

DEDUCTIONS

The observed pattern of changes suggests the following deductions:

First, the living puparia have the capacity to vary sharply in weight, the increases noted here being due to the absorption of environmental water, and the decreases to the evaporation of body fluids through the cuticula.

Second, the fact that the weight achieved at the termination of the seven-day wet period fell short, by 12.29 per cent of the initial weight, indicates the puparia tend to lose some of their capacity to regain by absorption. However, since mortality in puparia is not readily detected, it is possible that some of this loss of ability to regain all the previously lost weight was apparent, not real.

Third, a change in color, texture and specific gravity accompanies the variations in weight that arise from alternate wetting and drying. When newly pupariated, the puparia were normally dark ocherous and rubbery, tough; when they reached the extreme of dryness imposed in the treatment, they had turned pale stramineous, rigid and fragile. The darker flexible condition is restored with wetting. Dry puparia float lightly on water; wet ones float deeply.

Fourth, these variations in color, texture and weight, or specific gravity, are extrinsic and inconstant, hence have only negative taxonomic significance for segregation of species in the puparial stage.

Distribution and Variation of the Ant *Formica dakotensis* Emery

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Our understanding of *Formica dakotensis* Emery has been advanced considerably by Creighton (1950, Bull. Mus. Comp. Zool. 104: 480, 484-486) who cites data and references I need not repeat here. The easternmost record for *dakotensis*, doubted

by Creighton, was based on a mixed series from Digby, Nova Scotia (J. Russell leg., MCZ), consisting of eight workers mounted on two pins. By coincidence, the top two workers on each pin happened to be *F. subnuda* Emery, the bottom two on each pin, *F. dakotensis*. Evidently Creighton saw these top workers only, and assumed that the pins had been misplaced in a group of the wrong species; at my first glance, I also made the assumption that the series was homogeneous *subnuda*, and it was only after an intensive study of *subnuda* was begun that I found that instead it was a mixture of these two superficially similar species. There seems to be no reason any longer to doubt that both species occur as far east as Nova Scotia, especially in view of the considerable range extensions that are reported next below for *F. dakotensis*.

Variation in *dakotensis* includes a "race *montigena*," said to differ by having erect hairs on petiolar margin and gula. A series from Bluff Prairie, London, Ohio (C. H. Kennedy leg.), has from 3-5 erect hairs on the dorsal petiolar border; the Nova Scotia specimens have 1-5 per border.

A long series from Fairbanks, Alaska (W. Briggs leg.), is like the eastern lots in lacking gular hairs entirely, and generally has fewer on the petiolar border, often lacking hairs here completely. The samples with both gular and petiolar hairs erect are found in the Colorado Rockies, Idaho, Montana, Alberta Rockies and British Columbia, but there is as much variation in series from Alberta and Montana as in the rest of the distribution combined; some series from this region are extreme "typical" *dakotensis*, others are extreme *montigena*, and still others are intergradient and/or mixtures of the extremes.

Since the distributional patterns of the gular hairs and the petiolar hairs are strongly discordant, it is obvious that they cannot be used together to define geographical races. Considered alone, the gular hairs are characteristic in Colorado, but are less so farther north. The evidence for intergradation in this character alone is not quite good enough to rule out the possibility that *montigena* is a Rocky Mountain sibling that meets the east-west range of *dakotensis* in Montana and Alberta. The few females available do not provide very good support for

this hypothesis, although the considerable variation they show may fall into line when better material comes into evidence. Everything considered, it seems likely at this time that *montigena* should pass into the synonymy of *dakotensis*; at least, the burden of proof should fall on those who wish to maintain *montigena* as an independent taxon.

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