The petiolar syndrome is consistent within *Formica* and *Lasius*. It also seems to be a character of use in defining genus-groups or tribes within the Formicinae (Agosti, in prep.).

From a functional point of view, the petiolar syndrome can be understood, together with the form of the first gastral segment, as a part of the gastral reflexing system. Fixation of the petiole is needed to keep the gaster in an exactly defined position when preparing either to spray (Formicinae, Dolichoderinae) or to sting (Ponerinae, Myrmicinae), and this can be done in several different ways (Bolton, research in progress). *Formica* and *Lasius* represent just two systems out of many. In both these genera it is characteristic that the helcium is situated ventrally on the anterior face of gastral segment one. The fixation of the gastral position is achieved by the ventral shape of the petiole which fits exactly into its counterpart, either the posterior surface of the two closely set hind coxae in *Formica* (Figs 5, 6), or the U-shaped cavity due to the widely separated hind coxae and closely set mesocoxae, as in *Lasius* (Figs 7, 8). In each case these interlocking parts serve to hold the gaster in a fixed position when reflexed.

Bristles of the hind tibiae (Figs 9, 10). The hind tibiae of most of the Formicinae have two to several apical bristles. This is the condition seen in *Lasius* (Fig. 10), where it is often also accompa-

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Figs 1–18. 1. Ventral view of a gaster of the *Formica*-configuration; arrow indicating the fissure between the anterior and posterior portions of the sternite. 2. Ventral view of the gaster of the *Lasius*-configuration; arrow indicating fusion of tergite and sternite. 3. Ventral view of the meso- and metathorax of *Formica* spp.; arrow indicating articulatory excavation of the petiole. 4. Ventral view of the meso- and metathorax of *Lasius* spp.; arrow indicating articulatory excavation of the petiole. 5. Meso- and metacoxae of *Formica* spp. 6. Cross-section of the ventral part of the petiole of *Formica* spp. 7. Meso- and metacoxae of *Lasius* spp. 8. Cross-section of the ventral part of the petiole of *Lasius* spp. 9. Hind tibia of *Formica* sp. 10. Hind tibia of *Lasius* sp. 11. Frontal part of the head of a *Formica* sp.; arrow indicates beginning of the frontal carinae; A-----A showing the plane of the section of Fig. 12. 12. Section of the frons, showing the angular and prominent frontal carinae in *Formica* sp. 13. Frontal part of the head of a *Lasius* sp.; arrow indicating beginning of the frontal carinae; A-----A showing the plane of the section of Fig. 14. 14. Section of the frons, showing the rounded and inconspicuous frontal carinae in *Lasius* sp. 15. Propodeal spiracle of *Formica* sp.; note the slit-shaped lumen. 16. Propodeal spiracle of *Lasius* sp.; note the parallel-sided sclerite. 17. Alitrunk of *Formica* sp.; arrow indicating the propodeal spiracle. 18. Alitrunk of *Lasius* sp.; arrow indicating the propodeal spiracle.