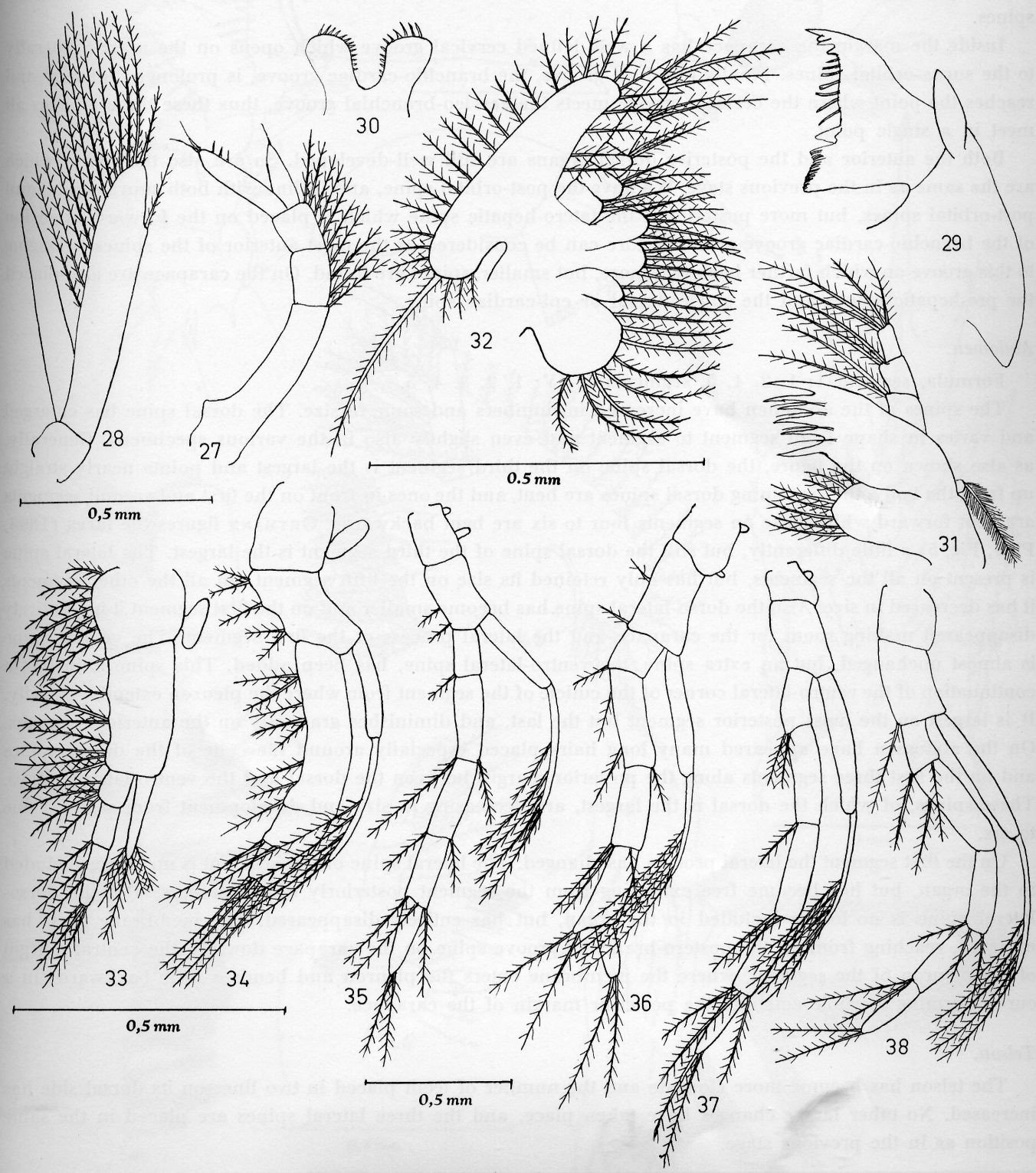
a little from the previous stage, but it has lost most of the hairs which covered it in the first Mysis. Also the rostral tooth and the epigastric rostral tooth have enlarged, and the rostral plate has developed to a whole platform in front of the body, the largest in all the known larvae, it carries a pair of large, curved supra-orbital spines. The antennal spine is almost unchanged from the last stage, but the number of branchiostegal



Figs. 27–38. *Solenocera muelleri*. First Mysis. Fig. 27, first antenna. — Fig. 28, second antenna. — Fig. 29, mandible. — Fig. 30, labium. — Fig. 31, first maxilla. — Fig. 32, second maxilla. — Figs. 33–35, first, second and third maxillipedes. — Fig. 36, first pereiopod. — Fig. 37 and 38, fourth and fifth pereiopods.

spines have been reduced to three, the most posterior one has disappeared, and the remaining three are decreasing in size in posterior direction. Also the branchio-lateral spines have been reduced to three and the latero-posterior marginal spine has disappeared only leaving the little spiny bud directly on the corner where it also was in the first Mysis. The postero-branchial groove spine has become more spine-like and lost its serrate brim except for very tiny bits. The same is the case with the pair of medio-posterior marginal spines.

Inside the margin the carapace has a well-defined cervical groove which opens on the margin laterally to the supra-orbital spines. Finally the third groove, the branchio-cardiac groove, is prolonged forward and reaches the point where the cervical groove meets the cervico-branchial groove, thus these three grooves all meet in a single point.

Both the anterior and the posterior dorsal organs are still well-developed. So are also the spines which are the same as in the previous stage. We have the post-orbital spine, and in line with both supra-orbital and post-orbital spines, but more posteriorly, the latero-hepatic spine which is placed on the forward extension of the branchio-cardiac groove and therefore can be considered as the most anterior of the spines belonging to this groove on which farther back two more, but smaller, spines are found. On the carapace are also placed the pre-hepatic spines and the single dorsal or epi-cardiac spine.

Abdomen.

Formula, segment I: 1. 2. 4. 5, segments II–IV: 1. 2. 3. 4. 5.

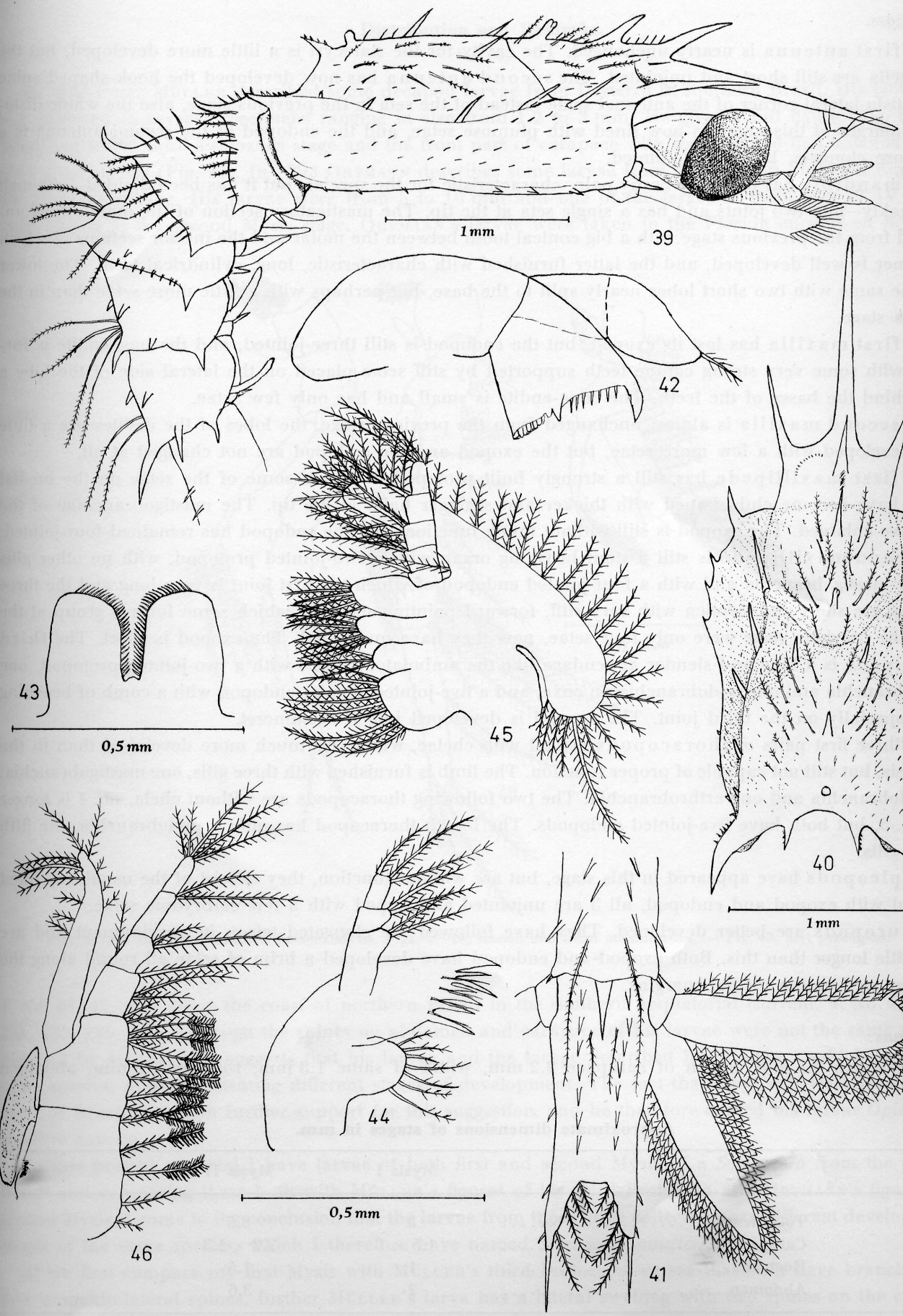
The spines of the abdomen have increased in numbers and some in size. The dorsal spine has enlarged and varies in shape from segment to segment and even slightly also in the various specimens. Generally, as also shown on the figure, the dorsal spine on the third segment is the largest and points nearly straight up from the body, the remaining dorsal spines are bent, and the ones in front on the first and second segments are bent forward while those on segments four to six are bent backwards. ORTMANN figures the larva (1893, Pl. 4, Fig. 5) a little differently, but still the dorsal spine of the third segment is the largest. The lateral spine is present on all the segments, but has only retained its size on the fifth segment, on all the other segments it has decreased in size. Also the dorso-lateral spine has become smaller and on the first segment it has entirely disappeared making room for the carapace and the lateral process of the first segment. The ventral spine is almost unchanged, but an extra spine, the ventro-lateral spine, has been added. This spine is in fact a continuation of the ventro-lateral corner of the cuticle of the segment from where the pleuron extends ventrally. It is largest on the most posterior segment but the last, and diminishes gradually on the anterior segments. On the abdomen have appeared many long hairs placed especially around the cone of the dorsal spines and on the first three segments along the posterior margin between the dorsal and the ventro-lateral spines. These spines, of which the dorsal is the largest, are decreasing in size and development from segment one to six.

On the first segment the lateral process has changed. The lateral spine of this segment is no longer included in the organ, but has become free extending from the segment posteriorly of the process, also the dorso-lateral spine is no longer included in the organ, but has entirely disappeared. The membrane itself has enlarged, reaching from off the postero-branchial groove spine on the carapace down to the ventral margin of the pleuron of the segment, where the membrane enters the pleuron and bends a little backwards in a curve, forming a whole collar to the posterior margin of the carapace.

Telson.

The telson has become more elongate and the number of teeth placed in two lines on its dorsal side has increased. No other larger changes have taken place, and the three lateral spines are placed in the same position as in the previous stage.

Figs. 39–46. *Solenocera muelleri*. Second Mysis. Fig. 39, carapace and part of abdominal segments, from lateral. — Fig. 40, carapace, from dorsal. — Fig. 41, telson with right uropod. — Fig. 42, mandible. — Fig. 43, labium. — Fig. 44, first maxilla. — Fig. 45, second maxilla. — Fig. 46, first maxillipede.


1 mm
39
42
43
0,5 mm
45
40
1 mm
44
0,5 mm
46
41

Appendages.

The first antenna is nearly unchanged. The cavity for the statocyst is a little more developed, but the two flagella are still short and unjointed. The second antenna has now developed the hook-shaped spine on the disto-lateral corner of the antennal scale instead of the seta in the previous stage, also the whole disto-medial margin of this organ is now lined with plumose setae, and the endopod of the second antenna is a little more elongate, but still unjointed.

The mandible has the same fleshy palp, characteristic for the species, but it has been divided—although only weakly—into two joints and has a single seta at the tip. The masticatory section of the mandible is unchanged from the previous stage with a big conical tooth between the molar and the incisor sections of which the former is well developed, and the latter furnished with characteristic, long, cylindrical teeth. The lower lip is the same with two short lobes nearly split to the base, but perhaps with a little more setae than in the previous stage.

The first maxilla has lost its exopod, but the endopod is still three-jointed, and the basi-endite is furnished with some very strong canine teeth supported by stiff setae placed on the lateral side of the lobe a little behind the bases of the teeth. The coxa-endite is small and has only few setae.

The second maxilla is almost unchanged from the previous stage, the lobes of the endites are a little better developed with a few more setae, but the exopod and the endopod are not changed at all.

The first maxillipede has still a strongly built protopod of which some of the setae on the medial margin have become club-shaped with thicker and stronger hairs at the tip. The mastigobranchiae of the coxa have enlarged. The exopod is still without much function, and the endopod has remained four-jointed. The second maxillipede is still a stout brushing organ with a two-jointed protopod, with no other gills than the mastigobranchia and with a four-jointed endopod of which the first joint is very long and the three following are short and swollen with very stiff, forward pointing setae, of which some form a group at the tip. In the previous stage were only four setae, now they have multiplied. The exopod is short. The third maxillipede is a long and slender appendage like the ambulatory limbs with a two-jointed protopod, one mastigobranchia and one podobranchia on coxa, and a five-jointed slender endopod with a comb of brushing setae, especially on the third joint. The exopod is developed into a swimmeret.

The three first pairs of thoracopods are all with chelae, which are much more developed than in the first Mysis, but still not capable of proper function. The limb is furnished with three gills, one mastigobranchia, one podobranchia and one arthrobranchia. The two following thoracopods are without chela, no. 4 is longer than no. 5, but both have five-jointed endopods. The fourth thoracopod has only a podobranchia, the fifth has no gills.

The pleopods have appeared in this stage, but are without function, they consist of the usual unjointed protopod with exopod and endopod, all 3 are unjointed and tipped with a few embryonic setae.

The uropods are better developed. They have followed the elongated telson in development and are still a little longer than this. Both exopod and endopod have developed a brim of setae all round along the lateral as well as the medial margins.

Dimensions:

Total length 8.5 mm, length of carapace 2.2 mm, width of same 1.3 mm, rostrum 1.5 mm, abdomen 3.6 mm.

Approximate dimensions of stages in mm.

	Mysis I	Mysis II
Total length	5	8.5
Carapace	1.5 × 1	2.2 × 1.3
Rostrum	1	1.5
Abdomen	2	3.6