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AN UNUSUAL BEHAVIOR PATTERN OBSERVED IN A SZECHUANESE ANT

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The most critical period in the normal development of an ant colony is the time of incipency—the period following fertilization, when the queen bends her efforts to rearing the first all-important group of workers. The most common pattern of action following the mating flight begins with the shedding of the wings, which have become an encumbrance. This accomplished, the young queen proceeds to isolate herself in a cell adapted to the environmental circumstances preferred by her particular species.

In the primitive *Ponerinae*, where the morphological and other differences between the queen and worker classes is relatively slight, she acts during the first days as a huntress or forager in much the same manner as the worker. In higher groups, however, there appear many different specializations of behavior patterns, often with concomitant structural adaptations, which ensure a start for the nest without necessitating the dangerous absence from the brood-chamber of the queen mother.

A few of these specializations may be cited:

The degeneration of the wing muscles and their transformation into stored food within the queen's body is common among the higher subfamilies.

In the genera of the *Solenopsis* complex, there are many species with workers greatly reduced in size and therefore fitted for a life of food-stealing in the nests of other ants or termites. This habit of semiparasitism is described under the terms *lecobiosis* and *cleptobiosis*. The relatively large queen, unfit for such cleptobiotic activities by virtue of her stature, takes on her wedding flight several tiny workers clinging by means of their mandibles to her appendages. This habit is highly developed in the tropical *Solenopsidine* genus *Carolina*. The present writer has, however, unpublished observations in his possession which note the prevalence of the habit in the Nearctic thief-ant, *Solenopsis molesta*. Near Philadelphia, he has observed newly fertile queens of this species in the time of the mating flight, some 20% of which carried one (rarely two) tiny workers attached to their legs during flight.

This represents only one among many types of parasitism found among ants. All afford a relatively safe method of commencing the nesting.

Among the mushroom cultivators of the New World, the queen carries on her mating flight a particle of the hyphae with the substrate from the parent nest. Thus she has the "seed" to start her own underground fungus garden.

With these provisions for insuring the food supply of the incipient colony, the writer wishes to add an observation of his own which he believes is rather unique.

In a sheltered ravine eroded into the face of a bluff called Mou Man Shan located about four miles east of H-inching, Szechuan, the writer noticed, while watching for birds, a swarming mating flight of ants hovering above the path upon which he was standing. The date was September 24, 1944, and the swarming was first observed about four o'clock in the afternoon; it continued until the first chill of evening fell at about half-past five. The day had been warm, with heavy rain in the morning and bright sunshine in the afternoon.

When first noticed, the dense swarms were drifting in the air at heights varying from three to seven feet above the path; the lateral changes in position did not vary greatly from time to time. The females flew steadily and deliberately, while the males swung in swift, erratic orbits about them. The writer captured numbers of the insects in flight, both separately and *in copula*, and was astonished to find that each female held a small, white, wingless female aphid between her mandibles. Further search revealed females already divested of their wings running on the path, the oak foliage, and the rice paddy borders in the immediate neighborhood. Each carried an aphid, though some dropped their burdens when roughly handled.

The female ants themselves were small (3 to 4.5 mm.), yellowish-tan in color, and were of the *Formicine* subfamily, which contains many species known to care for aphids for the sake of their honeydew secretions. The writer has never seen any references in the literature to this transference by the queen of a "seed" aphid, which evidently provides the nucleus of a new herd. The workers of this species are very small and pale, suggesting a predominantly hypogaeic mode of existence. Probably the aphid is a root-feeder, which circumstance would make possible the tending of the new flock without the queen having to stir from the first brood cell.

The identification of either the aphid or the ant is impossible at this time, owing to the non-existence here of proper literature and comparative specimens. They may well represent new species, since the area of the Szechuan Red Basin is practically unknown entomologically.

As conditions warrant, a later report will be made upon further conclusions reached following more comprehensive study than is now possible.