

Trail-laying from the Tibial Gland in *Crematogaster ashmeadi* Mayr and *Crematogaster scutellaris* Olivier (Formicidae: Myrmicinae)*

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Recruiting worker ants of the genus Crematogaster lay exploratory scent trails, thus far investigated, by use of their hindlegs (Leuthold 1968a, b; Fletcher and Brand 1968). While building up a trail individuals move slowly, drumming their hindtarsi onto the substrate in an autonomous rhythm independent of the pattern of locomotion. This method results in an active setting of pheromone "foot-prints". Whereas in all other ants investigated the trail pheromone is produced by an abdominal gland, it was found in Crematogaster to originate in the tibiae of the hindlegs. In this part of the leg the tendon of the claw is swollen into a spindle shaped, hollow organ which functions as reservoir of the oil-like trail substance. The distal extension of the tendon supplies a fine capillary tube to lead the pheromone down to the tarsus (Fig. 1A). The pheromone gland consists of a lobulate glandular tissue coating the reservoir (Fig. 1B). In C. scutellaris droplets of the lipid trail substance can be seen to originate in the glandular cells by vital microscopy (Fig. 1C).

Further histological work and the chemical identification of the trail pheromone are at present being undertaken.

References

- D.J.C. Fletcher and J.M. Brand 1968, J.Insect Physiol. 14, 783-788.
R.H. Leuthold 1968a, Psyche, Cambridge 75, 233-248.
R.H. Leuthold 1968b, Psyche, Cambridge 75, 334-350.

*with slow motion movie film

Fig. 1

Trail pheromone organ of Crematogaster scutellaris

- A. Pretarsal tendon of the hindleg in situ
- B. Detail of the glandular part of the tendon. The spindle shaped reservoir is filled with the trailactive liquid.
- C. Detail showing oil-like pheromone droplets in the glandular tissue (by vital microscopy)

dt = distal extension of the tendon (ductus of pheromone)

gl = glandular tissue

m = muscle tissue

pt = proximal extension of the tendon

sp = spindle shaped part of the tendon (pheromone reservoir)

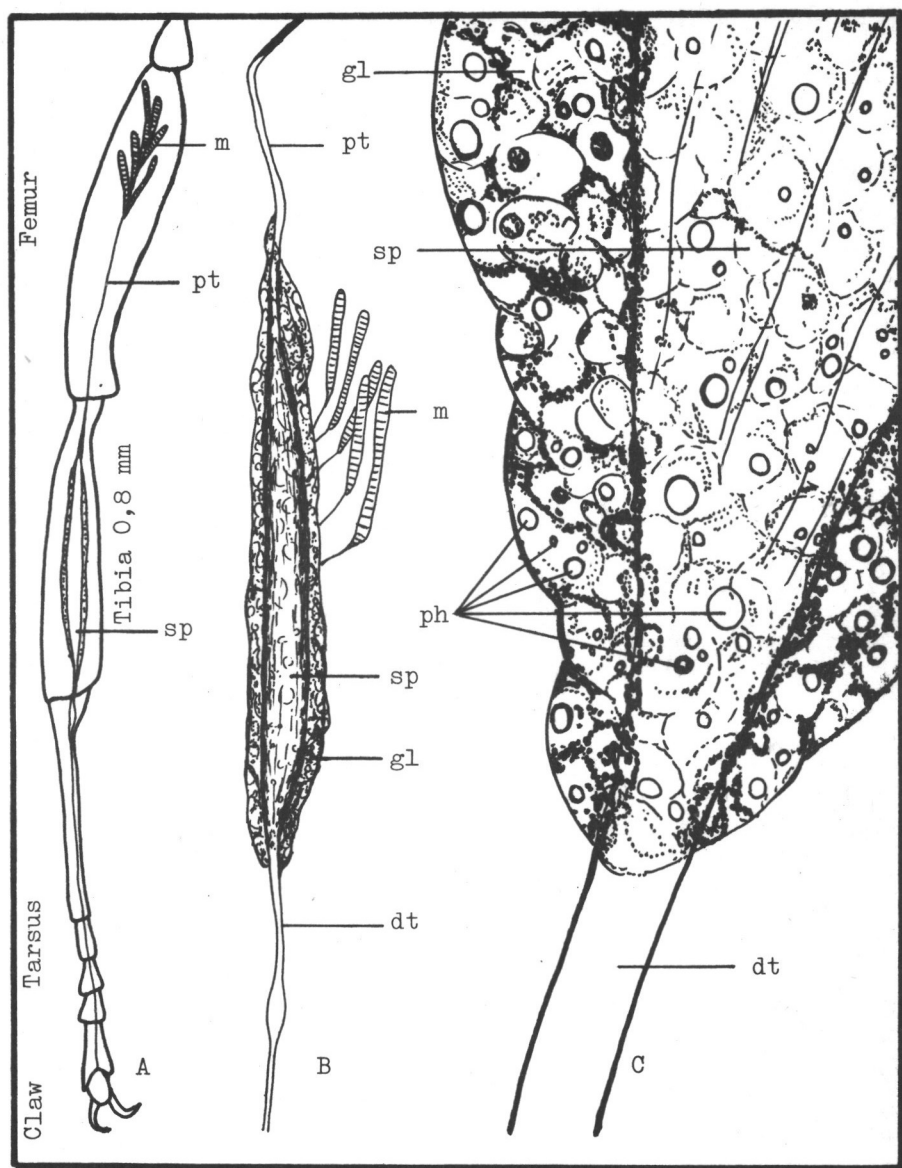


Fig. 1