

ABERRATIONS IN BRITISH ANTS OF THE GENUS *FORMICA*.

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PSEUDOGYNES

Worker-queen intercastes in *Formica* species have usually taken the form of pseudogynes. These resemble miniature females but the thorax is excessively developed in relation to the head and abdomen. They are not known to lay eggs; they are sluggish but otherwise behave much as small workers in the nest. From their behaviour and sporadic occurrence, they are evidently abnormal forms having no positive value in the life of a normal ant community. On the contrary, Wasmann (1902) considered that with *F. sanguinea* Latr. pseudogynes were brought about by abnormal feeding and behaviour associated with the presence of the myrmecophilous beetle *Lomechusoides strumosa* F. Donisthorpe (1927) questioned this relationship since he did not always find the beetle in nests where pseudogynes were present. Moreover, related species such as *Lomechusa pubicollis* Bris. were thought by Wasmann to have the same effects among *F. rufa* L. and allied species. This beetle has never been found in Britain, whereas pseudogynes of *F. rufa* and allied species have been recorded, often in abundance, from several localities.

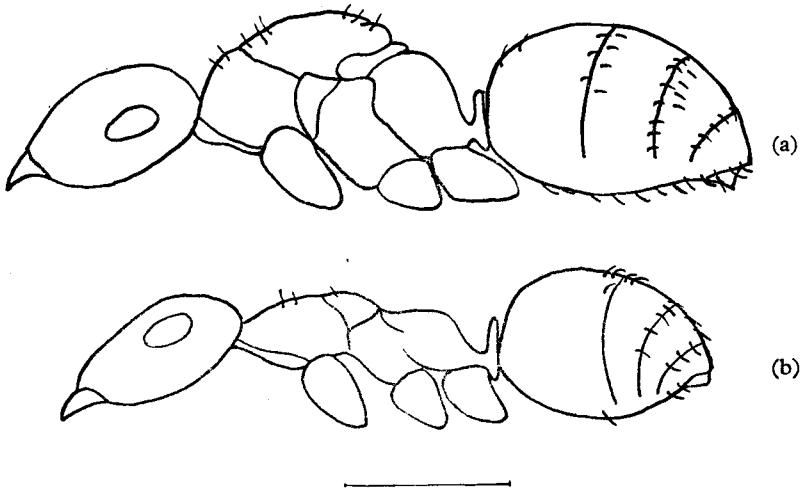


Fig. 1. A, Pseudogyne of *Formica lemmani* (Bondroit), Ambergate, Derbys., iv.55, in side-view. B, Small worker of *Formica lemmani* (Bondroit), Ambergate, Derbys., iv.55, in side-view.

Donisthorpe (1927) has recorded pseudogynes in colonies of *F. sanguinea* in S. England and *F. rufa* in Scotland. Yarrow (1955) has shown that *F. rufa* does not occur in Scotland and Donisthorpe's records from Rannoch and

Nethy Bridge probably refer to the two northern species *F. lugubris* Zett. and *F. aquilonia* Yarrow. In confirmation of this the writer has pseudogynes of both species from Braemar and Carrbridge respectively in the Scottish highlands and has also seen pseudogynes in nests of *F. rufa* in Surrey and Worcestershire. Yarrow (1955) has also pointed out that Donisthorpe's specimens of "*rufo-pratensis*" from the Isle of Wight are *rufa* pseudogynes. It is characteristic for pseudogynes in the *rufa* group of ants to have a clearly marked dark patch on the pronotum and mesonotum, not shining as in normal females of *F. rufa*, *lugubris* and *aquilonia* but matt as in typically coloured *F. nigricans* Em. workers. The degree of over development of the thorax is very variable.

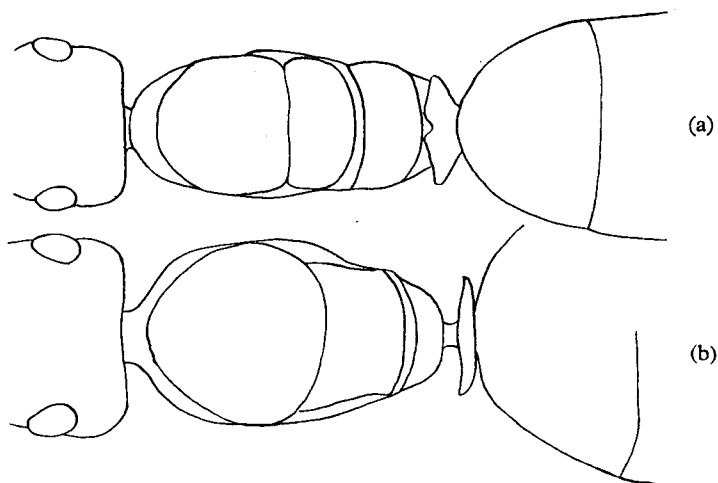


Fig. 2. A, Microgyne of *Formica lemami* (Bondroit), Dartmoor, ix.54, thorax seen from above. B, Normal queen of *Formica lemami* (Bondroit), Staffs., ix.55, thorax seen from above.

Wasmann found pseudogynes of *F. fusca* in Holland, but these have not yet been recorded in Britain for this group of ants. It is therefore of interest to record that in April, 1955, the writer dug up a colony of *F. lemami* Bond. at Ambergate, Derbyshire, in which some 50 or more pseudogynes, about 150 workers and 6 queens were present. The pseudogynes (fig. 1) were characterized by their small size and sluggish behaviour. The female-like thorax was coloured as in the worker and had no shining scutellum as in the queen. In this and other respects the pseudogynes resembled those of the *rufa* group. No myrmecophilous beetles were found, but some of the ants were quite heavily infested with a species of laelapid mite. The nest was situated round and under a stone in semi-shade and the colony was evidently

not thriving. In general it has been the writer's experience that pseudogynes have been found more commonly in colonies that seemed to be in a state of decline, but have also occurred in thriving populous colonies as was noted by Donisthorpe.

MICROGYNES

Microgynes have not been found among the *rufa* group of ants in Britain, but occasionally occur with *F. fusca* and its allies. Donisthorpe recorded microgynes with *F. fusca* L. from the New Forest and from Tenby in Wales. Other localities mentioned are Houth in Ireland and Rothes in Scotland and these should evidently refer to the northern species *F. lemani* Bond. (Yarrow, 1954). Female size in this group of ants is somewhat variable and in the writer's experience undersized queens are usually replicas of normal-sized queens in body proportion. Small queens found in a colony of *F. lemani* on

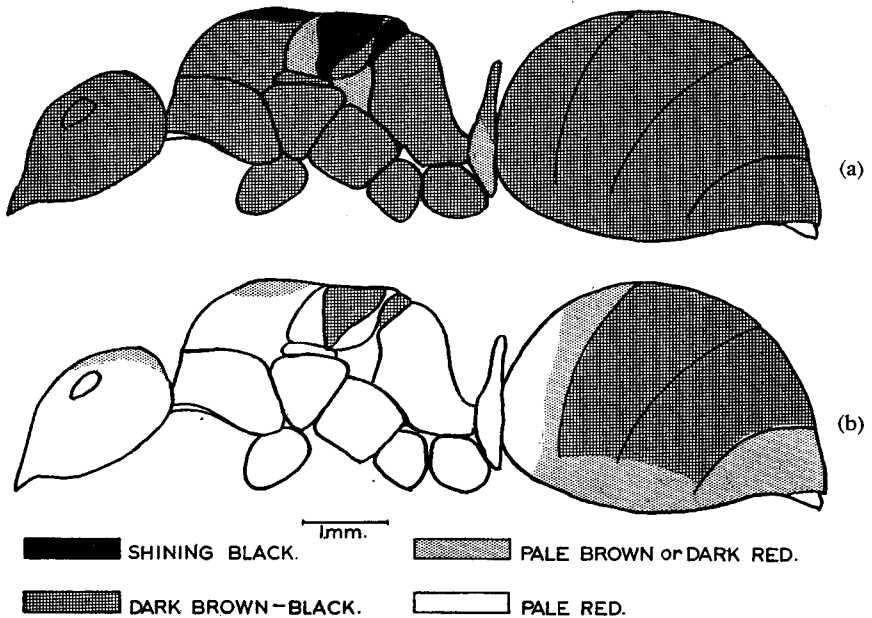


Fig. 3. A, Dark queen of *Formica rufa* L., Buddon wood, Leics., v.55, in side-view.
B, Pale queen of *Formica rufa* L., Wyre Forest, Worcs., vi.51, in side-view.

Dartmoor in September, 1954, however, were not much shorter than ordinary queens, but had the thorax markedly smaller and the head correspondingly reduced (fig. 2). Queens of the *fusca* group found their colonies singly, but there is no evidence that colony proliferation as in *Myrmica ruginodis microgyna* Brian (1949) may not also occur. In the

Dartmoor colony only small queens were present, but the records of Donisthorpe and others show that normal and small queens have frequently occurred together in the same nest, and this would suggest that the microgynes in these cases, at least, resulted from some form of developmental abnormality.

COLOUR

Yarrow (1955) has shown that in the *rufa* group, worker body colour is variable and of little significance in distinguishing the various species. Aberrant *F. nigricans* workers from a colony discovered by Yarrow in Dorset differ little in colour from nearby *F. rufa* and in the writer's collection are specimens of *F. sanguinea*, *exsecta*, *rufa*, *aquilonia* and *lugubris* that would be indistinguishable on the basis of colour. Workers of *lugubris* and of *rufa* often show considerable variation in the same colony with bright reddish and dusky coloured individuals occurring side by side. Several interesting colour contrasts have been found in nests of *F. rufa* in Buddon wood, Leicestershire, and in one colony a remarkable colour aberration in some of the queens was observed. A small nest was dug up and among about twenty queens five were almost completely black, a colour not observed in this species before. By contrast the writer has specimens of *rufa* queens from Wyre forest, which have only part of the scutellum and abdomen other than the basal segment dark, the rest of the body colour being reddish (fig. 3).

In the *fusca* group reddish colouration is frequent and normal among workers of *F. cunicularia* Latr. and *F. rufibarbis* Fab., but has also been found by the writer occasionally in *F. lemani* as in Wigtownshire in June, 1954, and once in *F. fusca* (Arneside, Lancashire, August, 1954). These may have been young workers in which the colour had not yet fully developed, but as a rule callows in these species are greyish and not reddish. Examples of some of these workers could have been easily mistaken on superficial examination for those of *F. cunicularia*, itself a very variably coloured species.

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