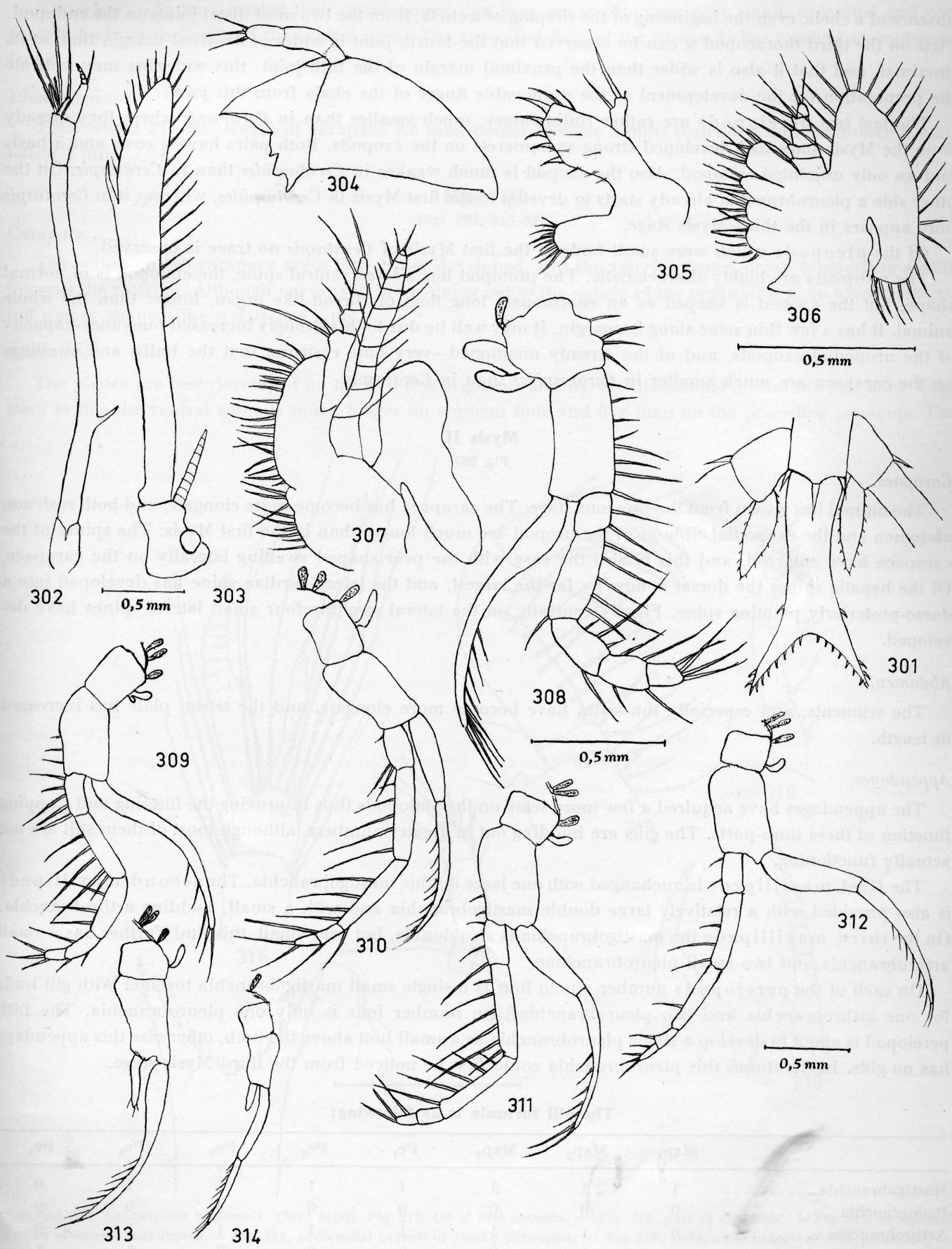
304
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314

absence of a chela, even the beginning of the shaping of a chela, from the two most distal joints on the endopod. First on the third thoracopod it can be observed that the fourth joint is wider at its distal margin than at its proximal, and that it also is wider than the proximal margin of the fifth joint; this widening may indicate the preparation for the development of the unmovable finger of the chela from this joint.

The last two pereiopods are rather rudimentary, much smaller than in *Cerataspis* where they already from the Mysis stage had developed strong swimmerets on the exopods. Both pairs have a coxa and a basis and an only unjointed endopod. Also the exopod is much weaker in *Cerataspides* than in *Cerataspis*. On the other side a pleurobranchia already starts to develop in the first Mysis in *Cerataspides*, whereas it in *Cerataspis* only appears in the third Mysis stage.

Of the pleopods which were small buds in the first Mysis of *Cerataspis* no trace is observed.

The uropods are highly characteristic. The protopod has a large ventral spine, the endopod is of normal shape, but the exopod is shaped as an enormously long float or thread-like organ, longer than the whole animal. It has a few thin setae along its margin. It may well be due to this strongly increased buoyancy-capacity of the uropodial exopods, and of the already mentioned—very long rostrum, that the bulbs and swellings on the carapace are much smaller in *Cerataspides* than in *Cerataspis*.

Mysis II.

Fig. 297.

Carapace.

The animal has grown from the previous stage. The carapace has become more elongate, and both rostrum, abdomen and the exopodial ribbons of the uropod are much longer than in the first Mysis. The spines of the carapace have enlarged, and this is also the case with the pear-shaped swelling laterally on the carapace. Of the hepatic spines the dorsal is now by far the largest, and the latero-cardiac spine has developed into a dorso-posteriorly pointing spine. Finally ventrally on the lateral swelling four small lateral spines have developed.

Abdomen.

The segments, and especially the sixth, have become more elongate, and the telson plate has increased in length.

Appendages.

The appendages have acquired a few more setae on the endopods thus improving the filtering and trapping function of these limb-parts. The gills are budding out in greater numbers, although most of them still are not actually functioning.

The first maxillipede is unchanged with one large double mastigobranchia. The second maxillipede is also provided with a relatively large double mastigobranchia and with a small, budding arthrobranchia. On the third maxillipede the mastigobranchia is also double, but very small, this limb further has a small arthrobranchia and two small pleurobranchiae.

On each of the pereiopods number one to four is a single small mastigobranchia together with gill-buds for one arthrobranchia and two pleurobranchiae, on number four is only one pleurobranchia. The fifth pereiopod is about to develop a single pleurobranchia as a small bud above the limb, otherwise this appendage has no gills. In *Cerataspis* this pleurobranchia could first be noticed from the third Mysis stage.

The gill formula is as following:

	Mxp_1	Mxp_2	Mxp_3	Pe_1	Pe_2	Pe_3	Pe_4	Pe_5
Mastigobranchia	1	1	1	1	1	1	1	0
Podobranchia.....	0	0	0	0	0	0	0	0
Arthrobranchia	0	1	1	1	1	1	1	0
Pleurobranchia	0	0	2	2	2	2	1	1

The pleopods have started their development, but they are in this stage only small, unjointed and not-furcate buds on each side of the ventral spine. The exopodial float of the uropods has reached an enormous length.

Dimensions:

Total length 21 mm; length of carapace 3,5 mm, height of same 2 mm; rostrum 8 mm; abdomen 8 mm; telson 2 mm.

Mysis III.

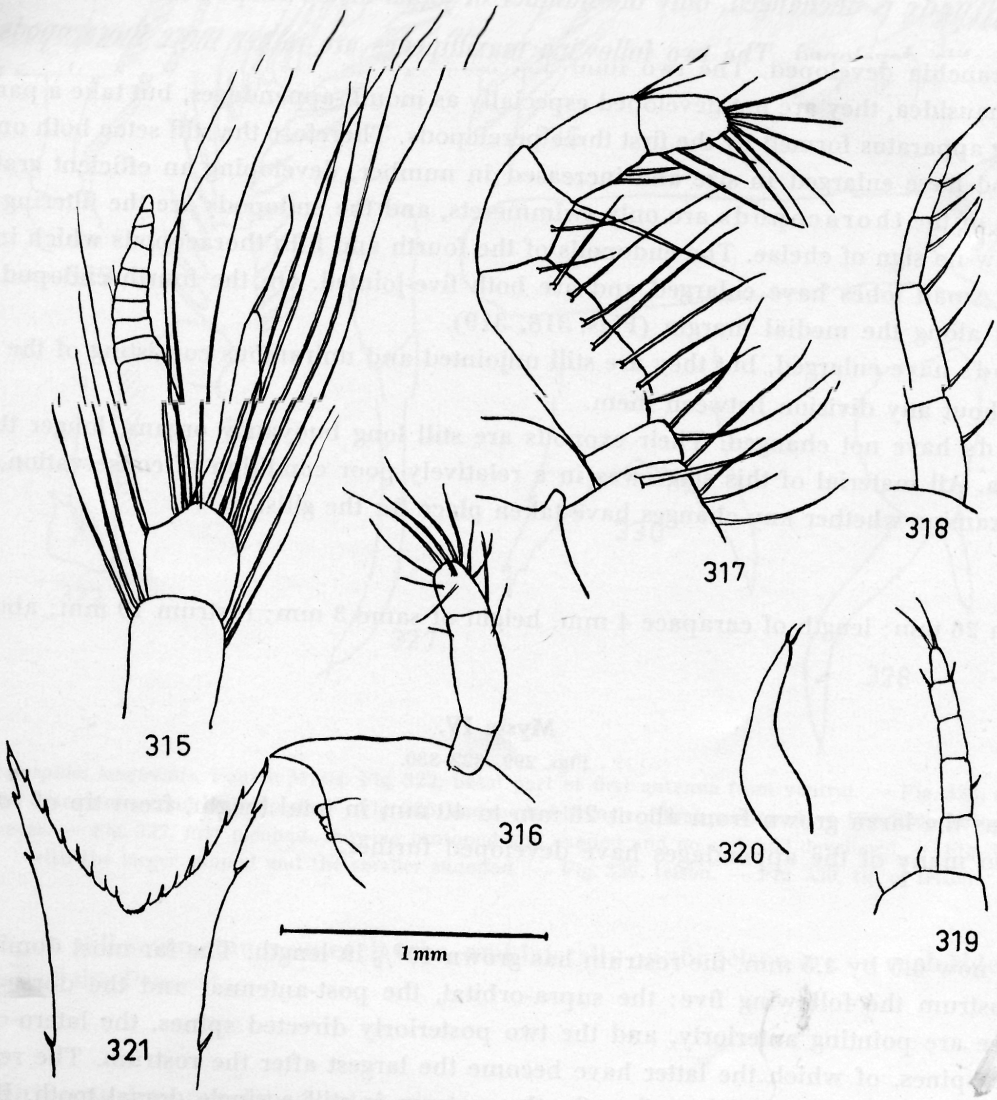
Figs. 298, 315–321.

Carapace.

The spines on the carapace are a little better developed, and the anterior dorsal organ is emerging a little towards the rostrum. Although nerves still are running out to the cuticle of the organ, this is no more bulbous, but sooner shaped like a flattened cone.

Abdomen.

The pleura are best developed on the two first segments and hardly discernible on the two last ones. Contrary to this the ventral spine is much longer on segment four and five than on the preceding segments. The



Figs. 315–321. *Cerataspides longiremis.* Third Mysis. Fig. 315, tip of first antenna. — Fig. 316, part of mandible. — Fig. 317, endopodial branch of second maxillipede. – Fig. 318, endopodial branch of fourth pereiopod. — Fig. 319, endopodial branch of fifth pereiopod. — Fig. 320, second pleopod. — Fig. 321, distal part of telson.

lateral spine seems still to decrease in size or rather not to grow together with the rest of the body. The telson plate is more elongate, and its furca is not quite so open. There are still seven spines on the inner margins of each furcal branch, and laterally the mid-spine and the most anterior spine seem to have moved a little forward (compare Fig. 301 with Fig. 319).

Appendages.

The first antenna is still very long (Fig. 315), its two basal joints have coalesced into one to the effect that the peduncle now consists of one longer basal joint and two shorter distal joints. From the third joint and from the tip of the second joint emerge many long hairs forming an anterior brush between the two flagella. These have both enlarged, the lateral one is still the largest and has developed near to ten rings at its tip. The medial flagellum is still unjointed, but tipped with a single seta.

The second antenna has also enlarged, and the endopodial flagellum is now reaching to about one third of the length of the antennal scale.

In the mandible there is a sharper division between the molar and incisor parts. The incisor part has only a single large tooth and a cutting edge, the molar part is becoming more compact than in the preceding stage, and the palp is still three-jointed, but it has increased the number of setae on its distal joint, and even the second joint is furnished with two small setae where there were none in the second Mysis.

The first maxillipede is unchanged, only the number of joints in the exopod have decreased, there is still no arthrobranchia developed. The two following maxillipedes are rather more thoracopods as is the case in the Euphausidea, they are not developed especially as mouth-appendages, but take a part in the filtering and catching apparatus formed by the first three pereiopods. Therefore the stiff setae both on the endopod and the protopod have enlarged in size and increased in number, developing an efficient grate. (Fig. 317).

The exopods of the thoracopods are only swimmerets, and the endopods are the filtering and trapping organs, and show no sign of chelae. The endopods of the fourth and fifth thoracopods which in the previous stage were only small lobes have enlarged and are both five-jointed. On the fourth endopod several setae have developed along the medial margin (Figs. 318, 319).

The pleopods have enlarged, but they are still unjointed and uniramous consisting of the protopod and the exopod without any division between them.

The uropods have not changed. Their exopods are still long buoyancy organs, longer than the rest of the whole larva. All material of this stage was in a relatively poor condition of conservation, so I have not been able to examine whether any changes have taken place for the gills.

Dimensions:

Total length 26 mm; length of carapace 4 mm, height of same 3 mm; rostrum 10 mm; abdomen 10 mm; telson 2 mm.

Mysis IV.

Figs. 299, 322–330.

Not only has the larva grown from about 26 mm to 40 mm in total length, from tip of rostrum to tip of telson, but also many of the appendages have developed further.

Carapace.

The size is now 6.5 by 4.5 mm, the rostrum has grown 40 % in length. The far most dominant spines are besides the rostrum the following five: the supra-orbital, the post-antennal and the dorso-hepatic spines, which all three are pointing anteriorly, and the two posteriorly directed spines, the latero-cardiac and the ventro-cardiac spines, of which the latter have become the largest after the rostrum. The rest of the spines are only very small or nearly disappearing. On the rostrum is still a single dorsal tooth. Behind rostrum, on the carapace, is the anterior dorsal organ in the shape of a widened tooth on the rostral carina. The posterior dorsal organ remains unchanged.