

strong and acute, is short (IR 0.24-0.40 in *Gnamptogenys*; 0.26-0.30 in *Ectatomma*), but *Proceratium* (IR 0.40) and *Discothyrea* (IR 0.40-0.41) are similar. Autapomorphic features of *Gnamptogenys* are: 1) spiracle very near posterior edge of spiracular plate, 2) distal segment of gonostylus much longer than proximal segment (subequal in *Ectatomma* and *Acanthoponera*; much shorter in *Paraponera*), and 3) lateral flanges on sting apex in many *Gnamptogenys* species. Autapomorphic features of *Ectatomma* are: 1) ventral arm of oblong plate with thickened band, and 2) furcula not fused to sting base, but with dorsal arm absent.

*Proceratium* and *Discothyrea* are clearly sister genera. At least eight synapomorphies link these two genera: 1) abrupt reduction in width of the dorsal portion of the spiracular plate, 2) lateral anal plates apparently absent, 3) fulcral arm of oblong plate extending all the way to the dorsal ridge, 4) gonostylus single-segmented, club-shaped, and with similar pilosity, 5) triangular plate with slender body and long ventroapical process, 6) lancet valves highly reduced (also present, probably convergently, in some *Gnamptogenys*), 7) sting bulb sides more strongly convergent than in other genera, and 8) anterior edge of the pygidium V-shaped and with concentric striations. They differ shape of the spiracular plates, height of the sting valve chamber, and construction of the sting base and furcula.

In conclusion, the grouping of genera produced by phylogenetic analysis closely reflects relationships implicit in the classification of Emery (1911, pp. 4-5, 27-52), even though I purposely did not consult his classification until after my analysis was finished. Emery treated *Paraponera* as a separate, monotypic Tribe Paraponerini. His Tribe Ectatommini contained four subtribes. The subtribe Ectatommini contained (among others) *Acanthoponera* and *Ectatomma*, with *Gnamptogenys* treated as a subgenus of *Ectatomma*. His subtribe Proceratiini contained (among others) *Proceratium* and *Discothyrea*. Wheeler (1922, pp. 636-645) employed the same classification with respect to these taxa, except for elevating the Proceratiini to full tribal status, a move that my analysis does not support.

Unlike Emery's classification, however, erstwhile *Holcoponera* species are clearly members of the the genus *Gnamptogenys*, rather than a separate genus. Also, the clear affinity of Emery's *Ectatomma Parectatomma triangularis* and *Ectat-*

*omma Poneracantha bispinosa* with *Gnamptogenys sensu stricto* supports Brown's (1958) synonymy of *Parectatomma* and *Poneracantha* with *Gnamptogenys* and the elevation of *Gnamptogenys* to a full genus.

Although the sting apparatus of *Paraponera* does not seem especially related to those of other ectatommines examined, we should not necessarily resurrect Emery's Tribe Paraponerini for two reasons. First, it is still possible that if the whole subfamily Ponerinae were considered, *Paraponera* would have a greater affinity to *Ectatomma* and its relatives than to other taxa. Second, it should be stressed that my conclusions are based on single character system. A more inclusive analysis including external characters may yield different results. Indeed, an alternative classification based on phylogenetic analysis of numerous, often new, external characters is being prepared by Lattke (1991b).

These results, therefore, should not be construed as a classification scheme, but rather, as an alternative hypothesis that should be tested by phylogenetic analysis in the context of the Ponerinae as a whole and using multiple character systems.

## Acknowledgments

I am deeply grateful to John E. Lattke for supplying identified specimens of all *Gnamptogenys* species and for showing me his unpublished manuscripts.

## Literature cited

- Brown, W. L., Jr.** 1958. Contributions toward a reclassification of the Formicidae, II: Tribe Ectatommini (Hymenoptera). Bull. Mus. Comp. Zool. Harv. 118(5):173-362.
- Emery, C.** 1911. Hymenoptera, fam. Formicidae, subfam. Ponerinae. In P. Wytsman, ed., Genera Insectorum, no. 118. V. Verteneuil & L. Desmet, Brussels. 125 pp.
- Hölldobler, B. and E. O. Wilson** 1990. The Ants. Belknap/Harvard University Press, Cambridge. 732 pp.
- Kugler, C.** 1978a. A comparative study of the myrmicine sting apparatus (Hymenoptera, Formicidae). Stud. Entomol. 20:413-548.