Terminology of the abdominal segments

Among the apocritan Hymenoptera a number of specialized terminologies for different abdominal segments have gained currency in different family-level taxa, as summarized in Gauld and Bolton (1988). The ants are no exception and in fact have acquired a more than usually specialized terminology. This is because, superimposed upon the primary set of abdominal modifications common to all Apocrita, they also have a secondary set of modifications which are peculiar to the ants. Thus to avoid confusion between abdominal segment number, gastral segment number, etc., all segments referred to in this paper are those of the true abdomen (see Figs 1, 3); these segments are as follows.

In ants abdominal segment 1 is the propodeum, fused to the thorax proper (Fig. 3) and consisting only of the tergite. Abdominal segments 2 to apex are sometimes collectively called the metasoma. Abdominal segment 2 is the petiole, a reduced and more or less isolated segment in all the ants (e.g. Figs 2–5. 8–10). Abdominal segment 3 is termed the first gastral segment when it is full-sized, but the postpetiole when it is reduced. Confusingly it is sometimes also called the postpetiole when full-sized. Abdominal segment 2, or segments 2+3 when 3 is also reduced, may be termed the waist or pedicel. The remaining abdominal segments, 3 or 4–7 in female castes, and 3 or 4–8 in males, are collectively called the gaster, and together form the enlarged apparent 'abdomen' (e.g. Figs 1, 6, 7, 11, 15, 17–23). Abdominal segment 8 is reduced and internal in female castes, not visible externally, and forms a part of the sting apparatus. Each abdominal segment behind the first otherwise consists of a dorsal tergite (=tergum, tergal plate) and a ventral sternite (=sternum, sternal plate). In females and workers the last visible abdominal tergite, that of segment 7, is termed the pygidium, and the last visible sternite the hypopygium. In males the sternite of abdominal segment 9 is called the subgenital plate.

Abdominal segments 1 (propodeum) and 2 (petiole) (Figs 2–5) have been much used in ant systematics, and no new terminology is required for them or their component parts. However, the remaining segments have seen only very little use as systematic tools and a couple of terms need to be introduced or clarified here.

The anterior sections of abdominal segments 3 to the apex are inserted into the posterior ends of the preceding segments (Figs 1, 6, 7), and are not normally visible unless the waist and gastral segments are artificially distended or dissected. When this is done a distinct division between the normally concealed anterior portion of each segment, and its normally exposed posterior section, can usually be clearly seen (Figs 6, 11, 17). The anterior portion of the segment may narrow at this point, or there may be a transverse impression, groove or constriction, or the sculpture may change or be lost, or pilosity and pubescence may be lost. Frequently more than one of these differences may occur on the anterior section of each segment, to contrast it to the posterior section.

Taylor (1978) has suggested that the concealed anterior sections of the segments may be acrosclerites, but was aware that this was not necessarily so. Considering the definitions of acrosclerites (acrotergite, etc.) given in Snodgrass (1935), it is almost certain that these modified concealed portions of the abdominal sclerites in ants are not genuine acrosclerites but represent a secondary development. Fortunately Brown (1975) had used the term pretergite, in the form 'pretergital belt', for this concealed portion, and a nomenclature derived from this beginning will be used here. Thus, each abdominal tergite from segment 3 to the apex consists of a normally concealed *pretergite* and a normally exposed *posttergite*. Similarly each sternite from segment 3 to the apex consists of a *presternite* and a *poststernite*.