

within the genus *Proceratium*. This assumption is probably based on the fact that a nodiform petiole is likely to better represent the ponerine ancestral condition than the squamiform petiole "type *Sysphincta*". Unfortunately there is no morphological evidence for this since the two genera closer to *Proceratium* have a petiole either scale-like (*Bradoponera*) or scale-like to weakly nodiform (*Discothyrea*). We are unable to define two or more clear-cut mandibular morphologies to be used as discrete characters for phylogenetic purpose within *Proceratium*. According to the character evolution compatible with our phylogenetic reconstruction, however, the plesiomorphic clypeal morphology for *Proceratium* should be either convex and protruding (like in *Discothyrea* and *Bradoponera*), or straight (like in the basal *silaceum* clade). The members of the *stictum* clade, with their notched clypeus, appear to exhibit the derived and not the plesiomorphic clypeal morphology.

***Proceratium boltoni* Leston**

Fig. 32

Proceratium boltoni Leston, 1971: 118, figs. 1 & 2 (worker). Worker and gyne. Original description. Type locality: Legon, Ghana. Type material: Holotype worker deposited in MCZC, not seen. 8 paratype workers labelled: "Legon, A. D., Ghana, 8.VII.1970, D. Leston, in piece of rotten twig, 2" below ground, Paratype, *Proceratium boltoni* Leston" or variations thereof, in LACM, MCZC, MHNG, MRSN, MZSP, NHMB; all examined.

DIAGNOSIS. A member of the *stictum* clade, appearing in an unresolved position within the species of this clade and differing from all the other species, in the worker, by the following combination of characters: funicular joints 2-10 broader than long, frontal carinae low, narrow and subparallel and ventral process of the petiole needle-shaped.

DESCRIPTION. *Worker* (Fig. 32). Head longer than broad, with subparallel sides. Vertex convex in full face view and flat in posterior view. Clypeus broad, subconvex, protruding anteriorly and surrounding the whole antennal insertion. Anteromedian margin of the clypeus with a superficial notch denticulate on each side; each denticle with a short, dorsal, convergent carina. Frontal carinae separate from each other, subparallel and not covering

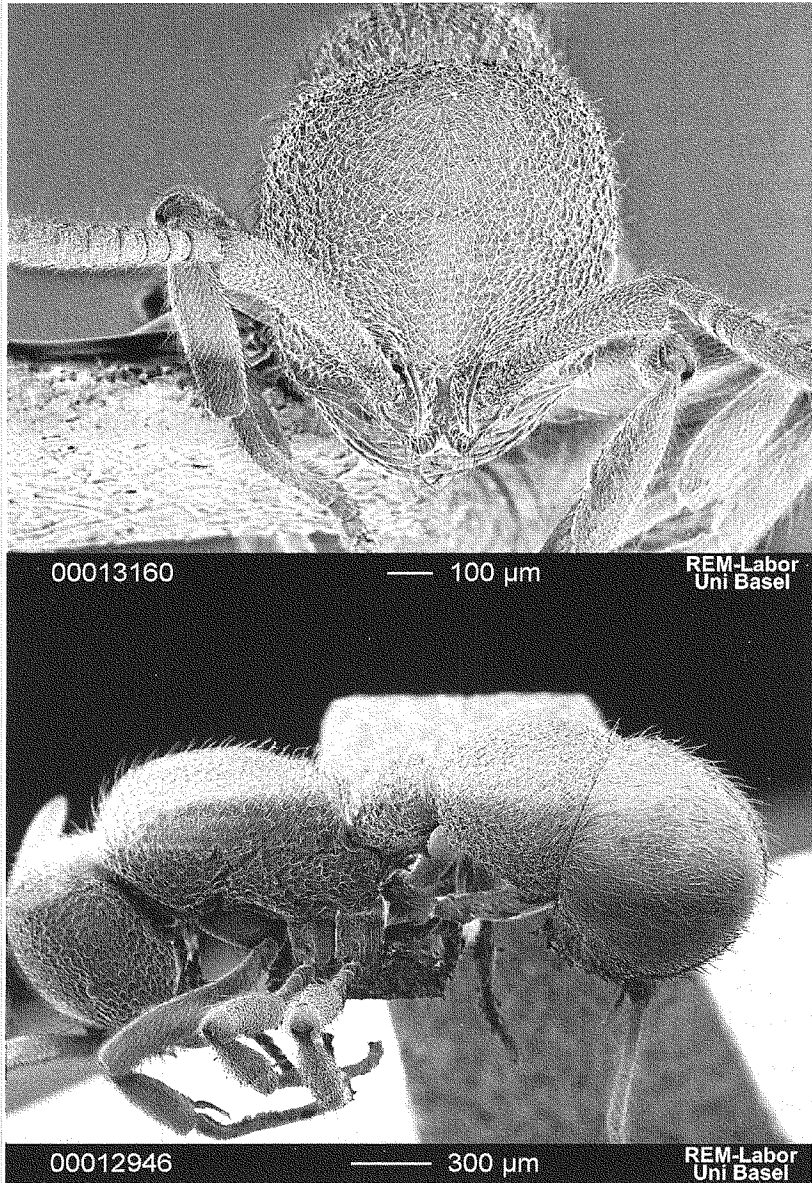


Fig. 32 – *Proceratium boltoni* Leston. Worker (paratype) from Legon, Ghana: head (top) in dorsal view and meso- and metasoma (bottom) in oblique side view.

the antennal insertions, their expansions narrow and low. Frons gently concave medially. Genal carina present and more marked posteriorly. Gular area gently impressed. Eyes present, with a single convex ommatidium below the head midline. First funicular joint about as long as broad. Funicular joints 2-10 broader than long. Last funicular joint about as long as the sum of joints 7-10. Scapes not attaining the vertexal margin and gently thickening apically. Masticatory margin of the mandibles with 2-3 denticles before the pointed apical tooth. Palp formula 4,3.

Mesosoma slightly longer than head length (mandibles included), gently convex in profile. Promesonotal and propodeal sutures absent. Promesopleural and mesometapleural sutures visible and more impressed ventrally. Propodeal sides angulate or denticulate between basal and declivous faces. Propodeal lobes with a small, subround dorsal tooth. Propodeal spiracle round and above mid height in lateral view.

Petiole slightly broader than long. Its sides diverging on the anterior third and convex on the two posterior thirds in dorsal view. Anterior border of the petiole concave and transversally carinate, the carina denticulate on each side. Ventral process of the petiole spiniform, rarely bispinose. Postpetiole broader than petiole and with diverging sides. Postpetiolar sternite anteromedially with a variably marked subtriangular projection. Posterior half of the postpetiolar sternite strongly convex. Constriction between postpetiole and gaster deep. Gastral tergite I strongly convex. Gastral sternite I not projecting anteriorly. Remaining gastral tergites and sternites curved ventrally.

Legs slender, not very elongate. All tibiae with a pectinate spur. Spurs of fore legs with a basal spine. Fore basitarsi slightly longer than the mid ones. Hind basitarsi about 0.8 of the length of the hind tibiae. Second tarsomere of mid and hind legs longer than third and fourth tarsomeres and about as long as the pretarsus. Pretarsal claws simple. Arolium small.

Sculpture. Head irregularly reticulate-punctate, the reticulation larger, deeper and approaching foveae on the vertex and sides of the head. Mesosoma, petiole and postpetiole irregularly foveolate-granulate, the granulation in some parts raised as peaks. First gastral tergite smooth, with dense, minute piligerous foveae, the foveae denser and slightly larger on the sides. Legs and scapes with dense punctures.

Body covered by hairs of three main types: (1) short, dense, suberect or subdecumbent on the whole body, erect and sparse on the funicular joints; (2) long, suberect or subdecumbent, sparse on the whole body except the scapes and the funicular joints; (3) shorter than type (1), dense and decumbent on the funicular joints only. In addition, the funicular joints bear thick, appressed, short, sparse hairs and the scapes sparse hairs shorter than those of type (2).

Colour dark brown to black; anterior part of the head dorsum, scapes, mandibles and legs lighter.

Measurements in mm and Indices: TL 3.69-3.78; HL 0.85; HW 0.79-0.80; EL 0.07; SL 0.60; WL 1.08; PeL 0.36-0.38; PeW 0.38-0.42; HFeL 0.65-0.67; HTiL 0.55; HBaL 0.45; LS4 0.16-0.18; LT4 0.66-0.73; CI 92.9-94.1; SI 70.6; IGR 0.24-0.25.

Gyne. Briefly described by Leston (1971) from a single paratype specimen (collection of deposition not stated). No specimens of this caste were available for the present study.

MATERIAL EXAMINED: GHANA: ACCRA DISTRICT: Legon, 8.VII.1970, 8 workers (paratypes), in piece of rotten wood, D. Leston [LACM, MCZC, MHNG, MRSN, MZSP, NHMB]; same locality, 16.X.1970, 4 workers, D. Leston [LACM, NHMB].

DISCUSSION. *P. boltoni* is in an unresolved position within the *stictum* clade. In general shape and sculpture, *boltoni* resembles *cavinodus* and two Dominican fossil species, *denticulatum* and *gibberum*. Both fossils, however, are known from the gyne only. *Boltoni*, *denticulatum* and *gibberum* share the ventral process of the petiole needle-shaped, a character not considered in our data matrix because it re-appears in an unpredictable way among other species of the genus. *Boltoni* also shares with *denticulatum* the low, subparallel frontal carinae and both species share with *cavinodus* the clypeal notch laterally denticulate. The workers of *boltoni* (TL ~3.6-3.8 mm) and the sole known specimen of *cavinodus* (TL 3.3 mm) are the smallest species of this clade. We studied only a "dwarf" worker of *stictum* (TL 3.5 mm) ranging between *boltoni* and *cavinodus* in size.

According to Leston (1971) the type colony of *boltoni* comprised a dealate gyne, 34 mature workers, 8 callow workers, 3 worker pupae and 5 larvae.

DISTRIBUTION: Ghana.