounded off and without any tooth (Sars, Pl. xviii. fig. 1). (In half-grown and still smaller specimens the frontal tooth is directed forwards). A gastro-hepatic groove is wanting, as in *T. obtusifrons*, *T. pectinata*, *T. distinguenda* and *T. lateralis*. The eyes are rather small and black with a brownish hue. As in *T. obtusifrons* the basal joint of the antennular peduncle shows a lobe covering the proximal inner half of the dorsal side of second joint, but this lobe is narrower and its front margin more rounded than in *T. obtusifrons* (Sars, Pl. xviii. fig. 2). In *T. vulgaris* the endopod of the uropods protrudes slightly beyond the tip of telson and is a little shorter than the exopod. — Length of the largest specimen, an adult female, 19.5mm; an adult male measures 18.2mm.

Localities. — Stat. 1676, 2 specimens; stat. 1736, 5 specimens; stat. 1760, 5 specimens; stat. 1768, 1 specimen; stat. 1800, 5 specimens; stat. 1802, 4 specimens; stat. 1849, 1 specimen; stat. 1856, 5 specimens.

Remarks. — This species is common in the Atlantic. In general aspect it is similar to *T. distinguenda*, but the latter species differs in some particulars, especially in having no lateral marginal denticles on the carapace. *T. obtusifrons* Sars has been established on specimens from the Pacific and has not yet been found in the Atlantic; the *Plankton* specimens referred by Ortmann to *T. obtusifrons* certainly belong to *T. vulgaris*, because Ortmann expressly states that they have minute lateral marginal denticles on the carapace.

5. **Thysanopoda pectinata**, Ortm.

(Fig. 12)

Thysanopoda pectinata Ortmann, op. cit. p. 10, Pl. I. fig. 4.

Locality. — Stat. 1639, 2 specimens (one large, the other less than half-grown).

Remarks. — Adult specimens measure about 35 to 44^{mm} in length. To Ortmann's description some notes must be added. The front part of the upper side of carapace is rather similar to that in *T. vulgaris*, but the keel is higher at the dorsal organ, the shallow sublinear impressions are somewhat shorter, the front end is not so obtuse as in *T. vulgaris*, each half of its margin being slightly convex, while the tip terminates in a minute tooth directed obliquely upwards and forwards. Eyes rather small, brown. The basal joint of the antennular peduncle is at the upper inner side produced into a lobe which, seen from the side (fig. 12), terminates in a small short triangular acute process which is shorter than deep, when the insertion of the most distal one of the coupling setæ is considered the base of the process. The lower oblique margin of this lobe on the inner side of the antennula is furnished with a number of stiff short setæ projecting downwards and forwards, and each of them terminates in a hook; these setæ on the left antennula are coupled together with those of the right antennula, with the result

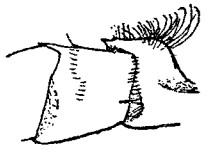

Fig. 12.— First and second joints of the peduncle of left antennula of *T. pectinata*, seen from the outer side.

that the antennulæ in all probability generally are moved together and can be removed from each other only to a certain degree. Ortmann describes these setæ as « ca. 10 kammförmige Dörnchen », believing that they afford a specific character, but such coupling setæ are found in all species of the genus seen by me (1). — As to other features I refer to Ortmann's description.

6. **Thysanopoda distinguenda**, n. sp.

(Fig. 13)

Description. — In general aspect and size this species is similar to *T. vulgaris*, but differs in several particulars : the carapace has no lateral marginal denticles, and its front part is shaped as in *T. pectinata*; the lobe from the basal joint of the antennular peduncle terminates in a nearly spiniform process; the endopod of the uropods protrudes considerably beyond the end of telson, though it is a little shorter than the exopod. — It is very closely allied to *T. pectinata*, but shows one sharp structural difference and is, besides, very much

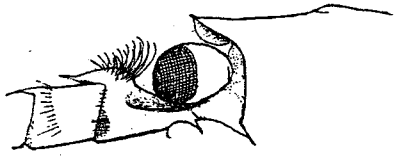

Fig. 13. — Front and of carapace, left eye and peduncle of antennula of *T. distinguenda*, from the side.

smaller. The difference alluded to is the shape of the process terminating the lobe from the basal joint of the antennular peduncle : in this species it is, seen from the side (fig. 13), nearly spiniform, much longer but not higher than in *T. pectinata*, therefore considerably longer than deep. The eyes are nearly black, thus darker than in *T. pectinata*. The largest specimen, an adult male, measures only 23^{mm} in length.

Localities. — Stat. 1760, 1 specimen; stat. 1800, 2 specimens ; stat. 1849, 1 specimen; stat. 1856, 4 specimens.

(1) I found them also in a species of *Euphausia*, but have not yet looked for their occurrence in the other genera of the order.

Remarks. — It is after long deliberation that I establish this species. It is so closely allied to *T. pectinata* that one may be inclined to consider it a variety. But I have seen 8 specimens, among which two adult males, and of *T. pectinata* a large number from the boreal part of the Atlantic is preserved in the Copenhagen Museum. *T. pectinata* is nearly twice as long as *T. distinguenda ;* besides a less than half-grown specimen from stat. 1639 of the former species could be separated with certainty from not full-grown specimens of the latter form. In order to avoid confusion I must therefore, at least provisionally, establish *T. distinguenda* as a separate species ; when more material has been examined the question can be reconsidered.

7. **Thysanopoda lateralis**, n. sp.

(Figs. 14-16).

Description. — The carapace has no marginal denticles, but above its lateral border a fine ridge runs from the anterior nearly to the posterior end, and this ridge is the upper limit for a linear impression of a certain breadth ; in this way a rim of the carapace is sharply marked off from the remainder ; the rim itself is narrow in front, considerably broader behind the

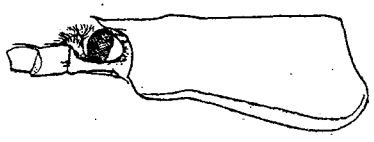

Fig. 14. — Carapace with left eye and antennular peduncle of a female *T. lateralis*.

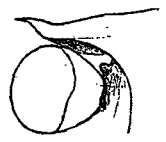

Fig. 15.-Outline of front end of carapace and eye of the same specimen, more highly magnified.

middle and becomes narrow again along the postero-lateral margin. A gastro-hepatic groove is wanting. The front part of the carapace is considerably produced, seen from above almost covering the eye-stalks ; the end itself is produced into a compressed curved acute rostrum, the proximal half of which is directed obliquely upwards and forwards, while the distal part is horizontal ; the upper side of the front part of the carapace

has a rather low keel accompanied on each side along nearly its anterior half by a conspicuous sublinear excavation. The eyes are almost medium-sized, black ; the eye-stalks, as in the preceding species, without any tubercle. The basal joint of the antennular peduncle has above in front of the eyes a thickened elevated portion adorned with numerous hairs ; anteriorly this portion is produced into a very oblong-triangular lobe terminating in a long spine directed forwards and a little outwards along the upper surface of second joint not quite to its end ; the distal outer angle of the same joint has two spines of different size. Second joint of the peduncle is above produced into a long flat lobe, the outer angle of which terminates in a conspicuous spine ; seen from the side (fig. 14) the whole lobe with its spine looks as a very long spine. Third abdominal segment has a thin dorsal spine on the posterior margin. The endopod of the uropods is somewhat shorter than telson, while the exopod reaches exactly to its tip.— Length of a probably adult female 30 mm.

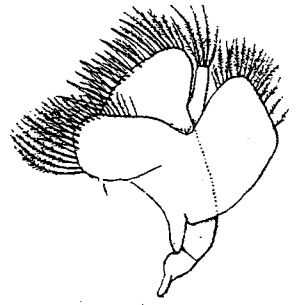

Fig. 16. — Left maxillula of the same specimen, from below.

Locality. — Stat., 1768, 1 specimen.

Remarks. — By the shape of rostrum, the armature of the antennular peduncles and especially by the lateral ridge and impressed line on the carapace this species is abundantly distinguished from all other forms hitherto known. By the shape of the maxillulæ (fig. 16) and absence of gastro-hepatic groove it shows itself to be related to *T. obtusifrons*, *T. pectinata*, etc.

8. **Thysanopoda insignis**, n. sp.

(Figs. 17-19)

Description. — Carapace without lateral denticles. A deep gastro-hepatic groove is found across its dorsal part, and this groove is at the end connected with more lateral grooves shown on figs. 17-18. On the posterior 2/3 of the carapace two