

script. H. Sutton and N. Avruch assisted in processing the data, and funds for computer time were provided by the Royal Ontario Museum. The research was supported, in part, by National Science Foundation Grant DEB77-03356 (W. H. Gotwald, Jr., Principal Investigator). The junior author acknowledges receipt of operating grant No. A9725 from the Natural Sciences and Engineering Research Council (Canada).

REFERENCES CITED

- Atchley, W. R., C. T. Gaskins, and D. Anderson.** 1976. Statistical properties of ratios. I. Empirical results. *Syst. Zool.* 25: 137-48.
- Borgmeier, T.** 1953. Vorarbeiten zu einer Revision der neotropischen Wanderameisen. *Stud. Entomol.* 2: 1-51.
1955. Die Wanderameisen der Neotropischen Region (Hym. Formicidae). *Ibid.* 3: 1-717.
- Gotwald, W. H., Jr.** 1980. Army ants. In H. R. Hermann, [ed.] *Social Insects*. Academic Press, New York. (In press)
- Gotwald, W. H., Jr., and B. M. Kupiec.** 1975. Taxonomic implications of doryline worker ant morphology: *Cheliomyrmex morosus* (Hymenoptera: Formicidae). *Ann. Entomol. Soc. Am.* 68: 961-71.
- Hills, M.** 1978. On ratios—a response to Atchley, Gaskins, and Anderson. *Syst. Zool.* 27: 61-2.
- Rohlf, F. J.** 1972. An empirical comparison of three ordination techniques in numerical taxonomy. *Ibid.* 21: 271-80.
- Rohlf, F. J., J. Kishpaugh, and D. Kirk.** 1972. NT-SYS. Numerical Taxonomy System of Multivariate Statistical Programs. State Univ. of N.Y., Stony Brook. 64 pp.
- Schnell, G. D.** 1970. A phenetic study of the suborder Lari (Aves). I. Methods and results of principal components analyses. *Syst. Zool.* 19: 35-7.
- Sneath, P. H. A.** 1969. Evaluation of clustering methods. In A. J. Cole [ed.] *Numerical Taxonomy*. Proc. Coll. Numerical Taxonomy, Univ. of St. Andrews, Sept. 1968. p. 257-71. Academic Press, London. 324 pp.
- Sneath, P. H. A., and R. R. Sokal.** 1973. *Numerical Taxonomy. The Principles and Practice of Numerical Classification*. W. H. Freeman & Co., San Francisco. 573 pp.
- Snelling, R. R.** 1980. Systematics of social Hymenoptera. In H. R. Hermann, [ed.] *Social Insects*. Academic Press, New York. (In press)
- Sokal, R. R., and F. J. Rohlf.** 1962. The comparison of dendograms by objective methods. *Taxon* 11: 33-40.
- Wilson, E. O.** 1964. The true army ants of the Indo-Australian area. *Pac. Insects* 6: 427-83.
- Wood, D. S.** 1979. Phenetic relationships within the family Gruidae. *Wilson Bull.* 91: 384-99.

Appendix I

Character List

(All lengths measured in mm to nearest 0.01 mm)

- *1. Number of antennal segments (including scape).
- †*2. Length of terminal flagellar segment. †*3. Scape length (excluding neck) (SL). *4. Scape index (SL × 100/HW). †*5. Head length (HL). *6. Cephalic index (HW × 100/HL). †*7. Maximum head width (HW). †*8. Anterior head width (AHW). †*9. Posterior head width (PHW). †*10. Degree of head taper (AHW-PHW). 11. Shape of occipital angles in dorsal view. 12. Shape of occipital angles in lateral view. †*13. Interantennal distance (between mesal margins of sockets). 14. Spination of frontal carinae. 15. Shape of frontal carinae in lateral view. 16. Texture of head exoskeleton. 17. Head color. †*18. Mandible length (ML). *19. Mandibulocephalic index (ML × 100/HL). *20. Number of subapical mandibular teeth. 21. Mandibular shape. 22. Shape of 1st subapical mandibular tooth. *23. Number of labral tubercles. *24. Number of segments in

maxillary palpus. †*25. Length of terminal segment of maxillary palpus. †*26. Length of terminal segment of labial palpus. 27. Shape of galeal crown. 28. Shape of anterior clypeal margin. 29. Texture of pronotal exoskeleton. 30. Color of pronotum. †*31. Pronotal width in dorsal view. †*32. Length of mesosoma. 33. Promesonotal/promesopleural suture completion. †*34. Distance from propodeal spiracle to posterior mesosomal margin. 35. Spination of basisterna. *36. Profemur length. †*37. Protibia length †*38. Mesofemur length. †*39. Mesotibia length. †*40. Metafemur length. †*41. Metatibia length. †*42. Length of petiolar node (PL). †*43. Minimum width of petiole (PNW). †*44. Maximum width of petiole (PWW). *45. Petiolar index A (PNW × 100/PL). *46. Petiolar index B (PWW × 100/PL). 47. Development of subpetiolar process. †*48. Length of gaster in lateral view. 49. Shape of pygidial impression margins. 50. Color of gaster.