

Actually, the term would be quite useful if more broadly employed as a synonym for the cumbersome "division of labor," and a distinction made between "age polyethism" and "caste polyethism."

*Age polyethism.*—It has long been known that ant workers, like honey bees, remain in the nest as nurses for a time after eclosion and commence foraging as they age. Weir (176), for instance, found that *Myrmica scabrinodis* Nylander workers eclosed during the current season tend to serve as nurses, those produced in the previous seasons as nest builders, and older workers, possibly two years old, as foragers. Wide individual quantitative differences in this polyethic sequence occurred, with the domestic period proving the most plastic. In *Myrmica rubra*, marked variation among workers was detected in locomotor activity, behavior, and metabolic activity, which Weir suggests is correlated with age differences (177). Otto's monograph (119) on *Formica polyctena* (= *F. minor*) gives the most thorough picture of age polyethism in a single species to date. Workers remain in the nest for about the first forty days, during which time their ovaries become well developed (and presumably functional—see "Food Exchange" in this review). Then, as the ovaries regress, the workers commence their *Aussendienst* as foragers and nest builders. Great variation in this sequence and in the specific labor performed exist among individuals; for instance, many never serve as nurses. Histological studies show that beside the ovaries, several of the major exocrine glands undergo predictable age changes. Otto is thus able to provide some valuable first clues as to their possible social functions.

*Caste polyethism.*—As just noted, individual differences exist in the sequence of age polyethism. In worker-monomorphic species there may be no correlates in morphological variation, and the polyethic classes that are distinguishable after adjustments are made for age are sometimes referred to as "physiological castes" on the sound assumption that underlying physiological differences do exist. Where true morphological subcastes exist within the worker caste, caste polyethism is invariably pronounced. The latter phenomenon has yet to be studied in any thorough manner, but a few recent findings are noteworthy. In *Formica obscuripes* Forel (= *rufa melanotica* Emery), the size-frequency distribution is unimodal but a dramatic polyethism exists: smaller workers forage for honeydew, and larger ones tend the nest and collect the honeydew in the field from the minors through regurgitation (89). In the "honey ant" species belonging to diverse formicine genera it is generally the largest workers which develop into repletes (157, 203). In *Oecophylla longinoda* (Fabricius) and *Daceton armigerum* (Latreille), on the other hand, it is the minor workers which remain in the nest while the majors forage (103, 172, 201). In most ant genera with a highly modified "soldier" caste, these individuals function primarily in colony defense, but the defensive behavior employed varies radically (38, 39, 40, 140, 194). Thus,