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Re-description of some of Helfer's Pycnogonid type-specimens*)

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Fifteen years ago, H. HELFER in his paper "Einige neue Pantopoden aus der Sammlung des Zoologischen Museums in Berlin" (Sitz. Ber. Ges. Naturf. Fr., Berlin 1937 (1938), pp. 162—185) established 5 new genera, each based on a new species, 2 new species belonging to known genera, and 3 new varieties.

Since then, several authors have expressed their doubt about the validity of HELFER's new forms. Indeed, HELFER's descriptions and figures leave doubt as to the affinities of the material. Often the descriptions and the figures are contradictory e.g., in *Heteronymphon kempfi* var. *dimorpha* the figure of the chelifore shows one suture too much, and in *Pycnosoma batangense* a suture too little.

Working out the rich collection of Pycnogonida obtained in the western Pacific, chiefly during "Dr. TH. MORTENSEN's Pacific Expedition 1914—16" and the "Danish Expedition to the Kei Islands 1922", I found it necessary to re-examine the types of species included in HELFER's paper, since his new generic and trivial names had caused so many speculations and confusion in literature. This revision was rendered possible by the courtesy of the direction of the "Zoologisches Museum der Humboldt-Universität, Berlin". Thanks are due to Prof. Dr. A. KÄSTNER and Dr. H.—E. GRUNER, for the loan of, and the information on the type-specimens.

Not all the types of HELFER's new genera, species, and varieties were present in the Berlin Museum; Dr. GRUNER kindly informed me: "Prof. HELFER..... teilte mir nämlich mit, dass alle Pantopoden unseres Museums, die er noch zur Bearbeitung in seinem Institut hatte, bei einem Bombenangriff vollständig verloren gegangen sind. Höchstwahrscheinlich befanden sich darunter auch die von Ihnen noch gewünschten Typen....."

HELFER proposed the new genera *Procidella*, *Peritrachia*, *Ainigma*, *Spicularia*, and *Kyphomia*. The types of the first three out of these five genera proposed by HELFER were present in the Berlin collection. None of these 3 genera could be maintained. Of the three type-species, one

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*) Received April 8, 1953.

proved to be an unidentifiable juvenile, while two could be maintained as new species under the existing genera *Anoplodactylus* and *Ascorhynchus*. Though the types of HELFER's genera *Spicularia* and *Kyphomia* were bombed during the war, it was possible to ascertain their taxonomic status. The former must have been a juvenile of *Pseudopallene circularis* (GOODSIR, 1842), while the second could be maintained as a new species in the genus *Ammothella* VERRILL, 1900.

The types of HELFER's new species *Nymphon ortmanni* were lost, but I was able to ascertain the status of the species, since the Pycnogonid collection of the late Dr. J. C. C. LOMAN contained a beautiful set of topotypes, while additional samples were present in the material of the "Pacific Expedition".

The type of *Pycnosoma batangense* HELFER was present in the Berlin collection and proved to belong to *Anoplodactylus*.

The type of *Pentanympion antarcticum* HODGSON var. *gaussi* HELFER has been destroyed, probably during world-war II, but for a single leg, which is still present in the Berlin Museum, but which is insufficient for identification.

The types of the other two new varieties, described by HELFER, were present, and are redescribed here as synonyms of existing species.

All data concerning HELFER's material are found in table I.

Nymphon ortmanni HELFER, 1938. Fig. 1.

N. ortmanni HELFER, 1938, pp. 164—167, fig. 1a—g.

N. japonicum, LOMAN (non ORTMANN), 1911, p. 8.

The types of this species were never deposited in the Berlin Museum, and were probably lost during the war. HELFER had at his disposal 8

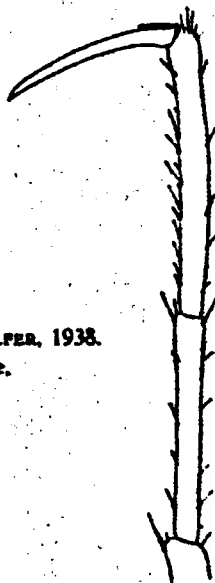


Fig. 1. *Nymphon ortmanni* HELFER, 1938.
Distal joints of leg, male.

males and 3 females, which were collected July 7, 1904, by Dr. HABERER, in Sagami Bay.

Table I. Pycnogonid type specimens of Prof. HERMANN HELFER.

HELPER'S original name.	Type locality, collector, etc.	Number of specimens referred to by HELPER, 1938	Number of specimens present in the Herlin Museum, 1953	Material from other sources	Actual status of the material
<i>Nymphon ortmanni</i> n.sp.	Sagami Bay, 7.VII. 1904. HABERER coll.	8 ♂, 3 ♀ (fragm.)	—	LOMAN's material of " <i>N. japonicum</i> ", 1911. Topotypes of MORTENSEN's Pacific Exp.	<i>N. ortmanni</i> HELFER, 1938.
<i>N. longitarse</i> var. <i>antarctica</i> n. var.	65°59' S. - 89°33' E. 8.II.1903. Gauss station.	1 specimen.	1 immature (fragmentary)	—	<i>N. frigidum</i> HODGSON, 1907.
<i>Pentanympyon antarcticum</i> var. <i>gaussi</i> n. var.	do. (but 7.II.1903)	1 specimen (damaged)	1 leg.	—	?
<i>Heteronympyon kempfi</i> var. <i>dimorpha</i> n. var.	do.	1 ♀, damaged.	1 flabby, damaged specimen (sex uncertain)	—	<i>H. exiguum</i> (HODGSON 1927)
<i>Precidella gibber</i> n.g., n.sp.	Luderitz Bay, 18.XII.1903.	1 ♀	1 post-larval stage.	—	unidentifiable young Pallenid.
<i>Pycnosoma batangense</i> n.sp.	Gr. Batanga, Cameroons. LEDERMANN, collector.	1 ♀	1 ♀ (adult)	—	<i>Anoplodactylus batangense</i> (HELPER, 1938).
<i>Peritrachia pycnosoma</i> n.g., n.sp.	Kobe, Japan, 1912.	1 ♀	1 ♀	1 ♂, 4 ♀, from Misaki. (MORTENSEN's Pacific Exp.)	<i>Anoplodactylus pycnosoma</i> (HELPER, 1938).
<i>Spicularia discoidea</i> n.g., n.sp.	78°40' N. - 21°31' E. (Spitzbergen), 60 m. ROEMER & SCHAUBINN, collectors.	1 ♀	—	very common juvenile of <i>Pseudoboreal-arctic pallene circularis</i> species. (GOODSIR, 1842).	
<i>Kyphomia setacea</i> n.g., n.sp.	35°19' S. - 20°12' E. (Agulhas Bank), 126 m. Deutsche Tiefsee, Exp. Sta. 109.	1 ♀, 1 ♂	—	—	<i>Ammothella setacea</i> (HELPER, 1935).
<i>Ainigma ornatum</i> n.g., n.sp.	do. (1938)	2 ♀, 1 ♂	2 ♀, 1 ♂ (syntypes)	—	<i>Ascorhynchus ornatum</i> (HELPER, 1938).

LOMAN, 1911, described among the Pycnogonida collected by HABERER and DOFLEIN in Japanese waters, *N. japonicum* ORTMANN, from Sagami Bay. Of this material 2 specimens were preserved in the Zoological Museum, Amsterdam, which proved to belong to the species described by HELFER. It is even very probable that LOMAN's specimens and HELFER's originate from the same sample, collected by HABERER, 1904, in Sagami Bay, between Ito and the Isle of Hatsushima.

As HELFER's types no longer exist, I propose to regard LOMAN's material as neotypes. The neo-holotype, a larvigerous male, together with a neo-paratype (a female), are in the Zoological Museum, Amsterdam (number Z.M.A. Pa. 1070).

Several specimens of this species also were captured by Dr. TH. MORTENSEN in different Japanese localities. A detailed description of the species will be included in "Papers from Dr. Mortensen's Pacific Expedition". Suffice it at present, to state that *N. ortmanni* is close to *N. japonicum* as redescribed by HEDGPETH, 1949, pp. 249—250, fig. 20a—e, but differs from that species in the short auxiliaries, the claw, which is more than half as long as the propodus, and the smaller size. The length of the tarsus and the setation of the legs are subject to considerable variation.

Nymphon frigidum HODGSON, 1907.

N. frigidum HODGSON, 1907, pp. 25—26, Pl. III fig. 4, Pl. X fig. 10; GORDON, 1944, p. 21 (in key).

N. longitarse var. *antarctica* HELFER, 1938, pp. 167—168, fig. 2a, c, e.

HELPER's type of the variety *antarcticum* is an immature specimen. The animal has not a single complete leg. Two loose legs were present in the bottle: HELFER described them as belonging to the trunk. Both trunk and legs agree in nearly every particular with HODGSON's *N. frigidum*, likewise founded on an immature specimen. The only difference found is in the tarsus, which is slightly longer than the propodus, instead of $\frac{2}{3}$ of the length of that joint.

The species is certainly very close to *N. hiemale* and *N. gracillimum*, from which it differs in the longer claw of the leg ($\frac{3}{5}$ as long as the propodus), the shorter 4th palp joint (half as long as the 5th), and the smaller number of oviger spines and denticulations on the chelae.

As the type of HELFER's variety is immature, its exact status cannot be ascertained. At any rate, it is not an antarctic variety of *N. longitarse*, as HELFER suggested. It differs in so many characters from *N. longitarse* (e.g., in the length of the tarsus, in the length of the claw and of the auxiliaries, in the strong spines on the prododal sole, in the quite different chelae, etc.) that it cannot be regarded as a variety of that species, but has to be considered as an independent species. HELFER's proposed varietal trival name *antarctica* (or, with the correct ending, *antarcticum*) cannot be raised to a specific trival name, since it was preoccupied twice before in the genus *Nymphon* (viz., by MIERS, 1879, and by PFEFFER, 1889). Happily it falls as a synonym since HELFER's variety is likely to be identical with *N. frigidum* HODGSON, in spite of the difference in length of the tarsal joint, which I do not consider of taxonomic importance in this immature material.

Pentanympyon antarcticum var. *gaussi* HELFER, 1938.

Pentanympyon antarcticum var. *gaussi* HELFER, 1938, pp. 169—170, fig. 3a—c.

Since only a single leg of this species remains in the Berlin Museum (the rest of the animal being lost, probably during world-war II), I cannot ascertain the status of this variety.

If, however, the terminal oviger claw really is lacking, as HELFER pretends, the variety not only deserves specific rank, but even may be regarded as the type of a new genus. Nevertheless, it is more probable that the terminal claw was torn off by accident and that the specimen does not even deserve a varietal name.

Heteronympyon exiguum (HODGSON, 1927). Fig. 2a—e.

*H. kemp*i var. *dimorpha* HELFER, 1938, pp. 171—172, fig. 4a—c; MARCUS, 1940, p. 21; GORDON, 1944, p. 35.

The type-material consists of a single specimen, of doubtful sex, in a flabby condition, lacking a part of the left palp and having only 1 complete leg. Evidently it was studied some time under the pressure of a cover-glass, the specimen now is as flat as a sheet of paper.

I cannot find any significant difference between HELFER's variety and *H. exiguum* (HODGSON, 1927) (= *H. kemp*i GORDON, 1932). The chelifore scape is not 2-jointed, as drawn by HELFER. On the place where

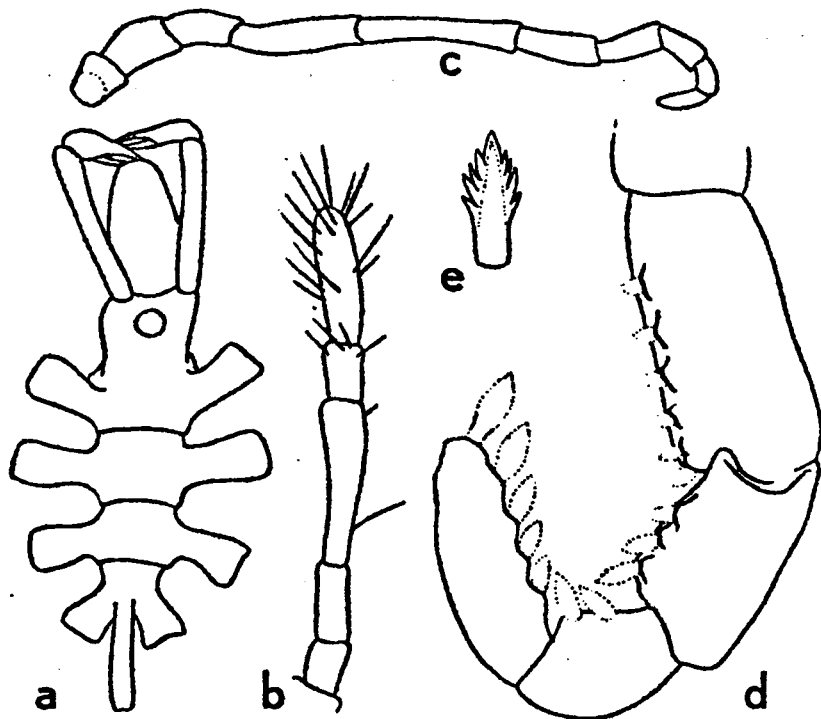


Fig. 2. *Heteronympyon kemp*i var. *dimorpha* HELFER, 1938; holotype. a. dorsal view, legs omitted; b. palp; c. oviger; d. distal joints of the oviger; e. compound oviger spine.

HELPER figured the suture, the scape segment has been folded and collapsed, suggesting to be 2-jointed. The distal palp joints are slightly more hairy than GORDON's description of *H. kempfi* (1932, 1938) indicates, but this character has no taxonomic importance.

The ovigers agree with GORDON's description. The errors in HELPER's description, regarding the length of the 5th and 6th oviger joint in *H. kempfi*, were corrected already by GORDON, 1944. The number of compound spines amounts to 6 : 3 : 2 : 5. The chelae are in a bad, flabby condition. At least 11 denticulations are to be seen on the immovable finger, and 12 on the movable one, but perhaps some more are present.

The lack of distinct prominences on coxa 2 and 3 cannot be controlled, since the legs are too flattened for showing this character.

Procidella gibber HELPER, 1938, nomen dubium. Fig. 3a—e.

Procidella gibber HELPER, 1938, pp. 172—174. fig. 5; STOCK, 1952a. pp. 4—5.

My opinion (1952a) about this irritating genus, expressed long before I had seen HELPER's type, proved to be quite correct. The holotype, and only known specimen of the species, is a juvenile in a post-larval stage.

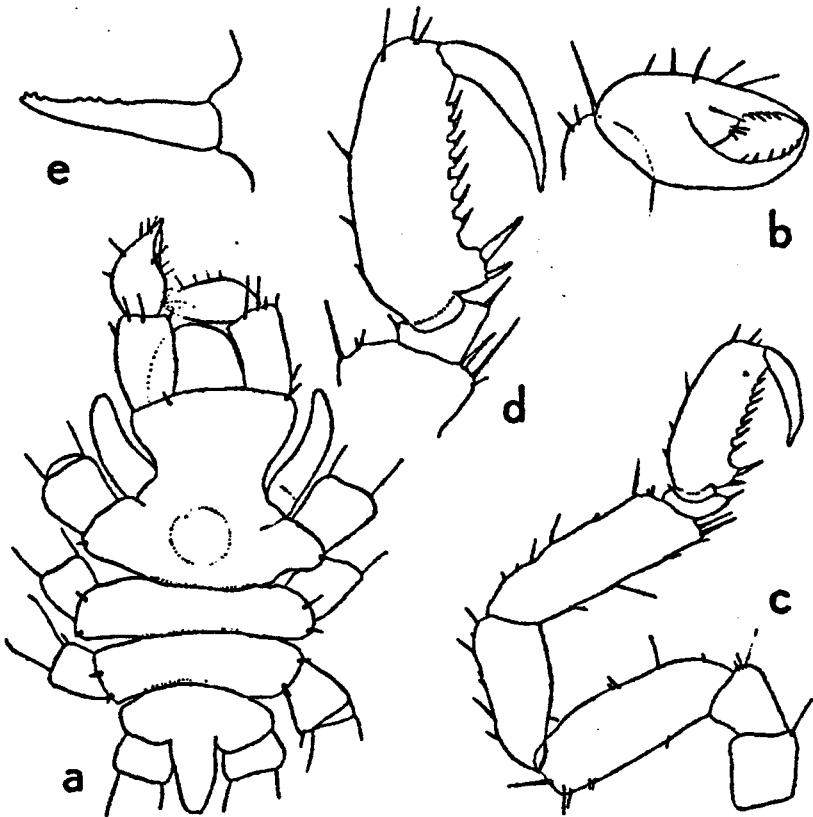


Fig. 3. *Procidella gibber* HELPER, 1938: holotype.
a. dorsal view; b. chela; c. second leg; d. distal joints of second leg; e. largest spine of propodal heel, highly magnified.

The ovigers are still unjointed and the 4th pair of legs still incompletely segmented. HELFER erroneously described the undeveloped oviger as the palp. Actually palpi are lacking.

I draw special attention to the structure of the propodus. The heel bears two spines, the distal one being the largest. The distal margin of both these spines is distinctly crenulated. The sole is armed with about 7 spinules, each of which is implanted on a protuberance.

The remaining characters are to be seen in my figures and in HELFER's original description, which is further rather correct.

The revision of the holotype has not shed much light upon the taxonomic status of the genus *Procidella* HELFER. As I showed in my 1952b paper, the shape of the trunk of Pallenids changes considerably during the growth, even when the animals have completely developed legs and ovigers. It is, therefore, quite impossible to recognize the affinities of this post-larval stage. It agrees in many characters with *Pallenoides magnicollis* STOCK, 1951, likewise from Lüderitz Bay, but it differs from it in the propodal armature.

Dr. K. H. BARNARD, of the South African Museum, drew my attention to the fact that HELFER's holotype was collected during the time that Dr. LEONARD SCHULTZE was at Lüderitz Bay. The Pycnogonida collected on SCHULTZE's trip were treated by HODGSON, 1910 (a paper evidently overlooked by HELFER, since most species described in that paper were omitted by him from the systematic part in Bronn's Klassen und Ordnungen, 1935). HODGSON, 1910 described a new genus, *Metapallene*, containing but for the genotype *Pallene languida* HOEK, a new species from Lüderitz Bay, *M. dubitans*. HELFER's material, collected at the same time and by the same collector as *Metapallene dubitans* HODGSON, agrees in most details with that species, and may be identical with it.

The best thing to do, however, appears me to ignore HELFER's *Procidella gibber*, and to consider it as a *nomen dubium*, since the species is based on an undeveloped, young animal.

Anoplodactylus batangense (HELFER, 1938). Fig. 4a—e.

Pycnosoma batangense HELFER, 1938, pp. 174—176, fig. 6a—c; MARCUS, 1940, pp. 47—48.

HELFER's figures of this species are very poor. The trunk shows dorsally only indistinct intersegmental lines. Ventrally similar lines are much more distinct. I cannot find the nodosities on the skin, which HELFER mentions in his description ("Die Haut ist rauh von den zahlreichen, sehr kleinen, den Körper bedeckenden Höckern (Warzen)"). The lateral processes are about as long as wide, separated by slightly more than half their diameter. Dorso-distal surface of the crurigers smooth. Ocular tubercle cylindrical, with a tricuspidate tip. Eyes indistinct or absent. Abdomen rather short, directed forward now, as result of a previous treatment with a cover-glass. Proboscis slender, styliiform, not pointed downward in this flattened specimen. Chelifore scape 1-jointed (not 2-jointed as stated by HELFER). Legs rather spinose. Tibia 2 about $\frac{4}{5}$ as long as tibia 1, and distinctly shorter than the propodus. Propodus with 1 strong basal spine, and 3 to 4 smaller ones on the heel. Propodal sole with 5 flat spines of curious shape, and 1 distal seta. Claw laterally with 3 to 6 small denticulations, but without auxiliaries.

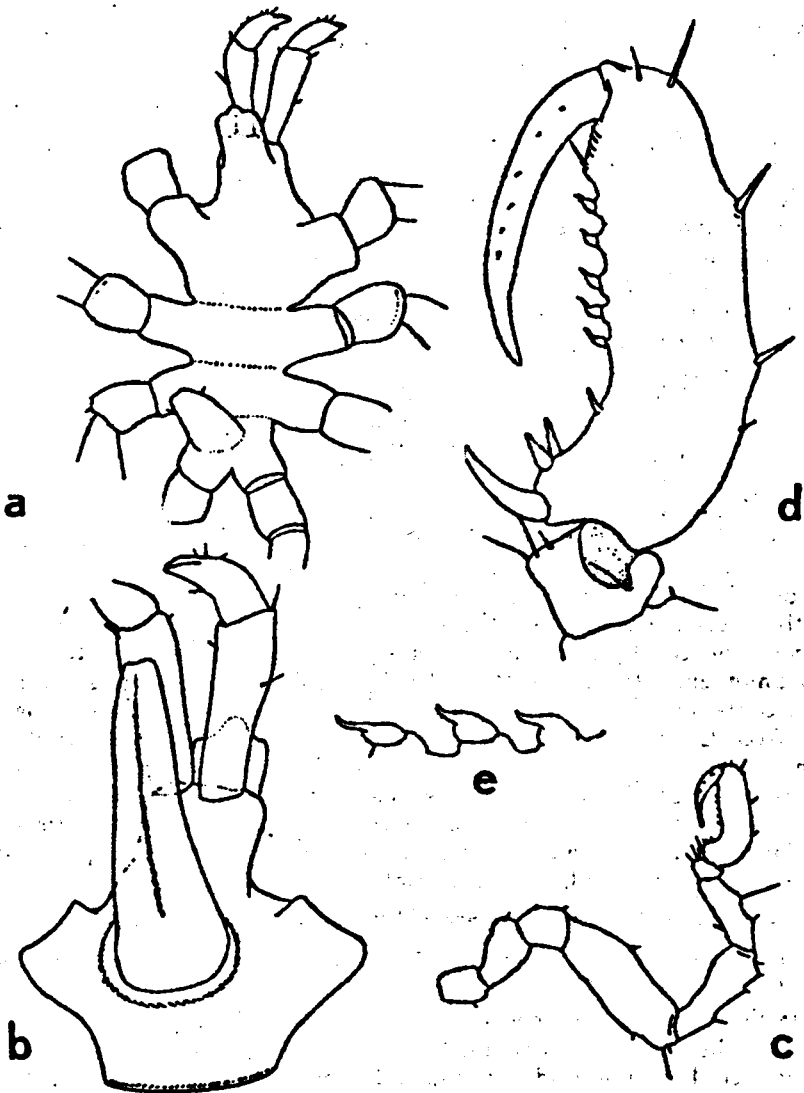


Fig. 4. *Pycnosoma batangense* HELPER, 1938; holotype, ♀.
a. dorsal view; b. cephalic segment in ventral view; c. second leg; d. distal joints of second leg; e. spines of the propodal sole, highly magnified.

This species proves to belong to *Anoplodactylus*, instead of to *Pycnosoma*. It is readily distinguished from most other species of *Anoplodactylus* by the styliiform proboscis. It is certainly very close to, if not identical with, *A. stylirostris* HEDGPETH, 1948, or *A. tenuirostris* LEBOUR, 1948, the former from the Florida coast and the Bahama's, the latter from Bermuda, though I would hesitate to synonymize without having seen material from that part of the Atlantic.

The type locality of *A. batangense* is in the Cameroons (and not on the coast of Chile, as HEDGPETH, 1947, p. 38, states), and it would not

be surprising from zoogeographical point of view, if the species proves to be synonymous with a form from the Western Atlantic or the Caribbean.

The type locality, "Grosz Batanga", is South of Kribi, between the mouth of the Kampo and of the Njong.

Anoplodactylus pycnosoma (HELPER, 1938). Fig. 5a—f.
Peritrachia pycnosoma HELPER, 1938, pp. 176—177, fig. 7.

The type is a female, clearly belonging to the genus *Anoplodactylus*. For reasons to be stated elsewhere, I doubt the validity of the subgenus *Halosoma*. If, however the subgenus would prove to be valid, the present species would belong to it.

The species is almost identical with *A. robustus* (DOHRN, 1881), which is widely distributed in the Mediterranean and the Atlantic. HELPER's type originates from Kobe, Japan. It agrees with Atlantic material in the shape of trunk and proboscis, in the short abdomen, and in the robust legs. Considering only HELPER's holotype, a female, one would be inclined to regard it as synonymous with *A. robustus*. Fortunately, MORTENSEN's Pacific Expedition found the male of this species. From this we know that the only noteworthy difference between *A. robustus* and *A. pycnosoma* is found in the oviger, which is devoid of a sixth joint in Atlantic material. The sixth oviger joint is small but distinct in the Japanese species.

A. pycnosoma will be described fully in the Papers from Dr. Mortensen's Pacific Expedition. The figures of this species included in the present paper were not drawn after HELPER's type, but after specimens taken by TH. MORTENSEN at low tide near Misaki.

Pseudopallene circularis (GOODSIR, 1848).

Pseudopallene circularis. HEDGPETH, 1948, p. 206, fig. 19 (literature!).
Spicularia discoidea HELPER, 1938, pp. 177—179, fig. 8.
Halosoma discoideum, MARCUS, 1940, p. 46.

Though I have not seen the type of this species, I am completely sure that it is a juvenile of *Pseudopallene circularis*, a common Boreal Arctic species. HELPER's type locality was 78° 40' N., 21° 31' E. (Spitzbergen).

Ammothella setacea (HELPER, 1938).

Kyphomia setacea HELPER, 1938, pp. 179—181, fig. 9a—c.

The types were lost, but the discovery of a very closely related species in the East Indian Archipelago has convinced me, that HELPER's genus *Kyphomia* is synonymous with *Ammothella*.

Ascorhynchus ornatum (HELPER, 1938). Fig. 6a—g.

Ainigma ornatum HELPER, 1938, pp. 181—183, fig. 10a—f.

Three syntypes are present, 2 females and 1 male. This is a highly characteristic animal, easily recognizable, even without description. In general, HELPER's descriptions and figures of this form are rather good.

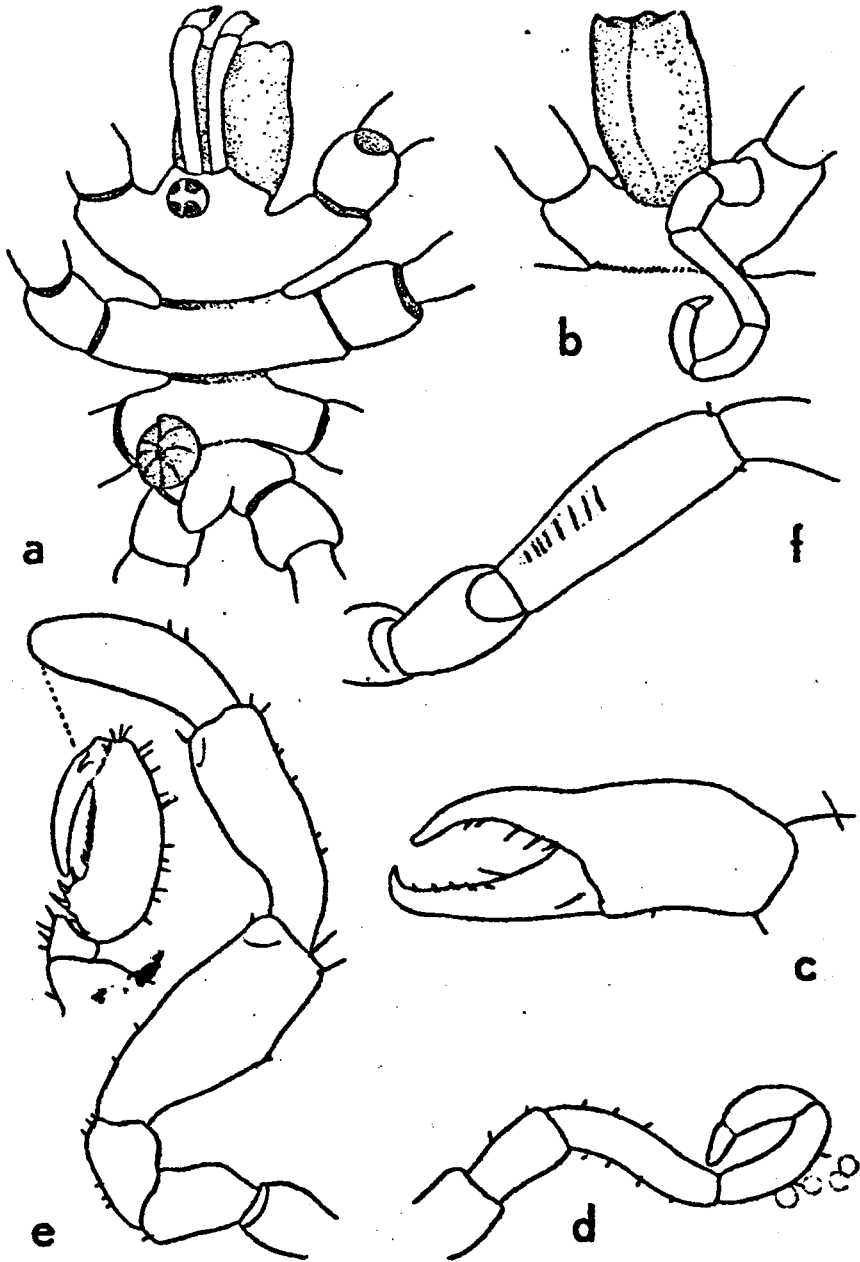


Fig. 5. *Peritrachia pycnosoma* HELPER, 1938 (from material of Dr. MORTENSEN'S Pacific Expedition).
a. dorsal view of male; b. cephalic segment of male. In ventral view; c. chela of female; d. male oviger; e. third leg of male; f. dorsal view of the femur (male) to show the openings of the cement gland.

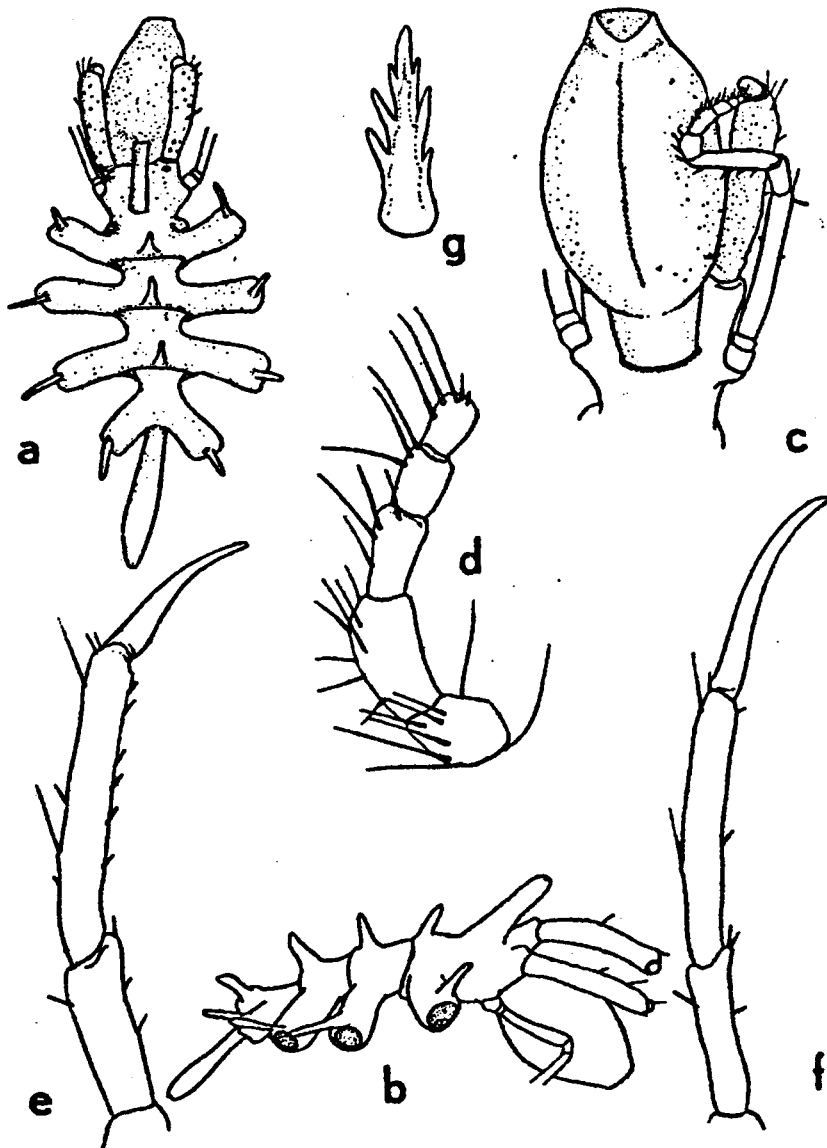


Fig. 6. *Atrigma ornatum* HELPER, 1938; syntypes.
a. dorsal view of female; b. female in lateral view; c. anterior part of the body, in ventral view (female); d. tip of palp (female); e. distal joints of fourth leg, female; f. distal joints of third leg, male.

Only the following points are in disagreement with, or to be added to, his text.

The palpi are 10-jointed, instead of 9-jointed. There is a small second joint, evidently overlooked by HELPER. The oviger spines are coarsely denticulated, with about 3 pairs of serrations. The spine formula in the female is 4 : 2 : 1 : 3. The terminal oviger claw is smooth.

I doubt, whether HELPER is right in assuming that the tubercle at the

distal end of the femur in the male bears the opening of the cement gland.

The propodal sole bears a few irregular spinules only. The length of the terminal claw is slightly variable, usually about $\frac{5}{6}$ of the propodus.

Though the proboscis is not of the typical *Ascorhynchus* shape, I am sure that *Ainigma* is identical with *Ascorhynchus*. All structural details (cheliformes, palps, ovigers, legs) agree with *Ascorhynchus*, and even the proboscis can be derived from the typical tripartite pattern. The basal part is well-developed, the distal part, however, is short, obtuse, and not sharply defined from the middle part of the proboscis.

There are some other slight indications, that the animals in question belong to *Ascorhynchus*. E.g., the tubercles on dorsum and lateral processes are found again in several other species of *Ascorhynchus*; the segmentation of the trunk (each of the anterior segments overlaps the following one); the abdomen is implanted and directed ventrally, like in most, if not all, other species of the genus *Ascorhynchus*.

Moreover it may be borne in mind, that several species of *Ascorhynchus* have aberrantly shaped probosces, e.g., *A. arenarium* (DOHRN), *A. simile* FAGE, and *A. orthorhynchus* HOEK.

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