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Revision of the European representatives of the genus *Callipallene* Flynn, 1929*)

(Pycnogonida)

by

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CONTENTS:

I. INTRODUCTION.

It will be difficult to imagine a more variable group of species than the European representatives of the genus *Callipallene* FLYNN, 1929. He, who wants to identify the European species and sub-species of the genus *Callipallene*, may easily get stuck, for if he does not dispose of enough material for comparison, he will have great trouble in distinguishing them. Yet, though difficult to define, certain differences do exist between the forms.

It must be pointed out that non-adult specimens are almost unidentifiable. With the aid of our drawings and descriptions, however, it will be possible to identify full-grown females and ovigerous males.

I tried to collect as many references as possible on the species and subspecies discussed in this paper. Nevertheless I may have overlooked some. Of course it is impossible to controll the identifications of the different authors, unless the species was exactly pictured.

*) Received October 17, 1951.

II. History of the genus.

The genus *Pallene* was established as early as 1837 by H. Johnston. Johnston's descriptions and figures are very clear, in comparison with those of his contemporaries. A ninety-odd years later, Flynn pointed to the fact that the name *Pallene* had been preoccupied, and he replaced it by *Callipallene*.

Johnston knew only one species, referable to *Pallene*, viz. *P. brevirostris*, which has to be considered the genotype. Up to 1881 (the year in which Dohrn's monograph on the Pantopods of Naples was published), several species have been described under *Pallene*, now considered as belonging to half a dozen related genera, which form the family *Pallenidae*. Examples of such species are: *Pallene circularis* Goodsir, *P. intermedia* Kroyer, *P. chiragra* M. Milne Edwards, *P. lappa* Böhm, *P. pygmaea* Hodge, *P. attenuata* Hodge and several of Hoek's Challenger Pallenids.

Curiously enough two European species, clearly belonging to *Pallene* s.s. were described, in that time before 1881, under quite different genera, viz. *Phoxichilidium cheliferum* Claparède and *Phoxichilus spinosus* Quatrefages (non auct. plur.). Possibly the former is identical our present *Callipallene spectrum* and the latter with *C. brevirostris*. The original descriptions and figures, however, are too incomplete, or even erroneous, for a certain identification (c.f. the chelate oviger in the species of Claparède!)

A. Dohrn, 1881, was the first to recognize the characters of value for distinguishing the species in the genus. Four new species were added and described in detail.

Finally G. O. Sars, 1888, described a new species, *Pallene producta*, from Norwegian waters.

Hence 6 certain and 2 doubtful species were described from European waters. I have seen specimens of all certain species. They proved to be clearly distinguishable. To my opinion, however, several of the so-called species should not preserve their specific rank. They may be considered as subspecies, as the following description will show.

Bouvier, 1923, divided the 6 European species of the genus into 2 forms: one with a short, and one with a long neck. This unnatural division cannot be held. The same author, followed by Corrêa (1948), divides the species according the presence or absence of an intersegmental line between segment 3 and 4 of the body. This character is dependent on age, consequently cannot be used.

Corrêa, 1948, drew up a key to the genus, including all known species.

III. List of and key to the European species.

The species and subspecies of *Callipallene*, present in European waters, should be named as follows:

Callipallene phantoma phantoma (Dohrn, 1881)
C. phantoma crinita subspec. nov.
C. brevirostris brevirostris (Johnston, 1837)
C. brevirostris producta (G. O. Sars, 1888)
C. emaciata emaciata (Dohrn, 1881)
C. emaciata tiberi (Dohrn, 1881)
C. emaciata spectrum (Dohrn, 1881)

Together 3 species and 7 subspecies; the three species are keyed as follows:

*) Sole of propodus straight; auxiliary claws at most half as long as the principal claw, usually less C. phantoma (page 3)

**) Sole of propodus feebly curved; curvature most distinct on the half of the length of the propodal joint; auxiliary claws from 2/3 to 9/10 as long as the principal claw. C. brevirostris (page 5)

***) Sole of propodus strongly curved; auxiliary claws about half as long as the principal claw, C. emaciata (page 8)

IV. Growth changes.

The aspect of all species discussed in this paper, changes as they grow older. In older specimens the suture between the third and fourth body segment becomes more distinct. In young specimens the neck is invariably shorter (sometimes much shorter, cf. fig. 25, 26, 27) than in adult ones. A juvenile specimen of *Callipallene brevirostris brevirostris* for example resembles — as far as the shape of the neck is concerned — *C. emaciata emaciata*! The neck of juveniles of *C. brevirostris producta* agrees with the neck of adult specimens of *C. emaciata spectrum*. The length of the auxiliary claw is not subjected to variation with the age (with the exeption of the curious alternations of this length in *C. phantoma*, see at that place).

V. Constant characters in adult specimens.

A very reliable and constant character in adult specimens is the shape of the neck. The neck is always thickened in its distal part; this thickened portion has been called „crop" in the remaining part of this paper. This crop may either be outlined distinctly from the rest of the neck or it may form a gradual transition to it. This may also be the case with the implantation of the ovigers.

The curvature and armature of the propodus, the length of the claw and of the auxiliary claw are important characters.

Usually, the diameter between and the length of the lateral processes are characteristic. The relative length of the joints of the legs to a certain extent forms a useful additional character.

VI. Description of the species and subspecies.

a) Callipallene phantoma (Dohrn, 1881)

This is the most distinctly characterized species of all those discussed here. It can be separated — at any age — from the other species by its perfectly straight propodal sole, especially of the first leg. The neck is unusually long and slender, clavated the crop is rather distinctly set off against the rest of neck. The lateral processes are slender, much longer than wide; they are separated by a large space.

The auxiliary claws show a very remarkable process of growth. Even in ovigerous males and in females with eggs, the auxiliary claws on the anterior legs are not fully developed. The development of these claws starts at the fourth pair of legs, and in adult specimens the auxiliaries of these legs are usually completely developed. But on the third pair of legs they are much shorter, on the second pair shorter again, on the first pair of legs nearly undeveloped.

In completely full-grown specimens the auxiliaries on all legs are of the same length. Such adult specimens form 5 % only of a population. In the remaining 95 %, the auxiliary claw is progressively longer on the posterior legs; 4th leg $^2/_5$ as long as the principal claw, 3rd leg $^1/_4$ as long, 2nd leg $^1/_6$ as long, 1rst leg very short. These differences in length are to be seen clearly on DOHRN's plate XIV, fig. 1 (1881) and in the present paper (fig. 13, 14, 20, 23, 24).

In completely full-grown specimens, a rather distinct suture separates the 3rd and 4th body segment.

SUBSPECIES OF *Callipallene phantoma*.

The European fauna comprises two closely related subspecies:

C. phantoma pantoma (DOHRN, 1881) (fig. 12, 13, 14, 20, 25, 26, 27)

Pallene phantoma DOHRN, 1881 (part.), p. 196—197, Taf. XIV, fig. 1—9; CARUS, 1885, p. 287; LOMAN, 1912, p. 9 (according to BOUVIER, 1917, LOMAN's specimens belong to C. *brevirostris producta*); BOUVIER, 1923b, p. 34, 37, fig. 33; ? SCHIMKEWITSCH, 1930, p. 253—257, fig. 60—61 (this record may be referable to C. *brevirostris producta*); GILTAY, 1934 (part.), p. 1—5, fig. 1; HELFER, 1935, p. 268.

Pallene phantopa NORMAN, 1908, p. 205.

Callipallene brevirostris (non JOHNSTON) OHSHIMA, 1942, p. 257—262, fig. 1—3; HEDGPETH, 1947, p. 25—27, fig. 13a.

Callipallene phantoma HEDGPETH, 1948 (part.), p. 204, fig. 18 b; CORRÊA, 1948, p. 6, 8.

This subspecies has the characters of the species; its legs and chelae are scarcely covered with unfeathered hairs. The auxiliary claws bear neither hairs nor spines.

DISTRIBUTION: Naples (type locality); Villefranche sur Mer (GILTAY, 1934; I re-examined this specimen; it is a completely adult female); Venice (Museo Civico di Storia Naturale); Black Sea? (SCHIMKEWITSCH, 1930); Bird Key, Fla (HEDGPETH, 1948); Sasebo, Japan (OHSHIMA, 1942).

The occurrence of this species in the Mediterranean, the Florida coast region and Japan is an interesting zoogeographical problem. A few other species more are known, both from the Japanese and Atlantic coasts, viz. *Achelia echinata* and *Ammothella bi-unguiculata*, while the Japanese *Pycnogonum benokianum Ohshima*, is very closely related with *P. pusillum* DOHRN, the latter being known from Naples and Santa Maria Bay.

C. phantoma crinita subsp. nov. (figs. 21, 22, 23, 24)

Pallene phantoma DOHRN, 1881 (part.).

Callipallene phantoma CORRÊA, 1948 (part.), p. 5.

Closely resembles the typical form. Legs, especially the femur and tibiae, however, covered with long, pinnate hairs (fig. 22). Moreover, the auxiliary claw of the last pair of legs is distinctly "pectinate", it bears 2 small spines near its base (fig. 24). The pectinate structure of these claws has already been described by DOHRN. GILTAY, 1934, denied this character, but my observations show that DOHRN was right. The structure is to be seen only on the last pair of legs.

This subspecies is chiefly characterized by its much more hairy appearance (pinnate hairs on the legs, instead of short simple ones, hairs on the auxiliaries, chelifores more hairy).

The holotype of this species, a female with eggs in her femoral joints, is preserved in the Museo Civico di Storia Naturale, Venice.

DISTRIBUTION: Naples (DOHRN, 1881); Lagoon of Venice (type locality).

b) Callipallene brevirostris (JOHNSTON, 1837)

The combination of a long auxiliary claw and a feebly curved sole of the propodus is the distinguishing character of this species. Even juvenile specimens are identifiable by the length of the auxiliaries, which are from $^2/_3$ to $^9/_{10}$ as long as the principal claw. The species should be divided into two subspecies, together forming quite a natural group. The literature on *C. brevirostris* is large: it is difficult, however, to decide wether the statements concerning this species are right.

SUBSPECIES OF *Callipallene brevirostris*.

C. brevirostris brevirostris (JOHNSTON, 1837) (fig. 5, 6)

Pallene brevirostris JOHNSTON, 1837, p. 380, Pl. 12, fig. 7—8; MILNE EDWARDS, 1840, p. 534—535; GOSSE, 1885, p. 120, fig. 192; FORBES, 1859; GRUBE, 1869, p. 118—119, p. 125, Taf. I, fig. 5, 5a—c; HOEK, 1877, p. 237—240, Taf. XV, fig. 4—7, Taf. XVI, fig. 14, 21, 22; HOEK, 1881, p. 511—512, pl. XXVI, fig. 17, pl. XXIX, fig. 36; HANSEN, 1884a, Tab. VII, fig. 20. HANSEN, 1884b, p. 649; HALHED, 1886, p. 230; SARS, 1888, no. 6; TOPSENT, 1890, p. 62; SARS, 1891, no. 6, p. 32—36, Pl. III, fig. 1a—h; MÖBIUS, 1893, p. 86; HERDMAN, 1896, p. 442; MÖBIUS, 1901, p. 50; d'ARCY THOMPSON, 1901, p. 54; COLE, 1901, p. 195—207; HALLEZ, 1904, p. L; Plymouth Marina Fauna, 1904, 1st ed.; CARPENTER, 1905, p. 3; NORMAN, 1908 (part.), p. 204—205; SCHIMKEWITSCH, 1908, p. 430 (this species?); d'ARCY THOMPSON, 1909 (part.), p. 541, 542, fig. 275A, 285; TESCH, 1910, p. 51, 55—56; HODGSON, 1910; LOMAN, 1912 (part.), p. 8; SUMMER, OSBURN & COLE, 1913, p. 677; WIRÉN, 1918, p. 42; BOUVIER, 1923a, (part.), p. 119; BOUVIER, 1923b, p. 34—36, fig. 28; FISH, 1925, p. 161; MEISENHEIMER, 1925, p. 2, 5; MEISENHEIMER, 1927, p. 14; LOMAN, 1928, p. 79—80, fig. 7; GILTAY, 1928, p. 211—213, fig. 8; LOSINA-LOSINSSKIJ, 1930; SCHIMKEWITSCH, 1930 (part.), 245—253, fig. 58—59 (this record may be referable to *C. emaciata spectrum*); Plymouth Marine Fauna, 1931, 2nd ed.; SCHLOTTKE, 1932, p. 1—10; STEPHENSEN, 1933, p. 33—35, fig. 10 (5); HELFER, 1935, p. 268, fig. 130B, 178; HELFER, 1936, p. 2 (map); STEPHENSEN, 1936a, p. 24; STEPHENSEN, 1936b, p. 34—36, fig. 7: 1—6; FARAGGIANA, 1940 (part.), p. 2—4; LEBOUR, 1945, p. 144 (according to LEBOUR, p. 144, CRAWSHAY — 1912 — found this species 46 miles S.W. of the Eddystone, in 49 fm. This record is to be regarded a mistake — not the only one in Lebour's paper. The cited paper of Crawshay does not give any data about Pallenids).

Pallene sp. VERRILL, 1873, p. 415).

Pallene empusa WILSON, 1878, p. 9, pl. 3, fig. 2a—g; WILSON, 1880, p. 476—477, pl. 2, fig. 5—7; RATHBUN, 1881, p. 118; MORGAN, 1891, p. 8—22.

?*Phoxichilus spinosus* QUATREFAGES non auct. plur, 1845, p. 41, pl. I, fig. 2, 2a. pl. 2, fig. 1.

Callipallene brevirostris HEDGPETH, 1948, p. 202—203 ,fig. 18a; CORRÊA, 1948, p. 6—8; STOCK, 1949, p. 3, fig. 4.

non *Callipallene brevirostris* OHSHIMA, 1942 and HEDGEPETH, 1947 (cf. references *Callipallene phantoma phantoma*).

Some of these records should be accepted with reservations; they may be due to confusion with another (sub)species.

C. brevirostris brevirostris can be distinguished by the shape of its neck; the very distinctly developed crop, which is markedly set off against the remaining part of the neck. Lateral processes rather short, shorter than the diameter of the corresponding body segment. Space between the lateral processes 1,5 times as large as the diameter of the processes. Last body segment, even in adult specimens, indistinctly separated from the third. Implantation of the ovigers distinctly set off against the neck.

DISTRIBUTION : In shallow water off the European coast, from Norway to Portugal. Eastern coast of North America from Bay of Fundy (?, cf HEDGPETH, 1948) to Tampa Bay, Fla. (HEDGPETH, 1948). The records from the Mediterranean (Monaco, LOMAN, 1912 ; Gulf of Genoa, FARAGGIANA, 1940) and from the Black Sea (off the Crimea, SCHIMKEWITSCH, 1930) may be due to confusion with either *C. emaciata emaciata* or *C. emaciata spectrum*.

C. brevirostris producta (G. O. SARS, 1888) (figs. 9, 10, 11)

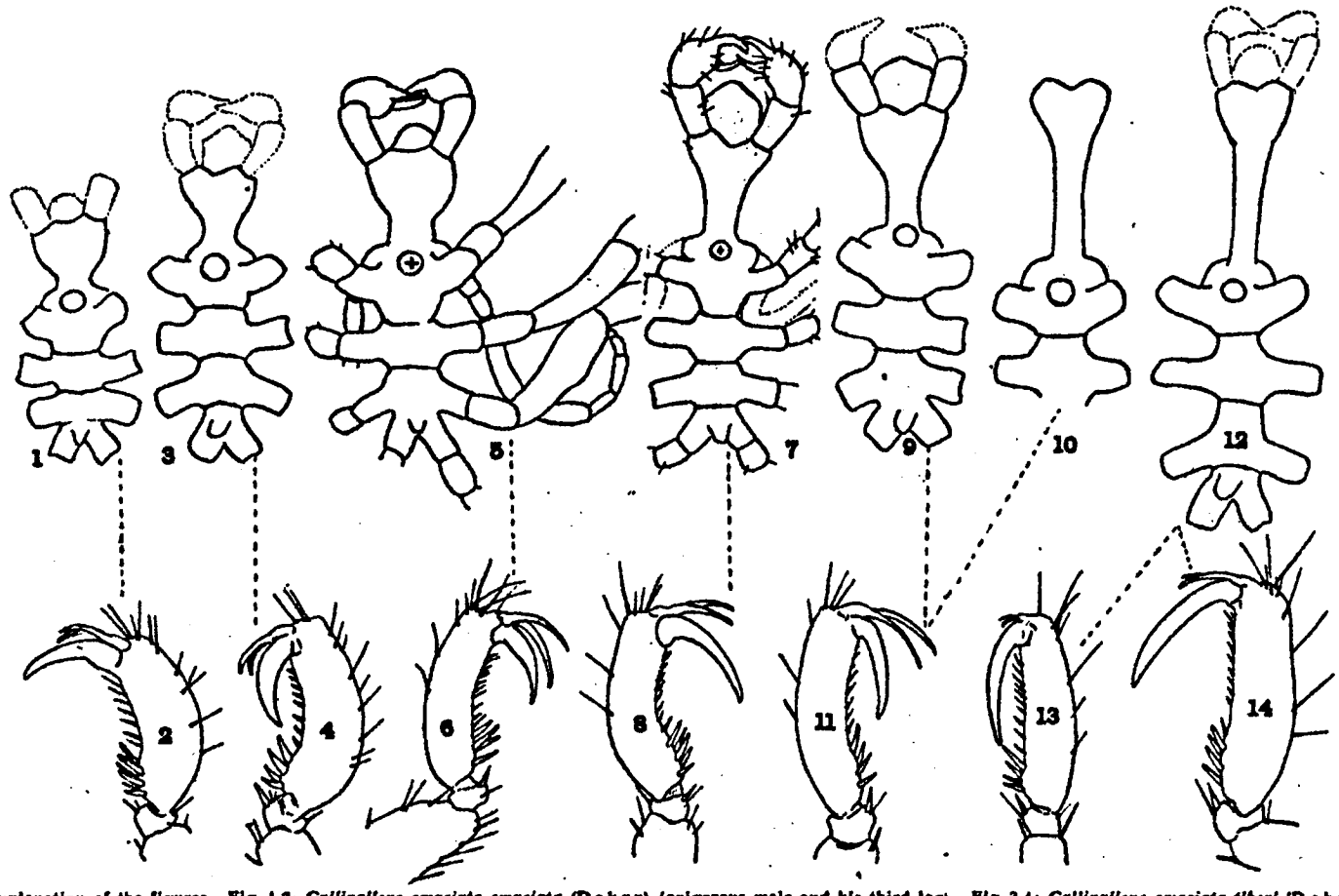
Pallene producta SARS, 1888, p. 342 ; SARS, 1891, p. 36—37, pl. III, fig. 2a—d ; CARPENTER, 1896, p. 15 ; HERDMAN, 1896, p. 442 ; MÖBIUS, 1901, p. 50 ; ? d'ARCY THOMPSON, 1909, p. 542 ; ARNDT, 1913, p. 132 ; BOUVIER, 1917, p. 25 ; WIRÉN, 1918, p. 42 ; BOUVIER, 1923b, p. 34, 36—37, fig. 32 ; MEISENHEIMER, 1935, p. 2, 5 ; MEISENHEIMER, 1927, p. 14 ; STEPHENSEN, 1933, p. 33, fig. 10 (1—4) ; HELFER, 1935, p. 268 ; STEPHENSEN, 1936a, p. 24 ; STEPHENSEN, 1936b, p. 34—36, fig. 7 : 7—8.
? *Pallene phantoma* SCHIMKEWITSCH, 1930, p. 253—257, fig. 60—61.
Pallene phantoma GILTAY, 1934 (part.), p. 1—5.
Callipallene producta CORRÊA, 1948, p. 6—8.

So far, adult specimens of this subspecies have been brought up from deep water only (except for 2 dubious records, viz. D'ARCY THOMPSON, 1909, and WIRÉN, 1918). Juveniles, however, have been found in shallow water (0—1 m) in the Lagoon of Venice. These juveniles closely resemble *C. brevirostris brevirostris* and *C. emaciata spectrum*. They differ from the former by their more slender neck (compare figs. 5 and 9) and by the crop, which is not clearly separated from the rest of the neck. From the latter they differ chiefly by the shape of the propodus and the length of the auxiliaries, whereas the crop in *C. emaciata spectrum* is even more indistinct.

Adult specimens may be confused with *C. phantoma phantoma* only. They have an exceedingly long neck, exactly as in the said subspecies. GILTAY, 1934, studied a female specimen of *Callipallene* from Villefranche sur Mer. His conclusion, based on this single specimen, that *Pallene phantoma* and *Pallene producta* are synonyms, cannot be held. I am very grateful to Dr A. CAPART, of Brussels, who kindly forwarded GILTAY's material to me for a re-examination : it proved to belong to *C. phantoma phantoma*.

The differences between *C. phantoma phantoma* and *C. brevirostris producta* may be found in the shape of the propodus (sole straight in *phantoma*, with a curvature in *producta*), in the length of the auxiliary claws, which in *producta* are at least $^2/_3$ as long as the principal claw and do not show the caudo-cranial development. The lateral processes are hardly longer than wide and their length is far below the diameter of the corresponding body segment, both characters in contrast with *C. phantoma phantoma*. I never observed specimens with the auxiliary claw as long as the principal one, as described by SARS, 1888 and 1891.

DISTRIBUTION : Western coast of Norway, from the Trondhjemfjord (ARNDT, 1913) southward to the Azores (BOUVIER, 1917); Lagoon of Venice (Museo Civico di Storia Naturale); Black Sea ? (SCHIMKEWITSCH, 1930).



Explanation of the figures. Fig. 1-2: *Callipallene emaciata emaciata* (Dohrn) (ovigerous male and his third leg). Fig. 3-4: *Callipallene emaciata tiberi* (Dohrn) (adult male and his third leg). Fig. 5-6: *Callipallene brevirostris brevirostris* (Johnst.) (adult female and her third leg). Fig. 7-8: *Callipallene emaciata spectrum* (Dohrn) (adult female and her third leg). Fig. 9-11: *Callipallene brevirostris producta* (Sars) (young female, adult male and third leg of the female). Fig. 12-14: *Callipallene phantoma phantoma* (Dohrn) (adult female, first leg of an ovigerous male, fourth leg of an adult female).

The figures 1, 2, 7 and 8 have been made from specimens of Banyuls; fig. 3, 4, 5 and 6 from specimens of the Dutch coast; fig. 9, 11, 12, 13 and 14 from specimens of Venice; fig. 10 from a specimen of the Trondhjemfjord. Figs. 1, 3, 5, 7, 9, 10 and 12: x 37,5. Figs. 2, 4, 6, 8, 11, 13 and 14: x 75.

c) Callipallene emaciata (DOHRN, 1881)

This species is characterized by its auxiliary claw, which is about half as long as the principal one, combined with a strongly curved propodal joint.

In European waters the species is represented by 3 subspecies, one of them (*C. e. spectrum*) diverging from the others in that the neck is rather slender and the propodus is not as compact as in the remaining forms.

SUBSPECIES OF *Callipallene emaciata*:

C. emaciata emaciata (DOHRN, 1881) (figs. 1, 2, 15, 16)

Pallene emaciata DOHRN, 1881, p. 193—196, Taf. XIV, fig. 10—21; CARUS, 1885, p. 287; BOUVIER, 1923a (part.), p. 119; BOUVIER, 1923b, p. 34, 36, fig. 29; GILTAY, 1929 (part.), p. 172—173, fig. 1; HELFER, 1935, p. 268.
Pallene brevirostris NORMAN, 1908 (part.), p. 204—205; d'ARCY THOMPSON, 1909 (part.), p. 541; LOMAN, 1912 (part.), p. 8; SCHIMKEWITSCH, 1930 (part.), p. 245—253; FARAGGIANA, 1940 (part.), p. 2—4.
? *Callipallene emaciata* HEDGPETH, 1948, p. 204, fig. 18f—g.
Callipallene emaciata CORRÊA, 1948, p. 5, 7, 8.

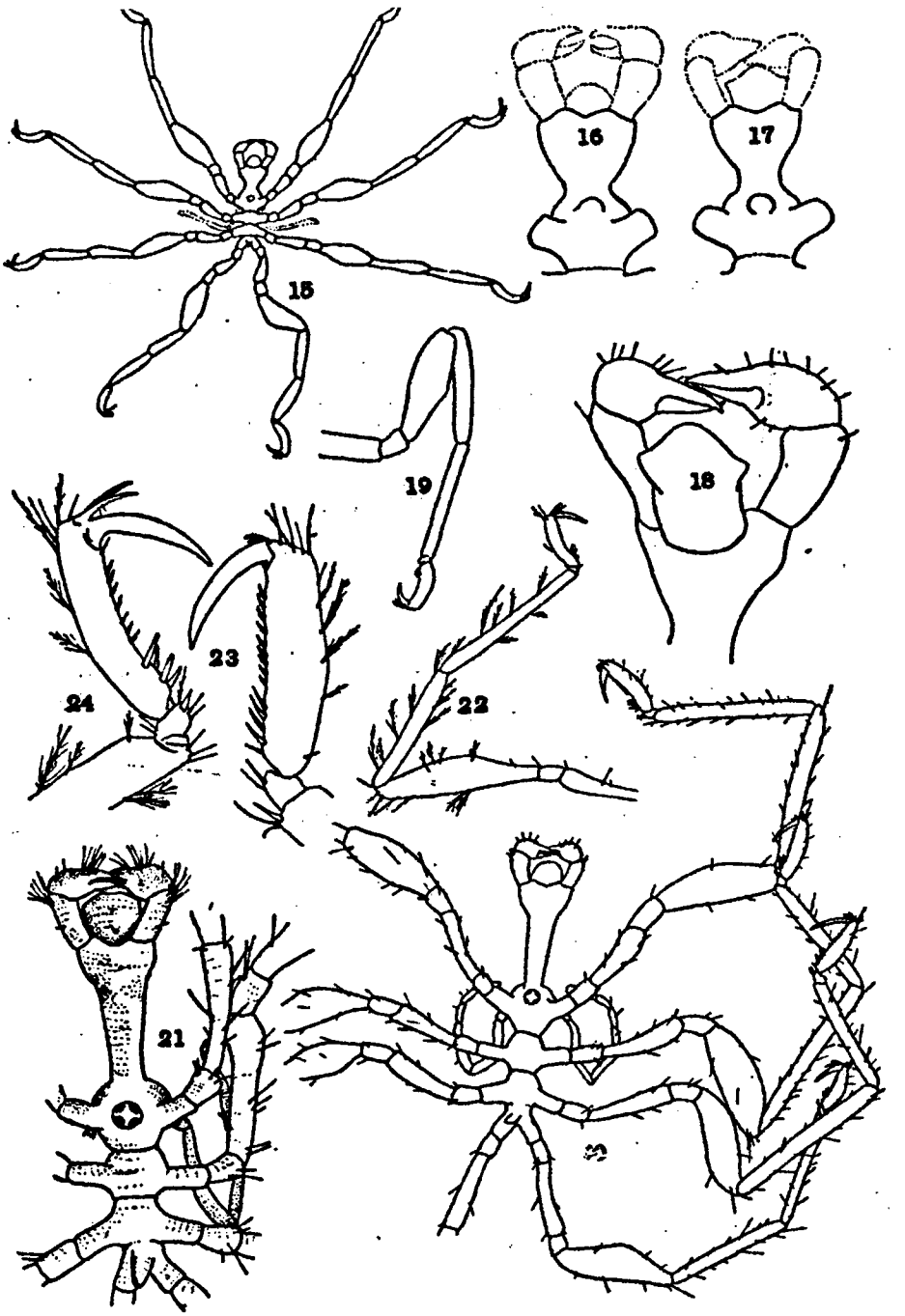
This is a distinct subspecies, which differs from the 6 other European members of the genus, by the combination of the following characters. Neck very short, crop particulary compact, not distinctly set off against the rest of the neck. The smallest diameter of the crop is situated at $^1/_3$ of the total length of the neck (fig. 1, 16). Oviger implantation not clearly set off. Proboscis short. Lateral processes separated by at most their own diameter; the length of the lateral processes is far inferior to the body diameter. The legs are short. In the male tibia 2 is equal to tibia 1. Propodus compact, strongly curved; auxiliaries half as long as the principal claw, sometimes a little shorter. Third and fourth body segment separated — in adult specimens — by a rather distinct intersegmental line.

DISTRIBUTION: Naples (type locality); Cette? (BOUVIER, 1923a, 1923b); Banyuls sur Mar (GILTAY, 1929; I re-examined GILTAY's specimens; his material was not monospecific, but it contained 4 specimens of the present subspecies and 3 of *C. emaciata spectrum*: the specimens belonging to *C. emaciata emaciata* consist of 3 males, among which 1 ovigerous and 1 larvigerous, and 1 adult female); Florida? (HEDGPETH, 1948; his drawings to me seem to point to juveniles of *C. brevirostris brevirostris*, because of the long auxiliary claw and the feebly curved propodal sole).

C. emaciata tiberi (DOHRN, 1881) (figs. 3, 4, 17, 18)

Pallene tiberii DOHRN, 1881, p. 198—199, 117, Taf. XVII, fig. 10—11.
Pallene tiberi CARUS, 1885, p. 287; NORMAN, 1908, p. 205; BOUVIER, 1923b, p. 34, 36, fig. 30; HELFER, 1935, p. 268.
Callipallene tiberi CORRÊA, 1948, p. 6.

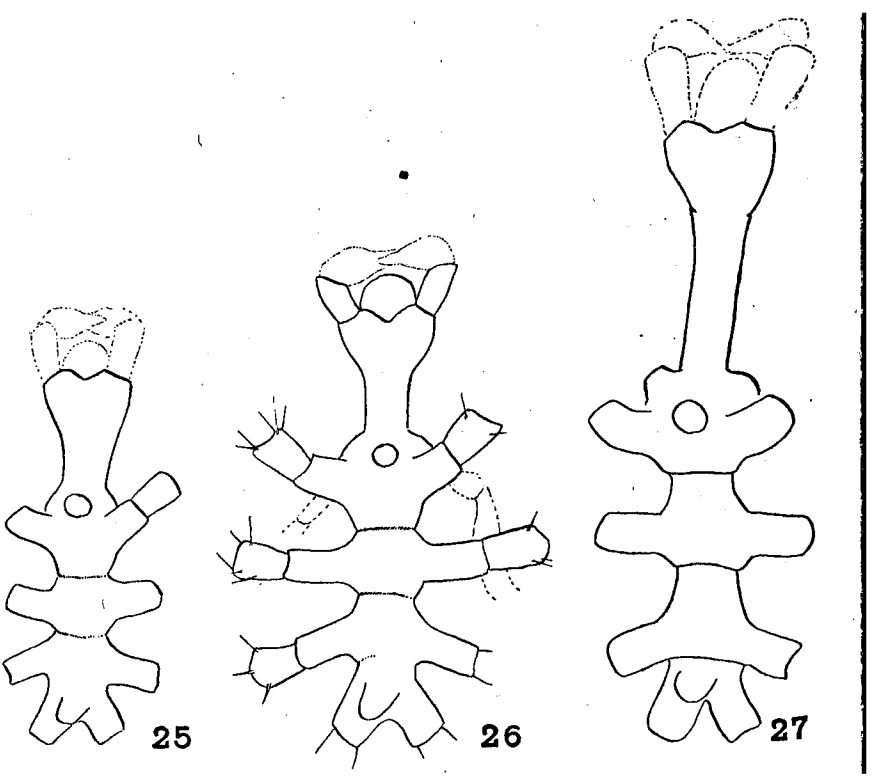
This subspecies is very closely related to the preceeding one; further investigations possibly prove this subspecies to be identical with it. For the present, however, they seem to be distinct. In the male tibia 2 is



Explanation of the figures. Fig. 15-16: *Callipallene emaciata emaciata* (D o h r n) (adult female and her neck). Fig. 17-18: *Callipallene emaciata tiberi* (D o h r n) (neck of an adult female; ventral view of the proboscis of an adult female). Fig. 19: *Callipallene emaciata spectrum* (D o h r n) (third leg of an adult female). Fig. 20: *Callipallene phantoma phantoma* (D o h r n) (adult female). Fig. 21-24: *Callipallene phantoma crinita* ssp. nov. (adult female, her fourth leg, tarsus and propodus of her first leg, tarsus and propodus of her fourth leg).
The figures 15, 16 and 19 have been made from specimens of Banyuls; fig. 17 from a specimen of Roscoff; fig. 18 from a specimen of the Dutch coast; fig. 20-24 from specimens of Venice.
Fig. 15: x 11. Figs. 19, 20, 22: x 21. Figs. 16, 17, 21: x 37,5. Figs. 18, 23, 24: x 75.

much longer than tibia 1 in *tiberi,* whereas these joints are almost equal in the typical form. The lateral processes of the male are separated by a much larger space than in emaciata emaciata (compare fig. 1 and 3). The neck of either sex of *tiberi* is different from the one of the typical form ; the crop is not as compact and its smallest diameter is situated at ½ of the total length of the neck. The proboscis is longer and has, especially in the male, a distinctly angulate outline (fig. 18), a character which is almost absent in C. *em. emaciata.* The intersegmental line between body segment 3 and 4 is always distinct, even in juveniles. Moreover, this subspecies seems to be of a somewhat larger size than the typical one.

DISTRIBUTION :Naples (type locality); Roscoff (Mr. F. MOLEWATER of Utrecht, Holland, collected 3 specimens of this subspecies near Roscoff ; the specimens are preserved in the collection of the Zoological Museum, Amsterdam); the Boulonnais (last summer I collected 1 ovigerous male at Wimereux and 1 adult female at Ambleteuse); Dutch coast, near IJmuiden (Mr. A. MULDER, of Haarlem, collected 1 male on a buch of cork, near shorepole 56). Mr J. S. M. GERRITS, of Zandvoort, collected 1 adult female on a cork, washed ashore near Bloemen-



Explanation of the figures. Fig. 25-27: *Callipallene phantoma phantoma* (D o h r n), growth changes.
25 : young male.
26 : ovigerous male.
27 : completely adult, ovigerous male.
The figures 25, 26, 27 have been made from specimens of Venice.
Magnification of all figures: x 50.

daal ; both specimens are preserved in the Zoological Museum Amsterdam ; we may assume, that the corks on which this subspecies was collected, have been transported passively from the South (cf. STOCK & BLOKLANDER, 1952). Among the localities of this subspecies, enumerated by BOUVIER, 1923b, p. 36, the record from Plymouth, has to be considered a mistake ; it evidently has to be referred to the following subspecies, C. *emaciata spectrum*.

C. emaciata spectrum (DOHRN, 1881) (fig. 7, 8, 19)

Pallene spectrum DOHRN, 1881, p. 197—198, Taf. XV, fig. 1—2 ; CARUS, 1885, p. 287 ; NORMAN, 1908, p. 205 ; d'ARCY THOMPSON, 1909, p. 542 ; TESCH, 1910, p. 51 (note ; HODGSON, 1910. BOUVIER, 1923b, p. 34, 36, fig. 31 ; HELFER, 1935, p. 268 ; FARAGGIANA, 1940. p. 4—5 ; LEBOUR, 1945, p. 139, 140, 144.
Callipallene spectrum CORRÊA, 1948, p. 6.
Pallene emaciata GILTAY, 1929 (part.), p. 172—173.
? *Pallene brevirostris* SCHIMKEWITSCH, 1930 (compare *C. brevirostris brevirostris*); p. 245—253, fig. 58—59.
? *Phoxichilidium cheliferum* CLAPARÈDE, 1863, p. 103—104, Taf. XVIII, fig. 12 ; the chelate oviger in this species, as described by CLAPARÈDE, is an obvious lapsus ; the author mistook the foliate spines on the last oviger segment for a chela.
? *Phoxichilidium chiliferum* (sic.) SCHIMKEWITSCH, 1929/30, p. 194, 243.
? *Pallene chilifera* (sic.) SCHIMKEWITSCH, 1930, p. 243 ; HELFER, 1935, p. 268.

It can be distinguished at first glance from the remaining subspecies of C. *emaciata* by the presence of its rather slender neck. The crop is not distinctly set off at all. The lateral processes are slender, as long as the body diameter, well separated. Inplantation of the ovigers distinctly set off against the rest of the neck.

This subspecies somewhat resembles *C. brevirostris brevirostris*, differing, however, in the undefined crop, the more slender lateral processes, the short auxiliaries, the more strongly curved sole of the propodus. In adult specimens the last body segment is rather clearly defined.

DISTRIBUTION : Naples (type locality); Banyuls sur Mer (3 adult females, previously identified as *C. emaciata emaciata* by GILTAY, 1929 ; preserved in l'Institut Royal des Sciences Naturelles de Belgique, Brussels); Plymouth (NORMAN, 1908); St. Vaast-la-Houghe ? (CLAPARÈDE, 1863); Black Sea ? (SCHIMKEWITSCH, 1930).

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*) These papers were not available to the author.

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