

# The Biology of Social Insects

Proceedings of the Ninth Congress of the  
International Union for the Study of  
Social Insects, Boulder, Colorado, August 1982

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Stochastic aspects of polyethism in the ant *Lasius niger*

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Polyethism was studied in 5 young colonies comprising 225 ants individually marked. 24 behavioural parameters were noticed for each individual. Data have been treated by correspondence analysis (a form of principal component analysis). The first factor leads to distinguish, as known previously in numerous ants, nurses and foragers. The second factor is opposing among foragers carriers and explorers. We have in these young societies, reared in artificial nest with only one cell for the queen and the brood, only one caste of nurses. For outside tasks we observe simultaneously a great specialization (carriers and explorers) and a great plasticity for other foragers available for many tasks. The repartition for the levels of activity was studied for each task: it is always exponential, with a little number of hyperactive workers, the slope of curves is variable from very specialized tasks (for ex: egg nursing) to tasks involving the whole population (for ex: grooming). Nevertheless the repartition of the total activity is log-normal. This contradiction seems to indicate that individual potentialities are distributed according to a stochastic process with factors (perhaps experience) enhancing the expression of some groups of tasks.

Westview Press / Boulder, Colorado