

THE ANTS OF THE GENUS *MYRMICA* IN BRITAIN

By C. A. COLLINGWOOD

(National Agricultural Advisory Service, Shardlow Hall, near Derby)

INTRODUCTION AND ACKNOWLEDGMENTS

THE various species of the genus *Myrmica* show a diversity of form and colouring even within the comparatively small area of the British Isles. Confusion in nomenclature and the appearance of overlap in some of the commonly used distinguishing characters have combined to make this one of the more difficult groups of species to separate satisfactorily. In this paper the seven British species and their main variations are briefly discussed, and information is given on their distribution and habits.

In assembling the material for this paper the writer has collected widely throughout the British Isles including Ireland, and has also collected or seen material from other European countries. He is indebted to Messrs. M. Bibikoff, W. L. Brown of the Museum of Comparative Zoology, L. Christie, Holger Holgersen of Norway, and many others for the loan of additional specimens, and to their respective authorities for permission to examine various local museum collections including that of the City of Leicester, the National Museum of Wales, the Royal Scottish Museum and the City of Liverpool.

The seven British species comprise *Myrmica rubra* L., *M. ruginodis* Nyl., *M. sulcinodis* Nyl., *M. lobicornis* Nyl., *M. scabrinodis* Nyl., *M. sabuleti* Mein. and *M. schencki* Em. Another species, *M. rugulosa* Nyl. is found in N. Europe including Scandinavia and the Netherlands, and may yet be discovered in E. or SE. England. The nomenclature adopted in the present paper follows Holgersen (1944) in giving specific rank to *M. sabuleti* Mein. and Yarrow (1955) in substituting the name *rubra* L. for *laevinodis* Nylander, and differs in these respects from that employed by Donisthorpe (1927) and by Kloet and Hincks (1945). In addition no status is accorded to supposed interspecific intermediate forms. Forel (1874) erected a series of names to cover these forms which are still widely employed in the literature on *Myrmica*. Brian and Brian (1949) have already shown that apparent intermediates, recognised as such by Donisthorpe, between *rubra* and *ruginodis* were, in fact, clearly assignable to one or other of these species. The frequent occurrence of a mixture of species in *Myrmica* marriage swarms does not in itself provide evidence of interspecific crossing, and among the many hundreds of examples of the British species that have been examined by the writer the few that show abnormal features are clearly assignable to aberrations of one of the species and not to intermediates.

In the following keys, reliance has been placed on easily perceived qualitative differences. Head index measurements are given, however, as additional means of separation between some of the species. These include the frontal index (F.I.), which is the ratio of the minimum width between the frontal ridges and the maximum head width (excluding eyes) $\times 100$, and the scape index (S.I.), which is the ratio of scape length to head width $\times 100$.

KEYS TO THE MALES

- 1 Long curved antennal scapes more than half as long as funiculus; epinota unarmed or with blunt tubercles 2
- Short or angulate scapes half or less the length of funiculus; epinota sharply tuberculate or toothed 4
- 2 Scape abruptly curved near base; frontal area and petiole striated
sulcinodis Nylander 3
- Scape evenly curved; frontal area smooth, petiole not striated 3
- 3 Posterior tibiae and tarsi with long semi-erect hairs; hairs project over upper surface of first femur; antennal segments 4, 5 and 6 scarcely longer than broad; thorax shining black *rubra* Linnaeus
- Posterior tibiae and tarsi with short semi-decumbent hairs; upper surface of first femur bare; thorax brownish; antennal segments clearly elongate *ruginodis* Nylander
- 4 Scape longer than following 5 antennal segments, distinctly angled near base; pale limb and body articulations contrast with dark body colour *lobicornis* Nylander
- Scape shorter than following 5 antennal segments, more or less bent; colour less contrasted 5
- 5 Scape as long as first 4-5 following segments; upper surface of first femur bare *sabuleti* Meinert
- Scape nearly as long as first 3 following segments; upper surface of femur hairy 6
- 6 Scape thick with long hairs exceeding width; third antennal segment scarcely twice as long as broad; body and legs thickly clothed in long hairs; head not impressed in front of median ocellus
scabrinodis Nylander
- Scape slender with hairs not exceeding width; third antennal segment more than twice as long as broad; body and legs with short hairs; head impressed in front of median ocellus *schencki* Emery

KEYS TO QUEENS AND WORKERS

- 1 Antennal scapes simply curved, not dilated at bend 2
- Antennal scapes angled near base, ridged or dilated at bend 4
- 2 Scapes abruptly curved near base; frontal area striate; thorax and petiole strongly sulcate; spines convergent *sulcinodis* Nylander
- Scape gently curved; frontal area shining; petiole smooth or rugose; worker spines divergent 3
- 3 Petiole in profile curved or peaked and rounded behind; spines short, space between smooth or very faintly striate; epinotum above usually with transverse striae; postpetiole shining *rubra* Linnaeus
- Petiole in profile truncate and angled behind; spines long and coarse, space between with strong transverse striae (exceptionally absent); epinotum above with rest of thorax longitudinally rugose; postpetiole rugose *ruginodis* Nylander
- 4 Scape with transverse ridge at bend appearing as tooth in profile 5
- Scape simple, angled or with flattened extension at bend 6
- 5 Postpetiole higher than wide in profile; workers with deep meso-epitonal furrow; frons more than quarter head width (F.I. 29.9, range 26-33); scape shorter (S.I. 87.8), ridge at bend appears as fine tooth in profile; smaller dusky species *lobicornis* Nylander

- Postpetiole low and thick; workers with shallow meso-epinotal impression; frons quarter head width (F.I. 25.5, range 24-27); scape longer (S.I. 93); ridge at bend flange-like, less pointed in profile; larger reddish species, rare **schencki** Emery
- 6 Scape at bend simply angled, slightly dilated or with short semi-circular extension; frons wider (F.I. 38); petiole in profile angled and anteriorly concave; subspinal area about as large as that occupied by postero-lateral epinotal lobes; length of worker 4-4.8 mm. **scabrinodis** Nylander
- Scape at bend with more or less extensive lateral development, often massive with a longitudinal ridge running forward from the bend; frons narrower (F.I. 34.3); petiole thicker, more rounded in profile; subspinal area larger than that occupied by postero-lateral lobes; length of worker 4.2-5.5 mm. **sabuleti** Meinert

NOTES ON THE SPECIES

Myrmica rubra Linnaeus, 1758(Syn. *laevinodis* Nylander, 1846 (Yarrow, 1955))

This species is widely distributed throughout Britain and Ireland but does not range so far north or to such high altitudes as *M. ruginodis*. In N. Britain it is confined to river valleys, as in Oyckell, E. Sutherland and in Garve, E. Ross-shire and coastal areas, where it may be abundant as in Galloway (Collingwood, 1953). It is not found on bleak moorland and ascends to 300 m. or more only on limestone pasture, as in the Ingleborough district of NW. Yorks. It is scarce or absent on dry sandy heathland even in S. England and evidently flourishes best in alluvial or moisture retentive soils in sheltered areas. In such places *rubra* may become a dominant species with colonies proliferating freely by nest splitting of queens and workers.

This is one of the more aggressive of the *Myrmica* species and uses its sting freely. Neighbouring colonies will combine to destroy an introduced nest of another species but may also fight among themselves on disturbance. This ant attends both root-feeding aphids and those on the aerial parts of plants, including trees, more consistently than do the other members of the genus. Colonies are normally polygynous with 5-30 or more queens according to the size of the nest, and fresh colonies are usually formed by splitting of the parent nest. Single queens may also found their colonies unaided but seldom do so.

Microgynes sometimes occur. These are queens of normal form but small stature. They occur normally in a form of the allied species *ruginodis*, to be discussed below, but are not known in the writer's experience among the other British species. Tomlin (*in* Donisthorpe, 1927) discovered a microgyne acting as sole queen in a nest at Mathon, Herefordshire. The writer found a colony in a tree stump near Ross-on-Wye in the same county in April, 1953, from which seven microgynes and a number of normal workers were taken. A dealate microgyne was found in September of the same year wandering on the ground near Badsey (Worcs.). These examples measured between 4.3 and 5.0 mm. in length, and at Ross-on-Wye were smaller than the larger workers in the same nest. On the Continent similar microgynes have been recorded by Forel in Switzerland and by Wasmann in Holland (Donisthorpe, 1927), by Sadil (1945) in Czechoslovakia, and by Bibikoff (*personal commun.*) in Switzerland. These

occurrences all appear to have been of a sporadic nature, but the tendency for these forms to arise in *rubra* is of special interest in view of their regular occurrence in *ruginodis*.

Intermediate forms between *rubra* and *ruginodis* were widely assumed until the investigations of Brian and Brian (1949) showed that most of these were probably large *rubra* workers. The chief character that has been used to distinguish the species—the relative length of the epinotal spine in the female castes—has been shown to be correlated with head-width. Increasing size of worker as indicated by head-width is usually associated with increasing length of spine, so that the larger *rubra* workers may have the same length of spine as smaller individuals of *ruginodis*. This, accompanied by minor sculpture variations, has sometimes led to confusion between the species, but the more massive flat-topped petiole node of *ruginodis* compared with the peaked or rounded node of *rubra* provides an easily perceived and certain distinction between the species in all cases which have been examined by the writer. Apart from minor variations in sculpture and spine length, *rubra* appears to be one of the more stable of European *Myrmica* and has had fewer named variations than most of the other species.

Myrmica ruginodis Nylander, 1846

(Syn. *rubra* Linnaeus, auctt. (Yarrow, 1955))

This species is ubiquitous throughout Britain. It is present throughout the bleaker moorlands of N. Scotland and is the only ant recorded so far from the Shetlands and St. Kilda, but is equally common in S. Britain. Brian and Brian (1949) discovered this ant to consist of two incompletely dimorphic races, one polygynous with several small queens in each nest, the other monogynous with one large queen. These forms were named by the authors as var. *microgyna* and var. *macrogyna* respectively. In addition to queen size, there are characteristic differences in habitat and behaviour; *macrogyna* is more aggressive, will not normally accept strange queens into its nest, is more generally distributed and predominates in transitory habitats; *microgyna* readily accepts strange queens of its own type and is found in more stable habitats.

In Britain the two races appear to be fairly consistently developed over a large area of W. Scotland, Ireland and NW. England. In other areas the differences do not appear so clearly defined. There is little information from the Continent where *macrogyna* is undoubtedly the commonest form. There are only two references in the literature to small queens known to the writer—a record by Wasmann of a microgynous colony in Feldkirch, Holland (*in* Donisthorpe, 1927) and a reference to the Brians' work by Sadil (1951), in which the author does not comment on the prevalence or otherwise of *microgyna* in Czechoslovakia. This author, however, figures an example of a worker from Sobotka, so presumably this form, although morphologically indistinguishable from *macrogyna* in the worker caste, is to be found there.

Var. *microgyna* is distinctly developed in many areas of Scotland and Ireland especially in west coastal districts. Numerous strong colonies were found, for example, in Kintyre in 1956 along the sea shores. It was of some interest to note the apparent absence of *rubra* from this area, although it had

been found in abundance in a previous season in Galloway in similar situations. In the English Lake District *microgyna* was very frequent in *Molinia* tussocks in the mosses (Collingwood and Satchell, 1956). Brian (*personal communication*) reports the discovery of this form in peat bogs in SW. England. These records suggest that *microgyna* tends to flourish in wet cool areas but, according to site distribution evidence from the Lake District and elsewhere, may be replaced by *rubra* in more sheltered places. It is not, however, limited to such areas and has been recorded from a wide variety of habitats including woodland and hillsides.

Throughout its known distribution in Britain *microgyna* is frequently completely sympatric with *macrogyna*. The writer has, for example, found the two forms actually nesting side by side at Allgreave, Cheshire, and in Wharfedale, NW. Yorks. Brian and Brian (1955) give further evidence to show how, by differences in mating behaviour and methods of colony reproduction, the two forms retain their separateness and consequently have some claim to be regarded as true species. The general evidence of incomplete dimorphism provided by the authors themselves, allied to the absence of any reliable means of morphological separation, do not at present justify this suggestion. Moreover, in Midland areas the two forms are frequently difficult to disentangle. One colony found near Matlock, Derbyshire, contained six queens of intermediate size, while another nearby had one. Colonies with three to four queens of intermediate to large size were frequent near Winchcombe, E. Glos., in April, 1956. Polygynous colonies in Scotland frequently contain up to 13 or more queens, but even in these there were considerable differences between the smallest and largest queens. In their original study, Brian and Brian (1949) found that 15 per cent. of the queens obtained from polygynous nests were larger than the smallest *macrogyna* queens. The writer has examined a similar number of examples and found over 34 per cent. in the larger size range and there is evidently a strong tendency to bimodality in this respect in polygynous colonies.

Since the term variety has now no validity in zoological nomenclature, Brian and Brian (1955) have proposed that the two forms *macrogyna* and *microgyna* be designated subspecies. This term is usually restricted to geographic or at least ecological races and cannot, therefore, be properly applied to them, since they can and do frequently occupy the same ecological niches in the same locality throughout their known area of distribution in Britain. The evidence so far available suggests that *microgyna* can scarcely be regarded as a stabilised form but may be an adaptive response of the species towards an oceanic type of climate.

Forel (1874) assumed the existence of forms intermediate between *ruginodis* and *sulcinodis*, to which he gave the name *ruginodis* var. *sulcinodo-ruginodis*. Donisthorpe (1927) attributed to this a variety found on Box Hill, Surrey, in which the workers had a somewhat striate frontal area but were otherwise like *ruginodis*. The writer also attributed certain variations found in N. Scotland (Collingwood, 1951) to this category but on careful re-examination they have proved to be aberrations of *ruginodis*. One worker has the narrow based but strong incurving spines of *sulcinodis* type; another series of workers have more or less striated frontal areas and both workers and queen are very dark, as in many examples of *sulcinodis*. Nevertheless from their general

facies they are quite clearly *ruginodis*. A fine series of large dark workers were sent to the writer by Mr. L. Christie from Loch Droma, E. Ross-shire. Dark colour and stronger sculpturing appear to be normal variations among all the *Myrmica* species found in the Highlands.

Myrmica sulcinodis Nylander, 1846

In Europe this ant is generally restricted to mountain areas but is found in Britain on the lowland heaths of S. England as well as in the Scottish Highlands, where it has been taken up to a height of 600 m. The species is not known from Ireland and there are only two old doubtful records from Wales. It is abundant on well drained gritty moorland both in the Highlands and in similar areas of England from Northumberland to Staffordshire. It has been taken on Dartmoor recently by Dr. M. V. Brian (*personal communication*) and is not uncommon in parts of the New Forest and Dorset heathland as well as in Surrey. In these southern areas nests are often sited in boggy ground and damp tussocks, whereas in N. Britain the species is markedly xerophilous and only found in open ground in well drained areas.

British examples normally show a marked colour contrast between the dark head and gaster and the red thorax. Some Scottish examples would qualify for the dark form described as *nigripes* by Ruzscky (1896). Some examples from the French Alps are by contrast much paler than typical British specimens. This distinctive species is very coarsely sculptured. British examples have strong converging spines but in some continental series the spines diverge (Bibikoff collection: Switzerland). Males are readily differentiated from those of *ruginodis* by a more abruptly curved scape and striate frontal area. On the Continent some *scabrinodis* variations with no lobar extension at the bend of the scape are superficially similar, and it is probable that *sulcinodis* var. *sulcinodo-scabrinodis* Forel may refer to such examples. *M. scabrinodis*, however, can always be distinguished by the slight sinuation of the scape at the bend, which in *sulcinodis* is always curved in one plane only.

This is a slow moving but aggressive species preying on other ants and insects and capable of stinging fiercely. Colonies are typically monogynous.

Myrmica scabrinodis Nylander, 1846

This species has almost as wide a range as *ruginodis* in the British Isles and has been taken in almost every county of England, Wales and Ireland and in Scotland from Caithness southwards. It has not been taken higher than about 300 m. in the Scottish Highlands or in Ireland (O'Rourke, 1950) but occurs in a wide diversity of habitat, flourishing in dry sandy areas as well as in woodland and even in boggy ground. Colonies normally arise from single queens but in older nests up to five may be present. In central and south England this species is frequently associated with the ant *Lasius flavus* Fab., occupying a part of the latter's mound nest and preying on the *flavus* workers. In N. Britain it is a component of the loose association of four species including *M. ruginodis macrogyna*, *Leptothorax acervorum* Fab. and *Formica lemni* Bond. studied by Brian and Brian (1951) in W. Scotland which is characteristic for the whole of moorland Britain.

There are considerable variations in sculpture and petiole shape which have led various authors to describe a medley of varieties, subspecies and related



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FIG. 1.—Vice-county distribution of *Myrmica sulcinodis* Nylander (\\ \\ \\).
FIG. 2.—Vice-county distribution of *Myrmica schenckii* Emery (/ / /), and of *Myrmica lobicornis* Nylander (||||).

species. One of the few of interest to British students is the form described by Bondroit as var. *pilosiscapus* which he recognised in specimens from Britain as well as from European mountain areas. Sadil (1951) gives this form full specific status, redescribing it from examples found in mountain areas and peat bogs in Czechoslovakia. This author distinguishes it from *scabrinodis* by the darker colour, deeper sculpture, higher more angled petiole and the presence, in typical examples, of a semicircular extension at the bend of the scape in the female castes; in the male the petiole is stated to be thicker and more rounded than in *scabrinodis* and has a slight anterior concavity. Many British examples, especially from the Scottish Highlands, would qualify for inclusion in this description. Probably the colony tentatively referred to as var. *scabrinodolobicornis* Forel by Donisthorpe (1927) would refer to this form. All the features enumerated above are of the general trend exhibited by *Myrmica* from N. Britain. They are too indistinctly differentiated from the typical form in Britain and too variable even among members of the same nest series to justify separation in the writer's opinion. Named examples from Europe have not been available so that this view can only be regarded as tentative. Sadil's head index measurements, however, fall well within the range he himself gives for *scabrinodis*, while all the differences enumerated are those of degree rather than of kind.

Sadil (1951) has described other *scabrinodis*-like species, including *balcanina* and *slovaca*, both of which have a more or less rectilinear petiole outline from above, approaching that of *rugulosa*. Some of the writer's specimens taken in Worcestershire would approximate to the description of one of these forms but both are, by Sadil's own admission, variable and not consistently different from *scabrinodis*. The males are differentiated by what appear to be small variations in petiole shape. It is not unlikely that one of Sadil's species may be the same as *puerilis* Stärcke (1942) which differs in the male by pilosity characters. Since these authors have concentrated on a different set of diagnostic characters, it is not possible to link their descriptions. According to Wolf's excellent key (1954) to the male castes only of certain West German species *puerilis* is clearly distinguishable from either *scabrinodis* or *rugulosa*.

The variation in scape characters of both *scabrinodis* and *sabuleti* so that there appear to be linking forms has made the distinction between these species more controversial than between other pairs of similar species. Dr. W. L. Brown, in a personal communication to the writer, referred examples of both *scabrinodis* and *sabuleti* sent him from Scotland to the one species *scabrinodis*, stating that in the collections in the Museum of Comparative Zoology the scape characters from most European localities intergraded. In Britain, however, just as Holgersen found in Norway, clear differences in form and behaviour are to be seen wherever the two species occur.

The males are not only distinguished by the size of the scape but also by a consistent difference in pilosity. In *sabuleti* the hairs on the scape and legs are much shorter than in *scabrinodis*. The more massive scape in *sabuleti* females is associated with a narrower frons and the regression lines for frons width on head width in the two species do not overlap. The various differences already indicated in the keys do not appear to vary allometrically and are as apparent in small individuals as in large.

Myrmica sabuleti Meinert, 1860

This species is more localised in its distribution than *scabrinodis* yet ranges as far north as Sutherlandshire. Colonies tend to be grouped together in certain localities in much the same way as *rubra* but are usually monogynous or with few queens. Primary pleometrosis seems to be quite frequent in this species and two or three queens have often been found starting colonies together. This ant appears to flourish best in warm stony places, nesting under stones and seldom or never in tree stumps. In the north it is found only in river valleys, or in coastal districts but is frequent on hillsides in the south, especially in limestone districts.

M. sabuleti tends to be larger, more brightly coloured and somewhat more aggressive than *scabrinodis*. Like *rubra* it will sometimes prey on *Lasius flavus* as on other insects but, unlike *scabrinodis*, is not characteristically associated with this species. In many ways its habits and distribution in Britain resemble those of *rubra*, but its nests are normally sited in drier more insulated places. At the same time it does not seem to tolerate the more arid sandy areas where *scabrinodis* is still capable of flourishing.

Certain forms with deeper sculpture, darker colour and a massive development of the lobar extension of the scape are characteristic of a few localities in the northern Highlands. In some of these specimens the scape is sharply angled and the massive extension appears almost as a tooth in profile. Such examples were mistaken for the rarer and quite different *schencki* by the writer (Collingwood, 1951) and by Donisthorpe, who confirmed the identification at that time. The writer is grateful to Dr. I. H. H. Yarrow for subsequently pointing out the mistake. This form contrasts quite as strikingly with southern examples of *sabuleti* as "*pilosiscapus*" contrasts with southern *scabrinodis*, but can only be regarded as a minor geographic variation.

Finzi (1926) described as the race *lonae* a form described as having a more massive lobar extension than in the type, being at least twice the width of the scape at its narrowest point. Many Highland examples would fit this description and so would numerous series from further south. This appears, therefore, to be a normal variation of the species. A male from the Finzi collection kindly lent by Dr. W. L. Brown, and named by Finzi himself as "*lonae*", does not appear distinguishable from other large *sabuleti* males. In the other direction some nest series have workers with a considerably reduced extension of the scape which, however, is more elongated than in the more extreme forms of *scabrinodis*.

Myrmica lobicornis Nylander, 1846

This species has not been found in Ireland but is widely distributed throughout England, Wales and Scotland from the north coast of Sutherlandshire southward. It is nowhere abundant and colonies are usually single and sparsely scattered over an area. It is a characteristic species of the high Alps and other mountain areas in Europe, but has seldom been found in Britain at higher altitudes than 300 m. and is less frequent than *sulcinodis* in the Scottish Highlands. *M. lobicornis*, however, appears to be less restricted in habitat than *sulcinodis* and may be found in dry pasture, open woodland and stony hillsides as well as on heaths.

This is one of the easiest species to recognise in Britain. The slender antennal scape bears a small upright process which appears as a small tooth in profile; the body colour is similar to that of *sulcinodis* with the dark head and gaster contrasting with the paler thorax. There is considerable variation in sculpture, spine length and size of antennal tooth even in Britain. The variation in this species over Europe as a whole is more remarkable. In general British examples have a smaller antennal process than seems to be usual among continental material seen. Some Norwegian examples kindly sent by Dr. Holger Holgersen have, by contrast, an outstanding development of the tooth which appears as a wide saucer-like flange larger than that of typical *schencki*.

Myrmica schencki Emery, 1895.

This interesting species is the least common of the British *Myrmica*. Its known distribution in Britain is unlike that of any other ant. It was discovered in one locality in Glamorganshire in 1915 by H. M. Hallett (Donisthorpe, 1927) and it was subsequently found in Ireland in 1926 by A. W. Stelfox (1927). Later discoveries by Stelfox and others (O'Rourke, 1950) have shown it to be widely, though sparsely, distributed there in the SE., and SW., where it has now been taken from about 15 localities mostly in single nests or as individual examples. This species was taken in England for the first time in 1946 by H. E. Hammond and K. G. V. Smith, who collected a single worker from the Shropshire side of the Wyre Forest. Further examples were not found in subsequent visits by the writer and others until April, 1957, when a nest was discovered in the railway cutting not far from the Bridgenorth-Bewdley road in the Worcestershire part of the forest. This nest was revisited in July and a few *alatae* collected. It has since been discovered in two more localities—a single nest at Barnack in the Soke of Peterborough and a group of a dozen or more nests in a sheltered sand bank by the side of a railway cutting at Wilsford, S. Lincs. Its present known distribution therefore extends in a narrow belt from the East Midlands to the extreme west of Ireland and forms a complete contrast to the north-south distribution of *lobicornis*.

M. schencki is widely distributed through central Europe in lowland areas and on the lower slopes of mountains. It is scarce in S. Scandinavia and, with the exception of *M. rugulosa*, does not extend so far north as the other N. European members of the genus. It is a monogynous species and nests most frequently in the ground in sandy places and not typically under stones as does *sabuleti*. In Ireland O'Rourke (1950) has found it nesting in peat as well as in sandy places and it is not apparently limited to any particular type of habitat there, although it has been found most frequently near the coast.

British examples of this species conform well with those seen from France and Switzerland and, in NW. Europe at least, it is a distinctive and easily recognized species, distinguished by its very narrow frons, large upright process on the scape and very shallow meso-epinotal impression in the worker caste. In S. Europe the species is more variable and in the worker caste sometimes hard to distinguish from the larger forms of *lobicornis*. Males of the two species are, however, quite unmistakable and more unlike than other pairs of similar species already discussed.

SUMMARY

Keys to the males and to the queens and workers of the seven British species of *Myrmica* are given. Their distribution, habits and main variations in Britain are briefly discussed.

The vice-county distributions of *M. sulcinodis* Nyl., *M. lobicornis* Nylander and *M. schencki* Emery are mapped.

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