very short, as in *Penæus canaliculatus*, where they are subequal in length and but little longer than the terminal joint of the peduncle; one is cylindrical and the other is flattened, and has the margins on the lower surface projecting above the middle portion. In *Aristeus* the flagella are very unequal in length, and very distinct in their cross-section, the inner being cylindrical, slender, and longer than the animal, while the outer is short and flat, with the margins thickened on the lower surface. In *Solenocera* the flagella are subequally long and have their margins parallel, one flagellum being cylindrical and the other longitudinally concave, and both truncate at their extremity; the cylindrical is the smaller, and when at rest lies in the hollow of the other in its entire length.

In *Haliporus* the flagella differ in the larger being flattened, but not fluted, and both terminate in gradually tapering extremities.

In *Sergestes* the secondary or inner flagellum is reduced to a small, almost rudimentary condition, as shown in Pl. LXXI. fig. *b*; but in the male another branch is given off, which is developed somewhat like a claw or retaining hook, varying in shape in different species. As this is only present in the male, it must be of value in its relation to sex, and must be of more importance than its simple character would seem to suggest.

According to my observation, in the specimens of this collection the membranous cilia, or sensory rods, are less numerous and less important among the Dendrobranchiata than in the other divisions.

In the Phyllobranchiata the first pair of antennæ is developed upon the same general plan as in the two preceding divisions; but it is flattened out and cupped to receive the ophthalmopoda. The prosartema is never present, but on the outer side the stylocerite is developed into a large, flattened plate, generally sharp-pointed, but sometimes, as in *Pandalus*, rounded instead of being styliform.

The acoustic apparatus in Crustacea has been extensively studied. Dr. von Hensen, in his memoir on the subject,[1] has described it in twenty-eight species, but that is a small number compared with those that have not been examined. The direction of the research appears to show that in the Trichobranchiata particles of sand take the place of otoliths, whereas in the Dendrobranchiata and Phyllobranchiata the latter are more constant, and certainly in a higher degree of development, as may be seen in the genera *Tozeuma* and *Anchistia*, in both of which the otolith is as well formed as in any of the Schizopoda or Sergestidæ.

Among the Macrura generally the first pair of antennæ terminates in two flagella, and, so far as my experience enables me to say, *Lucifer* is the only genus in which it terminates in a single flagellum (Pl. LXXIX. fig. 1*b*).

The outer flagellum supports a number of membranous organs, which are generally massed together at the base, and are more abundant in the male than in the female; the

[1] *Zeitschr. f. wiss. Zool.*, Bd. xiii., 1863, pp. 319–412 (p. 18 sep. copy).