

much curved, forming a very distinct "scoop-out." Opposed to this is a movable finger-like process, with hooked bristles at its tip, supplemented by two or even three other less specialized processes.

What is the purpose of all these specializations, and why have they been developed?

To the latter part of the question I have no answer, save as the structures are sensory in character. It is usually conceded that the olfactory organs and the sense of smell are situated in the antennae, and that the development of pectinations and sensory hairs is necessary to enable the male to find the female more readily. This explanation may be considered as correct, but it gives no reason why so simple a structure answers the purpose in the one case and why so extremely complicated an apparatus should be required in the other. The sense of touch is also placed in the antennae by students, and also without doubt, so far as I am concerned, correctly. I would, however, in cases of this character consider it rather a sense of appreciation than a sense of touch, and possibly this sense of appreciation may cover those of touch and hearing, being reduced to an appreciation of certain disturbances in the atmosphere acting upon the extremely sensitive hair, which communicate, directly or indirectly, with nerve fibers. That they are not required by the species to maintain its existence is proved, of course, by the fact that the female has no such sensitive or sensory structures, and hence we assume that they are of use in recognizing the presence of that sex by the male.

The other processes stand on a different footing. They are mechanical, not sensory in their character, and we assume that they have a sexual function for the reason above given—they are found in one sex only. I have never myself seen any species of this series in copulation, nor have I found any who have seen it. So far as I am aware, no publication to which I have had access has described the process; hence the subject is one for conjecture. Judging from what we know of certain species of Coleoptera these mechanical modifications are clasping organs, enabling the male to encircle and tightly hold the female antennae during copulation. Why the necessity for such organs exists in the present series still remains a question.

The most interesting modifications, however, are those of the male forelegs, and in this entire tribe not a single species has a quite normal structure of this member. Irrespective of all tuftings, the proportion of the parts becomes changed.

The coxa, usually not mobile but rigidly applied to the thoracic mass, becomes movable, loses rigidity, and gradually becomes elongated and attenuated, forming a functional part of the leg.

The trochanter, which is inconspicuous normally, tends to increase in length until it exceeds the femur in size in every dimension, giving us a very distinct additional member in the leg structure. No specializations of a sensory character are developed on this segment so far as our species are concerned.