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NEW BATHYAL SPECIES OF *SEROLIS* (ISOPODA, FLABELLIFERA) FROM THE WESTERN SOUTH ATLANTIC OCEAN [1])

BY

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Available data are scanty on the deep-sea Isopoda fauna from the western South Atlantic Ocean, off southern Brazil (Menzies, 1962). In order to improve our knowledge, an intensive systematic survey (ISOTAN-DRAGA I Project), was conducted by the author from depths extending from the shallow sublittoral to 3180 meters (MBT series). The research vessels used were the "Prof. W. Besnard" and "Emília", of the Instituto Oceanográfico, USP. The samples were collected with an MBT dredge (a small biological trawl modified by the author).

The present paper is the first of a series to be published on the deep-sea isopods from that region. It reports three new bathyal species of *Serolis* Leach, 1818, namely *S. insignis* sp. n., *S. arcuata* sp. n. and *S. venusta* sp. n.

Serolis insignis sp. n. (figs. 1-11)

Holotype. — Sta. MBT 168. Damaged female with developing oostegites, 11.0 mm in width (measured along pereonite I at the level of the postero-lateral angles). September 1970. P. Soares Moreira coll.

Type locality. — Sta. MBT 168. Off Cabo Frio, State of Rio de Janeiro, Brazil, 21°37'S 40°03'W, 900 m depth.

Other material. — Sta. MBT 168. 1 fragment of the fore half of the body of a juvenile. Sta. MBT 96. Off State of Santa Catarina, Brazil, 26°36'S 46°00'W. 600 m depth. June 1970. P. Soares Moreira coll. 1 manca specimen, 7.0 mm long (paratype).

Etymology. — The species name is derived from the Latin word "insignis" = mark or sign, alluding to the pronounced transverse carina on the dorsum of the pleotelson.

Description. — Holotype female. Body (fig. 1): enlarged, depressed, only slightly convex, lateral margins smooth. Colour (in alcohol) yellowish; middle of head dark; eyes pinkish; middle of pereon pinkish, especially on first three pereonites.

Head: greatest width by far across frontal margin; antero-lateral angles acutely projected; frontal carina well marked, sharp, running uninterruptedly along transverse length of the head; between the eyes, at its anterior level, are 4 flattened

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tubercles, directed distally and placed in transverse row; posteriorly on the head 3 somewhat flat tubercles, the median of which smaller and separated by deep grooves from the broad lateral ones. Eyes large, prominent and convex, pinkish, composed of few but distinct ommatidia, whitish-opaque at surface.

Pereon: pereonites II-VI free, with dorsal surface smooth, lacking tubercles or rugae. Pereonite I with 2 sharp carinae on either of the expanded lateral sides, one of which transverse. Pereonites I-II (and judging from the manca paratype, also pereonites III-VI) bearing on posterior margin a median, flat, acute point; on either side of the distal margin of the coxal plates, very laterally, a rounded projection, absent only on pereonite VI. Coxal plates elongate, curved, separated from one another at the lateral margins by large gaps; distolateral angles of pereonites II to VI narrowing posteriorly to a level far beyond apex of pleotelson. Coxal plates in both holotype and manca paratype distinctly marked off by dorsal sutures on pereonites II-V; in the manca specimen the sutures on pereonite VI are clear and complete, whilst in the holotype they are fused to the segment, appearing as "scars", not reaching to the margins of the segment.

Pleon: all three pleonites free, each with a mid-distal, flat, acute point. Pleonite 2 elongate, very narrow, margins almost parallel laterally, reaching back to a level far beyond pleonite 3, but not beyond pereonite VI. Pleonite 3 short, acutely pointed, reaching to a level slightly beyond the pleotelson mid-anterior projection. Pleotelson broad, depressed, flattened along the lateral margins from about the middle to near the apex; dorsum with a flat mid-anterior triangular projection, and a low, broad, longitudinal keel; halfway back a pronounced, encurved, transverse carina running along all width of the pleotelson, joining on either side a short oblique ridge fading posteriorly; lateral margins widely convex distally, with deep postero-lateral excavations flanked laterally by a rounded point; distal margin on either side of mid-line slightly curved and converging to a small, rounded, apical point.

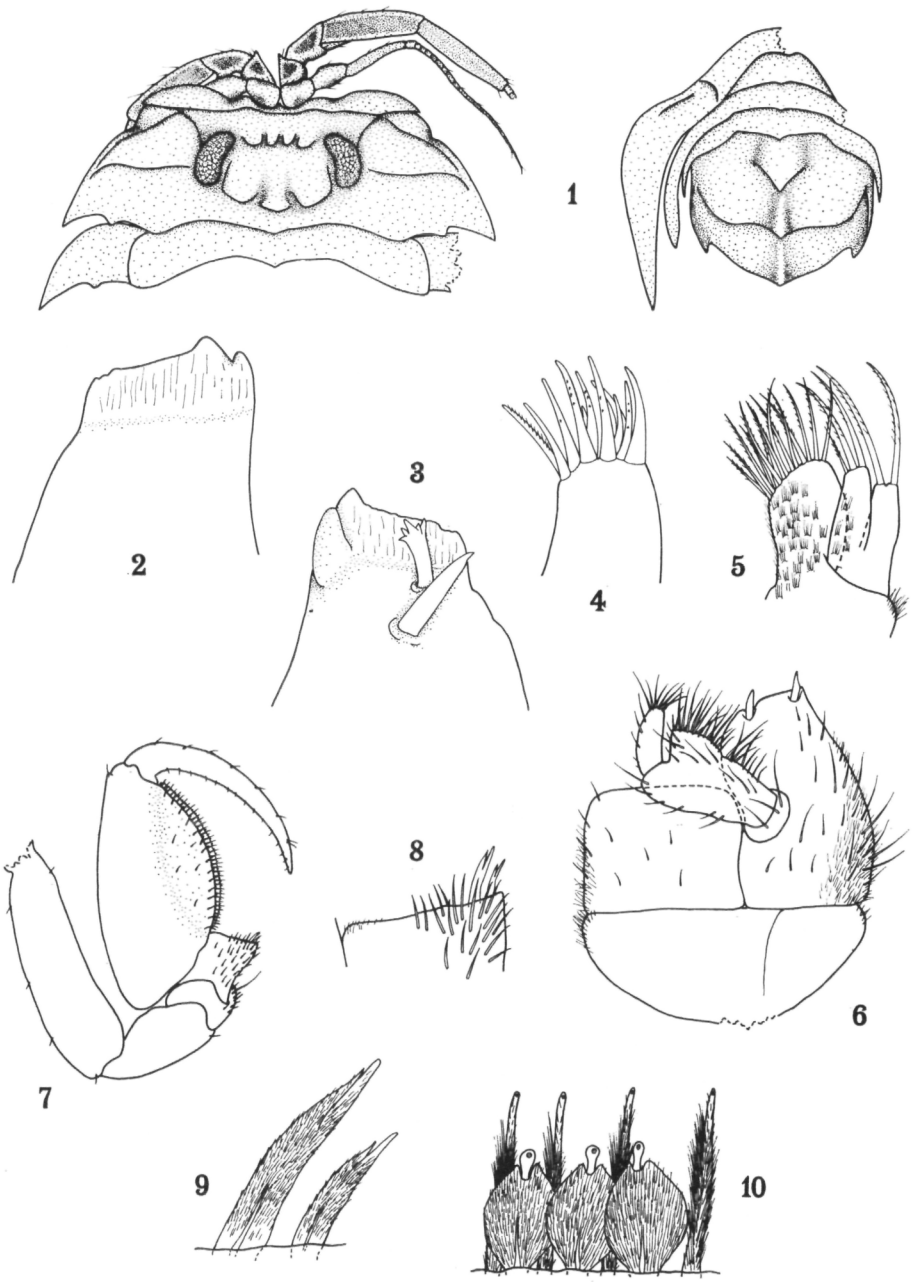
Antenna 1: flagellum composed of 20 short articles progressively narrowing posteriorly.

Right mandible (fig. 2): incisor obliquely truncate, cutting edge slightly irregular, with 2 strong prominent teeth on inner angle. Lacinia mobilis composed of 1 stout, distally many-toothed spine (fig. 3). Setal row of 1 single, strong, tapering spine.

Maxilla 1 (fig. 4): outer endite, apex with 10 unequal, encurved toothed spines, and 1 stout, minutely combed seta.

Maxilla 2 (fig. 5): outer lobe a little broader than 2 inner lobes together, surface densely covered by pectinate scales, apex with 14 slender combed setae. Outer 2 lobes of subequal length; innermost lobe with 3 apical pectinate setae, one of which much shorter; outermost lobe with 2 pectinate setae.

Maxilliped (fig. 6): endite robust, inner margin convex proximally, sides covered by both moderately elongate and delicate setae; apex broad, obliquely truncate, with outer angle rounded and 2 stout subapical spines. Palp 3-articulate;



Figs. 1-10. *Serolis insignis* sp. n., holotype female, 11.0 mm in width (along pereonite I). 1, body, dorsal, anterior and posterior parts; 2, 3, right mandible, outer and inner views; 4, maxilla 1; 5, maxilla 2; 6, maxilliped; 7-10, pereopod I: 7, total; 8, apex of carpus; 9, composite setae from carpus; 10, composite setae from ventral margin of propodus.

2nd article elongate, broader distally, inner margin densely covered by moderately elongate setae and with a distinct emargination about the middle; article 3 about half as long as article 2. Distal epipod quadrate with rounded angles, outer margin with fine long setae and a few short setae.

Pereopod I (fig. 7): basis and ischium almost bare. Merus, ventral margin widely rounded, with short setae and 1 slender, elongate seta on ventro-distal angle. Carpus, main portion of article covered by short setae, ventral margin slightly convex, distal margin truncate (fig. 8) with 2 stout, stiffly setulate composite setae (fig. 9). Propodus elongate, oval; ventral margin fringed by two longitudinal rows of minutely setulate setae: one row composed of bifid elongate setae, another one by short, enlarged, leaf-like setae (fig. 10). Dactylus narrowing apically, claw not marked off, margins with short setae.

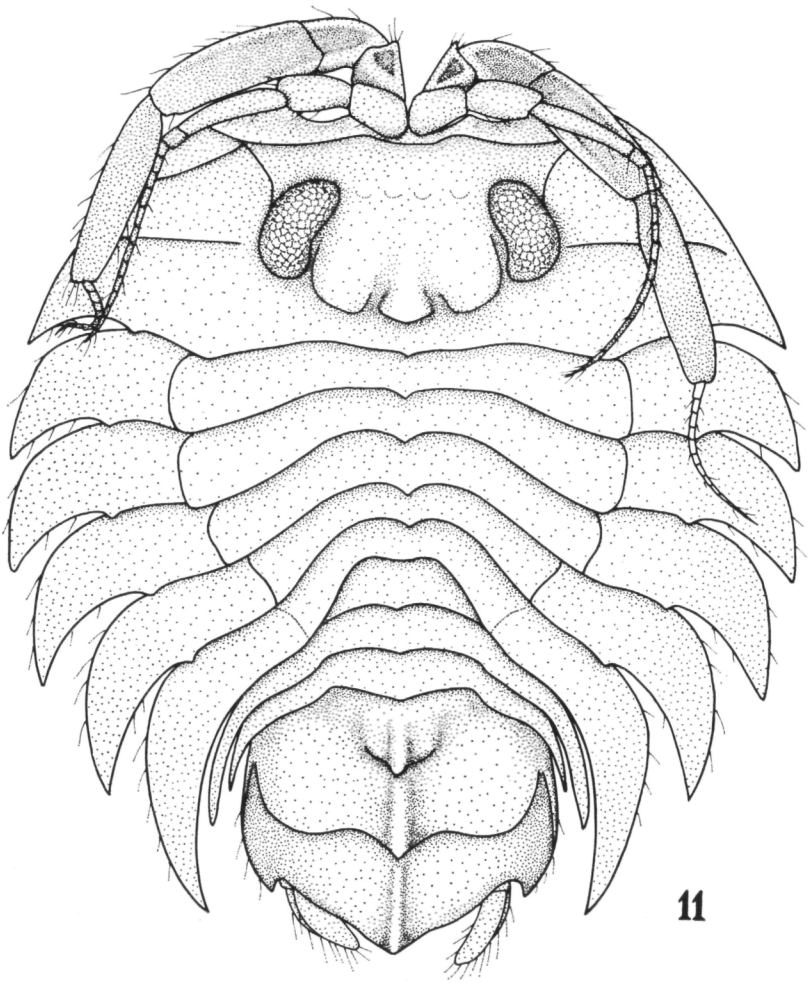


Fig. 11. *Serolis insignis* sp. n., manca paratype 7.0 mm long, dorsal.

Manca paratype. — Major differences from female holotype.

Body (fig. 11): enlarged, almost circular, lateral margins with few scattered setae.

Head: similar to that of holotype female, but with all 4 flattened anterior tubercles only slightly marked.

Pereon: coxal plates of pereonite VI (as well as the pleonite 2 pleural plates) much shorter than those of holotype.

Pleon: mid-anterior spine-like projection not so triangular as in the female, and less acutely pointed.

Discussion. — This new species seems closely related to *Serolis gracilis* Beddard, 1884, by the overall shape of the body, by the coxal plates being elongate narrow, acutely-pointed and marked off by dorsal sutures on pereonites II-V, and by an almost similar pattern of carinae on the dorsum of the pleotelson.

However, *S. gracilis* may easily be distinguished from *S. insignis* sp. n. by the following main characteristics:

(a) head smooth, convex, without either anterior and posterior tubercles;

(b) pleotelson with "two oblique ridges one on either side" of the flattened mid-anterior spine (Beddard, 1884: 62, pl. 3 figs. 7, 8), which are lacking in *S. insignis*, and

c) pleotelson, posterior angles widely rounded, apex slightly concave (Beddard, 1884: pl. 3 figs. 7, 8), whilst in *S. insignis* its distal margin converges pronouncedly mid-posteriorly to a rounded apical point.

Besides the mentioned characteristics, further ones seem apparent between the females of both species. In *S. gracilis* the coxal plates of the pereonites VI, while elongate, extend posteriorly only to the level of the apex of the pleotelson. In contrast, in *S. insignis* sp. n. they reach posteriorly to a level far beyond the apex of the pleotelson. Pleonite 2 also seems to be longer in *S. insignis* than in *S. gracilis*.

The manca paratype (sex indeterminate) shows many characteristics that only after subsequent molts will be fully developed. The most obvious of them are the transverse row of tubercles anteriorly on the head, the absence of pereopod VII, the relative length between pereonite VI and pleonite 2, the shape of the mid-anterior pleotelsonal prominence, and the coxal plates of pereonite VI not yet being completely fused to the segment.

It seems interesting to point out in the holotype female the abnormal emarginations on the antero-lateral margins of the pereonite I. They were caused by the subchela of the male pereopod II while clasping the female during copulation. These marks are frequently found in females of *Serolis* species, as discussed by Moreira (1973).

Serolis arcuata sp. n. (figs. 12-35)

Holotype. — Sta. MBT 168. Ovigerous female, 3.0 mm long. Allotype adult male (slightly damaged), 3.8 mm long. September 1970. P. Soares Moreira coll.

Type locality. — Sta. MBT 168. Off Cabo Frio, State of Rio de Janeiro, Brazil, 21°37'S 40°03'W, 900 m depth.

Other material. — Sta. MBT 168. 1 fragment of the fore half of the body of an adult female with empty marsupium.

Etymology. — The name is derived from the Latin word "arcuatus" = arched, alluding to the animal's body convexity.

Description. — Holotype female. Body: grossly oval, moderately convex, lateral margins smooth with few short setae.

Head smooth; greatest width across frontal margin; frontal carina well marked laterally; mid-anterior region depressed, posterior region distinctly convex. Eyes large, reddish, slightly prominent, composed of distinct but few ommatidia.

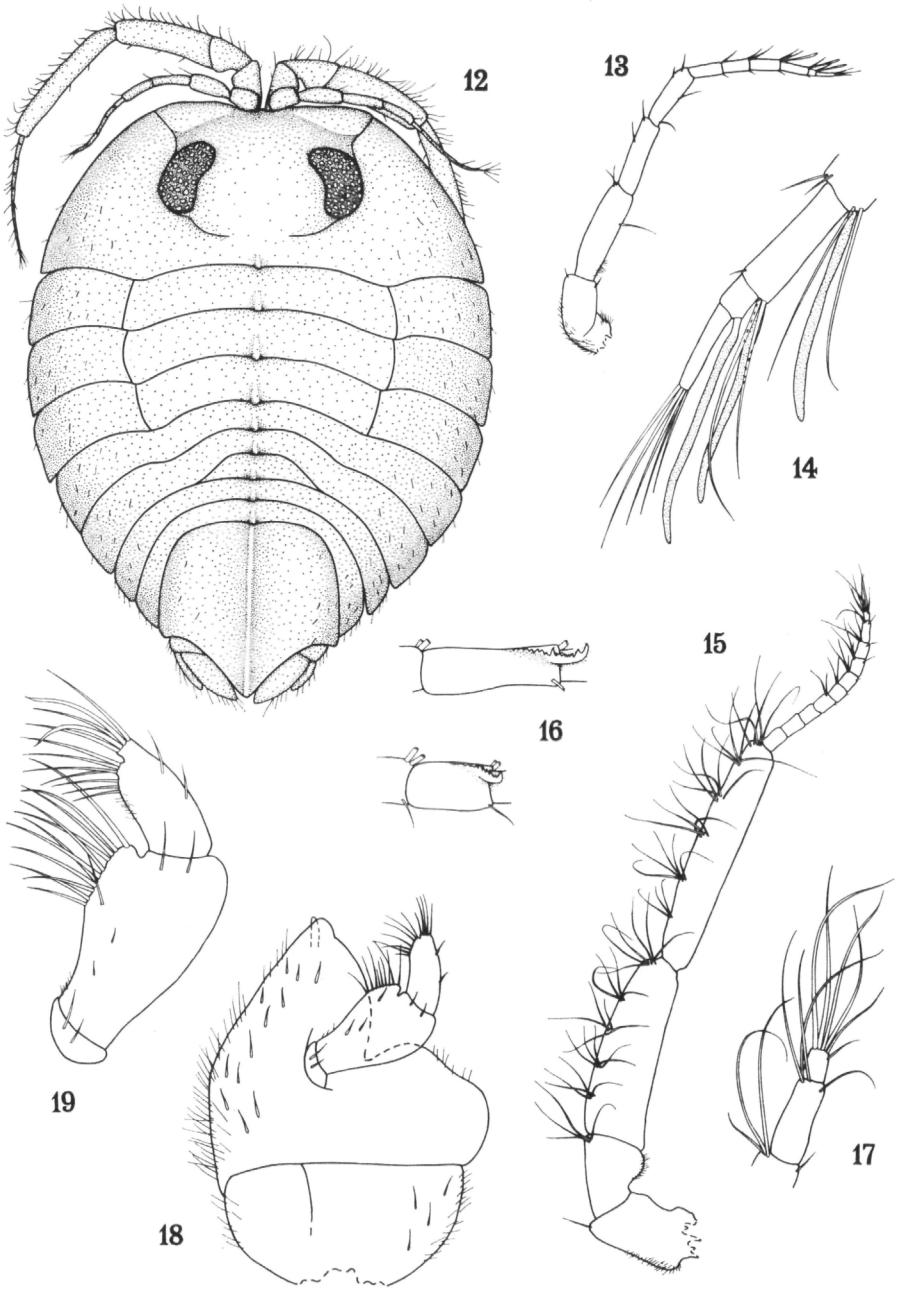
Pereon: dorsum with scattered short setae mainly placed laterally. Expanded sides of pereonite I devoid of carina. Pereonites II-VI free, with an almost indistinct mid-longitudinal keel not ending in a point. Pereonites and pleonites all contiguous laterally with one another. Coxal plates marked off by dorsal sutures on pereonites II-IV. Lateral sides of coxal plates expanded, and only slightly prolonged backwards on rear angle.

Pleon: all three pleonites free, each with a slight median carina ending into a small point. Pleonites 2 and 3 narrow, subequal medially; pleonite 3 extending posteriorly to a level beyond apex of pleonite 2, reaching back to about the distal third of the pleotelson. Pleotelson, lateral margins nearly parallel, slightly rounded, with slight postero-lateral excavations flanked laterally by a rounded point; distal third triangular, apex pointed-rounded; a narrow mid-longitudinal keel running along all length of the pleotelson.

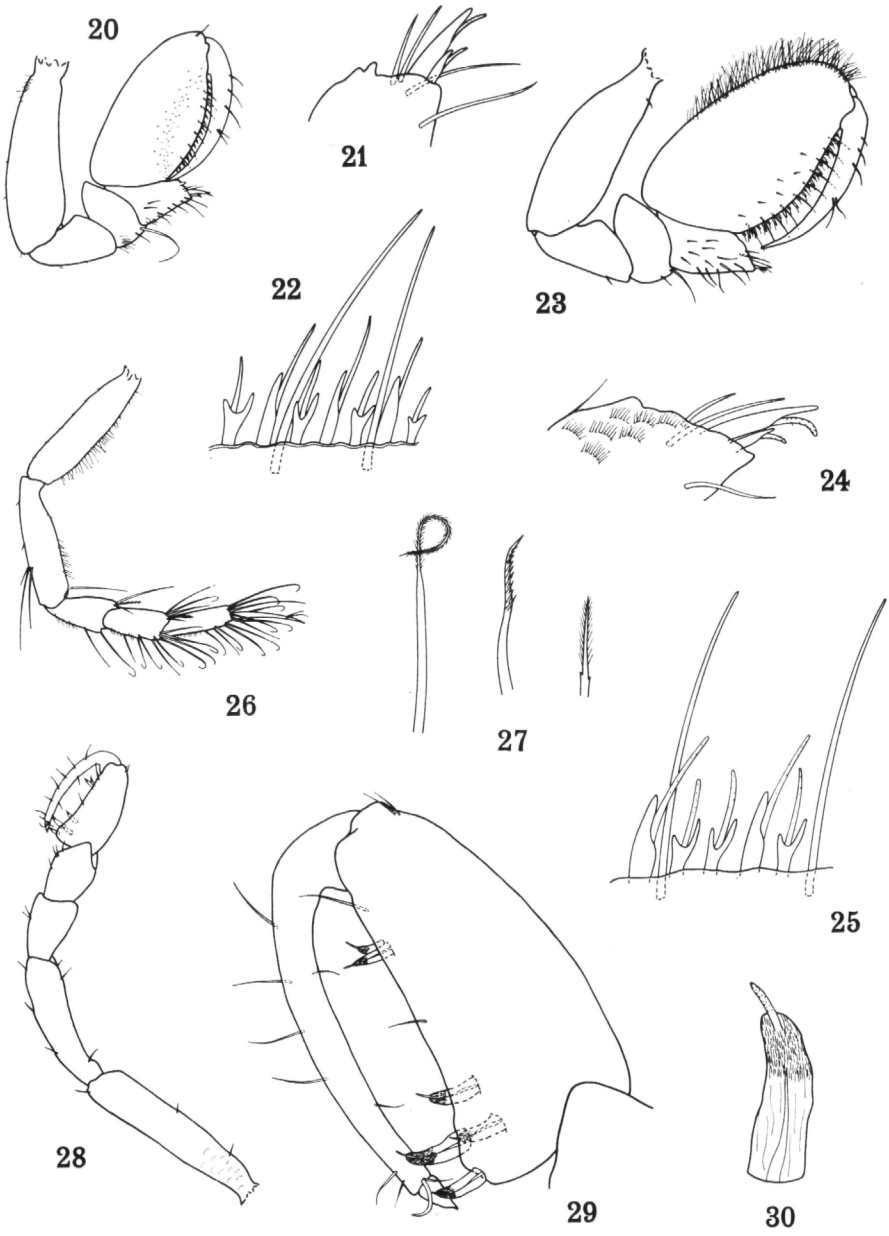
Antenna 1 (fig. 13): peduncle, both inner margins of article 1, and fore part of outer margin of articles 1 and 2, covered by short fine setae; article 3 about 1.2 times the length of the 4th article. Flagellum composed of 6 articles; 1 single aesthete present on each article from 3 to 5; first four articles elongate and about equal in length, last two smaller (fig. 14); penultimate article the shortest of the flagellum, about 3 times shorter than the last; ultimate article elongate, narrow, tipped by a tuft of slender setae.

Antenna 2 (fig. 15): peduncle, proximal half of inner margin of article 2, and outer margin of article 3, with a dense coverage of short fine setae; ventral side of each article from 3 to 5 with tufts of slender setae. Flagellum composed of 10 short articles slightly narrowing posteriorly; a short, irregularly serrated, distally well projected flagellar process (fig. 16) present on ventral surface of the articles 2 to penultimate; last article the shortest of the flagellum, about 2.7 times shorter than the penultimate (fig. 17).

Maxilliped (fig. 18): endite narrowing towards a pointed apex; 2 stout, blunt simple setae subapically, one of which hardly to be seen from the outside, due to the thickness of the endite; inner margin densely covered by fine, moderately elongate setae, outer surface with scattered simple setae. Distal epipod fused to endite, and prominently convex at both lateral and distal margins. Palp 3-articu-



Figs. 12-19. *Serolis arcuata* sp. n., allotype male 3.8 mm long (fig. 12), holotype female 3.0 mm long (figs. 13-19). 12, body, dorsal; 13, 14, antenna 1 and last three articles of flagellum; 15-17, antenna 2: 15, total; 16, flagellar process; 17, terminal articles of flagellum; 18, 19, maxilliped and its 3-articulate palp.



Figs. 20-30. *Serolis arcuata* sp. n., holotype female 3.0 mm long (figs. 20-22, 26, 27), allotype male 3.8 mm long (figs. 23-25, 28-30). 20-25, pereopod I: 20, 23, total; 21, 24, apex of carpus; 22, 25, composite setae from ventral margin of propodus; 26, 27, pereopod II and types of setae from its articles; 28-30, pereopod II: 28, total; 29, subchelate propodus and dactylus; 30, composite setae from propodus.

late; article 2 about 1.6 times the length of article 3; rear part of inner margin of 2nd article truncate and bearing elongate setae; distal portion of last article characteristically shaped, as shown in fig. 19.

Pereopod I (fig. 20): basis and ischium with dorsal margin naked, ventral margin with a few minute setae. Merus strongly projected dorsally, lower margin widely rounded, proximal half covered by fine setae, distally with 1 subapical seta and 1 slender bare seta. Carpus, ventral margin with both fine and short, simple setae; distal portion with 2 unequal, stout, composite setae, and short, bare setae (fig. 21). Propodus oval, robust; ventral margin bordered by two longitudinal rows of 2 types of short, composite setae, and by a submarginal row of elongate setae (fig. 22). Dactylus curved inwards, a row of few setae along the outer margin.

Pereopod II (fig. 26): basis and ischium, dorsal margin with a coverage of fine setae. Ischium through to propodus with ventral margin bearing transverse rows of very slender, finely setulate setae characteristically recurved at the tip (fig. 27). This type of seta, together with a few simple ones, are present on the dorso-distal angles of the articles, excepting that of the basis. Merus and carpus, in addition, bearing two other types of pectinate setae (fig. 27) on the dorso-distal angle. Dactylus elongate, very slender, ending in an acute claw.

Pereopod VII (fig. 31): similar to pereopod II, as well as to pereopods III-VI. Both the setal pattern and types of setae present on pereopod II are also found in this pereopod. It differs from pereopod II, however, by the larger number of transverse rows of setae on the ventral margin of the articles. Dactylus elongate, very slender, as shown in fig. 32.

Uropod (fig. 35): biramous; protopod, inner margin with a coverage of fine setae, inner distal angle strongly projected and bearing one elongate, plumose seta. Exopod shorter than the endopod. Endopod broad, about 1.8 times the length of the exopod, inner and outer margins broadly convex, bordered by plumose setae, and converging to a rounded apical point.

Description of allotype adult male. — Body (fig. 12): larger but similar to that of female, from which it differs only slightly. Mid-longitudinal carina on pereonites and pleonites prolonged backwards into a short point. Pleotelson's median keel narrow and well marked.

Pereopod I (fig. 23): similar to that of female but stouter, differing strikingly because the dorsal margin of the propodus bears a large, dense patch of elongate fine setae. Carpus (fig. 24) and both types of composite setae bordering ventral margin of propodus (fig. 25) almost as those of the female.

Pereopod II (fig. 28): basis through to carpus with few short setae on both upper and lower margins. Propodus elongate (fig. 29), narrower distally, ventral margin with three pairs of stout composite setae (fig. 30). Dactylus elongate, abruptly curved inward, when folded back reaching to proximal angle of propodus, apex distinctly marked off, triangular.

Pleopod 2 (fig. 33): protopod strongly projected on inner angle, which bears two elongate, plumose coupling setae. Endopod broad (fig. 34), moderately prolonged on inner angle; copulatory appendix (fig. 33) about 3 times the length of the endopod.

Discussion. — This species seems closely related to *Serolis oblonga* Moreira (in press), by the general morphology of the body, the similarity of the shape of both pleotelson and uropods, the distal epipod of the maxilliped fused to the endite, and the kinds of setae bordering the ventral margin of the pereopod I propodus.

S. arcuata sp. n. differs from *S. oblonga* by the presence of eyes (*S. oblonga* is blind), palp of maxilliped 3-articulate (4-articulate in *S. oblonga*), upper margin of propodus of male pereopod I densely setose (in *S. oblonga* this setose cover is lacking), and in the length of the male pereopod II dactylus, that, when flexed, reaches to the proximal angle of the propodus, while in *S. oblonga* it reaches to a level far beyond the propodal proximal angle.

Secondary sexual dimorphism is chiefly noted in the setose coverage of the dorsal margin of the male pereopod I propodus.

Serolis venusta sp. n. (figs. 36-56)

Holotype. — Sta. F. Adult male, 3.8 mm long. February 1969. P. Soares Moreira coll.

Type locality. — Sta. F. Off State of São Paulo, Brazil, 24°42'S 43°54'W, 1000 m depth.

Other material. — Sta. MBT 190. Off State of São Paulo, Brazil, 25°28'S 44°57'W, 1100 m depth. May 1971. P. Soares Moreira coll. 1 damaged adult male, and 1 young male with pereopod II not fully developed, 2.7 mm long (paratypes).

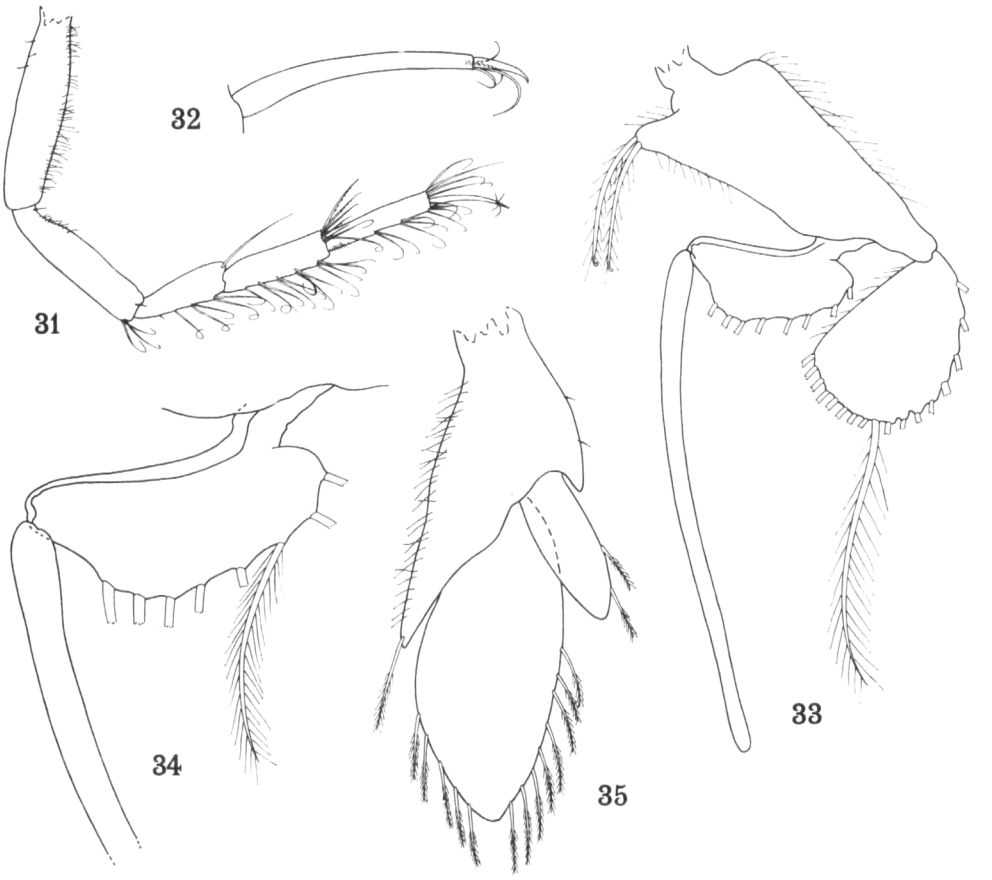
Etymology. — The species name is derived from the Latin word "venustus" = beautiful.

Description. — Holotype adult male. Body (fig. 36): triangular, well convex, lateral margins smooth and devoid of setae. Colour (in alcohol) milky white.

Head: equally broad across both frontal margin and level where the eyes should be; frontal carina well marked; frontal margin rising almost abruptly to frontal ridge; middle surface of head widely convex; posteriorly, a distinct keel ending in a point. Eyes absent, without any trace of ocular prominence.

Pereon: pereonite I, expanded sides smooth, devoid of ridges. Coxal plates marked off by dorsal sutures on pereonites II-IV. Pereonites I-VI free, with a pronounced median carina extending backwards into a point. Each pereonite does not extend backwards beyond the next. Disto-lateral angles of coxal plates roundly quadrate, those of pereonites V and VI slightly elongate.

Pleon: all three pleonites free, each with a median keel produced backwards into a point. Pleonites 2 and 3 narrowly elongate, apex evenly rounded and not exceeding general convexity of body outline. Pleonite 2 extending not beyond



Figs. 31-35. *Serolis arcuata* sp. n., holotype female 3.0 mm long (figs. 31, 32, 35), allotype male 3.8 mm long (figs. 33, 34). 31, 32, pereopod VII, total and dactylus; 33, 34, pleopod 2, total and endopod with basal part of copulatory appendix; 35, uropod.

pleonite 3. Pleotelson broadly triangular, apex acutely pointed; dorsal surface convex and smooth, except for a pronounced mid-sagittal carina running the length of the pleotelson; a shallow, elongate pit anteriorly on the mid-longitudinal ridge.

Antenna 1 (fig. 37): peduncular articles elongate, not expanded; articles 3 and 4 narrower than 1st and 2nd; article 3 the longest of the peduncle, about 1.2 times the length of the 2nd, and 1.5 times the length of the 4th. Flagellum composed of 9 short articles gradually tapering; each article from no. 4 to penultimate bearing on inner-distal angle one aesthete and a few simple setae; penultimate article short (fig. 38), terminal one elongate, about 1.8 times the length of the penultimate, broader anteriorly, tipped by a tuft of slender, simple setae.

Antenna 2 (fig. 39): peduncle, articles 3-5 with many tufts of moderately elongate setae on ventral side; article 5 the longest of the antenna, about 1.1 times the length of the 4th. Flagellum composed of 7 narrowly elongate articles, each

bearing on the inner-distal angle 2-3 slender setae; articles from 2 to 6 with a strongly serrated flagellar process (fig. 40) on the ventral surface; terminal article short, about 2.1 times shorter than the penultimate (fig. 41).

Maxilliped (fig. 42): endite distally broad, with a shallow medial concavity and 2 stout setae, one of which located on inner angle; ventral surface densely covered by pectinate scales and few short setae. Palp 3-articulate (fig. 43); basal article with 2 setae; 2nd article the largest, about 2 times longer than article 3, with a shallow depression medially on inner margin. Distal epipod (fig. 44) not fused to endite, expanded, grossly quadrate, distal angles rounded, inner distal angle widely rounded, lateral surface covered by pectinate scales.

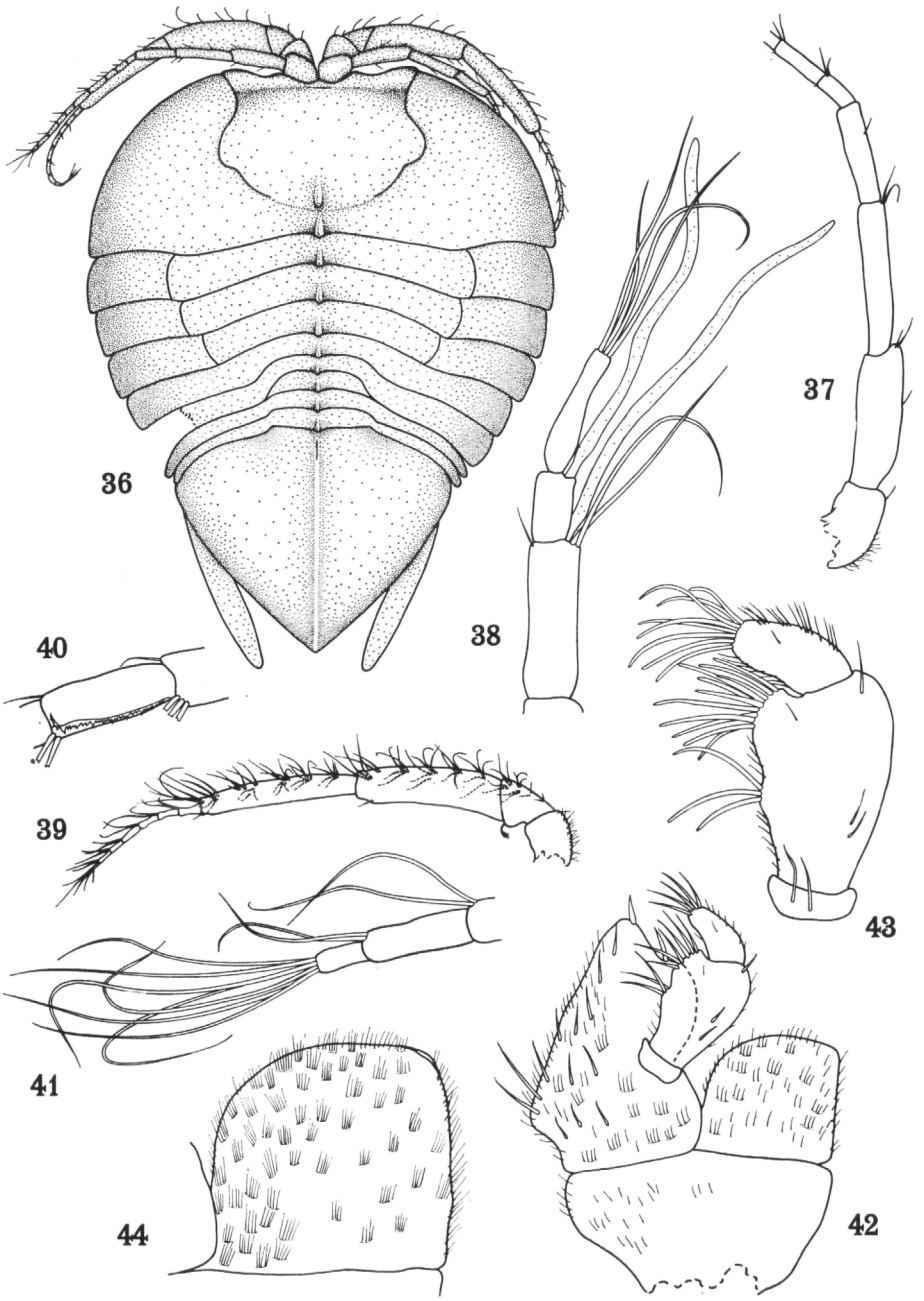
Pereopod I (fig. 45): densely covered by pectinate scales. Basis stout, ventral margin widely convex. Merus short, dorsal margin widely rounded, distal margin and ventro-distal angle with short setae. Carpus, truncate distal margin with a rounded prominence, 1 simple seta and 2 stout composite setae (fig. 46). Propodus strong, oval; lower margin convex, bordered by two longitudinal rows of two kinds of short composite setae, and by a narrow fringe of hyaline membrane (fig. 47). Dactylus curved, claw not marked off (fig. 48).

Pereopod II (fig. 49): basis elongate, with short setae along both dorsal and ventral margins. Ischium, merus and carpus with transverse rows of minutely combed setae on ventral margin, those on ischium placed on distal portion; merus with the upper-distal angle projected and bearing setae; carpus enlarged, with a few pectinate setae medially on dorsal margin. Propodus elongate, strong; upper margin distinctly convex; ventral margin almost straight, with both stout composite setae and stout apically tapering setae arranged as shown in fig. 50. Dactylus elongate, curved, tipped by a distinct, blunt claw, when folded back reaching to a level beyond ventro-proximal angle of propodus.

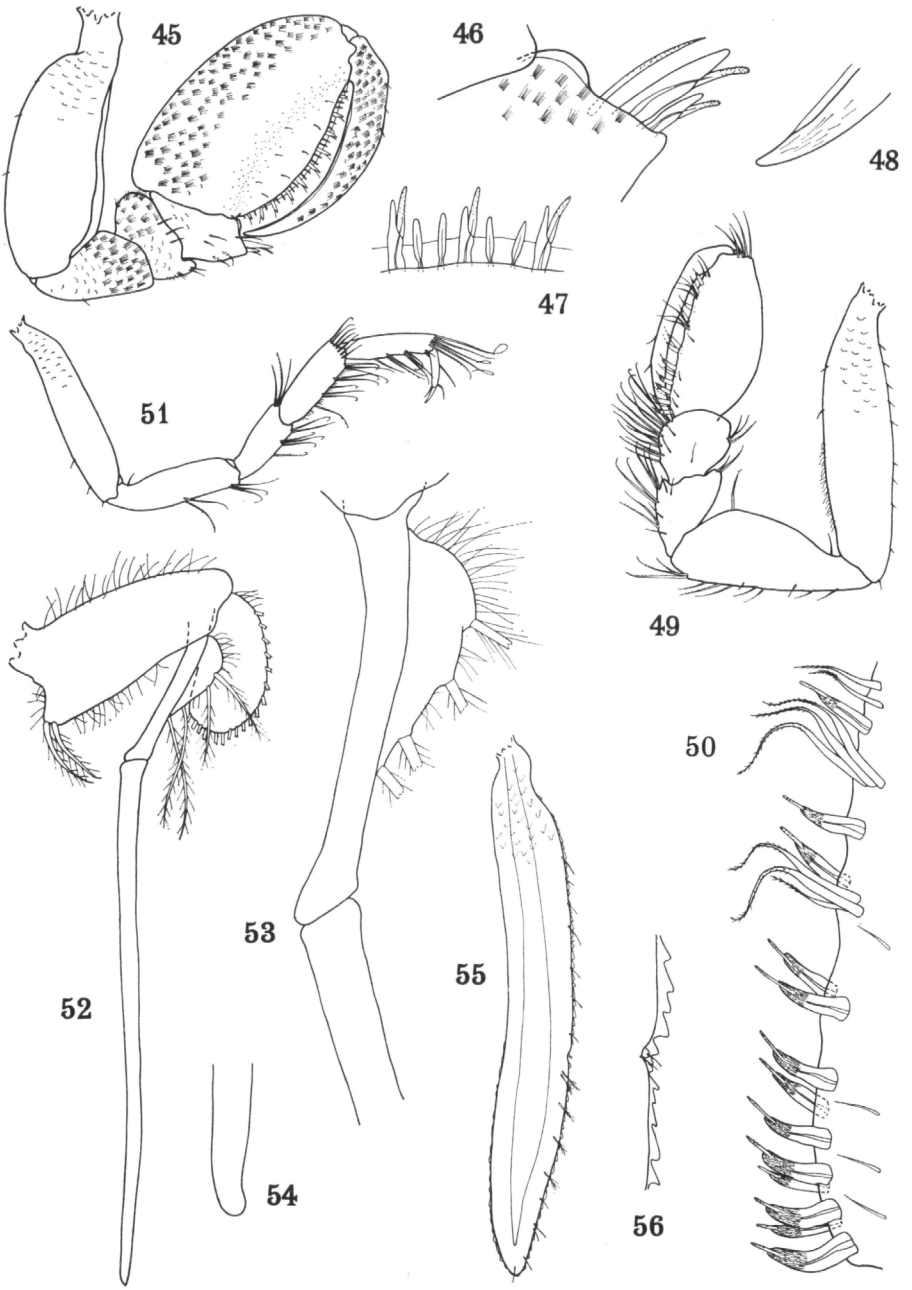
Pereopod VII (fig. 51): basis with only a few setae distally on ventral margin. Ischium through to propodus bearing on lower margin transverse rows of slender, minutely combed setae, which are also placed on the distal angle and along the distal margin of merus, carpus and propodus. Dactylus narrowing posteriorly; claw distinct and elongate; 2 setae, one each on dorsal and ventral base of claw.

Pleopod 2 (fig. 52). Protopod strongly projected on inner angle, which bears 2 long plumose coupling setae recurved at tip. Endopod strongly prolonged on inner angle (fig. 53); expanded portion of endopod not reaching to end of thick endopodal prolongation and gradually converging to it, margin fringed by 4 plumose setae; copulatory appendix elongate, narrow, rounded at tip (fig. 54), about 3.7 times longer than endopod maximum length (fig. 52).

Uropod (fig. 55): superficially uniramous. Protopod/endopod completely coalesced, about 7.8 times longer than broad; margin bordered by a hyaline irregular serrated fringe, apex narrowly-rounded; inner margin distinctly concave about the middle, posteriorly converging outwards; outer margin widely convex, distally slightly converging outwards. Exopod freely articulated, minute, obscure (fig. 56), smaller than serrations on protopod/endopod margins.



Figs. 36-44. *Serolis venusta* sp. n., holotype male 3.8 mm long. 36, body, dorsal; 37, 38, antenna 1 and last 3 articles of flagellum; 39-41, antenna 2: 39, total; 40, flagellar process; 41, terminal articles of flagellum; 42-44, maxilliped: 42, total; 43, 3-articulated palp; 44, distal epipod.



Figs. 45-56. *Serolis venusta* sp. n., holotype male 3.8 mm long. 45-48, pereopod I: 45, total; 46, apex of carpus; 47, composite setae from propodus ventral margin; 48, apex of dactylus; 49, 50, pereopod II and setal armament of ventral margin of propodus; 51, pereopod VII; 52-54, pleopod 2: 52, total; 53, endopod and basal part of copulatory appendix; 54, apex of copulatory appendix; 55, 56, uropod, total, and detail of outer margin showing minute exopod.

Discussion. — *S. venusta* sp. n. is most closely related to *Serolis menziesi* Hessler, 1970. Actually, it is distinguished from that species by a combination of minor characteristics, the most important of which are as follows:

(a) head, pereonites and pleonites bearing a mid-longitudinal carina produced in a point (in *S. menziesi* this carina is absent, and the posterior margin of each of its segments is smooth and widely concave);

(b) shape of the distal epipod of the maxilliped (in *S. menziesi* its inner-distal angle is somewhat rounded and obliquely truncate, whereas in *S. venusta* it is broadly rounded);

(c) shape of the apex of the pleonites 2 and 3 (evenly-rounded in *S. venusta*, pointed-rounded in *S. menziesi*);

(d) morphology and structure of the endopod of the male pleopod 2 (in *S. venusta* the expanded portion of the endopod converges gradually to its thick prolongation);

(e) number of setae on the ventral margin of the male pereopod II propodus (in *S. venusta* it has 1 stout composite seta, and 1 group of distally tapering setae less than in *S. menziesi*, notwithstanding the close similarity of setal pattern in these related species); and

(f) shape and structure of the uropod (in *S. venusta* the uropod is distinctly recurved outwards distally, it is about 7.8 times longer than broad, and the exopod is obscure and hardly discernable, whereas in *S. menziesi* the uropod is almost straight, about 7.3 times longer than broad, and the exopod, although minute, is larger than in *S. venusta*).

Of the above mentioned distinguishing characteristics, the best ones characterizing *S. venusta* sp. n., are the median carina running along the dorsum of the body, the shape of the distal epipod of the maxilliped, and the shape of the uropod and its length/width proportions. Hessler (1970), remarking on *S. menziesi*, also pointed out that the morphology of the uropod is one of the best characteristics distinguishing *S. menziesi* from the closely related species *S. vemae* Menzies, 1962. It seems that the uropod morphology is of prime importance to separate these related species.

The damaged adult male paratype shows the median keel along the body more developed and sharp than the holotype specimen, inclusive the carina posteriorly on the head. The mid-longitudinal carina in the not fully developed male paratype (2.7 mm) is not so sharp as in the adult, but the minute exopod of the uropod is more easily discernible.

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RÉSUMÉ

Trois espèces d'isopodes sérolidés bathyales de l'Atlantique Sud Occidentale, *S. insignis* sp. n., *S. arcuata* sp. n. et *S. venusta* sp. n., toutes nouvelles pour la science, sont décrites.

LITERATURE CITED

BEDDARD, F. E., 1884. Report on the Isopoda collected by H.M.S. "Challenger" during the years 1873-76. Part I. The genus Serolis. Rep. scient. Results Voy. H.M.S. Challenger, Zool., **11**: 1-83, pls. 1-10.

HESSLER, R. R., 1970. A new species of Serolidae (Isopoda) from bathyal depths of the Equatorial Atlantic Ocean. Crustaceana, **18** (3): 227-232, figs. 1-24.

MENZIES, R. J., 1962. The isopods of abyssal depths in the Atlantic Ocean. Vema Research Ser., **1**: 79-206, figs. 1-74.

MOREIRA, P. S., 1973. The biology of species of Serolis (Crustacea, Isopoda, Flabellifera): reproductive behavior of Serolis polaris Richardson, 1911. Bolm Inst. oceanogr. São Paulo, **22**: 109-122, figs. 1-7.

——, in press. An account of the Serolidae (Crustacea, Isopoda, Flabellifera) collected by U. S. Antarctic Expeditions. Publção esp. Inst. oceanogr. São Paulo.

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