SPECIES OF *SEROLIS* (ISOPODA, FLABELLIFERA) FROM SOUTHERN BRAZIL*

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SYNOPSIS

This paper reports species of *Serolis* (Isopoda, Flabellifera) occurring on the continental shelf of southern Brazil. Five species are recorded. *S. polaris* Richardson, 1911 and *S. laevis* Richardson, 1911, new records from Brazil, are redescribed. *S. uaperta* sp. n., *S. veaperta* sp. n. and *S. completa* sp. n., are new to science. A full description of the female *S. laevis* is given for the first time. Furthermore, the nonidentity of this species with *S. convexa* Cunningham, 1871, is positively established. Family, generic and specific diagnosis are provided. Ecological and distributional notes, as well as a classification key based on adult specimens, are given for each species studied.

INTRODUCTION

The aim of this work is to report the Isopoda species of *Serolis* (Isopoda, Flabellifera) occurring in southern Brazil, from Lat. 22°00'S. Amongst the Isopoda genera found in the Antarctic and Sub-antarctic regions, the genus *Serolis* is the most remarkable in number of species and number of individuals. With the exception of a few species, the genus has a distribution restricted to the Southern Hemisphere, where most of its species are confined by the Antarctic and Sub-antarctic Convergences.

The present recordings along the southern Brazilian coast are of interest, firstly because the Isopoda fauna from this area is very poorly known, secondly because new species are added to the overall fauna from this zoogeographical region, and thirdly because this first assessment of the *Serolis* species inhabiting southern Brazil adds further data for a future evaluation of the relationship between the Isopoda fauna from southern Brazil and the Antarctic and Sub-antarctic regions.

Fam. *SEROLIDAE*

Beddard 1884, p. 7

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Richardson 1905, p. 320
Vanhöffen 1914, p. 518
Nordenstam 1933, p. 38-47
Sheppard 1933, p. 268
Menzies 1962, p. 108

DIAGNOSIS - Body broad, well depressed, with the first 2 pereonites fused to cephalon. Cephalon and pereonite I laterally separated by sutures. Antenna 1 with 4, and antenna 2 with 5 peduncular articles, flagellum multi-articulated. Mandible and maxilliped with palp. Maxilliped palp 3- or 4 articulated; epipod always well developed. Maxilla 2 usually composed of 1 inner and 2 outer lobes. Coxal plates marked off on pereonites II-VII,or in a varying number of pereonites. Pereonite VI free,or partially fused to pereonite V and/or to pleonite I. Pereonite VII dorsally never complete,usually absent. Pereopod I subchelate in both sexes, pereopod II only in the adult male;propodus of pereopod I in both sexes always extremely large. Pleon with 3 pleonites. Pleopods 1-3 natatory, with the exopod articulated at the distal part and the endopod at the median part of the transversely elongate protopod. Pleopods 4-5 large and branchial; exopod of pleopod 4 operculiform, not branchial, and biarticulated, endopod entire or cleft distally. Uropod lateral, usually biramous, not arching over pleotelson.

- modified from Sheppard, 1933.

Genus *SEROLIS* Leach, 1818

SYNONYMS - *Oniscus* Fabricius, 1775, p. 296; 1787, p. 240 (part.).
Asellus Olivier,1789,p.252(part).
Cymothoa Fabricius, 1793, p.503 (part.).
Serolis Leach, 1818, p. 339; Desmarest, 1825, p.292; Milne-Edwards, 1840, p. 228; Audouin & Milne-Edwards, 1841, p. 5; Grube, 1875, p. 208; Beddard, 1884, p.7; Richardson, 1905,p. 320; Vanhöffen, 1914, p.518; Nordenstam, 1933, p. 48; Sheppard, 1933, p.267-268; Menzies, 1962,p.108;1962a, p. 186.
Brongniartia Eights, 1833, p.53

TYPE SPECIES - *Serolis paradoxa* (Fabricius, 1775).

DIAGNOSIS - The same as for the family.

REMARKS - The genus *Serolis* is a very large and heterogeneous genus presently comprising more than 60 described species.

Five species of *Serolis* are recorded from southern Brazil (Moreira, 1966) as follows:

S. polaris Richardson, 1911
S. laevis Richardson, 1911
S. uaperta sp. n.
S. veaperta sp. n.
S. completa sp. n.

Key to the species of *Serolis* found in southern Brazil:

1 - Coxal plates marked off dorsally on pereonites II-V; pleonite VI extending to about pleotelson apex, but not reaching tip of pleonite 2 pleural plates; maxillipedal palp 3-articulated; endopod of uropod with outer and inner angles of distal margin broadly rounded .....*S.polaris* (p.87)
- Coxal plates marked off dorsally on pereonites II-IV 2
2 - Pereonite VI extending back beyond plenites 2-3 3
- Pereonite VI not extending back beyond pleonites 2-3; pleotelson U-shaped, with hind margin smooth and broadly rounded, and with a mid-longitudinal carina flanked on either side by an arcuate diagonal carina delimiting a shallow excavated area .... *S. uaperta* sp.n. (p.90)
3 - Pereonite VI free, not fused medially with pleonite 1 4
- Pereonite VI fused with pleonite 1 at midposterior margin; pleonites 2-3 very short, not exceeding or exceeding slightly the anterolateral margins of pleotelson ..... *S. veaperta* sp.n. (p.92)
4 - Pereonite VI extending back beyond pleonites 2-3; pleotelson with a slight midlongitudinal carina interrupted by a flattened area ..... *S. laevis* (p. 95)
- Pereonite VI extending back not beyond pleonites 2-3; body elliptical, pleotelson ending

into an acutely pointed apex.....
..... *S. completa* sp.n. (p. 98)

SEROLIS POLARIS Richardson, 1911
(Figs. 1-20)

Serolis polaris Richardson, 1911, p.396-398, fig. 1; Sheppard, 1933, p. 290-292, fig. 4 c-f,pl. XIV (fig. 2).

Serolis (Serolis) polaris Nordenstam, 1933, p. 58-59.

DIAGNOSIS - *Serolis* with cephalon bearing 2 small anterior tubercles, and 3 flattened posterior prominences, of which the lateral ones are triangular and slightly prolonged backwards. Pereonites and pleonites each one with 1 mid-distal tubercle extending rearward, that on pereonite IV larger, very prominent and spiniform. Eyes present, with corneal facets. Antenna 1, peduncular article 2 the longest. Antenna 2 with flagellar process. Maxilla 2, 3-lobed. Maxilliped, distal epipod fused to endite; palp 3-articulated. Coxal plates of pereonites II-V marked off by dorsal sutures. Pereonite VI free, extending backwards to about pleotelson apex, as well as to a level well beyond pleonite 3 but not beyond pleonite 2. Pleon with 3 free pleonites. Pleonite 2 extending well beyond 3, reaching back to a level beyond apex of pleotelson. Pleonite 3 short, extending backwards to about apex of midanterior tubercle of pleotelson. Pleotelson with 1 stout spiniform midanterior tubercle flanked, at each side, by 1 small tubercle; from each of these tubercles extends a diagonal carina delimiting at each side a flattened triangular area ending in a rounded point; slightly beyond these points are situated 3 spiniform tubercles interconnected by an arcuate transverse carina; another carina, fading posteriorly, is placed on each pleotelson side following its anterolateral margins. Pleopods 1-3 with protopod produced at inner angle; pleopod 4 with endopod cleft distally and uniarticulated; pleopod 5 with exo-and endopod uniarticulated,exopod devoid of setae at apex. Uropod biramous; protopod, outer margin with sparse long plumose setae, inner distal angle acutely produced and devoid of plumose seta; exo- and endopod hind margins crenulated, that of exopod broadly rounded, that of endopod slightly truncate with outer and inner angles broadly rounded.

HOLOTYPE - Young male, 19.0 mm long. Deposited in the Museum d'Histoire Naturelle de Paris.

TYPE LOCALITY - South Sandwich Islands.

SIZE RANGE - Adult females, 16.0-22.0 mm long; adult males, 16.0-20.7 mm long.

MATERIAL EXAMINED - See p. for details. on stations.

Rio de Janeiro - Sta. III: 1 adult male (17.5 mm), 3 females carrying eggs and embryos (16.0, 16.4 and 17.6 mm), 1 immature male (11.6 mm), 1 female fragment.

São Paulo - Off Ilha Anchieta, about Lat. 23°32'S, 1 adult male (16.0mm).

Rio Grande do Sul - Sta. 406: 11 adult males (18.0, 18.7,19.0 (2), 19.5 (2), 20.0 (3), 20.5 and 20.7 mm).

SUPPLEMENTARY DESCRIPTIVE NOTES - Body- (Fig. 1). Circular, well depressed,lateral margins of coxal and pleural plates minutely serrated and bordered by fine setae. Greatest width of cephalon across the eyes; 2 anterior tubercles placed in front and between the eyes, one on each side of the midline. Eyes reniform, strongly convex and prominent, chiefly posteriorly.

Pereon - Pereonites I-IV each with 1 prominent, median, spiniform tubercle at distal margin; pereonites V-VI and pleo - nites 1-3 each with 1 flattened mid-distal tubercle. Expanded lateral surface of pereonite I with 1 small erect tubercle at each side of anterior margin; a carina bordering anterolateral margins, another carina running from about the 1/3 posterior level of the eyes to distal angle of pereonite. Pereonites II-VI with a small posterior angular projection close to suture of coxal plates, which are elongate, acutely pointed, and not contiguous laterally.

Pleon - Hind margin of pleotelson rounded, and coverging medially to a small rounded point.

Antenna 1 - (Fig.2) - Peduncular article 4 about 3 times as long as 3; flagellum composed of 28 articles, articles 5 to penultimate bearing 1 aesthete, terminal article narrower and shorter than penultimate (Fig. 2a).

Antenna 2 - (Fig. 3) - Article 4 of

peduncle about 1.6 times as long as 5, which is the longest; flagellum composed of about 20 articles, articles 6 to 16 bearing a serrated process (Fig. 3a) at ventral surface, terminal article shorter than penultimate (Fig. 3b).

Right mandible - (Fig. 4) - Incisor smooth, truncate obliquely, with the inner angle broadly rounded, and the outer angle projected into 2 small teeth. Lacinia mobilis slightly enlarged distally, where it bears irregular, unequal teeth (Fig.4a). Setal row of 1 stout, incurved seta.

Maxilla 1 - (Fig. 5) - Apex of outer lobe with 9 stout spines, and 1 pectinate seta; inner lobe lost during dissection.

Maxilla 2 - (Fig. 6) - Inner lobe with about 14 apical setae; two outer lobes subequal in length, innermost lobe with 4 setae, outermost one with 2 setae at apex.

Maxilliped - (Fig. 7) - Endite distally broad, truncated, with an excentric excavation and 2 subapical stout setae. Distal epipod rectangular, with the outer margin bordered by fine setae. Article 3 of palp about 1.7 times as long as article 2.

Pereopod I - (Fig. 8) - Ventrodistal angle of ischium, and ventral margin of merus, with short setae arising from amongst minute setae; ventral margin of carpus developing into a strong convex prominence covered by minute setae, from amongst which arise short bare setae and 2 stout plumose setae (Fig. 8a); propodus ventral margin bordered by two rows of 2 different shapes of composite setae (Figs. 8b, c); dactylus with a row of short setae at dorsal margin, tip incurved, irregular and ridged ventrally (Fig. 8d).

Pereopod II - (Fig. 9) - Ventral margin of ischium, merus and carpus with a dense covering of long plumose setae (Fig. 9a); propodus short, narrowing distally, ventral margin with stout composite setae (Fig.9b) and long plumose setae (Fig. 9a); dactylus strong, incurved, not extending beyond ventroproximal angle of propodus, tip with 1 stout, blunt claw and 3 minutely hairy setae (Fig. 9c).

Pereopod III - (Fig. 10) - Ventral margin of carpus and propodus with longitudinal row of short pectinate setae (Fig. 10a); dactylus elongate, compressed,ventral margin scaleless distally, apex with few setae and 1 blunt claw (Fig. 10b). Many shapes of setae (Figs. 10c-g) are found on this and on the remaining pereopods. Noteworthy are the long glabrous setae (Fig.10f) on the dorsodistal angle of carpus pereopod III.

Pereopods IV-V - (Figs.11, 12) - Very alike, with the ventral margin of merus, carpus and propodus bordered by transverse rows of short glabrous setae (Fig.10d); pereopod IV with 1 blunt stout claw at tip of dactylus (Fig. 11a); pereopod V with 1 stout, minutely hairy seta and 1 strongly incurved spine (Fig. 12a) at dactylus tip.

Pereopod VI - (Fig. 13) - Setal pattern of merus, carpus and propodus similar to pereopods IV-V, but differing markedly, because the setae bordering their ventral margin are minutely hairy (Figs. 10e, 13a) instead of being glabrous. Dactylus tapers distally into 1 stout claw and 1 minute hairy seta (Fig. 13b).

Pereopod VII - (Fig. 14) - Ventral margin of merus, carpus and propodus densely covered by long, plumose setae (Fig. 10c); carpus and propodus at the end with minutely hairy (Fig. 10e) and strongly pectinate setae (Fig. 14a); dactylus appreciable, decurved, ending in 1 stout claw flanked at base by 2 short, oval-shaped accessories claws (Fig. 14b).

Pleopods 1-3 - (Figs. 15-17) - Inner angle of protopod not produced, and devoid of plumose setae. Pleopod 2 in the adult male with endopod elongate, narrowing slightly toward the inner angle, at its maximum length about 2.7 times as long as appendix masculinum. Apex of appendix masculina, see Fig. 16a.

Pleopod 4 - (Fig. 18) - Endopod cleft distally into a short rounded and a long narrow prolongment bordered by fine setae (Fig. 18a).

Pleopod 5 - (Fig. 19) - Exo- and endopod subequal in length; exopod constricted at tip (Fig. 19a); endopod broadly rounded, with a small, vaulted prominence at the foremost level of outer margin.

Uropod - (Fig. 20) - Exo- and endopod broad, lamellar; exopod shorter and narrower than endopod, outer and hind margins crenulated and bordered by plumose setae; endopod with plumose setae from about posterior half of outer margin and along hind margin.

DISCUSSION - The species resembles *S. paradoxa* (Fabricius, 1775) and chiefly *S. schythei* Lütken, 1858, by the shape of body, arrangement of tubercles and carinae on pereon and pleon, coxal plates marked off by dorsal sutures on pereonited II-V, and endopod of pleopod 4 cleft distally.

The chief morphological differences distinguishing these 3 species are summarized in Table I.

TABLE I - Morphological comparison of *S. polaris*, *S. schythei* and *S. paradoxa*

	S. polaris	*S. schythei*	*S. paradoxa*
1. Maxilla 2, outer two lobes	2 and 4-5 apical setae;	2 and 6-7 apical setae;	2 and 5-6 apical setae;
2. Maxillipedal palp	3-articulated;	4-articulated;	3-articulated;
3. Pereonite V	extending a little beyond middle of pleotelson;	extending well beyond apex of pleotelson;	extending to the anterior level of pleotelson;
4. Pereonite VI	extending to about apex of pleotelson, as well as reaching back to a level not beyond pleonite 2;	extending well beyond to both apex of pleotelson and pleonite 2;	extending to about middle of pleotelson, as well to a level well beyond pleonite 2;
5. Pleonite 2	extending far beyond 3, but only slightly beyond apex of pleotelson;	extending well beyond to both pleonite 3 and apex of pleotelson;	very short; not extending beyond to both pleonite 3 and foremost level of pleotelson;
6. Pereopod II of adult male with dactylus	not reaching ventroproximal angle of propodus;	extending beyond ventroproximal angle of propodus;	not reaching ventroproximal angle of propodus;
7. Endopod of uropod	slightly truncate distally with both outer and inner angles broadly rounded.	truncate distally, with the outer angle pointed, inner angle broadly rounded.	- - - - - - - -

REMARKS - From material gathered by Lahille at South Sandwich Islands, Richardson (1911) summarily wrote the original description of the species. Sheppard (1913) re-examined the type specimen, without dissecting it. Consequently, most of the appendages have not been drawn before.

The following amendments and notes may be made:

1 - Secondary sexual dimorphism occurs in the number of flagellar articles of antenna 1. Males have the flagellum composed of 20 articles, females of 11 articles.

2 - The maxillipedal palp is composed of 3 articles, contrasting with 4 found in *S. schythei* (Beddard, 1884; Nordenstam, 1933; Sheppard, 1933). Mañe-Garzón (1953) clearly overlooked the small 4th article of the maxillipedal palp in *S. schythei*.

3 - The 2 stout plumose setae on the ventral margin of the carpus of pereopod I (Fig. 8a) are quite different from those found in both *S. paradoxa* and *S. schythei* Mañe-Garzón 1953, pl. I, fig. 13). Actually, these setae represent a very important characteristic to the recognition of the species.

BATHYMETRICAL DISTRIBUTION - The depth recorded for the species ranges from 30 to 65 meters (present data). Previous occurrences of the species appear to be from depths shallower or around the bathymetrical limits reported here.

GEOGRAPHICAL DISTRIBUTION - South Sandwich Islands (Richardson, 1911). South of La Plata, off the Argentina coast, Lat.

36°50'S, Long. 55°54'W (Nordenstam, 1933). Rio de Janeiro, São Paulo and Rio Grande do Sul, Brazil (present recordings).

ECOLOGICAL AND DISTRIBUTIONAL NOTES - The species has a wide geographical distribution, as the available data indicate. This report extends to the north and beyond Lat. 22°10.5'S, the previously recorded Atlantic Ocean distribution of the species.

S. polaris seems to be a cryophile eurythermic shallow water species (Moreira, 1966), occurring inside, as well as outside the Antarctic Convergence. Along southern Brazil it was found in waters of temperature ranging from 13.74°C (at 65 m, off Rio Grande do Sul) to 17.13°C (at 30 m, off Rio de Janeiro), and in salinity ranging from 33.70 to 36.17°/oo.

Very little can be reported about the substrata on which the species occurred. Off Cabo de São Thomé (Rio de Janeiro), it was gathered on a bottom of very coarse quartzitic sand with shell fragments.

Ovigerous females have been taken off Rio de Janeiro in February. Off São Paulo and Rio Grande do Sul, only adult males were captured, respectively, in November and October.

Serolis uaperta sp. n.
(Figs. 21-40)

DIAGNOSIS - *Serolis* with the posterior region of cephalon, pereonites I-VI and pleonites 1-3, bearing a mid-longitudinal carina prolonging back in a small point. Eyes present, with corneal facets. Antenna 1, peduncular article 3 the longest. Antenna 2 devoid of flagellar process. Maxilla 2, 3-lobed. Maxilliped, distal epipod fused to endite; palp 3-articulated. Coxal plates of pereonites II-IV marked off by dorsal sutures. Pereonite VI free, with coxal plates extending not beyond pleonites 2-3. Pleon with 3 free pleonites. Pleonite 2 extending not beyond 3. Pleonite 3 extending not beyond middle of pleotelson. Pleotelson U-shaped, well convex; hind margin smooth and broadly rounded; dorsal surface with 1 slight mid-longitudinal carina; on either side 1 arcuate diagonal carina delimiting a shallow excavated area. Pleopods 1-3 with protopod produced at inner angle; pleopod 4 with endopod uniarticulated, not cleft distally; pleopod 5 with endopod uniarticulated, exopod biarticulated, and bearing 2 plumose setae at apex. Uropod biramous; protopod, outer margin fringed by short setae, inner distal angle acutely produced and devoid of apical plumose setae, protopod apex reaching back the foremost level of endopod; exo- and endopod broady, both with hind margins crenulated, and bordered by short and 2-3 long bare setae.

HOLOTYPE - Adult male, 3.7 mm long. L. Forneris col. Deposited in the Museu de Zoologia, University of São Paulo, São Paulo, Brazil.

TYPE LOCALITY - Ilha Anchieta, São Paulo, off Ponta do Catimbau to W, about Lat. 23°32'S, Long. 45°02'W, 21 m depth.

NAME - The specific name *uaperta* from *U* + latin *apertus*, alludes to the broady, U-shaped pleotelson.

SIZE RANGE - Adult males, 3.5 - 3.9 mm long; adult female, 3.7 mm long.

MATERIAL EXAMINED - See p. 101 for details on stations.

Rio de Janeiro - Sta. II: 1 fragment. Sta. III: 1 adult male (3.9 mm long). Sta. A: 1 immature female. Sta. 177: 1 ovigerous female (3.7 mm). Sta. 302: 1 juvenile. Sta. 303: 1 mutilated immature female (2.5 mm). Sta. 305: 1 young female with developing oostegites (3.0 mm), 1 juvenile.

São Paulo - Sta. E.65.3: 1 immature male (3.0 mm), 2 juveniles. Sta. E.65.9 : 1 adult male (3.3 mm), 2 juveniles. Ilha Anchieta, off Ponta do Catimbau to W: 1 adult male (3.7 mm). Ilha Anchieta, off Ilha das Palmas to W: 3 adult males (3.5, 3.5 and 3.6 mm), 2 juveniles.

ADDITIONAL DESCRIPTIVE NOTES - Body - (Fig. 21). Broad, well convex, coxal and pleural plates slightly extending back, lateral margins smooth and devoid of setae. Greatest width of cephalon across frontal margin; dorsal surface smooth, except by the mid posterior carina.

Pereon - Pereonite I with the expanded lateral surface smooth, devoid of carinae; pereonites I-IV, and V-VI, respectively, contiguous one to the other laterally.

Pleon - Pleotelson without posterolateral angles and spiniform points, hind margin smooth and broadly rounded, but in some specimens slightly pointed at apex, anterior dorsal surface minutely pitted sometimes.

Antenna 1 - (Fig. 22) - Peduncular article 4 about 1.4 times as long as 3; flagellum composed of 6 articles; articles 2 to last bearing 1 aesthete; aesthete lateral on ultimate article, which is very short, much shorter than penultimate (Fig. 22a).

Antenna 2 - (Fig. 23) - Peduncular article 4 about 1.5 times as long as 5, which is the longest; flagellum composed of 10 articles, terminal article slightly shorter than penultimate.

Right mandible - (Fig. 24) - Incisor end slightly rounded, almost truncate obliquely, distally with few small, broady teeth, outer angle tooth the strongest and the most prominent. Lacinia mobilis short, stout, truncate into minute teeth. Setal row of 1 incurved seta.

Maxilla 1 -(Fig. 25) - Apex of outer lobe with 9 stout spines, and 1 minutely pectinate seta; inner lobe oval, with 1 short seta distally.

Maxilla 2 - (Fig. 26) - Inner lobe much larger than each of the 2 outer lobes and with about 11 apical pectinate setae; 2 outer lobes subequal in length, outermost lobe with 2 pectinate setae at apex, and 1 short, incurved spine subapically, innermost lobe with 2 pectinate setae at apex.

Maxilliped - (Fig. 27) - Endite narrowing toward a rounded pointed apex bearing 1 subapical seta. Distal epipod small, prominently convex at the outer margin. Article 3 of palp about 1.7 times as long as article 2.

Pereopod I - (Fig. 28) - Ventrodistal angle of basis, and ventral margin of ischium, with a dense covering of fine setae; merus with 1 short bare seta at ventrodistal angle; distal end of carpus with 2 stout composite setae and a submarginal fringe of short simple setae; propodus broadly oval, dorsal margin with a dense covering of fine setae distally, ventral margin with 2 longitudinal rows of unequal bare setae, one row being composed of short setae arranged obliquely, the other one of elongate, almost straight setae.

Pereopod II - (Fig. 29) - Ischium, merus and carpus with a dense covering of fine setae at ventral margin, setae longer on ischium; dorsal margin of propodus protuberantly convex, ventral margin straight, with about 10 stout composite setae, and a dense covering of short fine setae; dactylus strong, decurved, tip narrowing abruptly to 1 short acute point extending beyond the ventroproximal angle of propodus.

Pereopods III-VII - (Figs. 30-34) - Very alike, with ischium through propodus bearing transverse rows of minutely hairy setae at ventral margin; dactylus elongate, tipped by an incurved claw (Fig. 30a), dactylus from pereopod VII shorter, stouter and more decurved.

Pleopods 1-3 - (Figs. 35-37) - Protopod with 3 (pleopod 1) or 2 (pleopods 2 and 3) plumose setae at the produced inner angle; pleopod 2 of adult male with endopod narrow and elongate at the naked inner portion; maximum length of endopod about 2.3 times as long as appendix masculina.

Pleopods 4-5 - (Figs. 38, 39) - Endopod of pleopod 5 narrowing abruptly from middle toward a rounded pointed apex.

Uropod - (Fig. 40) - For further details see DIAGNOSIS, p. 90.

DISCUSSION - *S. uaperta* sp.n. approaches *S. exigua* Nordenstam, 1933, in the shape of body, coxal plates of pereonites II-IV marked off by dorsal sutures, maxilla 2, 3-lobed, distal epipod of maxilliped fused to endite, palp 3-articulated, pleon with 3 free pleonites etc.

However, both species may be readily distinguished one from the other by the characteristics listed in Table II.

REMARKS - *S. uaperta* sp. n. bears 1 aesthete on the lateral middle margin of the terminal flagellar article of the antenna 1. This is an uncommon feature in the genus *Serolis*, where the last article of the flagellum is usually without an aesthete or, if it is present, occupies an end position.

GEOGRAPHICAL DISTRIBUTION - Known only from Rio de Janeiro (vicinity of Ilha Grande and off Cabo de São Thomé), and São Paulo (off Ilha Anchieta, Ilha da Vitória, and Ilha Sumítica - Ilha dos Búzios), Brazil.

BATHYMETRICAL DISTRIBUTION - The depth recorded for the species varyies from 19 to 51 m.

ECOLOGICAL AND DISTRIBUTIONAL NOTES - Since the species has been collected from so many stations, it will probably reveal

TABLE II - Morphological comparison of *S. exigua* and *S. uaperta* sp. n.

S. exigua	*S. uaperta* sp. n.
1. Antenna 1, terminal article of the flagellum devoid of aesthete;	1. Antenna 1, terminal article of the flagellum with 1 aesthete;
2. Antenna 2 with flagellar process;	2. Antenna 2 devoid of flagellar process;
3. Pleopods 4-5 with the endopod biarticulated;	3. Pleopods 4-5 with the endopod uniarticulated;
4. Pleotelson with 1 well-marked midlongitudinal carina, and on either side with 2 converging carinae delimiting a flattened triangular area continuying distally by a short carina;	4. Pleotelson with 1 midlongitudinal carina, and on either side with 1 arcuate diagonal carina delimiting a shallow excavated area;
5. Uropod with the inner distal angle of protopod reaching back to about middle of endopod;	5. Uropod with inner distal angle of protopod reaching back to the foremost level of endopod;
6. Pleotelson with the apex markedly pointed rounded; hind margin on either side of apex truncate obliquely.	6. Pleotelson with hind margin broadly rounded, very seldon with a distinct apical point.

a wider distribution than the actual recordings indicate. Up to now the species is known only from several localities in São Paulo and Rio de Janeiro.

It appears that *S. uaperta* sp. n. has a distribution restricted to shallow bottoms. Isolated dredgings below 100 m between Cabo de São Thomé (RJ) and Ilha de São Sebastião (SP), did not reveal its presence.

The available data also suggest it is a cryophile eurythermic species (Moreira, 1966). It occurred chiefly on bottoms under the influence of colder waters ranging in temperature from 15.63 to 20.00°C. However, along its actual known area of occurrence, the species was collected also in temperature as high as 24.4°C. The salinity of the water ranged from 35.12 to 36.17°/oo.

Information on species/substrata are scanty. The existing data shows the species occurring chiefly on sandy bottoms, rather than on clay bottoms.

The available data are not enough to furnish reliable information on the presence of a breeding season in this species. Ovigerous females have been collected only once in June, in Rio de Janeiro. Mostly of the other collected specimens were juveniles or immature males or females. Adult males have been found in Rio de Janeiro in February, and in São Paulo in February and May.

Serolis veaperta sp. n.
(Figs. 41-60)

DIAGNOSIS - *Serolis* with body smooth, devoid of tubercles or spiniform points. Eyes present, with corneal facets. Antenna 1, peduncular article 2 the longest. Antenna 2 devoid of flagellar process. Maxilla 2, 2-lobed. Maxilliped, distal epipod fused to endite; palp 3-articulated. Coxal plates of pereonites II-IV marked off by dorsal sutures. Pereonite VI fused at midposterior margin with pleonite 1, coxal plates extending well beyond pleonites 2-3, as well as reaching back to a level slightly beyond middle of pleotelson. Pleon with 2 free pleonites. Pleonites 2-3 very short, not exceeding or exceeding slightly the anterolateral margins of pleotelson. Pleonite 2 almost reaching back 3. Pleotelson V-shaped, but straight anterolaterally; dorsal surface with 1 midlongitudinal carina; on either side with 2 faint longitudinal carinae, the outermost following roughly the outline of the lateral margins, the innermost slightly arcuate, both pairs joining posteriorly at a level a little beyond middle of pleotelson. Pleopods 1-3 with protopod not produced at inner angle; pleopod 4 with endopod partially biarticulated, and not cleft distally; pleopod 5 with both exo

and endopod biarticulated, exopod devoid of seta at apex. Uropod biramous; protopod narrow, elongate, with inner distal angle produced and bearing 1 plumose seta at apex; exo- and endopod elongate and narrow, inner margin hairy and fringed by plumose setae, but almost distally naked, outer margin bordered all along by short simple setae, apex of both exo- and endopod narrow,rounded pointed.

HOLOTYPE - Adult male, 4.7 mm long. L. Forneris col. Deposited in the Museu de Zoologia, University of São Paulo, São Paulo, Brazil.

TYPE LOCALITY - Ilha Anchieta,São Paulo, Brazil, between Ilhote do Sul and Ponta das Andorinhas, about Lat. 23°33'S, Long. 45°04'W, 18 m depth.

NAME - The specific name *veaperta*,from *V* + latin *apertus*, alludes to the anteriorly broady, V-shaped pleotelson.

SIZE RANGE - Adult males, 3.7 - 4.7 mm long; adult females, 3.5-5.3 mm long.

MATERIAL EXAMINED - See p. for details on stations.

Rio de Janeiro - Sta. 12: 2 juveniles, 5 juveniles fragments.

São Paulo - Ilha Anchieta, between Ilhote do Sul and Ponta das Andorinhas: 2 adult females (4.5 mm long), 3 adult males (3.7, 4.0 and 4.7 mm). Ilha Anchieta, off Ilhote: 1 female carrying embryos (3.5 mm), 1 immature male (2.8 mm).

Rio Grande do Sul - Sta. 327: 1 ovigerous female (5.3 mm long).

ADDITIONAL DESCRIPTIVE NOTES - Body - (Fig. 41) - Coxal and pleural plates extending backward slightly, lateral margins smooth and devoid of setae. Greatest width of cephalon across frontal margin; dorsal surface smooth.

Pereon - Pereonite 1 with the expanded lateral surface smooth, devoid of carina; tubercles or spiniform point lacking on pereonites; pereonites I-IV, and V-VI respectively, contiguous laterally one another.

Pleon - Pleotelson almost flattened dorsally, laterally bend down abruptly, posterolateral angles not flanked by spiniform point, posterolateral margins converging straightly toward a narrow,rounded pointed apex.

Antenna 1 - (Fig. 42) - Peduncular article 2 much wider than 3 and 4, article 4 about 1.3 times as long as 3; flagellum composed of 6 articles, articles 2 to last bearing 1 aesthete, terminal article minute, much shorter than penultimate (Fig. 42a).

Antenna 2 - (Fig. 43) - Peduncular articles 4 and 5 about equal in length (5 slightly longer); flagellum composed of 7 articles, penultimate and terminal articles subequal and very short (Fig. 43a), both articles much shorter than antipenultimate.

Right mandible - (Fig. 44) - Incisor with a concavity separating 2 prominent teeth, 1 tooth pronouncing rounded, another broader and truncate distally. Lacinia mobilis and setal row not clearly distinguished from one another, lacinia mobilis probably represented by the stout bifurcated seta and the setal row by the remainder 3 unequal setae, one being finely pectinate (Fig. 44a).

Maxilla 1 - (Fig. 45) - Apex of outer lobe with 11 stout spines; inner lobe very small, with the truncate apex bearing 1 short seta.

Maxilla 2 - (Fig. 46) - Inner lobe larger than outer, and with about 9 apical setae; outer lobe small, elongate, with 2 setae at apex.

Maxilliped - (Fig. 47) - Endite broad and smooth at distal margin, inner distal angle as a small pointed tooth with 5 subapical short setae. Distal epipod with a shallow excavation separating 2 rounded prominences, the distal one markedly crenulated (Fig. 47a). Article 3 of palp about 3.5 times as long as article 2.

Pereopod I - (Fig. 48) - Merus, dorsal margin protuberantly convex, ventrodistal angle with 1 long seta and few short setae; carpus, distal angle with 2 stout composite setae (Fig. 48a), ventral margin with sparse short setae; ventral margin of propodus with 1 longitudinal row of composite setae (Fig. 48b) flanked by 1 row of simple setae.

Pereopod II - (Fig. 49) - Ischium, ventral margin with a dense covering of fine setae; ventral margin of both merus and ventral margin with a dense covering of fine setae; ventral margin of both merus and carpus with transverse rows of minutely hairy setae; propodus elongate (Fig. 49a), with the ventral margin almost straight bearing pairs of short stout setae;dactylus

decurved strongly, and extending not beyond ventroproximal angle of propodus.

Pereopods III-VII - (Figs. 50-54)- Very alike. Ischium through propodus with ventral margin bearing transverse rows of minutely pectinate setae (Figs. 53a, b); dactylus narrow and elongate.

Pleopods 1-3 - (Figs.44-57) - Protopod not produced at inner angle, where it bears either 1 plumose or 1 naked seta; pleopod 2 of adult male with endopod narrowing regu - larly toward the inner angle; maximum length of endopod about 2.7 times as long as ap- pendix masculina.

Pleopods 4-5 - (Figs. 58-59) - See DIAGNOSIS, p.92.

Uropod - (Fig. 60) - Protopod about as long as exopod, outer margin bordered by simple setae, inner margin densely hairy from middle to apex.

DISCUSSION - This species resembles *S. nototropis* Sheppard, 1933, by the shape of body and arrangement of carinae on dor- sum of pleotelson, by the 2-lobed maxilla 1, by the coxal plates marked off by dorsal sutures on pereonites II-IV, by the pereon- ite VI fused to pleonite 1 at midposterior margin etc.

However, *S. veaperta* sp. n. may be easily distinguished from *S. nototropis* by those characteristics listed in Table III.

REMARKS - The 2-lobed character of the maxilla 1 is uncommon in the genus. It is found only in 3 other species, i.e., *S. nototropis*, *S. orbiculata* Sheppard, 1933 and *S. bonaerensis* Bastida & Torti, 1967.

Terminal aesthete is also uncommon in the genus, since the last article of the flagellum of the antenna 1 is usually absent of it.

GEOGRAPHICAL DISTRIBUTION - Known presently only from Brazil: Rio de Janeiro (Ilha Grande), São Paulo (Ilha Anchieta neighboring), and off Rio Grande do Sul.

BATHYMETRICAL DISTRIBUTION - The depth recorded for the species ranges from 18 to 34 m.

ECOLOGICAL AND DISTRIBUTIONAL NOTES - *S. veaperta* sp. n. probably occurs all along the southern Brazilian coast, although it has not yet been recorded off Paraná and Santa Catarina. This gap is probably due to a lack of sampling rather than the absence of the species.

Along southern Brazil, the species has been collected in water temperatures rang- ing from 15.6 to 17.80°C, and salinities ranging from 35.12 to 35.72°/oo. It appears that *S. veaperta* sp. n. is a cryophyle species, with a distribution related to colder waters (Moreira, 1966).

Data on substrata are too scanty and

TABLE III - Morphological comparison of *S. nototropis* and *S. veaperta* sp.n.

S. nototropis	*S. veaperta* sp.n.
1. Antenna 1, peduncular arti cle 3 the longest;	1. Antenna 1, peduncular arti cle 2 the longest;
2. Antenna 2, peduncular arti cle 4 much shorter than 5;	2. Antenna 2, peduncular arti cle 4 about as long as 5;
3. Maxilla 1, outer lobe with 4 apical setae;	3. Maxilla 1, outer lobe with 2 apical setae;
4. Pereonites and pleonites each one with a midlongitu dinal carina prolonging back as a small spiniform point ;	4. Pereonites and pleonites smooth, devoid of carinae and spiniform points;
5. Pleopods 1-3 with protopod produced at inner angle , where it bears 3 or 2 stout plumose setae;	5. Pleopods 1-3 with protopod not produced at inner an- gle, where it bears 1 plu- mose or 1 naked seta;
6. Pleotelson V-shaped; ante- rolateral margins rounded; dorsal carinae strongly marked.	6. Pleotelson V-shaped; ante- rolateral margins straight; dorsal carinae faintly mar ked.

inconclusive for even a preliminary comment. The species was gathered on sand as well as on clay bottoms.

Ovigerous females were taken off São Paulo in March, and off Rio Grande do Sul in June.

Serolis laevis Richardson, 1911
(Figs. 61-80)

Serolis laevis Richardson, 1911, p. 399-400, fig. 2; Sheppard, 1933, p.315-318, pl. XIV (fig.5); Mañe-Garzón, 1953, p.5-8, pl. II (figs. 1-11).

[nec] *Serolis* (*Serolis*) *convexa* Cunningham-Nordenstam, 1933, p. 77-82, figs. 4 d-i, 6 d, 10 d, 19 a-e.

DIAGNOSIS - *Serolis* with body smooth, devoid of tubercles or spiniform points. Eyes present, with corneal facets. Antenna 1, peduncular article 2 the longest. Antenna 2 devoid of flagellar process. Maxilla 2, 3-lobed. Maxilliped, distal epipod not fused to endite; palp 3-articulated. Coxal plates of pereonites II-IV marked off by dorsal sutures. Pereonite VI free, extending well beyond to pleonites 2-3. Pleon with 3 free pleonites. Pleonites 2-3 very short, slightly exceeding anterolateral margins of pleotelson. Pleonite 2 extending slightly beyond 3. Pleotelson flattened, roughly V-shaped but almost straight anterolaterally; dorsal surface with 1 slight midlongitudinal carina interrupted a little beyond middle of pleotelson by a flattened, smooth area; at each side with (in larger adult specimens) or without (in smaller adult specimens) 2 very light carinae, of which the outermost follows the outline of anterolateral margins; lateral carinae, when present, joining posteriorly at a level slightly beyond middle of pleotelson. Pleopods 1-3 with protopod produced at inner angle; pleopod 4 with endopod partially biarticulated and not cleft distally; pleopod 5 with exo- and endopod biarticulated, exopod bearing 2 plumose setae at apex. Uropod biramous; inner distal angle of protopod acutely produced and with 1 plumose seta, outer margin with few minutely hairy setae; exopod outer margin bordered all along by minutely hairy setae, apex irregularly crenulated bearing long plumose setae; endopod outer margin from about middle bordered by short setae, subapically with a transverse crenulation bearing plumose setae, apex smooth, rounded, with sparse fine setae.

HOLOTYPE - Adult male, 16.0 mm long. Deposited in the Museu d'Histoire Naturelle de Paris.

TYPE LOCALITY - South Sandwich Islands.

SIZE RANGE - Adult females, 7.1-14.2 mm long; adult males, 9.0-16.3 mm long.

MATERIAL EXAMINED - See p.101 for details on stations.

Rio de Janeiro - Sta. IV: 2 adult females, one with embryos (14.2 mm), another with empty marsupium (12.6 mm). Sta. 12 : 2 ovigerous females (7.1 and 7.4 mm). Sta. 311: 1 adult male (9.0 mm).

São Paulo - Sta. E. 65.3: 1 mutilated female with developing oostegites (about 5.0 mm). Sta. 1801: 1 young female (12.7mm). Ilha Anchieta, off Ilhote: 1 ovigerous female (8.4 mm).

Rio Grande do Sul - Sta. 327: 1 adult male (16.3 mm). Sta. 397: 1 ovigerous female (9.3 mm), 1 immature male (9.5 mm). Sta. 415: 1 ovigerous female (13.5 mm).

SUPPLEMENTARY DESCRIPTIVE NOTES -

Adult female - Body - (Fig.61). Lateral margins of pereon and pleon smooth and devoid of setae. Greatest width of cephalon across frontal margin; dorsal surface of cephalon smooth, except by a slight prominence like carina present in some specimens posteriorly. Eyes large, reniform.

Pereon - Expanded lateral surface of pereonite I with a median, oblique, transverse carina and another carina forwardly. Pereonites I-IV, and V-VI, respectively, contiguous with one another laterally. Dorsolateral surface of pereonites I-IV sometimes with minute scattered pits.

Pleon - Pleonites 1-3, and in some specimens also pereonite VI, with 1 small mid-distal point. Anterolateral margins of pleotelson benddown abruptly in larger specimens, smoothly vaulted in the smaller ones; posterolateral margins converging inward toward an upcurved truncate apex with rounded angles.

Antenna 1 - (Fig. 62) - Article 4 of peduncle about 2.5 times as long as 3; flagellum composed of 11-15 articles, articles 3 to penultimate bearing 1 aesthete,

terminal article much narrower and longer than penultimate, which is minute (Fig. 62a).

Antenna 2 - (Fig. 63) - Peduncular article 4 as long as 5; flagellum composed of 16-18 articles, terminal article slightly longer than penultimate (Fig. 63a).

Left mandible - (Fig. 64) - Incisor with 2 strong pointed teeth, 1 tooth smooth, another one broader, truncate obliquely, and with small irregular denticles distally (Fig. 64a). Lacinia mobilis expanded, roughly quandrangular, and strongly denticulated at distal edge (Fig. 64b). Setal row of 1 seta minutely serrated at one side.

Maxilla 1 - (Fig. 65) - Outer lobe with 10 stout spines and 1 minutely pectinate seta at apex; inner lobe broady distally, bend inward obliquely, and with 1 short, incurved apical seta.

Maxilla 2 - (Fig. 66) - All 3 lobes well developed, and about equal in length. Inner lobe incurved inwardly, with about 9 pectinate setae at apex, subapically with 1 very small seta; 2 outer lobes each with 6 pectinate setae at apex.

Maxilliped - (Fig. 67) - Endite broady, apically truncate and with a shallow excentric excavation, subapically with 2 stout, finely hairy setae. Distal epipod irregularly rounded, and fringed by fine setae. Article 3 of palp small, striking narrower than article 2, about 5.6 times as long as 2.

Pereopod I - (Fig. 68) - Basis through carpus devoid of setae at ventral margin, carpus with 2 stout composite setae (Fig. 68a) at the end; ventral margin of propodus bordered by composite bifurcate setae (Fig. 68b) and short bare setae.

Pereopods II-VII - (Figs. 69-74) - Very alike, with merus through propodus bearing transverse rows of finely pectinate setae (Fig. 72a) at ventral margin; dactylus narrow, elongate, decurved, ending in an acute claw.

Pleopods 1-3 - (Figs. 75-77) - Protopod with 3 (pleopod 1) or 2 pleopods 2 and 3) plumose setae at the produced inner angle.

Pleopods 4-5 (Figs. 78-79), and Uropod (Fig. 80).

DISCUSSION - The original description of the species (Richardson, 1911) is short and sometimes confusing, as well already pointed out by Nordenstam (1933). As a result, the latter author confused two species, considering *S. laevis* identical to *S. convexa* Cunningham, 1871.

Sheppard (1933) and Mañe-Garzón (1953) have shown the difference between the two species. Sheppard examined the holotype of *S. laevis*, comparing it with individuals of *S. convexa*. However, since no appendages were removed in order to preserve the type specimen, the re-description had to be inevitably superficial. Mañe-Garzón (1953) fully described the adult male. The adult female is here described and drawn for the first time. The result of this study corroborates the previous ones pointing out the validity of the species, and adding additional new data to the species recognition.

S. laevis is similar to *S. convexa* in the shape of body, coxal plates marked off by dorsal sutures on pereonites II - IV, pereonite VI extending beyond pleonites 2-3, maxilla 2 with all 3 lobes well developed and bearing many setae at apex etc.

However, the two species can be easily distinguished from one another. Table IV shows some of the morphological differences between the two species.

REMARKS - 1 - Richardson's illustration (1911, p. 400, fig. 2) showing the cephalon of *S. laevis* as separated from pereonite I by a suture is not correct. Mañe-Garzón (1953) illustrated the male correctly. The midposterior fusion between cephalon and pereonite I is compete, without a suture line.

2 - The expanded lateral surface of pereonite I bears, at each side, 2 oblique transverse carina, overlooked by previous authors.

3 - The lateral carinae on pleotelson dorsal surface may or may not be present. When present they are always slightly marked. This characteristic seems to be very variable, and is not related to the size of the specimens. For instance, at Sta. 397, off Rio Grande do Sul, a male specimen 9.5 mm long has the lateral carinae clearly marked off, while in one ovigerous female 9.3 mm long, the carinae are absent. On the other hand, in one ovigerous female 13.5 mm long from Sta. 415, the lateral carinae are present, although only slightly developed.

4 - Sheppard (1933) and Nordenstam

TABLE IV - Morphological comparison of *S. laevis* and *S. convexa*

S. laevis	*S. convexa*
1. Cephalon usually without, but sometimes with a slight mid-posterior carina;	1. Cephalon with a marked spiniform midposterior carina;
2. Antenna 1, peduncular article 2 the longest;	2. Antenna 1, peduncular article 3 the longest;
3. Pereonite VI extending to about pleotelson middle level;	3. Pereonite VI extending well anteriorly to pleotelson middle level;
4. Pleonite 2 extending slightly beyond 3;	4. Pleonite 2 not extending beyond 3;
5. Pleotelson devoid of strong lateral carinae ending into a slight point;	5. Pleotelson with well marked lateral carinae ending into sharp spine;
6. Pereopod I of adult female with two shapes of composite setae on ventral margin of propodus: one shape bifurcated, another short, simple, tapering distally.	6. Pereopod I of adult female with two shapes of composite setae on ventral margin of propodus: one shape bifurcated (similar to the one occurring in *S. laevis*), another stout, leaf-like, composed of minute fine setae in tranverse rows (not found in *S. laevis*).

(1933) showed for *S. convexa* and *S. gaudichaudii* Audoin & Milne Edwards, 1840, that the males differ from the females in the shape of the setae bordering the propodus ventral margin of pereopod I. Sheppard (*op. cit.*) suggested that a similar condition should be expected in *S. laevis*. The present study corroborate that supposition. Males and females of *S. laevis* have on propodus of pereopod I two different shapes of composite setae, one common to both sexes, another not (see Table IV). This feature is rarely found amongst species of *Serolis*. Many species show striking dimorphic characteristics, but usually not involving the propodal setae shape of pereopod I.

5 - The available data indicate a secondary sexual dimorphism in the number of flagellar articles from both antenna 1 and 2, as follows:

	Antenna 1	Antenna 2
Adult males	21-22 articles	18-21 articles
Adult females	11-15 articles	16-18 articles

6 - Attention is called to the striking variation between adult male and female sizes. A reasonable explanation for this has not yet been found, but it will be once more material is available for study. It should be noted that in the same area both forms (larger and smaller) of individuals occur, as shown by the material collected at Sta. 327, 397 and 415, off Rio Grande do Sul.

BATHYMETRICAL DISTRIBUTION - The species depth limits range from 6 to 34 m. Previous occurrences appear to be from depths shallower or around these bathymetrical values.

GEOGRAPHICAL DISTRIBUTION - South Sandwhich Islands (Richardson, 1911). South of Isla dos Lobos, off Uruguay (Mañe-Garzon, 1953). Rio de Janeiro, São Paulo and Rio Grande do Sul, Brazil (present recordings).

ECOLOGICAL AND DISTRIBUTIONAL NOTES- The present report extends the Atlantic Ocean range of *S. laevis* a considerable distance northward. In consequence, the species has now a very wide geographical distribution, although only sampled from a few and scattered localities. Their most northward extent observed is now Lat. 22°06'S. The species has not as yet been reported from the Pacific Ocean.

The available data show *S. laevis* as being a cryophyle eurythermic shallow bottom form (Moreira, 1966), occurring inside as well as outside the Antarctic Convergence. Along southern Brazil the species was found chiefly on sand bottoms in waters ranging in temperature from 13.00 to 19.15° C, and

salinity from 32.86 to 36.24°/oo.

Ovigerous females or females with empty marsupium have been taken in Rio de Janeiro in Febraury and June, in São Paulo in March and May, and in Rio Grande do Sul in November-December. These data seem to indicate that the breeding period is very long with the species probably breeding throughout the year.

Serolis completa sp. n.
(Figs. 81-97)

DIAGNOSIS - *Serolis* with body elliptical, smooth. Eyes present, with corneal facets. Antenna 1, peduncular article 2 the longest. Antenna 2 with flagellar process. Maxilla 2, 3-lobed. Maxilliped, distal epipod fused to endite; epipod bordered by a serrated hyaline flange; palp 3-articulated. Pereopod I, composite of short setae on ventral margin of propodus 2-denticulated. Coxal plates of pereonites II-V marked off by dorsal sutures. Pereonite VI free, extending not beyond pleonites 2-3, and reaching back to about middle level of pleotelson. Pleon with 3 free pleonites. Pleonite 2 extending not beyond both pleonite 3 and posterolateral spiniform point of pleotelson, reaching back to a level well anterior apex of pleotelson. Pleonite 3 extending slightly beyond posterolateral spiniform point of pleotelson, as well as reaching back to a level far anterior apex of pleotelson. Pleotelson with 1 faint mid-longitudinal carina; posterolateral margins smooth, converging medially to an acutely pointed apex. Pleopods 1-3 with protopod produced at inner angle; pleopod 4 with endopod uniarticulated, not cleft at apex; pleopod 5 with endopod uniarticulate, exopod biarticulated and with 2 plumose setae at apex. Uropod biramous; protopod broady, well developed, larger than exo- and endopod, inner distal angle very elongate, acutely produced and with 1 plumose seta at apex, outer margin crenulated and fringed by long plumose setae, inner margin bordered by short fine setae; exopod smaller than endopod, with outer margin crenulated and bearing long plumose setae; endopod broady, margins crenulated along almost entire length, and bordered by plumose setae.

HOLOTYPE - Adult male, 4.0 mm long. P.S. Moreira col. Deposited in the Museu de Zoologia, University of São Paulo, São Paulo, Brazil.

TYPE LOCALITY - São Paulo, off Ilha Sumítica and Ilha dos Búzios, about Lat. 23°50'S, Long. 45°10'W, 12 m depth.

NAME - The specific name *completa*, from latin *completus*, alludes to the fact that the developmental stages of the species have been characterized and described (Moreira, 1966).

SIZE RANGE - Adult females, 2.7-4.0 mm long; adult males, 3.5-4.6 mm long.

MATERIAL EXAMINED - See p.101 for details on stations.

Rio de Janeiro - Sta. A: 5 adult males (size range, 4.1-4.6 mm), 18 females carrying embryos or with empty marsupium (size range, 3.0-4.0 mm), 11 juveniles, 2 fragments. Sta. 314: 1 adult male (4.4mm), 2 adult females (3.5 and 3.6 mm), 1 juvenile.

São Paulo - Sta. E.65.3: 2 adult males (4.0 and 4.1mm), 1 female with embryos (3.5mm), 2 juveniles. Sta. E.65.5: 1 juvenile. Sta. E.65.6: 1 adult male (3.5 mm), 2 females carrying eggs or embryos (2.9 and 3.0mm), 1 juvenile. Sta. E.65.7: 1 adult male (3.9mm), 1 ovigerous female (3.0mm), 4 juveniles. Sta. E. 65.9: 8 adult males (size range 3.5-4.0 mm), 13 females carrying eggs or embryos (size range, 2.7-3.4 mm), 31 juveniles.

SUPPLEMENTARY DESCRIPTIVE NOTES- Adult male - Body - (Fig. 81) - Lateral margins of pereon and pleon minutely serrated and bordered by fine hairy setae. Greatest width of cephalon across the eyes.

Pereon and Pleon - Expanded lateral surface of pereonite I smooth, devoid of carinae. Tubercles or spiniform points lacking on pereonites and pleonites. Pereonites I-VI contiguous with one another laterally. Pleotelson slightly convex, posterolateral angles wide and flanked by 1 acute point at the outer side.

Antenna 1 - (Fig. 82) - Peduncular article 4 about 3 times as long as 3; flagellum composed of 7 articles; articles 3 to penultimate bearing 1 long aesthete, terminal article narrow, and as long as penultimate (Fig. 82a).

Antenna 2 - (Fig. 83) - Peduncular articles 4 and 5 about equal in length (actually article 4 slightly longer); article 2 of peduncle with 1 long plumose seta at distal angle; flagellum composed of 9 articles; articles 2 to 6 bearing a serrated flagellar

process (Fig. 83a) at ventral surface, terminal article shorter than penultimate.

Right mandible - (Fig. 84) - Incisor 3-toothed, median tooth broadly rounded and the most prominent. Lacinia mobilis lamellar, narrow at base but expanded distally into several stout, unequal teeth separated one from the other by irregular gaps (Fig. 84a). Setal row of 1 stout seta minutely toothed at apex.

Left mandible - (Fig. 85) - Incisor obliquely truncate, and produced into 2-3 unequal teeth at outer angle. Lacinia mobilis expanded, incurved, outer angle produced strongly in 1 stout elongate process, distal margin straight and minutely toothed. Setal row of 1 slightly curved seta denticulated at one margin.

Maxilla 1 - (Fig. 86) - Outer lobe with about 9 stout spines, and 1 finely pectinate seta apically; inner lobe with 1 short apical seta.

Maxilla 2 - (Fig. 87) - Inner lobe with about 7 apical setae; two outer lobes each with 2 setae at apex.

Maxilliped - (Fig. 88) - Endite broady distally, bordered by a serrated hyaline flange (Fig. 88a), apex with 2 stout setae, of which 1 is strongly serrulated. Distal epipod roundly produced at the outer distal angle, where it is bordered by a serrated hyaline flange (Fig. 88b). Article 3 of palp small, about 4.3 times as long as article 2.

Pereopod I - (Fig. 89) - Basis and chiefly ischium, merus and carpus densely covered by short fine setae; ventrodistal angle of merus with 1 long seta; carpus with 2 stout composite setae at distal angle (Fig. 89a) and bare setae along ventral margin; propodus at the dorsal end with a patch of fine short setae, ventral margin with longitudinal rows of 2 shapes of stout composite setae (Figs. 89b, c) flanked by 1 row of simple setae, lateral surface nearby ventral margin densely hairy.

Pereopod II - (Fig. 90) - Ischium, merus and carpus with ventral margin densely covered by long fine setae; ventrodistal angle of ischium with a transverse row of simple setae; merus at the ventral end with transverse rows of long plumose setae; ventrodistal margin of carpus with transverse rows of long bare setae; propodus narrow, elongate, decurved slightly, ventral margin with irregular pairs of stout composite setae (Fig. 90a); dactylus incurved strongly, not extending beyond to ventroproximal angle of propodus, tip with 1 stout triangular claw and 4 setae borning from its ventral base (Fig. 90b).

Pereopods III-VII - (Figs. 91-92) - Densely hairy, and very alike. Ischium through propodus with ventral margin bearing transverse rows of long plumose and finely pectinate short setae (Fig. 91a); both ventrodistal angle of merus, and ventral margin of propodus, with short, stout, naked setae (Fig. 91b); propodus at the end with 2 shapes of strong pectinate setae (Fig. 91c, d); dactylus narrow, elongate, tapering to an acute claw, ventral margin bordered by fine setae.

Pleopods 1-3 - (Figs. 93-94) - Protopod bearing at the inner angle 2 stout plumose setae. Endopod of pleopod 2 narrowing slightly toward inner angle, where just close to it is devoid of plumose setae; endopod at its maximum length about 1.6 times as long as appendix masculina.

Pleopods 4-5 - (Figs. 95-96), and Uropod-(Fig. 97).

ADULT FEMALE

The adult female resembles the adult male in many respects; a complete description, therefore, seems unnecessary.

The body is similar to the adult male, but smaller, more convex and less broad, and with the pleotelson midlongitudinal carina sometimes more distinctly marked.

Antenna 1 - Flagellum composed of 6 articles, flagellar articles from 2 to penultimate bearing 1 aesthete each, terminal article longer and narrower than penultimate (Fig. 82b).

Antenna 2 - Flagellum composed of 6 articles, flagellar articles from 2 to last bearing a serrated process at ventral surface.

Right mandible - Enlarged subdistal seta of endite with distal denticles more pronouncing and not so irregular (Fig. 84b).

Maxilliped - Serrated hyaline flange of endite not too pronounced (Fig. 88c).

Pereopod I - Composite setae on ventral margin of propodus less numerous but morpho-

logically resembling those of male (Figs. 89d, e); setae shapes on merus and carpus similar to male (Fig. 89f); propodus dorsodistal margin scaleless (Fig. 89g).

Pereopods II-VII - Very similar, but less hairy than the male. Pereopod II (Fig. 90c).

Pleopods 1-3 - Resembling to one another and to pleopods 1 and 3 of male (Fig. 93).

Pleopods 4-5 and Uropod - Very alike those of male. Pleopod 4 with apex of endopod bearing pronouncing lobosities (Fig. 95a).

DISCUSSION - *S. completa* sp.n. is very similar to *S. elliptica* Sheppard, 1933, chiefly in the elliptical body, 3- articulated maxillipedal palp, large uropods, pleonites 1-3 free, and coxal plates marked off on pereonites II-V.

However, both species can be easily distinguished from each other. The most striking morphological differences separating the two species are listed in Table V.

TABLE V - Morphological comparison of *S. elliptica* and *S. completa* sp. n.

S. elliptica	*S. completa* sp. n.
1. Antenna 1, peduncular article 3 the longest;	1. Antenna 1, peduncular article 2 the longest;
2. Antenna 2 devoid of flagellar process;	2. Antenna 2 with flagellar process;
3. Pereopod I, composite short setae on ventral margin of propodus 4-denticulated;	3. Pereopod I, composite short setae on ventral margin of propodus 2-denticulated;
4. Pleonite 3 extending to a level well beyond posterolateral spiniform point of pleotelson, but as far as or only slightly beyond apex of pleotelson;	4. Pleonite 3 extending to a level slightly beyond posterolateral spiniform point of pleotelson, but reaching back to a level far anterior apex of pleotelson;
5. Pleotelson with a broadly rounded apex.	5. Pleotelson with an acutely pointed apex.

REMARKS - Secondary sexual dimorphism is not very obvious in this species. It is noted mostly in the number of antenna 2 flagellar articles (males, 9 articles; females, 6 articles), and in the dorsodistal margin of propodus of female pereopod I, which is scaleless instead of bearing a patch of fine short setae.

The composite setae on ventral margin of propodus of pereopod I are similar in both sexes. The outstanding broadness and development of the uropods is striking in this species, as well as, in the allied *S. elliptica*.

BATHYMETRICAL DISTRIBUTION - The depth recorded for the species ranges from 33 to 60 m.

GEOGRAPHICAL DISTRIBUTION - Off Rio de Janeiro and São Paulo, Brazil. Up to date known only from Brazil.

ECOLOGICAL AND DISTRIBUTIONAL NOTES - The species is well represented in the material studied, appearing to be vey abundant and widely distributed off São Paulo and Rio de Janeiro. The number of stations recording the species suggests a much wider distribution than indicated by the actual existing data.

The species seems to be a shallow water form, so far not collected below 60 m depth, occurring mostly on clay bottoms with shell fragments, rather than on sand bottoms.

It appears that the species has a preference for warmer waters (Moreira, 1966), having been collected in water temperatures ranging from 23.6 to 24.4°C. The single exception is the station off Ponta de Juatinga, where the recorded bottom water temperature was 15.59°C.

Ovigerous females were taken off Rio

de Janeiro in February, and off São Paulo in May.

RESUMO

Faz-se um primeiro levantamento das espécies do gênero *Serolis* (Isopoda,Flabellifera) ocorrendo na plataforma continental - centro-sul do Brasil, a partir da Lat. - 22°00'S. Cinco espécies são registradas. As espécies *S. polaris* Richardson, 1911 e *S. laevis* Richardson, 1911, são redescritas, e representam ocorrências novas para o Brasil. As espécies *S. uaperta* sp. n., *S. veaperta* sp. n. e *S. completa* sp.n., são novas para a ciência. A fêmea de *S. laevis* é descrita pela primeira vez. Confirma-se, também, a validez das espécies *S. convexa* Cunningham, 1871 e *S. laevis* como espécies distintas.Fornece-se diagnoses para a família, gênero e para cada espécie estudada, assim como uma chave de identificação elaborada à base de espécimens adultos. À descrição de cada espécie seguem-se observações ecológicas.

ACKNOWLEDGEMENTS

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LIST OF BENTHIC STATIONS AND SPECIES PRESENT*

RIO DE JANEIRO

1 - Sta. II; off Cabo de São Thomé;22°15.5' S-40°54.5'W; Feb 1969; 51 m; coarse sand; 15.63°C, 35.78°/oo, 4.13 ml/l;R/V "Prof. W. Besnard"; circular dredge.
SEROLIS UAPERTA sp. n.

2 - Sta. III; off Cabo de São Thomé;22°10.5 S-40°59'W; Feb 1969; 30 m; very coarse quartzitic sand with shell fragments ; 17.13°C, 36.17°/oo, 4.21 ml/l;R/V"Prof. W. Besnard; circular dredge.
SEROLIS POLARIS Richardson
SEROLIS UAPERTA sp. n.

3 - Sta. IV; off Cabo de São Thomé;22°06'S-41°04'W; Feb 1969; 15 m; very coarse shelly sand; 19.15°C, 36.24°/oo; 4.05 ml/l; R/V "Prof. W.Besnard"; circular dredge.
SEROLIS LAEVIS Richardson

4 - Sta. A; off Ilha Grande; 23°22'S-44°26' W; Feb 1969; 50 m; fine sand; 15.95°C, 35.71°/oo; R/V"Prof. W. Besnard"; triangular dredge.
SEROLIS COMPLETA sp. n.
SEROLIS UAPERTA sp. n.

5 - Sta. 12; Ilha Grande; 265° to Ponta do Grego, 50° to Ilhote do Jorge Grego; Jun 1967; 34 m; clay; 17.80°C,35.72°/oo; "Emilia"; anchor dredge.
SEROLIS LAEVIS Richardson
SEROLIS VEAPERTA sp. n.

6 - Sta. 177; off Ponta de Castelhanos to ESE, 338° to Ponta do Arpoador (Ilha - da Marambaia), 284° to Farol do Castelhano, 87° to Laje da Marambaia; Jun 1967; 35 m; very coarse sand;20.00° C, 35.36°/oo; "Emília"; Foerster-grab.
SEROLIS UAPERTA sp. n.

7 - Sta. 302; Ilha Grande, Farol do Castelhano to SE, 23°14'S-43°56.5'W. Feb 1968; 49 m; very coarse sand;R/V"Prof. W. Besnard"; rectangular dredge.
SEROLIS UAPERTA sp. n.

8 - Sta. 303; between Ilha Grande-Ilha da Marambaia; 23°05'S-44°03'W; Feb 1968; 20 m; very coarse sand; R/V "Prof. W. Besnard"; photo-grab.
SEROLIS UAPERTA sp. n.

9 - Sta. 305; off Ilha Grande, Ponta de Castelhanos to S; 23°13'S-44°06'W;Feb 1968; 40 m; very coarse sand; R/V"Prof. W. Besnard"; photo-grab.
SEROLIS UAPERTA sp. n.

* Station data listed as follows: Station number; locality and/or latitude-longitude; date; depth (m); substrata;temperature,salinity and oxygen content of bottom water; vessel; collecting gear and species present.

10- Sta. 311; baía da Ilha Grande;23°07'S-44°29.5'W; Feb 1968; 25 m; very fine sand; R/V "Prof.W.Besnard";photo-grab.
SEROLIS LAEVIS Richardson
SEROLIS UAPERTA sp. n.

11 - Sta. 314; off Ponta de Juatinga, about 23°22'S - 44°29'W; Feb 1968; 50 m;very fine sand; R/V "Prof. W. Besnard". photo-grab.
SEROLIS COMPLETA sp. n.

SÃO PAULO

12 - Sta. E.65.3; nearby Ilha Anchieta; 23°34'S-45°05'W; May 1965; 33 m;coarse sand; 24.4°C; "Emília";"Calypso dredge" modified.
SEROLIS LAEVIS Richardson
SEROLIS UAPERTA sp. n.
SEROLIS COMPLETA sp. n.

13 - Sta. E.65.5; nearby Ilha da Vitória ; 23°42'S-45°04'W; May 1965; 40 m; clay; 23.8°C; "Emília"; "Calypso dredge", modified.
SEROLIS COMPLETA sp. n.

14 - Sta. E.65.6; off Ilha da Vitória;23°47'S-44°57'W; May 1965; 52 m; sticky clay; 23.7°C; "Emília"; "Calypso dredge", modified.
SEROLIS COMPLETA sp. n.

15 - Sta. E.65.7; off Ilha da Vitória;23°49'S-44°53'W; May 1965; 60 m; sticky clay; 23.6°C; "Emília"; "Calypso dredge", modified.
SEROLIS COMPLETA sp. n.

16 - Sta. E.65.9; off Ilha Sumítica and Ilha dos Búzios; about 23°50'S-45°10'W; May 1965; 42 m; sticky clay; 24.4°C; "Emília";"Calypso dredge", modified.
SEROLIS COMPLETA sp. n.
SEROLIS UAPERTA sp. n.

17 - Sta. 1801; nearby Ilha Anchieta, 224° to Ponta Grossa; 6 m; fine sand; R/S "Calypso".
SEROLIS LAEVIS Richardson

18 - Ilha Anchieta, off Ponta do Catimbau to W; about 23°32'S-45°02'W; Feb 1964; 21 m; sand with shell fragments; 16.0°C ; 35.12°/oo; "Veliger"; Anchor dredge.
SEROLIS UAPERTA sp. n.

19 - Ilha Anchieta, off Ilha das Palmas to ; May 1965; 19 m; coarse sand; "Emília"; "Calypso dredge", modified.
SEROLIS UAPERTA sp. n.

20 - Ilha Anchieta, between Ilhote do Sul and Ponta das Andorinhas; about 23°33'S-45°04'W; Mar 1963; 18 m; sand with shell fragments; 15.6°C, 35.12°/oo; "Veliger"; rectangular dredge and anchor dredge.
SEROLIS VEAPERTA sp. n.

21 - Ilha Anchieta, off Ilhote; Mar 1963; 18 m; sand; 15.6°C, 35.12°/oo;"Veliger"; anchor dredge.
SEROLIS LAEVIS Richardson
SEROLIS VEAPERTA sp. n.

22 - Off Ilha Anchieta; about 23°32'S; Nov 1963; 30 m; fishing boat; otter trawl.
SEROLIS POLARIS Richardson

RIO GRANDE DO SUL

23 - Sta. 327; off Chui; 33°48'S-53°12'W ; Jun 1968; 22 m; clay; 13.00°C,32.863‰ 5.62 ml/l; R/V "Prof.W. Besnard";photo-grab.
SEROLIS LAEVIS Richardson
SEROLIS VEAPERTA sp. n.

24 - Sta. 397; 29°45'-49°55'W; Oct 1968;26m; 17.96°C, 35.639°/oo, 5.54 ml/l; R/V "Prof. W. Besnard"; triangular dredge.
SEROLIS LAEVIS Richardson

25 - Sta. 406; off Chui; 34°14'S-52°53'W ; Oct 1968; 65 m; 13.74°C, 33.70°/oo,3.95 ml/l; R/V "Prof. W. Besnard"; otter trawl.
SEROLIS POLARIS Richardson

26 - Sta. 415; 33°11'S-52°33'W; Nov 1968; 14 m; 18.34°C, 31.889°/oo, 5.25 ml/l; R/V "Prof. W. Besnard"; triangular dredge.
SEROLIS LAEVIS Richardson

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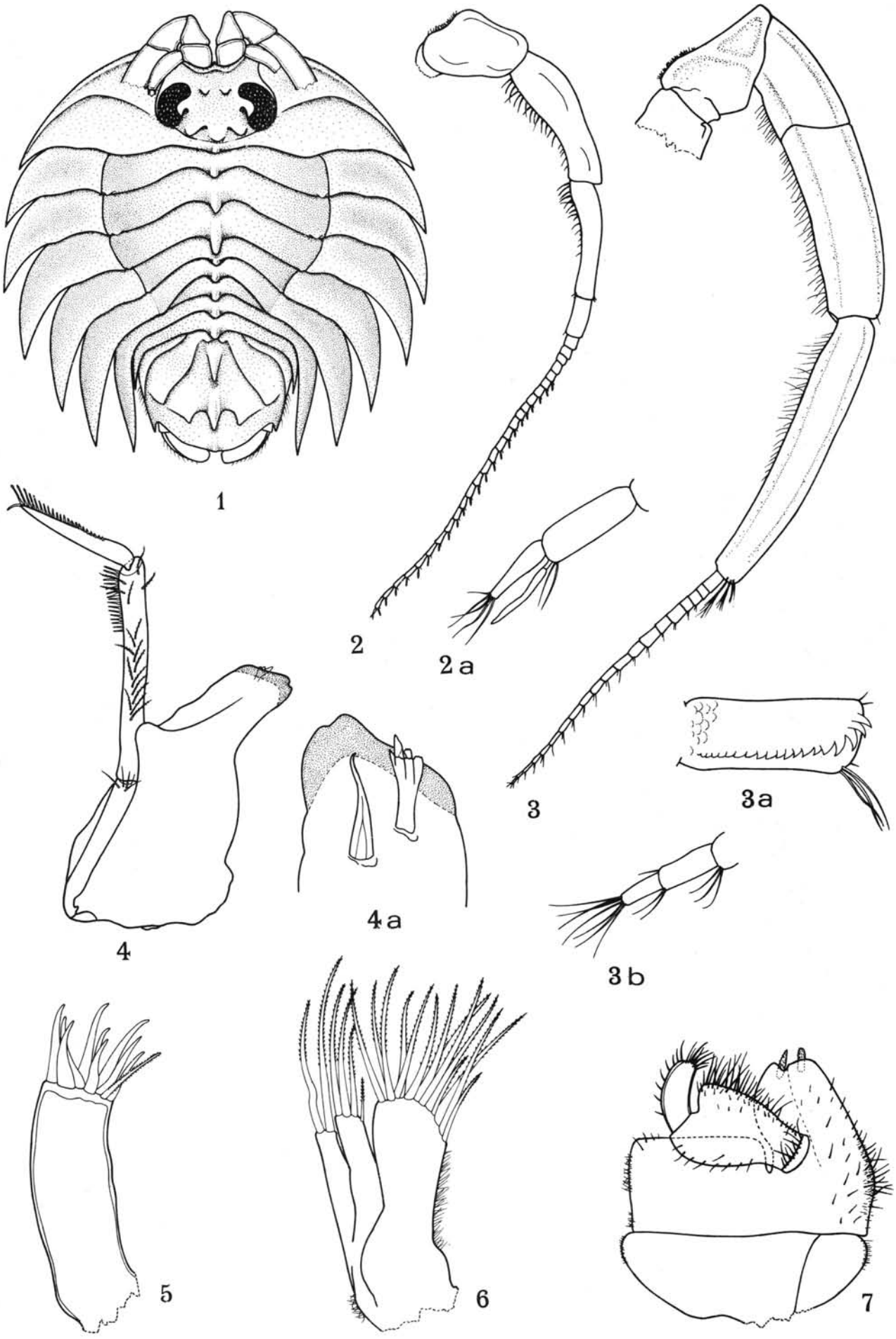
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PLATE I

Serolis polaris Richardson, adult male, 16.0 mm long

FIG. 1 - Body, dorsal view.

FIG. 2 - Antenna 1.

FIG. 2a - Apex of flagellum.

FIG. 3 - Antenna 2.

FIG. 3a - Serrated process on ventral surface of flagellar articles.

FIG. 3b - Apex of flagellum.

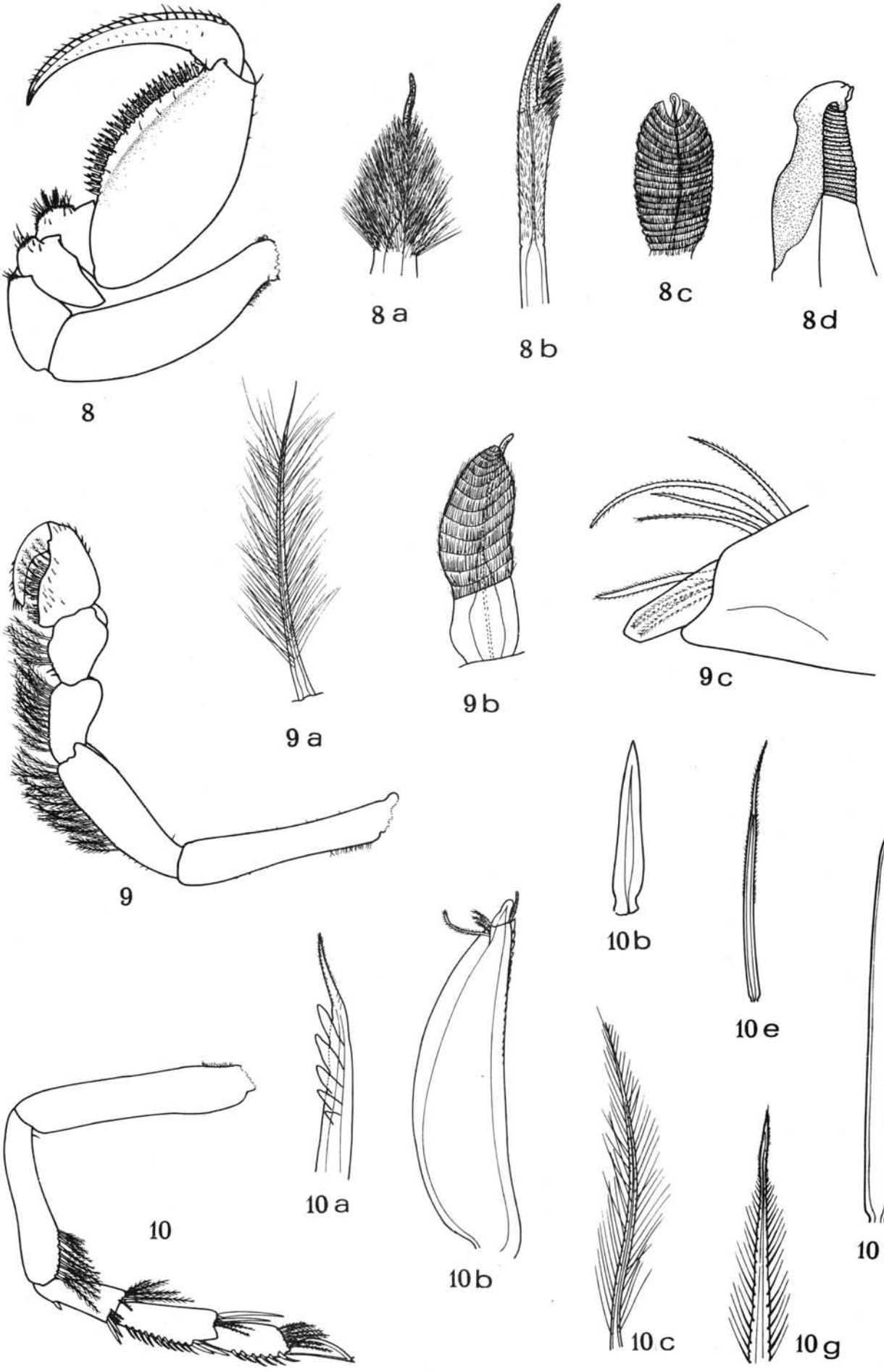
FIG. 4 - Right mandible.

FIG. 4a - Distal portion of same, showing both the lacinia mobilis and setal row.

FIG. 5 - Maxilla 1.

FIG. 6 - Maxilla 2.

FIG. 7 - Maxilliped.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8 a
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8c
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10f
10 c
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PLATE II

Serolis polaris Richardson, adult male, 16.0 mm long

FIG. 8 - Pereopod I.

FIG. 8a - Composite setae on ventral margin of carpus.

FIGS. 8b-c - Composite setae on ventral margin of propodus.

FIG. 8d - Tip of dactylus.

FIG. 9 - Pereopod II.

FIG. 9a - Plumose setae on ventral margin of ischium through propodus.

FIG. 9b - Compositae setae on ventral margin of propodus.

FIG. 9c - Apical portion of dactylus showing the blunt claw.

FIG. 10 - Pereopod III.

FIGS. 10a,c-g - Different shapes of setae found on same pereopod as well as on pereopods IV-VII.

FIG. 10b - Dactylus.

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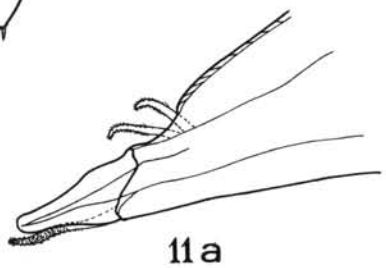

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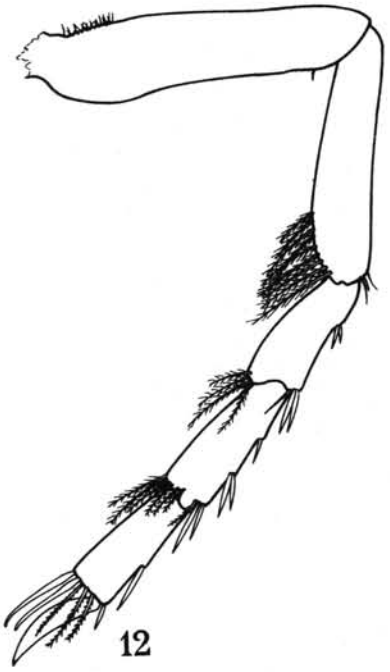

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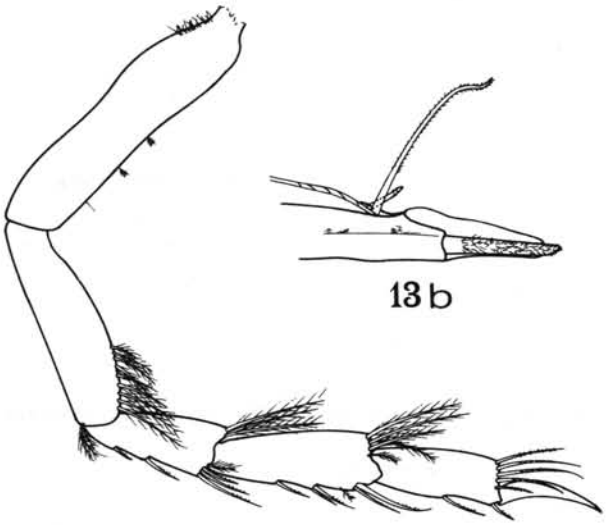

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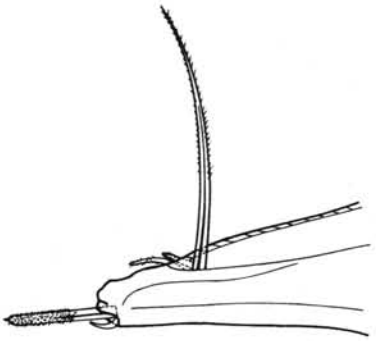

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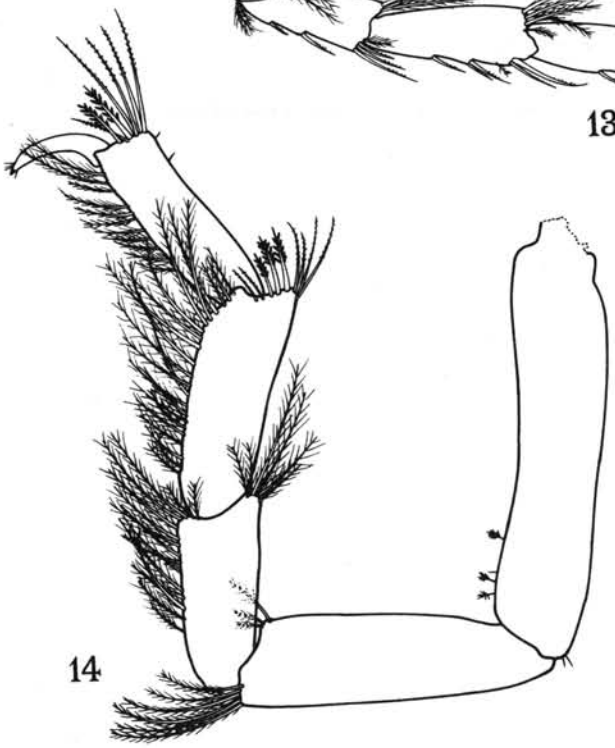

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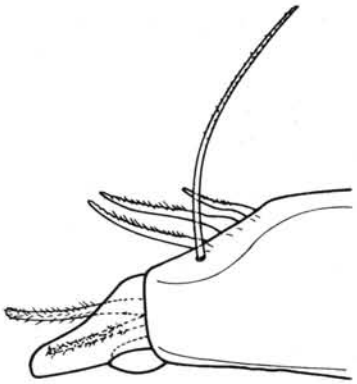

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PLATE III

Serolis polaris Richardson, adult male, 16.0 mm long

FIG. 11 - Pereopod IV.

FIG. 11a - Apical portion of dactylus.

FIG. 12 - Pereopod V.

FIG. 12a - Apical portion of dactylus.

FIG. 13 - Pereopod VI.

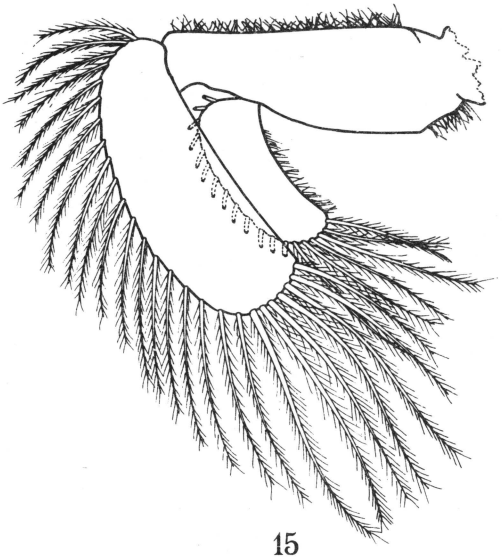
FIG. 13a - Compositae setae on ventral margin of merus through propodus.

FIG. 13b - Apical portion of dactylus.

FIG. 14 - Pereopod VII.

FIG. 14a - Pectinate setae at the end of carpus and propodus.

FIG. 14b - Apical portion of dactylus.



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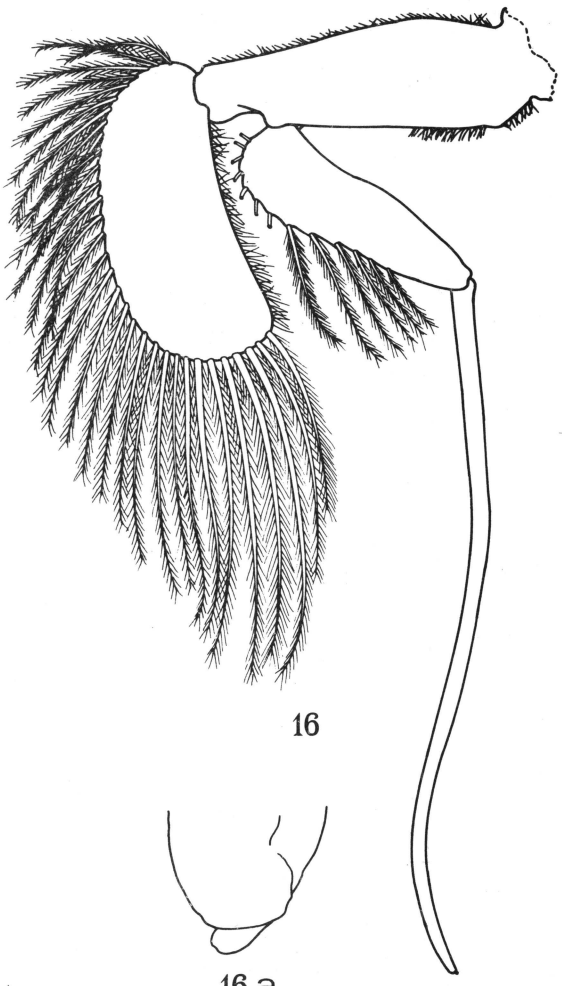

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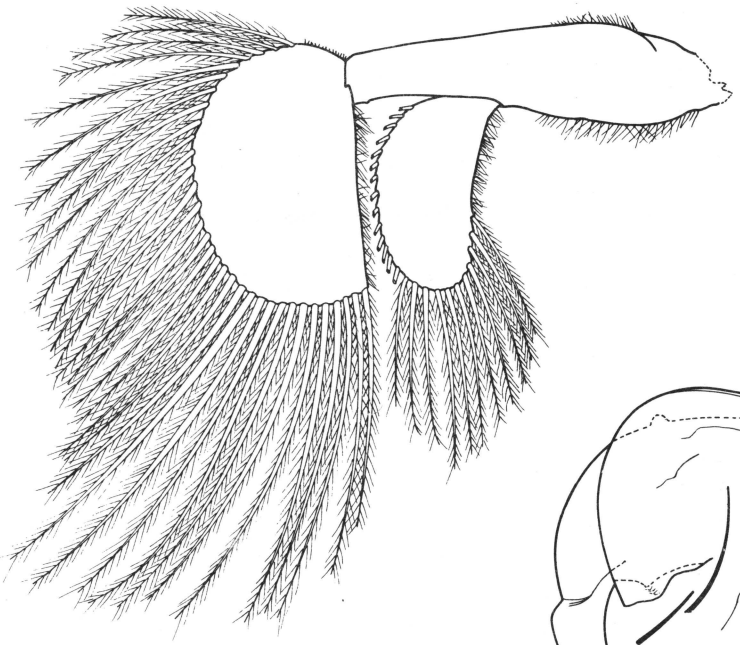

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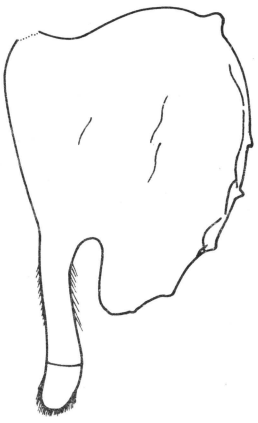

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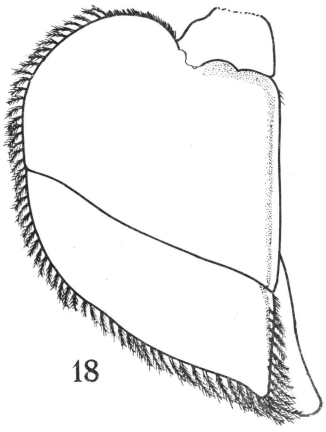

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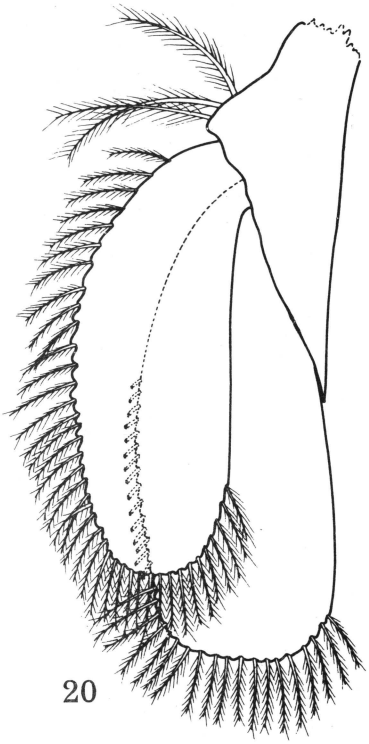

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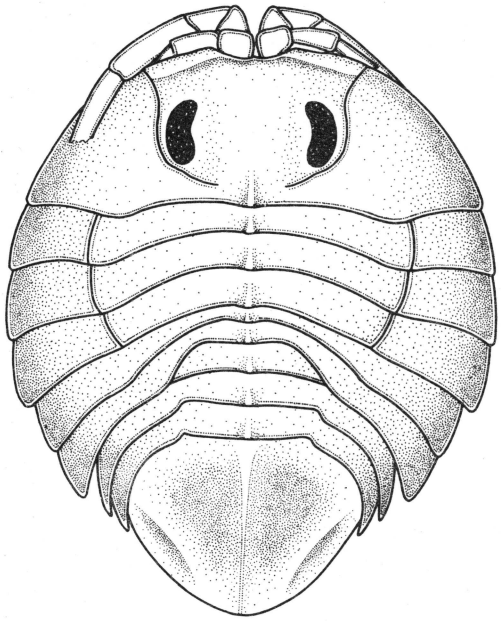
PLATE IV

Serolis polaris Richardson, adult male, 16.0 mm long

FIG. 15 - Pleopod 1.
FIG. 16 - Pleopod 2.
FIG. 16a - Apex of appendix masculina.
FIG. 17 - Pleopod 3.
FIG. 18 - Pleopod 4.
FIG. 18a - Endopod of same.
FIG. 19 - Pleopod 5.
FIG. 19a - Tip of exopod of same.
FIG. 20 - Uropod.



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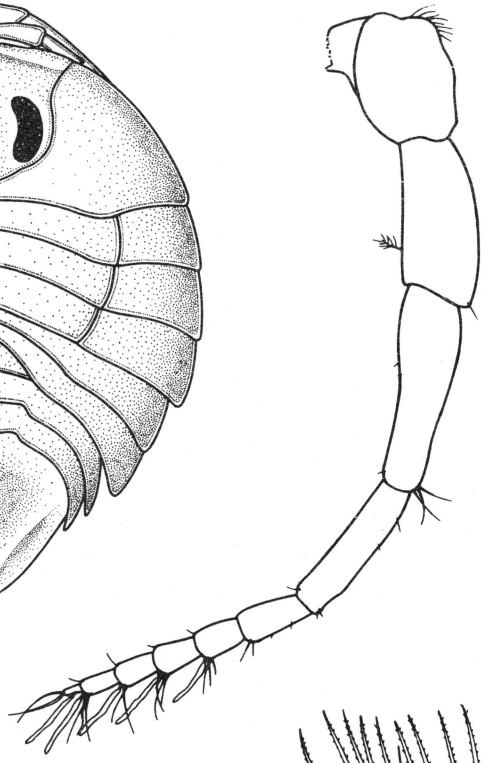

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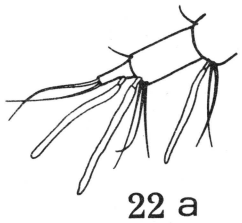

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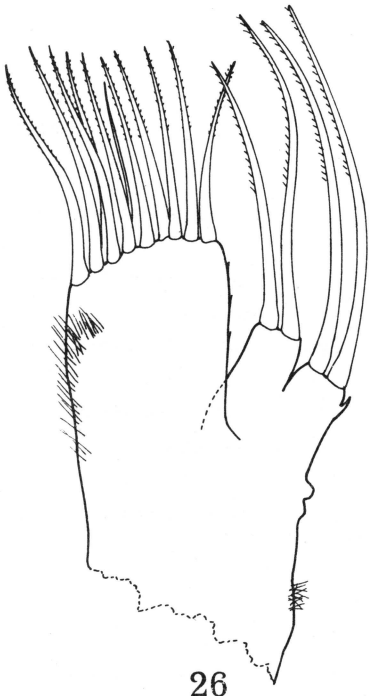

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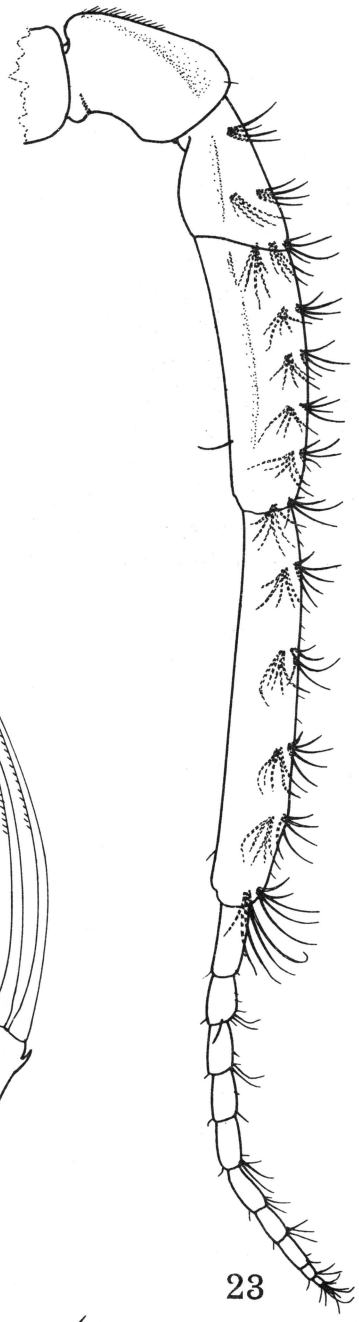

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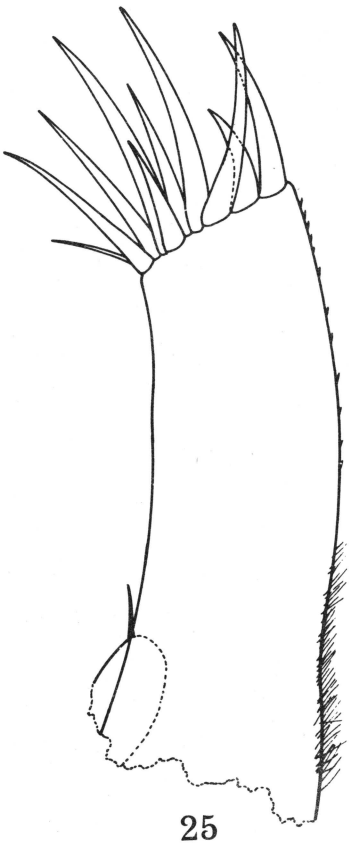
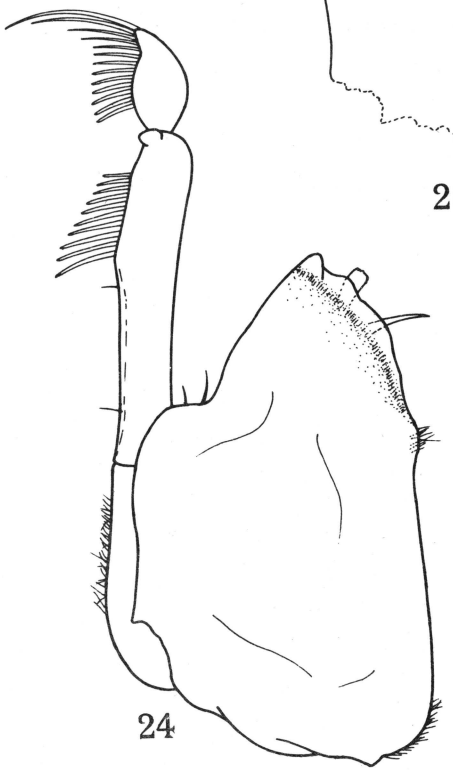


25



24

27

PLATE V

Serolis uaperta sp.n., adult male, 3.7 mm long

FIG. 21 - Body, dorsal view.
FIG. 22 - Antenna 1.
FIG. 22a - Apex of flagellum
FIG. 23 - Antenna 2.
FIG. 24 - Right mandible.
FIG. 25 - Maxilla 1.
FIG. 26 - Maxilla 2.
FIG. 27 - Maxilliped.

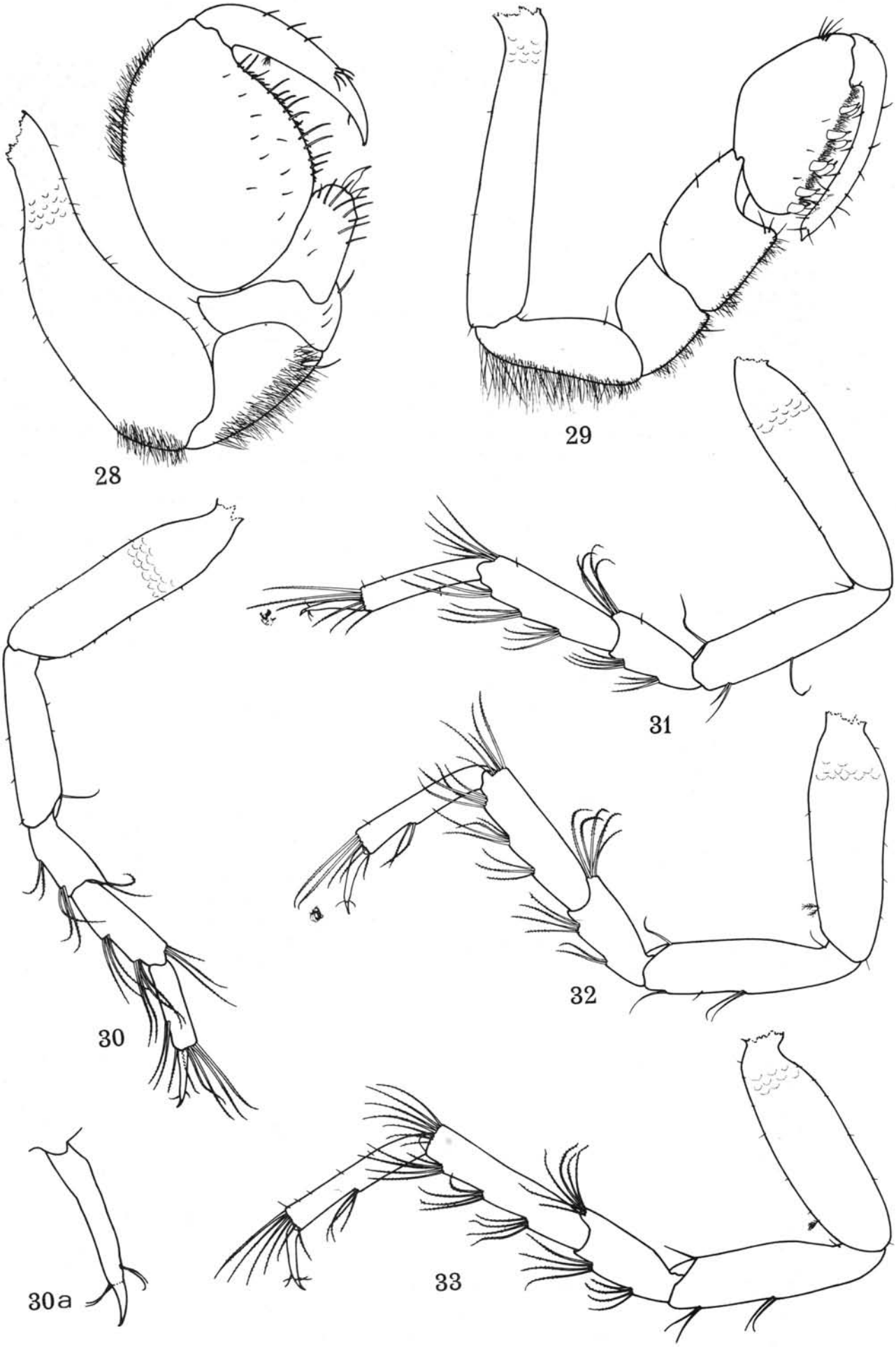
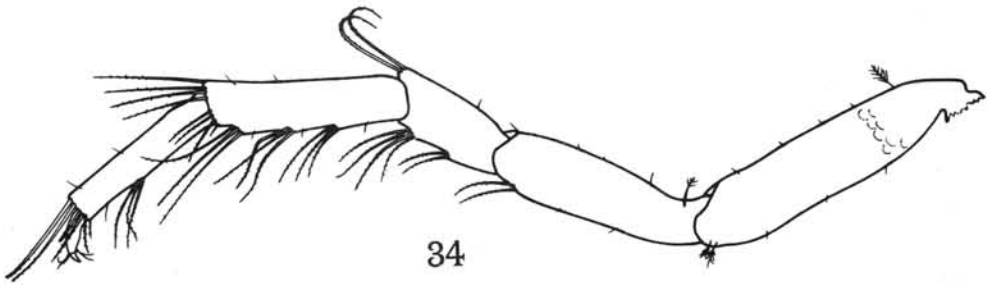

28
29
30
31
32
30a
33

PLATE VI

Serolis uaperta sp. n., adult male, 3.7 mm long

FIG. 28 - Pereopod I.
FIG. 29 - Pereopod II.
FIG. 30 - Pereopod III.
FIG. 30a - Dactylus of same.
FIG. 31 - Pereopod IV.
FIG. 32 - Pereopod V.
FIG. 33 - Pereopod VI.



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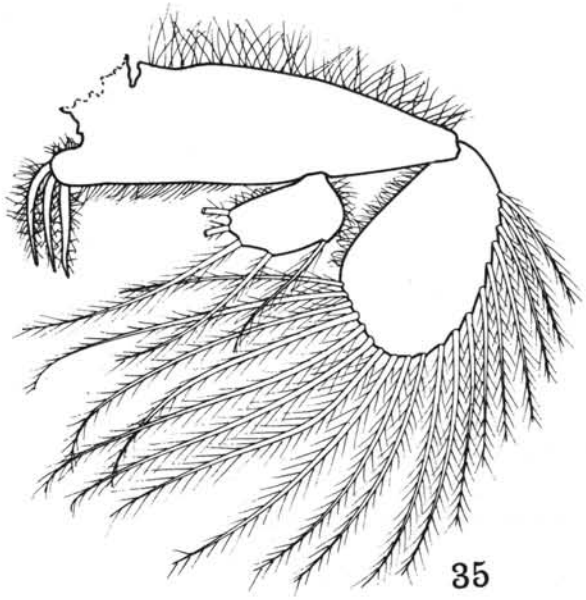

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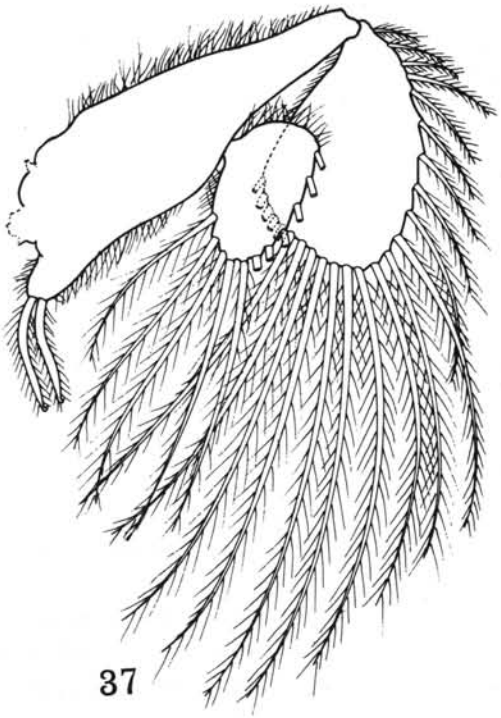
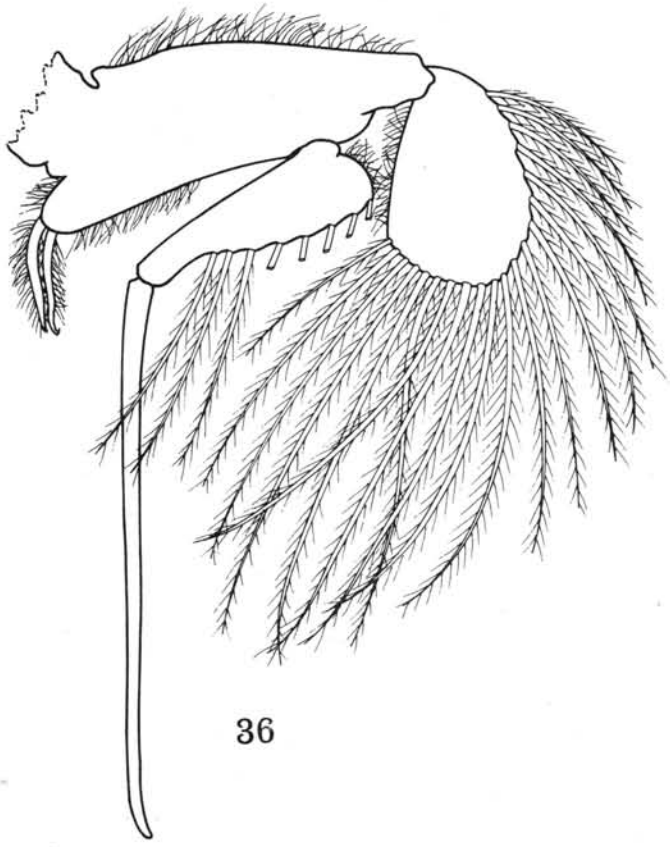


37



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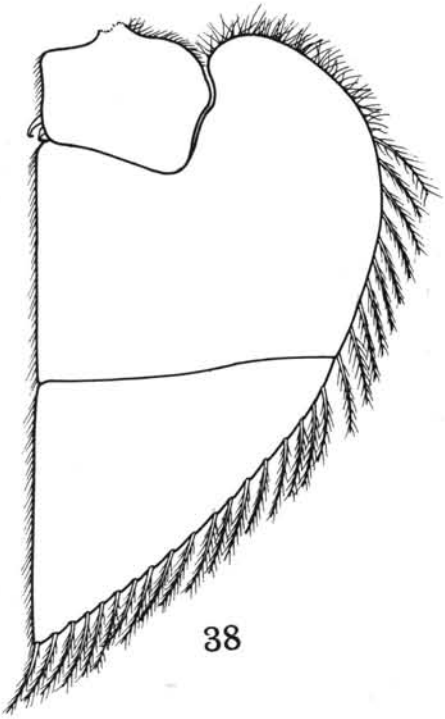
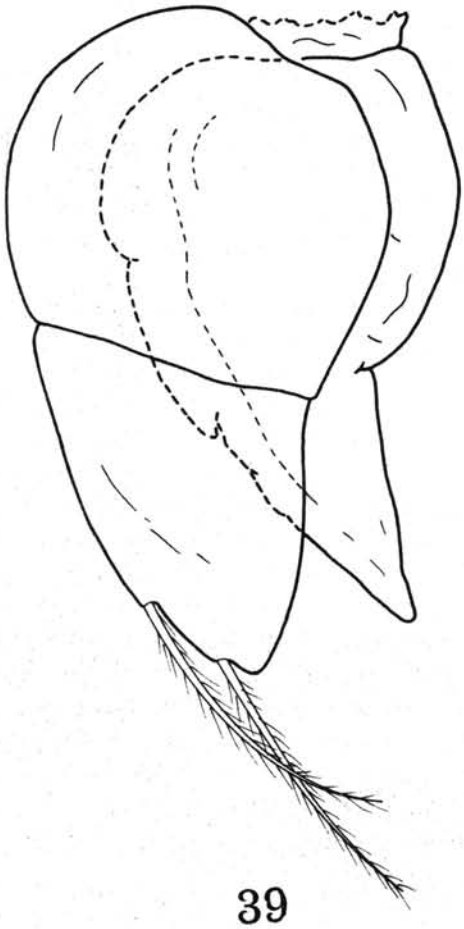


38

PLATE VII

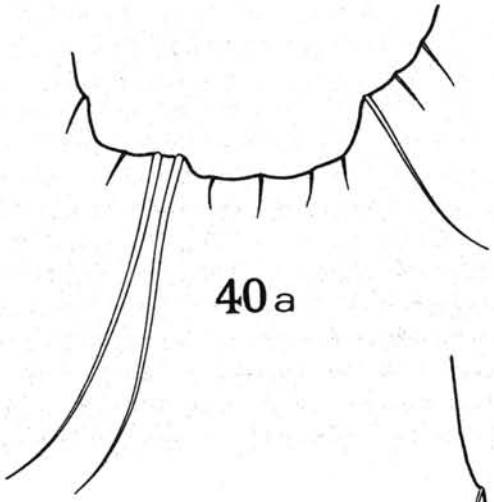
Serolis uaperta sp. n., adult male, 3.7 mm long

FIG. 34 - Pereopod VII.
FIG. 35 - Pleopod 1.
FIG. 36 - Pleopod 2.
FIG. 37 - Pleopod 3.
FIG. 38 - Pleopod 4.

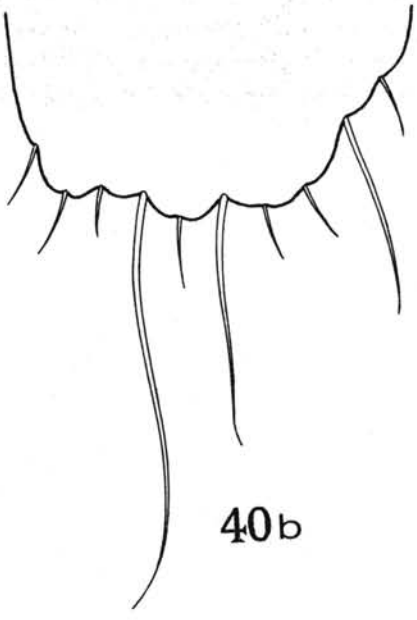


39

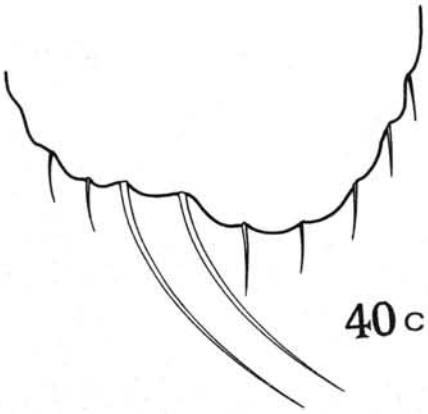
40



40a



40b

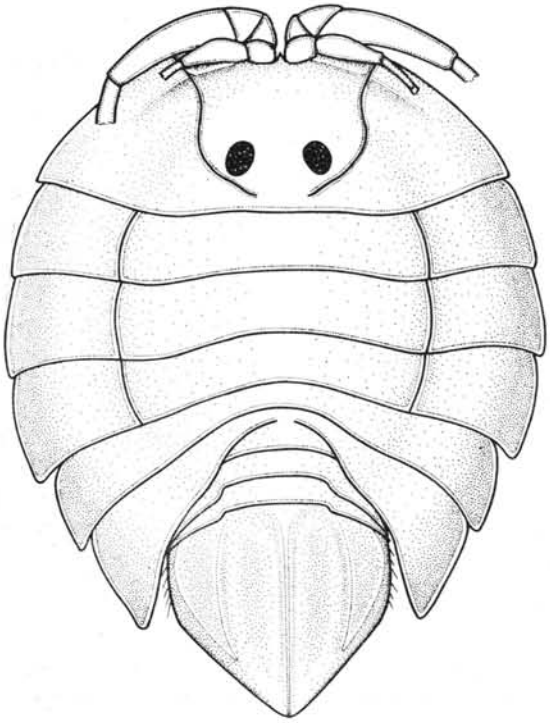


40c

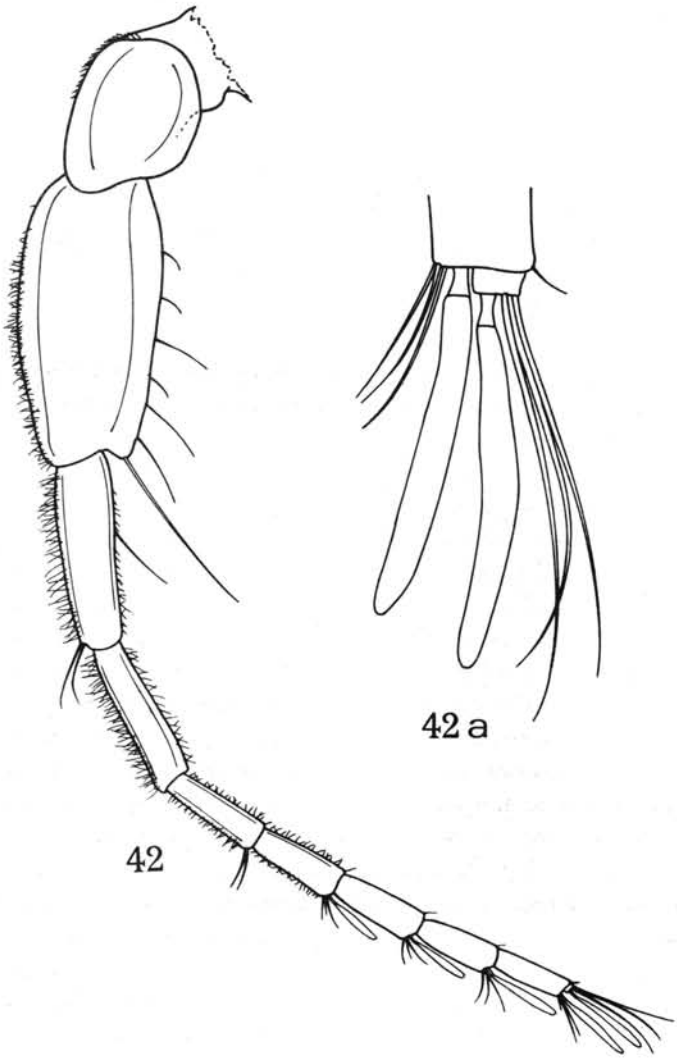
PLATE VIII

Serolis uaperta sp. n., adult male, 3.7 mm long

FIG. 39 - Pleopod 5.
FIG. 40 - Uropod.
FIG. 40a - Apex of right exopod.
FIG. 40b - Apex of left exopod.
FIG. 40c - Apex of endopod.



41

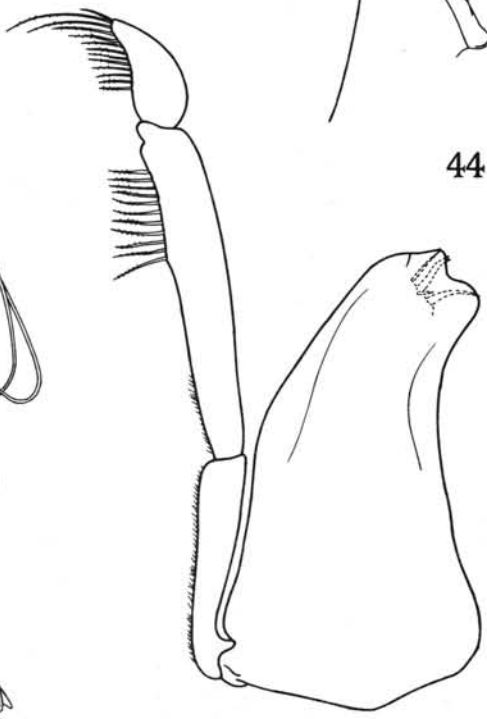


42

42a

43

43a



44

44a

PLATE IX

Serolis veaperta sp. n., adult male, 4.7 mm long

FIG. 41 - Body, dorsal view.
FIG. 42 - Antenna 1.
FIG. 42a - Apex of flagellum.
FIG. 43 - Antenna 2.
FIG. 43a - Apex of flagellum.
FIG. 44 - Right mandible.
FIG. 44a - Distal portion of same.

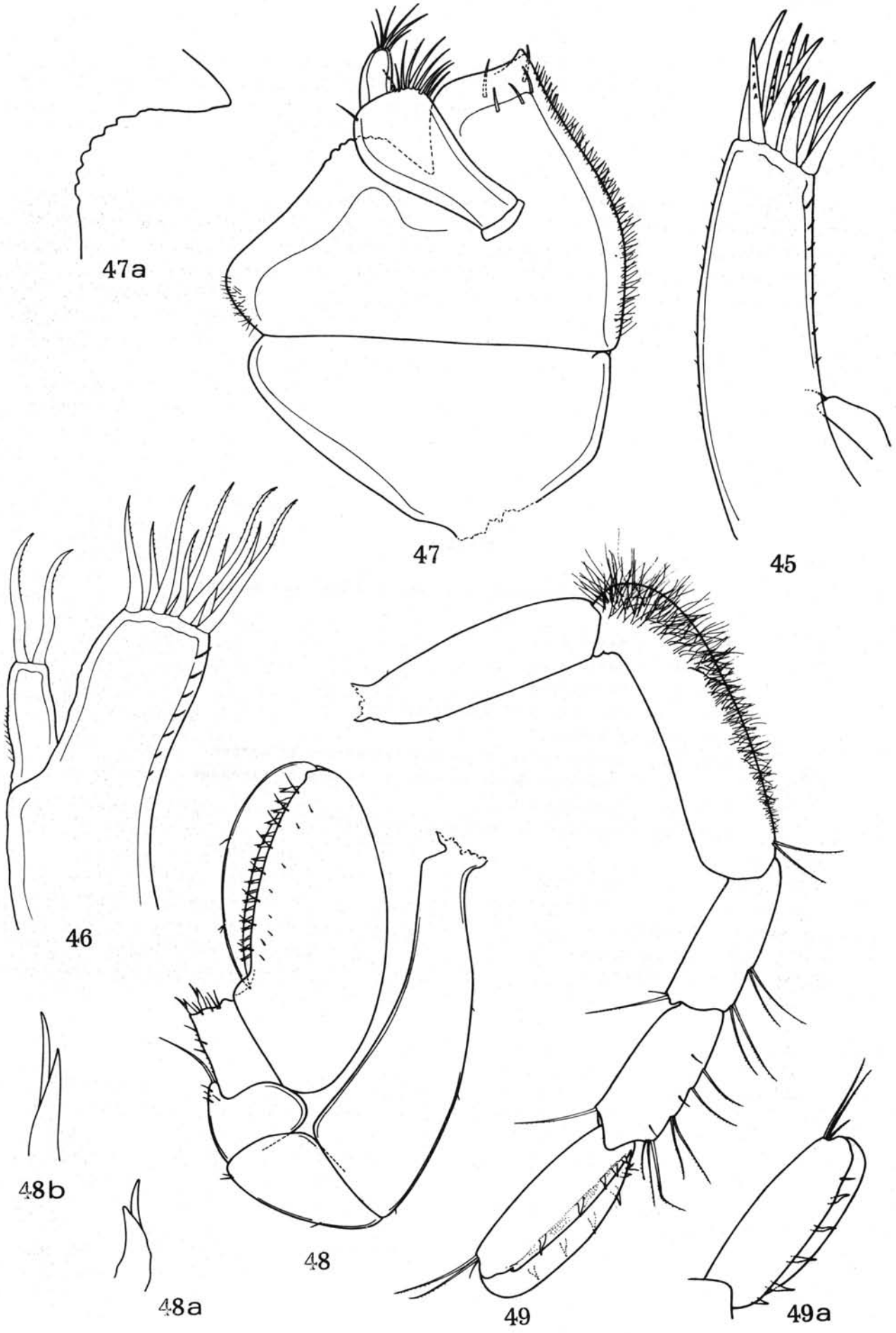

47a
47
45
46
48b
48
48a
49
49a

PLATE X

Serolis veaperta sp. n., adult amale, 4.7 mm long

FIG. 45 - Maxilla 1.
FIG. 46 - Maxilla 2.
FIG. 47 - Maxilliped.
FIG. 47a - End margin of distal epipod.
FIG. 48 - Pereopod I.
FIG. 48a - Composite setae on ventral margin of carpus.
FIG. 48b - Composite setae on ventral margin of propodus.
FIG. 49 - Pereopod II.
FIG. 49a - Propodus and dactylus of same.

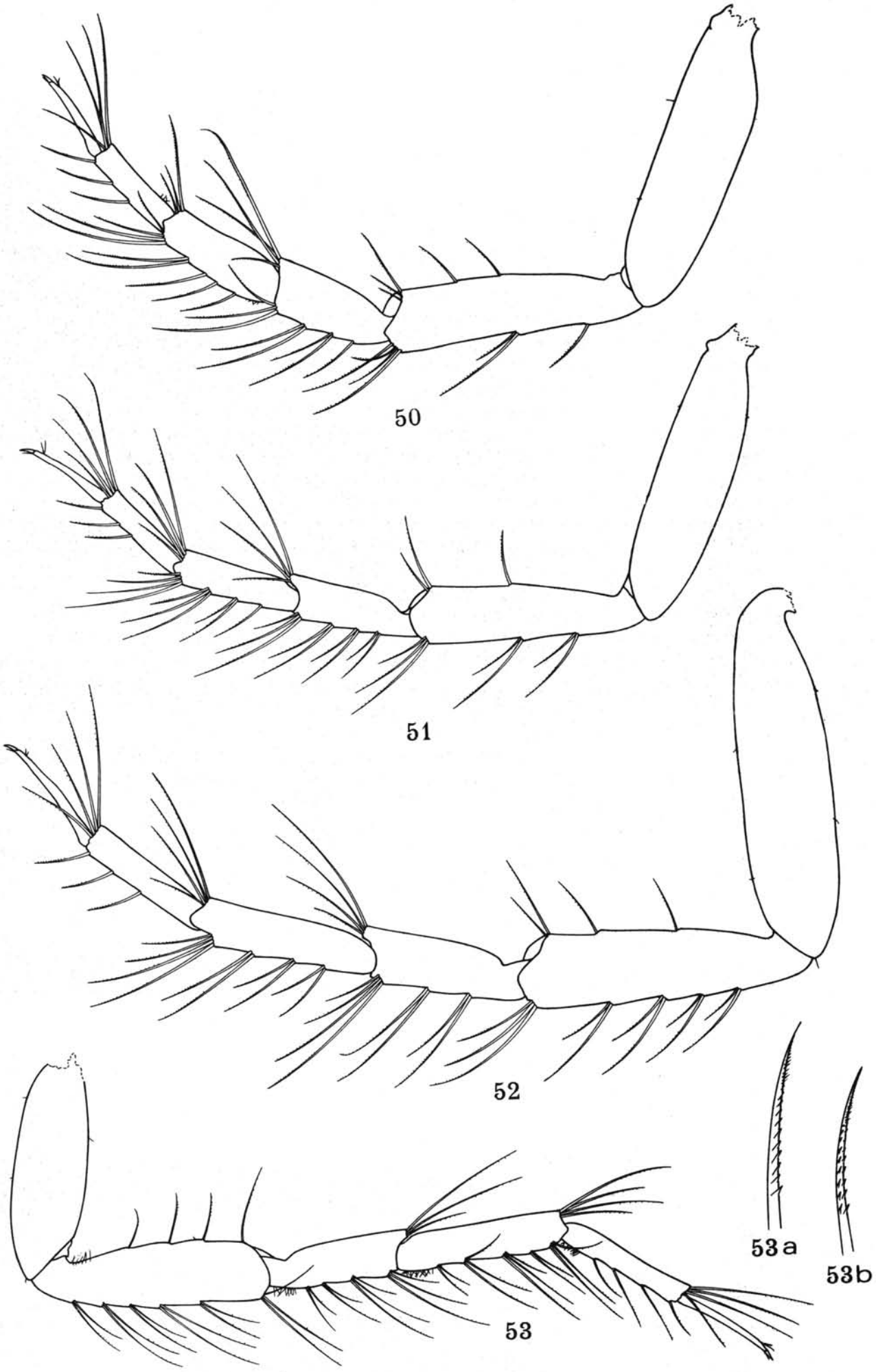

50
51
52
53a
53b
53

PLATE XI

Serolis veaperta sp. n., adult male, 4.7 mm long

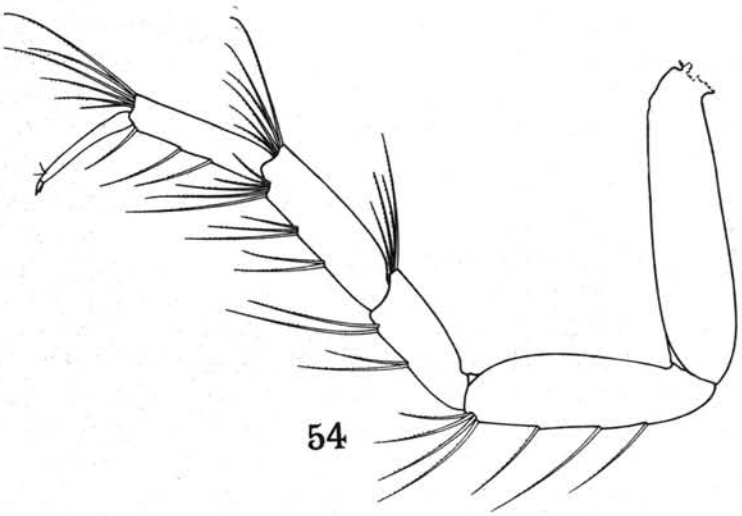
FIG. 50 - Pereopod III.

FIG. 51 - Pereopod IV.

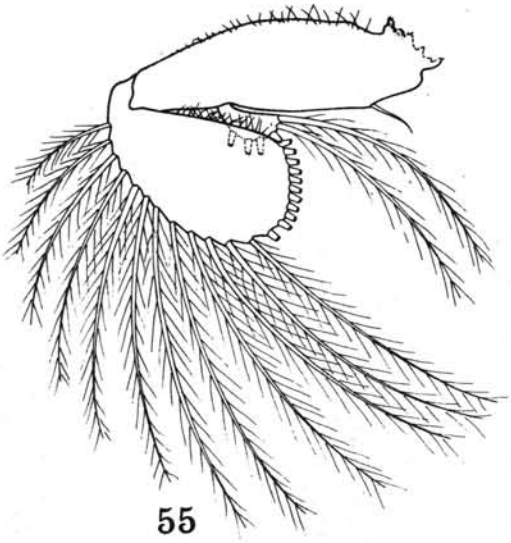
FIG. 52 - Pereopod V

FIG. 53 - Pereopod VI.

FIGS.53a-b - Setae from ventral margin of ischium through propodus of pereopods III-VII.



54



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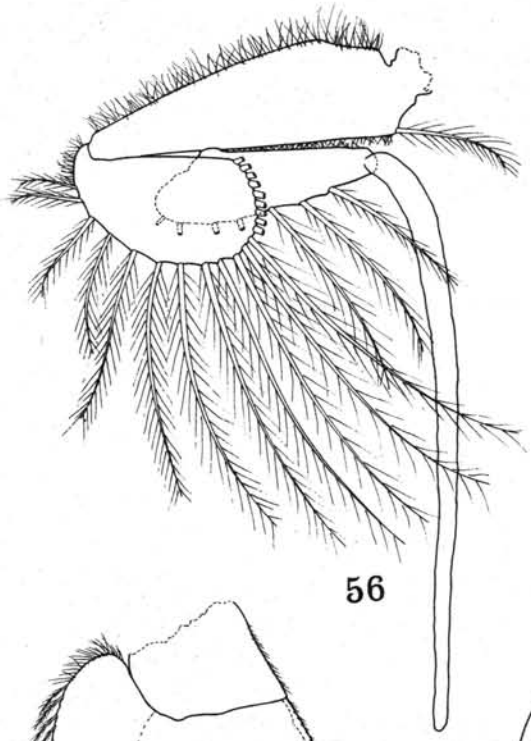
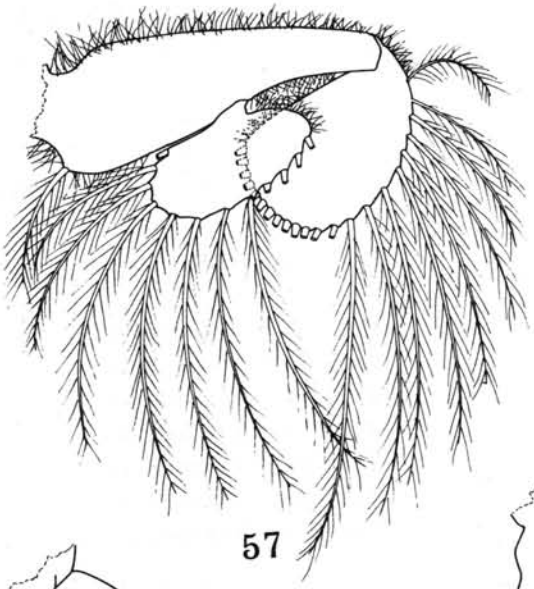


56



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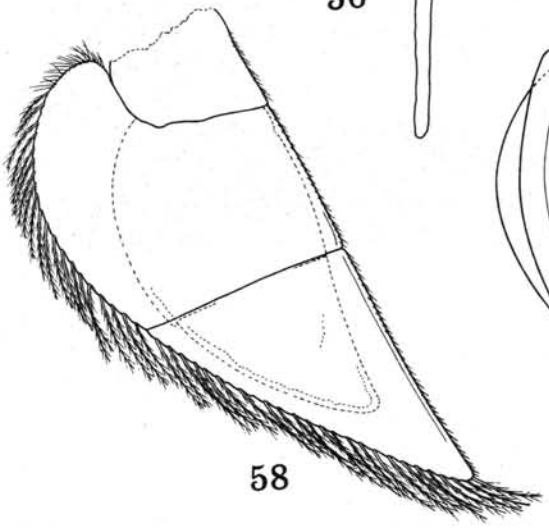
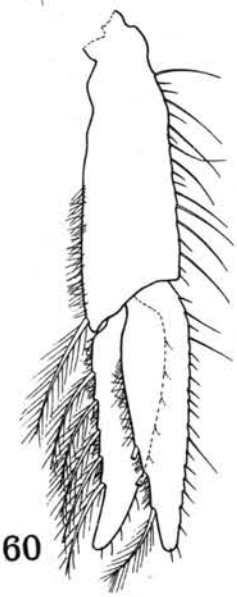


58

59



60

PLATE XII

Serolis veaperta sp. n., adult male, 4.7 mm long

FIG. 54 - Pereopod VII.
FIG. 55 - Pleopod 1.
FIG. 56 - Pleopod 2.
FIG. 57 - Pleopod 3.
FIG. 58 - Pleopod 4.
FIG. 59 - Pleopod 5.
FIG. 60 - Uropod.

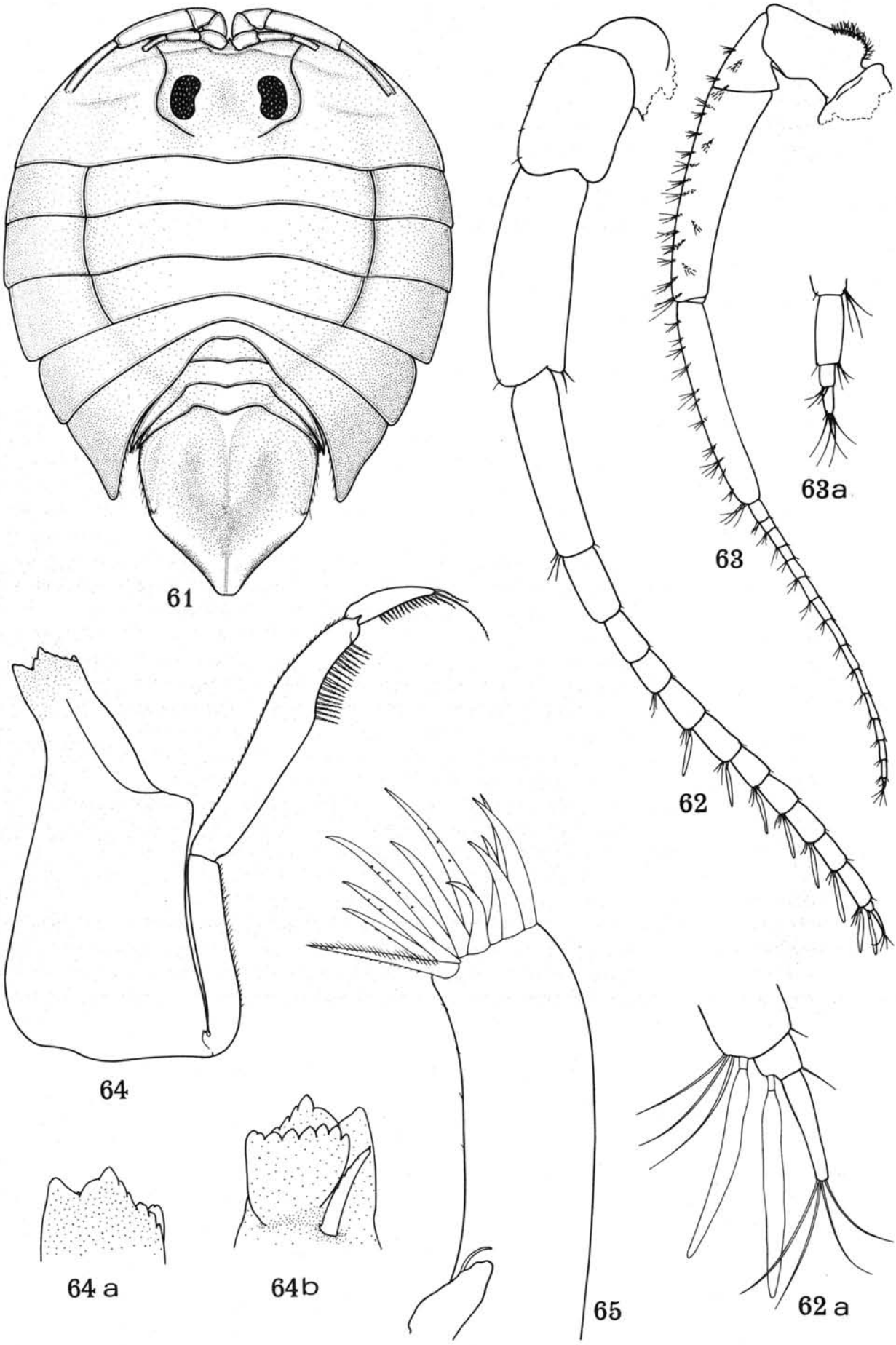
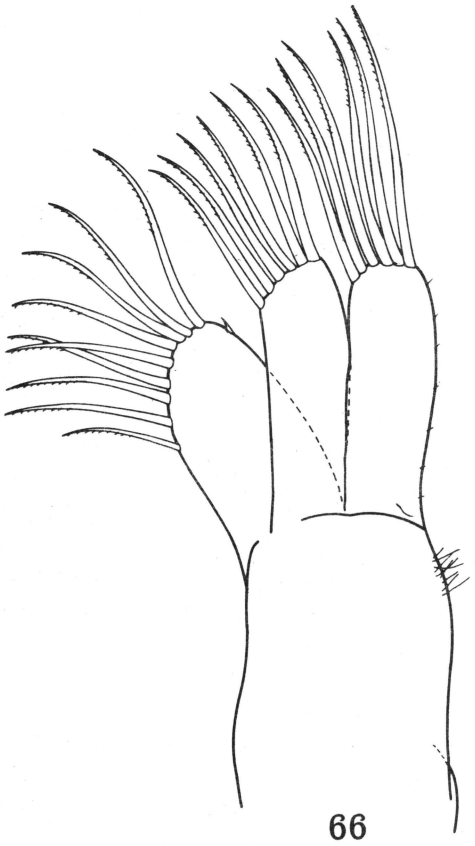

61
63a
63
62
64
64 a
64b
65
62 a

PLATE XIII

Serolis laevis Richardson, ovigerous female, 8.4 mm long

FIG. 61 - Body, dorsal view.
FIG. 62 - Antenna 1.
FIG. 62a - Apex of flagellum.
FIG. 63 - Antenna 2.
FIG. 63a - Apex of flagellum.
FIG. 64 - Left mandible.
FIGS.64a-b - Distal portion of same.
FIG. 65 - Maxilla 1.



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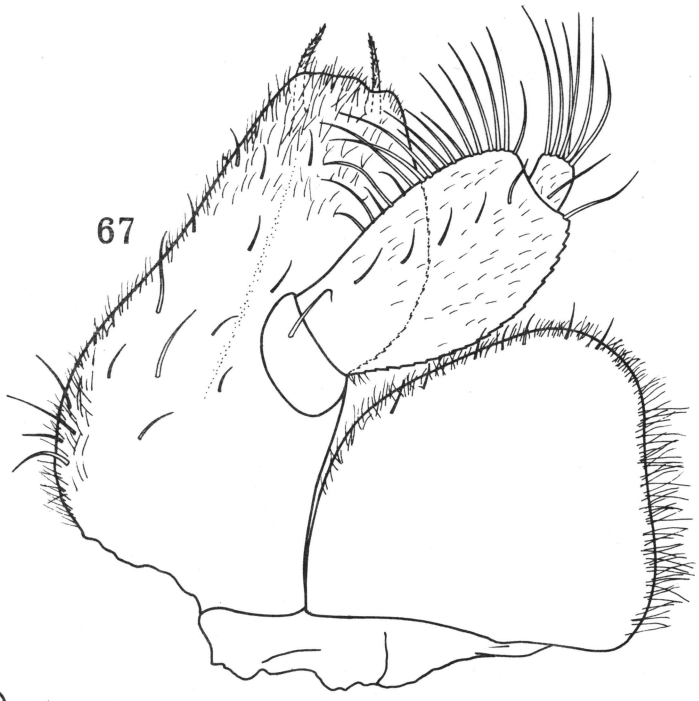

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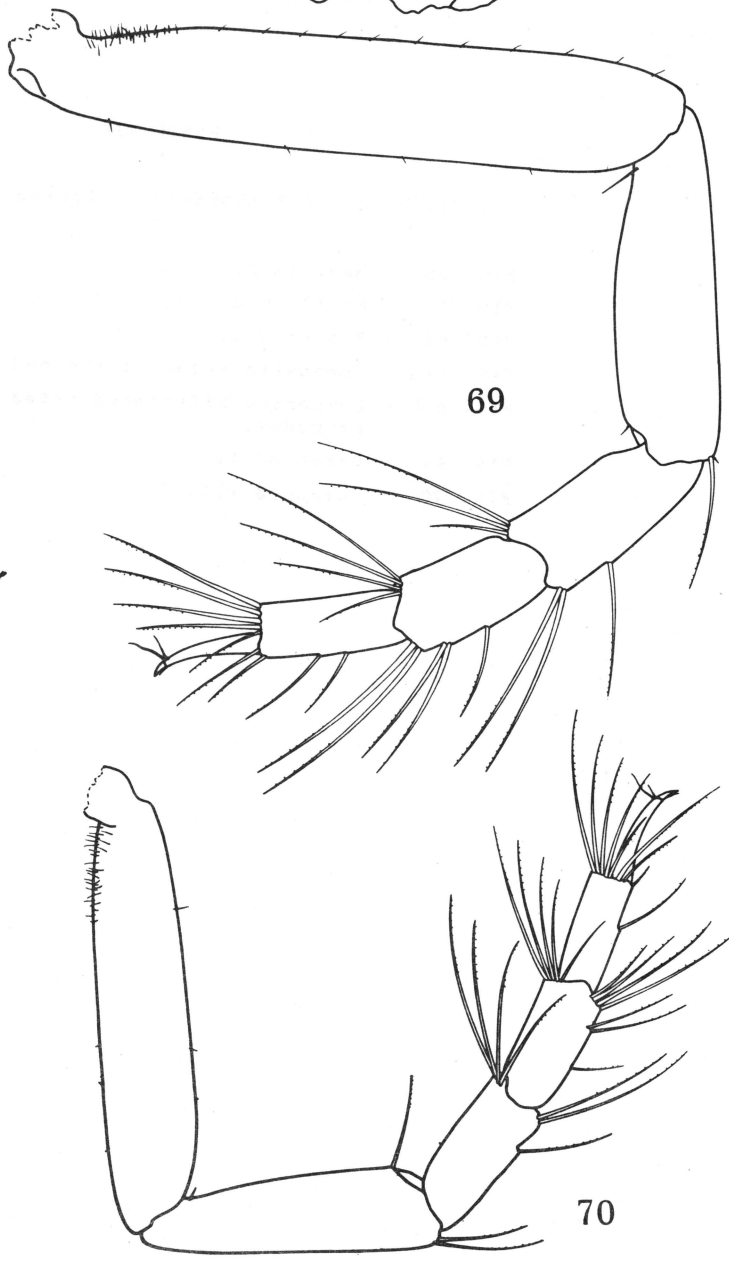

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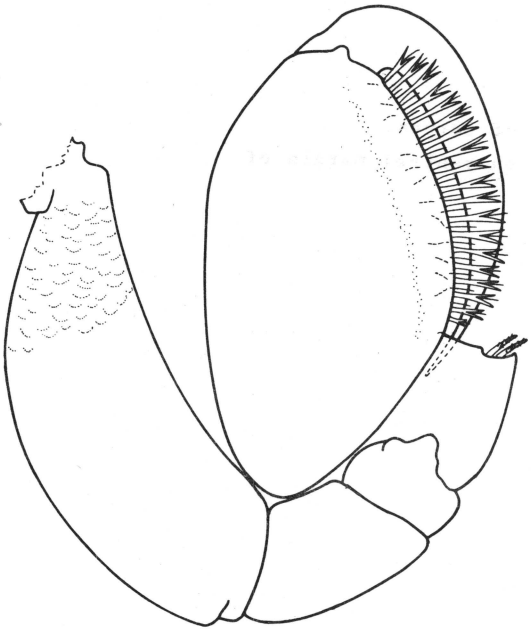


68

68a

68b

70

PLATE XIV

Serolis laevis Richardson, ovigerous female, 8.4 mm long

FIG. 66 - Maxilla 2.

FIG. 67 - Maxilliped.

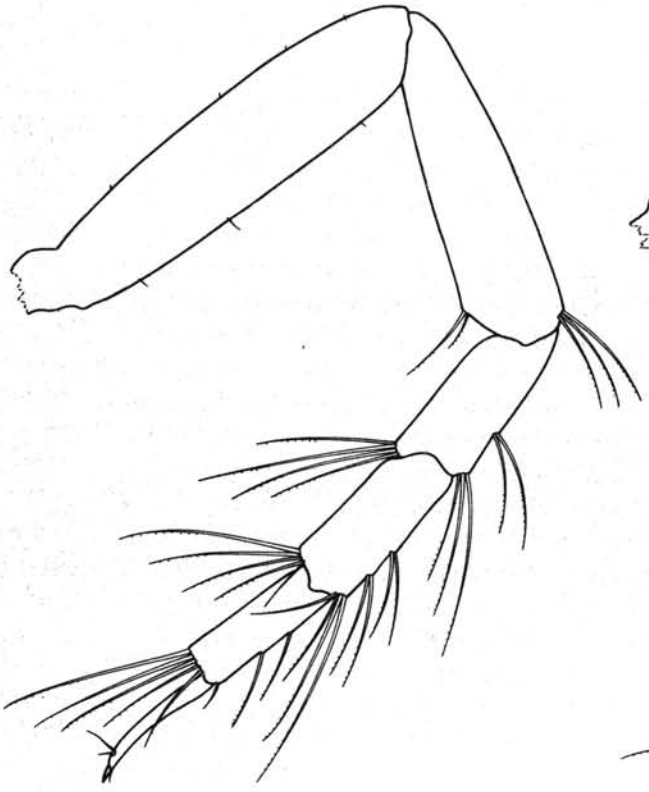
FIG. 68 - Pereopod I.

FIG. 68a - Composite setae at the end of carpus.

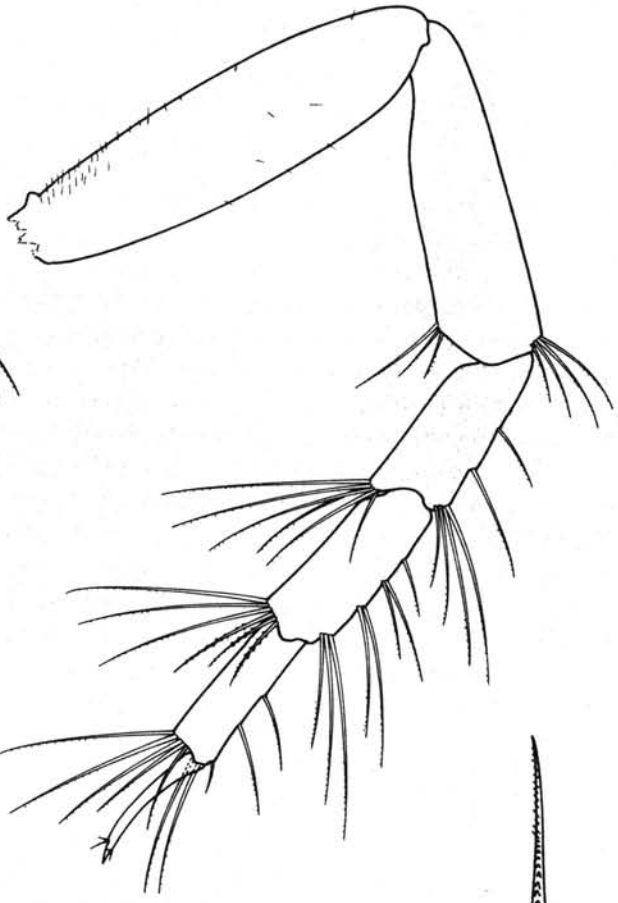
FIG. 68b - Composite bifurcated setae on ventral margin of propodus.

FIG. 69 - Pereopod II.

FIG. 70 - Pereopod III.

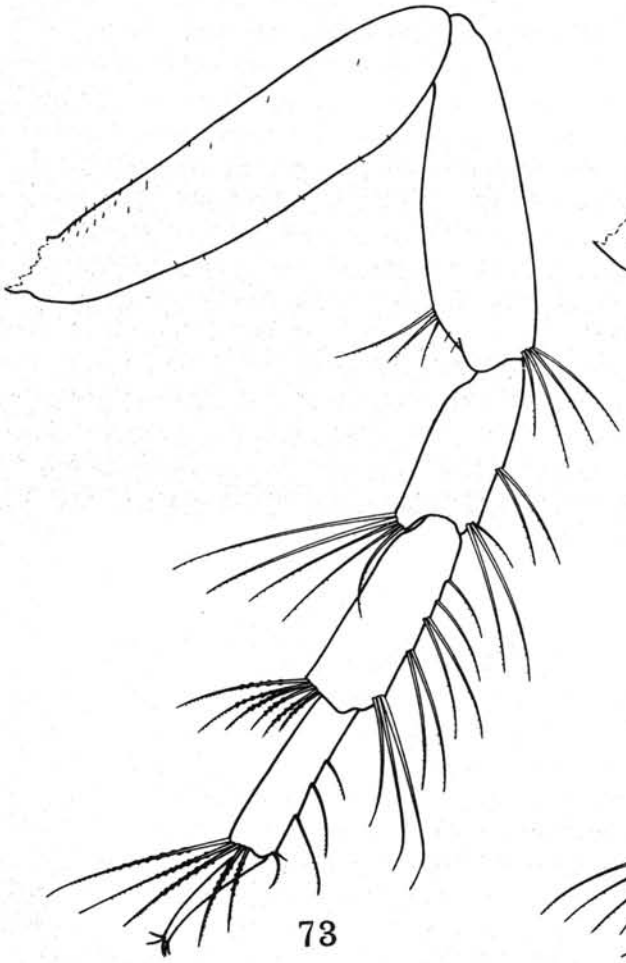


71



72

72a



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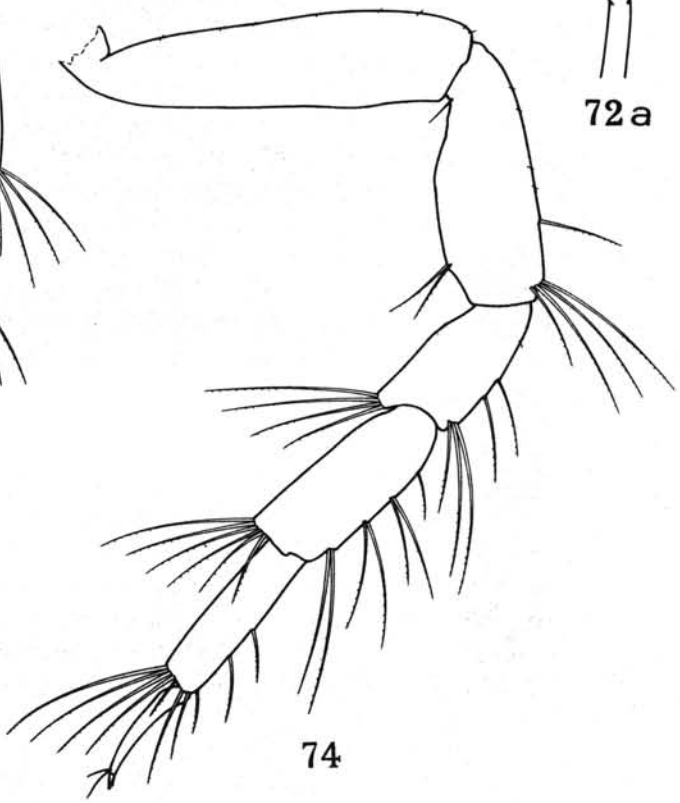
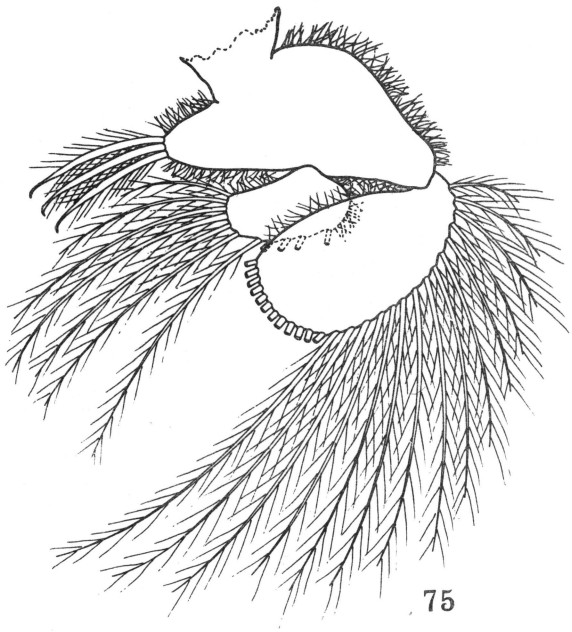


74

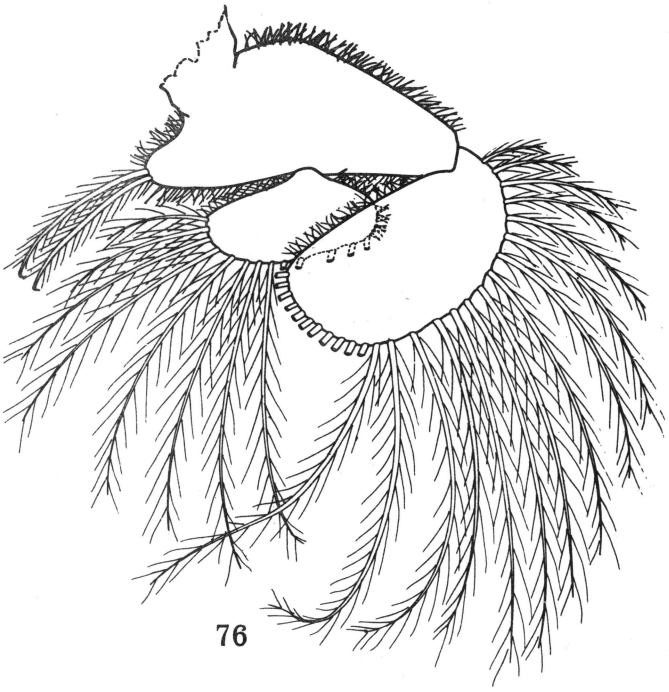
PLATE XV

Serolis laevis Richardson, ovigerous female, 8.4 mm long

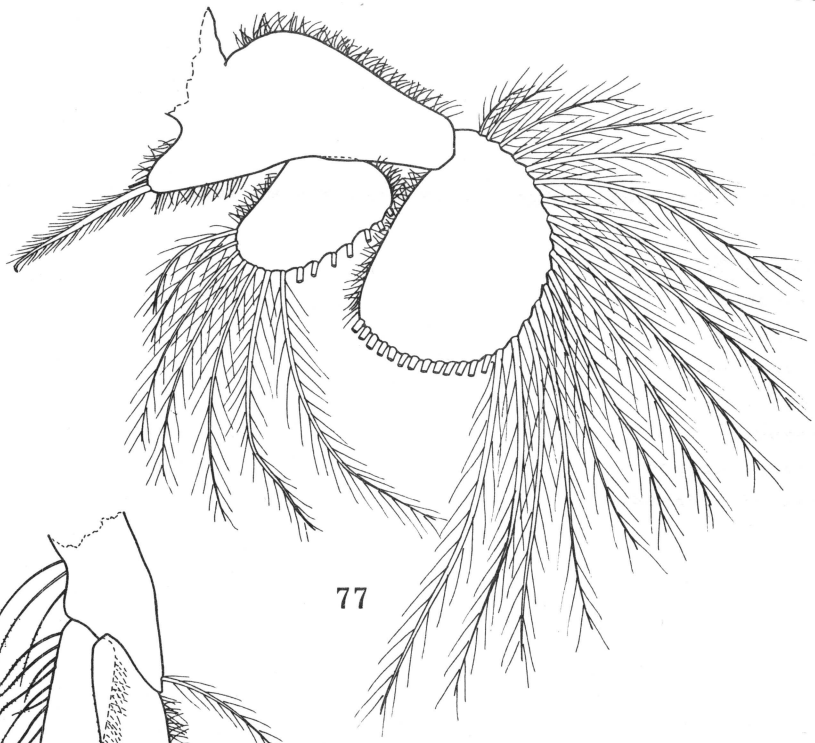
FIG. 71 - Pereopod IV.
FIG. 72 - Pereopod V.
FIG. 73 - Pereopod VI.
FIG. 74 - Pereopod VII.



75



76



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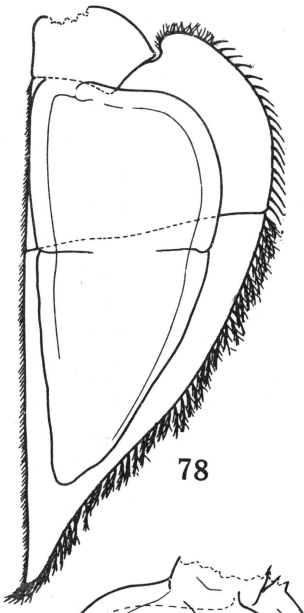
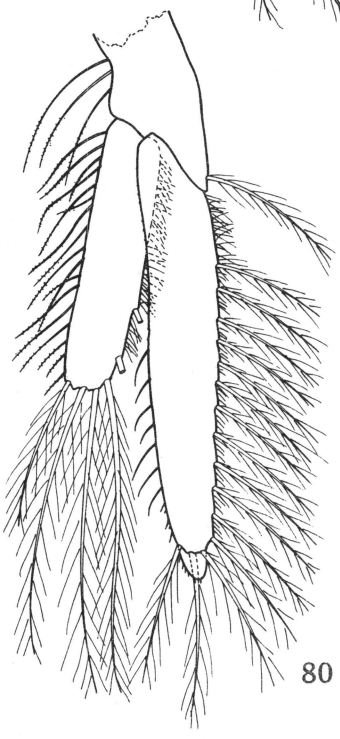


78



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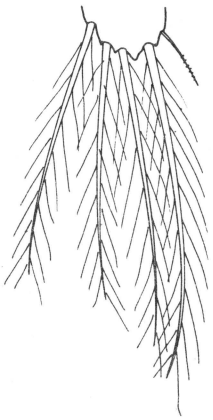
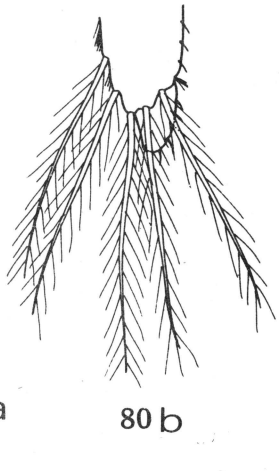
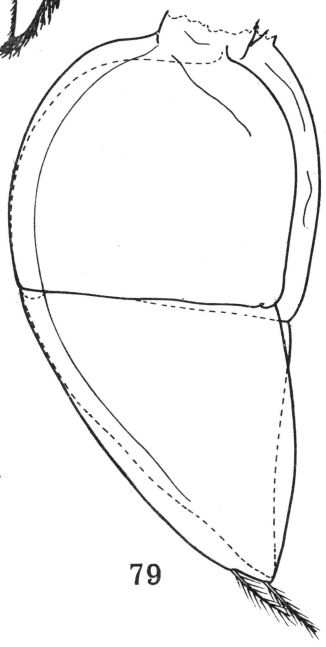


80 a



80 b

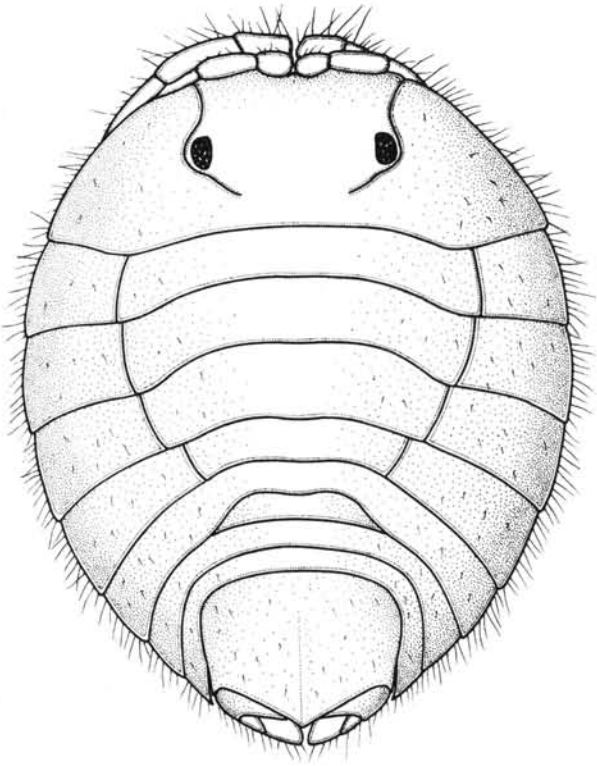


79

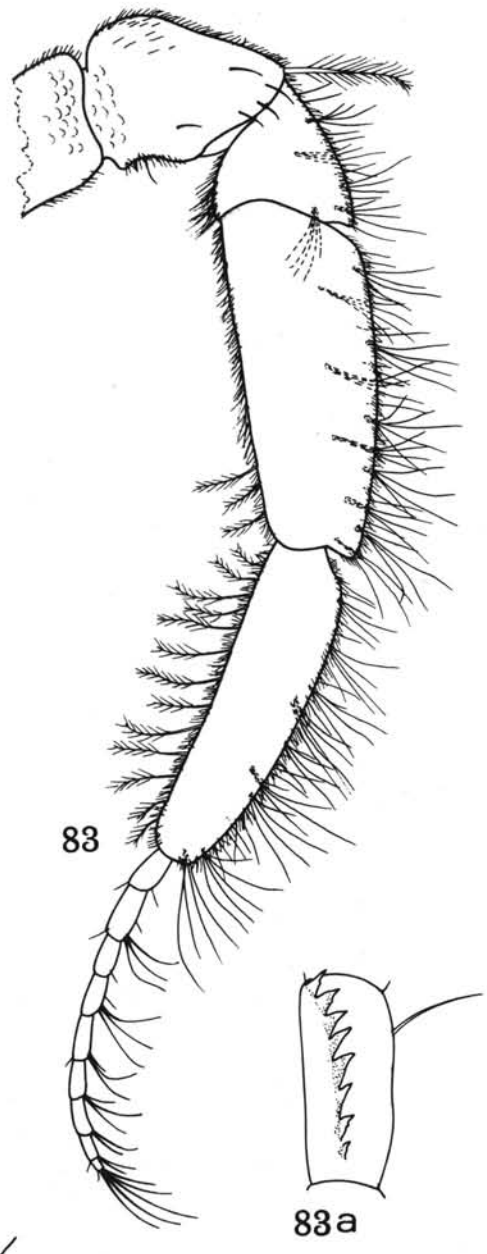
PLATE XVI

Serolis laevis Richardson, ovigerous female, 8.4 mm long

FIG. 75 - Pleopod 1.
FIG. 76 - Pleopod 2.
FIG. 77 - Pleopod 3.
FIG. 78 - Pleopod 4.
FIG. 79 - Pleopod 5.
FIG. 80 - Uropod.
FIG. 80a - Apex of exopod.
FIG. 80b - Apex of endopod.

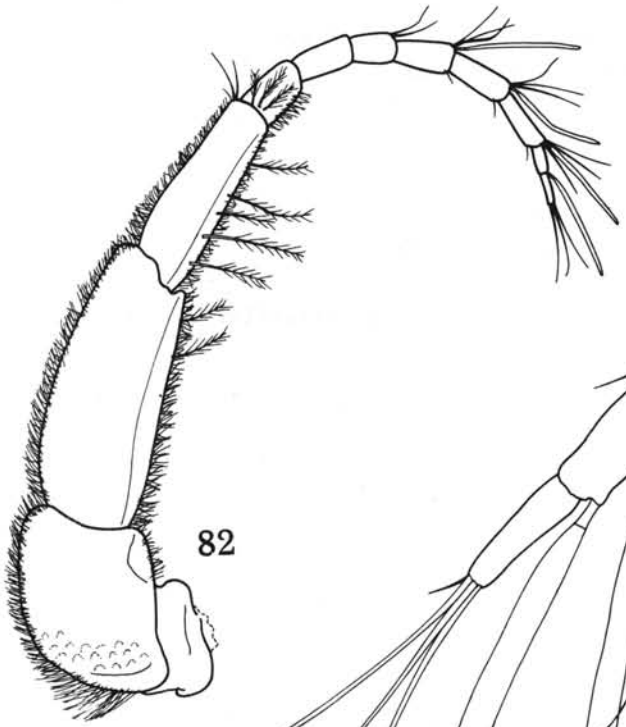


81

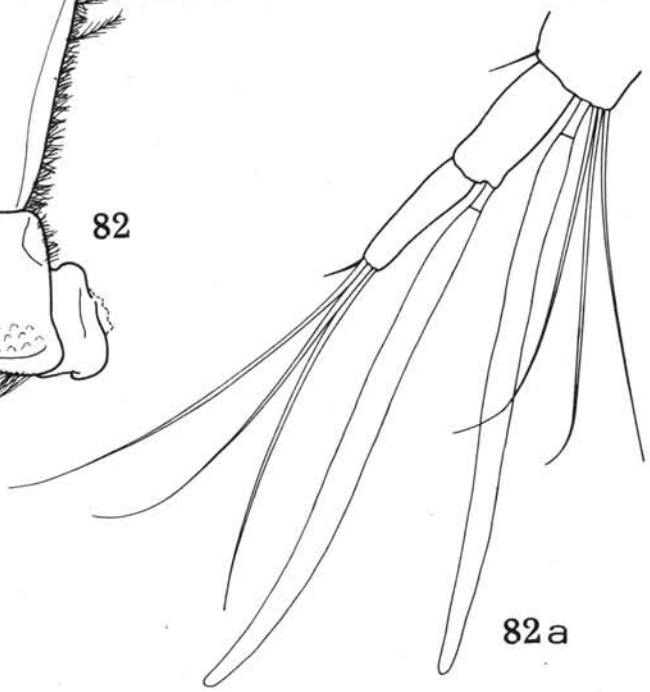


83

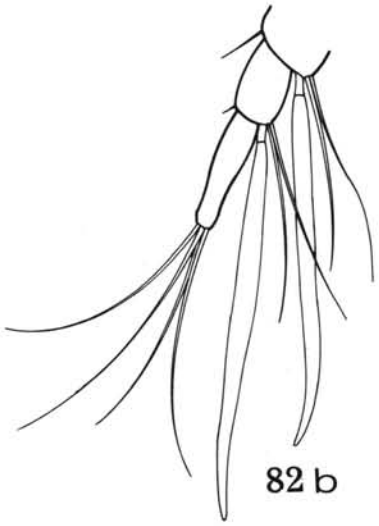
83a



82



82a



82b

PLATE XVII

Serolis completa sp. n., adult male, 4.0 mm long;
ovigerous female, 3.5 mm long

FIG. 81 - Body, dorsal view.

FIG. 82 - Antenna 1.

FIG. 82a - Apex of flagellum of same.

FIG. 82b - Apex of flagellum of female antenna 1.

FIG. 83 - Antenna 2.

FIG. 83a - Serrated process on ventral surface of flagellar articles.

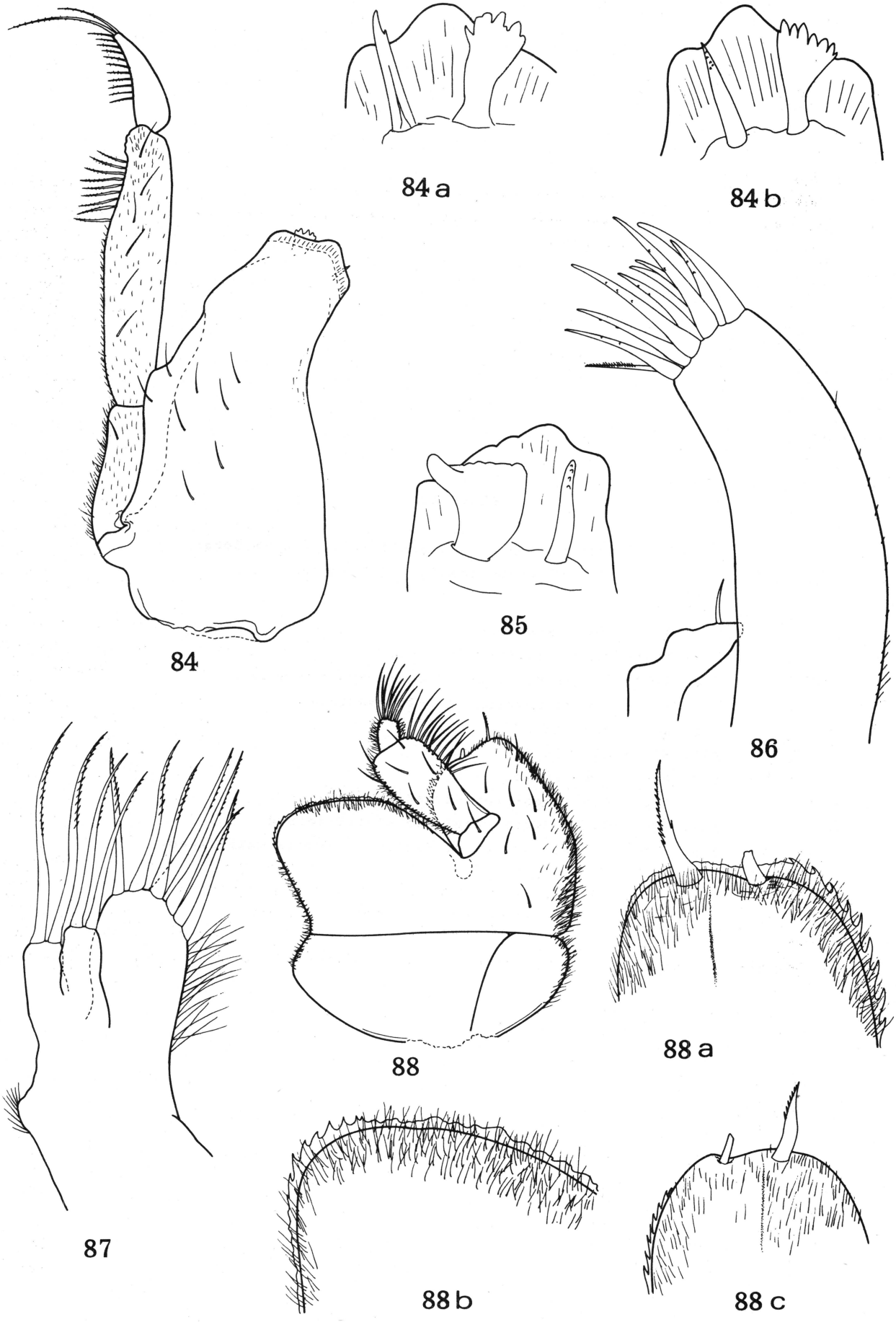

84 a
84 b
84
85
86
87
88
88 a
88 b
88 c

PLATE XVIII

Serolis completa sp. n., adult male, 4.0 mm long;
ovigerous female, 3.5 mm long

FIG. 84 - Right mandible.
FIG. 84a - Distal portion of same.
FIG. 84b - Distal portion of female right mandible.
FIG. 85 - Distal portion of left mandible.
FIG. 86 - Maxilla 1.
FIG. 87 - Maxilla 2.
FIG. 88 - Maxilliped.
FIG. 88a - Distal portion of endite.
FIG. 88b - Outer distal angle of distal epipod.
FIG. 88c - Distal portion of endite of female maxilliped.

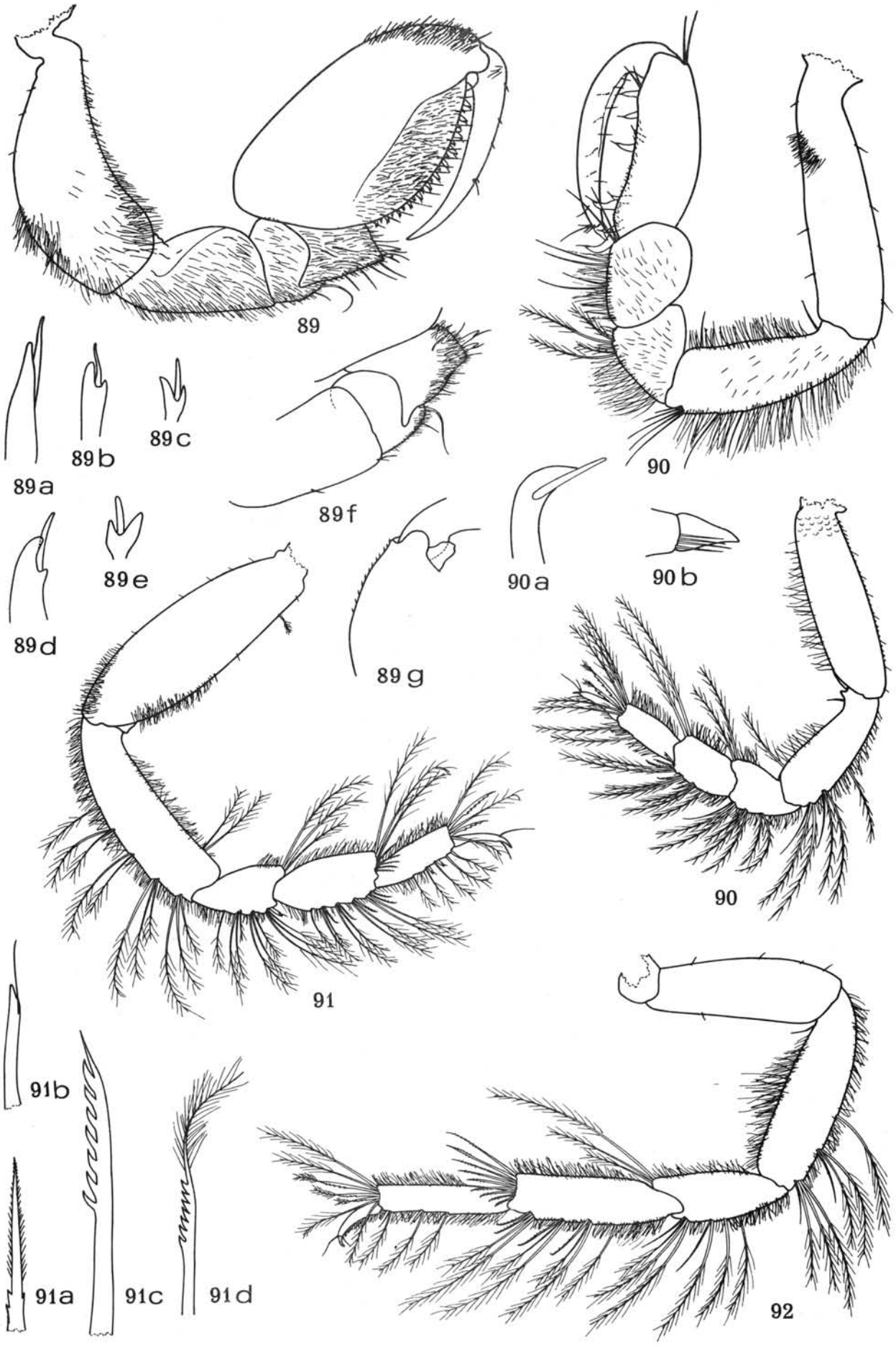
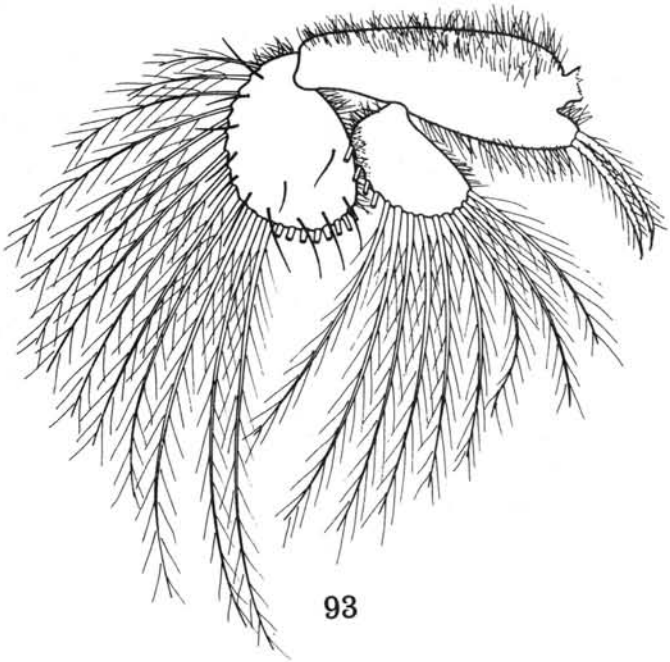

89
89a
89b
89c
89d
89e
89f
89g
90
90a
90b
90
91
91a
91b
91c
91d
92

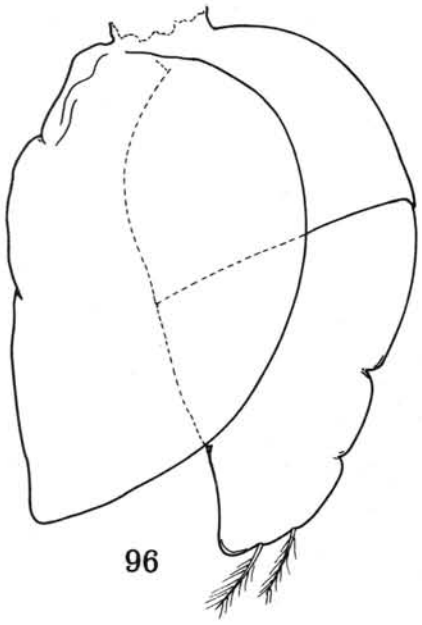
PLATE XIX

Serolis completa sp. n., adult male, 4.0 mm long;
ovigerous female, 3.5 mm long

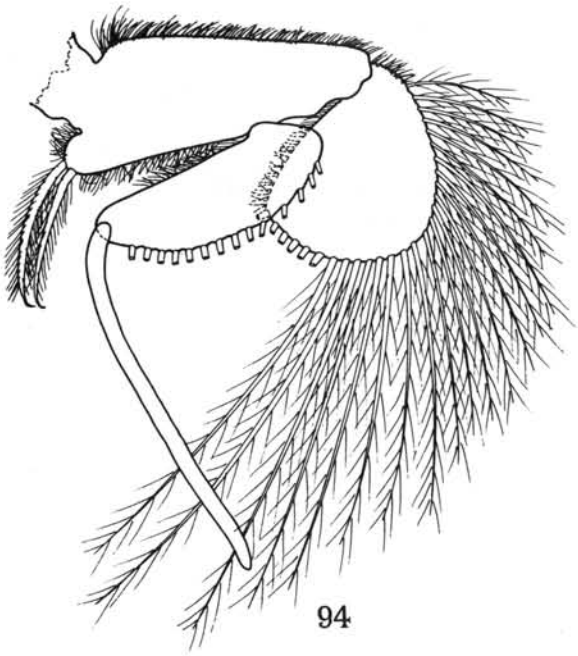
FIG. 89 - Pereopod I.
FIG. 89a - Composite setae on carpus distal angle.
FIGS. 89b-c - Composite seta on propodus ventral margin.
FIGS. 89d-e - Composite seta on female propodus ventral margin.
FIG. 89f - Merus and carpus of female pereopod I.
FIG. 89g - Distal margin of propodus female pereopod I.
FIG. 90 - Pereopod II.
FIG. 90a - Composite setae on ventral margin of propodus.
FIG. 90b - Apex of dactylus.
FIG. 90c - Pereopod II of female.
FIG. 91 - Pereopod III.
FIGS. 91a-d - Different shapes of seta on pereopods II-VII.
FIG. 92 - Pereopod VII.



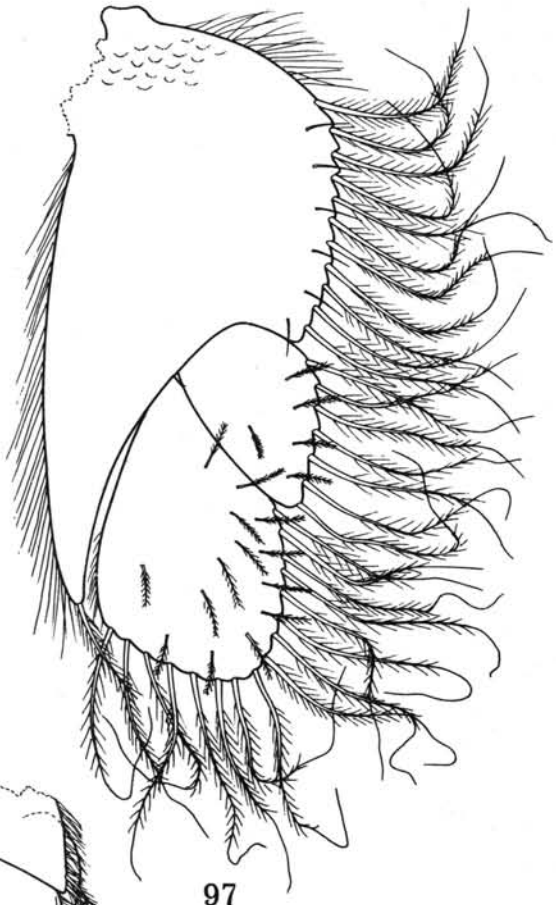
93



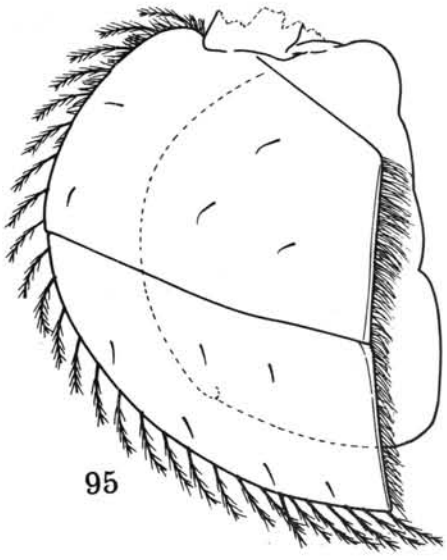
96



94



97



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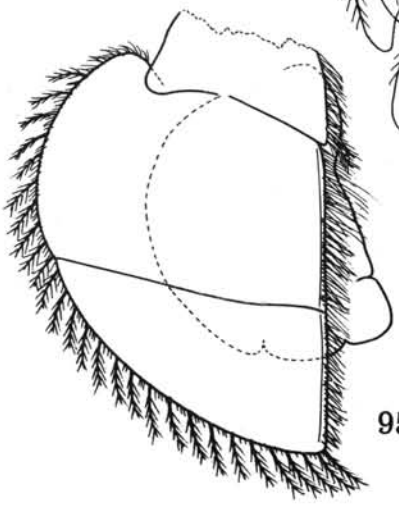

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PLATE XX

Serolis completa sp. n., adult male, 4.0 mm long;
ovigerous female, 3.5 mm long

FIG. 93 - Pleopod 1.
FIG. 94 - Pleopod 2.
FIG. 95 - Pleopod 4.
FIG. 95a- Female pleopod 4.
FIG. 96 - Pleopod 5.
FIG. 97 - Uropod.