sum shallowly concave; behind this the propodeal dorsum in profile humped, rising to a blunt peak then sloping posteriorly to the triangular and more or less horizontal short spines. Metapleural lobes broad and deep, rounded, projecting farther posteriorly than the apices of the propodeal spines and linked to the spines by short narrow lamellae down the margins of the declivity. Petiole and postpetiole reticulate-rugose dorsally and laterally, both with numerous short standing hairs. Petiole in profile lacking a strongly differentiated node; with a short stout anterior peduncle which is almost as deep as the remainder of the subcylindrical and weakly curved segment. Petiolar spiracle situated in anterior one-third of length of segment, approximately at the end of the peduncular section. Subpetiolar process very low and rounded, giving rise ventrally to a pair of roughly parallel longitudinal ridges. Petiole subcylindrical in dorsal view, narrowing at the anterior peduncle and broadening posteriorly. Petiole in dorsal view 0.58 long and 0.26 wide at maximum. Postpetiole fractionally broader (width 0.34) than long (0.30), with more or less straight sides and a convex posterior margin. Sternite of postpetiole reduced, very small in profile in comparison with the tergite. Gaster immediately behind postpetiole with a short flattened surface both dorsally and ventrally. First tergite comprising most of the gaster, as stated in generic diagnosis. Gaster reticulate-rugose to foveate-rugose everywhere, the sculpture on the first sternite coarser and more sharply defined than on most of the first tergite. Erect to suberect short hairs numerous on all surfaces of gaster. Colour a dull red throughout, the legs slightly lighter in shade than the body.

Holotype worker, EAST MALAYSIA: Sabah, Gn. Silam, 810 m, soil sample, A18/9.2, 1983 (*R. Leakey*) (BMNH).

Discussion

The single known worker of *Secostruma lethifera* was extracted from a soil-core sample taken on the forested slopes of Gunong Silam, Sabah. Autapomorphies isolating this genus include the unique structure of the mandibles (character 2, above; Fig. 4) and the construction of the gaster (character 18; Fig. 1) which are not duplicated elsewhere in the Myrmicinae. The combination of characters given in the diagnosis of the genus immediately isolates *Secostruma* from all other known myrmicine ants.

Like many deeply subterranean ants *S. lethifera* has very reduced eyes, but it is not depigmented and its sculpture everywhere is strong. The whole ant has a very armoured appearance and the aspect of a thoroughly predaceous species. The striking modification of the gaster gives added protection to the dorsum, but primarily it brings the sting into a ventral position when the gaster is horizontal (Fig. 1). This is most probably an aid to employing the sting in a relatively confined space, where free movement of the entire gaster to bring an apically-placed sting into play would be very difficult. If the long narrow petiole is elevated against the propodeal declivity and the postpetiole and gaster are flexed downwards at the petiole–postpetiole and postpetiole–gaster joints, then the sting would be directed approximately anteriorly, between the legs.

This useful adaptation to life in subterranean confined spaces, coupled with the strong sculpture and armour of this ant, and its powerful specialized mandibles, renders speculation about its prey very interesting. Some ponerine genera which feed on arthropod eggs, such as *Proceratium* and *Discothyrea* (Brown, 1980b), also have the gaster downcurved. However, the mandibles in these genera are feeble by comparison and hardly resemble the powerful blades of *Secostruma*. The most striking feature of the mandibles of *S. lethifera* is their division into a sharp, blake-like edentate 'incisor' region apically, and a dentate projecting 'molar' region basally (Fig. 4). Such a mandible would provide a good combination of penetrating and gripping power, sufficient to hold prey firmly until the sting could be brought into action. I doubt if such specializations would be necessary to deal with eggs or soft-bodied prey such as earthworms or even termites, but, taken in combination with the armoured body and deeply recessed, strongly protected, antennal insertions, they would be very efficient in coping with hard-bodied arthropods struggling in an earth tunnel or confined space in the soil. I am tempted to speculate that the prey may be geophilomorph centipedes, or even millipedes.

A few other genera of Myrmicinae show hypertrophy of the first gastral tergite. In the arboreal genus *Cataulacus* the first tergite forms