

Redescription of K. H. Barnard's three species of *Mesanthura* (Crustacea: Isopoda: Anthuridea)

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Introduction

K. H. Barnard erected the genus *Mesanthura* in 1914 while redescribing the species *Anthura catenula* Stimpson, 1855, which thus became the type species of the genus. Nine years later we find in his 'Revision of the family Anthuridae...' (Barnard 1925) the description of three new species of this genus, namely, *M. ocellata* (Thailand), *M. albolineata* (Singapore) and *M. pulchra* (West Indies). In the South African Museum (SAM, Cape Town) I found some paratypes of these species, which originally had been kept in the Copenhagen Museum and later were placed in the SAM by Barnard. The original descriptions of these species are composed of a few short sentences and small drawings of the pigment patterns.

It is traditional to distinguish the species of *Mesanthura* by the dorsal pigment patterns, which are thought to be specific. Barnard (1925) himself writes: "Structural features separating the species are hard to find..." (p. 143).

The material from the SAM was not ideal for a thorough redescription. The pigments are faded, many setae are lost, damaged or dirty, very few specimens are available, and most mouthparts are lacking. Nevertheless, the drawings may be useful for future comparisons with new material.

List of abbreviations used in text and figures

A 1	antenna 1	P 1-7	peropods 1-7
A 2	antenna 2	Plp 1-5	pleopods 1-5
Md	mandible	Tel	telson
Mx	maxilla 1	UEn	endopod of uropods
Mxp	maxilliped	UEx	exopod of uropods

Mesanthura pulchra Barnard, 1925

(Figs. 1-4)

Material examined: 1 immature adult 7.5 mm, 1 immature adult 5.5 mm. 1 male 5.0 mm; SAM A 17618.

Localities: St. Thomas, St. John (West Indies), 10-18 fathoms.

Distribution: U.S. Virgin Islands, Puerto Rico, Dry Tortugas, Florida.

Description of immature adult: Colour pattern as in fig. 1 (after Barnard (1925); see also Kensley (1982 a, fig. 152)). To the features mentioned by Kensley (1982 a) we can add: pereonite 6 smaller than 5; 7 smaller than 6. Pleonite 6 fused with telson, dorsal fusion line forming transversal step on pleotelson, with middorsal slit.

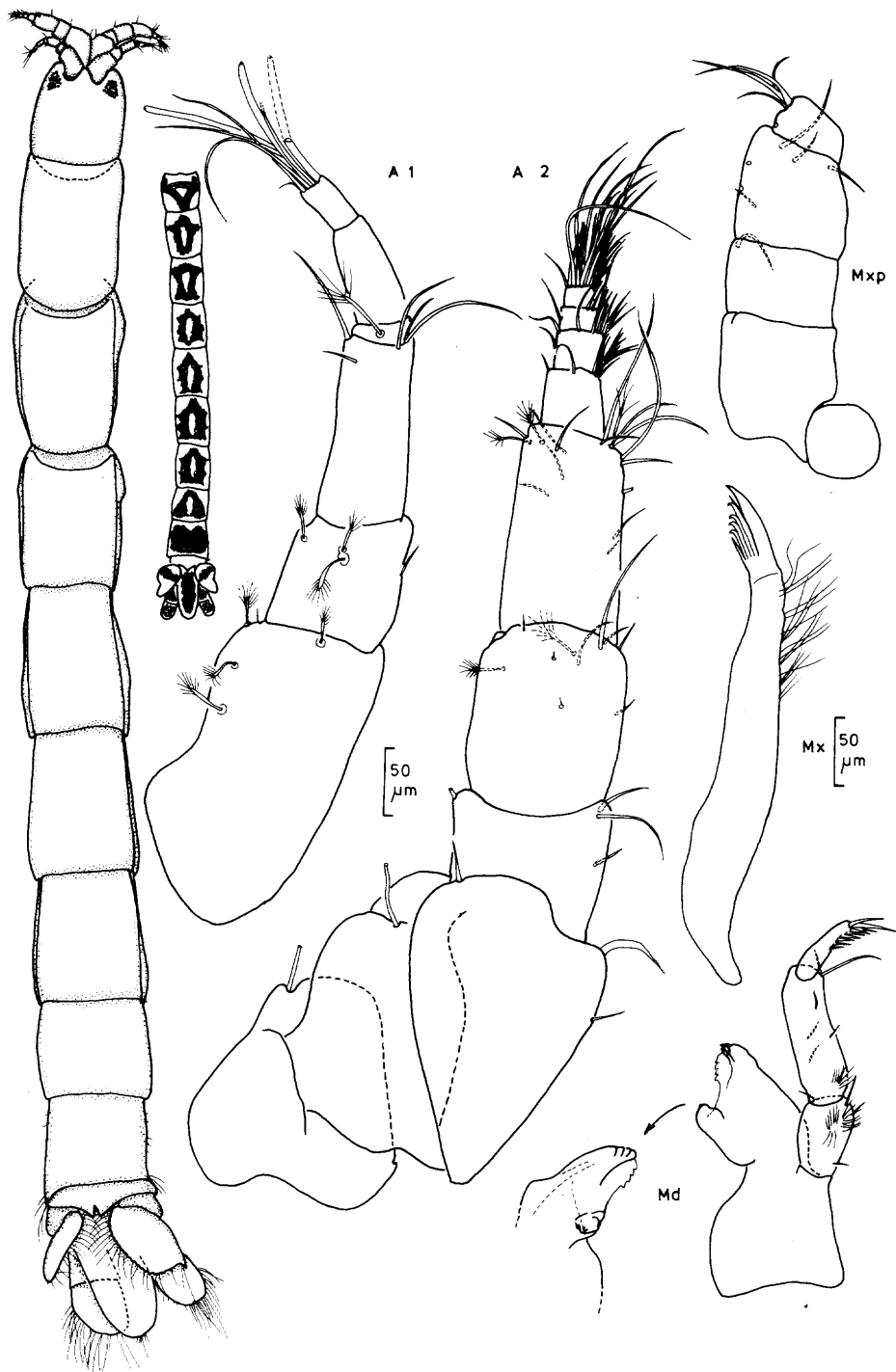


FIG. 1. *Mesanthura pulchra* Barnard, 1925, immature adult (7.5 mm); left: dorsal view of total animal, pigment pattern after Barnard (1925). For symbols see list of abbreviations.

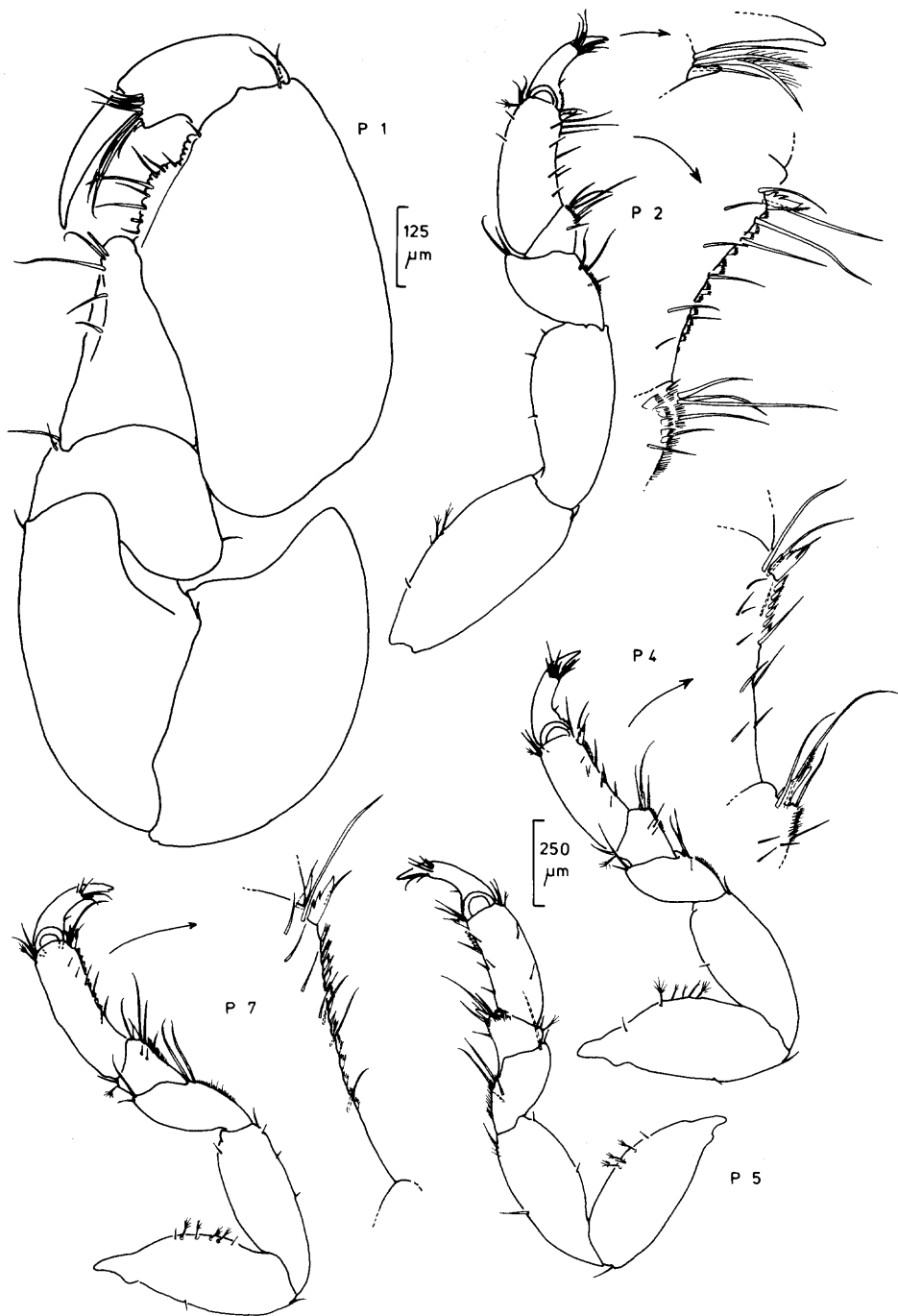


FIG. 2. *Mesanthura pulchra* Barnard, 1925, immature adult (7.5 mm). Pereopods with details of propodal palm.

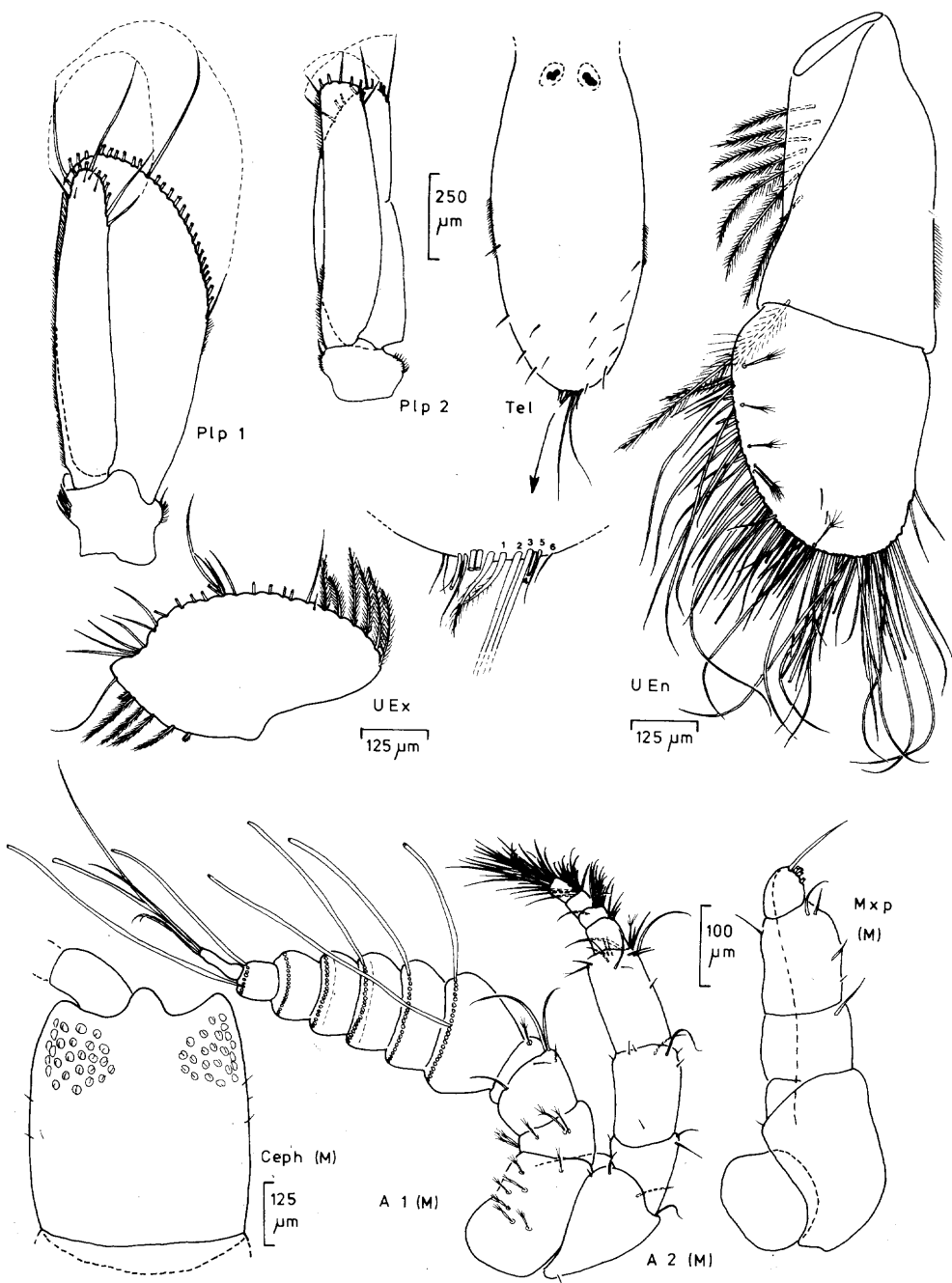


FIG. 3. *Mesanthura pulchra* Barnard, 1925; above: immature adult (7.5 mm), below: male (5.0 mm); Ceph = cephalothorax in dorsal view. Most setae of pleopods cut off and shown as simple setae. Most aesthetascs of A1 (M) not drawn, small circles indicating places of insertion.

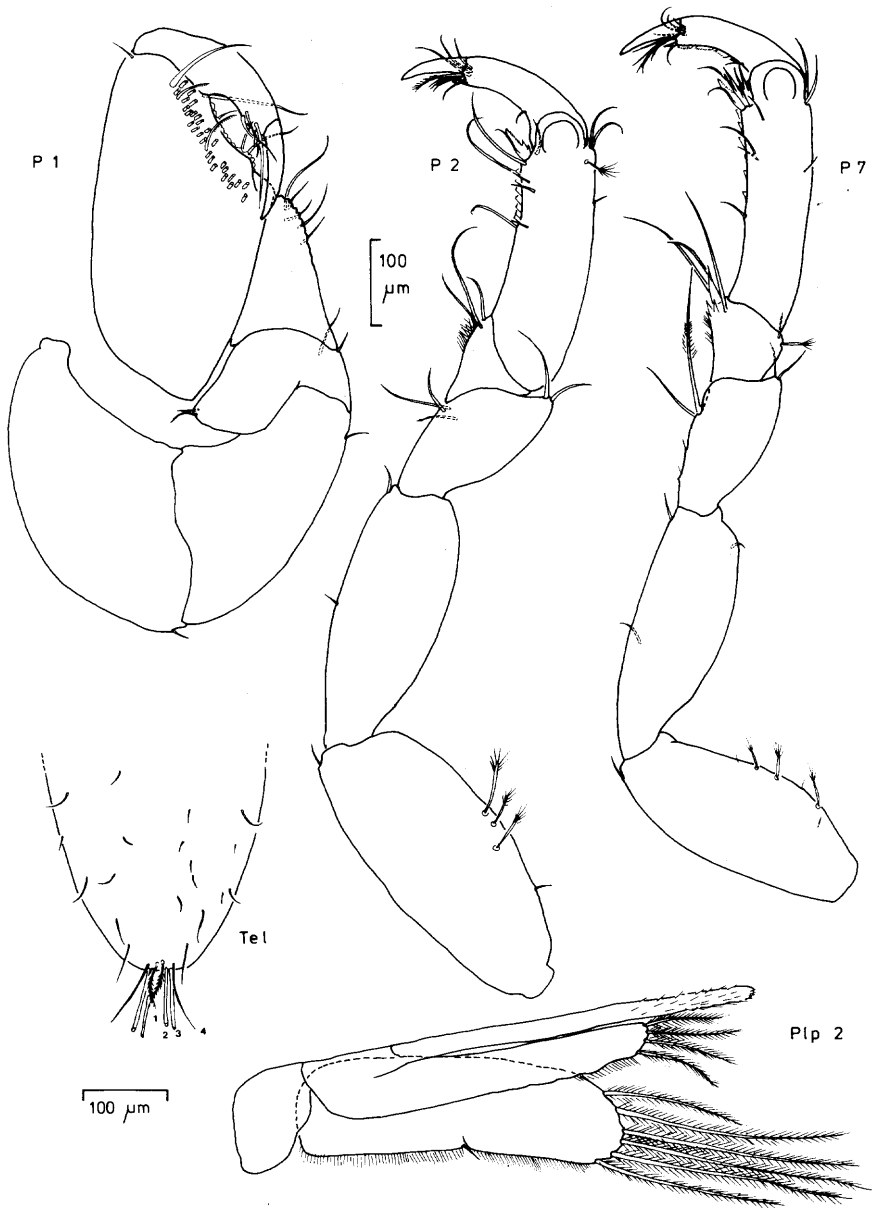


FIG. 4. *Mesanthura pulchra* Barnard, 1925, male (5.0 mm). Most medial setae of P1 cut off.

Flagellum of A 1 with three articles; first small article with one feather-like bristle, last article bearing five setae and three aesthetascs. Flagellum of A 2 with four articles; for setation of peduncle and flagellum see fig. 1. Mouthparts: see fig. 1 (Md, Mx, Mxp). Palm of propodus of P1 crenulated, process (fig. 2) bearing eight setae; setation of medial surface of P1 incomplete. P2-7 have distally on the dactylus a few small setae, two of them fringed, as well as the large and small claws (fig. 2). Distal sensory spines of propodi slightly varying in form, but always bearing

a small bristle and two teeth on distal edge; palm with cuticular scales, setation as in fig. 2. P 2 similar to P 3, P 5 similar to P 6. Exopod of Plp 1 operculiform, with 28 swimming setae, narrow endopod with 12 swimming setae. Exopod of Plp 2 with nine swimming setae, endopod with eight. Endopod of Urp not surpassing Tel, slightly longer than wide, sympod about 1.5 times longer than endopod. Margin of endopod fringed with a large number of setae (fig. 3), few of them plumose (many plumose setae lost the fringing hairs and appear as simple setae). Exopod oval, with distal concave sinuosity that tapers to a blunt point. For setation see fig. 3 (several plumose setae are lost). Telson linguiform with rounded apex, dorsal surface with several pairs of short setae (not completely preserved), apex bearing six pairs of setae and some additional short setae (detail of Tel in fig. 3); central pair short, plumose. Two basal statocysts present.

Description of male specimen: Eyes larger than in female. Flagellum of A1 with eight articles; first article with one feather-like bristle, articles 2–7 with distal row of long aesthetascs, last article bearing at least four setae and few (?) aesthetascs (only one was visible through the mass of the other aesthetascs). A 2 and Mxp similar to foregoing specimen, Mx and Md lost. Palm of P 1 not showing the prominent projection present in immature adult specimens; for setation see fig. 4. Remaining pereopods more slender than in female and with fewer setae. Exopod of Plp 1 with 18 swimming setae, endopod with eight. Exopod of Plp 2 with six swimming setae, endopod with four; appendix masculina (see fig. 4). Telsonic apex with only four pairs of setae.

Remarks

Kensley (1982 a) compared *M. decorata* Menzies & Glynn, 1968, with the type material of *M. pulchra* and found these species to be identical. The original drawings of Menzies and Glynn can be used to study only the pigment pattern. The same is true for the description of *M. pulchra* by Barnard (1925). The present material shows many conformities with the description recently published by Kensley (1982 a); most differences (setation of A 1, A 2, and pereopods; number of flagellar articles) probably are not present on the specimens. The higher number of marginal setae on the third maxillipedal article and on the pleopods is probably caused by the larger size (9.3 mm instead of 7.5 mm) of Kensley's specimen.

Mesanthura albolineata Barnard, 1925

(Figs. 5–7)

Material examined: 1 mature female 12 mm, SAM A 17623.

Locality: Singapore.

Description: Colour pattern as in fig. 5 (partly faded). Cephalothorax slightly longer than wide, anterolateral eyes present. Relative length of pereonites: $C < 1 = 2 > 3 < 4 > 5 > 6 > 7$. Pleonites 1–5 fused, together longer than pereonite 7. Pleonite 6 fused with Tel as in foregoing species. Oostegites on pereonites 2, 3, 4.

Flagellum of A 1 with three articles; first article small, with one feather-like bristle; second article longest, with one small distal seta; last article short, with seven setae and three aesthetascs. Flagellum of A 2 with three small articles with many short setae distally (fig. 5). Only one maxilla was preserved of the mouthparts (see fig. 5).

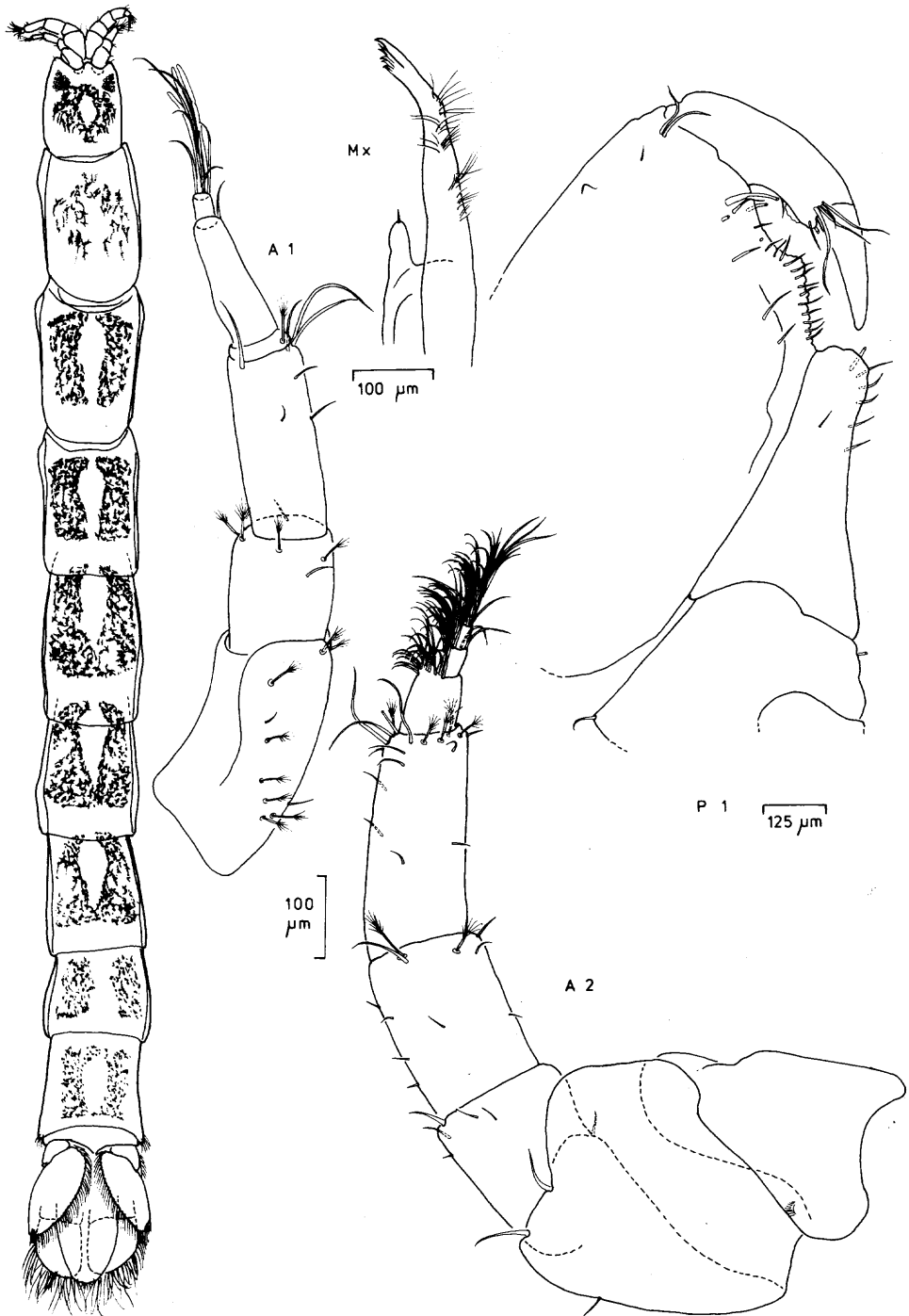


FIG. 5. *Mesanthura albolineata* Barnard, 1925, mature female (12 mm); left: whole animal in dorsal view.

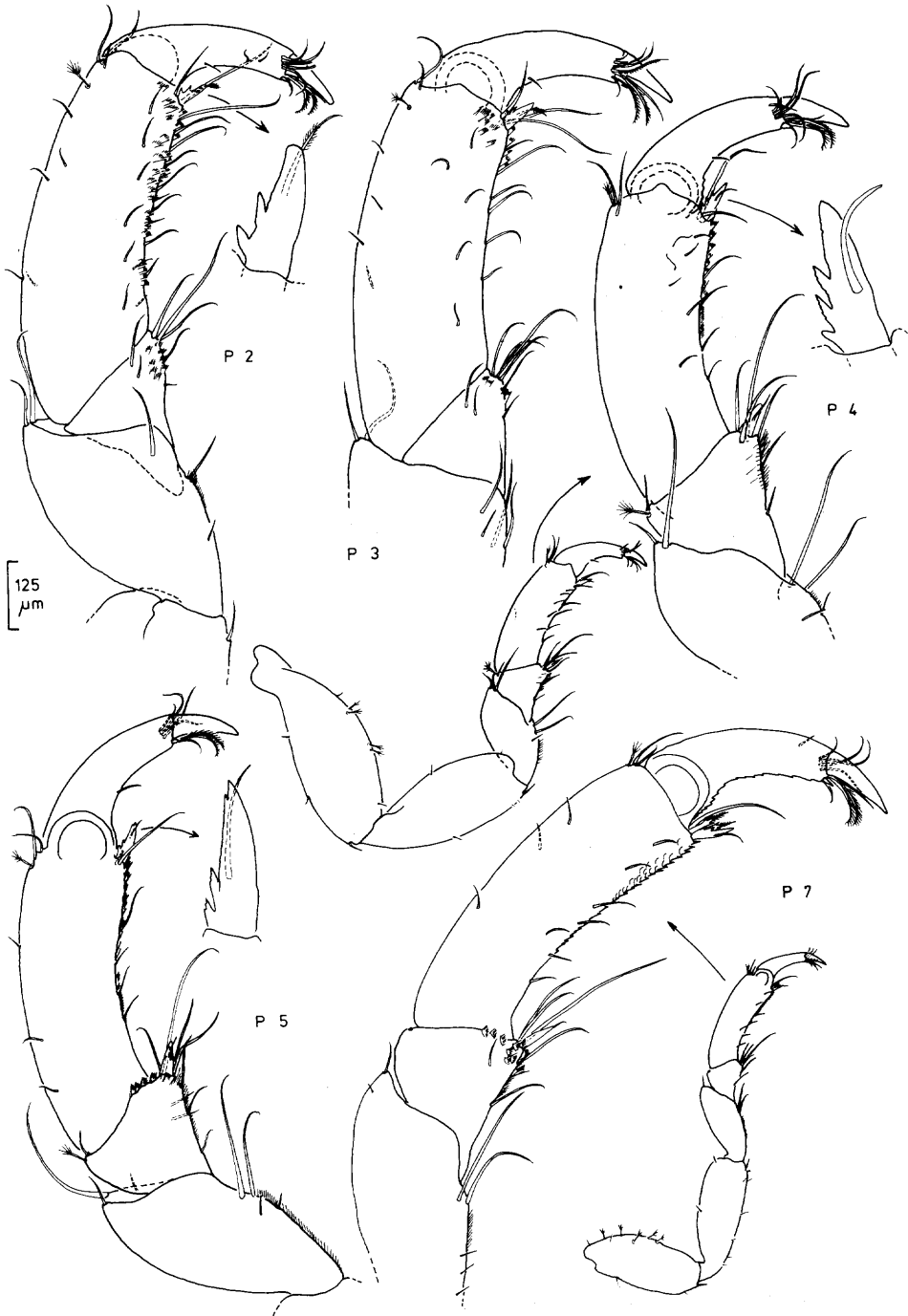


FIG. 6. *Mesanthura albolineata* Barnard, 1925, mature female (12 mm).

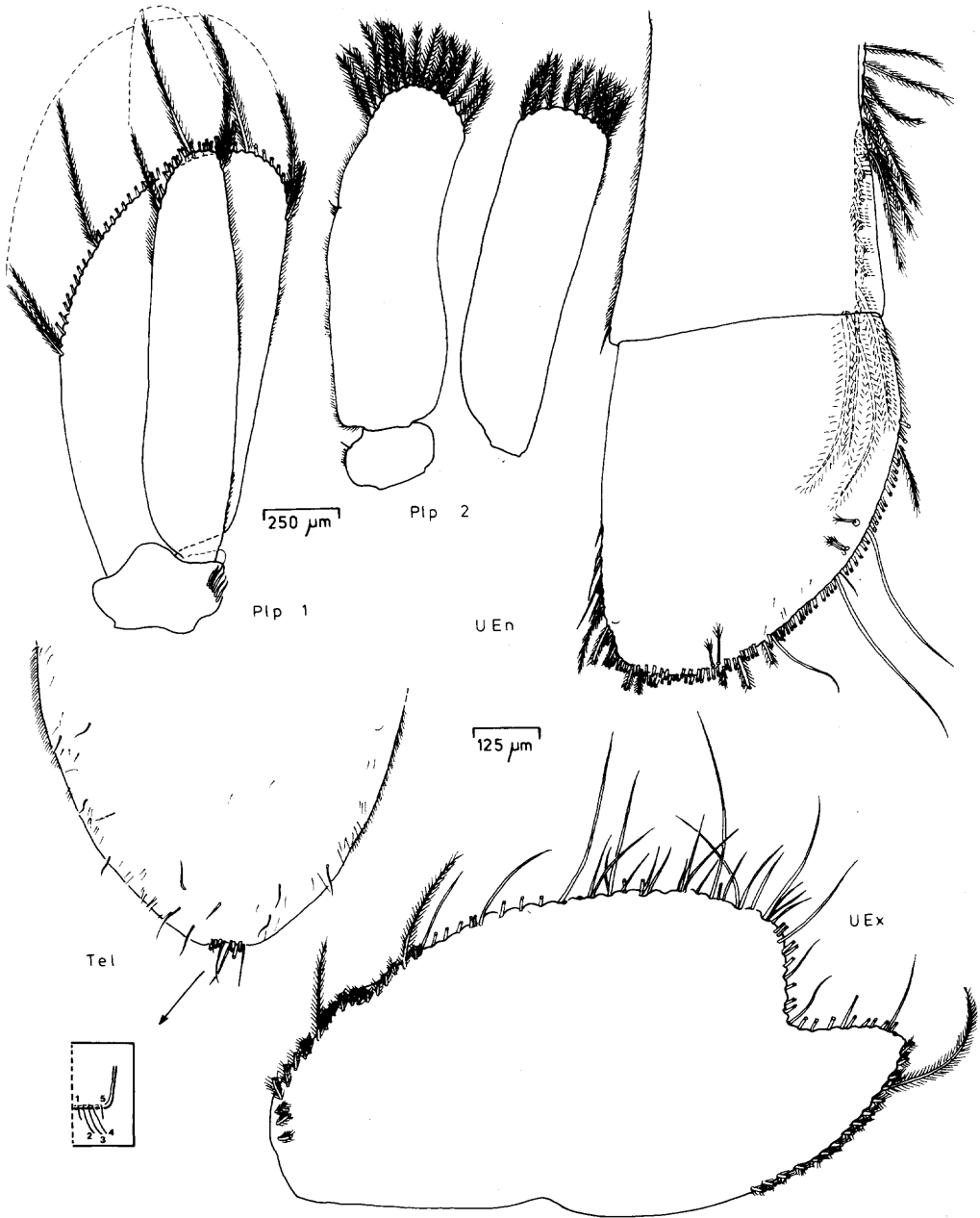


FIG. 7. *Mesanthura albolineata* Barnard, 1925, mature female (12 mm); most setae of Plp 1, UEn and UEx cut off.

P1 with stout subchelate propodus, general outline as in foregoing species. Unguis shorter than dactylus, palm of propodus with central projection more proximal and more acute than in *M. pulchra*; palm bearing row of about 15 short setae, four further setae distally, a few setae also on the medial surface (fig. 5), P2, 3 with short triangular carpus and elongated, oval propodus, the latter with distal sensory spine of typical form (fig. 6, P2), palm with cuticular scales and two rows of short setae, and further setae scattered over propodal surface as shown in fig. 6. P4-7 with short trapezoidal carpus; propodus with distal dentated sensory spine, another simpler spine on carpus, setation as in fig. 6. P6 similar to P5. Dactylus having two distal fringed setae as well as short setae. Exopod of Plp 1 operculiform, more than twice as wide as the endopod; exopod with 40 swimming setae, endopod with 11. Uropods not surpassing Tel, sympod somewhat longer than endopod, the latter longer than wide. Margin of endopod fringed with more than 80 setae, some of them being plumose (fig. 7). UEx leaf-like, distal sinuosity forming a right angle; setation as in fig. 7. Tel linguiform; apex gently rounded, with five pairs of setae; dorsal surface with several short setae (fig. 7). Two basal statocysts present.

Remarks

Of this species only the description of Barnard (1925) is known. About the mouthparts he wrote: "Mandibular palp as in *M. ocellata*" (p. 144), this means "mandibular palp with 3rd joint not so strongly developed as in the two preceding species [= *M. catenula*, *M. maculata*]". In *M. catenula* the palp is "strong in proportion to the trunk", in *M. maculata* "not unusually strong". The mouthparts remain an enigma since they are lacking in the present specimen. Barnard supposed that the species would always be recognized by its dorsal white longitudinal lines on each segment. But, comparing the patterns of the species known today, we find more or less similar patterns in *M. protei* (see Kensley 1980) and *M. pulchra* (see Kensley 1982a); in other species the white line is more expanded, forming an oval or round patch. As this is the case, morphological features must support the differences found in the arrangement of chromatophores. *M. protei* seems to differ from *M. albolineata* by the more pronounced projection on the propodal palm of P1; in the Houtman-Abrolhos specimen of *M. protei* (see Kensley and Poore 1982) we find a shallower sinuosity of the UEx. Kensley (1980, p. 30) writes about *M. protei*: "The possibility exists that there is a single polychromatic species of *Mesanthura* distributed throughout the northern Indian Ocean. Further collecting... is necessary". In reality we see that the urgent necessity is to prepare thorough descriptions of the species in question.

Mesanthura ocellata Barnard, 1925

(Figs. 8-10)

Material examined: 1 mature female 12 mm, SAM A 17624.

Locality: Thailand, 1 fathom.

Description: Pigment pattern as in fig. 8 (after Barnard 1925). Cephalothorax as long as wide, anterolateral eyes present, rostral point extending beyond the anterolateral angles. Relative length of pereonites: $C < 1 > 2 = 3 < 4 < 5 > 6 > 7$. Pleonites 1-5 fused, together longer than pereonite 7 (fig. 8). Flagellum of A1 with three articles; first article short, with one feather-like bristle; second article longest; last article short, with four setae and three aesthetascs. Flagellum of A2 with three

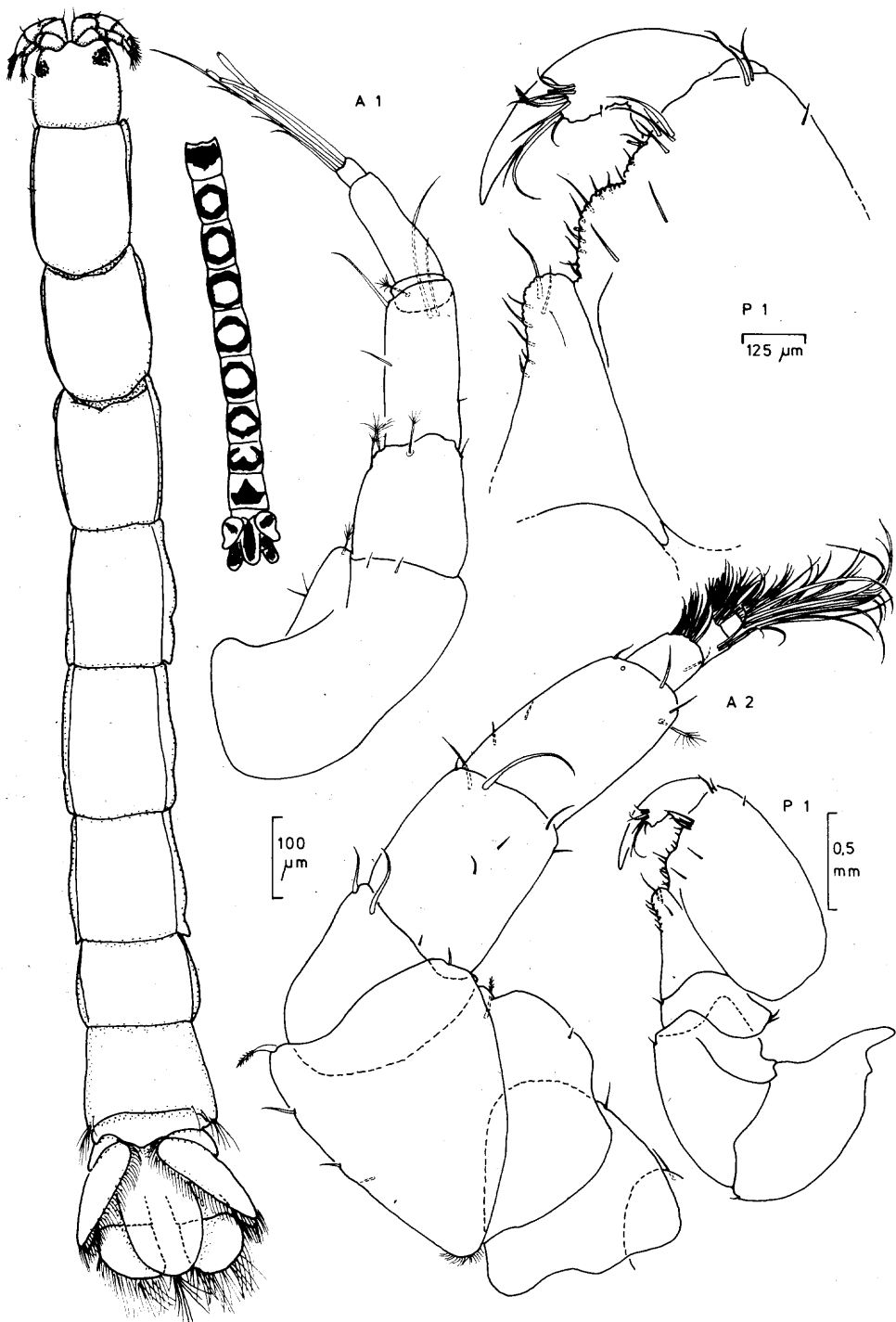


FIG. 8. *Mesanthura ocellata* Barnard, 1925, mature female (12 mm); left: whole animal in dorsal view. Pigment pattern after Barnard (1925).

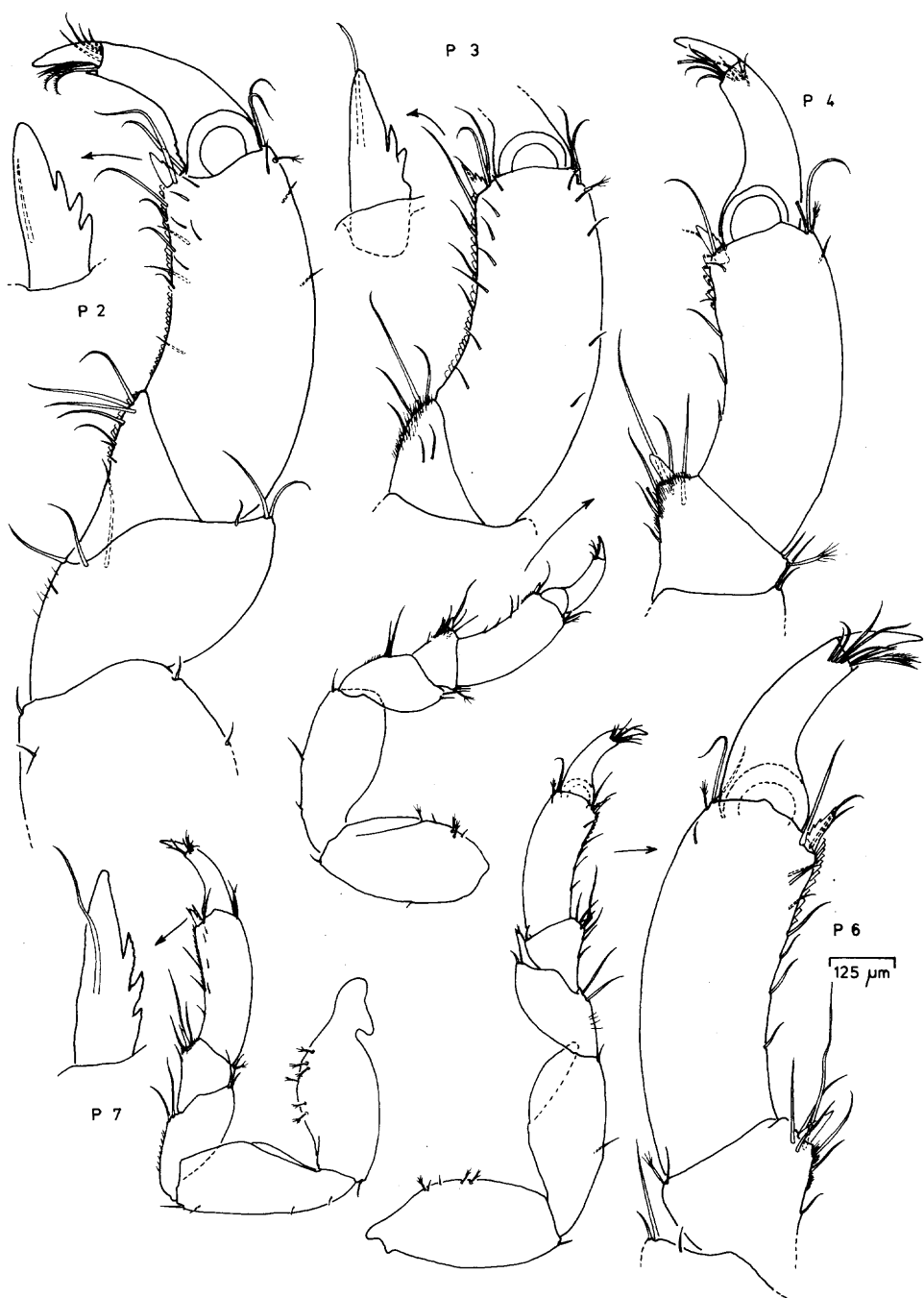


FIG. 9. *Mesanthura ocellata* Barnard, 1925, mature female (12 mm).

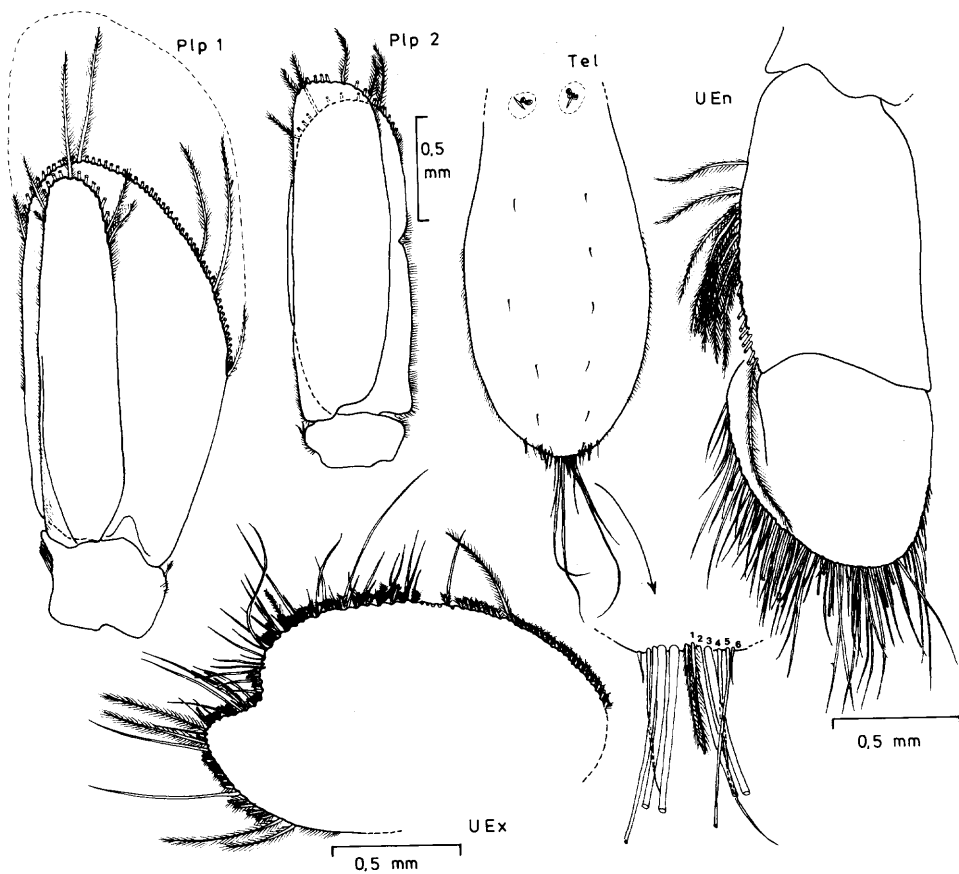


FIG. 10. *Mesanthura ocellata* Barnard, 1925, mature female (12 mm). Most plumose setae of pleopods and of UEx cut off.

short articles, setation as in fig. 8. Mouthparts not preserved. P 1 subchelate, unguis shorter than dactylus. Propodus with crenulated palm, basal part of palm with rounded projection (fig. 8), bearing row of 11 short setae, further six setae distally. P 2, 3 with short triangular carpus; propodus with distal dentated sensory spine, palm with cuticular scales and short setae (fig. 9). P 4–7 with trapezoidal carpus, propodus more slender than in P 2, 3, carpi and propodi each bearing a distal sensory spine, setation as in fig. 9. Dactylus of pereopods having two fringed setae apically, as well as several single setae. Exopod of Plp 1 operculiform, about 2.5 times wider than endopod. Exopod with 56 swimming setae, endopod with 15. Exopod of Plp with 15 setae, endopod with nine. Uropods as long as Tel; sympod about 1.3 times longer than endopod; endopod nearly as wide as long (fig. 10), margin bearing more than 70 setae (plumose character of some setae not preserved). UEx oval, apex rounded, with distal sinuosity; setation as in fig. 10. Telson linguiform, dorsal surface smooth, with few pairs of small setae, apex bearing six pairs of setae (fig. 10), the central pair being plumose. Two basal statocysts present. Oostegites on pereonites 2, 3, 4 and 5.

Remarks

M. ocellata was no better known than the species previously described. Its typical pigment pattern can be derived from the patterns of the previous species; the white central patch is nearly round, surrounded by a ring of chromatophores. Similar rings are also present in *M. occidentalis* (Menzies and Barnard 1959), where the rings are thinner. Much broader rings are present in *M. protei* (Kensley and Poore 1982) and *M. catenula* (Kensley 1982 b) and also, in a more diffuse way, in *M. gerlachi* (Wägele 1981). Of the Indopacific species, *M. protei* seems to have a richer setation of P 2 in comparison with *M. ocellata*; the apex of the UEx is more acute. *M. gerlachei* has a flagellum of A 2 with four articles (*M. ocellata*: 3); the Tel bears a different pattern of dorsal setae; the propodal palm of the pereopods and especially of P 1 bear many fewer setae. But we must bear in mind that the described specimen of *M. gerlachei* was, at 5 mm, much smaller than the present specimen of *M. ocellata*, and a smaller number of setae is not necessarily indicative for a genetic difference (see Discussion). *M. catenula* has only one (?) flagellar article of A 1, the sinuosity of the UEx is found more distally than in *M. ocellata*, and the distal point of the UEx does not extend beyond the remaining part of this branch as it does in other species.

Discussion

We see that with the help of the existing descriptions it is indeed possible to find structural differences between species, though much more information is required before we are able to define the species in a satisfactory way.

Comparing specimens which show many similarities, differences can only be found when the taxonomist tries to observe smaller details. Then one question often arises: Are the small differences due to intraspecific variability or do they indicate a greater genetic barrier? Variations in the number of setae are only meaningful when two specimens of equal size, and preferably of the same sex and stage, are compared. Wägele demonstrated the correlation between body and length and number of setae for *Apanthura stanjeki* (1981) and for Mediterranean species of *Paranthura* (1982), which is only natural. However, in the latter study (Wägele 1982) it also became clear that specimens of equal size have a different setation on their extremities when they belong to different species.

Further useful features are differences in sexual dimorphism. Unfortunately only a few males are known in the genus *Mesanthura*.

The three species redescribed in the present paper differ in many respects. The most obvious features apart from the pigmentation are the long distal article of A1 in *M. pulchra*; differences in the shape of the propodal palm of P 1; different outlines of the UEx, and the longer flagellum of A 2 in *M. pulchra*. In this species we also find fewer swimming setae on the Plp 1 exopod in relation to the endopod (28:12 instead of 56:15 or 40:11). The female of *M. ocellata* has four pairs of oostegites, *M. albolineata* has only three.

More details could be relevant and should be studied whenever better material is available.

Summary

Barnard's three species *Mesanthura pulchra*, *M. ocellata* and *M. albolineata* (Barnard 1925) are redescribed. It is found that in the genus *Mesanthura* not only pigment patterns can be used to discern species, but also details of the morphology, which, however, have seldomly been described.

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