

## NOTE ON MORPHOLOGY OF CERTAIN CLASPING ORGANS IN THE PEDICULIDAE.

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The results of Parasitism in developing special organs for adherence possess a prominent Morphological interest since these organs exhibit a high degree of specialization which contrasts markedly with the degeneration of other sets of organs. The Pediculidae present a number of instances of such structures which seem not to have been described in detail and the purpose of this note is to call attention to some of them.

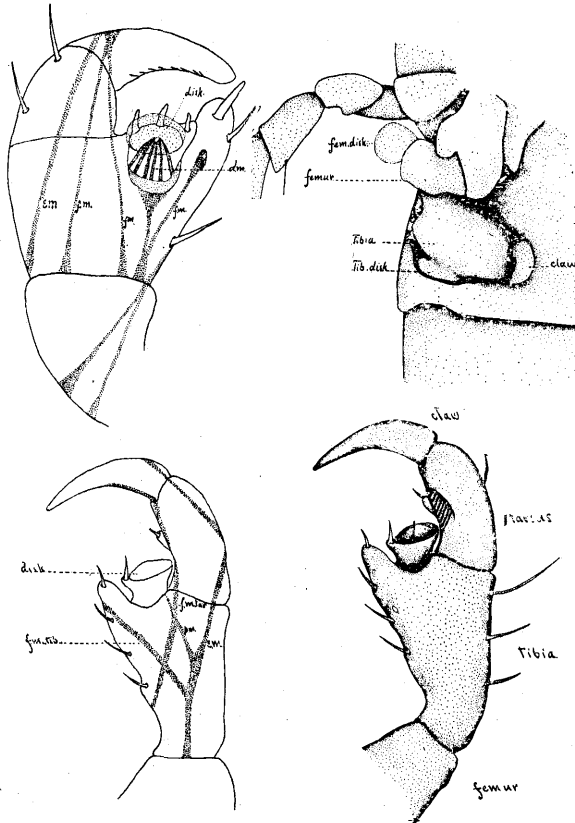
In *Haematopinus urius* there is a protractile disk at the distal end of the tibiae, the purpose of which, as suggested in an earlier note, being to press against the hair in opposition to the tarsal claw and thus assist in the hold upon the hair. In the previous description of this structure no attempt was made to explain the apparatus or its movements, but it was mentioned that the disk played back and forth in a pit-like depression of the tibiae, and the examination of balsam mounts of this organ fails to show very clearly the basis of movement. There is a large muscle running through the tibia and forking near the middle of the tibial joint, one part going to the tibial spur, the other passing on to the tarsal joint while from the latter a fiber runs to the base of the protractile disk. This would seem able to retract the organ and combined with an elastic frame-work for the protraction would account for the movements. I have been entirely unable to discover any muscle strands which would seem to act for the protraction and believe that this may be provided for in the movements of the chitinous wall assisted partially by the flexion of the tarsal joint. The figure shows the distribution of the muscle strands as noted in the majority of specimens examined.

In *Haematopinus macrocephalus* there is a disk-like organ in the same position as in the preceding species, but it differs from the protractile disk in *urius* in having a convex surface, apparently membranous, and within the bulb of the organ may be seen a half dozen strands of muscles, the contraction of which would serve to withdraw the surface membrane. The muscle strand runs from the base of the tibiae to the cup-like depression of the disk, but not having examined this organ in living specimens the extent of the protraction, if any, is unknown. The musculature of the tibial joint is shown in the accompanying figure.

In *Euhaematopinus abnormis* the posterior pair of legs is very greatly modified, so much so that they cannot serve any function as ordinary organs of locomotion, but must be adapted purely for clasping, the femur and tibia each possessing expanded disks, the former upon the anterior part of the femur and so arranged that

it must press against the femur of the middle legs and with them doubtless forms a clasping organ ; the latter, upon the outer face of the tibiae is adjusted to a special structure in the margin of the abdomen and which serves to crowd the inner face of the tibia against the abdominal wall. The claw is a broad, nail-like structure apparently incapable of distinct flexion. Both tibia and femur seem to provide special means of rigidly clasping the hairs of the host animal, and if we bear in mind the subterranean habits of its host, the development of such special organs may be accounted for.

Special organs for clasping occur also in the antennae and abdominal brushes of certain species, but these have been mentioned, perhaps, in sufficient length in other papers.



Lower figures : *Haematopinus urius*.

Upper left hand figure : *H. macrocephalus*.

Upper right hand figure : *Euhaematopinus abnormis*.