reasonable size in the inner area of the carapace. Of the branchio-lateral teeth only a few small ones remain on the posterior margin of the carapace behind the postero-branchial spine.

Abdomen.

Formula, segments I–VI: 1. 2.

The abdomen is nearly unchanged except that it has grown in size in the same proportion as the rest of the animal. The lateral process on the first abdominal segment has enlarged a little and is now separated at the base from the lateral spine of the segment. The lateral spines of the last segment are very small.

Telson.

The telson has grown more narrow and elongate, and the three spines on the lateral margin have moved towards the tip of the plate. The most distal spine is placed near the tip as in the previous stage, but the following spine has moved up close behind it, and the third spine is now placed at a distance from the tip of the telson of about one fourth of the whole length of the telson. At the bottom of the cleft of the telson a flattened arch was found in the first Mysis. This arch has in this stage developed to a full median lobe inside the original cleft, so that the normal telson cleft is now divided into two equally sized clefts one on each side of the median lobe. The four setae placed on each of the inner sides of the single cleft in the first Mysis are placed on the inner lateral side of each of the clefts caused by the new development of the lobe in the middle.

Appendages.

The first antenna has as in the previous stage a three-jointed protopod, but several more setae have been added to its margins, on the medial and lateral margins is a continuous line of setae from the basis to the tip of the protopod. The setae are placed in three groups: a line of short hairs at the border of the statocyst groove, a semilunate line on the medio-distal corner of the same joint, and another semilunate line on the same corner of the second joint. Finally the two terminal flagella have become much longer and have already started to become annulated.

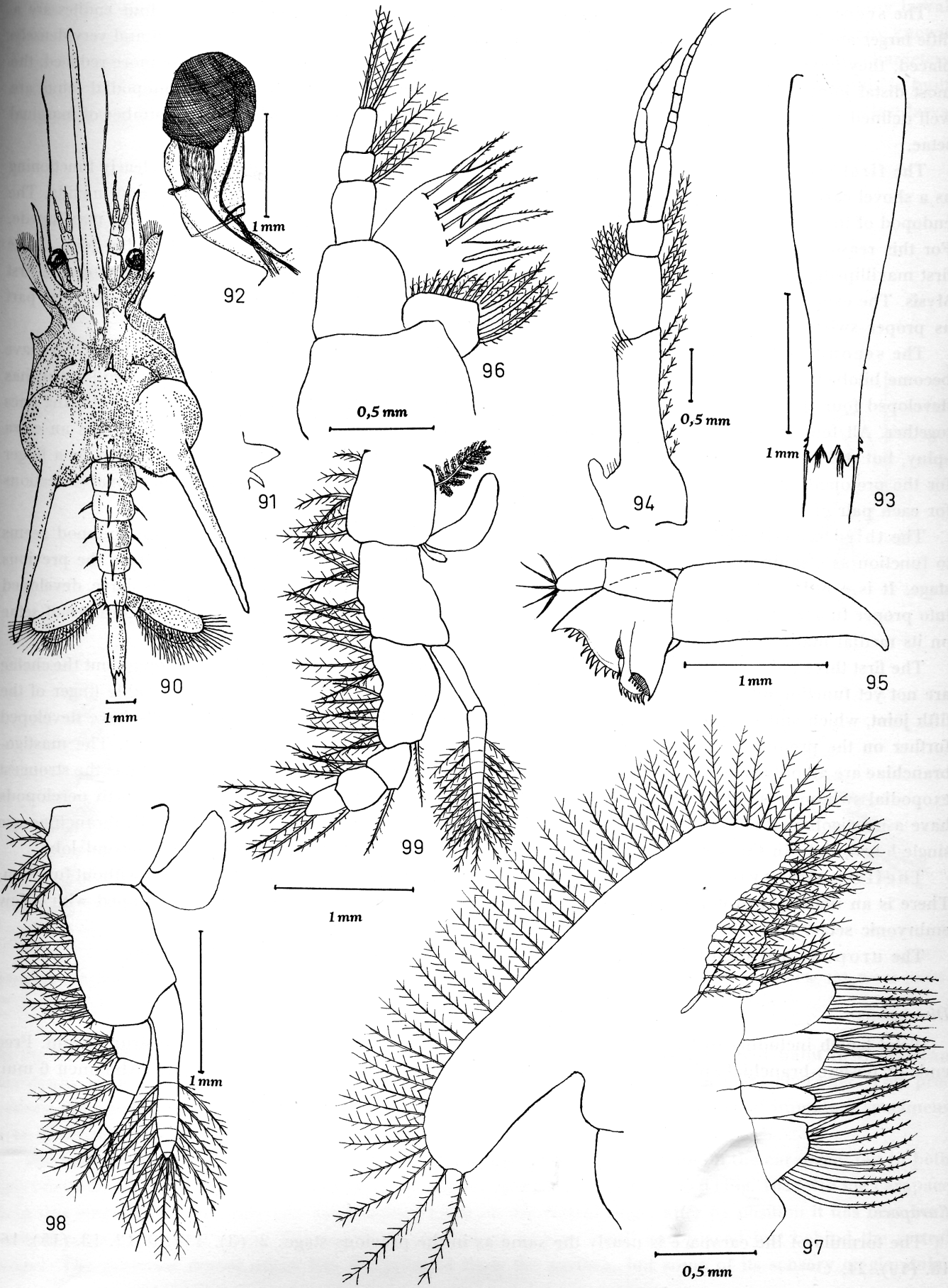
The eye (Fig. 92) has the ocelli placed in two groups, a larger dorso-medial part and a smaller ventro-lateral part, divided by a deep cleft, but fused at the bottom of the cleft. The eyestalk is also divided into two sections. Nearest to the ocelli it forms a tubular collar, which at its base is cut angularly to its length, more proximally is the narrower inner eyestalk. Inside the collar part is a group of nerve-cells with nerves coming from the eye, and posteriorly of this plexus are the neurites continuing to the brain. From this plexus nerve-threads lead to the brain, and from the plexus other nerve-threads spread to the "ocular papillae". Farther from the basis of the smaller group of ocelli a group of thin muscle fibres stretches through the eyestalk to a sclerit at the basis of the eyestalk, and shortly before this muscle passes the collar section of the eyestalk, it penetrates a sclerit hinge from the cuticle of the eyestalk. The function of this muscle seems to be to bend the eyestalk and thus to turn the group of ocelli towards a certain point.

In the second antenna no stronger changes have taken place, only the endopod consists of a basal joint, and the flagellum has started to develop and reaches in this stage four fifth of the length of the rostrum.

The mandible has grown still stronger, both its corpus mandibulae as well as its incisor and molar parts which now are more differentiated. Finally the palp is two-jointed and tipped with four to five short setae.

The first maxilla shows a stronger division between coxa and basis, and coxa has a much wider basis than in the previous stage. The coxa-endite has relatively decreased in length, although the rhomboid shape is retained. Its setae are stronger than in the previous stage, especially the posteriorly placed ones. Together with the basi-endite it forms a very strong tearing brush. The endopod is nearly unchanged.

Figs. 90–99. *Solenocera* sp. larva *danae*. Second Mysis. Fig. 90, in total from dorsal. — Fig. 91, lateral process on first abdominal segment and lateral spine. — Fig. 92, eye. — Fig. 93, telson. — Fig. 94, first antenna from dorsal. — Fig. 95, mandible. — Fig. 96, first maxilla. — Fig. 97, second maxilla. — Figs. 98–99, first and second maxillipedes.


1 mm
92
96
0,5 mm
94
0,5 mm
1 mm
93
91
90
1 mm
95
1 mm
99
1 mm
98
97
0,5 mm

The second maxilla. No important changes have taken place since last stage. The four endites are a little larger and are now clearly cut off from their protopodial base, and their setae are stout and very densely placed, they have lost the plumose hairs on their proximal half. The endopod is a little more reduced, the most distal joint is absorbed into the more proximal ones, only the first and second endopodial joints are well defined from one another. The exopod has enlarged and is more flat with a larger number of marginal setae.

The first maxillipede is interesting as especially the protopod has enlarged and is clearly functioning as a shovel carrying the food to the tearing by the first maxilla and the brushing by the second maxilla. The endopod of the second maxillipede functions as a movable lid or finger for the shovel of the first maxillipede. For this reason the number of setae have increased on the protopod and the first endopodial joint of the first maxillipede, and the setae have become more stiff. The rest of the endopod is unchanged from the first Mysis. The exopod has become stronger and has longer plumose setae, and it is now jointed in its distal part as proper swimmerets. The mastigobranchiae are only single-lobed.

The second maxillipede is a little larger than the first one. On the coxa the mastigobranchiae have become bilobed, but the second lobe is still very small. The endopod, in the previous stage two-jointed, has developed four strong and massive joints of which the first one is nearly as long as the three following ones together. All four joints have numerous strong setae on their medial margins, and each joint has an extra spiny, but still plumose, seta on its disto-lateral corner. As already mentioned, this endopod acts as a finger for the protopod of the first maxillipede. The exopod is two-jointed, the distal joint with movable sections for each pair of setae.

The third maxillipede is the longest of all the limbs, to judge from its structure the endopod seems to function as cleaning brush for the mouth appendages. The leg has not changed much from the previous stage. It is a little larger, the mastigobranchia is still single-lobed and the podobranchiae have developed into proper functioning gills. The exopod is stronger, and the endopod has acquired a larger number of setae on its medial margin.

The first three pairs of pereiopods have developed proper chelae at the tip of the endopod, but the chelae are not yet functioning, and the stiff finger on the fourth joint is nearly as long as the movable finger of the fifth joint, which still is tipped with three setae. Further the endopod is hairy, and the gills have developed further on the protopod like in the maxillipedes. The exopod is a long, slender swimmeret. The mastigobranchiae are all only single-lobed. The fourth pereiopod is the longest of the pereiopods and has the strongest exopodial swimmerets. The fifth pereiopod is a little smaller than the fourth. The first to fourth pereiopods have a mastigobranchia and a podobranchia. The fifth pereiopod has no gills. All the mastigobranchiae are single-lobed, only in the second maxilla the mastigobranchiae have started to develop a second lobe.

The five pairs of pleopods have developed into small, bifurcate rudimentary limbs still without function. There is an unjointed protopod and an unjointed exopod and endopod, the last two are tipped with a few embryonic setae.

The uropods are almost fully developed and are now reaching behind the telson plate.

Dimensions:

Total length including rostrum 22 mm. Carapace length 6 mm, width about 6 mm. Rostrum 9 mm. Free ends of postero-branchial spines 6 mm, including the bulbous basis on carapace 9.5 mm. Abdomen 6 mm.

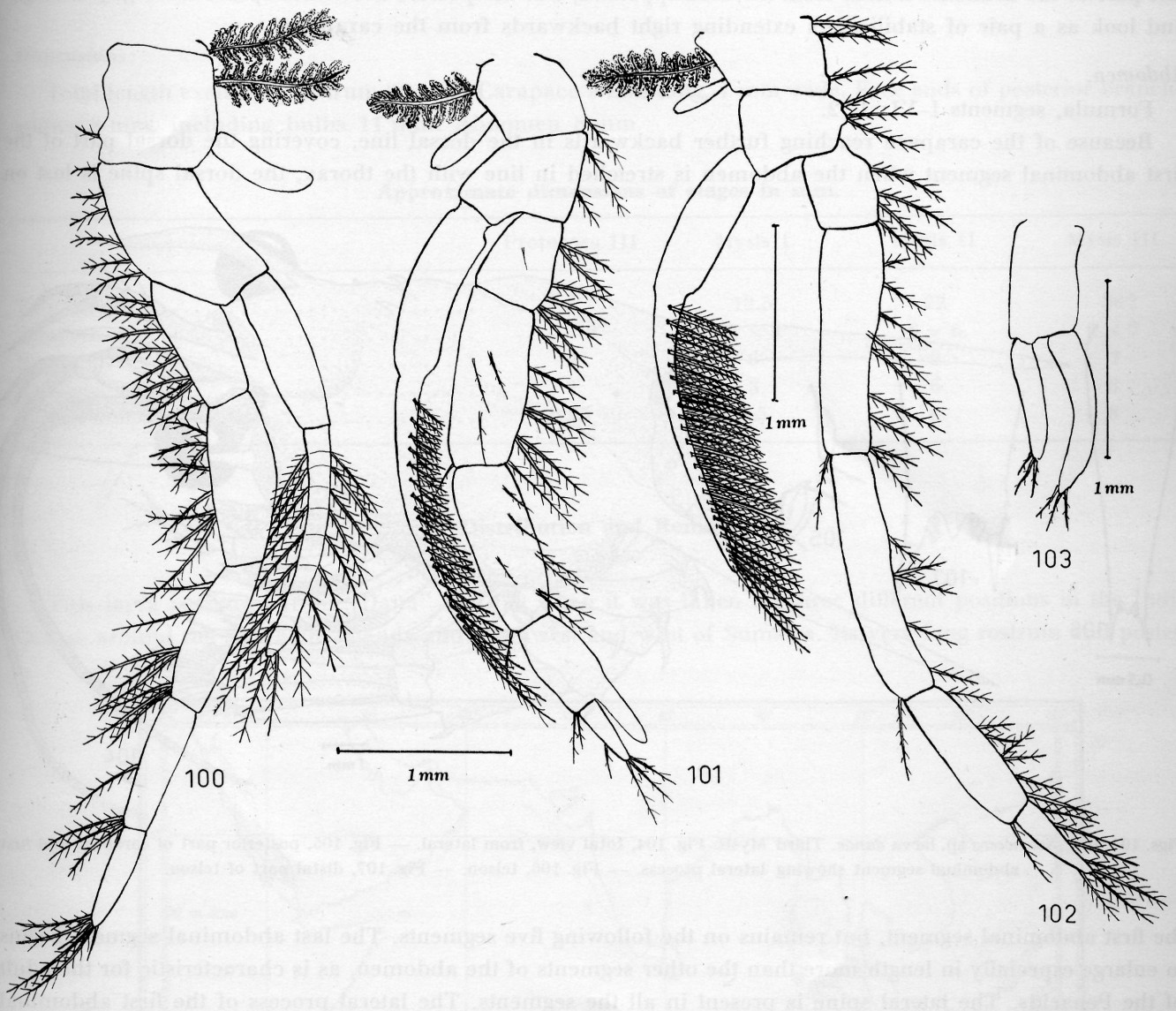
Mysis III.

Figs. 104–107.

Carapace.

The formula of the carapace is nearly the same as in the previous stage: 2. (3). 4. 7. 9. 12. 13. (15). 16. 18. (19). 24.

The whole appearance of the larva in this stage approaches that of the adult, but still too many larval characters are present to give sufficient background for judging whether or not this is the larva of any known *Solenocera* species. When disregarding all the larval characters not enough remain to provide the characters of the adult. This is partly caused by two principles in the adult taxonomy of Penaeids. First this is built on the shape of the carapace with spines, teeth and ridges, and this changes considerably from the last larva



Figs. 100–103. *Solenocera* sp. larva *danae*. Second Mysis. Fig. 100, third maxillipede. — Fig. 101, first pereiopod. — Fig. 102, fourth pereiopod. — Fig. 103, first pleopod.

to the first post-larva, and secondly, especially in modern time, it has become a bad habit in Crustacean taxonomy to use the Petasma and Thelysium, or often only one of them as a primary character. This procedure often excludes more than half the specimens of a sample due to the number of immature specimens and of those of the opposite sex, in smaller samples all may be excluded.

The rostrum is probably very long, at least it has a very wide and solid base on the carapace, but in both specimens available to me it was broken off at its base on the carapace or close to it (Fig. 104). On the carapace is in this stage also found only one single dorsal tooth on the rostral ridge, after its position it has here been termed epigastric-rostral tooth. The anterior dorsal organ is very small and placed just behind the rostral ridges. The posterior dorsal organ has disappeared from the surface, but some of its sensory or glandular