

anterior arthrobranchia the central or supporting axis, particularly towards the base, appears to be rigid and multiarticulate, each articulus supporting one or more obtusely pointed processes, the rudiments probably of undeveloped trichobranchiate filaments.

The mastigobranchia, with its attendant podobranchial plume attached to the coxa of the first pair of pereopoda, resembles that of the second pair of gnathopoda both in size and form. At its base are two fasciculi of long straight hairs, which under the microscope are seen to be fringed with fine cilia. Those that spring from the apex of the mastigobranchia are, under the fifth of an inch microscopic power, seen to have their edges serrated rather than ciliated. The anterior arthrobranchia is short, supporting on the under side a row of moderately long trichobranchial filaments on a rigid stem; the upper has a few of these at the base, while the distal extremity supports three broad phyllobranchiate petals. The posterior arthrobranchia is long and phyllobranchiate, the petals being arranged on the posterior margin of the stalk longitudinally from the base to the apex. A bundle of pendent trichobranchiate filaments is attached to a rigid and curved support that appears to be only connected with, and not part of, the longitudinal axis of the long phyllobranchiate plume.

The mastigobranchia and podobranchia belonging to the second pair of pereopoda bear a close resemblance to the appendages attached to the first pair. The anterior and posterior arthrobranchia are also similar, consisting of a long plume of phyllobranchiate petals, one or two of which at the base are double, beneath which is a bundle of trichobranchiate filaments.

The mastigobranchia of the third pair of pereopoda supports no podobranchial plume, and the anterior and posterior arthrobranchiæ are long and well developed, resembling those of the second pair, being phyllobranchiate, and having the largest petal at the base, near the root of which, on the under side, a bundle of trichobranchiate filaments is attached.

The mastigobranchia of the fourth pair of pereopoda, like that of the preceding pair, supports no branchial plume, and the arthrobranchiæ also resemble the preceding, but are much longer, and in the posterior the trichobranchial filaments extend to the foot of the apical petal, decreasing in length gradually from the base, where they are abundant, to the extremity, where they thin out to a single row.

There is neither mastigobranchial lash nor branchial plume attached to the fifth pair of pereopoda and the posterior somite of the pereion. This last somite is not fused with the rest of the pereion, but connected by membranous attachments, that admit of a limited amount of movement on the part of the somite, and one of a more extended degree in every direction in the case of the posterior pair of pereopoda.

The branchiæ are of two distinct kinds, one consisting of finger-like processes or cylindrical filaments, the other of broad thin foliaceous plates. The former are trichobranchiæ, the latter are phyllobranchiæ.