

ABYSSAL PYCNOGONIDA
FROM THE NORTH-EASTERN ATLANTIC BASIN,
PART II

by

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Résumé

Cinq espèces de Colossendeidae ont été trouvées entre 994 et 4 411 m de profondeur dans le Golfe de Gascogne et l'entrée de la Manche. Le matériel-type de *Colossendeis leporhynchus* Hoek, 1881 et de *C. bicincta* Schimkewitsch, 1893, ainsi que les spécimens signalés de *C. gigas-leporhynchus*, ont été révisés. Une clé de détermination des espèces européennes du genre *Colossendeis* est dressée.

The first part of this paper was published in the "Cahiers de Biologie marine" (Stock, 1978). In that part, all families of Pycnogonida have been treated, but one, the Colossendeidae, which will be the subject of the present paper. In order to settle the identity of certain forms found in the Bay of Biscay and recorded in the present article, a number of type-specimens of species described in the 19th century, which gave rise to taxonomic confusion, are re-examined and re-described. This was done for the types of *Colossendeis leporhynchus* Hoek, 1881 (which is considered a distinct species and not a synonym of *C. macerrima* Wilson, 1881) and of *C. bicincta* Schimkewitsch, 1893 (which is recorded for the first time from the Atlantic Ocean). The recorded specimens of the supposed "intermediate" called *C. gigas-leporhynchus* by Hoek, 1881 and Bouvier, 1937, are also re-studied. They represent a good species that should be called *C. cucurbita* Cole, 1909.

The following species are recorded in this part: family Colossendeidae — *Colossendeis clavata* Meinert, 1898; *C. macerrima* Wilson, 1881; *C. colossea* Wilson, 1881; *C. arcuata* A. Milne Edwards in Filhol, 1885; *C. bicincta* Schimkewitsch, 1893.

TAXONOMIC PART

GENUS *COLOSSENDEIS* Jarzynsky, 1870

Not less than eight species of *Colossendeis* are known from Europe; seven of these are found in the North-eastern Atlantic Basin. The six species treated in the sequel are all brevitarsal, the two remaining species being longitarsal. These two remaining species are *C. proboscidea* (Sabine, 1824) and *C. angusta* Sars, 1877. *C. proboscidea* is a "character form of the Polar Basin" (Stephensen, 1943; map in Stephensen, 1933). Hedgpeth, 1948: 338 recapitulates all known records for this species; none is South of 60° N. *C. angusta*, on the other hand, is not only recorded from Arctic waters, but also from several "Talisman" Stations off the coast of N.W. Africa (see Bouvier, 1937). The species does not seem to have been found so far in the Bay of Biscay or the entrance of the English Channel.

The European species can be distinguished as follows:

- 1 a) Length of tarsus + propodus + claw at least 3/4 of the length of tibia 2 (longitarsal species) 2
- b) Length of the three distal segments of the legs much less (brevitarsal species) 3
- 2 a) Proboscis widest in its distal part. Lateral processes touching *C. proboscidea* (Sabine, 1824)
- b) Proboscis widest in its central part. Lateral processes well-spaced *C. angusta* Sars, 1877
- 3 a) Terminal three palp segments \leq segment 7 (and $<$ 10 % of the total length of the palp). Palp segment 3 \leq 5. Proboscis straight to upcurved 4
- b) Terminal three palp segments $>$ segment 7 (and $>$ 10 % of the total length of the palp). Palp segment 3 \ll 5. Proboscis straight to downcurved 5
- 4 a) Palp segment 6 \geq 7. Proboscis very slender, more than twice as long as the trunk *C. mocerrima* Wilson, 1881
- b) Palp segment 6 $<$ 7. Proboscis not very slender, swollen in the middle, much less than twice as long as the trunk *C. cucurbita* Cole, 1909
- 5 a) Palp segment 3 two to three times as long as segment 5. Tarsus \leq propodus. (Proboscis down-curved. Palp segment 7 not elongated) *C. arcuata* A. Milne-Edwards, in Filhol, 1885
- b) Palp segment 3 less than twice as long as segment 5. Tarsus $>$ propodus 6
- 6 a) Proboscis widest at the top, slightly down-curved. Propodal sole and inner margin of tarsus with several well-sized spines. (Palp segment 7 short) *C. clavata* Meinert, 1898
- b) Proboscis widest in the middle. Propodal sole and tarsus without larger spines 7
- 7 a) Palp segment 7 elongate. Proboscis straight *C. colosseo* Wilson, 1881 (and *C. minuta* Hoek, 1881)
- b) Palp segment 7 short. Proboscis down-curved *C. bicincta* Schimkewitsch, 1893.

COLOSSENDEIS CLAVATA Meinert, 1898

- C. *clavata* Meinert, 1898: 54, pl. V figs. 19-20; Meinert, 1899: 57-58, pl. V figs. 19-20; Bouvier, 1917: 9-10; Bouvier, 1937: 26, fig. 1; Hedgpeth, 1948: 273-274, fig. 50e; Stock, 1971: 27.

Material examined

All from the Bay of Biscay:

- 1 specimen; "Polygas" CV 09 (= St. 1), 47°31'4N 08°43'6W, 2119m, 22 Oct. 1972.
- 5 specimens; "Polygas" GV 10 (= St. 1), 47°30'7N 08°40'6W, 2108m, 22 Oct. 1972.
- 1 specimen; "Polygas" CV 12 (= St. 2), 47°32'5 N 09°06'2W, 2775m, 23 Oct. 1972.
- 2 specimens; "Polygas" DS 15 (= St. 1), 47°35'2N 08°40'1 W, 2246m, 21 Oct. 1972.
- 4 specimens; "Biogas" II — CV 20 (= St. 1), 47°37'5N 08°33'7W, 2282m, 19 Apr. 1973.
- 1 specimen; "Biogas" II — CV 21 (= St. H.Z.), 47°42'5N 08°03'2W, 994m, 20 Apr. 1973.
- 3 specimens; "Biogas" IV — CP 01 (= St. 1), 47°34'6N 08°38'8W, 2245m, 25 Feb. 1974.
- 1 specimen; "Biogas" V — CP 07 (= St. 6), 44°09'8N 04°16'4W, 2170m, 21 June 1974.
- 1 specimen; "Biogas" VI — CP 09 (= St. 1), 47°33'0N 08°44'1 W, 2171m, 20 Oct. 1974.

Remarks

There are several other records of this relatively rare species, all from the northern Atlantic:

- 62°06'N 19°00'W (= S. of Iceland), 104fms, the type-locality. (Bouvier, 1937: 26 erroneously cites this locality as "au Sud d'Irlande".)
- 43°45'30"N 09°41'W (of Greenwich), 2320m (Bouvier, 1917) (= off Cape Finisterre, Spain).
- 44°07'N 10°16'W (of Paris!), 2030m (Bouvier, 1937) (= off Cape Ortegal, Spain, and not, as Bouvier thinks, "au Nord du Cap Ortegal, Maroc").
- 55°07'7N 15°11'2W (= W. of Northern Ireland), 2215m (Stock, 1971).
- Two records in the Bay of Biscay, near Stat. 1 of the present sampling program, depths 1152-2149m (Stock, 1971).

In addition, the species is also known from the North American side of the Atlantic (Hedgpeth, 1948).

Although many records lie round the 2000metres line, some are from much shallower waters ("Biogas" II — CV 21 from 994m, or "Noratlante" St. 129 from 1152m).

COLOSSENDEIS MACERRIMA Wilson, 1881 (Fig. 2, m)

Syn.: *C. villegentei* A. Milne Edwards, 1881: 933.

C. leptorhynchus var. *septentrionalis* Caullery, 1896: 362-363.

Material examined

All from the Bay of Biscay:

- 1 specimen; "Biogas" I — CV 08 (= St. 1), 47°34'5N 08°34'2W, 2180m, 9 Aug. 1972.
- 1 specimen; "Polygas" — CV 10 (= St. 1), 47°30'7N 08°40'6W, 2108m, 22 Oct. 1972.
- 2 specimens; "Polygas" — CV 16 (= St. 6), 44°06'5N 04°16'9W, 1909m, 31 Oct. 1972.
- 2 specimens; "Polygas" — DS 17 (= St. 1), 47°32'0N 08°45'5W, 2103m, 22 Oct. 1972.
- 4 specimens; "Polygas" — DS 26 (= St. 5), 44°25'3N 04°44'5W, 4411m, 2 Nov. 1972.
- 4 specimens; "Biogas" III — CV 23 (= St. 1), 47°32'7N 08°34'2W, 2034m, 25 Aug. 1973.
- 1 specimen; "Biogas" III — CV 24 (= St. 1), 47°33'7N 08°34'3W, 2025m, 25 Aug. 1973.
- 3 specimens; "Biogas" III — CV 26 (= St. 2), 47°33'9N 09°05'3W, 2822m, 26 Aug. 1973.
- 2 specimens; "Biogas" III — CV 32 (= St. 6), 44°07'6N 04°15'8W, 1895m, 1 Sep. 1973.
- 1 specimen (fragm.); "Biogas" III — DS 35 (= St. 1), 47°34'4N 08°40'7W, 2226m, 24 Aug. 1973.
- 1 specimen; "Biogas" III — DS 50 (= St. 6), 44°08'9N 04°15'9W, 2124m, 1 Sep. 1973.
- 1 specimen (fragm.); "Biogas" IV — CP 01 (= St. 1), 47°34'6N 08°38'8W, 2245m, 25 Feb. 1974.
- 2 specimens; "Biogas" IV — CP 02 (= St. 1), 47°33'2N 08°41'4W, 2177m, 26 Feb. 1974.
- 15 specimens; "Biogas" V — CP 07 (= St. 6), 44°09'8N 04°16'4W, 2170m, 21 June 1974.
- 1 specimen; "Biogas" VI — CP 09 (= St. 1), 47°33'0N 08°44'1 W, 2171m, 20 Oct. 1974.
- 1 specimen (fragm.); "Biogas" VI — CP 12 (= St. 2), 47°32'5N 09°11'6W, 2925m, 22 Oct. 1974.
- 5 specimens; "Biogas" VI — CP 23 (= St. 6), 44°04'6N 04°21'4W, 1980m, 31 Oct. 1974.
- 10 specimens; "Biogas" VI — CP 25 (= St. 6), 44°05'0N 04°17'0W, 1894m, 1 Nov. 1974.
- 1 specimen; "Biogas" VI — DS 87 (= St. 6), 44°05'2N 04°19'4W, 1913m, 1 Nov. 1974.

Remarks

The macemma-complex within the genus *Colossendeis* is characterized by its palp, in which segment 3 is much shorter than

segment 5 and in which the three distalmost segments are \leq segment 7 (the three distalmost segments together are less than 10 percent of the total length of the palp). Moreover, the proboscis of the members of the *macerrima*-group has the tendency to be slightly upcurved.

Up to recently, most authors (including myself) followed Bouvier, 1917, in attributing all, or almost all, names coined for members of the *macerrima*-group to one single species. However, in the present paper, I adhere the view that *C. leptorhynchus* Hoek, 1881 might represent a separate taxon, whereas *C. cucurbita* Cole, 1909 certainly is a distinct species.

Three names for members of the *macerrima*-group were created in the very same year, 1881: *C. macerrima* by Wilson, *C. leptorhynchus* by Hoek, and *C. villegentei* by A. Milne Edwards. These materials came from very different localities, viz. the North American coast off Delaware Bay, the southern Indian and Pacific Oceans, and the Bay of Biscay, respectively. The matter of priority is easily solved: Hoek refers in his work (1881: 147) to Wilson's paper and Milne Edwards (1881: 933), in turn, refers to Hoek's work, so clearly enough Wilson's name, *macerrima*, is the oldest name available.

Bouvier, 1917 re-examined Milne Edwards' material and considered it identical with *C. macerrima*. The type-material of Milne Edwards was taken at "Travailleur" Stat. 38, in the entrance of the Bay of Biscay, N. of La Coruna, at a depth of 1048fms — 1916.7m (1) on 14 Aug. 1881 (and not, as Bouvier, 1937 thinks, from "Talisman" Stat. 38, because this station was sampled two years after the publication of Milne Edwards' paper). I have studied numerous additional samples from the Bay of Biscay, as well as a rich material from the Atlantic coast of North America and I agree with the synonymy of *C. macerrima* and *C. villegentei*.

Caullery, 1896 described, likewise from the Bay of Biscay ("Caudan" Stat. 2), a *Colossendeis* which he named *C. leptorhynchus* var. *septentrionalis*. He was apparently unaware of Milne Edwards' 1881 paper, but he quotes Milne Edwards' 1882 paper in which the name *C. villegentei* was also cited. Although *villegentei* was very briefly diagnosed in 1881 (in two lines only, p. 933 footnote 5), it is certainly not a *nomen nudum*. Like Bouvier, 1917, I think Caullery's taxon is referable to *C. macerrima*.

Bouvier includes also *C. leptorhynchus* Hoek, 1881, in the synonymy of *C. macerrima*, no doubt influenced by Hoek's own suspicion (1881: 147) that the two "are very nearly related to, if not identical with" one another. Much evidence to support the synonymy is not presented by Bouvier (1917: 12), except that (in translation) "Mr. Loman also supposes so". In order to bring more light into this question, I have re-examined Hoek's type-material of *C. leptorhynchus*.

(1) Milne Edwards (1881, 1882: 38) mentions a depth of 1918m but, in other parts of his 1882 paper (viz. on p. 55 and on the chart), he recorded a depth of 1916m.

Descriptive notes on the syntypes of *Colossendeis leptorhynchus*
Hoek, 1881

The British Museum (Natural History), London, holds actually only three syntypes of *C. leptorhynchus*, all from "Challenger" Stat. 300 (33°42'S 78°13'W, 1375fms; this locality is in the Pacific Ocean, W. of Valparaiso, Chile). Mrs. Joan P. Ellis, of the Crustacea Section of the British Museum, informed me (in litt., Oct. 4 and Nov. 10, 1977) that two more specimens from Stat. 300 could not be located, whereas the specimens from the remaining "Challenger" Stations (viz., 146, 147 and 310) were never deposited in the British Museum. So, the following notes are based on the three remaining syntypes, registered in the B.M. (N.H.) under cat. no. 1881.38. Some new figures, made from the largest syntype, are included in the present paper (Fig. 2, 1).

The proboscis is very slender and elongate indeed (in dorsal view, the ratio length/greatest diameter is 14.2), and almost straight in lateral view (tip not upcurved). It is more than twice as long as the length of the trunk (incl. abdomen).

The palp is thin; the lengths of the segments (excluding the two small basal segments) are as follows: 3rd segm. 10098, 4th segm. 1095, 5th segm. 16932, 6th segm. 2201, 7th segm. 2666, 8th segm. 773, 9th segm. 762, 10th segm. 1014 μ m. The 7th palp segment is very slender (7 times as long as wide) and distinctly longer than the 6th.

The 3 distal leg segments (measured in a detached leg of one of the syntypes) have the following lengths: tarsus 7507, propodus 3121, claw 602 μ m. The propodal sole is armed with minute spinules only.

I provisionally consider *C. leptorhynchus* a species distinct from *C. macerrima* (for the distinction: see under *C. cucurbita*). The species seems to be limited to the abyssal zone of the Southern Hemisphere. I suppose that *C. pennata* Pushkin, 1970 is identical with *C. leptorhynchus*.

COLOSSENDEIS COLOSSEA Wilson, 1881

Syn., refs.: vide Bouvier, 1917, and Hedgpeth, 1948.

Material examined

All from the Bay of Biscay:

- 1 specimen (fragm.); "Polygas" — CV 16 (= St. 6), 44°06'5N 04°16'9 W, 1909m, 31 Oct. 1972.
- 2 specimens; "Biogas" III — CV 23 (= St. 1), 47°32'7N 08°34'2W, 2034m, 25 Aug. 1973.

- 2 specimens; "Biogas" VI — CP 23 (= St. 6), 44°04'6 N 04°21'4W, 1980m, 31 Oct. 1974.
- 2 specimens; "Biogas" VI — CP 25 (= St. 6), 44°05'0 N 04°16'9W, 1909m, 31 Oct. 1974.

A very characteristic species, distributed in all major oceans.

COLOSSENDEIS ARCUATA A. Milne Edwards, in Filhol, 1885
(Fig. 1, g-j)

- Syn.: *C. arcuatus* A. Milne Edwards, in Filhol, 1885: 151, fig. 48.
C. arcuata; Bouvier, 1937: 26-30, figs. 2-8.
C. michaelsarsi Olson 1913: 4-5, figs. 1-4, pl. I A; Hedgpeth 1948: 274, fig. 50 f.
C. Titan Perrier, 1886 (non Filhol, 1885): 302, fig. 241 no. 7.

Material examined

- Two records from the Bay of Biscay:
 — 1 specimen (fragm.); "Biogas" V — CP 07 (= St. 6), 44°09'8N 04°16'4 W, 2170m, 21 June 1974.
 — 1 specimen (fragm.); "Biogas" VI — CP 08 (= St. 1), 44°33'2N 08°38'5W, 2177m, 20 Oct. 1974.

Remarks

C. arcuatus A. Milne Edwards, in Filhol, 1885 (not described but only illustrated on page 151) is quite certainly identical with the present species. The very characteristic, short, 5th palp segment (not encountered in any other North Atlantic species) is clearly borne out by Filhol's engraving. The legend of the figure reads: «Fig. 48.— *Colossendeis arcuatus* (A. M. Edw.), pris à 1,500 mètres de profondeur. Expédition du *Talisman*». No further reference to the species is made in Filhol's book. Unfortunately, A. Milne Edwards did never formally describe *C. arcuata*. So, it is understandable that Hedgpeth (1948) finds it hard to accept Milne Edwards' «manuscript name», published in a semi-popular work like Filhol's, especially since the species was not formally designated as new. Topsent (1891: 178) appears to hold the same opinion. However, the Code of Nomenclature (art. 12 and 16a-VII) makes it clear that the name is available (it is accompanied by an «indication», in the form of an illustration). Moreover, the illustrations in Filhol's work have been made after the drawings of Milne Edwards himself (1885: viii — «exécutés avec soin extrême durant les campagnes du *Travailleur* et du *Talisman* par M. A. Milne Edwards...»). For this reason, I have followed Bouvier (1937) and used the oldest available name, *C. arcuata*, for the taxon under consideration.

Filhol's specimen of *C. arcuata* was re-examined by Bouvier (1937). It came from «*Talisman*» no. 33 (= Stat. 34), 32°31'N 09°48'W, depth 1350 m (according to Hedgpeth, 1948: 309), or 1500m (according to Filhol, 1885: 151), or 1550 m (according to Bouvier, 1937: 26). This locality is W. of the Moroccan coast, off

Cap Cantin (= Beddouza Lighthouse on the Times Atlas of the World, ed. 1968).

Filhol mentions another *Colossendeis* in his same book (1885: 153) viz. *C. titan*. This name is unaccompanied by an author's name or by an «indication», such as a figure, in the sense of the Code of

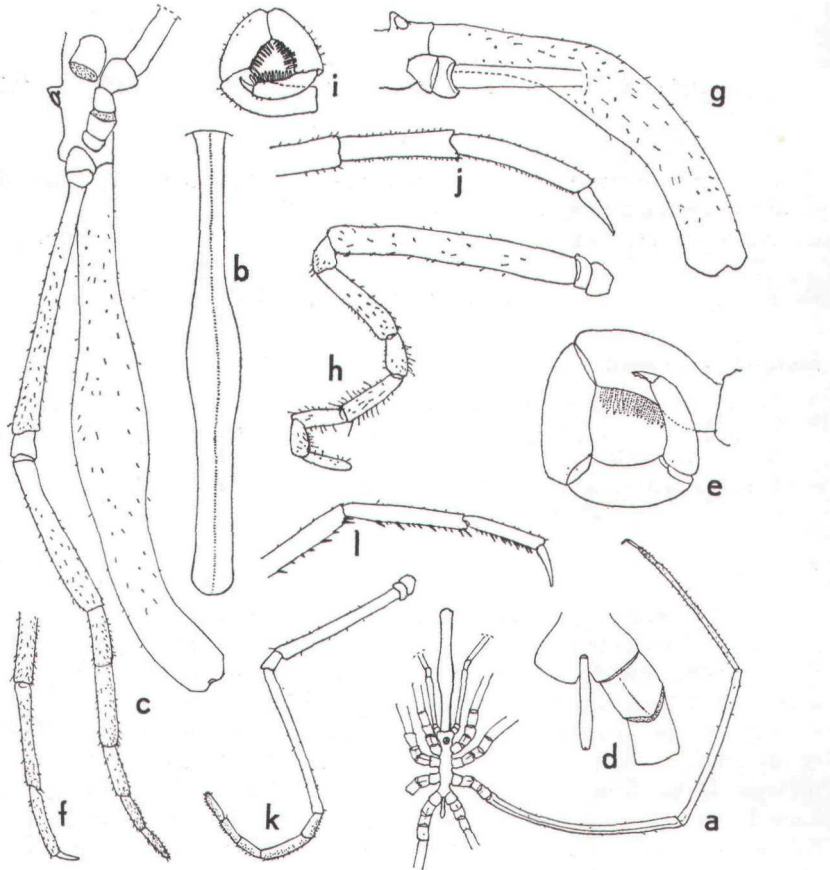


FIG. 1

a-f, *Colossendeis bicincta* Schimkewitch, 1893 (from "Biogas" IV - CP 03).
 a: dorsal view; b: proboscis, dorsal; c: frontal part of the body, from the left; d: abdomen, dorsal; e: distal oviger segments (compound spines omitted);
 f: distal segments of 2nd leg.
 g-j, *Colossendeis arcuata* A. Milne Edwards, in Filhol, 1885 (from "Biogas" VI - CP 08).
 g: proboscis, from the right; h: palp; i: distal oviger segments (only the row of the largest compound spines indicated diagrammatically); j: distal leg segments.
 k-l, *Colossendeis clavata* Meinert, 1898 (from "Biogas" V - CP 07).
 k: palp, l: distal segments of 4th leg.

Nomenclature. Although the depth of the type-locality (4000 m) is mentioned (on p. 153 and on plate 7) this does not form an «indication» (Code, art. 16 (b) (i)). The name *C. titan* of Filhol clearly is unavailable.

The specimen on which Filhol based his notes was re-examined by Bouvier (1917: 15). It came from «Talisman» nr. 134 (= Stat. 147,

cf. Hedgpeth, 1948: 309, footnote on p. 334), 4060 m, between the Azores and France. The specimen proved to be identical with *C. colossesa* Wilson, 1881, which name has priority.

Also Perrier (1886: 302, fig. 24 no. 7) recorded a species as «*Colossandeis Titan*» (sic), found «dans l'Atlantique vers 2500 mètres de profondeur». This seems to indicate that Perrier based his record on material from another «Talisman» station than Filhol, since the latter has a depth of «4000 m» (in reality 4060 m). Perrier's name is available, however, since it is accompanied by an indication in the form of a figure. Bouvier (1917: 15) supposes that *C. titan* of Perrier is not the same as *C. titan* of Filhol, but that it may represent a *Colossendeis arcuata* or a *C. clavata*. In his 1937 paper, Bouvier thinks that *C. titan* of Perrier is a badly illustrated *C. colosseae*.

I do not agree entirely with Bouvier's conclusions. I think that Perrier's engraving and the one of Filhol are mirror images based on the same, Milne Edwards', original drawing. Both pictures clearly represent the same species which can easily be identified as a brevitarsoal *Colossendeis*, with a down-curved proboscis and a very short 5th palp segment. There is only one such species in the entire North Atlantic, *C. arcuata* (= *C. michaelsarsi*). In my opinion, Perrier mislabelled the animal in his fig. 241 as «*Colossandeis Titan*», but it represents in reality *C. arcuata*. Another indication, except for the figure, that Perrier and Filhol used the same source, is the fact the name *C. titan* is unaccompanied in both works by an author's name (it is the only animal in Perrier's fig. 241 lacking an author's name). These considerations make me suggest the following synonymy: *C. titan* Filhol, 1885 (*nomen nudum*) = junior synonym of *C. colosseae* Wilson, 1881 (based on re-examination, by Bouvier, of the type-specimen).

C. titan Perrier, 1886 (available name) = junior synonym of *C. arcuata* A. Milne Edwards in Filhol, 1885 (based on the unique morphology of the animal depicted).

This is a rare species. Olsen (1913) recorded it as a new species which he called *C. michaelsarsi*, from the deep-sea off north-western Africa. Also Milne Edwards' specimen came from that region. Hedgpeth (1948) found a specimen in the western North Atlantic, S. of Nova Scotia. I have examined also some specimens from the Bahama region (unpublished). The present records are the first for European waters. The species appears to be restricted to the northern Atlantic Ocean.

***COLOSSENDEIS CUCURBITA* Cole, 1909 (Fig. 2, c).**

Syn.: *C. cucurbita* Cole, 1909: 188-191, pl. 2 figs. 3-4, pl. 3 figs. 8-12; Fage, 1956: 178-179, fig. 21 (lowest figure only, not fig. 21 B).

C. gigas-leptorhynchus; Hoek, 1881: 65-66; Bouvier, 1937: 32-33.

C. macerrima; Turpaeva, 1971 (non Wilson, 1881): 289, fig. 7 (4-5).

C. macerrima leptorhynchus; Turpaeva, 1975 (non Hoek, 1881): 234-236, figs. 1 (2), 2 (1), 3 (3-4).

Material examined

- Between the Azores and France:
- 1 specimen; "Talisman" nr. 133 (= Stat. 146), 42°15'N 23°37'W (of Paris!; i.e., 21°17'W of Greenwich), 3975m, 24 Aug. 1883. (MNHN).
 - 1 specimen; "Talisman" nr. 135 (= Stat. 149) (Bouvier, 1937: 32 cites the number erroneously as "315"), 43°15'N 21°40'W (of Paris!, i.e., 19°20'W of Greenwich), 4165m, 25 Aug. 1882. (MNHN).
- South of Australia:
- 1 specimen (recorded by Hoek, 1881, as *C. gigas-leptorhynchus*); "Challenger" Stat. 158, 50°01'S 123°04'E, 1800 fms. (BMNH).

Remarks

Although *C. cucurbita* is not represented in the collections of the CNEXO, it belongs to the fauna of the North-Eastern Atlantic Basin, as is proved by its occurrence in the «Talisman» materials collected between the Azores and France. I take this opportunity to make some remarks on the synonymy and status of the species and I base my observations on the re-examination of Hoek's original material of *Colossendeis gigas-leptorhynchus* (kept in the British Museum (Natural History), London), and on the specimens from two «Talisman» stations, recorded by Bouvier, 1937, under the same name (kept in the Muséum national d'Histoire naturelle, Paris). Although all three specimens are in a somewhat fragmentary condition, they resemble even in the smallest details the species described and illustrated carefully by Cole (1909) as *C. cucurbita*, based on material from «Albatross» Stat. 4647 (= midway between Peru and the Galapagos Islands).

The re-examination of Hoek's specimen of *C. gigas-leptorhynchus* confirms the ideas of Calman (1923: 267) and Fage (1956: 178) that this is not an «intermediate» between *C. gigas* (= *C. colossea*) and *C. leptorhynchus*, but an independent species, for which Cole's name, *C. cucurbita*, is available. It should be noted that Fage stresses the differences clearly, but that this fig. 21 (showing the differences in the palp between *C. colossea* and *C. cucurbita*) is confused in that sense that the top figure represents the palp of *C. colossea* and the lower figure that of *C. cucurbita* (and not *vice versa* as the legend to the figure suggests).

Fage's material came from two localities around New Zealand, and one locality off the Pacific coast of the Isthmus of Panamá.

In 1971, Turpaeva recorded *C. cucurbita* (as *C. macerrima*) from the Kurilo-Kamchatka Trench. Moreover, Turpaeva (1975) recorded the same species, now under the name of «*C. macerrima leptorhynchus* Hoek, 1891» (sic) from the north-western Pacific and from the coasts of Peru and Chile. The trinomen used by her is not accepted in the present paper, for reasons explained below.

Apparently, *C. cucurbita* is a widely distributed species, found so far in deeper waters of the Atlantic, Pacific and of the Southern Seas.

The compound name, *gigas-leptorhynchus*, used by Hoek, 1881, was not meant as a specific name: Hoek avoided the designation «n. sp.», used throughout his work, and said explicitly that he wishes

«to consider it as an intermediate form». Although Bouvier (1937) treated the compound as an acceptable specific name, it was not coined as such, and —not being binominal— cannot be accepted. The first available name, *C. cucurbita* Cole, 1909, should be used to designate the species in question.

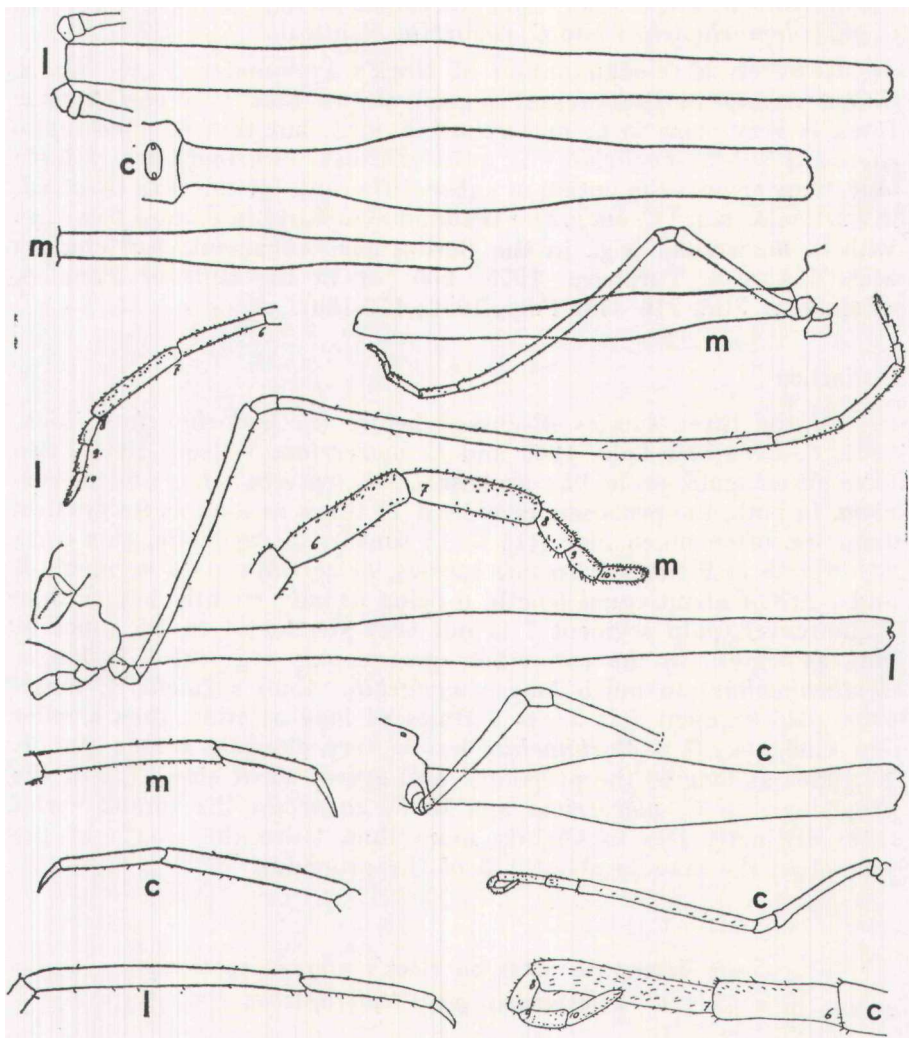


FIG. 2

Colossendeis leptorhynchus Hoek, 1881 (l), *C. cucurbita* Cole, 1909 (c), and *C. macerrima* Wilson, 1881 (m).

Proboscis (dorsal), proboscis and palp (lateral), palp segments 6 to 10, and distal segments of 3rd leg.

The illustrations of *C. leptorhynchus* have been made after syntypes from "Challenger" Stat. 300; the palp of *C. cucurbita* after a specimen from "Talisman" Stat. 149; the remaining illustrations of *C. cucurbita* after Hoek's specimen of "*C. gigas-leptorhynchus*" from "Challenger" Stat. 158; the figures of *C. macerrima* have been drawn after a specimen from "Biogas" IV - CP 25.

Turpaeva (1975) came to a different classification. She divided *C. macerrima* (sensu lato) into two subspecies, *C. m. macerrima* and *C. m. leptorhynchus*. Apparently, she acted under the impression

that *C. leptorhynchus* Hoek, 1881 and *C. gigas-leptorhynchus* Hoek, 1881 were identical. At any rate, she took the epitheton, *leptorhynchus*, of the first, but the characters of the second. It should be indicated, that Turpaeva's fig. 1 is confused, since the distal palp portion of *macerrima* is labelled «*leptorhynchus*», and *vice versa*. Turpaeva's list of synonyms also shows that she considers *C. leptorhynchus* s.str., *C. gigas-leptorhynchus* and *C. cucurbita* identical.

However, a re-examination of Hoek's type-material (see under *C. macerrima* in the present paper) shows that *C. leptorhynchus* Hoek is very close to *C. macerrima* (s. str.), but that *C. gigas-leptorhynchus* (= *C. cucurbita*) is quite distinct. Furthermore, I have objections against the notion of subspecific rank for the taxa involved, in particular since *C. cucurbita* is found sympatric in certain localities with *C. macerrima* (e.g., in the Bering Sea, «Academic Kurtchatov» Stat. 618, vide Turpaeva, 1975: 236; or in the Gulf of Panamá, «Galathea» Stat. 716, vide Fage, 1956: 179-180).

Distinction

Of the three species discussed before (*C. leptorhynchus* Hoek, 1881, *C. cucurbita* Cole, 1909 and *C. macerrima* Wilson, 1881), two have an elongate, probe-like proboscis, viz. *leptorhynchus* and *macerrima*. In both, the proboscis is as least 11 times as long as its greatest diameter, often much more (14 to 15 times); in *cucurbita*, this ratio is lower (8 to 9 times). In one species, *macerrima*, palp segments 6 and 7 are of about equal length, 6 being usually slightly longer than 7; moreover, palp segment 7 is not very slender (4 to 4.5 times as long as wide). In the two other species, palp segment 7 is longer (*leptorhynchus*) to much longer (*cucurbita*) than segment 6; moreover, palp segment 7 is 5.5 to 7 times as long as wide, thus slender and elongate. *C. leptorhynchus* has a very elongate tarsus (tarsus 2.4 times as long as the propodus) and a very short claw (1/5 of the propodus); in *C. macerrima* and in *C. cucurbita* the tarsus varies from distinctly less to slightly more than twice the length of the propodus; the claw is about 1/3 of the propodus.

Some descriptive notes on Hoek's original specimen of *Colossendeis gigas-leptorhynchus*

The specimen is in a defective condition (as already remarked by Hoek). The palps are broken, but, out of the preserved fragments, almost the entire appendage can be reconstructed (segment 8 is lacking, however). The proboscis is 8.3 times as long as its greatest diameter and resembles in shape that of *C. colossea*. It is very slightly upcurved. The measurements provided by Hoek (1881: 66) are correct. The palp has a short 3rd segment, and a long 5th segment (for measurements of the palp in this species, see Fage, 1956: 179). The 7th palp segment is much longer than the 6th. In the specimen examined, the tarsus is less than twice as long as the propodus and the claw is about 1/3 of the propodus. The propodal sole is armed with some minute spinules only.

Colossendeis bicincta Schimkewitsch, 1893 (Figs. 1, a-f; 3).

Ref. : *C. bicincta* Schimkewitsch, 1893: 27-29, pl. I figs. 1-3.

Material examined

From the Bay of Biscay:

- 1 ♂; "Biogas" IV — CP 03 (= St. 1), 47°32'7 N 08°34'0 W, 2119m, 26 Feb. 1974.
- 1 ♂ (fragm.); "Biogas" VI — CP 10 (= St. 2), 47°29'6 N 09°04'5 W, 2878m, 21 Oct. 1974.

Description

Trunk somites not articulated. Chitinous lines separate the lateral processes from the trunk. Lateral processes about as long as wide, separated by rather less than their own diameter, unarmed. Ocular tubercle low, conical, leaning backward; two large, anterior eyes, in preserved state poorly pigmented; lateral sense organs on the ventroposterior side of the eyes. Abdomen slender, with basal (pseudo-) articulation, reaching halfway coxa 2 of leg 4.

Proboscis characteristic: almost twice as long as the trunk (without abdomen); basal part narrow, slender, straight; central part distinctly swollen; distal part narrower again, a trifle swollen at the tip, and distinctly down-curved (type B''':2:E''').

No chelifores. Palp segments 1 and 2 short; segment 3 the longest, 1.5 to 1.4 times longer than the second-longest segment, segment 5; segment 7 about 1.33 times longer than segment 6; segment 8 shorter than 6, segments 9 and 10 mutually subequal, shorter than segment 8.

Oviger spine field configuration NS : $\frac{Sp}{A}$: $\frac{Sp/N}{n=5-8}$. Terminal

claw with slight inner flange, short.

Legs long but rather heavy in comparison to, for instance, *C. colossea* and *C. macerrima* (the diameter of the femoral segment of P3, at 1/3 of its length, is 237 µm in the specimen from Stat. CP 03, against 144 µm in specimens of *C. colossea* of about the same general size. Femur slightly longer than tibia 1; tibia 2 the shorter segment. Minute spinules are scattered over the legs, especially on the 2nd tibia, tarsus and propodus, but none of these spinules assumes the larger size as found in the distal leg segments of *C. clavata*. Tarsus distinctly longer than the propodus. Claw short, about 0.25 of the propodus.

Measurements of male ("Biogas" VI — CP 03) in cm (palp in µm)

| | |
|--|------|
| Length of trunk (frontal margin cephalic segment to base of abdomen) | 2.25 |
| Length abdomen | 0.70 |
| Width across 2nd lateral processes | 1.05 |
| Length proboscis | 4.15 |

Diameter proboscis (at the basis) 0.35
 Do. (at the tip) 0.45
 Do. (in the middle) 0.55
 Palp: 1st segm. 2010; 2nd 1260; 3rd 18690; 4th 2140, 5th 13450, 6th
 4040; 7th 5510; 8th 3480; 9th 2950; 10th 2970.
 First leg: femur 5.35; 1st tibia 5.20; 2nd tibia 4.30.
 Third leg: 1st coxa 0.45; 2nd coxa 0.40; 3rd coxa 0.45; femur 6.00;
 1st tibia 5.90; 2nd tibia 5.10; tarsus 0.70; propodus 0.55; claw 0.13.
 Fourth leg: femur 5.90; 1st tibia 5.85; 2nd tibia 4.90; tarsus 0.65; propo-
 dus 0.55; claw 0.13.

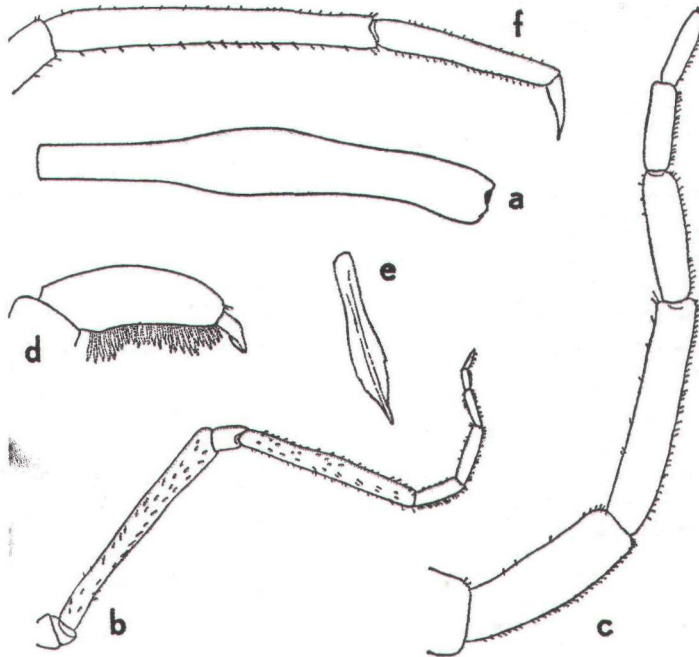


FIG. 3

Colossendeis bicincta Schimkewitsch, 1893, holotype (from "Albatross" Stat. 3360),
 a: proboscis, from the right; b: palp, c: distal part of palp; d: distal part of
 oviger (only one row of compound spines indicated, semi-diagrammatically);
 e: compound oviger spine.

**Some notes on the holotype of *Colossendeis bicincta*
 Schimkewitsch, 1893**

A number of illustrations made from the holotype of *C. bicincta*, kept in the U.S. National Museum (cat. no. 32156) are included in the present paper, to supplement Schimkewitsch' figures, which are in general fair. The holotype was collected at «Albatross» Stat. 3360, of the West coast of Panamá, 06°17'N 82°05'W, in 1672 fathoms. As far as I can ascertain, the species was never found again. Schimkewitsch characterized this species clearly, and after reexamination of the type-specimen, I have no reservations as to the identity of the Pacific specimen and the material from the Bay of Biscay, although

there are a few minor differences. The differences observed are the following: (1) the holotype is slightly larger (trunk length, without abdomen, 25 mm, length proboscis 45 mm) than the Atlantic specimens, and looks «heavier»; (2) the ocular tubercle of the holotype is slightly lower; (3) the proboscis of the holotype is distally slightly more enlarged and slightly less down-curved; (4) the 5th palp segment of the holotype is slightly longer in comparison with the third segment.

I do not attach much value to the differences in the shape of the proboscis. In the first place, the specimen from «Biogas» VI - CP 10 has a proboscis that is intermediate between that of «Biogas» IV - CP 03 (figured in the present paper, Fig. 1, c) and that of the holotype (Fig. 3, a). In the second place, the degree of curvature in another *Colossendeis*, *C. macerrima*, appears to be rather variable and it may be variable in the present species as well.

Distinction

At the first sight, the present species looks like a *C. colossea*. However, the proboscis is distinctly down-curved (straight in *colossea*) and the 7th palp segment is not elongated (strongly elongated in *colossea*). From the two Atlantic species with a down-curved proboscis, *C. arcuata* and *C. clavata*, *C. bicincta* can easily be separated by the relative lengths of palp segments 3 and 5 (5th segment $1/3 - 1/2$ of the 3rd in *arcuata*, $2/3 - 4/5$ of the 3rd in *bicincta*, and \geq than the 3rd in *clavata*). Moreover, in *arcuata* and in *clavata* palp segments 8 to 10 are subequal, but in *bicincta* segment 8 is the longest.

In general appearance, *C. bicincta* looks rather similar to *C. orientalis* Losina-Losinsky, 1958, from the northern Pacific, but the latter differs in several details, such as the short tarsus, the femur which is the shortest of the longer leg segments, the spinulation of the podopod sole, and the subchelate oviger tip.

Acknowledgments

I wish to express my gratitude to the Centre national de Tri d'Océanographie biologique, Brest, France, for entrusting me their valuable and carefully assembled collections.

Dr. J. Forest, Muséum national d'Histoire naturelle, Paris, France, kindly arranged the loan of Bouvier's specimens of *Colossendeis* from the "Talisman" collections. Dr. H.W. Levi, Museum of Comparative Zoology, Cambridge (Mass.), U.S.A., and Dr. C.A. Child, Smithsonian Institution, Washington (D.C.), U.S.A., are thanked for their assistance in locating the type-specimen of *Colossendeis bicincta* Schimkewitsch. Through the courtesy of Dr. R.W. Ingle and Mrs. J.P. Ellis, British Museum (Natural History), London, England, a number of Hoek's type-specimens of *Colossendeis* were made available for study.

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