

interior view of the same membrane (F,) with the vestibule (v) laid open, and the auditory nerve (N) passing through the shell to be distributed on the sacculus.

It appears from a variety of observations that Insects, both in their larva and their perfect state, possess the faculty of hearing; but no certain knowledge has been obtained of the parts which exercise this sense. The prevailing opinion among entomologists is that it resides in some part of the antennæ; organs, which are supposed to have a peculiar sensibility to aerial undulations. This hypothesis is founded principally on the analogy of the crustacea, whose antennæ contain the vestibular cavity already described; but on the other hand it is opposed by the fact that Spiders, which hear very acutely, have no antennæ, and it is also reported that insects, when deprived of their antennæ, still retain the power of hearing.*

None of the Mollusca appear to possess, even in the smallest degree, the sense of hearing, if we except the highly organized Cephalopoda; for in them we find, at the lower part of the cartilaginous ring, which has been supposed to exhibit the first rudiment of a cranium, a tubercle, containing in its interior two membranous vesicles, contiguous to each other, and surrounded by a fluid. They evidently correspond to the vestibular sacs, and contain each a small calcareous body, suspended from the vesicles by slender nervous filaments, like the clapper of a bell, and probably performing an office analogous to that instrument; for, being thrown into a tremulous motion by every undulation of the surrounding fluid, they will strike against the membrane, and communicate similar and still stronger impulses to the nerves by which they are suspended, thus increasing the impression made on those nerves. The mechanical effect of an apparatus of this kind is shown by the simple experiment,

* Comparetti has described structures in a great number of insects, which he imagined were organs of hearing; but his observations have not been confirmed by subsequent inquirers, and their accuracy is therefore doubtful. See De Blainville "De l'Organisation des Animaux," i. 565.