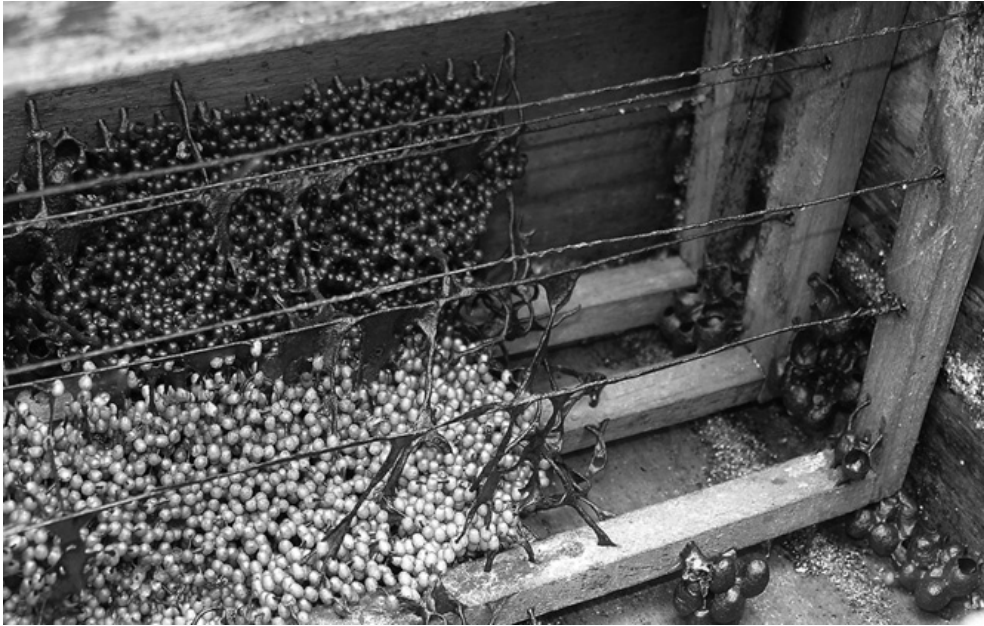
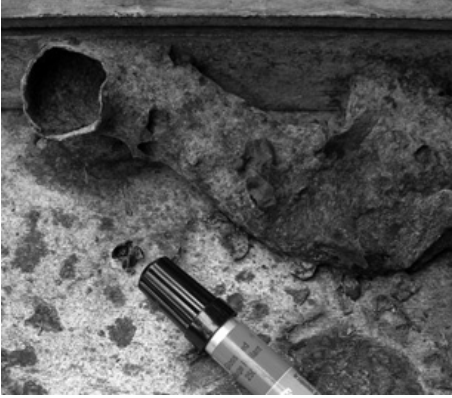


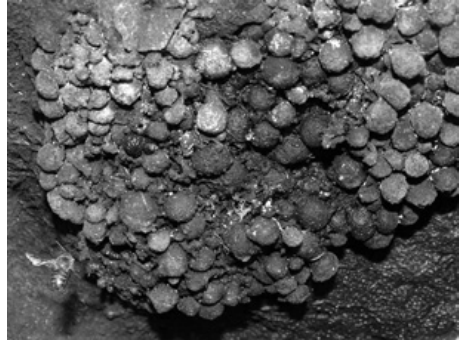
# **Online Materials**



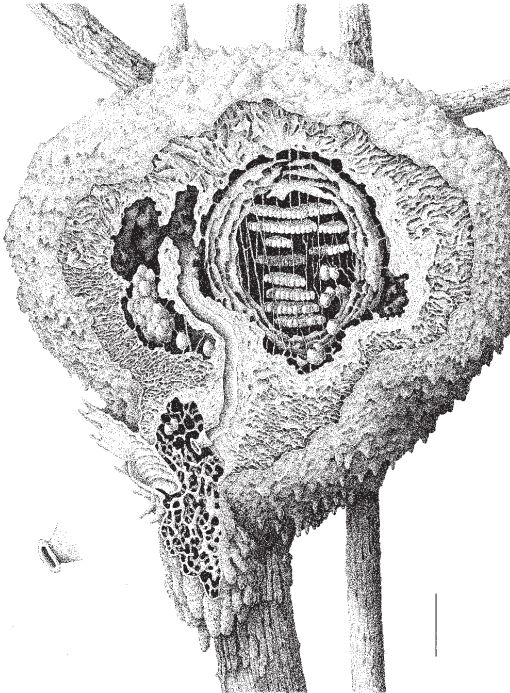
**Figure A.** Nest of *Tetragonula iridipennis* (Yunnan, China) constructed in an empty hive of *Apis cerana*.



**Figure B.** Internal and external nest entrance tubes built by *Scaptotrigona luteipennis* (Panama and Chiriqui Provinces, Panama).



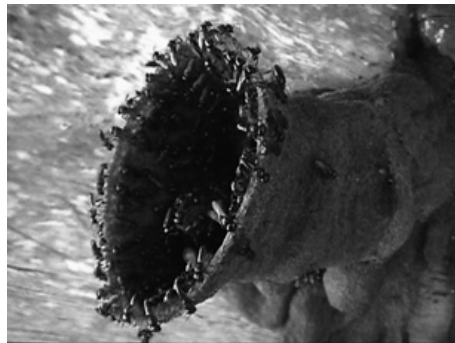
**Figure D.** Resin balls on the former floor in the nest of *Melipona panamica* (Colon Province, Panama).



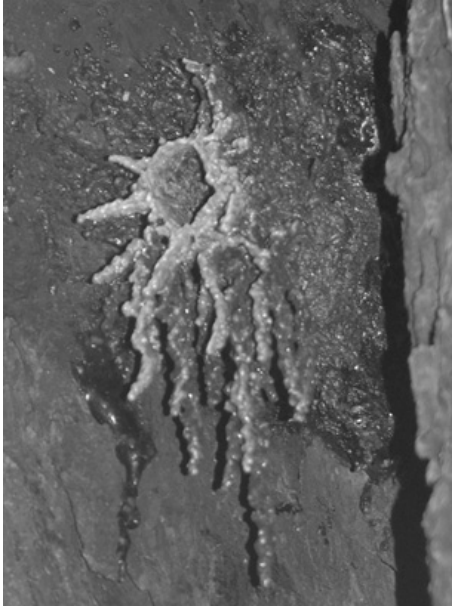
**Figure C.** Cut-away view of the exposed nest of *Partamona pearsoni* (Amazonas, Brazil) showing the internal entrance 'bottleneck' and the empty external nest galleries with empty food storage pots (Camargo, from Camargo and Pedro, 2003).



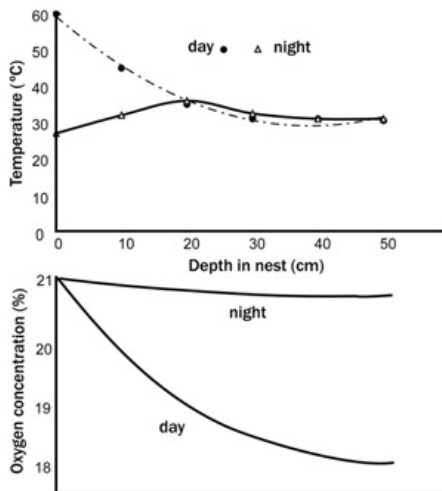
**Figure E.** (a) Nest entrance tube, removed from nest of *Trigona silvestriana* (Madre de Dios, Peru), showing internal resin lamellae; (b) nest entrance of *Scaptotrigona* sp., Yasuni National Park, Ecuador.



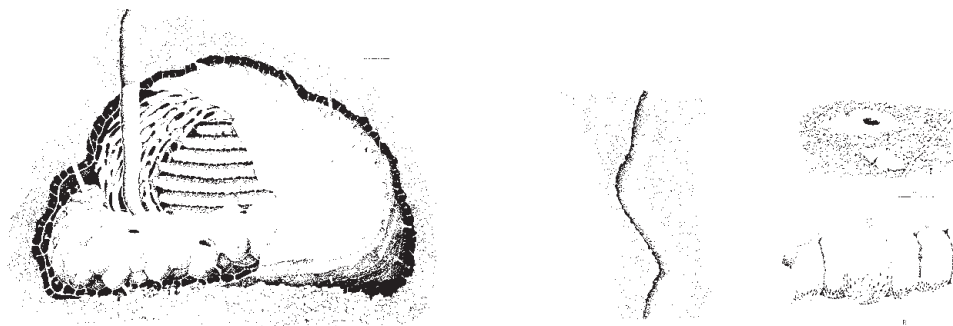
**Figure F.** (a) External nest entrance of *Lestrimelitta* (Panama, Panama), (b) external nest entrance of *L. nitiikib* (Quintana Roo, Mexico).



**Figure G.** External nest entrance and resin deposits of *Tetragonula pagdenformis* (Trang, Thailand).



**Figure H.** Internal nest temperatures and CO<sub>2</sub> of *Plebeina hildebrandti* (formerly *T. denoiti*) and *Hy-potrigona gribodoi* (Moritz and Crewe, 1988).



**Figure I.** Subterranean nest, showing entrance hole, tunnel and brood cells, and brood area, involucra and food storage pots, of *Mourella caerulea* (Rio Grande do Sul, Brazil) (Camargo, from Camargo and Wittmann, 1989).



**Figure J.** Involucrum sheath (3 lamellae, on average) surrounding the brood area, with adjacent storage pots, of *Melipona panamica* (Colon, Panama).



(a)



(b)



(c)



(d)

**Figure K.** (a) Water (not from rain) ejected from the nest entrance by *Melipona panamica* (Colon, Panama); (b) a leiodid, *Scotocryptus melitophylus*, riding the hind leg of worker *M. panamica*; (c) resin deposit by internal nest entrance of *M. panamica*; (d) the exterior mud and resin construction made by *M. panamica* on hive edges.





(a)



(b)



(c)



(d)

**Figure L.** (a) Two external nest entrance tubes of *Meliponula ferruginea* (Bwindi Impenetrable Forest Reserve, Uganda; photograph provided by Kajobe). (b) External nest entrance tube of *Scaura latitarsis* (Amazonas, Brazil) and marauding ants (Camargo, from Camargo, 1984). (c) Nest entrance with ridge of fresh resin applied in ant defense by *Tetragonula collina* (Trang, Thailand). (d) Dual nest entrances of a single *Lepidotrigona ventralis* colony, with resin droplets along tubes (Trang, Thailand).