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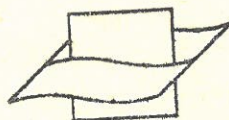
REVUE ROUMAINE DE
BIOLOGIE

SÉRIE DE ZOOLOGIE

TOME 17

1972, N° 4

TIRAGE À PART



Vlaams Instituut voor de Zee
Flanders Marine Institute

EDITIONS DE L'ACADEMIE DE LA REPUBLIQUE SOCIALISTE DE ROUMANIE

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Hommage de l'auteur.

ARCHAEOCUMA AND SCHIZOCUMA, NEW GENERA OF CUMACEA FROM THE AMERICAN TROPICAL WATERS

BY

MIHAI BĂCESCU

On the basis of the material captured by R/V Anton Bruun in 1965 from the Peruvian area of the Humboldt cold stream, and on the basis of the material collected by R/V Vema in its 15th expedition from the coasts of Ecuador, the author describes *Archaeocuma peruana* g.n.sp.n., a Cumacean characterized by the presence of pleopod I in both sexes and by that of a rudimentary penis in males and suggests the setting up of a new family, Archaeocumidae.

According to material captured upon the 14th expedition of the Vema vessel, from the waters East of Florida, he describes *Schizocuma vema* g.n. sp.n., a Cumacean characterized by a distinct existence of two pseudorostral, widely separated funnels, an optic, blind lobe tilted downwards, and by the extreme length of the abdominal segments and uropods, unique among Cumacea.

Archaeocuma n.g.

Diagnosis. Cumacean presenting *Lampropidae* features and a *Platysympus* type carapace, i.e. low, almost round, if seen from above; on the sides, a continuous crenellation (expansions with crenel aspect). *Not only* ♂♂, *but also* ♀♀ bear a *pair of well* developed pleopods, namely pair I. Males also present two penial conical tubercules, between the peraeopods of pair V — unique features among Cumacea.

1. *Archaeocuma peruana* n. sp. (Figs 1—2 and fig. 4, a, b).

Description. ♀♀. Tegument porcelain-like, very thin and breakable, with reticular structure on the cephalotorax and scaly on the appendage. Carapace compressed dorsoventrally, twice as broad as high and just a little longer, the pseudorostral lobes inclusively, than the maximum breadth

(ratio 7 : 6, Fig. 1, A), shiny white. Starting from the posterior margin of the pseudorostral lobes, a crenellated circle (fig. 1 A) continuing on a lateral edge of the Carapace may be seen — both from above and underneath (fig. 4 A) — up to its posterior region somewhat similar to the spinules belt in *Diastylis fimbriata* Sars.

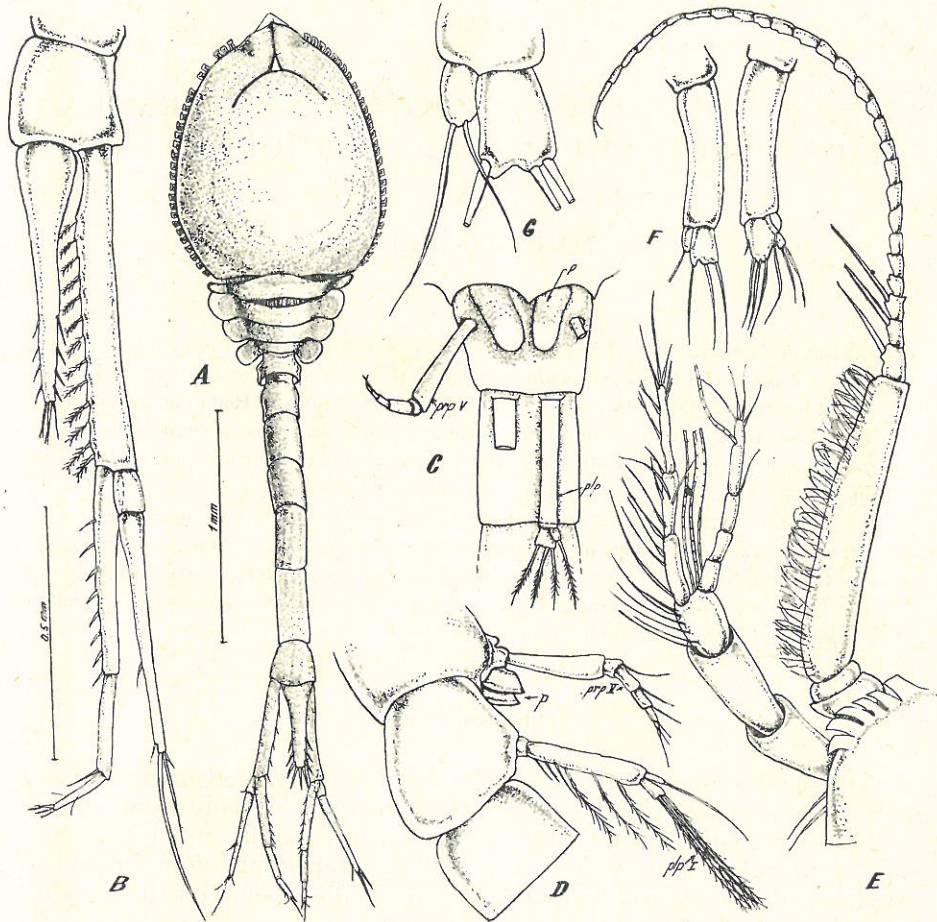


Fig. 1. — *Archaeocuma peruana* n.g.n.sp. ♂ (only F and G = ♀). A, ♂ P, seen from above; B, pleotelson and uropod of ♂ N (telson, from semilateral view); C, inferior part of last thoracomer and of the first pleomer: *p*, penial cutgrowth (*prp V* = last peraeopod; *plp I* pleopod I); D, ditto, lateral view; E, antennae; F, pleopods I in females; G, ditto, their rami magnified (orig.).

Antennule (Fig. 2, A) with basis 3-articulated, extremely scaly, even thorny; length of segments decreases distally; flagelli almost as long as basis, outer flagellum with 4 joints, inner one only with three, although somewhat longer than the former. A_2 (Fig. 2 B) is 4-articulated in adults. Buccal pieces of *Lamprops* type. Maxillule with palp bearing 2 setae, the inner one very short.

Maxilliped I with strong dactylary claw (Fig. 2 *C*); maxilliped II with this claw longer, almost two and a half as long as dactylus; merus swollen, eccentric as against axis of the other segments; it is the single segment provided with spines in its proximal inferior region and the superior distal one (fig. 2, *D*).

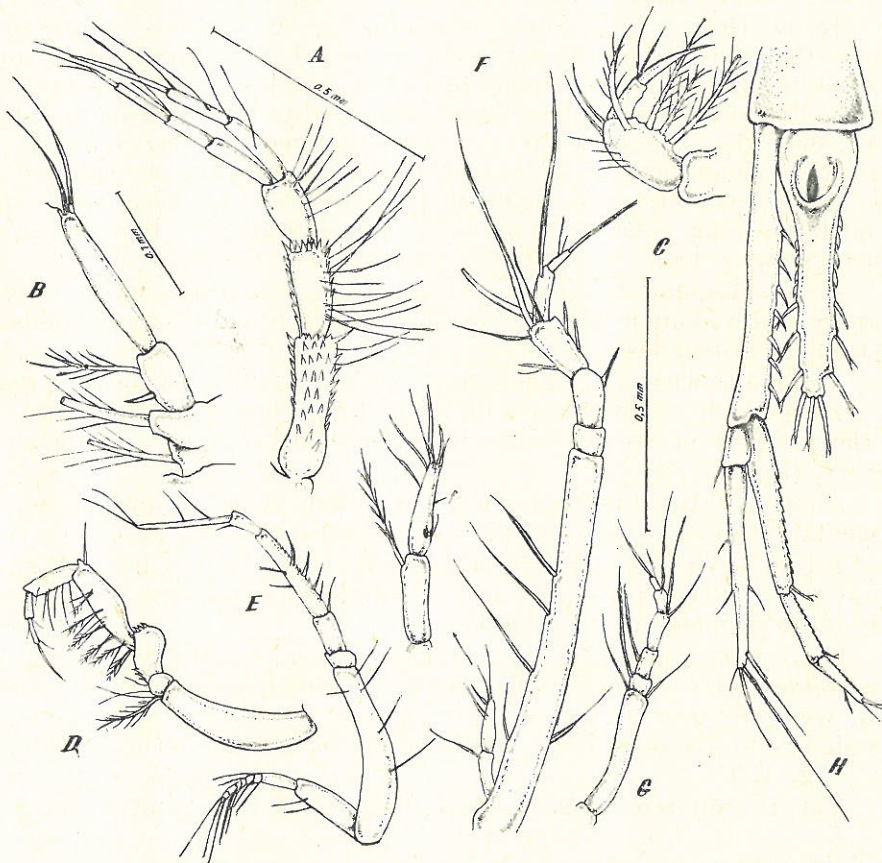


Fig. 2. — *Archaeocuma peruana* n.g.n.sp. ♀ P. A, Antennule; B, antenna; C, distal part of maxilliped I; D maxilliped III; E, peraeopod II; F, peraeopod IV (f, its exopodite magnified); G, peraeopod V (designed under the same magnifier as IV); H, telson and uropods (orig.).

Peraeopod II (Fig. 2, *E*) totally unarmed, with the basis short and dactylus \pm equal in length with the carpus, the latter being the only armed segment (on the inferior edge). Peraeopod IV (Fig. 2 *F*) with a huge basis and a double flexion, specific to Cumacea, between propodite and carpus, on one hand, and between carpus and merus, on the other hand. Exopods of maxilliped III and peraeopods I and II, minute, with flagellum 5-articulated, the ones of peraeopods III and IV reduced to two small segments (Fig. 2, *F*). Mxp. III and first thoracopods bear on the basis marsupial plates, serrated on their distal edge. Peraeopod

V, extremely reduced (Fig. 2, *G*) — only $2/3$ as long as the basis, prp. IV, and hardly exceeding the adjacent pleopod (Fig. 1 *D* and 1, *C*).

On the first pleomer (in females!) are 2 typical pleopods (Fig. 1, *F*), near to the next pleonite; their rami are short, uniarticulated; endopodite larger, a \pm quadrangular blade, with 4 setae, covering partially the exopodite, minute, oval, bearing 1—2 long, simple, distal setae (Fig. 1, *G*).

Telson (Fig. 2, *H*) shorter than the last 2 pleomers, is almost as long as the basis of the uropods, exceeding it by the three distal spines. Serrated margins with 3—4 pairs of flagellated spines in the distal third; also the apical spines are flagellated. Endopodite of the uropod 3-articulated, somewhat longer than the basis, having the proximal segment larger than the other two distal ones together, excepting the spines. Their inner edge serrated, each segment terminated by a flagellated spine. Exopodite as long as the 2 proximal endopodal segments, terminates with a huge seta, as long as its distal segment (Fig. 2, *H*).

— $\sigma\sigma$. Tegument, carapace shape and armature, ratio between carapace and abdomen length, structure of telson and even pleopods, are the same as in females.

Antennule with a peduncle more swollen and less scabrous; flagelli 4 —, respectively 3-articulated differing from the ones in females only by the presence of an estetascae bunch of which two are subterminally inserted (Fig. 1, *E*).

Antenna, also dimorphic, with flagellum short (approximately 35 segments), not exceeding the length of the carapace (Fig. 1, *E*).

Telson shorter than basis of uropods, bears 3—4 pairs of terminal lateral spines. Peraeopods present well developed exopodites, with a huge basis and 6 segments on flagellum.

Pleop I slightly longer than next pleomer; basis with 3 large pennated setae and 2—4 simple ones in the proximal region with the 2 short rami, with identical structure as in females, terminates with 4—5 long pennated setae (lacking in \varnothing) reaching the beginning of the pleomer III (*plp*, Fig. 1, *C*).

Yet, the fundamental feature distinguishing the $\sigma\sigma$ of *Archaeocuma peruana* from the other Cumacea is the presence on the posterior region of last peraeonite, of two obvious penial, conical protuberances, shiny, situated in an arcuate excavation of the respective sternite (Fig. 1, *C* and *D*) between the peraeopods of pair V and little before their insertion. These rudiments of penes distinctly appear only upon last prenuptial moult, also completely achieving the exopodites of peraeopods III and IV, as well as A_2 σ . Basis of uropods has 13 spines, partially double serrated (\varnothing has 7) and 8 spines on the endopodite of the uropods, while in $\varnothing\varnothing$ there is none (Fig. 1, *H*).

Size. $\varnothing\varnothing$ m = 4—4.2 mm (4.8 with A_1 and uropods together):

$\sigma\sigma$ N = 3.2 mm.

Material. 22 specimens (2 $\sigma\sigma$ N, 5 $\sigma\sigma$ P and 15 $\varnothing\varnothing$ P) St. 94, XIth Expedition of R/V Anton Bruun above the Peruvian Trench (08°21'S; 81°25'W). Muddy-sandy bottom with foraminifera and very rich in Isopoda and Cumacea; of the 150 Cumaceans, over 70 have been *Dias-*

tylis sp, *Cyclaspis* (3 species); *Makrokyllindrus* (7 specimens) and *Campylaspis* (2 sp.) [1]. 2 ♂♂ N, 1 ♀ M (St. V-15-60; 06°21'N; 85°17' W; 30.II.1958 - 1016 m; 1 ♂ N. (St. +V - 15-67; 09°43'S; 80°04' W; 8.XII.58, 2846 m), both stations west of Equator, made by R/V Vema vessel in its 15th expedition.

Holotype ♂ N, coll. Museum Gr. Antipa, no 200; allotype ♀ P, id. no 201 and 4 ♂♂ P + 12 ♀♀ P = paratypes, id. no 202.

Remarks. According to some features, the genus *Archaeocuma* should be included in the family Lampropidae, a family which seems to be morphologically better characterized than any other.

Yet, the presence, within this family, of genera presenting 3 pairs of pleopods (in ♂♂, of course) beside others without any pleopod, determined Stebbing [6] to separate them in several families, a viewpoint with which most cumaceologists did not agree. Recently, Given [3] resumes his classification and even suggests a new family Mesolampropidae, for his genus *Mesolamprops*, characterized by the presence of 2 pairs of pleopods in ♂♂. If—as advocated by Given—we consider that the number of pleopods in males actually represents a very valid generic character, this could no more be a family character, as well, a standpoint also accepted by Jones [4].

However, the recent finding of a genus with 2 pairs of pleopods in ♂♂ (Given, 1964) and of the genus *Archaeocuma* nobis, with a single pair (if we consider the latter also as *Lampropidae*) will have to partially change the diagnosis of this family, by adding Cumacea with 0—3 pairs of pleopods instead of “3 or 0 pairs” as it is given.

Yet, in order to obtain an accurate framing of the existence of a lampropidoid cumacean, *having one pair of pleopods not only in ♂♂ but also in ♀♀ and rudiments of penes, we deem as necessary to create a new family, Archaeocumidae.*

Both the presence of these pleopods in females and the male genital tubercles — unique features of known Cumacea — are so unusual, that they may account for a separate family.

In the process of time, this family would include, of course, other representatives, nearer to the cumacea ancestors, still presenting pleopods in females, which disappear during their evolution, but maintained in kindred pericaridae, f. inst. in Tanaidacea.

The fact that the evolution-line of pleopods is regressive is clearly demonstrated by the case of an *Archaeocuma peruana* ♀ from 3300 m (St. 166, XI Cruise R/V Anton Bruun 1965), accordingly, also from the Peru trench, the pleopods of which were shorter (up to the half of pleomer II) than in the type population (all 16 ♀♀ with pleopods as long as the pleomer II) and especially by the case of a ♀ captured in front of the Ecuador coast (15th Cruise R/V Vema); this latter practically *does not have any pleopods* and it has to be studied on a larger number of specimens whether it was anomaly or a new feature acquired by the local population which may be in a more advanced evolution stage than the one living in the Peru trench, an environment, presumably, nearer to the original one, which led to the creation of the *Archaeocuma* genus.

2. *Schizocuma* n.g.

Diagnosis. Pseudorostral lobes widely separated, forming two divergent funnels slightly upraised. Frontal lobe huge, terminates with the optic one, without any trace of lenses — like a broad plate bent between the pseudorostral funnels.

Abdominal segments and uropods particularly long and thin. Basis of maxilliped II without antero-inferior projection, while basis of peraeopods hardly broadened proximally.

3. *Schizocuma vema* n.sp. (Fig. 3 and 4 c, d)

Description. ♂ N. Cumacean of particular slenderness and thinness (Fig. 4, C and D). Carapace short (five times as short as the abdomen with uropods together), without carinae, with long, lateral hairs as phanera; slightly serrated on its antero-inferior edge (Fig. 3, A); ratio between cephalothorax and the remaining body = 2.8. Pseudorostral lobes, widely separated by the flexion of the blind, quadrangular eye plate, twice as broad as long, are slightly upturned (Fig. 3, B).

Abdominal segments long and thin, suggesting a *Caprella* when seen laterally (fig. 4, D); their length increases distally up to the fifth one, which is 5.5 times as long as broad; in exchange, the pleotelson is very short, almost a quarter the length of the last but one segment (Fig. 3, C).

Antennule with long basis and large flagellum, hardly exceeding its distal segment; it has five segments, the middle one much longer, while the short flagellum is 2-articulated (Fig. 3, A and B). A_2 with short flagellum; Maxilla II and Mxp. II of *Cumella* type; Mxp. I with long palp extended by a single seta. Mxp. III (Fig. 3, D) is the only thoracic appendage, somewhat armed, namely, two spinules on the basis; the other appendages are thin and unarmed. Peraeopod I has a very long ischium and a long dactylary claw; propodus, at least thrice as long as the dactylopodite (Fig. 3, E). Prp. II (Fig. 3, F) with dactylus equal to propodus and carpopodite together; basipodites of prp. I and II only slightly dilated although the ♂ specimen was ready for reproduction; their exopodites, as in the Mxp. III (Fig. 3, D), with flagellum 5-articulated. Prp III and IV, common, with exopodites somewhat smaller than in the first thoracopods, bearing long dactylary claws (Fig. 3 A).

Fig. 3. — *Schizocuma vema* n.g.n.sp. ♂ N. A, lateral view; B, cephalothorax, seen from above; C, pleotelson and uropod; D, maxilliped III; E, last 2 segments of peraeopod I; F, peraeopod II (orig.).

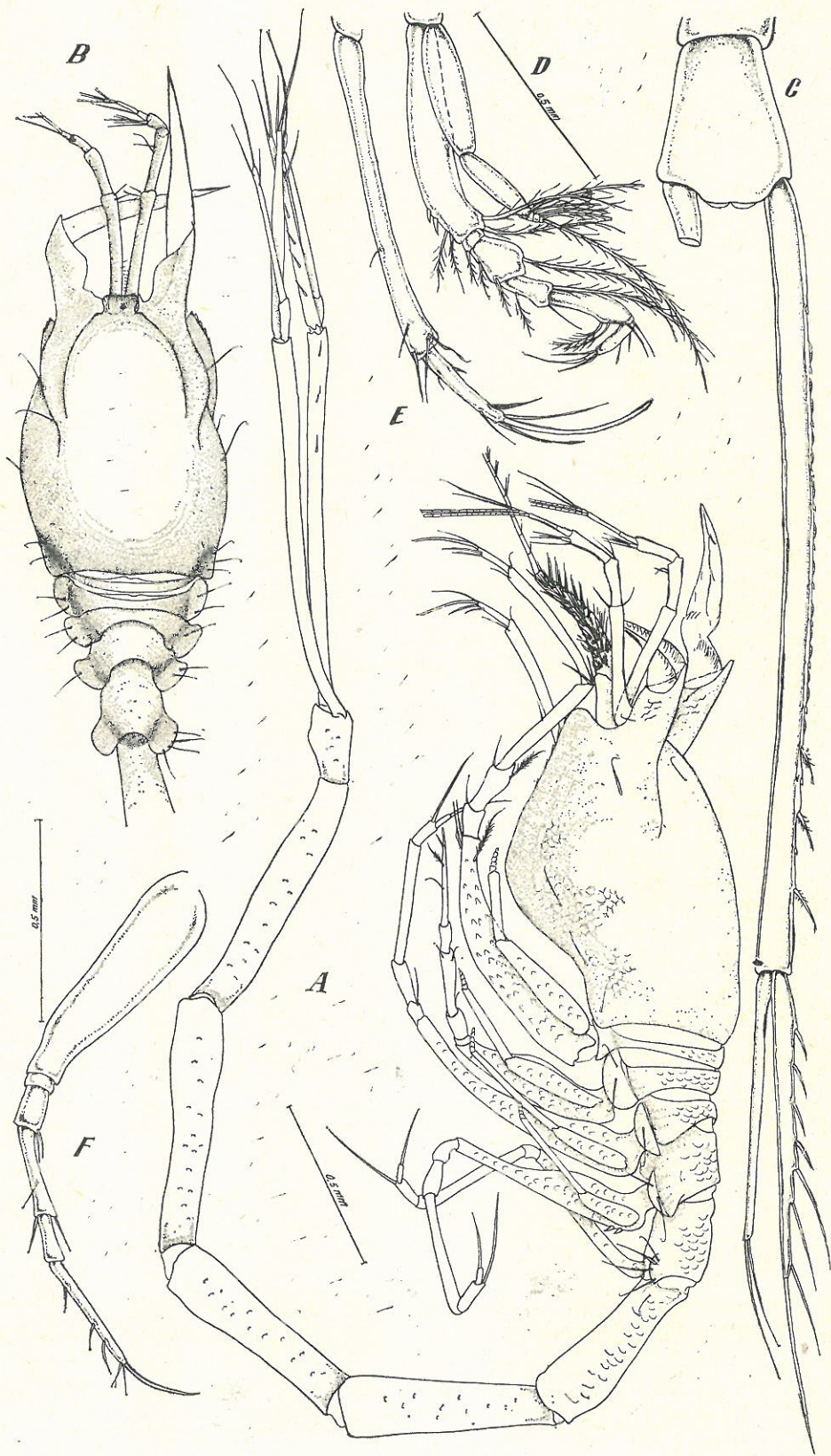


Fig. 3

Fig. 4. — *Archaeocuma peruana* n.g.n.sp. ♂ N. *A*, seen from below (last pereopods removed with a view to allow visibility of penial formations); *B*, profile of posterior part of pereonite and of first pleopods; arrow indicates the penial formations; left, pleopod I; right, pereopod V. *C*, ♂ of *Schizocuma vema* n.g.n.sp., Cephalotorax seen from above; *D*, lateral view of the whole specimen (orig. photo S. Boicescu).

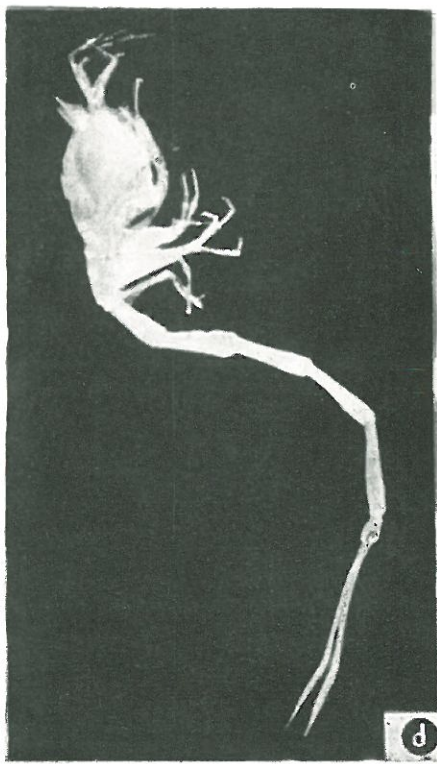
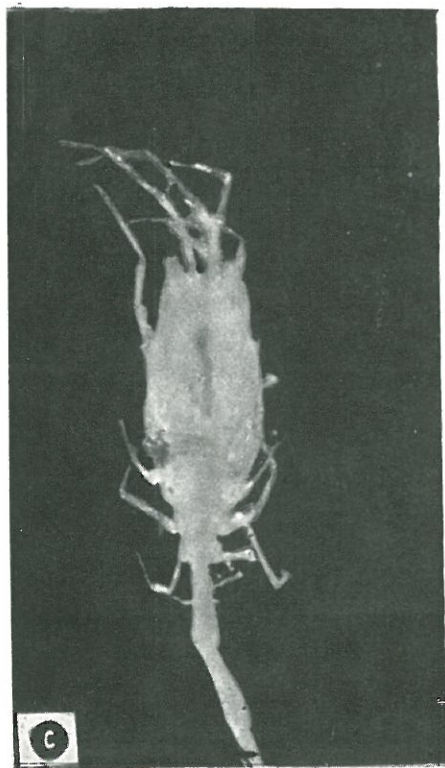
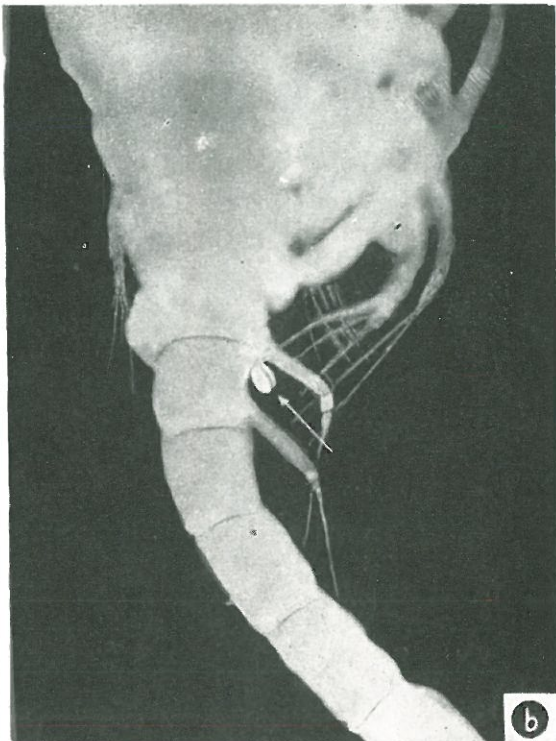
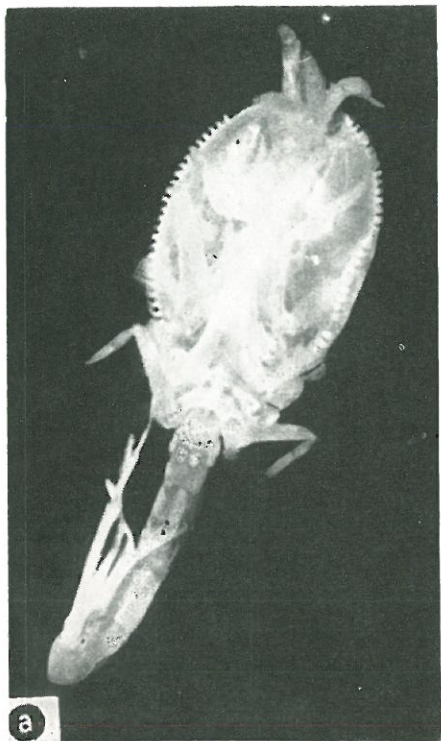


Fig. 4

Uropods (Fig. 3·A, C) unusually long, even though they seem to be short as against the slender pleomers (only as long as the last three ones). Their basis provided with 3 spines distally double serrated and approximately 12 minute, spiniform tubercles all along, slightly exceeds the length of the 2 last pleomers. Endopodite unarticulated, as in the whole family of Cumidae, exceeds the thin 2-articulated exopodite and bears 7 spines-setae (Fig. 3, C).

Size standard = 5 mm; together with A_1 and uropods = 7 mm.

Material 1 ♂ captured by the Vema expedition 15 (27°17'N; 77°08'W), the 1.I.1958. East of Florida, at 1316 m depth (S.B.T.).

Holotype ♂ bears no 203 in the collection of the Museum "Gr. Antipa".

Remarks. The only more accurate likeness of this caprelloid *Cumacean* with bifide forehead, would be with *Cumella molossa* Zimmer, which also presents a distinctly separated pseudorostrum. Zimmer writes [7] that *C. molossa* has many particularities which distinguishes it from the other species of the genus *Cumella*, resembling it only with *C. gracillima* Calman, „die auch deutlich getrennte Atemsiphonen besitzt".

It also appears to resemble "*Schizotrema*" *calmani* Stebling [6] (the inverted commas belong to us, because in that case, it could not deal with this genus), about whom the same Zimmer wrote in 1941 [8] (I quote); „Die von Cap-Natal bekannte Tiefseeart dürfte wohl einer bisher unbeschriebene Gattung angehören". With regard to *C. gracillima* Calman [2], he writes that "distinguished from both the known species of *Cumella* by the much greater slenderness of the posterior part of the body and of the limbs, especially the uropods" ... inferring upon the necessity of modifying the diagnosis of the genus. Taking into considerations these observations as well as the above mentioned unusual morphological features, as: separated pseudorostral lobes, extreme length of abdomen, lack of an infero-distal projection of the basis of mxp. III and the lack of dilation of the peraeopods I and II basis, enable us to deem as fully necessary the setting up of a new genus, *Schizocuma*.

For the time being, this latter seems to include, along with *S. vema* mihi, also *Schizocuma calmani* (Stebling) and *Schizocuma molossa* (Zimmer) in which the uropods are unknown; maybe, upon a possible future revision, it could also enter *Cumella gracillima* and *C. egregia* Hansen 1920, all slender species, distinctly differing from the stocky body of almost all Nannastacidae; they don't appear to have 2 pseudorostral lobes, although two separated siphons have been mentioned in the former.

What is certain is that the new genus also belongs to the family Nannastacidae but has nothing in common with *Schizotrema*.

A particular interesting fact-found after this manuscript has been delivered- is the finding, upon the recent selection of Cumacea collected by myself on the occasion of the XI th Cruise R/V Anton Bruun, of a second specimen of *Schizocuma* in the Peruvian waters (St. 101: 08°13'S; 81°09', 1927-1997 m).

It deals about a ♀ which is likely to belong to another species characterized by a gibbosity in the posterior part of the Carapace. Consequently, this new genus joins the group of similar living beings, present both in the E and the W of Central America, hence among the very old forms,

the ancestors of which populated the Tertiary Ocean that separated the two Americas.

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Received March 24, 1972

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