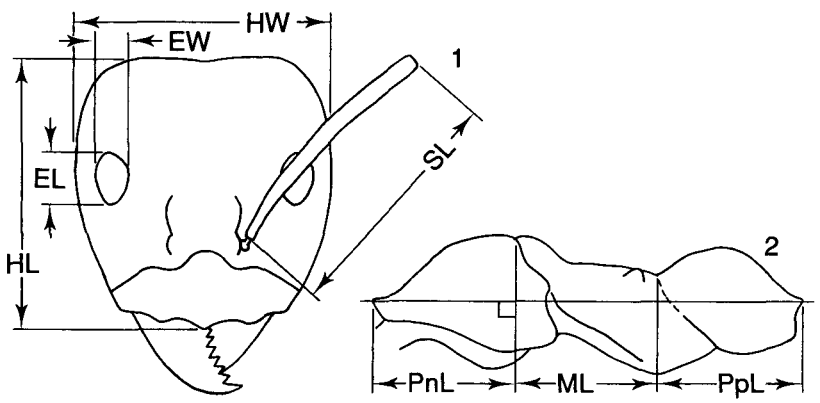
Halliday (1979, 1981) investigated the enzymes esterase and amylase within the *I. purpureus* group. His study using esterase allele frequencies found that the forms B (=*lividus*) and P (=*purpureus*) were diagnosable while the forms SP (=*greensladei*), V (=*viridiaeneus*) and Y (=*galbanus*) were not. Amylase, on the other hand, suggested that the species formed two groups: P (=*purpureus*) + V (=*viridiaeneus*) + Y (=*galbanus*) and B (=*lividus*) + SP (=*greensladei*). The members of each group could be separated from members of the other group on the basis of allele frequencies, but forms could not be distinguished from other members of the same group. Additionally, amylase showed that variation between the colour forms was lower than between most other species of Hymenoptera, while variation within colour forms was typical of other species in the order. These results suggest that (i) while these forms are good biological species, they are genetically very similar; and (ii) biochemical characters allow the recognition of some species but other species are so similar that they are not diagnosable using these characters.

Finally, Greenslade and Halliday (1982) examined the entire *I. purpureus* group, resulting in the recognition of two additional forms, K (=*reburrus*) and SB (here considered conspecific with *viridiaeneus*). Descriptions of each form were limited to colour patterns, although it was stated that male genitalia were also of use in separating forms. Distributions were given for each form, and the forms were grouped into complexes ('groups'). As in earlier studies, however, no formal species descriptions were given. This action is not surprising given the very similar gene frequencies found by Halliday and the morphological conservatism found during the present work.

Diagnosis of *Iridomyrmex* and the *I. purpureus* Group

Workers of *Iridomyrmex* can be recognised by the relatively posterior placement of the compound eyes, the anterolateral clypeal margin posterior to the mediolateral region and separated from it by a shoulder, and a central projection in the anteromedial clypeal margin, either pointed or rounded (sometimes only feebly projecting) (Shattuck 1992*a*, 1992*b*). Workers of the *I. purpureus* group can be diagnosed by the presence of erect setae on all surfaces of the tibiae and generally all surfaces of the scapes (sometimes limited to the outer scape surface only), relatively large size (head length greater than 1·45 mm, most often greater than 1·65 mm), a scape index less than 1·10 (Fig. 3), and a fairly broad head (cephalic index greater than 0·85, most often greater than 0·90). Additionally, *I. purpureus* group species are generally reddish with purple, green or blue iridescence.

Iridomyrmex purpureus group species are most similar to members of the *I. discors* group in that smaller *I. purpureus* group individuals are approximately the same overall size as larger *I. discors* group individuals, the colour is about the same, and species of both



Figs 1, 2. Measurements examined during this study. *1*, head measurements (head positioned in full face view); *2*, mesosomal measurements.